



POWERING INNOVATION THAT DRIVES HUMAN ADVANCEMENT

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# HFSS™ 3D Layout Scripting Guide



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# Table of Contents

|                                                                            |                   |
|----------------------------------------------------------------------------|-------------------|
| <b>Table of Contents</b>                                                   | <b>Contents-1</b> |
| <b>1 - Introduction to Scripting</b>                                       | <b>1-1</b>        |
| Scripting Help Conventions                                                 | 1-1               |
| Variable Types                                                             | 1-2               |
| Introduction to IronPython                                                 | 1-2               |
| Scope                                                                      | 1-2               |
| Python Compatibility                                                       | 1-2               |
| Advantages of IronPython                                                   | 1-2               |
| Scripting Using Iron Python                                                | 1-3               |
| IronPython Script Execution Environment                                    | 1-4               |
| Script Argument for IronPython                                             | 1-4               |
| Scripting using Embedded VBScript or JavaScript                            | 1-5               |
| Scripting with Python                                                      | 1-6               |
| Standalone IronPython                                                      | 1-7               |
| Running Standalone IronPython                                              | 1-7               |
| Using a Recorded Script                                                    | 1-7               |
| Creating an External Script                                                | 1-7               |
| Example Script                                                             | 1-8               |
| IronPython Samples                                                         | 1-9               |
| Change property                                                            | 1-10              |
| Create a Cone using IronPython                                             | 1-11              |
| Creating User Defined Primitives and User Defined Models in Python Scripts | 1-14              |
| Advantages Compared to C++                                                 | 1-15              |
| Changes compared to C                                                      | 1-15              |
| Structures                                                                 | 1-15              |
| Return Values for UDM and UDP Functions                                    | 1-15              |
| Constants                                                                  | 1-15              |
| Methods                                                                    | 1-15              |

|                                                   |      |
|---------------------------------------------------|------|
| Output Parameters .....                           | 1-16 |
| Comparison with C function: .....                 | 1-16 |
| 'List Size' Parameters .....                      | 1-17 |
| Comparison with C function: .....                 | 1-17 |
| Added Parameters .....                            | 1-18 |
| Developing a UDM/UDP .....                        | 1-19 |
| Creation .....                                    | 1-19 |
| Location .....                                    | 1-19 |
| Organize .....                                    | 1-20 |
| Edit/Reload .....                                 | 1-20 |
| UDPEExtension .....                               | 1-20 |
| IUDPEExtension Methods .....                      | 1-20 |
| Mandatory Methods .....                           | 1-21 |
| GetLengthParameterUnits() .....                   | 1-21 |
| Optional Methods .....                            | 1-21 |
| Example UDP .....                                 | 1-22 |
| UDMExtension .....                                | 1-23 |
| Import .....                                      | 1-23 |
| Main class: UDMExtension .....                    | 1-23 |
| IUDMExtension Methods .....                       | 1-23 |
| Mandatory Methods .....                           | 1-23 |
| Optional Methods .....                            | 1-25 |
| Example UDM .....                                 | 1-26 |
| UDMFunctionLibrary .....                          | 1-26 |
| Functions list: .....                             | 1-27 |
| UDM/UDP Functions .....                           | 1-28 |
| Return Values for Each UDM and UDP Function ..... | 1-28 |
| UDP/UDM Structures and Constants .....            | 1-30 |
| UDP/UDM Structures .....                          | 1-30 |
| List of Structures .....                          | 1-32 |



|                                                                 |      |
|-----------------------------------------------------------------|------|
| UDP/UDM Constants .....                                         | 1-38 |
| Enum constants: .....                                           | 1-38 |
| UDP Python Example .....                                        | 1-40 |
| Introduction to CPython .....                                   | 1-44 |
| Creating an External Script .....                               | 1-45 |
| Start ansysedt as GRPC server .....                             | 1-45 |
| Connect Functions: .....                                        | 1-46 |
| Example: .....                                                  | 1-46 |
| Launching Electronics Desktop .....                             | 1-46 |
| Connecting with a Running Instance of Electronics Desktop ..... | 1-47 |
| Closing Electronics Desktop/Ending the Script .....             | 1-47 |
| -grpcsrv Flag .....                                             | 1-47 |
| Ansys Electronics Desktop Scripting .....                       | 1-50 |
| Overview of Electronics Desktop Scripting Objects .....         | 1-50 |
| oAnsoftApp .....                                                | 1-51 |
| oDesktop .....                                                  | 1-51 |
| oProject .....                                                  | 1-51 |
| oDesign .....                                                   | 1-51 |
| oEditor .....                                                   | 1-51 |
| oModule .....                                                   | 1-52 |
| Example Script Opening .....                                    | 1-52 |
| GetActiveProject and GetActiveDesign for Wider Use .....        | 1-53 |
| Running a Script .....                                          | 1-53 |
| Within Electronics Desktop .....                                | 1-53 |
| From the Command Line .....                                     | 1-54 |
| Recording a Script .....                                        | 1-54 |
| Recording a Script to File .....                                | 1-54 |
| Recording a Script to a Project .....                           | 1-55 |
| Working with Project Scripts .....                              | 1-56 |
| Executing a Script from Within a Script .....                   | 1-57 |

|                                                           |            |
|-----------------------------------------------------------|------------|
| Electronics Desktop Scripting Conventions .....           | 1-57       |
| Named Arguments .....                                     | 1-57       |
| IronPython Example .....                                  | 1-58       |
| Setting Numerical Values .....                            | 1-59       |
| Layout Scripts and the Active Layer .....                 | 1-59       |
| Scripts and Locked Layers .....                           | 1-60       |
| PyAEDT (Beta) .....                                       | 1-60       |
| <b>2 - Object-Oriented Property Scripting .....</b>       | <b>2-1</b> |
| Object-Oriented Scripting .....                           | 2-1        |
| Material Properties and Examples .....                    | 2-9        |
| Body Properties and Modification .....                    | 2-11       |
| Retrieving Variables .....                                | 2-11       |
| Retrieve Datasets and Values .....                        | 2-12       |
| GetSolutionData API .....                                 | 2-14       |
| Summary .....                                             | 2-14       |
| Additional Details Specific to AEDT Solvers .....         | 2-18       |
| Additional details on Boundaries/Excitations .....        | 2-19       |
| 3D component encapsulation .....                          | 2-21       |
| Additional details on Solve setup .....                   | 2-21       |
| Materials Scripting Support .....                         | 2-22       |
| Object Oriented Scripting for Materials .....             | 2-26       |
| Examples showing change to material property type: .....  | 2-27       |
| Examples showing change to a vector component value ..... | 2-27       |
| Change choice property value .....                        | 2-28       |
| Change choice property value .....                        | 2-29       |
| Property Script Commands .....                            | 2-30       |
| Object Script Property Function Summary .....             | 2-32       |
| Object Path .....                                         | 2-32       |
| Property Object .....                                     | 2-33       |
| Project Object .....                                      | 2-34       |

---

|                                                           |      |
|-----------------------------------------------------------|------|
| Design Object .....                                       | 2-35 |
| 3D Modeler Object .....                                   | 2-36 |
| Variable Object .....                                     | 2-36 |
| Optimetrics Module Object: .....                          | 2-37 |
| Optimetrics Setup Object .....                            | 2-38 |
| ReportSetup(Results) Module Object: .....                 | 2-39 |
| ReportSetup(Results) Module Child Objects: .....          | 2-39 |
| Radiation Module Object: .....                            | 2-40 |
| Radiation Module Child Objects: .....                     | 2-41 |
| Conventions Used in this Chapter .....                    | 2-41 |
| Callback Scripting Using PropHost Object .....            | 2-44 |
| ChangeProperty (Schematic Editor and Layout Editor) ..... | 2-47 |
| PropHost Functions .....                                  | 2-54 |
| AddMenuProp .....                                         | 2-54 |
| AddMenuProp2 .....                                        | 2-55 |
| AddProp .....                                             | 2-57 |
| AddProp2 .....                                            | 2-60 |
| ExecuteScript .....                                       | 2-62 |
| GetApplication .....                                      | 2-62 |
| GetCallback .....                                         | 2-63 |
| GetChangedProperty .....                                  | 2-64 |
| GetDescription .....                                      | 2-64 |
| GetDesign .....                                           | 2-65 |
| GetEditor .....                                           | 2-65 |
| GetEvaluatedText .....                                    | 2-66 |
| GetFileName .....                                         | 2-66 |
| GetHidden .....                                           | 2-67 |
| GetProgress .....                                         | 2-68 |
| GetPropHost .....                                         | 2-68 |
| GetPropServers .....                                      | 2-68 |

|                                                     |            |
|-----------------------------------------------------|------------|
| GetPropTabType .....                                | 2-69       |
| GetReadOnly .....                                   | 2-69       |
| GetRunStatus .....                                  | 2-70       |
| GetTabTypeName .....                                | 2-70       |
| GetText .....                                       | 2-71       |
| GetValue .....                                      | 2-72       |
| IsValueConstant .....                               | 2-72       |
| PropertyExists .....                                | 2-73       |
| RemoveProp .....                                    | 2-73       |
| SetCallback .....                                   | 2-74       |
| SetDescription .....                                | 2-75       |
| SetHidden .....                                     | 2-75       |
| SetReadOnly .....                                   | 2-76       |
| SetText .....                                       | 2-76       |
| SetValue .....                                      | 2-77       |
| GetArrayVariables .....                             | 2-85       |
| GetProperties .....                                 | 2-85       |
| GetPropertyValue .....                              | 2-86       |
| GetVariables .....                                  | 2-88       |
| GetVariableValue .....                              | 2-88       |
| SetPropertyValue .....                              | 2-89       |
| SetVariableValue .....                              | 2-90       |
| <b>3 - Application Object Script Commands .....</b> | <b>3-1</b> |
| GetAppDesktop .....                                 | 3-2        |
| <b>4 - Desktop Object Script Commands .....</b>     | <b>4-1</b> |
| AddMessage .....                                    | 4-6        |
| AreThereSimulationsRunning .....                    | 4-7        |
| ClearMessages .....                                 | 4-7        |
| CloseAllWindows .....                               | 4-11       |
| CloseProject .....                                  | 4-12       |

---

|                                                   |      |
|---------------------------------------------------|------|
| CloseProjectNoForce .....                         | 4-12 |
| Count .....                                       | 4-13 |
| DeleteProject .....                               | 4-13 |
| DownloadJobResults .....                          | 4-14 |
| DeleteRegistryEntry .....                         | 4-15 |
| DoesRegistryValueExist .....                      | 4-16 |
| EnableAutoSave .....                              | 4-16 |
| ExportOptionsFiles .....                          | 4-17 |
| GetActiveProject .....                            | 4-18 |
| GetActiveScheduler .....                          | 4-18 |
| GetActiveSchedulerInfo .....                      | 4-19 |
| GetAutoSaveEnabled .....                          | 4-20 |
| GetBuildDateTimeString .....                      | 4-20 |
| GetCustomMenuSet .....                            | 4-21 |
| GetDefaultUnit .....                              | 4-22 |
| GetDesktopConfiguration .....                     | 4-24 |
| GetDistributedAnalysisMachines .....              | 4-24 |
| GetDistributedAnalysisMachinesForDesignType ..... | 4-25 |
| GetExeDir .....                                   | 4-25 |
| GetGDIObjectCount .....                           | 4-26 |
| GetLibraryDirectory .....                         | 4-26 |
| GetLocalizationHelper .....                       | 4-27 |
| GetMessages .....                                 | 4-28 |
| GetMonitorData .....                              | 4-29 |
| GetPersonalLibDirectory .....                     | 4-30 |
| GetProcessID .....                                | 4-30 |
| GetProjectDirectory .....                         | 4-31 |
| GetProjectList .....                              | 4-31 |
| GetProjects .....                                 | 4-32 |
| GetRegistryInt .....                              | 4-32 |

|                                 |      |
|---------------------------------|------|
| GetRegistryString .....         | 4-33 |
| GetRunningInstancesMgr .....    | 4-34 |
| GetSchematicEnvironment .....   | 4-34 |
| GetScriptingToolsHelper .....   | 4-35 |
| GetSysLibDirectory .....        | 4-36 |
| GetTempDirectory .....          | 4-36 |
| GetUserLibDirectory .....       | 4-37 |
| GetVersion .....                | 4-37 |
| IsFeatureEnabled .....          | 4-38 |
| KeepDesktopResponsive .....     | 4-39 |
| LaunchJobMonitor .....          | 4-40 |
| NewProject .....                | 4-40 |
| OpenAndConvertProject .....     | 4-41 |
| OpenMultipleProjects .....      | 4-42 |
| OpenProject .....               | 4-42 |
| OpenProjectWithConversion ..... | 4-43 |
| PageSetup (Layout Editor) ..... | 4-43 |
| PauseRecording .....            | 4-44 |
| PauseScript .....               | 4-44 |
| Print .....                     | 4-45 |
| QuitApplication .....           | 4-45 |
| RefreshJobMonitor .....         | 4-46 |
| ResetLogging .....              | 4-47 |
| RestoreProjectArchive .....     | 4-48 |
| RestoreWindow .....             | 4-48 |
| ResumeRecording .....           | 4-49 |
| RunACTWizardScript .....        | 4-50 |
| RunProgram .....                | 4-50 |
| RunScript .....                 | 4-51 |
| RunScriptWithArguments .....    | 4-52 |

|                                            |      |
|--------------------------------------------|------|
| SelectScheduler .....                      | 4-53 |
| SetActiveProject .....                     | 4-55 |
| SetActiveProjectByPath .....               | 4-55 |
| SetCustomMenuSet .....                     | 4-56 |
| SetDesktopConfiguration .....              | 4-57 |
| SetLibraryDirectory .....                  | 4-58 |
| SetProjectDirectory .....                  | 4-58 |
| SetRegistryFromFile .....                  | 4-59 |
| SetRegistryInt .....                       | 4-59 |
| SetRegistryString .....                    | 4-60 |
| SetSchematicEnvironment .....              | 4-61 |
| SetTempDirectory .....                     | 4-62 |
| ShowDockingWindow .....                    | 4-62 |
| Sleep .....                                | 4-63 |
| StopSimulations .....                      | 4-63 |
| SubmitJob .....                            | 4-64 |
| TileWindows .....                          | 4-65 |
| Desktop Commands For Registry Values ..... | 4-66 |
| DeleteRegistryEntry .....                  | 4-67 |
| DoesRegistryValueExist .....               | 4-67 |
| GetRegistryInt .....                       | 4-68 |
| GetRegistryString .....                    | 4-69 |
| SetRegistryFromFile .....                  | 4-69 |
| SetRegistryInt .....                       | 4-70 |
| SetRegistryString .....                    | 4-71 |
| ImportExport Tool Commands .....           | 4-71 |
| ImportANF .....                            | 4-72 |
| ImportANFv2 .....                          | 4-73 |
| ImportAutoCAD .....                        | 4-74 |
| ImportAWRMicrowaveOffice .....             | 4-74 |

|                                                            |            |
|------------------------------------------------------------|------------|
| ImportEDB .....                                            | 4-75       |
| ImportExtracta .....                                       | 4-76       |
| ImportGDSII .....                                          | 4-77       |
| ImportGerber .....                                         | 4-78       |
| ImportIDF .....                                            | 4-78       |
| ImportIDFandMerge .....                                    | 4-81       |
| ImportIDX .....                                            | 4-82       |
| ImportIPC .....                                            | 4-84       |
| ImportODB .....                                            | 4-85       |
| ImportXFL .....                                            | 4-86       |
| <b>5 - Running Instances Manager Script Commands .....</b> | <b>5-1</b> |
| GetAllRunningInstances .....                               | 5-1        |
| GetRunningInstanceByProcessID .....                        | 5-1        |
| GetRunningInstancesMgr .....                               | 5-2        |
| <b>6 - Project Object Script Commands .....</b>            | <b>6-1</b> |
| AddDataset .....                                           | 6-4        |
| AddMaterial .....                                          | 6-6        |
| AnalyzeAll [project] .....                                 | 6-10       |
| ChangeProperty .....                                       | 6-10       |
| ClearMessages .....                                        | 6-14       |
| CloneMaterial .....                                        | 6-15       |
| Close .....                                                | 6-16       |
| CopyDesign .....                                           | 6-16       |
| CutDesign .....                                            | 6-17       |
| DeleteDataset .....                                        | 6-18       |
| DeleteDesign .....                                         | 6-18       |
| DeleteToolObject .....                                     | 6-19       |
| EditDataset .....                                          | 6-19       |
| EditMaterial .....                                         | 6-21       |
| ExportDataset .....                                        | 6-28       |

---



|                                    |      |
|------------------------------------|------|
| ExportMaterial .....               | 6-29 |
| GetActiveDesign .....              | 6-29 |
| GetArrayVariables .....            | 6-30 |
| GetChildNames [Project] .....      | 6-31 |
| GetChildObject [Project] .....     | 6-31 |
| GetChildTypes [Project] .....      | 6-32 |
| GetDefinitionManager .....         | 6-33 |
| GetDependentFiles .....            | 6-33 |
| GetDesign .....                    | 6-34 |
| GetDesigns .....                   | 6-35 |
| GetEDBHandle .....                 | 6-35 |
| GetLegacyName .....                | 6-36 |
| GetName [Project] .....            | 6-36 |
| GetObjPath [Project] .....         | 6-37 |
| GetPath .....                      | 6-38 |
| GetPropEvaluatedValue .....        | 6-38 |
| GetPropNames [Project] .....       | 6-39 |
| GetPropSIValue .....               | 6-40 |
| GetPropValue [Project] .....       | 6-41 |
| GetProperties .....                | 6-41 |
| GetPropertyValue .....             | 6-42 |
| GetTopDesignList .....             | 6-44 |
| GetVariableValue .....             | 6-44 |
| GetVariables .....                 | 6-45 |
| ImportDataset .....                | 6-46 |
| Note About File Types: .....       | 6-47 |
| InsertDesign .....                 | 6-48 |
| InsertDesign (Layout Editor) ..... | 6-49 |
| InsertDesignWithWorkflow .....     | 6-50 |
| InsertToolObject .....             | 6-51 |

|                                                |            |
|------------------------------------------------|------------|
| Paste (Project Object) .....                   | 6-51       |
| Redo [Project Level] .....                     | 6-52       |
| RemoveAllUnusedDefinitions .....               | 6-52       |
| RemoveMaterial .....                           | 6-53       |
| RemoveUnusedDefinitions .....                  | 6-53       |
| Rename .....                                   | 6-55       |
| RunToolkit .....                               | 6-55       |
| Save .....                                     | 6-56       |
| SaveAs .....                                   | 6-57       |
| SaveAsStandAloneProject .....                  | 6-59       |
| SaveProjectArchive .....                       | 6-60       |
| SetActiveDefinitionEditor .....                | 6-61       |
| SetActiveDesign .....                          | 6-61       |
| SetPropValue [Project] .....                   | 6-62       |
| SetPropertyValue .....                         | 6-63       |
| SetVariableValue .....                         | 6-64       |
| SimulateAll .....                              | 6-65       |
| Undo [Project] .....                           | 6-65       |
| UpdateDefinitions .....                        | 6-66       |
| <b>7 - Design Object Script Commands .....</b> | <b>7-1</b> |
| AddDataset .....                               | 7-7        |
| AddDynamicLink .....                           | 7-9        |
| AddModelingProperties .....                    | 7-11       |
| Analyze .....                                  | 7-11       |
| AnalyzeAll [design] .....                      | 7-12       |
| AnalyzeAllNominal .....                        | 7-12       |
| ApplyMeshOps .....                             | 7-13       |
| ChangeProperty[ReportSetup] .....              | 7-13       |
| CopyItemCommand .....                          | 7-22       |
| CreateReport .....                             | 7-22       |

---

|                                       |      |
|---------------------------------------|------|
| DeleteDataset .....                   | 7-35 |
| DeleteDesignInstance .....            | 7-36 |
| DeleteFieldVariation .....            | 7-36 |
| DeleteFullVariation .....             | 7-37 |
| DeleteOutputVariable .....            | 7-38 |
| DeleteSolutionVariation .....         | 7-38 |
| EditCoSimulationOptions .....         | 7-39 |
| EditDataset .....                     | 7-39 |
| EditImportData .....                  | 7-41 |
| EditInfiniteArray .....               | 7-42 |
| Edit (Layout Editor) .....            | 7-42 |
| EditLayoutForLayoutComponent .....    | 7-44 |
| EditNotes .....                       | 7-44 |
| EditNotes (Layout Editor) .....       | 7-45 |
| EditOptions (Layout Editor) .....     | 7-45 |
| EditOutputVariable .....              | 7-46 |
| EMDesignOptions .....                 | 7-47 |
| ExportCausalRLGCNetlist .....         | 7-48 |
| ExportCircuit (Layout Editor) .....   | 7-50 |
| ExportConvergence .....               | 7-54 |
| ExportDataset .....                   | 7-55 |
| ExportForHSpice .....                 | 7-56 |
| ExportForHSpice (Layout Editor) ..... | 7-57 |
| ExportForSpice (Layout Editor) .....  | 7-58 |
| ExportMeshStats .....                 | 7-60 |
| ExportNetworkData .....               | 7-61 |
| ExportNetworkData .....               | 7-63 |
| ExportNMFData .....                   | 7-65 |
| ExportProfile .....                   | 7-66 |
| ExportReport .....                    | 7-67 |

|                                                |      |
|------------------------------------------------|------|
| ExportRLGCData .....                           | 7-68 |
| Generate Mesh .....                            | 7-70 |
| GetChildNames [Design] .....                   | 7-70 |
| GetChildObject [Design] .....                  | 7-71 |
| GetChildTypes [Design] .....                   | 7-72 |
| GetDesignID .....                              | 7-72 |
| GetDesignName .....                            | 7-73 |
| GetDesignType .....                            | 7-73 |
| GetDesignValidationInfo .....                  | 7-74 |
| GetEditor .....                                | 7-75 |
| GetEditor (Layout Editor) .....                | 7-75 |
| GetGeometryIdsForNetLayerCombinations .....    | 7-76 |
| GetGeometryIdsForAllNetLayerCombinations ..... | 7-77 |
| GetManagedFilesPath .....                      | 7-78 |
| GetModule .....                                | 7-78 |
| GetModule (Layout Editor) .....                | 7-79 |
| GetModule (RadiationSetupMgr) .....            | 7-80 |
| GetName .....                                  | 7-81 |
| GetName (Layout Editor) .....                  | 7-82 |
| GetNoteText .....                              | 7-83 |
| GetObjPath [Design] .....                      | 7-83 |
| GetOutputVariableValue .....                   | 7-84 |
| GetOutputVariables .....                       | 7-85 |
| GetProject .....                               | 7-85 |
| GetPropHost .....                              | 7-86 |
| GetProperties .....                            | 7-86 |
| GetPropertyValue .....                         | 7-87 |
| GetPropNames [Design] .....                    | 7-89 |
| GetPropValue [Design] .....                    | 7-89 |
| GetVariables .....                             | 7-90 |

|                                                |       |
|------------------------------------------------|-------|
| GetVariableValue .....                         | 7-91  |
| ImportDataset .....                            | 7-91  |
| Note About File Types: .....                   | 7-92  |
| InsertDesign .....                             | 7-93  |
| OverlayCurrents (Layout Editor) .....          | 7-94  |
| OverlayFarField (Layout Editor) .....          | 7-95  |
| OverlayMesh (Layout Editor) .....              | 7-95  |
| OverlayNearField (Layout Editor) .....         | 7-96  |
| PasteDesign (Design Object) .....              | 7-96  |
| PasteItemCommand (Layout Editor) .....         | 7-97  |
| PushExcitations .....                          | 7-97  |
| Redo [Design] .....                            | 7-99  |
| Redo (Layout Editor) .....                     | 7-100 |
| RemoveImportData (Layout Editor) .....         | 7-100 |
| RemoveModelingProperties (Layout Editor) ..... | 7-101 |
| RenameDesignInstance .....                     | 7-101 |
| RenameDesignInstance (Layout Editor) .....     | 7-102 |
| RenameImportData (Layout Editor) .....         | 7-102 |
| RenameSource [Interface Source] .....          | 7-103 |
| ReportTemplates (Layout Editor) .....          | 7-103 |
| RunToolkit .....                               | 7-103 |
| SetActiveEditor .....                          | 7-104 |
| SetActiveEditor (Layout Editor) .....          | 7-105 |
| SetBendGraphicsMode .....                      | 7-105 |
| SetDesignMode .....                            | 7-106 |
| SetDoMeshAssembly .....                        | 7-106 |
| SetFastTransformationForLayoutComponent .....  | 7-112 |
| SetObjectAttributesForLayoutComponent .....    | 7-113 |
| SetPropValue [Design] .....                    | 7-116 |
| SetPropertyValue .....                         | 7-117 |

|                                                    |            |
|----------------------------------------------------|------------|
| SetShowLayoutForLayoutComponent .....              | 7-118      |
| SetVariableValue .....                             | 7-118      |
| Solve .....                                        | 7-119      |
| Undo [Design] .....                                | 7-120      |
| Undo (Layout Editor) .....                         | 7-120      |
| ValidateCircuit (Layout Editor) .....              | 7-121      |
| <b>8 - 3D Modeler Editor Script Commands .....</b> | <b>8-1</b> |
| Conventions Used in this Chapter: .....            | 8-1        |
| <AttributesArray> .....                            | 8-1        |
| <SelectionsArray> .....                            | 8-2        |
| Draw Menu Commands .....                           | 8-4        |
| Create3DComponent .....                            | 8-6        |
| CreateBondwire .....                               | 8-11       |
| CreateBox .....                                    | 8-14       |
| CreateCircle .....                                 | 8-16       |
| CreateCone .....                                   | 8-18       |
| CreateCutplane .....                               | 8-20       |
| CreateCylinder .....                               | 8-22       |
| CreateEllipse .....                                | 8-24       |
| CreateEquationCurve .....                          | 8-26       |
| CreateEquationSurface .....                        | 8-29       |
| CreateHelix .....                                  | 8-31       |
| CreatePoint .....                                  | 8-33       |
| CreatePolyline .....                               | 8-34       |
| CreateRectangle .....                              | 8-38       |
| CreateRegion .....                                 | 8-41       |
| CreateRegularPolygon .....                         | 8-43       |
| CreateRegularPolyhedron .....                      | 8-46       |
| CreateSphere .....                                 | 8-48       |
| CreateSpiral .....                                 | 8-50       |

---

|                                           |      |
|-------------------------------------------|------|
| CreateTorus .....                         | 8-52 |
| CreateUserDefinedPart .....               | 8-54 |
| Edit3DComponent .....                     | 8-60 |
| Edit3DComponentDefinition .....           | 8-62 |
| EditPolyline .....                        | 8-64 |
| Get3DComponentDefinitionNames .....       | 8-67 |
| Get3DComponentInstanceNames .....         | 8-68 |
| Get3DComponentMaterialNames .....         | 8-68 |
| Get3DComponentMaterialProperties .....    | 8-69 |
| Get3DComponentParameters .....            | 8-69 |
| Get3DComponentPartNames .....             | 8-70 |
| Insert3DComponent .....                   | 8-70 |
| InsertComponent .....                     | 8-72 |
| InsertPolylineSegment .....               | 8-73 |
| SweepAlongPath .....                      | 8-75 |
| SweepAlongVector .....                    | 8-76 |
| SweepAroundAxis .....                     | 8-78 |
| SweepFacesAlongNormal .....               | 8-79 |
| SweepFacesAlongNormalWithAttributes ..... | 8-81 |
| UpdateComponentDefinition .....           | 8-82 |
| Edit Menu Commands .....                  | 8-83 |
| Copy .....                                | 8-84 |
| DeletePolylinePoint .....                 | 8-85 |
| DuplicateAlongLine .....                  | 8-85 |
| DuplicateAroundAxis .....                 | 8-87 |
| DuplicateMirror .....                     | 8-89 |
| Mirror .....                              | 8-91 |
| Move .....                                | 8-93 |
| OffsetFaces .....                         | 8-94 |
| Paste (Model Editor) .....                | 8-95 |

|                             |       |
|-----------------------------|-------|
| Rotate .....                | 8-96  |
| Scale .....                 | 8-97  |
| Modeler Menu Commands ..... | 8-98  |
| AlignFaces .....            | 8-101 |
| AssignMaterial .....        | 8-101 |
| Chamfer .....               | 8-103 |
| CleanUpModel .....          | 8-105 |
| Connect .....               | 8-105 |
| CoverLines .....            | 8-106 |
| CoverSurfaces .....         | 8-107 |
| CreateEntityList .....      | 8-107 |
| CreateFaceCS .....          | 8-109 |
| CreateGroup .....           | 8-113 |
| CreateNamedSelection .....  | 8-114 |
| CreateObjectCS .....        | 8-115 |
| CreateObjectFromEdges ..... | 8-121 |
| CreateObjectFromFace .....  | 8-122 |
| CreateObjectFromFaces ..... | 8-124 |
| CreateRelativeCS .....      | 8-125 |
| DeleteEmptyGroups .....     | 8-127 |
| DeleteLastOperation .....   | 8-127 |
| DeleteOperation .....       | 8-128 |
| DetachEdges .....           | 8-129 |
| DetachFaces .....           | 8-131 |
| EditEntityList .....        | 8-132 |
| EditFaceCS .....            | 8-133 |
| EditNamedSelection .....    | 8-137 |
| EditObjectCS .....          | 8-138 |
| EditRelativeCS .....        | 8-144 |
| Export .....                | 8-146 |

---



|                                          |       |
|------------------------------------------|-------|
| ExportModelImageToFile .....             | 8-148 |
| ExportModelMeshToFile .....              | 8-151 |
| Fillet .....                             | 8-152 |
| FlattenGroup .....                       | 8-153 |
| GenerateHistory .....                    | 8-154 |
| GetActiveCoordinateSystem .....          | 8-155 |
| GetActiveCoordinateSystemTransform ..... | 8-155 |
| GetCoordinateSystems .....               | 8-155 |
| HealObject .....                         | 8-156 |
| Import .....                             | 8-159 |
| ImportDXF [Modeler] .....                | 8-162 |
| ImportFromClipboard .....                | 8-165 |
| ImportGDSII [Modeler] .....              | 8-166 |
| Imprint .....                            | 8-169 |
| ImprintProjection .....                  | 8-170 |
| Intersect .....                          | 8-171 |
| MoveCStoEnd .....                        | 8-172 |
| MoveEntityToGroup .....                  | 8-173 |
| MoveFaces .....                          | 8-174 |
| ProjectSheet .....                       | 8-175 |
| PurgeHistory .....                       | 8-176 |
| ReplaceWith3DComponent .....             | 8-177 |
| Section .....                            | 8-179 |
| SeparateBody .....                       | 8-180 |
| SetModelUnits .....                      | 8-181 |
| SetWCS .....                             | 8-182 |
| ShowWindow .....                         | 8-183 |
| Simplify .....                           | 8-183 |
| Split .....                              | 8-185 |
| Stitch .....                             | 8-187 |

|                                             |       |
|---------------------------------------------|-------|
| Subtract .....                              | 8-188 |
| SweepFacesAlongNormal .....                 | 8-189 |
| ThickenSheet .....                          | 8-191 |
| UncoverFaces .....                          | 8-192 |
| Unite .....                                 | 8-193 |
| Ungroup .....                               | 8-194 |
| WrapSheet .....                             | 8-195 |
| Other oEditor Commands .....                | 8-196 |
| AddDefinitionFromLibFile .....              | 8-198 |
| AssignSurfaceMaterial .....                 | 8-202 |
| BreakUDMConnection .....                    | 8-204 |
| ChangeProperty .....                        | 8-205 |
| CloseAllWindows[Editor] .....               | 8-209 |
| Delete .....                                | 8-210 |
| FitAll .....                                | 8-210 |
| GenerateAllUserDefinedModels .....          | 8-211 |
| GenerateUserDefinedModel .....              | 8-211 |
| GeometryCheckAndAutofix .....               | 8-212 |
| GetBodyNamesByPosition .....                | 8-213 |
| GetChildNames [Modeler] .....               | 8-215 |
| GetChildObject [Modeler] .....              | 8-217 |
| GetChildTypes [Modeler] .....               | 8-218 |
| GetEdgeByPosition .....                     | 8-219 |
| GetEdgeIDsFromFace .....                    | 8-221 |
| GetEdgeIDsFromObject .....                  | 8-221 |
| GetEdgeLength .....                         | 8-222 |
| GetEntityIDsContainedByNamedSelection ..... | 8-222 |
| GetEntityListIDByName .....                 | 8-223 |
| GetFaceArea .....                           | 8-223 |
| GetFaceCenter .....                         | 8-224 |

---

|                                            |       |
|--------------------------------------------|-------|
| GetFaceByPosition .....                    | 8-225 |
| GetFaceIDs .....                           | 8-226 |
| GetFaceIDsOfSheet .....                    | 8-226 |
| GetMatchedObjectName .....                 | 8-227 |
| GetModelBoundingBox .....                  | 8-228 |
| GetModelUnits .....                        | 8-228 |
| GetNumObjects .....                        | 8-229 |
| GetObjectIDByName .....                    | 8-229 |
| GetObjectName .....                        | 8-230 |
| GetObjectNameByEdgeID .....                | 8-230 |
| GetObjectNameByFaceID .....                | 8-231 |
| GetObjectNameByID .....                    | 8-231 |
| GetObjectNameByVertexID .....              | 8-232 |
| GetObjectsByMaterial .....                 | 8-233 |
| GetObjectShapeType .....                   | 8-233 |
| GetObjectsInGroup .....                    | 8-234 |
| GetObjectVolume .....                      | 8-235 |
| GetObjPath [Editor] .....                  | 8-235 |
| GetPartsForUserDefinedModel .....          | 8-236 |
| GetPoints [3D Modeler Editor] .....        | 8-236 |
| GetPropEvaluatedValue .....                | 8-237 |
| GetPropertyValue .....                     | 8-237 |
| GetPropNames [Modeler] .....               | 8-239 |
| GetPropSIValue .....                       | 8-240 |
| GetPropValue [Modeler] .....               | 8-241 |
| GetRelativeCoordinateSystems .....         | 8-242 |
| GetSelections [Model Editor] .....         | 8-242 |
| GetSubGroupsInGroup .....                  | 8-243 |
| GetUserPosition .....                      | 8-244 |
| GetVertexIDFromNameForFirstOperation ..... | 8-244 |

|                                                  |            |
|--------------------------------------------------|------------|
| GetVertexIDsFromEdge .....                       | 8-245      |
| GetVertexIDsFromFace .....                       | 8-245      |
| GetVertexIDsFromObject .....                     | 8-246      |
| GetVertexPosition .....                          | 8-246      |
| GetWireBodyNames .....                           | 8-247      |
| PageSetup .....                                  | 8-247      |
| RemoveBadEdges .....                             | 8-249      |
| RemoveBadFaces .....                             | 8-249      |
| RemoveBadVertices .....                          | 8-250      |
| RenamePart .....                                 | 8-251      |
| SetPropValue [Modeler] .....                     | 8-252      |
| SetTopDownViewDirectionForActiveView .....       | 8-252      |
| SetTopDownViewDirectionForAllViews .....         | 8-253      |
| UpdatePriorityList .....                         | 8-253      |
| UpgradeVersion .....                             | 8-254      |
| Validate3DComponent .....                        | 8-255      |
| WriteHistoryTreeLayoutForTest .....              | 8-256      |
| Cable Modeling Commands .....                    | 8-257      |
| AddCableToBundle .....                           | 8-258      |
| CreateCableBundle .....                          | 8-259      |
| CreateCableHarness .....                         | 8-260      |
| CreateClockSource .....                          | 8-262      |
| CreatePWLSource .....                            | 8-263      |
| CreateStraightWireCable .....                    | 8-265      |
| CreateTwistedPairCable .....                     | 8-266      |
| ExportCableLibrary .....                         | 8-268      |
| ImportCableLibrary .....                         | 8-268      |
| RemoveCable .....                                | 8-269      |
| UpdateCableHarness .....                         | 8-269      |
| <b>9 - Output Variable Script Commands .....</b> | <b>9-1</b> |

---

|                                                   |             |
|---------------------------------------------------|-------------|
| CreateOutputVariable .....                        | 9-1         |
| DeleteOutputVariable .....                        | 9-3         |
| DoesOutputVariableExist .....                     | 9-3         |
| EditOutputVariable .....                          | 9-4         |
| ExportOutputVariables .....                       | 9-5         |
| GetOutputVariables .....                          | 9-6         |
| GetOutputVariableValue .....                      | 9-7         |
| ImportOutputVariables .....                       | 9-8         |
| SimValueContext .....                             | 9-9         |
| <b>10 - Reporter Editor Script Commands .....</b> | <b>10-1</b> |
| AddAllEyeMeasurements .....                       | 10-6        |
| AddCartesianLimitLine .....                       | 10-6        |
| AddCartesianLimitLineFromCurve .....              | 10-7        |
| AddCartesianLimitLineFromEquation .....           | 10-9        |
| AddCartesianXMarker .....                         | 10-10       |
| AddCartesianYMarker .....                         | 10-11       |
| AddCartesianYMarkerToStack .....                  | 10-11       |
| AddDeltaMarker .....                              | 10-12       |
| AddMarker .....                                   | 10-13       |
| AddNote .....                                     | 10-14       |
| AddTraceCharacteristics .....                     | 10-15       |
| AddTraces .....                                   | 10-17       |
| ApplyReportTemplate .....                         | 10-18       |
| ChangeProperty[ReportSetup] .....                 | 10-19       |
| ClearAllMarkers .....                             | 10-28       |
| ClearAllTraceCharacteristics .....                | 10-28       |
| CloneReportsFromDatasetSolution .....             | 10-29       |
| CopyPlotSettings .....                            | 10-30       |
| CopyReportDefinitions .....                       | 10-30       |
| CopyReportsData .....                             | 10-31       |

|                                       |       |
|---------------------------------------|-------|
| CopyTraceDefinitions .....            | 10-31 |
| CopyTracesData .....                  | 10-32 |
| CreateReport .....                    | 10-33 |
| CreateReportFromTemplate .....        | 10-45 |
| CreateReportOfAllQuantities .....     | 10-46 |
| DeleteMarker .....                    | 10-47 |
| DeleteAllReports .....                | 10-47 |
| DeleteReports .....                   | 10-48 |
| DeleteTraces .....                    | 10-48 |
| DoesSupportTraceCharacteristics ..... | 10-49 |
| EditCartesianXMarker .....            | 10-50 |
| EditCartesianYMarker .....            | 10-51 |
| EditMarker .....                      | 10-51 |
| ExportEyeMaskViolation .....          | 10-52 |
| ExportImageToFile [Reporter] .....    | 10-53 |
| ExportModelImageToFile .....          | 10-57 |
| ExportModelMeshToFile .....           | 10-60 |
| ExportPlot3DToFile [Reporter] .....   | 10-61 |
| ExportReport .....                    | 10-62 |
| ExportReportDataToFile .....          | 10-63 |
| ExportTableToFile .....               | 10-64 |
| ExportToFile [Reporter] .....         | 10-64 |
| ExportUniformPointsToFile .....       | 10-65 |
| GetAllCategories .....                | 10-67 |
| GetAllQuantities .....                | 10-68 |
| GetAllReportNames .....               | 10-69 |
| GetAvailableDisplayTypes .....        | 10-69 |
| GetAvailableReportTypes .....         | 10-70 |
| GetAvailableSolutions .....           | 10-70 |
| GetChildNames [Report Setup] .....    | 10-71 |

|                                            |       |
|--------------------------------------------|-------|
| GetChildObject [Report Setup] .....        | 10-71 |
| GetChildTypes [ReportSetup] .....          | 10-72 |
| GetCurvePropServerName .....               | 10-73 |
| GetDisplayType .....                       | 10-73 |
| GetDynLinkIntrinsicVariables .....         | 10-74 |
| GetDynLinkQtyValueState .....              | 10-74 |
| GetDynLinkTraces .....                     | 10-75 |
| GetDynLinkVariableValues .....             | 10-75 |
| GetName .....                              | 10-76 |
| GetObjPath [Design] .....                  | 10-77 |
| GetPropertyValue .....                     | 10-77 |
| GetPropNames [Reporter] .....              | 10-79 |
| GetPropValue [Report Setup] .....          | 10-79 |
| GetQtyExpressionsForSourceTrace .....      | 10-80 |
| GetReportTraceNames .....                  | 10-81 |
| GetReportSummaryForRegressionTesting ..... | 10-81 |
| GetSolutionContexts .....                  | 10-82 |
| GetSolutionDataPerVariation .....          | 10-82 |
| GetDataUnits .....                         | 10-84 |
| GetDesignVariableNames .....               | 10-85 |
| GetDesignVariableUnits .....               | 10-86 |
| GetDesignVariableValue .....               | 10-87 |
| GetDesignVariationKey .....                | 10-88 |
| GetImagDataValues .....                    | 10-88 |
| GetPerQuantityPrimarySweepValues .....     | 10-89 |
| GetRealDataValues .....                    | 10-90 |
| GetSweepNames .....                        | 10-91 |
| GetSweepUnits .....                        | 10-92 |
| GetSweepValues .....                       | 10-92 |
| IsDataComplex .....                        | 10-93 |

|                                                      |             |
|------------------------------------------------------|-------------|
| IsPerQuantityPrimarySweep .....                      | 10-94       |
| Release Data .....                                   | 10-95       |
| GroupPlotCurvesByGroupingStrategy .....              | 10-95       |
| ImportIntoReport .....                               | 10-96       |
| ImportReportDataIntoReport .....                     | 10-97       |
| MovePlotCurvesToGroup .....                          | 10-97       |
| MovePlotCurvesToNewGroup .....                       | 10-98       |
| OpenWindowForAllReports .....                        | 10-99       |
| OpenWindowForReports .....                           | 10-99       |
| PastePlotSettings .....                              | 10-100      |
| PasteReports .....                                   | 10-100      |
| PasteReportsWithLegacyNames .....                    | 10-101      |
| PasteTraces .....                                    | 10-102      |
| PasteTracesWithLegacyNames .....                     | 10-102      |
| RenameReport .....                                   | 10-103      |
| RenameTrace .....                                    | 10-103      |
| ResetPlotSettings .....                              | 10-104      |
| SavePlotSettingsAsDefault .....                      | 10-105      |
| SetLinkOutputTraces .....                            | 10-105      |
| SetPropValue [Report Setup] .....                    | 10-106      |
| UnGroupPlotCurvesInGroup .....                       | 10-107      |
| UpdateAllReports .....                               | 10-107      |
| UpdateReports .....                                  | 10-108      |
| UpdateTraces .....                                   | 10-108      |
| UpdateTracesContextAndSweeps .....                   | 10-111      |
| <b>11 - Optimetrics Module Script Commands .....</b> | <b>11-1</b> |
| CopySetup .....                                      | 11-7        |
| DeleteSetups [Optimetrics] .....                     | 11-8        |
| DistributedAnalyzeSetup .....                        | 11-8        |
| EnableSetup .....                                    | 11-9        |

---



|                                                             |       |
|-------------------------------------------------------------|-------|
| ExportDXConfigFile .....                                    | 11-10 |
| ExportOptimetricsProfile .....                              | 11-10 |
| ExportOptimetricsResult .....                               | 11-11 |
| ExportParametricResults .....                               | 11-12 |
| ExportParametricSetupTable .....                            | 11-13 |
| ExportRespSurfaceMinMaxTable .....                          | 11-13 |
| ExportRespSurfaceRefinePoints .....                         | 11-14 |
| ExportRespSurfaceResponsePoints .....                       | 11-15 |
| ExportRespSurfaceVerificationPoints .....                   | 11-15 |
| GenerateVariationData [Parametric] .....                    | 11-16 |
| GetChildNames [Optimetrics] .....                           | 11-16 |
| GetChildObject [Optimetrics] .....                          | 11-17 |
| GetChildTypes [Optimetrics] .....                           | 11-18 |
| GetName .....                                               | 11-18 |
| GetObjPath [Design] .....                                   | 11-19 |
| GetOptimetricResult .....                                   | 11-20 |
| GetOptimetricsResult .....                                  | 11-20 |
| GetPropNames [Optimetrics] .....                            | 11-21 |
| GetPropValue [Optimetrics] .....                            | 11-22 |
| GetSetupNames [Optimetrics] .....                           | 11-22 |
| GetSetupNamesByType [Optimetrics] .....                     | 11-23 |
| ImportSetup .....                                           | 11-24 |
| PasteSetup [Optimetrics] .....                              | 11-25 |
| RenameSetup [Optimetrics] .....                             | 11-25 |
| SetPropValue [Optimetrics] .....                            | 11-26 |
| SolveAllSetup .....                                         | 11-27 |
| SolveSetup [Optimetrics] .....                              | 11-27 |
| ValidateSetup [Parametric] .....                            | 11-28 |
| General Commands Recognized by the Optimetrics Module ..... | 11-29 |
| CopySetup .....                                             | 11-30 |

|                                           |       |
|-------------------------------------------|-------|
| DeleteSetups [Optimetrics] .....          | 11-31 |
| DistributedAnalyzeSetup .....             | 11-32 |
| EnableSetup .....                         | 11-32 |
| ExportDXConfigFile .....                  | 11-33 |
| ExportOptimetricsProfile .....            | 11-34 |
| ExportOptimetricsResult .....             | 11-34 |
| ExportParametricResults .....             | 11-35 |
| ExportParametricSetupTable .....          | 11-36 |
| ExportRespSurfaceMinMaxTable .....        | 11-37 |
| ExportRespSurfaceRefinePoints .....       | 11-37 |
| ExportRespSurfaceResponsePoints .....     | 11-38 |
| ExportRespSurfaceVerificationPoints ..... | 11-39 |
| ExportDOEResponseCurve .....              | 11-39 |
| ExportDOEResponseCurveSlices .....        | 11-40 |
| ExportDOEResponseSurface .....            | 11-41 |
| ExportDOELocalSensitivity .....           | 11-41 |
| ExportDOELocalSensitivityCurve .....      | 11-42 |
| GenerateVariationData [Parametric] .....  | 11-43 |
| GetChildNames [Optimetrics] .....         | 11-43 |
| GetChildObject [Optimetrics] .....        | 11-44 |
| GetChildTypes [Optimetrics] .....         | 11-44 |
| GetName .....                             | 11-45 |
| GetObjPath [Design] .....                 | 11-46 |
| GetOptimetricResult .....                 | 11-46 |
| GetPropNames [Optimetrics] .....          | 11-47 |
| GetPropValue [Optimetrics] .....          | 11-47 |
| GetSetupNames [Optimetrics] .....         | 11-48 |
| GetSetupNamesByType [Optimetrics] .....   | 11-49 |
| ImportSetup .....                         | 11-49 |
| PasteSetup [Optimetrics] .....            | 11-50 |

|                                                    |             |
|----------------------------------------------------|-------------|
| RenameSetup [Optimetrics] .....                    | 11-51       |
| SetPropValue [Optimetrics] .....                   | 11-51       |
| SolveAllSetup .....                                | 11-52       |
| SolveSetup [Optimetrics] .....                     | 11-53       |
| ValidateSetup [Parametric] .....                   | 11-54       |
| Parametric Script Commands .....                   | 11-54       |
| EditSetup [Parametric] .....                       | 11-55       |
| ExportParametricSetupTable .....                   | 11-55       |
| GenerateVariationData [Parametric] .....           | 11-56       |
| InsertSetup [Parametric] .....                     | 11-56       |
| ValidateSetup [Parametric] .....                   | 11-61       |
| Optimization Script Commands .....                 | 11-61       |
| EditSetup [Optimization] .....                     | 11-61       |
| InsertSetup [Optimization] .....                   | 11-65       |
| Sensitivity Script Commands .....                  | 11-71       |
| EditSetup [Sensitivity] .....                      | 11-71       |
| Statistical Script Commands .....                  | 11-75       |
| EditSetup [Statistical] .....                      | 11-75       |
| InsertSetup [Statistical] .....                    | 11-75       |
| <b>12 - Solutions Module Script Commands .....</b> | <b>12-1</b> |
| DeleteImportData .....                             | 12-1        |
| DeleteSolutionVariation .....                      | 12-2        |
| EditQ3DSources (Layout Editor) .....               | 12-3        |
| EditSources (Layout Editor) .....                  | 12-6        |
| ExportEigenmodes .....                             | 12-10       |
| ExportForHSpice .....                              | 12-11       |
| ExportNetworkData .....                            | 12-12       |
| ExportNMFData .....                                | 12-14       |
| FFTONReport .....                                  | 12-16       |
| GetAdaptiveFreq .....                              | 12-16       |

|                                                         |             |
|---------------------------------------------------------|-------------|
| GetAvailableVariations .....                            | 12-17       |
| GetExcitationScaling .....                              | 12-17       |
| GetSolutionVersionID .....                              | 12-18       |
| GetSolveRangeInfo .....                                 | 12-18       |
| GetSourceContexts .....                                 | 12-19       |
| GetSourceData (Layout Editor) .....                     | 12-19       |
| GetValidSolutionList .....                              | 12-20       |
| HasFields .....                                         | 12-20       |
| HasMatrixData .....                                     | 12-21       |
| HasMesh .....                                           | 12-22       |
| ImportSolution .....                                    | 12-22       |
| ImportTable .....                                       | 12-23       |
| IsFieldAvailableAt .....                                | 12-24       |
| ListMatchingVariations .....                            | 12-25       |
| ListValuesOfVariable .....                              | 12-26       |
| SetQ3DSATNetChanges (Layout Editor) .....               | 12-26       |
| <b>13 - Field Overlays Module Script Commands .....</b> | <b>13-1</b> |
| AddMarkerToPlot .....                                   | 13-4        |
| AddNamedExpression .....                                | 13-5        |
| CalcOp .....                                            | 13-5        |
| CalcStack .....                                         | 13-6        |
| CalculatorRead .....                                    | 13-6        |
| CalculatorWrite .....                                   | 13-7        |
| ChangeProperty .....                                    | 13-8        |
| ChangeGeomSettings .....                                | 13-12       |
| ClcEval .....                                           | 13-12       |
| ClcMaterial .....                                       | 13-13       |
| ClearAllNamedExpr .....                                 | 13-14       |
| CopyNamedExprToStack .....                              | 13-14       |
| CreateFieldPlot .....                                   | 13-15       |

|                                                |       |
|------------------------------------------------|-------|
| DeleteFieldPlot .....                          | 13-25 |
| DeleteMarker[Fields Reporter] .....            | 13-26 |
| DeleteNamedExpr .....                          | 13-26 |
| DeleteUneditablePlot .....                     | 13-27 |
| DoesNamedExpressionExists .....                | 13-27 |
| EditSurfaceMeshSummaryData .....               | 13-28 |
| EnterComplex .....                             | 13-31 |
| EnterComplexVector .....                       | 13-32 |
| EnterCoord .....                               | 13-33 |
| EnterEdge .....                                | 13-33 |
| EnterLine .....                                | 13-34 |
| EnterOutputVar .....                           | 13-34 |
| EnterPoint .....                               | 13-35 |
| EnterQty .....                                 | 13-35 |
| EnterScalar .....                              | 13-36 |
| EnterScalarFunc .....                          | 13-37 |
| EnterSurf .....                                | 13-37 |
| EnterVector .....                              | 13-38 |
| EnterVectorFunc .....                          | 13-38 |
| EnterVol .....                                 | 13-39 |
| ExportFieldPlot .....                          | 13-39 |
| ExportMarkerTable .....                        | 13-40 |
| ExportOnGrid [Field Overlays] .....            | 13-41 |
| ExportPlotImageToFile .....                    | 13-42 |
| ExportPlotImageWithViewToFile [Reporter] ..... | 13-43 |
| ExportSurfaceMeshSummary .....                 | 13-44 |
| ExportToFile .....                             | 13-45 |
| GetFieldFolderNames .....                      | 13-46 |
| GetFieldPlotNames .....                        | 13-47 |
| GetFieldPlotQuantityName .....                 | 13-47 |

|                                                     |             |
|-----------------------------------------------------|-------------|
| GetMeshPlotNames .....                              | 13-48       |
| GetTopEntryValue .....                              | 13-49       |
| HideAntennaParameterOverlay .....                   | 13-49       |
| HidePolarPlot .....                                 | 13-50       |
| HideRadiatedPlotOverlay .....                       | 13-50       |
| LoadNamedExpressions .....                          | 13-51       |
| ModifyFieldPlot .....                               | 13-52       |
| ReassignFieldPlot .....                             | 13-53       |
| RenameFieldPlot .....                               | 13-55       |
| RenamePlotFolder .....                              | 13-56       |
| SaveFieldsPlots .....                               | 13-57       |
| SaveNamedExpressions .....                          | 13-57       |
| SetFieldPlotSettings .....                          | 13-58       |
| SetPlotFolderSettings .....                         | 13-60       |
| ShowAntennaParameterOverlay .....                   | 13-64       |
| UpdateAllFieldsPlots .....                          | 13-65       |
| UpdateQuantityFieldsPlots .....                     | 13-65       |
| <b>14 - Fields Calculator Script Commands .....</b> | <b>14-1</b> |
| AddNamedExpression .....                            | 14-2        |
| CalcOp .....                                        | 14-3        |
| CalcRead(deprecated) .....                          | 14-3        |
| CalculatorRead .....                                | 14-4        |
| CalcStack .....                                     | 14-5        |
| CalculatorWrite .....                               | 14-6        |
| ChangeGeomSettings .....                            | 14-6        |
| ClcEval .....                                       | 14-7        |
| ClcMaterial .....                                   | 14-8        |
| ClcMaterialValue .....                              | 14-8        |
| ClearAllNamedExpr .....                             | 14-9        |
| CopyNamedExprToStack .....                          | 14-9        |

---

|                                                           |             |
|-----------------------------------------------------------|-------------|
| DeleteNamedExpr .....                                     | 14-10       |
| DoesNamedExpressionExists .....                           | 14-10       |
| EnterComplex .....                                        | 14-11       |
| EnterComplexVector .....                                  | 14-12       |
| EnterCoord .....                                          | 14-12       |
| EnterEdge .....                                           | 14-13       |
| EnterLine .....                                           | 14-14       |
| EnterOutputVar .....                                      | 14-14       |
| EnterPoint .....                                          | 14-15       |
| EnterQty .....                                            | 14-15       |
| EnterScalar .....                                         | 14-16       |
| EnterScalarFunc .....                                     | 14-16       |
| EnterSurf .....                                           | 14-17       |
| EnterVector .....                                         | 14-17       |
| EnterVectorFunc .....                                     | 14-18       |
| EnterVol .....                                            | 14-19       |
| ExportOnGrid [Fields Calculator] .....                    | 14-19       |
| ExportToFile [Fields Calculator] .....                    | 14-21       |
| GetTopEntryValue .....                                    | 14-23       |
| LoadNamedExpressions .....                                | 14-24       |
| SaveNamedExpressions .....                                | 14-24       |
| <b>15 - Radiation Module Script Commands .....</b>        | <b>15-1</b> |
| General Commands Recognized by the Radiation Module ..... | 15-2        |
| CopyRadFieldSetup .....                                   | 15-2        |
| DeleteFarFieldSetup .....                                 | 15-2        |
| DeleteNearFieldSetup .....                                | 15-3        |
| DeleteSetup .....                                         | 15-4        |
| EditRadiatedPowerCalculationMethod .....                  | 15-4        |
| GetChildNames [Radiation] .....                           | 15-5        |
| GetChildObject [Radiation] .....                          | 15-5        |

|                                                                   |       |
|-------------------------------------------------------------------|-------|
| GetChildTypes [Radiation] .....                                   | 15-6  |
| GetPropNames [Radiation] .....                                    | 15-6  |
| GetPropValue [Radiation] .....                                    | 15-6  |
| GetSetupNames .....                                               | 15-7  |
| PasteRadFieldSetup .....                                          | 15-8  |
| RenameSetup [Radiation] .....                                     | 15-8  |
| SetPropValue [Radiation] .....                                    | 15-9  |
| Script Commands for Creating and Modifying Radiation Setups ..... | 15-9  |
| AddAntennaOverlay .....                                           | 15-10 |
| AddRadFieldSourceGroup .....                                      | 15-12 |
| EditAntennaOverlay .....                                          | 15-13 |
| EditBoxSetup .....                                                | 15-14 |
| EditFarFieldSphereSetup .....                                     | 15-16 |
| EditInfiniteSphereSetup .....                                     | 15-17 |
| EditLineSetup .....                                               | 15-19 |
| EditNearFieldBoxSetup .....                                       | 15-20 |
| EditNearFieldLineSetup .....                                      | 15-22 |
| EditNearFieldRectangleSetup .....                                 | 15-23 |
| EditNearFieldSphereSetup .....                                    | 15-24 |
| EditRadFieldSourceGroup .....                                     | 15-26 |
| EditRectangleSetup .....                                          | 15-27 |
| EditSphereSetup .....                                             | 15-28 |
| InsertBoxSetup .....                                              | 15-30 |
| InsertFarFieldSphereSetup .....                                   | 15-32 |
| InsertInfiniteSphereSetup .....                                   | 15-33 |
| InsertLineSetup .....                                             | 15-35 |
| InsertNearFieldBoxSetup .....                                     | 15-36 |
| InsertNearFieldLineSetup .....                                    | 15-38 |
| InsertNearFieldRectangleSetup .....                               | 15-39 |
| InsertNearFieldSphereSetup .....                                  | 15-40 |

---



|                                                                                 |             |
|---------------------------------------------------------------------------------|-------------|
| InsertRectangleSetup .....                                                      | 15-42       |
| InsertSphereSetup .....                                                         | 15-43       |
| Script Commands for Modifying Antenna Array Setups .....                        | 15-45       |
| EditAntennaArraySetup .....                                                     | 15-45       |
| Script Commands for Exporting Antenna Parameters and Max Field Parameters ..... | 15-50       |
| ExportElementPatternToFile .....                                                | 15-50       |
| ExportFieldsToFile .....                                                        | 15-51       |
| ExportParametersToFile .....                                                    | 15-53       |
| ExportRadiationFieldsToFile .....                                               | 15-54       |
| ExportRadiationParametersToFile .....                                           | 15-55       |
| <b>16 - Radiation Setup Manager Module Script Commands .....</b>                | <b>16-1</b> |
| Add (Infinite Sphere) .....                                                     | 16-1        |
| Edit (RadiationSetupMgr for Infinite Sphere) .....                              | 16-4        |
| Add (Near Field Line) .....                                                     | 16-7        |
| Edit (RadiationSetupMgr for Near Field Line) .....                              | 16-9        |
| Add (Near Field Plane) .....                                                    | 16-10       |
| Edit (RadiationSetupMgr for Near Field Plane) .....                             | 16-13       |
| Add (Near Field Sphere) .....                                                   | 16-16       |
| Edit (RadiationSetupMgr for Near Field Sphere) .....                            | 16-19       |
| <b>17 - User Defined Document Script Commands .....</b>                         | <b>17-1</b> |
| AddDocument .....                                                               | 17-1        |
| DeleteAllDocuments .....                                                        | 17-2        |
| DeleteDocument .....                                                            | 17-3        |
| EditDocument .....                                                              | 17-4        |
| GetDocumentDefinitionNames .....                                                | 17-5        |
| GetDocumentNames .....                                                          | 17-5        |
| RenameDocument .....                                                            | 17-6        |
| SaveHtmlDocumentAs .....                                                        | 17-7        |
| SavePdfDocumentAs .....                                                         | 17-7        |
| UpdateAllDocuments .....                                                        | 17-8        |

|                                                         |             |
|---------------------------------------------------------|-------------|
| UpdateDocument .....                                    | 17-8        |
| ViewHtmlDocument .....                                  | 17-9        |
| ViewPdfDocument .....                                   | 17-10       |
| Example Python Script: Defining a Document .....        | 17-10       |
| <b>18 - User Defined Solutions Commands .....</b>       | <b>18-1</b> |
| CreateUserDefinedSolution .....                         | 18-1        |
| DeleteUserDefinedSolutions .....                        | 18-2        |
| EditUserDefinedSolution .....                           | 18-3        |
| GetUserDefinedSolutionNames .....                       | 18-4        |
| GetUserDefinedSolutionProperties .....                  | 18-4        |
| <b>19 - Network Data Explorer Script Commands .....</b> | <b>19-1</b> |
| AddDiffPair .....                                       | 19-3        |
| Cascade (SPISim) .....                                  | 19-4        |
| ClearDiffPairs .....                                    | 19-5        |
| Clone .....                                             | 19-6        |
| Close .....                                             | 19-7        |
| Combine (SPISim) .....                                  | 19-8        |
| Deembed (SPISim) .....                                  | 19-9        |
| DeembedBack (SPISim) .....                              | 19-10       |
| DeembedFront (SPISim) .....                             | 19-11       |
| DisableDiffPairs .....                                  | 19-12       |
| EnableDiffPairs .....                                   | 19-13       |
| ExportCitiFile .....                                    | 19-13       |
| ExportFullWaveSpice .....                               | 19-15       |
| ExportMatlab .....                                      | 19-17       |
| ExportNMFData .....                                     | 19-18       |
| ExportNetworkData .....                                 | 19-19       |
| ExportSpreadsheet .....                                 | 19-22       |
| ExportTouchstone .....                                  | 19-24       |
| ExportTouchstone2 .....                                 | 19-26       |

---

|                                                   |                   |
|---------------------------------------------------|-------------------|
| Extract (SPISim) .....                            | 19-28             |
| GetFrequencies .....                              | 19-29             |
| GetFrequencyCount .....                           | 19-30             |
| GetName .....                                     | 19-31             |
| GetPortCount .....                                | 19-31             |
| GetPortNumber .....                               | 19-32             |
| GetPostProcSettings .....                         | 19-33             |
| GetSolutionVariation .....                        | 19-34             |
| GetVariation .....                                | 19-35             |
| HasSameData .....                                 | 19-35             |
| LoadSolution .....                                | 19-37             |
| Open .....                                        | 19-38             |
| Rename (SPISim) .....                             | 19-39             |
| Renormalize (SPISim) .....                        | 19-40             |
| Reorder .....                                     | 19-41             |
| Reorder (SPISim) .....                            | 19-42             |
| Reset .....                                       | 19-43             |
| SetAllPortImpedances .....                        | 19-44             |
| SetPortDeembedDistance .....                      | 19-45             |
| SetPortImpedance .....                            | 19-45             |
| SetPostProcSettings .....                         | 19-46             |
| Smooth .....                                      | 19-47             |
| Stretch (SPISim) .....                            | 19-49             |
| Terminate .....                                   | 19-50             |
| <b>20 - ComInstance Script Commands .....</b>     | <b>(multiple)</b> |
| Callback Scripting Using ComInstance Object ..... | (multiple)        |
| ComInstance Functions .....                       | 54                |
| GetComponentName .....                            | 54                |
| GetInstanceID [Component Instance] .....          | 55                |
| GetInstanceName [Component Instance] .....        | 55                |

|                                                    |             |
|----------------------------------------------------|-------------|
| GetParentDesign .....                              | 56          |
| GetPropHost .....                                  | 56          |
| GetPropServerName .....                            | 57          |
| <b>21 - Simulation Setup Commands .....</b>        | <b>21-1</b> |
| Add (Layout Editor) .....                          | 21-2        |
| AddMeshOperation .....                             | 21-13       |
| AddSweep (Layout Editor) .....                     | 21-18       |
| Analyze (Layout Editor) .....                      | 21-21       |
| AnalyzeSweep (Layout Editor) .....                 | 21-21       |
| Delete (Layout Editor) .....                       | 21-21       |
| DeleteGFD (Setup HFSS 3D Layout) .....             | 21-21       |
| DeleteSweep (Layout Editor) .....                  | 21-22       |
| DynamicMeshOverlays (Layout Editor) .....          | 21-23       |
| Edit (Layout Editor) .....                         | 21-23       |
| EditSweep (Layout Editor) .....                    | 21-34       |
| ExportToHFSS (Layout Editor) .....                 | 21-37       |
| ExportToQ3D (Layout Editor) .....                  | 21-37       |
| GetAllSolutionNames (Layout Editor) .....          | 21-37       |
| GetGFDDData (Setup HFSS 3D Layout) .....           | 21-37       |
| GetMeshOperations .....                            | 21-38       |
| GetSetupData (Layout Editor) .....                 | 21-38       |
| LayoutMeshOverlay (Layout Editor) .....            | 21-39       |
| Layout3DMeshOverlay (Layout Editor) .....          | 21-39       |
| ListVariations (Layout Editor) .....               | 21-39       |
| PullExcitationsFromTransient (Layout Editor) ..... | 21-39       |
| RefreshMeshOverlays (Layout Editor) .....          | 21-40       |
| Rename (Layout Editor) .....                       | 21-40       |
| RenameSweep (Layout Editor) .....                  | 21-41       |
| <b>22 - Excitations Commands .....</b>             | <b>22-1</b> |
| Add [Excitation HFSS 3D Layout] .....              | 22-2        |

---

|                                                    |             |
|----------------------------------------------------|-------------|
| AddRefPort (Layout Editor) .....                   | 22-2        |
| AddRefPortUsingEdges (Layout Editor) .....         | 22-2        |
| ConvertPlaneToTrace (Layout Editor) .....          | 22-4        |
| ConvertTraceToPlane (Layout Editor) .....          | 22-5        |
| CoupleEdgePorts .....                              | 22-5        |
| CreateGroundPortComponent (Layout Editor) .....    | 22-5        |
| CreateInterfaceGround (Layout Editor) .....        | 22-5        |
| CreateInterfacePort (Layout Editor) .....          | 22-6        |
| CreateInterfacePortComponent (Layout Editor) ..... | 22-6        |
| DecoupleEdgePorts .....                            | 22-6        |
| Delete[Excitation HFSS 3D Layout] .....            | 22-7        |
| Delete [Interface Port] .....                      | 22-7        |
| Delete[Excitation HFSS 3D Layout] .....            | 22-7        |
| DeleteProbePortAndVia (Layout Editor) .....        | 22-7        |
| DeleteSource [Interface Source] .....              | 22-7        |
| Edit (Layout Editor) .....                         | 22-8        |
| EditCircuitExcitations (Layout Editor) .....       | 22-19       |
| EditCircuitPort [Interface Port] .....             | 22-19       |
| EditExcitations (Layout Editor) .....              | 22-20       |
| GetAllBoundariesList (Layout Editor) .....         | 22-21       |
| GetAllPortsList (Layout Editor) .....              | 22-21       |
| Rename [Interface Port] .....                      | 22-21       |
| RenameSource [Interface Source] .....              | 22-22       |
| Rename (Layout Editor) .....                       | 22-22       |
| RemoveRefPort (Layout Editor) .....                | 22-22       |
| SelectInLayout (Layout Editor) .....               | 22-22       |
| <b>23 - 2.5D Via Commands .....</b>                | <b>23-1</b> |
| ConvertPrimitives (Layout Editor) .....            | 23-1        |
| Delete [Via HFSS 3D Layout] .....                  | 23-1        |
| Edit [Via HFSS 3D Layout] .....                    | 23-2        |

|                                                  |             |
|--------------------------------------------------|-------------|
| MultipleEdit [multiple via HFSS 3D Layout] ..... | 23-2        |
| Rename [Via HFSS 3D Layout] .....                | 23-2        |
| SelectInLayout [Via HFSS 3D Layout] .....        | 23-3        |
| <b>24 - Cavity Commands</b> .....                | <b>24-1</b> |
| Add [Cavity HFSS 3D Layout] .....                | 24-1        |
| Delete [Cavity HFSS 3D Layout] .....             | 24-1        |
| Edit [Cavity HFSS 3D Layout] .....               | 24-2        |
| Rename [Cavity HFSS 3D Layout] .....             | 24-2        |
| SelectInLayout [Cavity HFSS 3D Layout] .....     | 24-2        |
| <b>25 - Layout Scripting</b> .....               | <b>25-1</b> |
| Object Identifiers and Script Recording .....    | 25-2        |
| Create Primitives .....                          | 25-3        |
| AddObject ("3D Line") (Layout Editor) .....      | 25-3        |
| CreateCircle (Layout Editor) .....               | 25-6        |
| CreateLine (Layout Editor) .....                 | 25-7        |
| AddObject ("Partition Line") (IC Editor) .....   | 25-8        |
| CreatePolygon (Layout Editor) .....              | 25-12       |
| CreateRectangle (Layout Editor) .....            | 25-12       |
| CreateText (Layout Editor) .....                 | 25-13       |
| Create Voids in Primitives .....                 | 25-15       |
| CreateCircleVoid (Layout Editor) .....           | 25-16       |
| CreateLineVoid (Layout Editor) .....             | 25-16       |
| CreatePolygonVoid (Layout Editor) .....          | 25-17       |
| CreateRectangleVoid (Layout Editor) .....        | 25-17       |
| GetPolygonVoids (Layout Editor) .....            | 25-17       |
| Other Creation Methods .....                     | 25-18       |
| AddPinGroupRefPort (Layout Editor) .....         | 25-19       |
| CreateComponent (Layout Editor) .....            | 25-20       |
| CreateCurrentSourcePort (Layout Editor) .....    | 25-20       |
| CreateHole (Layout Editor) .....                 | 25-21       |

---

|                                                 |       |
|-------------------------------------------------|-------|
| CreateMeasure (Layout Editor) .....             | 25-22 |
| CreatePin (Layout Editor) .....                 | 25-23 |
| CreatePinGroup (Layout Editor) .....            | 25-24 |
| CreatePinGroupPort (Layout Editor) .....        | 25-24 |
| CreatePinGroups (Layout Editor) .....           | 25-24 |
| CreateTrace (Layout Editor) .....               | 25-26 |
| CreateVia (Layout Editor) .....                 | 25-31 |
| CreateViaGroups (Layout Editor) .....           | 25-32 |
| CreateVoltageProbePort (Layout Editor) .....    | 25-33 |
| CreateVoltageSourcePort (Layout Editor) .....   | 25-34 |
| DeletePinGroup (Layout Editor) .....            | 25-35 |
| Object Movement and Modification Methods .....  | 25-35 |
| Connect (Layout Editor) .....                   | 25-36 |
| Copy (Layout Editor) .....                      | 25-36 |
| Delete (Layout Editor) .....                    | 25-36 |
| Disconnect (Layout Editor) .....                | 25-37 |
| Edit (Layout Editor) .....                      | 25-37 |
| Expand (Layout Editor) .....                    | 25-38 |
| ExpandWithPorts (Layout Editor) .....           | 25-39 |
| FlipHorizontal (Layout Editor) .....            | 25-40 |
| FlipVertical (Layout Editor) .....              | 25-40 |
| Move (Layout Editor) .....                      | 25-40 |
| Paste (Layout Editor) .....                     | 25-40 |
| Rotate (Layout Editor) .....                    | 25-41 |
| Activation and Deactivation Methods .....       | 25-41 |
| DeactivateOpen (Layout Editor) .....            | 25-41 |
| DeactivateShort (Layout Editor) .....           | 25-42 |
| Delete (Layout Editor) .....                    | 25-42 |
| Layout and Geometry Interrogation Methods ..... | 25-42 |
| Layout Interrogation (Layout Editor) .....      | 25-43 |

|                                               |       |
|-----------------------------------------------|-------|
| CreateLineFromPolygon (Layout Editor) .....   | 25-43 |
| CreateObjectFromPolygon (Layout Editor) ..... | 25-44 |
| FindObjects (Layout Editor) .....             | 25-44 |
| FilterObjectList (Layout Editor) .....        | 25-45 |
| FindObjectsByPoint (Layout Editor) .....      | 25-46 |
| FindObjectsByPolygon (Layout Editor) .....    | 25-46 |
| GetBBox (Layout Editor) .....                 | 25-46 |
| GetCSObjects (Layout Editor) .....            | 25-47 |
| GetPolygon (Layout Editor) .....              | 25-47 |
| GetPolygonDef (Layout Editor) .....           | 25-47 |
| Point (Layout Editor) .....                   | 25-47 |
| Polygon (Layout Editor) .....                 | 25-47 |
| Point Object (Layout Editor) .....            | 25-48 |
| Set (Layout Editor) .....                     | 25-49 |
| SetX (Layout Editor) .....                    | 25-49 |
| GetX (Layout Editor) .....                    | 25-49 |
| SetY (Layout Editor) .....                    | 25-50 |
| GetY (Layout Editor) .....                    | 25-50 |
| SetArc (Layout Editor) .....                  | 25-50 |
| IsArc (Layout Editor) .....                   | 25-50 |
| IsEqual (Layout Editor) .....                 | 25-51 |
| Mag (Layout Editor) .....                     | 25-51 |
| Distance (Layout Editor) .....                | 25-51 |
| Cross (Layout Editor) .....                   | 25-51 |
| Move (Layout Editor) .....                    | 25-51 |
| Rotate (Layout Editor) .....                  | 25-51 |
| Normalize (Layout Editor) .....               | 25-52 |
| DistanceFromLine (Layout Editor) .....        | 25-52 |
| ClosestPointOnLine (Layout Editor) .....      | 25-52 |
| Polygon Object (Layout Editor) .....          | 25-52 |

---



|                                               |       |
|-----------------------------------------------|-------|
| AddPoint (Layout Editor) .....                | 25-54 |
| SetClosed (Layout Editor) .....               | 25-54 |
| IsClosed (Layout Editor) .....                | 25-55 |
| Move (Layout Editor) .....                    | 25-55 |
| Rotate (Layout Editor) .....                  | 25-55 |
| Scale (Layout Editor) .....                   | 25-55 |
| MirrorX (Layout Editor) .....                 | 25-56 |
| GetPoints (Layout Editor) .....               | 25-56 |
| AddHole (Layout Editor) .....                 | 25-56 |
| HasHoles (Layout Editor) .....                | 25-57 |
| GetHoles (Layout Editor) .....                | 25-57 |
| HasArcs (Layout Editor) .....                 | 25-57 |
| HasSelfIntersections (Layout Editor) .....    | 25-57 |
| BBoxLL (Layout Editor) .....                  | 25-57 |
| BBoxUR (Layout Editor) .....                  | 25-58 |
| IsParametric (Layout Editor) .....            | 25-58 |
| IsConvex (Layout Editor) .....                | 25-58 |
| IsPoint (Layout Editor) .....                 | 25-58 |
| IsSegment (Layout Editor) .....               | 25-58 |
| IsArc (Layout Editor) .....                   | 25-58 |
| IsBox (Layout Editor) .....                   | 25-59 |
| IsCircle (Layout Editor) .....                | 25-59 |
| GetBoundingCircleCenter (Layout Editor) ..... | 25-59 |
| GetBoundingCircleRadius (Layout Editor) ..... | 25-59 |
| Area (Layout Editor) .....                    | 25-59 |
| PointInPolygon (Layout Editor) .....          | 25-59 |
| CircleIntersectsPolygon (Layout Editor) ..... | 25-60 |
| GetIntersectionType (Layout Editor) .....     | 25-60 |
| GetClosestPoint (Layout Editor) .....         | 25-60 |
| GetClosestPoints (Layout Editor) .....        | 25-61 |

|                                                 |       |
|-------------------------------------------------|-------|
| Unite (Layout Editor) .....                     | 25-61 |
| Intersect (Layout Editor) .....                 | 25-61 |
| Subtract (Layout Editor) .....                  | 25-62 |
| Xor (Layout Editor) .....                       | 25-62 |
| Boolean Operations on Primitives .....          | 25-62 |
| ConvertPrimitives (Layout Editor) .....         | 25-63 |
| ConvertPrimitivesToVias (Layout Editor) .....   | 25-63 |
| Unite (Layout Editor) .....                     | 25-64 |
| Intersect (Layout Editor) .....                 | 25-64 |
| SplitRegion (Layout Editor) .....               | 25-65 |
| Subtract (Layout Editor) .....                  | 25-65 |
| ToggleViaPin (Symbol Editor) .....              | 25-66 |
| Coordinate System Methods .....                 | 25-66 |
| CreateCS (Layout Editor) .....                  | 25-67 |
| ClearRelative (Layout Editor) .....             | 25-70 |
| Create3DStructure (Layout Editor) .....         | 25-70 |
| GetCSObjects (Layout Editor) .....              | 25-71 |
| Group (Layout Editor) .....                     | 25-71 |
| CreateGroupSelected (Layout Editor) .....       | 25-71 |
| PositionRelative (Layout Editor) .....          | 25-71 |
| SetCS (Layout Editor) .....                     | 25-74 |
| Ungroup (Layout Editor) .....                   | 25-74 |
| IC Editor Script Commands (IC Mode Only) .....  | 25-75 |
| Common to General Mode .....                    | 25-76 |
| ApplyTechnology (IC Editor) .....               | 25-81 |
| ChangeActiveLayout (IC Editor) .....            | 25-82 |
| ChangeActiveLayout (IC Editor) .....            | 25-83 |
| Compress Primitives (IC Editor) .....           | 25-84 |
| CreateMeshRegion (IC Editor) .....              | 25-85 |
| CreateMeshRegionPartitionLine (IC Editor) ..... | 25-87 |

---

---

|                                               |        |
|-----------------------------------------------|--------|
| CreateViaGroupsOnLayer (IC Editor) .....      | 25-90  |
| ReconstructArcs (IC Editor) .....             | 25-92  |
| ReconstructArcsOnLayer (IC Editor) .....      | 25-93  |
| RemoveSmallHoles (IC Editor) .....            | 25-94  |
| RemoveSmallLines (IC Editor) .....            | 25-95  |
| RemoveSmallMetalIslands (IC Editor) .....     | 25-95  |
| ResetTechnology (IC Editor) .....             | 25-96  |
| SnapPrimitives (IC Editor) .....              | 25-96  |
| SnapPrimitivesOnLayer (IC Editor) .....       | 25-98  |
| SnapVias (IC Editor) .....                    | 25-98  |
| SnapViasOnLayer (IC Editor) .....             | 25-100 |
| UnitePrimitivesOnLayer (IC Editor) .....      | 25-102 |
| WrapGeometries (IC Editor) .....              | 25-102 |
| WrapGeometry (IC Editor) .....                | 25-103 |
| Layers Methods .....                          | 25-104 |
| AddObject (Layout Editor and IC Editor) ..... | 25-105 |
| AddLayer (Layout Editor) .....                | 25-107 |
| AddStackupLayer (Layout Editor) .....         | 25-110 |
| ChangeLayer (Layout Editor) .....             | 25-114 |
| ClearLayerMappings (Layout Editor) .....      | 25-118 |
| DuplicateAcrossLyrs (Layout Editor) .....     | 25-118 |
| ExportGDSII (Layout Editor) .....             | 25-118 |
| ExportStackupXML (Layout Editor) .....        | 25-120 |
| GetAllLayerNames (Layout Editor) .....        | 25-121 |
| GetLayerInfo (Layout Editor) .....            | 25-121 |
| GetStackupLayerNames (Layout Editor) .....    | 25-123 |
| ImportStackupXML (Layout Editor) .....        | 25-124 |
| RemoveLayer (Layout Editor) .....             | 25-124 |
| General Mode .....                            | 25-125 |
| IC Mode (IC Editor) .....                     | 25-125 |

---

|                                                 |        |
|-------------------------------------------------|--------|
| SetLayerMapping (Layout Editor) .....           | 25-126 |
| SyncRigidFlexSandbox (Layout Editor) .....      | 25-127 |
| Net and NetClass Methods .....                  | 25-128 |
| CreateDifferentialPair (Layout Editor) .....    | 25-129 |
| CreateNetClass .....                            | 25-130 |
| DeleteNets (Layout Editor) .....                | 25-130 |
| DelNetClass .....                               | 25-131 |
| GetNetClasses .....                             | 25-131 |
| GetNetClassNets .....                           | 25-131 |
| GetNetConnections (Layout Editor) .....         | 25-132 |
| GetNets (Layout Editor) .....                   | 25-133 |
| HighlightNet (Layout Editor) .....              | 25-133 |
| ModifyDifferentialPair (Layout Editor) .....    | 25-134 |
| ModifyNetClass .....                            | 25-135 |
| ResetDifferentialpairs (Layout Editor) .....    | 25-135 |
| SelectNetConnected (Layout Editor) .....        | 25-138 |
| SelectPhysicallyConnected (Layout Editor) ..... | 25-139 |
| SetNetColor (Layout Editor) .....               | 25-140 |
| SetNetVisible (Layout Editor) .....             | 25-142 |
| ToggleNetHighlight (Layout Editor) .....        | 25-143 |
| Port Methods .....                              | 25-144 |
| AddCircuitRefPort (Layout Editor) .....         | 25-146 |
| AddPortsToAllNets (Layout Editor) .....         | 25-147 |
| AddPortsToNet (Layout Editor) .....             | 25-148 |
| AddRefPort (Layout Editor) .....                | 25-148 |
| AlignPorts (Layout Editor) .....                | 25-150 |
| AssignCircuitRefPort (Layout Editor) .....      | 25-151 |
| AssignRefPort (Layout Editor) .....             | 25-153 |
| ClearRefPort (Layout Editor) .....              | 25-155 |
| CreateCircuitPort (Layout Editor) .....         | 25-156 |

---

|                                                           |        |
|-----------------------------------------------------------|--------|
| CreateEdgePort (Layout Editor) .....                      | 25-158 |
| CreateNPort (Layout Editor) .....                         | 25-161 |
| CreatePortInstancePorts (Layout Editor) .....             | 25-162 |
| CreatePortsOnComponents (Layout Editor) .....             | 25-162 |
| CreatePortsOnComponentsByNet (Layout Editor) .....        | 25-162 |
| GetPortInfo (Layout Editor) .....                         | 25-164 |
| RemovePort (Symbol Editor) .....                          | 25-167 |
| RemovePortsFromAllNets (Layout Editor) .....              | 25-167 |
| RemovePortsFromNet (Layout Editor) .....                  | 25-167 |
| RemovePortsOnComponents (Layout Editor) .....             | 25-168 |
| SetHfssExtentsVisible (Layout Editor) .....               | 25-169 |
| SetHfssPortsVisible (Layout Editor) .....                 | 25-170 |
| Miscellaneous Methods .....                               | 25-170 |
| AlignObjects (Layout Editor) .....                        | 25-172 |
| ChangeOptions (Layout Editor) .....                       | 25-174 |
| ChangeProperty (Schematic Editor and Layout Editor) ..... | 25-177 |
| ClipPlane (Layout Editor) .....                           | 25-185 |
| CopyToHFSS 3D Layout (Layout Editor) .....                | 25-185 |
| CutOutSubDesign (Layout Editor) .....                     | 25-186 |
| Defeature Objects (Layout Editor) .....                   | 25-189 |
| DissolveComponents (Layout Editor) .....                  | 25-190 |
| Duplicate (Layout Editor) .....                           | 25-191 |
| Edit3DComponentDefinition .....                           | 25-192 |
| EditComponent (Layout Editor) .....                       | 25-193 |
| EditPinGroup (Layout Editor) .....                        | 25-194 |
| EnableComponents (Layout Editor) .....                    | 25-195 |
| EraseMeasurements (Layout Editor) .....                   | 25-197 |
| ExportDXF (Layout Editor) .....                           | 25-197 |
| ExportGDSII (Layout Editor) .....                         | 25-198 |
| ExportGerber (Layout Editor) .....                        | 25-200 |

|                                                      |             |
|------------------------------------------------------|-------------|
| ExportNCDrill (Layout Editor) .....                  | 25-202      |
| GetActiveUnits (Layout Editor) .....                 | 25-204      |
| GetComponentInfo (Layout Editor) .....               | 25-204      |
| GetCompInstanceFromRefDes (Layout Editor) .....      | 25-205      |
| GetComponentPins (Layout Editor) .....               | 25-205      |
| GetComponentPinInfo (Layout Editor) .....            | 25-206      |
| GetEditorName (Layout Editor) .....                  | 25-207      |
| GetMaterialList (Layout Editor) .....                | 25-207      |
| GetProperties (Layout Editor) .....                  | 25-208      |
| GetPropertyValue (Layout Editor) .....               | 25-208      |
| GetSelections (Layout Editor) .....                  | 25-208      |
| GetSelectionsInHierarchy (Layout Editor) .....       | 25-209      |
| Heal (Layout Editor) .....                           | 25-209      |
| PageSetup (Layout Editor) .....                      | 25-211      |
| PushExcitations .....                                | 25-212      |
| Select (Layout Editor) .....                         | 25-214      |
| SelectAll (Layout Editor) .....                      | 25-214      |
| SetActiveUnits (Layout Editor) .....                 | 25-215      |
| SetPropertyValue (Layout Editor) .....               | 25-215      |
| StitchLines (Layout Editor) .....                    | 25-216      |
| UnselectAll (Layout Editor) .....                    | 25-217      |
| ZoomToFit (Layout Editor) .....                      | 25-217      |
| <b>26 - Definition Manager Script Commands .....</b> | <b>26-1</b> |
| Add [component manager] .....                        | 26-3        |
| AddDataset .....                                     | 26-18       |
| AddDefinitionFromBlock .....                         | 26-20       |
| AddMaterial .....                                    | 26-25       |
| Add [padstack manager] .....                         | 26-29       |
| Add [symbol manager] .....                           | 26-34       |
| AreMaterialPropertiesEqual .....                     | 26-42       |

---

|                                         |        |
|-----------------------------------------|--------|
| AreSurfaceMaterialPropertiesEqual ..... | 26-43  |
| ChangeProperty (Symbol Editor) .....    | 26-44  |
| CloneMaterial .....                     | 26-54  |
| DeleteDataset .....                     | 26-54  |
| DoesMaterialExist .....                 | 26-55  |
| Edit [component manager] .....          | 26-56  |
| EditDataset .....                       | 26-74  |
| EditMaterial .....                      | 26-76  |
| Edit [padstack manager] .....           | 26-83  |
| ExportDataset .....                     | 26-88  |
| Export [footprint manager] .....        | 26-89  |
| ExportMaterial .....                    | 26-90  |
| Export [padstack manager] .....         | 26-91  |
| ExportScript .....                      | 26-91  |
| Export [symbol manager] .....           | 26-92  |
| GetProjextMaterialNames .....           | 26-93  |
| GetPropertyValue .....                  | 26-94  |
| ImportDataset .....                     | 26-95  |
| Note About File Types: .....            | 26-96  |
| Remove [component manager] .....        | 26-97  |
| Remove [footprint manager] .....        | 26-99  |
| RemoveMaterial .....                    | 26-100 |
| Remove [padstack manager] .....         | 26-100 |
| RemoveScript .....                      | 26-101 |
| Remove [symbol manager] .....           | 26-102 |
| RemoveUnusedDefinitions .....           | 26-103 |
| SetPropertyValue .....                  | 26-105 |
| UpdateDefFromBlock .....                | 26-106 |
| UpdateDefFromBlockEx .....              | 26-108 |
| UpdateDefinitions .....                 | 26-111 |

|                                               |        |
|-----------------------------------------------|--------|
| Component Manager Script Commands .....       | 26-111 |
| Add [component manager] .....                 | 26-112 |
| AddNPortData [component manager] .....        | 26-127 |
| AddSolverOnDemandModel .....                  | 26-132 |
| ClearSolutionCache [component manager] .....  | 26-132 |
| Edit [component manager] .....                | 26-132 |
| EditSolverOnDemandModel .....                 | 26-151 |
| EditWithComps [component manager] .....       | 26-152 |
| Export [component manager] .....              | 26-160 |
| GetNames [component manager] .....            | 26-162 |
| GetNPortData [component manager] .....        | 26-162 |
| GetSolverOnDemandData .....                   | 26-162 |
| GetSolverOnDemandModelList .....              | 26-163 |
| IsUsed [component manager] .....              | 26-163 |
| Remove [component manager] .....              | 26-163 |
| RemoveSolverOnDemandModel .....               | 26-165 |
| RemoveUnused [component manager] .....        | 26-165 |
| Update Dynamic Link [component manager] ..... | 26-166 |
| Footprint Manager Script Commands .....       | 26-166 |
| Add [footprint manager] .....                 | 26-167 |
| Edit [footprint manager] .....                | 26-181 |
| EditWithComps [footprint manager] .....       | 26-182 |
| Export [footprint manager] .....              | 26-197 |
| GetNames [footprint manager] .....            | 26-197 |
| IsUsed [footprint manager] .....              | 26-198 |
| Remove [footprint manager] .....              | 26-198 |
| RemoveUnused [footprint manager] .....        | 26-199 |
| Material Manager Script Commands .....        | 26-200 |
| GetNames [material manager] .....             | 26-200 |
| GetProperties [material manager] .....        | 26-201 |

---



|                                                     |        |
|-----------------------------------------------------|--------|
| IsUsed [material manager] .....                     | 26-202 |
| RemoveUnused [material manager] .....               | 26-202 |
| Model Manager Script Commands .....                 | 26-203 |
| Add [model manager] .....                           | 26-203 |
| ConvertToDynamic .....                              | 26-212 |
| ConvertToParametric .....                           | 26-212 |
| Edit [deprecated] .....                             | 26-212 |
| EditWithComps [model manager] .....                 | 26-212 |
| Export [model manager] .....                        | 26-221 |
| GetNames [model manager] .....                      | 26-222 |
| IsUsed [model manager] .....                        | 26-223 |
| Remove [model manager] .....                        | 26-223 |
| RemoveUnused [model manager] .....                  | 26-224 |
| Network Data Explorer Manager Script Commands ..... | 26-225 |
| ExportFullWaveSpice .....                           | 26-226 |
| ExportNetworkData .....                             | 26-227 |
| ExportNMFData .....                                 | 26-229 |
| Padstack Manager Script Commands .....              | 26-230 |
| Add [padstack manager] .....                        | 26-231 |
| Edit [padstack manager] .....                       | 26-236 |
| EditWithComps [padstack manager] .....              | 26-241 |
| Export [padstack manager] .....                     | 26-247 |
| GetNames [padstack manager] .....                   | 26-248 |
| IsUsed [padstack manager] .....                     | 26-248 |
| Remove [padstack manager] .....                     | 26-248 |
| RemoveUnused [padstack manager] .....               | 26-249 |
| Script and Library Scripts .....                    | 26-250 |
| AddScript .....                                     | 26-250 |
| EditScript .....                                    | 26-251 |
| ExportScript .....                                  | 26-252 |

|                                                     |             |
|-----------------------------------------------------|-------------|
| ModifyLibraries .....                               | 26-253      |
| RemoveScript .....                                  | 26-254      |
| Symbol Manager Script Commands .....                | 26-255      |
| Add [symbol manager] .....                          | 26-255      |
| BringToFront [symbol manager] .....                 | 26-264      |
| Edit [deprecated] .....                             | 26-264      |
| EditSymbolAndUpdateComps [symbol manager] .....     | 26-264      |
| Export [symbol manager] .....                       | 26-275      |
| GetNames [symbol manager] .....                     | 26-275      |
| IsUsed [symbol manager] .....                       | 26-276      |
| Remove [symbol manager] .....                       | 26-276      |
| RemoveUnused [symbol manager] .....                 | 26-277      |
| Technology Manager Script Commands .....            | 26-278      |
| Add (Technology Manager) .....                      | 26-278      |
| GetNames (Technology Manager) .....                 | 26-280      |
| IsUsed (Technology Manager) .....                   | 26-280      |
| Remove (Technology Manager) .....                   | 26-281      |
| <b>27 - Definition Editor Script Commands .....</b> | <b>27-1</b> |
| AddCircuitRefPort (Layout Editor) .....             | 27-7        |
| AddLayer (Layout Editor) .....                      | 27-9        |
| AddPortsToAllNets (Layout Editor) .....             | 27-12       |
| AddPortsToNet (Layout Editor) .....                 | 27-13       |
| AddRefPort (Layout Editor) .....                    | 27-13       |
| AlignObjects (Layout Editor) .....                  | 27-15       |
| AlignPorts (Layout Editor) .....                    | 27-17       |
| AssignCircuitRefPort (Layout Editor) .....          | 27-17       |
| AssignRefPort (Layout Editor) .....                 | 27-19       |
| ChangeProperty .....                                | 27-22       |
| ClearLayerMappings (Layout Editor) .....            | 27-26       |
| ClearRefPort (Layout Editor) .....                  | 27-26       |

---

|                                                      |       |
|------------------------------------------------------|-------|
| ClearRelative (Layout Editor) .....                  | 27-26 |
| Connect (Layout Editor) .....                        | 27-27 |
| ConvertPlaneToTrace (Layout Editor) .....            | 27-27 |
| ConvertTraceToPlane (Layout Editor) .....            | 27-27 |
| Copy (Layout Editor) .....                           | 27-28 |
| CopyToHFSS 3D Layout (Layout Editor) .....           | 27-28 |
| Create3DStructure (Layout Editor) .....              | 27-28 |
| CreateCS (Layout Editor) .....                       | 27-29 |
| CreateCircle (Layout Editor) .....                   | 27-32 |
| CreateCircleVoid (Layout Editor) .....               | 27-33 |
| CreateCircuitPort (Layout Editor) .....              | 27-34 |
| CreateCircuitPortsOnComponents (Layout Editor) ..... | 27-36 |
| CreateComponent (Layout Editor) .....                | 27-37 |
| CreateEdgePort (Layout Editor) .....                 | 27-38 |
| CreateGroundPortComponent (Layout Editor) .....      | 27-41 |
| CreateGroupSelected (Layout Editor) .....            | 27-41 |
| CreateHole (Layout Editor) .....                     | 27-41 |
| CreateInterfaceGround (Layout Editor) .....          | 27-42 |
| CreateInterfacePort (Layout Editor) .....            | 27-43 |
| CreateInterfacePortComponent (Layout Editor) .....   | 27-43 |
| CreateLine (Layout Editor) .....                     | 27-43 |
| CreateLineFromPolygon (Layout Editor) .....          | 27-45 |
| CreateLineVoid (Layout Editor) .....                 | 27-45 |
| CreateMeasure (Layout Editor) .....                  | 27-46 |
| CreateNportCircuitElements .....                     | 27-47 |
| CreateNetClass .....                                 | 27-49 |
| CreateObjectFromPolygon (Layout Editor) .....        | 27-49 |
| CreatePin (Layout Editor) .....                      | 27-49 |
| CreatePinGroup (Layout Editor) .....                 | 27-50 |
| CreatePinGroupPort (Layout Editor) .....             | 27-50 |

|                                                       |       |
|-------------------------------------------------------|-------|
| CreatePinGroupPortsOnComponents (Layout Editor) ..... | 27-50 |
| CreatePolygon (Layout Editor) .....                   | 27-51 |
| CreatePolygonVoid (Layout Editor) .....               | 27-52 |
| CreatePortInstancePorts (Layout Editor) .....         | 27-53 |
| CreatePortsOnComponents (Layout Editor) .....         | 27-53 |
| CreateRectangle (Layout Editor) .....                 | 27-53 |
| CreateRectangleVoid (Layout Editor) .....             | 27-54 |
| CreateText (Layout Editor) .....                      | 27-55 |
| CreateTrace (Layout Editor) .....                     | 27-57 |
| CreateVia (Layout Editor) .....                       | 27-62 |
| CutOutSubDesign (Layout Editor) .....                 | 27-63 |
| DeactivateOpen (Layout Editor) .....                  | 27-67 |
| DeactivateShort (Layout Editor) .....                 | 27-67 |
| Defeature Objects (Layout Editor) .....               | 27-67 |
| DelNetClass .....                                     | 27-68 |
| Delete (Layout Editor) .....                          | 27-68 |
| DeleteNets (Layout Editor) .....                      | 27-69 |
| DeletePinGroup (Layout Editor) .....                  | 27-69 |
| Disconnect (Layout Editor) .....                      | 27-70 |
| Duplicate (Layout Editor) .....                       | 27-70 |
| DuplicateAcrossLyrs (Layout Editor) .....             | 27-70 |
| Edit (Layout Editor) .....                            | 27-71 |
| Edit3DComponentDefinition .....                       | 27-72 |
| EraseMeasurements (Layout Editor) .....               | 27-73 |
| Expand (Layout Editor) .....                          | 27-73 |
| ExpandWithPorts (Layout Editor) .....                 | 27-74 |
| ExportDXF (Layout Editor) .....                       | 27-75 |
| ExportGDSII (Layout Editor) .....                     | 27-76 |
| ExportGerber (Layout Editor) .....                    | 27-78 |
| ExportNCDrill (Layout Editor) .....                   | 27-80 |

|                                                 |       |
|-------------------------------------------------|-------|
| ExportToHFSS (Layout Editor) .....              | 27-82 |
| ExportToQ3D (Layout Editor) .....               | 27-82 |
| FilterObjectList (Layout Editor) .....          | 27-82 |
| FindObjectsByPoint (Layout Editor) .....        | 27-83 |
| FindObjectsByPolygon (Layout Editor) .....      | 27-84 |
| FlipHorizontal (Layout Editor) .....            | 27-84 |
| FlipVertical (Layout Editor) .....              | 27-84 |
| GeometryCheckAndAutofix .....                   | 27-84 |
| GetAllLayerNames (Layout Editor) .....          | 27-86 |
| GetBBox (Layout Editor) .....                   | 27-86 |
| GetCSObjects (Layout Editor) .....              | 27-86 |
| GetCompInstanceFromRefDes (Layout Editor) ..... | 27-87 |
| GetComponentInfo (Layout Editor) .....          | 27-87 |
| GetComponentPinInfo (Layout Editor) .....       | 27-88 |
| GetComponentPins (Layout Editor) .....          | 27-88 |
| GetEditorName (Layout Editor) .....             | 27-89 |
| GetMaterialList (Layout Editor) .....           | 27-90 |
| GetNetClassNets .....                           | 27-90 |
| GetNetClasses .....                             | 27-90 |
| GetNetConnections (Layout Editor) .....         | 27-91 |
| GetPolygon (Layout Editor) .....                | 27-91 |
| GetPolygonDef (Layout Editor) .....             | 27-92 |
| GetPortInfo (Layout Editor) .....               | 27-92 |
| GetProperties (Layout Editor) .....             | 27-95 |
| GetPropertyValue (Layout Editor) .....          | 27-95 |
| GetSelections [Design] .....                    | 27-95 |
| Group (Layout Editor) .....                     | 27-95 |
| Heal (Layout Editor) .....                      | 27-96 |
| HighlightNet (Layout Editor) .....              | 27-98 |
| ImportDXF [Modeler] .....                       | 27-99 |

|                                               |        |
|-----------------------------------------------|--------|
| ImportGDSII .....                             | 27-102 |
| Intersect (Layout Editor) .....               | 27-103 |
| ModifyNetClass .....                          | 27-103 |
| Move (Layout Editor) .....                    | 27-104 |
| PageSetup (Layout Editor) .....               | 27-104 |
| Point (Layout Editor) .....                   | 27-105 |
| Polygon (Layout Editor) .....                 | 27-105 |
| PositionRelative (Layout Editor) .....        | 27-105 |
| PushExcitations .....                         | 27-108 |
| RemoveLayer (Layout Editor) .....             | 27-110 |
| RemovePortsFromAllNets (Layout Editor) .....  | 27-110 |
| RemovePortsFromNet (Layout Editor) .....      | 27-111 |
| RemovePortsOnComponents (Layout Editor) ..... | 27-112 |
| Rotate (Layout Editor) .....                  | 27-113 |
| SelectAll (Layout Editor) .....               | 27-113 |
| SetCS (Layout Editor) .....                   | 27-113 |
| SetLayerMapping (Layout Editor) .....         | 27-114 |
| SetNetVisible (Layout Editor) .....           | 27-114 |
| StitchLines (Layout Editor) .....             | 27-116 |
| Subtract (Layout Editor) .....                | 27-116 |
| ToggleViaPin (Footprint Editor) .....         | 27-117 |
| Ungroup (Layout Editor) .....                 | 27-117 |
| Unite (Layout Editor) .....                   | 27-118 |
| UnselectAll (Layout Editor) .....             | 27-118 |
| ZoomToFit (Layout Editor) .....               | 27-118 |
| Symbol Editor Scripts .....                   | 27-119 |
| AddLevel (Symbol Editor) .....                | 27-120 |
| AlignHorizontal (Symbol Editor) .....         | 27-120 |
| AlignVertical (Symbol Editor) .....           | 27-121 |
| BringToFront (Symbol Editor) .....            | 27-122 |

---

|                                        |        |
|----------------------------------------|--------|
| ChangeProperty (Symbol Editor) .....   | 27-122 |
| CloseEditor (Symbol Editor) .....      | 27-132 |
| Copy (Symbol Editor) .....             | 27-132 |
| CreateArc (Symbol Editor) .....        | 27-133 |
| CreateCircle (Symbol Editor) .....     | 27-134 |
| CreateImage (Symbol Editor) .....      | 27-134 |
| CreateLine (Symbol Editor) .....       | 27-135 |
| CreatePin (Symbol Editor) .....        | 27-136 |
| CreatePolygon (Symbol Editor) .....    | 27-136 |
| CreateRectangle (Symbol Editor) .....  | 27-137 |
| CreateText (Symbol Editor) .....       | 27-137 |
| Cut (Symbol Editor) .....              | 27-138 |
| Delete (Symbol Editor) .....           | 27-138 |
| DisplayPinNames (Symbol Editor) .....  | 27-139 |
| ExportFile (Symbol Editor) .....       | 27-139 |
| FlipHorizontal (Symbol Editor) .....   | 27-140 |
| FlipVertical (Symbol Editor) .....     | 27-140 |
| GetProperties (Symbol Editor) .....    | 27-141 |
| GetPropertyValue (Symbol Editor) ..... | 27-141 |
| GetVisibleLevels (Symbol Editor) ..... | 27-141 |
| GridSetup (Symbol Editor) .....        | 27-142 |
| Move (Symbol Editor) .....             | 27-143 |
| Pan (Symbol Editor) .....              | 27-144 |
| Paste (Symbol Editor) .....            | 27-144 |
| Redo (Symbol Editor) .....             | 27-145 |
| RemoveLevels (Symbol Editor) .....     | 27-145 |
| RemovePort (Symbol Editor) .....       | 27-146 |
| Rotate (Symbol Editor) .....           | 27-146 |
| Save (Symbol Editor) .....             | 27-147 |
| SelectAll (Symbol Editor) .....        | 27-147 |

|                                            |        |
|--------------------------------------------|--------|
| SendToBack (Symbol Editor) .....           | 27-147 |
| SetActiveLevel (Symbol Editor) .....       | 27-148 |
| SetInitialLevels (Symbol Editor) .....     | 27-149 |
| SetPropertyValue (Symbol Editor) .....     | 27-149 |
| SetVisibleLevels (Symbol Editor) .....     | 27-150 |
| ToggleLevel (Symbol Editor) .....          | 27-150 |
| ToggleViaPin (Symbol Editor) .....         | 27-151 |
| Undo (Symbol Editor) .....                 | 27-151 |
| ZoomArea (Symbol Editor) .....             | 27-152 |
| ZoomIn (Symbol Editor) .....               | 27-153 |
| ZoomOut (Symbol Editor) .....              | 27-153 |
| ZoomPrevious (Symbol Editor) .....         | 27-154 |
| ZoomToFit (Symbol Editor) .....            | 27-154 |
| Footprint Editor Scripts .....             | 27-155 |
| AddLayer (Footprint Editor) .....          | 27-157 |
| AddStackupLayer (Footprint Editor) .....   | 27-160 |
| ChangeLayer (Footprint Editor) .....       | 27-164 |
| ChangeLayers (Footprint Editor) .....      | 27-168 |
| ChangeOptions (Footprint Editor) .....     | 27-174 |
| CloseEditor (Footprint Editor) .....       | 27-178 |
| CreateCircle (Footprint Editor) .....      | 27-178 |
| CreateCircleVoid (Footprint Editor) .....  | 27-178 |
| CreateEdgePort (Footprint Editor) .....    | 27-179 |
| CreateLine (Footprint Editor) .....        | 27-180 |
| CreateLineVoid (Footprint Editor) .....    | 27-181 |
| CreateMeasure (Footprint Editor) .....     | 27-181 |
| CreatePolygonVoid (Footprint Editor) ..... | 27-182 |
| CreatePin (Footprint Editor) .....         | 27-183 |
| CreatePolygon (Footprint Editor) .....     | 27-183 |
| CreateRectangle (Footprint Editor) .....   | 27-183 |

---



|                                                       |             |
|-------------------------------------------------------|-------------|
| CreateText (Footprint Editor) .....                   | 27-183      |
| CreateVia (Footprint Editor) .....                    | 27-184      |
| Duplicate (Footprint Editor) .....                    | 27-184      |
| Edit (Footprint Editor) .....                         | 27-184      |
| EraseMeasurements (Footprint Editor) .....            | 27-185      |
| FlipHorizontal (Footprint Editor) .....               | 27-185      |
| FlipVertical (Footprint Editor) .....                 | 27-185      |
| GetAllLayerNames (Footprint Editor) .....             | 27-185      |
| GetLayerInfo (Footprint Editor) .....                 | 27-186      |
| GetProperties (Footprint Editor) .....                | 27-188      |
| GetStackupLayerNames (Footprint Editor) .....         | 27-188      |
| Intersect (Footprint Editor) .....                    | 27-188      |
| Move (Footprint Editor) .....                         | 27-189      |
| PageSetup (Footprint Editor) .....                    | 27-189      |
| RemoveLayer (Footprint Editor) .....                  | 27-189      |
| RemovePort (Footprint Editor) .....                   | 27-190      |
| Rotate [Footprint Editor] .....                       | 27-190      |
| Save (Footprint Editor) .....                         | 27-191      |
| SetActiveDefinitionEditor (Footprint Editor) .....    | 27-191      |
| SetPropertyValue (Footprint Editor) .....             | 27-192      |
| Subtract (Footprint Editor) .....                     | 27-193      |
| ToggleViaPin (Footprint Editor) .....                 | 27-193      |
| Unite (Footprint Editor) .....                        | 27-193      |
| ZoomToFit (Footprint Editor) .....                    | 27-194      |
| <b>28 - Core Global Script Context Commands .....</b> | <b>28-1</b> |
| AddErrorMessage .....                                 | 28-1        |
| AddFatalMessage .....                                 | 28-1        |
| AddInfoMessage .....                                  | 28-2        |
| AddWarningMessage .....                               | 28-2        |
| LogDebug .....                                        | 28-3        |

LogError ..... 28-3

**29 - Example Scripts ..... 29-1**

    IronPython Example Scripts ..... 29-1

        BH Coordinates Python Script ..... 29-1

            Script Contents ..... 29-2

            Posco\_BH\_Curve.tab Contents ..... 29-3

        Equation Based Curve Python Script ..... 29-6

**Index ..... Index-1**

# 1 - Introduction to Scripting

Using scripts is a fast, effective way to accomplish tasks you want to repeat. When you execute a script, the commands in the script are performed in the order in which they appear.

Electronics Desktop can record scripts in Python, and can run external scripts written in Python. Additionally, it contains a Python command shell for executing scripts.

When running Ansys Electronics Desktop from the command line, scripts can be written in any language that provides Microsoft COM methods.

The following sections contain more information about scripting:

- [Scripting Help Conventions](#) – explains the layout of the scripting help.
- [Introduction to IronPython](#) – provides a broad overview of IronPython.
- [Introduction to C-Python](#) – provides guidance on using C-Python for Ansys Electronics Desktop scripts.
- [Ansys Electronics Desktop Scripting](#) – details instructions and tips for running, recording, and working with scripts in Electronics Desktop.
- [PyAEDT](#) (Beta) – a Python library that interacts directly with the AEDT API to make scripting simpler for the end user.

## Scripting Help Conventions

The majority of this guide lists individual script commands using the following format.

**[ScriptName]**

[Description of script use.]

|                     |                                                                                                          |
|---------------------|----------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | [UI commands corresponding to the script command, if any.]                                               |
| <b>Parameters</b>   | [List of arguments taken by the script command, if any. Includes argument types and brief descriptions.] |
| <b>Return Value</b> | [The script's return value, if any.]                                                                     |

|                       |                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | [Correct syntax for the command in Python. Arguments are enclosed in angle brackets (<>).] |
| <b>Python Example</b> | [Sample script]                                                                            |

## Variable Types

The following data types are used throughout the help:

- **<string>** – use within quotation marks.
- **<bool>** – boolean value; should be set to either True or False.
- **<int>** – an integer. For example, 1.
- **<double>** – a double precision value. For example, 1.2.
- **<array>** – a list contained in square brackets.
- **<value>** – can be an integer, string, or other variable, depending on context.

## Introduction to IronPython

IronPython is an implementation of the Python programming language targeting the .NET runtime. What this means in practical terms is that IronPython uses the Python programming language syntax and standard python libraries and can additionally use .NET classes and objects to give one the best of both worlds. This usage of .NET classes is fairly seamless in that a class defined in a .NET assembly can be used as a base class of a python class.

### Scope

Functioning as a tutorial on Python or IronPython is way out of the scope of this document. There are several excellent resources online that do a very good job in that regard. This document only attempts to provide a limited introduction to IronPython as used to script Ansys EM products.

This document is also not a tutorial on the scripting of Ansys EM products. It complements the existing scripting guide (available from a product's Help menu) and provides a pythonic interpretation of that information.

### Python Compatibility

The version of IronPython in use is **2.7** and built on the .NET framework version 4.0: this version targets **Python 2.7** language compatibility. While most python files will execute under IronPython with no changes, python libraries that make use of extensions written in the C programming language (NumPy or SciPy for instance), are not expected to work under IronPython. In such cases, it might be possible to locate .NET implementation of such libraries or explore the use of IronClad.

[\(http://code.google.com/p/ironclad/\)](http://code.google.com/p/ironclad/).

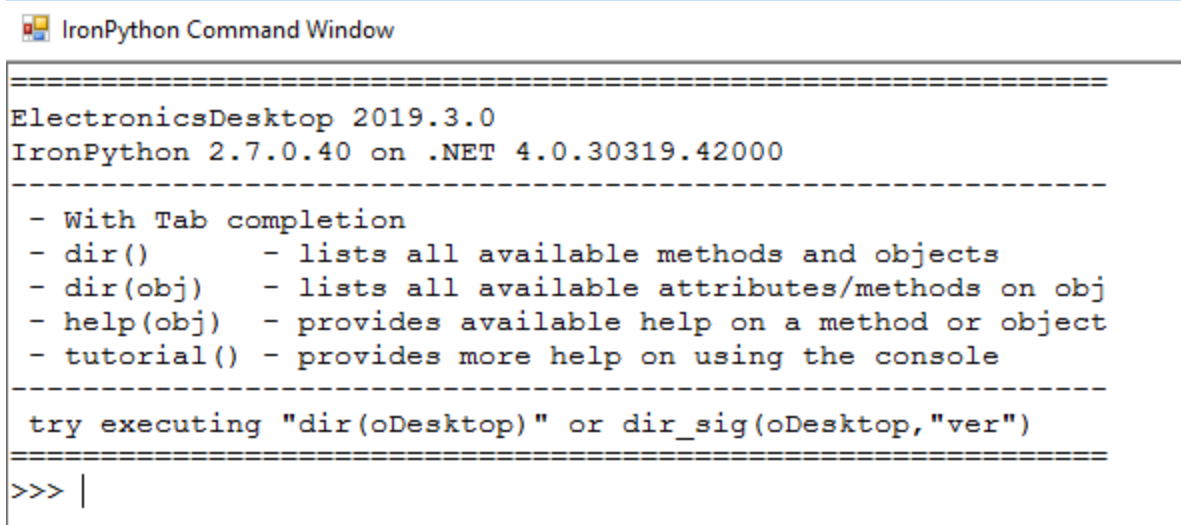
### Advantages of IronPython

The advantages that IronPython use provides are significant:

- Python has a large eco-system with plenty of supporting libraries, Visual IDEs and debuggers. It is actively developed and enhanced.

- IronPython, in addition, has access to the entire .NET eco system. This allows us, for instance, to create a modern GUI using the **System.Windows.Forms** assembly from IronPython code and call any other .NET assembly for that matter.
- The use of IronPython's technologies enables the ability to interactively script Desktop (feature in development).
- The Python syntax of dictionaries is somewhat easier to read and write when supplying arguments to the scripting methods.

This document describes IronPython briefly and then goes on to describe the desktop provided IronPython scripting console and scripting with IronPython. You can open an IronPython Command Window by clicking **Tools > Open Command Window**.



```

IronPython Command Window

=====
ElectronicsDesktop 2019.3.0
IronPython 2.7.0.40 on .NET 4.0.30319.42000
=====
- With Tab completion
- dir()      - lists all available methods and objects
- dir(obj)   - lists all available attributes/methods on obj
- help(obj)  - provides available help on a method or object
- tutorial() - provides more help on using the console
=====
try executing "dir(oDesktop)" or dir_sig(oDesktop,"ver")
=====
>>> |
  
```

### [Scripting Using Iron Python](#)

#### [Standalone IronPython and Desktop IronPython](#)

#### [IronPython Examples](#)

#### [Creating User Defined Primitives and User Defined Models in Python Scripts](#)

## Scripting Using Iron Python

The following topics detail scripting using Iron Python:

### [IronPython Script Execution Environment](#)

### [Scripting with IronPython](#)

### [Standalone IronPython and Desktop IronPython](#)

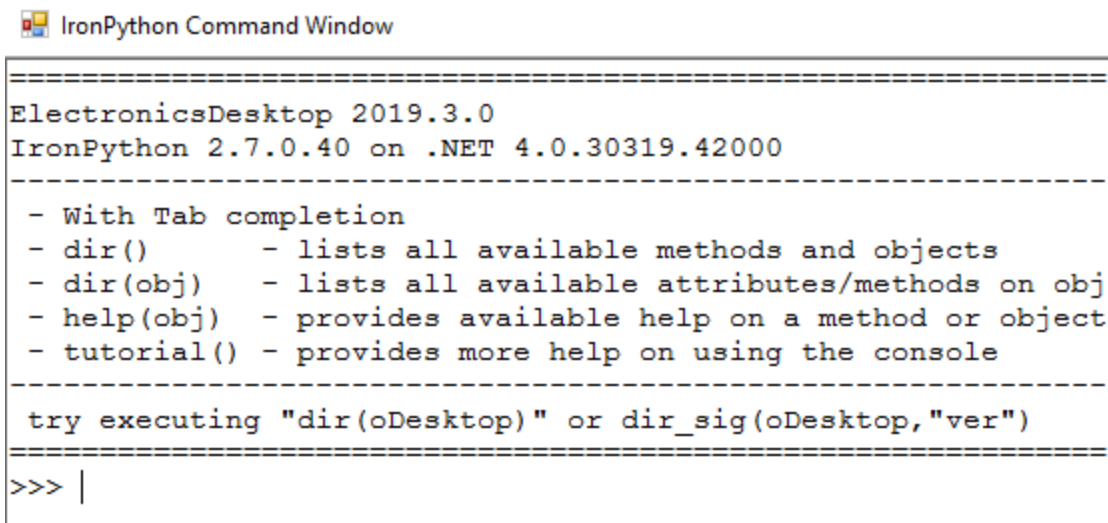
### [Introduction to IronPython](#)

### [Appendix: IronPython Samples](#)

## IronPython Script Execution Environment

Scripts written in IronPython are executed by desktop in four different ways:

- **Tools > Open Command Window**, to open the **IronPython Command Window**:



```
IronPython Command Window

=====
ElectronicsDesktop 2019.3.0
IronPython 2.7.0.40 on .NET 4.0.30319.42000
=====
- With Tab completion
- dir()      - lists all available methods and objects
- dir(obj)   - lists all available attributes/methods on obj
- help(obj)  - provides available help on a method or object
- tutorial() - provides more help on using the console
=====
try executing "dir(oDesktop)" or dir_sig(oDesktop,"ver")
=====
>>> |
```

- **Tools > Run Script** menu item, select "IronPython" from the file type drop-down list.
- Launch the product with a script argument.
  - HFSS -runscript someScript.py to keep HFSS GUI open after completing script execution.
  - HFSS -features=beta -ng -runscriptandexit someScript.py to run HFSS in a non-graphical mode and exit after script completion. Note that this is a beta feature supported for the HFSS and 3D Layout design types.
- Register an IronPython script as an external tool using the **Tools > External Tools** menu item.

When desktop executes a script, it does so in an execution environment setup with predefined variables and functions. These predefined variables and functions are how the script communicates with the desktop, and they come in four flavors addressed in the following subtopics:

### [Script Argument for IronPython](#)

#### Script Argument for IronPython

When scripts are launched using the **Tools > Run Script** menu item, the dialog that pops up allows the user to specify arguments.

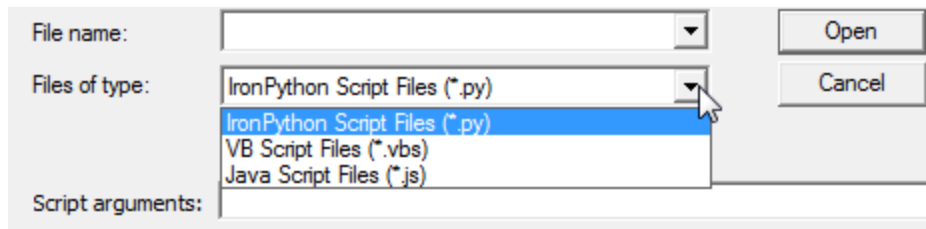


**Figure 1: Run Script dialog and script arguments**

Any argument specified here is communicated to the script being executed as the predefined variable **ScriptArgument**.

## Related Topics

[IronPython Script Execution Environment](#)

## Scripting using Embedded VBScript or JavaScript

While Ansys Electronics Desktop no longer supports VBScript or JavaScript, users may have a significant collection of VBScript or JavaScript assets. These existing script files can be executed via Python. Various **Run<\*>Command** methods have been designed for this purpose.

For example, a user can create a parameterized cone in HFSS by executing the following Python script from the **Tools > Run Script** menu:

```
# assign the VBScript snippet obtained from a script recording from
HFSS to

# coneScript and replace the BottomRadius recorded value with botRa-
dius

coneScript = """Dim oAnsoftApp

Dim oDesktop

Dim oProject

Dim oDesign

Dim oEditor

Dim oModule

Set oAnsoftApp = CreateObject("Ansoft.ElectronicsDesktop")

Set oDesktop = oAnsoftApp.GetAppDesktop()

oDesktop.RestoreWindow

Set oProject = oDesktop.GetActiveProject()

oProject.InsertDesign "HFSS", "HFSSPyTestDesign", "DrivenModal", ""
```

```
Set oDesign = oProject.SetActiveDesign("HFSSPyTestDesign")
Set oEditor = oDesign.SetActiveEditor("3D Modeler")
oEditor.CreateCone Array("NAME:ConeParameters", _
    "XCenter:=", "0mm", "YCenter:=", "0mm", "ZCenter:=", "0mm", _
    "WhichAxis:=", "Z", "Height:=", "2mm", _
    "BottomRadius:=", "3mm", _
    "TopRadius:=", "0mm"), Array("NAME:Attributes", "Name:=", _
    "Cone1", "Flags:=", "", "Color:=", "(132 132 193)", "Trans-
    parency:=", 0, _
    "PartCoordinateSystem:=", "Global", "UDMId:=", "", "Mater-
    ialValue:=", _
    "" & Chr(34) & "vacuum" & Chr(34) & "", "SolveInside:=", _
    true)
""

SetScriptingLanguageToVBScript()
RunScriptCommand(coneScript, "")
```

This hybrid approach is useful when you have existing VBScript commands that you want to reuse or when you want to quickly parameterize a recorded sample, but one significant limitation of this approach is the inability to capture return values from VBScript or JavaScript calls that do return something. Full two-way communication with the product requires the use of pure Python to directly invoke the script objects.

## Related Topics

[IronPython Script Execution Environment](#)

## Scripting with Python

Access to application scripting objects is provided via the predefined **oDesktop** object.

Note the following:

- Any argument is supplied via the built in **ScriptArgument** variable.
- The **oDesktop** object is always available.
- Method calls have to adhere to the rule of ensuring trailing parentheses irrespective of whether the function returns anything or has any arguments.
- Any compound/block arguments should be translated to the appropriate Python array or dictionary syntax.



## Related Topics

[IronPython Script Execution Environment](#)

[Standalone IronPython and Desktop IronPython](#)

## Standalone IronPython

In general, it is easier to run a script directly from Electronics Desktop. Standalone IronPython does not implement all the functionality available when a script is run from Electronics Desktop. It only implements full support for COM functions.

### Running Standalone IronPython

Standalone IronPython uses COM to get the handle to the AnsysEDT app. To run standalone IronPython, you'll need to call the IronPython interpreter `ipy64.exe`.

It is located in:

```
\\<AnsysEDTInstallationPath>\common\IronPython\ipy64.exe
```

For example, to run `myScript.py`, type the following in the command line:

```
"C:\Program Files\ANSYS Inc\v252\AnsysEM\common\IronPython\ipy64.exe"  
"<filePath>\myScript.py"
```

You can set the interpreter to be the default program when double-clicking the `.py` script. You can use any recorded script as the basis for a standalone script and simply add an installation-internal path to the python module search path (as shown below) and end the script with a new shutdown call.

### Using a Recorded Script

A python script recorded in AnsysEDT already has the required lines to be run as a standalone, except for the first two lines (path settings) and the final `Shutdown()` call. See the [example script](#) below.

### Creating an External Script

When creating a script outside of Electronics Desktop, the following lines should be included at the beginning of your script:

- `import sys`  
  
    `# Imports the sys module containing system-specific functions native to IronPython.`
- `sys.path.append("<InstallationPath>")`  
  
    `# Adds the Electronics Desktop installation path to the list of directories Python searches for modules and files.`

- `sys.path.append("<InstallationPath>/PythonFiles/DesktopPlugin")`  
`# Adds the PythonFiles/DesktopPlugin subfolder to the list of directories Python searches for modules and files.`
- `import ScriptEnv`  
`# This imports ScriptEnv.py from the installation path specified above. ScriptEnv.py performs an operating system check and defines functions used in Electronics Desktop scripts. See the annotations in the ScriptEnv.py file for more information.`
- `ScriptEnv.Initialize("Ansoft.ElectronicsDesktop")`  
`or ScriptEnv.InitializeNew(NonGraphical=True)`  
`# Initialize and InitializeNew are functions within ScriptEnv.py. The first option launches Electronics Desktop. The second allows you to run a script without launching Electronics Desktop. See the annotations in the ScriptEnv.py file for more information.`

You must end the script with:

- `ScriptEnv.Shutdown()`  
`# This stops ScriptEnv.py. If you are running multiple scripts, include this only at the end of the last script.`

#### Example Script

```
import sys

sys.path.append(r"C:\Program Files\ANSYS Inc\v252\AnsysEM")

sys.path.append(r"C:\Program Files\ANSYS Inc\v252\An-
sysEM\PythonFiles\DesktopPlugin")

import ScriptEnv

ScriptEnv.Initialize("Ansoft.ElectronicsDesktop")

oDesktop.RestoreWindow()

oProject = oDesktop.NewProject()

oProject.InsertDesign("HFSS", "HFSSDesign1", "DrivenModal", "")

oDesign = oProject.SetActiveDesign("HFSSDesign1")

oEditor = oDesign.SetActiveEditor("3D Modeler")

oEditor.CreateRectangle(

[

    "NAME:RectangleParameters",
```

```

    "IsCovered:= ", True,
    "XStart:= ", "-0.2mm",
    "YStart:= ", "-3mm",
    "ZStart:= ", "0mm",
    "Width:= ", "0.8mm",
    "Height:= ", "1.2mm",
    "WhichAxis:= ", "Z"
],
[
    "NAME:Attributes",
    "Name:= ", "Rectangle1",
    "Flags:= ", "",
    "Color:= ", "(132 132 193)",
    "Transparency:= ", 0,
    "PartCoordinateSystem:= ", "Global",
    "UDMId:= ", "",
    "MaterialValue:= ", "\"vacuum\"",
    "SolveInside:= ", True
])

oDesign.SetDesignSettings(['NAME:Design Settings Data', 'Allow Material Override:=', True, 'Calculate Lossy Dielectrics:=', True])

oEditor.SetModelUnits(['NAME:Units Parameter', 'Units:=', 'mil', 'Rescale:=', False ])

ScriptEnv.Shutdown()

```

## IronPython Samples

### Important:

VBScript is no longer supported in Ansys Electronics Desktop. It is referenced here only to aid users in translating existing VBScript scripts to Python.

**Change property**

The following snippets show how a change property command (in this case, to change the color of a cone) looks in VBScript and its two possible IronPython variants.

```
oEditor.ChangeProperty Array("NAME:AllTabs", Array("NAME:Geometry3DAttributeTab",_
    Array("NAME:PropServers", "Cone1"), _
    Array("NAME:ChangedProps", _
    Array("NAME:Color", "R:=", 255, "G:=", 255, "B:=", 0))))
```

**Sample Script: ChangeProperty command to change color of a cone**

```
oEditor.ChangeProperty(
["NAME:AllTabs",
    ["NAME:Geometry3DAttributeTab",
    ["NAME:PropServers", "Cone1"],
    ["NAME:ChangedProps",
    ["NAME:Color", "R:=", 0, "G:=", 0, "B:=", 64]
    ]
]
])
```

**Sample Script: ChangeProperty command to change color of cone using Python arrays**

Any time there are named arrays composed purely of key-value pairs, they can always be represented using a Python dictionary, irrespective of the nesting of said named array.

```
oEditor.ChangeProperty(
["NAME:AllTabs",
["NAME:Geometry3DAttributeTab",
    ["NAME:PropServers", "Cone1"],
    ["NAME:ChangedProps",
    {
        "NAME": "Color",
        "R" : 0,
        "G" : 64,
        "B" : 0
    }
    ]
]
```

```
    }]]  
  ])
```

### **Sample Script: ChangeProperty command to change the color of a cone using Python arrays and dictionaries**

#### **Create a Cone using IronPython**

Most scripting tasks using IronPython are expected to be formatted as the following example. One starts with the predefined **oDesktop** object and drills down to the design, editors, modules etc and issues any required commands on the object while formatting the script command arguments in natural python syntax.

```
oProject = oDesktop.GetActiveProject()  
oDesign = oProject.InsertDesign("HFSS", "Random", "DrivenModal", "")  
oEditor = oDesign.SetActiveEditor("3D Modeler")  
oEditor.CreateCone(  
{  
    "NAME" : "ConeParameters",  
    "XCenter" : "0mm",  
    "YCenter" : "0mm",  
    "ZCenter" : "0mm",  
    "WhichAxis" : "Z",  
    "Height" : "2mm",  
    "BottomRadius" : "1.56204993518133mm",  
    "TopRadius" : "0mm"  
},  
{  
    "NAME" : "Attributes",  
    "Name" : "Cone1",  
    "Flags" : "",  
    "Color" : "(132 132 193)",  
    "Transparency" : 0,  
    "PartCoordinateSystem": "Global",  
    "UDMId" : "",
```

```
"MaterialValue" : "\"vacuum\"",  
"SolveInside" : True  
}  
)
```

### **Sample Script: IronPython script to create a cone**

#### **Create geometry and then create a grid from it using copy/paste/move**

The following script demonstrates slightly more advanced use of scripting and the use of return values from script methods. It creates a 5x5 grid of cones and also demonstrates the adding of information messages to the application's message window.

```
oProject = oDesktop.GetActiveProject()  
  
oDesign = oProject.InsertDesign("HFSS", "Hersheys Kisses", "DrivenModal", "")  
  
oEditor = oDesign.SetActiveEditor("3D Modeler")  
  
# create the first cone  
AddInfoMessage("Creating first cone")  
  
firstConeName = "firstCone"  
coneBotRad = "1.5mm"  
oEditor.CreateCone(  
    {  
        "NAME" : "ConeParameters",  
        "XCenter" : "0mm",  
        "YCenter" : "0mm",  
        "ZCenter" : "0mm",  
        "WhichAxis" : "Z",  
        "Height" : "2mm",  
        "BottomRadius": coneBotRad,  
        "TopRadius" : "0mm"  
    },  
    {  
        "NAME" : "Attributes",
```

```
"Name" : firstConeName,
"Flags" : "",
"Color" : "(132 132 193)",
"Transparency" : 0,
"PartCoordinateSystem": "Global",
"UDMId" : "",
"MaterialValue" : "\"vacuum\"",
"SolveInside" : True
}
)

# Now replicate this a few times and create an array out of it
AddInfoMessage("Replicating it 24 times")
for x in range(5):
    for y in range(5):
        # leave the first one alone in it's created
        # position
        if x == 0 and y == 0:
            continue

# all other grid positions, replicate from the
# first one

# copy first
oEditor.Copy(
{
    "NAME" : "Selections",
    "Selections" : firstConeName
}
)
```

```
# paste it and capture the pasted name
# the pasted names come in an array as we could
# be pasting a selection composed of multiple objects
pasteName = oEditor.Paste()[0]

# now move the pasted item to it's final position
oEditor.Move(
    {
        "NAME" : "Selections",
        "Selections" : pasteName
    },
    {
        "NAME" : "TransalateParameters",
        "CoordinateSystemID" : -1,
        "TranslateVectorX" : "%d * 3 * %s" % (x, coneBotRad),
        "TranslateVectorY" : "%d * 3 * %s" % (y, coneBotRad),
        "TranslateVectorZ" : "0mm"
    }
)

# Now fit the display to the created grid
oEditor.FitAll()
```

## Related Topics

[Introduction to IronPython](#)

[Scripting Using Iron Python: Putting it all Together](#)

## Creating User Defined Primitives and User Defined Models in Python Scripts

You can create User Defined Primitives and User Defined Models in Python scripts (based on the IronPython implementation).



**Advantages Compared to C++**

- No need to create and build project; all you need to do is create a Python script
- Python script is platform independent
- Scripts can inherit functionality from existing scripts
- Garbage collector - no need to free memory
- Easy debugging

**Changes compared to C**

Though methods, constants and structures are kept as close to the C implementation as possible, some changes had to be made to make code Python-compatible.

**Structures**

- Structures have the same names as in C implementation.
- Structures fields names are capitalized.
- Arrays in structures become lists in Python (Technically a .NET IList container)
- Structure instances are created using the supplied constructors and members are accessed using the provided access methods.

For a complete list of structures and examples please see [UDP/UDM Structures](#).

**Return Values for UDM and UDP Functions**

For information on return values for each UDM and UDP function, see the [Return Values](#) section.

**Constants**

Enumeration/Enum constants have almost the same names as in C but the enum must be qualified by the type. Additionally, redundant "UDP", "UDM" or type prefixes have been removed. This allows for better human-readability.

```
# Example of specifying the LengthUnit enum by qualifying it
# with the type of the enum: UnitType
unitType = UnitType.LengthUnit
```

For a complete list of enum constants please see [UDP/UDM Constants](#).

**Methods**

Methods are described in [IUDPExtension methods](#), [IUDMExtension methods](#), and [UDMFunctionLibrary](#) listed further in this document. A separate chapter includes a [UDP IronPython example of fillet and chamfer](#).

The main differences in functions parameters (from C implementation):

- functions names in UDPFunctionLibrary and UDMFunctionLibrary are capitalized
- arrays become a python list of objects
- `void * callback` parameter is dropped from the parameter list
- output parameters (pointer types that are filled during the function call) usually become return values
- 'list size' parameter usually will be omitted as redundant

### Output Parameters

The rule for the output parameters is as follows:

- If the function has one output parameter variable and no return value, the variable will become function's return value. The same will happen if the return value is a 'success/failure' boolean ('None' will be returned on failure and parameter variable - on success).
- If the function has one output parameter and a return value, the function will return a Python tuple where function return value will be the first one in the tuple.
- If there is more than one out variable, the function will return a Python tuple with all output parameters in the specified order. If function has a return value, it must always be the first in the tuple.

**# one output parameter; return value is ignored**

```
udmDefinition = udmFunctionLibrary.GetDefinition()
```

**# one output parameter; return value must be preserved. return  
# and output values are packed into the return tupe, in order**

```
(lRet, partIdsList) = udpFunctionLibrary.DetachFaces(nPartIds, faceIdsList)
```

**# Two output parameter; return value must be preserved**

**# the return tuple is (returnVal, output1, output2)**

```
(bRet, udpPositionLow, udpPositionHigh) = udmFunctionLibrary.GetBoundingBox(partId, exact);
```

**Comparison with C function:**

| C                                                                                                                         | Python                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <pre>bool getDefinition(UDMDefinition* udmDefinition, void* callbackData );</pre> <p>where udmDefinition is an output</p> | <pre>udmDefinition = udmFunctionLibrary.GetDefinition()</pre> <p>(Note: callbackData is omitted in py interface)</p> |

| C                                                                                                                                                 | Python                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| parameter                                                                                                                                         |                                                                                                                                                |
| <pre>long detachIFaces( int nFacesAndPartIds, long* facIds, long* partIds, void* callbackData);</pre> <p>where partIds is an output parameter</p> | <pre>(bRet, partIds) = udmFunctionLibrary.DetachIFaces (nFacesAndPartIds, facIds)</pre> <p>(Note: callbackData is omitted in py interface)</p> |

#### 'List Size' Parameters

The rule for the 'list size' is as follows:

- If function has input 'List' parameter and input 'list size' parameter, 'list size' parameter will be omitted.
- If function has output 'List' parameter and output 'list size' parameter, 'list size' parameter will be omitted.
- If function has output 'List' parameter and input 'list size' parameter, 'list size' parameter won't be omitted as it's needed for memory allocation in the corresponding C++ function from the UDP/UDM function library.

Example:

**# input list, input list size**

```
lret = udpFunctionLibrary.Unite(objectIds)
```

**# output list, output list size**

```
faceIdList = udmFunctionLibrary.GetAllFaces(PartId)
```

**# output list, input list size**

```
(lret, partIdList) = udpFunctionLibrary.DetachFaces(listSize,
faceIdList)
```

**Comparison with C function:**

| C                              | Python            |
|--------------------------------|-------------------|
| bool getAllFaces( long partId, | facIds = udmFunc- |

| C                                                                                                                                                                                                      | Python                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>long* numFaces, long** facelds, void* callbackData);</pre> <p>where numFaces and facelds are output parameters and numFaces is the size of faceld.</p>                                            | <pre>tionLibrary.GetAllFaces(partId)</pre> <p>(ignore numFaces as redundant: folded into facelds,<br/>return value is omitted: folded into the facelds is None check<br/>callbackData is omitted)</p> |
| <pre>long unite( long numObjects, long* objectIds, void* callbackData);</pre> <p>where numObjects and objectIds are input parameters and numObjects is the size of objectIds.</p>                      | <pre>lret = udpFunctionLibrary.Unite(objectIds)</pre> <p>(ignore numObjects as redundant: folded into objectIds<br/>callbackData is omitted)</p>                                                      |
| <pre>long detachFaces( long nSize, long* facelds, long* partIds, void* callbackData);</pre> <p>where partIds is and output list and nSize is an input parameters and nSize is the size of partIds.</p> | <pre>(lret, partIdList) = udpFunctionLibrary.DetachFaces(nSize, facelds)</pre> <p>(nSize is not ignored,<br/>callbackData is omitted)</p>                                                             |

#### Added Parameters

There is a special case in UDPFunctionLibrary: two functions - DuplicateAlongLine and DuplicateAroundAxis - have new integer listSize parameter added to their signatures.

This parameter defines the size of the output List. This is done for compliance with C++ geometry library as the size of the List must be predefined and this size is different from the existing parameter's values.

Example:

```
(ret, cloneIDs) = funcLib.DuplicateAlongLine(partID, transVec,
numCubes, cloneIDsSize)

(ret, cloneIDs) = funcLib.DuplicateAroundAxis(partID, axis, angle,
nClones, cloneIDsSize)
```

Here cloneIdsSize is a new integer parameter.

Comparison with C function:

| C                                                                                                                                                     | Python                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| long duplicateAlongLine(<br>long partId,<br>UDPVector transVector,<br>int nClones,<br>long* nClones,<br>void* callbackData);                          | (lret, cloneIds) = udmFunctionLibrary.DuplicateAlongLine(partId, transVec, nClones, cloneIdsSize)<br><br>(callbackData is omitted<br>cloneIdsSize is a new parameter)     |
| long duplicateAroundAxis(<br>long partId,<br>UDPCoordinateSystemAxis axis,<br>double angle,<br>int nClones,<br>long* nClones,<br>void* callbackData); | (lret, cloneIds) = udmFunctionLibrary.DuplicateAroundAxis(partId, axis, angle, nClones, cloneIdsSize)<br><br>(callbackData is omitted<br>cloneIdsSize is a new parameter) |

## Developing a UDM/UDP

### Creation

To create a User Defined Primitive in Python you write a Python script that implements [UDPExtension class](#). To create a User Defined Model in Python you write a Python script that implements [UDMExtension](#) class (see links for full description).

### Location

The scripts are located the same way the C based UDM/UDP are. They are expected to be under the UserDefinedParts or UserDefinedModels sub-directories of one of the library folders (SysLib, UserLib or Personallib). They will then appear under the appropriate menu items:

**Draw > User Defined Primitives for UDP** or **Draw > User Defined Model for UDM**.

The sub-directories structure created in one of the specified directory will be displayed in the UDP/UDM menu.

Keep in mind that there is no difference between the menu display for C and Python implementations of UDM or UDP - only the file names without extensions are displayed

## Organize

"Lib" sub-directory is a special directory. The contents of this directory is not shown in the menu. In the "Lib" directory you can create Python scripts with base classes and utilities to be used in UDP/UDM Python scripts. All the Lib directories upstream of a script (till the UserDefinedModels or UserDefinedPrimitives) are included in the Python search path and this allows for easy import of helper modules in such directories.

To use UDM data structures, constants, and/or classes in your Lib sub-directory scripts you have to add import statement to the scripts:

For UDM:extension:

```
from UDM import *
```

For UDP:extension:

```
from UDP import *
```

## Edit/Reload

Python is a scripting language, so if you have errors in your script, you will see them at the time you try to run the script. The errors will be displayed in the Message Manager Window. If you need more information, you might be able to get it from log files. See: Debug Logging.

You can always change your script, call **Update Menu** command from **Draw > User Defined Model > menu** or **Draw > User Defined Primitives > menu** and run the script again. If you delete script you might want to restart the application instead of calling **Update Menu**.

## UDPExtension

### Import

You do not have to add import statements for the predefined classes, structures, and constants - it is done for you and all data types described in this document can be used in your Python script.

However you have to add import statements to your helper scripts in your Lib sub-directory.

```
from UDP import *
```

### Main class: UDPExtension

You must write a class derived from IUDPExtension with a mandatory name UDPExtension:

```
class UDPExtension(IUDPExtension):
```

The class should implement [IUDPExtension methods](#) described in the topic that follows.

### IUDPExtension Methods

All methods are same as the methods in the C UDP implementation. The changes to the methods signatures are just to conform to the Python style.

**Mandatory Methods**

These methods must be implemented in the UDP Python script as methods of UDPExtension class.

**GetLengthParameterUnits()**

- returns string.

**GetPrimitiveTypeInfo()**

- returns UDPPrimitiveTypeInfo.

**GetPrimitiveParametersDefinition2()**

- returns a list of UDPPrimitiveParameterDefinition2 or None on failure

**AreParameterValuesValid2(errorMsg, udpParams)**

- errorMsg is a c# list of strings
- udpParams is a c# list of UDPParam
- returns True if udpParams are valid, False otherwise.

**CreatePrimitive2(funcLib, udpParams)**

- funcLib is [UDMFunction library](#)
- udpParams is a c# list of UDPParam
- returns True on success, False on failure.

**Optional Methods**

These methods, which have default implementations, can be implemented as methods of UDPExtension class as needed. Default methods will return NULL or FALSE depending on the return type.

**GetPrimitiveParameters()**

- returns Python list of strings or NULL

**GetRegisteredFaceNames()**

- returns Python list of strings or NULL

**GetRegisteredEdgeNames()**

- returns Python list of strings or NULL

### **GetRegisteredVertexNames()**

- returns Python list of strings or NULL

### **ProjectParametersOnToValidPlane2(currentUDPParams, projectedUDPParams)**

- currentUDPParams is a list of UDPPParam
- projectedUDPParams is a list of UDPPParam
- returns True on success, False on failure.

### **MapParametersDefinitionVersions2(oldVersion, oldUDPParams)**

- oldVersion is a string
- oldUDPParamsis a list of UDPPParam
- returns Python list of UDPPParam or NULL

### **GetOldPrimitiveParametersDefinition2(version )**

- version is a string
- returns a list of UDPPPrimitiveParameterDefinition2 or None on failure.

### **Example UDP**

```
import sys

class UDPExtension(IUDPExtension):

    def GetLengthParameterUnits(self):
        return "mm"

    def GetPrimitiveTypeInfo(self)
        typeInfo = UDPPPrimitiveTypeInfo(
            name = "SampleUDP",
            purpose = "example",
            company="Ansys",
            date="12.21.12",
            version = "1.0")
```



```
    return typeInfo  
  
    ...  
  
    ...
```

## UDMExtension

### Import

You do not have to add import statements for the predefined classes and structures - it is done for you, and all data types described in this document can be used in your Python script.

However you have to add import statements to your helper scripts in your Lib sub-directory.

```
from UDM import *
```

### Main class: UDMExtension

You must write a class derived from IUDMExtension with a mandatory name UDMExtension:

```
class UDMExtension(IUDMExtension):
```

The class should implement [IUDMExtension methods](#) described below.

### IUDMExtension Methods

All methods are the same as the methods in the C UDM implementation. The changes to the methods signatures are just to conform to the Python style.

### Mandatory Methods

These methods must be implemented in the UDM Python script as methods of UDMExtension class.

#### GetInfo()

- returns UDMInfo object populated with appropriate UDM information.

#### IsAttachedToExternalEditor()

- returns True if UDM dll is attached to external editor.
- In case of python UDMs, this should typically return False

#### CreateInstance(funcLib)

- funcLib is UDMFunctionLibrary
- returns UDMPParameters.

#### GetUnits(instanceId)

- instanceId is an integer.
- returns string containing units for the instance.

**Refresh(funcLib, udmlnParams, updatedParams, refreshModifiedPartsOnly, nonEditedPartRefls )**

This method is called every time a UDM is refreshed. Geometry creation/refresh should happen in this method.

- funcLib is UDMFunctionLibrary
- udmlnParams is a list of UDMParameters that comes from desktop
- updatedParams: UDM script can change the UDM parameters it receives. Updated parameters need to be sent back to desktop. If the UDM script is not going to change any of the parameters that it received, it needs to copy udmlnParams to updatedParams.
- refreshModifiedPartsOnly is a Boolean

Supporting this flag is optional. For UDMs where the refresh performance is not an issue, it is recommended to ignore this flag and update all parts every time.

This flag can be used to optimize performance of Refresh method when the model created by UDM is large. If the UDM consists of multiple parts, and new parameters change only a few parts amongst them, UDM script can only modify parts that are changed by the new parameters.

- nonEditedPartRefls: If RefreshModifiedPartsOnly is true and the UDM script supports partial update, Refresh method needs to return ids of parts that are unchanged.

returns True on success, False on failure.

**ReleaseInstance(instanceId)**

- instanceId is an integer.
- This should release any resources assigned to this particular instance of UDM.
- returns True on success, False on failure.

**GetAttribNameForEntityId()**

- Returns string that acts as a the name of the attribute containing entity IDs.
- For example, it can return a unique string such as "ATTRIB\_XACIS\_ID"
- Python UDMs should implement this method.

**GetAttribNameForPartId()**

- Returns a string that acts as a the name of the attribute containing entity IDs.
- For example, it can return a unique string such as "ATTRIB\_XACIS\_ID" (Can be same as

GetAttribNameForEntityId())

- Python UDMs should implement this method.

#### Optional Methods

These methods have default implementations (default is to return NULL or FALSE depending on the return type) but can be overridden by the user as needed as methods of UDMExtension class.

#### **DialogForDefinitionOptionsAndParams(self, defData, optData, params):**

Replaces the old UDMDialogForDefinitionAndOptions method, which is still supported, but users are urged to use UDMDialogForDefinitionOptionsAndParams. If both methods are present, application will use UDMDialogForDefinitionOptionsAndParams.

- UDM can open a dialog box for UDM definition, options, parameters in this method. Definition, options, and parameters are set/modified by user and returned to application. Dll can also just give default definition, options and parameters.
- Returns two Booleans and a string
  - First Boolean returns whether the method was successful or not.
  - Second Boolean returns whether the application should open a dialog box. If it is True, application will populate a dialog box with definition, options, parameters that are returned.
  - String returned contains length units for parameters.

#### **DialogForDefinitionAndOptions(self, defData, optData) [Deprecated]**

UDM can open a dialog box for UDM definition and options in this method. Definition, and options are set/modified by user and returned to application. Dll can also just give default definition and options.

- Returns two Booleans.
  - First Boolean provides whether the call to this method was successful or not.
  - Second Boolean determines whether the application should pop up a dialog box. If this is true, application will populate the dialog box with the definitions and options that are returned. As no parameters are returned, no parameters are shown in this dialog box.

#### **GetInstanceSourceInfo(instancelid)**

- instancelid is an integer.
- returns string containing source information of UDM instance. It is used to create initial name for UDM instance.

#### **ShouldAttachDefinitionFilesToProject()**

- returns True if any of definition files needs to be attached to project
- returns a Python list of strings containing definition names of files or NULL

**Example UDM**

```
class UDMExtension(IUDMExtension):

    def IsAttachedToExternalEditor(self):
        return False

    def GetInfo(self)
        udmInfo = UDMInfo(
            name = "SampleUDM",
            purpose = "udm example",
            company="Ansys",
            date="12.21.12",
            version = "1.0")

        return udmInfo

    ...

    ...
```

**UDMFunctionLibrary**

UDMFunctionLibrary implements IUDMFunctionLib interface. The IUDMFunctionLib object is passed as a parameter to Python script in the following functions

- CreateInstance
- Refresh

You can call any of the functions from the functions list (shown below).

```
partRefId = udmFunctionLib.GetPartRefId(partId)
```

For example sample code that calls GetBoundingBox in Python script can look like this:

```
partId = 10
exact = True
udpPosition = UDPPosition(0,0,0)

(bret, udpPositionLow, udpPositionHigh) = udmFunctionLibrary.GetBoundingBox(partId, exact);
```

```

if bret:

    udpPosition.X = udpPositionLow.X

```

As you can see udpPositionLow and udpPositionHigh output parameters are defined in the call to GetBoundingBox function. There is no need to define them before the function call.

#### Functions list:

1. **List\_of\_UDMDefinition:** udmDefinitionList = **GetDefinition()**
2. **List\_of\_UDMOption:** udmOptionList = **GetOptions()**
3. **bool:** bret = **SetMaterialName(string: matName, int: partId)**
4. **bool:** bret = **SetMaterialName2(string: matName, string: partName)**
5. **bool:** bret = **SetPartName(string: partName, int: partId)**
6. **int:** iret = **GetInstanceId()**
7. **string:** str = **GetPartRefId(int: partId)**
8. **bool:** bret = **SetPartRefId(int: partId, string: refId)**
9. **List\_of\_int:** facelds = **GetAllFaces(int: partId)**
10. **List\_of\_int:** edgelds = **GetAllEdges(int: partId)**
11. **List\_of\_int:** vertexlds = **GetAllVertices(int: partId)**
12. **bool:** bret = **SetFaceAttribs(List\_of\_int: facelds, List\_of\_string: attribs)**
13. **bool:** bret = **SetEdgeAttribs(List\_of\_int: edgelds, List\_of\_string: attribs)**
14. **bool:** bret = **SetVertexAttribs(List\_of\_int: vertexlds, List\_of\_string: attribs)**
15. **string:** str = **GetModelerUnit()**
16. **string:** str = **GetCacheFileForUDMResume()**
17. **bool:** bret = **SetPartColor(int: partId, int: nColor)**
18. **bool:** bret = **SetPartFlags(int: partId, int: nFlags)**
19. (**bool:** bret, **UDPPosition:** low, **UDPPosition:** high) = **GetBoundingBox(int: partId, bool: exact)**
20. **bool:** bret = **IsParametricUpdate()**
21. **bool:** bret = **SetMaterialNameByRefId(string: partRefId, string: matName)**
22. **bool:** bret = **SetPartNameByRefId(string: partRefId, string: partName)**
23. **bool:** bret = **SetPartColorByRefId(string: partRefId, int: nColor)**
24. **bool:** bret = **SetPartFlagsByRefId(string: partRefId, int: nFlags)**

In addition to the above functions all functions defined in the UDPFunctionLib are available in the IUDMFunctionLib and can be called directly exactly the same way as the IUDMFunctionLib functions.

Example:

```
udmFunctionLib.CreateCircle(center, radius, ratio, isCovered)
```

## UDM/UDP Functions

### Return Values for Each UDM and UDP Function

*ID* – ID of created Object

*SI* – Success Indicator. Identifies whether or not operation was successful.

### Functions list:

1. **bool:** SI = **AddMessage(MessageSeverity:** messageSeverity, **string:** message)
2. **bool:** SI = **NameAFace(UDPPosition:** pointOnFace, **string:** faceName)
3. **bool:** SI = **NameAEdge(UDPPosition:** pointOnEdge, **string:** edgeName)
4. **bool:** SI = **NameAVertex(UDPPosition:** pointOnVertex, **string:** vertexName)
5. **int:** ID = **GetFaceIDFromPosition(UDPPosition:** pointOnFace)
6. **int:** ID = **GetEdgeIDFromPosition(UDPPosition:** pointOnEdge)
7. **int:** ID = **CreatePolyline(UDPPolylineDefinition:** polylineDefinition)
8. **int:** ID = **CreateRectangle(CoordinateSystemPlane:** whichPlane, **UDPPosition:** center-Point, **List\_of\_double:** widthAndHeight, **int:** isCovered)
9. **int:** ID = **CreateArc(CoordinateSystemPlane:** whichPlane, **UDPPosition:** centerPoint, **UDPPosition:** startPoint, **double:** fAngle)
10. **int:** ID = **CreateCircle(CoordinateSystemPlane:** whichPlane, **UDPPosition:** center-Point, **double:** fRadius, **int:** isCovered)
11. **int:** ID = **CreateEllipse(CoordinateSystemPlane:** whichPlane, **UDPPosition:** center-Point, **double:** fMajorRadius, **double:** fRadiusRatio, **int:** isCovered)
12. **int:** ID = **CreateRegularPolygon(CoordinateSystemPlane:** whichPlane, **UDPPosition:** centerPoint, **UDPPosition:** startPoint, **int:** numOfSides, **int:** isCovered)
13. **int:** ID = **CreateEquationBasedCurve(UDPEquationBasedCurveDefinition:** curveDefinition)
14. **int:** ID = **CreateEquationBasedSurface(UDPEquationBasedSurfaceDefinition:** surfaceDefinition)
15. **int:** ID = **CreateSpiral(UDPSpiralDefinition:** spiralDefinition)
16. **int:** ID = **CreateBox(UDPPosition:** startPoint, **List\_of\_double:** boxXYZsize)
17. **int:** ID = **CreateSphere(UDPPosition:** centerPoint, **double:** fRadius)
18. **int:** ID = **CreateCylinder(CoordinateSystemAxis:** whichAxis, **UDPPosition:** center-Point, **double:** fRadius, **double:** fHeight)
19. **int:** ID = **CreateCone(CoordinateSystemAxis:** whichAxis, **UDPPosition:** centerPoint, **double:** fBottomRadius, **double:** fTopRadius, **double:** fHeight)
20. **int:** ID = **CreateTorus(CoordinateSystemAxis:** whichAxis, **UDPPosition:** centerPoint, **double:** fMajorRadius, **double:** fMinorRadius)

21. **int:** ID = **CreatePolyhedron**(**CoordinateSystemAxis:** whichAxis, **UDPPosition:** center-Point, **UDPPosition:** startPosition, **int:** numOfSides, **double:** fHeight)
22. **int:** ID = **CreateHelix**(**UDPHelixDefinition:** helixDefinition)
23. **bool:** SI = **Unite**(**List\_of\_int:** pObjectIDArray)
24. **bool:** SI = **Subtract**(**List\_of\_int:** pBlankObjectIDArray, **List\_of\_int:** pToolObjectIDArray)
25. **bool:** SI = **Intersect**(**List\_of\_int:** pObjectIDArray)
26. **bool:** SI = **Imprint**(**List\_of\_int:** pBlankObjectIDArray, **List\_of\_int:** pToolObjectIDArray)
27. **bool:** SI = **SweepAlongVector**(**int:** profileID, **UDPVector:** sweepVector, **UDPSweepOptions:** sweepOptions)
28. **bool:** SI = **SweepAroundAxis**(**int:** profileID, **CoordinateSystemAxis:** whichAxis, **double:** sweepAngle, **UDPSweepOptions:** sweepOptions)
29. **bool:** SI = **SweepAlongPath**(**int:** profileID, **int:** pathID, **UDPSweepOptions:** sweepOptions)
30. **bool:** SI = **Translate**(**int:** partID, **UDPVector:** translateVector)
31. **bool:** SI = **Rotate**(**int:** partID, **CoordinateSystemAxis:** whichAxis, **double:** rotateAngle)
32. **bool:** SI = **Mirror**(**int:** partID, **UDPPosition:** mirrorPlaneBasePosition, **UDPVector:** mirrorPlaneNormalVector)
33. **bool:** SI = **Transform**(**int:** partID, **List\_of\_double:** rotationMatrix, **UDPVector:** translateVector)
34. **bool:** SI = **Scale**(**int:** partID, **double:** xScale, **double:** yScale, **double:** zScale)
35. (**bool:** SI, **List\_of\_int:** cloneIDs) = **DuplicateAlongLine**(**int:** partID, **UDPVector:** translateVector, **int:** numTotalObjs, **int:** cloneIDsListSize)
36. (**bool:** SI, **List\_of\_int:** cloneIDs) = **DuplicateAroundAxis**(**int:** partID, **CoordinateSystemAxis:** whichAxis, **double:** rotateAngle, **int:** numTotalObjs, **int:** cloneIDsListSize)
37. **int:** ID = **DuplicateAndMirror**(**int:** partID, **UDPPosition:** mirrorPlaneBasePosition, **UDPVector:** mirrorPlaneNormalVector)
38. **bool:** SI = **Connect**(**List\_of\_int:** objectIDArray)
39. **bool:** SI = **Offset**(**int:** partID, **double:** offsetDistance)
40. **int:** ID? = **Section**(**int:** partID, **CoordinateSystemPlane:** sectionPlane)
41. (**bool:** SI, **int:** ID) = **Split**(**int:** partID, **CoordinateSystemPlane:** splitPlane, **SplitWhichSideToKeep:** whichSideToKeep, **bool:** bSplitCrossingObjectsOnly)
42. (**bool:** SI, **List\_of\_int:** importedObjectIDs) = **ImportNativeBody2**(**string:** fileNameWithFullPath)
43. (**bool:** SI, **List\_of\_int:** importedObjectIDs) = **ImportAnsoftGeometry**(**string:** fileNameWithFullPath, **List\_of\_string:** overridingParamsNameArray, **List\_of\_UDPPParam:** overridingParamsArray)
44. **int:** ID = **Clone**(**int:** partID)
45. **bool:** SI = **DeletePart**(**int:** partID)

46. **int**: ID = **CreateObjectFromFace**(*int*: faceID)
47. **bool**: SI = **Fillet**(*UDPBLNDElements*: entitiesToFillet, *UDPBLNDFilletOptions*: filletOptions)
48. **bool**: SI = **Chamfer**(*UDPBLNDElements*: entitiesToChamfer, *UDPBLNDChamferOptions*: chamferOptions)
49. (**bool**: SI, *List\_of\_int*: newPartIDs) = **DetachFaces**(*int*: newPartIDArraySize, *List\_of\_int*: faceIDs)
50. (**bool**: SI, *List\_of\_int*: newPartIDs) = **DetachEdges**(*int*: newPartIDArraySize, *List\_of\_int*: edgeIDs)
51. **int**: ID = **CreateObjectFromEdge**(*int*: edgeID)
52. **bool**: SI = **SheetThicken**(*int*: partID, **double**: fThickness, **bool**: bThickenBothSides)
53. (**bool**: SI, *List\_of\_int*: newPartIDArray) = **SweepFaceAlongNormal**(*int*: newPartIDArraySize, *List\_of\_int*: faceIDArray, **double**: sweepLength)
54. **bool**: SI = **CoverLine**(*int*: partID)
55. **bool**: SI = **CoverSurface**(*int*: partID)
56. **bool**: SI = **UncoverFaces**(*List\_of\_int*: faceIDArray)
57. (**bool**: SI, *int*: numPartsCreated, *List\_of\_int*: faceIDArray) = **SeparateBodies**(*int*: partID, *int*: numPartsCreated)
58. **bool**: SI = **MoveFaces**(*List\_of\_int*: faceIDArray, **bool**: bMoveAlongNormal, **double**: fOffsetDistance, *UDPVector*: moveVector)
59. **bool**: SI = **WrapSheet**(*int*: sheetBodyID, *int*: targetBodyID)
60. **bool**: SI = **ImprintProjection**(*int*: blankBodyID, *List\_of\_int*: toolBodyIDArray, **bool**: bNormalProjection, *UDPVector*: projectDirection, **double**: projectDistance)
61. **string**: path = **GetTempDirPath**()
62. **string**: path = **GetSysLibDirPath**()
63. **string**: path = **GetUserLibDirPath**()
64. **string**: path = **GetPersonalLibDirPath**()
65. **string**: path = **GetInstallDirPath**()
66. **string**: path = **GetProjectPath**()
67. (**bool**: SI, **bool**: abort) = **SetProgress**(*UDPPProgress*: progress)

## UDP/UDM Structures and Constants

The following sections describe:

- [UDP/UDM Structures](#)
- [UDP/UDM Constants](#)

## UDP/UDM Structures

Differences compared to C API:



- **UDMDefinition**
- **UDMOptions**
- **UDMPParameters**

Instead of containing arrays of data, the structures contain single fields where each field corresponds to an item in a different array from the original C API. The structure objects thus constructed are added to the Python list. Alternately the Python list can be initialized using the structure objects.

Example (creating UDMPParameter list):

```
udmParamList = [  
    UDMPParameter(  
        "cubeSizeName", UnitType.LengthUnit,  
        UDPParam(ParamDataType.Double, cubeSize),  
        ParamPropType.Value,  
        ParamPropFlag.MustBeReal),  
    UDMPParameter(  
        "cubeDistanceName", UnitType.LengthUnit,  
        UDPParam(ParamDataType.Double, cubeDistance),  
        ParamPropType.Value,  
        ParamPropFlag.MustBeReal),  
    UDMPParameter("numCubesName", UnitType.LengthUnit,  
        UDPParam(ParamDataType.Int, numCubes),  
        ParamPropType.Number,  
        ParamPropFlag.MustBeInt]
```

- **UDPParam**
- **UDPParamData**

**Data** field in UDPParam is now an object - the same for all types of data used - as Python can work with any type of data.

**UDPParamData** is obsolete, thus not implemented. Be sure to set proper data type to UDPParam.DataType when setting UDPParam.Data.

Example:

```
nCubesParam = UDPParam(ParamDataType.Int, numCubes)
nCubes = nCubesParam.Data
```

```
distanceParam = UDPParam()
distanceParam.setDouble(10.5)
doubleDistance = distanceParam.Data * 2
```

- **UDP3x3Matrix**

The structure is not implemented. Use size 9 Python List of doubles instead.

Example:

```
rotationMatrix = [0,0,1, 1,0,0, 0,0,1]
udpFunctionLib.Transform(partId, rotationMatrix, translationVector)
```

#### List of Structures

You can use constructors to create a structure. You can also modify fields - directly or by provided methods.

Example:

```
pos1 = UDPPosition(1,2,3)
pos2 = UDPPosition(x=1,y=10,z=0)
pos2.Z = pos1.Z
udpParam = UDPParam(ParamDataType.Double,1)
value = udpParam.Data
```

| Structure                            | Construction                                                                                                   | Members                                                                          |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| UDPPrimitiveTypeInfo                 | UDPPrimitiveTypeInfo(<br>string name,<br>string purpose,<br>string company,<br>string date,<br>string version) | string Name<br>string Purpose<br>string Company<br>string Date<br>string Version |
| UDPPrim-<br>itiveParameterDefinition | UDPPrim-<br>itiveParameterDefinition(<br>                                                                      | string Name<br>string Description                                                |

| Structure                             | Construction                                                                                                                                                                                                                                                                                | Members                                                                                                                             |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|                                       | string name,<br>string description,<br>UnitType unitType,<br>double defaultValue)                                                                                                                                                                                                           | UnitType UnitType<br>double DefaultValue                                                                                            |
| UDPParam                              | UDPParam()<br><br>UDPParam(<br>ParamDataType dataType,<br>object data)<br><br>object can be int, double,<br>string, bool or UDPPosition<br><br><b>methods:</b><br>setInt(int val)<br>setBool(bool val)<br>setString(string val)<br>setDouble(double val)<br>setPosition(UDPPosition<br>val) | ParamDataType DataType<br>object Data<br><br>object can be int, double , string,<br>bool or UDPPosition                             |
| UDPPrim-<br>itiveParameterDefinition2 | UDPPrim-<br>itiveParameterDefinition2(<br>string name,<br>string description,<br>UnitType unitType,<br>ParamPropType propType,<br>ParamPropFlag propFlag,<br>UDPParam defaultValue)                                                                                                         | string Name<br>string Description<br>UnitType UnitType<br>ParamPropType PropType<br>ParamPropFlag PropFlag<br>UDPParam DefaultValue |
| UDPPosition                           | UDPPosition(<br>double x,<br>double y,<br>double z)                                                                                                                                                                                                                                         | double X<br>double Y<br>double Z                                                                                                    |

| Structure                       | Construction                                                                                                                                                                                       | Members                                                                                                                                                          |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | double z)                                                                                                                                                                                          |                                                                                                                                                                  |
| UDPVector                       | UDPVector(<br>double x,<br>double y,<br>double z)                                                                                                                                                  | double X<br>double Y<br>double Z                                                                                                                                 |
| UDPSweepOptions                 | UDPSweepOptions(<br>SweepDraftType draftType,<br>double draftAngle,<br>double twistAngle)                                                                                                          | SweepDraftType DraftType<br>double DraftAngle<br>double TwistAngle                                                                                               |
| UDPPolylineSegmentDefinition    | UDPPolylineSegmentDefinition(<br>PolylineSegmentType segmentType,<br>int segmentStartIndex,<br>int numberOfPoints,<br>double angle,<br>UDPPosition centerPoint,<br>CoordinateSystemPlane arcPlane) | PolylineSegmentType SegmentType<br>int segmentStartIndex,<br>int numberOfPoints,<br>double angle,<br>UDPPosition centerPoint,<br>CoordinateSystemPlane arcPlane) |
| UDPPolylineDefinition           | UDPPolylineDefinition()<br>UDPPolylineDefinition(<br>List_of_UDPPosition positions,<br>List_of_UDPPolylineSegmentDefinition segDefs,<br>int closed,<br>int covered)                                | int IsClosed<br>int IsCovered<br>List_of_UDPPosition ArrayOfPosition<br>List_of_UDPPolylineSegmentDefinition ArrayOfSegmentDefinition                            |
| UDPEquationBasedCurveDefinition | UDPEquationBasedCurveDefinition(<br>string functionXt,<br>string functionYt,<br>string functionZt,                                                                                                 | string FunctionXt<br>string FunctionYt<br>string FunctionZt<br>double TStart<br>double TEnd                                                                      |

| Structure                              | Construction                                                                                                                                                                                                       | Members                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                        | double tStart,<br>double tEnd,<br>int numOfPointsOnCurve)                                                                                                                                                          | int NumOfPointsOnCurve                                                                                                                                                                                                                                                                                                                                                   |
| UDPEqua-<br>tionBasedSurfaceDefinition | UDPEqua-<br>tionBasedSurfaceDefinition(<br>string functionXuv,<br>string functionYuv,<br>string functionZuv,<br>double uStart,<br>double uEnd,<br>double vStart,<br>double vEnd<br>int reserved1<br>int reserved2) | string FunctionXuv<br>string FunctionYuv<br>string FunctionZuv<br>double UStart<br>double UEnd<br>double VStart<br>double VEnd<br><br>two integer arguments that are reserved for future use. They need to be provided, for example as 0. For example:<br><br>theSurfaceDefinition =<br>UDPEqua-<br>tionBasedSur-<br>faceDefinition<br>("u", "v", "1", 0, 1, 0, 1, 0, 0) |
| UDPHelixDefinition                     | UDPHelixDefinition(<br>int profileID,<br>UDPPosition ptOnAxis,<br>UDPPosition axisDir,<br>double noOfTurns,<br>bool isRightHanded,<br>double radi-<br>usChangePerTurn,<br>double pitch)                            | int ProfileID<br>UDPPosition PtOnAxis<br>UDPPosition AxisDir<br>double NoOfTurns<br>bool IsRightHanded<br>double RadiusChangePerTurn<br>double Pitch                                                                                                                                                                                                                     |
| UDPSpiralDefinition                    | UDPSpiralDefinition(<br>int profileID,<br>UDPPosition ptOnAxis,<br>UDPPosition axisDir,<br>double noOfTurns,                                                                                                       | int ProfileID<br>UDPPosition PtOnAxis<br>UDPPosition AxisDir<br>double NoOfTurns<br>bool IsRightHanded                                                                                                                                                                                                                                                                   |

| Structure             | Construction                                                                                                                                                                                                                                                    | Members                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | bool isRightHanded,<br>double radiusChangePerTurn)                                                                                                                                                                                                              | double RadiusChangePerTurn                                                                                                                                                                                                                                                                                                                                                   |
| UDPBLNDElements       | UDPBLNDElements(<br>int partID,<br>int noOfEdges;<br>int* listOfEdges; )<br><br>UDPBLNDElements(<br>int partID,<br>int noOfVertices;<br>int* listOfVertices;<br>)                                                                                               | UDPBLNDElements can hold either edges or vertices, but not both at the same time. Edges should be applied to solids, and vertices should be applied to sheets.<br><br>int PartID /* part to be blended i.e. filleted/chamfered */<br>int noOfEdges;<br>int* listOfEdges; /* edges to be blended */<br>int noOfVertices;<br>int* listOfVertices; /* vertices to be blended */ |
| UDPBLNDFilletOptions  | UDPBLNDFilletOptions(<br>bool suppressFillet,<br>BLNDFilletRadiusLaw filletRadiusLaw,<br>double filletStartRadius,<br>double filletEndRadius,<br>bool followSmoothEdgeSequence,<br>BLNDFilletType filletType,<br>double setbackDistance,<br>double bulgeFactor) | bool SuppressFillet /* Reserved for future */<br><br>BLNDFilletRadiusLaw FilletRadiusLaw<br><br>double FilletStartRadius<br>double FilletEndRadius<br>bool FollowSmoothEdgeSequence /* Reserved for future */<br>BLNDFilletType FilletType<br>double SetbackDistance<br>double BulgeFactor /* Reserved for future */                                                         |
| UDPBLNDChamferOptions | UDPBLNDChamferOptions(<br>bool suppressChamfer,<br>BLNDChamferRangeLaw chamferRangeLaw,                                                                                                                                                                         | bool SuppressChamfer<br>BLNDChamferRangeLaw ChamferRangeLaw<br>double ChamferLeftRange                                                                                                                                                                                                                                                                                       |

| Structure     | Construction                                                                                                                  | Members                                                                                 |
|---------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|               | double chamferLeftRange,<br>double chamferRightRange)                                                                         | double ChamferRightRange                                                                |
| UDPProgress   | UDPProgress(<br>int prog,<br>int subProg,<br>string mesg,<br>string subMesg)                                                  | int Prog<br>int SubProg<br>string Mesg<br>string SubMesg                                |
| UDMInfo       | UDMInfo(<br>string name,<br>string purpose,<br>string company,<br>string date,<br>string version)                             | string Name<br>string Purpose<br>string Company<br>string Date<br>string Version        |
| UDMDefinition | UDMDefinition()<br><br>UDMDefinition(<br>string name,<br>UDParam value,<br>ParamPropType propType,<br>ParamPropFlag propFlag) | string DefName<br>UDPParam DefValue<br>ParamPropType PropType<br>ParamPropFlag PropFlag |
| UDMOption     | UDMOption()<br><br>UDMOption(<br>string name,<br>UDParam value,<br>ParamPropType propType,<br>ParamPropFlag propFlag)         | string OptName<br>UDPParam OptValue<br>ParamPropType PropType<br>ParamPropFlag PropFlag |
| UDMParameter  | UDMParameter()<br><br>UDMParameter(<br>                                                                                       | string ParamName<br>UDPParam ParamValue<br>UnitType UnitType                            |

| Structure | Construction                                                                                               | Members                                          |
|-----------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
|           | string name,<br>UDParam value,<br>UnitType unitType,<br>ParamPropType propType,<br>ParamPropFlag propFlag) | ParamPropType PropType<br>ParamPropFlag PropFlag |

**UDP/UDM Constants**

Full names of enum constants must be used in scripts.

Example:

```
unitType = UnitType.LengthUnit
```

```
dataType = ParamDataType.Int
```

**Enum constants:**

| enum Constant | Parameters                                                                     |
|---------------|--------------------------------------------------------------------------------|
| UnitType      | NoUnit<br>LengthUnit<br>AngleUnit                                              |
| ParamDataType | Int<br>Double<br>String<br>Bool<br>Position<br>Unknown                         |
| ParamPropType | Text<br>Menu<br>Number<br>Value<br>FileName<br>Checkbox<br>Position<br>Unknown |
| ParamPropFlag | NoFlag                                                                         |



| enum Constant         | Parameters                                                                         |
|-----------------------|------------------------------------------------------------------------------------|
|                       | ReadOnly<br>MustBeInt<br>MustBeReal<br>Hidden<br>Unknown                           |
| CoordinateSystemAxis  | XAxis<br>YAxis<br>ZAxis                                                            |
| CoordinateSystemPlane | XYPlane<br>YZPlane<br>ZXPlane                                                      |
| SweepDraftType        | ExtendedDraft<br>RoundDraft<br>NaturalDraft<br>MixedDraft                          |
| SplitWhichSideToKeep  | SplitKeepBoth<br>SplitKeepPositiveOnly<br>SplitKeepNegativeOnly                    |
| PolylineSegmentType   | LineSegment<br>ArcSegment<br>SplineSegment<br>AngularArcSegment                    |
| MessageSeverity       | WarningMessage<br>ErrorMessage<br>InfoMessage<br>IncompleteMessage<br>FatalMessage |
| BLNDFilletRadiusLaw   | BLNDConstantRadius<br>BLNDVariableRadius                                           |
| BLNDFilletType        | BLNDRound /* The outward surface of the fillet is curved.*/                        |

| enum Constant       | Parameters                                                                                                                        |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------|
|                     | BLNDMitered /* The outward surface of the fillet is flat and cut at an angle.*/                                                   |
| BLNDChamferRangeLaw | BLNDConstantRange<br>BLNDVariableRange                                                                                            |
| PartPropertyFlags   | PropNonModel<br>PropDisplayWireFrame<br>PropReadOnly<br>PostprocessingGeometry<br>PropInvisible<br>PropShowDirection<br>PropDummy |

### UDP Python Example

This Python script example demonstrates how to use the UDPBLNDElements structure and the UDP chamfer and fillet functions.

```
import sys

primitive_info = UDPPrimitiveTypeInfo(
    name="Fillet_Chamfer",
    purpose="Fillet Chamfer Example",
    company="Ansys",
    date="09/11/2020",
    version="1.0")

primitive_param_definitions = [
    UDPPrimitiveParameterDefinition2(
        "x_size",
        "",
        UnitType.LengthUnit,
        ParamPropType.Value,
        ParamPropFlag.MustBeReal,
        UDPParam(ParamDataType.Double, 10)),
    UDPPrimitiveParameterDefinition2(
```

```

        "y_size",
        "",
        UnitType.LengthUnit,
        ParamPropType.Value,
        ParamPropFlag.MustBeReal,
        UDPParam(ParamDataType.Double, 5)),
    UDPPrimitiveParameterDefinition2(
        "z_size",
        "",
        UnitType.LengthUnit,
        ParamPropType.Value,
        ParamPropFlag.MustBeReal,
        UDPParam(ParamDataType.Double, 2))
]

length_units = "mm"

#####
# Class Implementation
#####

class UDPExtension(IUDPExtension):
    def CreatePrimitive2(self, func_lib, param_values):
        """
        Inbuilt function that is called to generate a UDP after suc-
        cessful validation

        :param func_lib: drawing inbuilt class, see in Help: UDMFunc-
        tionLibrary

        :param param_values: list of udp parameter values (user input)
        generated by UDP Core

        :return: None
        """

        param_dict = self.get_param_dict(param_values)

```

```
start_point = UDPPosition(0, 0, 0)
box = func_lib.CreateBox(start_point, [
    param_dict["x_size"],
    param_dict["y_size"],
    param_dict["z_size"]
])

# points on the middle of 4 vertical edges
points = [
    [0, 0, param_dict["z_size"]/2],
    [param_dict["x_size"], 0, param_dict["z_size"]/2],
    [param_dict["x_size"], param_dict["y_size"], param_dict["z_
size"]/2],s
    [0, param_dict["y_size"], param_dict["z_size"]/2]
]

edges = [func_lib.GetEdgeIDFromPosition(UDPPosition(point[0],
point[1], point[2])) for point in points]

fillet_rad = 0.1 * param_dict["x_size"] # 10% of X size
fillet_opt = UDPBLNDFilletOptions(True, BLNDFil-
letRadiusLaw.BLNDConstantRadius, fillet_rad, 0.0, True, BLNDFil-
letType.BLNDRound, 0.0, 0.0)

chamfer_length = 0.1 * param_dict["x_size"] # 10% of X size
chamfer_opt = UDPBLNDChamferOptions(False, BLNDCham-
ferRangeLaw.BLNDConstantRange, chamfer_length, 0.0)

# select your geometry to which to apply operations
blend_element = UDPBLNDElements(box)
```

```
# specify attribute ListOfEdges to which edges to apply fillet
operation
blend_element.ListOfEdges = edges[0:2]
func_lib.Fillet(blend_element, fillet_opt)

# redeclare attribute ListOfEdges to which edges to apply chamfer
operation
blend_element = UDPBLNDElements(box)
blend_element.ListOfEdges = edges[2:4]
func_lib.Chamfer(blend_element, chamfer_opt)

# Provide to the user Info message indicating success
func_lib.AddMessage(MessageSeverity.InfoMessage, "Completed!")

def GetPrimitiveTypeInfo(self):
    return primitive_info

def GetLengthParameterUnits(self):
    return length_units

def GetPrimitiveParametersDefinition2(self):
    return primitive_param_definitions

def AreParameterValuesValid2(self, error, udp_params):
    return True

# Custom Functions
def get_param_value_by_name(self, param_values, param_name):
    """
    Function to get a value of a single parameter accessing it by
    name
```

```
:param param_values: list of udp parameter values (user input)
generated by UDP Core

:param param_name: name of the parameter as specified in defin-
ition list

:return: Value of the parameter or None if parameter does not
exist

"""

param_dict = self.get_param_dict(param_values)
value = param_dict.get(param_name, None)
return value

def get_param_dict(self, param_values):
    """
    Function to return a dictionary of UDP parameter name and value
    (key: value) pairs

    :param param_values: list of udp parameter values (user input)
    generated by UDP Core

    :return: dict of parameter name and values
    """
    udm_param_def = self.GetPrimitiveParametersDefinition2()
    param_dict = {}
    for i, param in enumerate(udm_param_def):
        param_value = param_values[i].Data
        if str(param.PropType) != "Menu":
            param_dict[param.Name] = param_value
        else:
            param_dict[param.Name] = param_value.replace("'", '').split(
                ",", " ")[0]
    return param_dict
```

## Introduction to CPython

CPython can be used to:

- Launch Ansys Electronics Desktop ([InitializeNew](#))
- Connect with a running instance of Ansys Electronics Desktop ([Initialize](#))
- Execute Ansys Electronics Desktop script functions

One advantage of CPython is the large set of libraries and tools that are available. See below for instructions on modifying a script so that it can be launched with CPython interpreters.

CPython Script Engine and ansysedt process are communicated using GRPC, the ansysedt process started as GRPC server, the Script Script Engine acted as the GRPC client.

## Creating an External Script

While [the same as IronPython](#) when run externally, a CPython recorded script must be modified by adding the following lines to the beginning of your script *before* `import ScriptEnv`

```
import sys

# Imports the sys module containing system-specific functions native to Python.

sys.path.append(r"<InstallationPath>/PythonFiles/DesktopPlugin")

# Adds the PythonFiles/DesktopPlugin subfolder to the list of directories Python searches for modules and files.
```

Those lines are followed by:

```
import ScriptEnv

# This imports ScriptEnv.py from the installation path specified above.
```

Follow that with:

- Either `InitializeNew()` or `Initialize()`, as described below.
- Any desired Electronics Desktop scripting commands.
- Closing command, as described below.

## Start ansysedt as GRPC server

But default ansysedt process will be started as GRPC server. When there is no argument provided ansysedt.exe it start listening on the first available port from 50051.

### -grpcsrv Flag

`ansysedt -grpcsrv <optional port number or port range>.`

`ansysedt -grpcsrv`

If no Port Number specified, same as the default like no grpcsrv flag

`ansysedt -grpcsrv portNumber`

ansyedt process will be listening on the port number, but report error as the port is used by other application.

`ansyedt -grpcsrv FirstPortNumber:LastPortNumber`

ansyedt process will be listening on the first available port within the port range, but report error if all ports in the range used.

`ansyedt -grpcsrv FirstPortNumber:NumberOfPorts`

ansyedt process will be listening on the first available port within the port range, but report error if all ports in the range used.

**Note:** If the last number is smaller than the first number the last number will be treated as the number of ports. (50051: 50250 has the same range as 50051:200)

## Connect Functions:

1. `Connect(projectPath)`
  - a. Connect to the opened project.
  - b. Launch ansyedt.exe, open the project, then connect to it.
  - c. Error if the project does not exist.
2. `Connect(portNumber)` Connect to running ansyedt process in the local machine. Error if no ansyedt process listening on this port.
3. `Connect(machine, projectPath)` connect to an open project in remote Machine. projectPath must be a network path. Error if no ansyedt process opened the project.
4. `Connect(machine, portNumber)` connect to a running ansyedt process on the remote machine. Error if no ansyedt process listening on this port.

## Example:

```
import sys
sys.path.append(r"<InstallationPath>/PythonFiles/DesktopPlugin")
import ScriptEnv
ScriptEnv.Connect(r"c:\myProjects\Project1.aedt")
oProject = oDesktop.GetActiveProject()
print(oProject.GetName())
```

## Launching Electronics Desktop

To launch a new instance of Electronics Desktop and connect oApplication and oDesktop to it:

```
InitializeNew(NonGraphical = <True|False>, Module = None, Machine =
"", Port = <Port#>)
```

Where:



- **NonGraphical** – Specifies whether to launch Electronics Desktop in non-graphical mode.
- **Module** – Behavior remains unchanged from [Iron Python](#) and should be left defaulted to "None." See the code in ScriptEnv.py for more details.
- **Machine** – Currently an empty string, as InitializeNew() will only launch Electronics Desktop on the current machine.
- **Port** – Electronics Desktop will launch using the first unused port it finds starting at <Port#>. If Port = 0, the starting port will be 50051.

**Note:**

InitializeNew() will *always* launch a new instance of Electronics Desktop. Please use Initialize() to connect to an existing instance. See below.

## Connecting with a Running Instance of Electronics Desktop

To connect oApplication and oDesktop to an existing Electronics Desktop instance, or launch a new instance and connect to it if necessary:

```
Initialize(name, NG = <True|False>, machine = "", port = <Port#>)
```

Where:

- **Name** – Ignored.
- **NG** – If launch is necessary, specifies whether to launch Electronics Desktop in non-graphical mode.
- **Machine** – The machine on which to launch/connect. For current machine, pass empty string or use localhost.
- **Port** – If port is nonzero, the script tries to connect to an existing instance on <port#> running on <machine>. If there is no instance running on that <port>, a new instance of Electronics Desktop launches on that port and then connects to it. If port = 0, the new instance is launched on the first free port, starting at 50051.

## Closing Electronics Desktop/Ending the Script

To close Electronics Desktop, add the following line to the end of the script:

```
ScriptEnv.Shutdown()

# This stops ScriptEnv.py. If you are running multiple scripts,
include this only at the end of the last script.
```

## -grpcsrv Flag

This flag will launch the application in a mode where the executable serves as a scripting server that can be used for CPython scripting in conjunction with the CPython stand alone scripting instructions that were mentioned earlier. The -ng flag can be combined with -grpcsrv.

On Windows:

```
ansysedt.exe -grpcsrv <optional port number>.
```

On Linux:

```
ansysedt -grpcsrv <optional port number>.
```

If the port number is omitted, the default of 50051 will be used.

With -grpcsrv, a message will be displayed in the **Messages** window indicating that the server was started. If the requested port is in use by another application, starting the sever may fail.

### Related Topics:

[Standalone Scripting in Iron Python](#)

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# Ansys Electronics Desktop Scripting

This chapter provides an overview of scripting in Ansys Electronics Desktop.

[Overview of Ansys Electronics Desktop Scripting Objects](#)

[Running a Script](#)

[Recording a Script](#)

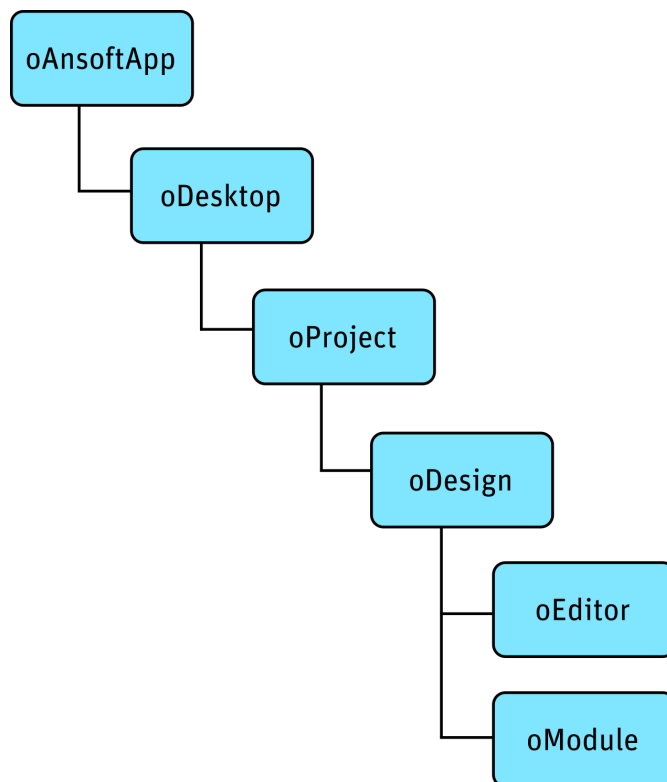
[Working with Project Scripts](#)

[Executing a Script from Within a Script](#)

[Ansys Electronics Desktop Scripting Conventions](#)

## Overview of Electronics Desktop Scripting Objects

When you record a script using Ansys Electronics Desktop, the beginning of the script must contain some standard commands, as illustrated in the following chart. The commands in the chart define the objects used by Electronics Desktop in the script and assign values to these objects. The objects are used in the hierarchical order shown.



The commands are described below, followed by examples.

## **oAnsoftApp**

The **oAnsoftApp** object provides a handle for Iron Python to access the `Ansoft.ElectronicsDesktop` product.

In Iron Python, for example:

```
oAnsoftApp = CreateObject('Ansoft.ElectronicsDesktop')
```

## **oDesktop**

The **oDesktop** object is used to perform desktop-level operations, including project management.

In Iron Python, for example:

```
oDesktop = oAnsoftApp.GetAppDesktop()
```

Consult the following for details about script commands recognized by `oDesktop`:

- [Desktop Object Script Commands](#).

## **oProject**

The **oProject** object corresponds to one project open in Electronics Desktop. It is used to manipulate the project and its data. Its data includes variables, material definitions, and one or more designs.

In Iron Python, for example:

```
oProject = oDesktop.GetActiveProject()
```

Consult the following for details about script commands recognized by `oProject`:

- [Project Object Script Commands](#)

## **oDesign**

The **oDesign** object corresponds to a design in the project. This object is used to manipulate the design and its data, including variables, modules, and editors.

In Iron Python, for example:

```
oDesign = oProject.GetActiveDesign()
```

Consult the following for details about script commands recognized by `oDesign`:

- [Design Object Script Commands](#)
- [Output Variable Script Commands](#)
- [Reporter Editor Script Commands](#)

## **oEditor**

The **oEditor** object corresponds to an editor, such as the 3D Modeler, Layout, or Schematic editor. This object is used to add and modify data in the editor.

In Iron Python, for example:

```
oEditor = oDesign.SetActiveEditor('3D Modeler')
```

Consult the following for details about script commands recognized by `oEditor`:

- [3D Modeler Editor Script Commands](#)
- [Layout Editor Script Commands](#)

### Important:

There is no Reporter Editor object for `oEditor`. Reporter Editor commands are executed by `oDesign`.

See: [Reporter Editor Script Commands](#).

## oModule

The **oModule** object corresponds to a module in the design. Modules are used to handle a set of related functionalities.

In IronPython, for example:

```
oModule = oDesign.GetModule('BoundarySetup')
```

Consult the following for details about script commands recognized by `oModule`:

- Analysis Module Script Commands
- Boundary and Excitation Module Script Commands
- Field Overlays Module Script Commands
- Mesh Operations Module Script Commands
- Optimetrics Module Script Commands
- Radiation Module Script Commands
- Reduce Matrix Module Script Commands
- Solutions Module Script Commands

## Example Script Opening

Combining the above objects, a script in Iron Python could begin like the following:

```
oAnsoftApp = CreateObject("Ansoft.ElectronicsDesktop")
oDesktop = oAnsoftApp.GetAppDesktop()
oProject = oDesktop.SetActiveProject("Project1")
oDesign = oProject.SetActiveDesign("Design1")
oEditor = oDesign.SetActiveEditor("3D Modeler")
oModule = oDesign.GetModule("BoundarySetup")
```

## GetActiveProject and GetActiveDesign for Wider Use

The sample script above only works for "Design1" within "Project1". To create a script that is usable for any open project, you can use one or both of `GetActiveProject` and `GetActiveDesign`.

In IronPython:

```
oProject = oDesktop.GetActiveProject()  
  
oDesign = oProject.GetActiveDesign()
```

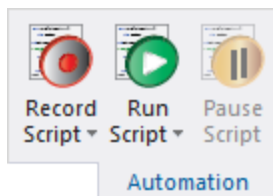
## Running a Script

Electronics Desktop scripts can be run from within the software or from the command line.

### Within Electronics Desktop

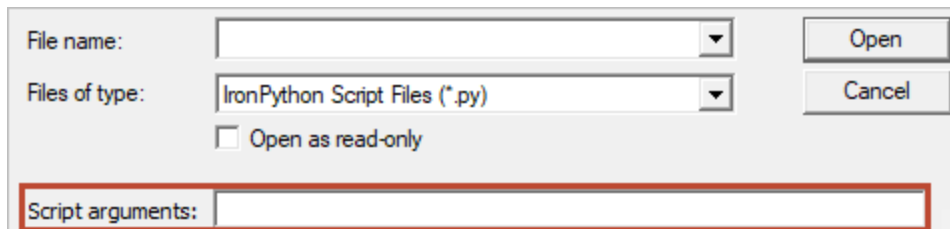
To run scripts in Electronics Desktop:

1. Click **Tools > Run Script**, or select the **Automation** tab and click the **Run Script** icon:



The **Run Script** file browser appears.

2. Use the file browser to locate the script file (\*.py).
3. If desired, type script arguments in the Script Arguments field:



4. Click **Open**.

Electronics Desktop executes the script.

While script execution is in progress, the **Run Script** button transforms into a **Stop Script** button. Click **Stop Script** to stop the script execution.

To temporarily pause a running script, click **Pause Script**. This button transforms into a **Resume Script** button, which you can click to resume script execution.

### From the Command Line

To run a script from a command line, add the `-runscriptandexit` or `-runscript` argument to the Electronics Desktop command line syntax.

To use script arguments, add the `-scriptargs` parameter and specify the arguments. For example:

```
ansyedt.exe -scriptargs "hello there"
```

The command line parameter following `-scriptargs` is passed without modification as a single string in the `ScriptArgument` python variable.

For more information about running a script from the command line, consult the HFSS 3D Layout help topic "Running Ansys Electronics Desktop from the Command Line".

### Recording a Script

Electronics Desktop can record a script based on UI actions and save this script in Python (\*.py) format.

Scripts can be saved to an [external file](#), or [to the project](#).

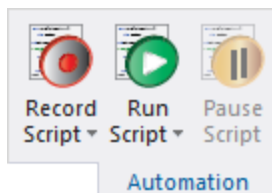
#### Important:

When you record a script, every subsequent action you take is recorded. You must manually stop recording.

### Recording a Script to File

To record a script to file:

1. Click **Tools > Record Script to File**, or select the **Automation** tab and click the **Record Script** icon:



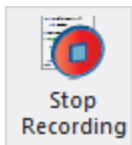
A **Save As** file browser appears.

2. Navigate to the location where you want to save the script.
3. In the **File Name** field, type a name for the script file.



4. Click **Save**.

The **Record Script** button transforms into a **Stop Recording** button, and Electronics Desktop begins recording your actions.



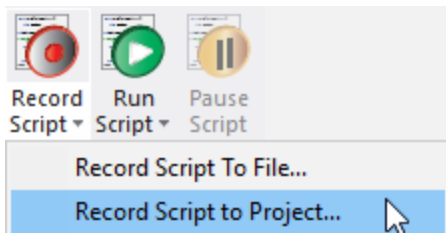
5. Perform the steps you want to record.
6. When you have finished recording the script, click **Stop Recording**, or select **Tools > Stop Script Recording**.

The recorded script is saved to the folder you specified.

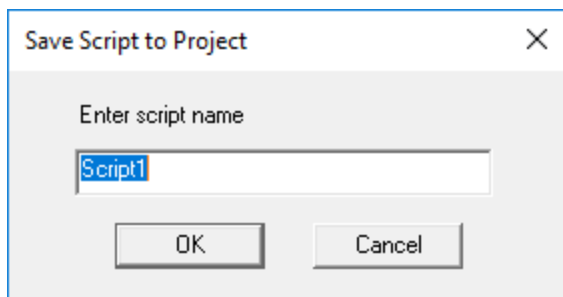
### Recording a Script to a Project

To record a script to a project:

1. Click **Tools > Record Script to Project**, or select the **Automation** tab and use the **Record Script** drop-down menu to select **Record Script to Project**.



The **Save Script to Project** dialog box appears:



2. Enter a name for the script in the text box, then click **OK**.

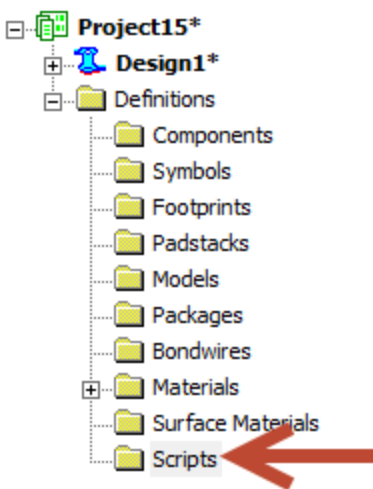
3. Perform the steps you want to record.
4. When you have finished, click **Stop Recording**, or select **Tools > Stop Script Recording**.

The recorded script is saved to *scriptname.py* in the Scripts library and can be accessed from the Project Manager. See: [Working with Project Scripts](#).

## Working with Project Scripts

Scripts can be [recorded to a project](#).

Once a script has been recorded to the project, you can manage it in the **Project Manager** from the **Definitions** folder:



Individual scripts appear in this folder. Right-click a script to edit or run it:



You can also run project scripts from the **Automation** tab by selecting **Run Script > Project Scripts > [Script Name]**.

**Note:**

Project scripts are stored in the project scripts library. Refer to the topic "Managing Library Contents" for information on working with libraries.

## Executing a Script from Within a Script

Electronics Desktop provides a script command that enables you to launch another script from within the script that is being executed.

In CPython:

```
oDesktop.RunScript (<ScriptName>)
```

If the full path to the script is not specified, Electronics Desktop searches for the specified script in the following locations, in order:

1. Personal Library Directory (PersonalLib)
2. User Library Directory (UserLib)
3. System Library Directory (SysLib)
4. Installation Directory

Each of the library directories can be specified in Electronics Desktop under **Tools > Options > General Options**, on the **Project Options** tab.

## Electronics Desktop Scripting Conventions

A number of scripting conventions exist for Electronics Desktop regarding syntax, arguments, and numerical values.

Consult the following topics:

- [Named Arguments](#)
- [Setting Numerical Values](#)
- [Layout Scripts and the Active Layer](#)
- [Scripts and Locked Layers](#)

### Named Arguments

Many Electronics Desktop script commands use named arguments. The names can appear in three ways:

1. Named data, where name precedes data.

For example:

```
..., "SolveInside:=", true, ...
```

2. Named Array, where name precedes array.

For example:

```
..., "Attributes:=", Array(...),...
```

3. Named Array, where name is inside an array.

For example:

```
..., Array("NAME:Attributes",...),...
```

In the first and second examples, the name is formatted as "<Name> :=". This signals to Electronics Desktop that this is a name for the next argument in the script command. In the third example, the name is formatted as "NAME :<name>" and is the first element of the array.

The names are used both to identify what the data means to you and to inform Electronics Desktop which data is being given. The names must be included or the script will not play back correctly. However, if you are writing a script, you do not need to pass in every piece of data that the command can take. For example, if you are modifying a boundary, the script will be recorded to include every piece of data needed for the boundary, whether or not it was modified. If you are writing a script by hand, you can add only the data that changed and omit anything that you do not want to change. Electronics Desktop will use the names to determine which data you provided.

### IronPython Example

When editing a port excitation, Electronics Desktop records the `Edit` command as follows in IronPython:

```
oModule.Edit("Port1",
[
    "NAME:Port1",
    [
        "NAME:Properties",
        "PortSolver:=", "true",
        "Phase:=", "0deg",
        "Magnitude:=", "2mA",
        "Impedance:=", "500hm",
        "Theta:=", "0deg",
        "Phi:=", "0deg",
        "PostProcess:=", "false",
        "Renormalize:=", "500hm + 0i Ohm",
        "Deembed:=", "0mm",
        "RefToGround:=", "false"
    ],
],
```

```
"Type:=", "EdgePort",  
"IsGapSource:=", true,  
"UpperProbe:=", false,  
"LayoutObject:=", "Port1",  
"Pin:=", "",  
"ReferencePort:=", ""  
]  
)
```

If you only wish to change the magnitude, you can leave out the other data arguments when manually writing a script:

```
oModule.Edit("Port1",  
  ["NAME:Port1",  
    ["Magnitude:=", "1mA"]  
  ]  
)
```

### Setting Numerical Values

For script arguments that expect a number, the following options are possible:

- Pass in the number directly.

```
oModule.EditVoltage('Voltage1', ['NAME:Voltage1', 'Voltage:=',  
3.5])
```

- Pass in a string containing the number with units.

```
oModule.EditVoltage('Voltage1', ['NAME:Voltage1', 'Voltage:=',  
'3.5V'])
```

- Pass in a variable name.

```
var = 3.5  
  
oModule.EditVoltage('Voltage1', ['NAME:Voltage1', 'Voltage:=',  
var])
```

### Layout Scripts and the Active Layer

A design's active layer is the layer that is used for object creation and placement during adding operations in the user interface. Adding operations include paste and placement of instances, as well as object creation. Usually there is an active layer, but it is not required and cannot be assumed. Adding operations are responsible for ensuring that the active layer exists and meets

any particular requirements (such as layer type) for the operation. Adding operations may change the active layer to a different layer that meets requirements. If the active layer is changed, Electronics Desktop generates an alert. If no layer is available to be active, the operation is not done.

The active layer is not used during script adding operations. Script adding operations are responsible for ensuring that the specified layer exists and meets the particular requirements (such as layer type) for the operation. If there is a problem with using the specified layer, the operation is not done. The active layer is always visible and selectable. These attributes are reset, if needed, when a layer is made active. The current active layer is indicated by a combo box display in the toolbar. The list for the combo box contains all layers that may be set active.

The active text style is related to the active layer. If there is no active layer, there is no active text style. Objects on the active layer have priority during snapping.

### Scripts and Locked Layers

The locked attribute of a layer is defined to mean that you may not edit, delete, or add objects on the layer, either directly or with scripts (i.e., scripts run on layout or footprint definitions). This includes not being able to change properties of objects on the layer. Note, however, that parameter changes can alter objects on locked layers.

The locked attribute of a layer is configurable using script commands and is user-editable via the **Edit Layers Dialog** in the Layout Editor.

## PyAEDT (Beta)

PyAEDT is a Python library that interacts with the AEDT API to make scripting simpler for the end user. It supports all AEDT 3D products (HFSS, Icepak, Maxwell 3D, and Q3D Extractor), 2D tools, Ansys Mechanical, EMIT, Circuit tools like Nexxim, system simulation tools like Twin Builder, and layout tools like HFSS 3D Layout and EDB. Additionally, it enables the end user to have a CPython interface with AEDT. Its class and method structures simplify operation for the end user, enabling more Pythonic code while reusing information as much as possible across the various APIs.

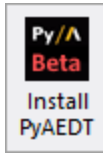
Documentation for PyAEDT can be found online at: <https://aedt.docs.pyansys.com/version/stable/>

Installing PyAEDT adds three items to the **Tools > Toolkit > PersonalLib** menu and to the **Automation** tab:

- **Console** – launches the PyAEDT console.
- **Jupyter Notebook** – launches Jupyter Notebook (a computational notebook) in an internet browser.
- **Run PyAEDT Script** – launches a file browser allowing you to select a Python script to run via PyAEDT.

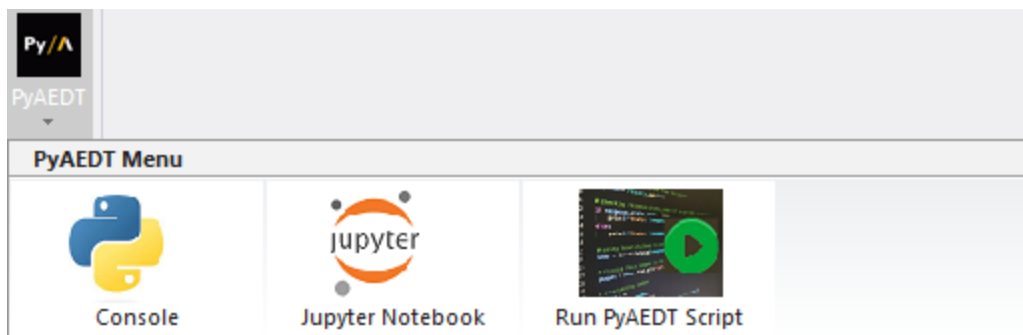
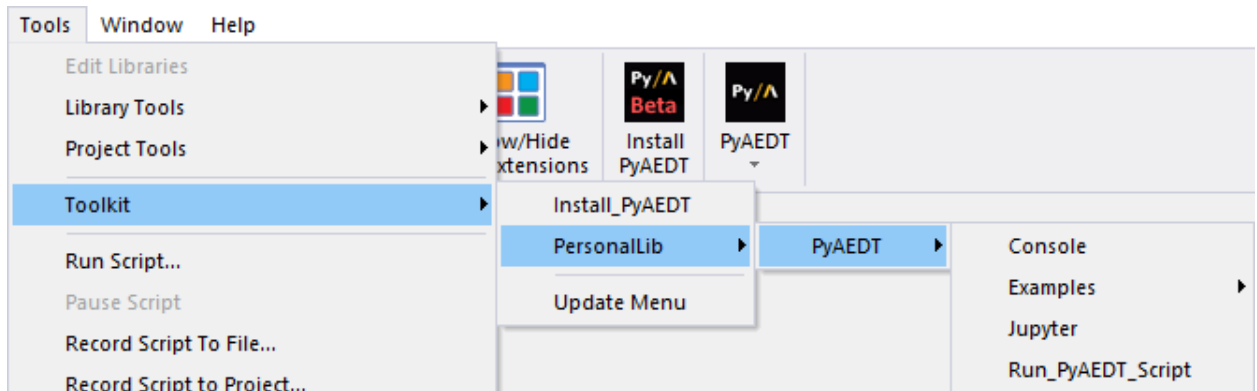
To install PyAEDT:

- From the **Automation** tab, click **Install PyAEDT**.



A web browser launches, and takes you to detailed installation instructions.

When installation is complete, the **Tools > Toolkit > PersonalLib** menu and the **Automation** tab update to display PyAEDT menu options:



## 2 - Object-Oriented Property Scripting

Object-oriented scripting enhances scripting in AEDT by allowing object-oriented access to retrieve or modify object properties. The primary gain is the ease with which properties of various existing objects in an AEDT project or design can be read, modified, and set. This feature also allows for much less code to be written to access object properties and enables much more readable code for users, avoiding complex array input.

This topic covers the following:

- Logic/syntax
- Basic attributes of project and design properties
- Example Scripts

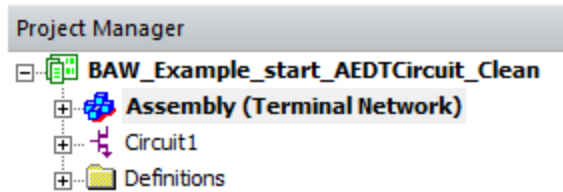
### Object-Oriented Scripting

There are five basic functions in object-oriented scripting for retrieving and setting properties:

1. GetChildNames()
2. GetChildObjects()
3. GetPropNames()
4. GetPropValue()
5. SetPropValue()

At a high level, use GetChildNames() to determine what object instances exist for a given object. An example is shown below to demonstrate for an AEDT Project shown that has two Designs.





If you open the Command Window that allows for executing python code, you first define the Project Object, oProject, and the Design Object, oDesign, as shown:

```
>>> oProject = oDesktop.GetActiveProject()
>>> oDesign = oProject.GetActiveDesign()
```

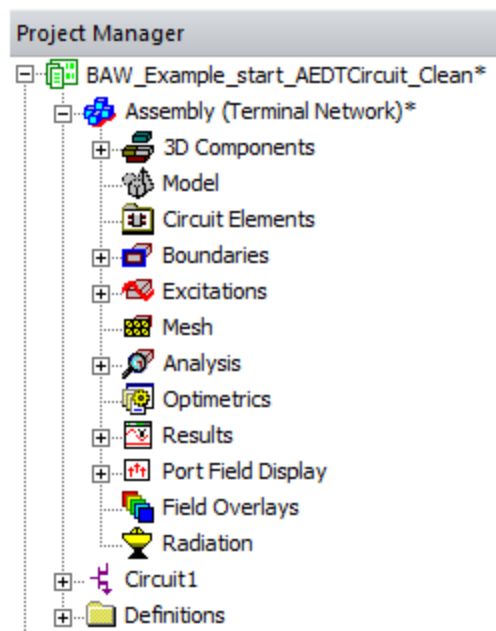
Once the objects have been defined, you can use GetChildNames() to learn what object instances exist for each. As an example, observe the Child Names of oProject, and you see a list of the Designs in the AEDT Project, per the GUI.

```
>>> oProject.GetChildNames()
['Assembly', 'Circuit1']
```

As another example, retrieve the names of the Object Instances available in oDesign, to see the various objects associated with a Design setup:

```
>>> oDesign.GetChildNames()  
['Boundaries', 'Excitations', 'Circuit Elements', 'Model', 'Mesh', 'Analysis', 'Optimetrics', 'Port  
Field Display', 'Field Overlays', 'Radiation', 'Results', '3D Modeler']
```

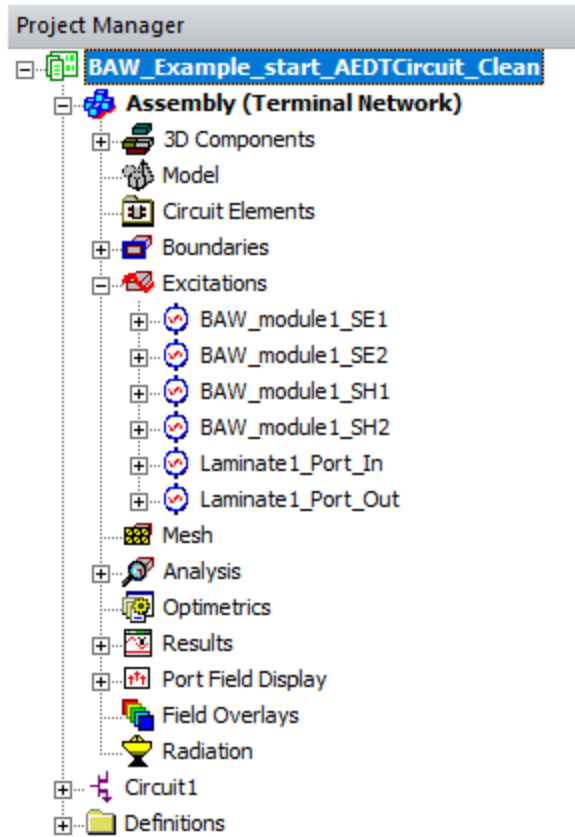
These names are what you would expect based on the Project Manager Layout:



In the **Project Manager** above, any object that has the '+' symbol is populated with children that you can query. Once you know the name of the object you want, you can instance it via the `GetChildObject()` command. This defines the instance to the desired object. As an example, set an instance for the Excitations:

```
>>> oExcitations = oDesign.GetChildObject('Excitations')
```

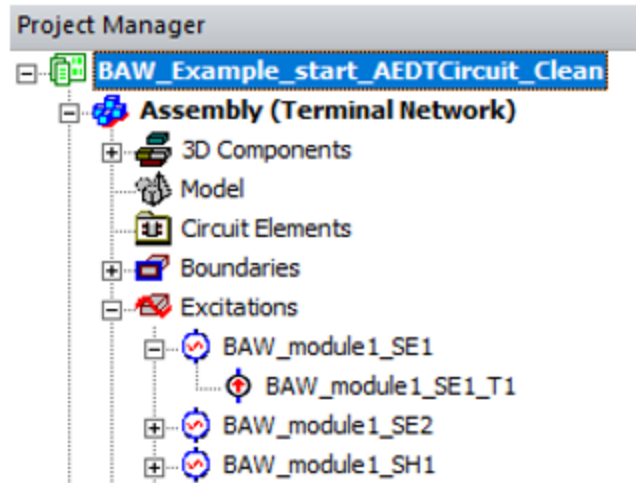
You now have an object, oExcitations defined to be the oDesign Child Object 'Excitations'. What does this mean? If you expand the Excitations dialogue in the Project Manager, you expect that the Child Names of this object would be the names of the Excitations as defined, in this case six ports:



```
>>> oExcitations.GetChildNames()  
['Laminat1_Port_In', 'Laminat1_Port_Out', 'BAW_module1_SE1', 'BAW_module1_SE2', 'BAW_module1_SH1',  
'BAW module1 SH2']
```

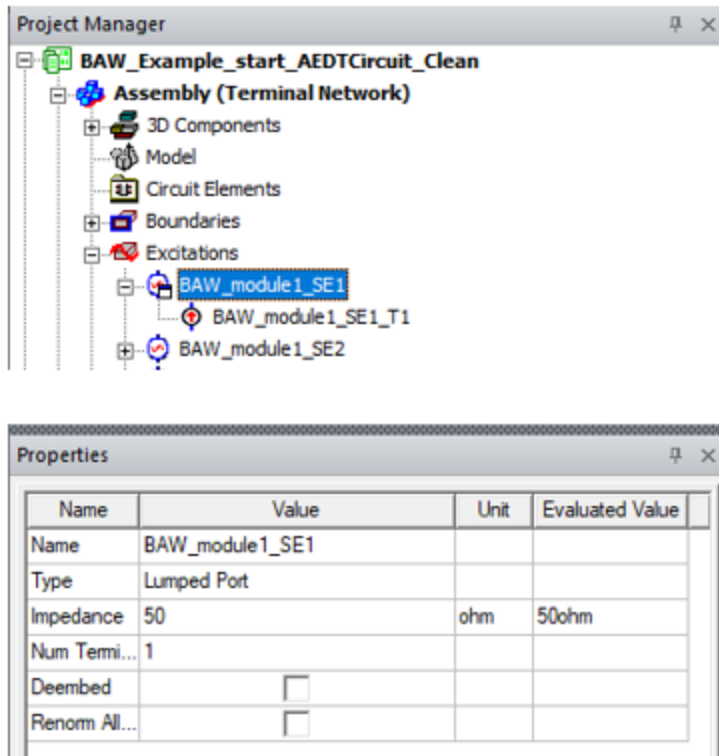
There is clear logic to the Object Child Names as the children of the oExcitations object as the ports that have been defined in HFSS. Looking at the Project tree can help you to conceive and retrieve desired information.

Expand the first port to see its expected Child Object, its Terminal, in the **Project Manager** Window:



Through scripting, first define the Port Object (in this example, oPort) using the 'GetChildObject()' command for the first port, 'BAW\_module1\_SE1.' Then determine its Object Child Name, the terminal definition:

```
>>> oPort = oExcitations.GetChildObject('BAW_module1_SE1')
>>> oPort.GetChildNames()
['BAW_module1_SE1_T1']
```



```
>>> oPort.GetPropNames()  
['Name', 'Type', 'Impedance', 'Num Terminals', 'Deembed', 'Renorm All Terminals']
```

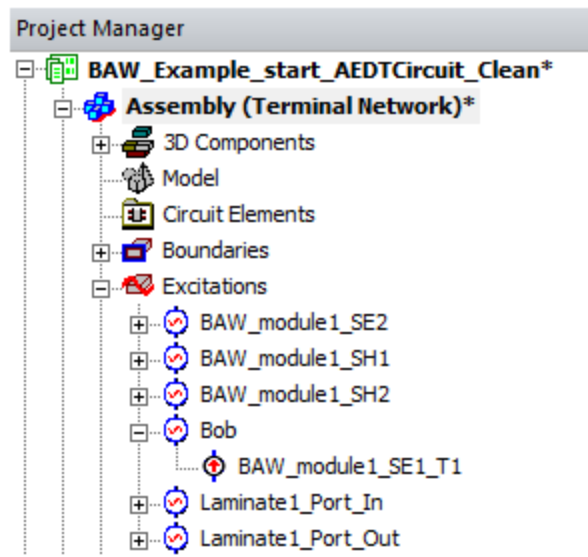
Once you identify the desired object and you know the desired property, you can access the value via `GetPropValue()`. For example, if you want to retrieve the name of the object `oPort`:

```
>>> oPort.GetPropValue('Name')  
'BAW_module1_SE1'
```

To change the value of the property, use the `SetPropValue()` function. The arguments for this function are (*Property Name*, *New Value*). For example, to change the name of the port to 'Bob':

```
>>> oPort.SetPropValue('Name', 'Bob')  
True
```

This function returns a Boolean 'True' if successful. The Project Manager window updates accordingly:



This approach for retrieving and setting properties is general and can be used for many aspects of an Ansys Electronics Desktop simulation. This Object-Oriented method of property identification and modification operates only on existing objects. Object-Oriented scripting cannot create new instances; you must revert to the functions in a given Module to do that. Not all Children of a given object may be accessible via the GetChildNames() command just yet. An example is given for Material property modification later in this App Note. However, if you need specific objects you can reference details in the Scripting Help or reach out to an Application Engineer.

## Material Properties and Examples

This section discusses the material properties and how to access and modify them. Because materials are globally defined, the objects are children of the Project, oProject, as shown below:



```
>>> oProject = oDesktop.GetActiveProject()
>>> oMaterials = oProject.GetChildObject('Materials')
>>> oMaterials.GetChildNames()
['vacuum', 'Cap_Mat', 'Outline_Mat', 'SolderMask_Mat', 'copper', 'pec']
```

All materials with a Project Definition, or assigned to an object, in the Project are accessible. For example, assume you want to see the conductivity of 'copper.' Follow the same flow as in the previous section:

```
>>> oCopper = oMaterials.GetChildObject('copper')
>>> oCopper.GetPropNames()
['Coordinate System Type', 'Coordinate System Type/Choices', 'Relative Permittivity Type', 'Relative Permittivity Type/Choices', 'Relative Permittivity', 'Relative Permeability Type', 'Relative Permeability Type/Choices', 'Relative Permeability', 'Bulk Conductivity Type', 'Bulk Conductivity Type/Choices', 'Bulk Conductivity', 'Dielectric Loss Tangent Type', 'Dielectric Loss Tangent Type/Choices', 'Dielectric Loss Tangent', 'Magnetic Loss Tangent Type', 'Magnetic Loss Tangent Type/Choices', 'Magnetic Loss Tangent', 'Electric Coercivity Type', 'Electric Coercivity Magnitude', 'Magnetic Coercivity Type', 'Magnetic Coercivity Magnitude', 'Thermal Conductivity Type', 'Thermal Conductivity Type/Choices', 'Thermal Conductivity', 'Magnetic Saturation Type', 'Magnetic Saturation', 'Lande G Factor Type', 'Lande G Factor', 'Delta H Type', 'Delta H', '- Measured Frequency Type', '- Measured Frequency', 'Core Loss Model', 'Core Loss Model/Choices', 'Mass Density Type', 'Mass Density', 'Composition', 'Composition/Choices', 'Specific Heat Type', 'Specific Heat', 'Young's Modulus Type', 'Young's Modulus Type/Choices', 'Young's Modulus', 'Poisson's Ratio Type', 'Poisson's Ratio Type/Choices', 'Poisson's Ratio', 'Thermal Expansion Coefficient Type', 'Thermal Expansion Coefficient Type/Choices', 'Thermal Expansion Coefficient', 'Magnetostriiction Type', 'Inverse Magnetostriiction Type', 'Thermal Material Type', 'Thermal Material Type/Choices', 'Solar Behavior Type', 'Solar Behavior Type/Choices', 'Solar Behavior']
```

The Material Property of interest is "Bulk Conductivity." So you create a "Cond" object to store the value and use the GetPropValue function to obtain it. Then name the Cond object to see the value:

```
>>> Cond = oCopper.GetPropValue('Bulk Conductivity')
>>> Cond
'58000000'
```

To change the conductivity, use the SetPropValue() function as shown below:

```
>>> oCopper.SetPropValue('Bulk Conductivity', '100')
True
>>> NewCond = oCopper.GetPropValue('Bulk Conductivity')
>>> NewCond
'100'
```

## Body Properties and Modification

The following example shows how to retrieve the properties of a Body in the model, in this case a Region object. Once you identify the desired property, you can modify it as needed.

```
>>> oModel = oDesign.GetChildObject('3D Modeler')
>>> oModel.GetChildNames()
['RadBox_Region_1']
>>> oRegion = oModel.GetChildObject('RadBox_Region_1')
>>> oRegion.GetPropNames()
['Name', 'Material', 'Solve Inside', 'Orientation', 'Orientation/Choices', 'Model', 'Group', 'Display
Wireframe', 'Material Appearance', 'Color', 'Color/Red', 'Color/Green', 'Color/Blue', 'Transparent']
```

## Retrieving Variables

Retrieving defined variables in a Design or Project is a common effort for automation. There are two types of variables, Design and Project. Project variables are preceded with a '\$' symbol and are retrieved in the Project object as it is globally defined to all Designs. Design variables do not have any preceding symbols and are retrieved in the Design object as their scope is limited to a given Design. The following example demonstrates the retrieval of Project Variable names and values, and then Design variable names and values.:

```
>>> oProjVar = oProject.GetChildObject("Variables")
>>> oProjVar.GetPropNames()
['$test']
>>> oProjVar.GetPropValue('$test')
'0'
>>> oDesVar = oDesign.GetChildObject("Variables")
>>> oDesVar.GetPropNames()
['test']
>>> oDesVar.GetPropValue('test')
'0'
```

## Retrieve Datasets and Values

The GetChildObject, GetChildTypes and GetChildNames functions operate on the oDesktop objects. This allows you to retrieve and view datasets and values. The dataset script wrapper store all values internally in SI units, and converts them back to user-supplied units when you request non-SI property values. For example, if you assigned a dataset to the example OptimTee project in HFSS, you could use these functions in the command window:

```
>>>oDesktop.GetChildTypes()

['Projects']

>>>oDesktop.GetChildNames()

['OptimTee']

>>>arrProjectNames = oDesktop.GetChildNames()

>>>tp = oDesktop.GetChildObject('OptimTee')

>>>tp.GetChildTypes()
```

```
['Design', 'Project Data']
>>>tp.GetChildNames('Project Data')
['Variables', 'Materials', 'Surface Materials', 'Datasets']
>>>ds = tp.GetChildObject('datasets')
>>>ds.GetChildNames()
['$ds1']
>>>ds1=ds.GetChildObject('$ds1')
>>>ds1.GetPropValue('[:,:]')
[[1.0, 4.0], [2.0, 5.0], [3.0, 6.0]]
>>>ds1.GetPropSIValue()
[[1.0, 4.0], [2.0, 5.0], [3.0, 6.0]]
>>>ds1.DimUnits
>>>ds1.DimUnits = ['mm','mm']
>>>ds1.DimUnits
['mm', 'mm']
>>>ds1.GetPropSIValue()
[[0.001, 0.0040000000000000001], [0.002, 0.0050000000000000001], [0.0030000000000000001,
0.0060000000000000001]]
>>>ds1.GetPropValue('[:,:]')
[[1.0, 4.0], [2.0, 5.0], [3.0, 6.0]]
```

## GetSolutionData API

Many users want to use scripts to extract solution data from Ansys Electronics Desktop for custom Post Processing. Scripting includes a new method to do this without having to export data to a file and then re-import it for use in a script. The new function is accessible via the “ReportSetup” Module. The function call is “GetSolutionDataPerVariation()”. A code snippet to extract Terminal S Parameter data is shown:

```
8  oModule=.oDesign.GetModule("ReportSetup")
9  Results=.oModule.GetSolutionDataPerVariation("Terminal.Solution.Data",.Setup1.Sweep1,
10  [
11  ..... "Domain:=",.Sweep"
12  ..... ],
13  [
14  ..... "Freq:=",.["All"]
15  ..... ],
16  [
17  ..... "dB(St(Terminal_1,Terminal_1))"
18  ..... ]
19  ##.Get.Dependent.and.Independent.Variable.data.for.Nominal.Variation
20  NominalData=.Results[0]
21  ##.Get.Independent.Variable.Data
22  ##.For.second.argument,.if.pass.True.then.data.is.in.SI.Units
23  ##.if.pass.False.then.data.is.in.default.scale.units.instead.of.SI
24  SweepValues=.NominalData.GetSweepValues("Freq",.True)
25  ##.Get.Dependent.Variable.DataValues
26  ##.Note:.Can.pass.any.'Y.Component'.Name
27  DataValues=.NominalData.GetRealDataValues("dB(St(Terminal_1))")
```

The above code shows how you can extract the Dependent and Independent data to variables for easy manipulation. For more information on other functions available for this, see [GetSolutionDataPerVariation](#).

## Summary

Scripting has been advancing in Ansys Electronics Desktop to better allow you to customize and automate their repetitive or complex simulations. The ability to easily retrieve and set property values via the Object-Oriented scripting allows for ease of both writing and

reading. The ability to extract solution data within a script execution is a new functionality that markedly enables more advanced post processing.

Object oriented property scripting presents an easy to use, intuitive and object oriented representation of the data model. The framework supports query of objects and their properties including the edits of the data model in an object oriented fashion. With the new scripting framework, data exposure is intuitive and provides maximum coverage.

Each exposed script object supports the following COM functions:

- **GetName**
  - Return name of the object as text string
  - e.g. name of a design, solve setup, boundary, etc
- **GetChildTypes**
  - An object can have different types of children.
  - Return array of text string. Can be empty if the object's children are NOT categorized into different types.

For example, a design object has 3 children types. The following examples show how the commands run in the **Tools > Open Command Window** for IronPython.

```
>>> design.GetChildTypes()  
  
['Module', 'Editor', 'Design Data']
```

- **GetChildNames**
  - Input: [String – Type]. Default = “Module” and “Editor” for design script object. ‘All’ for other script objects.
  - Return an array of immediate children's names, of a given type if specified

For example, a Mechanical design object has these children.

```
>>> design.GetChildNames()  
  
['Boundaries', 'Excitations', 'Optimetrics', 'Results', '3D Modeler']
```

Four of the children are of “Module” type

```
>>> design.GetChildNames("module")
```

```
['Boundaries', 'Excitations', 'Optimetrics', 'Results']
```

- **GetChildObject**

- Input: String -- Object path. The path may include multiple generations.
- Return the child object if found

For example,

```
>>> d = project.GetChildObject("hfss")
>>> d.GetChildObject("3d modeler").GetChildNames()
['Box1', 'Box1_1', 'Box1_1_1']
>>> project.GetChildObject("hfss/3d modeler").GetChildNames()
['Box1', 'Box1_1', 'Box1_1_1']
```

- **GetPropNames**

- Input: [BOOL - IncludeReadOnly] -- default to true
- Return an array of the object's properties

For example,

```
>>> geom = project.GetChildObject("hfss/3d modeler").GetChildObject("Box1")
>>> geom.GetPropNames()
['Name', 'Material', 'Material/SIValue', 'Material/EvaluatedValue', 'Solve Inside', 'Orientation', 'Orientation/Choices', 'Model', 'Group', 'Display Wireframe', 'Material Appearance', 'Color', 'Color/Red', 'Color/Green', 'Color/Blue', 'Transparent']
```

- **GetPropValue**

- Input: String – Property Path. The path may include multiple generations.
- Return the property value as VARIANT

For example,

```
>>> geom.GetPropValue("material")
'vacuum'
>>> geom.GetPropValue("xsize")
'3mm'
>>> op.GetPropValue("attach to original object")
False
```

- **SetPropValue**

- Input: String – Property Path. The path may include multiple generations.
- Input: String – Data. New value of the property.
- Return -- True if property data is updated successfully. False if failed to assign the new value.

For example,

```
>>> geom.SetPropValue("model", False)
>>> boxcmd.SetPropValue("ysize", "4mm")
```

- **GetPropEvaluatedValue (<PropName>)**

For example,

```
oVar = oDesign.GetChildObject(" Variables/var")
oVar.GetPropEvaluatedValue()
```

- **GetPropSIValue (<PropName>)**

For example,

```
oCreateBox = oDesign.GetChildObject("3D Modeler/Box1/CreateBox:1")
oCreateBox.GetPropValue("xSize")
```



```
return "length / 2"  
  
oCreateBox.GetPropEvaluatedValue("xSize")  
  
return '0.4mm'  
  
oCreateBox.GetPropSIValue("xSize")  
  
return 0.0004
```

## Additional Details Specific to AEDT Solvers

“3D Modeler” of 3D products and “Machine” of RMXprt are exposed as “Editor” type children of a design script object.

“Variables” and “Design Settings” are exposed as “Design Data” type children of a design script object.

The following “Module” types are exposed as “Module” type children of a design script object.

### HFSS

- Boundaries, Excitations, Circuit Elements, Hybrid Regions, Analysis, Radiation, Field Overlays, Optimetrics, Results

### HFSS 3D Layout

- Boundaries, Excitations, Circuit Elements, Analysis, Radiation, Field Overlays, Optimetrics, Results

### Maxwell 3D/2D

- Boundaries, Excitations, Analysis, Field Overlays, Optimetrics, Results

### RMxpert

- Analysis, Field Overlays, Optimetrics, Results

### Q3D

- Boundaries, Nets, Analysis, Optimetrics,

## Q2D

- Boundaries, Conductors, Analysis, Field Overlays, Optimetrics,

## Icepak

- Thermal, Monitor, Mesh, Analysis, Field Overlays, Optimetrics, Results

## Mechanical

- Boundaries, Excitations, Analysis, Field Overlays, Optimetrics, Results

## Circuit

- Optimetrics, Results

## Circuit Netlist

- Results

## EMIT

- Coupling

## Simplorer/Twin Builder

- Analysis, Optimetrics, Results

## Additional details on Boundaries/Excitations

Each design type presents its boundaries/excitations data in the project tree as different groups. For example, an HFSS design has Boundaries, Excitations, Circuit Elements and Hybrid Regions while a Icepak design has just a “Thermal” project tree folder.

These module script objects do not have properties

```
>>> project.GetChildObject("icepak/thermal").GetPropNames()
```

```
[]
```

GetChildTypes of these module script objects returns the types of its immediate children

```
>>> d = p.GetChildObject("q2d")
>>> d.GetChildObject("conductors").GetChildTypes()
['NonIdealGround', 'SignalLine']
```

**GetChildNames** of these module object returns its immediate children

```
>>> p.GetChildObject("icepak/thermal").GetChildNames()
['Source1', 'Resistance1', 'ConductingPlate1', 'Source2', 'Resistance2', 'ConductingPlate2',
'Source3', 'Resistance3', 'ConductingPlate3']
```

**GetChildNames** can be invoked with a “type” and the returns will be filtered by that given type.

```
>>> p.GetChildObject("icepak/thermal").GetChildNames("resistance")
['Resistance1', 'Resistance2', 'Resistance3']
```

**Children of a module object are scriptable objects and have properties.**

```
>>> port = p.GetChildObject("hfss/excitations/1")
>>> port.GetPropNames(False)
['Name', 'Deembed', 'Deembed Dist', 'Renorm All Terminals']
```

**You can query/edit these properties**

```
>>> port.GetPropValue("deembed")
False
>>> port.SetPropValue("deembed", True)
True
>>> port.GetPropValue("deembed")
True
```

A boundary/excitation script object can also have children. For example, HFSS terminal is a child of its port. Q3D source/sink can be children of a net.

```
>>> port.GetChildNames()
['Box1_T1']
>>> port.GetChildTypes()
['Terminal']
>>> p.GetChildObject("q3d/nets/s2").GetChildNames()
['Source2', 'Sink2']
>>> p.GetChildObject("q3d/nets/s2").GetChildTypes()
['Sink', 'Source']
```

## 3D component encapsulation

These script interfaces are compliant with encapsulation. For example,

- Design.GetChildObject("boundaries").GetChildNames() will not return component boundaries
- SetPropValues of component excitations can only be used to edit post processing settings such as 'Deembed', 'Deembed Dist' of a HFSS port.

## Additional details on Solve setup

All solve setups are children of the "Analysis" script object. This parent script object is also of the type "Module".

```
>>> d = oDesktop.GetActiveProject().GetChildObject("hfss")
>>> d.GetChildNames()
['Boundaries', 'Excitations', 'Hybrid Regions', 'Circuit Elements', 'Analysis', 'Optimetrics',
'RadField', 'Results', '3D Modeler']
>>> setups = d.GetChildObject("analysis")
```

This module script object has no property

```
>>> setups.GetPropNames ()  
  
[]
```

The children of this module script object in a 3D design is not categorized into different types because the solve setup type is one-to-one to the solution type of a 3D design.

```
>>> setups.GetChildTypes ()  
  
[]
```

The children of this module script object in a 3DLayout and Simplorer/TwinBuilder design is categorized into different solve setup types, such as “Transient”, “AC” and “DC” in a Simplorer/TwinBuilder design and “HFSS” and “SIwave” in a 3D layout design.

A solve setup script object can also have children. Children are typically frequency sweeps.

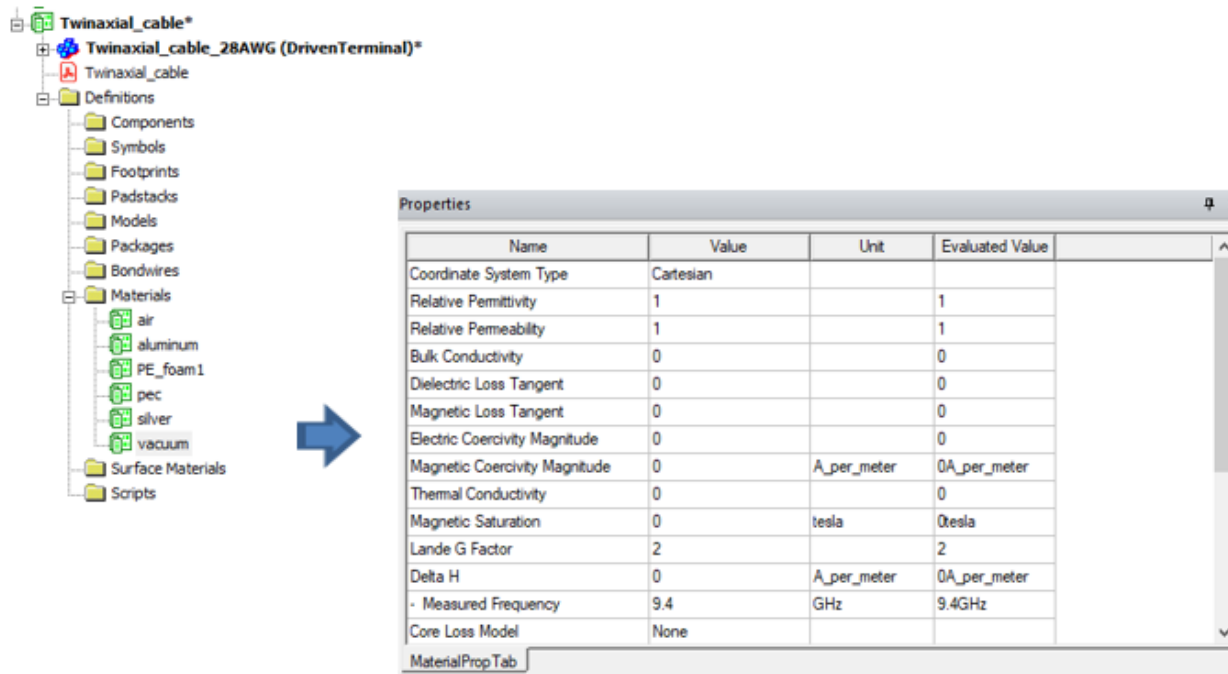
```
>>> setup.GetChildNames ()  
  
['Sweep', 'Sweep1', 'Sweep2']  
  
>>> setup.GetChildTypes ()  
  
['Discrete', 'Interpolating']  
  
>>> sweep1 = setup.GetChildObject("sweep")
```

### Related Topics

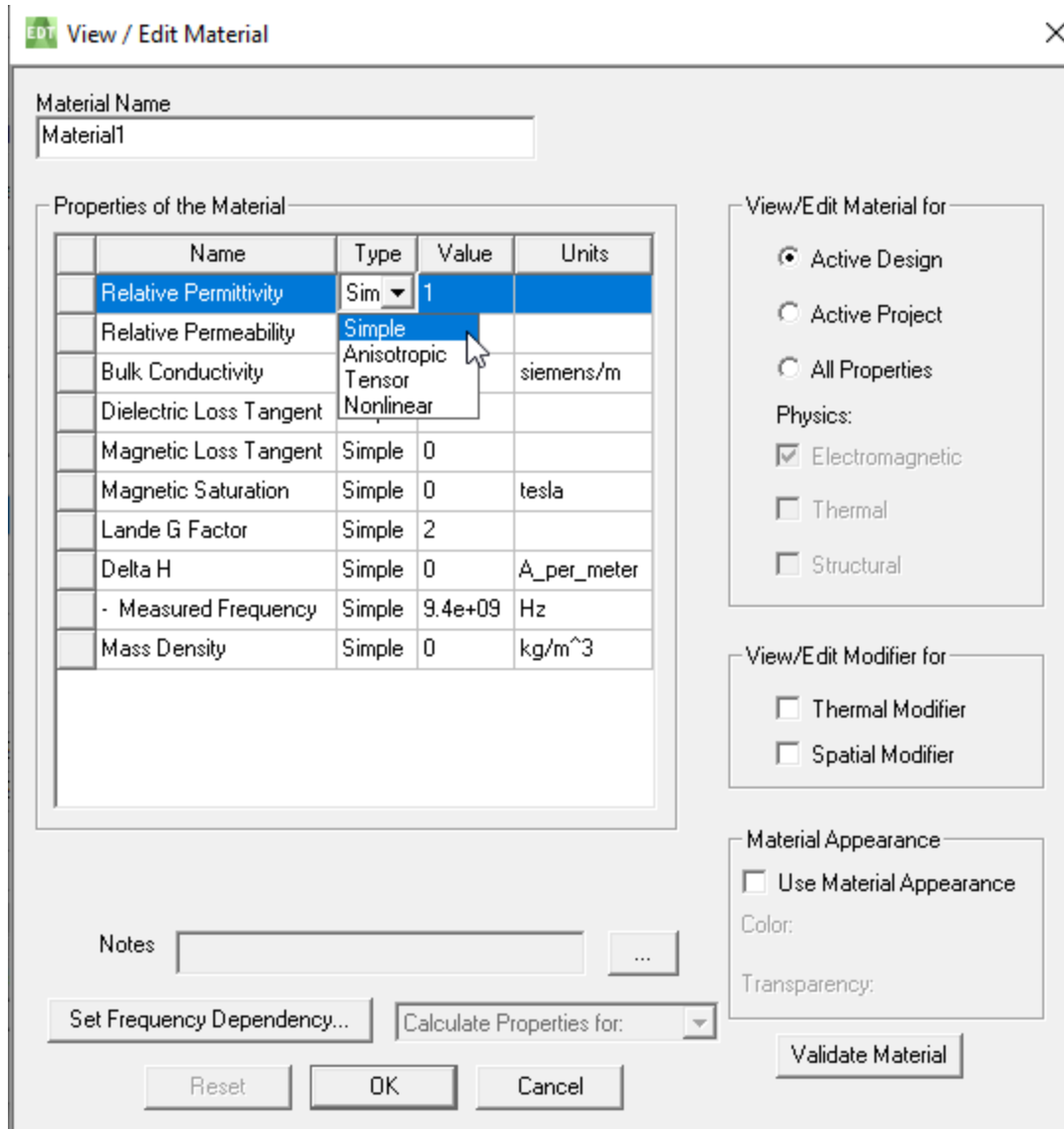
Example: GetPropNames and GetPropValues for Layered Impedance Boundary Script

## Materials Scripting Support

Supported material properties are shown in a Property window for the material item.



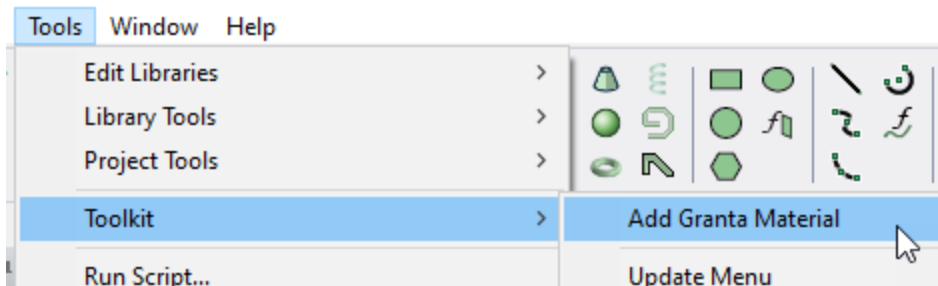
Some Material Properties like Relatively Permittivity may have values assigned as BH Curves or Tensors, as discussed in the Assigning Materials chapter of the online help.



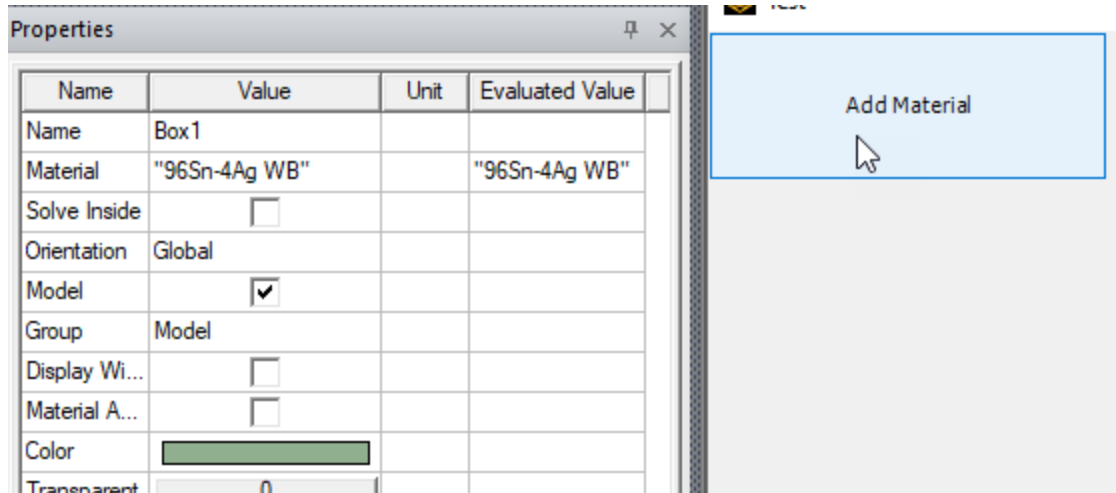
With this feature enabled you can then:

- Get/Set Simple material property
- Get/Set Anisotropic material property
- Get/Set Nonlinear material property
- Get/Set Vector material property
  - Components hide/shown as needed
- Get/Set Tensor material property
- Get/Set Choice material property
- [AddDefinitionFromBlock](#)
- [AddDefiniitonFromLibFile](#)
- [GetExtendedDefinitionObect](#)

A new Toolkit allows you to select materials from the Granta materials gateway, such that project materials will automatically be added when you select a material from the gateway, and that the gateway itself is easily accessed from the materials.







What is not supported:

- Change of property type
- Custom material property, due to its complexity

## Object Oriented Scripting for Materials

Materials are Child objects of the Active Project. In the IronPython command window, you can execute `GetPropNames()` for a specified material as follows:

```
>>> omats = oDesktop.GetActiveProject().GetChildObject("Materials")
>>> omat = omats.GetChildObject("vacuum")
>>> omat.GetPropNames()
```

```
['Coordinate System Type', 'Coordinate System Type/Choices', 'Relative Permeability Type',  
'Relative Permeability Type/Choices', 'Relative Permeability', 'Relative Per-  
meability/SIValue', 'Relative Permeability/EvaluatedValue', 'Bulk Conductivity Type', 'Bulk  
Conductivity Type/Choices', 'Bulk Conductivity', 'Bulk Conductivity/SIValue', 'Bulk Con-  
ductivity/EvaluatedValue', 'Magnetic Coercivity Type', 'Magnetic Coercivity Magnitude', 'Mag-  
netic Coercivity Magnitude/SIValue', 'Magnetic Coercivity Magnitude/EvaluatedValue',  
'Composition', 'Composition/Choices', 'Young's Modulus Type', 'Young's Modulus Type/Choices',  
'Young's Modulus', 'Young's Modulus/SIValue', 'Young's Modulus/EvaluatedValue', 'Poisson's  
Ratio Type', 'Poisson's Ratio Type/Choices', 'Poisson's Ratio', 'Poisson's Ratio/SIValue',  
'Poisson's Ratio/EvaluatedValue']
```

### Examples showing change to material property type:

```
>>> omat.GetPropValue("Relative Permeability Type/Choices")  
  
['Simple', 'Anisotropic', 'Tensor', 'Nonlinear']  
  
>>> omat.GetPropValue("Relative Permeability Type")  
  
'Nonlinear'  
  
>>> omat.SetPropValue("Relative Permeability Type", "Simple")  
  
True  
  
>>> omat.GetPropValue("Relative Permeability Type")  
  
'Simple'  
  
>>> omat.SetPropValue("Relative Permeability", 10)  
  
True
```

### Examples showing change to a vector component value

```
>>> omat.GetPropValue("Magnetic Coercivity Magnitude")  
  
'0A_per_meter'  
  
>>> omat.SetPropValue("Magnetic Coercivity Magnitude", "-1A_per_meter")
```

```
True
```

```
>>> omat.GetPropNames()
```

```
['Coordinate System Type', 'Coordinate System Type/Choices', 'Relative Permeability Type',  
'Relative Permeability Type/Choices', 'Relative Permeability', 'Relative Per-  
meability/SIValue', 'Relative Permeability/EvaluatedValue', 'Bulk Conductivity Type', 'Bulk  
Conductivity Type/Choices', 'Bulk Conductivity', 'Bulk Conductivity/SIValue', 'Bulk Con-  
ductivity/EvaluatedValue', 'Magnetic Coercivity Type', 'Magnetic Coercivity Magnitude', 'Mag-  
netic Coercivity Magnitude/SIValue', 'Magnetic Coercivity Magnitude/EvaluatedValue', 'Magnetic  
Coercivity Components', 'Magnetic Coercivity Components/Component1', 'Magnetic Coercivity Com-  
ponents/Component2', 'Magnetic Coercivity Components/Component3', 'Composition', 'Com-  
position/Choices', '- Stacking Factor Type', '- Stacking Factor', '- Stacking Factor/SIValue',  
'- Stacking Factor/EvaluatedValue', '- Stacking Direction', '- Stacking Direction/Choices',  
"Young's Modulus Type", "Young's Modulus Type/Choices", "Young's Modulus", "Young's Mod-  
ulus/SIValue", "Young's Modulus/EvaluatedValue", "Poisson's Ratio Type", "Poisson's Ratio  
Type/Choices", "Poisson's Ratio", "Poisson's Ratio/SIValue", "Poisson's Ratio/EvaluatedValue"]
```

```
>>> omat.SetPropValue("Magnetic Coercivity Components/Component2", 2)
```

```
True
```

```
>>> omat.GetPropValue("Magnetic Coercivity Components")
```

```
['Component1:=', '2', 'Component2:=', '2', 'Component3:=', '0']
```

## Change choice property value

```
>>> omat.GetPropValue("Composition/Choices")
```

```
['Solid', 'Lamination', 'Litz Wire']
```

```
>>> omat.SetPropValue("Composition", "Lamination")
```

```
True
```

```
>>> omat.GetPropNames()
```

```
[ 'Coordinate System Type', 'Coordinate System Type/Choices', 'Relative Permeability Type',
'Relative Permeability Type/Choices', 'Relative Permeability', 'Relative Per-
meability/SIValue', 'Relative Permeability/EvaluatedValue', 'Bulk Conductivity Type', 'Bulk
Conductivity Type/Choices', 'Bulk Conductivity', 'Bulk Conductivity/SIValue', 'Bulk Con-
ductivity/EvaluatedValue', 'Magnetic Coercivity Type', 'Magnetic Coercivity Magnitude', 'Mag-
netic Coercivity Magnitude/SIValue', 'Magnetic Coercivity Magnitude/EvaluatedValue', 'Magnetic
Coercivity Components', 'Magnetic Coercivity Components/Component1', 'Magnetic Coercivity Com-
ponents/Component2', 'Magnetic Coercivity Components/Component3', 'Composition', 'Com-
position/Choices', '- Stacking Factor Type', '- Stacking Factor', '- Stacking Factor/SIValue',
'- Stacking Factor/EvaluatedValue', '- Stacking Direction', '- Stacking Direction/Choices',
"Young's Modulus Type", "Young's Modulus Type/Choices", "Young's Modulus", "Young's Mod-
ulus/SIValue", "Young's Modulus/EvaluatedValue", "Poisson's Ratio Type", "Poisson's Ratio
Type/Choices", "Poisson's Ratio", "Poisson's Ratio/SIValue", "Poisson's Ratio/EvaluatedValue"]
```

```
>>> omat.SetPropValue("Magnetic Coercivity Components/Component2", 2)
```

```
True
```

```
>>> omat.GetPropValue("Magnetic Coercivity Components")
```

```
['Component1:=', '2', 'Component2:=', '2', 'Component3:=', '0']
```

## Change choice property value

```
>>> omat.GetPropValue("Composition/Choices")
```

```
['Solid', 'Lamination', 'Litz Wire']
```

```
>>> omat.SetPropValue("Composition", "Lamination")
```

```
True
```

```
>>> omat.GetPropNames()
```

```
[ 'Coordinate System Type', 'Coordinate System Type/Choices', 'Relative Permeability Type',
'Relative Permeability Type/Choices', 'Relative Permeability', 'Relative Per-
meability/SIValue', 'Relative Permeability/EvaluatedValue', 'Bulk Conductivity Type', 'Bulk
Conductivity Type/Choices', 'Bulk Conductivity', 'Bulk Conductivity/SIValue', 'Bulk
```

```
Conductivity/EvaluatedValue', 'Magnetic Coercivity Type', 'Magnetic Coercivity Magnitude',  
'Magnetic Coercivity Magnitude/SIValue', 'Magnetic Coercivity Magnitude/EvaluatedValue', 'Mag-  
netic Coercivity Components', 'Magnetic Coercivity Components/Component1', 'Magnetic Coer-  
civity Components/Component2', 'Magnetic Coercivity Components/Component3', 'Composition',  
'Composition/Choices', '- Stacking Factor Type', '- Stacking Factor', '- Stacking Fact-  
or/SIValue', '- Stacking Factor/EvaluatedValue', '- Stacking Direction', '- Stacking Dir-  
ection/Choices', 'Young's Modulus Type', 'Young's Modulus Type/Choices', 'Young's Modulus',  
'Young's Modulus/SIValue', 'Young's Modulus/EvaluatedValue', 'Poisson's Ratio Type', 'Pois-  
son's Ratio Type/Choices', 'Poisson's Ratio', 'Poisson's Ratio/SIValue', 'Poisson's Ratio/E-  
valuatedValue']
```

```
>>>
```

## Property Script Commands

Property script commands allow you to navigate through all objects and properties in a project. You can get and set all properties for all objects in the Project tree with simple data types.

Property Object is the base class defined for all script objects that support the properties Get and Set.

`GetName()`

- Returns the name of the object.

`GetChildTypes()`

- An object may have different types of children. For example, a design may have variables, modules, and editors.
- Returns an array of text strings; may be empty if the children are not divided into different types.

`GetChildNames(<type>)`

- <type> – Child type name. By default, returns all children names for all types.
- Returns an array of immediate children names, belonging to a type if specified.

`GetChildObject(<objPath>)`

- <objPath> – A child object path; can contain multiple generations (for example, designObject/moduleObject/SetupObject).
- Returns a child property object if the object is found.

GetPropNames (<bIncludeReadOnly>)

- <bIncludeReadOnly> – Optional; defaults to true. True includes read-only properties; False excludes read-only properties.
- Returns an array of the object's property names.

GetPropValue (<propertyPath>)

- <propertyPath> – The property's path; may be a child object's path appended with a property name (for example, TeeModel/Offset/SIValue).
- Returns the property value if found. Otherwise causes script error.

SetPropValue (<propertyPath>, <data>)

- <propertyPath> – The property's path; may be a child object's path appended with a property name (for example, TeeModel/Offset/SIValue).
- <data> – New data; type depends on property type.
- Returns True if updated successfully; False if new data is invalid.

For a detailed summary of how Property script commands are used in a range of contexts, including Variable objects, see: [Object Script Property Function Summary](#). Additional examples for these commands are listed under [Project Objects](#), [Design Objects](#), [3D Modeler](#), [Optimetrics](#), [Radiation Module](#) and [Reporter](#).

#### Note:

Older property commands should be executed by the oProject object.

```
oProject = oDesktop.SetActiveProject("Project1")
```

```
oProject.CommandName <args>
```

**Some of the topics covered in this chapter are as follows:**

[Object Script Property Function Summary](#)

[Conventions Used in this Chapter](#)

[ChangeProperty](#)

[GetArrayVariables](#)

[GetProperties](#)

[GetPropertyValue](#)

[GetVariables](#)

[GetVariableValue](#)

[SetPropertyValue](#)

[SetVariableValue](#)

[Example Use of Record Script and Edit Properties](#)

## **Object Script Property Function Summary**

### **Object Path**

The Object path can be used to navigate through objects and properties in an Ansys EM project.

- An Object path consisted of one or multiple Object-ID-Nodes separated by "/" . In the HFSS-Optimtee example, the Optimization Max value of variable "offset" is represented by the path "TeeModel/offset/Optimization/max" or "TeeModel/Variable[offset]/Optimization[max]"
- Object-ID-Node; may exist in the following forms:
  - A simple object name or property name.
  - Type[Name] for object; Tab[name] for property.

- Name[attr1="v1", attr2 = "v2", ...]. When more than one child object have the same name, use attributes to specify the difference.
- ArrayName[index]. For example, in an Optimetric setup with multiple calculations, "Calculation[0]" could be used to identify the first calculation.
- Name beginning with '@' character denoted as a property name, when an object has a child and property with the same name.

## Property Object

The Property Object is the base class defined for all script object that support property Get & Set.

- GetName()
  - Returns the name of the object.
- GetChildTypes()
  - An object may have different type of children. For example, a design may have variables, modules, and editors.
  - Returns array of text strings; may be empty if the children are *not* divided to different types.
- GetChildNames(<type>)
  - <type> – children type name; default returns all children names for all types.
  - Returns an array of immediate children names, belonging to the type if specified.
- GetChildObject(<objPath>)
  - <objPath> – A child object path. The path may include multiple generations, such as (designObject/moduleObj/SetupObject).
  - Returns a child property object if the object found.
- GetPropEvaluatedValue(<propName>)
  - Return the Evaluated-Value for Value-Property and Variable.
  - Return the Property-value as text string for other property types.
- GetPropSIValue(<propName>)
  - Return the SI-Value for Value-Property and Variable.
  - Return NAN for other property type if its value is cannot be converted to a double-floating point value.



- GetPropNames(<*blIncludeReadOnly*>);
  - <*blIncludeReadOnly*> – optional, default to true; True will include read-only properties, False will exclude read-only properties.
  - Returns an array of the object's property names.
- GetPropValue(<*propertyPath*>)
  - <*propertyPath*> – the property's full path. A property name or child object's path appended with a property name, like "TeeModel/Offset/SIValue"
  - Returns the property value if the property is found; otherwise causes script error.
- SetPropValue(<*propertyPath*>, <*data*>)
  - <*propertyPath*> – the property's full path. A property name or child object's path appended with a property name, like "TeeModel/Offset/Value"
  - <*data*> – new data, type is dependent on property type.
  - Returns True if property data is updated successfully; False if the new data is invalid.

## Project Object

Project Object inherited all functions defined in the Property Object. But it doesn't have property, GetPropValue() & SetPropValue() function can be used to set its child object's property.

- GetChildTypes() always return ["Design", "Variable"].
- GetChildNames(type)
 

GetChildNames() & GetChildName("Design") will return all Design names of the project.

GetChildNames("Variable") return all project variable names.
- GetChildObject(objPath)

oDesign = oProject("TeeModel")

oVariable = oProject.GetChildObject("VariableName")

oReport = oProject.GetChildObject("TeeModel/Results/S Parameter Plot 1")

- GetPropNames(bIncludeReadOnly) always return empty array since the project has no property.
- GetPropValue(propertyPath)

```
oProject.GetPropValue("TeeModel/offset") //get the offset variable value in the TeeModel Design  
oProject.GetPropValue("TeeModel/Results/S Parameter Plot 1/Display Type") // Get the report display type.
```

- SetPropValue(propertyPath, newValue)

```
oProject.SetPropValue("TeeModel/offset", "2mm") //Set the offset variable value to "2mm" in the TeeModel Design  
oProject.SetPropValue("TeeModel/Results/S Parameter Plot 1/Display Type", "Data Table") // Set the report display type to data  
table.
```

## Design Object

Design Object inherited all functions defined in the Property Object. But it doesn't have property, GetPropValue() & SetPropValue() function can be used to set its child object's property..

- GetChildTypes() always return ['Module', 'Editor', 'Variable'].
- GetChildNames(type)  
GetChildNames() will return modules & editor child names.  
GetChildNames("Variable") will return all variable names  
GetChildNames("Module") will return all module names that support property-object-script like ['Optimetrics', 'RadField', 'Results']  
GetChildNames("Editor") will return a 3D editor name for all 3D Designs
- GetChildObject()  
oVariable = oDesign.GetChildObject("VariableName")  
oReport = oDesign.GetChildObject("Results/S Parameter Plot 1")  
oRptModule = oDesign.GetChildObject("ReportSetup")
- GetPropNames(bIncludeReadOnly) always return empty array since the design has no property.
- GetPropValue()  
oDesign.GetPropValue("offset/SIValue") //get the offset variable SI value in the Design  
oDesign.GetPropValue("Results/S Parameter Plot 1/Display Type") // Get the report display type

- SetPropValue()  
 oDesign.SetPropValue("offset", "2mm") //Set the offset variable value to "2mm" in the Design  
 oDesign.SetPropValue("Results/S Parameter Plot 1/Display Type", "Data Table") // Set the report display type to data table.

### 3D Modeler Object

GetChild commands returns the appropriate properties for modeler objects. For 3D Components and UDMs, these commands do not return parts, coordinate systems, plans, as top-level modeler children.

```
oModeler = oDesktop.GetActiveProject().GetActiveDesign().GetChildObject("3D Modeler")
oModeler.GetChildNames()
oModeler.GetChildNames("ModelParts")
oModeler.GetChildNames("AllParts")
oModeler.GetChildNames("NonModelParts")
oModeler.GetChildNames("Planes")
oModeler.GetChildNames("CoordinateSystems")
```

### Variable Object

Is a Property Object that has no child. It also provides quick function call to get/set it properties by adding functions with property name appended to Get\_ & Set\_ prefix. To find what functions it provided enter dir(oVar) the command window. It can accessed by the project or design object's GetChildObject(VariableName) function.

```
oProjVar = oProject.GetChildObject("$VarName")
oVar = oProject.GetChildObject("DesignName/VarName")
oVar = oDesign.GetChildObject("variableName")
oProject..GetChildNames("Variable") will return all project variable names.
oDesign.GetChildNames(Variable) will return all Design Variable names.
```

- GetChildTypes() always return empty array.
- GetChildNames() always return empty array , since variable has no child.
- GetChildObject(objPath) it has no child.

- `GetPropNames(bIncludeReadOnly)` ['EvaluatedValue', 'SIValue'] are read-only properties
  - Independent variable :['Value', 'EvaluatedValue', 'SIValue', 'Description', 'ReadOnly', 'Hidden', 'Sweep', 'Optimization/Included', 'Optimization/Min', 'Optimization/Max', 'Sensitivity/Included', 'Sensitivity/Min', 'Sensitivity/Max', 'Sensitivity/IDisp', 'Statistical', 'Statistical/Included', 'Tuning/Included', 'Tuning/Step', 'Tuning/Min', 'Tuning/Max'].
  - Dependent variable ['Value', 'EvaluatedValue', 'SIValue', 'Description', 'ReadOnly', 'Hidden', 'Sweep']
- `GetPropValue(propName)`  
`oVar.GetPropValue()` return the variable value as text string.  
`oVar.GetPropValue("Value")` return the variable value as text string.  
`oVar.GetPropValue("SIValue")` return the SI-value of variable as number.  
`oVar.Get_SIValue()` also return the SI value.
- `SetPropValue(propName, newValue)`  
`oVar.SetPropValue("Value", 888)`  
`oVar.SetPropValue("Sensitivity/Included", True)`  
`oVar.SetPropValue("Sensitivity/Max", '1.8pF')`  
`oVar.Set_Sensitivity_Max( '1.8pF')` also works as last call.  
`oVar.SetPropValue("Sensitivity", ['Min:=' , '0.8pF', 'Max:=' , '1.8pF'])`  
//set multiple attributes at one call:  
`oVar.SetPropValue("@", ['Value:=' , 288, 'Sensitivity', ['Included', True, 'Min', '0.0']])`  
`oVar.SetPropValue("", ['Value:=' , 288, 'Sensitivity', ['Included', True, 'Min', '0.0']])`

### Optimetrics Module Object:

Optimetrics Module Object inherited all functions defined in the Property Object. But it doesn't have property, `GetPropValue()` & `SetPropValue()` function can be used to set its child object's property..

- `GetChildTypes()` there are six type of children, they are ['OptiParametric', 'OptiOptimization', 'OptiSensitivity', 'OptiStatistical', 'OptiDesignExplorer', 'OptiDXDOE']. But the return array only included those that have setup defined, so it may be an empty array if no optimetrics setup is defined. The `GetChildNames(type)` function also recognized the type name without the prefix "Opti".
- `GetChildNames(type)`  
`GetChildNames()` will return all setup for all types.  
`GetChildNames("OptiOptimization")` & `GetChildNames("Optimization")` will return all Optimization setup.

- `GetChildObject()`  
`oParamSetup = oOptModule.GetChildObject('ParametricSetup1')` get the  
`oOptSetup = oOptModule.GetChildObject('OptimizationSetup1')`
- `GetPropNames(bIncludeReadOnly)` always return empty array since the it has no property.
- `GetPropValue(propPath)` may be used to get its child's property value  
`oOptModule.GetPropValue("OptimizationSetup1\Optimizer")` get the optimizer name for OptimizationSetup1
- `SetPropValue(propPath, newValue)` may be used to set its child's property value  
`oOptModule.SetPropValue(ParametricSetup1\Enabled", False) //disable ParametricSetup1`

### Optimetrics Setup Object

This is a new Object inherited all functions defined in the Property Object. But it doesn't have child. It is accessible through its parents.

`oOptSetup = oOptModule.GetChildObject('OptimizationSetup1')`

`oOptSetup = oDesign.GetChildObject('Optimetrics\OptimizationSetup1')`

`oOptSetup = oProject.GetChildObject('TeeModel\Optimetrics\OptimizationSetup1')`

- `GetChildTypes()` always return empty array.
- `GetChildNames(type)` always return empty array
- `GetChildObject()`
- `GetPropNames(bIncludeReadOnly)` will return the property names listed in the property window when the setup is selected.
- `GetPropValue(propName)`  
`oOptSetup.GetPropValue("Optimizer")` return the selected optimizer name.  
`oOptSetup.GetPropValue("Optimizer/Choices")` return all optimizer names.
- `SetPropValue(propName, newValue)`  
`oOptSetup.SetPropValue("Optimizer", "NotAnOptimizerName");` will return false.  
`oOptSetup.SetPropValue("Optimizer", "Quasi Newton");` return true, since "Quasi Newton" is one of the optimizer name returned as the Optimizer Choices.
- `HasResult()` return true if the setup is solved. Otherwise return false.

- Validate() return true if the setup is valid for analyze. Otherwise return false. Calling the SetPropValue() function to change the property may invalid the setup.

**ReportSetup(Results) Module Object:**

ReportSetup module Object inherited all functions defined in the Property Object. But it doesn't have property, GetPropValue() & SetPropValue() function can be used to get/set its child object's property..

- GetChildTypes() always empty array.
- GetChildNames(type)  
GetChildNames() return all report names
- GetChildObject(objPath)  
oRpt = oRptModule.GetChildObject("S Parameter Plot 1") return the report property object  
oTrace = oRptModule.GetChildObject("S Parameter Plot 1/dB(S(Port1,Port1))") return the trace property object  
oAxisX = oRptModule.GetChildObject("S Parameter Plot 1/AxisX") return the axis X property object
- GetPropNames(bIncludeReadOnly) always return empty array since the it \has no property.
- GetPropValue()  
oRptModule.GetPropValue("S Parameter Plot 1/Display Type")
- SetPropValue()  
oRptModule.SetPropValue("S Parameter Plot 1/Display Type", "DataTable")

**ReportSetup(Results) Module Child Objects:**

These are Property Objects. Its first level of child object is report. Report has trace, axis, header, Legend, and more children. Trace has curve as child etc.

Those child objects can be accessed by calling all levels of parent object's GetChildObject(path) function.

```
oRpt = oRptModule.GetChildObject(reportName)
```

```
oRpt = oDesign.GetChildObject("Results/reportName")
```

```
oTrace = oRpt.GetChildObject(traceName)
```

```
oTrace = oRptModule.GetChildObject(ReportName/TraceName)
```

- GetChildTypes() always return empty array.
- GetChildNames() get the object's child names. What will be returned will depend on the object instance.
- GetChildObject(objPath)
- GetPropNames(bIncludeReadOnly) will return the property names listed in the property window when the object is selected.
- GetPropValue(propName)
  - oRpt.GetPropValue("Display Type") return the report's display type.
  - oOptSetup.GetPropValue("Display Type/Choices") return all optimizer names.
  - oTrace.GetPropValue("X Component")
- SetPropValue(propName, newValue)
  - oTrace.SetPropValue("Primary sweep", "Freq")

#### **Radiation Module Object:**

This inherited all functions defined in the Property Object. But it doesn't have property, GetPropValue() & SetPropValue() function can be used to set its child object's property.

- GetChildTypes() always return empty array, now its children
- GetChildNames(type)
  - GetChildNames() return all setup names.
- GetChildObject(setupName) return the setup object as Property object.
  - oOverlay= oRadModule.GetChildObject('Antenna Parameter Overlay1')
  - oSphere = oRadModule.GetChildObject('Infinite Sphere1')
- GetPropNames() return empty array; it has no property.
- GetPropValue()
  - oRadModule.GetPropValue('Line1/Num Points') //Get the the Line1 setups' "Num Points" property value.
- SetPropValue()
  - oRadModule.SetPropValue('Line1/Num Points', 100) ; Set the Line1 setups' "Num Points" property to 100.

## Radiation Module Child Objects:

These are Property Objects. It also provides quick function call to get/set its properties by adding functions with property name appended to Get\_ & Set\_ prefix. To find what functions it provides enter dir(oVar) the command window.

Those child objects can be access by call all levels of parent object's GetChildObject(path) function.

```
oRadSetup = oRadModule.GetChildObject(setupName)
```

```
oRadSetup = oDesign.GetChildObject(RadField/setupName)
```

- GetChildTypes() always return empty array.
- GetChildNames() always return empty array , since Radiation setup has no child.
- GetChildObject(objPath) it has no child.
- GetPropNames(bIncludeReadOnly) will return the property names listed in the property window when the setup is selected.
- GetPropValue(propName)
  - oRadSetup.GetPropValue("Num Points") return the line setup's "Num Points" property value.
  - oRadSetup.Get\_NumPoints() will also get the same value.
- SetPropValue(propName, newValue)
  - oRadSetup.SetPropValue('Num Points', 888)
  - oRadSetup.Set\_NumPoints(888)

## Conventions Used in this Chapter

General Definitions:

|                           |                                                                                                                                                                             |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Property</b>           | A single item that can be modified in the <b>Properties</b> window or in the modal <b>Properties</b> pop-up window.                                                         |
| <b>&lt;PropServer&gt;</b> | The item whose properties are being modified. This is usually a compound name, giving all information needed by the editor, design, or project in order to locate the item. |
| <b>&lt;PropTab&gt;</b>    | Corresponds to one tab in the <b>Properties</b> window, the one under which properties are being edited.                                                                    |
| <b>&lt;PropName&gt;</b>   | The name of a single property.                                                                                                                                              |

The following tables list specific <PropServer> and <PropTab> values for different property types.

For Project Variables:



|                           |                      |
|---------------------------|----------------------|
| <b>&lt;PropServer&gt;</b> | "ProjectVariables"   |
| <b>&lt;PropTab&gt;</b>    | "ProjectVariableTab" |

For Local Variables:

|                           |                    |
|---------------------------|--------------------|
| <b>&lt;PropServer&gt;</b> | "LocalVariables"   |
| <b>&lt;PropTab&gt;</b>    | "LocalVariableTab" |

For Passed Parameters:

|                           |                                       |
|---------------------------|---------------------------------------|
| <b>&lt;PropServer&gt;</b> | "Instance:<Name of Circuit Instance>" |
| <b>&lt;PropTab&gt;</b>    | "PassedParameter Tab"                 |

For Definition Parameters:

|                           |                        |
|---------------------------|------------------------|
| <b>&lt;PropServer&gt;</b> | "DefinitionParameters" |
| <b>&lt;PropTab&gt;</b>    | "DefinitionParameters" |

For Modules and Editors:

|                           |                                                                                                                                                                                                                                                                                                |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;PropServer&gt;</b> | <ModuleName>:<ItemName> where <ItemName> is the boundary name, solution setup name, etc.<br>For example, "BoundarySetup:PerfE1"                                                                                                                                                                |
| <b>&lt;PropTab&gt;</b>    | Boundary Module: "HfssTab"<br>Mesh Operations Module: "MeshSetupTab"<br>Analysis Module: "HfssTab"<br>Optimetrics Module: "OptimetricsTab"<br>Solutions Module: <i>Does not support properties.</i><br>Field Overlays Module: "FieldsPostProcessorTab"<br>Radiation Module: "RadFieldSetupTab" |

|  |                                                                                                                                                                                                                                                            |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Circuit Module: "CCircuitTab"<br>System Module: "SystemTab"<br>HFSS 3D Layout Module: "HFSS 3D LayoutTab"<br>Nexxim Module: "NexximTab"<br>Layout elements: "BaseElementTab"<br>Schematic elements: "ComponentTab"<br>Optimetrics Module: "OptimetricsTab" |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

For 3D Model Editor objects:

|                           |                                          |
|---------------------------|------------------------------------------|
| <b>&lt;PropServer&gt;</b> | Name of the object. For example, "Box1". |
| <b>&lt;PropTab&gt;</b>    | "Geometry3DAttributeTab"                 |

For 3D Model Editor operations:

|                           |                                                                                                                                                                                |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;PropServer&gt;</b> | <ObjName>:<OperationName>:<int> where <int> is the operation's history index.<br>For example, "Box2:CreateBox:2" refers to the second "CreateBox" operation in Box2's history. |
| <b>&lt;PropTab&gt;</b>    | "Geometry3DCmdTab"                                                                                                                                                             |

For Reporter operations on Report properties:

|                               |                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;PropServer&gt;</b>     | <b>&lt;ReportSetup&gt;</b>                                                                                                                                                                                                                                                                                                                                 |
| <b>&lt;ChangeProperty&gt;</b> | Array. For example, to set the company name in a plot header to "My Company":<br><br><pre>Set oModule = oDesign.GetModule("ReportSetup")  oModule.ChangeProperty Array("NAME:AllTabs", _ Array("NAME:Header", _ Array ("NAME:PropServers", _ "XY Plot1:Header"), Array("NAME:ChangedProps", _ Array("NAME:Company Name", "Value:=", "My Company"))))</pre> |

**Note:**

For scripted property changes in the various modules and editors, refer to the chapters on the System, HFSS 3D Layout, and Nexxim tools, as well as the Layout and Schematic editors.

## Callback Scripting Using PropHost Object

Callback scripts are scripts that can be set in the Property Dialog for individual properties by clicking the button in the Callback column and choosing a script that is saved with the project. Callback scripts can contain any legal script commands including general Ansys script function calls ( e.g., `GetApplicationName()` ).

In addition, Callback scripts can also call functions on a special object named PropHost. The PropHost represents the PropServer (owner of properties) that contains the Property that is calling the Callback script. Therefore, the Callback script can use the PropHost's functions to query or set other properties in the same PropServer.

### Definitions

`<propName>` = text string

`<value>` = double

`<valueText>` = text string

`<fileName>` = full path file name

`<choices>` = string containing menu choices separated by commas

`<initialChoice>` = string containing initial choice for menu; must be one of the `<choices>`

`<scriptName>` = string containing name of script stored in project

`<bool>` is 1 for true or 0 for false

| <propType> | <propTypeName> | Property Description |
|------------|----------------|----------------------|
| 0          | TextProp       | Text                 |
| 1          | MenuProp       | Menu                 |
| 2          | CheckboxProp   | Checkbox             |
| 3          | VariableProp   | Variable             |
| 4          | VPointProp     | VPoint               |
| 5          | V3DPointProp   | V3DPoint             |
| 6          | NumberProp     | Number               |
| 7          | ColorProp      | Color                |
| 8          | PointProp      | Point                |
| 9          | ValueProp      | Value                |
| 10         | ButtonProp     | Button               |
| 11         | SeparatorProp  | Separator            |
| 12         | NetlistProp    | Netlist              |
| 13         | FileNameProp   | FileName             |

| <tabType> | Description            | Objects with this tab type                          |
|-----------|------------------------|-----------------------------------------------------|
| 0         | DefaultTab             |                                                     |
| 1         | PassedParameterTab     | Instances of designs, components, geometric objects |
| 2         | DefinitionParameterTab | Definitions of designs, components                  |
| 3         | LocalVariableTab       | Definitions of designs, components                  |
| 4         | ProjectVariableTab     | Projects                                            |
| 5         | ConstantsTab           | Projects                                            |
| 6         | BaseElementTab         | Geometric objects                                   |

|       |                        |                                |
|-------|------------------------|--------------------------------|
| 7     | ComponentTab           | Designs, components            |
| 8     | PropertyTab            |                                |
| 9     | CircuitTab             |                                |
| 10    | SystemTab              |                                |
| 11    | HFSS3DLayoutTab        |                                |
| 12    | HfssTab                | HFSS objects                   |
| 13    | OptimetricsTab         | Optimetrics data               |
| 14    | AltraSimTab            |                                |
| 15    | Report3DTab            | Report3d                       |
| 16    | FieldsPostProcessorTab | Fieldspostprocessor            |
| 17    | MeshSetupTab           | Manual meshing setup           |
| 18    | RadFieldSetupTab       | Radiation field geometry setup |
| 19    | Geometry3DAttributeTab | Geometry3D                     |
| 20    | Geometry3DCmdTab       | Geometry3D                     |
| 21    | Geometry3DPolylineTab  | Geometry3D                     |
| 22    | Geometry3DCSTab        | Geometry3D                     |
| 23    | Geometry3DPlaneTab     | Geometry3D                     |
| 24    | Geometry3DPointTab     | Geometry3D                     |
| 25    | Geometry3DListTab      | Geometry3D                     |
| 26    | StandardPropTab        |                                |
| 27    | PropDisplayPropTab     |                                |
| 28    | CustomPropTab          |                                |
| 39512 | Component              | Designs, components            |

**The topics for this section include:**

[ChangeProperty for HFSS and Maxwell](#)

[ChangeProperty for Schematic and Layout](#)

### **ChangeProperty (Schematic Editor and Layout Editor)**

*Use:* Changes to properties are scripted using the ChangeProperty command.

This command can be executed by the oEditor to change editor properties, by the oDesign to change design level properties, and by the oProject to change project level properties. The command can be used to create, edit, and/or remove properties. In HFSS and Maxwell, only Variable and Separator properties can be deleted.

Use the script recording feature and edit a property, and then view the resulting script entry or use GetPropertyValue for the desired property to see the expected format.

*Command:* None

*Syntax:* ChangeProperty Array("Name:AllTabs", <PropTabArray>, <PropTabArray>, ...)

ChangeProperty(<modulename>:<setup name>:<sweep name>)

*Return Value:* None

*Parameters:* <PropTabArray>

```
Array("Name:<PropTab>",  
      <PropServersArray>,  
      <NewPropArray>,  
      <ChangedPropsArray>,  
      <DeletedPropsArray>)
```

<PropServersArray>

```
Array("Name:PropServers", <PropServer>,
```

```
<PropServer>, ...)
```

```
<NewPropArray>
```

```
Array("Name:NewProp", <PropDataArray>,  
<PropDataArray>, ...)
```

```
<ChangedPropsArray>
```

```
Array("Name:ChangedProps", <PropDataArray>,  
<PropDataArray>, ...)
```

```
<DeletedPropsArray>
```

```
Array("Name:DeletedProps", <PropName>,  
<PropName>, ...)
```

```
<PropDataArray>
```

```
Array("NAME:<PropName>",  
      "PropType:=", <PropType>,  
      "NewName:=", <string>,  
      "Description:=", <string>,  
      "NewRowPosition:=", <int>,
```

```
"ReadOnly:=", <bool>,  
"Hidden:=", <bool>,  
<PropTypeSpecificArgs>
```

<PropType>

Type: string

Identifies the type of property when a new property is added. In HFSS and Maxwell, only separator properties and variable properties can be added.

```
"SeparatorProp"  
"VariableProp"  
"TextProp"  
"NumberProp"  
"ValueProp"  
"CheckboxProp"  
"MenuProp"  
"PointProp"  
"VPointProp"  
"V3DPointProp"  
"ButtonProp"
```

**NewName**



Specify the new name of a property if the property's name is being edited. In HFSS and Maxwell, the name can only be changed for separators and variables.

### Description

Specify a description of the property. In HFSS and Maxwell, the description can only be changed for separators and variables.

### NewRowPosition

Used to reorder rows in the **Property** dialog box.

In HFSS, this only applies to the **Project>Project Variables** panel and the **Hfss>DesignProperties** panel.

In Maxwell, this only applies to the **Project>Project Variables** panel and the **Maxwell3D>DesignProperties**, **Maxwell2D>Design Properties**, or **RMxpert>Design Properties** panels. Specify the new zero-based row index of the variable or separator.

### ReadOnly

Used to mark a property as "read only" so it can not be modified. In HFSS and Maxwell, this flag can only be set for variables and separators.

### Hidden

Used to hide a property so it can not be viewed outside of the **Property** dialog box. In HFSS and Maxwell, this flag can only be set for variables and separators.

<PropTypeSpecificArgs>

SeparatorProp: no arguments

TextProp: "Value:=", <string>

NumberProp: "Value:=", <double>

ValueProp: "Value:=", <value>

CheckboxProp: "Value:=", <bool>

MenuProp: "Value:=", <string>

PointProp "X:=", <double>, "Y:=", <double>

VPointProp: "X:=", <value>, "Y:=", <value>

V3DPointProp: "X:=", <value>, "Y:=", <value>,  
"Z:=", <value>

Material Button: "Material:=", <string>

Color Button: "R:=", <int>, "G:=", <int>, "B:=", <int>

Transparency Button: "Value:=", <double>

<PropTypeSpecificArgs> for VariableProps

Syntax:

"Value:=", <value>, <OptimizationFlagsArray>,

<TuningFlagsArray>, <SensitivityFlagsArray>,

<StatisticsFlagsArray>

### Parameters:

<OptimizationFlagsArray>

Array("NAME:Optimization",

"Included:=", <bool>,

"Min:=", <value>,

"Max:=", <value>)

<Tuning flagsArray>

Array("NAME:Tuning",

"Included:=", <bool>,

"Step:=", <value>,

"Min:=", <value>,

"Max:=", <value>)

<SensitivityFlagsArray>

Array("NAME:Sensitivity",

"Included:=", <bool>,

"Min:=", <value>,

"Max:=", <value>,

"IDisp:=", <value> )

```
<StatisticsFlagsArray>  
    Array("NAME:Statistical",  
"Included:=", <bool>,  
"Dist:=", <Distribution>,  
"StdD:=", <value>,  
"Min:=", <value>,  
"Max:=", <value>,  
"Tol:=", <string>)
```

**<Distribution>**

Type: string

Value should be "Gaussian" or "Uniform"

**StdD**

Standard deviation.

**Min**

Low cut-off for the distribution.

**Max**

High cut-off for the distribution.

**To1**

Tolerance for uniform distributions. Format is "<int>%".

Example: "20%".

**PropHost Functions**

The following commands can be used to manipulate properties from a Property script.

[GetEditor](#)

[GetPropHost](#)

**AddMenuProp**

*Use:* Creates a new Menu property in tabType with name specified; choices are set to the values in choices; initial selection is initialChoice.

| UI Access  | NA        |         |                                                                                                                                                                                                                                                                                                                                                |
|------------|-----------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name      | Type    | Description                                                                                                                                                                                                                                                                                                                                    |
|            | <tabType> | Integer | One of the following, where tab titles are shown in parentheses:<br><br>1 for PassedParameterTab ("Parameter Values")<br><br>2 for DefinitionParameterTab (Parameter Defaults")<br><br>3 for LocalVariableTab ("Variables" or "Local Variables")<br><br>4 for ProjectVariableTab ("Project variables")<br><br>5 for ConstantsTab ("Constants") |

|                     |                 |        |                                                                                                                                                                                                                                           |
|---------------------|-----------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                 |        | 6 for BaseElementTab ("Symbol" or "Footprint")<br>7 for ComponentTab ("General")<br>28 for CustomTab ("Intrinsic Variables")<br>39500 for Quantities ("Quantities")<br>39506 for Signals ("Signals")<br>39512 for Component ("Component") |
|                     | <propName>      | String | Name of the new menu property                                                                                                                                                                                                             |
|                     | <choices>       | String | A comma-separated list of menu choice strings.                                                                                                                                                                                            |
|                     | <initialChoice> | String | One of the strings in the list of choices.                                                                                                                                                                                                |
| <b>Return Value</b> | None            |        |                                                                                                                                                                                                                                           |

|                       |                                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddMenuProp(<tabType>, <propName>, <choices>, <initialChoice>)                                 |
| <b>Python Example</b> | <pre>PropHost.AddProp(2,     "ResChoices", "inline,upfront,parallel,series", "parallel")</pre> |

## AddMenuProp2

Creates a new Menu property in tabTypeName with name specified; choices are set to the values in choices; initial selection is initialChoice.

|                   |           |        |                                                                  |
|-------------------|-----------|--------|------------------------------------------------------------------|
| <b>UI Access</b>  | None      |        |                                                                  |
| <b>Parameters</b> | Name      | Type   | Description                                                      |
|                   | <tabType> | String | One of the following, where tab titles are shown in parentheses: |

|                     |                 |        |                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|-----------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                 |        | PassedParameterTab ("Parameter Values")<br>DefinitionParameterTab (Parameter Defaults)<br>LocalVariableTab ("Variables" or "Local Variables")<br>ProjectVariableTab ("Project variables")<br>ConstantsTab ("Constants")<br>BaseElementTab ("Symbol" or "Footprint")<br>ComponentTab ("General")<br>Component("Component")<br>CustomTab ("Intrinsic Variables")<br>Quantities ("Quantities")<br>Signals ("Signals") |
|                     | <propName>      | String | Name of the new menu property.                                                                                                                                                                                                                                                                                                                                                                                     |
|                     | <choices>       | String | A comma-separated list of menu choice strings.                                                                                                                                                                                                                                                                                                                                                                     |
|                     | <initialChoice> | String | One of the strings in the list of choices.                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Return Value</b> | None            |        |                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddMenuProp2(<tabTypeName>, <propName>, <choices>, <initialChoice>)                                                    |
| <b>Python Example</b> | <pre>PropHost.AddMenuProp2("DefinitionParameterTab", "ResChoices", "inline,upfront,parallel,series", "parallel")</pre> |

**AddProp**

*Use:* Creates a new propType property in tabType with name and value specified.

*Command:* None

*Syntax:* AddProp(<tabType>, <propType>, <propName>, <valueText>)

*Return Value:* None.

| UI Access         | NA         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------|------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name       | Type    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                   | <tabType>  | Integer | One of the following, where tab titles are shown in parentheses:<br>1 for PassedParameterTab ("Parameter Values")<br>2 for DefinitionParameterTab (Parameter Defaults)<br>3 for LocalVariableTab ("Variables" or "Local Variables")<br>4 for ProjectVariableTab ("Project variables")<br>5 for ConstantsTab ("Constants")<br>6 for BaseElementTab ("Symbol" or "Footprint")<br>7 for ComponentTab ("General")<br>28 for CustomTab ("Intrinsic Variables")<br>39500 for Quantities ("Quantities")<br>39506 for Signals ("Signals")<br>39512 for Component ("Component") |
|                   | <propType> | Integer | One of the following to add new definition properties (e.g., to component, design or project):<br>0 for TextProp (any string)                                                                                                                                                                                                                                                                                                                                                                                                                                          |



|                     |             |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|-------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |             |        | 1 for Menu (one,two,three)<br>2 for CheckboxProp ("true" or "false" values)<br>3 for VariableProp (useful for Project and Local Variables, expression)<br>4 for VPointProp (x and y values, which can be expressions)<br>5 for V3DPointProp (x, y and z values, which can be expressions)<br>6 for NumberProp (simple number, no expression)<br>7 for ColorProp (takes an RGB value)<br>8 for PointProp (x and y values, no expressions)<br>11 for SeparatorProp (used for property list organization, the value is the separator "title")<br>13 for FileNameProp (special button property for filenames)<br>39506 for GenericProp (for generics in Twin Builder, SML and VHDL)<br>39500 for QuantityProp (for Twin Builder quantities, SML and VHDL)<br>39504 for SignalProp (for VHDL signals in Twin Builder)<br>39502 for VariablePropNU (like a VariableProp, but provides access to setting NetlistUnits in Component definition dialog for Designer; for Twin Builder, use GenericProp in DefinitionParametersTab, QuantitiyProp in Quantities, and signalProp in Signals) |
|                     | <propName>  | String | Name of the new menu property.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                     | <valueText> | String | The property value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                     |             |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Return Value</b> | None        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| <b>Python Syntax</b>  | AddProp(<tabType>, <propType>, <propName>, <valueText>) |
| <b>Python Example</b> | PropHost.AddProp(2, 3, "W1", "10mm")                    |

**Note:**

AddProp adds a new property using the <propName> preceded by a separator "--". For instance, a new property added with the <propName> "xxx" will be added with the name "--xxx". Consequently, all subsequent script functions that wish to access the added property must now use the name "--xxx".

For example:

```
PropHost.AddProp 1, 11, "Time_Domain_Options", ""
```

```
Prophost.SetHidden "--Time_Domain_Options", 1
```

| propType | Property Type | Value Example      |
|----------|---------------|--------------------|
| 0        | Text          | "hello"            |
| 1        | Menu          | "one,two,three"    |
| 2        | Checkbox      | "true" or "false"  |
| 3        | Variable      | "34mm" or "2*val1" |
| 4        | VPoint        | "x1,y1"            |
| 5        | V3DPoint      | "x1,y1,z1"         |
| 6        | Number        | "17" or "22pF"     |
| 7        | Color         |                    |
| 8        | Point         | "34,27"            |

|    |           |                    |
|----|-----------|--------------------|
| 9  | Value     | "34mm" or "2*val1" |
| 11 | Separator | "colors"           |
| 13 | Filename  | "c:\temp\ne22.s2p" |

**AddProp2**

Creates a new propTypeName property in tabTypeName with name and value specified.

| UI Access         | NA        |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|-----------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name      | Type | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                   | <tabType> | Type | One of the following, where tab titles are shown in parentheses:<br><br>PassedParameterTab ("Parameter Values")<br><br>DefinitionParameterTab (Parameter Defaults)<br><br>LocalVariableTab ("Variables" or "Local Variables")<br><br>ProjectVariableTab ("Project variables")<br><br>ConstantsTab ("Constants")<br><br>BaseElementTab ("Symbol" or "Footprint")<br><br>ComponentTab ("General")<br><br>Component("Component")<br><br>CustomTab ("Intrinsic Variables")<br><br>Quantities ("Quantities")<br><br>Signals ("Signals") |

|              |             |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------|-------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <propType>  | String | <p>One of the following to add new definition properties (e.g., to component, design or project):</p> <p>TextProp (any string)</p> <p>CheckboxProp ("true" or "false" values)</p> <p>VariableProp (useful for Project and Local Variables, expression)</p> <p>VPointProp (x and y values, which can be expressions)</p> <p>V3DPointProp (x, y and z values, which can be expressions)</p> <p>NumberProp (simple number, no expression)</p> <p>ColorProp (takes an RGB value)</p> <p>PointProp (x and y values, no expressions)</p> <p>SeparatorProp (used for property list organization, the value is the separator "title")</p> <p>FileNameProp (special button property for filenames)</p> <p>GenericProp (for generics in Twin Builder, SML and VHDL)</p> <p>QuantityProp (for Twin Builder quantities, SML and VHDL)</p> <p>SignalProp (for VHDL signals in Twin Builder)</p> <p>VariablePropNU (like a <code>VariableProp</code>, but provides access to setting <code>NetlistUnits</code> in Component definition dialog for Designer; for Twin Builder, use <code>GenericProp</code> in <code>DefinitionParametersTab</code>, <code>QuantityProp</code> in <code>Quantities</code>, and <code>signalProp</code> in <code>Signals</code>)</p> |
|              | <propName>  | String | Name of the new menu property.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|              | <valueText> | String | The property value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|              |             |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Return Value | None        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                       |                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddProp2(<tabTypeName>, <propTypeName>, <propName>, <valueText>)                         |
| <b>Python Example</b> | <pre>PropHost.AddProp2("DefinitionParameterTab",<br/>"VariableProp", "W1", "10mm")</pre> |

## ExecuteScript

Finds the named script in the Definitions/Scripts folder and runs that script; the script being run can also use the PropHost object.

|                     |              |        |                                             |
|---------------------|--------------|--------|---------------------------------------------|
| <b>UI Access</b>    | NA           |        |                                             |
| <b>Parameters</b>   | Name         | Type   | Description                                 |
|                     | <scriptName> | String | Name of a script stored in a script library |
| <b>Return Value</b> | None         |        |                                             |

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| <b>Python Syntax</b>  | ExecuteScript(<scriptName>)                           |
| <b>Python Example</b> | <pre>PropHost.ExecuteScript("PropChangeScript")</pre> |

## GetApplication

Returns the application object currently running the script.

|                  |    |
|------------------|----|
| <b>UI Access</b> | NA |
|------------------|----|

|                     |                 |      |             |
|---------------------|-----------------|------|-------------|
| <b>Parameters</b>   | Name            | Type | Description |
|                     | None            |      |             |
| <b>Return Value</b> | Object          |      |             |
|                     | The Application |      |             |

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | GetApplication()                                     |
| <b>Python Example</b> | <code>oAnsoftApp2 = prophost.GetApplication()</code> |

## GetCallback

Finds named property and returns name of Callback script.

|                     |            |        |                      |
|---------------------|------------|--------|----------------------|
| <b>UI Access</b>    | NA         |        |                      |
| <b>Parameters</b>   | Name       | Type   | Description          |
|                     | <propName> | String | Name of the property |
| <b>Return Value</b> | String     |        |                      |

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Python Syntax</b>  | GetCallback(<propName>)                      |
| <b>Python Example</b> | <code>a = PropHost.GetCallback( "W1")</code> |

## GetChangedProperty

*Use:* If the script was called by a Callback associated with a property, this function returns the name of that property.

|                     |                                                                                                                                                                     |      |             |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------|
| <b>UI Access</b>    | NA                                                                                                                                                                  |      |             |
| <b>Parameters</b>   | Name                                                                                                                                                                | Type | Description |
|                     | None                                                                                                                                                                |      |             |
| <b>Return Value</b> | String<br>Returns "C" if the script was a Callback associated with the property named "C" and the script was called in response to the property "C" changing value. |      |             |

|                       |                                               |
|-----------------------|-----------------------------------------------|
| <b>Python Syntax</b>  | GetChangedProperty()                          |
| <b>Python Example</b> | <pre>pn = PropHost.GetChangedProperty()</pre> |

## GetDescription

Finds named property and returns description string

|                     |            |        |                      |
|---------------------|------------|--------|----------------------|
| <b>UI Access</b>    | NA         |        |                      |
| <b>Parameters</b>   | Name       | Type   | Description          |
|                     | <propName> | String | Name of the property |
| <b>Return Value</b> | String     |        |                      |

|                       |                                               |
|-----------------------|-----------------------------------------------|
| <b>Python Syntax</b>  | GetDescription(<propName>)                    |
| <b>Python Example</b> | <pre>a = PropHost.GetDescription( "W1")</pre> |

### GetDesign

*Use:* Returns the interface to the specified design simulation.

*Command:* None

*Syntax:* GetDesign <DesignName>

*Return Value:* Interface to the specified design simulation.

*Parameters:* <DesignName>

Type: <string>

### GetEditor

*Use:* Returns an interface to the editor requested IF the PropServer behind the PropHost is contained within that type of editor.

*Command:* None

*Syntax:* GetEditor(<editorName>)

*Return Value:* String

|                      |                         |
|----------------------|-------------------------|
| <b>Python Syntax</b> | GetEditor(<editorName>) |
|----------------------|-------------------------|



|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| <b>Python Example</b> | <code>oEditor = GetEditor("SchematicEditor")</code> |
|-----------------------|-----------------------------------------------------|

### GetEvaluatedText

Returns the evaluated value of the property, useful when the value is an expression.

|                     |                               |        |                          |
|---------------------|-------------------------------|--------|--------------------------|
| <b>UI Access</b>    | NA                            |        |                          |
| <b>Parameters</b>   | Name                          | Type   | Description              |
|                     | <propname>                    | String | The name of the property |
| <b>Return Value</b> | String<br>The Evaluated Value |        |                          |

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetEvaluatedText (&lt;propname&gt;)</code>   |
| <b>Python Example</b> | <code>ret = prophost.GetEvaluatedText ("R")</code> |

### GetFileName

Finds the full path name to propName.

|                     |                                      |        |                      |
|---------------------|--------------------------------------|--------|----------------------|
| <b>UI Access</b>    | NA                                   |        |                      |
| <b>Parameters</b>   | Name                                 | Type   | Description          |
|                     | <propName>                           | String | Name of the property |
| <b>Return Value</b> | Full path file name or empty string. |        |                      |

**Note:**

Directory variables can be used in the property's value (e.g. \$projectdir, \$userlib, \$syslib, \$personallib) and these will be expanded to the correct path. GetFileName always returns a path string; if propName actually contains a variable expression, that expression is evaluated to a constant string before returning.

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | GetFileName(<propName>)                              |
| <b>Python Example</b> | <pre>a = PropHost.GetFileName("SubstrateFile")</pre> |

**GetHidden**

Finds named property and returns its Hidden flag.

|                     |                                                     |        |                      |
|---------------------|-----------------------------------------------------|--------|----------------------|
| <b>UI Access</b>    | NA                                                  |        |                      |
| <b>Parameters</b>   | Name                                                | Type   | Description          |
|                     | <propName>                                          | String | Name of the property |
| <b>Return Value</b> | Returns 1 if property is hidden and 0 if it is not. |        |                      |

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | GetHidden(<propName>)                   |
| <b>Python Example</b> | <pre>a= PropHost.GetHidden( "W1")</pre> |

**GetProgress**

*Use:* Returns the percentage (from 0 to 100) of the simulation completed.

*Command:* None

*Syntax:* GetProgress(<simProgress>)

*Return Value:* String

**GetPropHost**

*Use:* Returns an interface to the PropHost of the CompInstance, which gives access to its properties. This interface can be used to call PropHost functions; for more information see [Callback Scripting Using PropHost Object](#).

*Command:* None

*Syntax:* GetPropHost()

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | GetPropHost()                           |
| <b>Python Example</b> | oPropHost2 = CompInstance.GetPropHost() |

**GetPropServers**

Returns array of objects that have properties showing on tabTypeName.

|                     |                            |      |             |
|---------------------|----------------------------|------|-------------|
| <b>UI Access</b>    | NA                         |      |             |
| <b>Parameters</b>   | Name                       | Type | Description |
|                     | None                       |      |             |
| <b>Return Value</b> | Array of propserver names. |      |             |

|                       |                                                                                                                                                                                                                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetPropServers(<tabTypeName>)                                                                                                                                                                                                                                                                                                   |
| <b>Python Example</b> | <pre>objects = PropHost.GetPropServers("PassedParameterTab")</pre> <p>Returns array containing PropServers that have properties shown on PassedParameterTab; this would include only components and designs; individual properties can be accessed using standard notation, e.g. objects(0) might contain "Complnst@CAP_1".</p> |

### GetPropTabType

Finds named property and returns the id of the tab it is in.

|                     |                |        |                      |
|---------------------|----------------|--------|----------------------|
| <b>UI Access</b>    | NA             |        |                      |
| <b>Parameters</b>   | Name           | Type   | Description          |
|                     | <propName>     | String | Name of the property |
| <b>Return Value</b> | Returns string |        |                      |

|                       |                                               |
|-----------------------|-----------------------------------------------|
| <b>Python Syntax</b>  | GetPropTabType(<propName>)                    |
| <b>Python Example</b> | <pre>a = PropHost.GetPropTabType( "W1")</pre> |

### GetReadOnly

Finds named property and returns its ReadOnly flag.

|                     |                                                        |        |                      |
|---------------------|--------------------------------------------------------|--------|----------------------|
| <b>UI Access</b>    | NA                                                     |        |                      |
| <b>Parameters</b>   | Name                                                   | Type   | Description          |
|                     | <propName>                                             | String | Name of the property |
| <b>Return Value</b> | Returns 1 if property is read-only and 0 if it is not. |        |                      |

|                       |                                                            |  |  |
|-----------------------|------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | GetReadOnly(<propName>)                                    |  |  |
| <b>Python Example</b> | <pre>a = PropHost.GetReadOnly( "W1" );<br/>returns 1</pre> |  |  |

### GetRunStatus

*Use:* Returns the status number of the specified design simulation.

*Command:* None

*Syntax:* GetRunStatus(<statusNumber>)

*Return Value:* Returns string.

### GetTabTypeName

Finds named property and returns the name of the tab it is on.

|                  |    |
|------------------|----|
| <b>UI Access</b> | NA |
|------------------|----|

|                     |            |        |                      |
|---------------------|------------|--------|----------------------|
| <b>Parameters</b>   | Name       | Type   | Description          |
|                     | <propName> | String | Name of the property |
| <b>Return Value</b> | String     |        |                      |

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| <b>Python Syntax</b>  | GetTabTypeName(<propName>)                      |
| <b>Python Example</b> | <pre>a = PropHost.GetTabTypeName ( "W1" )</pre> |

## GetText

Finds property in any tab and returns its value as a text string.

|                     |            |        |                      |
|---------------------|------------|--------|----------------------|
| <b>UI Access</b>    | NA         |        |                      |
| <b>Parameters</b>   | Name       | Type   | Description          |
|                     | <propName> | String | Name of the property |
| <b>Return Value</b> | String     |        |                      |

|                       |                                       |
|-----------------------|---------------------------------------|
| <b>Python Syntax</b>  | GetText(<propName>)                   |
| <b>Python Example</b> | <pre>a = PropHost.GetText ("C")</pre> |

**GetValue**

*Use:* Finds property in any tab and returns its value as a double.

*Command:* None

*Syntax:* GetValue(<propName>)

*Return Value:* Returns double.

**Note:**

Values are returned in SI units. Compound SI units are, in general, not supported. Temperature values are returned in Celsius

**IsValueConstant**

Determines whether the specified property is a constant or not. Returns True if propName is evaluated to be a constant; returns False if propName is evaluated to be an expression.

|                     |                                                                  |        |                           |
|---------------------|------------------------------------------------------------------|--------|---------------------------|
| <b>UI Access</b>    | NA                                                               |        |                           |
| <b>Parameters</b>   | Name                                                             | Type   | Description               |
|                     | <propname>                                                       | String | The name of the property. |
| <b>Return Value</b> | Integer; non-zero for constant, zero for variable or expression. |        |                           |

|                       |                                                |
|-----------------------|------------------------------------------------|
| <b>Python Syntax</b>  | IsValueConstant (<propname>)                   |
| <b>Python Example</b> | <pre>ret = prophost.IsValueConstant("R")</pre> |

## PropertyExists

Finds named property and returns its property type.

|                     |                                                            |        |                      |
|---------------------|------------------------------------------------------------|--------|----------------------|
| <b>UI Access</b>    | NA                                                         |        |                      |
| <b>Parameters</b>   | Name                                                       | Type   | Description          |
|                     | <propName>                                                 | String | Name of the property |
| <b>Return Value</b> | Returns 1 if property exists in any tab, 0 if it does not. |        |                      |

|                       |                                               |
|-----------------------|-----------------------------------------------|
| <b>Python Syntax</b>  | PropertyExists(<propName>)                    |
| <b>Python Example</b> | <pre>a = PropHost.PropertyExists( "W1")</pre> |

## RemoveProp

Removes the named property from whichever tab it is found.

|                   |            |        |                      |
|-------------------|------------|--------|----------------------|
| <b>UI Access</b>  | NA         |        |                      |
| <b>Parameters</b> | Name       | Type   | Description          |
|                   | <propName> | String | Name of the property |



|                     |      |
|---------------------|------|
| <b>Return Value</b> | None |
|---------------------|------|

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | <code>RemoveProp(&lt;propName&gt;)</code> |
| <b>Python Example</b> | <code>PropHost.RemoveProp("W1")</code>    |

## SetCallback

Finds named property and sets its Callback script.

|                     |              |             |                                              |
|---------------------|--------------|-------------|----------------------------------------------|
| <b>UI Access</b>    | NA           |             |                                              |
| <b>Parameters</b>   | <b>Name</b>  | <b>Type</b> | <b>Description</b>                           |
|                     | <propName>   | String      | Name of the property                         |
|                     | <scriptName> | String      | Name of a script stored in a script library. |
| <b>Return Value</b> | None         |             |                                              |

|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>SetCallback(&lt;propName&gt;, &lt;scriptName&gt;)</code>  |
| <b>Python Example</b> | <code>PropHost.SetCallback("W1", "SynchronizeResistors")</code> |

## SetDescription

Finds named property and sets its description text.

|                     |               |        |                      |
|---------------------|---------------|--------|----------------------|
| <b>UI Access</b>    | NA            |        |                      |
| <b>Parameters</b>   | Name          | Type   | Description          |
|                     | <propName>    | String | Name of the property |
|                     | <description> | String | Descriptive text.    |
| <b>Return Value</b> | None          |        |                      |

|                       |                                                                           |
|-----------------------|---------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetDescription(<propName>, <description>)                                 |
| <b>Python Example</b> | <pre>PropHost.SetDescription("W1", "this is the width of the gate")</pre> |

## SetHidden

Finds named property and sets its Hidden flag.

|                     |            |         |                        |
|---------------------|------------|---------|------------------------|
| <b>UI Access</b>    | NA         |         |                        |
| <b>Parameters</b>   | Name       | Type    | Description            |
|                     | <propName> | String  | Name of the property   |
|                     | <hidden>   | Boolean | True or 1, false or 0. |
| <b>Return Value</b> | None       |         |                        |

|                       |                                          |
|-----------------------|------------------------------------------|
| <b>Python Syntax</b>  | SetHidden(<propName>, <hidden>)          |
| <b>Python Example</b> | <code>PropHost.SetHidden("W1", 1)</code> |

### SetReadOnly

Finds named property and sets its ReadOnly flag.

|                     |             |             |                        |
|---------------------|-------------|-------------|------------------------|
| <b>UI Access</b>    | NA          |             |                        |
| <b>Parameters</b>   | <b>Name</b> | <b>Type</b> | <b>Description</b>     |
|                     | <propName>  | String      | Name of the property   |
|                     | <hidden>    | Boolean     | True or 1, false or 0. |
| <b>Return Value</b> | None        |             |                        |

|                       |                                            |
|-----------------------|--------------------------------------------|
| <b>Python Syntax</b>  | SetReadOnly(<propName>, <hidden>)          |
| <b>Python Example</b> | <code>PropHost.SetReadOnly("W1", 1)</code> |

### SetText

Finds property in any tab and sets its value to a text string.

|                  |    |
|------------------|----|
| <b>UI Access</b> | NA |
|------------------|----|

|                     |            |        |                             |
|---------------------|------------|--------|-----------------------------|
| <b>Parameters</b>   | Name       | Type   | Description                 |
|                     | <propName> | String | Name of the property        |
|                     | <text>     | String | The value for the property. |
| <b>Return Value</b> | None       |        |                             |

|                       |                                            |
|-----------------------|--------------------------------------------|
| <b>Python Syntax</b>  | SetText(<propName>, <text>)                |
| <b>Python Example</b> | <code>PropHost.SetText("C", "22nF")</code> |

## SetValue

Finds property in any tab and sets its value to a double.

|                     |            |        |                                       |
|---------------------|------------|--------|---------------------------------------|
| <b>UI Access</b>    | NA         |        |                                       |
| <b>Parameters</b>   | Name       | Type   | Description                           |
|                     | <propName> | String | Name of the property                  |
|                     | <value>    | Real   | A real number for the property value. |
| <b>Return Value</b> | None       |        |                                       |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | SetValue(<propName>, <value>)             |
| <b>Python Example</b> | <code>PropHost.SetValue("C", 2e-9)</code> |

## ChangeProperty (HFSS and Maxwell)

*Use:* Changes to properties are scripted using the ChangeProperty command. This command can be executed by the oEditor to change editor properties, by the oDesign to change design level properties, and by the oProject to change project level properties. The command can be used to create, edit, and/or remove properties. In HFSS and Maxwell, only Variable and Separator properties can be deleted.

Use the script recording feature and edit a property, and then view the resulting script entry or use GetPropertyValue for the desired property to see the expected format.

*Command:* None

*Syntax:* ChangeProperty Array("Name:AllTabs", <PropTabArray>, <PropTabArray>, ...)

ChangeProperty(<modulename>:<setup name>:<sweep name>)

*Return Value:* None

*Parameters:* <PropTabArray>

```
Array("Name:<PropTab>",  
      <PropServersArray>,  
      <NewPropArray>,  
      <ChangedPropsArray>,  
      <DeletedPropsArray>)
```

<PropServersArray>

```
Array("Name:PropServers", <PropServer>,  
      <PropServer>, ...)
```

```
<NewPropArray>
```

```
    Array("Name:NewProp", <PropDataArray>,  
    <PropDataArray>,...)
```

```
<ChangedPropsArray>
```

```
    Array("Name:ChangedProps",<PropDataArray>,  
    <PropDataArray>, ...)
```

```
<DeletedPropsArray>
```

```
    Array("Name:DeletedProps", <PropName>,  
    <PropName>, ...)
```

```
<PropDataArray>
```

```
    Array("NAME:<PropName>",  
        "PropType:=", <PropType>,  
        "NewName:=", <string>,  
        "Description:=", <string>,  
        "NewRowPosition:=", <int>,  
        "ReadOnly:=", <bool>,  
        "Hidden:=", <bool>,  
        <PropTypeSpecificArgs>)
```

<PropType>

Type: string

Identifies the type of property when a new property is added. In HFSS and Maxwell, only separator properties and variable properties can be added.

"SeparatorProp"

"VariableProp"

"TextProp"

"NumberProp"

"ValueProp"

"CheckboxProp"

"MenuProp"

"PointProp"

"VPointProp"

"V3DPointProp"

"ButtonProp"

### **NewName**

Specify the new name of a property if the property's name is being edited. In HFSS and Maxwell, the name can only be changed for separators and variables.

**Description**

Specify a description of the property. In HFSS and Maxwell, the description can only be changed for separators and variables.

**NewRowPosition**

Used to reorder rows in the **Property** dialog box.

In HFSS, this only applies to the **Project>Project Variables** panel and the **Hfss>DesignProperties** panel.

In Maxwell, this only applies to the **Project>Project Variables** panel and the **Maxwell3D>DesignProperties**, **Maxwell2D>Design Properties**, or **RMxpvt>Design Properties** panels.

Specify the new zero-based row index of the variable or separator.

**ReadOnly**

Used to mark a property as "read only" so it can not be modified. In HFSS and Maxwell, this flag can only be set for variables and separators.

**Hidden**

Used to hide a property so it can not be viewed outside of the **Property** dialog box. In HFSS and Maxwell, this flag can only be set for variables and separators.

<PropTypeSpecificArgs>

SeparatorProp: no arguments

TextProp: "Value:=", <string>

NumberProp: "Value:=", <double>



```
ValueProp: "Value:=", <value>
CheckboxProp: "Value:=", <bool>
MenuProp: "Value:=", <string>
PointProp "X:=", <double>, "Y:=", <double>
VPointProp: "X:=", <value>, "Y:=", <value>
V3DPointProp: "X:=", <value>, "Y:=", <value>, "Z:=", <value>
Material Button: "Material:=", <string>
Color Button: "R:=", <int>, "G:=", <int>, "B:=", <int>
Transparency Button: "Value:=", <double>
```

<PropTypeSpecificArgs> for VariableProps

**Syntax:**

```
"Value:=", <value>, <OptimizationFlagsArray>,
<TuningFlagsArray>, <SensitivityFlagsArray>,
<StatisticsFlagsArray>
```

**Parameters:**

```
<OptimizationFlagsArray>
```

```
Array("NAME:Optimization",
```

```
"Included:=", <bool>,
```

```
"Min:=", <value>,  
"Max:=", <value>)
```

```
    <Tuning flagsArray>  
        Array("NAME:Tuning",  
"Included:=", <bool>,  
"Step:=", <value>,  
"Min:=", <value>,  
"Max:=", <value>)
```

```
    <SensitivityFlagsArray>  
        Array("NAME:Sensitivity",  
"Included:=", <bool>,  
"Min:=", <value>,  
"Max:=", <value>,  
"IDisp:=", <value> )
```

```
    <StatisticsFlagsArray>  
        Array("NAME:Statistical",  
"Included:=", <bool>,  
"Dist:=", <Distribution>,
```

"StdD:=", <value>,

"Min:=", <value>,

"Max:=", <value>,

"Tol:=", <string>)

<Distribution>

Type: string

Value should be "Gaussian" or "Uniform"

StdD

Standard deviation.

Min

Low cut-off for the distribution.

Max

High cut-off for the distribution.

Tol

Tolerance for uniform distributions. Format is "<int>%".

Example: "20%".

## GetArrayVariables

Returns a list of array variables. To get a list of indexed project variables, execute with oProject. To get a list of indexed local variables, use oDesign.

|                     |                                                 |
|---------------------|-------------------------------------------------|
| <b>UI Access</b>    | N/A                                             |
| <b>Parameters</b>   | None.                                           |
| <b>Return Value</b> | Array of strings containing names of variables. |

|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetArrayVariables()                                                 |
| <b>Python Example</b> | <pre>oProject.GetArrayVariables() oDesign.GetArrayVariables()</pre> |

## GetProperties

Gets a list of all the properties belonging to a specific <PropServer> and <PropTab>. This can be executed by the oProject, oDesign, or oEditor variables.

|                   |             |             |                                                                                                                                                                                                                                                                               |
|-------------------|-------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | N/A         |             |                                                                                                                                                                                                                                                                               |
| <b>Parameters</b> | <b>Name</b> | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                            |
|                   | <PropTab>   | String      | One of the following, where tab titles are shown in parentheses: <ul style="list-style-type: none"> <li>PassedParameterTab ("Parameter Values")</li> <li>DefinitionParameterTab (Parameter Defaults")</li> <li>LocalVariableTab ("Variables" or "Local Variables")</li> </ul> |

|                     |                                                                      |        |                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------|----------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                                                      |        | <ul style="list-style-type: none"> <li>• ProjectVariableTab ("Project variables")</li> <li>• ConstantsTab ("Constants")</li> <li>• BaseElementTab ("Symbol" or "Footprint")</li> <li>• ComponentTab ("General")</li> <li>• Component("Component")</li> <li>• CustomTab ("Intrinsic Variables")</li> <li>• Quantities ("Quantities")</li> <li>• Signals ("Signals")</li> </ul> |
|                     | <code>&lt;PropServer&gt;</code>                                      | String | An object identifier, generally returned from another script method, such as <code>CompInst@R;2;3</code>                                                                                                                                                                                                                                                                      |
| <b>Return Value</b> | Array of strings containing the names of the appropriate properties. |        |                                                                                                                                                                                                                                                                                                                                                                               |

|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetProperties( &lt;PropTab&gt;, &lt;PropServer&gt; )</code> |
| <b>Python Example</b> | <code>oEditor.GetProperties('PassedParameterTab', 'k')</code>     |

## GetPropertyValue

Returns the value of a single property belonging to a specific `<PropServer>` and `<PropTab>`. This function is available with the Project, Design or Editor objects, including definition editors.

**Tip:** Use the script recording feature and edit a property, and then view the resulting script to see the format for that property.

|                     |                               |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|-------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                           |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Parameters</b>   | <b>Name</b>                   | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                     | <PropTab>                     | String      | One of the following, where tab titles are shown in parentheses: <ul style="list-style-type: none"> <li>PassedParameterTab ("Parameter Values")</li> <li>DefinitionParameterTab (Parameter Defaults")</li> <li>LocalVariableTab ("Variables" or "Local Variables")</li> <li>ProjectVariableTab ("Project variables")</li> <li>ConstantsTab ("Constants")</li> <li>BaseElementTab ("Symbol" or "Footprint")</li> <li>ComponentTab ("General")</li> <li>Component("Component")</li> <li>CustomTab ("Intrinsic Variables")</li> <li>Quantities ("Quantities")</li> <li>Signals ("Signals")</li> </ul> |
|                     | <PropServer>                  | String      | An object identifier, generally returned from another script method, such as <code>CompInst@R;2;3</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                     | <PropName>                    | String      | Name of the property.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Return Value</b> | String value of the property. |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetPropertyValue (&lt;PropTab&gt;, &lt;PropServer&gt;, &lt;PropName&gt;)</code>                                                                |
| <b>Python Example</b> | <pre> selectionArray = oEditor.GetSelections()  for k in selectionArray:     val = oEditor.GetPropertyValue("PassedParameterTab", k, "R") ... </pre> |

## GetVariables

Returns a list of all defined variables. To get a list of project variables, execute this command using `oProject`. To get a list of local variables, use `oDesign`.

|                     |                                            |
|---------------------|--------------------------------------------|
| <b>UI Access</b>    | N/A                                        |
| <b>Parameters</b>   | None.                                      |
| <b>Return Value</b> | Array of strings containing the variables. |

|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetVariables ()</code>                                                  |
| <b>Python Example</b> | <code>oProject.GetVariables ()</code><br><code>oDesign.GetVariables ()</code> |

## GetVariableValue

Gets the value of a single specified variable. To get the value of project variables, execute this command using `oProject`. To get the value of local variables, use `oDesign`.

|                   |                              |             |                                 |
|-------------------|------------------------------|-------------|---------------------------------|
| <b>UI Access</b>  | N/A                          |             |                                 |
| <b>Parameters</b> | <b>Name</b>                  | <b>Type</b> | <b>Description</b>              |
|                   | <code>&lt;VarName&gt;</code> | String      | Name of the variable to access. |

|                     |                                              |
|---------------------|----------------------------------------------|
| <b>Return Value</b> | String represents the value of the variable. |
|---------------------|----------------------------------------------|

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetVariableValue( &lt;VarName&gt; )</code>   |
| <b>Python Example</b> | <code>oProject.GetVariableValue("var_name")</code> |

## SetPropertyValue

Sets the value of a single property belonging to a specific PropServer and PropTab. This function is available with the Project, Design or Editor objects, including definition editors. This is not supported for properties of the following types: ButtonProp, PointProp, V3DPointProp, and VPointProp. Only the ChangeProperty command can be used to modify these properties.

Use the script recording feature and edit a property, and then view the resulting script entry or use GetPropertyValue for the desired property to see the expected format.

|                   |             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------|-------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | N/A         |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Parameters</b> | <b>Name</b> | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                   | <propTab>   | String      | <p>One of the following, where tab titles are shown in parentheses:</p> <ul style="list-style-type: none"> <li>PassedParameterTab ("Parameter Values")</li> <li>DefinitionParameterTab (Parameter Defaults")</li> <li>LocalVariableTab ("Variables" or "Local Variables")</li> <li>ProjectVariableTab ("Project variables")</li> <li>ConstantsTab ("Constants")</li> <li>BaseElementTab ("Symbol" or "Footprint")</li> <li>ComponentTab ("General")</li> <li>Component("Component")</li> </ul> |



|              |              |        |                                                                                                                                                       |
|--------------|--------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |              |        | <ul style="list-style-type: none"><li>• CustomTab ("Intrinsic Variables")</li><li>• Quantities ("Quantities")</li><li>• Signals ("Signals")</li></ul> |
|              | <propServer> | String | An object identifier, generally returned from another script method, such as <code>CompInst@R;2;3</code>                                              |
|              | <propName>   | String | Name of the property.                                                                                                                                 |
|              | <propValue>  | String | The value for the property                                                                                                                            |
| Return Value | None.        |        |                                                                                                                                                       |

|                |                                                                                                         |
|----------------|---------------------------------------------------------------------------------------------------------|
| Python Syntax  | <code>SetPropertyValue(&lt;propTab&gt;, &lt;propServer&gt;, &lt;propName&gt;, &lt;propValue&gt;)</code> |
| Python Example | <code>oEditor.SetPropertyValue("PassedParameterTab", "k", "R", "2200")</code>                           |

## SetVariableValue

Sets the value of a variable. To set the value of a project variable, execute this command using `oProject`. To set the value of a local variable, use `oDesign`.

|              |            |        |                             |
|--------------|------------|--------|-----------------------------|
| UI Access    | N/A        |        |                             |
| Parameters   | Name       | Type   | Description                 |
|              | <VarName>  | String | Variable name.              |
|              | <VarValue> | Value  | New value for the variable. |
| Return Value | None.      |        |                             |

|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>SetVariableValue (&lt;VarName&gt;, &lt;VarValue&gt;)</code> |
| <b>Python Example</b> | <code>oProject.SetVariableValue('\$Var1', '3mm')</code>           |

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left blank.

## 3 - Application Object Script Commands

The Application object commands permit you to get the AppDesktop. Application object commands should be executed by the oAnsoftApp object.

`oAnsoftApp.<CommandName> <args>`

### General Application Script Commands

The following are general script commands recognized by the **oAnsoftApp** object:

- [GetAppDesktop](#)

The following deprecated commands are no longer supported and produce an error if used.

- GetDesiredRamMBLimit (deprecated)
- GetHPCLicenseType (deprecated)
- GetMaximumRamMBLimit (deprecated)
- GetMPISpawnCmd(deprecated)
- GetMPIVendor (deprecated)
- GetNumberOfProcessors (deprecated)
- GetUseHPCForMP (deprecated)
- SetDesiredRamMBLimit (deprecated)
- SetHPCLicenseType (deprecated)
- SetMaximumRamMBLimit (deprecated)
- SetMPISpawnCmd (deprecated)
- SetMPIVendor (deprecated)
- SetNumberOfProcessors (deprecated)
- SetUseHPCForMP (deprecated)

## GetAppDesktop

GetAppDesktop is a function of oAnsoftApp. This function does not take an input and it returns an object. The object is assigned to the variable oDesktop.

|                     |        |      |             |
|---------------------|--------|------|-------------|
| <b>UI Access</b>    | NA     |      |             |
| <b>Parameters</b>   | Name   | Type | Description |
|                     | None   |      |             |
| <b>Return Value</b> | Object |      |             |

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | GetAppDesktop()                                    |
| <b>Python Example</b> | <code>oDesktop = oAnsoftApp.GetAppDesktop()</code> |

## 4 - Desktop Object Script Commands

Desktop commands should be executed by the oDesktop object. Some new commands permit you to query objects when you do not know the names. See: [Object Oriented Property Scripting](#).

```
Set oDesktop =  
    CreateObject("Ansoft.ElectronicsDesktop")  
    oDesktop.CommandName <args>
```

[AddMessage](#)

[AreThereSimulationsRunning](#)

[ClearMessages](#)

[CloseAllWindows](#)

[CloseProject](#)

[CloseProjectNoForce](#)

[DeleteProject](#)

[DeleteRegistryEntry](#)

[DoesRegistryValueExist](#)

[DownloadJobResults](#)

[EnableAutoSave](#)

[ExportOptionsFiles](#)

[GetActiveProject](#)

[GetActiveScheduler](#)

[GetActiveSchedulerInfo](#)

[GetAutoSaveEnabled](#)

[GetBuildDateTimeString](#)

[GetCustomMenuSet](#)

[GetDefaultUnit](#)

[GetDesktopConfiguration](#)

[GetDistributedAnalysisMachines](#)

[GetDistributedAnalysisMachinesForDesignType](#)

[GetExeDir](#)

[GetGDIObjectCount](#)

[GetLibraryDirectory](#)

[GetLocalizationHelper](#)

[GetMessages](#)

[GetMonitorData](#)

[GetPersonalLibDirectory](#)

[GetProcessID](#)

[GetProjectDirectory](#)

[GetProjectList](#)

[GetProjects](#)

[GetRegistryInt](#)

[GetRegistryString](#)

[GetRunningInstancesMgr](#)

[GetSchematicEnvironment](#)

[GetScriptingToolsHelper](#)

[GetSysLibDirectory](#)

[GetTempDirectory](#)

[GetUserLibDirectory](#)

[GetVersion](#)

[IsFeatureEnabled](#)

[LaunchJobMonitor](#)

[NewProject](#)

[OpenAndConvertProject](#)

[OpenMultipleProjects](#)

[OpenProject](#)

[OpenProjectWithConversion](#)

[PageSetup](#)

[PauseRecording](#)

[PauseScript](#)

[Print](#)

[QuitApplication](#)

[RefreshJobMonitor](#)

[ResetLogging](#)



[RestoreProjectArchive](#)

[RestoreWindow](#)

[ResumeRecording](#)

[RunACTWizardScript](#)

[RunProgram](#)

[RunScript](#)

[RunScriptWithArguments](#)

[SelectScheduler](#)

[SetActiveProject](#)

[SetActiveProjectByPath](#)

[SetCustomMenuSet](#)

[SetDesktopConfiguration](#)

[SetLibraryDirectory](#)

[SetProjectDirectory](#)

[SetRegistryFromFile](#)

[SetRegistryInt](#)

[SetRegistryString](#)

[SetSchematicEnvironment](#)

[SetTempDirectory](#)

[ShowDockingWindow](#)

[Sleep](#)

[StopSimulations](#)

[SubmitJob](#)

[TileWindows](#)

**Related Topics:**

[Desktop Commands For Registry Values](#)

[ImportExport Tool Commands](#)

## AddMessage

Add a message with severity and context to message window.

|              |               |         |                                                                                                                                                                                                                                                                                                                                                |
|--------------|---------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | N/A           |         |                                                                                                                                                                                                                                                                                                                                                |
| Parameters   | Name          | Type    | Description                                                                                                                                                                                                                                                                                                                                    |
|              | <projectName> | String  | Project name. Passing an empty string adds the message as the desktop global message.                                                                                                                                                                                                                                                          |
|              | <designName>  | String  | Design name. Ignored if project name is empty. Passing an empty string adds the message to project node in the message tree.                                                                                                                                                                                                                   |
|              | <severity>    | Integer | One of "Error", "Warning" or "Info". Anything other than the first two is treated as "Info"<br><br>0 = Informational, 1 = Warning, 2 = Error, 3 = Fatal                                                                                                                                                                                        |
|              | <msg>         | String  | The message for the message window.                                                                                                                                                                                                                                                                                                            |
|              | <category>    | String  | Optional. The category is created with the message under the design tree node if the category does not exist. If the category already exists, the new message is added to the end of the existing category. It is ignored if the project or design is empty. If missing or empty, the message is added to the Design node in the message tree. |
| Return Value | None.         |         |                                                                                                                                                                                                                                                                                                                                                |

|                |                                                                                               |
|----------------|-----------------------------------------------------------------------------------------------|
| Python Syntax  | AddMessage( <projectName>, <designName>, <severity>, <msg>, <category>)                       |
| Python Example | <pre>oDesktop.AddMessage("Project1", "HFSS 3D Layout", 0, "This is a test message", "")</pre> |

## AreThereSimulationsRunning

Returns a bool specifying whether there are simulations running, or either running or pending, depending on the inclusion of alsoPending.

|                     |                                                          |         |                                                                       |
|---------------------|----------------------------------------------------------|---------|-----------------------------------------------------------------------|
| <b>UI Access</b>    | NA                                                       |         |                                                                       |
| <b>Parameters</b>   | Name                                                     | Type    | Description                                                           |
|                     | <bool><br><AlsoPending>                                  | Integer | Whether to report if simulations are running, or running and pending. |
| <b>Return Value</b> | A human readable status string specifying what happened. |         |                                                                       |

|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| <b>Python Syntax</b>  | AreThereSimulationsRunning (<bool>, clean)                 |
| <b>Python Example</b> | <pre>oDesktop.AreThereSimulationsRunning(bool clean)</pre> |

## ClearMessages

For a specified project and design, this command clears all messages in a specified severity range. The user-specified integral severity level is interpreted as:

```
0 => info, 1 => warning, 2 => error, and 3 => fatal error.
```

The ClearMessages function accepts four input arguments. The first two specifies project and design, respectively. This function clears messages in the range specified by the third (interpreted as start severity) and fourth (interpreted as stop severity) arguments. The fourth argument has a default value of 0. The last two arguments need not be specified in any given order, i.e., they can indicate either ascending or descending trend. The function clears all messages having severity level within this specified range. The start and stop severity need not be specified in any given order (i.e., they can indicate either ascending or descending severity).

|                     |                                                                                               |             |                                                                                                                                                                                                                                                                                              |
|---------------------|-----------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | In <b>Message Manager</b> , right-click and select <b>Clear messages for [ProjectName]...</b> |             |                                                                                                                                                                                                                                                                                              |
| <b>Parameters</b>   | <b>Name</b>                                                                                   | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                           |
|                     | <projectName>                                                                                 | String      | Name of the project from which to clear messages.                                                                                                                                                                                                                                            |
|                     | <designName>                                                                                  | String      | Name of the design under the <projectName> from which to clear messages.                                                                                                                                                                                                                     |
|                     | <startSeverity>                                                                               | Integer     | User-specified severity level at which messages start getting cleared: <ul style="list-style-type: none"><li>• 0 = informational</li><li>• 1 = warning</li><li>• 2 = error</li><li>• 3 = fatal error</li></ul>                                                                               |
|                     | <stopSeverity>                                                                                | Integer     | <i>Optional.</i> User-specified stop severity level until which messages will be cleared. <ul style="list-style-type: none"><li>• 0 = informational</li><li>• 1 = warning</li><li>• 2 = error</li><li>• 3 = fatal error</li></ul> If not specified, <stopSeverity> has a default value of 0. |
| <b>Return Value</b> | None.                                                                                         |             |                                                                                                                                                                                                                                                                                              |

|                       |                                                                                                                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ClearMessages(&lt;projectName&gt;, &lt;designName&gt;, &lt;startSeverity&gt;, &lt;stopSeverity&gt;)</code>                                                                                                       |
| <b>Python Example</b> | <pre><b>Preserve Current Functionality; stopSeverity = 0 (DEFAULT VALUE)</b> # startSeverity = 0; clears just the Info messages oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor", "Maxwell13DDesign1", 0)</pre> |

```

# startSeverity = 1; clears all the Info and Warning messages
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor", "Maxwell3DDesign1", 1)
# startSeverity = 2; clears all the Info, Warning, Error
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor", "Maxwell3DDesign1", 2)
# startSeverity = 3; clears all messages, i.e., Info, Warning, Error, Fatal
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor", "Maxwell3DDesign1", 3)
Extend the current functionality by enabling range-based deletion
# startSeverity = 0; clears the Info messages;
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor", "Maxwell3DDesign1", 0)
# startSeverity = 0 and stopSeverity = 0; clears all the Info messages
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor", "Maxwell3DDesign1", 0,
0)
# startSeverity = 0 and stopSeverity = 1; clears all the Info and Warning mes-
sages
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor", "Maxwell3DDesign1", 0,
1)
# startSeverity = 0 and stopSeverity = 2; clears all the Info, Warning, and Error
messages
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor", "Maxwell3DDesign1", 0,
2)
# startSeverity = 0 and stopSeverity = 3; clears all the Info, Warning, Error,
and Fatal messages
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor", "Maxwell3DDesign1", 0,
3)

```

```
# startSeverity = 1; clears all the Info and Warning messages;
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor","Maxwell3DDesign1",1)
# startSeverity = 1 and stopSeverity = 1; clears all the Warning messages
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor","Maxwell3DDesign1",1, 1)
# startSeverity = 1 and stopSeverity = 2; clears all the Warning and Error mes-
sages
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor","Maxwell3DDesign1",1, 2)
# startSeverity = 1 and stopSeverity = 3; clears all the Warning, Error, and
Fatal messages
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor","Maxwell3DDesign1",1, 3)

# startSeverity = 2; clears all the Info, Warning, and Error messages;
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor","Maxwell3DDesign1",2)
# startSeverity = 2 and stopSeverity = 2; clears all the Error messages
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor","Maxwell3DDesign1",2, 2)
# startSeverity = 2 and stopSeverity = 3; clears all the Error and Fatal messages
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor","Maxwell3DDesign1",2, 3)
# startSeverity = 2 and stopSeverity = 0; clears all the Info, Warning, and Error
messages
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor","Maxwell3DDesign1",2, 0)
```

```
# startSeverity = 3; clears all the Info, Warning, Error, and Fatal messages;
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor","Maxwell3DDesign1",3)
# startSeverity = 3 and stopSeverity = 3; clears all the Fatal error messages
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor","Maxwell3DDesign1",3, 3)
# startSeverity = 3 and stopSeverity = 0; clears all the Info, Warning, Error,
and Fatal messages
oDesktop.ClearMessages("Ex_EC_1_Asymmetrical_Conductor","Maxwell3DDesign1",3, 0)
```

## CloseAllWindows

Closes all MDI child windows on the desktop.

|                     |                                               |
|---------------------|-----------------------------------------------|
| <b>UI Access</b>    | From main menu, <b>Window &gt; CloseAll</b> . |
| <b>Parameters</b>   | None.                                         |
| <b>Return Value</b> | None.                                         |

|                       |                            |
|-----------------------|----------------------------|
| <b>Python Syntax</b>  | CloseAllWindows()          |
| <b>Python Example</b> | oDesktop.CloseAllWindows() |



## CloseProject

Closes a specified project. Changes to the project are not saved. Save the project using the Project command **Save** or **Save As** before closing to save changes.

| UI Access    | File > Close  |        |                                                                                                |
|--------------|---------------|--------|------------------------------------------------------------------------------------------------|
| Parameters   | Name          | Type   | Description                                                                                    |
|              | <ProjectName> | String | The name of the project already in the Desktop that is to be closed, without path or extension |
| Return Value | None          |        |                                                                                                |

| Python Syntax  | CloseProject (<ProjectName>)                     |
|----------------|--------------------------------------------------|
| Python Example | <code>oDesktop.CloseProject ("MyProject")</code> |

## CloseProjectNoForce

*Use:* Close a named project currently open in the Desktop, unless a simulation is running. Changes to the project will not be saved. Save the project using the Project command **Save** or **Save As** before closing to save changes. To determine if the project has been closed, use `GetProjectList` and see if the named project is present.

| UI Access  | File > Close  |        |                                                                              |
|------------|---------------|--------|------------------------------------------------------------------------------|
| Parameters | Name          | Type   | Description                                                                  |
|            | <ProjectName> | String | The name of the project already on the Desktop that is to be closed, without |

|                     |                                                             |
|---------------------|-------------------------------------------------------------|
|                     | <input type="text"/> <input type="text"/> path or extension |
| <b>Return Value</b> | None                                                        |

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| <b>Python Syntax</b>  | CloseProjectNoForce (< <i>ProjectName</i> >)           |
| <b>Python Example</b> | <code>oDesktop.CloseProjectNoForce("MyProject")</code> |

## Count

Gets the total number of queried projects or designs obtained by GetProjects() and GetDesigns() commands.

|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
| <b>UI Access</b>      | N/A                                                                             |
| <b>Parameters</b>     | None.                                                                           |
| <b>Return Value</b>   | Integer                                                                         |
| <b>Python Syntax</b>  | Count                                                                           |
| <b>Python Example</b> | <code>projects = oDesktop.GetProjects()<br/>numprojects = projects.Count</code> |

## DeleteProject

Deletes a project from disk.

|                  |                         |
|------------------|-------------------------|
| <b>UI Access</b> | <b>Edit &gt; Delete</b> |
|------------------|-------------------------|

|              |               |        |                     |
|--------------|---------------|--------|---------------------|
| Parameters   | Name          | Type   | Description         |
|              | <ProjectName> | String | Name of the project |
| Return Value | None          |        |                     |

|                |                                                  |
|----------------|--------------------------------------------------|
| Python Syntax  | DeleteProject (<ProjectName>)                    |
| Python Example | <code>oDesktop.DeleteProject("MyProject")</code> |

## DownloadJobResults

This command is for downloading results from Ansys Cloud. Before using this script command, the command [SelectScheduler\(\)](#) must be used first to select “ansys cloud” scheduler. This makes sure that current scheduler is Ansys Cloud, and user is logged in. Then, either a valid .q file or .q.completed file must be in the project folder, or, a valid job ID and a “batchinfo” folder containing the corresponding .jobid file are required in the project folder. When the download requirements are met, the command downloads results from Ansys Cloud using the specified filters to the given folder.

|            |                  |        |                                                                                                                                                                                                                                                        |
|------------|------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | Select Scheduler |        |                                                                                                                                                                                                                                                        |
| Parameters | Name             | Type   | Description                                                                                                                                                                                                                                            |
|            | <jobID>          | String | Provide the job ID of the target job. The job ID must be able to be found in current .q (or .q.completed) file, or inside the “batchinfo” folder in projectPath. If the job ID is empty, the job ID in current .q (or .q.completed) file will be used. |
|            | <projectPath>    | String | A string of path to locate the project folder. The project file may be not necessary, but .q (or .q.completed) file or “batchinfo” folder with valid .jobid files are required.                                                                        |
|            | <resultPath>     | String | A string giving the folder path for the download to save to.                                                                                                                                                                                           |

|                      |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                     |        |                                                                                                                                                                                     |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      | <table><tr><td>&lt;Filters&gt; (optional)</td><td>String</td><td>A string containing filters to download. The delimiter of file types is “;”. If no filter specified, the default filter “*” will be applied, which requests all files for download.</td></tr></table> | <Filters> (optional)                                                                                                                                                                | String | A string containing filters to download. The delimiter of file types is “;”. If no filter specified, the default filter “*” will be applied, which requests all files for download. |
| <Filters> (optional) | String                                                                                                                                                                                                                                                                 | A string containing filters to download. The delimiter of file types is “;”. If no filter specified, the default filter “*” will be applied, which requests all files for download. |        |                                                                                                                                                                                     |
| Return Value         | A Boolean result about download complete or not                                                                                                                                                                                                                        |                                                                                                                                                                                     |        |                                                                                                                                                                                     |

|                       |                                                                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>DownloadJobResults(jobID, projectPath, resultsPath, filters)</code>                                                                                   |
| <b>Python Example</b> | <pre>boolDownloadCompleted = oDesktop.DownloadJobResults("012345678901234567890", "C:\\projects\\basic.aedt", "C:\\projects\\DownloadResults\\", "*")</pre> |

## DeleteRegistryEntry

Deletes a registry entry from a registry key. Returns true if deletion succeeded.

|                     |                                                                                                                                                |        |                         |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------|
| <b>UI Access</b>    | N/A                                                                                                                                            |        |                         |
| <b>Parameters</b>   | Name                                                                                                                                           | Type   | Description             |
|                     | <pathToRegistry>                                                                                                                               | String | Path to Registry entry. |
| <b>Return Value</b> | Boolean: <ul style="list-style-type: none"> <li>• <b>True</b> – Key has been deleted.</li> <li>• <b>False</b> – Key does not exist.</li> </ul> |        |                         |

|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>DeleteRegistryEntry(&lt;pathToRegistry&gt;)</code>             |
| <b>Python Example</b> | <pre>res = oDesktop.DeleteRegistryEntry("Desktop/ColorScheme")</pre> |

## DoesRegistryValueExist

Determines whether a registry value exists.

|              |                                                                                                                                   |        |                                            |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------|
| UI Access    | N/A                                                                                                                               |        |                                            |
| Parameters   | Name                                                                                                                              | Type   | Description                                |
|              | <KeyName>                                                                                                                         | String | Full name of registry key, including path. |
| Return Value | Boolean: <ul style="list-style-type: none"><li>• <b>True</b> – Key exists.</li><li>• <b>False</b> – Key does not exist.</li></ul> |        |                                            |

|                |                                                                                                       |
|----------------|-------------------------------------------------------------------------------------------------------|
| Python Syntax  | DoesRegistryValueExist(<KeyName>)                                                                     |
| Python Example | <pre>Exist = oDesktop.DoesRegistryValueExist('Desktop/ActiveDSOConfigurations/HFSS 3D Lay-out')</pre> |

## EnableAutoSave

Enable or disable autosave feature.

|           |     |
|-----------|-----|
| UI Access | N/A |
|-----------|-----|

|                     |          |         |                                             |
|---------------------|----------|---------|---------------------------------------------|
| <b>Parameters</b>   | Name     | Type    | Description                                 |
|                     | <enable> | Boolean | True to enable autosave; False disables it. |
| <b>Return Value</b> | None.    |         |                                             |

|                       |                                            |
|-----------------------|--------------------------------------------|
| <b>Python Syntax</b>  | EnableAutoSave(<enable>)                   |
| <b>Python Example</b> | <code>oDesktop.EnableAutoSave(True)</code> |

## ExportOptionsFiles

Copies the options config files to the *DestinationDirectory*.

|                     |                                                         |        |                                        |
|---------------------|---------------------------------------------------------|--------|----------------------------------------|
| <b>UI Access</b>    | <b>Tools &gt; Options &gt; Export Options Files ...</b> |        |                                        |
| <b>Parameters</b>   | Name                                                    | Type   | Description                            |
|                     | <DestinationDirectory>                                  | String | The path to the destination directory. |
| <b>Return Value</b> | None                                                    |        |                                        |

|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportOptionsFiles( <DestinationDirectory>)                 |
| <b>Python Example</b> | <code>oDesktop.ExportOptionsFiles("D:/test/export/")</code> |

## GetActiveProject

Obtains the project currently active in the Desktop, as an object.

**Note:**

**GetActiveProject** returns normally if there are no active objects.

|              |                                                              |
|--------------|--------------------------------------------------------------|
| UI Access    | N/A                                                          |
| Parameters   | None.                                                        |
| Return Value | Object: the project that is currently active in the desktop. |

|                |                                                   |
|----------------|---------------------------------------------------|
| Python Syntax  | GetActiveProject()                                |
| Python Example | <pre>oProject = oDesktop.GetActiveProject()</pre> |

## GetActiveScheduler

Obtains the name of the scheduler active in the Desktop.

**Note:**

**GetActiveScheduler** returns normally if there are no active objects.

|                     |                                                                                                                                                                                                            |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                                                                                                        |
| <b>Parameters</b>   | None.                                                                                                                                                                                                      |
| <b>Return Value</b> | Name of the scheduler that is currently active in the desktop. Gets results such as "RSM", "Remote RSM", "Ansys Cloud", "SLURM", "LSF", "PBS", "SGE", "Windows HPC", etc. (User-friendly scheduler names.) |

|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetActiveScheduler()</code>                           |
| <b>Python Example</b> | <code>oSchedulerName = oDesktop.GetActiveScheduler()</code> |

## GetActiveSchedulerInfo

Obtains info for the scheduler active in the Desktop.

### Note:

**GetActiveSchedulerInfo** returns normally if there are no active objects.

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Parameters</b>   | None.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Return Value</b> | Info for the scheduler that is currently active in the desktop or a remote scheduler. Gets results such as "RSM", "Remote RSM", "Ansys Cloud", "SLURM", "LSF", "PBS", "SGE", "Windows HPC", as well as server info used to select a server. For a local scheduler, the return format resembles '{"Selected Scheduler":"RSM","Scheduler Name":"RSM","Server":""}'. For a remote scheduler, the return format resembles '{"Selected Scheduler":"Remote RSM","Scheduler Name":"SLURM","Server":"<server>"}' |



|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetActiveSchedulerInfo()</code>                           |
| <b>Python Example</b> | <code>oSchedulerInfo = oDesktop.GetActiveSchedulerInfo()</code> |

## GetAutoSaveEnabled

Checks whether the autosave feature is enabled.

|                     |                                                                                                                            |
|---------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                        |
| <b>Parameters</b>   | None.                                                                                                                      |
| <b>Return Value</b> | Integer: <ul style="list-style-type: none"><li>• 1 – Autosave is enabled.</li><li>• 0 – Autosave is not enabled.</li></ul> |

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetAutoSaveEnabled()</code>                    |
| <b>Python Example</b> | <code>Enabled = oDesktop.GetAutoSaveEnabled()</code> |

## GetBuildDateTimeString

Returns a string representing the build date and time of the product;

|                     |                                                                                                               |
|---------------------|---------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                           |
| <b>Parameters</b>   | None.                                                                                                         |
| <b>Return Value</b> | String build date and time, in the format: year-month-day hour:minute:second.<br>Example: 2019-01-18 21:59:33 |

|                       |                                                |
|-----------------------|------------------------------------------------|
| <b>Python Syntax</b>  | GetBuildDateTimeString()                       |
| <b>Python Example</b> | <code>oDesktop.GetBuildDateTimeString()</code> |

## GetCustomMenuSet

Returns the name of the current selected menu set in **Tools > Options > General Options > General > Desktop Configuration**.

|                     |                                                                                   |
|---------------------|-----------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                               |
| <b>Parameters</b>   | None.                                                                             |
| <b>Return Value</b> | String containing current menu set. For example, 'Default', 'EM', 'Twin Builder'. |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | GetCustomMenuSet ()                       |
| <b>Python Example</b> | <code>oDesktop.GetCustomMenuSet ()</code> |

# GetDefaultUnit

Returns the default unit for a physical quantity.

|            |                                                                                                                                                                                |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | Tools > Options > General Options > Default Units. Note that this menu only displays units that can be changed, while the script can be used to view additional default units. |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Parameters | Name                                                                                                                                                                           | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|            | <type>                                                                                                                                                                         | String | String containing a type of measurement.<br><br>Valid strings are (case insensitive): <ul style="list-style-type: none"><li>• "Acceleration"</li><li>• "Angle"</li><li>• "AngularAcceleration"</li><li>• "AngularDamping"</li><li>• "AngularSpeed"</li><li>• "Capacitance"</li><li>• "Conductance"</li><li>• "Current"</li><li>• "CurrentChangeRate"</li><li>• "DataRate"</li><li>• "DeltaH" (Magnetic Field Strength)</li><li>• "Density"</li><li>• "Flux"</li><li>• "Force"</li><li>• "Frequency"</li></ul> |

|                     |                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|---------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                                         |  | <ul style="list-style-type: none"><li>• "Inductance"</li><li>• "Length"</li><li>• "MagneticReluctance"</li><li>• "Mass"</li><li>• "MassFlowRate"</li><li>• "MomentInertia"</li><li>• "Power"</li><li>• "Pressure"</li><li>• "PressureCoefficient"</li><li>• "Resistance"</li><li>• "SaturateMagnetization" (Magnetic Inductance)</li><li>• "Speed"</li><li>• "Temperature"</li><li>• "Time"</li><li>• "Torque"</li><li>• "Voltage"</li><li>• "VoltageChangeRate"</li><li>• "Volume"</li><li>• "VolumeFlowPerPressureRoot"</li><li>• "VolumeFlowRate"</li></ul> |
| <b>Return Value</b> | String containing the default unit (for example, "mm"). |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                       |                                                |
|-----------------------|------------------------------------------------|
| <b>Python Syntax</b>  | GetDefaultUnit(<type>)                         |
| <b>Python Example</b> | <code>oDesktop.GetDefaultUnit("Length")</code> |

## GetDesktopConfiguration

Returns the name of the current selected configuration in **Tools > Options > General Options > General > Desktop Configuration**.

|                     |                                                                                      |
|---------------------|--------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                  |
| <b>Parameters</b>   | None.                                                                                |
| <b>Return Value</b> | String containing current Desktop configuration. For example, 'All', 'Twin Builder'. |

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| <b>Python Syntax</b>  | GetDesktopConfiguration()                       |
| <b>Python Example</b> | <code>oDesktop.GetDesktopConfiguration()</code> |

## GetDistributedAnalysisMachines

Gets a list of machines used for distributed analysis. You can iterate through the list using standard scripting methods.

|                     |                                                                          |
|---------------------|--------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                      |
| <b>Parameters</b>   | None.                                                                    |
| <b>Return Value</b> | Returns a collection of names of machines used for distributed analysis. |

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| <b>Python Syntax</b>  | GetDistributedAnalysisMachines()                       |
| <b>Python Example</b> | <code>oDesktop.GetDistributedAnalysisMachines()</code> |

## GetDistributedAnalysisMachinesForDesignType

To obtain a list of the machines set up for analysis of the specified design type.

|              |                                                |        |                                                                                                                                                                                    |
|--------------|------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | NA                                             |        |                                                                                                                                                                                    |
| Parameters   | Name                                           | Type   | Description                                                                                                                                                                        |
|              | <designTypeName>                               | String | The name of the type of design, such as "Twin Builder", "HFSS", HFSS-IE", "Maxwell 3D" , "Maxwell 2D", "RMxprt", "EM Design", "Circuit", "System", "Q3D Extractor", "2D Extractor" |
| Return Value | Object; returns a collection of machine names. |        |                                                                                                                                                                                    |

|                       |                                                                                                           |
|-----------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetDistributedAnalysisMachinesForDesignType (<designTypeName>)                                            |
| <b>Python Example</b> | <pre>machineNames =oDesktop.<br/>GetDistributedAnalysisMachinesForDesignType<br/>("HFSS 3D Layout")</pre> |

## GetExeDir

Returns the path where the executable is located.

|                     |                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                            |
| <b>Parameters</b>   | None.                                                                                          |
| <b>Return Value</b> | String path where executable is located.<br>Example: "C:\Program Files\ANSYS Inc\v252\AnsysEM" |

|                       |                                   |
|-----------------------|-----------------------------------|
| <b>Python Syntax</b>  | GetExeDir()                       |
| <b>Python Example</b> | <code>oDesktop.GetExeDir()</code> |

## GetGDIObjectCount

**Note:**

This command is for internal Ansys use only.

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | GetGDIObjectCount()                       |
| <b>Python Example</b> | <code>oDesktop.GetGDIObjectCount()</code> |

## GetLibraryDirectory

Get the path to the `SysLib` directory.

|                     |                                             |      |             |
|---------------------|---------------------------------------------|------|-------------|
| <b>UI Access</b>    | NA                                          |      |             |
| <b>Parameters</b>   | Name                                        | Type | Description |
|                     | None                                        |      |             |
| <b>Return Value</b> | String<br>The path to the SysLib directory. |      |             |

|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| <b>Python Syntax</b>  | GetLibraryDirectory()                                   |
| <b>Python Example</b> | AddInfoMessage (str (oDesktop.GetLibraryDirectory() ) ) |

## GetLocalizationHelper

**Note:**

This command is for internal Ansys use only.

Returns the object for the localization helper.

|                     |                                                                                |      |             |
|---------------------|--------------------------------------------------------------------------------|------|-------------|
| <b>UI Access</b>    | NA                                                                             |      |             |
| <b>Parameters</b>   | Name                                                                           | Type | Description |
|                     | None                                                                           |      |             |
| <b>Return Value</b> | Object<br>Localization helper object, such as "IDispatch(ILocalizationHelper)" |      |             |



|                       |                                  |
|-----------------------|----------------------------------|
| <b>Python Syntax</b>  | GetLocalizationHelper()          |
| <b>Python Example</b> | oDesktop.GetLocalizationHelper() |

## GetMessages

Get the messages from a specified project and design.

|                     |                           |             |                                                                                                                                                                                                                                                         |
|---------------------|---------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | NA                        |             |                                                                                                                                                                                                                                                         |
| <b>Parameters</b>   | <b>Name</b>               | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                      |
|                     | <ProjectName>             | String      | Name of the project for which to collect messages. An incorrect project name results in no messages (design is ignored). An empty project name results in all messages (design is ignored)                                                              |
|                     | <DesignName>              | String      | Name of the design in the named project for which to collect messages. An incorrect design name results in no messages for the named project. An empty design name results in all messages for the named project                                        |
|                     | <Severity>                | Integer     | Severity is 0-3, and is tied in to info/warning/error/fatal types as follows: <ul style="list-style-type: none"><li>• 0 – info and above</li><li>• 1 – warning and above</li><li>• 2 – error and fatal</li><li>• 3 – fatal only (rarely used)</li></ul> |
| <b>Return Value</b> | Array of string messages. |             |                                                                                                                                                                                                                                                         |

|                      |                                                       |
|----------------------|-------------------------------------------------------|
| <b>Python Syntax</b> | GetMessages (<ProjectName>, <DesignName>, <Severity>) |
|----------------------|-------------------------------------------------------|

|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>Messages = oDesktop.GetMessages("MyProject", "HFSS 3D Layout1", 1)</pre> |
|-----------------------|-------------------------------------------------------------------------------|

## GetMonitorData

Get monitor data. This command requires a -monitor flag on the ansyedt.exe command line and is used only with the web client.

|                     |                                 |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|---------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | NA                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Parameters</b>   | <b>Name</b>                     | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                     | <Request>                       | String      | <p>a json string describing what monitor data is desired. This is a list of triples separated by spaces of the form: <code>type startposition maxnumber</code>.</p> <p>The <code>type</code> must be one of convergence profile sweptvar progress variations, displaytype, or a guide that was previously returned in a displaytype block.</p> <p>The <code>startposition</code> is an integer that specifies where to start in the sequence of monitor data of that type. Each of these types is available in a list, ordered by time. For example, as the simulation goes on, data points are added to the internal list of convergence items. If the caller needs to incrementally update a display, it can repeatedly call this method with the <code>startposition</code> for each of the types given as the size of the list it has previously obtained and displayed, which ensures there will be no duplication and the returned data will be new each time.</p> <p>The <code>maxnumber</code>, if greater than 0, is the limit on the number of new items returned for each type. If the caller is able to handle any number of returned values, it can be left at 0.</p> |
| <b>Return Value</b> | a json string with the results. |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| <b>Python Syntax</b>  | GetMonitorData (<Request>)                               |
| <b>Python Example</b> | <code>Messages = oDesktop.GetMonitorData(request)</code> |

## GetPersonalLibDirectory

Get the path to the `PersonalLib` directory.

|                     |                                                        |
|---------------------|--------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                    |
| <b>Parameters</b>   | None.                                                  |
| <b>Return Value</b> | String path to the <code>PersonalLib</code> directory. |

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| <b>Python Syntax</b>  | GetPersonalLibDirectory()                       |
| <b>Python Example</b> | <code>oDesktop.GetPersonalLibDirectory()</code> |

## GetProcessID

Returns the process ID of `ansysedt.exe`.

|                     |                                                                       |
|---------------------|-----------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                   |
| <b>Parameters</b>   | None.                                                                 |
| <b>Return Value</b> | Integer process ID of <code>ansysedt.exe</code> . For example, 12716. |

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Python Syntax</b>  | GetProcessID ()                      |
| <b>Python Example</b> | <code>oDesktop.GetProcessID()</code> |

## GetProjectDirectory

Gets the path to the Project directory.

|                     |                                       |
|---------------------|---------------------------------------|
| <b>UI Access</b>    | N/A                                   |
| <b>Parameters</b>   | None.                                 |
| <b>Return Value</b> | String path to the Project directory. |

|                       |                                             |
|-----------------------|---------------------------------------------|
| <b>Python Syntax</b>  | GetProjectDirectory()                       |
| <b>Python Example</b> | <code>oDesktop.GetProjectDirectory()</code> |

## GetProjectList

Returns a list of all projects that are open in Electronics Desktop.

|                   |       |
|-------------------|-------|
| <b>UI Access</b>  | N/A   |
| <b>Parameters</b> | None. |

|                     |                                                                                    |
|---------------------|------------------------------------------------------------------------------------|
| <b>Return Value</b> | Array of strings containing the names of all open projects in Electronics Desktop. |
|---------------------|------------------------------------------------------------------------------------|

|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetProjectList()</code>                             |
| <b>Python Example</b> | <code>list_of_projects = oDesktop.GetProjectList()</code> |

## GetProjects

Returns a list of all the projects that are currently open in Electronics Desktop. Once you have the projects, you can iterate through them using standard scripting methods.

|                     |                                                                                       |
|---------------------|---------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                   |
| <b>Parameters</b>   | None.                                                                                 |
| <b>Return Value</b> | Returns a collection containing objects for all open projects in Electronics Desktop. |

|                       |                                     |
|-----------------------|-------------------------------------|
| <b>Python Syntax</b>  | <code>GetProjects()</code>          |
| <b>Python Example</b> | <code>oDesktop.GetProjects()</code> |

## GetRegistryInt

Obtains registry key integer value.

|                     |                                                                                                                                   |        |                                            |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                               |        |                                            |
| <b>Parameters</b>   | Name                                                                                                                              | Type   | Description                                |
|                     | <KeyName>                                                                                                                         | String | Full name of registry key, including path. |
| <b>Return Value</b> | Integer if the integer value is found. Return as Bad-Argument-Value if registry key does not exist or it is not an integer value. |        |                                            |

|                       |                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetRegistryInt(<KeyName>)                                                                                                  |
| <b>Python Example</b> | <pre>num = oDesktop.GetRegistryInt('Desktop/Settings/ProjectOptions/HFSS 3D Layout/UpdateReportsDynamicallyOnEdits')</pre> |

## GetRegistryString

Obtains registry key string value.

|                     |                                                                                                                               |        |                                            |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                           |        |                                            |
| <b>Parameters</b>   | Name                                                                                                                          | Type   | Description                                |
|                     | <KeyName>                                                                                                                     | String | Full name of registry key, including path. |
| <b>Return Value</b> | String if the string value is found. Return as Bad-Argument-Value if registry key does not exist or it is not a string value. |        |                                            |

|                      |                              |
|----------------------|------------------------------|
| <b>Python Syntax</b> | GetRegistryString(<KeyName>) |
|----------------------|------------------------------|

|                       |                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>activeDSO = oDesktop.GetRegistryString('Desktop/ActiveDSOConfigurations/HFSS 3D Layout')</pre> |
|-----------------------|-----------------------------------------------------------------------------------------------------|

## GetRunningInstancesMgr

Returns the object of the Running Instances Manager.

|                     |                                            |      |             |
|---------------------|--------------------------------------------|------|-------------|
| <b>UI Access</b>    | N/A                                        |      |             |
| <b>Parameters</b>   | Name                                       | Type | Description |
|                     | None                                       |      |             |
| <b>Return Value</b> | Object<br>Running instances manager object |      |             |

|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| <b>Python Syntax</b>  | GetRunningInstancesMgr()                                        |
| <b>Python Example</b> | <pre>oRunningInstances = oDesktop.GetRunningInstanceMgr()</pre> |

## GetSchematicEnvironment

Returns the name of the current schematic environment set in **Tools > Options > General Options > General > Desktop Configuration**.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

|                     |                                                                                                                                                                      |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | None.                                                                                                                                                                |
| <b>Return Value</b> | Integer representing a schematic environment: <ul style="list-style-type: none"><li>• 0 = Circuit</li><li>• 1 = Twin Builder</li><li>• 2 = Maxwell Circuit</li></ul> |

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| <b>Python Syntax</b>  | GetSchematicEnvironment()                       |
| <b>Python Example</b> | <code>oDesktop.GetSchematicEnvironment()</code> |

## GetScriptingToolsHelper

**Note:**

This command is for internal Ansys use only.

Returns the object for the scripting tools helper.

|                     |                                        |      |             |
|---------------------|----------------------------------------|------|-------------|
| <b>UI Access</b>    | NA                                     |      |             |
| <b>Parameters</b>   | Name                                   | Type | Description |
|                     | None                                   |      |             |
| <b>Return Value</b> | Object<br>ScriptingTools helper object |      |             |



|                       |                                                 |
|-----------------------|-------------------------------------------------|
| <b>Python Syntax</b>  | GetScriptingToolsHelper()                       |
| <b>Python Example</b> | <code>oDesktop.GetScriptingToolsHelper()</code> |

## GetSysLibDirectory

Get the path to the `SysLib` directory.

|                     |                                                   |
|---------------------|---------------------------------------------------|
| <b>UI Access</b>    | N/A                                               |
| <b>Parameters</b>   | None.                                             |
| <b>Return Value</b> | String path to the <code>SysLib</code> directory. |

|                       |                                            |
|-----------------------|--------------------------------------------|
| <b>Python Syntax</b>  | GetSysLibDirectory()                       |
| <b>Python Example</b> | <code>oDesktop.GetSysLibDirectory()</code> |

## GetTempDirectory

Gets the path to the `Temp` directory.

|                     |                                                 |
|---------------------|-------------------------------------------------|
| <b>UI Access</b>    | N/A                                             |
| <b>Parameters</b>   | None.                                           |
| <b>Return Value</b> | String path to the <code>Temp</code> directory. |

|                       |                                          |
|-----------------------|------------------------------------------|
| <b>Python Syntax</b>  | GetTempDirectory()                       |
| <b>Python Example</b> | <code>oDesktop.GetTempDirectory()</code> |

## GetUserLibDirectory

Gets the path to the UserLib directory.

|                     |                                                   |
|---------------------|---------------------------------------------------|
| <b>UI Access</b>    | N/A                                               |
| <b>Parameters</b>   | None.                                             |
| <b>Return Value</b> | Stringpath to the <code>UserLib</code> directory. |

|                       |                                             |
|-----------------------|---------------------------------------------|
| <b>Python Syntax</b>  | GetUserLibDirectory()                       |
| <b>Python Example</b> | <code>oDesktop.GetUserLibDirectory()</code> |

## GetVersion

Returns a string representing the version.

|                   |       |
|-------------------|-------|
| <b>UI Access</b>  | N/A   |
| <b>Parameters</b> | None. |

|                     |                                           |
|---------------------|-------------------------------------------|
| <b>Return Value</b> | String containing version of the product. |
|---------------------|-------------------------------------------|

|                       |                                    |
|-----------------------|------------------------------------|
| <b>Python Syntax</b>  | GetVersion()                       |
| <b>Python Example</b> | <code>oDesktop.GetVersion()</code> |

## IsFeatureEnabled

Returns a Boolean for whether a queried feature is enabled.

|                     |                            |
|---------------------|----------------------------|
| <b>UI Access</b>    | N/A                        |
| <b>Parameters</b>   | <FeatureID>.               |
| <b>Return Value</b> | Boolean for named feature. |

|                       |                                                                                                                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | IsFeatureEnabled()                                                                                                                                                                       |
| <b>Python Example</b> | <pre>import ScriptEnv ScriptEnv.Initialize("Ansoft.ElectronicsDesktop") oDesktop.RestoreWindow() feature_strs = ["SF3519", "F195709_EXPORT_TO_EMIT", "F362235_EMIT_RESULTS_WINDOW_</pre> |

```

IMPROVEMENTS",_
    "F136736_SBR_Rough_Surface", "F353006_VOLUMETRIC_SBR", "F359673_SBR_MULTISTATE_ARRAY",
    "F393115_SWE_ANTENNA",_
    "S196592_SBR_Directivity", "F432541_VSBR_IMPROVEMENTS", "F353007_VRT_FILTERS_ENHANCE",
    "S540337_SBR_REGION_LOSS_DIRECTIVITY",_
    "F11941_VRT_CURRENT_DENSITY", "S544593_SBR_3D_COMPONENT_ARRAY", "F539850_SBR_GO_
    BLOCKAGE", "F540275_SBR_RAYSTATS"]

results = [oDesktop.IsFeatureEnabled(str) for str in feature_strs]
result_txt = open("C:/Users/MyResults/Downloads/results.txt", "w")

    for i in range(len(feature_strs)):
        result_txt.write('%s : %s\n' % (feature_strs[i], results[i]))

result_txt.close()

```

## KeepDesktopResponsive

Specifies the minimum number of milliseconds to keep the desktop from showing hung.

|                     |                                                                                                           |         |                                                                                                           |
|---------------------|-----------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                       |         |                                                                                                           |
| <b>Parameters</b>   | Name                                                                                                      | Type    | Description                                                                                               |
|                     | <MinTimeInMilliseconds>                                                                                   | Integer | The minimum number of milliseconds to keep the desktop window from showing hung, that is, not responding. |
| <b>Return Value</b> | Boolean True for success and to keep running; False to indicate that the calling script should shut down. |         |                                                                                                           |

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | KeepDesktopResponsive (<TimeInMilliseconds>)       |
| <b>Python Example</b> | <code>oDesktop.KeepDesktopResponsive(10000)</code> |

## LaunchJobMonitor

*Use:* For use in starting job monitoring. This brings up the **Monitor Job** dialog box.

|                     |                    |        |                                          |
|---------------------|--------------------|--------|------------------------------------------|
| <b>UI Access</b>    | Launch Job Monitor |        |                                          |
| <b>Parameters</b>   | Name               | Type   | Description                              |
|                     | <projectPath>      | String | Path to the project file to be monitored |
| <b>Return Value</b> | None               |        |                                          |

|                       |                                                                    |
|-----------------------|--------------------------------------------------------------------|
| <b>Python Syntax</b>  | LaunchJobMonitor()                                                 |
| <b>Python Example</b> | <code>oDesktop.LaunchJobMonitor("C:\\projects\\basic.aedt")</code> |

## NewProject

Creates a new project. The new project becomes the active project.

|                   |                       |
|-------------------|-----------------------|
| <b>UI Access</b>  | <b>File &gt; New.</b> |
| <b>Parameters</b> | None.                 |

|                     |                                    |
|---------------------|------------------------------------|
| <b>Return Value</b> | Object, the project that is added. |
|---------------------|------------------------------------|

|                       |                                             |
|-----------------------|---------------------------------------------|
| <b>Python Syntax</b>  | NewProject()                                |
| <b>Python Example</b> | <pre>oProject = oDesktop.NewProject()</pre> |

## OpenAndConvertProject

Opens a legacy project and converts or copies it to .aedt format.

|                     |                                                                               |             |                                                                                                                                                                                                                                                                                     |
|---------------------|-------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Click <b>File &gt; Open</b> , and choose a legacy project                     |             |                                                                                                                                                                                                                                                                                     |
| <b>Parameters</b>   | <b>Name</b>                                                                   | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                  |
|                     | <itemPath>                                                                    | String      | full project path of the legacy project                                                                                                                                                                                                                                             |
|                     | <legacyChoice>                                                                | Integer     | 0: show conversion dialog box, (same as <b>File &gt; Open</b> of a legacy file)<br><br>1: rename (changes extension to .aedt, the original file and results are renamed)<br><br>2: copy (creates new file with .aedt extension, and the original file and results remain available) |
| <b>Return Value</b> | An object reference to the newly opened project which has the .aedt extension |             |                                                                                                                                                                                                                                                                                     |

**Warning:** If project file/results with the same name and .aedt extension already exist in the same directory, they will be overwritten.

|                       |                                                                                                                                                  |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | OpenAndConvertProject( <i>filePath</i> , <i>legacyChoice</i> )                                                                                   |
| <b>Python Example</b> | <pre>oProject = oDesktop.OpenAndConvertProject("c:\files\optimtee.hfss", 1)</pre><br><b>Note:</b> optimtee.hfss is gone after this code executes |

|  |                                                                                   |
|--|-----------------------------------------------------------------------------------|
|  | <pre>oProject = oDesktop.OpenAndConvertProject("c:\files\optimtee.hfss", 2)</pre> |
|--|-----------------------------------------------------------------------------------|

|  |                                                             |
|--|-------------------------------------------------------------|
|  | <b>Note:</b> optimtee.hfss remains after this code executes |
|--|-------------------------------------------------------------|

## OpenMultipleProjects

Opens all files of a specified type in a specified directory.

| UI Access    | N/A         |        |                           |
|--------------|-------------|--------|---------------------------|
| Parameters   | Name        | Type   | Description               |
|              | <directory> | String | Path to the projects.     |
|              | <file Type> | String | Type of projects to open. |
| Return Value | None.       |        |                           |

| Python Syntax  | OpenAndConvertProject(<filePath>, <legacyChoice>)                                    |
|----------------|--------------------------------------------------------------------------------------|
| Python Example | <pre>oProject = oDesktop.OpenAndConvertProject("c:\files\optimtee.", "*.aedt")</pre> |

## OpenProject

Opens a specified project.

| UI Access  | Click <b>File &gt; Open</b> . |        |                                   |
|------------|-------------------------------|--------|-----------------------------------|
| Parameters | Name                          | Type   | Description                       |
|            | <FileName>                    | String | Full path of the project to open. |

|                     |                                                  |
|---------------------|--------------------------------------------------|
| <b>Return Value</b> | An object reference to the newly opened project. |
|---------------------|--------------------------------------------------|

|                       |                                                                |
|-----------------------|----------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>OpenProject(&lt;FileName&gt;)</code>                     |
| <b>Python Example</b> | <code>oDesktop.OpenProject("D:/Projects/Project1.aedt")</code> |

## OpenProjectWithConversion

**Note:**

This command is for internal Ansys use only.

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| <b>Python Syntax</b>  | <code>OpenProjectWithConversion()</code>          |
| <b>Python Example</b> | <code>oDesktop.OpenProjectWithConversion()</code> |

## PageSetup (Layout Editor)

*Use:* Specifies page setup for printing.

*Command:* **File>Page Setup**

*Syntax:* `PageSetup <ArgArray>`

*Return Value:* None.

*Parameters:* `<Margins>`: Page margins in implicit units of inches.

`<Border>`: Integer value indicating to draw border (1) or not to draw (0).



<DesignVars>: Integer value indicating to draw design vars (1) or not to draw (0).

## PauseRecording

Temporarily stop script recording.

|                     |      |      |             |
|---------------------|------|------|-------------|
| <b>UI Access</b>    | NA   |      |             |
| <b>Parameters</b>   | Name | Type | Description |
|                     | None |      |             |
| <b>Return Value</b> | None |      |             |

|                       |                                        |
|-----------------------|----------------------------------------|
| <b>Python Syntax</b>  | PauseRecording()                       |
| <b>Python Example</b> | <code>oDesktop.PauseRecording()</code> |

## PauseScript

Pause the execution of the script and pop up a message to the user. The script execution will not resume until the user chooses.

|                  |                                |
|------------------|--------------------------------|
| <b>UI Access</b> | <b>Tools &gt; Pause Script</b> |
|------------------|--------------------------------|

|              |           |        |             |
|--------------|-----------|--------|-------------|
| Parameters   | Name      | Type   | Description |
|              | <Message> | String | Any Text.   |
| Return Value | None      |        |             |

|                |                                                                            |
|----------------|----------------------------------------------------------------------------|
| Python Syntax  | PauseScript (<Message>)                                                    |
| Python Example | <code>oDesktop.PauseScript("Text to display in pop-up dialog box.")</code> |

## Print

Prints the contents of the active view window.

|              |                         |
|--------------|-------------------------|
| UI Access    | <b>File &gt; Print.</b> |
| Parameters   | None.                   |
| Return Value | None.                   |

|                |                               |
|----------------|-------------------------------|
| Python Syntax  | Print()                       |
| Python Example | <code>oDesktop.Print()</code> |

## QuitApplication

Exits the desktop.

|                     |                        |
|---------------------|------------------------|
| <b>UI Access</b>    | <b>File &gt; Exit.</b> |
| <b>Parameters</b>   | None.                  |
| <b>Return Value</b> | None.                  |

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | <code>QuitApplication()</code>          |
| <b>Python Example</b> | <code>oDesktop.QuitApplication()</code> |

## RefreshJobMonitor

For use in monitoring a job.

|                     |                                                                                                                                                                                                                                                               |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | <b>Tools &gt; Job Management &gt; Monitor Jobs.</b>                                                                                                                                                                                                           |
| <b>Parameters</b>   | None.                                                                                                                                                                                                                                                         |
| <b>Return Value</b> | <p>A string specifying the job state.</p> <p>The result can be any of the following strings:</p> <ul style="list-style-type: none"><li>• "Monitor Not Visible"</li><li>• "Queued"</li><li>• "Running"</li><li>• "Shutting Down"</li><li>• "Unknown"</li></ul> |

|  |                                                                                                                              |
|--|------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>• "Completed"</li> <li>• "Not Monitoring"</li> <li>• "Starting Monitoring"</li> </ul> |
|--|------------------------------------------------------------------------------------------------------------------------------|

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | RefreshJobMonitor()                       |
| <b>Python Example</b> | <code>oDesktop.RefreshJobMonitor()</code> |

## ResetLogging

Redirects simulation log file to a specified directory and log level.

|                     |                               |             |                      |
|---------------------|-------------------------------|-------------|----------------------|
| <b>UI Access</b>    | N/A                           |             |                      |
| <b>Parameters</b>   | <b>Name</b>                   | <b>Type</b> | <b>Description</b>   |
|                     | <code>&lt;logFile&gt;</code>  | String      | Path to log file.    |
|                     | <code>&lt;logLevel&gt;</code> | Integer     | Specified log level. |
| <b>Return Value</b> | None.                         |             |                      |

|                       |                                                                              |
|-----------------------|------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ResetLogging( <code>&lt;logFile&gt;</code> , <code>&lt;logLevel&gt;</code> ) |
| <b>Python Example</b> | <code>oDesktop.ResetLogging("C:/Project1.aedtresults/", 1)</code>            |

## RestoreProjectArchive

Restores a previously archived project to a specified path.

| UI Access    | File > Restore Archive.   |         |                                                                  |
|--------------|---------------------------|---------|------------------------------------------------------------------|
| Parameters   | Name                      | Type    | Description                                                      |
|              | <ArchiveFilePath>         | String  | Path to archived file                                            |
|              | <ProjectFilePath>         | String  | Path to restore location                                         |
|              | <OverwriteExistingFiles>  | Boolean | True to overwrite an existing file of the same name; else False. |
|              | <OpenProjectAfterRestore> | Boolean | True to open the project after it is restored; else False.       |
| Return Value | None.                     |         |                                                                  |

| Python Syntax  | RestoreProjectArchive (<Archivefilepath>, <ProjectFilePath>, <OverwriteExistingFiles>, <OpenProjectAfterRestore>)             |
|----------------|-------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oDesktop.RestoreProjectArchive("C:\Users\jdoe\Documents\OptimTee.aedt", "C:\Documents\OptimTee.aedt", False, True)</pre> |

## RestoreWindow

Restores a minimized Desktop window.

| UI Access | N/A |
|-----------|-----|
|-----------|-----|

|                     |       |
|---------------------|-------|
| <b>Parameters</b>   | None. |
| <b>Return Value</b> | None. |

|                       |                                       |
|-----------------------|---------------------------------------|
| <b>Python Syntax</b>  | RestoreWindow()                       |
| <b>Python Example</b> | <code>oDesktop.RestoreWindow()</code> |

## ResumeRecording

Resume recording a script.

|                     |       |
|---------------------|-------|
| <b>UI Access</b>    | N/A   |
| <b>Parameters</b>   | None. |
| <b>Return Value</b> | None  |

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | ResumeRecording()                       |
| <b>Python Example</b> | <code>oDesktop.ResumeRecording()</code> |

# RunACTWizardScript

**Note:**  
This command is for internal Ansys use only.

|                |                               |
|----------------|-------------------------------|
| Python Syntax  | RunACTWizardScript()          |
| Python Example | oDesktop.RunACTWizardScript() |

# RunProgram

Runs an external program.

|              |            |                  |                                                                              |
|--------------|------------|------------------|------------------------------------------------------------------------------|
| UI Access    | NA         |                  |                                                                              |
| Parameters   | Name       | Type             | Description                                                                  |
|              | <ProgName> | String           | Name of the program to run.                                                  |
|              | <ProgPath> | String           | Location of the program. Pass in an empty string to use the system path.     |
|              | <WorkPath> | String           | Working directory in which program will start.                               |
|              | <ArgArray> | Array of Strings | Arguments to pass to the program. If no arguments, pass in <code>None</code> |
| Return Value | None       |                  |                                                                              |

|                       |                                                                                                           |
|-----------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | RunProgram (<ProgName>, <ProgPath>, <WorkPath>, <ArgArray>)                                               |
| <b>Python Example</b> | <pre>oDesktop.RunProgram("winword.exe", _ "C:\Program Files\Microsoft Office\Office10", _ "", None)</pre> |

## RunScript

Launches another script from within the script currently being executed.

|                   |                  |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | Tools>Run Script |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Parameters</b> | <b>Name</b>      | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                   | <ScriptPath>     | String      | <p>Name or full path of the script to execute.</p> <p>If the full path to the script is not specified, Twin Builder searches for the specified script in the following locations, in this order:</p> <ol style="list-style-type: none"> <li>1. Personal library directory.</li> </ol> <p>This is the <b>PersonalLib</b> subdirectory in the project directory. The project directory can be specified in the <b>General Options</b> dialog box (click <b>&gt;Tools &gt; Options &gt; General Options</b> to open this dialog box) under the <b>Project Options</b> tab.</p> <ol style="list-style-type: none"> <li>2. User library directory.</li> </ol> <p>This is the <b>userlib</b> subdirectory in the library directory. The library directory can be specified <b>General Options</b> dialog in the box (click <b>Tools &gt; Options &gt; General Options</b> to to open this dialog box) under the <b>Project Options</b> tab.</p> <ol style="list-style-type: none"> <li>3. System library directory.</li> </ol> |



|                     |                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                              |  |                                                                                                                                                                                                                                                                                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <table><tr><td></td><td></td><td><p>This is the syslib subdirectory in the library directory. The library directory can be specified in the <b>General Options</b> dialog box (click <b>Tools &gt; Options &gt; General Options</b> to open this dialog box) under the <b>Project Options</b> tab.</p><p>4. HFSS installation directory.</p></td></tr></table> |                                                                                                                                                                                                                                                                                                              |  | <p>This is the syslib subdirectory in the library directory. The library directory can be specified in the <b>General Options</b> dialog box (click <b>Tools &gt; Options &gt; General Options</b> to open this dialog box) under the <b>Project Options</b> tab.</p> <p>4. HFSS installation directory.</p> |
|                     |                                                                                                                                                                                                                                                                                                                                                                | <p>This is the syslib subdirectory in the library directory. The library directory can be specified in the <b>General Options</b> dialog box (click <b>Tools &gt; Options &gt; General Options</b> to open this dialog box) under the <b>Project Options</b> tab.</p> <p>4. HFSS installation directory.</p> |  |                                                                                                                                                                                                                                                                                                              |
| <b>Return Value</b> | <p>Long</p> <p>the return code for the script method.</p>                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                              |  |                                                                                                                                                                                                                                                                                                              |

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| <b>Python Syntax</b>  | RunScript (<ScriptPath>)                              |
| <b>Python Example</b> | <pre>oDesktop.RunScript("C:/Project/test1.vbs")</pre> |

## RunScriptWithArguments

Similar to RunScript, launch another script from within the currently executing script, but with arguments.

|                   |              |             |                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------|--------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | NA           |             |                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Parameters</b> | <b>Name</b>  | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                |
|                   | <ScriptPath> | String      | <p>The name or full path of the script to execute. If the full path to the script is not specified, the software looks for the script in the following locations:</p> <ul style="list-style-type: none"><li>Personal library directory: "PersonalLib"</li></ul> <p>The PersonalLib directory can be specified in <b>Tools &gt; Options &gt; General Options</b> on the 'Project Options' tab.</p> |

|                     |                                                |        |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------|------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                                |        | <ul style="list-style-type: none"> <li>User library directory: "userlib"<br/>The UserLib directory can be specified in <b>Tools &gt; Options &gt; General Options</b> on the 'Project Options' tab.</li> <li>System library directory: "syslib"<br/>The SysLib directory can be specified in <b>Tools &gt; Options &gt; General Options</b> on the 'Project Options' tab.</li> <li>Software installation directory</li> </ul> |
|                     | <Arguments>                                    | String | The arguments to supply to the specified script.                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Return Value</b> | Long<br>the return code for the script method. |        |                                                                                                                                                                                                                                                                                                                                                                                                                               |

|                       |                                                                           |
|-----------------------|---------------------------------------------------------------------------|
| <b>Python Syntax</b>  | RunScriptWithArguments (<ScriptPath>, <Arguments>)                        |
| <b>Python Example</b> | <pre>oDesktop.RunScriptWithArguments ("C:/Project/test2.py", "foo")</pre> |

## SelectScheduler

Selects the scheduler used for batch job submission. It tries non-graphical selection of the scheduler, attempting to get version information from the scheduler in order to check for successful selection. If unable to get the information, it displays the **Select Scheduler** window and waits for the user to complete the settings.

|                   |                                                         |      |             |
|-------------------|---------------------------------------------------------|------|-------------|
| <b>UI Access</b>  | <b>Tools &gt; Job Management &gt; Select Scheduler.</b> |      |             |
| <b>Parameters</b> | Name                                                    | Type | Description |

|                     |                                                                                                                                                      |        |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <i>&lt;option&gt;</i>                                                                                                                                | String | One of the following options (not case sensitive): <ul style="list-style-type: none"><li>• Empty string for remote RSM service</li><li>• "RSM" for local RSM</li><li>• "Windows HPC" for Windows HPC</li><li>• "LSF" for Load-Sharing Facility</li><li>• "SGE" for Grid Engine (GE, OGE, SGE, UGE, etc.)</li><li>• "PBS" for Portable Batch Scheduler/System (PBSPRO, Torque, Maui, etc.)</li><li>• "Ansys Cloud" for Ansys Cloud</li></ul> |
|                     | <i>&lt;address (optional)&gt;</i>                                                                                                                    | String | String specifying the IP address or hostname of the head node or for the remote host running the RSM service.                                                                                                                                                                                                                                                                                                                               |
|                     | <i>&lt;username (optional)&gt;</i>                                                                                                                   | String | Username string to use for remote RSM service (or blank to use username stored in current submission host user settings). If the (non-blank) username doesn't match the username stored in current submission host user settings, then the Select Scheduler dialog is displayed to allow for password entry prior to job submission.                                                                                                        |
|                     | <i>&lt;forcePasswordEntry (optional)&gt;</i>                                                                                                         | String | Boolean used to force display of the Select Scheduler GUI to allow for password entry prior to job submission.                                                                                                                                                                                                                                                                                                                              |
| <b>Return Value</b> | The selected scheduler (if selection was successful, this string should match the input option string, although it could differ in upper/lowercase). |        |                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|                       |                                                                                                                                  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Select Scheduler( <i>&lt;option&gt;</i> , <i>&lt;address&gt;</i> , <i>&lt;username&gt;</i> , <i>&lt;forcePasswordEntry&gt;</i> ) |
| <b>Python Example</b> | <pre>result = oDesktop.SelectScheduler("Windows HPC",<br/>"headnode.win.example.com")</pre>                                      |

## SetActiveProject

Specifies the name of the project that should become active in the desktop. Returns that project.

|                     |                                        |        |                                                                         |
|---------------------|----------------------------------------|--------|-------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                    |        |                                                                         |
| <b>Parameters</b>   | Name                                   | Type   | Description                                                             |
|                     | <ProjectName>                          | String | The name of the project already in the Desktop that is to be activated. |
| <b>Return Value</b> | Object, the project that is activated. |        |                                                                         |

|                       |                                                              |
|-----------------------|--------------------------------------------------------------|
| <b>Python Syntax</b>  | SetActiveProject (<ProjectName>)                             |
| <b>Python Example</b> | <pre>oProject = oDesktop.SetActiveProject ("Project1")</pre> |

## SetActiveProjectByPath

Specifies the name of the project that should become active in the desktop. Returns that project. If a user has two projects open with the same name, the result of `SetActiveProject` is ambiguous (the first one listed in selected). This command permits unambiguous specification of the active project.

|                     |                                        |        |                                                                                   |
|---------------------|----------------------------------------|--------|-----------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                    |        |                                                                                   |
| <b>Parameters</b>   | Name                                   | Type   | Description                                                                       |
|                     | <ProjectName>                          | String | The full path name of the project already in the Desktop that is to be activated. |
| <b>Return Value</b> | Object, the project that is activated. |        |                                                                                   |

|                       |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetActiveProjectByPath(<ProjectName>)                                               |
| <b>Python Example</b> | <pre>oProject = oDesktop.SetActiveProjectByPath("c:\Projects\MyProject.aedt")</pre> |

## SetCustomMenuSet

Sets the custom menu set for Electronics Desktop.

|                     |                                                                                                                                                                              |        |                                                                                                                                                                                                                                 |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Navigate to <b>Tools &gt; Options &gt; General Options &gt; General &gt; Desktop Configuration</b> . Select a configuration using the <b>Custom Menu Set</b> drop-down menu. |        |                                                                                                                                                                                                                                 |
| <b>Parameters</b>   | Name                                                                                                                                                                         | Type   | Description                                                                                                                                                                                                                     |
|                     | <customMenuSet>                                                                                                                                                              | String | Name of desired menu set. Can be one of: <ul style="list-style-type: none"><li>• 'Default'</li><li>• 'EM'</li><li>• 'RF'</li><li>• 'RF.0'</li><li>• 'SI'</li><li>• 'SI1.0'</li><li>• 'SI2.0'</li><li>• 'Twin Builder'</li></ul> |
| <b>Return Value</b> | None                                                                                                                                                                         |        |                                                                                                                                                                                                                                 |

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| <b>Python Syntax</b>  | SetCustomMenuSet(<customMenuSet>)                 |
| <b>Python Example</b> | <code>oDesktop.SetCustomMenuSet('Default')</code> |

## SetDesktopConfiguration

Sets the desktop configuration.

|                     |                                                                                                                                                                                         |        |                                                                                                                                                                                     |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Navigate to <b>Tools &gt; Options &gt; General Options &gt; General &gt; Desktop Configuration</b> . Select a configuration using the <b>Set targeted configuration</b> drop-down menu. |        |                                                                                                                                                                                     |
| <b>Parameters</b>   | Name                                                                                                                                                                                    | Type   | Description                                                                                                                                                                         |
|                     | <configName>                                                                                                                                                                            | String | Name of desired Desktop configuration. Can be one of: <ul style="list-style-type: none"><li>• 'All'</li><li>• 'EM'</li><li>• 'RF'</li><li>• 'SI'</li><li>• 'Twin Builder'</li></ul> |
| <b>Return Value</b> | None                                                                                                                                                                                    |        |                                                                                                                                                                                     |

|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| <b>Python Syntax</b>  | SetDesktopConfiguration (<configName>)              |
| <b>Python Example</b> | <code>oDesktop.SetDesktopConfiguration('RF')</code> |

## SetLibraryDirectory

Sets the library directory path. The specified directory must already exist and contain a syslib folder.

|                     |                 |        |                                  |
|---------------------|-----------------|--------|----------------------------------|
| <b>UI Access</b>    | NA              |        |                                  |
| <b>Parameters</b>   | Name            | Type   | Description                      |
|                     | <DirectoryPath> | String | The path to the SysLib Directory |
| <b>Return Value</b> | None            |        |                                  |

|                       |                                              |  |  |
|-----------------------|----------------------------------------------|--|--|
| <b>Python Syntax</b>  | SetLibraryDirectory (<DirectoryPath>)        |  |  |
| <b>Python Example</b> | oDesktop.SetLibraryDirectory("c:\libraries") |  |  |

## SetProjectDirectory

Sets the project directory path.

|                     |                 |        |                                                                          |
|---------------------|-----------------|--------|--------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A             |        |                                                                          |
| <b>Parameters</b>   | Name            | Type   | Description                                                              |
|                     | <DirectoryPath> | String | The path to the project directory. This should be writeable by the user. |
| <b>Return Value</b> | None.           |        |                                                                          |

|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| <b>Python Syntax</b>  | SetProjectDirectory (<DirectoryPath>)                    |
| <b>Python Example</b> | <code>oDesktop.SetProjectDirectory("c:\projects")</code> |

## SetRegistryFromFile

Configures registry by specifying an Analysis Configuration file which must have been exported from the HPC and Analysis panel.

|                     |                                                                                                                                          |        |                                  |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                                      |        |                                  |
| <b>Parameters</b>   | Name                                                                                                                                     | Type   | Description                      |
|                     | <filePath>                                                                                                                               | String | Full file path of registry file. |
| <b>Return Value</b> | Success if configuration is imported. Bad argument value if the file is not found or does not contain valid analysis configuration data. |        |                                  |

|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| <b>Python Syntax</b>  | SetRegistryFromFile(<filePath>)                               |
| <b>Python Example</b> | <code>oDesktop.SetRegistryFromFile('c:/temp/test.acf')</code> |

## SetRegistryInt

Sets registry key to an integer value.



|                     |                                                                                                                            |         |                                               |
|---------------------|----------------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                        |         |                                               |
| <b>Parameters</b>   | Name                                                                                                                       | Type    | Description                                   |
|                     | <KeyName>                                                                                                                  | String  | Full name of registry key, including path.    |
|                     | <int>                                                                                                                      | Integer | Integer value to be assigned to registry key. |
| <b>Return Value</b> | Success if the key is defined as an integer. Bad argument value if a key is not defined, or if the value is a text string. |         |                                               |

|                       |                                                                                                                         |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetRegistryInt(<KeyName>, <int>)                                                                                        |
| <b>Python Example</b> | <pre>oDesktop.SetRegistryInt('Desktop/Settings/ProjectOptions/HFSS 3D Layout/UpdateReportsDynamicallyOnEdits', 0)</pre> |

## SetRegistryString

Sets registry key to a string value.

|                     |                                                                                                                            |        |                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                        |        |                                              |
| <b>Parameters</b>   | Name                                                                                                                       | Type   | Description                                  |
|                     | <KeyName>                                                                                                                  | String | Full name of registry key, including path.   |
|                     | <value>                                                                                                                    | String | String value to be assigned to registry key. |
| <b>Return Value</b> | Success if the key is defined as a text string. Bad argument value if the key is not defined or requires an integer value. |        |                                              |

|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetRegistryString(<KeyName>, <value>)                                                              |
| <b>Python Example</b> | <code>oDesktop.SetRegistryString('Desktop/ActiveDSOConfigurations/HFSS 3D Layout', 'Local')</code> |

## SetSchematicEnvironment

Sets the schematic environment for Electronics Desktop.

|                     |                                                                                                                                                                                      |             |                                                                                                                                                                      |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Navigate to <b>Tools &gt; Options &gt; General Options &gt; General &gt; Desktop Configuration</b> . Select a schematic environment using the <b>Custom Menu Set</b> drop-down menu. |             |                                                                                                                                                                      |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                                                                          | <b>Type</b> | <b>Description</b>                                                                                                                                                   |
|                     | <schEnv>                                                                                                                                                                             | Integer     | Desired schematic environment. Can be one of: <ul style="list-style-type: none"><li>• 0 (Circuit)</li><li>• 1 (Twin Builder)</li><li>• 2 (Maxwell Circuit)</li></ul> |
| <b>Return Value</b> | None                                                                                                                                                                                 |             |                                                                                                                                                                      |

|                       |                                                  |
|-----------------------|--------------------------------------------------|
| <b>Python Syntax</b>  | SetSchematicEnvironment(<schEnv>)                |
| <b>Python Example</b> | <code>oDesktop.SetSchematicEnvironment(1)</code> |

## SetTempDirectory

Sets the temp directory path. The directory will be automatically created if it does not already exist.

|                     |                 |        |                                                                       |
|---------------------|-----------------|--------|-----------------------------------------------------------------------|
| <b>UI Access</b>    | N/A             |        |                                                                       |
| <b>Parameters</b>   | Name            | Type   | Description                                                           |
|                     | <DirectoryPath> | String | The path to the Temp directory. This should be writeable by the user. |
| <b>Return Value</b> | None.           |        |                                                                       |

|                       |                                                |
|-----------------------|------------------------------------------------|
| <b>Python Syntax</b>  | SetTempDirectory (<DirectoryPath>)             |
| <b>Python Example</b> | <pre>oDesktop.SetTempDirectory("c:\tmp")</pre> |

## ShowDockingWindow

Shows or hides a docking window.

|                     |                                         |         |                                                                                       |
|---------------------|-----------------------------------------|---------|---------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right click docking window > Show/Hide. |         |                                                                                       |
| <b>Parameters</b>   | Name                                    | Type    | Description                                                                           |
|                     | <windowName>                            | String  | The window name (for example, "Message Manager", "Component Libraries", "Properties") |
|                     | <show>                                  | Boolean | True to show; False to hide.                                                          |
| <b>Return Value</b> | None.                                   |         |                                                                                       |

|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| <b>Python Syntax</b>  | ShowDockingWindow (<windowName>, <show>)                          |
| <b>Python Example</b> | <code>oDesktop.ShowDockingWindow('Message Manager', False)</code> |

## Sleep

Suspends execution of HFSS for the specified number of milliseconds, up to 60,000 milliseconds (1 minute).

|                     |                       |         |                                                                 |
|---------------------|-----------------------|---------|-----------------------------------------------------------------|
| <b>UI Access</b>    | NA                    |         |                                                                 |
| <b>Parameters</b>   | Name                  | Type    | Description                                                     |
|                     | <TimeInMil-liseconds> | Integer | The time that the execution should be suspended in milliseconds |
| <b>Return Value</b> | None                  |         |                                                                 |

|                       |                                   |
|-----------------------|-----------------------------------|
| <b>Python Syntax</b>  | Sleep (<TimeInMilliseconds>)      |
| <b>Python Example</b> | <code>oDesktop.Sleep(1000)</code> |

## StopSimulations

Either cleanly stops all running and pending simulations, or aborts them.

|                     |                                                          |         |                                                                                     |
|---------------------|----------------------------------------------------------|---------|-------------------------------------------------------------------------------------|
| <b>UI Access</b>    | NA                                                       |         |                                                                                     |
| <b>Parameters</b>   | Name                                                     | Type    | Description                                                                         |
|                     | <bool>                                                   | Integer | If true, clean stop for all running and pending simulations. If false, aborts them. |
|                     | <Clean>                                                  |         |                                                                                     |
| <b>Return Value</b> | A human readable status string specifying what happened. |         |                                                                                     |

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| <b>Python Syntax</b>  | StopSimulations (<bool>, clean)                   |
| <b>Python Example</b> | <code>oDesktop.StopSimulations(bool clean)</code> |

## SubmitJob

Submits a batch job to a scheduler. When submitting the same project file multiple times, you should have the script wait for each job (or jobs for multi-step) to finish, which can be done via the monitoring functions LaunchJobMonitor() and RefreshJobMonitor(), checking the result of RefreshJobMonitor() in a loop until it returns completed ("Monitor Not Visible") status.

|                   |                                                   |        |                                                                                                                     |
|-------------------|---------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | <b>Tools &gt; Job Management &gt; Submit Job.</b> |        |                                                                                                                     |
| <b>Parameters</b> | Name                                              | Type   | Description                                                                                                         |
|                   | <settingsPath>                                    | String | Path to the settings file (exported from the Submit Job GUI) to use for submission.                                 |
|                   | <projectPath>                                     | String | Path to the project file to use in the batch job. This could be an archive (.aedtz file) or an un-archived project. |
|                   | <design (optional)>                               | String | Name of the design to use for batch solve.                                                                          |
|                   | <setup (optional)>                                | String | Name of the specific setup to solve.                                                                                |

|                     |                                                       |
|---------------------|-------------------------------------------------------|
| <b>Return Value</b> | Array of job ID strings (empty if no jobs submitted). |
|---------------------|-------------------------------------------------------|

|                       |                                                                                                                                                                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>SubmitJob(&lt;settingsPath&gt;, &lt;projectPath&gt;, &lt;design&gt;, &lt;setup&gt;)</code>                                                                                                                                                  |
| <b>Python Example</b> | <pre> jobIDs = oDesktop.SubmitJob("C:\\hpc-settings\\Submit_ Job_Settings.ared", "C:\\projects\\basic.aedt")) moreIDs = oDesktop.SubmitJob("C:\\hpc-settings\\Submit_ Job_Settings.ared", "C:\\projects\\basic.aedt", "Design1", "Setup1") </pre> |

## TileWindows

Arrange all open windows in a tiled format.

|              |                                                                                            |         |                                                                                                         |
|--------------|--------------------------------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------------------------|
| UI Access    | From main menu, <b>Window &gt;Tile Horizontally</b> or <b>Window &gt;Tile Vertically</b> . |         |                                                                                                         |
| Parameters   | Name                                                                                       | Type    | Description                                                                                             |
|              | <TilingFlag>                                                                               | Integer | <ul style="list-style-type: none"><li>• 0 – Tile vertically.</li><li>• 1 – Tile horizontally.</li></ul> |
| Return Value | None.                                                                                      |         |                                                                                                         |

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Python Syntax</b>  | <code>TileWindows(&lt;TilingFlag&gt;)</code> |
| <b>Python Example</b> | <code>oDesktop.TileWindows(0)</code>         |

## Desktop Commands For Registry Values

The Ansys Registry is stored as XML format file. By default it is located at C:\User-s\<UserName>\Documents\Ansoft\<AnsysProductNameversion>\config\<PC\_NAME>\_user.XML. Most of the Ansys product configuration information is stored in this XML file. These methods allow you to change the product configuration.

For example, to set the DSO & HPC analysis setup for HFSS using a Python script:

1. Start HFSS 3D Layout.
2. Go to the DSO and HPC options and create a setup named "test".
3. Export the setup to a file (for example, c:\temp\test.acf).
4. Copy the exported file to a target PC (for example, f:\temp\test.acf).
5. Run the following script:

```
#import the setup

oDesktop.SetRegistryFromFile("f:\\temp\\test.acf")

# Set Active Setup to "test"

oDesktop.SetRegistryString("Desktop/ActiveDSOConfigurations/HFSS 3D Layout", "test")
```

See the following subtopics:

[DeleteRegistryEntry](#)

[DoesRegistryValueExist](#)

[GetRegistryInt](#)

[GetRegistryString](#)

[SetRegistryFromFile](#)

[SetRegistryInt](#)[SetRegistryString](#)

## DeleteRegistryEntry

Deletes a registry entry from a registry key. Returns true if deletion succeeded.

|                     |                                                                                                                                                |        |                         |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------|
| <b>UI Access</b>    | N/A                                                                                                                                            |        |                         |
| <b>Parameters</b>   | Name                                                                                                                                           | Type   | Description             |
|                     | <pathToRegistry>                                                                                                                               | String | Path to Registry entry. |
| <b>Return Value</b> | Boolean: <ul style="list-style-type: none"> <li>• <b>True</b> – Key has been deleted.</li> <li>• <b>False</b> – Key does not exist.</li> </ul> |        |                         |

|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteRegistryEntry(<pathToRegistry>)                     |
| <b>Python Example</b> | res = oDesktop.DeleteRegistryEntry("Desktop/ColorScheme") |

## DoesRegistryValueExist

Determines whether a registry value exists.

|                   |           |        |                                            |
|-------------------|-----------|--------|--------------------------------------------|
| <b>UI Access</b>  | N/A       |        |                                            |
| <b>Parameters</b> | Name      | Type   | Description                                |
|                   | <KeyName> | String | Full name of registry key, including path. |



|                     |                                                                                                                                   |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>Return Value</b> | Boolean: <ul style="list-style-type: none"><li>• <b>True</b> – Key exists.</li><li>• <b>False</b> – Key does not exist.</li></ul> |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------|

|                       |                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DoesRegistryValueExist(<KeyName>)                                                                     |
| <b>Python Example</b> | <pre>Exist = oDesktop.DoesRegistryValueExist('Desktop/ActiveDSOConfigurations/HFSS 3D Lay-out')</pre> |

## GetRegistryInt

Obtains registry key integer value.

|                     |                                                                                                                                   |             |                                            |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                               |             |                                            |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                       | <b>Type</b> | <b>Description</b>                         |
|                     | <KeyName>                                                                                                                         | String      | Full name of registry key, including path. |
| <b>Return Value</b> | Integer if the integer value is found. Return as Bad-Argument-Value if registry key does not exist or it is not an integer value. |             |                                            |

|                      |                           |
|----------------------|---------------------------|
| <b>Python Syntax</b> | GetRegistryInt(<KeyName>) |
|----------------------|---------------------------|

|                       |                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>num = oDesktop.GetRegistryInt('Desktop/Settings/ProjectOptions/HFSS 3D Layout/UpdateReportsDynamicallyOnEdits')</pre> |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------|

## GetRegistryString

Obtains registry key string value.

|                     |                                                                                                                               |             |                                            |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                           |             |                                            |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                   | <b>Type</b> | <b>Description</b>                         |
|                     | <KeyName>                                                                                                                     | String      | Full name of registry key, including path. |
| <b>Return Value</b> | String if the string value is found. Return as Bad-Argument-Value if registry key does not exist or it is not a string value. |             |                                            |

|                       |                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetRegistryString(&lt;KeyName&gt;)</code>                                                     |
| <b>Python Example</b> | <pre>activeDSO = oDesktop.GetRegistryString('Desktop/ActiveDSOConfigurations/HFSS 3D Layout')</pre> |

## SetRegistryFromFile

Configures registry by specifying an Analysis Configuration file which must have been exported from the HPC and Analysis panel.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

|              |                                                                                                                                          |        |                                  |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|
| Parameters   | Name                                                                                                                                     | Type   | Description                      |
|              | <filePath>                                                                                                                               | String | Full file path of registry file. |
| Return Value | Success if configuration is imported. Bad argument value if the file is not found or does not contain valid analysis configuration data. |        |                                  |

|                |                                                  |
|----------------|--------------------------------------------------|
| Python Syntax  | SetRegistryFromFile(<filePath>)                  |
| Python Example | oDesktop.SetRegistryFromFile('c:/temp/test.acf') |

## SetRegistryInt

Sets registry key to an integer value.

|              |                                                                                                                            |         |                                               |
|--------------|----------------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------|
| UI Access    | N/A                                                                                                                        |         |                                               |
| Parameters   | Name                                                                                                                       | Type    | Description                                   |
|              | <KeyName>                                                                                                                  | String  | Full name of registry key, including path.    |
|              | <int>                                                                                                                      | Integer | Integer value to be assigned to registry key. |
| Return Value | Success if the key is defined as an integer. Bad argument value if a key is not defined, or if the value is a text string. |         |                                               |

|               |                                  |
|---------------|----------------------------------|
| Python Syntax | SetRegistryInt(<KeyName>, <int>) |
|---------------|----------------------------------|

|                       |                                                                                                                           |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <code>oDesktop.SetRegistryInt('Desktop/Settings/ProjectOptions/HFSS 3D Layout/UpdateReportsDynamicallyOnEdits', 0)</code> |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------|

## SetRegistryString

Sets registry key to a string value.

|                     |                                                                                                                            |             |                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                        |             |                                              |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                | <b>Type</b> | <b>Description</b>                           |
|                     | <KeyName>                                                                                                                  | String      | Full name of registry key, including path.   |
|                     | <value>                                                                                                                    | String      | String value to be assigned to registry key. |
| <b>Return Value</b> | Success if the key is defined as a text string. Bad argument value if the key is not defined or requires an integer value. |             |                                              |

|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>SetRegistryString(&lt;KeyName&gt;, &lt;value&gt;)</code>                                     |
| <b>Python Example</b> | <code>oDesktop.SetRegistryString('Desktop/ActiveDSOConfigurations/HFSS 3D Layout', 'Local')</code> |

## ImportExport Tool Commands

These oDesktop commands are run by using the GetTool script to call the ImportExport Tool.

```
oTool = oDesktop.GetTool("ImportExport")
```

Scripts run via the ImportExport Tool include:

[ImportANF](#)[ImportANFV2](#)[ImportAutoCAD](#)[ImportAWRMicrowaveOffice](#)[ImportEDB](#)[ImportExtracta](#)[ImportGDSII](#)[ImportGerber](#)[ImportIDF](#)[ImportIDFandMerge](#)[ImportIPC](#)[ImportODB](#)[ImportXFL](#)

## ImportANF

Imports an ANF file into a new project. For older ANFv2 files, use [ImportANFv2](#).

| UI Access    | File > Import > ANF. |        |                        |
|--------------|----------------------|--------|------------------------|
| Parameters   | Name                 | Type   | Description            |
|              | <ANFfilename>        | String | Full path of ANF file. |
| Return Value | None.                |        |                        |

|                       |                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ImportANF(&lt;ANFfilename&gt;)</code>                                                                                                          |
| <b>Python Example</b> | <pre>oDesktop.RestoreWindow()  Set oTool = oDesktop.GetTool('ImportExport')  oTool.ImportANF('C:\\\\AnsTranslator\\\\results\\\\package4.anf')</pre> |

## ImportANFv2

Imports an ANFv2 file into a new project. For newer ANF files, use [ImportANF](#).

|                     |                                   |        |                                                   |
|---------------------|-----------------------------------|--------|---------------------------------------------------|
| <b>UI Access</b>    | <b>File &gt; Import &gt; ANF.</b> |        |                                                   |
| <b>Parameters</b>   | Name                              | Type   | Description                                       |
|                     | <ANFfilename>                     | String | Full path of ANF file.                            |
|                     | <outputPathName>                  | String | Full path of *.aedb output file.                  |
|                     | <controlFileName>                 | String | Full path of XML control file.                    |
|                     | <cmpFileName>                     | String | Full path of CMP file. Pass empty string if none. |
| <b>Return Value</b> | None.                             |        |                                                   |

|                       |                                                                                                                                                                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ImportANFv2 (&lt;ANFfilename&gt;, &lt;outputPathName&gt;, &lt;controlFileName&gt;, &lt;cmpFileName&gt;)</code>                                                                                                                                         |
| <b>Python Example</b> | <pre>oDesktop.RestoreWindow()  Set oTool = oDesktop.GetTool('ImportExport')  oTool.ImportANFV2 ("C:/Users/jdoe/Documents/SAMPLEFILES/my_model.anf", "C:/Users/jdoe/Documents/Ansoft/my_model.aedb", "C:/Users/jdoe/Documents/Ansoft/my_model.xml", "")</pre> |

|  |  |
|--|--|
|  |  |
|--|--|

## ImportAutoCAD

Imports an AutoCAD file into a new project.

|                     |                                       |        |                                                           |
|---------------------|---------------------------------------|--------|-----------------------------------------------------------|
| <b>UI Access</b>    | <b>File &gt; Import &gt; AutoCAD.</b> |        |                                                           |
| <b>Parameters</b>   | Name                                  | Type   | Description                                               |
|                     | <dxfileName>                          | String | Full path of DXF file.                                    |
|                     | <outputPathFileName>                  | String | Full path of EDB file to create during import.            |
|                     | <controlFileName>                     | String | Full path of XML control file. Pass empty string if none. |
| <b>Return Value</b> | None.                                 |        |                                                           |

|                       |                                                                                                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ImportAutoCAD (<dxfileName>, <outputPathFileName>, <controlFileName>)                                                                                               |
| <b>Python Example</b> | <pre>Set oTool = oDesktop.GetTool('ImportExport')<br/>oTool.ImportAutoCAD('C:/MyPath/a4lines.dxf', 'C:/MyPath/a4lines.aedb.edb',<br/>'C:/MyPath/a4lines.xml')</pre> |

## ImportAWRMicrowaveOffice

Imports an AWRMicrowaveOffice file into a new project.

|                  |                                                  |
|------------------|--------------------------------------------------|
| <b>UI Access</b> | <b>File &gt; Import &gt; AWRMicrowaveOffice.</b> |
|------------------|--------------------------------------------------|

|                     |                  |             |                           |
|---------------------|------------------|-------------|---------------------------|
| <b>Parameters</b>   | <b>Name</b>      | <b>Type</b> | <b>Description</b>        |
|                     | <xmlFileName>    | String      | Full path of XML file.    |
|                     | <outputPathName> | String      | Full path of output file. |
|                     | <logFileName>    | String      | Full path of log file.    |
| <b>Return Value</b> | None.            |             |                           |

|                       |                                                                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ImportAWRMicrowaveOffice (<xmlFileName>, <outputPathName>, <logFileName>)                                                                                                                           |
| <b>Python Example</b> | <pre>oDesktop.RestoreWindow()  Set oTool = oDesktop.GetTool('ImportExport')  oTool.ImportAWRMicrowaveOffice('C:/MyFiles/package4.xml', 'C:/MyFiles/package4.aedb', 'C:/MyFiles/package4.log')</pre> |

## ImportEDB

Imports an EDB file into a new project.

|                     |                                   |             |                        |
|---------------------|-----------------------------------|-------------|------------------------|
| <b>UI Access</b>    | <b>File &gt; Import &gt; EDB.</b> |             |                        |
| <b>Parameters</b>   | <b>Name</b>                       | <b>Type</b> | <b>Description</b>     |
|                     | <edbFileName>                     | String      | Full path of EDB file. |
| <b>Return Value</b> | None.                             |             |                        |



|                       |                                                                                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ImportEDB (<edbFileName>)                                                                                                                      |
| <b>Python Example</b> | <pre>oDesktop.RestoreWindow()  Set oTool = oDesktop.GetTool('ImportExport')  oTool.ImportEDB('C:/MyFiles/projectforimport.aedb/edb.def')</pre> |

## ImportExtracta

Imports a Cadence Extracta file into a new project.

### Note:

In order for this script to work, you must have the Cadence-supplied executable Extracta.exe installed on your machine.

|                     |                                                           |        |                                          |
|---------------------|-----------------------------------------------------------|--------|------------------------------------------|
| <b>UI Access</b>    | <b>File &gt; Import &gt; Cadence APD / Allegro / SiP.</b> |        |                                          |
| <b>Parameters</b>   | Name                                                      | Type   | Description                              |
|                     | <extractaFileName>                                        | String | Full path of Extracta file.              |
|                     | <outputPathName>                                          | String | Full path of output file to be created.  |
|                     | <controlFileName>                                         | String | Optional. Full path to XML control file. |
| <b>Return Value</b> | None.                                                     |        |                                          |

|                      |                                                                          |
|----------------------|--------------------------------------------------------------------------|
| <b>Python Syntax</b> | ImportExtracta (<extractaFileName>, <outputPathName>, <controlFileName>) |
| <b>Python</b>        | oDesktop.RestoreWindow()                                                 |

|                |                                                                                                                                               |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Example</b> | <pre>Set oTool = oDesktop.GetTool('ImportExport') oTool.ImportExtracta('C:/MyFiles/projectforimport.brd', 'C:/MyFiles/project.edb', '')</pre> |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------|

## ImportGDSII

Imports a GDSII file into a new project.

| UI Access    | File > Import > GDSII. |        |                                                                                                                                                                                                                                |
|--------------|------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                   | Type   | Description                                                                                                                                                                                                                    |
|              | <gdsiiFileName>        | String | Full path of GDSII file.                                                                                                                                                                                                       |
|              | <outputPathName>       | String | Full path of EDB file to create during import.                                                                                                                                                                                 |
|              | <controlFileName>      | String | Optional. Full path of XML control file. Full path of “technology” (corresponding to <code>-t=technologyfile</code> argument in anstranlator). Pass empty string if none.                                                      |
|              | <mapFileName>          | String | If technology file was used in place of the control file. Full path to either gdsii mapping file (corresponding to <code>-g=gdsMappingFile</code> argument in anstranlator) or XML control file. Otherwise, pass empty string. |
| Return Value | None.                  |        |                                                                                                                                                                                                                                |

| Python Syntax  | ImportGDSII(<gdsiiFileName>, <outputPathName>, <controlFileName>, <mapFileName>)                                                                                                           |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oDesktop.RestoreWindow()  Set oTool = oDesktop.GetTool('ImportExport')  oTool.ImportGDSII('C:/Files/test.gds', 'C:/Files/test.aedb', 'C:/Files/test.ircx', 'C:/Files/test.xml')</pre> |

### ImportGerber

Imports a GERBER file into a new project.

|              |                         |        |                                                                     |
|--------------|-------------------------|--------|---------------------------------------------------------------------|
| UI Access    | File > Import > GERBER. |        |                                                                     |
| Parameters   | Name                    | Type   | Description                                                         |
|              | <gerberFileName>        | String | Full path of GERBER file.                                           |
|              | <outputPathName>        | String | Full path of EDB file to create during import.                      |
|              | <controlFileName>       | String | Optional. Full path of XML control file. Pass empty string if none. |
| Return Value | None.                   |        |                                                                     |

|                |                                                                                                                                                                                          |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ImportGerber(<gerberFileName>, <outputPathName>, <controlFileName>)                                                                                                                      |
| Python Example | <pre>oDesktop.RestoreWindow()<br/><br/>Set oTool = oDesktop.GetTool('ImportExport')<br/>oTool.ImportGERBER('C:/Files/test.gbr', 'C:/Files/test.aedb.edb',<br/>'C:/Files/test.xml')</pre> |

### ImportIDF

Imports an IDF file into a new project. To merge with an existing design, use [ImportIDFandMerge](#).

| UI Access  | placeholder                       |        |                                                        |
|------------|-----------------------------------|--------|--------------------------------------------------------|
| Parameters | Name                              | Type   | Description                                            |
|            | <NAME>                            | string | Settings                                               |
|            | <Board>                           | bool   | Full path of board file                                |
|            | <Library>                         | int    | Full path of library file                              |
|            | <Control>                         | int    | Full path of control file                              |
|            | <Filters>                         | list   | ["Cap","Height","HeightExclude2D","Ind","Power","Res"] |
|            | <CreateFilteredAsNonModel>        | bool   | True or False                                          |
|            | <FootPrint>                       | string | Footprint size and unit                                |
|            | <NAME>                            | string | definitionOverridesMap                                 |
|            | <NAME>                            | string | instanceOverridesMap                                   |
|            | <HighSurfThickness>               | string | High side surface thickness and unit                   |
|            | <LowSurfThickness>                | string | Low side surface thickness and unit                    |
|            | <InternalLayerThickness>          | string | Internal layer thickness and unit                      |
|            | <NumInternalLayer>                | int    | Number of internal layers                              |
|            | <HighSurfaceCopper>               | int    | High side surface coverage percentage                  |
|            | <LowSurfaceCopper>                | int    | Low side surface coverage percentage                   |
|            | <InternalLayerCopper>             | int    | Internal layer coverage percentage                     |
|            | <TraceMaterial>                   | string | Trace material name                                    |
|            | <SubstrateMaterial>               | int    | Substrate material name                                |
|            | <CreateBoard>                     | bool   | True or False                                          |
|            | <ModelBoardAsRect>                | bool   | True or False                                          |
|            | <ModelDeviceAsRect>               | bool   | True or False                                          |
|            | <Cutoff>                          | bool   | True or False                                          |
|            | <IncludeDrilledHoles>             | bool   | True or False                                          |
|            | <HoleDiameterCutoff>              | string | Hole diameter size and unit                            |
|            | <ReplaceDevices>                  | bool   | True or False                                          |
|            | <CreatePointsOnBoardForInstances> | bool   | True or False                                          |

|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ImportIDF_1 (&lt;NAME&gt;, &lt;Board&gt;, &lt;Library&gt;, &lt;Control&gt;, &lt;Filters&gt;, &lt;CreateFilteredAsNonModel&gt;, &lt;NAME&gt;, &lt;NAME&gt;, &lt;HighSurfThickness&gt;, &lt;LowSurfThickness&gt;, &lt;InternalLayerThickness&gt;, &lt;NumInternalLayer&gt;, &lt;HighSurfaceCopper&gt;, &lt;LowSurfaceCopper&gt;, &lt;InternalLayerCopper&gt;, &lt;TraceMaterial&gt;, &lt;SubstrateMaterial&gt;, &lt;CreateBoard&gt;, &lt;ModelBoardAsRect&gt;, &lt;ModelDeviceAsRect&gt;, &lt;Cutoff&gt;, &lt;IncludeDrilledHoles&gt;, &lt;ReplaceDevices&gt;)</code>                                                                                                                                                                                                                                                                               |
| <b>Python Example</b> | <pre>oDesign.ImportIDF(<br/>    [<br/>        "NAME:Settings",<br/>        "Board:=" , "C:\\Users\\Model Files\\brd_board.emn",<br/>        "Library:=" , "C:\\Users\\Model Files\\brd_board.emp",<br/>        "Control:=" , "C:\\Users\\Model Files\\brd_board.xml",<br/>        "Filters:=" , ["HeightExclude2D"],<br/>        "CreateFilteredAsNonModel:=", False,<br/>        "FootPrint:=" , "0.1mm2",<br/>        [<br/>            "NAME:definitionOverridesMap"<br/>        ],<br/>        [<br/>            "NAME:instanceOverridesMap"<br/>        ],<br/>        "HighSurfThickness:=" , "0.07mm",<br/>        "LowSurfThickness:=" , "0.07mm",<br/>        "InternalLayerThickness:=", "0.07mm",<br/>        "NumInternalLayer:=" , 2,<br/>        "HighSurfaceCopper:=" , 30,<br/>        "LowSurfaceCopper:=" , 30,<br/>    ]<br/>)</pre> |

|  |                                                                                                                                                                                                                                                                                                                                                                                                  |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "InternalLayerCopper:=" , 30, "TraceMaterial:="      , "Cu-Pure", "SubstrateMaterial:="  , "FR-4", "CreateBoard:="        , True, "ModelBoardAsRect:="   , True, "ModelDeviceAsRect:="  , False, "Cutoff:="              , False, "IncludeDrilledHoles:=" , True, "HoleDiameterCutoff:="  , "0.1mm", "ReplaceDevices:="     , False, "CreatePointsOnBoardForInstances:=", False ] ) </pre> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## ImportIDFandMerge

Imports an IDF file into a new project. To import without merging, use [ImportIDF](#).

| UI Access    | File > Import > IDF. Enable <b>Merge with existing</b> and select a project/design. |        |                                                                     |
|--------------|-------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------|
| Parameters   | Name                                                                                | Type   | Description                                                         |
|              | <idfFileName>                                                                       | String | Full path of GERBER file.                                           |
|              | <libFileName>                                                                       | String | Optional. Full path of library file. Pass empty string if none.     |
|              | <controlFileName>                                                                   | String | Optional. Full path of XML control file. Pass empty string if none. |
|              | <project>                                                                           | String | Name of project to merge with.                                      |
|              | <design>                                                                            | String | Name of design to merge with.                                       |
| Return Value | None.                                                                               |        |                                                                     |

|                       |                                                                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ImportIDFandMerge(&lt;idfFileName&gt;, &lt;libPathName&gt;, &lt;controlFileName&gt;, &lt;project&gt;, &lt;design&gt;)</code>                                                                     |
| <b>Python Example</b> | <pre>oDesktop.RestoreWindow()  Set oTool = oDesktop.GetTool('ImportExport')  oTool.ImportIDFandMerge('C:/Files/test.brd', 'C:/Files/test.aedb.lib', 'C:/Files/test.xml', 'Project1', 'Design12')</pre> |

## ImportIDX

Imports and IDX model into a new Icepak project.

| UI Access         | Icepak > Import IDX        |        |                                                 |
|-------------------|----------------------------|--------|-------------------------------------------------|
| <b>Parameters</b> | Name                       | Type   | Description                                     |
|                   | <NAME>                     | string | Settings                                        |
|                   | <Board>                    | bool   | Full path of .idx file                          |
|                   | <Library>                  | string | NA                                              |
|                   | <Control>                  | string | NA                                              |
|                   | <Filters>                  | list   | HeightExclude2D                                 |
|                   | <CreateFilteredAsNonModel> | bool   | True or False                                   |
|                   | <NAME>                     | string | definitionOverridesMap                          |
|                   | <NAME>                     | string | instanceOverridesMap                            |
|                   | <HighSurfThickness>        | string | High surface layer thickness value and unit     |
|                   | <LowSurfThickness>         | string | Low surface layer thickness value and unit      |
|                   | <InternalLayerThickness>   | string | Internal surface layer thickness value and unit |
|                   | <NumInternalLayer>         | int    | Number of internal layers value                 |
|                   | <HighSurfaceCopper>        | int    | High surface percent coverage value             |

|                     |                                          |        |                                       |
|---------------------|------------------------------------------|--------|---------------------------------------|
|                     | <code>&lt;LowSurfaceCopper&gt;</code>    | int    | Low surface percent coverage value    |
|                     | <code>&lt;InternalLayerCopper&gt;</code> | int    | Internal layer percent coverage value |
|                     | <code>&lt;TraceMaterial&gt;</code>       | string | Trace material name                   |
|                     | <code>&lt;SubstrateMaterial&gt;</code>   | int    | Substrate material name               |
|                     | <code>&lt;CreateBoard&gt;</code>         | bool   | True or False                         |
|                     | <code>&lt;ModelBoardAsRect&gt;</code>    | bool   | True or False                         |
|                     | <code>&lt;ModelDeviceAsRect&gt;</code>   | bool   | True or False                         |
|                     | <code>&lt;Cutoff&gt;</code>              | bool   | True or False                         |
|                     | <code>&lt;ReplaceDevices&gt;</code>      | bool   | True or False                         |
| <b>Return Value</b> | None                                     |        |                                       |

|                |                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ImportIDX (<NAME>, <Board>, <Library>, <Control>, <Filters>, <CreateFilteredAsNonModel>, <NAME>, <NAME>, <HighSurfThickness>, <LowSurfThickness>, <InternalLayerThickness>, <NumInternalLayer>, <HighSurfaceCopper>, <LowSurfaceCopper>, <InternalLayerCopper>, <TraceMaterial>, <SubstrateMaterial>, <CreateBoard>, <ModelBoardAsRect>, <ModelDeviceAsRect>, <Cutoff>, <ReplaceDevices>)                |
| Python Example | <pre>oDesign.ImportIDX(     [         "NAME:Settings",         "Board:=", "C:\\Users\\Model files\\PCB-00278_A.idx",         "Library:=", "",         "Control:=", "",         "Filters:=", ["HeightExclude2D"],         "CreateFilteredAsNonModel:=", False,         [             "NAME:definitionOverridesMap"         ],         [             "NAME:instanceOverridesMap"         ],     ], )</pre> |



|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "HighSurfThickness:="      , "0.07mm", "LowSurfThickness:="       , "0.07mm", "InternalLayerThickness:=" , "0.07mm", "NumInternalLayer:="       , 2, "HighSurfaceCopper:="      , 30, "LowSurfaceCopper:="       , 30, "InternalLayerCopper:="    , 30, "TraceMaterial:="          , "Cu-Pure", "SubstrateMaterial:="      , "FR-4", "CreateBoard:="            , True, "ModelBoardAsRect:="       , False, "ModelDeviceAsRect:="      , False, "Cutoff:="                 , False, "ReplaceDevices:="         , False ] ) </pre> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### ImportIPC

Imports an IPC2581 file into a new project.

| UI Access    | File > Import > IPC2581. |        |                                                                     |
|--------------|--------------------------|--------|---------------------------------------------------------------------|
| Parameters   | Name                     | Type   | Description                                                         |
|              | <ipcFileName>            | String | Full path of IPC2581 file.                                          |
|              | <outputPathName>         | String | Full path of EDB file to create during import.                      |
|              | <controlFileName>        | String | Optional. Full path of XML control file. Pass empty string if none. |
| Return Value | None.                    |        |                                                                     |

|                       |                                                                                                                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ImportIPC(&lt;ipcFileName&gt;, &lt;outputPathName&gt;, &lt;controlFileName&gt;)</code>                                                                                            |
| <b>Python Example</b> | <pre>oDesktop.RestoreWindow()  Set oTool = oDesktop.GetTool('ImportExport')  oTool.ImportIPC('C:/Files/test.cvg', 'C:/Files/test.aedb', 'C:/Files/test.xml', 'C:/Files/test.txt')</pre> |

## ImportODB

Imports an ODB++ file into a new project.

|                     |                                     |        |                                                                     |
|---------------------|-------------------------------------|--------|---------------------------------------------------------------------|
| <b>UI Access</b>    | <b>File &gt; Import &gt; ODB++.</b> |        |                                                                     |
| <b>Parameters</b>   | Name                                | Type   | Description                                                         |
|                     | <odbFileName>                       | String | Full path of ODB++ file.                                            |
|                     | <outputPathName>                    | String | Full path of EDB file to create during import.                      |
|                     | <controlFileName>                   | String | Optional. Full path of XML control file. Pass empty string if none. |
| <b>Return Value</b> | None.                               |        |                                                                     |

|                       |                                                                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ImportODB(&lt;odbFileName&gt;, &lt;outputPathName&gt;, &lt;controlFileName&gt;)</code>                                                                       |
| <b>Python Example</b> | <pre>oDesktop.RestoreWindow()  Set oTool = oDesktop.GetTool('ImportExport')  oTool.ImportODB('C:/Files/test.odb', 'C:/Files/test.aedb', 'C:/Files/test.xml')</pre> |

## ImportXFL

Imports an XFL file into a new project.

|                     |                                   |        |                                                                     |
|---------------------|-----------------------------------|--------|---------------------------------------------------------------------|
| <b>UI Access</b>    | <b>File &gt; Import &gt; XFL.</b> |        |                                                                     |
| <b>Parameters</b>   | Name                              | Type   | Description                                                         |
|                     | <xflFileName>                     | String | Full path of XFL file.                                              |
|                     | <outputPathName>                  | String | Full path of EDB file to create during import.                      |
|                     | <controlFileName>                 | String | Optional. Full path of XML control file. Pass empty string if none. |
| <b>Return Value</b> | None.                             |        |                                                                     |

|                       |                                                                                                                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ImportXFL(<xflFileName>, <outputPathName>, <controlFileName>)                                                                                                                     |
| <b>Python Example</b> | <pre>oDesktop.RestoreWindow()<br/><br/>Set oTool = oDesktop.GetTool('ImportExport')<br/>oTool.ImportXFL('C:/Files/test.xfl', 'C:/Files/test.aedb',<br/>'C:/Files/test.xml')</pre> |

## 5 - Running Instances Manager Script Commands

The Running Instances Manager is a scripting object that lets you identify and connect to all running instances of Electronics Desktop. oDesktop objects that are returned provide full scripting functionality. Running Instances Manager commands should be executed by the oDesktop object. For example:

```
oRunningInstances = oDesktop.GetRunningInstancesMgr()
```

[GetAllRunningInstances](#)

[GetRunningInstanceByProcessID](#)

[GetRunningInstanceByProject](#)

### GetAllRunningInstances

Returns a list of running instances of Ansys Electronics Desktop.

|                     |                                                               |
|---------------------|---------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                           |
| <b>Parameters</b>   | None.                                                         |
| <b>Return Value</b> | Array containing list of Ansys Electronics Desktop instances. |

|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| <b>Python Syntax</b>  | GetAllRunningInstances()                                      |
| <b>Python Example</b> | <code>obj = oRunningInstances.GetAllRunningInstances()</code> |

### GetRunningInstanceByProcessID

Returns the instance of Ansys Electronics Desktop that is running a specified process.

|                     |                                  |         |             |
|---------------------|----------------------------------|---------|-------------|
| <b>UI Access</b>    | N/A                              |         |             |
| <b>Parameters</b>   | Name                             | Type    | Description |
|                     | <processID>                      | Integer | Process ID  |
| <b>Return Value</b> | String of the returned instance. |         |             |

|                       |                                                                           |
|-----------------------|---------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetRunningInstanceByProcessID(<processID>)                                |
| <b>Python Example</b> | <code>obj = oRunningInstances.GetRunningInstanceByProcessID(12345)</code> |

## GetRunningInstancesMgr

Returns the object of the Running Instances Manager.

|                     |                                            |      |             |
|---------------------|--------------------------------------------|------|-------------|
| <b>UI Access</b>    | N/A                                        |      |             |
| <b>Parameters</b>   | Name                                       | Type | Description |
|                     | None                                       |      |             |
| <b>Return Value</b> | Object<br>Running instances manager object |      |             |

|                       |                                                                    |
|-----------------------|--------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetRunningInstancesMgr()                                           |
| <b>Python Example</b> | <code>oRunningInstances = oDesktop.GetRunningInstancesMgr()</code> |



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left blank.

## 6 - Project Object Script Commands

Project commands should be executed by the oProject object.

One example of accessing this object is:

```
oProject = oDesktop.GetActiveProject()
```

### **Dataset Script Commands:**

[AddDataset](#)

[DeleteDataset](#)

[EditDataset](#)

[ExportDataset](#)

[HasDataset](#)

[ImportDataset](#)

### **Other Project Object Script Commands:**

[AddMaterial](#)

[AnalyzeAll](#)

[ChangeProperty](#)

[ClearMessages](#)

[CloneMaterial](#)

[Close](#)

[CopyDesign](#)

[CutDesign](#)



[DeleteDesign](#)

[DeleteToolObject](#)

[EditMaterial](#)

[ExportMaterial](#)

[GetActiveDesign](#)

[GetArrayVariables](#)

[GetChildNames \[Project\]](#)

[GetChildObject \[Project\]](#)

[GetChildTypes \[Project\]](#)

[GetDefinitionManager](#)

[GetDependentFiles](#)

[GetDesign](#)

[GetDesigns](#)

[GetEDBHandle](#)

[GetLegacyName](#)

[GetName \[Project\]](#)

[GetObjPath \[Project\]](#)

[GetPath](#)

[GetPropEvaluatedValue](#)

[GetPropNames \[Project\]](#)

[GetPropSIValue](#)

[GetPropValue \[Project\]](#)

[GetProperties](#)

[GetPropertyValue](#)

[GetTopDesignList](#)

[GetVariableValue](#)

[GetVariables](#)

[InsertDesign](#)

[InsertDesign \(Layout Editor\)](#)

[InsertDesignWithWorkflow](#)

[InsertToolObject](#)

[Paste \[Project Object\]](#)

[Redo \[Project Level\]](#)

[RemoveAllUnusedDefinitions](#)

[RemoveMaterial](#)

[RemoveUnusedDefinitions](#)

[Rename](#)

[RunToolkit](#)

[Save](#)

[SaveAs](#)

[SaveAsStandAloneProject](#)

[SaveProjectArchive](#)

[SetActiveDefinitionEditor](#)

[SetActiveDesign](#)

[SetPropValue \[Project\]](#)

[SetPropertyValue](#)

[SetVariableValue](#)

[SimulateAll](#)

[Undo \[Project\]](#)

[UpdateDefinitions](#)

# AddDataset

Adds a dataset. This can be executed by the oProject, or oDesign variables.

|              |                           |        |                                                                                                        |
|--------------|---------------------------|--------|--------------------------------------------------------------------------------------------------------|
| UI Access    | Project > Datasets > Add. |        |                                                                                                        |
| Parameters   | Name                      | Type   | Description                                                                                            |
|              | <DatasetDataArray><br>>   | Array  | Array("NAME:<DatasetName>",<br>Array("NAME:Coordinates", <CoordinateArray>,<br><CoordinateArray>, ...) |
|              | <DatasetName>             | String | Name of the dataset.                                                                                   |
|              | <CoordinateArray>         | Array  | Array("NAME:Coordinate", "X:=", <double>, "Y:=",<double>)                                              |
| Return Value | None.                     |        |                                                                                                        |

| Python Syntax  | AddDataset <DatasetDataArray>                                                                                                                                                                                                                                                                                                    |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oProject.AddDataset(<br/>[<br/>  "NAME:\$ds1",<br/>  [<br/>    "NAME:Coordinates",<br/>    [<br/>      "NAME:Coordinate",<br/>      "X:=", 2,<br/>      "Y:=", 4<br/>    ],<br/>    [<br/>      "NAME:Coordinate",<br/>      "X:=", 6,<br/>      "Y:=", 8<br/>    ]<br/>  ]<br/>]<br/>)<br/>oDesign.AddDataset(<br/>[</pre> |

|  |                                                                                                                                                                                                                                                                        |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"NAME:\$dsl",<br/><br/>  [<br/>    "NAME:Coordinates",<br/>    [<br/>      "NAME:Coordinate",<br/>      "X:=", 2,<br/>      "Y:=", 4<br/>    ],<br/>    [<br/>      "NAME:Coordinate",<br/>      "X:=", 6,<br/>      "Y:=", 8<br/>    ]<br/>  ]<br/>]<br/>)</pre> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## AddMaterial

Adds a local material.

|                  |                                             |
|------------------|---------------------------------------------|
| <b>UI Access</b> | <b>Add Material</b> in the material editor. |
|------------------|---------------------------------------------|

| <b>Parameters</b> | Name                                | Type   | Description                                                                                                                                                                                                                                                                  |
|-------------------|-------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <code>&lt;MaterialParams&gt;</code> | Array  | [<br>"NAME: <name of the material to be added>",<br><MatProperty>, <MatProperty>, ...<br>]                                                                                                                                                                                   |
|                   | <code>&lt;MatProperty&gt;</code>    | Array  | For simple material:<br>"<PropertyName>:=", <value><br><br>For anisotropic material:<br>[<br>"NAME:<PropertyName>",<br>"property_type:=", "AnisoProperty",<br>"unit:=", <Unit>,"<br>"component1:=", <value>,"<br>"component2:=", <value>,"<br>"component3:=", <value>))<br>] |
|                   | <code>&lt;PropertyName&gt;</code>   | String | Should be one of the following (depending on the material, design, and solution types):                                                                                                                                                                                      |

|        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |        | <p>Electromagnetic (Maxwell-exclusive material properties omitted, see Maxwell Scripting help):</p> <p>"permittivity", "permeability", "conductivity", "dielectric_loss_tangent", "magnetic_loss_tangent", "electric_coercivity", "magnetic_coercivity", "saturation_mag", "lande_g_factor", "delta_H", "delta_h_freq", "mass_density"</p> <p>Thermal (including solids, Icepak fluid flow, and Mechanical rotating fluid modeling):</p> <p>"thermal_conductivity", "mass_density", "specific_heat", "thermal_expansion_coefficient", "thermal_material_type", "viscosity", "diffusivity", "molecular_mass", "clarity_type"</p> <p>Structural:</p> <p>"mass_density", "youngs_modulus", "poissons_ratio", "thermal_expansion_coefficient"</p> |
| <Unit> | String | <p>Possible values (Maxwell-exclusive properties omitted, see Maxwell Scripting Help; other missing entries are unitless):</p> <p>conductivity: "siemens/m"</p> <p>saturation_mag: "uTesla", "mTesla", "tesla", "kTesla", "uGauss", "mGauss", "gauss", "kGauss"</p> <p>delta_H: "A_per_meter", "kA_per_meter", "Oe", "kOe"</p> <p>delta_h_frequency: "Hz", "kHz", "MHz", "GHz", "THz", "rps", "per_sec"</p>                                                                                                                                                                                                                                                                                                                                   |

|                     |      |  |                                                                                                                                                       |
|---------------------|------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |      |  | mass_density: "kg/m^3"<br>thermal_conductivity: "W/m-C"<br>specific_heat: "J/kg-C"<br>youngs_modulus: "N/m^2"<br>thermal_expansion_coefficient: "1/C" |
| <b>Return Value</b> | None |  |                                                                                                                                                       |

|                       |                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddMaterial ([ "NAME:<MaterialName>",<br><MatProperty>, <MatProperty>, ...])                                                                                                                                                                                                                                                                             |
| <b>Python Example</b> | <pre> oDefinitionManager.AddMaterial( ["permittivity:=", "2.2", "0.002"])  oDefinitionManager.AddMaterial [ ("NAME:Material2",_     "dielectric_loss_tangent:=", "44",     Array("NAME:saturation_mag",_         "property_type:=", "AnisoProperty",_         "unit:=", "Gauss",_         "component1:=", "11", _         "component2:=", "22", _ </pre> |



|  |                                                               |
|--|---------------------------------------------------------------|
|  | <pre>"component3:=", "33"), _<br/>"delta_H:=", "440e")]</pre> |
|--|---------------------------------------------------------------|

## AnalyzeAll [project]

Runs the project-level script command from the script, which simulates all solution setups and Optimetrics setups for all design instances in the project. The UI waits until simulation is finished before continuing with the script.

|                     |                                  |
|---------------------|----------------------------------|
| <b>UI Access</b>    | <b>Project &gt; Analyze All.</b> |
| <b>Parameters</b>   | None.                            |
| <b>Return Value</b> | None.                            |

|                       |                                  |
|-----------------------|----------------------------------|
| <b>Python Syntax</b>  | AnalyzeAll()                     |
| <b>Python Example</b> | <pre>oProject.AnalyzeAll()</pre> |

## ChangeProperty

Changes the properties of an object in the history tree.

|                  |                                                                          |
|------------------|--------------------------------------------------------------------------|
| <b>UI Access</b> | Right-click an object in the History Tree and select <b>Properties</b> . |
|------------------|--------------------------------------------------------------------------|

|                     |                |             |                                                                                                                                                                                                     |
|---------------------|----------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>    | <b>Type</b> | <b>Description</b>                                                                                                                                                                                  |
|                     | <propertyArgs> | Array       | Structured array. The properties vary depending on the object. Due to the number of potential configurations, it is recommended that you generate this script using the UI's <b>Automation</b> tab. |
| <b>Return Value</b> | None.          |             |                                                                                                                                                                                                     |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ChangeProperty(<propertyArgs>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Python Example</b> | <p><b>Example: Changing the Position of a Box</b></p> <pre> oEditor.ChangeProperty( [     "NAME:AllTabs",     [         "NAME:Geometry3DCmdTab",         [             "NAME:PropServers" ,             "Box1:CreateBox:1"         ],         [             "NAME:ChangedProps",             [                 "NAME:Position",                 "X:="          , "0.35in",                 "Y:="          , "0.55in",                 "Z:="          , "0in"             ]         ]     ] ] ) </pre> |

**Example: Offset the Position of a 3D Component or Layout Component with a Variable**

```
oDesign.ChangeProperty(  
  [  
    "NAME:AllTabs",  
    [  
      "NAME:LocalVariableTab",  
      [  
        "NAME:PropServers",  
        "LocalVariables"  
      ],  
      [  
        "NAME:NewProps",  
        [  
          "NAME:zH",  
          "PropType:=",          , "VariableProp",  
          "UserDef:=",          , True,  
          "Value:=",            , "50mm"  
        ]  
      ]  
    ]  
  ]  
)  
oEditor = oDesign.SetActiveEditor("3D Modeler")  
oEditor.ChangeProperty(  
  [  
    "NAME:AllTabs",  
    [  
      "NAME:General",  
      [  
        "NAME:PropServers",  
        "LC1_1"  
      ],  
      [  
        "NAME:ChangedProps",
```

```

        [
            "NAME:Position",
            "X:=" , "0mm",
            "Y:=" , "0mm",
            "Z:=" , "zH"
        ]
    ]
]
])

```

### Example: Changing a Box's Material and Wireframe Display

```

oEditor.ChangeProperty(
[
    "NAME:AllTabs",
    [
        "NAME:Geometry3DAttributeTab",
        [
            "NAME:PropServers" ,
            "Box1"
        ],
        [
            "NAME:ChangedProps",
            [
                "NAME:Material",
                "Value:=" , "\"vacuum\""
            ],
            [
                "NAME:Display Wireframe",
                "Value:=" , True
            ]
        ]
    ]
]
])

```

### Example: Change Default Handle (reference coordinate system) for a 3D Component or Layout Component

```
oEditor.ChangeProperty(  
  [  
    "NAME:AllTabs",  
    [  
      "NAME:General",  
      [  
        "NAME:PropServers",  
        "LC1_1"  
      ],  
      [  
        "NAME:ChangedProps",  
        [  
          "NAME:Handle",  
          "Value:=" , " NotchOutY"  
        ]  
      ]  
    ]  
  ]  
)
```

## ClearMessages

Clears information in the **Messages** window.

### Note:

Additional options are available when using the Desktop-level [ClearMessages](#) command.

|                     |       |
|---------------------|-------|
| <b>UI Access</b>    | N/A   |
| <b>Parameters</b>   | None. |
| <b>Return Value</b> | None. |

|                       |                                       |
|-----------------------|---------------------------------------|
| <b>Python Syntax</b>  | ClearMessages()                       |
| <b>Python Example</b> | <code>oProject.ClearMessages()</code> |

## CloneMaterial

Clones a local material.

|                     |                                                                                                                                                                        |        |                                 |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                                                                    |        |                                 |
| <b>Parameters</b>   | Name                                                                                                                                                                   | Type   | Description                     |
|                     | <matName>                                                                                                                                                              | String | Name of existing material.      |
|                     | <newName>                                                                                                                                                              | String | Name for newly cloned material. |
| <b>Return Value</b> | Boolean: <ul style="list-style-type: none"><li>• 1 - Material is cloned.</li><li>• 0 - Existing material not found or a conflict with the new material name.</li></ul> |        |                                 |

|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| <b>Python Syntax</b>  | CloneMaterial (<matName>, <newName>)                                |
| <b>Python Example</b> | <code>oDefinitionManager.CloneMaterial("copper1", "copper3")</code> |

## Close

Closes the active project.

**Warning:**

Unsaved changes will be lost.

|                     |       |
|---------------------|-------|
| <b>UI Access</b>    | N/A   |
| <b>Parameters</b>   | None. |
| <b>Return Value</b> | None. |

|                       |                               |
|-----------------------|-------------------------------|
| <b>Python Syntax</b>  | Close()                       |
| <b>Python Example</b> | <code>oProject.Close()</code> |

## CopyDesign

Copies a specified design.

|                   |                        |        |                                  |
|-------------------|------------------------|--------|----------------------------------|
| <b>UI Access</b>  | <b>Edit &gt; Copy.</b> |        |                                  |
| <b>Parameters</b> | Name                   | Type   | Description                      |
|                   | <DesignName>           | String | Name of the design to copy from. |

|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                |
|-----------------------|------------------------------------------------|
| <b>Python Syntax</b>  | CopyDesign (<DesignName>)                      |
| <b>Python Example</b> | <pre>oProject.CopyDesign ("HFSSDesign1")</pre> |

## CutDesign

Cuts a design from the active project. The design is stored in memory and can be pasted.

### Warning:

This is a legacy command that is no longer supported and should not be used as it may have unintended effects on solved designs.

|                     |                       |        |                     |
|---------------------|-----------------------|--------|---------------------|
| <b>UI Access</b>    | <b>Edit &gt; Cut.</b> |        |                     |
| <b>Parameters</b>   | Name                  | Type   | Description         |
|                     | <DesignName>          | String | Name of the design. |
| <b>Return Value</b> | None.                 |        |                     |

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | CutDesign (<DesignName>)                           |
| <b>Python Example</b> | <pre>oProject.CutDesign ("SimplorerDesign1")</pre> |



## DeleteDataset

Deletes a specified dataset. This can be executed by the oProject, or oDesign variables.

|              |                              |        |                                           |
|--------------|------------------------------|--------|-------------------------------------------|
| UI Access    | Project > Datasets > Remove. |        |                                           |
| Parameters   | Name                         | Type   | Description                               |
|              | <DatasetName>                | String | Name of the dataset found in the project. |
| Return Value | None.                        |        |                                           |

|                |                                                                               |
|----------------|-------------------------------------------------------------------------------|
| Python Syntax  | DeleteDataset (<DatasetName>)                                                 |
| Python Example | <pre>oProject.DeleteDataset('\$ds1')<br/>oDesign.DeleteDataset('\$ds1')</pre> |

## DeleteDesign

Deletes a specified design in the project.

|              |                                         |        |                     |
|--------------|-----------------------------------------|--------|---------------------|
| UI Access    | Edit > Delete, or Delete in the ribbon. |        |                     |
| Parameters   | Name                                    | Type   | Description         |
|              | <DesignName>                            | String | Name of the design. |
| Return Value | None.                                   |        |                     |

|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteDesign (<DesignName>)                                 |
| <b>Python Example</b> | <code>oProject.DeleteDesign("HFSS 3D LayoutDesign2")</code> |

## DeleteToolObject

**Note:**

This command is for internal Ansys use only.

|                     |              |        |                          |
|---------------------|--------------|--------|--------------------------|
| <b>UI Access</b>    | N/A          |        |                          |
| <b>Parameters</b>   | Name         | Type   | Description              |
|                     | <ObjectName> | String | Name of the tool object. |
| <b>Return Value</b> | None.        |        |                          |

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| <b>Python Syntax</b>  | DeleteToolObject(<ObjectName>)                    |
| <b>Python Example</b> | <code>oProject.DeleteToolObject("object1")</code> |

## EditDataset

Modifies a dataset. This can be executed by the oProject, or oDesign variables.

|              |                            |        |                                |
|--------------|----------------------------|--------|--------------------------------|
| UI Access    | Project > Datasets > Edit. |        |                                |
| Parameters   | Name                       | Type   | Description                    |
|              | <OriginalName>             | String | Name of the original dataset.  |
|              | <DatasetDataArray>         | Array  | Data for the modified dataset. |
| Return Value | None.                      |        |                                |

|                |                                                                                                                                                                                                                |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | EditDataset (<OriginalName> <DatasetDataArray>)                                                                                                                                                                |
| Python Example | <pre>oProject.EditDataset ("ds1" ["NAME:ds2",   ["NAME:Coordinates",     [       "NAME:Coordinate",       "X:=", 1, "Y:=", 2     ],     [       "NAME:Coordinate",       "X:=", 3, "Y:=", 4     ]   ] ])</pre> |

```
)
oDesign.EditDataset ("ds1"
["NAME:ds2",
  ["NAME:Coordinates",
    [
      "NAME:Coordinate",
      "X:=", 1, "Y:=", 2
    ],
    [
      "NAME:Coordinate",
      "X:=", 3, "Y:=", 4
    ]
  ]
]
)
```

EditMaterial

Modifies an existing material.

|            |                                                    |        |                                      |
|------------|----------------------------------------------------|--------|--------------------------------------|
| UI Access  | View/Edit Materials command in the material editor |        |                                      |
| Parameters | Name                                               | Type   | Description                          |
|            | <OriginalName>                                     | String | Name of the material before editing. |

|  |                                    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--|------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <code>&lt;MatProperties&gt;</code> | Array | Structured array containing material properties:<br><br>[<br>"NAME:<New material name>",<br>"CoordinateSystemType:=", <string>,<br>"BulkOrSurfaceType:=" , <integer>,<br>[<br>"NAME:PhysicsTypes",<br>"set:=" , <array containing string physics types><br>],<br><Optional ModifierDataArray>,<br>"permeability:=" , <string containing value>,<br>"conductivity:=" , <string containing value>,<br>"thermal_conductivity:=", <string containing value>,<br>"mass_density:=" , <string containing value>,<br>"specific_heat:=" , <string containing value>,<br>"youngs_modulus:=" , <string containing value>,<br>"poissons_ratio:=" , <string containing value>,<br>"thermal_expansion_coefficient:=", <string containing value><br>]<br>] |
|  | <code>&lt;Modi-</code>             | Array | Optional structured array containing thermal or spatial modifiers:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|                     |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <code>fierDataArray&gt;</code> | <pre>[   "NAME:ModifierData",   [     "NAME:&lt;ThermalModifierData or SpatialModifierData&gt;",     "modifier_data:=" , &lt;"thermal_modifier_data" or "spa-     tial_modifier_data"&gt;,     [       "NAME:&lt;all_thermal_modifiers or all_spatial_mod-       ifiers&gt;",       [         "NAME:&lt;modifierName&gt;",         "Property::=" , &lt;string property being mod-         ified&gt;,         "Index::=" , &lt;integer&gt;,         "prop_modifier:=" , &lt;"thermal_modifier" or "spa-         tial_modifier"&gt;,         "use_free_form:=" , &lt;Boolean&gt;,         "free_form_value:=" , &lt;string modifier value&gt;,       ]     ]   ] ]</pre> |
| <b>Return Value</b> | None.                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Python Syntax  | EditMaterial (<OriginalName>, <MatProperties>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <p><b>Without Modifiers:</b></p> <pre>oDefinitionManager.EditMaterial("alumina_92pct",<br/>[<br/>    "NAME:alumina_92pct",<br/>    "CoordinateSystemType:=" , "Cartesian",<br/>    "BulkOrSurfaceType:=" , 1,<br/>    [<br/>        "NAME:PhysicsTypes",<br/>        "set:=" , ["Electromagnetic","Thermal","Structural"]<br/>    ],<br/>    "permittivity:=" , "9.3",<br/>    "dielectric_loss_tangent:=" , "0.008",<br/>    "thermal_conductivity:=" , "26",<br/>    "mass_density:=" , "3720",<br/>    "specific_heat:=" , "790",<br/>    "youngs_modulus:=" , "267000000000",<br/>    "poissons_ratio:=" , "0.26",</pre> |

```

    "thermal_expansion_coefficient:=", "7.2e-006"
]
)

With Thermal Modifier:

oDefinitionManager.EditMaterial("copper",
[
    "NAME:copper",
    "CoordinateSystemType:=", "Cartesian",
    "BulkOrSurfaceType:=" , 1,
    [
        "NAME:PhysicsTypes",
        "set:=" , ["Electromagnetic","Thermal","Structural"]
    ],
    [
        "NAME:ModifierData",
        [
            "NAME:ThermalModifierData",
            "modifier_data:=" , "thermal_modifier_data",
            [
                "NAME:all_thermal_modifiers",
                [

```



```
        "NAME:one_thermal_modifier",
        "Property:=" , "permittivity",
        "Index:=" , 0,
        "prop_modifier:=" , "thermal_modifier",
        "use_free_form:=" , True,
        "free_form_value:=" , "if(Temp > 1000cel, 1, if(Temp < -273.15cel, 1, 1))"
    ]
]
],
"permeability:=" , "0.999991",
"conductivity:=" , "58000000",
"thermal_conductivity:=" , "400",
"mass_density:=" , "8933",
"specific_heat:=" , "385",
"youngs_modulus:=" , "120000000000",
"poissons_ratio:=" , "0.38",
"thermal_expansion_coefficient:=" , "1.77e-05"
])
```

**Transient Solve, Non-linear Drude Data Plasma**

```
import ScriptEnv

ScriptEnv.Initialize("Ansoft.ElectronicsDesktop")

oDesktop.RestoreWindow()

oProject = oDesktop.SetActiveProject("Drude_plasma_parameters_r231")
oDefinitionManager = oProject.GetDefinitionManager()
oDefinitionManager.EditMaterial("Drude",

[
    "NAME:Drude",
    "CoordinateSystemType:=", "Cartesian",
    "BulkOrSurfaceType:="    , 1,
    [
        "NAME:PhysicsTypes",
        "set:="                , ["Electromagnetic"]
    ],
    [
        "NAME:AttachedData",
        [
            "NAME:MatNonLinearDrudeFreqDepData",
            "property_data:="    , "nonlinear_drude_data",
            "EpsilonInfinity:="  , "1",
            "PlasmaFrequency:="  , "4.62348462366278GHz",
```

|  |                                                                                                                                                                                                                                                                                                                   |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "CollisionFrequency:=" , "0.00054491190162662GHz", "FieldBreakdown:=" , "10000V_per_meter", "PlasmaMaintainFrequency:=" , "2.31174231183139GHz", "NeutralDensity:=" , 2.65164580488373E+20, "ElectronDensity:=" , 2.65164580488373E+17, "CollisionRateConstant:=" , 2.05499505485618E-15      ] ] ]) </pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# ExportDataset

Exports a dataset to a named file. This can be executed by the oProject, or oDesign variables.

| UI Access    | Project > Datasets > Export. |        |                            |
|--------------|------------------------------|--------|----------------------------|
| Parameters   | Name                         | Type   | Description                |
|              | <datasetFileFullPath>        | String | The full path to the file. |
| Return Value | None.                        |        |                            |

| Python Syntax  | ExportDataset (<datasetFileFullPath>)       |
|----------------|---------------------------------------------|
| Python Example | oProject.ExportDataset('e:/tmp/dsdata.txt') |

```
oDesign.ExportDataset('e:/tmp/dsdata.txt')
```

## ExportMaterial

Exports a local material to a library.

| UI Access    | Export to Library command in the material editor. |        |                                                                             |
|--------------|---------------------------------------------------|--------|-----------------------------------------------------------------------------|
| Parameters   | Name                                              | Type   | Description                                                                 |
|              | <ExportData>                                      | Array  | ["NAME:<LibraryName>",<br><MaterialName>, <MaterialName>, ...]              |
|              | <LibraryName>                                     | String | Name of the exported library.                                               |
|              | <MaterialName>                                    | String | Name of the material to be exported.                                        |
|              | <LibraryLocation>                                 | String | Location to save the library. Only "PersonalLib" and "UserLib" are allowed. |
| Return Value | None.                                             |        |                                                                             |

| Python Syntax  | ExportMaterial (<ExportData>, <LibraryLocation>)                                                                     |
|----------------|----------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oDefinitionManager.ExportMaterial (["NAME:mylib",_ "Material1", "Material2", "Material3"], "PersonalLib")</pre> |

## GetActiveDesign

Returns the design in the active project

**Note:** `GetActiveDesign` will return normally if there are no active objects.

|                     |                              |
|---------------------|------------------------------|
| <b>UI Access</b>    | N/A                          |
| <b>Parameters</b>   | None.                        |
| <b>Return Value</b> | Object of the active design. |

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetActiveDesign()</code>                    |
| <b>Python Example</b> | <code>oDesign = oProject.GetActiveDesign()</code> |

## GetArrayVariables

Returns a list of array variables. To get a list of indexed project variables, execute with `oProject`. To get a list of indexed local variables, use `oDesign`.

|                     |                                                 |
|---------------------|-------------------------------------------------|
| <b>UI Access</b>    | N/A                                             |
| <b>Parameters</b>   | None.                                           |
| <b>Return Value</b> | Array of strings containing names of variables. |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | <code>GetArrayVariables()</code>          |
| <b>Python Example</b> | <code>oProject.GetArrayVariables()</code> |

|  |                                          |
|--|------------------------------------------|
|  | <code>oDesign.GetArrayVariables()</code> |
|--|------------------------------------------|

## GetChildNames [Project]

Returns the names of the project's child objects.

| UI Access    | N/A                                                |        |                                                                                                    |
|--------------|----------------------------------------------------|--------|----------------------------------------------------------------------------------------------------|
| Parameters   | Name                                               | Type   | Description                                                                                        |
|              | <type>                                             | String | (Optional) Default is "design"; Any value returned by <a href="#">GetChildTypes()</a> can be used. |
| Return Value | Array of names of children for the queried object. |        |                                                                                                    |

| Python Syntax  | GetChildNames (<type>)                                                                                   |  |  |
|----------------|----------------------------------------------------------------------------------------------------------|--|--|
| Python Example | <pre>arrDesignNames = oProject.GetChildNames() arrVarbleNames = oProject.GetChildNames("Variable")</pre> |  |  |

## GetChildObject [Project]

Returns the project's child objects.

### Note:

`GetChildObject` will return normally if there are no active objects.

|                     |                          |             |                                                                                                                                  |
|---------------------|--------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                      |             |                                                                                                                                  |
| <b>Parameters</b>   | <b>Name</b>              | <b>Type</b> | <b>Description</b>                                                                                                               |
|                     | <path>                   | String      | The path may include multiple generations (for example, "designObject/moduleObj/SetupObject"). See <a href="#">Object Path</a> . |
| <b>Return Value</b> | Object of a found child. |             |                                                                                                                                  |

|                       |                                                                                                                                                                                                                              |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetChildObject(<path>)                                                                                                                                                                                                       |
| <b>Python Example</b> | <pre>oProject = oDesktop.GetActiveProject() oDesign = oProject.GetChildObject("TeeModel") oVariable = oProject.GetChildObject("VariableName") oReport = oProject.GetChildObject("TeeModel/Results/S Parameter Plot 1")</pre> |

## GetChildTypes [Project]

Returns the types of the project's child objects.

|                     |                                                        |
|---------------------|--------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                    |
| <b>Parameters</b>   | None.                                                  |
| <b>Return Value</b> | Array of string represents types of the child objects. |

|                       |                                       |
|-----------------------|---------------------------------------|
| <b>Python Syntax</b>  | <code>GetChildTypes()</code>          |
| <b>Python Example</b> | <code>oProject.GetChildTypes()</code> |

## GetDefinitionManager

Gets the `DefinitionManager` object.

|                     |                                        |
|---------------------|----------------------------------------|
| <b>UI Access</b>    | N/A                                    |
| <b>Parameters</b>   | None.                                  |
| <b>Return Value</b> | <code>DefinitionManager</code> object. |

|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetDefinitionManager()</code>                               |
| <b>Python Example</b> | <code>oDefinitionManager = oProject.GetDefinitionManager()</code> |

**Note:** For more information on commands for the `DefinitionManager`, see [Definition Manager Script Commands](#).

## GetDependentFiles

Provides a list of the external files referenced in the project, including characteristic (for example, MDX) and coupled project files.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|



|                     |                           |
|---------------------|---------------------------|
| <b>Parameters</b>   | None.                     |
| <b>Return Value</b> | List of referenced files. |

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| <b>Python Syntax</b>  | GetDependentFiles()                             |
| <b>Python Example</b> | <pre>files = oProject.GetDependentFiles()</pre> |

## GetDesign

Returns the interface to a specific design in a given project.

|                     |                                 |        |                     |
|---------------------|---------------------------------|--------|---------------------|
| <b>UI Access</b>    | N/A                             |        |                     |
| <b>Parameters</b>   | Name                            | Type   | Description         |
|                     | < <i>designName</i> >           | String | Name of the design. |
| <b>Return Value</b> | Object of the specified design. |        |                     |

|                       |                                               |
|-----------------------|-----------------------------------------------|
| <b>Python Syntax</b>  | GetDesign (< <i>designName</i> >)             |
| <b>Python Example</b> | <pre>oProject.GetDesign ("HFSSDesign1")</pre> |

## GetDesigns

Obtains all designs in the current project.

|                     |                                                 |
|---------------------|-------------------------------------------------|
| <b>UI Access</b>    | N/A                                             |
| <b>Parameters</b>   | None.                                           |
| <b>Return Value</b> | List of objects for all designs in the project. |

|                       |                                    |
|-----------------------|------------------------------------|
| <b>Python Syntax</b>  | GetDesigns()                       |
| <b>Python Example</b> | <code>oProject.GetDesigns()</code> |

## GetEDBHandle

Returns the EDB handle for the project.

**Important:**

This script is for internal Ansys use only.

|                     |                                                   |
|---------------------|---------------------------------------------------|
| <b>UI Access</b>    | N/A                                               |
| <b>Parameters</b>   | None.                                             |
| <b>Return Value</b> | String indicating the EDB handle for the project. |

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Python Syntax</b>  | GetEDBHandle()                       |
| <b>Python Example</b> | <code>oProject.GetEDBHandle()</code> |

## GetLegacyName

Obtains the legacy name of a project.

**Note:**

This command is for internal Ansys use only.

|                     |                                            |
|---------------------|--------------------------------------------|
| <b>UI Access</b>    | N/A                                        |
| <b>Parameters</b>   | None.                                      |
| <b>Return Value</b> | String containing the legacy project name. |

|                       |                                       |
|-----------------------|---------------------------------------|
| <b>Python Syntax</b>  | GetLegacyName()                       |
| <b>Python Example</b> | <code>oProject.GetLegacyName()</code> |

## GetName [Project]

Obtains the project name

|                     |                                                                          |
|---------------------|--------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                      |
| <b>Parameters</b>   | None.                                                                    |
| <b>Return Value</b> | String containing the project name, not including the path or extension. |

|                       |                                 |
|-----------------------|---------------------------------|
| <b>Python Syntax</b>  | GetName()                       |
| <b>Python Example</b> | <code>oProject.GetName()</code> |

## GetObjPath [Project]

Obtains the project name from the full path.

|                     |                                          |
|---------------------|------------------------------------------|
| <b>UI Access</b>    | N/A                                      |
| <b>Parameters</b>   | None.                                    |
| <b>Return Value</b> | String containing only the project name. |

|                       |                                    |
|-----------------------|------------------------------------|
| <b>Python Syntax</b>  | GetObjPath()                       |
| <b>Python Example</b> | <code>oProject.GetObjPath()</code> |

## GetPath

Returns the location of the project on disk.

|                     |                                                                            |
|---------------------|----------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                        |
| <b>Parameters</b>   | None.                                                                      |
| <b>Return Value</b> | String containing the path to the project, not including the project name. |

|                       |                                 |
|-----------------------|---------------------------------|
| <b>Python Syntax</b>  | GetPath()                       |
| <b>Python Example</b> | <code>oProject.GetPath()</code> |

## GetPropEvaluatedValue

Returns the Evaluated-Value for Value-Property and Variable. Returns the Property-value as text string for other property types

**Note:**

This command is not supported by the EMIT and Circuit design types.

|                   |            |        |                       |
|-------------------|------------|--------|-----------------------|
| <b>UI Access</b>  | N/A        |        |                       |
| <b>Parameters</b> | Name       | Type   | Description           |
|                   | <PropName> | String | Name of the property. |

|                     |                                      |
|---------------------|--------------------------------------|
| <b>Return Value</b> | String value of the evaluated value. |
|---------------------|--------------------------------------|

|                       |                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetPropEvaluatedValue (&lt;PropName&gt;)</code>                                   |
| <b>Python Example</b> | <pre>oVar = oDesign.GetChildObject(" Variables/var") oVar.GetPropEvaluatedValue()</pre> |

## GetPropNames [Project]

Obtains the property name of the object. At the project level, GetPropNames always returns empty because the project is not associated with any property.

|                     |                   |         |                                                                                                                                                   |
|---------------------|-------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A               |         |                                                                                                                                                   |
| <b>Parameters</b>   | Name              | Type    | Description                                                                                                                                       |
|                     | <includeReadOnly> | Boolean | (Optional) <ul style="list-style-type: none"> <li>• True – Include read only props.</li> <li>• False – Do not include read only props.</li> </ul> |
| <b>Return Value</b> | Empty array.      |         |                                                                                                                                                   |

|                       |                                       |
|-----------------------|---------------------------------------|
| <b>Python Syntax</b>  | <code>GetPropNames ()</code>          |
| <b>Python Example</b> | <code>oProject.GetPropNames ()</code> |

# GetPropSIValue

Returns the SI-Value for Value-Property and Variable. Return NAN for other property type if its value is not able to convert to be a double-floating point value.

**Note:**  
This command is not supported by the EMIT and Circuit design types.

|              |                                                                                                                       |        |                       |
|--------------|-----------------------------------------------------------------------------------------------------------------------|--------|-----------------------|
| UI Access    | N/A                                                                                                                   |        |                       |
| Parameters   | Name                                                                                                                  | Type   | Description           |
|              | <PropName>                                                                                                            | String | Name of the property. |
| Return Value | Property value as a double floating value, or NAN if the property value cannot be converted to double floating point. |        |                       |

|                |                                                                                                                                                                                                                                        |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | GetPropSIValue (<PropName>)                                                                                                                                                                                                            |
| Python Example | <pre>oCreateBox = oDesign.GetChildObject ("3D Modeler/Box1/CreateBox:1") oCreateBox.GetPropValue ("xSize")  return "length / 2"  oCreateBox.GetPropEvaluatedValue ("xSize")  return '0.4mm'  oCreateBox.GetPropSIValue ("xSize")</pre> |

|  |               |
|--|---------------|
|  | return 0.0004 |
|--|---------------|

## GetPropValue [Project]

Returns the property value for the active project object, or specified property values.

|                     |                           |        |                                                                                  |
|---------------------|---------------------------|--------|----------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                       |        |                                                                                  |
| <b>Parameters</b>   | Name                      | Type   | Description                                                                      |
|                     | <propPath>                | String | A child object's property path. See: <a href="#">Property Function Summary</a> . |
| <b>Return Value</b> | String of property value. |        |                                                                                  |

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| <b>Python Syntax</b>  | GetPropValue(<propPath>)                              |
| <b>Python Example</b> | <code>oProject.GetPropValue("TeeModel/offset")</code> |

## GetProperties

Gets a list of all the properties belonging to a specific <PropServer> and <PropTab>. This can be executed by the oProject, oDesign, or oEditor variables.

|                   |           |        |                                                                                                                                                                                                                                                                              |
|-------------------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | N/A       |        |                                                                                                                                                                                                                                                                              |
| <b>Parameters</b> | Name      | Type   | Description                                                                                                                                                                                                                                                                  |
|                   | <PropTab> | String | One of the following, where tab titles are shown in parentheses: <ul style="list-style-type: none"> <li>PassedParameterTab ("Parameter Values")</li> <li>DefinitionParameterTab (Parameter Defaults)</li> <li>LocalVariableTab ("Variables" or "Local Variables")</li> </ul> |



|                     |                                                                      |        |                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------|----------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                                                      |        | <ul style="list-style-type: none"> <li>• ProjectVariableTab ("Project variables")</li> <li>• ConstantsTab ("Constants")</li> <li>• BaseElementTab ("Symbol" or "Footprint")</li> <li>• ComponentTab ("General")</li> <li>• Component("Component")</li> <li>• CustomTab ("Intrinsic Variables")</li> <li>• Quantities ("Quantities")</li> <li>• Signals ("Signals")</li> </ul> |
|                     | <code>&lt;PropServer&gt;</code>                                      | String | An object identifier, generally returned from another script method, such as <code>CompInst@R;2;3</code>                                                                                                                                                                                                                                                                      |
| <b>Return Value</b> | Array of strings containing the names of the appropriate properties. |        |                                                                                                                                                                                                                                                                                                                                                                               |

|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetProperties( &lt;PropTab&gt;, &lt;PropServer&gt; )</code> |
| <b>Python Example</b> | <code>oEditor.GetProperties('PassedParameterTab', 'k')</code>     |

## GetPropertyValue

Returns the value of a single property belonging to a specific `<PropServer>` and `<PropTab>`. This function is available with the Project, Design or Editor objects, including definition editors.

**Tip:** Use the script recording feature and edit a property, and then view the resulting script to see the format for that property.

| UI Access    | N/A                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------|-------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                          | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|              | <PropTab>                     | String | One of the following, where tab titles are shown in parentheses: <ul style="list-style-type: none"> <li>PassedParameterTab ("Parameter Values")</li> <li>DefinitionParameterTab (Parameter Defaults")</li> <li>LocalVariableTab ("Variables" or "Local Variables")</li> <li>ProjectVariableTab ("Project variables")</li> <li>ConstantsTab ("Constants")</li> <li>BaseElementTab ("Symbol" or "Footprint")</li> <li>ComponentTab ("General")</li> <li>Component("Component")</li> <li>CustomTab ("Intrinsic Variables")</li> <li>Quantities ("Quantities")</li> <li>Signals ("Signals")</li> </ul> |
|              | <PropServer>                  | String | An object identifier, generally returned from another script method, such as <code>CompInst@R;2;3</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|              | <PropName>                    | String | Name of the property.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Return Value | String value of the property. |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Python Syntax  | GetPropertyValue (<PropTab>, <PropServer>, <PropName>)                                                                                                 |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>selectionArray = oEditor.GetSelections()  for k in selectionArray:     val = oEditor.GetPropertyValue("PassedParameterTab", k, "R")     ...</pre> |

## GetTopDesignList

Returns a list of top-level design names.

|                     |                                                       |
|---------------------|-------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                   |
| <b>Parameters</b>   | None.                                                 |
| <b>Return Value</b> | List of strings containing name of top-level designs. |

|                       |                                          |
|-----------------------|------------------------------------------|
| <b>Python Syntax</b>  | GetTopDesignList()                       |
| <b>Python Example</b> | <code>oProject.GetTopDesignList()</code> |

## GetVariableValue

Gets the value of a single specified variable. To get the value of project variables, execute this command using `oProject`. To get the value of local variables, use `oDesign`.

|                   |           |        |                                 |
|-------------------|-----------|--------|---------------------------------|
| <b>UI Access</b>  | N/A       |        |                                 |
| <b>Parameters</b> | Name      | Type   | Description                     |
|                   | <VarName> | String | Name of the variable to access. |

|                     |                                              |
|---------------------|----------------------------------------------|
| <b>Return Value</b> | String represents the value of the variable. |
|---------------------|----------------------------------------------|

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetVariableValue( &lt;VarName&gt; )</code>   |
| <b>Python Example</b> | <code>oProject.GetVariableValue("var_name")</code> |

## GetVariables

Returns a list of all defined variables. To get a list of project variables, execute this command using `oProject`. To get a list of local variables, use `oDesign`.

|                     |                                            |
|---------------------|--------------------------------------------|
| <b>UI Access</b>    | N/A                                        |
| <b>Parameters</b>   | None.                                      |
| <b>Return Value</b> | Array of strings containing the variables. |

|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetVariables()</code>                                                 |
| <b>Python Example</b> | <code>oProject.GetVariables()</code><br><code>oDesign.GetVariables()</code> |

# ImportDataset

Imports a dataset from a named file. This can be executed by the oProject, or oDesign variables. The name of the dataset is file-name+index number (e.g., dsdata1) unless the filename ends with a trailing number. When there is a trailing number at the end, we will remove the number and use first unused index. Alternatively, the name of the dataset can be explicitly defined by providing a string as an optional second argument.

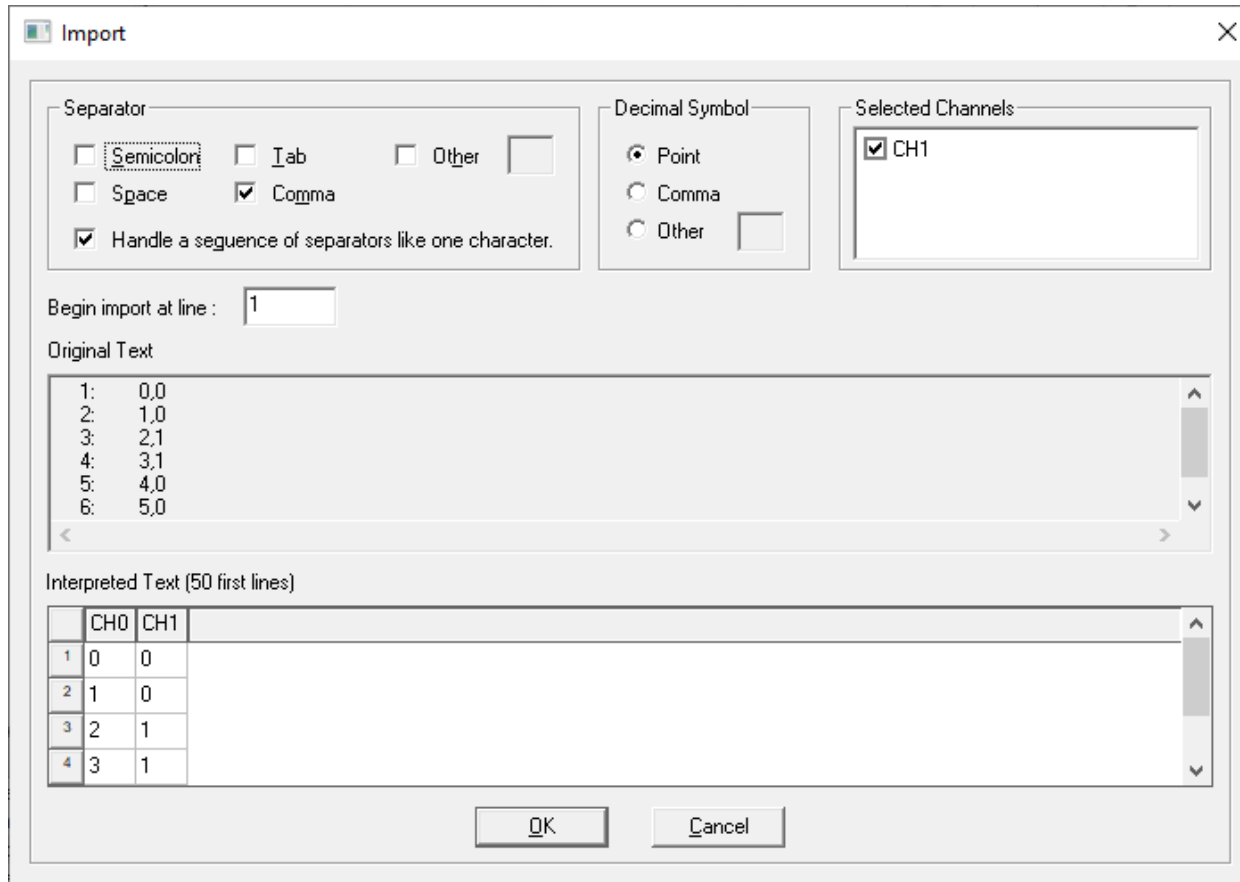
|              |                              |        |                                                                                                                    |
|--------------|------------------------------|--------|--------------------------------------------------------------------------------------------------------------------|
| UI Access    | Project > Datasets > Import. |        |                                                                                                                    |
| Parameters   | Name                         | Type   | Description                                                                                                        |
|              | <datasetFilePath>            | String | The full path to the file containing the dataset values. *.tab files recommended (see <a href="#">note</a> below). |
|              | <optionalDatasetName>        | String | Optional. User-defined dataset name.                                                                               |
| Return Value | None.                        |        |                                                                                                                    |

|                |                                                                                                                                                                                                                            |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ImportDataset (<datasetFilePath>,<optionalDatasetName>)                                                                                                                                                                    |
| Python Example | <pre>oProject.ImportDataset('e:\tmp\dsdata.tab') oDesign.ImportDataset('e:\tmp\dsdata.tab') oProject.ImportDataset('e:\tmp\dsdata.tab', 'MyDatasetName') oDesign.ImportDataset('e:\tmp\dsdata.tab', 'MyDatasetName')</pre> |

## Note About File Types:

Tab-delimited or space-delimited files with the extension \*.tab are the recommended file type. When using ImportDataset at the Design level, \*.tab is the only file type supported.

At the Project level, other file types are supported (for example, \*.csv). However, after calling the command, you must configure the file import format manually through the Electronics Desktop GUI by selecting **Project > Datasets** and clicking **Import**.



## InsertDesign

Inserts a new design in the project. For Circuit and HFSS 3D Layout scripts, the last argument will always be empty.

| UI Access    | Project > [Insert Circuit Design / Insert Circuit Netlist / Insert HFSS 3D Layout Design]. |        |                                                                                                                                                  |
|--------------|--------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                                                       | Type   | Description                                                                                                                                      |
|              | <DesignType>                                                                               | String | Design type. Valid types: "Circuit", "Nexxim Circuit", "System", "Nexxim Netlist", "HFSS3D".                                                     |
|              | <DesignName>                                                                               | String | Design name.                                                                                                                                     |
|              | <TechnologyFile>                                                                           | String | The path to the Circuit technology file to be used in the design. Use a pair of empty double quotes ("" ) for none.                              |
|              | <SubcircuitID>                                                                             | String | (Optional) Must be preceded by a colon if included along with the Technology File name. No colon is necessary when the subcircuit ID is omitted. |
|              | ""                                                                                         | None   | Empty argument.                                                                                                                                  |
| Return Value | None.                                                                                      |        |                                                                                                                                                  |

| Python Syntax  | InsertDesign (<DesignType>, <DesignName>, <TechnologyFile>:<SubCircuitID>,"")                         |
|----------------|-------------------------------------------------------------------------------------------------------|
| Python Example | oProject.InsertDesign("Nexxim Circuit","MyDesign", "C:\\Program Files\\ANSYS Inc\\v252\\AnsysEM", "") |

## InsertDesign (Layout Editor)

Insert a design

*Command:* None

*Syntax:* InsertDesign <type>, <name>, <stationerypath>, <parentname>

*Return Value:* None

*Parameters:* <type>

Type: string



<name>

Type: string

<stationerypath>

Type: string

<parentname>

Type: string

## InsertDesignWithWorkflow

Inserts a design with a named workflow and returns an IDispatch string.

|              |                                                        |        |                                  |
|--------------|--------------------------------------------------------|--------|----------------------------------|
| UI Access    | N/A                                                    |        |                                  |
| Parameters   | Name                                                   | Type   | Description                      |
|              | <type>                                                 | String | Type of design.                  |
|              | <workflowName>                                         | String | Name of the workflow.            |
|              | <specName>                                             | String | Name of the spec.                |
|              | <fileName>                                             | String | Name of the file.                |
|              | <libLoc>                                               | String | Type of library, such as SysLib. |
|              | <stationaryPath>                                       | String | Path.                            |
| Return Value | IDispatch string, such as 'IDispatch(IAltraSimScript)' |        |                                  |

|               |                                                                                                      |
|---------------|------------------------------------------------------------------------------------------------------|
| Python Syntax | InsertDesignWithWorkflow(<type>, <workflowName>, <specName>, <fileName>, <libLoc>, <stationaryPath>) |
| Python        | oProject.InsertDesignWithWorkflow ("Circuit Design", "Serial Design",                                |

|                |                                                                                                                                                                        |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Example</b> | "PCIe3 Stressed", "LongChannel", "SysLib",<br>"C:\\Program Files\\ANSYS Inc\\v252\\AnsysEM\\syslib\\MS" - RT_duroid 6010 (Er=10.2)<br>0.010 inch, 0.5 oz copper.asty") |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## InsertToolObject

**Note:**

This command is for internal Ansys use only.

|                       |                             |
|-----------------------|-----------------------------|
| <b>Python Syntax</b>  | InsertToolObject()          |
| <b>Python Example</b> | oProject.InsertToolObject() |

## Paste (Project Object)

Pastes a design in the active project.

|                     |                         |
|---------------------|-------------------------|
| <b>UI Access</b>    | <b>Edit &gt; Paste.</b> |
| <b>Parameters</b>   | None.                   |
| <b>Return Value</b> | None                    |

|                       |                  |
|-----------------------|------------------|
| <b>Python Syntax</b>  | Paste()          |
| <b>Python Example</b> | oProject.Paste() |

## Redo [Project Level]

Reapplies the last project-level command.

|                     |                        |
|---------------------|------------------------|
| <b>UI Access</b>    | <b>Edit &gt; Redo.</b> |
| <b>Parameters</b>   | None.                  |
| <b>Return Value</b> | None.                  |

|                       |                              |
|-----------------------|------------------------------|
| <b>Python Syntax</b>  | Redo()                       |
| <b>Python Example</b> | <code>oProject.Redo()</code> |

## RemoveAllUnusedDefinitions

Removes all unused project definitions.

|                     |       |
|---------------------|-------|
| <b>UI Access</b>    | N/A   |
| <b>Parameters</b>   | None. |
| <b>Return Value</b> | None. |

|                      |                              |
|----------------------|------------------------------|
| <b>Python Syntax</b> | RemoveAllUnusedDefinitions() |
|----------------------|------------------------------|

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Example</b> | <code>oProject.RemoveAllUnusedDefinitions()</code> |
|-----------------------|----------------------------------------------------|

## RemoveMaterial

Removes a material from a library.

| UI Access    | Remove Material(s) command in the material editor |         |                                                                                                                                                        |
|--------------|---------------------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                              | Type    | Description                                                                                                                                            |
|              | <MaterialName>                                    | String  | Name of the material to be removed.                                                                                                                    |
|              | <IsProjectMaterial>                               | Boolean | If True, assumes the material is a project material. The last two parameters will be ignored.<br><br>If False, the material is not a project material. |
|              | <LibraryName>                                     | String  | Name of the user or personal library where the material resides.                                                                                       |
|              | <LibraryLocation>                                 | String  | Location of library. Valid options:"UserLib" or "PersonalLib".                                                                                         |
| Return Value | None.                                             |         |                                                                                                                                                        |

|                       |                                                                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>RemoveMaterial (&lt;MaterialName&gt;, &lt;IsProjectMaterial&gt;,<br/>                  &lt;LibraryName&gt;, &lt;LibraryLocation&gt;)</code> |
| <b>Python Example</b> | <code>oDefinitionManager.RemoveMaterial ([<br/>"Material1", false, "mo0907","UserLib"])</code>                                                    |

## RemoveUnusedDefinitions

Removes any unused project definitions.

|                     |                                                                 |       |                                                                     |
|---------------------|-----------------------------------------------------------------|-------|---------------------------------------------------------------------|
| <b>UI Access</b>    | <b>Tools &gt; Project Tools &gt; Remove Unused Definitions.</b> |       |                                                                     |
| <b>Parameters</b>   | Name                                                            | Type  | Description                                                         |
|                     | <Definitions>                                                   | Array | Definitions to be removed, such as materials and surface materials. |
| <b>Return Value</b> | None.                                                           |       |                                                                     |

|                       |                                                                                                                                                                                                                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | RemoveUnusedDefinitions(<Definitions>)                                                                                                                                                                                                                                            |
| <b>Python Example</b> | <pre>oProject.RemoveUnusedDefinitions(<br/>    [<br/>        [<br/>            "NAME:Materials",<br/>            "Al-Extruded"<br/>        ],<br/>        [<br/>            "NAME:SurfaceMaterials",<br/>            "Steel-oxidised-surface"<br/>        ]<br/>    ]<br/>)</pre> |

## Rename

Renames the project and saves it. Similar to [SaveAs\(\)](#).

| UI Access    | Edit > Rename. |         |                                                                                                                                        |
|--------------|----------------|---------|----------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name           | Type    | Description                                                                                                                            |
|              | <NewName>      | String  | Desired name of the project. The path is optional.                                                                                     |
|              | <OverWriteOk>  | Boolean | <ul style="list-style-type: none"><li>• True - overwrite the file on disk if it exists.</li><li>• False - prevent overwrite.</li></ul> |
| Return Value | None.          |         |                                                                                                                                        |

| Python Syntax  | Rename(<NewName>,<OverWriteOK>)                                |
|----------------|----------------------------------------------------------------|
| Python Example | <pre>oProject.Rename("c:\projects\MyProject.aedt", True)</pre> |

## RunToolkit

Runs a Python toolkit script, applying it to the active design. The toolkit script itself may have prerequisites, such as sweeps defined, or specific model characteristics, such as port definitions.

**Important:**

Full scripting for cable modeling is not supported and no arguments are allowed in the script. The **RunToolkit** command will not automatically create a cable bundle, but will simply open the **Cable Modeling** dialog box. You will have to manually input your parameters.

|              |                                             |        |                                                                       |
|--------------|---------------------------------------------|--------|-----------------------------------------------------------------------|
| UI Access    | [HFSS 3D Layout] > Toolkit > [Script Name]. |        |                                                                       |
| Parameters   | Name                                        | Type   | Description                                                           |
|              | <LibraryType>                               | String | Name of the library in which the script is located.                   |
|              | <ToolkitName>                               | String | Name of the Python script.                                            |
|              | <ToolkitArg>                                | Array  | Structured array containing arguments required by the toolkit script. |
| Return Value | User-defined solution(s) and/or output(s).  |        |                                                                       |

|                |                                                            |
|----------------|------------------------------------------------------------|
| Python Syntax  | RunToolkit(<LibraryType>, <ToolkitName>, <ToolkitArg>)     |
| Python Example | oDesign.RunToolkit("SysLib", "Hearing Aid Compliance", []) |

**Save**

Saves the active project.

|              |              |
|--------------|--------------|
| UI Access    | File > Save. |
| Parameters   | None.        |
| Return Value | None.        |

|                       |                              |
|-----------------------|------------------------------|
| <b>Python Syntax</b>  | Save()                       |
| <b>Python Example</b> | <code>oProject.Save()</code> |

## SaveAs

Saves the project under a new name. Requires a full path.

### Note:

This script takes two parameters for non-schematic/layout designs and four parameters for schematic/layout designs.

| UI Access  | File > Save As.    |         |                                                                                                                                                                                                                                              |
|------------|--------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name               | Type    | Description                                                                                                                                                                                                                                  |
|            | <NewName>          | String  | The desired name of the project, with directory and extension.                                                                                                                                                                               |
|            | <OverWriteOK>      | Boolean | True to overwrite the file of the same name, if it exists. False to prevent overwrite.                                                                                                                                                       |
|            | <DefaultAction>    | String  | For Schematic/Layout projects only. Otherwise omit. See note below.<br>Valid actions: ef_overwrite , ef_copy_no_overwrite, ef_make_path_absolute, or empty string.                                                                           |
|            | <OverwriteActions> | Array   | For Schematic/Layout projects only. Otherwise omit. See note below.<br>Structured array: Array("Name: <Action>", <FileName>, <FileName>, ...)<br>Valid actions: ef_overwrite , ef_copy_no_overwrite, ef_make_path_absolute, or empty string. |



|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                                                                                                                                                                                                                                                                                                |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | For non-Schematic/Layout project: SaveAs (<NewName> <OverWriteOK>)<br>For Schematic/Layout project: SaveAs (<NewName> <OverWriteOK> <DefaultAction> <OverrideActions>)                                                                                                                                                         |
| <b>Python Example</b> | <pre>oProject.SaveAs('D:/projects/project1.aedt', True)  ----  oProject.SaveAs('D:/Projects/Project1.aedt', True, 'ef_overwrite', ['NAME:Over- rideActions', ['NAME:ef_copy_no_overwrite', ['NAME:Files', '\$PROJECTDIR/circuit_models.inc']], ['NAME:ef_make_path_absolute', ['NAME:Files', '\$PROJECTDIR/SL_6s.sp']]])</pre> |

**Important:**

The DefaultAction and OverrideActions strings correspond to the following actions:

- **ef\_overwrite** – Copy file to new project directory and overwrite.
- **ef\_copy\_no\_overwrite** – Copy file to new project directory and don't overwrite.
- **ef\_make\_path\_absolute** – Change reference to point to file in old project directory.
- **Empty String** – Do nothing.

The DefaultAction is applied to all files that are NOT explicitly listed in the OverrideActions array. Those in the OverrideActions array are separate arrays for actions that are different from the default action; those actions are applied to the files listed in the same array:

- If OverrideActions are not specified, DefaultAction is applied to ALL files in project directory.

## SaveAsStandAloneProject

Saves the project as a standalone copy.

**Note:**

This script is not supported when the application is being controlled by Ansys Workbench.

|              |               |        |                                                                |
|--------------|---------------|--------|----------------------------------------------------------------|
| UI Access    | N/A           |        |                                                                |
| Parameters   | Name          | Type   | Description                                                    |
|              | <projectName> | String | The desired name of the project, with directory and extension. |
| Return Value | None.         |        |                                                                |

|                       |                                                                            |
|-----------------------|----------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SaveAsStandAloneProject( <projectName> )                                   |
| <b>Python Example</b> | <code>oProject.SaveAsStandAloneProject('D:/projects/project1.aedt')</code> |

## SaveProjectArchive

Saves the active project as an archive to the specified file path.

|                     |                           |         |                                                                                 |
|---------------------|---------------------------|---------|---------------------------------------------------------------------------------|
| <b>UI Access</b>    | <b>File &gt; Archive.</b> |         |                                                                                 |
| <b>Parameters</b>   | Name                      | Type    | Description                                                                     |
|                     | <archiveFilePath>         | String  | Path to archived file.                                                          |
|                     | <IncludeExternalFiles>    | Boolean | True to include external files; False to exclude.                               |
|                     | <IncludeResultsFiles>     | Boolean | True to include simulation files associated with the project; False to exclude. |
|                     | <AdditionalFiles>         | Array   | Additional specified files to include.                                          |
|                     | <ArchiveNotes>            | String  | String describe the archive.                                                    |
| <b>Return Value</b> | None.                     |         |                                                                                 |

|                       |                                                                                                                         |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SaveProjectArchive(<archivefilepath>, <IncludeExternalFiles>, <IncludeResultsFiles>, <AdditionalFiles>, <ArchiveNotes>) |
| <b>Python Example</b> | <code>oProject.SaveProjectArchive("C:\\Users\\Documents\\Ansoft\\Project27.aedt", True, False, [], "")</code>           |

## SetActiveDefinitionEditor

Obtains a specified definition editor.

|              |                                         |        |                                                                                        |
|--------------|-----------------------------------------|--------|----------------------------------------------------------------------------------------|
| UI Access    | N/A                                     |        |                                                                                        |
| Parameters   | Name                                    | Type   | Description                                                                            |
|              | <EditorName>                            | String | Name of the definition editor to set active, one of "SymbolEditor", "FootprintEditor". |
|              | <DefinitionName>                        | String | The combination name for the symbol or footprint, <libname>:<def-name>                 |
| Return Value | Object for the definition to be edited. |        |                                                                                        |

|                |                                                                                                                                   |  |  |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------|--|--|
| Python Syntax  | SetActiveDefinitionEditor(<EditorName>, <DefinitionName>)                                                                         |  |  |
| Python Example | <pre>oProject.SetActiveDefinitionEditor("SymbolEditor",<br/>"Simplorer Elements\Basic Elements\Circuit\Passive Elements:R")</pre> |  |  |

## SetActiveDesign

Sets a design to be the active design.

|              |              |        |                                                 |
|--------------|--------------|--------|-------------------------------------------------|
| UI Access    | N/A          |        |                                                 |
| Parameters   | Name         | Type   | Description                                     |
|              | <DesignName> | String | Name of the design to set as the active design. |
| Return Value | None.        |        |                                                 |

|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetActiveDesign (<DesignName>)                                      |
| <b>Python Example</b> | <code>oDesign = oProject.SetActiveDesign("SimplorerDesign2")</code> |

## SetPropValue [Project]

Sets a property value for an active project's child object.

|                     |                                                                                                                                       |             |                                                                          |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------|
| <b>UI Access</b>    | Edit Properties on ProjectTree objects.                                                                                               |             |                                                                          |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                           | <b>Type</b> | <b>Description</b>                                                       |
|                     | <propPath>                                                                                                                            | String      | A child object's property path. See: <a href="#">Property Function</a> . |
|                     | <newValue>                                                                                                                            | String      | New property value.                                                      |
| <b>Return Value</b> | Boolean: <ul style="list-style-type: none"><li>• <b>True</b> – property found.</li><li>• <b>False</b> – property not found.</li></ul> |             |                                                                          |

|                       |                                                                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetPropValue(<propPath>, <newValue>)                                                                                                                                 |
| <b>Python Example</b> | <code>oProject.SetPropValue("TeeModel/offset", "2mm")</code><br><code>oProject.SetPropValue("TeeModel/Results/S Parameter Plot 1/Display Type", "Data Table")</code> |

## SetPropertyValue

Sets the value of a single property belonging to a specific PropServer and PropTab. This function is available with the Project, Design or Editor objects, including definition editors. This is not supported for properties of the following types: ButtonProp, PointProp, V3DPointProp, and VPointProp. Only the ChangeProperty command can be used to modify these properties.

Use the script recording feature and edit a property, and then view the resulting script entry or use GetPropertyValue for the desired property to see the expected format.

| UI Access         | N/A          |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|--------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name         | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                   | <propTab>    | String | One of the following, where tab titles are shown in parentheses: <ul style="list-style-type: none"> <li>PassedParameterTab ("Parameter Values")</li> <li>DefinitionParameterTab (Parameter Defaults")</li> <li>LocalVariableTab ("Variables" or "Local Variables")</li> <li>ProjectVariableTab ("Project variables")</li> <li>ConstantsTab ("Constants")</li> <li>BaseElementTab ("Symbol" or "Footprint")</li> <li>ComponentTab ("General")</li> <li>Component("Component")</li> <li>CustomTab ("Intrinsic Variables")</li> <li>Quantities ("Quantities")</li> <li>Signals ("Signals")</li> </ul> |
|                   | <propServer> | String | An object identifier, generally returned from another script method, such as CompInst@R;2;3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                   | <propName>   | String | Name of the property.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                   | <propValue>  | String | The value for the property                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Return Value      | None.        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetPropertyValue(<propTab>, <propServer>, <propName>, <propValue>)            |
| <b>Python Example</b> | <code>oEditor.SetPropertyValue("PassedParameterTab", "k", "R", "2200")</code> |

## SetVariableValue

Sets the value of a variable. To set the value of a project variable, execute this command using `oProject`. To set the value of a local variable, use `oDesign`.

|                     |            |        |                             |
|---------------------|------------|--------|-----------------------------|
| <b>UI Access</b>    | N/A        |        |                             |
| <b>Parameters</b>   | Name       | Type   | Description                 |
|                     | <VarName>  | String | Variable name.              |
|                     | <VarValue> | Value  | New value for the variable. |
| <b>Return Value</b> | None.      |        |                             |

|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| <b>Python Syntax</b>  | SetVariableValue (<VarName>, <VarValue>)                |
| <b>Python Example</b> | <code>oProject.SetVariableValue('\$Var1', '3mm')</code> |

## SimulateAll

Simulates all solution setups and Optimetrics setups for all design instances in the project. Script processing only continues when all analyses are finished.

|                     |       |
|---------------------|-------|
| <b>UI Access</b>    | N/A   |
| <b>Parameters</b>   | None. |
| <b>Return Value</b> | None. |

|                       |                                     |
|-----------------------|-------------------------------------|
| <b>Python Syntax</b>  | SimulateAll()                       |
| <b>Python Example</b> | <code>oProject.SimulateAll()</code> |

## Undo [Project]

Cancels the last project-level command.

|                     |                        |
|---------------------|------------------------|
| <b>UI Access</b>    | <b>Edit &gt; Undo.</b> |
| <b>Parameters</b>   | None.                  |
| <b>Return Value</b> | None.                  |

|                       |                              |
|-----------------------|------------------------------|
| <b>Python Syntax</b>  | Undo()                       |
| <b>Python Example</b> | <code>oProject.Undo()</code> |



|  |  |
|--|--|
|  |  |
|--|--|

## UpdateDefinitions

Updates all definitions. The **Messages** window reports when definitions are updated, or warns when definitions cannot be found.

|                     |                                                                                                         |
|---------------------|---------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | <b>Tools &gt; Project Tools &gt; Update Definitions.</b> Click <b>Select All</b> , then <b>Update</b> . |
| <b>Parameters</b>   | None.                                                                                                   |
| <b>Return Value</b> | None.                                                                                                   |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | UpdateDefinitions()                       |
| <b>Python Example</b> | <code>oProject.UpdateDefinitions()</code> |

## 7 - Design Object Script Commands

Design object commands should be executed by the oDesign object.

```
oDesign.CommandName <args>
```

For example:

```
Set oDesign = oProject.SetActiveDesign("HFSSDesign1")
```

### Conventions Used in this Chapter

<ModuleName> is a placeholder for any one of the following modules:

- [Cavity Commands](#) – "Cavities"
- [Excitations Commands](#) – "Excitations" or "Boundaries"
- [Field Overlays Module](#) – "FieldsReporter"
- [Optimetrics Module](#) – "Optimetrics"
- [Output Variable Module](#) – "OutputVariable"
- [Radiation Setup Manager Module](#) – "RadiationSetupMgr"
- [Reporter Module](#) – "ReportSetup"
- [Simulation Setup Commands](#) – "SolveSetups"
- [User Defined Documents Module](#) – "UserDefinedDocuments"
- [User Defined Solutions Module](#) – "UserDefinedSolutionModule"

[AddDataset](#)

[AddDynamicLink](#)

[AddModelingProperties](#)

[Analyze](#)

[AnalyzeAll](#)

[AnalyzeAllNominal](#)

[ApplyMeshOps](#)

ChangePortProperty [Nexxim]

[ChangeProperty](#)

[CopyItemCommand](#)

[CreateReport](#)

[DeleteDataset](#)

[DeleteDesignInstance](#)

[DeleteFieldVariation](#)

[DeleteFullVariation](#)

[DeleteOutputVariable](#)

[DeletePlotEntities](#)

DeletePort [Nexxim]

DeleteSource [Nexxim]

[EditCoSimulationOptions](#)

[EditDataset](#)

**EditDesignSettings**

[EditImportData](#)

[EditInfiniteArray](#)

[EditLayoutForLayoutComponent](#)

[EditNotes](#)

[EditNotes \(Layout Editor\)](#)

[EditOptions](#)

[EditOutputVariable](#)

[EMDesignOptions](#)

[ExportCausalRLGCNetlist](#)

[ExportCircuit \(Layout Editor\)](#)

[ExportConvergence](#)

[ExportDataset](#)

[ExportForHSpice](#)

[ExportForHSpice \(Layout Editor\)](#)

[ExportForSpice \(Layout Editor\)](#)

[ExportNMFData](#)

[ExportLayoutViaCurrentDensity](#)

[ExportMeshStats](#)

[ExportNetworkData](#)

[ExportNetworkData \(Layout Editor\)](#)

[ExportNMFData](#)

[ExportProfile](#)

[ExportReport](#)

[GenerateMesh](#)

[GetAllPorts](#)

[GetChildNames \[Design\]](#)

[GetChildObject \[Design\]](#)

[GetChildTypes \[Design\]](#)

[GetDesignID](#)

[GetDesignType](#)

[GetDesignName](#)

[GetDesignValidationInfo](#)

[GetEditor](#)

[GetEditor \(Layout Editor\)](#)

[GetGeometryIdsForAllNetLayerCombinations](#)

[GetGeometryIdsForNetLayerCombinations](#)

[GetManagedFilePath](#)

[GetModule](#)

[GetName](#)

[GetNominalVariation](#)

[GetNoteText](#)

[GetObjPath](#)

[GetOutputVariableValue](#)

[GetOutputVariables](#)

[GetProject](#)

[GetPostProcessingVariables](#)

[GetPropHost](#)

[GetPropNames \[Design\]](#)

[GetPropValue \[Design\]](#)

[GetProperties](#)

[GetPropertyValue](#)

[GetSelections](#)

[GetSolutionType](#)

[GetSolveInsideThreshold](#)

[GetVariableValue](#)

[GetVariables](#)

[ImportDataFilePath \[Nexxim\]](#)

[ImportDataset](#)

[InsertDesign](#)

[OverlayCurrents](#)

[OverlayFarField](#)

[OverlayMesh](#)

[OverlayNearField](#)

[PasteArray](#)

[PasteDesign](#)

PasteItemCommand

[PushExcitations](#)

[Redo](#)

[RemoveImportData \(Layout Editor\)](#)

[RemoveModelingProperties](#)

[RenameDesignInstance](#)

RenameImportData [Nexxim]

[RenameSource](#)

[ReportTemplates](#)

[RunToolkit](#)

[SetActiveEditor](#)

[SetBendGraphicsMode](#)

[SetDesignMode](#)

[SetPropValue \[Design\]](#)

[SetPropertyValue](#)

[SetShowLayoutForLayoutComponent](#)

[SetSolveInsideThreshold](#)

[SetSourceContexts](#)

[SetVariableValue](#)

SimulateLink

[Solve](#)[Undo](#)

## AddDataset

Adds a dataset. This can be executed by the oProject, or oDesign variables.

| UI Access    | Project > Datasets > Add. |        |                                                                                                             |
|--------------|---------------------------|--------|-------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                      | Type   | Description                                                                                                 |
|              | <DatasetDataArray>        | Array  | Array("NAME:<DatasetName>",<br>><br>Array("NAME:Coordinates", <CoordinateArray>,<br><CoordinateArray>, ...) |
|              | <DatasetName>             | String | Name of the dataset.                                                                                        |
|              | <CoordinateArray>         | Array  | Array("NAME:Coordinate", "X:=", <double>, "Y:=", <double>)                                                  |
| Return Value | None.                     |        |                                                                                                             |

| Python Syntax  | AddDataset <DatasetDataArray>                                                               |
|----------------|---------------------------------------------------------------------------------------------|
| Python Example | <pre>oProject.AddDataset ( [ "NAME:\$ds1", [ "NAME:Coordinates", [ "NAME:Coordinate",</pre> |



```
        "X:=", 2,  
        "Y:=", 4  
    ],  
    [  
        "NAME:Coordinate",  
        "X:=", 6,  
        "Y:=", 8  
    ]  
]  
]  
)  
oDesign.AddDataset(  
    [  
        "NAME:$ds1",  
        [  
            "NAME:Coordinates",  
            [  
                "NAME:Coordinate",  
                "X:=", 2,  
                "Y:=", 4
```

|  |                                                                                                                |
|--|----------------------------------------------------------------------------------------------------------------|
|  | <pre>],<br/><br/>[<br/>    "NAME:Coordinate",<br/>    "X:=", 6,<br/>    "Y:=", 8<br/>]<br/>]<br/>]<br/>)</pre> |
|--|----------------------------------------------------------------------------------------------------------------|

## AddDynamicLink

Adds a dynamic link component to a Circuit or HFSS 3D Layout design. Circuit designs can accept dynamic links from HFSS, Q3D, 2D Extractor, and SIwave.

**Note:**  
HFSS 3D Layout designs can only accept dynamic links from HFSS.

| UI Access    | <ul style="list-style-type: none"><li>Open the Circuit or HFSS 3D Layout design to which you want to add the link. On the <b>Component Libraries</b> menu, open the <b>Symbols</b> tab, and then click <b>Import Models</b>. Select the appropriate icon from the panel of icons. The <b>Import Components</b> dialog opens.</li><li>If the source for a dynamic link is an HFSS design, in the Project Manager drag and drop the design onto a Circuit or HFSS 3D Layout design to create the link.</li></ul> |                                                                     |      |             |              |        |                                                                     |  |  |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------|-------------|--------------|--------|---------------------------------------------------------------------|--|--|
| Parameters   | <table><tr><th>Name</th><th>Type</th><th>Description</th></tr><tr><td>&lt;designName&gt;</td><td>String</td><td>Design source for the dynamic link. Optional, defaults to the first</td></tr></table>                                                                                                                                                                                                                                                                                                          | Name                                                                | Type | Description | <designName> | String | Design source for the dynamic link. Optional, defaults to the first |  |  |
| Name         | Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Description                                                         |      |             |              |        |                                                                     |  |  |
| <designName> | String                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Design source for the dynamic link. Optional, defaults to the first |      |             |              |        |                                                                     |  |  |

|                     |                           |         |                                                                                                                                                                                   |
|---------------------|---------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                           |         | design in the project pointed to by projectPath.                                                                                                                                  |
|                     | <projectPath>             | String  | Project source for the dynamic link. Optional, defaults to the current active project.                                                                                            |
|                     | <linkName>                | String  | Name applied to the dynamic link. Optional, defaults to the designName.                                                                                                           |
|                     | <solutionName>            | String  | Solution in source design which will be referenced by the dynamic link. Optional, defaults to the first setup:sweep.                                                              |
|                     | <transLinePort>           | String  | For HFSS designs only, port name for transmission lines. It is created only if it is <i>not</i> empty. Optional, defaults to "". This value is ignored for non-HFSS design types. |
|                     | <ReduceMatrix>            | String  | For Q3D and 2D extractor designs, reduce matrix which will be referenced by the dynamic link. This is ignored for other design types. Optional, defaults to "Original".           |
|                     | <EnableHFSSCableModeling> | Boolean | For 2D extractor designs only, flag to create cable models. This is ignored for other designs types. Optional, defaults to false.                                                 |
|                     | <Description>             | String  | Description of the dynamic link's source. Optional.                                                                                                                               |
| <b>Return Value</b> | None.                     |         |                                                                                                                                                                                   |

|                       |                                                                                                                                                                                                  |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddDynamicLink (<designName>, <projectPath>, <linkName>, <solutionName>, <transLinePort>, <reducedMatrix>, <enableCableModeling>, <description>)                                                 |
| <b>Python Example</b> | <pre>oDesign = oProject.SetActiveDesign("Circuit1") oDesign.AddDynamicLink("TeeModel", "\$PersonalLib\\TeeWrongFile.aedt", "TeeLink", "Setup1 : LastAdaptive", "Port1", "", False, "desc")</pre> |

## AddModelingProperties

*Use:* Add a modeling property to a design

*Command:* None

*Syntax:* AddModelingProperties <design>

*Return Value:* None

*Parameters:* <design>

Type: string

## Analyze

Solves a single solution setup and all of its frequency sweeps.

| UI Access    | Right-click a solution setup in the project tree, and select <b>Analyze</b> .                                     |         |                                                                                                                                                                                                                                                                             |
|--------------|-------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                                                                              | Type    | Description                                                                                                                                                                                                                                                                 |
|              | <setup>                                                                                                           | String  | Setup name.                                                                                                                                                                                                                                                                 |
|              | isBlocking                                                                                                        | Boolean | An optional arg that defaults to <code>true</code> . If it's <code>false</code> , the command immediately returns while the analysis or analyses run in the background. The status of the analyses can be checked with the <code>AreThereSimulationsRunning</code> command. |
| Return Value | Integer value: <ul style="list-style-type: none"><li>• <b>0</b> – Success</li><li>• <b>Else</b> – Error</li></ul> |         |                                                                                                                                                                                                                                                                             |

| Python Syntax | Analyze (<setup>) |
|---------------|-------------------|
|---------------|-------------------|

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Example</b> | <code>oDesign.Analyze("Setup1", isBlocking)</code> |
|-----------------------|----------------------------------------------------|

## AnalyzeAll [design]

Runs all solution setups and Optimetrics setups for the current design instance.

|                     |             |             |                                                                                                                                                                                                                                                                             |
|---------------------|-------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A         |             |                                                                                                                                                                                                                                                                             |
| <b>Parameters</b>   | <b>Name</b> | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                          |
|                     | isBlocking  | Boolean     | An optional arg that defaults to <code>true</code> . If it's <code>false</code> , the command immediately returns while the analysis or analyses run in the background. The status of the analyses can be checked with the <code>AreThereSimulationsRunning</code> command. |
| <b>Return Value</b> | None        |             |                                                                                                                                                                                                                                                                             |

|                       |                                             |
|-----------------------|---------------------------------------------|
| <b>Python Syntax</b>  | <code>AnalyzeAll()</code>                   |
| <b>Python Example</b> | <code>oDesign.AnalyzeAll(isBlocking)</code> |

## AnalyzeAllNominal

Runs all defined setups.

|                  |                                                                                  |
|------------------|----------------------------------------------------------------------------------|
| <b>UI Access</b> | Right-click <b>Analysis</b> in the project tree, and select <b>Analyze All</b> . |
|------------------|----------------------------------------------------------------------------------|

|              |            |         |                                                                                                                                                                                                                                                                             |
|--------------|------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name       | Type    | Description                                                                                                                                                                                                                                                                 |
|              | isBlocking | Boolean | An optional arg that defaults to <code>true</code> . If it's <code>false</code> , the command immediately returns while the analysis or analyses run in the background. The status of the analyses can be checked with the <code>AreThereSimulationsRunning</code> command. |
| Return Value | None       |         |                                                                                                                                                                                                                                                                             |

|                |                                          |
|----------------|------------------------------------------|
| Python Syntax  | <code>AnalyzeAllNominal()</code>         |
| Python Example | <code>oDesign.AnalyzeAllNominal()</code> |

## ApplyMeshOps

This script has been replaced by [GenerateMesh](#).

## ChangeProperty[ReportSetup]

Change the properties for a Report.

|              |                                                    |       |                                                                                |
|--------------|----------------------------------------------------|-------|--------------------------------------------------------------------------------|
| UI Access    | Double-click on a report to change its properties. |       |                                                                                |
| Parameters   | Name                                               | Type  | Description                                                                    |
|              | <code>&lt;PropertyArray&gt;</code>                 | Array | Varies, depending on the properties associated with the select object command. |
| Return Value | None.                                              |       |                                                                                |

| Python Syntax         | ChangeProperty(<PropertyArray>)                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oModule = oDesign.GetModule("ReportSetup")  oModule.ChangeProperty(  [     "NAME:AllTabs",     [         "NAME:General",         [             "NAME:PropServers",             "XY Plot 1:General"         ]     ],     [         "NAME:ChangedProps",         [             "NAME:Use Scientific Notation",             "Value:=", True         ]     ] ]</pre> |

```
oModule = oDesign.GetModule("ReportSetup")
oModule.ChangeProperty(
[
  "NAME:AllTabs",
  [
    "NAME:Legend",
    [
      "NAME:PropServers",
      "S Parameter Plot 1:Legend"
    ],
    [
      "NAME:ChangedProps",
      [
        "NAME:Legend Name",
        "Value:=" , "Ansys"
      ]
    ]
  ]
]
])

oModule.ChangeProperty(
```



```
[  
    "NAME:AllTabs",  
    [  
        "NAME:General",  
        [  
            "NAME:PropServers",  
            "S Parameter Plot 1:General"  
        ],  
        [  
            "NAME:ChangedProps",  
            [  
                "NAME:Auto Scale Fonts",  
                "Value:=" , False  
            ]  
        ]  
    ]  
])
```

### Example For Rectangular Stacked Plot

```
oProject = oDesktop.SetActiveProject("antenna_test")
oDesign = oProject.SetActiveDesign("Design1")
oModule = oDesign.GetModule("ReportSetup")
oModule.ChangeProperty(
    [
        "NAME:AllTabs",
        [
            "NAME:Scaling",
            [
                "NAME:PropServers",
                "S Parameter Plot 1:AxisY2:Stack1",
                "S Parameter Plot 1:AxisY2:Stack2"
            ],
            [
                "NAME:ChangedProps",
                [
                    "NAME:Min",
                    "Value:="                , "-60"
                ]
            ]
        ]
    ]
)
```

```
    ])  
  
#### Example Change eye rect and eye plot:  
  
ScriptEnv.Initialize("Ansoft.ElectronicsDesktop")  
oDesktop.RestoreWindow()  
oProject = oDesktop.SetActiveProject("test_nport_synth2")  
oDesign = oProject.SetActiveDesign("Circuit1")  
oModule = oDesign.GetModule("ReportSetup")  
oModule.ChangeProperty(  
    [  
        "NAME:AllTabs",  
        [  
            "NAME:Grid",  
            [  
                "NAME:PropServers",  
                "QuickEye Voltage Plot 1:Grid:Eye"  
            ],  
            [  
                "NAME:ChangedProps",  
                [  
                    "NAME:Major grid line style",
```

```
        "Value:=" , "Dot"
    ],
    [
        "NAME:Minor grid line style",
        "Value:=" , "Dot"
    ]
],
[
    "NAME:Axis",
    [
        "NAME:PropServers",
        "QuickEye Voltage Plot 1:AxisX:Eye"
    ],
    [
        "NAME:ChangedProps",
        [
            "NAME:Axis Color",
            "R:=" , 255,
            "G:=" , 128,
            "B:=" , 128
```

```
    ]  
  ]  
],  
[  
  "NAME:Axis",  
  [  
    "NAME:PropServers",  
    "QuickEye Voltage Plot 1:AxisY1:Rect"  
  ],  
  [  
    "NAME:ChangedProps",  
    [  
      "NAME:Axis Color",  
      "R:=" , 255,  
      "G:=" , 128,  
      "B:=" , 128  
    ]  
  ]  
]  
]  
])
```

```
oModule.ChangeProperty(  
  [  
    "NAME:AllTabs",  
    [  
      "NAME:Grid",  
      [  
        "NAME:PropServers",  
        "QuickEye Voltage Plot 1:Grid:Rect"  
      ],  
      [  
        "NAME:ChangedProps",  
        [  
          "NAME:Major grid line style",  
          "Value:=", "LongDash"  
        ],  
        [  
          "NAME:Minor grid line style",  
          "Value:=", "LongDash"  
        ]  
      ]  
    ]  
  ]  
)
```

|  |    |
|--|----|
|  | ]) |
|--|----|

## CopyItemCommand

*Use:* Copy tree items, such as Altrasim Solution Setups in Nexxim, or Solve Setups and Frequency Sweeps in Ensemble.

*Command:* None

*Syntax:* CopyItemCommand <ItemPathList>

*Return Value:* None

*Parameters:* <ItemPathList>

Type: Array of strings

## CreateReport

Creates a new report with a single trace and adds it to the **Results** branch in the project tree.

| UI Access  | Right-click on <b>Results</b> > <b>Create [Type] Report</b> |        |                                                                                                                                                                                           |
|------------|-------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                        | Type   | Description                                                                                                                                                                               |
|            | <ReportName>                                                | String | Name of report.                                                                                                                                                                           |
|            | <ReportType>                                                | String | Type of report.                                                                                                                                                                           |
|            |                                                             |        | Possible values are:<br><br>"Modal S Parameters" - Only for Driven Modal solution-type problems with ports.<br><br>"Terminal S Parameters" - Only for Driven Terminal solution-type prob- |

|  |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |               | <p>lems with ports.</p> <p>"Eigenmode Parameters" - Only for Eigenmode solution-type problems.</p> <p>"Fields"</p> <p>"Far Fields" - Only for problems with radiation or PML boundaries.</p> <p>"Near Fields" - Only for problems with radiation or PML boundaries.</p> <p>"Emission Test"</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|  | <DisplayType> | <p>String</p> <p>Type of display.</p> <p>If ReportType is "Modal S Parameters", "Terminal S Parameters", or "Eigenmode Parameters", then set to one of the following:</p> <p>"Rectangular Plot", "Polar Plot", "Radiation Pattern", "Smith Chart", "Data Table", "3D Rectangular Plot", "3D Rectangular Bar Plot", "Rectangular Stacked Plot" or "3D Polar Plot".</p> <p>If &lt;ReportType&gt; is "Fields", then set to one of the following:</p> <p>"Rectangular Plot", "Polar Plot", "Radiation Pattern", "Rectangular Contour Plot", "Data Table", "3D Rectangular Plot", "Rectangular Stacked Plot" or "3D Rectangular Bar Plot".</p> <p>If &lt;ReportType&gt; is "Far Fields" or "Near Fields", then set to one of the following:</p> <p>"Rectangular Plot", "Radiation Pattern", "Rectangular Contour Plot", "Data Table", "3D Rectangular Plot", "3D Rectangular Bar Plot" "Rectangular Stacked Plot" or "3D Polar Plot"</p> <p>If &lt;ReportType&gt; is "Emission Test", then set to one of the following:</p> <p>"Rectangular Plot" or "Data Table"</p> |



|                     |                                |        |                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|--------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <b>&lt;SolutionName&gt;</b>    | String | Name of the solution as listed in the <b>Modify Report</b> dialog box.                                                                                                                                                                                                                                                                              |
|                     | <b>&lt;ContextArray&gt;</b>    | Array  | Context for which the expression is being evaluated. This can be an empty string if there is no context.<br><br><pre>Array("Domain:=", &lt;DomainType&gt;)</pre> <p>&lt;DomainType&gt; ex. "Sweep" or "Time"</p> <pre>Array("Context:=", &lt;GeometryType&gt;)</pre> <p>&lt;GeometryType&gt;<br/>ex. "Infinite Spheren", "Spheren", "Polylinen"</p> |
|                     | <b>&lt;FamiliesArray&gt;</b>   | Array  | Contains sweep definitions for the report.<br><br><pre>Array("&lt;VariableName&gt;:= ", &lt;ValueArray&gt;)</pre> <p>&lt;ValueArray&gt;<br/> <pre>Array("All") or Array("Value1", "Value2", ... "Valuen")</pre> <p>examples of &lt;VariableName&gt; "Freq", "Theta", "Distance"</p></p>                                                             |
|                     | <b>&lt;ReportDataArray&gt;</b> | Array  | This array contains the report quantity and X, Y, and (Z) axis definitions.<br><br><pre>Array("X Component:=", &lt;VariableName&gt;, "Y Component:=",<br/>&lt;VariableName&gt;   &lt;ReportQuantityArray&gt;)</pre> <p>&lt;ReportQuantityArray&gt;<br/>ex. <pre>Array("dB(S(Port1, Port1))")</pre></p>                                              |
| <b>Return Value</b> | None.                          |        |                                                                                                                                                                                                                                                                                                                                                     |

|                      |                                                         |
|----------------------|---------------------------------------------------------|
| <b>Python Syntax</b> | CreateReport(<ReportName>, <ReportType>, <DisplayType>, |
|----------------------|---------------------------------------------------------|

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | <p>&lt;SolutionName&gt;, &lt;ContextArray&gt;, &lt;FamiliesArray&gt;,<br/>&lt;ReportDataArray&gt;, &lt;ExtendedInfo&gt;)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Python Example | <p>Several examples are given below: (nominal, Optimetrics, spectral, Partial Discharge, 3D rectangular Bar Plot with Change Bar Properties, and Add a new orientation to a 3D model and 3D report)</p> <p><b>Nominal Example:</b></p> <pre>oModule.CreateReport( "XY Plot 2", "Standard",     "Rectangular Plot", "TR",     [         "NAME:Context",         "SimValueContext:=", [], 1, 0, 2, 0, false,         false, -1, 1, 0, 1, 1, "", 0, 0]     ],     [         "Time:="          , ["All"],         "aaa:="           , ["Nominal"]     ],     [         "X Component:=", "Time",         "Y Component:=", ["E1.I"]     ],     [])</pre> <p><b>Optimetrics Example:</b></p> <pre>oModule.CreateReport ("XY Plot 3", "Standard",     "Rectangular Plot", "TR",     [         "NAME:Context",         "OptiSetup:=", "ParametricSetup1", "SimValueContext:=",         [</pre> |

```

1, 0, 2, 0, false, false, 0, 1, 0, 1, 1, "", 0, 0
    ]
],
[
    "Time:=", ["All"], "aaa:=", ["Nominal"]
],
[
    "X Component:=", "Time",
    "Y Component:=", ["E1.I"]
],
[])
```

**Spectral Example:**

```

oModule.CreateReport ("XY Plot 4", "Standard",
    "Rectangular Plot", "TR",
    [
        "NAME:Context",
        "SimValueContext:=",
        [
            2, 0, 2, 0, false, false, -1, 1, 0, 1, 1, "",
            0, 0, "CG", false, "0", "KP", false, "0", "MH",
            false, "100", "TE", false, "40ms", "TH", false,
            "40", "TS", false, "0ns", "UF", false, "0",
            "WT", false, "0", "WW", false, "100"
        ]
    ],
    [
        "Spectrum:=", ["All"], "aaa:=", ["Nominal"]
    ],
    [
        "X Component:=", "Spectrum",
```

```

        "Y Component:=", ["mag(E1.I)"]
    ],
    [])

```

### Partial Discharge Example

```

oModule.CreateReport("Partial Discharge Plot 2",
    "Partial Discharge", "Rectangular Plot",
    "PartialDischarge1 : PartialDischarge", [],
    [
        "GasPressure:=", ["All"],
        "Freq:="          , ["All"],
        "bend_angle:="    , ["All"]
    ],
    [
        "X Component:=", "GasPressure",
        "Y Component:=", ["Power"]
    ])

```

### Example 3D Rectangular Bar Plot with Change Bar properties

```

oModule = oDesign.GetModule("ReportSetup")
oModule.CreateReport("S Parameter Plot 4", "Modal Solution Data",

```

```
"3D Rectangular Bar Plot", "Setup1 : Sweep", [],  
[  
    "Freq:="          , ["All"],  
    "UU:="            , ["All"],  
    "ZZZ:="           , ["Nominal"]  
],  
[  
    "X Component:=", "Freq",  
    "Y Component:=", "UU",  
    "Z Component:=", ["dB(S(wDipole1_1_p1,wDipole1_1_p1))"]  
])  
oModule.ChangeProperty(  
[  
    "NAME:AllTabs",  
    [  
        "NAME:Bar",  
        [  
            "NAME:PropServers"  
            "S Parameter Plot 4:Traces-dB(S(wDipole1_1_p1,wDipole1_1_p1))"  
        ],  
        [  
            "NAME:ChangedProps",
```

```

E:AllTabs",
    [
        "NAME:Bar",
        [
            "NAME:PropServers",
            "S Parameter Plot 4:Traces-dB(S(wDipole1_1_p1,wDipole1_1_p1))"
        ],
        [
            "NAME:ChangedProps",
            [
                "NAME:Filled",
                "Value:=", False
            ]
        ]
    ]
])

oModule.ChangeProperty(
    [
        "NAME:AllTabs",
        [
            "NAME:Bar",
            [
                "NAME:PropServers",
                "S Parameter Plot 4:Traces-dB(S(wDipole1_1_p1,wDipole1_1_p1))"
            ],
            [

```

```
        "NAME:AllTabs",
        [
            "NAME:Bar",
            [
                "NAME:PropServers",
                "S Parameter Plot 4:Traces-dB(S(wDipole1_1_p1,wDipole1_1_p1))"
            ],
            [
                "NAME:ChangedProps",
                [
                    "NAME:Outline Width",
                    "Value:=", "2"
                ]
            ]
        ]
    ])

oModule.ChangeProperty(
    [
        "NAME:AllTabs",
        [
            "NAME:Bar",
            [
                "NAME:PropServers",
                "S Parameter Plot 4:Traces-dB(S(wDipole1_1_p1,wDipole1_1_p1))"
            ],
            [
                "NAME:ChangedProps",
                [
                    "NAME:Bar Width",
```

**Example Script to add a new orientation to a 3D model and 3D report**

#### "AddViewOrientation" script command for 3D Report. The first argument must be the 3D report name.

```
import ScriptEnv
ScriptEnv.Initialize("Ansoft.ElectronicsDesktop")
oDesktop.RestoreWindow()
oDesktop.OpenProject("D:/Tee.aedt")
oProject = oDesktop.SetActiveProject("Project")
oDesign = oProject.SetActiveDesign("HFSSDesign1")
oModule = oDesign.GetModule("ReportSetup")
oModule.AddViewOrientation("Gain Plot 1", "3dreport", True,
[
    "NAME:OrientationVectorComponents",
    [
        "NAME:Direction",
        -0.634171009063721,
        0.12737800180912,
        -0.762628972530365
    ],
    [
        "NAME:Up",
```



```

        -0.577874004840851,
        0.577228009700775,
        0.57694798707962
    ]
],
[
    "NAME:ProjectionParams",
    [
        "NAME:Scaling",
        1.10227048397064,
        1.10227036476135,
        1.10227036476135
    ],
    [
        "NAME:Translation",
        -0.601842045783997,
        -0.352552056312561,
        -6.46677732467651
    ],
    "ProjectionType:=" , "Orthographic",

```

```
[
    "NAME:ProjectionLimits",
    -2.53312301635742,
    2.53312301635742,
    -1,
    1,
    0.994183540344238,
    10.5401248931885
]
])
oEditor = oDesign.SetActiveEditor("3D Modeler")
oEditor.AddViewOrientation("3dmodel", True,
[
    "NAME:OrientationVectorComponents",
    [
        "NAME:Direction",
        -0.627739012241364,
        -0.134194001555443,
        -0.766768991947174
    ],
    [
```

```

        "NAME:Up",
        -0.694571018218994,
        0.54128497838974,
        0.473899990320206
    ]
],
[
    "NAME:ProjectionParams",
    [
        "NAME:Scaling",
        0.0173665378242731,
        0.017366535961628,
        0.0173665322363377
    ],
    [
        "NAME:Translation",
        -0.0742612779140472,
        0.195189163088799,
        -5.89852476119995
    ]
],

```

```
"ProjectionType:=" , "Orthographic",  
  
[  
    "NAME:ProjectionLimits",  
    -2.27072739601135,  
    2.27072739601135,  
    -1,  
    1,  
    0.424737930297852,  
    10.8078212738037  
]  
  
])  
  
oDesktop.CloseProject("Project")
```

## DeleteDataset

Deletes a specified dataset. This can be executed by the oProject, or oDesign variables.

| UI Access    | Project > Datasets > Remove. |        |                                           |
|--------------|------------------------------|--------|-------------------------------------------|
| Parameters   | Name                         | Type   | Description                               |
|              | <DatasetName>                | String | Name of the dataset found in the project. |
| Return Value | None.                        |        |                                           |

|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteDataset (<DatasetName>)                                                   |
| <b>Python Example</b> | <pre>oProject.DeleteDataset ('\$ds1')<br/>oDesign.DeleteDataset ('\$ds1')</pre> |

## DeleteDesignInstance

*Use:* Delete the design instance

*Command:* None

*Syntax:* DeleteDesignInstance <instance\_name>

*Return Value:* None

*Parameters:* <instance\_name>

Type: string

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteDesignInstance(<instanceName>)                 |
| <b>Python Example</b> | <pre>oProject.DeleteDesignInstance("Circuit1")</pre> |

## DeleteFieldVariation

Deletes field variations, fields and meshes, or fields and meshes for specified variations.

|                   |                                                                              |      |             |
|-------------------|------------------------------------------------------------------------------|------|-------------|
| <b>UI Access</b>  | [Solver] > Results > Clean Up Solutions > [Fields Only / Fields and Meshes]. |      |             |
| <b>Parameters</b> | Name                                                                         | Type | Description |

|                     |                                       |         |                                                                                                     |
|---------------------|---------------------------------------|---------|-----------------------------------------------------------------------------------------------------|
|                     | <code>&lt;variationKeys&gt;</code>    | Array   | Array containing either "All" string to select all variations, or strings of variations to include. |
|                     | <code>&lt;deleteMesh&gt;</code>       | Boolean | When true, deletes mesh data.                                                                       |
|                     | <code>&lt;deleteLinkedData&gt;</code> | Boolean | When true, deletes linked data.                                                                     |
| <b>Return Value</b> | None.                                 |         |                                                                                                     |

|                       |                                                                                                                                          |  |  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | <code>DeleteFieldVariation(&lt;variationKeys&gt;, &lt;deleteMesh&gt;, &lt;deleteLinkedData&gt;)</code>                                   |  |  |
| <b>Python Example</b> | <pre>oProject = oDesktop.GetActiveProject() oDesign = oProject.GetActiveDesign() Design.DeleteFieldVariation(['All'], True, False)</pre> |  |  |

## DeleteFullVariation

Deletes either all solution data, or selected variation data.

|                     |                                                               |         |                                                                                                     |
|---------------------|---------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | <b>[HFSS 3D Layout] &gt; Results &gt; Clean Up Solutions.</b> |         |                                                                                                     |
| <b>Parameters</b>   | Name                                                          | Type    | Description                                                                                         |
|                     | <code>&lt;variationKeys&gt;</code>                            | Array   | Array containing either "All" string to select all variations, or strings of variations to include. |
|                     | <code>&lt;deleteLinkedData&gt;</code>                         | Boolean | When true, deletes linked data as well.                                                             |
| <b>Return Value</b> | None.                                                         |         |                                                                                                     |

|                       |                                                                                   |  |  |
|-----------------------|-----------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | <code>DeleteFullVariation(&lt;variationKeys&gt;, &lt;deleteLinkedData&gt;)</code> |  |  |
| <b>Python Example</b> | <code>oDesign.DeleteFullVariation(['All'], false)</code>                          |  |  |

## DeleteOutputVariable

Deletes an existing output variable. The variable can only be deleted if it is not in use by any traces.

|                     |                                                                                                           |        |                              |
|---------------------|-----------------------------------------------------------------------------------------------------------|--------|------------------------------|
| <b>UI Access</b>    | HFSS 3D Layout > Results > Output Variables. In the <b>Output Variables</b> window, click <b>Delete</b> . |        |                              |
| <b>Parameters</b>   | Name                                                                                                      | Type   | Description                  |
|                     | <OutputVarName>                                                                                           | String | Name of the output variable. |
| <b>Return Value</b> | None.                                                                                                     |        |                              |

|                       |                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteOutputVariable (<OutputVarName>)                                                            |
| <b>Python Example</b> | <pre>oModule = oDesign.GetModule("OutputVariable") oModule.DeleteOutputVariable ("testNew")</pre> |

## DeleteSolutionVariation

Deletes all solution data for specific solutions and design variations. This is obsolete and is supported only for backward compatibility. You should use DeleteFullVariation.

|                   |                                                                                                               |       |                                                           |
|-------------------|---------------------------------------------------------------------------------------------------------------|-------|-----------------------------------------------------------|
| <b>UI Access</b>  | Right-click on <b>Results</b> , select <b>Browse Solutions...</b> , click <b>Delete</b> button in the dialog. |       |                                                           |
| <b>Parameters</b> | Name                                                                                                          | Type  | Description                                               |
|                   | <SoluParams>                                                                                                  | Array | Structured array.<br><br>Array(<DataSpecifierArray>, ...) |

|                     |                                         |       |                                                                                   |
|---------------------|-----------------------------------------|-------|-----------------------------------------------------------------------------------|
|                     | <code>&lt;DataSpecifierArray&gt;</code> | Array | Structured array.<br><br>Array(<DesignVariationKey>, <SetupName>, <SolutionName>) |
| <b>Return Value</b> | None.                                   |       |                                                                                   |

|                       |                                                                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteSolutionVariation(<SoluParams>)                                                                                                |
| <b>Python Example</b> | <pre>oModule.DeleteSolutionVariation([     ["width='2in'", "Setup1", "Adaptive_1"],     ["width='2in'", "Setup1", "Sweep1"] ])</pre> |

## EditCoSimulationOptions

Sets options for cosimulation.

*Command:* None

*Syntax:* EditCoSimulationOptions <array\_name>

*Return Value:* None

*Parameters:* <array\_name>

Type: string

## EditDataset

Modifies a dataset. This can be executed by the oProject, or oDesign variables.



|              |                            |        |                                |
|--------------|----------------------------|--------|--------------------------------|
| UI Access    | Project > Datasets > Edit. |        |                                |
| Parameters   | Name                       | Type   | Description                    |
|              | <OriginalName>             | String | Name of the original dataset.  |
|              | <DatasetDataArray>         | Array  | Data for the modified dataset. |
| Return Value | None.                      |        |                                |

|                |                                                                                                                                                                                                                |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | EditDataset (<OriginalName> <DatasetDataArray>)                                                                                                                                                                |
| Python Example | <pre>oProject.EditDataset ("ds1" ["NAME:ds2",   ["NAME:Coordinates",     [       "NAME:Coordinate",       "X:=", 1, "Y:=", 2     ],     [       "NAME:Coordinate",       "X:=", 3, "Y:=", 4     ]   ] ])</pre> |

```
)  
oDesign.EditDataset ("ds1"  
  ["NAME:ds2",  
    ["NAME:Coordinates",  
      [  
        "NAME:Coordinate",  
        "X:=", 1, "Y:=", 2  
      ],  
      [  
        "NAME:Coordinate",  
        "X:=", 3, "Y:=", 4  
      ]  
    ]  
  ]  
)
```

## EditImportData

*Use:* Edit an imported solution

*Command:* None

*Syntax:* EditImportData <oldname> <newlink> <newpath> <newname> <data> <file>

*Return Value:* None

*Parameters:* <oldname>

Type: string

<newlink>

<newpath>

Type: string

<newname>

Type: string

<data>

Type: array

<file>

Type: string

## **EditInfiniteArray**

Edits the properties of an infinite array

*Command:* None

*Syntax:* EditInfiniteArray <array\_name>

*Return Value:* None

*Parameters:* <array\_name>

Type: string

## **Edit (Layout Editor)**

*Use:* Causes modification of one or more existing object(s).

**Syntax:** **Edit** <Array("NAME:items".....)>,

*Parameters:* <Array("NAME:items"  
<edit\_object\_info>, // one object info  
<edit\_object\_info>, // another one  
...) // etc

**<edit\_object\_info>:**

Array("NAME:item",  
"name:=", <object\_name>, // name of the object  
<object\_description>) // 'new' object state, type should be consistent with <object\_name>:

<object\_description>:

<circle\_description> |

<rectangle\_description> |

<line\_description> |

<polyon\_description> |

<text\_description> |

<circle\_void\_description> |

<rectangle\_void\_description> |

<line\_void\_description> |

<polyon\_void\_description> |

<component\_description> |

<pin\_description> |

<via\_description>

## EditLayoutForLayoutComponent

Opens the definition component for editing in HFSS 3D Layout for a Layout Component in an HFSS 3D design.

|              |                           |        |                                          |
|--------------|---------------------------|--------|------------------------------------------|
| UI Access    | Edit Layout...            |        |                                          |
| Parameters   | Name                      | Type   | Description                              |
|              | <ComponentDefinitionName> | String | Name of the Layout Component Definition. |
| Return Value | None.                     |        |                                          |

|                |                                                                                                                                                                     |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | EditLayoutForLayoutComponent ([Name:LayoutComponent EDB", Definitions:=",<br>[<ComponentDefinitionName> ])                                                          |
| Python Example | <pre>oDesign.EditLayoutForLayoutComponent (     [         "NAME:Layout Component EDB",         "Definitions:="          , ["Diff_Via_diffViaNominal"]     ] )</pre> |

## EditNotes

Updates the notes for the design.

|                     |                                        |        |                                                                 |
|---------------------|----------------------------------------|--------|-----------------------------------------------------------------|
| <b>UI Access</b>    | <b>HFSS 3D Layout &gt; Edit Notes.</b> |        |                                                                 |
| <b>Parameters</b>   | Name                                   | Type   | Description                                                     |
|                     | <DesignNotes>                          | String | New design notes that are applied, replacing any current notes. |
| <b>Return Value</b> | None.                                  |        |                                                                 |

|                       |                                       |  |  |
|-----------------------|---------------------------------------|--|--|
| <b>Python Syntax</b>  | EditNotes(<DesignNotes>)              |  |  |
| <b>Python Example</b> | oDesign.EditNotes("My design notes.") |  |  |

## EditNotes (Layout Editor)

Edits the notes of a design

*Command:* None

*Syntax:* EditNotes <design\_name>

*Return Value:* None

*Parameters:* <design\_name>

Type: string

## EditOptions (Layout Editor)

Edits the properties of an infinite array

*Command:* None

*Syntax:* EditOptions <array\_name>

*Return Value:* None

*Parameters:* <array\_name>

Type: string

### EditOutputVariable

Changes the name or expression of an existing output variable.

|              |                                 |        |                                                                                                                                                                                                                     |
|--------------|---------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | N/A                             |        |                                                                                                                                                                                                                     |
| Parameters   | Name                            | Type   | Description                                                                                                                                                                                                         |
|              | <OrigVarName>                   | String | Name of the original output variable.                                                                                                                                                                               |
|              | <NewExpression>                 | String | New value to assign to the variable.                                                                                                                                                                                |
|              | <NewVarName>                    | String | New name of the variable if any, else pass empty string.                                                                                                                                                            |
|              | <SolutionName>                  | String | Name of the solution as seen in the output variable UI.<br>For example, "Setup1 : Last Adaptive".                                                                                                                   |
|              | <ReportType> or <SolutionType>  | String | The name of the report type as seen in the output variable UI.<br>For Layout Editor, use the solution type.                                                                                                         |
|              | <ContextArray> or <DomainArray> | Array  | Structured array containing context for which the output variable expression is being evaluated.<br><br>Array("Context:=", <string>)<br><br>For Layout Editor, use Domain array:<br><br>Array("Domain:=", <string>) |
| Return Value | None                            |        |                                                                                                                                                                                                                     |

|        |                                                                                                       |
|--------|-------------------------------------------------------------------------------------------------------|
| Python | EditOutputVariable (<OrigVarName>, <NewExpression>, <NewVarName>, <SolutionName>, <ReportType   Solu- |
|--------|-------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>         | <i>tionType</i> >, <ContextArray   DomainArray>)                                                                                                   |
| <b>Python Example</b> | <pre>oModule = oDesign.GetModule("OutputVariable") oModule.EditOutputVariable ("test", "normalize(R1_0.V)", "testNew", "TR", "Standard", [])</pre> |

## EMDesignOptions

*Use:* Set options for an EM Design.

*Command:* Right click on design and select **EM Design Options**

*Syntax:* DesignOptions <Options Array>

*Return Value:* None

*Parameters:*

<Options Array>

```
Array("NAME:options",
"SaveSolFilesAsBinary:=", <boolean>,
"LowPriorityForSimulations:=", <boolean>,
"SaveNearFieldSolutions:=", <boolean>,
"SchematicEnabled:=", <boolean>,
"UseGlobalNumProc:=", <boolean>,
"ComputeBothEvenAndOddCPWModes:=", <boolean>,
"NumProcessors:=", <int>,
```



"NumProcessorsDistrib:=", <int>,  
"CausalMaterials:=", <boolean>,  
"UseHPCForMP:=", <boolean>,  
"HPCLicenseType:=", <int>)

- SaveSolFilesAsBinary - if true, solutions files are saved using a binary format.
- LowPriorityForSimulations - if true, run simulations at a lower CPU priority.
- SaveNearFieldSolutions - if true, save near field solutions
- SchematicEnabled - if true, enable schematics
- UseGlobalNumProc - if true, use global number of processors and ignore NumProcessors
- ComputeBothEvenAndOddCPWModes - if true, compute both even and odd cpw modes
- NumProcessors - number of processors
- NumProcessorsDistrib- number of distributed processors
- CausalMaterials - if true, use causal materials
- UseHPCForMP - if true, use hpc for mp
- HPCLicenseType - number indicating hpc license type

## ExportCausalRLGCNetlist

Exports Causal RLGC netlist data.

|           |                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| UI Access | From the <b>Project Manager</b> window, right-click a Q3D setup and select <b>Profile &gt; RLGC Matrix Data &gt; Export</b> . |
|-----------|-------------------------------------------------------------------------------------------------------------------------------|

|                     |                                |             |                                                                                                                                                                                                                                                                                                                              |
|---------------------|--------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>                    | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                           |
|                     | <Contents>                     | Array       | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:ExportCausalRLGCNetlist&gt;</li> <li>• &lt;FileName&gt;</li> <li>• &lt;SolutionName&gt;</li> <li>• &lt;Variation&gt;</li> <li>• &lt;VersionID&gt;</li> <li>• &lt;Pass&gt;</li> <li>• &lt;Frequencies&gt;</li> </ul> |
|                     | <NAME:ExportCausalRLGCNetlist> | String      | Identifies the contents of the array (i.e., "ExportCausalRLGCNetlist").                                                                                                                                                                                                                                                      |
|                     | <FileName>                     | String      | Full path to export directory for the new *.cir file.                                                                                                                                                                                                                                                                        |
|                     | <SolutionName>                 | String      | Name of the solution to export data from.                                                                                                                                                                                                                                                                                    |
|                     | <Variation>                    | String      | Empty string for current nominal variation.                                                                                                                                                                                                                                                                                  |
|                     | <VersionID>                    | String      | The solution's ID number.                                                                                                                                                                                                                                                                                                    |
|                     | <Pass>                         | String      | The pass to export the data file. If the value is empty or -1, all passes are given.                                                                                                                                                                                                                                         |
|                     | <Frequencies>                  | Array       | Structured array containing a list of frequencies. If array is empty, all frequencies are used.                                                                                                                                                                                                                              |
| <b>Return Value</b> | None.                          |             |                                                                                                                                                                                                                                                                                                                              |

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportCausalRLGCNetlist([<Contents>])                                          |
| <b>Python Example</b> | <pre>oDesign.ExportCausalRLGCNetlist ( [ "NAME:ExportCausalRLGCNetlist",</pre> |

|  |                                                                                                                                                                     |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "FileName:=" , "C:\\name.cir", "SolutionName:=" , "Q3D1:Adaptive Pass", "Variation:=" , "", "VersionID:=" , 138, "Pass:=" , -1, "Frequencies:=" , [] ] </pre> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## ExportCircuit (Layout Editor)

Exports lumped RLGC data.

| UI Access         | From the <b>Project Manager</b> window, right-click a setup and select <b>Properties</b> . |        |                                                                                                                                                                                                                                                                                                      |
|-------------------|--------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                       | Type   | Description                                                                                                                                                                                                                                                                                          |
|                   | <Solution>                                                                                 | String | The precise name of the solution from which to export data.                                                                                                                                                                                                                                          |
|                   | <SaveLocation>                                                                             | String | User-selected directory path to save the exported data.                                                                                                                                                                                                                                              |
|                   | <CircuitDataArray>                                                                         | Array  | An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:CircuitData&gt;</li> <li>• &lt;MatrixName&gt;</li> <li>• &lt;NumberOfCells&gt;</li> <li>• &lt;UserHasChangedSettings&gt;</li> <li>• &lt;IncludeCap&gt;</li> <li>• &lt;IncludeCond&gt;</li> </ul> |
|                   |                                                                                            |        |                                                                                                                                                                                                                                                                                                      |

|                          |         |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |         | <ul style="list-style-type: none"> <li>• &lt;CouplingLimitsArray&gt;</li> <li>• &lt;IncludeDCR&gt;</li> <li>• &lt;IncludeDCL&gt;</li> <li>• &lt;IncludeACR&gt;</li> <li>• &lt;IncludeACL&gt;</li> <li>• &lt;AddResistance&gt;</li> <li>• &lt;IncludeCPP&gt;</li> <li>• &lt;PackageArray&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p> |
| <NAME:CircuitData>       | String  | Identifies the contents of the array (i.e., CircuitData).                                                                                                                                                                                                                                                                                                                                                                   |
| <MatrixName>             | String  | Original, to export the solved matrix data, or enter the name of any reduced matrices, if available.                                                                                                                                                                                                                                                                                                                        |
| <NumberOfCells>          | Integer | Number of cells in export.                                                                                                                                                                                                                                                                                                                                                                                                  |
| <UserHasChangedSettings> | Boolean | <b>True</b> – export data with the user's chosen settings<br><b>False</b> – export data with the default settings                                                                                                                                                                                                                                                                                                           |
| <IncludeCap>             | Boolean | <b>True</b> – exports capacitance matrix<br><b>False</b> – does not export capacitance matrix                                                                                                                                                                                                                                                                                                                               |
| <IncludeCond>            | Boolean | <b>True</b> – exports conductance matrix<br><b>False</b> – does not export conductance matrix                                                                                                                                                                                                                                                                                                                               |
| <CouplingLimitsArray>    | Array   | <p>An array that contains these parameters in order:</p> <ul style="list-style-type: none"> <li>• &lt;NAME:CouplingLimits&gt;</li> <li>• &lt;CouplingLimitType&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p>                                                                                                                          |
| <NAME:CouplingLimits>    | String  | Identifies the contents of the array (i.e., CouplingLimits).                                                                                                                                                                                                                                                                                                                                                                |
| <CouplingLimitType>      | String  | <b>ByFraction</b> or <b>ByValue</b>                                                                                                                                                                                                                                                                                                                                                                                         |
| <IncludeDCR>             | Boolean | <b>True</b> – exports DC resistance matrix<br><b>False</b> – does not export DC resistance matrix                                                                                                                                                                                                                                                                                                                           |

|                    |         |                                                                                                                                                                                                                                                                                                                                                |
|--------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <IncludeDCL>       | Boolean | <b>True</b> – exports DC inductance matrix<br><b>False</b> – does not export DC inductance matrix                                                                                                                                                                                                                                              |
| <IncludeACR>       | Boolean | <b>True</b> – exports AC resistance matrix<br><b>False</b> does not export AC resistance matrix                                                                                                                                                                                                                                                |
| <IncludeACL>       | Boolean | <b>True</b> – exports AC inductance matrix<br><b>False</b> – does not export AC inductance matrix                                                                                                                                                                                                                                              |
| <ADDResistance>    | Boolean | <b>True</b> – adds DC and AC resistance<br><b>False</b> – does not add the DC and AC resistance<br><div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <p><b>Note:</b></p> <p>You cannot export both AC and DC matrices unless <b>AddResistance</b> is selected.</p> </div>                                              |
| <IncludeCPP>       | Boolean | <b>True</b> – exports data with Chip Package Protocol active<br><b>False</b> – does not export data with Chip Package Protocol active                                                                                                                                                                                                          |
| <RLGCCPPInfoArray> | Array   | An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:RLGCCPPInfo&gt;</li> <li>• &lt;PackageType&gt;</li> <li>• &lt;LengthUnits&gt;</li> <li>• &lt;NAME:Pins&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p> |
| <NAME:RLGCCPPInfo> | String  | Identifies the contents of the array (i.e., RLGCCPPInfo).                                                                                                                                                                                                                                                                                      |
| <PackageType>      | String  | <b>wirebond dieup, wirebond diedown, flipchip dieup, or flip-chip diedown</b>                                                                                                                                                                                                                                                                  |
| <LengthUnits>      | String  | A unit of measurement: <b>um, mm, or mil</b> .                                                                                                                                                                                                                                                                                                 |
| <NAME:Pins>        | Array   | Identifies the contents of the array (i.e., Pins).                                                                                                                                                                                                                                                                                             |

|                     |        |         |                                     |
|---------------------|--------|---------|-------------------------------------|
|                     | <Name> | String  | The user-entered name of the model. |
|                     | <Freq> | Integer | The frequency, in Hz.               |
| <b>Return Value</b> | None   |         |                                     |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | oDesign.ExportCircuit(<Solution>, <SaveLocation>, [<CircuitData>, <MatrixName>, <NumberOfCells>, <UserHasChangedSettings>, <IncludeCap>, <IncludeCond>, [<NAME:CouplingLimits>, <CouplingLimitType>], <IncludeDCR>, <IncludeDCL>, <IncludeACR>, <IncludeACL>, <ADDResistance>, <IncludeCPP>, [<NAME:RLGCCPPInfo>, <PackageType>, <LengthUnits>, [<NAME:Pins>]]], <Name>, <Freq>)                                            |
| <b>Python Example</b> | <pre>oDesign.ExportCircuit("Q3D1 : Last Adaptive", "", "C:/Projects/Q3D/Example.cir", [     "NAME:CircuitData",     "MatrixName:=" , "Original",     "NumberOfCells:=" , "1",     "UserHasChangedSettings:=", True,     "IncludeCap:=" , False,     "IncludeCond:=" , False,     [         "NAME:CouplingLimits",         "CouplingLimitType:=" , "None"     ],     "IncludeDCR:=" , True,     "IncludeDCL:=" , True,</pre> |

|  |                                                                                                                                                                                                                                                          |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"IncludeACR:=" , False, "IncludeACL:=" , False, "ADDResistance:=" , False, "IncludeCPP:=" , False, [   "NAME:RLGCCPPInfo",   "PackageType:=" , "wirebond dieup",   "LengthUnits:=" , "mm",   [     "NAME:Pins"   ] ] ], "Example", 100000000)</pre> |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## ExportConvergence

For a given variation, exports convergence data (max mag delta S, E, freq) to \*.conv file.

|            |                                                                                  |      |             |
|------------|----------------------------------------------------------------------------------|------|-------------|
| UI Access  | Results > Solution Data. Select <b>Convergence</b> tab and click <b>Export</b> . |      |             |
| Parameters | Name                                                                             | Type | Description |

|                     |                 |        |                                                                                           |
|---------------------|-----------------|--------|-------------------------------------------------------------------------------------------|
|                     | <Setup>         | String | Setup name.                                                                               |
|                     | <VariationKeys> | String | The variation. Pass empty string for the current nominal variation.                       |
|                     | <FilePath>      | String | Full path to desired *.conv file location.                                                |
|                     | <ProbType>      | String | <i>Optional.</i> For Q3D Extractor designs. Valid options are "CG", "DC RL", and "AC RL". |
| <b>Return Value</b> | None.           |        |                                                                                           |

|                       |                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportConvergence(<Setup>, <VariationKeys>, <FilePath> <ProbType>)                        |
| <b>Python Example</b> | oDesign.ExportConvergence('Setup1', 'x_size = 2mm', 'C:/Project12_Q3DDesign1.conv', 'CG') |

## ExportDataset

Exports a dataset to a named file. This can be executed by the oProject, or oDesign variables.

|                     |                                           |        |                            |
|---------------------|-------------------------------------------|--------|----------------------------|
| <b>UI Access</b>    | <b>Project &gt; Datasets &gt; Export.</b> |        |                            |
| <b>Parameters</b>   | Name                                      | Type   | Description                |
|                     | <datasetFileFullPath>                     | String | The full path to the file. |
| <b>Return Value</b> | None.                                     |        |                            |

|                       |                                             |
|-----------------------|---------------------------------------------|
| <b>Python Syntax</b>  | ExportDataset (<datasetFileFullPath>)       |
| <b>Python Example</b> | oProject.ExportDataset('e:/tmp/dsdata.txt') |
|                       | oDesign.ExportDataset('e:/tmp/dsdata.txt')  |



## ExportForHSpice

Exports matrix solution data to a file in a format suitable for HSpice analysis. Available only for Driven Terminal solution types with ports. Output in an appropriate format will be generated for each of the non-empty file names provided.

|                     |                       |         |                                                         |
|---------------------|-----------------------|---------|---------------------------------------------------------|
| <b>UI Access</b>    | N/A                   |         |                                                         |
| <b>Parameters</b>   | Name                  | Type    | Description                                             |
|                     | <DesignVariation>     | String  | Design variation key.                                   |
|                     | <SoluSelections>      | Array   | Array of selected solutions.                            |
|                     | <SpiceType>           | Integer | 1 - HSpice.                                             |
|                     | <BandWidth>           | Integer | 0 - Low (narrow) band width.                            |
|                     | <FWSFile>             | String  | Full wave spice file name.                              |
|                     | <LumpedElementFile>   | String  | Lumped element file name.                               |
|                     | <PoleZeroSpiceFile>   | String  | Pole zero spice file name.                              |
|                     | <PoleZeroMatlabFile>  | String  | Pole zero Matlab file name.                             |
|                     | <PartialFractionFile> | String  | Partial fraction file name.                             |
|                     | <FittingError>        | Double  | The accuracy to use in fitting the pole zero model.     |
|                     | <MinimumOrder>        | Integer | Minimum number of poles in rational function expansion. |
|                     | <MaximumOrder>        | Integer | Maximum number of poles in rational function expansion. |
|                     | <UseCommonGround>     | Integer | Optional. 1 to use common ground, 0 otherwise.          |
|                     | <EnforcePassivity>    | Integer | Optional. 1 to enforce passivity, 0 otherwise.          |
| <b>Return Value</b> | None.                 |         |                                                         |

|                      |                                                                                                                                                                                                  |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | ExportForHSpice(<DesignVariation>, <SoluSelections>, <SpiceType>, <BandWidth>, <FWSFile>, <LumpedElementFile>, <PoleZeroSpiceFile>, <PoleZeroMatlabFile>, <PartialFractionFile>, <FittingError>, |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <MinimumOrder>, <MaximumOrder>, [Optional <UseCommonGround>], [Optional <EnforcePassivity>])                                                 |
| <b>Python Example</b> | <pre>oModule.ExportForHSpice("width='2in'",     ["Setup1:Sweep1"], 1, 0,     "c:\mydir\Sweep1.fws", "", "", "", "",     .005, 20, 200)</pre> |

## ExportForHSpice (Layout Editor)

*Use:* Export matrix solution data to an HSpice subcircuit.

*Command:* None

*Syntax:* ExportForHSpice <SolutionVariationKey> <SolnSelectionArray> <Spice Type> <Bandwidth> <FullWaveSpiceFilename> <LumpedElementFilename> <Unused> <Unused> <PartialFractionFilename> <Fitting Error> <Unusedint> <MaxOrder> <UseCommonGround> <DoPassivityCheck>

*Return Value:* None

*Parameters:* <SolutionVariationKey>

Type: string

<SolnSelectionArray>

Type: array

<Spice Type: 1=HSPICE>

Type: int

<Bandwidth: 0=Low Bandwidth, 1=Broad Bandwidth>

Type: int

<FullWaveSpiceFilename>

Type: string

<LumpedElementFilename>

Type: string

<Unused>

Type: string

<Unused>

Type: string

<PartialFractionFilename>

Type: string

<Fitting Error>

Type: double

<Unusedint>

Type: int

<MaxOrder>

Type: int

<UseCommonGround [Default: FALSE]>

Type: boolean

<DoPassivityCheck [Default: FALSE]>

Type: boolean

## ExportForSpice (Layout Editor)

*Use:* Export matrix solution data to a file in the given spice format.

*Command:* None

*Syntax:* ExportForSpice <SolutionVariationKey> <SolnSelectionArray> <Spice Type> <Bandwidth> <FullWaveSpiceFilename>  
<LumpedElementFilename> <Unused> <Unused> <PartialFractionFilename> <FittingError> <MaxOrder> <UseCommonGround>  
<DoPassivityCheck>

*Return Value:* None

*Parameters:* <SolutionVariationKey>

Type: string

<SolnSelectionArray>

Type: array

<Spice Type: 0=PSpice, 2=MaxwellSpice, 3=Spectre>

Type: int

<Bandwidth: 0=Low Bandwidth, 1=Broad Bandwidth>

Type: int

<FullWaveSpiceFilename>

Type: string

<LumpedElementFilename>

Type: string

<Unused>

Type: string

<Unused>

Type: string

<PartialFractionFilename>

Type: string

<FittingError [Default:0.5]>

Type: double

<MaxOrder [Default:200]>

Type: int

<UseCommonGround [Default:FALSE]>

Type: boolean

<DoPassivityCheck [Default:FALSE]>

Type: boolean

# ExportMeshStats

Exports mesh statistics to a file.

|              |                     |         |                                                                                                                      |
|--------------|---------------------|---------|----------------------------------------------------------------------------------------------------------------------|
| UI Access    | N/A                 |         |                                                                                                                      |
| Parameters   | Name                | Type    | Description                                                                                                          |
|              | <setupName>         | String  | Name of the solution setup.                                                                                          |
|              | <variationString>   | String  | Name of the variation. An empty string is interpreted as the current nominal variation.                              |
|              | <filePath>          | String  | Full file path, including extension *.ms.                                                                            |
|              | <overwriteIfExists> | Boolean | (Optional). Defaults to True. If True, script overwrites any existing file of the same name. If False, no overwrite. |
| Return Value | None.               |         |                                                                                                                      |

|                       |                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportMeshStats(&lt;setupName&gt;, &lt;variationString&gt;, &lt;filePath&gt;, &lt;overwriteIfExists&gt;)</code> |
| <b>Python Example</b> | <code>oDesign.ExportMeshStats ("Setup1", "radius=3mm", "C:\mydir\meshstats.ms", True)</code>                          |

## ExportNetworkData

Exports matrix solution data to a file.

|                   |                      |             |                                                                                                                                                                         |
|-------------------|----------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | N/A                  |             |                                                                                                                                                                         |
| <b>Parameters</b> | <b>Name</b>          | <b>Type</b> | <b>Description</b>                                                                                                                                                      |
|                   | <DesignVariationKey> | String      | Design variation key. Pass empty string for the current nominal variation.                                                                                              |
|                   | <SolnSelectionArray> | Array       | Array of selected solutions.<br><br>Array(<SolnSelector>, <SolnSelector>, ...)<br><br>If more than one array entry, this indicates a combined Interpolating sweep.      |
|                   | <SolnSelector>       | String      | Solution setup name and solution name, separated by a colon.                                                                                                            |
|                   | <FileFormat>         | Integer     | File format value.<br><br>2 : Tab delimited spreadsheet format (.tab)<br>3 : Touchstone (.sNp)<br>4 : CitiFile (.cit)<br>7 : Matlab (.m)<br>8 : Terminal Z0 spreadsheet |
|                   | <OutFile>            | String      | Full path to the file to write out.                                                                                                                                     |
|                   | <FreqsArray>         | Array       | The frequencies to export. The <FreqsArray> argument contains a vector (e.g. "1GHz", "2GHz", ...) to use, or "all". To export all fre-                                  |

|                     |                        |         |                                                                                                                                                              |
|---------------------|------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                        |         | quencies, use Array("all"). If no frequencies are specified, all frequencies are used.                                                                       |
|                     | <DoRenorm>             | Boolean | For Touchstone format only. Specifies whether to renormalize the data before export.                                                                         |
|                     | <RenormImped>          | Double  | For Touchstone format only. Real impedance value in ohms, for renormalization. Required in syntax, but ignored if DoRenorm is false.                         |
|                     | <DataType>             | Array   | Optional. Type: "S", "Y", or "Z". The matrix to export.                                                                                                      |
|                     | <pass>                 | Integer | Optional. The pass to export. This is ignored if the sourceName is a frequency sweep. Leaving out this value or specifying -1 gets all passes.               |
|                     | <ComplexFormat>        | Integer | Optional. Type: "0", "1", or "2"<br><br>The format to use for the exported data.<br><br>0 = Magnitude/Phase.<br><br>1 = Real/Imaginary.<br><br>2 = db/Phase. |
|                     | <Precision>            | Integer | Optional. Touchstone number of digits precision. Default if not specified is 15.                                                                             |
|                     | <UseExportFreqs>       | Boolean | Specifies whether to use export frequencies.                                                                                                                 |
|                     | <IncludeGammaComments> | Boolean | Touchstone only. Specifies whether to include Gamma and Impedance comments.                                                                                  |
|                     | <SupportNonStdExport>  | Boolean | Specifies whether to support non-standard Touchstone extensions for mixed reference impedance.                                                               |
| <b>Return Value</b> | None.                  |         |                                                                                                                                                              |

|               |                                                                                                              |
|---------------|--------------------------------------------------------------------------------------------------------------|
| <b>Python</b> | ExportNetworkData(<DesignVariationKey>, <SolnSelectionArray>, <SolnSelector>, <FileFormat>, <OutFile>, <Fre- |
|---------------|--------------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                                                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>         | <code>qsArray&gt;, &lt;DoRenorm&gt;, &lt;RenormImped&gt;, [Optional &lt;DataType&gt;], [Optional &lt;pass&gt;], [Optional &lt;ComplexFormat&gt;], [Optional &lt;Precision&gt;], [Optional &lt;UseExportFreqs&gt;], [Optional &lt;IncludeGammaComments&gt;], [Optional &lt;SupportNonStdExport&gt;])</code> |
| <b>Python Example</b> | <pre>oModule.ExportNetworkData("", ["Setup1:Sweep1"], 3, "C://Documents/package_ HFSSDesign1.s4p", ['all'], True, 50, "S", -1, 0, 15, True, True, True</pre>                                                                                                                                               |

## ExportNetworkData

Exports matrix solution data to a file.

| UI Access         | N/A                  |         |                                                                                                                                                                                           |
|-------------------|----------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                 | Type    | Description                                                                                                                                                                               |
|                   | <DesignVariationKey> | String  | Design variation key. Pass empty string for the current nominal variation.                                                                                                                |
|                   | <SolnSelectionArray> | Array   | <p>Array of selected solutions.</p> <pre>Array(&lt;SolnSelector&gt;, &lt;SolnSelector&gt;, ...)</pre> <p>If more than one array entry, this indicates a combined Interpolating sweep.</p> |
|                   | <SolnSelector>       | String  | Solution setup name and solution name, separated by a colon.                                                                                                                              |
|                   | <FileFormat>         | Integer | <p>File format value.</p> <p>2 : Tab delimited spreadsheet format (.tab)</p> <p>3 : Touchstone (.sNp)</p> <p>4 : CitiFile (.cit)</p> <p>7 : Matlab (.m)</p>                               |



|                     |                        |         |                                                                                                                                                                                                                             |
|---------------------|------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                        |         | 8 : Terminal Z0 spreadsheet                                                                                                                                                                                                 |
|                     | <OutFile>              | String  | Full path to the file to write out.                                                                                                                                                                                         |
|                     | <FreqsArray>           | Array   | The frequencies to export. The <FreqsArray> argument contains a vector (e.g. "1GHz", "2GHz", ...) to use, or "all". To export all frequencies, use Array("all"). If no frequencies are specified, all frequencies are used. |
|                     | <DoRenorm>             | Boolean | For Touchstone format only. Specifies whether to renormalize the data before export.                                                                                                                                        |
|                     | <RenormImped>          | Double  | For Touchstone format only. Real impedance value in ohms, for renormalization. Required in syntax, but ignored if DoRenorm is false.                                                                                        |
|                     | <DataType>             | Array   | Optional. Type: "S", "Y", or "Z". The matrix to export.                                                                                                                                                                     |
|                     | <pass>                 | Integer | Optional. The pass to export. This is ignored if the sourceName is a frequency sweep. Leaving out this value or specifying -1 gets all passes.                                                                              |
|                     | <ComplexFormat>        | Integer | Optional. Type: "0", "1", or "2"<br><br>The format to use for the exported data.<br><br>0 = Magnitude/Phase.<br><br>1 = Real/Imaginary.<br><br>2 = db/Phase.                                                                |
|                     | <Precision>            | Integer | Optional. Touchstone number of digits precision. Default if not specified is 15.                                                                                                                                            |
|                     | <UseExportFreqs>       | Boolean | Specifies whether to use export frequencies.                                                                                                                                                                                |
| <b>Return Value</b> | <IncludeGammaComments> | Boolean | Touchstone only. Specifies whether to include Gamma and Impedance comments.                                                                                                                                                 |
|                     | <SupportNonStdExport>  | Boolean | Specifies whether to support non-standard Touchstone extensions for mixed reference impedance.                                                                                                                              |
| None.               |                        |         |                                                                                                                                                                                                                             |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportNetworkData(&lt;DesignVariationKey&gt;, &lt;SolnSelectionArray&gt;, &lt;SolnSelector&gt;, &lt;FileFormat&gt;, &lt;OutFile&gt;, &lt;FreqsArray&gt;, &lt;DoRenorm&gt;, &lt;RenormImped&gt;, [Optional &lt;DataType&gt;], [Optional &lt;pass&gt;], [Optional &lt;ComplexFormat&gt;], [Optional &lt;Precision&gt;], [Optional &lt;UseExportFreqs&gt;], [Optional &lt;IncludeGammaComments&gt;], [Optional &lt;SupportNonStdExport&gt;])</code> |
| <b>Python Example</b> | <pre>oModule.ExportNetworkData("", ["Setup1:Sweep1"], 3, "C://Documents/package_ HFSSDesign1.s4p", ['all'], True, 50, "S", -1, 0, 15, True, True, True</pre>                                                                                                                                                                                                                                                                                           |

## ExportNMFData

Exports s-parameters in neutral file format (\*.nmf).

|                   |                                                                                                                                                                           |         |                                                                                                                                                       |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | <b>Results &gt; Solution Data.</b> On the <b>Matrix</b> tab, click <b>Export</b> tab. Then click <b>Export &gt; S-parameter</b> . Select Neutral Model format and export. |         |                                                                                                                                                       |
| <b>Parameters</b> | Name                                                                                                                                                                      | Type    | Description                                                                                                                                           |
|                   | <sourceName>                                                                                                                                                              | Array   | String names of solutions. Use more than one array entry for a combined Interpolating sweep.                                                          |
|                   | <outputFileName>                                                                                                                                                          | String  | Full path of output file, including *.nmf extension.                                                                                                  |
|                   | <reduceMat>                                                                                                                                                               | String  | Either "Original" or name of reduced matrix.                                                                                                          |
|                   | <refImp>                                                                                                                                                                  | Double  | Reference impedance.                                                                                                                                  |
|                   | <freqs>                                                                                                                                                                   | Array   | Either "All" or array of doubles representing frequencies.                                                                                            |
|                   | <variationKey>                                                                                                                                                            | String  | Design variation key. Pass empty string for the current nominal variation.                                                                            |
|                   | <displayFormat>                                                                                                                                                           | String  | "MagPhase", "Reallmag", "DbPhase".                                                                                                                    |
|                   | <pass>                                                                                                                                                                    | Integer | Optional. The pass to export. This is ignored if the <i>sourceName</i> is a frequency sweep. Leaving out this value or specifying -1 gets all passes. |

|                     |                 |         |                                                                                                                             |
|---------------------|-----------------|---------|-----------------------------------------------------------------------------------------------------------------------------|
|                     | <ComplexFormat> | Integer | Optional. The format to use for the exported data. Options are<br>0 = Magnitude/Phase<br>1= Real/Imaginary.<br>2= db/Phase. |
|                     | <Precision>     | Integer | Optional. Number of digits precision. If not specified, the default is 6.                                                   |
| <b>Return Value</b> | None.           |         |                                                                                                                             |

|                       |                                                                                                                                                                                                                                   |  |  |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | ExportNMFData (<sourceName>, <outputFileName>, <reduceMat>, <refImp>, <freqs>, <variationKey>, <displayFormat>, <pass>, <ComplexFormat>, <Precision>)                                                                             |  |  |
| <b>Python Example</b> | <pre>oDesign.ExportNMFData("Setup2 : LastAdaptive", "C:/outputs/data.nmf", "Original", 50, [10000000, 20000000, 30000000, 40000000, 50000000, 60000000, 70000000, 80000000, 90000000, 100000000], "", "MagPhase", 0, 1, 11)</pre> |  |  |

## ExportProfile

Exports a solution profile to file.

|                   |                   |        |                                                                                           |
|-------------------|-------------------|--------|-------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | N/A               |        |                                                                                           |
| <b>Parameters</b> | Name              | Type   | Description                                                                               |
|                   | <SetupName>       | String | Text of the design's notes.                                                               |
|                   | <VariationString> | String | Variation name. Pass empty string for the current nominal variation.                      |
|                   | <filePath>        | String | Full file path, including extension *.prof.                                               |
|                   | <probType>        | String | <i>Optional.</i> For Q3D Extractor designs. Valid options are "CG", "DC RL", and "AC RL". |

|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportProfile(&lt;SetupName&gt;, &lt;VariationString&gt;, &lt;filePath&gt;, &lt;probType&gt;)</code> |
| <b>Python Example</b> | <code>oDesign.ExportProfile('Setup1', 'radius=3mm', 'C:\Files\Profile.prof', 'CG')</code>                  |

## ExportReport

**Note:**

The ExportReport script command has been replaced by the script command [ExportToFile](#). ExportReport remains in order to retain backward compatibility for existing scripts, but it is strongly recommended that you now use [ExportToFile](#).

Export a report to a data file.

*Command:* None

*Syntax:* ExportReport <ReportName>, <FileName>, <FileExtension>

*Return Value:* None

*Parameters:* <ReportName>

Type: string

<Filename>

Type: string

<FileExtension>

Type: string

|                |                                                                     |
|----------------|---------------------------------------------------------------------|
| Python Syntax  | ExportReport( <ReportName>, <FileName>)                             |
| Python Example | <pre>oDesign.ExportReport(<br/>    "Plot1", "c:\report1.dat")</pre> |

ExportRLGCData

Exports matrix solution data to a file.

|            |                      |         |                                                                                                                                                                    |
|------------|----------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | N/A                  |         |                                                                                                                                                                    |
| Parameters | Name                 | Type    | Description                                                                                                                                                        |
|            | <DesignVariationKey> | String  | Design variation key. Pass empty string for the current nominal variation.                                                                                         |
|            | <SolnSelectionArray> | Array   | Array of selected solutions.<br><br>Array(<SolnSelector>, <SolnSelector>, ...)<br><br>If more than one array entry, this indicates a combined Interpolating sweep. |
|            | <SolnSelector>       | String  | Solution setup name and solution name, separated by a colon.                                                                                                       |
|            | <FileFormat>         | Integer | File format value.<br><br>2 : Tab delimited spreadsheet format (.tab)<br><br>3 : Touchstone (.sNp)<br><br>4 : CitiFile (.cit)<br><br>7 : Matlab (.m)               |

|              |                        |         |                                                                                                                                                                                                                             |
|--------------|------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                        |         | 8 : Terminal Z0 spreadsheet                                                                                                                                                                                                 |
|              | <OutFile>              | String  | Full path to the file to write out.                                                                                                                                                                                         |
|              | <FreqsArray>           | Array   | The frequencies to export. The <FreqsArray> argument contains a vector (e.g. "1GHz", "2GHz", ...) to use, or "all". To export all frequencies, use Array("all"). If no frequencies are specified, all frequencies are used. |
|              | <DoRenorm>             | Boolean | Specifies whether to renormalize the data before export.                                                                                                                                                                    |
|              | <RenormImped>          | Double  | Real impedance value in ohms, for renormalization. Required in syntax, but ignored if DoRenorm is false.                                                                                                                    |
|              | <DataType>             | String  | Optional. Type: "S", "Y", or "Z". The matrix to export.                                                                                                                                                                     |
|              | <pass>                 | Integer | Optional. The pass to export. This is ignored if the sourceName is a frequency sweep. Leaving out this value or specifying -1 gets all passes.                                                                              |
|              | <ComplexFormat>        | Integer | Optional. Type: "0", "1", or "2"<br><br>The format to use for the exported data.<br><br>0 = Magnitude/Phase.<br><br>1 = Real/Imaginary.<br><br>2 = db/Phase.                                                                |
|              | <Precision>            | Integer | Optional. Touchstone number of digits precision. Default if not specified is 15.                                                                                                                                            |
|              | <UseExportFreqs>       | Boolean | Specifies whether to use export frequencies.                                                                                                                                                                                |
|              | <IncludeGammaComments> | Boolean | Specifies whether to include Gamma and Impedance comments.                                                                                                                                                                  |
|              | <SupportNonStdExport>  | Boolean | Specifies whether to support non-standard Touchstone extensions for mixed reference impedance.                                                                                                                              |
| Return Value | None.                  |         |                                                                                                                                                                                                                             |

|               |                                                                                                           |
|---------------|-----------------------------------------------------------------------------------------------------------|
| Python Syntax | ExportRLGCData(<DesignVariationKey>, <SolnSelectionArray>, <SolnSelector>, <FileFormat>, <OutFile>, <Fre- |
|---------------|-----------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <i>qsArray</i> >, <DoRenorm>, <RenormImped>, [Optional <DataType>], [Optional <pass>], [Optional <ComplexFormat>], [Optional <Precision>], [Optional <UseExportFreqs>], [Optional <IncludeGammaComments>], [Optional <SupportNonStdExport>]) |
| <b>Python Example</b> | <pre>oModule.ExportRLGCData("", ["Setup1:Sweep1"], 3, "C://Documents/package_ HFSSDesign1.s4p", ['all'], True, 50, "S", -1, 0, 15, True, True, True</pre>                                                                                    |

## Generate Mesh

If any mesh operations have been defined but not yet performed in the current variation for the specified solution setups, they will be applied to the current mesh. If necessary, an initial mesh will be computed first. No further analysis will be performed.

|                       |                                                                                                                  |       |                           |
|-----------------------|------------------------------------------------------------------------------------------------------------------|-------|---------------------------|
| <b>UI Access</b>      | <b>[HFSS 3D Layout] &gt; Analysis Setup &gt; Generate Mesh.</b>                                                  |       |                           |
| <b>Parameters</b>     | Name                                                                                                             | Type  | Description               |
|                       | <SimulationNames>                                                                                                | Array | List of simulation names. |
| <b>Return Value</b>   | Integer: <ul style="list-style-type: none"> <li>• <b>0</b> – Success</li> <li>• <b>Else</b> – Failure</li> </ul> |       |                           |
| <b>Python Syntax</b>  | GenerateMesh(<SimulationNames>)                                                                                  |       |                           |
| <b>Python Example</b> | oDesign.GenerateMesh(['Setup1','Setup2','Setup3'])                                                               |       |                           |

## GetChildNames [Design]

Returns the names of the design's child objects.

|                     |                                                                                                                                                          |        |                                                                                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                                                      |        |                                                                                                              |
| <b>Parameters</b>   | Name                                                                                                                                                     | Type   | Description                                                                                                  |
|                     | <type>                                                                                                                                                   | String | Optional. Valid options are "Module", "Editor", "Variable", and "Design Data". Default returns Module names. |
| <b>Return Value</b> | Names of children for the queried object (i.e., if "Design Data" is entered, <b>Return Value</b> will be ['Variables', 'Data-sets', 'Design Settings']). |        |                                                                                                              |

#160;

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | GetChildNames (<type>)                             |
| <b>Python Example</b> | <code>oDesign.GetChildNames ("Design Data")</code> |

## GetChildObject [Design]

Returns the design's child objects.

|                     |                                                         |        |                                                                                                                                   |
|---------------------|---------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                     |        |                                                                                                                                   |
| <b>Parameters</b>   | Name                                                    | Type   | Description                                                                                                                       |
|                     | <path>                                                  | String | The path may include multiple generations (for example, "designObject/moduleObj/SetupObject"). See: <a href="#">Object Path</a> . |
| <b>Return Value</b> | A child object if one is found. Otherwise script error. |        |                                                                                                                                   |

|                       |                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetChildObject(<path>)                                                                               |
| <b>Python Example</b> | <pre>oDesign = oProject.GetActiveDesign() oOptimModule = oDesign.GetChildObject("Optimetrics")</pre> |



|  |                                                                                                                                                                                                                            |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>oEditor = oDesign.GetChildObject("3D Model")<br/>oBox = oDesign.GetChildObject("3D Model/Box1")<br/>oRpt = oDesign.GetChildObject("Results/S Parameter Plot 1")<br/>oVariable= oDesign.GetChildObject("Offset")</pre> |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## GetChildTypes [Design]

Returns the design's child object types.

|              |                                           |
|--------------|-------------------------------------------|
| UI Access    | N/A                                       |
| Parameters   | None.                                     |
| Return Value | String: "Module", "Editor", or "Variable" |

|                |                                      |
|----------------|--------------------------------------|
| Python Syntax  | GetChildTypes()                      |
| Python Example | <code>oDesign.GetChildTypes()</code> |

## GetDesignID

Returns the unique identification number of the active design.

|           |     |
|-----------|-----|
| UI Access | N/A |
|-----------|-----|

|                     |                                                                          |
|---------------------|--------------------------------------------------------------------------|
| <b>Parameters</b>   | None.                                                                    |
| <b>Return Value</b> | String indicating the unique identification number of the active design. |

|                       |                                                                           |
|-----------------------|---------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetDesignID()                                                             |
| <b>Python Example</b> | <pre>oDesign = oProject.GetActiveDesign()<br/>oDesign.GetDesignID()</pre> |

## GetDesignName

Returns the name of the active design.

|                     |                                                  |
|---------------------|--------------------------------------------------|
| <b>UI Access</b>    | N/A                                              |
| <b>Parameters</b>   | None.                                            |
| <b>Return Value</b> | String indicating the name of the active design. |

|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetDesignName()                                                             |
| <b>Python Example</b> | <pre>oDesign = oProject.GetActiveDesign()<br/>oDesign.GetDesignName()</pre> |

## GetDesignType

Returns the design type of the active design.

|                     |                                                                                                                                                                                                                                                        |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                                                                                                                                                    |
| <b>Parameters</b>   | None.                                                                                                                                                                                                                                                  |
| <b>Return Value</b> | String indicating the design type of the active design ("Circuit Design", "Circuit Netlist", "EMIT", "HFSS 3D Layout Design", "HFSS", "HFSS-IE", "Icepak", "Maxwell 2D", "Maxwell 3D", "Q2D Extractor", "Q3D Extractor", "RMxpvt", or "Twin Builder"). |

|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetDesignType()                                                             |
| <b>Python Example</b> | <pre>oDesign = oProject.GetActiveDesign()<br/>oDesign.GetDesignType()</pre> |

## GetDesignValidationInfo

Returns the design's validation information.

|                     |                                                                                                                                                                                                 |        |                                                           |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                                                                                             |        |                                                           |
| <b>Parameters</b>   | Name                                                                                                                                                                                            | Type   | Description                                               |
|                     | <validationResultFilePath>                                                                                                                                                                      | String | Full path for validation file, including *.xml extension. |
| <b>Return Value</b> | Boolean: <ul style="list-style-type: none"><li>• <b>0</b> – Failure (validation not done)</li><li>• <b>1</b> – Success (results written to specified location; see file format below)</li></ul> |        |                                                           |

|                       |                                                                              |
|-----------------------|------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetDesignValidationInfo(<validationResultFilePath>)                          |
| <b>Python Example</b> | <code>oDesign.GetDesignValidationInfo('E:/MyProjects/Validation.xml')</code> |

## GetEditor

*Use:* Returns an interface to the editor requested IF the PropServer behind the PropHost is contained within that type of editor.

*Command:* None

*Syntax:* GetEditor(<editorName>)

*Return Value:* String

|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| <b>Python Syntax</b>  | GetEditor(<editorName>)                             |
| <b>Python Example</b> | <code>oEditor = GetEditor("SchematicEditor")</code> |

## GetEditor (Layout Editor)

*Use:* Get the named editor without activating it.

*Command:* None

*Syntax:* GetEditor <editorName object\_variable>

*Return Value:* String

*Parameters:* <editorName>

Type: string

<object\_variable>

Type: string

# GetGeometryIdsForNetLayerCombinations

Returns ID numbers of all faces and edges of the active design related to the current target combination of nets and layers.

**Note:** Intended to support [CreateFieldPlot](#).

|              |                                                                                                      |        |                    |
|--------------|------------------------------------------------------------------------------------------------------|--------|--------------------|
| UI Access    | N/A                                                                                                  |        |                    |
| Parameters   | Name                                                                                                 | Type   | Description        |
|              | <netName>                                                                                            | String | Net's name.        |
|              | <layerName>                                                                                          | String | Layer's name.      |
|              | <setupName>                                                                                          | String | Name of the setup. |
| Return Value | Array of strings indicating face and edge ID numbers and net/layer combination they are assigned to. |        |                    |

|                        |                                                                                                                                                                                                                                              |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax          | GetGeometryIdsForNetLayerCombinations ()                                                                                                                                                                                                     |
| Python Example         | <pre>oDesign = oProject.SetActiveDesign()<br/>oDesign.GetGeometryIdsForAllNetLayerCombinations ("&lt;no-net&gt;","Trace","HFSS Setup : Last Adaptive")</pre>                                                                                 |
| Example with Variables | <pre>oProject = oDesktop.SetActiveProject("Spiral_Inductor_Microstrip")<br/>oDesign = oProject.SetActiveDesign("Spiral")<br/>res = oDesign.GetGeometryIdsForNetLayerCombination("&lt;no-net&gt;","Trace","HFSS Setup : Last Adaptive")</pre> |

```
res = ['Surface', 'FacesList', '21', '22']
```

## GetGeometryIdsForAllNetLayerCombinations

Returns ID numbers of all faces and edges of the active design for all possible combinations of nets and layers the user can choose.

**Note:** Intended to support [CreateFieldPlot](#).

|                     |                                                       |        |                    |
|---------------------|-------------------------------------------------------|--------|--------------------|
| <b>UI Access</b>    | N/A                                                   |        |                    |
| <b>Parameters</b>   | Name                                                  | Type   | Description        |
|                     | <setupName>                                           | String | Name of the setup. |
| <b>Return Value</b> | Array of strings indicating face and edge ID numbers. |        |                    |

|                               |                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>          | GetGeometryIdsForAllNetLayerCombinations ()                                                                                                                                                                                                                                                                                                                                               |
| <b>Python Example</b>         | <pre>oDesign = oProject.GetActiveDesign() oDesign.GetGeometryIdsForAllNetLayerCombinations("HFSS Setup : Last Adaptive")</pre>                                                                                                                                                                                                                                                            |
| <b>Example with Variables</b> | <pre>oProject = oDesktop.SetActiveProject("Spiral_Inductor_Microstrip") oDesign = oProject.SetActiveDesign("Spiral")  res = oDesign.GetGeometryIdsForAllNetLayerCombinations("HFSS Setup : Last Adaptive")  res = ['PlotGeomInfo for &lt;no-net&gt;/&lt;no-layer&gt; (net/layer combination):', 'Surface', 'FacesList', '30', '31', '32', '33', '34', '35', '36', '37', '38', '39',</pre> |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | '40', '41', '42', '43', '44', '45', '46', '47', '48', '49', '50', '51', '52', '53', '54', '55', '56', '57', 'PlotGeomInfo for <no-net>/AirbridgeMetal (net/layer combination):', 'Surface', 'FacesList', '14', 'PlotGeomInfo for <no-net>/BottomGround (net/layer combination):', 'Surface', 'FacesList', '29', 'PlotGeomInfo for <no-net>/Trace (net/layer combination):', 'Surface', 'FacesList', '21', '22'] |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## GetManagedFilePath

Get the path to the project's results folder.

|                     |                                                           |
|---------------------|-----------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                       |
| <b>Parameters</b>   | None.                                                     |
| <b>Return Value</b> | String containing path where project results are located. |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | <code>oDesign.GetManagedFilePath()</code> |
| <b>Python Example</b> | <code>oDesign.GetManagedFilePath()</code> |

## GetModule

Returns the IDispatch for the specified module.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

|                     |                  |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>      | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                     | <modulename>     | String      | One of the following: <ul style="list-style-type: none"> <li>• <a href="#">Cavity Commands</a> – "Cavities"</li> <li>• <a href="#">Excitations Commands</a> – "Excitations" or "Boundaries"</li> <li>• <a href="#">Field Overlays Module</a> – "FieldsReporter"</li> <li>• <a href="#">Optimetrics Module</a> – "Optimetrics"</li> <li>• <a href="#">Output Variable Module</a> – "OutputVariable"</li> <li>• <a href="#">Radiation Setup Manager Module</a> – "RadiationSetupMgr"</li> <li>• <a href="#">Reporter Module</a> – "ReportSetup"</li> <li>• <a href="#">Simulation Setup Commands</a> – "SolveSetups"</li> <li>• <a href="#">User Defined Documents Module</a> – "UserDefinedDocuments"</li> <li>• <a href="#">User Defined Solutions Module</a> – "UserDefinedSolutionModule"</li> </ul> |
| <b>Return Value</b> | Module IDispatch |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | GetModule (<modulename>)                             |
| <b>Python Example</b> | <code>oModule = oDesign.GetModule("SimSetup")</code> |

## GetModule (Layout Editor)

Returns the IDispatch for the specified module.

|                   |              |             |                       |
|-------------------|--------------|-------------|-----------------------|
| <b>UI Access</b>  | N/A          |             |                       |
| <b>Parameters</b> | <b>Name</b>  | <b>Type</b> | <b>Description</b>    |
|                   | <modulename> | String      | One of the following: |



|                     |                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                  |  | <ul style="list-style-type: none"> <li>• <a href="#">Cavity Commands</a> – "Cavities"</li> <li>• <a href="#">Excitations Commands</a> – "Excitations" or "Boundaries"</li> <li>• <a href="#">Field Overlays Module</a> – "FieldsReporter"</li> <li>• <a href="#">Optimetrics Module</a> – "Optimetrics"</li> <li>• <a href="#">Output Variable Module</a> – "OutputVariable"</li> <li>• <a href="#">Radiation Setup Manager Module</a> – "RadiationSetupMgr"</li> <li>• <a href="#">Reporter Module</a> – "ReportSetup"</li> <li>• <a href="#">Simulation Setup Commands</a> – "SolveSetups"</li> <li>• <a href="#">User Defined Documents Module</a> – "UserDefinedDocuments"</li> <li>• <a href="#">User Defined Solutions Module</a> – "UserDefinedSolutionModule"</li> </ul> |
| <b>Return Value</b> | Module IDispatch |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | GetModule (<modulename>)                             |
| <b>Python Example</b> | <code>oModule = oDesign.GetModule("Cavities")</code> |

## GetModule (RadiationSetupMgr)

Returns the IDispatch for the specified module.

|                   |              |        |                       |
|-------------------|--------------|--------|-----------------------|
| <b>UI Access</b>  | N/A          |        |                       |
| <b>Parameters</b> | Name         | Type   | Description           |
|                   | <modulename> | String | One of the following: |

|                     |                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                  |  | <ul style="list-style-type: none"> <li>• <a href="#">Cavity Commands</a> – "Cavities"</li> <li>• <a href="#">Excitations Commands</a> – "Excitations" or "Boundaries"</li> <li>• <a href="#">Field Overlays Module</a> – "FieldsReporter"</li> <li>• <a href="#">Optimetrics Module</a> – "Optimetrics"</li> <li>• <a href="#">Output Variable Module</a> – "OutputVariable"</li> <li>• <a href="#">Radiation Setup Manager Module</a> – "RadiationSetupMgr"</li> <li>• <a href="#">Reporter Module</a> – "ReportSetup"</li> <li>• <a href="#">Simulation Setup Commands</a> – "SolveSetups"</li> <li>• <a href="#">User Defined Documents Module</a> – "UserDefinedDocuments"</li> <li>• <a href="#">User Defined Solutions Module</a> – "UserDefinedSolutionModule"</li> </ul> |
| <b>Return Value</b> | Module IDispatch |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | GetModule (<modulename>)                             |
| <b>Python Example</b> | <code>oModule = oDesign.GetModule("SimSetup")</code> |

## GetName

Returns the design ID and design name of the active design, in that order separated by a semicolon. If the active design is a sub-circuit, it also returns the parent ID and parent design name, listed before the active design information.

To get the *only* the design's name without the parent design name or design IDs, see `oDesign.GetDesignName()`.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

|                     |                                                                                                                   |
|---------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | None.                                                                                                             |
| <b>Return Value</b> | String indicating the name and ID of the active design and parent design (if the active design is a sub-circuit). |

|                       |                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetName()                                                                                                                                                                                                                                                                                                                                              |
| <b>Python Example</b> | <pre>oDesign.GetName( ) for a subcircuit <i>EMDesign2</i> in a parent design <i>EMDesign1</i> design_name = oDesign.GetName() 1;EMDesign1/2;EMDesign2</pre> <p>In the returned string:</p> <p>1 is the parent design ID; <i>EMDesign1</i> is the parent design name.</p> <p>2 is the active design ID; <i>EMDesign2</i> is the active design name.</p> |

# GetName (Layout Editor)

Get the name of the active design.

*Command:* None

*Syntax:* GetName <namestring\_variable>

*Return Value:* String

*Parameters:* <namestring\_variable>

Type: string

## GetNoteText

Returns the text of the note attached to a design.

|                     |                                  |
|---------------------|----------------------------------|
| <b>UI Access</b>    | N/A                              |
| <b>Parameters</b>   | None.                            |
| <b>Return Value</b> | String: text of the design note. |

|                       |                                    |
|-----------------------|------------------------------------|
| <b>Python Syntax</b>  | GetNoteText()                      |
| <b>Python Example</b> | <code>oDesign.GetNoteText()</code> |

## GetObjPath [Design]

Obtains the path to the design.

|                     |                                           |
|---------------------|-------------------------------------------|
| <b>UI Access</b>    | N/A                                       |
| <b>Parameters</b>   | None.                                     |
| <b>Return Value</b> | String containing the path to the design. |

|                       |                                   |
|-----------------------|-----------------------------------|
| <b>Python Syntax</b>  | GetObjPath()                      |
| <b>Python Example</b> | <code>oDesign.GetObjPath()</code> |

# GetOutputVariableValue

Returns the double value of an output variable. Only expressions that return a double value are supported. The expression is evaluated only for a single point.

|            |                      |        |                                                                                                                                                                                                                                                                                                           |
|------------|----------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | N/A                  |        |                                                                                                                                                                                                                                                                                                           |
| Parameters | Name                 | Type   | Description                                                                                                                                                                                                                                                                                               |
|            | <OutputVarName>      | String | Name of the output variable.                                                                                                                                                                                                                                                                              |
|            | <IntrinsicVariation> | String | A set of intrinsic variable value pairs to use when evaluating the output expression.<br><br>HFSS example:<br><br>"Freq='20GHz' Theta='20deg' Phi='30deg' "                                                                                                                                               |
|            | <SolutionName>       | String | Name of the solution as listed in the output variable UI. For example, "Setup1 : Last Adaptive".                                                                                                                                                                                                          |
|            | <ReportType>         | String | The name of the report type as seen in the output variable UI.<br><br>Possible values in Layout/Schematic Editor are: <ul style="list-style-type: none"><li>• "Standard"</li><li>• "Load Pull"</li><li>• "Constellation"</li><li>• "Data Table"</li><li>• "Eye Diagram"</li><li>• "Statistical"</li></ul> |
|            | <ContextArray>       | Array  | Structured array containing context for which the output variable expression is being evaluated. Can be empty.<br><br>Array("Context:=", <string>)                                                                                                                                                        |

|                     |                                      |
|---------------------|--------------------------------------|
| <b>Return Value</b> | Double value of the output variable. |
|---------------------|--------------------------------------|

|                       |                                                                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetOutputVariableValue(&lt;OutputVarName&gt;, &lt;IntrinsicVariation&gt;, &lt;SolutionName&gt;, &lt;ReportTypeName&gt;, &lt;ContextArray&gt;)</code> |
| <b>Python Example</b> | <pre>Val = oDesign.GetOutputVariableValue("test", "Freq = '20Ghz' Theta='20deg' Phi='30deg'", "TR", "Standard", [])</pre>                                  |

## GetOutputVariables

Returns the list of output variables.

|                     |                                        |
|---------------------|----------------------------------------|
| <b>UI Access</b>    | N/A                                    |
| <b>Parameters</b>   | None.                                  |
| <b>Return Value</b> | Array containing all output variables. |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | <code>GetOutputVariables()</code>         |
| <b>Python Example</b> | <code>oDesign.GetOutputVariables()</code> |

## GetProject

Returns to the active design's project or, if a project name is specified in the parentheses, changes focus to the specified project.

|                     |               |        |                                        |
|---------------------|---------------|--------|----------------------------------------|
| <b>UI Access</b>    | N/A.          |        |                                        |
| <b>Parameters</b>   | Name          | Type   | Description                            |
|                     | <ProjectName> | String | Name of an open project. Can be empty. |
| <b>Return Value</b> | None.         |        |                                        |

|                       |                                             |
|-----------------------|---------------------------------------------|
| <b>Python Syntax</b>  | GetProject(<ProjectName>)                   |
| <b>Python Example</b> | <code>oDesign.GetProject('Project2')</code> |

## GetPropHost

*Use:* Returns an interface to the PropHost of the CompInstance, which gives access to its properties. This interface can be used to call PropHost functions; for more information see [Callback Scripting Using PropHost Object](#).

*Command:* None

*Syntax:* GetPropHost()

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | GetPropHost()                                        |
| <b>Python Example</b> | <code>oPropHost2 = CompInstance.GetPropHost()</code> |

## GetProperties

Gets a list of all the properties belonging to a specific <PropServer> and <PropTab>. This can be executed by the oProject, oDesign, or oEditor variables.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

| <b>Parameters</b>   | Name                                                                 | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <code>&lt;PropTab&gt;</code>                                         | String | One of the following, where tab titles are shown in parentheses: <ul style="list-style-type: none"> <li>PassedParameterTab ("Parameter Values")</li> <li>DefinitionParameterTab (Parameter Defaults")</li> <li>LocalVariableTab ("Variables" or "Local Variables")</li> <li>ProjectVariableTab ("Project variables")</li> <li>ConstantsTab ("Constants")</li> <li>BaseElementTab ("Symbol" or "Footprint")</li> <li>ComponentTab ("General")</li> <li>Component("Component")</li> <li>CustomTab ("Intrinsic Variables")</li> <li>Quantities ("Quantities")</li> <li>Signals ("Signals")</li> </ul> |
|                     | <code>&lt;PropServer&gt;</code>                                      | String | An object identifier, generally returned from another script method, such as <code>CompInst@R;2;3</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Return Value</b> | Array of strings containing the names of the appropriate properties. |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetProperties( &lt;PropTab&gt;, &lt;PropServer&gt; )</code> |
| <b>Python Example</b> | <code>oEditor.GetProperties('PassedParameterTab', 'k')</code>     |

## GetPropertyValue

Returns the value of a single property belonging to a specific `<PropServer>` and `<PropTab>`. This function is available with the Project, Design or Editor objects, including definition editors.



**Tip:** Use the script recording feature and edit a property, and then view the resulting script to see the format for that property.

|                     |                               |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|-------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                           |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Parameters</b>   | <b>Name</b>                   | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                     | <PropTab>                     | String      | One of the following, where tab titles are shown in parentheses: <ul style="list-style-type: none"><li>• PassedParameterTab ("Parameter Values")</li><li>• DefinitionParameterTab (Parameter Defaults")</li><li>• LocalVariableTab ("Variables" or "Local Variables")</li><li>• ProjectVariableTab ("Project variables")</li><li>• ConstantsTab ("Constants")</li><li>• BaseElementTab ("Symbol" or "Footprint")</li><li>• ComponentTab ("General")</li><li>• Component("Component")</li><li>• CustomTab ("Intrinsic Variables")</li><li>• Quantities ("Quantities")</li><li>• Signals ("Signals")</li></ul> |
|                     | <PropServer>                  | String      | An object identifier, generally returned from another script method, such as <code>CompInst@R;2;3</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                     | <PropName>                    | String      | Name of the property.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Return Value</b> | String value of the property. |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|                       |                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetPropertyValue (&lt;PropTab&gt;, &lt;PropServer&gt;, &lt;PropName&gt;)</code>                                                                |
| <b>Python Example</b> | <pre> selectionArray = oEditor.GetSelections()  for k in selectionArray:     val = oEditor.GetPropertyValue("PassedParameterTab", k, "R") ... </pre> |

## GetPropNames [Design]

Returns array containing names of property. For designs, always returns an empty array because the design has no property.

|                     |                   |         |                                                                                                                                                          |
|---------------------|-------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A               |         |                                                                                                                                                          |
| <b>Parameters</b>   | Name              | Type    | Description                                                                                                                                              |
|                     | <includeReadOnly> | Boolean | (Optional). <ul style="list-style-type: none"> <li>• True - include read only property.</li> <li>• False - do not include read only property.</li> </ul> |
| <b>Return Value</b> | Empty array.      |         |                                                                                                                                                          |

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetPropNames(&lt;includeReadOnly&gt;)</code> |
| <b>Python Example</b> | <code>oDesign.GetPropNames()</code>                |

## GetPropValue [Design]

Returns the property value for the active design object, or specified property values.

|              |                                                                                          |        |                                                                                                |
|--------------|------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------|
| UI Access    | N/A                                                                                      |        |                                                                                                |
| Parameters   | Name                                                                                     | Type   | Description                                                                                    |
|              | <propPath>                                                                               | String | A child object's property path. See: <a href="#">Object Property Script Function Summary</a> . |
| Return Value | The property value (integer, string, or array of strings) of the specified child object. |        |                                                                                                |

|                |                                                                                      |  |  |
|----------------|--------------------------------------------------------------------------------------|--|--|
| Python Syntax  | GetPropValue(<propPath>)                                                             |  |  |
| Python Example | <code>oDesign.GetPropValue('offset/SIValue')</code>                                  |  |  |
|                | <code>oDesign.GetPropValue('Results/S Parameter Plot 1/Display Type')</code>         |  |  |
|                | <code>oDesign.GetPropValue('Results/S Parameter Plot 1/Display Type/Choices')</code> |  |  |

## GetVariables

Returns a list of all defined variables. To get a list of project variables, execute this command using `oProject`. To get a list of local variables, use `oDesign`.

|              |                                            |  |  |
|--------------|--------------------------------------------|--|--|
| UI Access    | N/A                                        |  |  |
| Parameters   | None.                                      |  |  |
| Return Value | Array of strings containing the variables. |  |  |

|               |                 |  |  |
|---------------|-----------------|--|--|
| Python Syntax | GetVariables () |  |  |
|---------------|-----------------|--|--|

|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| <b>Python Example</b> | <pre>oProject.GetVariables() oDesign.GetVariables()</pre> |
|-----------------------|-----------------------------------------------------------|

## GetVariableValue

Gets the value of a single specified variable. To get the value of project variables, execute this command using `oProject`. To get the value of local variables, use `oDesign`.

|                     |                                              |        |                                 |
|---------------------|----------------------------------------------|--------|---------------------------------|
| <b>UI Access</b>    | N/A                                          |        |                                 |
| <b>Parameters</b>   | Name                                         | Type   | Description                     |
|                     | <VarName>                                    | String | Name of the variable to access. |
| <b>Return Value</b> | String represents the value of the variable. |        |                                 |

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetVariableValue( &lt;VarName&gt; )</code>   |
| <b>Python Example</b> | <code>oProject.GetVariableValue("var_name")</code> |

## ImportDataset

Imports a dataset from a named file. This can be executed by the `oProject`, or `oDesign` variables. The name of the dataset is file-name+index number (e.g., dsdata1) unless the filename ends with a trailing number. When there is a trailing number at the end, we will remove the number and use first unused index. Alternatively, the name of the dataset can be explicitly defined by providing a string as an optional second argument.

|                  |                                           |
|------------------|-------------------------------------------|
| <b>UI Access</b> | <b>Project &gt; Datasets &gt; Import.</b> |
|------------------|-------------------------------------------|

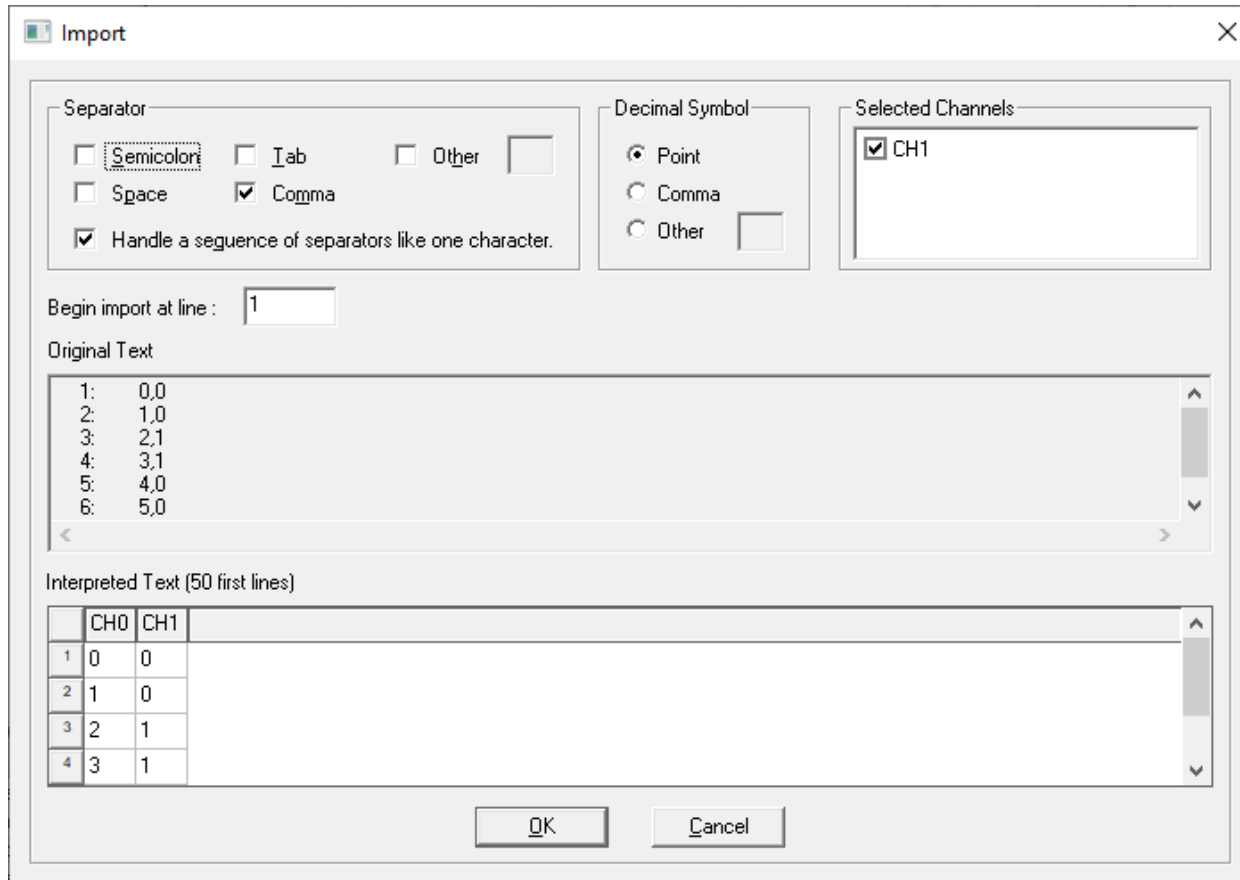
| Parameters   | Name                  | Type   | Description                                                                                                        |
|--------------|-----------------------|--------|--------------------------------------------------------------------------------------------------------------------|
|              | <datasetFilePath>     | String | The full path to the file containing the dataset values. *.tab files recommended (see <a href="#">note</a> below). |
|              | <optionalDatasetName> | String | <i>Optional.</i> User-defined dataset name.                                                                        |
| Return Value | None.                 |        |                                                                                                                    |

| Python Syntax  | ImportDataset (<datasetFilePath>,<optionalDatasetName>)                                                                                                                                                                    |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oProject.ImportDataset('e:\tmp\dsdata.tab') oDesign.ImportDataset('e:\tmp\dsdata.tab') oProject.ImportDataset('e:\tmp\dsdata.tab', 'MyDatasetName') oDesign.ImportDataset('e:\tmp\dsdata.tab', 'MyDatasetName')</pre> |

## Note About File Types:

Tab-delimited or space-delimited files with the extension \*.tab are the recommended file type. When using ImportDataset at the Design level, \*.tab is the only file type supported.

At the Project level, other file types are supported (for example, \*.csv). However, after calling the command, you must configure the file import format manually through the Electronics Desktop GUI by selecting **Project > Datasets** and clicking **Import**.



## InsertDesign

Inserts a new design in the project. For Circuit and HFSS 3D Layout scripts, the last argument will always be empty.

| UI Access    | Project > [Insert Circuit Design / Insert Circuit Netlist / Insert HFSS 3D Layout Design]. |        |                                                                                                                                                  |
|--------------|--------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                                                       | Type   | Description                                                                                                                                      |
|              | <DesignType>                                                                               | String | Design type. Valid types: "Circuit", "Nexxim Circuit", "System", "Nexxim Netlist", "HFSS3D".                                                     |
|              | <DesignName>                                                                               | String | Design name.                                                                                                                                     |
|              | <TechnologyFile>                                                                           | String | The path to the Circuit technology file to be used in the design. Use a pair of empty double quotes ("" ) for none.                              |
|              | <SubcircuitID>                                                                             | String | (Optional) Must be preceded by a colon if included along with the Technology File name. No colon is necessary when the subcircuit ID is omitted. |
|              | ""                                                                                         | None   | Empty argument.                                                                                                                                  |
| Return Value | None.                                                                                      |        |                                                                                                                                                  |

| Python Syntax  | InsertDesign (<DesignType>, <DesignName>, <TechnologyFile>:<SubCircuitID>,"")                         |
|----------------|-------------------------------------------------------------------------------------------------------|
| Python Example | oProject.InsertDesign("Nexxim Circuit","MyDesign", "C:\\Program Files\\ANSYS Inc\\v252\\AnsysEM", "") |

## OverlayCurrents (Layout Editor)

Creates a 3D view with a currents overlay

*Command:* None

*Syntax:* OverlayCurrents <solution name>

*Return Value:* <success>

Type: boolean

*Parameters:* <solution name>

Type: string

## OverlayFarField (Layout Editor)

Creates a 3D view with a far field overlay

*Command:* None

*Syntax:* OverlayFarField <solution name>

*Return Value:* <success>

Type: boolean

*Parameters:* <solution name>

Type: string

## OverlayMesh (Layout Editor)

Creates a 3D view with a mesh overlay

*Command:* None

*Syntax:* OverlayMesh <solution name>

*Return Value:* <success>

Type: boolean

*Parameters:* <solution name>

Type: string



# OverlayNearField (Layout Editor)

Creates a 3D view with a near field overlay

*Command:* None

*Syntax:* OverlayNearField <solution name>

*Return Value:* <success>

Type: boolean

*Parameters:* <solution name>

Type: string

# PasteDesign (Design Object)

Pastes a design that has already been copied to the clipboard into another design.

|              |               |         |                                                                                                                                                                                                                                                                                                                                                   |
|--------------|---------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | Edit > Paste. |         |                                                                                                                                                                                                                                                                                                                                                   |
| Parameters   | Name          | Type    | Description                                                                                                                                                                                                                                                                                                                                       |
|              | <pasteOption> | Integer | One of the following: <ul style="list-style-type: none"><li>• <b>0</b> – Link to the existing design that was copied</li><li>• <b>1</b> – Create a new copy of the design and keep the original layers of the design being copied</li><li>• <b>2</b> – Create a new copy of the design and merge the layers of the design being copied.</li></ul> |
| Return Value | None.         |         |                                                                                                                                                                                                                                                                                                                                                   |

|                       |                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | PasteDesign(<pasteOption>)                                                                                     |
| <b>Python Example</b> | <pre>oProject.CopyDesign('DesignB') oDesign = oProject.SetActiveDesign('DesignA') oDesign.PasteDesign(1)</pre> |

## PasteItemCommand (Layout Editor)

Paste tree items, such as Altrasim Solution and Solve Setups pasted to the Analysis Tree, or Frequency Sweeps pasted to the Solve Setup Tree.

**Command:** Right-click on the Analysis item in the Project tree and select Paste.

**Syntax:** PasteItemCommand <ItemPath>

**Return Value:** None

**Parameters:** <ItemPath>

Type: string

## PushExcitations

Allows access to computed excitations for transient and linear frequency solutions. The script command can be accessed from three locations.

|                   |                                                                                                                                                                                                     |        |                                                                                    |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------|
| <b>UI Access</b>  | <ul style="list-style-type: none"> <li>Layout Editor</li> <li>Schematic Editor</li> <li>Select a Nexxim solution in a 3D Layout design, right click, and choose <b>Push Excitations</b>.</li> </ul> |        |                                                                                    |
| <b>Parameters</b> | Name                                                                                                                                                                                                | Type   | Description                                                                        |
|                   | <Reference Designation>                                                                                                                                                                             | String | "<refdes>"<br><br>This argument is empty when excitations are pushed from a Nexxim |

|                              |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                              |       | solution.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <PushExcitations Parameters> | Array | <p>This parameter changes depending on whether the excitations comes from a transient or linear frequency solution. The keyword "transient:=" indicates to AEDT which solution generated the excitations. If "transient:=" is present, "CalcThevenin =" and its value are ignored.</p> <p>For a linear frequency solution, use this array:</p> <pre>Array("NAME:options",     "CalcThevenin =" , &lt;true false&gt;,     "Sol:=", "&lt;solution name&gt;")</pre> <p>If CalcThevenin is true, Thevenin's equivalent is calculated. Parameters for the linear frequency solution do not include a Freq argument, so all frequencies from the solution are used.</p> <p>For a transient solution, use:</p> <pre>Array("NAME:options",     "transient:=", Array(         "start:=", &lt;start time&gt;,         "stop:=", &lt;stop time&gt;,         "maxHarmonics:=", &lt;max harmonics&gt;,         "winType:=", &lt;window&gt;,         ["widthPct:=", &lt;width percentage&gt;],         ["kaiser:=", &lt;Kaiser value&gt;],         ["correctCoherentGain:=", true]),</pre> |

|                     |      |  |                                                                                                                                                                                                                                                                                                       |
|---------------------|------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |      |  | <pre>"Sol:=", "&lt;solution name&gt;")</pre> <p>winType can have the following values:</p> <ul style="list-style-type: none"><li>• Rectangular</li><li>• Bartlett</li><li>• Blackman</li><li>• Hamming</li><li>• Hanning</li><li>• Kaiser</li><li>• Welch</li><li>• Weber</li><li>• Lanczos</li></ul> |
| <b>Return Value</b> | None |  |                                                                                                                                                                                                                                                                                                       |

**Note:**

For more information about the component name, schematic IDs, and formats, see the section [Editor Scripting IDs](#).

## Redo [Design]

Reapplies the last design-level command.

|                     |                        |
|---------------------|------------------------|
| <b>UI Access</b>    | <b>Edit &gt; Redo.</b> |
| <b>Parameters</b>   | None.                  |
| <b>Return Value</b> | None.                  |

|                       |                             |
|-----------------------|-----------------------------|
| <b>Python Syntax</b>  | Redo()                      |
| <b>Python Example</b> | <code>oDesign.Redo()</code> |

## Redo (Layout Editor)

Redo the last operation

*Command:* Edit>Redo

*Syntax:* Redo

*Return Value:* None

*Parameters:* None

## RemoveImportData (Layout Editor)

Remove an imported solution

*Command:* None

*Syntax:* RemoveImportData <solution\_name>

*Return Value:* None

*Parameters:* <solution\_name>

Type: string

## RemoveModelingProperties (Layout Editor)

Remove a modeling property from a design

*Command:* None

*Syntax:* RemoveModelingProperties <design>

*Return Value:* None

*Parameters:* <design>

Type: string

## RenameDesignInstance

Renames a design instance.

|                     |                                                                                                       |        |                                                                                            |
|---------------------|-------------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click a design instance in the project tree, and then click <b>Rename</b> on the shortcut menu. |        |                                                                                            |
| <b>Parameters</b>   | Name                                                                                                  | Type   | Description                                                                                |
|                     | <OldName>                                                                                             | String | The current name of the design, which must be the design on which this command is invoked. |
|                     | <NewName>                                                                                             | String | The new name for the design.                                                               |
| <b>Return Value</b> | None.                                                                                                 |        |                                                                                            |

|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| <b>Python Syntax</b>  | RenameDesignInstance (<OldName>, <NewName>)         |
| <b>Python Example</b> | oDesign.RenameDesignInstance ("Design1", "Design2") |

## RenameDesignInstance (Layout Editor)

Rename the design instance

*Command:* None

*Syntax:* RenameDesignInstance <oldname> <newname>

*Return Value:* None

*Parameters:* <oldname>

Type: string

<newname>

Type: string

*Example:* oDesign.RenameDesignInstance <oldname> <newname>

## RenameImportData (Layout Editor)

Rename an imported solution

*Command:* None

*Syntax:* RenameImportData <oldname> <newname>

*Return Value:* None

*Parameters:* <oldname>

Type: string

<newname>

Type: string

*Example:* oDesign.RenameImportData <oldname> <newname>

## RenameSource [Interface Source]

*Use:* Renames an interface source

*Syntax:* RenameSource (STRING: Interface Source name)

*Example:* `oModule.RenameSource "OldName" "NewName"`

## ReportTemplates (Layout Editor)

*Use:* Creates a report using one of the HFSS 3D Layout report templates

*Command:* None

*Syntax:* ReportTemplates <template>

*Return Value:* None

*Parameters:* <template>

Type: string

*Example:* `oDesign.ReportTemplates <template>`

## RunToolkit

Runs a Python toolkit script, applying it to the active design. The toolkit script itself may have prerequisites, such as sweeps defined, or specific model characteristics, such as port definitions.

### Important:

Full scripting for cable modeling is not supported and no arguments are allowed in the script. The **RunToolkit** command will not automatically create a cable bundle, but will simply open the **Cable Modeling** dialog box. You will have to manually input your parameters.



|                     |                                             |        |                                                                       |
|---------------------|---------------------------------------------|--------|-----------------------------------------------------------------------|
| <b>UI Access</b>    | [HFSS 3D Layout] > Toolkit > [Script Name]. |        |                                                                       |
| <b>Parameters</b>   | Name                                        | Type   | Description                                                           |
|                     | <LibraryType>                               | String | Name of the library in which the script is located.                   |
|                     | <ToolkitName>                               | String | Name of the Python script.                                            |
|                     | <ToolkitArg>                                | Array  | Structured array containing arguments required by the toolkit script. |
| <b>Return Value</b> | User-defined solution(s) and/or output(s).  |        |                                                                       |

|                       |                                                            |  |  |
|-----------------------|------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | RunToolkit(<LibraryType>, <ToolkitName>, <ToolkitArg>)     |  |  |
| <b>Python Example</b> | oDesign.RunToolkit("SysLib", "Hearing Aid Compliance", []) |  |  |

## SetActiveEditor

Sets the active editor.

|                     |                |        |                             |
|---------------------|----------------|--------|-----------------------------|
| <b>UI Access</b>    | N/A.           |        |                             |
| <b>Parameters</b>   | Name           | Type   | Description                 |
|                     | <EditorName>   | String | Text of the design's notes. |
| <b>Return Value</b> | Editor object. |        |                             |

|                       |                                       |  |  |
|-----------------------|---------------------------------------|--|--|
| <b>Python Syntax</b>  | SetActiveEditor(<EditorName>)         |  |  |
| <b>Python Example</b> | oDesign.SetActiveEditor('3D Modeler') |  |  |

## SetActiveEditor (Layout Editor)

Set the active editor to the named one. (Activates window or opens window if necessary).

*Command:* None

*Syntax:* SetActiveEditor <editorName> <object\_variable>

*Return Value:* None

*Parameters:* <editorName>

Type: string

<object\_variable>

Type: string

*Example:* oDesign.SetActiveEditor <editorName> <object\_variable>

## SetBendGraphicsMode

Activates/deactivates a simplified version of the model rendering for designs with rigid-flex bends.

| UI Access    | From the <b>Layout</b> tab, select <b>Rigid-Flex &gt; Simplified Bend Graphics</b> . |         |                                                                                                                |
|--------------|--------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                                                 | Type    | Description                                                                                                    |
|              | <SetBendGraphics>                                                                    | Integer | <b>0</b> – Deactivates <b>Simplified Bend Graphics</b><br><b>1</b> – Activates <b>Simplified Bend Graphics</b> |
| Return Value | None.                                                                                |         |                                                                                                                |

| Python Syntax  | SetBendGraphics (<SetBendGraphics>) |
|----------------|-------------------------------------|
| Python Example | oEditor.SetBendGraphicsMode ("1")   |

# SetDesignMode

Switches between HFSS 3D Layout operating modes.

|              |                |        |                                                    |
|--------------|----------------|--------|----------------------------------------------------|
| UI Access    | Edit Layout... |        |                                                    |
| Parameters   | Name           | Type   | Description                                        |
|              | <modeName>     | String | Enter "IC" or "General" to change operating modes. |
| Return Value | None.          |        |                                                    |

|                |                             |
|----------------|-----------------------------|
| Python Syntax  | SetDesignMode(<modeName>)   |
| Python Example | oDesign.SetDesignMode("IC") |

# SetDoMeshAssembly

Set the active Mesh fusion properties for each object.

*Command:* Set Components for Mesh Fusion

*Syntax:* SetDoMeshAssembly <MeshAssemblyParameters>

*Return Value:* None

*Parameters:* <MeshAssemblyParameters>

Available script command choices for LayoutCompMeshEnvelopeType are:

- “Bounding Box”
- “Conformal”
- “Convex Hull”
- “Zone”

For MeshAssemblyBoundingVolumePadding, users are expected to specify all padding values in sequence.

1. For Bounding Box type, padding values are expected in the following format:

[+X, -X, +Y, -Y, +Z, -Z]

2. For Conformal and Convex Hull type, padding values are expected in the following format:

[+Horizontal, +Vertical, -Vertical]

3. For Zone envelope type, padding values are expected in the following format:

[+Vertical, - Vertical]

For all cases, additional values after those expected will be ignored.

#### *Python Examples*

Example with Priority Level Enabled, with a section for Component Priority Level is added.

```
oDesign.SetDoMeshAssembly(  
    [  
        "NAME:AllSettings",  
        [  
            "NAME:MeshAssembly",  
            [  
                "NAME:LC1_2",
```

```

        "MeshAssemblyBoundingVolumePadding:=", ["0","0","0","0","0","0"]
    ],
    [
        "NAME:LC1_3",
        "MeshAssemblyBoundingVolumePadding:=", ["0","0","0","0","0","0"]
    ],
    [
        "NAME:Modal1",
        "MeshAssemblyBoundingVolumePadding:=", ["0","0","0","0","0","0"]
    ]
],
"Component Priority Level:=", ["LC1_1","Modal1","LC1_2","Modal_with_mesh_region1","LC1_3","Modal3"]
])

```

If a design which had Priority Level set but then disabled, a section of the script records the disabled priority level.

```

oDesign.SetDoMeshAssembly(
[
    "NAME:AllSettings",
    [
        "NAME:MeshAssembly",

```

```
[
  "NAME:LC1_3",
  "MeshAssemblyBoundingVolumePadding:=", ["0","0","0","0","0","0"]
],
[
  "NAME:Modal1",
  "MeshAssemblyBoundingVolumePadding:=", ["0","0","0","0","0","0"]
]
],
"Priority Components:=" , ["LC1_3","Modal1","Modal_with_mesh_region1"]
])
```

**### If Priority Level is not enabled, the behavior is as before.**

```
oDesign.SetDoMeshAssembly(
[
  "NAME:AllSettings",
  [
    "NAME:MeshAssembly",
    [
      "NAME:Cylinder3",
      [
```

```
"NAME:MeshSetting",  
[  
  "NAME:GlobalSurfApproximation",  
  "CurvedSurfaceApproxChoice:=", "UseSlider",  
  "SliderMeshSettings:=" , 7  
],  
[  
  "NAME:GlobalCurvilinear",  
  "Apply:=" , False  
],  
[  
  "NAME:GlobalModelRes",  
  "UseAutoLength:=" , True  
],  
"MeshMethod:=" , "AnsoftClassic",  
"UseLegacyFaceterForTauVolumeMesh:=", False,  
"DynamicSurfaceResolution:=", False,  
"UseFlexMeshingForTAUvolumeMesh:=", False,  
"UseAlternativeMeshMethodsAsFallBack:=", True,  
"AllowPhiForLayeredGeometry:=", True
```

```

    ],
    "MeshAssemblyBoundingVolumePadding:=", ["0","0","0","0","0","0"]
  ],
  [
    "NAME:Pentagon_tilted2_1",
    "MeshAssemblyBoundingVolumePadding:=", ["0","0","0","0","0","0"]
  ],
  [
    "NAME:Cone_with_variable1",
    "MeshAssemblyBoundingVolumePadding:=", ["0","0","0","0","0","0"]
  ]
],
[
  "NAME:Priority Components",
  "Cylinder3",
  "Cone_with_variable1",
  "BoxWithMeshRegion1"
]
])

```

##### For Layout Component



```
oDesign.SetDoMeshAssembly(  
  [  
    "NAME:AllSettings",  
    [  
      "NAME:MeshAssembly",  
      [  
        "NAME:LC1_1",  
        "LayoutCompMeshEnvelopeType:=", "Zone",  
        "MeshAssemblyBoundingVolumePadding:=", ["100","200"]  
      ]  
    ]  
  ]  
)
```

## SetFastTransformationForLayoutComponent

Toggles whether layout components in show outlines of objects across layers during view changes. This improves the visualization performance.

| UI Access    | Fast Transformation    |        |                               |
|--------------|------------------------|--------|-------------------------------|
| Parameters   | Name                   | Type   | Description                   |
|              | <Layout ComponentName> | String | Name of the Layout Component. |
|              | Boolean                | String | True or False                 |
| Return Value | None.                  |        |                               |

|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>SetFastTransformationForLayoutComponent ("&lt;LayoutComponentName", &lt;boolean&gt; )</code> |
| <b>Python Example</b> | <code>oDesign.SetFastTransformationForLayoutComponent ("LC1_1", False)</code>                      |

## SetObjectAttributesForLayoutComponent

Sets visualization attributes for layout components in for a named component for layers, nets, and objects.

| UI Access           | Object Attributes              |         |                                                                                                                                                                             |
|---------------------|--------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | Name                           | Type    | Description                                                                                                                                                                 |
|                     | <Layout ComponentName>         | String  | Name of the Layout Component.                                                                                                                                               |
|                     | <ShowDielectric>               | Boolean | True to show dielectrics; false to hide dielectrics                                                                                                                         |
|                     | <DisplayMode>                  | Integer | 0 (for layout mode), 1 (for net mode), and 2 (for object mode)                                                                                                              |
|                     | <ObjectAttributesinLayerMode>  | Array   | List of layers. The three arguments for each layer represent the “Show”, “Wire Frame”, “and “Transparency” options for that layer in the “Object Attributes” dialog box.    |
|                     | <ObjectAttributesinNetMode>    | Array   | List of nets. The three arguments for each net represent the “Show”, “Wire Frame”, “and “Transparency” options for that net in the “Object Attributes” dialog box.          |
|                     | <ObjectAttributesinObjectMode> | Array   | List of objects. The three arguments for each object represent the “Show”, “Wire Frame”, “and “Transparency” options for that object in the “Object Attributes” dialog box. |
| <b>Return Value</b> | None                           |         |                                                                                                                                                                             |

|                      |                                                                                                                                                                                                                                            |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | <code>SetObjectAttributesForLayoutComponent (&lt;LayoutComponentName&gt;, &lt;ShowDielectric&gt;, &lt;DisplayMode&gt;, &lt;ObjectAttributesinLayerMode&gt; &lt;ObjectAttributesinNetMode&gt;, &lt;ObjectAttributesinObjectMode&gt;)</code> |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Python Example**

```
oDesign.SetObjectAttributesForLayoutComponent (
[
    "Name:="                , "LC1_1",
    "ShowDielectric:="      , False,
    "DisplayMode:="        , 2,
    [
        "NAME:ObjectAttributesInLayerMode",
        "GND_1_L2:="        , [True,True,0],
        "GND_2_L4:="        , [True,True,0],
        "GND_3_L6:="        , [True,True,0],
        "GND_4_L9:="        , [True,True,0],
        "GND_5_L11:="       , [True,True,0],
        "Inner_Layer_3_L10:=" , [True,True,0],
        "Top_L1:="          , [True,True,100],
        "VCC1_L7:="         , [True,True,0],
        "VCC2_L8:="         , [True,True,0]
    ],
    [
        "NAME:ObjectAttributesInNetMode",
        "GND:="            , [True,True,29],
```

```

"VCC:="          , [True,True,0],
"neg:="          , [True,True,67],
"pos:="          , [True,True,67]
],
[
  "NAME:ObjectAttributesInObjectMode",
  "line_1:="      , [True,True,0],
  "line_2:="      , [True,True,0],
  "line_3:="      , [True,True,100],
  "line_4:="      , [True,True,100],
  "rect_6:="      , [True,True,0],
  "rect_17:="     , [True,True,0],
  "rect_18:="     , [True,True,0],
  "rect_19:="     , [True,True,0],
  "rect_20:="     , [True,True,0],
  "rect_21:="     , [True,True,0],
  "rect_22:="     , [True,True,0],
  "line_24:="     , [True,True,100],
  "via_0:="       , [True,True,100],
  "via_1:="       , [True,True,100],
  "via_2:="       , [True,True,100],

```

|  |                                             |
|--|---------------------------------------------|
|  | <pre>"via_3:=" , [True,True,100] ] ])</pre> |
|--|---------------------------------------------|

# SetPropValue [Design]

Sets the property value for the active property object.

|                     |                                                                                                                                                                  |             |                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Edit properties on Project Tree objects.                                                                                                                         |             |                                                                                                |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                                                      | <b>Type</b> | <b>Description</b>                                                                             |
|                     | <propPath>                                                                                                                                                       | String      | A child object's property path. See: <a href="#">Object Property Script Function Summary</a> . |
|                     | <Value>                                                                                                                                                          | String      | New property value.                                                                            |
| <b>Return Value</b> | Boolean: <ul style="list-style-type: none"><li>• <b>True</b> - property found and the new value is valid.</li><li>• <b>False</b> - property not found.</li></ul> |             |                                                                                                |

|                       |                                                                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetPropValue(<propPath>, <Value>)                                                                                                     |
| <b>Python Example</b> | <pre>oDesign.SetPropValue("offset", "12mm") oDesign.SetPropValue("Results/S Parameter Plot 1/Display Type", "Rectangular Plot")</pre> |

## SetPropertyValue

Sets the value of a single property belonging to a specific PropServer and PropTab. This function is available with the Project, Design or Editor objects, including definition editors. This is not supported for properties of the following types: ButtonProp, PointProp, V3DPointProp, and VPointProp. Only the ChangeProperty command can be used to modify these properties.

Use the script recording feature and edit a property, and then view the resulting script entry or use GetPropertyValue for the desired property to see the expected format.

| UI Access           | N/A          |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|--------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>  | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                     | <propTab>    | String      | One of the following, where tab titles are shown in parentheses: <ul style="list-style-type: none"> <li>PassedParameterTab ("Parameter Values")</li> <li>DefinitionParameterTab (Parameter Defaults")</li> <li>LocalVariableTab ("Variables" or "Local Variables")</li> <li>ProjectVariableTab ("Project variables")</li> <li>ConstantsTab ("Constants")</li> <li>BaseElementTab ("Symbol" or "Footprint")</li> <li>ComponentTab ("General")</li> <li>Component("Component")</li> <li>CustomTab ("Intrinsic Variables")</li> <li>Quantities ("Quantities")</li> <li>Signals ("Signals")</li> </ul> |
|                     | <propServer> | String      | An object identifier, generally returned from another script method, such as CompInst@R;2;3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                     | <propName>   | String      | Name of the property.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                     | <propValue>  | String      | The value for the property                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Return Value</b> | None.        |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetPropertyValue(<propTab>, <propServer>, <propName>, <propValue>)            |
| <b>Python Example</b> | <code>oEditor.SetPropertyValue("PassedParameterTab", "k", "R", "2200")</code> |

## SetShowLayoutForLayoutComponent

Layout visualization, rather than bounding box, for a Layout Component in design.

|                     |                        |        |                               |
|---------------------|------------------------|--------|-------------------------------|
| <b>UI Access</b>    | <b>Edit Layout...</b>  |        |                               |
| <b>Parameters</b>   | Name                   | Type   | Description                   |
|                     | <Layout ComponentName> | String | Name of the Layout Component. |
|                     | Boolean                | String | True or False                 |
| <b>Return Value</b> | None.                  |        |                               |

|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetShowLayoutForLayoutComponent ("<LayoutComponentName", <boolean> ) |
| <b>Python Example</b> | <code>oDesign.SetShowLayoutForLayoutComponent ("LC1_1", True)</code> |

## SetVariableValue

Sets the value of a variable. To set the value of a project variable, execute this command using `oProject`. To set the value of a local variable, use `oDesign`.

|                     |            |        |                             |
|---------------------|------------|--------|-----------------------------|
| <b>UI Access</b>    | N/A        |        |                             |
| <b>Parameters</b>   | Name       | Type   | Description                 |
|                     | <VarName>  | String | Variable name.              |
|                     | <VarValue> | Value  | New value for the variable. |
| <b>Return Value</b> | None.      |        |                             |

|                       |                                            |
|-----------------------|--------------------------------------------|
| <b>Python Syntax</b>  | SetVariableValue (<VarName>, <VarValue>)   |
| <b>Python Example</b> | oProject.SetVariableValue('\$Var1', '3mm') |

## Solve

Performs one or more simulation. The next script command will not be executed until the simulation(s) are complete.

|                     |                                                                                                                                                                                          |       |                                           |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------|
| <b>UI Access</b>    | Select solution setup(s). Right-click and select <b>Analyze</b> .                                                                                                                        |       |                                           |
| <b>Parameters</b>   | Name                                                                                                                                                                                     | Type  | Description                               |
|                     | <SimulationNames>                                                                                                                                                                        | Array | Array containing string simulation names. |
| <b>Return Value</b> | Integer: <ul style="list-style-type: none"> <li>• <b>0</b> – Simulation(s) completed.</li> <li>• <b>1</b> – Simulation error.</li> <li>• <b>-1</b> – Command execution error.</li> </ul> |       |                                           |

|                       |                                               |
|-----------------------|-----------------------------------------------|
| <b>Python Syntax</b>  | Solve <SimulationNames>                       |
| <b>Python Example</b> | oDesign.Solve(['Setup1', 'Setup2', 'Setup3']) |



## Undo [Design]

Cancels the last design-level command.

|                     |                       |
|---------------------|-----------------------|
| <b>UI Access</b>    | <b>Edit &gt; Undo</b> |
| <b>Parameters</b>   | None.                 |
| <b>Return Value</b> | None.                 |

|                       |                             |
|-----------------------|-----------------------------|
| <b>Python Syntax</b>  | Undo()                      |
| <b>Python Example</b> | <code>oDesign.Undo()</code> |

## Undo (Layout Editor)

Undo the last operation

*Command:* Edit>Undo

*Syntax:* Undo

*Return Value:* None

*Parameters:* None

*Example:* `oDesign.Undo`

## ValidateCircuit (Layout Editor)

*Use:* Validates a HFSS 3D Layout design for consistency

*Command:* None

*Syntax:* ValidateCircuit

*Return Value:* Boolean:

- 1 - design is valid
- 0 - design is not valid

*Parameters:* None

*Example:* oDesign.ValidateCircuit

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left blank.

## 8 - 3D Modeler Editor Script Commands

3D Modeler commands should be executed by the "3D Modeler" editor:

```
Set oEditor = oDesign.SetActiveEditor("3D Modeler")
```

```
oEditor.<CommandName>
```

### Conventions Used in this Chapter:

#### <AttributesArray>

<AttributesArray> takes the following structure:

```
Array("NAME:Attributes",  
      "Name:=", <string>,  
      "Flags:=", <string>,  
      "Color:=", <string>,  
      "Transparency:=", <value>,  
      "PartCoordinateSystem:=", <string>,  
      "UDMId:=", <string>,  
      "MaterialValue:=", <string>,  
      "SurfaceMaterialValue:=", <string>,  
      "Solveinside:=", <boolean>,  
      "ShellElement:=", <boolean>,  
      "ShellElementThickness:=", <string>,  
      "IsMaterialEditable:=", <boolean>,
```

```
"UseMaterialAppearance:=", <boolean>,  
"IsLightweight:=", <boolean>)
```

Where:

- **Flags** – Takes a string containing "NonModel" and/or "Wireframe", separated by the # character. For example, "NonModel#Wireframe".
- **Color** – Takes a string containing an RGB triple, formatted as "(*<RGB>*)". For example, "(255 255 255)".
- **Transparency** – Takes a value between 0 and 1.
- **PartCoordinateSystem** – Orientation of the primitive. The name of one of the defined coordinate systems should be specified.
- **UDMId** – Takes a string containing an ID.
- **MaterialValue** – Takes a string of the material name.
- **SurfaceMaterialValue** – Takes a string of the surface material name.
- **Solveinside** – Takes a boolean value.
- **ShellElement** – Takes a boolean value specifying whether or not a shell element is present.
- **ShellElementThickness** – Takes a string containing the shell element thickness. If element is not present, pass empty string.
- **IsMaterialEditable** – Takes a boolean value.
- **IsLightweight** – Takes a boolean value.

### <SelectionsArray>

<SelectionsArray> typically takes the following structure:

```
Array("NAME:Selections",  
"Selections:=", <string>)
```

Where:

- **Selections** – Takes a comma-separated list of parts on which to perform the action. For example, "Rect1, Rect2, Rect3".

In some cases, <SelectionsArray> takes additional parameters:

```
Array("NAME:Selections",
    "AllowRegionDependentPartSelectionForPMLCreation:=", <boolean>,
    "AllowRegionSelectionForPMLCreation:=", <boolean>,
    "Selections:=", <string>,
    "NewPartsModelFlag:=" , <string>,
    "UseCurrentCS:=", <boolean>)
```

Where:

- **AllowRegionDependentPartSelectionForPMLCreation** – Takes a boolean value. See individual script for whether this parameter is required.
- **AllowRegionSelectionForPMLCreation** – Takes a boolean value. See individual script for whether this parameter is required.
- **Selections** – Takes a comma-separated list of parts on which to perform the action. For example, "Rect1, Rect2, Rect3".
- **NewPartsModelFlag** – Takes either string "Model" or string "Nonmodel". See individual script for whether this parameter is required.
- **UseCurrentCS** – Takes a boolean value. See individual script for whether this parameter is required. Use [GetActiveCoordinateSystem](#) to determine the current CS.

#### Note:

*Selections* is the only parameter required in *all* 3D Modeler Editor scripts. See individual scripts for additional required parameters.

## Organization

3D Modeler editor scripts are organized into the following categories:

[Draw Menu Commands](#)

[Edit Menu Commands](#)

[Modeler Menu Commands](#)

[Cable Modeling Commands](#)

[Other oEditor Commands](#)

## **Draw Menu Commands**

[Create3DComponent](#)

[CreateBondwire](#)

[CreateBox](#)

[CreateCircle](#)

[CreateCone](#)

[CreateCutplane](#)

[CreateCylinder](#)

[CreateEllipse](#)

[CreateEquationCurve](#)

[CreateEquationSurface](#)

[CreateHelix](#)

[CreatePoint](#)

[CreatePolyline](#)

[CreateRectangle](#)

[CreateRegion](#)

[CreateRegularPolygon](#)

[CreateRegularPolyhedron](#)

[CreateSphere](#)

[CreateSpiral](#)

[CreateSubregion](#)

[CreateTorus](#)

[CreateUserDefinedPart](#)

[Edit3DComponent](#)

[EditPolyline](#)

[Get3DComponentDefinitionNames](#)

[Get3DComponentInstanceNames](#)

[Get3DComponentMaterialNames](#)

[Get3DComponentMaterialProperties](#)

[Get3DComponentParameters](#)

[Insert3DComponent](#)

[InsertPolylineSegment](#)

[SweepAlongPath](#)

[SweepAlongVector](#)

[SweepAroundAxis](#)

[SweepFacesAlongNormal](#)

[SweepFacesAlongNormalWithAttributes](#)



[UpdateComponentDefinition](#)

# Create3DComponent

Creates a 3D component.

| UI Access  | Draw > 3D Component Library > Create 3D Component. |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------|----------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                               | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|            | <CreateData>                                       | Array | <p>Structured array containing geometry data:</p> <pre>(Array["NAME:CreateData",     "ComponentName:=", "&lt;string&gt;",     "Company:=", "&lt;string&gt;",     "Company URL:=", "&lt;string&gt;",     "Model Number:=", "&lt;string&gt;",     "Help URL:=" , "&lt;string&gt;",     "Version:=", "&lt;string&gt;",     "Notes:=", "&lt;string&gt;",     "IconType:=", "&lt;string&gt;",     "Owner:=", "&lt;string&gt;",     "Email:=", "&lt;string&gt;",     "Date:=", "&lt;string&gt;", #Component creation date     "HasLabel:=", &lt;boolean&gt;,     "IsEncrypted:=", &lt;boolean&gt;</pre> |

|  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  | <pre> "AllowEdit:=", &lt;boolean&gt;, "SecurityMessage:=" , "&lt;string&gt;", "Password:=" , "&lt;string&gt;", "EditPassword:=" , "&lt;string&gt;", "PasswordType:=" , "&lt;string&gt;", "HideContents:=" , &lt;boolean&gt;, "ReplaceNames:=" , &lt;boolean&gt;, #for objects and materials "ComponentOutline:=" , "&lt;string&gt;","#None" or "Bounding Box" "IncludedParts:=" , [Array of partnames], "HiddenParts:=" , [Array of hidden parts], "IncludedCS:=" , [Array of included CS], "DefaultHandle:=" , "&lt;reference CS&gt;" "IncludedParameters:=" , [Array of included parameters], "IncludedDependentParameters:=", [Array of dependent parameters], "ParameterDescription:=", &lt;array&gt; "IsLicensed:=" , &lt;boolean&gt; "LicensingDllName:=" , "&lt;string&gt;" "VendorComponentIdentifier:=", "&lt;string&gt;" "PublicKeyFile:=" , "&lt;string&gt;" ] </pre> |
|--|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                     |                           |        |                                                                                                                                                               |
|---------------------|---------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <b>&lt;DesignData&gt;</b> | Array  | Structured array containing design data:<br>Array["NAME:DesignData",<br>"Boundaries:=", <array>,<br>"Excitations:=", <array>,<br>"MeshOperations:=", <array>] |
|                     | <b>&lt;FileName&gt;</b>   | String | Full file path to 3D component.                                                                                                                               |
|                     | <b>&lt;ImageFile&gt;</b>  | Array  | Optional. Structured array containing file path of 3D component image:<br>Array["NAME:ImageFile",<br>"ImageFile:=", <string>])                                |
| <b>Return Value</b> | None.                     |        |                                                                                                                                                               |

|                       |                                                                                                                                                                                                                                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Create3DComponent(<CreateData>, <DesignData>, <FileName>, <ImageFile>)                                                                                                                                                                                                                                                                        |
| <b>Python Example</b> | <pre>oEditor.Create3DComponent(<br/>[<br/>    "NAME:CreateData",<br/>    "ComponentName:=", "Connector",<br/>    "Company:=", "",<br/>    "Company URL:=", "",<br/>    "Version:=", "1.0",<br/>    "Notes:=", "",<br/>    "Owner:=", "",<br/>    "IconType:=", "",<br/>    "Email:=", "",<br/>    "Date:=", "11:41:01 AM Aug 28, 2024",</pre> |

```

    "HasLabel:=", false,
    "IsEncrypted:=",      , False,
    "AllowEdit:=",      , False,
    "SecurityMessage:=", , "",
    "Password:=",      , "",
    "EditPassword:=",   , "",
    "PasswordType:=",   , "UnknownPassword",
    "HideContents:=",   , True,
    "ReplaceNames:=",   , True,
    "ComponentOutline:=",      , "None",
    "IncludedParts:=", [ "Box1", "Cylinder1", "Cone1"],
    "IncludedCS:=", [ "RelativeCS1"],
    "DefaultHandle:=", "Global",
    "IncludedParameters:=", [ "htcone", "lr", "htcyl", "zs", "radcyl", "xs", "$rp",
    "$con"],
    "IncludedDependentParameters:=", [],
    "ParameterDescription:=", [],
    "IsLicensed:=",      , False,
    "LicensingDllName:=", , "",
    "VendorComponentIdentifier:=", "",
    "PublicKeyFile:=",    , ""
  ],
  [
    "NAME:DesignData",
    "Boundaries:=", [ "PerfE1", "FiniteCond1"],
    "Excitations:=", [ "1"],
    "MeshOperations:=", []
  ],
  "C:/tmp/Connector.a3dcomp",
  [
    "NAME:ImageFile", "ImageFile:=", ""
  ]
)

```

### Example with an External Circuit:

```
oDesign = oProject.SetActiveDesign("Maxwell3DDesign1")
oEditor = oDesign.SetActiveEditor("3D Modeler")
oEditor.Create3DComponent(
[
  "NAME:CreateData",
  "ComponentName:=" , "Maxwell3DDesign1",
  "Company:=" , "",
  "Company URL:=" , "",
  "Model Number:=" , "",
  "Help URL:=" , "",
  "Version:=" , "1.0",
  "Notes:=" , "",
  "IconType:=" , "",
  "Owner:=" , "",
  "Email:=" , "",
  "Date:=" , "3:36:11 PM Feb 14, 2025",
  "HasLabel:=" , False,
  "IsEncrypted:=" , False,
  "AllowEdit:=" , False,
  "SecurityMessage:=" , "",
  "Password:=" , "",
  "EditPassword:=" , "",
  "PasswordType:=" , "UnknownPassword",
  "HideContents:=" , True,
  "ReplaceNames:=" , True,
  "ComponentOutline:=" , "None",
  "IncludedParts:=" , ["Box1"],
  "HiddenParts:=" , [],
  "IncludedCS:=" , [],
  "DefaultHandle:=" , "Global",
  "IncludedParameters:=" , [],
  "IncludedDependentParameters:=" , [],
  "ParameterDescription:=" , [],
```

```
"IsLicensed:=" , False,
"LicensingDllName:=" , "",
"VendorComponentIdentifier:=", "",
"PublicKeyFile:=" , ""
],
[
  "NAME:DesignData",
  "Excitations:=" , ["CoilTerminal1","CoilTerminal2","Winding1","External Circuit"]
],
"F:/Designs/ComponentExternalCircuit/test.a3dcomp",
[
  "NAME:ImageFile",
  "ImageFile:=" , ""
])
```

CreateBondwire

Creates a bondwire.

| UI Access  | Draw > Bondwire. |       |                                                                                                                                                                                                                                                                                               |
|------------|------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name             | Type  | Description                                                                                                                                                                                                                                                                                   |
|            | <Parameters>     | Array | Structured array.<br><br>Array ("NAME:BondwireParameters",<br><br>"WireType:=", <string("JEDEC_4Points", "JEDEC_5Points", or "LOW")>,<br><br>"WireDiameter:=", <string>,<br><br>"NumSides:=", <value>,<br><br>"XPadPos:=", <value>,<br><br>"YPadPos:=", <value>,<br><br>"ZPadPos:=", <value>, |

|                     |                   |       |                                                                                                                                                                                                                                                                                                             |
|---------------------|-------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                   |       | <pre> "XDir:=", &lt;value&gt;, "YDir:=", &lt;value&gt;, "ZDir:=", &lt;value&gt;, "Distance:=", &lt;value&gt;, "h1:=", &lt;value&gt;, "h2:=", &lt;value&gt;, "alpha:=", &lt;value&gt;, "beta:=", &lt;value&gt;, "WhichAxis:=", &lt;string("X","Y", or "Z")&gt;, "ReverseDirection:=", &lt;boolean&gt; </pre> |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> .                                                                                                                                                                                                                                                    |
| <b>Return Value</b> | None.             |       |                                                                                                                                                                                                                                                                                                             |

|                       |                                                                                                                                                                                                                                                      |  |  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | CreateBondwire(<Parameters>, <Attributes>)                                                                                                                                                                                                           |  |  |
| <b>Python Example</b> | <pre> oEditor.CreateBondwire( ["NAME:BondwireParameters",     "WireType:="                , "JEDEC_4Points",     "WireDiameter:="            , "0.025mm",     "NumSides:="                 , "6",     "XPadPos:="                  , "1.6mm", </pre> |  |  |

```

"YPadPos:="          , "-0.2mm",
"ZPadPos:="          , "0mm",
"XDir:="             , "-2.2mm",
"YDir:="             , "-1.4mm",
"ZDir:="             , "0mm",
"Distance:="         , "2.60768096208106mm",
"h1:="               , "0.2mm",
"h2:="               , "0mm",
"alpha:="            , "80deg",
"beta:="             , "0",
"WhichAxis:="        , "Z",
"ReverseDirection:=" , True
],
["NAME:Attributes",
  "Name:="            , "Bondwire1",
  "Flags:="           , "",
  "Color:="           , "(143 175 143)",
  "Transparency:="    , 0,
  "PartCoordinateSystem:=", "Global",
  "UDMId:="           , "",
  "MaterialValue:="   , "\"vacuum\"",

```



|  |                                                                                                                                                                                                                                                  |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"SurfaceMaterialValue:=", "\"\"\"", "SolveInside:="      , True, "ShellElement:="      , False, "ShellElementThickness:=", "0mm", "IsMaterialEditable:=" , True, "UseMaterialAppearance:=", False, "IsLightweight:="      , False ] )</pre> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CreateBox

Creates a box.

| UI Access  | Draw > Box.  |       |                                                                                                                                                                                                       |
|------------|--------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name         | Type  | Description                                                                                                                                                                                           |
|            | <Parameters> | Array | Structured array.<br><br>Array ("NAME:BoxParameters",<br>"XPosition:=", <string>,<br>"YPosition:=", <string>,<br>"ZPosition:=", <string>,<br>"XSize:="      , <string>,<br>"YSize:="      , <string>, |

|                     |                   |       |                                                          |
|---------------------|-------------------|-------|----------------------------------------------------------|
|                     |                   |       | "ZSize:=" , <string>)                                    |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> . |
| <b>Return Value</b> | None.             |       |                                                          |

| Python Syntax         | CreateBox(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.CreateBox( ["NAME:BoxParameters",     "XPosition:="          , "0.5mm",     "YPosition:="          , "-6.5mm",     "ZPosition:="          , "0mm",     "XSize:="              , "2mm",     "YSize:="              , "1.5mm",     "ZSize:="              , "1.5mm" ], ["NAME:Attributes",     "Name:="              , "Box3",     "Flags:="             , "",     "Color:="             , "(143 175 143)",     "Transparency:="      , 0,     "PartCoordinateSystem:=" , "Global",     "UDMId:="             , "", </pre> |

|  |                                                                                                                                                                                                                                                                                                 |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"MaterialValue:="      , "\"copper\"", "SurfaceMaterialValue:=" , "\"\"", "SolveInside:="        , False, "ShellElement:="        , False, "ShellElementThickness:=", "0mm", "IsMaterialEditable:="   , True, "UseMaterialAppearance:=", False, "IsLightweight:="        , False  ])</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CreateCircle

Creates a circle.

| UI Access  | Draw > Circle. |       |                                                                                                                                                                                 |
|------------|----------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name           | Type  | Description                                                                                                                                                                     |
|            | <Parameters>   | Array | Structured array.<br><br>Array("NAME:CircleParameters",<br><br>"IsCovered:=", <boolean>,<br><br>"XCenter:=", <value>,<br><br>"YCenter:=", <value>,<br><br>"ZCenter:=", <value>, |

|                     |                   |       |                                                                                                 |
|---------------------|-------------------|-------|-------------------------------------------------------------------------------------------------|
|                     |                   |       | "Radius:=", <value>,<br>"WhichAxis:=", <string><br>"NumSegments:=", <string containing integer> |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> .                                        |
| <b>Return Value</b> | None.             |       |                                                                                                 |

| Python Syntax         | CreateCircle(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.CreateCircle( ["NAME:CircleParameters",     "IsCovered:="                , True,     "XCenter:="                  , "5.5mm",     "YCenter:="                  , "-3mm",     "ZCenter:="                  , "0mm",     "Radius:="                   , "0.707106781186548mm",     "WhichAxis:="                , "Z",     "NumSegments:="              , "0" ], ["NAME:Attributes",     "Name:="                     , "Circle1",     "Flags:="                    , "",     "Color:="                    , "(143 175 143)", </pre> |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"Transparency:="          , 0, "PartCoordinateSystem:=", "Global", "UDMId:="                  , "", "MaterialValue:="          , "\"copper\"", "SurfaceMaterialValue:=", "\"\"", "SolveInside:="            , False, "ShellElement:="           , False, "ShellElementThickness:=", "0mm", "IsMaterialEditable:="     , True, "UseMaterialAppearance:=", False, "IsLightweight:="          , False  l)</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CreateCone

Creates a cone.

| UI Access  | Draw > Cone. |       |                                                                                 |
|------------|--------------|-------|---------------------------------------------------------------------------------|
| Parameters | Name         | Type  | Description                                                                     |
|            | <Parameters> | Array | Structured array.<br><br>Array("NAME:ConeParameters",<br>"XCenter:=", <string>, |

|                     |                   |       |                                                                                                                                                                 |
|---------------------|-------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                   |       | "YCenter:=", <string>,<br>"ZCenter:=", <string>,<br>"WhichAxis:=", <string>,<br>"Height:=", <string>,<br>"BottomRadius:=", <string>,<br>"TopRadius:=", <string> |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> .                                                                                                        |
| <b>Return Value</b> | None.             |       |                                                                                                                                                                 |

| Python Syntax         | CreateCone(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.CreateCone ( ["NAME:ConeParameters",   "XCenter:="                , "3mm",   "YCenter:="                , "-4.5mm",   "ZCenter:="                , "0mm",   "WhichAxis:="              , "Z",   "Height:="                  , "2.5mm",   "BottomRadius:="           , "2.82842712474619mm",   "TopRadius:="               , "2.23606797749979mm" ], ["NAME:Attributes", </pre> |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"Name:="                , "Cone1", "Flags:="                , "", "Color:="                , "(143 175 143)", "Transparency:="        , 0, "PartCoordinateSystem:=", "Global", "UDMId:="                , "", "MaterialValue:="        , "\"copper\"", "SurfaceMaterialValue:=", "\"\"", "SolveInside:="          , False, "ShellElement:="          , False, "ShellElementThickness:=", "0mm", "IsMaterialEditable:="    , True, "UseMaterialAppearance:=", False, "IsLightweight:="         , False  ]</pre> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CreateCutplane

Creates a cutplane.

|           |               |
|-----------|---------------|
| UI Access | Draw > Plane. |
|-----------|---------------|

| <b>Parameters</b>   | Name              | Type  | Description                                                                                                                                                                                                                     |
|---------------------|-------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <Parameters>      | Array | Structured array.<br><br>["NAME:PlaneParameters",<br>"PlaneBaseX=", <string>,<br>"PlaneBaseY=", <string>,<br>"PlaneBaseZ=", <string>,<br>"PlaneNormalX=", <string>,<br>"PlaneNormalY=", <string>,<br>"PlaneNormalZ=", <string>] |
|                     | <AttributesArray> | Array | See: <a href="#">AttributesArray</a> . CreateCutplane only takes the Name and Color attributes.                                                                                                                                 |
| <b>Return Value</b> | None.             |       |                                                                                                                                                                                                                                 |

| Python Syntax         | CreateCutplane(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                            |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oEditor.CreateCutplane( ["NAME:PlaneParameters",     "PlaneBaseX="           , "-0.6mm",     "PlaneBaseY="           , "-0.8mm",     "PlaneBaseZ="           , "0mm",     "PlaneNormalX="         , "1.2mm",     "PlaneNormalY="         , "0.2mm",     "PlaneNormalZ="         , "0mm"] )</pre> |



|  |                                                                                                                                         |
|--|-----------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>],<br/>["NAME:Attributes",<br/>  "Name:="                , "Plane1",<br/>  "Color:="                , "(143 175 143)"<br/>])</pre> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------|

CreateCylinder

Creates a cylinder.

| UI Access  | Draw > Cylinder.  |       |                                                                                                                                                                                                                                                                     |
|------------|-------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name              | Type  | Description                                                                                                                                                                                                                                                         |
|            | <Parameters>      | Array | Structured array.<br><br>Array("NAME:CylinderParameters",<br>"XCenter:=", <string>,<br>"YCenter:=", <string>,<br>"ZCenter:=", <string>,<br>"Radius:=", <string>,<br>"Height:=", <string>,<br>"WhichAxis:=", <string>,<br>"NumSides:=", <string containing integer>) |
|            | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> .                                                                                                                                                                                                            |

|              |       |
|--------------|-------|
| Return Value | None. |
|--------------|-------|

| Python Syntax  | CreateCylinder(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.CreateCylinder(<br/>    ["NAME:CylinderParameters",<br/>        "XCenter:="                , "6mm",<br/>        "YCenter:="                , "-4.5mm",<br/>        "ZCenter:="                , "0mm",<br/>        "Radius:="                 , "0.5mm",<br/>        "Height:="                 , "4.5mm",<br/>        "WhichAxis:="              , "Z",<br/>        "NumSides:="               , "0"<br/>    ],<br/>    ["NAME:Attributes",<br/>        "Name:="                   , "Cylinder1",<br/>        "Flags:="                  , "",<br/>        "Color:="                  , "(143 175 143)",<br/>        "Transparency:="           , 0,<br/>        "PartCoordinateSystem:="   , "Global",<br/>        "UDMId:="                  , "",<br/>        "MaterialValue:="          , "\"copper\"",</pre> |

|  |                                                                                                                                                                                                                                |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"SurfaceMaterialValue:=", "\"\"\"", "SolveInside:=", False, "ShellElement:=", False, "ShellElementThickness:=", "0mm", "IsMaterialEditable:=", True, "UseMaterialAppearance:=", False, "IsLightweight:=", False ] )</pre> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CreateEllipse

Creates an ellipse.

| UI Access  | Draw > Ellipse. |       |                                                                                                                                                                                                |
|------------|-----------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name            | Type  | Description                                                                                                                                                                                    |
|            | <Parameters>    | Array | Structured array.<br><br>Array("NAME:EllipseParameters",<br>"IsCovered:=", <string>,<br>"XCenter:=", <string>,<br>"YCenter:=", <string>,<br>"ZCenter:=", <string>,<br>"MajRadius:=", <string>, |

|                     |                   |       |                                                                               |
|---------------------|-------------------|-------|-------------------------------------------------------------------------------|
|                     |                   |       | "Ratio:=", <string>,<br>"WhichAxis:=", <string>,<br>"NumSegments:=", <string> |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> .                      |
| <b>Return Value</b> | None.             |       |                                                                               |

| Python Syntax         | CreateEllipse(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.CreateEllipse( ["NAME:EllipseParameters",   "IsCovered:="                , True,   "XCenter:="                  , "0.6mm",   "YCenter:="                  , "-0.6mm",   "ZCenter:="                  , "0mm",   "MajRadius:="                , "0.2mm",   "Ratio:="                    , "7",   "WhichAxis:="                , "Z",   "NumSegments:="              , "0" ], ["NAME:Attributes",   "Name:="                    , "Ellipse1",   "Flags:="                   , "", </pre> |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"Color:="                , "(143 175 143)", "Transparency:="          , 0, "PartCoordinateSystem:=", "Global", "UDMId:="                  , "", "MaterialValue:="          , "\"copper\"", "SurfaceMaterialValue:=", "\"\"", "SolveInside:="            , False, "ShellElement:="           , False, "ShellElementThickness:=", "0mm", "IsMaterialEditable:="     , True, "UseMaterialAppearance:=", False, "IsLightweight:="          , False  ])</pre> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CreateEquationCurve

Creates an equation-based curve.

| UI Access  | Draw > Equation-Based Curve. |       |                                                                     |
|------------|------------------------------|-------|---------------------------------------------------------------------|
| Parameters | Name                         | Type  | Description                                                         |
|            | <Parameters>                 | Array | Structured array.<br><br>Array("NAME:EquationBasedCurveParameters", |

|                     |                   |       |                                                                                                                                                                                                                                   |
|---------------------|-------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                   |       | "XtFunction:=", <string>,<br>"YtFunction:=", <string>,<br>"ZtFunction:=", <string>,<br>"tStart:=", <string>,<br>"tEnd:=", <string>,<br>"NumOfPointsOnCurve:=", <string>,<br>"Version:=", <integer>),<br><polylineArray(optional)> |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> .                                                                                                                                                                          |
| <b>Return Value</b> | None.             |       |                                                                                                                                                                                                                                   |

| Python Syntax         | CreateEquationCurve(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oEditor.CreateEquationCurve( ["NAME:EquationBasedCurveParameters",     "XtFunction:="          , "1",     "YtFunction:="          , "3",     "ZtFunction:="          , "32",     "tStart:="              , "1",     "tEnd:="                 , "3",     "NumOfPointsOnCurve:="  , "0",     "Version:="              , 1,</pre> |

```
[ "NAME:PolylineXSection",  
  "XSectionType:="      , "None",  
  "XSectionOrient:="    , "Auto",  
  "XSectionWidth:="     , "0",  
  "XSectionTopWidth:="  , "0",  
  "XSectionHeight:="    , "0",  
  "XSectionNumSegments:=" , "0",  
  "XSectionBendType:="   , "Corner"  
]  
],  
[ "NAME:Attributes",  
  "Name:="              , "EquationCurve1",  
  "Flags:="             , "",  
  "Color:="             , "(143 175 143)",  
  "Transparency:="      , 0,  
  "PartCoordinateSystem:=", "Global",  
  "UDMId:="             , "",  
  "MaterialValue:="      , "\"copper\"",  
  "SurfaceMaterialValue:=", "\"\"",  
  "SolveInside:="        , False,
```

|  |                                                                                                                                                                                            |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "ShellElement:="          , False, "ShellElementThickness:=", "0mm", "IsMaterialEditable:="    , True, "UseMaterialAppearance:=", False, "IsLightweight:="         , False l) </pre> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CreateEquationSurface

Creates an equation-based surface.

| UI Access         | Draw > Equation-Based Surface. |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|--------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                           | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                   | <Parameters>                   | Array | <p>Structured array.</p> <pre> Array("NAME:EquationBasedSurfaceParameters",     "XuvFunction:=" , &lt;string equation containing Func- tion, Operators and/or quantities _u, _v, or PI&gt;,     "YuvFunction:=" , &lt;string equation containing Func- tion, Operators and/or quantities _u, _v, or PI&gt;,     "ZuvFunction:=" , &lt;string equation containing Func- tion, Operators and/or quantities _u, _v, or PI&gt;,     "uStart:=" , &lt;string&gt;,     "uEnd:=" , &lt;string&gt;,     "vStart:=" , &lt;string&gt;,     "vEnd:=" , &lt;string&gt;, </pre> |



|                     |                   |       |                                                          |
|---------------------|-------------------|-------|----------------------------------------------------------|
|                     |                   |       | "Version:=" , <integer>)                                 |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> . |
| <b>Return Value</b> | None.             |       |                                                          |

| Python Syntax         | CreateEquationSurface(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.CreateEquationSurface ( ["NAME:EquationBasedSurfaceParameters",     "XuvFunction:="          , "_u",     "YuvFunction:="          , "_v",     "ZuvFunction:="          , "sin(_u)+cos(_v)",     "uStart:="                , "1",     "uEnd:="                  , "10",     "vStart:="                , "1",     "vEnd:="                  , "10",     "Version:="               , 1 ], ["NAME:Attributes",     "Name:="                  , "EquationSurface1",     "Flags:="                 , "",     "Color:="                 , "(143 175 143)", </pre> |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "Transparency:="          , 0, "PartCoordinateSystem:=", "Global", "UDMId:="                  , "", "MaterialValue:="          , "\"copper\"", "SurfaceMaterialValue:=", "\"\"", "SolveInside:="            , False, "ShellElement:="           , False, "ShellElementThickness:=", "0mm", "IsMaterialEditable:="     , True, "UseMaterialAppearance:=", False, "IsLightweight:="          , False 1) </pre> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CreateHelix

Creates a helix based on a sweep of specified objects.

| UI Access  | Draw > Helix.     |       |                                                                                                                    |
|------------|-------------------|-------|--------------------------------------------------------------------------------------------------------------------|
| Parameters | Name              | Type  | Description                                                                                                        |
|            | <SelectionsArray> | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                           |
|            | <Parameters>      | Array | Structured array.                                                                                                  |
|            |                   |       | <pre> Array("NAME:HelixParameters",       "XCenter:=" , &lt;string&gt;,       "YCenter:=" , &lt;string&gt;, </pre> |

|              |       |  |                                                                                                                                                                                                                                                                              |
|--------------|-------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |       |  | <pre>"ZCenter:=" , &lt;string&gt;, "XStartDir:=" , &lt;string&gt;, "YStartDir:=" , &lt;string&gt;, "ZStartDir:=" , &lt;string&gt;, "NumThread:=" , &lt;string&gt;, "RightHand:=" , &lt;boolean&gt;, "RadiusIncrement:=" , &lt;string&gt;, "Thread:=" , &lt;string&gt;)</pre> |
| Return Value | None. |  |                                                                                                                                                                                                                                                                              |

|                |                                                                                                                                                                                                                                                                                      |  |  |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Python Syntax  | CreateHelix(<SelectionsArray>, <Parameters>)                                                                                                                                                                                                                                         |  |  |
| Python Example | <pre>oEditor.CreateHelix( ["NAME:Selections",   "Selections:="          , "EquationSurface2",   "NewPartsModelFlag:="   , "Model" ], ["NAME:HelixParameters",   "XCenter:="             , "10000mm",   "YCenter:="             , "40000mm",   "ZCenter:="             , "0mm",</pre> |  |  |

|  |                                                                                                                                                                                                                                                   |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "XStartDir:="          , "0mm", "YStartDir:="          , "10000mm", "ZStartDir:="          , "0mm", "NumThread:="          , "1", "RightHand:="          , True, "RadiusIncrement:="    , "0mm", "Thread:="              , "1mm" ] ) </pre> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CreatePoint

Creates a point.

| UI Access    | Draw > Point.     |       |                                                                                                                                                                  |
|--------------|-------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name              | Type  | Description                                                                                                                                                      |
|              | <Parameters>      | Array | Structured array.<br><br><pre> Array("NAME:PointParameters",     "PointX:=", &lt;value&gt;,     "PointY:=", &lt;value&gt;,     "PointZ:=", &lt;value&gt;) </pre> |
|              | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> . CreatePoint takes only the Name and Color attributes.                                                   |
| Return Value | None.             |       |                                                                                                                                                                  |

|                |                                                                                                                                                                                                                                                                                                                                 |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | CreatePoint(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                                                         |
| Python Example | <pre>oEditor.CreatePoint(<br/><br/>    ["NAME:PointParameters",<br/>        "PointX:=" , "0.2mm",<br/><br/>        "PointY:=" , "-0.2mm",<br/><br/>        "PointZ:=" , "0mm"<br/>    ],<br/>    ["NAME:Attributes",<br/><br/>        "Name:=" , "Point1",<br/><br/>        "Color:=" , "(143 175 143) "<br/><br/>    ] )</pre> |

CreatePolyline

Creates a polyline.

|            |              |      |             |
|------------|--------------|------|-------------|
| UI Access  | Draw > Line. |      |             |
| Parameters | Name         | Type | Description |

|                     |                                      |       |                                                                                                                                                                                    |
|---------------------|--------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <b>&lt;Parameters&gt;</b>            | Array | Structured array.<br><br>Array("NAME:PolylineParameters",<br>"IsPolylineCovered:=", <bool>,<br>"IsPolylineClosed:=", <bool>,<br><PolylinePointsArray>,<br><PolylineSegmentsArray>) |
|                     | <b>&lt;PolylinePointsArray&gt;</b>   | Array | Array("NAME:PolylinePoints", <OnePointArray>,<br><OnePointArray>, ...)                                                                                                             |
|                     | <b>&lt;OnePointArray&gt;</b>         | Array | Array("NAME:PLPoint",<br>"X:=", <value>,<br>"Y:=", <value>,<br>"Z:=", <value>))                                                                                                    |
|                     | <b>&lt;PolylineSegmentsArray&gt;</b> | Array | <PolylineSegmentsArray><br><br>Array("NAME:PolylineSegments",<br><OneSegmentArray>, <OneSegmentArray>, ...)                                                                        |
|                     | <b>&lt;OneSegmentArray&gt;</b>       | Array | Array("NAME:PLSegment",<br>"SegmentType:=", <"Line", "Arc", "Spline", or<br>"AngularArc">,<br>"StartIndex:=", <value>,<br>"NoOfPoints:=", <value>)                                 |
|                     | <b>&lt;AttributesArray&gt;</b>       | Array | Structured array. See: <a href="#">AttributesArray</a> .                                                                                                                           |
| <b>Return Value</b> | None.                                |       |                                                                                                                                                                                    |

| Python Syntax  | CreatePolyline(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.CreatePolyline(<br/>    ["NAME:PolylineParameters",<br/>        "IsPolylineCovered:=" , True,<br/>        "IsPolylineClosed:=" , False,<br/>    ["NAME:PolylinePoints",<br/>        ["NAME:PLPoint",<br/>            "X:=" , "20000mm",<br/>            "Y:=" , "-20000mm",<br/>            "Z:=" , "0mm"<br/>        ],<br/>        ["NAME:PLPoint",<br/>            "X:=" , "-90000mm",<br/>            "Y:=" , "20000mm",<br/>            "Z:=" , "0mm"<br/>        ],<br/>        ["NAME:PLPoint",<br/>            "X:=" , "10000mm",<br/>            "Y:=" , "-140000mm",<br/>            "Z:=" , "0mm"</pre> |

```
]
],
["NAME:PolylineSegments",
  ["NAME:PLSegment",
    "SegmentType:="      , "Line",
    "StartIndex:="       , 0,
    "NoOfPoints:="       , 2
  ],
  ["NAME:PLSegment",
    "SegmentType:="      , "Line",
    "StartIndex:="       , 1,
    "NoOfPoints:="       , 2
  ]
],
["NAME:PolylineXSection",
  "XSectionType:="      , "None",
  "XSectionOrient:="    , "Auto",
  "XSectionWidth:="     , "0mm",
  "XSectionTopWidth:="  , "0mm",
  "XSectionHeight:="    , "0mm",
  "XSectionNumSegments:=" , "0",
```



```
"XSectionBendType:="      , "Corner"
]],
["NAME:Attributes",
  "Name:="                  , "Polyline1",
  "Flags:="                 , "",
  "Color:="                 , "(143 175 143)",
  "Transparency:="         , 0,
  "PartCoordinateSystem:=", "Global",
  "UDMId:="                 , "",
  "MaterialValue:="         , "\"copper\"",
  "SurfaceMaterialValue:=", "\"\"",
  "SolveInside:="          , False,
  "ShellElement:="          , False,
  "ShellElementThickness:=", "0mm",
  "IsMaterialEditable:="    , True,
  "UseMaterialAppearance:=", False,
  "IsLightweight:="         , False
])
```

## CreateRectangle

Creates a rectangle.

| UI Access    | Draw > Rectangle. |       |                                                                                                                                                                                                                                                                                                                                                   |
|--------------|-------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name              | Type  | Description                                                                                                                                                                                                                                                                                                                                       |
|              | <Parameters>      | Array | Structured array.<br><br><pre>Array("NAME:RectangleParameters",       "IsCovered:=" , &lt;boolean&gt;,       "XStart:=" , &lt;string&gt;,       "YStart:=" , &lt;string&gt;,       "ZStart:=" , &lt;string&gt;,       "Width:=" , &lt;string&gt;,       "Height:=" , &lt;string&gt;,       "WhichAxis:=" , &lt;string "X", "Y", or "Z"&gt;)</pre> |
|              | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> .                                                                                                                                                                                                                                                                                          |
| Return Value | None.             |       |                                                                                                                                                                                                                                                                                                                                                   |

| Python Syntax  | CreateRectangle(<Parameters>, <Attributes>)                                                                                                                                                                                                             |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.CreateRectangle( ["NAME:RectangleParameters",   "IsCovered:="          , True,   "XStart:="             , "-80000mm",   "YStart:="             , "-90000mm",   "ZStart:="             , "0mm",   "Width:="              , "20000mm",</pre> |

```
"Height:="                , "30000mm",  
"WhichAxis:="            , "Z"  
],  
["NAME:Attributes",  
  "Name:="                , "Rectangle1",  
  "Flags:="               , "",  
  "Color:="               , "(143 175 143)",  
  "Transparency:="        , 0,  
  "PartCoordinateSystem:=", "Global",  
  "UDMId:="               , "",  
  "MaterialValue:="       , "\"copper\"",  
  "SurfaceMaterialValue:=", "\"\"",  
  "SolveInside:="         , False,  
  "ShellElement:="        , False,  
  "ShellElementThickness:=", "0mm",  
  "IsMaterialEditable:="  , True,  
  "UseMaterialAppearance:=", False,  
  "IsLightweight:="       , False  
])
```

## CreateRegion

Creates a region containing the design.

| UI Access  | Draw > Region. |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------|----------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name           | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|            | <Parameters>   | Array | <p>Structured array.</p> <pre>Array("NAME:RegionParameters",     "+XPaddingType:=", &lt;string "Percentage Offset",     "Absolute Offset", or "Absolute Position"&gt;,     "+XPadding:=", &lt;string X value&gt;,     "-XPaddingType:=", &lt;string "Percentage Offset",     "Absolute Offset", or "Absolute Position"&gt;,     "-XPadding:=", &lt;string -X value&gt;,     "+YPaddingType:=", &lt;string "Percentage Offset",     "Absolute Offset", or "Absolute Position"&gt;,     "+YPadding:=", &lt;string Y value&gt;,     "-YPaddingType:=", &lt;string "Percentage Offset",     "Absolute Offset", or "Absolute Position"&gt;,     "-YPadding:=", &lt;string -Y value&gt;,     "+ZPaddingType:=", &lt;string "Percentage Offset",     "Absolute Offset", or "Absolute Position"&gt;,     "+ZPadding:=", &lt;string Z value&gt;,     "-ZPaddingType:=", &lt;string "Percentage Offset",     "Absolute Offset", or "Absolute Position"&gt;,</pre> |

|                     |                   |       |                                                          |
|---------------------|-------------------|-------|----------------------------------------------------------|
|                     |                   |       | "-ZPadding:=", <string -Z value>)                        |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> . |
| <b>Return Value</b> | None.             |       |                                                          |

| Python Syntax         | CreateRegion(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.CreateRegion( ["NAME:RegionParameters",     "+XPaddingType:="          , "Percentage Offset",     "+XPadding:="              , "0",     "-XPaddingType:="          , "Percentage Offset",     "-XPadding:="              , "0",     "+YPaddingType:="          , "Percentage Offset",     "+YPadding:="              , "0",     "-YPaddingType:="          , "Percentage Offset",     "-YPadding:="              , "0",     "+ZPaddingType:="          , "Percentage Offset",     "+ZPadding:="              , "0",     "-ZPaddingType:="          , "Percentage Offset",     "-ZPadding:="              , "0" ], </pre> |

```
[ "NAME:Attributes",
  "Name:="                , "Region",
  "Flags:="                , "Wireframe#",
  "Color:="                , "(143 175 143)",
  "Transparency:="        , 0,
  "PartCoordinateSystem:=" , "Global",
  "UDMId:="                , "",
  "MaterialValue:="        , "\"vacuum\"",
  "SurfaceMaterialValue:=" , "\"\"",
  "SolveInside:="          , False,
  "ShellElement:="         , False,
  "ShellElementThickness:=" , "nan ",
  "IsMaterialEditable:="    , True,
  "UseMaterialAppearance:=" , False,
  "IsLightweight:="         , False
]
```

## CreateRegularPolygon

Creates a regular polygon.

| UI Access  | Draw > Regular Polygon. |      |             |
|------------|-------------------------|------|-------------|
| Parameters | Name                    | Type | Description |

|              |                   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------|-------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <Parameters>      | Array | <p>Structured array.</p> <pre>Array("NAME:RegularPolygonParameters",     "IsCovered:=" , &lt;boolean&gt;,     "XCenter:=" , &lt;string&gt;,     "YCenter:=" , &lt;string&gt;,     "ZCenter:=" , &lt;string&gt;,     "XStart:=" , &lt;string&gt;,     "YStart:=" , &lt;string&gt;,     "ZStart:=" , &lt;string&gt;,     "NumSides:=" , &lt;string containing number greater than 2&gt;,     "WhichAxis:=" , &lt;string "X", "Y", or "Z"&gt;)</pre> |
|              | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> .                                                                                                                                                                                                                                                                                                                                                                                          |
| Return Value | None.             |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                |                                                                                                                                        |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | CreateRegularPolygon(<Parameters>, <Attributes>)                                                                                       |
| Python Example | <pre>oEditor.CreateRegularPolygon(     ["NAME:RegularPolygonParameters",     "IsCovered:=" , True,     "XCenter:=" , "-70000mm",</pre> |

```

"YCenter:="          , "-100000mm",
"ZCenter:="          , "0mm",
"XStart:="           , "-50000mm",
"YStart:="           , "-80000mm",
"ZStart:="           , "0mm",
"NumSides:="          , "12",
"WhichAxis:="         , "Z"
],
["NAME:Attributes",
  "Name:="             , "Polygon1",
  "Flags:="            , "",
  "Color:="            , "(143 175 143)",
  "Transparency:="     , 0,
  "PartCoordinateSystem:=", "Global",
  "UDMId:="            , "",
  "MaterialValue:="    , "\"copper\"",
  "SurfaceMaterialValue:=", "\"\"",
  "SolveInside:="      , False,
  "ShellElement:="     , False,
  "ShellElementThickness:=", "0mm",
  "IsMaterialEditable:=" , True,

```



|  |                                                                                  |
|--|----------------------------------------------------------------------------------|
|  | <pre>"UseMaterialAppearance:=", False,   "IsLightweight:="      , False 1)</pre> |
|--|----------------------------------------------------------------------------------|

CreateRegularPolyhedron

Creates a regular polyhedron.

| UI Access  | Draw > Regular Polyhedron. |       |                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------|----------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                       | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                            |
|            | <Parameters>               | Array | Structured array.<br><br>Array("NAME:PolyhedronParameters",<br><br>"XCenter:=" , <string>,<br><br>"YCenter:=" , <string>,<br><br>"ZCenter:=" , <string>,<br><br>"XStart:=" , <string>,<br><br>"YStart:=" , <string>,<br><br>"ZStart:=" , <string>,<br><br>"Height:=" , <string>,<br><br>"NumSides:=" , <string containing number greater<br>than 2>,<br><br>"WhichAxis:=" , <string "X", "Y", or "Z">) |
|            | <AttributesArray>          | Array | Structured array. See: <a href="#">AttributesArray</a> .                                                                                                                                                                                                                                                                                                                                               |

|              |       |
|--------------|-------|
| Return Value | None. |
|--------------|-------|

| Python Syntax  | CreateRegularPolyhedron(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.CreateRegularPolyhedron(<br/>  ["NAME:PolyhedronParameters",<br/>    "XCenter:="                , "40000mm",<br/>    "YCenter:="                , "-80000mm",<br/>    "ZCenter:="                , "0mm",<br/>    "XStart:="                 , "50000mm",<br/>    "YStart:="                 , "-70000mm",<br/>    "ZStart:="                 , "0mm",<br/>    "Height:="                 , "50000mm",<br/>    "NumSides:="               , "8",<br/>    "WhichAxis:="              , "Z"<br/>  ],<br/>  ["NAME:Attributes",<br/>    "Name:="                   , "RegularPolyhedron1",<br/>    "Flags:="                  , "",<br/>    "Color:="                  , "(143 175 143)",<br/>    "Transparency:="           , 0,<br/>    "PartCoordinateSystem:="   , "Global",</pre> |

|  |                                                                                                                                                                                                                                                                                    |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"UDMId:=" , "", "MaterialValue:=" , "\"copper\"", "SurfaceMaterialValue:=", "\"\"", "SolveInside:=" , False, "ShellElement:=" , False, "ShellElementThickness:=", "0mm", "IsMaterialEditable:=" , True, "UseMaterialAppearance:=", False, "IsLightweight:=" , False ] )</pre> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CreateSphere

Creates a sphere.

| UI Access  | Draw > Sphere. |       |                                                                                                                                        |
|------------|----------------|-------|----------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name           | Type  | Description                                                                                                                            |
|            | <Parameters>   | Array | Structured array.<br><br>Array ("NAME:SphereParameters",<br>"XCenter:=", <string>,<br>"YCenter:=", <string>,<br>"ZCenter:=", <string>, |

|                     |                   |       |                                                          |
|---------------------|-------------------|-------|----------------------------------------------------------|
|                     |                   |       | "Radius:=", <string>)                                    |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> . |
| <b>Return Value</b> | None.             |       |                                                          |

| Python Syntax         | CreateSphere(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.CreateSphere ( ["NAME:SphereParameters",     "XCenter:="                , "-40000mm",     "YCenter:="                , "-130000mm",     "ZCenter:="                , "0mm",     "Radius:="                 , "22360.6797749979mm" ], ["NAME:Attributes",     "Name:="                   , "Sphere1",     "Flags:="                  , "",     "Color:="                  , "(143 175 143)",     "Transparency:="           , 0,     "PartCoordinateSystem:="   , "Global",     "UDMId:="                  , "",     "MaterialValue:="          , "\"copper\"",     "SurfaceMaterialValue:="   , "\"\"", </pre> |

|  |                                                                                                                                                                                                               |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"SolveInside:="      , False, "ShellElement:="      , False, "ShellElementThickness:=", "0mm", "IsMaterialEditable:=" , True, "UseMaterialAppearance:=", False, "IsLightweight:="      , False ] )</pre> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CreateSpiral

Creates a spiral by sweeping the specified object(s).

| UI Access  | Draw > Spiral.    |       |                                                                                                                                                                                                                                    |
|------------|-------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name              | Type  | Description                                                                                                                                                                                                                        |
|            | <SelectionsArray> | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                                                           |
|            | <Parameters>      | Array | Structured array.                                                                                                                                                                                                                  |
|            |                   |       | <pre>Array ("NAME:SpiralParameters",       "XCenter:=" , &lt;string&gt;,       "YCenter:=" , &lt;string&gt;,       "ZCenter:=" , &lt;string&gt;,       "YStartDir:=" , &lt;string&gt;,       "ZStartDir:=" , &lt;string&gt;,</pre> |

|                     |       |  |                                                                                            |
|---------------------|-------|--|--------------------------------------------------------------------------------------------|
|                     |       |  | "NumThread:=" , <string>,<br>"RightHand:=" , <boolean>,<br>"RadiusIncrement:=" , <string>) |
| <b>Return Value</b> | None. |  |                                                                                            |

| Python Syntax         | CreateSpiral(<Parameters>, <Attributes>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.CreateSpiral( ["NAME:Selections",     "Selections:="          , "Polygon2",     "NewPartsModelFlag:="   , "Model" ], ["NAME:SpiralParameters",     "XCenter:="             , "-70000mm",     "YCenter:="             , "50000mm",     "ZCenter:="             , "0mm",     "XStartDir:="           , "-60000mm",     "YStartDir:="           , "-10000mm",     "ZStartDir:="           , "0mm",     "NumThread:="           , "1",     "RightHand:="           , True,     "RadiusIncrement:="     , "1mm" </pre> |

|  |    |
|--|----|
|  | 1) |
|--|----|

CreateTorus

Creates a torus.

| UI Access    | Draw > Torus.     |       |                                                                                                                                                                                                                                                                             |
|--------------|-------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name              | Type  | Description                                                                                                                                                                                                                                                                 |
|              | <Parameters>      | Array | Structured array.<br><br>Array("NAME:TorusParameters",<br><br>"XCenter:=" , <string>,<br><br>"YCenter:=" , <string>,<br><br>"ZCenter:=" , <string>,<br><br>"MajorRadius:=" , <string>,<br><br>"MinorRadius:=" , <string>,<br><br>"WhichAxis:=" , <string "X", "Y", or "Z">) |
|              | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> .                                                                                                                                                                                                                    |
| Return Value | None.             |       |                                                                                                                                                                                                                                                                             |

| Python Syntax  | CreateTorus(<Parameters>, <Attributes>)                      |
|----------------|--------------------------------------------------------------|
| Python Example | <pre>oEditor.CreateTorus(<br/>["NAME:TorusParameters",</pre> |

```

"XCenter:="          , "0.6mm",
"YCenter:="          , "-0.6mm",
"ZCenter:="          , "0mm",
"MajorRadius:="      , "0.365028153987289mm",
"MinorRadius:="      , "0.0821854415126694mm",
"WhichAxis:="        , "Z"
],
["NAME:Attributes",
  "Name:="            , "Torus1",
  "Flags:="           , "",
  "Color:="           , "(143 175 143)",
  "Transparency:="    , 0,
  "PartCoordinateSystem:=", "Global",
  "UDMId:="           , "",
  "MaterialValue:="    , "\"copper\"",
  "SurfaceMaterialValue:=", "\"\"",
  "SolveInside:="      , False,
  "ShellElement:="     , False,
  "ShellElementThickness:=", "0mm",
  "IsMaterialEditable:=" , True,
  "UseMaterialAppearance:=", False,

```



|  |                                             |
|--|---------------------------------------------|
|  | <pre>"IsLightweight:="      , False ]</pre> |
|--|---------------------------------------------|

CreateUserDefinedPart

Creates a user-defined part.

| UI Access  | Draw > User-Defined Primitive > [Part] |       |                                                                                                                                                                                                                                 |
|------------|----------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                   | Type  | Description                                                                                                                                                                                                                     |
|            | <Parameters>                           | Array | Structured array.<br><br>["NAME:UserDefinedPrimitiveParameters",<br><br>"DllName:=" , <string>,<br><br>"Version:=" , <string>,<br><br>"NoOfParameters:=" , <integer>,<br><br>"Library:=" , <string>,<br><br><paramVectorArray>] |
|            | <paramVectorArray>                     | Array | Structured array containing arrays for each pair:<br><br>["NAME:ParamVector",<br><br><pair>, <pair>, <pair>,...<br><br>]<br><br><pair>:<br><br>["NAME:Pair",                                                                    |

|                     |              |       |                                                          |
|---------------------|--------------|-------|----------------------------------------------------------|
|                     |              |       | "Name:=" , <string>,<br>"Value:=" , <string>]            |
|                     | <Attributes> | Array | Structured array. See: <a href="#">AttributesArray</a> . |
| <b>Return Value</b> | None.        |       |                                                          |

| Python Syntax         | CreateUserDefinedPart(<Parameters>, <paramVectorArray>, <Attributes>)                                                                                                                                                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.CreateUserDefinedPart ( ["NAME:UserDefinedPrimitiveParameters", "DllName:=" , "RMxpert/LapCoil.dll", "Version:=" , "16.0", "NoOfParameters:=" , 22, "Library:=" , "syslib", ["NAME:ParamVector", ["NAME:Pair", "Name:=" , "DiaGap", "Value:=" , "100mm" ], ["NAME:Pair", "Name:=" , "DiaYoke", "Value:=" , "20mm" ], </pre> |

```
["NAME:Pair",  
  "Name:=" , "Length",  
  "Value:=" , "100mm"  
],  
["NAME:Pair",  
  "Name:=" , "Skew",  
  "Value:=" , "0deg"  
],  
["NAME:Pair",  
  "Name:=" , "Slots",  
  "Value:=" , "18"  
],  
["NAME:Pair",  
  "Name:=" , "SlotType",  
  "Value:=" , "1"  
],  
["NAME:Pair",  
  "Name:=" , "Hs0",  
  "Value:=" , "1mm"  
],
```

```
[ "NAME:Pair",  
  "Name:=" , "Hs1",  
  "Value:=" , "1mm"  
],  
[ "NAME:Pair",  
  "Name:=" , "Hs2",  
  "Value:=" , "10mm"  
],  
[ "NAME:Pair",  
  "Name:=" , "Bs0",  
  "Value:=" , "2.5mm"  
],  
[ "NAME:Pair",  
  "Name:=" , "Bs1",  
  "Value:=" , "8mm"  
],  
[ "NAME:Pair",  
  "Name:=" , "Bs2",  
  "Value:=" , "5mm"  
],  
[ "NAME:Pair",
```

```

    "Name:=" , "Rs",
    "Value:=" , "0mm"
  ],
  ["NAME:Pair",
    "Name:=" , "FilletType",
    "Value:=" , "0"
  ],
  ["NAME:Pair",
    "Name:=" , "Layers",
    "Value:=" , "2"
  ],
  ["NAME:Pair",
    "Name:=" , "CoilPitch",
    "Value:=" , "4"
  ],
  ["NAME:Pair",
    "Name:=" , "EndExt",
    "Value:=" , "5mm"
  ],
  ["NAME:Pair",

```

```
"Name:=" , "SpanExt",  
"Value:=" , "25mm"  
],  
["NAME:Pair",  
"Name:=" , "BendAngle",  
"Value:=" , "0deg"  
],  
["NAME:Pair",  
"Name:=" , "SegAngle",  
"Value:=" , "10deg"  
],  
["NAME:Pair",  
"Name:=" , "LenRegion",  
"Value:=" , "200mm"  
],  
["NAME:Pair",  
"Name:=" , "InfoCoil",  
"Value:=" , "0"  
]  
]  
],
```

```
[ "NAME:Attributes",  
  "Name:=" , "LapCoil1",  
  "Flags:=" , "",  
  "Color:=" , "(143 175 143)",  
  "Transparency:=" , 0,  
  "PartCoordinateSystem:=" , "Global",  
  "UDMId:=" , "",  
  "MaterialValue:=" , "\"copper\"",  
  "SurfaceMaterialValue:=" , "\"\"",  
  "SolveInside:=" , False,  
  "ShellElement:=" , False,  
  "ShellElementThickness:=" , "0mm",  
  "IsMaterialEditable:=" , True,  
  "UseMaterialAppearance:=" , False,  
  "IsLightweight:=" , False  
]
```

## Edit3DComponent

Edits a specified 3D component by saving it to a new name so that its properties are accessible. To change the properties on an existing component without changing its name, see [ChangeProperty](#).

|                     |                    |             |                                                                                                                                                                                                                                                                                                                              |
|---------------------|--------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                |             |                                                                                                                                                                                                                                                                                                                              |
| <b>Parameters</b>   | <b>Name</b>        | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                           |
|                     | <compName>         | String      | Component name.                                                                                                                                                                                                                                                                                                              |
|                     | <Parameters>       | Array       | Structured array.<br><br><pre>Array("NAME:EditComponentParametersData",       "NewComponentName:=", &lt;string&gt;,       "GeometryParameters:=", &lt;string&gt;,       "MaterialParameters:=", &lt;string&gt;,       "DesignParameters:=", &lt;string&gt;,       &lt;ComponentMeshing&gt;,       &lt;Excitations&gt;)</pre> |
|                     | <ComponentMeshing> | Array       | Structured array.<br><br><pre>Array("NAME:Component Meshing",       "MeshAssembly:=", &lt;boolean&gt;)</pre>                                                                                                                                                                                                                 |
|                     | <Excitations>      | Array       | Structured array containing array of suppressed excitations.<br><br><pre>Array("NAME:Excitations",       "Suppressed:=", &lt;array&gt;)</pre>                                                                                                                                                                                |
| <b>Return Value</b> | None.              |             |                                                                                                                                                                                                                                                                                                                              |

|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| <b>Python Syntax</b>  | Edit3DComponent (<compName>, <Parameters>)          |
| <b>Python Example</b> | <pre>oEditor.Edit3DComponent(   "Connector1",</pre> |



|  |                                                                                                                                                                                                                                                                                                                                    |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>[ "NAME:EditComponentParametersData",<br/>  "NewComponentName:=", "Connector2",<br/>  "GeometryParameters:=", "",<br/>  "MaterialParameters:=", "",<br/>  "DesignParameters:=", "",<br/>  ["NAME:Component Meshing",<br/>   "MeshAssembly:=", False],<br/>  ["NAME:Excitations",<br/>   "Suppressed:=", []]<br/>]<br/>)</pre> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Edit3DComponentDefinition

Edits definitions of a specified 3D component.

| UI Access  | N/A          |       |                                                                                                                                               |
|------------|--------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name         | Type  | Description                                                                                                                                   |
|            | <Parameters> | Array | Structured array.<br><br>Array("NAME:EditComponentParametersData",<br>"OriginalComponentName:=", <string>,<br>"NewComponentName:=", <string>, |

|                       |                                                                                                                                                                                                                                                                                                 |       |                                                                                                                                                    |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------|
|                       |                                                                                                                                                                                                                                                                                                 |       | "GeometryParameters:=", <string>,<br>"MaterialParameters:=", <string>,<br>"DesignParameters:=", <string>,<br><ComponentMeshing>,<br><Excitations>) |
|                       | <ComponentMeshing>                                                                                                                                                                                                                                                                              | Array | Structured array.<br>Array("NAME:Component Meshing",<br>"MeshAssembly:=", <boolean>)                                                               |
|                       | <Excitations>                                                                                                                                                                                                                                                                                   | Array | Structured array containing array of suppressed excitations.<br>Array("NAME:Excitations",<br>"Suppressed:=", <array>)                              |
| <b>Return Value</b>   | None.                                                                                                                                                                                                                                                                                           |       |                                                                                                                                                    |
| <b>Python Syntax</b>  | Edit3DComponent (<Parameters>)                                                                                                                                                                                                                                                                  |       |                                                                                                                                                    |
| <b>Python Example</b> | <pre>oEditor.Edit3DComponent (     ["NAME:EditComponentParametersData",     "OriginalComponentName:=", "Connector1",     "NewComponentName:=", "Connector2",     "GeometryParameters:=", "",     "MaterialParameters:=", "",     "DesignParameters:=", "",     ["NAME:Component Meshing",</pre> |       |                                                                                                                                                    |

|  |                                                                                         |
|--|-----------------------------------------------------------------------------------------|
|  | <pre> "MeshAssembly:=", False], ["NAME:Excitations",     "Suppressed:=", []] ] ) </pre> |
|--|-----------------------------------------------------------------------------------------|

### EditPolyline

Modifies a specified polyline. See: [CreatePolyline](#).

| UI Access         | N/A                   |       |                                                                                                                                                                                                                         |
|-------------------|-----------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                  | Type  | Description                                                                                                                                                                                                             |
|                   | <SelectionsArray>     | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                                                |
|                   | <Parameters>          | Array | Structured array.<br><pre> Array("NAME:PolylineParameters",     "IsPolylineCovered:=", &lt;bool&gt;,     "IsPolylineClosed:=", &lt;bool&gt;,     &lt;PolylinePointsArray&gt;,     &lt;PolylineSegmentsArray&gt;) </pre> |
|                   | <PolylinePointsArray> | Array | Array("NAME:PolylinePoints", <OnePointArray>, <OnePointArray>, ...)                                                                                                                                                     |
|                   | <OnePointArray>       | Array | Array("NAME:PLPoint",<br><pre>     "X:=", &lt;value&gt;,     "Y:=", &lt;value&gt;, </pre>                                                                                                                               |

|                     |                         |       |                                                                                                                                                    |
|---------------------|-------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                         |       | "Z:=", <value>))                                                                                                                                   |
|                     | <PolylineSegmentsArray> | Array | <PolylineSegmentsArray><br>Array("NAME:PolylineSegments",<br><OneSegmentArray>, <OneSegmentArray>, ...)                                            |
|                     | <OneSegmentArray>       | Array | Array("NAME:PLSegment",<br>"SegmentType:=", <"Line", "Arc", "Spline", or<br>"AngularArc">,<br>"StartIndex:=", <value>,<br>"NoOfPoints:=", <value>) |
| <b>Return Value</b> | None.                   |       |                                                                                                                                                    |

|                       |                                                                                                                                                                                                                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | EditPolyline(<SelectionsArray>, <Parameters>)                                                                                                                                                                                                                                         |
| <b>Python Example</b> | <pre>oEditor.EditPolyline( ["NAME:Selections",     "Selections:=", "Polyline1"] ["NAME:PolylineParameters",     "IsPolylineCovered:=", True,     "IsPolylineClosed:=", False, ["NAME:PolylinePoints",     ["NAME:PLPoint",         "X:=", "20000mm",         "Y:=", "-20000mm",</pre> |

```
        "Z:="                , "0mm"
    ],
    ["NAME:PLPoint",
        "X:="                , "-90000mm",
        "Y:="                , "20000mm",
        "Z:="                , "0mm"
    ],
    ["NAME:PLPoint",
        "X:="                , "10000mm",
        "Y:="                , "-140000mm",
        "Z:="                , "0mm"
    ]
],
["NAME:PolylineSegments",
    ["NAME:PLSegment",
        "SegmentType:="      , "Line",
        "StartIndex:="       , 0,
        "NoOfPoints:="       , 2
    ],
    ["NAME:PLSegment",
```

```
"SegmentType:="      , "Line",  
"StartIndex:="       , 1,  
"NoOfPoints:="       , 2  
]  
],  
["NAME:PolylineXSection",  
  "XSectionType:="    , "None",  
  "XSectionOrient:="  , "Auto",  
  "XSectionWidth:="   , "0mm",  
  "XSectionTopWidth:=" , "0mm",  
  "XSectionHeight:="  , "0mm",  
  "XSectionNumSegments:=" , "0",  
  "XSectionBendType:=" , "Corner"  
]]  
)
```

## Get3DComponentDefinitionNames

Gets names of 3D component definitions.

|                     |                                                         |
|---------------------|---------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                     |
| <b>Parameters</b>   | None.                                                   |
| <b>Return Value</b> | Array of strings containing component definition names. |

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | Get3DComponentDefinitionNames()                      |
| <b>Python Example</b> | <code>oEditor.Get3DComponentDefinitionNames()</code> |

## Get3DComponentInstanceNames

Returns instance names of 3D component definitions.

|                     |                                  |        |                  |
|---------------------|----------------------------------|--------|------------------|
| <b>UI Access</b>    | N/A                              |        |                  |
| <b>Parameters</b>   | Name                             | Type   | Description      |
|                     | <DefinitionName>                 | String | Definition name. |
| <b>Return Value</b> | Array containing instance names. |        |                  |

|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| <b>Python Syntax</b>  | Get3DComponentInstanceNames(<DefinitionName>)                 |
| <b>Python Example</b> | <code>oEditor.Get3DComponentInstanceNames("Connector")</code> |

## Get3DComponentMaterialNames

Returns material names for a specified \*.a3dcomp format 3D component.

|                   |                |        |                          |
|-------------------|----------------|--------|--------------------------|
| <b>UI Access</b>  | N/A            |        |                          |
| <b>Parameters</b> | Name           | Type   | Description              |
|                   | <InstanceName> | String | Component instance name. |

|                     |                                  |
|---------------------|----------------------------------|
| <b>Return Value</b> | Array containing material names. |
|---------------------|----------------------------------|

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Get3DComponentMaterialNames(<InstanceName>)                            |
| <b>Python Example</b> | <code>oEditor.Get3DComponentMaterialNames("Connector1.a3dcomp")</code> |

## Get3DComponentMaterialProperties

Returns material properties for a specified 3D component.

|                     |                                       |        |                |
|---------------------|---------------------------------------|--------|----------------|
| <b>UI Access</b>    | N/A                                   |        |                |
| <b>Parameters</b>   | Name                                  | Type   | Description    |
|                     | <MaterialName>                        | String | Material name. |
| <b>Return Value</b> | Array containing material properties. |        |                |

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Get3DComponentMaterialProperties(<MaterialName>)                               |
| <b>Python Example</b> | <code>oEditor.Get3DComponentMaterialProperties('Connector1:Material01')</code> |

## Get3DComponentParameters

Returns parameters for a specified 3D component.

|                   |            |        |                    |
|-------------------|------------|--------|--------------------|
| <b>UI Access</b>  | N/A        |        |                    |
| <b>Parameters</b> | Name       | Type   | Description        |
|                   | <compName> | String | 3D component name. |



|                     |                                        |
|---------------------|----------------------------------------|
| <b>Return Value</b> | Array containing component parameters. |
|---------------------|----------------------------------------|

|                       |                                               |
|-----------------------|-----------------------------------------------|
| <b>Python Syntax</b>  | Get3DComponentParameters(<compName>)          |
| <b>Python Example</b> | oEditor.Get3DComponentParameters('Connector') |

## Get3DComponentPartNames

Returns part names for a specified 3D component.

|                     |                              |        |                        |
|---------------------|------------------------------|--------|------------------------|
| <b>UI Access</b>    | N/A                          |        |                        |
| <b>Parameters</b>   | Name                         | Type   | Description            |
|                     | <InstanceName>               | String | 3D component instance. |
| <b>Return Value</b> | Array containing part names. |        |                        |

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Python Syntax</b>  | Get3DComponentParameters(<InstanceName>)     |
| <b>Python Example</b> | oEditor.Get3DComponentPartNames('Connector') |

## Insert3DComponent

Inserts a 3D component in specified coordinate system with specified offset.

|                   |                                                                     |       |                   |
|-------------------|---------------------------------------------------------------------|-------|-------------------|
| <b>UI Access</b>  | <b>Draw &gt; 3D Component Library &gt; Browse &gt; [Component].</b> |       |                   |
| <b>Parameters</b> | Name                                                                | Type  | Description       |
|                   | <ComponentData>                                                     | Array | Structured array. |

|                     |       |  |                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|-------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       |  | <pre> Array("NAME:InsertComponentData",       "TargetCS:=", &lt;string&gt;,       "ComponentFile:=", &lt;string filepath&gt;),       "IsLocal:=", &lt;Boolean&gt;,       "InstanceParameters:=", &lt;string&gt;,         "XOffset:=" , "float with unit",         "YOffset:=" , "float with unit",         "ZOffset:=" , "float with unit") </pre> |
| <b>Return Value</b> | None. |  |                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Insert3DComponent(<ComponentData>)                                                                                                                                                                                                                                                                                                                                           |
| <b>Python Example</b> | <pre> oEditor.Insert3DComponent(     [         "NAME:InsertComponentData",         "TargetCS:=" , "Global",         "ComponentFile:=" , "C:/Program Files/ANSYS Inc/v252/An- sysEM/syslib/3DComponents/HFSS/Rectangular Waveguide/Straight.a3dcomp",         "IsLocal:=" , False,         "UniqueIdentifier:=" , "",         [             "NAME:InstanceParameters", </pre> |

|  |                                                                                                                                                                                                                                                                                                                                        |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "GeometryParameters:=" , "Flange='\0.4in\' FlangeFillet='\0.2in\' FlangeThickness='\0.2in\' GuideHeight='\0.4in\' GuideLength='\4in\' GuideWidth='\0.9in\' WallThickness='\0.1in\'",  "MaterialParameters:=" , "",  "DesignParameters:=" , ""  ],  "XOffset:=" , "-70mm",  "YOffset:=" , "45mm",  "ZOffset:=" , "0mm"  ]) </pre> |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### InsertComponent

Inserts a component.

| UI Access    | N/A             |       |                                                                                                                                                                                               |
|--------------|-----------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name            | Type  | Description                                                                                                                                                                                   |
|              | <ComponentData> | Array | <p>Structured array.</p> <pre> Array("NAME:InsertComponentData",     "Parameters:=", &lt;string&gt;,     "TargetCS:=", &lt;string&gt;,     "ComponentFile:=", &lt;string filepath&gt;) </pre> |
| Return Value | None.           |       |                                                                                                                                                                                               |

|                       |                                                                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>InsertComponent(&lt;ComponentData&gt;)</code>                                                                                                                             |
| <b>Python Example</b> | <pre>oEditor.InsertComponent(     ["NAME:InsertComponentData",      "Parameters:=", "",      "TargetCS:=", "Global",      "ComponentFile:=", "C:\tmp\Connector.a3dcomp"])</pre> |

## InsertPolylineSegment

Inserts a polyline segment before or after a specified existing segment.

|                     |                                                 |             |                                                                                                                                                                                                                                                                                                                                            |
|---------------------|-------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | <b>Draw &gt; Line Segment &gt; [Selection].</b> |             |                                                                                                                                                                                                                                                                                                                                            |
| <b>Parameters</b>   | <b>Name</b>                                     | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                         |
|                     | <code>&lt;Parameters&gt;</code>                 | Array       | Structured array.<br><pre>Array("NAME:Insert Polyline Segment",       "Selections:=" , &lt;string&gt;,       "Segment Indices:=" , &lt;array containing integers&gt;,       "At Start:=" , &lt;boolean&gt;,       "SegmentType:=" , &lt;string "Line", "Arc", "Spline",       or "AngularArc"&gt;,       &lt;PolylinePointsArray&gt;</pre> |
|                     | <code>&lt;PolylinePointsArray&gt;</code>        | Array       | Structured array. See: <a href="#">CreatePolyline</a> .                                                                                                                                                                                                                                                                                    |
| <b>Return Value</b> | None.                                           |             |                                                                                                                                                                                                                                                                                                                                            |

| Python Syntax  | InsertPolylineSegment(<Parameters>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.InsertPolylineSegment(<br/>    ["NAME:Insert Polyline Segment",<br/>    "Selections:="                , "Polyline1:CreatePolyline:1",<br/>    "Segment Indices:="          , [0],<br/>    "At Start:="                  , True,<br/>    "SegmentType:="               , "Line",<br/>    ["NAME:PolylinePoints",<br/>    ["NAME:PLPoint",<br/>    "X:="                          , "1.1mm",<br/>    "Y:="                          , "0.8mm",<br/>    "Z:="                          , "0mm"<br/>    ],<br/>    ["NAME:PLPoint",<br/>    "X:="                          , "0.6mm",<br/>    "Y:="                          , "-0.8mm",<br/>    "Z:="                          , "0mm"<br/>    ],<br/>    ],<br/>    ]<br/>)</pre> |

|  |    |
|--|----|
|  | ]) |
|--|----|

## SweepAlongPath

Sweeps the specified 1D or 2D parts along a path. The last 1D object specified is the path for the sweep.

| UI Access    | Draw > Sweep > Along Path. |       |                                                                                                                                                                                                                                          |
|--------------|----------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                       | Type  | Description                                                                                                                                                                                                                              |
|              | <SelectionsArray>          | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                                                                 |
|              | <PathSweepParametersArray> | Array | Array("NAME:PathSweepParameters",<br>"DraftAngle:=", <value>,<br>"DraftType:=", <string>,<br>"CheckFaceFaceIntersection:=", <bool>,<br>"TwistAngle:=", <value>)<br>Possible values for DraftType are "Extended", "Round", and "Natural". |
| Return Value | None.                      |       |                                                                                                                                                                                                                                          |

| Python Syntax  | SweepAlongPath(<SelectionsArray>, <PathSweepParametersArray>)                                                        |
|----------------|----------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.SweepAlongPath(     [         "NAME:Selections",         "Selections:=" , "Rectangle1,Polyline1",</pre> |

|  |                                                                                                                                                                                                                  |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"NewPartsModelFlag:=" , "Model"  ],  [    "NAME:PathSweepParameters",    "DraftAngle:=" , "0deg",    "DraftType:=" , "Round",    "CheckFaceFaceIntersection:=", False,    "TwistAngle:=" , "0deg"  ])</pre> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

SweepAlongVector

Sweeps the specified 1D or 2D parts along a vector.

| UI Access  | Draw > Sweep > Along Vector. |       |                                                                                                                                                                                    |
|------------|------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                         | Type  | Description                                                                                                                                                                        |
|            | <SelectionsArray>            | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                           |
|            | <VecSweepParametersArray>    | Array | Array("NAME:VectorSweepParameters",<br><br>"DraftAngle:=", <value>,<br><br>"DraftType:=", <string>,<br><br>"CheckFaceFaceIntersection:=", <bool>,<br><br>"SweepVectorX:=", <value> |

|                     |                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <div> <div></div> <div> "SweepVectorY:=", &lt;value&gt;<br/> "SweepVectorZ:=", &lt;value&gt;)<br/> Possible values for DraftType are "Extended", "Round", and "Natural". </div> </div> |
| <b>Return Value</b> | None.                                                                                                                                                                                  |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SweepAlongVector(<SelectionsArray>, <VecSweepParametersArray>)                                                                                                                                                                                                                                                                                                                                                              |
| <b>Python Example</b> | <pre>oEditor.SweepAlongVector(     [         "NAME:Selections",         "Selections:=" , "Rectangle1",         "NewPartsModelFlag:=" , "Model"     ],     [         "NAME:VectorSweepParameters",         "DraftAngle:=" , "0deg",         "DraftType:=" , "Round",         "CheckFaceFaceIntersection:=", False,         "SweepVectorX:=" , "0mm"         "SweepVectorY:=" , "0mm"         "SweepVectorX:=" , "12mm"</pre> |



|  |    |
|--|----|
|  | ]) |
|--|----|

SweepAroundAxis

Sweeps the specified 1D or 2D parts around an axis.

|              |                             |       |                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------|-----------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | Draw > Sweep > Around Axis. |       |                                                                                                                                                                                                                                                                                                                                                                                          |
| Parameters   | Name                        | Type  | Description                                                                                                                                                                                                                                                                                                                                                                              |
|              | <SelectionsArray>           | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                                                                                                                                                                                                                 |
|              | <AxisSweepParametersArray>  | Array | Array("NAME:AxisSweepParameters",<br><br>"DraftAngle:=", <value>,<br><br>"DraftType:=", <string>,<br><br>"CheckFaceFaceIntersection:=", <bool>,<br><br>"SweepAxis:=", <value><br><br>"SweepAngle:=", <value><br><br>"NumOfSegments:=", <value>)<br><br>Possible values for DraftType are "Extended", "Round", and "Natural".<br><br>Possible values for SweepAxis are "X", "Y", and "Z". |
| Return Value | None.                       |       |                                                                                                                                                                                                                                                                                                                                                                                          |

|               |                                                                |
|---------------|----------------------------------------------------------------|
| Python Syntax | SweepAroundAxis(<SelectionsArray>, <AxisSweepParametersArray>) |
|---------------|----------------------------------------------------------------|

|                |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre> oEditor.SweepAroundAxis(     [         "NAME:Selections",         "Selections:=" , "Rectangle1",         "NewPartsModelFlag:=" , "Model"     ],     [         "NAME:AxisSweepParameters",         "DraftAngle:=" , "0deg",         "DraftType:=" , "Round",         "CheckFaceFaceIntersection:=", False,         "SweepAxis:=" , "X"         "SweepAngle:=" , "360deg"         "NumOfSegments:=" , "12"     ] ) </pre> |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## SweepFacesAlongNormal

Sweep the specified face(s) along normal.

| UI Access  | Modeler > Surface > Sweep Faces Along Normal |       |                                                          |
|------------|----------------------------------------------|-------|----------------------------------------------------------|
| Parameters | Name                                         | Type  | Description                                              |
|            | <SelectionsArray>                            | Array | Structured array. See: <a href="#">SelectionsArray</a> . |

|              |                                 |       |                                                                                                                                                                            |
|--------------|---------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <code>&lt;parameters&gt;</code> | Array | Structured array.<br><br>Array("NAME:Parameters",<br>"NAME:SweepFaceAlongNormalToParameters",<br>"FacesToDetach:=", <faceIDarray>,<br>"LengthOfSweep:=", "<value><units>") |
| Return Value | None                            |       |                                                                                                                                                                            |

|                |                                                                                                                                                                                                                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | SweepFacesAlongNormal(<SelectionsArray> <parameters>)                                                                                                                                                                                                                                                              |
| Python Example | <pre>oEditor.SweepFacesAlongNormal(<br/>    ["NAME:Selections",<br/>      "Selections:=", "Rectangle1",<br/>      "NewPartsModelFlag:=", "Model"],<br/>    ["NAME:Parameters",<br/>      "NAME:SweepFaceAlongNormalToParameters",<br/>      "FacesToDetach:=", [183],<br/>      "LengthOfSweep:=", "0.1mm"])</pre> |

## SweepFacesAlongNormalWithAttributes

Sweep a face along normal, and specify attributes of the new object.

| UI Access    | Modeler > Surface > Sweep Faces Along Normal |       |                                                                                                                                                   |
|--------------|----------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                         | Type  | Description                                                                                                                                       |
|              | <SelectionsArray>                            | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                          |
|              | <parameters>                                 | Array | Array("NAME:Parameters",<br>"NAME:SweepFaceAlongNormalToParameters",<br>"FacesToDetach:=", <faceIDarray>,<br>"LengthOfSweep:=", "<value><units>") |
|              | <AttributesArray>                            | Array | Structured array. See: <a href="#">AttributesArray</a> .                                                                                          |
| Return Value | None                                         |       |                                                                                                                                                   |

| Python Syntax  | SweepFacesAlongNormalWithAttributes(<SelectionsArray>, <parameters>, <AttributesArray>)                                                                                                                                                                                            |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.SweepFacesAlongNormalWithAttributes( ["NAME:Selections",     "Selections:=", "Rectangle1",     "NewPartsModelFlag:=", "Model"], ["NAME:Parameters",     "NAME:SweepFaceAlongNormalToParameters",     "FacesToDetach:=", [183],     "LengthOfSweep:=", "0.1mm"],</pre> |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>[ "NAME:Attributes",<br/>  "Name:=", "Box3",<br/>  "Flags:=", "",<br/>  "Color:=", "(143 175 143)",<br/>  "Transparency:=", 0,<br/>  "PartCoordinateSystem:=", "Global",<br/>  "UDMId:=", "",<br/>  "MaterialValue:=", "\"copper\"",<br/>  "SurfaceMaterialValue:=", "\"\"",<br/>  "SolveInside:=", False,<br/>  "ShellElement:=", False,<br/>  "ShellElementThickness:=", "0mm",<br/>  "IsMaterialEditable:=", True,<br/>  "UseMaterialAppearance:=", False,<br/>  "IsLightweight:=", False]</pre> |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## UpdateComponentDefinition

Updates a 3D component's definition.

| UI Access    | Draw > 3D Component Library > Definitions. |       |                                                                                                                                     |
|--------------|--------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                       | Type  | Description                                                                                                                         |
|              | <data>                                     | Array | Structured array.<br><br>Array("NAME:UpdateDefinitionData",<br>"DefinitionNames:=", <string>,<br>"Passwords:=", <array of strings>) |
| Return Value | None.                                      |       |                                                                                                                                     |

| Python Syntax  | UpdateComponentDefinition(<data>)                                                                                                                                 |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.UpdateComponentDefinition(     ['NAME:UpdateDefinitionData',      'DefinitionNames:=', 'Connector, Magic_Tee',      'Passwords:=', ['', '']] )</pre> |

## Edit Menu Commands

[Copy](#)

[DeletePolylinePoint](#)

[DuplicateAlongLine](#)

[DuplicateAroundAxis](#)

[DuplicateMirror](#)

[Mirror](#)

[Move](#)

[OffsetFaces](#)

[Paste](#)

[Rotate](#)

[Scale](#)

**Copy**

Copies specified part(s) to the clipboard.

|              |                   |       |                                                          |
|--------------|-------------------|-------|----------------------------------------------------------|
| UI Access    | N/A               |       |                                                          |
| Parameters   | Name              | Type  | Description                                              |
|              | <SelectionsArray> | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
| Return Value | None.             |       |                                                          |

|                |                                                                               |  |  |
|----------------|-------------------------------------------------------------------------------|--|--|
| Python Syntax  | Copy(<SelectionsArray>)                                                       |  |  |
| Python Example | <pre>oEditor.Copy([     "NAME:Selections",     "Selections:=", "Box1"])</pre> |  |  |

## DeletePolylinePoint

Deletes either a start point or an end point from an existing polyline segment.

| UI Access    | Edit > Delete [Start/End] Point |       |                                                                                                                                                                                                                                                                                                  |
|--------------|---------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                            | Type  | Description                                                                                                                                                                                                                                                                                      |
|              | <DeletePointArray>              | Array | Structured array.<br><br><pre>Array("NAME:Delete Point",       "Selections:=", &lt;string       "&lt;PolylineName&gt;:&lt;PolylineAction&gt;:&lt;int&gt;"&gt;,       "Segment Index:=", &lt;integer&gt;,       "At Start:=", &lt;bool True for start point; False       for end point&gt;)</pre> |
| Return Value | None.                           |       |                                                                                                                                                                                                                                                                                                  |

| Python Syntax  | DeletePolylinePoint (<DeletePointArray>)                                                                                                                          |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.DeletePolylinePoint(["NAME:Delete Point",     "Selections:=", "Polyline1:CreatePolyline:1",     "Segment Index:=", 1,     "At Start:=", True])</pre> |

## DuplicateAlongLine

Duplicates specified parts along a line.



| UI Access    | Edit > Duplicate > Along Line. |       |                                                                                                                                                                                                                                                                |
|--------------|--------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                           | Type  | Description                                                                                                                                                                                                                                                    |
|              | <SelectionsArray>              | Array | Structured array.<br>Array("NAME:Selections",<br>"Selections:=" , <string>,<br>"NewPartsModelFlag:=" , <string>)                                                                                                                                               |
|              | <ParametersArray>              | Array | Structured array.<br>Array("NAME:DuplicateToAlongLineParameters",<br>"CreateNewObjects:=" , <boolean>,<br>"XComponent:=" , <string>,<br>"YComponent:=" , <string>,<br>"ZComponent:=" , <string>,<br>"NumClones:=" , <string containing number greater than 1>) |
|              | <OptionsArray>                 | Array | Structured array.<br>Array("NAME:Options",<br>"DuplicateAssignments:=" , <boolean>)                                                                                                                                                                            |
|              | <CreateGroup>                  | Array | Optional. Structured array.<br>Array("CreateGroupsForNewObjects:=" , <boolean>)                                                                                                                                                                                |
| Return Value | None.                          |       |                                                                                                                                                                                                                                                                |

| Python Syntax         | DuplicateAlongLine (<SelectionsArray>, <ParametersArray>, <OptionsArray>, <CreateGroup>)                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.DuplicateAlongLine( ["NAME:Selections",     "Selections:="          , "Box1",     "NewPartsModelFlag:="   , "Model" ], ["NAME:DuplicateToAlongLineParameters",     "CreateNewObjects:="    , False,     "XComponent:="          , "1mm",     "YComponent:="          , "-0.7mm",     "ZComponent:="          , "0mm",     "NumClones:="           , "2" ], ["NAME:Options",     "DuplicateAssignments:=", False ], ["CreateGroupsForNewObjects:=", False ]) </pre> |

## DuplicateAroundAxis

Duplicates specified parts around an axis.

| UI Access    | Edit > Duplicate > Around Axis. |       |                                                                                                                                                                                                                                  |
|--------------|---------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                            | Type  | Description                                                                                                                                                                                                                      |
|              | <SelectionsArray>               | Array | Structured array.<br><br>Array("NAME:Selections",<br>"Selections:=" , <string>,<br>"NewPartsModelFlag:=" , <string>)                                                                                                             |
|              | <ParametersArray>               | Array | Structured array.<br><br>Array("NAME:DuplicateAroundAxisParameters",<br>"CreateNewObjects:=" , <boolean>,<br>"WhichAxis:=" , <string>,<br>"AngleStr:=" , <string>,<br>"NumClones:=" , <string containing number greater than 1>) |
|              | <OptionsArray>                  | Array | Structured array.<br><br>Array("NAME:Options",<br>"DuplicateAssignments:=" , <boolean>)                                                                                                                                          |
|              | <CreateGroup>                   | Array | Optional. Structured array.<br><br>Array("CreateGroupsForNewObjects:=" , <boolean>)                                                                                                                                              |
| Return Value | None.                           |       |                                                                                                                                                                                                                                  |

| Python Syntax  | DuplicateAroundAxis (<SelectionsArray>, <ParametersArray>, <OptionsArray>, <CreateGroup>)                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre> oEditor.DuplicateAroundAxis(     ["NAME:Selections",         "Selections:="          , "Box1",         "NewPartsModelFlag:="   , "Model"     ],     ["NAME:DuplicateAroundAxisParameters",         "CreateNewObjects:="     , True,         "WhichAxis:="           , "Z",         "AngleStr:="             , "90deg",         "NumClones:="            , "2"     ],     ["NAME:Options",         "DuplicateAssignments:=", False     ],     ["CreateGroupsForNewObjects:=", False     ]) </pre> |

## DuplicateMirror

Duplicates specified parts according to a mirror plane.

|           |                            |
|-----------|----------------------------|
| UI Access | Edit > Duplicate > Mirror. |
|-----------|----------------------------|

|                     |                                |             |                                                                                                                                                                                                                                                                                  |
|---------------------|--------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>                    | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                               |
|                     | <b>&lt;SelectionsArray&gt;</b> | Array       | Structured array.<br><br>Array("NAME:Selections",<br>"Selections:=" , <string>,<br>"NewPartsModelFlag:=" , <string>)                                                                                                                                                             |
|                     | <b>&lt;ParametersArray&gt;</b> | Array       | Structured array.<br><br>Array("NAME:DuplicateToMirrorParameters",<br>"DuplicateMirrorBaseX:=" , <string>,<br>"DuplicateMirrorBaseY:=" , <string>,<br>"DuplicateMirrorNormalX:=" , <string>,<br>"DuplicateMirrorNormalY:=" , <string>,<br>"DuplicateMirrorNormalZ:=" , <string>) |
|                     | <b>&lt;OptionsArray&gt;</b>    | Array       | Structured array.<br><br>Array("NAME:Options",<br>"DuplicateAssignments:=" , <boolean>)                                                                                                                                                                                          |
|                     | <b>&lt;CreateGroup&gt;</b>     | Array       | Optional. Structured array.<br><br>Array("CreateGroupsForNewObjects:=" , <boolean>)                                                                                                                                                                                              |
| <b>Return Value</b> | None.                          |             |                                                                                                                                                                                                                                                                                  |

|                      |                                                                                       |
|----------------------|---------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | DuplicateMirror (<SelectionsArray>, <ParametersArray>, <OptionsArray>, <CreateGroup>) |
|----------------------|---------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oEditor.DuplicateMirror(<br/>    ["NAME:Selections",<br/>        "Selections:=", "Box1",<br/>        "NewPartsModelFlag:=", "Model"<br/>    ],<br/>    ["NAME:DuplicateToMirrorParameters",<br/>        "DuplicateMirrorBaseX:=", "-0.4mm",<br/>        "DuplicateMirrorBaseY:=", "-1.2mm",<br/>        "DuplicateMirrorBaseZ:=", "0mm",<br/>        "DuplicateMirrorNormalX:=", "0.124034734589208mm",<br/>        "DuplicateMirrorNormalY:=", "0.992277876713668mm",<br/>        "DuplicateMirrorNormalZ:=", "0mm"<br/>    ],<br/>    ["NAME:Options",<br/>        "DuplicateAssignments:=", False<br/>    ],<br/>    ["CreateGroupsForNewObjects:=", False<br/>    ]<br/>)</pre> |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Mirror

Mirrors specified part(s).

| UI Access    | Edit > Arrange > Mirror. |       |                                                                                                                                                                                                                                                         |
|--------------|--------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                     | Type  | Description                                                                                                                                                                                                                                             |
|              | <SelectionsArray>        | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                                                                                |
|              | <MirrorParameters>       | Array | Structured array.<br><br>Array("NAME:MirrorParameters",<br>"MirrorBaseX:=" , <string>,<br>"MirrorBaseY:=" , <string>,<br>"MirrorBaseZ:=" , <string>,<br>"MirrorNormalX:=" , <string>,<br>"MirrorNormalY:=" , <string>,<br>"MirrorNormalZ:=" , <string>) |
| Return Value | None.                    |       |                                                                                                                                                                                                                                                         |

| Python Syntax  | Mirror(<SelectionsArray>, <MirrorParameters>)                                                                                                                                          |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.Mirror(<br/>    ["NAME:Selections",<br/>        "Selections:=" , "Box1_1",<br/>        "NewPartsModelFlag:=" , "Model"<br/>    ],<br/>    ["NAME:MirrorParameters",</pre> |

|  |                                                                                                                                                                                                                                          |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "MirrorBaseX:="      , "-0.2mm", "MirrorBaseY:="      , "-1.2mm", "MirrorBaseZ:="      , "0mm", "MirrorNormalX:="    , "-0.316227766016838mm", "MirrorNormalY:="    , "0.948683298050514mm", "MirrorNormalZ:="    , "0mm" ] </pre> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Move

Moves specified part(s).

| UI Access    | Edit > Arrange > Move. |       |                                                                                                                                                                                                                          |
|--------------|------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                   | Type  | Description                                                                                                                                                                                                              |
|              | <SelectionsArray>      | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                                                 |
|              | <TranslateParameters>  | Array | Structured array.<br><br><pre> Array ( [ "NAME:TranslateParameters",         "TranslateVectorX:=" , &lt;string&gt;,         "TranslateVectorY:=" , &lt;string&gt;,         "TranslateVectorZ:=" , &lt;string&gt;) </pre> |
| Return Value | None.                  |       |                                                                                                                                                                                                                          |

|               |                                                |
|---------------|------------------------------------------------|
| Python Syntax | Move(<SelectionsArray>, <TranslateParameters>) |
|---------------|------------------------------------------------|



|                |                                                                                                                                                                                                                                                                                                               |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.Move(<br/>  ["NAME:Selections",<br/>    "Selections:=" , "Box1_1",<br/>    "NewPartsModelFlag:=" , "Model"<br/>  ],<br/>  ["NAME:TranslateParameters",<br/>    "TranslateVectorX:=" , "-0.5mm",<br/>    "TranslateVectorY:=" , "0.1mm",<br/>    "TranslateVectorZ:=" , "0mm"<br/>  ]<br/>)</pre> |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

OffsetFaces

Offsets the faces of selected part(s).

|              |                          |       |                                                                                           |
|--------------|--------------------------|-------|-------------------------------------------------------------------------------------------|
| UI Access    | Edit > Arrange > Offset. |       |                                                                                           |
| Parameters   | Name                     | Type  | Description                                                                               |
|              | <SelectionsArray>        | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                  |
|              | <OffsetParameters>       | Array | Structured array.<br><br>Array("NAME:OffsetParameters",<br>"OffsetDistance:=" , <string>) |
| Return Value | None.                    |       |                                                                                           |

| Python Syntax  | OffsetFaces (<SelectionsArray>, <OffsetParameters>)                                                                                                                                                               |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.OffsetFaces (     ["NAME:Selections",         "Selections:=", "Box1_1",         "NewPartsModelFlag:=", "Model"     ],     ["NAME:OffsetParameters",         "OffsetDistance:=", "16mm"     ]) </pre> |

## Paste (Model Editor)

Pastes previously copied object(s). See: [Copy](#).

|              |               |
|--------------|---------------|
| UI Access    | Edit > Paste. |
| Parameters   | None.         |
| Return Value | None.         |

| Python Syntax  | Paste()                                                                                    |
|----------------|--------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.Copy (     ["NAME:Selections",         "Selections:=" , "Box1_2"     ] </pre> |

|  |                                         |
|--|-----------------------------------------|
|  | <pre>] )<br/><br/>oEditor.Paste()</pre> |
|--|-----------------------------------------|

Rotate

Rotates specified object(s).

|              |                          |       |                                                                                                                                               |
|--------------|--------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | Edit > Arrange > Rotate. |       |                                                                                                                                               |
| Parameters   | Name                     | Type  | Description                                                                                                                                   |
|              | <SelectionsArray>        | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                      |
|              | <RotateParameters>       | Array | Structured array.<br><br>Array("NAME:RotateParameters",<br><br>"RotateAxis:=" , <string "X", "Y", or "Z">,<br><br>"RotateAngle:=" , <string>) |
| Return Value | None.                    |       |                                                                                                                                               |

|                |                                                                                                                                                |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | Rotate(<SelectionsArray>, <RotateParameters>)                                                                                                  |
| Python Example | <pre>oEditor.Rotate(<br/>  ["NAME:Selections",<br/>    "Selections:=", "Box1_1",<br/>    "NewPartsModelFlag:=", "Model"<br/>  ],<br/>  )</pre> |

|  |                                                                                           |
|--|-------------------------------------------------------------------------------------------|
|  | <pre>[ "NAME:RotateParameters",   "RotateAxis:=", "Z",   "RotateAngle:=", "90deg" ]</pre> |
|--|-------------------------------------------------------------------------------------------|

## Scale

Scales specified object(s).

| UI Access    | Edit > Scale.     |       |                                                                                                                                                                                                                                    |
|--------------|-------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name              | Type  | Description                                                                                                                                                                                                                        |
|              | <SelectionsArray> | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                                                           |
|              | <ScaleParameters> | Array | Structured array.<br><pre>Array("NAME:ScaleParameters",   "ScaleX:=" , &lt;string containing scale factor&gt;,   "ScaleY:=" , &lt;string containing scale factor&gt;,   "ScaleZ:=" , &lt;string containing scale factor&gt;)</pre> |
| Return Value | None.             |       |                                                                                                                                                                                                                                    |

| Python Syntax  | Scale (<SelectionsArray>, <ScaleParameters>)                            |
|----------------|-------------------------------------------------------------------------|
| Python Example | <pre>oEditor.Scale( ["NAME:Selections",   "Selections:=", "Box1",</pre> |

|  |                                                                                                                                                                         |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"NewPartsModelFlag:=", "Model"<br/><br/>],<br/>["NAME:ScaleParameters",<br/>    "ScaleX:=", "2",<br/>    "ScaleY:=", "2",<br/>    "ScaleZ:=", "2"<br/>    ])</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Modeler Menu Commands

[AssignMaterial](#)

[Chamfer](#)

[Connect](#)

[CoverLines](#)

[CoverSurfaces](#)

[CreateEntityList](#)

[CreateFaceCS](#)

[CreateGroup](#)

[CreateObjectCS](#)

[CreateObjectFromEdges](#)

[CreateObjectFromFaces](#)

[CreateRelativeCS](#)

[DeleteEmptyGroups](#)

[DeleteLastOperation](#)

[DetachFaces](#)

[EditEntityList](#)

[EditFaceCS](#)

[EditObjectCS](#)

[EditRelativeCS](#)

[Export](#)

[ExportModelImageToFile](#)

[ExportModelMeshToFile](#)

[Fillet](#)

[FlattenGroup](#)

[Generate History](#)

[GetActiveCoordinateSystem](#)

[GetCoordinateSystems](#)

[HealObject](#)

[Import](#)

[ImportDXF](#)

[ImportGDSII \[Modeler\]](#)

[Intersect](#)

[MoveCStoEnd](#)

[MoveEntityToGroup](#)

[MoveFaces](#)

[ProjectSheet](#)

[PurgeHistory](#)

[ReplaceWith3DComponent](#)

[Section](#)

[SeparateBody](#)

[SetModelUnits](#)

[SetWCS](#)

[ShowWindow](#)

[Split](#)

[Subtract](#)

[SweepFacesAlongNormal](#)

[ThickenSheet](#)

[UncoverFaces](#)

[Unite](#)

[Ungroup](#)

[WrapSheet](#)

## AlignFaces

Aligns the adjacent selected faces of imported objects which have only one operation in their History Tree.

| UI Access    | Modeler > Model Preparation > Align Faces |       |                                                                                                    |
|--------------|-------------------------------------------|-------|----------------------------------------------------------------------------------------------------|
| Parameters   | Name                                      | Type  | Description                                                                                        |
|              | <argFaceList>                             | Array | ["NAME:<SpecifiedName>",<br>"BaseFaces:=", <FaceNumberArray>,<br>"SnapFaces:=", <FaceNumberArray>] |
|              | <FaceNumberArray>                         | Array | Array of number represents specified faces.                                                        |
| Return Value | None.                                     |       |                                                                                                    |

| Python Syntax  | AlignFaces(<argFaceList>)                                                                                                      |
|----------------|--------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.AlignFaces([     "NAME:Entity List",     "BaseFaces:="          , [9],     "SnapFaces:="          , [18] ])</pre> |

## AssignMaterial

Assigns a material to specified object(s).

| UI Access | Modeler > Assign Material. |
|-----------|----------------------------|
|-----------|----------------------------|



|                      |                                                      |       |                                                                                                                                                                                                                                                                                                                                                  |
|----------------------|------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>    | Name                                                 | Type  | Description                                                                                                                                                                                                                                                                                                                                      |
|                      | <SelectionsArray>                                    | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                                                                                                                                                                         |
|                      | <AttributesArray>                                    | Array | Structured array. See: <a href="#">AttributesArray</a> .<br><br>This script supports the following attributes: <ul style="list-style-type: none"><li>• MaterialValue</li><li>• SolveInside</li><li>• ShellElement</li><li>• ShellElementThickness</li><li>• IsMaterialEditable</li><li>• UseMaterialAppearance</li><li>• IsLightweight</li></ul> |
| <b>Return Value</b>  | None.                                                |       |                                                                                                                                                                                                                                                                                                                                                  |
| <b>Python Syntax</b> | AssignMaterial(<SelectionsArray>, <AttributesArray>) |       |                                                                                                                                                                                                                                                                                                                                                  |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.AssignMaterial(     ["NAME:Selections",     "AllowRegionDependentPartSelectionForPMLCreation:=", True,     "AllowRegionSelectionForPMLCreation:=", True,     "Selections:=" , "Box1"     ],     ["NAME:Attributes",     "MaterialValue:=" , "diamond",     "SolveInside:=" , False,     "ShellElement:=" , False,     "ShellElementThickness:=" , "nan",     "IsMaterialEditable:=" , True,     "UseMaterialAppearance:=" , False,     "IsLightweight:=" , False     ]) </pre> |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Chamfer

Creates a chamfer.

| UI Access  | Modeler > Chamfer. |       |                                                          |
|------------|--------------------|-------|----------------------------------------------------------|
| Parameters | Name               | Type  | Description                                              |
|            | <SelectionsArray>  | Array | Structured array. See: <a href="#">SelectionsArray</a> . |

|              |                                 |       |                                                                                                                                                                                                                                                                                                                                                                          |
|--------------|---------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <code>&lt;Parameters&gt;</code> | Array | Structured array.<br><br>Array("NAME:Parameters",<br>Array("NAME:ChamferParameters",<br>"Edges:=" , <array containing integer>,<br>"Vertices:=" , <array>,<br>"LeftDistance:=" , <string>,<br>"RightDistance:=" , <string>,<br>"ChamferType:=" , <string "Symmetric",<br>"Left Distance-Angle", "Right Distance-Angle", or<br>"Left Distance-Right Distance">)<br>)<br>) |
| Return Value | None.                           |       |                                                                                                                                                                                                                                                                                                                                                                          |

|                |                                                                                                                                                                                                                       |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | Chamfer(<SelectionsArray>, <Parameters>)                                                                                                                                                                              |
| Python Example | <pre>oEditor.Chamfer(<br/>    ["NAME:Selections",<br/>    "Selections:="          , "Box2",<br/>    "NewPartsModelFlag:="   , "Model"<br/>    ],<br/>    ["NAME:Parameters",<br/>    ["NAME:ChamferParameters",</pre> |

|  |                                                                                                                                                                                              |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"Edges:="          , [42],<br/>"Vertices:="        , [],<br/>"LeftDistance:="    , "0.1mm",<br/>"RightDistance:="   , "0.1mm",<br/>"ChamferType:="     , "Symmetric"<br/>]<br/>])</pre> |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CleanUpModel

Cleans up history tree operations.

|                     |                                            |
|---------------------|--------------------------------------------|
| <b>UI Access</b>    | <b>Modeler &gt; Cleanup Model History.</b> |
| <b>Parameters</b>   | None.                                      |
| <b>Return Value</b> | None.                                      |

|                       |                        |
|-----------------------|------------------------|
| <b>Python Syntax</b>  | CleanUpModel()         |
| <b>Python Example</b> | oEditor.CleanUpModel() |

## Connect

Connects two or more 1D polyline objects or 2D sheet objects.

|                  |                                           |
|------------------|-------------------------------------------|
| <b>UI Access</b> | <b>Modeler &gt; Surface &gt; Connect.</b> |
|------------------|-------------------------------------------|

|              |                   |       |                                                          |
|--------------|-------------------|-------|----------------------------------------------------------|
| Parameters   | Name              | Type  | Description                                              |
|              | <SelectionsArray> | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
| Return Value | None.             |       |                                                          |

|                |                                                                                                         |
|----------------|---------------------------------------------------------------------------------------------------------|
| Python Syntax  | Connect(<SelectionsArray>)                                                                              |
| Python Example | <pre>oEditor.Connect(<br/>    ["NAME:Selections",<br/>    "Selections:=", "Polyline2,Polyline1"])</pre> |

## CoverLines

Covers two or more 1D objects to form a sheet.

|              |                                  |       |                                                          |
|--------------|----------------------------------|-------|----------------------------------------------------------|
| UI Access    | Modeler > Surface > Cover Lines. |       |                                                          |
| Parameters   | Name                             | Type  | Description                                              |
|              | <SelectionsArray>                | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
| Return Value | None.                            |       |                                                          |

|                |                                                                                                           |
|----------------|-----------------------------------------------------------------------------------------------------------|
| Python Syntax  | CoverLines(<SelectionsArray>)                                                                             |
| Python Example | <pre>oEditor.CoverLines([<br/>    "NAME:Selections",<br/>    "Selections:=", "Polyline3,Polyline4",</pre> |

|  |                                  |
|--|----------------------------------|
|  | "NewPartsModelFlag:=", "Model"]) |
|--|----------------------------------|

## CoverSurfaces

Covers two or more faces to form a solid object.

| UI Access    | <b>Modeler &gt; Surface &gt; Cover Faces.</b> |       |                                                          |
|--------------|-----------------------------------------------|-------|----------------------------------------------------------|
| Parameters   | Name                                          | Type  | Description                                              |
|              | <SelectionsArray>                             | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
| Return Value | None.                                         |       |                                                          |

| Python Syntax  | CoverSurfaces (<SelectionsArray>)                                                                                                                    |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.CoverSurfaces (     ["NAME:Selections",      "Selections:=", "Obj1_Face1,Obj2_Face2",      "NewPartsModelFlag:=", "Model"     ]) </pre> |

## CreateEntityList

Creates a list of entities containing objects or faces (not both).

**Warning:** As of the Ansys Electronics Desktop25r2 release, this command has been deprecated. It will be removed in a future release. Please use the [CreateNamedSelection](#) command instead.

| UI Access    | Modeler > Named Selection > Create > [Object / Face] Selection |       |                                                                                                                                                                                                                                                  |
|--------------|----------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                           | Type  | Description                                                                                                                                                                                                                                      |
|              | <Parameters>                                                   | Array | Structured array.<br><br>Array("NAME:GeometryEntityListParameters",<br>"EntityType:=" , <string "Object" or "Face">,<br>"EntityList:=" , <string of object names or IDs>)<br><br>See <a href="#">GetObjectIDByName</a> for returning object IDs. |
|              | <AttributesArray>                                              | Array | Structured array. See: <a href="#">AttributesArray</a> . CreateEntityList takes only the "Name" parameter.                                                                                                                                       |
| Return Value | None.                                                          |       |                                                                                                                                                                                                                                                  |

| Python Syntax  | CreateEntityList(<Parameters>,<AttributesArray>)                                                                                                                                                                                                           |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.CreateEntityList(<br/>    ["NAME:GeometryEntityListParameters",<br/>      "EntityType:=", "Object",<br/>      "EntityList:=", "Bondwire1,Bondwire2"<br/>    ],<br/>    ["NAME:Attributes",<br/>      "Name:=", "Objectlist1"<br/>    ])</pre> |

## CreateFaceCS

Creates a Face Coordinate System from a selected face.

| UI Access  | Modeler > Coordinate System > Create > FaceCS. |       |                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------|------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                           | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                    |
|            | <Parameters>                                   | Array | Structured array.<br><br><pre>Array("NAME:FaceCSParameters",       &lt;OriginArray&gt;,       "MoveToEnd:=", &lt;boolean&gt;,       "FaceID:=", &lt;integer&gt;,       &lt;AxisPosnArray&gt;,       "WhichAxis:=", &lt;string "X", "Y", or "Z"&gt;,       "ZRotationAngle:=", &lt;string&gt;,       "XOffset:=", &lt;string&gt;,       "YOffset:=", &lt;string&gt;,       "AutoAxis:=", &lt;boolean&gt;)</pre> |
|            | <OriginArray>                                  | Array | Structured array.<br><br><pre>Array("NAME:Origin",       "IsAttachedToEntity:=", &lt;boolean&gt;,       "EntityID:=", &lt;integer&gt;,       "FacetedBodyTriangleIndex:=", &lt;integer&gt;,       "TriangleVertexIndex:=", &lt;integer&gt;,</pre>                                                                                                                                                              |



|  |                 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--|-----------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                 |       | <pre>"PositionType:=" , &lt;string "FaceCenter", "EdgeCenter", "OnVertex", "OnEdge", or "OnFace"&gt;,  "UParam:=" , &lt;float between 0 and 1 representing the relative position of the point on the edge or face&gt;,  "VParam:=" , &lt;float between 0 and 1 representing the relative position of the point on the edge or face&gt;,  "XPosition:=" , &lt;string&gt;,  "YPosition:=" , &lt;string&gt;,  "ZPosition:=" , &lt;string&gt;)</pre> <p>IsAttachedToEntity specifies whether the point is anchored to a vertex, edge, or face. If True, provide UParam and VParam. If False, provide XPosition, YPosition, and ZPosition to provide fixed position. Pass "0" for unused parameters.</p> |
|  | <AxisPosnArray> | Array | <p>Structured array.</p> <pre>Array("NAME:AxisPosn",      "IsAttachedToEntity:=" , &lt;boolean&gt;,      "EntityID:=" , &lt;integer&gt;,      "FacetedBodyTriangleIndex:=", &lt;integer&gt;,      "TriangleVertexIndex:=" , &lt;integer&gt;,      "PositionType:=" , &lt;string "FaceCenter",     "EdgeCenter", "OnVertex", "OnEdge", or "OnFace"&gt;,      "UParam:=" , &lt;float&gt;,</pre>                                                                                                                                                                                                                                                                                                       |

|                     |                   |       |                                                                                                             |
|---------------------|-------------------|-------|-------------------------------------------------------------------------------------------------------------|
|                     |                   |       | "VParam:=" , <float>,<br>"XPosition:=" , <string>,<br>"YPosition:=" , <string>,<br>"ZPosition:=" , <string> |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> .                                                    |
| <b>Return Value</b> | None.             |       |                                                                                                             |

|                       |                                                                                                                                                                                                                                                                                                                                                                                 |  |  |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | CreateFaceCS(<Parameters>,<AttributesArray>)                                                                                                                                                                                                                                                                                                                                    |  |  |
| <b>Python Example</b> | <pre> oEditor.CreateFaceCS ( ["NAME:FaceCSParameters",   ["NAME:Origin",     "IsAttachedToEntity:=" , True,     "EntityID:=" , 46,     "FacetedBodyTriangleIndex:=" , -1,     "TriangleVertexIndex:=" , -1,     "PositionType:=" , "FaceCenter",     "UParam:=" , 0,     "VParam:=" , 0,     "XPosition:=" , "0",     "YPosition:=" , "0",     "ZPosition:=" , "0"   ] ] </pre> |  |  |

```
],
"MoveToEnd:="          , False,
"FaceID:="              , 46,
["NAME:AxisPosn",
  "IsAttachedToEntity:=" , True,
  "EntityID:="            , 46,
  "FacetedBodyTriangleIndex:=", -1,
  "TriangleVertexIndex:=" , -1,
  "PositionType:="        , "OnFace",
  "UParam:="              , 0.487129134674319,
  "VParam:="              , 0.308528523557527,
  "XPosition:="           , "1292.27748080459mm",
  "YPosition:="           , "-814.882885865484mm",
  "ZPosition:="           , "0mm"
],
"WhichAxis:="           , "X",
"ZRotationAngle:="      , "0deg",
"XOffset:="              , "0mm",
"YOffset:="              , "0mm",
"AutoAxis:="             , False
```

```

],
["NAME:Attributes",
    "Name:="          , "FaceCS1",
    "PartName:="      , "Rectangle1"
])

```

## CreateGroup

Creates a group from objects specified in the history tree.

| UI Access    | Modeler > Group > Create. |       |                                                                                                                                                                                |
|--------------|---------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                      | Type  | Description                                                                                                                                                                    |
|              | <Parameters>              | Array | Structured array.<br><br>Array("NAME:GroupParameter",<br>"ParentGroupID:=" , <string>,<br>"Parts:=" , <string>,<br>"SubmodelInstances:=" , <string>,<br>"Groups:=" , <string>) |
| Return Value | None.                     |       |                                                                                                                                                                                |

| Python Syntax  | CreateGroup(<Parameters>)                                 |
|----------------|-----------------------------------------------------------|
| Python Example | <pre> oEditor.CreateGroup( ["NAME:GroupParameter", </pre> |

|  |                                                                                                                                                      |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "ParentGroupID:="      , "Model", "Parts:="              , "Box1,Box2,Box3", "SubmodelInstances:="  , "", "Groups:="             , "" ] </pre> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------|

### CreateNamedSelection

Creates a list of entities containing objects or faces (not both).

| UI Access    | Modeler > Named Selection > Create > [Object / Face] Selection |       |                                                                                                                                                                                                                                                                      |
|--------------|----------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                           | Type  | Description                                                                                                                                                                                                                                                          |
|              | <Parameters>                                                   | Array | <p>Structured array.</p> <pre> Array("NAME:NamedSelectionParameters",       "Type:=" , &lt;string "Object" or "Face"&gt;,       "Selection:=" , &lt;string of object names or IDs&gt;) </pre> <p>See <a href="#">GetObjectIDByName</a> for returning object IDs.</p> |
|              | <AttributesArray>                                              | Array | Structured array. See <a href="#">AttributesArray</a> . CreateNamedSelection takes only the "Name" parameter and UDM ID.                                                                                                                                             |
| Return Value | None.                                                          |       |                                                                                                                                                                                                                                                                      |

|               |                                                      |
|---------------|------------------------------------------------------|
| Python Syntax | CreateNamedSelection(<Parameters>,<AttributesArray>) |
|---------------|------------------------------------------------------|

|                       |                                                                                                                                                                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> namedSelectionName = oEditor.CreateNamedSelection(     [         "NAME:NamedSelectionParameters",         "Type:=" , "Face",         "Selection:=" , [7,9]     ],     [         "NAME:Attributes",         "Name:=" , "FaceSelection1",         "UDM ID:=" , -1     ]) </pre> |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CreateObjectCS

Creates an object coordinate system from a selected object.

| UI Access         | Modeler > Coordinate System > Create > Object > [Offset / Rotated / Both]. |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------|----------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                       | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                   | <Parameters>                                                               | Array | <p>Structured array.</p> <pre> Array("NAME:ObjectCSParameters",     &lt;OriginArray&gt;     "MoveToEnd:=" , &lt;boolean&gt;,     "ReverseXAxis:=" , &lt;boolean&gt;,     "ReverseYAxis:=" , &lt;boolean&gt;,     &lt;xAxisArray / xAxisPosArray&gt;     &lt;yAxisArray / yAxisPosArray&gt;) </pre> <p><b>Note:</b> xAxisArray and xAxisPosArray differ. Use xAxisArray for absolute position and xAxisPosArray for relative position. Do the same for yAx-</p> |

|               |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |       | isArray and yAxisPosArray.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <OriginArray> | Array | <p>Structured array.</p> <pre>Array("NAME:Origin",     "IsAttachedToEntity:=" , &lt;boolean&gt;,     "EntityID:=" , &lt;integer&gt;,     "FacetedBodyTriangleIndex:=", &lt;integer&gt;,     "TriangleVertexIndex:=" , &lt;integer&gt;,     "PositionType:=" , &lt;string "OnVertex",     "EdgeCenter", "FaceCenter", "OnEdge", or "AbsolutePosition"&gt;,     "UParam:=" , &lt;float between 0 and 1 representing     the relative position of the point on the edge or     face&gt;,     "VParam:=" , &lt;float between 0 and 1 representing     the relative position of the point on the edge or     face&gt;,     "XPosition:=" , &lt;string&gt;,     "YPosition:=" , &lt;string&gt;,     "ZPosition:=" , &lt;string&gt;)</pre> <p>IsAttachedToEntity specifies whether the point is anchored. If True, provide UParam and VParam. If False, provide XPosition, YPosition, and ZPosition to provide fixed position. Pass "0" for unused parameters.</p> |
| <xAxisArray>  | Array | <p>Structured array for absolute position:</p> <pre>Array("NAME:xAxis",</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|                 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |       | <pre> "DirectionType:=" , "AbsoluteDirection", "EdgeID:=" , &lt;integer&gt;, "FaceID:=" , &lt;integer&gt;, "xDirection:=" , &lt;string&gt;, "yDirection:=" , &lt;string&gt;, "zDirection:=" , &lt;string&gt;, "UParam:=" , &lt;float&gt;, "VParam:=" , &lt;float&gt;) </pre>                                                                                                                                                                                                                                                                       |
| <xAxisPosArray> | Array | <p>Structured array for relative position:</p> <pre> Array("NAME:xAxisPos",     "IsAttachedToEntity:=" , &lt;boolean&gt;,     "EntityID:=" , &lt;integer&gt;,     "FacetedBodyTriangleIndex:=" , &lt;integer&gt;,     "TriangleVertexIndex:=" , &lt;integer&gt;,     "PositionType:=" , &lt;string "OnVertex",     "EdgeCenter", "FaceCenter", or "OnEdge"&gt;,     "UParam:=" , &lt;float&gt;,     "VParam:=" , &lt;float&gt;,     "XPosition:=" , &lt;string&gt;,     "YPosition:=" , &lt;string&gt;,     "ZPosition:=" , &lt;string&gt;) </pre> |
| <yAxisArray>    | Array | Structured array for absolute position:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |



|  |                 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--|-----------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                 |       | <pre>Array("NAME:yAxis",<br/>      "DirectionType:=" , "AbsoluteDirection",<br/>      "EdgeID:=" , &lt;integer&gt;,<br/>      "FaceID:=" , &lt;integer&gt;,<br/>      "xDirection:=" , &lt;string&gt;,<br/>      "yDirection:=" , &lt;string&gt;,<br/>      "zDirection:=" , &lt;string&gt;,<br/>      "UParam:=" , &lt;float&gt;,<br/>      "VParam:=" , &lt;float&gt;)</pre>                                                                                                                                                                                           |
|  | <yAxisPosArray> | Array | <p>Structured array for relative position:</p> <pre>Array("NAME:yAxisPos",<br/>      "IsAttachedToEntity:=" , &lt;boolean&gt;,<br/>      "EntityID:=" , &lt;integer&gt;,<br/>      "FacetedBodyTriangleIndex:=" , &lt;integer&gt;,<br/>      "TriangleVertexIndex:=" , &lt;integer&gt;,<br/>      "PositionType:=" , &lt;string "OnVertex",<br/>      "EdgeCenter", "FaceCenter", or "OnEdge"&gt;,<br/>      "UParam:=" , &lt;float&gt;,<br/>      "VParam:=" , &lt;float&gt;,<br/>      "XPosition:=" , &lt;string&gt;,<br/>      "YPosition:=" , &lt;string&gt;,</pre> |

|                     |                   |       |                                                          |
|---------------------|-------------------|-------|----------------------------------------------------------|
|                     |                   |       | "ZPosition:=" , <string>)                                |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> . |
| <b>Return Value</b> | None.             |       |                                                          |

| Python Syntax         | CreateObjectCS(<Parameters>,<AttributesArray>)                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.CreateObjectCS( ["NAME:ObjectCSParameters",   ["NAME:Origin",     "IsAttachedToEntity:=" , True,     "EntityID:=" , 59,     "FacetedBodyTriangleIndex:=", -1,     "TriangleVertexIndex:=" , -1,     "PositionType:=" , "OnVertex",     "UParam:=" , 0,     "VParam:=" , 0,     "XPosition:=" , "0",     "YPosition:=" , "0",     "ZPosition:=" , "0"   ],   "MoveToEnd:=" , False,   "ReverseXAxis:=" , False, </pre> |

```
"ReverseYAxis:="          , False,
["NAME:xAxis",
  "DirectionType:="        , "AbsoluteDirection",
  "EdgeID:="               , -1,
  "FaceID:="               , -1,
  "xDirection:="           , "1",
  "yDirection:="           , "0",
  "zDirection:="           , "0",
  "UParam:="               , 0,
  "VParam:="               , 0
],
["NAME:yAxis",
  "DirectionType:="        , "AbsoluteDirection",
  "EdgeID:="               , -1,
  "FaceID:="               , -1,
  "xDirection:="           , "0",
  "yDirection:="           , "1",
  "zDirection:="           , "0",
  "UParam:="               , 0,
  "VParam:="               , 0
```

```

    ]
  ],
  ["NAME:Attributes",
    "Name:=" , "ObjectCS1",
    "PartName:=" , "Box2"
  ])

```

## CreateObjectFromEdges

Creates an object from the specified object edge.

| UI Access  | Modeler > Edge > Create Object From Edge |       |                                                                                                                                                                     |
|------------|------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                     | Type  | Description                                                                                                                                                         |
|            | <SelectionsArray>                        | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                            |
|            | <ParametersArray>                        | Array | Structured array.<br><br><pre> Array("NAME:Parameters",   Array("NAME:BodyFromEdgeToParameters",     "Edges:=" , &lt;array containing integer edges&gt;   ) )</pre> |
|            | <CreateGroupsForNewObjects>              | Array | Structured array.<br><br><pre> Array("CreateGroupsForNewObjects:=",   &lt;boolean True to create groups for new objects; else False&gt;)</pre>                      |

|              |       |
|--------------|-------|
| Return Value | None. |
|--------------|-------|

|                |                                                                                                                                                                                                                                                                                              |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | CreateObjectFromEdges(<SelectionsArray>, <ParametersArray>, <CreateGroupsForNewObjects>)                                                                                                                                                                                                     |
| Python Example | <pre>oEditor.CreateObjectFromEdges (     ["NAME:Selections",     "Selections:=", "Box2",     "NewPartsModelFlag:=", "Model"     ],     ["NAME:Parameters",         ["NAME:BodyFromEdgeToParameters",         "Edges:=", [41] ]     ],     ["CreateGroupsForNewObjects:=", False     ])</pre> |

CreateObjectFromFace

Creates 2D objects from specified face(s).

|           |     |
|-----------|-----|
| UI Access | N/A |
|-----------|-----|

|                     |                             |             |                                                                                        |
|---------------------|-----------------------------|-------------|----------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>                 | <b>Type</b> | <b>Description</b>                                                                     |
|                     | <SelectionsArray>           | Array       | Structured array. See: <a href="#">SelectionsArray</a> .                               |
|                     | <Parameters>                | Array       | Structured array.<br><br>Array ("NAME:Parameters",<br><BodyFromFaceToParameters>)      |
|                     | <CreateGroupsForNewObjects> | Array       | Optional. Structured array.<br><br>Array ("CreateGroupsForNewObjects:=",<br><boolean>) |
| <b>Return Value</b> | None.                       |             |                                                                                        |

|                       |                                                                                                                                                                                                                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CreateObjectFromFace (<SelectionsArray>, <Parameters>, <CreateGroupsForNewObjects>)                                                                                                                                                                                                                          |
| <b>Python Example</b> | <pre>oEditor.CreateObjectFromFace (     ["NAME:Selections",     "Selections:="          , "Box3",     "NewPartsModelFlag:="   , "Model"     ],     ["NAME:Parameters",     ["NAME:BodyFromFaceToParameters",     "FacesToDetach:="       , [68]     ]     ],     ["CreateGroupsForNewObjects:=", False</pre> |

|  |    |
|--|----|
|  | 1) |
|--|----|

CreateObjectFromFaces

Creates 2D objects from specified face(s).

| UI Access    | Modeler > Surface > Create Object from Face |       |                                                                                   |
|--------------|---------------------------------------------|-------|-----------------------------------------------------------------------------------|
| Parameters   | Name                                        | Type  | Description                                                                       |
|              | <SelectionsArray>                           | Array | Structured array. See: <a href="#">SelectionsArray</a> .                          |
|              | <Parameters>                                | Array | Structured array.<br><br>Array ("NAME:Parameters",<br><BodyFromFaceToParameters>) |
|              | <CreateGroupsForNewObjects>                 | Array | Structured array.<br><br>Array ("CreateGroupsForNewObjects:=",<br><boolean>)      |
| Return Value | None.                                       |       |                                                                                   |

| Python Syntax  | CreateObjectFromFaces (<SelectionsArray>,<Parameters>,<CreateGroupsForNewObjects>)                                                                                               |  |  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Python Example | <pre>oEditor.CreateObjectFromFaces (<br/>    ["NAME:Selections",<br/>    "Selections:="                , "Box3",<br/>    "NewPartsModelFlag:="        , "Model"<br/>    ],</pre> |  |  |

```
[ "NAME:Parameters",
  [ "NAME:BodyFromFaceToParameters",
    "FacesToDetach:=" , [68]
  ]
],
["CreateGroupsForNewObjects:=", False
])
```

## CreateRelativeCS

Creates a Relative Coordinate System.

| UI Access  | Modeler > Coordinate System > Create > Relative CS > [Offset / Rotated / Both]. |       |                                                                                                                                                                                                                                                                                                        |
|------------|---------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                            | Type  | Description                                                                                                                                                                                                                                                                                            |
|            | <Parameters>                                                                    | Array | Structured array.<br><pre>Array("NAME:RelativeCSParameters",   "Mode:=" , "Axis/Position",   "OriginX:=" , &lt;string&gt;,   "OriginY:=" , &lt;string&gt;,   "OriginZ:=" , &lt;string&gt;,   "XAxisXvec:=" , &lt;string&gt;,   "XAxisYvec:=" , &lt;string&gt;,   "XAxisZvec:=" , &lt;string&gt;,</pre> |



|                     |                   |       |                                                                                                               |
|---------------------|-------------------|-------|---------------------------------------------------------------------------------------------------------------|
|                     |                   |       | "YAxisXvec:=" , <string>,<br>"YAxisYvec:=" , <string>,<br>"YAxisZvec:=" , <string>)                           |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> . CreateRelativeCS supports only the "Name" parameter. |
| <b>Return Value</b> | None.             |       |                                                                                                               |

| Python Syntax         | CreateRelativeCS(<Parameters>,<AttributesArray>)                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Example</b> | <pre> oEditor.CreateRelativeCS( ["NAME:RelativeCSParameters",     "Mode:="                , "Axis/Position",     "OriginX:="              , "0.62mm",     "OriginY:="              , "-0.7mm",     "OriginZ:="              , "0mm",     "XAxisXvec:="            , "1mm",     "XAxisYvec:="            , "0mm",     "XAxisZvec:="            , "0mm",     "YAxisXvec:="            , "0mm",     "YAxisYvec:="            , "1mm",     "YAxisZvec:="            , "0mm" </pre> |  |  |

```

],
["NAME:Attributes",
    "Name:=" , "RelativeCS1"
])

```

## DeleteEmptyGroups

Deletes group(s) from the history tree.

| UI Access    | Modeler > Group > Delete Empty. |       |                                                                          |
|--------------|---------------------------------|-------|--------------------------------------------------------------------------|
| Parameters   | Name                            | Type  | Description                                                              |
|              | <Parameters>                    | Array | Structured array.<br><br>Array("Groups:=" , <array of string group IDs>) |
| Return Value | None.                           |       |                                                                          |

| Python Syntax  | DeleteEmptyGroups(<Parameters>)                                                            |
|----------------|--------------------------------------------------------------------------------------------|
| Python Example | <pre> oEditor.DeleteEmptyGroups([     "Groups:=", ["Group1", "Group2", "Group3"] ]) </pre> |

## DeleteLastOperation

Deletes the last operation performed on the specified object(s).

| UI Access | Modeler > Delete Last Operation. |
|-----------|----------------------------------|
|-----------|----------------------------------|

|              |                   |       |                                                          |
|--------------|-------------------|-------|----------------------------------------------------------|
| Parameters   | Name              | Type  | Description                                              |
|              | <SelectionsArray> | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
| Return Value | None.             |       |                                                          |

|                |                                                                                                                                                   |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | DeleteLastOperation(<SelectionsArray>)                                                                                                            |
| Python Example | <pre>oEditor.DeleteLastOperation([<br/>    "NAME:Selections",<br/>    "Selections:=", "Box3",<br/>    "NewPartsModelFlag:=", "Model"<br/>])</pre> |

## DeleteOperation

Deletes specified operation performed on a selected object.

|            |                                                                                    |       |                                                                                                                                                                        |
|------------|------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | Select an operation in the project tree, then press <b>Delete</b> on the keyboard. |       |                                                                                                                                                                        |
| Parameters | Name                                                                               | Type  | Description                                                                                                                                                            |
|            | <ParamsArray>                                                                      | Array | Structured array.<br><br>Array("NAME:Parameters",<br>Array("NAME:PartOperations",<br>Array("NAME:<PartName>",<br>"OperationIndices:=", <array of operation indices>)), |

|              |                                                                                 |                              |  |                              |
|--------------|---------------------------------------------------------------------------------|------------------------------|--|------------------------------|
|              | <table><tr><td></td><td></td><td>Array("NAME:UDMOperations"))</td></tr></table> |                              |  | Array("NAME:UDMOperations")) |
|              |                                                                                 | Array("NAME:UDMOperations")) |  |                              |
| Return Value | None.                                                                           |                              |  |                              |

|                       |                                                                                                                                                                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteOperation(<ParamsArray>)                                                                                                                                                                                                                                         |
| <b>Python Example</b> | <pre>oEditor.DeleteOperation(<br/>[<br/>    "NAME:Parameters",<br/>    [<br/>        "NAME:PartOperations",<br/>        [<br/>            "NAME:Coil_0",<br/>            "OperationIndices:=", [1]<br/>        ]<br/>    ],<br/>    ["NAME:UDMOperations"]<br/>)</pre> |

## DetachEdges

Detaches the specified edge(s) from an object.

| UI Access    | Modeler > Edge > Detach Edges. |       |                                                                                                                               |
|--------------|--------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                           | Type  | Description                                                                                                                   |
|              | <SelectionsArray>              | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                      |
|              | <Parameters>                   | Array | Structured array.<br><br>Array("NAME:Parameters",<br><DetachEdgesArray>)                                                      |
|              | <DetachEdgesArray>             | Array | Structured array.<br><br>Array("NAME:DetachEdgesToParameters",<br>"EdgesToDetach:=" , <array containing integer<br>edge IDs>) |
| Return Value | None.                          |       |                                                                                                                               |

| Python Syntax  | DetachEdges(<SelectionsArray>, <Parameters>)                                                                                                                                                                                                            |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.DetachEdges(<br/>    ["NAME:Selections",<br/>    "Selections:=", "Rectangle1",<br/>    "NewPartsModelFlag:=", "Model"<br/>],<br/>    ["NAME:Parameters",<br/>    ["NAME:DetachEdgesToParameters",<br/>    "EdgesToDetach:=", [18,17]</pre> |

|  |                    |
|--|--------------------|
|  | <pre> ] ] ) </pre> |
|--|--------------------|

## DetachFaces

Detaches the specified face(s) from an object.

| UI Access    | Modeler > Surface > Detach Faces. |       |                                                                                                                           |
|--------------|-----------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                              | Type  | Description                                                                                                               |
|              | <SelectionsArray>                 | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                  |
|              | <Parameters>                      | Array | Structured array.<br>Array("NAME:Parameters",<br><DetachFacesArray>)                                                      |
|              | <DetachFacesArray>                | Array | Structured array.<br>Array("NAME:DetachFacesToParameters",<br>"FacesToDetach:=" , <array containing integer<br>face IDs>) |
| Return Value | None.                             |       |                                                                                                                           |

| Python Syntax  | DetachFaces(<SelectionsArray>, <Parameters>)                                                                  |
|----------------|---------------------------------------------------------------------------------------------------------------|
| Python Example | <pre> oEditor.DetachFaces ( ["NAME:Selections", "Selections:=", "Box3", "NewPartsModelFlag:=", "Model" </pre> |

|  |                                                                                                                               |
|--|-------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>],<br/>["NAME:Parameters",<br/>  ["NAME:DetachFacesToParameters",<br/>   "FacesToDetach:=", [68,67]<br/>  ]<br/>])</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------|

EditEntityList

Modifies an entity list.

**Warning:** As of the Ansys Electronics Desktop25r2 release, this command has been deprecated. It will be removed in a future release. Please use the [EditNamedSelection](#) command instead.

| UI Access  | Modeler > Named Selection > Reassign. |       |                                                                                                                                                                 |
|------------|---------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                  | Type  | Description                                                                                                                                                     |
|            | <SelectionsArray>                     | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                        |
|            | <Parameters>                          | Array | Structured array.<br><br>Array ("NAME:GeometryEntityListParameters",<br>"EntityType:=" , <string "Object" or<br>"Face">,<br>"EntityList:=" , <string list><br>) |

|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                                                                                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>EditEntityList(&lt;SelectionsArray&gt;, &lt;Parameters&gt;)</code>                                                                                                                                                                                 |
| <b>Python Example</b> | <pre>oEditor.EditEntityList(     ["NAME:Selections",     "Selections:="          , "Objectlist1"     ],     ["NAME:GeometryEntityListParameters",     "EntityType:="          , "Object",     "EntityList:="          , "Box1, Box2, Box3"     ]) </pre> |

## EditFaceCS

Recreates an existing face coordinate system. See: [CreateFaceCS](#).

|                   |                                                  |             |                                                                                                                                  |
|-------------------|--------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | <b>Modeler &gt; Coordinate System &gt; Edit.</b> |             |                                                                                                                                  |
| <b>Parameters</b> | <b>Name</b>                                      | <b>Type</b> | <b>Description</b>                                                                                                               |
|                   | <Parameters>                                     | Array       | Structured array.<br><br>Array("NAME:FaceCSParameters",<br><OriginArray>,<br>"MoveToEnd:=", <boolean>,<br>"FaceID:=", <integer>, |



|  |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                            | <pre> &lt;AxisPosnArray&gt;,  "WhichAxis:=" , &lt;string "X", "Y", or "Z"&gt;,  "ZRotationAngle:=" , &lt;string&gt;,  "XOffset:=" , &lt;string&gt;,  "YOffset:=" , &lt;string&gt;,  "AutoAxis:=" , &lt;boolean&gt; </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|  | <i>&lt;OriginArray&gt;</i> | <p>Array</p> <p>Structured array.</p> <pre> Array("NAME:Origin",      "IsAttachedToEntity:=" , &lt;boolean&gt;,      "EntityID:=" , &lt;integer&gt;,      "FacetedBodyTriangleIndex:=" , &lt;integer&gt;,      "TriangleVertexIndex:=" , &lt;integer&gt;,      "PositionType:=" , &lt;string "FaceCenter",     "EdgeCenter", "OnVertex", "OnEdge", or "OnFace"&gt;,      "UParam:=" , &lt;float between 0 and 1 representing     the relative position of the point on the edge or     face&gt;,      "VParam:=" , &lt;float between 0 and 1 representing     the relative position of the point on the edge or     face&gt;,      "XPosition:=" , &lt;string&gt;,      "YPosition:=" , &lt;string&gt;, </pre> |

|                     |                   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|-------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                   |       | <p>"ZPosition:=" , &lt;string&gt;)</p> <p>IsAttachedToEntity specifies whether the point is anchored to a vertex, edge, or face. If True, provide UParam and VParam. If False, provide XPosition, YPosition, and ZPosition to provide fixed position. Pass "0" for unused parameters.</p>                                                                                                                                                                                                                                           |
|                     | <AxisPosnArray>   | Array | <p>Structured array.</p> <pre>Array("NAME:AxisPosn",     "IsAttachedToEntity:=" , &lt;boolean&gt;,     "EntityID:=" , &lt;integer&gt;,     "FacetedBodyTriangleIndex:=", &lt;integer&gt;,     "TriangleVertexIndex:=" , &lt;integer&gt;,     "PositionType:=" , &lt;string "FaceCenter",     "EdgeCenter", "OnVertex", "OnEdge", or "OnFace"&gt;,     "UParam:=" , &lt;float&gt;,     "VParam:=" , &lt;float&gt;,     "XPosition:=" , &lt;string&gt;,     "YPosition:=" , &lt;string&gt;,     "ZPosition:=" , &lt;string&gt;)</pre> |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> . Use to select the coordinate system to edit.                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Return Value</b> | None.             |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Python Syntax</b>  | EditFaceCS (<Parameters>, <AttributesArray>) |
| <b>Python Example</b> | oEditor.EditFaceCS (                         |

```
[ "NAME:FaceCSParameters",  
  [ "NAME:Origin",  
    "IsAttachedToEntity:=" , True,  
    "EntityID:=" , 12,  
    "FacetedBodyTriangleIndex:=" , -1,  
    "TriangleVertexIndex:=" , -1,  
    "PositionType:=" , "FaceCenter",  
    "UParam:=" , 0,  
    "VParam:=" , 0,  
    "XPosition:=" , "0",  
    "YPosition:=" , "0",  
    "ZPosition:=" , "0"  
  ],  
  "MoveToEnd:=" , False,  
  "FaceID:=" , 12,  
  [ "NAME:AxisPosn",  
    "IsAttachedToEntity:=" , True,  
    "EntityID:=" , 12,  
    "FacetedBodyTriangleIndex:=" , -1,  
    "TriangleVertexIndex:=" , -1,
```

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"PositionType:=" , "OnFace", "UParam:="      , 0.62951717774066, "VParam:="      , 0.226514925559344, "XPosition:="   , "1200mm", "YPosition:="   , "-354.697014888131mm", "ZPosition:="   , "125.903435548132mm"  ], "WhichAxis:="   , "X", "ZRotationAngle:=" , "0deg", "XOffset:="     , "0mm", "YOffset:="     , "0mm", "AutoAxis:="    , False  ], ["NAME:Attributes", "Name:="        , "FaceCS1", "PartName:="    , "Box1" ])</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

EditNamedSelection

Modifies an entity list.

|           |                                       |
|-----------|---------------------------------------|
| UI Access | Modeler > Named Selection > Reassign. |
|-----------|---------------------------------------|

|                     |                   |             |                                                                                                                                                                     |
|---------------------|-------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>       | <b>Type</b> | <b>Description</b>                                                                                                                                                  |
|                     | <SelectionsArray> | Array       | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                            |
|                     | <Parameters>      | Array       | Structured array.<br><br>Array("NAME:NamedSelectionParameters",<br>"Type:=" , <string "Object" or "Face">,<br>"Selection:=" , <string of object names or IDs>)<br>) |
| <b>Return Value</b> | None.             |             |                                                                                                                                                                     |

|                       |                                                                                                                                                                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | EditNamedSelection(<SelectionsArray>, <Parameters>)                                                                                                                                                                                                                             |
| <b>Python Example</b> | <pre>oEditor.EditNamedSelection(<br/>    [<br/>        "NAME:Selections",<br/>        "Selections:=" , "FaceSelection1"<br/>    ],<br/>    [<br/>        "NAME:NamedSelectionParameters",<br/>        "Type:=" , "Face",<br/>        "Selection:=" , [12]<br/>    ]<br/>)</pre> |

## EditObjectCS

Edits an existing object coordinate system. See: [CreateObjectCS](#).

| UI Access  | Modeler > Coordinate System > Edit. |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------|-------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|            | <Parameters>                        | Array | <p>Structured array.</p> <pre>Array("NAME:ObjectCSParameters",       &lt;OriginArray&gt;       "MoveToEnd:=" , &lt;boolean&gt;,       "ReverseXAxis:=" , &lt;boolean&gt;,       "ReverseYAxis:=" , &lt;boolean&gt;,       &lt;xAxisArray / xAxisPosArray&gt;       &lt;yAxisArray / yAxisPosArray&gt;)</pre> <p><b>Note:</b> xAxisArray and xAxisPosArray differ. Use xAxisArray for absolute position and xAxisPosArray for relative position. Do the same for yAxisArray and yAxisPosArray.</p> |
|            | <OriginArray>                       | Array | <p>Structured array.</p> <pre>Array("NAME:Origin",       "IsAttachedToEntity:=" , &lt;boolean&gt;,       "EntityID:=" , &lt;integer&gt;,       "FacetedBodyTriangleIndex:=", &lt;integer&gt;,       "TriangleVertexIndex:=" , &lt;integer&gt;,       "PositionType:=" , &lt;string "OnVertex",       "EdgeCenter", "FaceCenter", "OnEdge", or "AbsolutePosition"&gt;,       "UParam:=" , &lt;float between 0 and 1 representing       the relative position of the point on the edge or</pre>     |

|                 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |       | <pre>face&gt;,  "VParam:=" , &lt;float between 0 and 1 representing the relative position of the point on the edge or face&gt;,  "XPosition:=" , &lt;string&gt;,  "YPosition:=" , &lt;string&gt;,  "ZPosition:=" , &lt;string&gt;)  IsAttachedToEntity specifies whether the point is anchored. If True, provide UParam and VParam. If False, provide XPosition, YPosition, and ZPosition to provide fixed position. Pass "0" for unused parameters.</pre> |
| <xAxisArray>    | Array | <p>Structured array for absolute position:</p> <pre>Array("NAME:xAxis",     "DirectionType:=" , "AbsoluteDirection",     "EdgeID:=" , &lt;integer&gt;,     "FaceID:=" , &lt;integer&gt;,     "xDirection:=" , &lt;string&gt;,     "yDirection:=" , &lt;string&gt;,     "zDirection:=" , &lt;string&gt;,     "UParam:=" , &lt;float&gt;,     "VParam:=" , &lt;float&gt;)</pre>                                                                              |
| <xAxisPosArray> | Array | <p>Structured array for relative position:</p> <pre>Array("NAME:xAxisPos",</pre>                                                                                                                                                                                                                                                                                                                                                                           |

|                 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |       | <pre> "IsAttachedToEntity:=" , &lt;boolean&gt;, "EntityID:=" , &lt;integer&gt;, "FacetedBodyTriangleIndex:=", &lt;integer&gt;, "TriangleVertexIndex:=" , &lt;integer&gt;, "PositionType:=" , &lt;string "OnVertex", "EdgeCenter", "FaceCenter", or "OnEdge"&gt;, "UParam:=" , &lt;float&gt;, "VParam:=" , &lt;float&gt;, "XPosition:=" , &lt;string&gt;, "YPosition:=" , &lt;string&gt;, "ZPosition:=" , &lt;string&gt;) </pre> |
| <yAxisArray>    | Array | <p>Structured array for absolute position:</p> <pre> Array("NAME:yAxis", "DirectionType:=" , "AbsoluteDirection", "EdgeID:=" , &lt;integer&gt;, "FaceID:=" , &lt;integer&gt;, "xDirection:=" , &lt;string&gt;, "yDirection:=" , &lt;string&gt;, "zDirection:=" , &lt;string&gt;, "UParam:=" , &lt;float&gt;, "VParam:=" , &lt;float&gt;) </pre>                                                                                 |
| <yAxisPosArray> | Array | <p>Structured array for relative position:</p>                                                                                                                                                                                                                                                                                                                                                                                  |



|                     |                   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|-------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                   |       | <pre>Array("NAME:yAxisPos",<br/>      "IsAttachedToEntity:=" , &lt;boolean&gt;,<br/>      "EntityID:=" , &lt;integer&gt;,<br/>      "FacetedBodyTriangleIndex:=", &lt;integer&gt;,<br/>      "TriangleVertexIndex:=" , &lt;integer&gt;,<br/>      "PositionType:=" , &lt;string "OnVertex",<br/>      "EdgeCenter", "FaceCenter", or "OnEdge"&gt;,<br/>      "UParam:=" , &lt;float&gt;,<br/>      "VParam:=" , &lt;float&gt;,<br/>      "XPosition:=" , &lt;string&gt;,<br/>      "YPosition:=" , &lt;string&gt;,<br/>      "ZPosition:=" , &lt;string&gt;)</pre> |
|                     | <AttributesArray> | Array | Structured array. See: <a href="#">AttributesArray</a> . Use to select the coordinate system to edit.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Return Value</b> | None.             |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | EditObjectCS(<Parameters>,<AttributesArray>)                                                                                           |
| <b>Python Example</b> | <pre>oEditor.EditObjectCS(<br/>    ["NAME:ObjectCSParameters",<br/>     ["NAME:Origin",<br/>      "IsAttachedToEntity:=" , True,</pre> |

```

"EntityID:="          , 59,
"FacetedBodyTriangleIndex:=" , -1,
"TriangleVertexIndex:=" , -1,
"PositionType:="      , "OnVertex",
"UParam:="            , 0,
"VParam:="            , 0,
"XPosition:="         , "0",
"YPosition:="         , "0",
"ZPosition:="         , "0"
],
"MoveToEnd:="         , False,
"ReverseXAxis:="      , False,
"ReverseYAxis:="      , False,
["NAME:xAxis",
  "DirectionType:="   , "AbsoluteDirection",
  "EdgeID:="          , -1,
  "FaceID:="          , -1,
  "xDirection:="      , "1",
  "yDirection:="      , "0",
  "zDirection:="      , "0",
  "UParam:="          , 0,

```

```
        "VParam:="                , 0
    ],
    ["NAME:yAxis",
        "DirectionType:="        , "AbsoluteDirection",
        "EdgeID:="                , -1,
        "FaceID:="                , -1,
        "xDirection:="            , "0",
        "yDirection:="            , "1",
        "zDirection:="            , "0",
        "UParam:="                , 0,
        "VParam:="                , 0
    ]
],
["NAME:Attributes",
    "Name:="                      , "ObjectCS1",
    "PartName:="                  , "Box2"
])
```

## EditRelativeCS

Edits an existing Relative Coordinate System. See: [CreateRelativeCS](#).

| UI Access    | Modeler > Coordinate System > Edit. |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------|-------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|              | <Parameters>                        | Array | Structured array.<br><br><pre>Array("NAME:RelativeCSParameters",       "Mode:=" , "Axis/Position",       "OriginX:=" , &lt;string&gt;,       "OriginY:=" , &lt;string&gt;,       "OriginZ:=" , &lt;string&gt;,       "XAxisXvec:=" , &lt;string&gt;,       "XAxisYvec:=" , &lt;string&gt;,       "XAxisZvec:=" , &lt;string&gt;,       "YAxisXvec:=" , &lt;string&gt;,       "YAxisYvec:=" , &lt;string&gt;,       "YAxisZvec:=" , &lt;string&gt;)</pre> |
|              | <AttributesArray>                   | Array | Structured array. See: <a href="#">AttributesArray</a> . Use to select the coordinate system to edit.                                                                                                                                                                                                                                                                                                                                                    |
| Return Value | None.                               |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

| Python Syntax  | EditRelativeCS(<Parameters>,<AttributesArray>)                                                 |
|----------------|------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.EditRelativeCS( ["NAME:RelativeCSParameters",   "Mode:=" , "Axis/Position",</pre> |

|  |                                                                                                                                                                                                                                                                                                                     |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"OriginX:="      , "0.62mm", "OriginY:="      , "-0.7mm", "OriginZ:="      , "0mm", "XAxisXvec:="    , "1mm", "XAxisYvec:="    , "0mm", "XAxisZvec:="    , "0mm", "YAxisXvec:="    , "0mm", "YAxisYvec:="    , "1mm", "YAxisZvec:="    , "0mm" ], ["NAME:Attributes",   "Name:="      , "RelativeCS1" ])</pre> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Export

Exports the model to a file.

**Note:** This script does not export image file types or GDSII files. See: [ExportModelImageToFile](#) and [ExportGDSII](#).

|           |                  |
|-----------|------------------|
| UI Access | Modeler > Export |
|-----------|------------------|

|                     | Name         | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|--------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <Parameters> | Array | Structured array.<br><br><pre>Array("NAME:ExportParameters",       "AllowRegionDependentPartSelectionForPMLCreation:=",       &lt;boolean&gt;,       "AllowRegionSelectionForPMLCreation:=", &lt;boolean&gt;,       "Selections:=" , &lt;string list&gt;,       "File Name:=" , &lt;string filepath&gt;,       "Major Version:=" , &lt;integer (-1 if not applic-       able)&gt;,       "Minor Version:=" , &lt;integer (-1 if not applic-       able)&gt;)</pre> |
| <b>Parameters</b>   |              |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Return Value</b> | None.        |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Python Syntax         | Export(<Parameters>)                                                                                                                                                                                                                                                                                          |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oEditor.Export( ["NAME:ExportParameters",   "AllowRegionDependentPartSelectionForPMLCreation:=", True,   "AllowRegionSelectionForPMLCreation:=", True,   "Selections:="          , "Box1,Box2,Box3",   "File Name:="          , "C:/Users/jdoe/Desktop/export.sab",   "Major Version:="      , 25,</pre> |

|  |                             |
|--|-----------------------------|
|  | "Minor Version:=" , 0<br>l) |
|--|-----------------------------|

## ExportModelImageToFile

Exports the model as an image file (\*.avz, \*.bmp, \*.gif, \*.jpeg, \*.tiff, \*.wrl). In Release 23.1, this command is fully supports -ng (non-graphical) mode. To export to Ensign use \*.avz. For export to Ensign in -ng mode, the corresponding version of Ensign must be installed. On Linux, it might need manual set environment variable AWP\_ROOT212 to its installation path, e.g. AWP\_ROOT212-2=/installations/ansys\_inc/v212/ for AnsysEDT v21.2 and Ensign 21.2.

ExportModelImageToFile exports a model image with background type and color that respect the AEDT color scheme by default. You can specify the background type and color with following parameters:

| Parameter Name          | Description                                                                              | Parameter Value                                                                        |
|-------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| BackgroundType          | Choose one out of four types of background                                               | Default<br>Plain<br>LinearGradient<br>RadialGradient                                   |
| BackgroundColor         | Plain:<br>Background color Lin-<br>earGradient/RadialGradient: Background start<br>color | 3 integers with a range of [0,255] that represent red,<br>green, and blue respectively |
| BackgroundContrastColor | Plain:<br>Ignored LinearGradient/RadialGradient: Back-<br>ground end color               | 3 integers with a range of [0,255] that represent red,<br>green, and blue respectively |

**Note:** Current scripts will not be affected, the image will be exported with default background color as it always does

If no BackgroundType is specified, or BackgroundType is Default, BackgroundColor and BackgroundContrastColor will be ignored, and the image will be exported with default background color

ExportModelImageToFile supports export overlay of polar plot 3D with existing transformation (scaling, rotation and translation) in -ng (non-graphical) mode.

| UI Access  | Modeler > Export. |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------|-------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name              | Type    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|            | <path>            | String  | Full file path including extension.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|            | <width>           | Integer | Width in pixels (use 0 for default).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|            | <height>          | Integer | Height in pixels (use 0 for default).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|            | <Parameters>      | Array   | Structured array.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|            |                   |         | <pre>Array("NAME:SaveImageParams",       "ShowAxis:=" , &lt;string containing         boolean&gt;,       "ShowGrid:=" , &lt;string containing         boolean&gt;,       "ShowRuler:=" , &lt;string containing         boolean&gt;,       "ShowRegion:=" , &lt;string&gt;,       "Selections:=" , &lt;string&gt;,       "FieldPlotSelections:=", &lt;string&gt;' #         Comma delimited string. #Use to set which         field plot to show.       "FitToSelections:=" , "",       "FitToFieldPlotSelection:=" , ""</pre> <div> <b>Note:</b> "FitToSelections" specify geometry objects for the "Fit" operation. </div> |



|                     |       |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|-------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       |  | <p><b>Note:</b> "FitToFieldPlotSelections" specifies field plots for the "Fit" operation.</p> <pre>"AutoFit:=" , "True",</pre> <p><b>Note:</b> If FitToSlections or FitToFieldPlotSelections are used , then AutoFit is True, it makes sure color key does not overlap field plot. It is False by default. If neither is used, then "AutoFit" will "Fit" to full model.</p> <pre>"Orientation:=" , &lt;string&gt;</pre> <pre>"ShowOrientationGadget:=" , &lt;False&gt;</pre> |
| <b>Return Value</b> | None. |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|                       |                                                                                                                                                |  |  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | ExportModelImageToFile(<path> <width> <height> <Parameters>)                                                                                   |  |  |
| <b>Python Example</b> | <pre>oEditor.ExportModelImageToFile ("D:/Image.png", 1920, 1080, [ "NAME:SaveImageParams", "ShowAxis:=" , "True", "ShowGrid:=" , "True",</pre> |  |  |

```

"ShowRuler:=" , "True",
"ShowRegion:=" , "Default",
"Selections:=" , "",
"FieldPlotSelections:=" , "",
"FitToSelections:=" , "",
"FitToFieldPlotSelections:=" , "",
"AutoFit:=" , "True",
"Orientation:=" , ""

])

```

## ExportModelMeshToFile

Exports geometry model to a 3D model file (e.g. \*.obj, \*.wrl, etc.).

| UI Access    | N/A          |        |                                                       |
|--------------|--------------|--------|-------------------------------------------------------|
| Parameters   | Name         | Type   | Description                                           |
|              | <filePath>   | String | Full file path, including extension *.obj, *.wrl, etc |
|              | <selections> | Array  | Selected parts.                                       |
| Return Value | None.        |        |                                                       |

| Python Syntax  | ExportModelMeshToFile <filePath>, <selections>)                                                                               |
|----------------|-------------------------------------------------------------------------------------------------------------------------------|
| Python Example | oEditor.ExportModelMeshToFile("E:/MyDir/scriptRun/2Selected-ng.obj", ["BotCover-", "AveragingVolumeAtPeakRMSEfieldLocation"]) |

Fillet

Performs a fillet on specified edge(s).

|              |                         |       |                                                                                                                                                                                                      |
|--------------|-------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | Modeler > Fillet.       |       |                                                                                                                                                                                                      |
| Parameters   | Name                    | Type  | Description                                                                                                                                                                                          |
|              | <SelectionsArray>       | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                             |
|              | <Parameters>            | Array | Structured array.<br><br>Array("NAME:Parameters",<br><FilletParametersArray>)                                                                                                                        |
|              | <FilletParametersArray> | Array | Structured array.<br><br>Array("NAME:FilletParameters",<br>"Edges:=" , <array containing integer<br>edge IDs>,<br>"Vertices:=" , <empty array>,<br>"Radius:=" , <string>,<br>"Setback:=" , <string>) |
| Return Value | None.                   |       |                                                                                                                                                                                                      |

|                |                                                                                       |
|----------------|---------------------------------------------------------------------------------------|
| Python Syntax  | Fillet(<SelectionsArray>, <Parameters>)                                               |
| Python Example | <pre>oEditor.Fillet(<br/>  ["NAME:Selections",<br/>    "Selections:=" , "Box1",</pre> |

|  |                                                                                                                                                                                                                                                                                                                                     |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>         "NewPartsModelFlag:="      , "Model"     ],     ["NAME:Parameters",         ["NAME:FilletParameters",             "Edges:="                , [13],             "Vertices:="              , [],             "Radius:="                , "1mm",             "Setback:="               , "0mm"         ]     ] ]) </pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## FlattenGroup

Flattens a specified history tree group.

| UI Access    | Modeler > Group > Flatten. |       |                                                                               |
|--------------|----------------------------|-------|-------------------------------------------------------------------------------|
| Parameters   | Name                       | Type  | Description                                                                   |
|              | <GroupID>                  | Array | Structured array.<br><br>Array("Groups:=", Array(<string list of group IDs>)) |
| Return Value | None.                      |       |                                                                               |

| Python Syntax | FlattenGroup (<GroupID>) |
|---------------|--------------------------|
|---------------|--------------------------|

|                |                                                             |
|----------------|-------------------------------------------------------------|
| Python Example | <code>oEditor.FlattenGroup(["Groups:=", ["Group1"]])</code> |
|----------------|-------------------------------------------------------------|

GenerateHistory

Generates the history for specified 1D object(s).

|              |                             |       |                                                          |
|--------------|-----------------------------|-------|----------------------------------------------------------|
| UI Access    | Modeler > Generate History. |       |                                                          |
| Parameters   | Name                        | Type  | Description                                              |
|              | <SelectionsArray>           | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
| Return Value | None.                       |       |                                                          |

|                |                                                                                                                                                                                                              |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | GenerateHistory (<SelectionsArray>)                                                                                                                                                                          |
| Python Example | <pre>oEditor.GenerateHistory(<br/>  ["NAME:Selections",<br/>    "Selections:="          , "Polyline1",<br/>    "NewPartsModelFlag:="   , "Model",<br/>    "UseCurrentCS:="        , True<br/>  ]<br/>)</pre> |

## GetActiveCoordinateSystem

Returns the active coordinate system.

|                     |                                          |
|---------------------|------------------------------------------|
| <b>UI Access</b>    | None.                                    |
| <b>Parameters</b>   | None.                                    |
| <b>Return Value</b> | String name of active coordinate system. |

|                       |                                                  |
|-----------------------|--------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetActiveCoordinateSystem()</code>         |
| <b>Python Example</b> | <code>oEditor.GetActiveCoordinateSystem()</code> |

## GetActiveCoordinateSystemTransform

Returns transformation information for the active coordinate system (with respect to the global coordinate system), which consists of the affine matrix for rotation of the coordinate system and a 3D vector with the translation of the coordinate system's origin with respect to the global coordinate system's origin.

|                     |                                                        |
|---------------------|--------------------------------------------------------|
| <b>UI Access</b>    | None                                                   |
| <b>Parameters</b>   | None                                                   |
| <b>Return Value</b> | Array of strings containing transformation information |

|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetActiveCoordinateSystemTransform()</code>         |
| <b>Python Example</b> | <code>oEditor.GetActiveCoordinateSystemTransform()</code> |

## GetCoordinateSystems

Returns the names of coordinate systems in the design.

|                     |                                                      |
|---------------------|------------------------------------------------------|
| <b>UI Access</b>    | None.                                                |
| <b>Parameters</b>   | None.                                                |
| <b>Return Value</b> | Array containing string names of coordinate systems. |

|                       |                                             |
|-----------------------|---------------------------------------------|
| <b>Python Syntax</b>  | GetCoordinateSystems()                      |
| <b>Python Example</b> | <code>oEditor.GetCoordinateSystems()</code> |

## HealObject

Heals an imported object.

|                   |                                                  |       |                                                                                                                                                                                                                                                             |
|-------------------|--------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | <b>Modeler &gt; Model Preparation &gt; Heal.</b> |       |                                                                                                                                                                                                                                                             |
| <b>Parameters</b> | Name                                             | Type  | Description                                                                                                                                                                                                                                                 |
|                   | <SelectionsArray>                                | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                                                                                    |
|                   | <Parameters>                                     | Array | Structured array.<br><br>Array("NAME:ObjectHealingParameters",<br>"Version:=" , <integer>,<br>"AutoHeal:=" , <boolean>,<br>"TolerantStitch:=" , <boolean>,<br>"SimplifyGeom:=" , <boolean>,<br>"TightenGaps:=" , <boolean>,<br>"HealToSolid:=" , <boolean>, |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <pre> "StopAfterFirstStitchError:=", &lt;boolean&gt;, "MaxStitchTol:=" , &lt;float&gt;, "ExplodeAndStitch:=" , &lt;boolean&gt;, "GeomSimplificationTol:=", &lt;integer&gt;, "MaximumGeneratedRadiusForSimplification:=", &lt;integer&gt;, "SimplifyType:=" , &lt;integer&gt;, "TightenGapsWidth:=" , &lt;float&gt;, "RemoveSliverFaces:=" , &lt;boolean&gt;, "RemoveSmallEdges:=" , &lt;boolean&gt;, "RemoveSmallFaces:=" , &lt;boolean&gt;, "SliverFaceTol:=" , &lt;integer&gt;, "SmallEdgeTol:=" , &lt;integer&gt;, "SmallFaceAreaTol:=" , &lt;integer&gt;, "BoundingBoxScaleFactor:=", &lt;integer&gt;, "RemoveHoles:=" , &lt;boolean&gt;, "RemoveChamfers:=" , &lt;boolean&gt;, "RemoveBlends:=" , &lt;boolean&gt;, "HoleRadiusTol:=" , &lt;integer&gt;, "ChamferWidthTol:=" , &lt;integer&gt;, "BlendRadiusTol:=" , &lt;integer&gt;, "AllowableSurfaceAreaChange:=", &lt;integer&gt;, </pre> |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



|                     |       |  |                                       |
|---------------------|-------|--|---------------------------------------|
|                     |       |  | "AllowableVolumeChange:=", <integer>) |
| <b>Return Value</b> | None. |  |                                       |

| Python Syntax         | HealObject(<SelectionsArray>, <Parameters>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oEditor.HealObject(<br/>    ["NAME:Selections",<br/>        "Selections:="          , "Box1",<br/>        "NewPartsModelFlag:="   , "Model"<br/>    ],<br/>    ["NAME:ObjectHealingParameters",<br/>        "Version:="              , 1,<br/>        "AutoHeal:="             , True,<br/>        "TolerantStitch:="        , True,<br/>        "SimplifyGeom:="         , True,<br/>        "TightenGaps:="           , True,<br/>        "HealToSolid:="           , False,<br/>        "StopAfterFirstStitchError:=", False,<br/>        "MaxStitchTol:="          , 0.001,<br/>        "ExplodeAndStitch:="      , True,<br/>        "GeomSimplificationTol:=" , -1,</pre> |

```

"MaximumGeneratedRadiusForSimplification:=", -1,
"SimplifyType:="          , 2,
"TightenGapsWidth:="      , 1E-06,
"RemoveSliverFaces:="     , False,
"RemoveSmallEdges:="      , False,
"RemoveSmallFaces:="      , False,
"SliverFaceTol:="         , 0,
"SmallEdgeTol:="          , 0,
"SmallFaceAreaTol:="      , 0,
"BoundingBoxScaleFactor:=", 1250,
"RemoveHoles:="           , False,
"RemoveChamfers:="        , False,
"RemoveBlends:="          , False,
"HoleRadiusTol:="         , 0,
"ChamferWidthTol:="       , 0,
"BlendRadiusTol:="        , 0,
"AllowableSurfaceAreaChange:=", 5,
"AllowableVolumeChange:=", 5
] )

```

## Import

Imports a 3D model file.

**Note:**

This script does not import DXF or GDSII models. See: [ImportDXF](#) and [ImportGDSII](#).

| UI Access         | Modeler > Import. |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------|-------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name              | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                   | <Parameters>      | Array | <p>Structured array.</p> <pre> Array("NAME:NativeBodyParameters",     "HealOption:=" , &lt;integer&gt;,     "Options:=" , &lt;string&gt;,     "FileType:=" , &lt;string "UnRecognized"&gt;,     "MaxStitchTol:=" , &lt;integer&gt;,     "ImportFreeSurfaces:=" , &lt;boolean&gt;,     "GroupByAssembly:=" , &lt;boolean&gt;,     "CreateGroup:=" , &lt;boolean&gt;,     "STLFileUnit:=" , &lt;string&gt;,     "MergeFacesAngle:=" , &lt;float&gt;,     "HealSTL:=" , &lt;boolean&gt;,     "ReduceSTL:=" , &lt;boolean&gt;,     "ReduceMaxError:=" , &lt;integer&gt;,     "ReducePercentage:=" , &lt;integer&gt;,</pre> |

|                     |       |  |                                                                                                                                                                                              |
|---------------------|-------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       |  | "PointCoincidenceTol:=" , <float>,<br>"CreateLightweightPart:=" , <boolean>,<br>"ImportMaterialNames:=" , <boolean>,<br>"SeparateDisjointLumps:=" , <boolean>,<br>"SourceFile:=" , <string>) |
| <b>Return Value</b> | None. |  |                                                                                                                                                                                              |

| Python Syntax         | Import(<Parameters>)                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.Import ( ["NAME:NativeBodyParameters",   "HealOption:="          , 0,   "Options:="             , "-1",   "FileType:="            , "UnRecognized",   "MaxStitchTol:="        , -1,   "ImportFreeSurfaces:="  , False,   "GroupByAssembly:="     , False,   "CreateGroup:="         , True,   "STLFileUnit:="         , "Auto",   "MergeFacesAngle:="     , 0.02,   "HealSTL:="             , False,   "ReduceSTL:="           , False, </pre> |

|  |                                                                                                                                                                                                                                                                                     |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"ReduceMaxError:="      , 0, "ReducePercentage:="    , 100, "PointCoincidenceTol:=" , 1E-06, "CreateLightweightPart:=", False, "ImportMaterialNames:=" , False, "SeparateDisjointLumps:=", False, "SourceFile:="          , "C:\\Users\\jdoe\\Desktop\\export.model" ] )</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

ImportDXF [Modeler]

Imports a DXF model file.

| UI Access  | Modeler > Import. |       |                                                                                                                                                                                                              |
|------------|-------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name              | Type  | Description                                                                                                                                                                                                  |
|            | <Parameters>      | Array | Structured array.<br><br>Array("NAME:options",<br>"FileName:=" , <string>,<br>"Scale:=" , <float>,<br>"AutoDetectClosed:=" , <boolean>,<br>"SelfStitch:=" , <boolean>,<br>"DefeatureGeometry:=" , <boolean>, |

|                     |                                  |       |                                                                                                                                                                                                                                                                                            |
|---------------------|----------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                  |       | <pre> "DefeatureDistance:=" , &lt;integer&gt;, "RoundCoordinates:=" , &lt;boolean&gt;, "RoundNumDigits:=" , &lt;integer&gt;, "WritePolyWithWidthAsFilledPoly:=", &lt;boolean&gt;, "ImportMethod:=" , &lt;integer&gt;, "2DSheetBodies:=" , &lt;boolean&gt;, &lt;layersArray&gt;) </pre>     |
|                     | <code>&lt;layersArray&gt;</code> | Array | Structured array.<br><pre> Array("NAME:LayerInfo",     &lt;layer&gt;, &lt;layer&gt;, &lt;layer&gt;,...) </pre>                                                                                                                                                                             |
|                     | <code>&lt;layer&gt;</code>       | Array | Structured array.<br><pre> Array("NAME:&lt;layerName&gt;",     "source:=" , &lt;string&gt;,     "display_source:=" , &lt;string&gt;,     "import:=" , &lt;boolean&gt;,     "dest:=" , &lt;string&gt;,     "dest_selected:=" , &lt;boolean&gt;,     "layer_type:=" , &lt;string&gt;) </pre> |
| <b>Return Value</b> | None.                            |       |                                                                                                                                                                                                                                                                                            |

|                       |                         |
|-----------------------|-------------------------|
| <b>Python Syntax</b>  | ImportDXF(<Parameters>) |
| <b>Python Example</b> | oEditor.ImportDXF(      |

```
[ "NAME:options",
  "FileName:=", "C:/Users/jdoe/Desktop/export.dxf",
  "Scale:="      , 0.001,
  "AutoDetectClosed:=" , True,
  "SelfStitch:="    , True,
  "DefeatureGeometry:=" , False,
  "DefeatureDistance:=" , 0,
  "RoundCoordinates:=" , False,
  "RoundNumDigits:="   , 4,
  "WritePolyWithWidthAsFilledPoly:=", False,
  "ImportMethod:="     , 1,
  "2DSheetBodies:="    , False,
  [ "NAME:LayerInfo",
    [ "NAME:0",
      "source:="      , "0",
      "display_source:=" , "0",
      "import:="      , True,
      "dest:="        , "0",
      "dest_selected:=" , False,
      "layer_type:="   , "signal"
```

```
],  
["NAME:LAYER_1",  
"source:=" , "LAYER_1",  
"display_source:=" , "LAYER_1",  
"import:=" , True,  
"dest:=" , "LAYER_1",  
"dest_selected:=" , False,  
"layer_type:=" , "signal"  
],  
["NAME:LAYER_2",  
"source:=" , "LAYER_2",  
"display_source:=" , "LAYER_2",  
"import:=" , True,  
"dest:=" , "LAYER_2",  
"dest_selected:=" , False,  
"layer_type:=" , "signal"  
]  
]  
])
```

## ImportFromClipboard

Imports a model from clipboard.



|              |                                  |
|--------------|----------------------------------|
| UI Access    | Modeler > Import From Clipboard. |
| Parameters   | None.                            |
| Return Value | None.                            |

|                |                               |
|----------------|-------------------------------|
| Python Syntax  | ImportFromClipboard ()        |
| Python Example | oEditor.ImportFromClipboard() |

ImportGDSII [Modeler]

Imports a GDSII model file.

|            |                   |       |                                                                                                                                                                                                                                                                               |
|------------|-------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | Modeler > Import. |       |                                                                                                                                                                                                                                                                               |
| Parameters | Name              | Type  | Description                                                                                                                                                                                                                                                                   |
|            | <Parameters>      | Array | Structured array.<br><br>Array("NAME:options",<br>"FileName:=" , <string>,<br>"FlattenHierarchy:=" , <boolean>,<br>"ImportMethod:=" , <integer>,<br><layerMapArray>, <layerMapArray>, <layerMapArray>,...<br>"OrderMap:=" ,<br>[ "entry:=" ,<br><entry>, <entry>, <entry>,... |

|                     |                              |       |                                                                                                                                         |
|---------------------|------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------|
|                     |                              |       | ]                                                                                                                                       |
|                     |                              |       | ])                                                                                                                                      |
|                     | <b>&lt;layerMapArray&gt;</b> | Array | Structured array.<br>Array("NAME:LayerMapInfo",<br>"LayerNum:=" , <integer>,<br>"DestLayer:=" , <string>,<br>"layer_type:=" , <string>) |
|                     | <b>&lt;entry&gt;</b>         | Array | Structured array.<br>Array("order:=" , <integer LayerNum>, "layer:=" ,<br><string DestLayer>)                                           |
| <b>Return Value</b> | None.                        |       |                                                                                                                                         |

| Python Syntax         | ImportGDSII(<Parameters>)                                                                                                                                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oEditor.ImportGDSII( ["NAME:options",   "FileName:=", "C:/Users/coil2.gds",   "FlattenHierarchy:="      , True,   "ImportMethod:="          , 1,   ["NAME:LayerMap",     ["NAME:LayerMapInfo",       "LayerNum:="          , 12,       "DestLayer:="          , "Signal12",</pre> |

```
        "layer_type:="          , "signal"
    ],
    ["NAME:LayerMapInfo",
    "LayerNum:="                , 13,
    "DestLayer:="               , "Signal13",
    "layer_type:="              , "signal"
    ],
    ["NAME:LayerMapInfo",
    "LayerNum:="                , 14,
    "DestLayer:="               , "Signal14",
    "layer_type:="              , "signal"
    ]
],
"OrderMap:=",
[
    "entry:=",
        ["order:=", 0, "layer:=", "Signal12"],
    "entry:=",
        ["order:=", 1, "layer:=", "Signal13"],
    "entry:=",
```

```

        ["order:=", 2, "layer:=", "Signal14"]
    ]
}

```

## Imprint

Imprints the geometry of one object upon another.

| UI Access    | Modeler > Boolean > Imprint... |       |                                                                                                                                    |
|--------------|--------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                           | Type  | Description                                                                                                                        |
|              | <Selections>                   | Array | Structured array.<br>Array("NAME:Selections",<br>"Blank Parts:=", <string, object name>,<br>"Tool Parts:=", <string, object name>) |
|              | <Parameters>                   | Array | Structured array.<br>Array("NAME:ImprintParameters",<br>"KeepOriginals:=", <boolean>)                                              |
| Return Value | None.                          |       |                                                                                                                                    |

| Python Syntax  | Imprint (<Selections>, <Parameters>)                                            |
|----------------|---------------------------------------------------------------------------------|
| Python Example | <pre> oEditor.Imprint( ["NAME:Selections", "Blank Parts:=", "Cylinder1", </pre> |

|  |                                                                                                   |
|--|---------------------------------------------------------------------------------------------------|
|  | <pre>"Tool Parts:=", "Box1"],<br/>["NAME:ImprintParameters",<br/>"KeepOriginals:=", False])</pre> |
|--|---------------------------------------------------------------------------------------------------|

## ImprintProjection

Projects the form of a sheet object onto the face or faces of another object (either solid or sheet).

| UI Access    | Modeler > Boolean > Imprint Projection. |       |                                                                                                                                                                                                                                                                                                            |
|--------------|-----------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                    | Type  | Description                                                                                                                                                                                                                                                                                                |
|              | <Selections>                            | Array | Structured array.<br><pre>Array("NAME:Selections",<br/>"Selections:=", &lt;string, selected objects&gt;)</pre>                                                                                                                                                                                             |
|              | <Parameters>                            | Array | Structured array.<br><pre>Array("NAME:ImprintProjectionParameters",<br/>"KeepOriginals:=", &lt;boolean&gt;,<br/>"NormalProjection:=", &lt;boolean&gt;,<br/>"Distance:=" , &lt;float&gt;,<br/>"DirectionX:=" , &lt;float&gt;,<br/>"DirectionY:=" , &lt;float&gt;,<br/>"DirectionZ:=" , &lt;float&gt;)</pre> |
| Return Value | None.                                   |       |                                                                                                                                                                                                                                                                                                            |

| Python Syntax  | ImprintProjection (<Selections>, <Parameters>)                                                                                                                                                                                                                                                                                                                                                                    |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.ImprintProjection(     ["NAME:Selections",         "Selections:=", "Rectangle1,Cylinder1"],     ["NAME:ImprintProjectionParameters",         "KeepOriginals:=", False,         "NormalProjection:=", True,         "Distance:=", "1.36014705087354mm",         "DirectionX:=", "0.882257546512569",         "DirectionY:=", "0.294085848837523",         "DirectionZ:=", "0.367607311046904"])</pre> |

## Intersect

Intersects specified objects.

| UI Access  | Modeler > Boolean > Intersect. |       |                                                                                                          |
|------------|--------------------------------|-------|----------------------------------------------------------------------------------------------------------|
| Parameters | Name                           | Type  | Description                                                                                              |
|            | <SelectionsArray>              | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                 |
|            | <Parameters>                   | Array | Structured array.<br><br>Array ("NAME:IntersectParameters",<br>"KeepOriginals:=" , <boolean True to keep |

|              |                                                                                           |                                     |  |  |  |                                     |
|--------------|-------------------------------------------------------------------------------------------|-------------------------------------|--|--|--|-------------------------------------|
|              | <table><tr><td></td><td></td><td>original objects; False to delete&gt;)</td></tr></table> |                                     |  |  |  | original objects; False to delete>) |
|              |                                                                                           | original objects; False to delete>) |  |  |  |                                     |
| Return Value | None.                                                                                     |                                     |  |  |  |                                     |

|                       |                                                                                                                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>Intersect(&lt;SelectionsArray&gt;, &lt;Parameters&gt;)</code>                                                                                                                                                |
| <b>Python Example</b> | <pre>oEditor.Intersect(<br/>    ["NAME:Selections",<br/>        "Selections:=", "Rectangle1,Rectangle2"<br/>    ],<br/>    ["NAME:IntersectParameters",<br/>        "KeepOriginals:=", False<br/>    ]<br/>)</pre> |

## MoveCStoEnd

Moves a specified Object Coordinate System to the end of the History tree.

|                     |                                                            |       |                                                          |
|---------------------|------------------------------------------------------------|-------|----------------------------------------------------------|
| <b>UI Access</b>    | <b>Modeler &gt; Coordinate System &gt; Move CS to End.</b> |       |                                                          |
| <b>Parameters</b>   | Name                                                       | Type  | Description                                              |
|                     | <SelectionsArray>                                          | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
| <b>Return Value</b> | None.                                                      |       |                                                          |

|                       |                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>MoveCStoEnd (&lt;SelectionsArray&gt;)</code>                                                   |
| <b>Python Example</b> | <pre>oEditor.MoveCStoEnd(     ["NAME:Selections",         "Selections:=" , "ObjectCS1"     ]) </pre> |

## MoveEntityToGroup

Moves a specified entity or entities to a specified group.

|                     |                                               |             |                                                                                                                         |
|---------------------|-----------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Drag item into the group in the history tree. |             |                                                                                                                         |
| <b>Parameters</b>   | <b>Name</b>                                   | <b>Type</b> | <b>Description</b>                                                                                                      |
|                     | <code>&lt;Objects&gt;</code>                  | Array       | Structured array. Selects the entity/entities to move.<br><br>Array("Objects:=" , <array containing string object IDs>) |
|                     | <code>&lt;MoveEntityToGroup&gt;</code>        | Array       | Structured array.<br><br>Array("ParentGroup:=" , <string group name>)                                                   |
| <b>Return Value</b> | None.                                         |             |                                                                                                                         |

|                       |                                                                                                         |
|-----------------------|---------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>MoveEntityToGroup (&lt;Objects&gt;, &lt;MoveEntityToGroup&gt;)</code>                             |
| <b>Python Example</b> | <pre>oEditor.MoveEntityToGroup(     ["Objects:=", ["Box3"]],     ["ParentGroup:=", "Box_Group"]) </pre> |



## MoveFaces

Moves the specified faces along normal or along a vector.

| UI Access  | Modeler > Surface > Move Faces > Along [Normal/Vector]. |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------|---------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                    | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|            | <SelectionsArray>                                       | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|            | <MoveFacesParametersArray>                              | Array | Structured array.<br><br>Array ("NAME:Parameters",<br><FacesOfOneObjToMove>, <FacesOfOneObjToMove>,<br>...)                                                                                                                                                                                                                                                                                                                                                                                              |
|            | <FacesOfOneObjToMove>                                   | Array | Structured array.<br><br>Array ("Name:MoveFacesParameters",<br>"MoveAlongNormalFlag:=", <boolean>,<br>"OffsetDistance:=", <string>,<br>"MoveVectorX:=", <string>,<br>"MoveVectorY:=", <string>,<br>"MoveVectorZ:=", <string>,<br>"FacesToMove:=", <array>)<br><br>MoveAlongNormalFlag specifies whether to move along the face normal or along a vector. If false, provide the MoveVectorX, MoveVectorY, and MoveVectorZ parameters.<br><br>FacesToMove is an array of integers (the IDs of the faces to |

|                     |      |  |        |
|---------------------|------|--|--------|
|                     |      |  | move). |
| <b>Return Value</b> | None |  |        |

| Python Syntax         | MoveFaces (<SelectionsArray>, <MoveFacesParametersArray>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oEditor.MoveFaces (     [         "NAME:Selections",         "Selections:="          , "Rectangle1",         "NewPartsModelFlag:="   , "Model"     ],     [         "NAME:Parameters",         [             "NAME:MoveFacesParameters",             "MoveAlongNormalFlag:="      , True,             "OffsetDistance:="           , "1mm",             "MoveVectorX:="               , "0mm",             "MoveVectorY:="               , "0mm",             "MoveVectorZ:="               , "0mm",             "FacesToMove:="               , [183]         ]     ] ) </pre> |

## ProjectSheet

Project a sheet object, typically for modeling thin conformal deposits. Typically followed by **Thicken Sheet**.

|                  |                                                        |
|------------------|--------------------------------------------------------|
| <b>UI Access</b> | Click <b>Modeler &gt; Surface &gt; Project Sheet</b> . |
|------------------|--------------------------------------------------------|

|              |                   |       |                                                          |
|--------------|-------------------|-------|----------------------------------------------------------|
| Parameters   | Name              | Type  | Description                                              |
|              | <SelectionsArray> | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
|              | <Parameters>      | Array | Array containing string.                                 |
|              |                   |       | Array ("NAME:ProjectSheetParameters")                    |
| Return Value | None.             |       |                                                          |

|                |                                                                                                                                                                 |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ProjectSheet (<SelectionsArray>, <Parameters>)                                                                                                                  |
| Python Example | <pre>oEditor.ProjectSheet (<br/>    ['NAME:Selections',<br/>        'Selections:=', 'Box1,Box2,Polyline1'],<br/>    ['NAME:ProjectSheetParameters']<br/>)</pre> |

## PurgeHistory

Purges the history of a specified object.

|              |                          |       |                                                          |
|--------------|--------------------------|-------|----------------------------------------------------------|
| UI Access    | Modeler > Purge History. |       |                                                          |
| Parameters   | Name                     | Type  | Description                                              |
|              | <SelectionsArray>        | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
| Return Value | None.                    |       |                                                          |

|                       |                                                                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | PurgeHistory (<SelectionsArray>)                                                                                                                            |
| <b>Python Example</b> | <pre>oEditor.PurgeHistory(<br/>    ["NAME:Selections",<br/>        "Selections:=", "Box2",<br/>        "NewPartsModelFlag:=", "Model"<br/>    ]<br/>)</pre> |

## ReplaceWith3DComponent

Replaces the selection with a 3D component.

|                     |              |       |                   |
|---------------------|--------------|-------|-------------------|
| <b>UI Access</b>    | None.        |       |                   |
| <b>Parameters</b>   | Name         | Type  | Description       |
|                     | <CreateData> | Array | Structured array. |
|                     | <DesignData> | Array | Structured array. |
|                     | <ImageFile>  | Array | Structured array. |
| <b>Return Value</b> | None.        |       |                   |

|                       |                                                                           |
|-----------------------|---------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ReplaceWith3DComponent(<CreateData>, <DesignData>, <ImageFile>)           |
| <b>Python Example</b> | <pre>oEditor.ReplaceWith3DComponent(<br/>    ["NAME&gt;CreateData",</pre> |

```
"ComponentName:=", "CoaxBend",  
"Company:=", "",  
"Company URL:=", "",  
"Model Number:=", "",  
"Help URL:=", "",  
"Version:=", "1.0",  
"Notes:=", "",  
"IconType:=", "",  
"Owner:=", "Jane Doe",  
"Email:=", "jdoe@email.com",  
"Date:=", "3:46:31 PM Jul 26, 2020",  
"HasLabel:=", False,  
"IncludedParts:=", ["outer","teflon","inner","teflon_1"],  
"HiddenParts:=", [],  
"IncludedCS:=", [],  
"DefaultHandle:=", "Global",  
"IncludedParameters:=", ["bend_angle"],  
"ParameterDescription:=", ["bend_angle:=", ""]  
],  
["NAME:DesignData",
```

|  |                                                                                                                          |
|--|--------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"Excitations:=", ["1","2"]<br/><br/>],<br/>["NAME:ImageFile",<br/>    "ImageFile:=", ""<br/><br/>]<br/><br/>)</pre> |
|--|--------------------------------------------------------------------------------------------------------------------------|

Section

Creates a 2D cross-section of the selection in the specified plane.

| UI Access    | Modeler > Surface > Section. |       |                                                                                                                                                                                               |
|--------------|------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                         | Type  | Description                                                                                                                                                                                   |
|              | <SelectionsArray>            | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                      |
|              | <Parameters>                 | Array | Structured array.<br><br>Array("NAME:SectionToParameters",<br>"CreateNewObjects:=" , <boolean>,<br>"SectionPlane:=" , <string "XY", "YZ", or<br>"ZX">,<br>"SectionCrossObject:=" , <boolean>) |
| Return Value | None.                        |       |                                                                                                                                                                                               |

| Python Syntax  | Section (<SelectionsArray>, <Parameters>)                                                                                                                                                                                                                                                                                                                  |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.Section(<br/>    ["NAME:Selections",<br/>        "Selections:="          , "Cone1",<br/>        "NewPartsModelFlag:="   , "Model"<br/>    ],<br/>    ["NAME:SectionToParameters",<br/>        "CreateNewObjects:="     , True,<br/>        "SectionPlane:="        , "XY",<br/>        "SectionCrossObject:="   , False<br/>    ]<br/>)</pre> |

SeparateBody

Separates the bodies of specified multi-lump objects.

| UI Access    | Modeler > Boolean > Separate Bodies. |       |                                                          |
|--------------|--------------------------------------|-------|----------------------------------------------------------|
| Parameters   | Name                                 | Type  | Description                                              |
|              | <SelectionsArray>                    | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
| Return Value | None.                                |       |                                                          |

|                       |                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SeparateBody (<SelectionsArray>)                                                                                                                     |
| <b>Python Example</b> | <pre>oEditor.SeparateBody(     ["NAME:Selections",         "Selections:=", "Rectangle1,Circle1",         "NewPartsModelFlag:=", "Model"     ])</pre> |

## SetModelUnits

Sets the model units.

|                     |                            |       |                                                                                                                                                                                                                                          |
|---------------------|----------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | <b>Modeler &gt; Units.</b> |       |                                                                                                                                                                                                                                          |
| <b>Parameters</b>   | Name                       | Type  | Description                                                                                                                                                                                                                              |
|                     | <Parameters>               | Array | <p>Structured array.</p> <pre>Array("NAME:Units Parameter",     "Units:=", &lt;string&gt;,     "Rescale:=", &lt;boolean True to rescale model; else False&gt;)</pre> <p>To see valid unit strings, select <b>Modeler &gt; Units</b>.</p> |
| <b>Return Value</b> | None.                      |       |                                                                                                                                                                                                                                          |

|                      |                              |
|----------------------|------------------------------|
| <b>Python Syntax</b> | SetModelUnits (<Parameters>) |
|----------------------|------------------------------|



|                |                                                                                                                                                |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.SetModelUnits(<br/>    ["NAME:Units Parameter",<br/>        "Units:=", "km",<br/>        "Rescale:=", False<br/>    ]<br/>)</pre> |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------|

SetWCS

Sets the working coordinate system.

|              |                                               |       |                                                                                                                                                                                      |
|--------------|-----------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | Modeler > Coordinate System > Set Working CS. |       |                                                                                                                                                                                      |
| Parameters   | Name                                          | Type  | Description                                                                                                                                                                          |
|              | <Parameters>                                  | Array | Structured array.<br><br>Array("NAME:SetWCS Parameter",<br>"Working Coordinate System:=", <string CS name>,<br>"RegionDepCSOk:=" , <boolean True if region-dependent;<br>else False) |
| Return Value | None.                                         |       |                                                                                                                                                                                      |

|                |                             |
|----------------|-----------------------------|
| Python Syntax  | SetWCS (<Parameters>)       |
| Python Example | <pre>oEditor.SetWCS (</pre> |

```
[ "NAME:SetWCS Parameter",
  "Working Coordinate System:=", "Global",
  "RegionDepCSOk:=", False
]
```

## ShowWindow

Opens the active 3D Modeler window.

|                     |       |
|---------------------|-------|
| <b>UI Access</b>    | None. |
| <b>Parameters</b>   | None. |
| <b>Return Value</b> | None. |

|                       |                                   |
|-----------------------|-----------------------------------|
| <b>Python Syntax</b>  | ShowWindow                        |
| <b>Python Example</b> | <code>oEditor.ShowWindow()</code> |

## Simplify

Converts a complex MCAD object into simpler primitives which are easy to mesh and solve.

|                   |                                                      |       |                                                          |
|-------------------|------------------------------------------------------|-------|----------------------------------------------------------|
| <b>UI Access</b>  | <b>Modeler &gt; Model Preparation &gt; Simplify.</b> |       |                                                          |
| <b>Parameters</b> | Name                                                 | Type  | Description                                              |
|                   | <Selections>                                         | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
|                   | <Parameters>                                         | Array | Structured array.                                        |

|              |               |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------|---------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |               |       | <pre>Array("NAME:SimplifyParameters",<br/>      "Type:=", &lt;string fit type&gt;,<br/>      "ExtrusionAxis:=", &lt;string&gt;,<br/>      "Cleanup:=", &lt;boolean&gt;,<br/>      "Splitting:=", &lt;boolean&gt;,<br/>      "SeparateBodies:=", &lt;boolean&gt;,<br/>      "CloneBody:=", &lt;boolean&gt;,<br/>      "Generate Primitive History:=", &lt;boolean&gt;,<br/>      "NumberPointsCurve:=", &lt;integer&gt;,<br/>      "LengthThresholdCurve:=", &lt;integer&gt;)</pre> |
|              | <CreateGroup> | Array | <p>Structured array.</p> <pre>Array("CreateGroupsForNewObjects:=", &lt;boolean&gt;)</pre>                                                                                                                                                                                                                                                                                                                                                                                          |
| Return Value | None.         |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                |                                                                                                                                                 |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | Simplify (<Selections>, <Parameters>, <CreateGroup>)                                                                                            |
| Python Example | <pre>oEditor.Simplify(<br/>    ["NAME:Selections",<br/>      "Selections:=", "Cylinder1,Box2",<br/>      "NewPartsModelFlag:=", "Model"],</pre> |

```
[ "NAME:SimplifyParameters",
    "Type:=", "Polygon Fit",
    "ExtrusionAxis:=", "Auto",
    "Cleanup:=", True,
    "Splitting:=", True,
    "SeparateBodies:=", False,
    "CloneBody:=", False,
    "Generate Primitive History:=", True,
    "NumberPointsCurve:=", 3,
    "LengthThresholdCurve:=", 20],
["CreateGroupsForNewObjects:=", True]
)
```

## Split

Splits the specified object(s) along a plane.

| UI Access  | Modeler > Boolean > Split. |       |                                                                                                                    |
|------------|----------------------------|-------|--------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                       | Type  | Description                                                                                                        |
|            | <SelectionsArray>          | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                           |
|            | <Parameters>               | Array | Structured array.<br>Array("NAME:SplitToParameters",<br>"SplitPlane:=" , <string "XY", "YZ", "ZX", or<br>"Dummy">, |

|                     |       |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|-------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       |  | <pre>"WhichSide:=" , &lt;string "PositiveOnly", "NegativeOnly" or "Both"&gt;, "ToolType:=" , &lt;string "PlaneTool" or "FaceTool"&gt;, "ToolEntityID:=" , &lt;-1 if using SplitPlane; else FaceID&gt;, "SplitCrossingObjectsOnly:=", &lt;boolean&gt;, &gt;DeleteInvalidObjects:=", &lt;boolean&gt;)</pre> <p>You can split an object either along an existing plane , or by creating a plane using an edge.</p> <p>For existing plane:</p> <ul style="list-style-type: none"><li>• SplitPlane is "XY", "YZ", or "ZX"</li><li>• ToolType is "PlaneTool"</li><li>• ToolEntityID is -1</li></ul> <p>For an edge:</p> <ul style="list-style-type: none"><li>• SplitPlane is "Dummy"</li><li>• ToolType is "EdgeTool"</li><li>• ToolEntityID is the face ID</li></ul> |
| <b>Return Value</b> | None. |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>Split(&lt;SelectionsArray&gt;, &lt;Parameters&gt;)</code> |
| <b>Python Example</b> | <code>oEditor.Split(</code>                                     |

```

["NAME:Selections",
  "Selections:="          , "Box1",
  "NewPartsModelFlag:="   , "Model"
],
["NAME:SplitToParameters",
  "SplitPlane:="          , "XY",
  "WhichSide:="           , "PositiveOnly",
  "ToolType:="            , "PlaneTool",
  "ToolEntityID:="        , -1,
  "SplitCrossingObjectsOnly:=", False,
  "DeleteInvalidObjects:=", True
]
)

```

## Stitch

Stitches selected sheets.

| UI Access    | Modeler > Model Preparation > Stitch Sheets. |       |                                                                                                 |
|--------------|----------------------------------------------|-------|-------------------------------------------------------------------------------------------------|
| Parameters   | Name                                         | Type  | Description                                                                                     |
|              | <Selections>                                 | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                        |
|              | <Parameters>                                 | Array | Structured array.<br>Array("NAME:StitchParameters",<br>"MaxTol:=", <integer maximum tolerance>) |
| Return Value | None.                                        |       |                                                                                                 |

|                |                                                                                                                                                                                                                              |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | Stitch (<Selections>, <Parameters>)                                                                                                                                                                                          |
| Python Example | <pre>oEditor.Stitch(<br/>    ["NAME:Selections",<br/>        "Selections:=", "Rectangle3,Rectangle4",<br/>        "NewPartsModelFlag:=", "Model"],<br/>    ["NAME:StitchParameters",<br/>        "MaxTol:=", -1]<br/>)</pre> |

Subtract

Subtracts the specified object(s).

|            |                               |       |                                                                                                                                                                                                                                         |
|------------|-------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | Modeler > Boolean > Subtract. |       |                                                                                                                                                                                                                                         |
| Parameters | Name                          | Type  | Description                                                                                                                                                                                                                             |
|            | <Selections>                  | Array | <p>Structured array.</p> <pre>Array("NAME:Selections",<br/>    "Blank Parts:=" , &lt;string object name(s)&gt;,<br/>    "Tool Parts:=" , &lt;string object name(s)&gt;)</pre> <p>The Tool Parts object is the object being removed.</p> |

|                     |              |       |                                                                                                               |
|---------------------|--------------|-------|---------------------------------------------------------------------------------------------------------------|
|                     |              |       | The Blank Parts object has any Tool Parts overlap removed.<br>Either string can contain more than one object. |
|                     | <Parameters> | Array | Structured array.<br><br>Array("NAME:SubtractParameters",<br>"KeepOriginals:=" , <boolean>)                   |
| <b>Return Value</b> | None.        |       |                                                                                                               |

|                       |                                                                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Subtract(<Selections>, <Parameters>)                                                                                                                                                |
| <b>Python Example</b> | <pre>oEditor.Subtract( ["NAME:Selections",     "Blank Parts:=", "Rectangle1",     "Tool Parts:=", "Rectangle2" ], ["NAME:SubtractParameters",     "KeepOriginals:=", False ])</pre> |

## SweepFacesAlongNormal

Sweep the specified face(s) along normal.

|                   |                                                           |      |             |
|-------------------|-----------------------------------------------------------|------|-------------|
| <b>UI Access</b>  | <b>Modeler &gt; Surface &gt; Sweep Faces Along Normal</b> |      |             |
| <b>Parameters</b> | Name                                                      | Type | Description |



|              |                   |       |                                                                                                                                                                            |
|--------------|-------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <SelectionsArray> | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                   |
|              | <parameters>      | Array | Structured array.<br><br>Array("NAME:Parameters",<br>"NAME:SweepFaceAlongNormalToParameters",<br>"FacesToDetach:=", <faceIDarray>,<br>"LengthOfSweep:=", "<value><units>") |
| Return Value | None              |       |                                                                                                                                                                            |

|                |                                                                                                                                                                                                                                                                                                                              |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | SweepFacesAlongNormal(<SelectionsArray> <parameters>)                                                                                                                                                                                                                                                                        |
| Python Example | <pre>oEditor.SweepFacesAlongNormal(<br/>    ["NAME:Selections",<br/>        "Selections:=", "Rectangle1",<br/>        "NewPartsModelFlag:=", "Model"],<br/>    ["NAME:Parameters",<br/>        "NAME:SweepFaceAlongNormalToParameters",<br/>        "FacesToDetach:=", [183],<br/>        "LengthOfSweep:=", "0.1mm"])</pre> |

## ThickenSheet

Thickens a sheet object to convert it to a 3D object.

| UI Access    | Modeler > Surface > Thicken Sheet |       |                                                                                                                      |
|--------------|-----------------------------------|-------|----------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                              | Type  | Description                                                                                                          |
|              | <SelectionsArray>                 | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                             |
|              | <parameters>                      | Array | Structured array.<br>Array("NAME:SheetThickenParameters",<br>"Thickness:=" , <string>,<br>"BothSides:=" , <boolean>) |
| Return Value | None.                             |       |                                                                                                                      |

| Python Syntax  | ThickenSheet (<SelectionsArray> <parameters>)                                                                                                                                                                                                                                             |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.ThickenSheet(     ["NAME:Selections",         "Selections:="          , "Rectangle3",         "NewPartsModelFlag:="   , "Model"     ],     ["NAME:SheetThickenParameters",         "Thickness:="           , "0.01mm",         "BothSides:="           , False     ] )</pre> |

|  |   |
|--|---|
|  | ] |
|--|---|

UncoverFaces

Uncovers the specified face(s).

|              |                                   |       |                                                                                                                                                      |
|--------------|-----------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | Modeler > Surface > Uncover Faces |       |                                                                                                                                                      |
| Parameters   | Name                              | Type  | Description                                                                                                                                          |
|              | <SelectionsArray>                 | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                             |
|              | <parameters>                      | Array | Structured array.<br><br>Array ("NAME:Parameters",<br><br>Array ("NAME:UncoverFacesParameters",<br><br>"FacesToUncover:=" , <array of face<br>IDs>)) |
| Return Value | None.                             |       |                                                                                                                                                      |

|                |                                                                                                                                                          |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | UncoverFaces(<SelectionsArray> <parameters>)                                                                                                             |
| Python Example | <pre>oEditor.UncoverFaces(<br/>    ["NAME:Selections",<br/>        "Selections:=" , "Box1",<br/>        "NewPartsModelFlag:=" , "Model"<br/>    ],</pre> |

```
[ "NAME:Parameters",
  [ "NAME:UncoverFacesParameters",
    "FacesToUncover:=" , [12,16,18]
  ]
]
```

## Unite

Unites the specified objects.

| UI Access    | Modeler > Boolean > Unite |       |                                                                                                                                                                                                                                                                                                                           |
|--------------|---------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                      | Type  | Description                                                                                                                                                                                                                                                                                                               |
|              | <SelectionsArray>         | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                                                                                                                                                  |
|              | <parameters>              | Array | Structured array.                                                                                                                                                                                                                                                                                                         |
|              |                           |       | <pre>Array("NAME:UniteParameters",   "KeepOriginals:=" , &lt;boolean&gt;,   "TurnOnNBodyBoolean:=", &lt;boolean&gt;)</pre> <div> <p><b>Note:</b></p> <p>TurnOnNBodyBoolean is set to True by default. Enabled by Parasolid, this unites <i>n</i> bodies in a single step, rather than uniting them one by one.</p> </div> |
| Return Value | None.                     |       |                                                                                                                                                                                                                                                                                                                           |

|                       |                                                                                                                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>Unite(&lt;SelectionsArray&gt;, &lt;parameters&gt;)</code>                                                                                                                                                                                      |
| <b>Python Example</b> | <pre>oEditor.Unite(<br/>    ["NAME:Selections",<br/>        "Selections:=", "Rectangle1,Rectangle2"<br/>    ],<br/>    ["NAME:UniteParameters",<br/>        "KeepOriginals:=", False,<br/>        "TurnOnNBodyBoolean:=", True<br/>    ]<br/>)</pre> |

## Ungroup

Ungroups a specified history tree group.

|                     |                                        |       |                                                                                              |
|---------------------|----------------------------------------|-------|----------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | <b>Modeler &gt; Group &gt; Ungroup</b> |       |                                                                                              |
| <b>Parameters</b>   | Name                                   | Type  | Description                                                                                  |
|                     | <code>&lt;Groups&gt;</code>            | Array | Structured array.<br><code>Array("Groups:=", &lt;array of group names to ungroup&gt;)</code> |
| <b>Return Value</b> | None                                   |       |                                                                                              |

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| <b>Python Syntax</b>  | Ungroup(<Groups>)                                      |
| <b>Python Example</b> | <code>oEditor.Ungroup(["Groups:=", ["Group1"]])</code> |

## WrapSheet

Wraps a sheet object to another object.

|                     |                   |             |                                                                                         |
|---------------------|-------------------|-------------|-----------------------------------------------------------------------------------------|
| <b>UI Access</b>    | None.             |             |                                                                                         |
| <b>Parameters</b>   | <b>Name</b>       | <b>Type</b> | <b>Description</b>                                                                      |
|                     | <SelectionsArray> | Array       | Structured array. See: <a href="#">SelectionsArray</a> .                                |
|                     | <Parameters>      | Array       | Structured array.<br><br>Array("NAME:WrapSheetParameters",<br>"Imprinted:=", <boolean>) |
| <b>Return Value</b> | None.             |             |                                                                                         |

|                       |                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | WrapSheet (<SelectionsArray>, <Parameters>)                                                                                                         |
| <b>Python Example</b> | <pre>oEditor.WrapSheet( ["NAME:Selections",     "Selections:=", "Rectangle1, Box1" ], ["NAME:WrapSheetParameters",     "Imprinted:=", True ])</pre> |

|  |   |
|--|---|
|  | ] |
|  | ) |

## Other oEditor Commands

[AddDefinitionFromBlock](#)

[AddDefinitionFromLibFile](#)

[AddViewOrientation](#)

[BreakUDMConnection](#)

[ChangeProperty](#)

[Delete](#)

[FitAll](#)

[GeometryCheckAndAutofix](#)

[GetBodyNamesByPosition](#)

[GetChildNames \[Modeler\]](#)

[GetChildObject \[Modeler\]](#)

[GetChildTypes \[Modeler\]](#)

[GetEdgeByPosition](#)

[GetEdgeIDsFromObject](#)

[GetEdgeIDsFromFace](#)

[GetEntityListIDByName](#)

[GetExtendedDefinitionObject](#)

[GetFaceArea](#)

[GetFaceByPosition](#)

[GetFaceCenter](#)

[GetFaceIDs](#)

[GetGeometryModelerMode](#)

[GetMatchedObjectName](#)

[GetModelBoundingBox](#)

[GetModelUnits](#)

[GetNumObjects](#)

[GetObjectIDByName](#)

[GetObjectName](#)

[GetObjectNameByFaceID](#)

[GetObjectsByMaterial](#)

[GetObjectsInGroup](#)

[GetObjectVolume](#)

[GetPropertyValue](#)

[GetPropEvaluatedValue](#)

[GetPropNames](#)

[GetPropSIValue](#)

[GetPropValue](#)



[GetSelections](#)[GetUserPosition](#)[GetVertexIDsFromEdge](#)[GetVertexIDsFromFace](#)[GetVertexIDsFromObject](#)[GetVertexPosition](#)[PageSetup](#)[RenamePart](#)[SetPropValue \[Modeler\]](#)

## AddDefinitionFromLibFile

Adds a material definition from a library file (e.g. AMAT file), by name and library type (using definition folder name) . This scripting command directly supports the .AMAT (or .ASURF) definition formats.

| UI Access  | N/A               |         |                                                                                                                  |
|------------|-------------------|---------|------------------------------------------------------------------------------------------------------------------|
| Parameters | Name              | Type    | Description                                                                                                      |
|            | <FilePath>        | String  | Path of the library file (i.e. AMAT file or ASURF file)                                                          |
|            | <defName>         | String  | Which definition to use, required because a lib file can have multiple definitions.                              |
|            | <defFolderName>   | String  | Library type (by definition folder name).                                                                        |
|            | <newTimeStamp>    | String  | New timestamp string (time_t as integer, number of seconds since 1/1/1970 12:00am), default is current time      |
|            | <replaceExisting> | Boolean | True to replace existing, False to choose a new unique name if an existing definition is found, default is False |

|              |                                               |
|--------------|-----------------------------------------------|
| Return Value | Property scripting object for the definition. |
|--------------|-----------------------------------------------|

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | AddDefinitionFromLibFile(<FilePath>, <defName>, <defFolderName>, <newTimeStamp>, <replaceExisting>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Python Example | <pre>oProject = oDesktop.NewProject() oProject.InsertDesign("HFSS", "HFSSDesign1", "DrivenModal", "") oDesign = oProject.SetActiveDesign("HFSSDesign1") oEditor = oDesign.SetActiveEditor("3D Modeler") oEditor.CreateBox(      [          "NAME:BoxParameters",          "XPosition:="                , "-0.4mm",              "YPosition:="            , "-1mm",              "ZPosition:="            , "0mm",              "XSize:="                 , "1.4mm",              "YSize:="                 , "1.6mm",              "ZSize:="                 , "0.6mm"      ],</pre> |

```
[  
  
  "NAME:Attributes",  
    "Name:=", "Box1",  
  
  "Flags:=", "",  
  
  "Color:=", "(143 175 143)",  
  
  "Transparency:=", 0,  
  
  "PartCoordinateSystem:=", "Global",  
  
  "UDMId:=", "",  
  
  "MaterialValue:=", "\"vacuum\"",  
  
  "SurfaceMaterialValue:=", "\"\"",  
  
  "SolveInside:=", True,  
  
    "ShellElement:=", False,  
  
  "ShellElementThickness:=", "0mm",  
]
```

```

        "IsMaterialEditable:=" , True,

        "UseMaterialAppearance:=", False,

        "IsLightweight:=" , False

    ])

oDefinitionManager = oProject.GetDefinitionManager()
scriptDir = os.path.dirname(os.path.realpath(__file__))
amatFilePath = scriptDir + '/material0.txt'
materialName = "material0"
materialNameInQuotes = "\"" + materialName + "\""
added = oDefinitionManager.AddDefinitionFromLibFile(amatFilePath, materialName, "Materials", "")
addedName = ''

    if isinstance(added, basestring):
addedName = added

        elif isinstance(added, list):
addedName = added[0]
else:

    addedName = added.GetName().replace("Materials:", "")
AddInfoMessage(os.path.basename(__file__) + " result: " + addedName)
oEditor.ChangeProperty(

```

```
[
  "NAME:AllTabs",
  [
    "NAME:Geometry3DAttributeTab",
    [
      "NAME:PropServers",
      "Box1"
    ],
    [
      "NAME:ChangedProps",
      [
        "NAME:Material",
        "Value:=", materialNameInQuotes
      ]
    ]
  ]
])
```

## AssignSurfaceMaterial

Assigns a material to specified surfaces.

|                      |                                                             |       |                                                                                                                                                                                                                                                                                                                                                  |
|----------------------|-------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>     | N/A                                                         |       |                                                                                                                                                                                                                                                                                                                                                  |
| <b>Parameters</b>    | Name                                                        | Type  | Description                                                                                                                                                                                                                                                                                                                                      |
|                      | <SelectionsArray>                                           | Array | Structured array. See: <a href="#">SelectionsArray</a> .                                                                                                                                                                                                                                                                                         |
|                      | <AttributesArray>                                           | Array | Structured array. See: <a href="#">AttributesArray</a> .<br><br>This script supports the following attributes: <ul style="list-style-type: none"><li>• MaterialValue</li><li>• SolveInside</li><li>• ShellElement</li><li>• ShellElementThickness</li><li>• IsMaterialEditable</li><li>• UseMaterialAppearance</li><li>• IsLightweight</li></ul> |
| <b>Return Value</b>  | None.                                                       |       |                                                                                                                                                                                                                                                                                                                                                  |
| <b>Python Syntax</b> | AssignSurfaceMaterial(<SelectionsArray>, <AttributesArray>) |       |                                                                                                                                                                                                                                                                                                                                                  |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oEditor.AssignSurfaceMaterial(<br/>    ["NAME:Selections",<br/>    "AllowRegionDependentPartSelectionForPMLCreation:=", True,<br/>    "AllowRegionSelectionForPMLCreation:=", True,<br/>    "Selections:=" , "Rectangle1"<br/>    ],<br/>    ["NAME:Attributes",<br/>    "MaterialValue:=" , "diamond",<br/>    "SolveInside:=" , False,<br/>    "ShellElement:=" , False,<br/>    "ShellElementThickness:=" , "nan",<br/>    "IsMaterialEditable:=" , True,<br/>    "UseMaterialAppearance:=" , False,<br/>    "IsLightweight:=" , False<br/>    ]<br/>)</pre> |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**BreakUDMConnection**

Breaks a current UDM connection to Discovery.

|                  |                   |
|------------------|-------------------|
| <b>UI Access</b> | Break Connection. |
|------------------|-------------------|

|                     |                   |       |                                                          |
|---------------------|-------------------|-------|----------------------------------------------------------|
| <b>Parameters</b>   | Name              | Type  | Description                                              |
|                     | <SelectionsArray> | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
| <b>Return Value</b> | None.             |       |                                                          |

|                       |                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | BreakUDMConnection (<SelectionsArray>)                                                                                          |
| <b>Python Example</b> | <pre>oEditor.BreakUDMConnection (     [         "NAME:Selections",         "Selections:="          , "Discovery1"     ]) </pre> |

## ChangeProperty

Changes the properties of an object in the history tree.

|                     |                                                                          |       |                                                                                                                                                                                                     |
|---------------------|--------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click an object in the History Tree and select <b>Properties</b> . |       |                                                                                                                                                                                                     |
| <b>Parameters</b>   | Name                                                                     | Type  | Description                                                                                                                                                                                         |
|                     | <propertyArgs>                                                           | Array | Structured array. The properties vary depending on the object. Due to the number of potential configurations, it is recommended that you generate this script using the UI's <b>Automation</b> tab. |
| <b>Return Value</b> | None.                                                                    |       |                                                                                                                                                                                                     |



| Python Syntax                | ChangeProperty(<propertyArgs>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Python Example</b></p> | <p><b>Example: Changing the Position of a Box</b></p> <pre> oEditor.ChangeProperty( [     "NAME:AllTabs",     [         "NAME:Geometry3DCmdTab",         [             "NAME:PropServers" ,             "Box1:CreateBox:1"         ],         [             "NAME:ChangedProps",             [                 "NAME:Position",                 "X:="          , "0.35in",                 "Y:="          , "0.55in",                 "Z:="          , "0in"             ]         ]     ] ] ) </pre> <p><b>Example: Offset the Position of a 3D Component or Layout Component with a Variable</b></p> <pre> oDesign.ChangeProperty( [     "NAME:AllTabs",     [         "NAME:LocalVariableTab",         [             "NAME:PropServers", </pre> |

```

        "LocalVariables"
    ],
    [
        "NAME:NewProps",
        [
            "NAME:zH",
            "PropType:=",
            "UserDef:=",
            "Value:="
        ],
        [
            "VariableProp",
            True,
            "50mm"
        ]
    ]
]
])
oEditor = oDesign.SetActiveEditor("3D Modeler")
oEditor.ChangeProperty(
[
    "NAME:AllTabs",
    [
        "NAME:General",
        [
            "NAME:PropServers",
            "LC1_1"
        ],
        [
            "NAME:ChangedProps",
            [
                "NAME:Position",
                "X:=",
                "Y:=",
                "Z:="
            ],
            [
                "0mm",
                "0mm",
                "zH"
            ]
        ]
    ]
]
])

```

**Example: Changing a Box's Material and Wireframe Display**

```
oEditor.ChangeProperty(  
[  
  "NAME:AllTabs",  
  [  
    "NAME:Geometry3DAttributeTab",  
    [  
      "NAME:PropServers" ,  
      "Box1"  
    ],  
    [  
      "NAME:ChangedProps",  
      [  
        "NAME:Material",  
        "Value:="      , "\"vacuum\""  
      ],  
      [  
        "NAME:Display Wireframe",  
        "Value:="      , True  
      ]  
    ]  
  ]  
])
```

**Example: Change Default Handle (reference coordinate system) for a 3D Component or Layout Component**

```
oEditor.ChangeProperty(  
[  
  "NAME:AllTabs",  
  [  
    "NAME:General",
```

```
[
    "NAME:PropServers",
    "LC1_1"
],
[
    "NAME:ChangedProps",
    [
        "NAME:Handle",
        "Value:=" , " NotchOutY"
    ]
]
]
])
```

## CloseAllWindows[Editor]

Closes all windows belong to current 3D Modeler editor.

|                     |       |
|---------------------|-------|
| <b>UI Access</b>    | N/A   |
| <b>Parameters</b>   | None. |
| <b>Return Value</b> | None. |

|                       |                           |
|-----------------------|---------------------------|
| <b>Python Syntax</b>  | CloseAllWindows()         |
| <b>Python Example</b> | oEditor.CloseAllWindows() |

## Delete

Deletes the specified object(s).

|                     |                          |       |                                                          |
|---------------------|--------------------------|-------|----------------------------------------------------------|
| <b>UI Access</b>    | <b>Edit &gt; Delete.</b> |       |                                                          |
| <b>Parameters</b>   | Name                     | Type  | Description                                              |
|                     | <SelectionsArray>        | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
| <b>Return Value</b> | None.                    |       |                                                          |

|                       |                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Delete(<SelectionsArray>)                                                                                     |
| <b>Python Example</b> | <pre>oEditor.Delete(<br/>    ["NAME:Selections",<br/>    "Selections:=", "Rectangle1,Rectangle2"<br/>])</pre> |

## FitAll

Fits the design to the modeling area.

|                     |                                          |
|---------------------|------------------------------------------|
| <b>UI Access</b>    | <b>View &gt; Fit All &gt; All Views.</b> |
| <b>Parameters</b>   | None.                                    |
| <b>Return Value</b> | None.                                    |

|                       |                               |
|-----------------------|-------------------------------|
| <b>Python Syntax</b>  | FitAll()                      |
| <b>Python Example</b> | <code>oEditor.FitAll()</code> |

## GenerateAllUserDefinedModels

Generates all user defined models.

|                     |                            |
|---------------------|----------------------------|
| <b>UI Access</b>    | N/A                        |
| <b>Parameters</b>   | None.                      |
| <b>Return Value</b> | Array of models generated. |

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | GenerateAllUserDefinedModels ()                      |
| <b>Python Example</b> | <code>oEditor.GenerateAllUserDefinedModels ()</code> |

## GenerateUserDefinedModel

Generates specified user defined model(s).

|                     |                            |       |                                                          |
|---------------------|----------------------------|-------|----------------------------------------------------------|
| <b>UI Access</b>    | N/A                        |       |                                                          |
| <b>Parameters</b>   | Name                       | Type  | Description                                              |
|                     | <SelectionsArray>          | Array | Structured array. See: <a href="#">SelectionsArray</a> . |
| <b>Return Value</b> | Array of models generated. |       |                                                          |

|                       |                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GenerateUserDefinedModel (<SelectionsArray>)                                                           |
| <b>Python Example</b> | <pre>oEditor.GenerateUserDefinedModel(["NAME:Selections", "Selections:=", "model1,<br/>model2"])</pre> |

## GeometryCheckAndAutofix

*Use:* Runs Geometry Check and optionally applies autofixes.

*Command:* **HFSS 3D Layout > Geometry Check**

*Syntax:* GeometryCheckAndAutofix <ChecksArray>,

minimum\_area\_meters\_squared,

<FixesArray>

*Return Value:* None

*Parameters:* <ChecksArray> - Array("NAME:checks", <check 1>, <check 2>, ..., <check n>)

Specify the checks that should be included. Specifying fewer checks may speed up execution but may also result in less problems reported in the message manager (or the logfile) and consequently less problems that can be fixed by autofixes.

The following are valid checks that can be specified:

- "Self-Intersecting Polygons"
- "Disjoint Nets (Floating Nodes)"
- "DC-Short Errors"

- "Identical/Overlapping Vias"
- "Misalignments"

There may be no checks, all 5 of the checks, or anything in between. The order that checks are specified in is not relevant.

### **minimum\_area\_meters\_squared**

Specify a decimal value for the minimum area (e.g. .000015) optionally in scientific notation (e.g. 2E-006). Cutouts smaller than this minimum area may be ignored during validation check.

### **<FixesArray> - Array("NAME:fixes", <fix 1>, <fix 2>, ..., <fix n>)**

Specify the autofixes that should be applied if they are found by a check.

The following are valid fixes that can be specified:

- "Self-Intersecting Polygons"
- "Disjoint Nets",
- "Identical/Overlapping Vias"
- "Traces-Inside-Traces Errors"
- "Misalignments (Planes/Traces/Vias)"

There may be no fixes specified, all 5 fixes specified, or anything in between. The order that fixes are specified in is not relevant.

## **GetBodyNamesByPosition**

Returns the names of objects that contact a specified point.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|



|              | Name                                  | Type  | Description                                                                                                                                                                                        |
|--------------|---------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <positionParameters>                  | Array | Structured array containing position coordinates for active coordinate system.<br><br>Array("NAME:Parameters",<br>"XPosition:=", <string>,<br>"YPosition:=", <string>,<br>"ZPosition:=", <string>) |
| Parameters   |                                       |       |                                                                                                                                                                                                    |
| Return Value | Array containing string object names. |       |                                                                                                                                                                                                    |

|                |                                                                                                                                                                                        |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | GetBodyNamesByPosition (<positionParameters>)                                                                                                                                          |
| Python Example | <pre>oEditor.GetBodyNamesByPosition(<br/>    ["NAME:Parameters",<br/>      "XPosition:=", "0mm",<br/>      "YPosition:=", "15mm",<br/>      "ZPosition:=", "0mm"<br/>    ]<br/>)</pre> |

## GetChildNames [Modeler]

Returns the names of children for a specified input. For 3D Components and UDMs, these commands do not return parts, coordinate systems, plans, as top-level modeler children.

### Note:

This command is not supported by the EMIT and Circuit design types.

| UI Access    | N/A                                                     |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------|---------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                    | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|              | <category>                                              | String | <p><i>Optional.</i> Passing no input returns the list of possible strings:</p> <ul style="list-style-type: none"> <li>"AllParts" – Returns the names of all parts.</li> <li>"CoordinateSystems" – Returns the names of all coordinate systems.</li> <li>"Groups" – Returns the names of all groups.</li> <li>"Lists" – Returns the names of all lists.</li> <li>"ModelParts" – Returns names of model parts.</li> <li>"NonModelParts" – Returns the names of non-model parts.</li> <li>"Planes" – Returns the names of all planes.</li> <li>"Points" – Returns the names of all points.</li> <li>"SubmodelDefinitions" – Returns the names of sub-model definitions.</li> </ul> |
| Return Value | Array containing object names in the selected category. |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| Python Syntax                | GetChildNames(<category>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Python Example</b></p> | <p><b>Standalone Example:</b></p> <pre>oEditor.GetChildNames("ModelParts") oEditor.GetChildNames("Points")</pre> <p><b>Example used in Conjunction with <a href="#">GetChildObject</a> and <a href="#">GetPropNames</a>:</b></p> <pre>oDesign = oProject.GetActiveDesign() oModel = oDesign.GetChildObject("3D Modeler") oModel.GetChildTypes()</pre> <ul style="list-style-type: none"> <li>• This returns an array containing strings: "ModelParts", "AllParts", "NonModelParts", "CoordinateSystems", "Points", "Planes", "SubmodelDefinitions", "Groups", and "Lists".</li> </ul> <pre>oModel.GetChildNames("ModelParts")</pre> <ul style="list-style-type: none"> <li>• This returns an array containing string model parts. For example: "WG_Interior", "WG", "MT_Interior", "MT", "Box2", "Cylinder1".</li> </ul> <pre>oWGi = oModel.GetChildObject("WG_Interior")</pre> <ul style="list-style-type: none"> <li>• This sets the object WG_Interior to variable oWGi.</li> </ul> <pre>oWGi.GetPropNames()</pre> <ul style="list-style-type: none"> <li>• This returns property names from child object assigned to oWGi. In this case: "Name", "Material", "Material/SIValue", "Material/EvaluatedValue", "Solve Inside", "Orientation", "Orientation/Choices", "Model", "Display Wireframe", "Material Appearance", "Color", "Color/Red", "Color/Green", "Color/Blue", and "Transparent".</li> </ul> |

## GetChildObject [Modeler]

Returns a 3D modeler child object, which can be assigned to a variable. Will return normally if there are no active objects. For 3D Components and UDMs, these commands do not return parts, coordinate systems, plans, as top-level modeler children.

**Note:** This command is not supported by the EMIT and Circuit design types.

|                     |                                                                                               |        |                             |
|---------------------|-----------------------------------------------------------------------------------------------|--------|-----------------------------|
| <b>UI Access</b>    | N/A                                                                                           |        |                             |
| <b>Parameters</b>   | Name                                                                                          | Type   | Description                 |
|                     | <object>                                                                                      | String | In this case, "3D Modeler". |
| <b>Return Value</b> | Returns the 3D Modeler object. In the examples below, it is assigned to the variable oEditor. |        |                             |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetChildObject(<object>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Python Example</b> | <p><b>Standalone Example:</b></p> <pre>oDesign = oProject.GetActiveDesign() oEditor = oDesign.GetChildObject("3D Modeler")</pre> <p><b>Example used in Conjunction with <a href="#">GetChildNames</a> and <a href="#">GetPropNames</a>:</b></p> <pre>oDesign = oProject.GetActiveDesign() oModel = oDesign.GetChildObject("3D Modeler") oModel.GetChildTypes()</pre> <ul style="list-style-type: none"> <li>This returns an array containing strings: "ModelParts", "AllParts", "NonModelParts", "CoordinateSystems", "Points", "Planes", "SubmodelDefinitions", "Groups", and "Lists".</li> </ul> |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>oModel.GetChildNames("ModelParts")</pre> <ul style="list-style-type: none"> <li>This returns an array containing string model parts. For example: "WG_Interior", "WG", "MT_Interior", "MT", "Box2", "Cylinder1".</li> </ul> <pre>oWGi = oModel.GetChildObject("WG_Interior")</pre> <ul style="list-style-type: none"> <li>This sets the object WG_Interior to variable oWGi.</li> </ul> <pre>oWGi.GetPropNames()</pre> <ul style="list-style-type: none"> <li>This returns property names from child object assigned to oWGi. In this case: "Name", "Material", "Material/SIValue", "Material/EvaluatedValue", "Solve Inside", "Orientation", "Orientation/Choices", "Model", "Display Wireframe", "Material Appearance", "Color", "Color/Red", "Color/Green", "Color/Blue", and "Transparent".</li> </ul> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### GetChildTypes [Modeler]

Gets child types of queried designs or editors obtained by [GetActiveProject\(\)](#) and [GetActiveDesign\(\)](#) commands. For 3D Components and UDMs, these commands do not return parts, coordinate systems, plans, as top-level modeler children.

**Note:**

This command is not supported by the EMIT and Circuit design types.

|                     |                                            |
|---------------------|--------------------------------------------|
| <b>UI Access</b>    | N/A                                        |
| <b>Parameters</b>   | None.                                      |
| <b>Return Value</b> | Array containing the names of child types. |

| Python Syntax  | GetChildTypes()                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <p><b>Standalone Example:</b></p> <pre>oDesign = oProject.GetActiveDesign() oEditor = oDesign.SetActiveEditor("3D Modeler") oEditor.GetChildTypes()</pre> <ul style="list-style-type: none"> <li>This returns an array containing strings: "Part", "CoordinateSystem", "Group", "ComponentDefinition", "UserDefinedModel", "Point", "Plane", and "List".</li> </ul> <p><b>Note:</b> Users can query the Part type to see if it is a model or nonmodel.</p> <p><b>Example Used in Conjunction with <a href="#">GetChildNames</a>:</b></p> <pre>oProject = oDesktop.GetActiveProject() oDesign = oProject.GetActiveDesign() oDesign.GetChildNames()</pre> <ul style="list-style-type: none"> <li>This returns an array containing names of child objects for the design. For example: "Boundaries", "Nets", "Analysis", "Optimetrics", "Radiation", "Results", and "3D Modeler".</li> </ul> <pre>oDesign.GetChildTypes()</pre> <ul style="list-style-type: none"> <li>This returns an array containing the child types. For example: "Module", "Editor", and "Variable".</li> </ul> |

## GetEdgeByPosition

Returns the ID for edge(s) that contact a specified point.

|              |                                   |       |                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------|-----------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | N/A                               |       |                                                                                                                                                                                                                                                                                                                                                                                         |
| Parameters   | Name                              | Type  | Description                                                                                                                                                                                                                                                                                                                                                                             |
|              | <positionParameters>              | Array | <p>Structured array.</p> <pre>Array("NAME:EdgeParameters",<br/>      "BodyName:=", &lt;string object name&gt;,<br/>      "Xposition:=", &lt;string&gt;,<br/>      "YPosition:=", &lt;string&gt;,<br/>      "ZPosition:=", &lt;string&gt;)</pre> <p><b>Note:</b></p> <p>For 2D XY Designs, ZPosition should be set to "0".</p> <p>For 2D RZ Designs, YPosition should be set to "0".</p> |
| Return Value | Array containing string edge IDs. |       |                                                                                                                                                                                                                                                                                                                                                                                         |

|                |                                                                                                                                                                     |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | GetEdgeByPosition (<positionParameters>)                                                                                                                            |
| Python Example | <pre>oEditor.GetEdgeByPosition(<br/>    ["NAME:EdgeParameters",<br/>     "BodyName:=", "Box1",<br/>     "Xposition:=", "10mm",<br/>     "YPosition:=", "0mm",</pre> |

```
"ZPosition:=", "10mm"  
]  
)
```

## GetEdgeIDsFromFace

Returns the edge IDs for a specified Face ID.

|              |                                   |         |                           |
|--------------|-----------------------------------|---------|---------------------------|
| UI Access    | N/A                               |         |                           |
| Parameters   | Name                              | Type    | Description               |
|              | <faceID>                          | Integer | ID of the specified face. |
| Return Value | Array containing string edge IDs. |         |                           |

|                |                                 |
|----------------|---------------------------------|
| Python Syntax  | GetEdgeIDsFromFace (<faceID>)   |
| Python Example | oEditor.GetEdgeIDsFromFace (20) |

## GetEdgeIDsFromObject

Returns the edge IDs for a specified object.

|            |          |        |              |
|------------|----------|--------|--------------|
| UI Access  | N/A      |        |              |
| Parameters | Name     | Type   | Description  |
|            | <object> | String | Object name. |



|                     |                                   |
|---------------------|-----------------------------------|
| <b>Return Value</b> | Array containing string edge IDs. |
|---------------------|-----------------------------------|

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | GetEdgeIDsFromObject (<object>)                    |
| <b>Python Example</b> | <code>oEditor.GetEdgeIDsFromObject ("Box1")</code> |

## GetEdgeLength

Returns the length of edges for a specified Edge ID.

|                     |                                               |         |                           |
|---------------------|-----------------------------------------------|---------|---------------------------|
| <b>UI Access</b>    | N/A                                           |         |                           |
| <b>Parameters</b>   | Name                                          | Type    | Description               |
|                     | <edgeID>                                      | Integer | ID of the specified edge. |
| <b>Return Value</b> | Integer containing the length of found edges. |         |                           |

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | GetEdgeLength (<EdgeID>)                |
| <b>Python Example</b> | <code>oEditor.GetEdgeLength (20)</code> |

## GetEntityIDsContainedByNamedSelection

Returns the list of entity IDs contained in the named selection. See [CreateNamedSelection](#).

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

|              |                                                                            |        |                 |
|--------------|----------------------------------------------------------------------------|--------|-----------------|
| Parameters   | Name                                                                       | Type   | Description     |
|              | <selectionName>                                                            | String | selection name. |
| Return Value | String containing the list of entity IDs contained in the named selection. |        |                 |

|                |                                                                                           |
|----------------|-------------------------------------------------------------------------------------------|
| Python Syntax  | GetEntityIDsContainedByNamedSelection (<selectionName>)                                   |
| Python Example | <code>entityIDs = oEditor.GetEntityIDsContainedByNamedSelection ("FaceSelection1")</code> |

## GetEntityListIDByName

Returns the specified entity list's ID number. See [CreateNamedSelection](#).

|              |                                              |        |             |
|--------------|----------------------------------------------|--------|-------------|
| UI Access    | N/A                                          |        |             |
| Parameters   | Name                                         | Type   | Description |
|              | <listName>                                   | String | List name.  |
| Return Value | String containing the entity list ID number. |        |             |

|                |                                                       |
|----------------|-------------------------------------------------------|
| Python Syntax  | GetEntityListIDByName (<listName>)                    |
| Python Example | <code>oEditor.GetEntityListIDByName ("MyList")</code> |

## GetFaceArea

Returns the area of a specified face.

|              |                            |         |                       |
|--------------|----------------------------|---------|-----------------------|
| UI Access    | N/A                        |         |                       |
| Parameters   | Name                       | Type    | Description           |
|              | <faceID>                   | Integer | ID of specified face. |
| Return Value | Long integer of face area. |         |                       |

|                |                         |  |  |
|----------------|-------------------------|--|--|
| Python Syntax  | GetFaceArea (<faceID>)  |  |  |
| Python Example | oEditor.GetFaceArea(19) |  |  |

## GetFaceCenter

Returns the center position of a specified face.

|              |                                              |      |             |
|--------------|----------------------------------------------|------|-------------|
| UI Access    | N/A                                          |      |             |
| Parameters   | Name                                         | Type | Description |
|              | <planarFaceID>                               | Long | Face ID     |
| Return Value | Array containing string X, Y, Z coordinates. |      |             |

|                |                                |  |  |
|----------------|--------------------------------|--|--|
| Python Syntax  | GetFaceCenter (<planarFaceID>) |  |  |
| Python Example | oEditor.GetFaceCenter(12)      |  |  |

## GetFaceByPosition

Returns the face ID located at a specified position.

**Note:**

The coordinates must point to exactly one face, not a vertex or edge where two or more faces join.

| UI Access    | N/A              |       |                                                                                                                                                                      |
|--------------|------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name             | Type  | Description                                                                                                                                                          |
|              | <FaceParameters> | Array | Structured Array.<br><br>Array("NAME:FaceParameters",<br>"BodyName:=", <string>,<br>"XPosition:=", <string>,<br>"YPosition:=", <string>,<br>"ZPosition:=", <string>) |
| Return Value | Integer Face ID. |       |                                                                                                                                                                      |

| Python Syntax  | GetFaceByPosition(<FaceParameters>)                                                                                                     |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.GetFaceByPosition(<br/>    ["NAME:FaceParameters",<br/>      "BodyName:=", "Box1",<br/>      "XPosition:=", "0.2mm",</pre> |

|  |                                                                       |
|--|-----------------------------------------------------------------------|
|  | <pre>"YPosition:=", "-0.2mm",<br/>"ZPosition:=", "0.4mm"<br/>l)</pre> |
|--|-----------------------------------------------------------------------|

## GetFaceIDs

Returns the face IDs associated with a specified object.

|              |                                   |        |              |
|--------------|-----------------------------------|--------|--------------|
| UI Access    | N/A                               |        |              |
| Parameters   | Name                              | Type   | Description  |
|              | <objectName>                      | String | Object name. |
| Return Value | Array containing string face IDs. |        |              |

|                |                             |
|----------------|-----------------------------|
| Python Syntax  | GetFaceIDs (<objectName>)   |
| Python Example | oEditor.GetFaceIDs ('Box1') |

## GetFaceIDsOfSheet

Returns the face IDs associated with a specified sheet object.

|            |      |      |             |
|------------|------|------|-------------|
| UI Access  | N/A  |      |             |
| Parameters | Name | Type | Description |

|                      |                                                                                                                  |                                 |  |                      |        |                                 |
|----------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------|--|----------------------|--------|---------------------------------|
|                      | <table><tr><td>&lt;<i>sheetName</i>&gt;</td><td>String</td><td>Name of specified sheet object.</td></tr></table> |                                 |  | < <i>sheetName</i> > | String | Name of specified sheet object. |
| < <i>sheetName</i> > | String                                                                                                           | Name of specified sheet object. |  |                      |        |                                 |
| Return Value         | Array containing string face IDs.                                                                                |                                 |  |                      |        |                                 |

|                       |                                                  |
|-----------------------|--------------------------------------------------|
| <b>Python Syntax</b>  | GetFaceIDsOfSheet(<sheetName>)                   |
| <b>Python Example</b> | <code>oEditor.GetFaceIDsOfSheet('Sheet1')</code> |

## GetMatchedObjectName

Returns all object names containing the input text string.

|                     |                                       |        |                                        |
|---------------------|---------------------------------------|--------|----------------------------------------|
| <b>UI Access</b>    | N/A                                   |        |                                        |
| <b>Parameters</b>   | Name                                  | Type   | Description                            |
|                     | <wildcardText>                        | String | Text string present in object name(s). |
| <b>Return Value</b> | Array containing string object names. |        |                                        |

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| <b>Python Syntax</b>  | GetMatchedObjectName(<wildcardText>)              |
| <b>Python Example</b> | <code>oEditor.GetMatchedObjectName('Box*')</code> |
|                       | <code>oEditor.GetMatchedObjectName('?ox?')</code> |

## GetModelBoundingBox

Returns the bounding box of the current model using the global coordinate system as reference. The outputs are in the defined modeler units. Only modeled objects are considered for this computation (non-modeled objects are ignored).

|                     |                                                                                                                           |
|---------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                       |
| <b>Parameters</b>   | None.                                                                                                                     |
| <b>Return Value</b> | Array containing string Xmin, Ymin, Zmin, Xmax, Ymax, and Zmax values of the bounding box in the global coordinate system |

|                       |                                            |
|-----------------------|--------------------------------------------|
| <b>Python Syntax</b>  | GetModelBoundingBox()                      |
| <b>Python Example</b> | <code>oEditor.GetModelBoundingBox()</code> |

## GetModelUnits

Returns the model's unit of measure.

|                     |                                    |
|---------------------|------------------------------------|
| <b>UI Access</b>    | N/A                                |
| <b>Parameters</b>   | None.                              |
| <b>Return Value</b> | String containing unit of measure. |

|                      |                 |
|----------------------|-----------------|
| <b>Python Syntax</b> | GetModelUnits() |
|----------------------|-----------------|

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Python Example</b> | <code>oEditor.GetModelUnits()</code> |
|-----------------------|--------------------------------------|

## GetNumObjects

Returns the number of objects in a design.

|                     |                            |
|---------------------|----------------------------|
| <b>UI Access</b>    | N/A                        |
| <b>Parameters</b>   | None.                      |
| <b>Return Value</b> | Integer number of objects. |

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Python Syntax</b>  | <code>GetNumObjects()</code>         |
| <b>Python Example</b> | <code>oEditor.GetNumObjects()</code> |

## GetObjectIDByName

Given an object's name, returns its ID. IDs are used with [CreateEntityList](#).

|                     |                    |        |              |
|---------------------|--------------------|--------|--------------|
| <b>UI Access</b>    | N/A                |        |              |
| <b>Parameters</b>   | Name               | Type   | Description  |
|                     | <objectName>       | String | Object name. |
| <b>Return Value</b> | Integer object ID. |        |              |



|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetObjectIDByName(&lt;objectName&gt;)</code> |
| <b>Python Example</b> | <code>oEditor.GetObjectIDByName('Box1')</code>     |

## GetObjectName

Returns an object's name from its specified base index (creation order).

|                     |                                |         |                                                  |
|---------------------|--------------------------------|---------|--------------------------------------------------|
| <b>UI Access</b>    | N/A                            |         |                                                  |
| <b>Parameters</b>   | Name                           | Type    | Description                                      |
|                     | <index>                        | Integer | Base index (where '0' is the first item created) |
| <b>Return Value</b> | String containing object name. |         |                                                  |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | <code>GetObjectName(&lt;index&gt;)</code> |
| <b>Python Example</b> | <code>oEditor.GetObjectName(3)</code>     |

## GetObjectNameByEdgeID

Returns an object name given an edge ID.

|                   |          |         |              |
|-------------------|----------|---------|--------------|
| <b>UI Access</b>  | N/A      |         |              |
| <b>Parameters</b> | Name     | Type    | Description  |
|                   | <EdgeID> | Integer | The edge ID. |

|                     |                                |
|---------------------|--------------------------------|
| <b>Return Value</b> | String containing object name. |
|---------------------|--------------------------------|

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetObjectByNameByEdgeID(&lt;EdgeID&gt;)</code> |
| <b>Python Example</b> | <code>oEditor.GetObjectByNameByEdgeID(88)</code>     |

## GetObjectByNameByFaceID

Returns an object name given a face ID.

|                     |                                |         |              |
|---------------------|--------------------------------|---------|--------------|
| <b>UI Access</b>    | N/A                            |         |              |
| <b>Parameters</b>   | Name                           | Type    | Description  |
|                     | <FaceID>                       | Integer | The face ID. |
| <b>Return Value</b> | String containing object name. |         |              |

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetObjectByNameByFaceID (&lt;FaceID&gt;)</code> |
| <b>Python Example</b> | <code>oEditor.GetObjectByNameByFaceID(88)</code>      |

## GetObjectByNameByID

Returns an object name given an ID.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

|              |                                |         |                |
|--------------|--------------------------------|---------|----------------|
| Parameters   | Name                           | Type    | Description    |
|              | <ObjID>                        | Integer | The object ID. |
| Return Value | String containing object name. |         |                |

|                |                                              |
|----------------|----------------------------------------------|
| Python Syntax  | GetObjectByNameByID(<ObjID>)                 |
| Python Example | <code>oEditor.GetObjectByNameByID(88)</code> |

## GetObjectByNameVertexID

Returns an object name given a vertex ID.

|              |                                |         |                |
|--------------|--------------------------------|---------|----------------|
| UI Access    | N/A                            |         |                |
| Parameters   | Name                           | Type    | Description    |
|              | <VertexID>                     | Integer | The vertex ID. |
| Return Value | String containing object name. |         |                |

|                |                                                  |
|----------------|--------------------------------------------------|
| Python Syntax  | GetObjectByNameVertexID(<VertexID>)              |
| Python Example | <code>oEditor.GetObjectByNameVertexID(88)</code> |

## GetObjectsByMaterial

Returns a list of objects of a specified material.

|              |                                       |        |                |
|--------------|---------------------------------------|--------|----------------|
| UI Access    | N/A                                   |        |                |
| Parameters   | Name                                  | Type   | Description    |
|              | <material>                            | String | Material name. |
| Return Value | Array containing string object names. |        |                |

|                |                                                     |
|----------------|-----------------------------------------------------|
| Python Syntax  | GetObjectsByMaterial (<material>)                   |
| Python Example | <code>oEditor.GetObjectsByMaterial('copper')</code> |

## GetObjectShapeType

Returns the shape type of a specified object.

|              |                               |        |                                          |
|--------------|-------------------------------|--------|------------------------------------------|
| UI Access    | N/A                           |        |                                          |
| Parameters   | Name                          | Type   | Description                              |
|              | <objName>                     | String | Name of specified object.                |
|              | <csName>                      | String | Name of coordinate system of the object. |
| Return Value | String containing shape type. |        |                                          |

|               |                                         |
|---------------|-----------------------------------------|
| Python Syntax | GetObjectShapeType(<objName>, <csName>) |
|---------------|-----------------------------------------|

|                |                                                           |
|----------------|-----------------------------------------------------------|
| Python Example | <code>oEditor.GetObjectShapeType("box1", "Global")</code> |
|----------------|-----------------------------------------------------------|

GetObjectsInGroup

Returns a list of objects in a specified group.

|              |                                       |        |                                                                                                                                                                                                                                               |
|--------------|---------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | N/A                                   |        |                                                                                                                                                                                                                                               |
| Parameters   | Name                                  | Type   | Description                                                                                                                                                                                                                                   |
|              | <group>                               | String | Group name.<br><br>One of: <ul style="list-style-type: none"><li>• "&lt;materialName&gt;"</li><li>• "&lt;assignmentName&gt;"</li><li>• "Non Model"</li><li>• "Solids"</li><li>• "Unclassified"</li><li>• "Sheets"</li><li>• "Lines"</li></ul> |
| Return Value | Array containing string object names. |        |                                                                                                                                                                                                                                               |

|                |                                                   |
|----------------|---------------------------------------------------|
| Python Syntax  | <code>GetObjectsInGroup (&lt;group&gt;)</code>    |
| Python Example | <code>oEditor.GetObjectsInGroup ('Sheets')</code> |

## GetObjectVolume

Returns an object's volume from its name).

|                     |        |        |             |
|---------------------|--------|--------|-------------|
| <b>UI Access</b>    | N/A    |        |             |
| <b>Parameters</b>   | Name   | Type   | Description |
|                     | <name> | String | Object name |
| <b>Return Value</b> | .Real  |        |             |

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Python Syntax</b>  | GetObjectVolume(<name>)                      |
| <b>Python Example</b> | <code>oEditor.GetObjectVolume("Box1")</code> |

## GetObjPath [Editor]

Obtains the path to the 3D modeler.

|                     |                             |
|---------------------|-----------------------------|
| <b>UI Access</b>    | N/A                         |
| <b>Parameters</b>   | None.                       |
| <b>Return Value</b> | String containing the path. |

|                       |                                   |
|-----------------------|-----------------------------------|
| <b>Python Syntax</b>  | GetObjPath()                      |
| <b>Python Example</b> | <code>oEditor.GetObjPath()</code> |

## GetPartsForUserDefinedModel

Obtains parts from a specified user defined model.

|                     |                                               |        |                             |
|---------------------|-----------------------------------------------|--------|-----------------------------|
| <b>UI Access</b>    | N/A                                           |        |                             |
| <b>Parameters</b>   | Name                                          | Type   | Description                 |
|                     | <udmName>                                     | String | Name of user defined model. |
| <b>Return Value</b> | Array of strings containing associated parts. |        |                             |

|                       |                                                                           |
|-----------------------|---------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetPartsForUserDefinedModel (<udmName>)                                   |
| <b>Python Example</b> | <code>oEditor.GetPartsForUserDefinedModel ("OnDieSpiralInductor1")</code> |

## GetPoints [3D Modeler Editor]

Returns all the points defined in current 3D modeler.

|                     |                                              |
|---------------------|----------------------------------------------|
| <b>UI Access</b>    | N/A                                          |
| <b>Parameters</b>   | None.                                        |
| <b>Return Value</b> | Array of strings containing names of points. |

|                       |                                   |
|-----------------------|-----------------------------------|
| <b>Python Syntax</b>  | GetPoints ()                      |
| <b>Python Example</b> | <code>oEditor.GetPoints ()</code> |

## GetPropEvaluatedValue

Returns the Evaluated-Value for Value-Property and Variable. Returns the Property-value as text string for other property types

**Note:**

This command is not supported by the EMIT and Circuit design types.

|                     |                                      |        |                       |
|---------------------|--------------------------------------|--------|-----------------------|
| <b>UI Access</b>    | N/A                                  |        |                       |
| <b>Parameters</b>   | Name                                 | Type   | Description           |
|                     | <PropName>                           | String | Name of the property. |
| <b>Return Value</b> | String value of the evaluated value. |        |                       |

|                       |                                                 |  |  |
|-----------------------|-------------------------------------------------|--|--|
| <b>Python Syntax</b>  | GetPropEvaluatedValue (<PropName>)              |  |  |
| <b>Python Example</b> | oVar = oDesign.GetChildObject(" Variables/var") |  |  |
|                       | oVar.GetPropEvaluatedValue()                    |  |  |

## GetPropertyValue

Returns the value of a single property belonging to a specific <PropServer> and <PropTab>. This function is available with the Project, Design or Editor objects, including definition editors.



**Tip:** Use the script recording feature and edit a property, and then view the resulting script to see the format for that property.

| UI Access    | N/A                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------|-------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                          | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|              | <PropTab>                     | String | One of the following, where tab titles are shown in parentheses: <ul style="list-style-type: none"> <li>PassedParameterTab ("Parameter Values")</li> <li>DefinitionParameterTab (Parameter Defaults")</li> <li>LocalVariableTab ("Variables" or "Local Variables")</li> <li>ProjectVariableTab ("Project variables")</li> <li>ConstantsTab ("Constants")</li> <li>BaseElementTab ("Symbol" or "Footprint")</li> <li>ComponentTab ("General")</li> <li>Component("Component")</li> <li>CustomTab ("Intrinsic Variables")</li> <li>Quantities ("Quantities")</li> <li>Signals ("Signals")</li> </ul> |
|              | <PropServer>                  | String | An object identifier, generally returned from another script method, such as <code>CompInst@R;2;3</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|              | <PropName>                    | String | Name of the property.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Return Value | String value of the property. |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetPropertyValue (<PropTab>, <PropServer>, <PropName>)                                                                                               |
| <b>Python Example</b> | <pre> selectionArray = oEditor.GetSelections()  for k in selectionArray:     val = oEditor.GetPropertyValue("PassedParameterTab", k, "R") ... </pre> |

## GetPropNames [Modeler]

Returns the property names for the active model object or specified property values.

### Note:

This command is not supported by the EMIT and Circuit design types.

|                     |                                                                                                                                                                                                                                                                                              |         |                                                                                                                                                                                                  |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                                                                                                                                                                                          |         |                                                                                                                                                                                                  |
| <b>Parameters</b>   | Name                                                                                                                                                                                                                                                                                         | Type    | Description                                                                                                                                                                                      |
|                     | <IncludeReadOnly>                                                                                                                                                                                                                                                                            | Boolean | Optional. <ul style="list-style-type: none"> <li>• <b>True</b> - includes all properties.</li> <li>• <b>False</b> - returns only property names that can be changed.</li> </ul> True by default. |
| <b>Return Value</b> | Returns property names of the current 3D Model object; includes the following:<br>["Name", "Material", "Solve Inside", "Orientation", "Orientation/Choices", "Model", "Group", "Display Wireframe", "Material Appearance", "Color", "Color/Red", "Color/Green", "Color/Blue", "Transparent"] |         |                                                                                                                                                                                                  |

|                       |                                               |
|-----------------------|-----------------------------------------------|
| <b>Python Syntax</b>  | GetPropNames(<IncludeReadOnly>)               |
| <b>Python Example</b> | <code>oEditor.GetPropNames(ObjectName)</code> |

## GetPropSIValue

Returns the SI-Value for Value-Property and Variable. Return NAN for other property type if its value is not able to convert to be a double-floating point value.

**Note:**

This command is not supported by the EMIT and Circuit design types.

|                     |                                                                                                                       |        |                       |
|---------------------|-----------------------------------------------------------------------------------------------------------------------|--------|-----------------------|
| <b>UI Access</b>    | N/A                                                                                                                   |        |                       |
| <b>Parameters</b>   | Name                                                                                                                  | Type   | Description           |
|                     | <PropName>                                                                                                            | String | Name of the property. |
| <b>Return Value</b> | Property value as a double floating value, or NAN if the property value cannot be converted to double floating point. |        |                       |

|                       |                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetPropSIValue (<PropName>)                                                                                          |
| <b>Python Example</b> | <code>oCreateBox = oDesign.GetChildObject("3D Modeler/Box1/CreateBox:1")<br/>oCreateBox.GetPropValue("xSize")</code> |

```

return "length / 2"

oCreateBox.GetPropEvaluatedValue ("xSize")

return '0.4mm'

oCreateBox.GetPropSIValue ("xSize")

return 0.0004

```

## GetPropValue [Modeler]

Returns the property value for the active model object, or specified property values.

### Note:

This command is not supported by the EMIT and Circuit design types.

| UI Access    | N/A                 |      |                                                                                                 |
|--------------|---------------------|------|-------------------------------------------------------------------------------------------------|
| Parameters   | Name                | Type | Description                                                                                     |
|              | <propPath>          |      | Optional. Child object's property path. See: <a href="#">Object Property Function Summary</a> . |
| Return Value | The property value. |      |                                                                                                 |

| Python Syntax  | GetPropValue(<propPath>)                                                                                                        |
|----------------|---------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre> Rh1 = oDesign.GetChildObject('Box1')  Rh1.GetPropValue('Orientation') </pre> <p>Returns the specified Property Value:</p> |

|  |          |
|--|----------|
|  | 'Global' |
|--|----------|

## GetRelativeCoordinateSystems

Returns the relative coordinate systems in the current 3D modeler.

|                     |                                                       |
|---------------------|-------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                   |
| <b>Parameters</b>   | None.                                                 |
| <b>Return Value</b> | Array containing name of relative coordinate systems. |

|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| <b>Python Syntax</b>  | GetRelativeCoordinateSystems()                      |
| <b>Python Example</b> | <code>oEditor.GetRelativeCoordinateSystems()</code> |

## GetSelections [Model Editor]

Returns an array of currently selected objects.

|                     |                             |
|---------------------|-----------------------------|
| <b>UI Access</b>    | N/A                         |
| <b>Parameters</b>   | None.                       |
| <b>Return Value</b> | Array containing object IDs |

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Python Syntax</b>  | GetSelections()                      |
| <b>Python Example</b> | <code>oEditor.GetSelections()</code> |

## GetSubGroupsInGroup

Returns subgroup names in a specified group.

|                     |                                  |             |                                                                                                                                                                                                                                               |
|---------------------|----------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                              |             |                                                                                                                                                                                                                                               |
| <b>Parameters</b>   | <b>Name</b>                      | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                            |
|                     | <group>                          | String      | Group name.<br><br>One of: <ul style="list-style-type: none"><li>• "&lt;materialName&gt;"</li><li>• "&lt;assignmentName&gt;"</li><li>• "Non Model"</li><li>• "Solids"</li><li>• "Unclassified"</li><li>• "Sheets"</li><li>• "Lines"</li></ul> |
| <b>Return Value</b> | Array containing subgroup names. |             |                                                                                                                                                                                                                                               |

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | GetSubGroupsInGroup(<group>)                       |
| <b>Python Example</b> | <code>oEditor.GetSubGroupsInGroup('Sheets')</code> |

## GetUserPosition

Returns a user's current coordinates in the 3D Modeler window.

|                     |                                       |        |                                                               |
|---------------------|---------------------------------------|--------|---------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                   |        |                                                               |
| <b>Parameters</b>   | Name                                  | Type   | Description                                                   |
|                     | <prompt>                              | String | "Enter a point." Then click a point in the 3D Modeler window. |
| <b>Return Value</b> | Array containing X, Y, Z coordinates. |        |                                                               |

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| <b>Python Syntax</b>  | GetUserPosition(<prompt>)                              |
| <b>Python Example</b> | <code>oEditor.GetUserPosition("Enter a point.")</code> |

## GetVertexIDFromNameForFirstOperation

Returns vertex ID associated with a specified vertex belongs to the first operation of a part.

|                     |                                 |        |                           |
|---------------------|---------------------------------|--------|---------------------------|
| <b>UI Access</b>    | N/A                             |        |                           |
| <b>Parameters</b>   | Name                            | Type   | Description               |
|                     | <PartName>                      | String | Name of specified part.   |
|                     | <VertexName>                    | String | Name of specified vertex. |
| <b>Return Value</b> | Integer representing vertex ID. |        |                           |

|                       |                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetVertexIDFromNameForFirstOperation(&lt;PartName&gt;, &lt;VertexName&gt;)</code> |
| <b>Python Example</b> | <code>oEditor.GetVertexIDFromNameForFirstOperation("Part1", "Vertex1")</code>           |

## GetVertexIDsFromEdge

Returns vertex IDs associated with a specified edge.

|                     |                                     |         |             |
|---------------------|-------------------------------------|---------|-------------|
| <b>UI Access</b>    | N/A                                 |         |             |
| <b>Parameters</b>   | Name                                | Type    | Description |
|                     | <edgeID>                            | Integer | Edge ID.    |
| <b>Return Value</b> | Array containing string vertex IDs. |         |             |

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetVertexIDsFromEdge(&lt;edgeID&gt;)</code> |
| <b>Python Example</b> | <code>oEditor.GetVertexIDsFromEdge(10)</code>     |

## GetVertexIDsFromFace

Returns vertex IDs associated with a specified face.

|                     |                                     |         |             |
|---------------------|-------------------------------------|---------|-------------|
| <b>UI Access</b>    | N/A                                 |         |             |
| <b>Parameters</b>   | Name                                | Type    | Description |
|                     | <faceID>                            | Integer | Face ID.    |
| <b>Return Value</b> | Array containing string vertex IDs. |         |             |



|                       |                                               |
|-----------------------|-----------------------------------------------|
| <b>Python Syntax</b>  | GetVertexIDsFromFace(<faceID>)                |
| <b>Python Example</b> | <code>oEditor.GetVertexIDsFromFace(10)</code> |

## GetVertexIDsFromObject

Returns vertex IDs associated with a specified object.

|                     |                                     |        |              |
|---------------------|-------------------------------------|--------|--------------|
| <b>UI Access</b>    | N/A                                 |        |              |
| <b>Parameters</b>   | Name                                | Type   | Description  |
|                     | <objectName>                        | String | Object name. |
| <b>Return Value</b> | Array containing string vertex IDs. |        |              |

|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| <b>Python Syntax</b>  | GetVertexIDsFromObject(<objectName>)                |
| <b>Python Example</b> | <code>oEditor.GetVertexIDsFromObject('Box1')</code> |

## GetVertexPosition

Returns an array of coordinates for a specified vertex.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

|                     |                                       |             |                    |
|---------------------|---------------------------------------|-------------|--------------------|
| <b>Parameters</b>   | <b>Name</b>                           | <b>Type</b> | <b>Description</b> |
|                     | <vertexID>                            | Integer     | Vertex ID.         |
| <b>Return Value</b> | Array containing X, Y, Z coordinates. |             |                    |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | GetVertexPosition(<vertexID>)             |
| <b>Python Example</b> | <code>oEditor.GetVertexPosition(1)</code> |

## GetWireBodyNames

Returns the wire body names in current 3D modeler.

|                     |                                   |
|---------------------|-----------------------------------|
| <b>UI Access</b>    | N/A                               |
| <b>Parameters</b>   | None.                             |
| <b>Return Value</b> | Array containing string of names. |

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | GetWireBodyNames()                      |
| <b>Python Example</b> | <code>oEditor.GetWireBodyNames()</code> |

## PageSetup

Specifies page settings for printing.

| UI Access    | File > Page Setup. |       |                                                                                                                             |
|--------------|--------------------|-------|-----------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name               | Type  | Description                                                                                                                 |
|              | <Parameters>       | Array | Structured array.<br><br>[<br>"NAME:PageSetupData",<br>"margins:=", <SetupArray><br>]                                       |
|              | <SetupArray>       | Array | Structured Array<br><br>[<br>"left:=", <string>,<br>"right:=", <string>,<br>"top:=", <string>,<br>"bottom:=", <string><br>] |
| Return Value | None.              |       |                                                                                                                             |

| Python Syntax  | PageSetup(<Parameters>)                                      |
|----------------|--------------------------------------------------------------|
| Python Example | <pre>oEditor.PageSetup([<br/>    "NAME:PageSetupData",</pre> |

```
"margins:=",  
["left:=", "10mm",  
"right:=", "10mm",  
"top:=", "10mm",  
"bottom:=", "10mm"]  
])
```

## RemoveBadEdges

Removes bad edges from specified list.

| UI Access    | N/A        |       |                            |
|--------------|------------|-------|----------------------------|
| Parameters   | Name       | Type  | Description                |
|              | <EdgeList> | Array | Array containing edge IDs. |
| Return Value | None.      |       |                            |

| Python Syntax  | RemoveBadEdges (<EdgeList>)       |
|----------------|-----------------------------------|
| Python Example | oEditor.RemoveBadEdges ([18, 30]) |

## RemoveBadFaces

Removes bad faces from specified list.

| UI Access | N/A |
|-----------|-----|
|-----------|-----|

|              |            |       |                            |
|--------------|------------|-------|----------------------------|
| Parameters   | Name       | Type  | Description                |
|              | <FaceList> | Array | Array containing face IDs. |
| Return Value | None.      |       |                            |

|                |                                                  |
|----------------|--------------------------------------------------|
| Python Syntax  | RemoveBadFaces (<FaceList>)                      |
| Python Example | <code>oEditor.RemoveBadFaces ([328, 333])</code> |

## RemoveBadVertices

Removes bad vertices from specified list.

|              |              |       |                              |
|--------------|--------------|-------|------------------------------|
| UI Access    | N/A          |       |                              |
| Parameters   | Name         | Type  | Description                  |
|              | <VertexList> | Array | Array containing vertex IDs. |
| Return Value | None.        |       |                              |

|                |                                                     |
|----------------|-----------------------------------------------------|
| Python Syntax  | RemoveBadVertices (<VertexList>)                    |
| Python Example | <code>oEditor.RemoveBadVertices ([324, 325])</code> |

## RenamePart

Renames an object.

| UI Access    | Enter new name in <b>Name</b> field. |       |                                                                                                              |
|--------------|--------------------------------------|-------|--------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                 | Type  | Description                                                                                                  |
|              | <renameParametersArray>              | Array | Structured array.<br><br>Array("NAME:Rename Data",<br>"Old Name:=", <string>,<br>"New Name:=", <string><br>) |
| Return Value | None.                                |       |                                                                                                              |

| Python Syntax  | oEditor.RenamePart(<renameParametersArray>)                                                                                                         |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.RenamePart(<br/>[<br/>    'NAME:Rename Data',<br/>    'Old Name:=', 'partname',<br/>    'New Name:=', 'newpartname',<br/>]<br/>)</pre> |

## SetPropValue [Modeler]

Sets the property value for the active model property.

**Note:**

This command is not supported by the EMIT and Circuit design types.

|                     |                                                                                                                                       |        |                                                                                       |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Edit <b>Properties</b> on History Tree objects                                                                                        |        |                                                                                       |
| <b>Parameters</b>   | Name                                                                                                                                  | Type   | Description                                                                           |
|                     | <propPath>                                                                                                                            | String | Child object's property path. See: <a href="#">Object Property Function Summary</a> . |
|                     | <value>                                                                                                                               | Varies | New property value.                                                                   |
| <b>Return Value</b> | Boolean: <ul style="list-style-type: none"><li>• <b>True</b> – property found.</li><li>• <b>False</b> – property not found.</li></ul> |        |                                                                                       |

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Python Syntax</b>  | SetPropValue(<propPath>, <value>)    |
| <b>Python Example</b> | oEditor.SetPropValue("Color/r", 111) |

## SetTopDownViewDirectionForActiveView

Sets active view to top-down view direction.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

|              |              |        |                                    |
|--------------|--------------|--------|------------------------------------|
| Parameters   | Name         | Type   | Description                        |
|              | <RelativeCS> | String | Name of relative coordinate system |
| Return Value | None.        |        |                                    |

|                |                                                                      |
|----------------|----------------------------------------------------------------------|
| Python Syntax  | SetTopDownViewDirectionForActiveView (<RelativeCS>)                  |
| Python Example | <code>oEditor.SetTopDownViewDirectionForActiveView ("Global")</code> |

## SetTopDownViewDirectionForAllViews

Sets all views to top-down view direction.

|              |              |        |                                    |
|--------------|--------------|--------|------------------------------------|
| UI Access    | N/A          |        |                                    |
| Parameters   | Name         | Type   | Description                        |
|              | <RelativeCS> | String | Name of relative coordinate system |
| Return Value | None.        |        |                                    |

|                |                                                                    |
|----------------|--------------------------------------------------------------------|
| Python Syntax  | SetTopDownViewDirectionForAllViews (<RelativeCS>)                  |
| Python Example | <code>oEditor.SetTopDownViewDirectionForAllViews ("Global")</code> |

## UpdatePriorityList

Updates specified priority lists.



|                     |             |             |                               |
|---------------------|-------------|-------------|-------------------------------|
| <b>UI Access</b>    | N/A         |             |                               |
| <b>Parameters</b>   | <b>Name</b> | <b>Type</b> | <b>Description</b>            |
|                     | <Lists>     | Array       | Array of priority list names. |
| <b>Return Value</b> | None.       |             |                               |

|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| <b>Python Syntax</b>  | UpdatePriorityList (<Lists>)                                                |
| <b>Python Example</b> | <code>oEditor.UpdatePriorityList(["PriorityList1", "PriorityList2"])</code> |

## UpgradeVersion

Upgrades legacy geometry to current version.

|                     |                                                                                       |             |                                                                                                                                                                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click on an operation icon in the history tree, select <b>Upgrade Version</b> . |             |                                                                                                                                                                                                                                                   |
| <b>Parameters</b>   | <b>Name</b>                                                                           | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                |
|                     | <Selections>                                                                          | Array       | Structured array.<br><br><code>Array("NAME:Parameters",<br/>    Array("NAME:PartOperations",<br/>        Array("NAME:&lt;string&gt;"),<br/>        "OperationIndices:=", &lt;array of integers&gt;),<br/>    Array("NAME:UDMOperations") )</code> |
| <b>Return Value</b> | None.                                                                                 |             |                                                                                                                                                                                                                                                   |

| Python Syntax  | UpgradeVersion (<Selections>)                                                                                                                                                  |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.UpgradeVersion([     "NAME:Parameters",     ["NAME:PartOperations",     ["NAME:source",     "OperationIndices:=", [0]]     ],     ["NAME:UDMOperations"] ])</pre> |

## Validate3DComponent

Validates a 3D component.

| UI Access    | N/A                                                                                                                                       |        |                                             |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------|
| Parameters   | Name                                                                                                                                      | Type   | Description                                 |
|              | <componentPath>                                                                                                                           | String | Path to a 3D component.                     |
|              | <password>                                                                                                                                | String | Optional. Password to access the component. |
| Return Value | Boolean: <ul style="list-style-type: none"> <li>• <b>1</b> - component is valid.</li> <li>• <b>0</b> - component is not valid.</li> </ul> |        |                                             |

|                       |                                                                              |
|-----------------------|------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>Validate3DComponent (&lt;componentPath&gt;, &lt;password&gt;)</code>   |
| <b>Python Example</b> | <pre>oEditor.Validate3DComponent (<br/>"C:/temp/component.3dcomp", "")</pre> |

## WriteHistoryTreeLayoutForTest

Writes history tree layout to a file.

|                     |                       |             |                                                                                                                                                     |
|---------------------|-----------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                   |             |                                                                                                                                                     |
| <b>Parameters</b>   | <b>Name</b>           | <b>Type</b> | <b>Description</b>                                                                                                                                  |
|                     | <filePath>            | String      | Path to the file.                                                                                                                                   |
|                     | <OrgByMaterial>       | Integer     | <ul style="list-style-type: none"><li>• <b>1</b> - organize objects by material.</li><li>• <b>0</b> - do not organize by material.</li></ul>        |
|                     | <OrgByAssignment>     | Integer     | <ul style="list-style-type: none"><li>• <b>1</b> - organize sheets by assignment.</li><li>• <b>0</b> - do not organize by assignment.</li></ul>     |
|                     | <OrgByCompDefinition> | Integer     | <ul style="list-style-type: none"><li>• <b>1</b> - organize components by definition.</li><li>• <b>0</b> - do not organize by definition.</li></ul> |
|                     | <DonotOrgUnderGroup>  | Integer     | <ul style="list-style-type: none"><li>• <b>1</b> - do not organize within group.</li><li>• <b>0</b> - organize within group.</li></ul>              |
|                     | <ShowGroup>           | Integer     | Optional. <ul style="list-style-type: none"><li>• <b>1</b> - show group.</li><li>• <b>0</b> - do not show.</li></ul>                                |
| <b>Return Value</b> | None.                 |             |                                                                                                                                                     |

|                       |                                                                                                                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>WriteHistoryTreeLayoutForTest (&lt;filePath&gt;, &lt;OrgByMaterial&gt;, &lt;OrgByAssignment&gt;, &lt;OrgByCompDefinition&gt;, &lt;DonotOrgUnderGroup&gt;, &lt;ShowGroup&gt;)</code> |
| <b>Python Example</b> | <pre>oEditor.WriteHistoryTreeLayoutForTest ('C:\temp', 1, 0, 0, 0, 1)</pre>                                                                                                               |

## Cable Modeling Commands

Cables are created and edited as design objects using the Cable Setup module, and then inserted as native components. For example, elements of a cable are created:

```
oModule = oDesign.GetModule("CableSetup")
oModule.CreateStraightWireCable(....
```

And then, when a Harness has been created from various components, it is inserted to the Modeler:

```
oEditor = oDesign.SetActiveEditor("3D Modeler")
oEditor.InsertNativeComponent(
    [
        "NAME:InsertNativeComponentData",
        "TargetCS:=" , "Global",
        "SubmodelDefinitionName:=", "MyHarness",
    ]
    ...
```

[AddCableToBundle](#)

[CreateCableBundle](#)

[CreateCableHarness](#)

[CreateClockSource](#)

[CreatePWLSource](#)

[CreateStraightWireCable](#)

[CreateTwistedPairCable](#)

[ExportCableLibrary](#)

[ImportCableLibrary](#)

[RemoveCable](#)

[UpdateCableHarness](#)

**AddCableToBundle**

Add a cable to an existing bundle using the Beta Cable Modeling feature. Right click on the 3D Component icon and select **Cables > Edit Cables** to open the **Cable Editor**.

|              |                                       |
|--------------|---------------------------------------|
| UI Access    | 3D Components > Cables > Edit Cables. |
| Parameters   | None                                  |
| Return Value | None                                  |

|                |                                                   |
|----------------|---------------------------------------------------|
| Python Syntax  | AddCableToBundle(<parameters>))                   |
| Python Example | oModule.AddCableToBundle("bundle1", "tpwire2", 1, |

|  |                                                                                                                                                                                                                                                                                                             |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>[<br/><br/>    "NAME:CableInstParams",<br/><br/>    "XPos:="                , "0mm",<br/>    "YPos:="                , "0mm",<br/>    "RotX:="                , "0deg"<br/><br/>],<br/><br/>[<br/><br/>    "NAME:CableInstAttribs",<br/><br/>    "Name:="                , "tpwire2"<br/><br/>])</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CreateCableBundle

Creates a cable bundle using the Beta Cable Modeling feature. Right click on the 3D Component icon and select **Cables>Edit Cables** to open the **Cable Editor**. Then **Add>Bundle...**

|              |                                    |
|--------------|------------------------------------|
| UI Access    | 3D Components>Cables > Edit Cables |
| Parameters   | None                               |
| Return Value | None                               |

|                |                                                           |
|----------------|-----------------------------------------------------------|
| Python Syntax  | CreateCableBundle([<parameters>]), [<name>])              |
| Python Example | <pre>oModule.CreateCableBundle(<br/><br/>    [<br/></pre> |

|  |                                                                                                                                                                                                                                                                                             |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"NAME:BundleParams", "AutoPack:="          , True, [     "NAME:InsulationJacketParams",     "InsThickness:="    , "0.25mm",     "JacketMaterial:="  , "PVC plastic",     "InnerDiameter:="   , "2.5mm" ] ], [     "NAME:BundleAttribs",     "Name:="            , "bundle1" ] ])</pre> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CreateCableHarness

Creates a cable harness using the Beta Cable Modeling feature. Right click on the 3D Component icon and select **Cables>New Cable Harness** to open the **Insert Cable Harness Component Editor**.

|            |                                             |
|------------|---------------------------------------------|
| UI Access  | 3D Components>Cables > New Cable Harness... |
| Parameters | None                                        |

|              |      |
|--------------|------|
| Return Value | None |
|--------------|------|

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | CreateCableHarness(<parameters>))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Python Example | <pre>oModule.CreateCableHarness(<br/>    [<br/>        "NAME:HarnessParams",<br/>        "Bundle:="                , "bundle1",<br/>        "TwistAlongPath:="        , "720deg",<br/>        "Route:="                  , "Polyline1",<br/>        "AutoOrient:="             , False,<br/>        "Origin:="                  , ["0mm", "0mm", "0mm"],<br/>        "XAxisEnd:="                , ["-6mm", "0mm", "0mm"],<br/>        "PlaneFlip:="              , True,<br/>        [<br/>            "NAME:RefConductors",<br/>            "tpwire2/w1"<br/>        ],<br/>        [<br/>            "NAME:InputTerminations",<br/>            "tpwire2/w1:="          , [                                "Source:="",<br/>            "tpwire2/w2:="          , [                                "Imped:=""</pre> |



|  |                                                                                                                                                                                                                                      |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>], [     "NAME:OutputTerminations",     "tpwire2/w1:="          , [          "Imped:="     "tpwire2/w2:="          , [          "Source:=" ] ], [     "NAME:HarnessAttribs",     "Name:="                , "MyHarness" ])</pre> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CreateClockSource

Creates a clock source using the Beta Cable Modeling feature. Right click on the 3D Component icon and select **Cables>Edit Cable Sources...** to open the **Cable Time Domain Sources Editor**.

|              |                                    |
|--------------|------------------------------------|
| UI Access    | 3D Components>Cables > Edit Cables |
| Parameters   | None                               |
| Return Value | None                               |

| Python Syntax  | CreateClockSource(<parameters>))                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre> oModule.CreateClockSource (     [         "NAME:ClockSignalParams",         "Period:="                , "35us",         "LowPulseVal:="           , "0V",         "HighPulseVal:="          , "1V",         "Risetime:="              , "5us",         "Falltime:="              , "5us",         "PulseWidth:="            , "20us"     ],     [         "NAME:TDSourceAttribs",         "Name:="                  , "clock1"     ] ) </pre> |

## CreatePWLSource

Creates a PWL source using the Beta Cable Modeling feature. Right click on the 3D Component icon and select **Cables > Edit Cable Sources...** to open the **Cable Time Domain Sources Editor**.

|           |                                              |
|-----------|----------------------------------------------|
| UI Access | 3D Components>Cables > Edit Cable Sources... |
|-----------|----------------------------------------------|

|              |      |
|--------------|------|
| Parameters   | None |
| Return Value | None |

|                |                                                                                                                                                                                                                                                                                                                                                                           |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | CreatePWLSource(<parameters>))                                                                                                                                                                                                                                                                                                                                            |
| Python Example | <pre>oModule.CreatePWLSource(<br/>    [<br/>        "NAME:PWLSignalParams",<br/>        [<br/>            "NAME:SignalValues",<br/>            "0V",<br/>            "0.5V",<br/>            "0V"<br/>        ],<br/>        [<br/>            "NAME:TimeValues",<br/>            "0ns",<br/>            "1ns",<br/>            "2ns"<br/>        ]<br/>    ]<br/>)</pre> |

|  |                                                                            |
|--|----------------------------------------------------------------------------|
|  | <pre>], [     "NAME:TDSrcAttribs",     "Name:="          , "pw13" ])</pre> |
|--|----------------------------------------------------------------------------|

CreateStraightWireCable

Creates a straight Wire Cable using the Beta Cable Modeling feature. Right click on the 3D Component icon and select **Cables > Edit Cables** to open the **Cable Editor**. Then **Add Straight Wire Cable**.

|              |                                    |
|--------------|------------------------------------|
| UI Access    | 3D Components>Cables > Edit Cables |
| Parameters   | None                               |
| Return Value | None                               |

|                |                                                                                                                                                                                                         |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | CreateStraightWireCable([<parameters>]), [<name>])                                                                                                                                                      |
| Python Example | <pre>oModule = oDesign.GetModule("CableSetup") oModule.CreateStraightWireCable(     [         "NAME:StWireParams",         "WireStandard:="      , "ISO",         "WireGauge:="         , "0.13",</pre> |

|  |                                                                                                                                                                                                                                                                     |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"CondDiameter:="      , "0.55mm", "CondMaterial:="      , "copper", "InsThickness:="      , "0.25mm", "InsMaterial:="       , "PVC plastic", "InsType:="           , "Thin Wall"  ], [     "NAME:StWireAttribs",     "Name:="           , "stwire1"  ] )</pre> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CreateTwistedPairCable

Creates a twisted pair cable using the Beta Cable Modeling feature. Right click on the 3D Component icon and select **Cables>Edit Cables** to open the **Cable Editor**. Then **Add Twisted Pair Cable**.

|              |                                    |
|--------------|------------------------------------|
| UI Access    | 3D Components>Cables > Edit Cables |
| Parameters   | None                               |
| Return Value | None                               |

| Python Syntax  | CreateTwisted Pair Cable([<parameters>]), [<name>])                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.CreateTwistedPairCable("stwire1",     [         "NAME:TwistedPairParams",         [             "NAME:VirtualJacketParams",             "JacketMaterial:="          , "",             "InnerDiameter:="          , "0"         ],         "IsLayLengthSpecified:=", False,         "LayLength:="                  , "13.8888888888889mm",         "TurnsPerMeter:="              , "72"     ],     [         "NAME:TwistedPairAttribs",         "Name:="                        , "tpwire1"     ] )</pre> |

## ExportCableLibrary

Exports a cable library created using the Beta Cable Modeling feature. Right click on the 3D Component icon and select **Cables > Export Cable Library**. to open a browser window.

|              |                                                  |
|--------------|--------------------------------------------------|
| UI Access    | 3D Components > Cables > Export Cable Library... |
| Parameters   | None                                             |
| Return Value | None                                             |

|                |                                                                                                                                  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ExportCableLibrary(<parameters>))                                                                                                |
| Python Example | <pre>oModule = oDesign.GetModule("CableSetup")<br/>oModule.ExportCableLibrary("D:\\Users\\JaneDoe\\PersonalLib\\MyCables")</pre> |

## ImportCableLibrary

Imports an existing cable library created using the Beta Cable Modeling feature. Right click on the 3D Component icon and select **Cables>Export Cable Library**. to open a browser window.

|              |                                                |
|--------------|------------------------------------------------|
| UI Access    | 3D Components>Cables > Import Cable Library... |
| Parameters   | None                                           |
| Return Value | None                                           |

|                       |                                                                                                                              |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ImportCableLibrary(&lt;parameters&gt;))</code>                                                                         |
| <b>Python Example</b> | <pre>oModule = oDesign.GetModule("CableSetup") oModule.ExportCableLibrary("D:\\Users\\JaneDoe\\PersonalLib\\MyCables")</pre> |

## RemoveCable

Removes an existing cable created using the Beta Cable Modeling feature. Right click on the 3D Component icon and select **Cables>Edit Cables....** to open a **Cable Editor** window.

|                     |                                                    |
|---------------------|----------------------------------------------------|
| <b>UI Access</b>    | <b>3D Components&gt;Cables &gt; Edit Cables...</b> |
| <b>Parameters</b>   | None                                               |
| <b>Return Value</b> | None                                               |

|                       |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>RemoveCable(&lt;parameters&gt;))</code>                                       |
| <b>Python Example</b> | <pre>oModule = oDesign.GetModule("CableSetup") oModule.RemoveCable("bundle4")</pre> |

## UpdateCableHarness

Creates a cable harness using the Beta Cable Modeling feature. Right click on the 3D Component icon and select **Cables>New Cable Harness** to open the **Insert Cable Harness Component Editor**.

|                  |                                                          |
|------------------|----------------------------------------------------------|
| <b>UI Access</b> | <b>3D Components&gt;Cables &gt; New Cable Harness...</b> |
|------------------|----------------------------------------------------------|



|              |      |
|--------------|------|
| Parameters   | None |
| Return Value | None |

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | UpdateCableHarness(<parameters>))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Python Example | <pre>oModule.UpdateCableHarness(<br/>    [<br/>        "NAME:HarnessParams",<br/>        "Bundle:="                , "bundle1",<br/>        "TwistAlongPath:="        , "720deg",<br/>        "Route:="                  , "Polyline1",<br/>        "AutoOrient:="             , False,<br/>        "Origin:="                  , ["0mm", "0mm", "0mm"],<br/>        "XAxisEnd:="                , ["-6mm", "0mm", "0mm"],<br/>        "PlaneFlip:="              , True,<br/>        [<br/>            "NAME:RefConductors",<br/>            "tpwire2/w1"<br/>        ],<br/>    ]<br/>)</pre> |

```
        "NAME:InputTerminations",
        "tpwire2/w1:="          , [          "Source:="
        "tpwire2/w2:="          , [          "Imped:="
    ],
    [
        "NAME:OutputTerminations",
        "tpwire2/w1:="          , [          "Imped:="
        "tpwire2/w2:="          , [          "Source:="
    ]
],
[
    "NAME:HarnessAttribs",
    "Name:="                    , "MyHarness"
])
```

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left blank.

## 9 - Output Variable Script Commands

Output variable commands should be executed by the "OutputVariable" module.

First, obtain the output variable module from oDesign and use it for output variable commands:

```
Set oModule = oDesign.GetModule("OutputVariable")  
  
oModule.<CommandName><args>
```

The commands are:

[DeleteOutputVariable](#)

[DoesOutputVariableExist](#)

[EditOutputVariable](#)

[ExportOutputVariables](#)

[GetOutputVariableValue](#)

[GetOutputVariables](#)

[ImportOutputVariables](#)

### CreateOutputVariable

Adds a new output variable. Different forms of this command are executed for different design types.

**Note:**

Output variables are associated with a name and an expression. The name is not permitted to collide with design variable, sim value, or other output variable names. It cannot have spaces or any arithmetic or other operators in it. Expression definitions cannot be cyclic. For example,  $A = 2*B$ ,  $B=3*A$  is not allowed.

| UI Access    | HFSS 3D Layout > Results > Output Variables. |        |                                                                                                                                                                                                                     |
|--------------|----------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                         | Type   | Description                                                                                                                                                                                                         |
|              | <OutputVarName>                              | String | Name of the new output variable.                                                                                                                                                                                    |
|              | <Expression>                                 | Value  | Value to assign to the variable.                                                                                                                                                                                    |
|              | <SolutionName>                               | String | Name of the solution, as seen in the output variable UI.                                                                                                                                                            |
|              | <reportType> or <solutionType>               | String | The name of the report type as seen in the output variable UI.<br>For Layout Editor, use the solution type.                                                                                                         |
|              | <ContextArray> or <DomainArray>              | Array  | Structured array containing context for which the output variable expression is being evaluated.<br><br>Array("Context:=", <string>)<br><br>For Layout Editor, use Domain array:<br><br>Array("Domain:=", <string>) |
| Return Value | None.                                        |        |                                                                                                                                                                                                                     |

|                |                                                                                                                                                                              |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | CreateOutputVariable (<OutputVarName>, <Expression>, <SolutionName>, <reportType   solutionType>, <contextArray   domainArray>)                                              |
| Python Example | <b>HFSS Example:</b><br><br>oModule.CreateOutputVariable("Var" & OutputQuantity, OutputQuantity, Solution, "Far Fields", ["Context:=", InfiniteSphere, "Domain:=", "Sweep"]) |

**Layout Editor Example :**

```
Set oModule = oDesign.GetModule("OutputVariable")

oModule.CreateOutputVariable("test", "mag(S(WavePort1,WavePort1))", "Setup1 : LastAdaptive", "Modal Solution Data", ["Domain:=", "Sweep"])
```

## DeleteOutputVariable

Deletes an existing output variable. The variable can only be deleted if it is not in use by any traces.

|                     |                                                                                                           |        |                              |
|---------------------|-----------------------------------------------------------------------------------------------------------|--------|------------------------------|
| <b>UI Access</b>    | HFSS 3D Layout > Results > Output Variables. In the <b>Output Variables</b> window, click <b>Delete</b> . |        |                              |
| <b>Parameters</b>   | Name                                                                                                      | Type   | Description                  |
|                     | <OutputVarName>                                                                                           | String | Name of the output variable. |
| <b>Return Value</b> | None.                                                                                                     |        |                              |

|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteOutputVariable (<OutputVarName>)                                                             |
| <b>Python Example</b> | <pre>oModule = oDesign.GetModule("OutputVariable")  oModule.DeleteOutputVariable ("testNew")</pre> |

## DoesOutputVariableExist

Verifies whether or not a named output variable exists.

|              |                                                            |        |                           |
|--------------|------------------------------------------------------------|--------|---------------------------|
| UI Access    | N/A                                                        |        |                           |
| Parameters   | Name                                                       | Type   | Description               |
|              | <outputVariableName>                                       | String | The output variable name. |
| Return Value | Boolean True if the variable exists; False if it does not. |        |                           |

|                |                                                                                                                                                                                               |  |  |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Python Syntax  | DoesOutputVariableExist(<outputVariableName>)                                                                                                                                                 |  |  |
| Python Example | <pre>oProject = oDesktop.GetActiveProject()<br/>oDesign = oProject.GetActiveDesign()<br/>oModule = oDesign.GetModule("OutputVariable")<br/>oModule.DoesOutputVariableExist("MyTestVar")</pre> |  |  |

## EditOutputVariable

Changes the name or expression of an existing output variable.

|            |                 |        |                                                          |
|------------|-----------------|--------|----------------------------------------------------------|
| UI Access  | N/A             |        |                                                          |
| Parameters | Name            | Type   | Description                                              |
|            | <OrigVarName>   | String | Name of the original output variable.                    |
|            | <NewExpression> | String | New value to assign to the variable.                     |
|            | <NewVarName>    | String | New name of the variable if any, else pass empty string. |
|            | <SolutionName>  | String | Name of the solution as seen in the output variable UI.  |

|                     |                                 |        |                                                                                                                                                                                                                                                       |
|---------------------|---------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                 |        | For example, "Setup1 : Last Adaptive".                                                                                                                                                                                                                |
|                     | <ReportType> or <SolutionType>  | String | The name of the report type as seen in the output variable UI.<br><br>For Layout Editor, use the solution type.                                                                                                                                       |
|                     | <ContextArray> or <DomainArray> | Array  | Structured array containing context for which the output variable expression is being evaluated.<br><br><code>Array("Context:=", &lt;string&gt;)</code><br><br>For Layout Editor, use Domain array:<br><code>Array("Domain:=", &lt;string&gt;)</code> |
| <b>Return Value</b> | None                            |        |                                                                                                                                                                                                                                                       |

|                       |                                                                                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>EditOutputVariable (&lt;OrigVarName&gt;, &lt;NewExpression&gt;, &lt;NewVarName&gt;, &lt;SolutionName&gt;, &lt;ReportType   SolutionType&gt;, &lt;ContextArray   DomainArray&gt;)</code> |
| <b>Python Example</b> | <pre>oModule = oDesign.GetModule("OutputVariable") oModule.EditOutputVariable ("test", "normalize(R1_0.V)", "testNew", "TR", "Standard", [])</pre>                                            |

## ExportOutputVariables

Exports output variables to a file.

|                   |                                                               |        |                                |
|-------------------|---------------------------------------------------------------|--------|--------------------------------|
| <b>UI Access</b>  | Click on <b>Export</b> in the <b>Output Variables</b> dialog. |        |                                |
| <b>Parameters</b> | Name                                                          | Type   | Description                    |
|                   | <FileName>                                                    | String | Name of the file include path. |



|                     |                                                                                                                                                                              |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Return Value</b> | Boolean: <ul style="list-style-type: none"><li>• <b>True</b> - output variable successfully exported.</li><li>• <b>False</b> - error when export output variables.</li></ul> |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportOutputVariables(<FileName>)                                   |
| <b>Python Example</b> | <code>oModule.ExportOutputVariables("C:/output_var.aoutvar")</code> |

## GetOutputVariables

Returns the list of output variables.

|                     |                                        |
|---------------------|----------------------------------------|
| <b>UI Access</b>    | N/A                                    |
| <b>Parameters</b>   | None.                                  |
| <b>Return Value</b> | Array containing all output variables. |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | GetOutputVariables()                      |
| <b>Python Example</b> | <code>oDesign.GetOutputVariables()</code> |

## GetOutputVariableValue

Returns the double value of an output variable. Only expressions that return a double value are supported. The expression is evaluated only for a single point.

| UI Access    | N/A                                  |        |                                                                                                                                                                                                                                                                                                                  |
|--------------|--------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                 | Type   | Description                                                                                                                                                                                                                                                                                                      |
|              | <OutputVarName>                      | String | Name of the output variable.                                                                                                                                                                                                                                                                                     |
|              | <IntrinsicVariation>                 | String | A set of intrinsic variable value pairs to use when evaluating the output expression.<br><br>HFSS example:<br><br>"Freq='20GHz' Theta='20deg' Phi='30deg' "                                                                                                                                                      |
|              | <SolutionName>                       | String | Name of the solution as listed in the output variable UI. For example, "Setup1 : Last Adaptive".                                                                                                                                                                                                                 |
|              | <ReportType>                         | String | The name of the report type as seen in the output variable UI.<br><br>Possible values in Layout/Schematic Editor are: <ul style="list-style-type: none"> <li>• "Standard"</li> <li>• "Load Pull"</li> <li>• "Constellation"</li> <li>• "Data Table"</li> <li>• "Eye Diagram"</li> <li>• "Statistical"</li> </ul> |
|              | <ContextArray>                       | Array  | Structured array containing context for which the output variable expression is being evaluated. Can be empty.<br><br>Array("Context:=", <string>)                                                                                                                                                               |
| Return Value | Double value of the output variable. |        |                                                                                                                                                                                                                                                                                                                  |

|                       |                                                                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetOutputVariableValue(&lt;OutputVarName&gt;, &lt;IntrinsicVariation&gt;, &lt;SolutionName&gt;, &lt;ReportTypeName&gt;, &lt;ContextArray&gt;)</code> |
| <b>Python Example</b> | <pre>Val = oDesign.GetOutputVariableValue("test", "Freq = '20Ghz' Theta='20deg' Phi='30deg'", "TR", "Standard", [])</pre>                                  |

## ImportOutputVariables

Imports output variables from a file.

|                     |                                                                                                                                                                              |        |                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------|
| <b>UI Access</b>    | Click on <b>Import</b> in the <b>Output Variables</b> dialog.                                                                                                                |        |                                |
| <b>Parameters</b>   | Name                                                                                                                                                                         | Type   | Description                    |
|                     | <FileName>                                                                                                                                                                   | String | Name of the file include path. |
| <b>Return Value</b> | Boolean: <ul style="list-style-type: none"><li>• <b>True</b> - output variable successfully imported.</li><li>• <b>False</b> - error when import output variables.</li></ul> |        |                                |

|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ImportOutputVariables(&lt;FileName&gt;)</code>              |
| <b>Python Example</b> | <pre>oModule.ImportOutputVariables("C:/output_var.aoutvar")</pre> |

## SimValueContext

SimValueContext holds context information for a trace, and describes how data for a trace should be extracted from the simulation. SimValueContext contains a list of 14 required initial values:

```
SimValueContext (
Domain ID, Calculation Type, Number of Cycles, Rise Time,
Step, Impulse, Context ID, Window Width,
Window Type, TDR Kaiser Parameter, Hold Time, DeviceName,
TDR Step Time, DR Maximum Time )
```

For example, the following indicates a trace in the Time Domain, Standard Calculation with the number of cycles being 2:

```
"SimValueContext:=", Array(1, 0, 2, 0, false, false, -1, 1, 0, 1, 1, "", 0, 0)
```

Additional, context-specific values may follow the required values, as described in subsection 15 below.

### 1. Domain ID

|                  |   |
|------------------|---|
| No Domain        | 0 |
| Time Domain      | 1 |
| Spectrum Domain  | 2 |
| Sweep Domain     | 3 |
| Device Domain    | 4 |
| SinglePt Domain  | 5 |
| LoadPull Domain  | 6 |
| Transient Domain | 7 |
| Budget Domain    | 8 |

|                          |       |
|--------------------------|-------|
| NetworkFunction Domain   | 9     |
| Oscillator Domain        | 55802 |
| Noise Domain             | 55803 |
| Transfer Function Domain | 55807 |
| Time Frequency Domain    | 55808 |
| Transient Time Domain    | 55809 |
| Periodic AC Domain       | 55818 |
| UI Domain                | 55819 |
| Eye Measurement Domain   | 55823 |
| Initial Response Domain  | 55824 |
| Peak Distortion Domain   | 55825 |

## 2. Calculation Type

|                       |   |
|-----------------------|---|
| Standard Calculation  | 0 |
| Device2_DCIV          | 1 |
| Device3_DCIV_Output   | 2 |
| Device3_DCIV_Input    | 3 |
| Device3_DCIV_Transfer | 4 |
| Device3_DCIV_Reverse  | 5 |
| Device2_ACLoad        | 6 |
| Device3_ACLoad_Output | 7 |
| Device3_ACLoad_Input  | 8 |

|                            |    |
|----------------------------|----|
| Device3_ACLoad_Transfer    | 9  |
| Device3_ACLoad_Reverse     | 10 |
| Constellation              | 11 |
| EyeDiagram                 | 12 |
| FreeX ( Statistic Report ) | 13 |

3. **Number of Cycles** — Used in Time Domain in HarmonicBalance analysis.
4. **Rise Time** — Not used by Designer/Nexxim.
5. **Step** — Not used by Designer/Nexxim.
6. **Impulse** — Not used by Designer/Nexxim.
7. **Context ID** — Not used by Designer/Nexxim.
8. **Window Width** — Not used by Designer/Nexxim.
9. **Window Type** — Not used by Designer/Nexxim.
10. **TDR Kaiser Parameter** — Not used by Designer/Nexxim.
11. **Hold Time** — Not used by Designer/Nexxim.
12. **DeviceName** — Not used by Designer/Nexxim.
13. **TDR Step Time** — Not used by Designer/Nexxim.
14. **TDR Maximum Time** — Not used by Designer/Nexxim.
15. **Context-specific values** — Used in Time Domain in HarmonicBalance analysis.

Context-specific values are entered in the format "key, true/false, keyvalue", where:

— "**key**" is the name of the key being set.

- **"true/false"** indicates whether the key is a string value.
- **"keyvalue"** is the value of the key.
- The order of the context keys is not significant.
- Context keys have software defaults that will be used if not provided in the script.

**a. Plotting Range for Time domain in Transient and QuickEye analysis:**

| Description          | Key Name | Is a string? | Key Value |
|----------------------|----------|--------------|-----------|
| Start Time           | WS       | False        | 0ns       |
| Stop Time            | WE       | False        | 10ns      |
| Minimum Time         | WM       | False        | 0ns       |
| Maximum Time         | WN       | False        | 10ns      |
| Is Thinning Enabled? | DE       | False        | 0         |
| Dy/dx Tolerance      | DT       | False        | 0.001     |
| Number of points     | DP       | False        | 20000000  |

**b. Transient report context for Spectral domain in Transient analysis:**

| Description | Key Name | Is a string? | Key Value |
|-------------|----------|--------------|-----------|
| Start Time  | TS       | False        | 0ns       |

|                      |    |       |      |
|----------------------|----|-------|------|
| Stop Time            | TE | False | 10ns |
| Max Harmonics        | MH | False | 100  |
| Max Frequency        | MF | False | *    |
| Window type          | WT | False | 0    |
| Width Percentage     | WW | False | 100  |
| Kaiser Parameter     | KP | False | 0    |
| Adjust Coherent Gain | CG | False | 0    |

\* Script can specify either MH or MF. If neither is specified, Max Harmonics is set to 100. If both are specified, MF is used.

| Window Type | ID |
|-------------|----|
| Rectangular | 0  |
| Bartlett    | 1  |
| Blackman    | 2  |
| Hamming     | 3  |
| Hanning     | 4  |
| Kaiser      | 5  |
| Welch       | 6  |
| Weber       | 7  |
| Lanzcos     | 8  |

**c. Eyeprobe index context for UI domain, Time domain, Eye Measurement domain in VeriEye and QuickEye analysis:**



| Description          | Key Name | Is a string? | Key Value |
|----------------------|----------|--------------|-----------|
| Eyeprobe compinst ID | PCID     | False        | 0         |

**d. Eyesource index context for Initial Response domain and Peak Distortion domain in VerifEye and QuickEye analysis:**

| Description           | Key Name | Is a string? | Key Value |
|-----------------------|----------|--------------|-----------|
| Eyesource compinst ID | SCID     | False        | 0         |

**e. UI domain context in VerifEye and QuickEye analysis:**

| Description             | Key Name | Is a string? | Key Value                                                                            |
|-------------------------|----------|--------------|--------------------------------------------------------------------------------------|
| Use midpoint?           | MIDPOINT | False        | 0 - Don't use midpoint.<br>1 - Use midpoint of amplitude.<br>2 - Use midpoint of UI. |
| Minimum latch overdrive | MLO      | False        | 0                                                                                    |

**f. Distribution Context for UI Domain in VerifEye and QuickEye analysis:**

| Description       | Key Name | Is a string? | Key Value                                                     |
|-------------------|----------|--------------|---------------------------------------------------------------|
| Use distribution? | USE_DIST | False        | 0 - No<br>1 - Yes                                             |
| Distribution type | DIST     | False        | 0 - Receiver Jitter<br>1 - Receiver Noise<br>2 - User Defined |

### Receiver Jitter Parameters

| Description                  | Key Name   | Is a string? | Key Value |
|------------------------------|------------|--------------|-----------|
| DLL standard deviation       | DSD        | False        | 0         |
| Distribution type            | DIST       | False        | 0         |
| DLL taps                     | DMN        | False        | 0         |
| Static Offset                | SOFF       | False        | 0         |
| Number of Gaussian data sets | NUMG       | False        | 0         |
| Gaussian std deviation       | GS0,GS1... | False        | 0         |
| Offset mean                  | GM1,GM1... | False        | 0         |
| Number of Uniform data sets  | NUMU       | False        | 0         |
| Uniform width                | UW0,UW1... | False        | 0         |
| Uniform mean                 | UM1,UM1... | False        | 0         |

### Receiver Noise Parameters

| Description                  | Key Name   | Is a string? | Key Value |
|------------------------------|------------|--------------|-----------|
| Number of Gaussian data sets | NUMG       | False        | 0         |
| Gaussian std deviation       | GS0,GS1... | False        | 0         |
| Number of Uniform data sets  | NUMU       | False        | 0         |
| Uniform width                | UW0,UW1... | False        | 0         |

### User Defined Parameters

| Description             | Key Name    | Is a string? | Key Value |
|-------------------------|-------------|--------------|-----------|
| Number of XY data pairs | NUMG        | False        | 0         |
| X data                  | X0,X1,X2... | False        | 0         |
| Y data                  | Y0,Y1,Y2... | False        | 0         |
| Cutoff probability      | CP          | False        | 0         |

## 10 - Reporter Editor Script Commands

Reporter commands should be executed by the oDesign object.

For example:

```
oDesign = Project.SetActiveDesign("EMDesign1")  
oModule = oDesign.GetModule("ReportSetup")
```

All Report and Trace properties can be edited using the **ChangeProperty** commands. This includes Title properties, General properties, and Background properties such as border color, fonts, X and Y axis scaling, and number display.

**Note:**

When you execute **Tools > Record Script**, operations performed in the Reporter are automatically recorded.

The list of commands is as follows:

[AddAllEyeMeasurements](#)

[AddCartesianLimitLine](#)

[AddCartesianLimitLineFromCurve](#)

[AddCartesianLimitLineFromEquation](#)

[AddCartesianXMarker](#)

[AddCartesianYMarker](#)

[AddCartesianYMarkerToStack](#)

[AddDeltaMarker](#)

[AddMarker](#)

[AddNote](#)

[AddTraceCharacteristics](#)

[AddTraces](#)

AddVerifEyeAnalysis

[ApplyReportTemplate](#)

[ChangeProperty](#)

[ClearAllMarkers](#)

[ClearAllTraceCharacteristics](#)

[CloneReportsFromDatasetSolution](#)

[CopyPlotSettings](#)

[CopyReportDefinitions](#)

[CopyReportData](#)

[CopyTraceDefinitions](#)

[CopyTracesData](#)

CreateReportFromFile

[CreateReportFromTemplate](#)

[CreateReportOfAllQuantities](#)

[DeleteAllReports](#)

[DeleteReports](#)

[DeleteTraceCharacteristics](#)

[DeleteTraces](#)

[DoesSupportTraceCharacteristics](#)

[DumpAllReportsData](#)

[EditCartesianXMarker](#)

[EditCartesianYMarker](#)

[EditMarker](#)

EditQuickEyeAnalysis

EditVerifEyeAnalysis

[ExportEyeMaskViolation](#)

[ExportImageToFile](#)

[ExportReportDataToFile](#)

[ExportTableToFile](#)

[ExportToFile \[Reporter\]](#)

[GetAllCategories](#)

[GetAllQuantities](#)

[GetAllReportNames](#)

[GetAvailableDisplayTypes](#)

[GetAvailableReportTypes](#)

[GetAvailableSolutions](#)

[GetChildNames](#)

[GetChildObject](#)

[GetChildTypes](#)

[GetCurvePropServerName](#)

[GetDisplayType](#)

[GetDynLinkIntrinsicVariables](#)

[GetDynLinkQtyValueState](#)

[GetDynLinkLinkTraces](#)

[GetDynLinkVariableValues](#)

[GetName](#)

[GetObjPath](#)

[GetPropNames](#)

[GetPropSIValue](#)

[GetPropertyValue](#)

[GetQtyExpressionsForSourceTrace](#)

[GetReportSummaryForRegressionTesting](#)

[GetReportTraceNames](#)

[GetSolutionContexts](#)

[GetSolutionDataPerVariation](#)

[GroupPlotCurvesByGroupingStrategy](#)

[ImportIntoReport](#)

[ImportReportDataIntoReport](#)

[MovePlotCurvesToGroup](#)

[MovePlotCurvesToNewGroup](#)

[OpenWindowForAllReports](#)

[OpenWindowForReports](#)

[PastePlotSettings](#)

[PasteReports](#)

[PasteReportsWithLegacyNames](#)

[PasteTraces](#)

[PasteTracesWithLegacyNames](#)

[RenameReport](#)

[RenameTrace](#)

[ResetPlotSettings](#)

[SavePlotSettingsAsDefault](#)

[SetLinkOutputTraces](#)

[SetPropValue](#)

[UngroupPlotCurvesInGroup](#)

[UpdateAllFieldsPlots](#)

[UpdateAllReports](#)

[UpdateReports](#)

[UpdateTraces](#)

[UpdateTracesContextandSweeps](#)



# AddAllEyeMeasurements

Displays all the eye measurements in tabular format.

|              |                                                                                              |        |                     |
|--------------|----------------------------------------------------------------------------------------------|--------|---------------------|
| UI Access    | Right-click the report and select <b>Trace Characteristics &gt; Add All Eye Measurements</b> |        |                     |
| Parameters   | Name                                                                                         | Type   | Description         |
|              | <ReportName>                                                                                 | String | Name of the report. |
| Return Value | None.                                                                                        |        |                     |

|                |                                                       |
|----------------|-------------------------------------------------------|
| Python Syntax  | AddAllEyeMeasurements(<ReportName>)                   |
| Python Example | <code>oModule.AddAllEyeMeasurements("DQS Eye")</code> |

# AddCartesianLimitLine

Adds a limit line to a report on the X axis.

|            |                                              |        |                                                                                                                                                                |
|------------|----------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | Report2D > Add Limit Line> Specify Points... |        |                                                                                                                                                                |
| Parameters | Name                                         | Type   | Description                                                                                                                                                    |
|            | <ReportName>                                 | String | Name of the report.                                                                                                                                            |
|            | <Def>                                        | Array  | Structured array:<br><br>Array("NAME:CartesianLimitLine",<br><br>Array("NAME:XValues", <integer X values>),<br><br>"XUnits:=", <string unit of measure for X>, |

|                     |       |  |                                                                                                                                                                         |
|---------------------|-------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       |  | <pre> Array("NAME:YValues", &lt;integer Y values&gt;), "YUnits:=", "&lt;string unit of measure for Y&gt;", "YAxis:=", &lt;string name of associated Y axis&gt; ) </pre> |
| <b>Return Value</b> | None. |  |                                                                                                                                                                         |

|                       |                                                                                                                                                                                                                                                                                 |  |  |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | <b>AddCartesianLimitLine (&lt;ReportName&gt;, &lt;Def&gt;)</b>                                                                                                                                                                                                                  |  |  |
| <b>Python Example</b> | <pre> oModule.AddCartesianLimitLine("Project Outputs",     ["NAME:CartesianLimitLine",         ["NAME:XValues",0, 2, 5, 7, 10, 15],         "XUnits:=", "s",         ["NAME:YValues",0.05, 0.3, 0.65, 0.825, 0.95, 1],         "YUnits:=", "mV", "YAxis:=", "Y1"     ] ) </pre> |  |  |

## AddCartesianLimitLineFromCurve

Adds a limit line to a report from selected curve on the plot.

|                   |                                                                 |        |                     |
|-------------------|-----------------------------------------------------------------|--------|---------------------|
| <b>UI Access</b>  | <b>Report2D &gt; Add Limit Line &gt; From Selected Curve...</b> |        |                     |
| <b>Parameters</b> | Name                                                            | Type   | Description         |
|                   | <ReportName>                                                    | String | Name of the report. |

|                     |                                      |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------|--------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <code>&lt;LimitLineParams&gt;</code> | String | Structured array.<br><br>Array("NAME:CartesianLimitLineFromCurve",<br>"TraceName:=", <string name of selected trace>,<br>"CurveName:=", <string name of selected curve>,<br>"Start:=", "<value><unit>",<br>"Stop:=", "<value><unit>",<br>"YAxis:=", <integer Y-Axis number>,<br>"YOffset:=", <value offset from Y-Axis>,<br>"CreateMode:=", "<AboveCurve   BelowCurve   Above and<br>Below Curve>",<br>"YShiftPercent:=", <value percentage to shift from Y>) |
| <b>Return Value</b> | None.                                |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|                       |                                                                                                                                                                                                                                               |  |  |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | AddCartesianLimitLineFromCurve(<ReportName>, <LimitLineParams>)                                                                                                                                                                               |  |  |
| <b>Python Example</b> | <pre>oModule.AddCartesianLimitLineFromCurve("Variables Plot 2", [     "NAME:CartesianLimitLineFromCurve",     "TraceName:="                , "Phase",     "CurveName:="                , "",     "Start:="                    , "0deg",</pre> |  |  |

|  |                                                                                                                                                                                         |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "Stop:="                , "375deg", "YAxis:="                , 1, "YOffset:="              , 0, "CreateMode:="           , "AboveCurve", "YShiftPercent:="        , 10 ] ) </pre> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## AddCartesianLimitLineFromEquation

Adds a limit line to a report from a specified equation.

| UI Access    | Report2D > Add Limit Line > Specify Equation... |        |                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------|-------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                            | Type   | Description                                                                                                                                                                                                                                                                                                                                                                     |
|              | <ReportName>                                    | String | Name of the report.                                                                                                                                                                                                                                                                                                                                                             |
|              | <LimitLineParams>                               | Array  | Structured array.                                                                                                                                                                                                                                                                                                                                                               |
|              |                                                 |        | <pre> Array("NAME:CartesianLimitLineFromEquation",       "YAxis:=", &lt;integer Y-Axis number&gt;,       "Start:=", &lt;string start frequency with unit&gt;,       "Stop:=", &lt;string end frequency with unit&gt;,       "Step:=", &lt;string frequency resolution with unit&gt;,       "Equation:=", &lt;string specified equation&gt;)       "XValuesUnit:=", "GHz" </pre> |
| Return Value | None.                                           |        |                                                                                                                                                                                                                                                                                                                                                                                 |

| Python Syntax  | AddCartesianLimitLineFromEquation(<ReportName>, <LimitLineParams>)                                                                                                                                                                                                                                                         |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.AddCartesianLimitLineFromEquation("S Parameter Plot 1", [     "NAME:CartesianLimitLineFromEquation",     "YAxis:="          , 1,     "Start:="          , "9GHz",     "Stop:="           , "11GHz",     "Step:="           , "0.2GHz",     "Equation:="       , "x+1"     "XValuesUnit:="    , "GHz" ])</pre> |

## AddCartesianXMarker

Adds a marker to a report on the X axis.

| UI Access    | Report2D > Marker > Add X Marker. |        |                                             |
|--------------|-----------------------------------|--------|---------------------------------------------|
| Parameters   | Name                              | Type   | Description                                 |
|              | <ReportName>                      | String | Name of report.                             |
|              | <MarkerName>                      | String | Marker name, including any trailing number. |
|              | <XValue>                          | Double | X coordinate.                               |
| Return Value | None                              |        |                                             |

|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| <b>Python Syntax</b>  | AddCartesianXMarker (<ReportName>, <MarkerName>, <XValue>) |
| <b>Python Example</b> | oModule.AddCartesianXMarker ("XY Plot 1", "MX1", 0)        |

## AddCartesianYMarker

Adds a marker to a report on the Y axis.

|                     |                                                |        |                                             |
|---------------------|------------------------------------------------|--------|---------------------------------------------|
| <b>UI Access</b>    | <b>Report2D &gt; Marker &gt; Add Y Marker.</b> |        |                                             |
| <b>Parameters</b>   | Name                                           | Type   | Description                                 |
|                     | <ReportName>                                   | String | Name of report.                             |
|                     | <MarkerName>                                   | String | Marker name, including any trailing number. |
|                     | <AxisName>                                     | String | Name of axis.                               |
|                     | <YValue>                                       | Double | Y coordinate.                               |
|                     | <CurveName>                                    | String | Name of curve.                              |
| <b>Return Value</b> | None                                           |        |                                             |

|                       |                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddCartesianYMarker (<ReportName>, <MarkerName>, <AxisName>, <YValue>, <CurveName>)   |
| <b>Python Example</b> | oModule.AddCartesianYMarker("XY Plot 1", "MY1", "Y1", 0,<br>"dB() : Setup1 : Sweep1") |

## AddCartesianYMarkerToStack

Adds a marker to a stacked report on the Y axis.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

|              |               |        |                                                                                       |
|--------------|---------------|--------|---------------------------------------------------------------------------------------|
| Parameters   | Name          | Type   | Description                                                                           |
|              | <ReportName>  | String | Name of report.                                                                       |
|              | <MarkerName>  | String | Marker name, including any trailing number.                                           |
|              | <AxisName>    | String | Name of axis.                                                                         |
|              | <YValue>      | Double | Y coordinate.                                                                         |
|              | <CurveName>   | String | Name of curve.                                                                        |
|              | <StackOption> | Array  | "Current" to create marker on the current stack. "All" to create marker on all stack. |
| Return Value | None          |        |                                                                                       |

|                |                                                                                                           |
|----------------|-----------------------------------------------------------------------------------------------------------|
| Python Syntax  | AddCartesianYMarkerToStack (<ReportName>, <MarkerName>, <AxisName>, <YValue>, <CurveName>, <StackOption>) |
| Python Example | <pre>oModule.AddCartesianYMarker("XY Plot 1", "MY1", "Y1", 0, "dB() : Setup1 : Sweep1", ["All"])</pre>    |

## AddDeltaMarker

Add markers to calculate differences between two trace points on a plot.

|            |                                       |        |                                                                   |
|------------|---------------------------------------|--------|-------------------------------------------------------------------|
| UI Access  | Report2D > Marker > Add Delta Marker. |        |                                                                   |
| Parameters | Name                                  | Type   | Description                                                       |
|            | <ReportName>                          | String | Name of report.                                                   |
|            | <MarkerName1>                         | String | Marker name, including any trailing number, for the first marker. |
|            | <CurveName1>                          | String | Full trace name for the first marker.                             |
|            | <PrimarySweepValue1>                  | String | Frequency, including unit, for the first marker's sweep.          |

|                     |                      |        |                                                                    |
|---------------------|----------------------|--------|--------------------------------------------------------------------|
|                     | <MarkerName2>        | String | Marker name, including any trailing number, for the second marker. |
|                     | <CurveName2>         | String | Full trace name for the second marker.                             |
|                     | <PrimarySweepValue2> | String | Frequency, including unit, for the second marker's sweep.          |
| <b>Return Value</b> | None                 |        |                                                                    |

|                       |                                                                                                                                                                                                                                                                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddDeltaMarker(<ReportName>, <MarkerName1>, <CurveName1>, <PrimarySweepValue1>, <MarkerName2>, <CurveName2>, <PrimarySweepValue2>)                                                                                                                                                                                                       |
| <b>Python Example</b> | <pre>oModule.AddDeltaMarker("S Parameter Plot 1", "m1",     "dB(S(A-MII-RXD1_30_SQFP28X28_208_U1 A-MII-RXD1_30_SQFP28X28_208_U1)) : SYZ Sweep 1 : SYZ Sweep 1 : Cartesian",     "1.7GHz", "m2",     "dB(S(A-MII-RXD1_30_SQFP28X28_208_U1 A-MII-RXD1_30_SQFP28X28_208_U1)) : SYZ Sweep 1 : SYZ Sweep 1 : Cartesian",     "5.05GHz")</pre> |

## AddMarker

Adds a marker to a trace on a report.

|                   |                                              |        |                                             |
|-------------------|----------------------------------------------|--------|---------------------------------------------|
| <b>UI Access</b>  | <b>Report2D &gt; Marker &gt; Add Marker.</b> |        |                                             |
| <b>Parameters</b> | Name                                         | Type   | Description                                 |
|                   | <ReportName>                                 | String | Name of report.                             |
|                   | <MarkerName>                                 | String | Marker name, including any trailing number. |
|                   | <CurveName>                                  | String | Full trace name.                            |
|                   | <PrimarySweepValue>                          | String | Primary sweep value, including unit.        |



|              |      |
|--------------|------|
| Return Value | None |
|--------------|------|

|                |                                                                                                       |
|----------------|-------------------------------------------------------------------------------------------------------|
| Python Syntax  | AddMarker( <ReportName>, <MarkerName>, <CurveName>, <PrimarySweepValue>)                              |
| Python Example | <pre>oModule.AddMarker("XY Plot 1", "m5",<br/>"GS1.VAL : TR4 : Cartesian", "3.61599999999997s")</pre> |

AddNote

Adds a note at a specified location to a given report.

|            |                                                      |        |                                                                                                                                                                                                                                                          |
|------------|------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | Right-click on the plot and select <b>Add Note</b> . |        |                                                                                                                                                                                                                                                          |
| Parameters | Name                                                 | Type   | Description                                                                                                                                                                                                                                              |
|            | <ReportName>                                         | String | Name of report                                                                                                                                                                                                                                           |
|            | <NoteDataArray>                                      | Array  | Structured array.<br><br>Array("NAME:<StringDataName>", <NoteArray>)                                                                                                                                                                                     |
|            | <NoteArray>                                          | Array  | Structured array:<br><br>Array("NAME:<NoteDataSourceName>",<br>"SourceName:=", <string source name>,<br>"HaveDefaultPos:=", <boolean True for position 0,0;<br>False to specify below>,<br>"DefaultXPos:=", <int X position for note; 0 for<br>default>, |

|                     |      |  |                                                                                                                           |
|---------------------|------|--|---------------------------------------------------------------------------------------------------------------------------|
|                     |      |  | <code>"DefaultYPos:=", &lt;int Y position for note; 0 for default&gt;, <br/> "String:=", &lt;string note text&gt;)</code> |
| <b>Return Value</b> | None |  |                                                                                                                           |

|                       |                                                                                                                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>AddNote (&lt;ReportName&gt;, &lt;NoteDataArray&gt;)</code>                                                                                                                                                                                    |
| <b>Python Example</b> | <pre>oModule.AddNote ("XY Plot1",     ["NAME:NoteDataSource",         "SourceName:=", "Note1",         "HaveDefaultPos:=", False,         "DefaultXPos:=", 1996,         "DefaultYPos:=", 3177,         "String:=", "This is a note."     ] )</pre> |

## AddTraceCharacteristics

Adds a trace characteristics field to the legend on a report.

|                  |                                                                                                                  |
|------------------|------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b> | <b>Report2D &gt; Trace Characteristics &gt; All.</b> This opens the <b>Add Trace Characteristics</b> dialog box. |
|------------------|------------------------------------------------------------------------------------------------------------------|

|                     |                |             |                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|----------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>    | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                     |
|                     | <ReportName>   | String      | Name of report.                                                                                                                                                                                                                                                                                                                                                                                        |
|                     | <FunctionName> | String      | The function name. See the <b>Functions</b> column of the <b>Add Trace Characteristics</b> dialog box.                                                                                                                                                                                                                                                                                                 |
|                     | <FunctionArgs> | Array       | <p>Array containing string values for any function arguments. Pass empty array if no arguments exist.</p> <p>To see which argument(s) a function takes, see the bottom of the <b>Add Trace Characteristics</b> dialog box.</p> <p>For function with one argument:</p> <pre>Array(&lt;value&gt;)</pre> <p>For function with multiple arguments:</p> <pre>Array(&lt;value&gt;, &lt;value&gt;, ...)</pre> |
|                     | <RangeArgs>    | Array       | <p>Required. Array containing either string "Full" for a full sweep range, or "Specified" and strings containing the start and end values for the frequency range.</p> <p>For example:</p> <pre>Array("Specified", "19.5GHz", "24.4GHz")</pre>                                                                                                                                                         |
| <b>Return Value</b> | None.          |             |                                                                                                                                                                                                                                                                                                                                                                                                        |

|                       |                                                                                                                                                                                  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddTraceCharacteristics (<ReportName>, <FunctionName>, <FunctionArgs>, <RangeArgs>)                                                                                              |
| <b>Python Example</b> | <pre>oModule.AddTraceCharacteristics("XY Plot 2", "delaytime", ["0"], ["Full"]) oModule.AddTraceCharacteristics("Differential S-parameters", "prms", ["0", "0"], ["Full"])</pre> |

```
oModule.AddTraceCharacteristics("Rept2DRectFreq", "distortion", ["0"], ["Specified",
"19.5GHz", "20.4GHz"])
```

## AddTraces

Creates a new trace and adds it to the specified report.

| UI Access  | Modify Report > Add Trace. |        |                                                                                                                                                                                                                                                                                                 |
|------------|----------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                       | Type   | Description                                                                                                                                                                                                                                                                                     |
|            | <ReportName>               | String | Name of Report                                                                                                                                                                                                                                                                                  |
|            | <SolutionName>             | String | Name of the solution as listed in the <b>Modify Report</b> dialog box.                                                                                                                                                                                                                          |
|            | <ContextArray>             | Array  | Context for which the expression is being evaluated. This can be an empty string if there is no context.<br><br>Array("Domain:=", <DomainType>)<br><DomainType> ex. "Sweep" or "Time"<br>Array("Context:=", <GeometryType>)<br><GeometryType> ex. "Infinite Spheren",<br>"Spheren", "Polylinen" |
|            | <FamiliesArray>            | Array  | Contains sweep definitions for the report.<br><br>Array("<VariableName>:= ", <ValueArray>)<br><ValueArray><br>Array("All") or Array("Value1", "Value2",<br>..."Valuen")<br>examples of <VariableName> "Freq", "Theta",<br>"Distance"                                                            |
|            | <ReportDataArray>          | Array  | This array contains the report quantity and X, Y, and (Z) axis definitions.                                                                                                                                                                                                                     |

|                     |      |  |                                                                                                                                                                                                 |
|---------------------|------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |      |  | <pre>Array("X Component:=", &lt;VariableName&gt;,       "Y Component:=", &lt;VariableName&gt;   &lt;ReportQuantityArray&gt;) &lt;ReportQuantityArray&gt; ex. Array("dB(S(Port1, Port1))")</pre> |
| <b>Return Value</b> | None |  |                                                                                                                                                                                                 |

| Python Syntax         | Add Traces(<ReportName>, <SolutionName>, <ContextArray>, <FamiliesArray>, <ReportDataArray>)                                                                                                                                                                                                                                                                                                                                         |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oModule.AddTraces("XY Plot1", "Setup1 : Sweep1", ["Domain:=", "Time", "HoldTime:=", 1, "RiseTime:=", 0, "StepTime:=", 6.24999373748E-012, "Step:=", False, "WindowWidth:=", 1, "WindowType:=", 0, "KaiserParameter:=", 1, "MaximumTime:=", 6.2437437437444E-009], ["Time:=", ["All"], "OverridingValues:=", ["0s", "6.24999373748188e-012s", ... ]], ["X Component:=", "Time", "Y Component:=", ["TDRZ(WavePort1)"]], [])</pre> |

# ApplyReportTemplate

Applies settings to a report from a template file.

|                     |                                                                               |        |                                                                |
|---------------------|-------------------------------------------------------------------------------|--------|----------------------------------------------------------------|
| <b>UI Access</b>    | Right-click on a report, select <b>Report Templates &gt; Apply Settings</b> . |        |                                                                |
| <b>Parameters</b>   | Name                                                                          | Type   | Description                                                    |
|                     | <ReportName>                                                                  | String | Name of the report to apply settings to.                       |
|                     | <TemplateFile>                                                                | String | Template file name with path.                                  |
|                     | <PropertyType>                                                                | String | Property types to apply.<br><br>("Graphical"   "Data"   "All") |
| <b>Return Value</b> | None.                                                                         |        |                                                                |

|                       |                                                                                   |  |  |
|-----------------------|-----------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | ApplyReportTemplate(<ReportName>, <TemplateFile>, <PropertyType>)                 |  |  |
| <b>Python Example</b> | oModule.ApplyReportTemplate("Variables Plot 1", "C:/MyTemplate.rpt", "Graphical") |  |  |

## ChangeProperty[ReportSetup]

Change the properties for a Report.

|                     |                                                    |       |                                                                                |
|---------------------|----------------------------------------------------|-------|--------------------------------------------------------------------------------|
| <b>UI Access</b>    | Double-click on a report to change its properties. |       |                                                                                |
| <b>Parameters</b>   | Name                                               | Type  | Description                                                                    |
|                     | <PropertyArray>                                    | Array | Varies, depending on the properties associated with the select object command. |
| <b>Return Value</b> | None.                                              |       |                                                                                |

| Python Syntax  | ChangeProperty(<PropertyArray>)                                                                                                                                                                                                                                                                                                                                           |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule = oDesign.GetModule("ReportSetup")  oModule.ChangeProperty(  [     "NAME:AllTabs",     [         "NAME:General",         [             "NAME:PropServers",             "XY Plot 1:General"         ]     ],     [         "NAME:ChangedProps",         [             "NAME:Use Scientific Notation",             "Value:=", True         ]     ] ]  ])</pre> |

```
oModule = oDesign.GetModule("ReportSetup")
oModule.ChangeProperty(
[
"NAME:AllTabs",
[
"NAME:Legend",
[
"NAME:PropServers",
"S Parameter Plot 1:Legend"
],
[
"NAME:ChangedProps",
[
"NAME:Legend Name",
"Value:=" , "Ansys"
]
]
]
])
oModule.ChangeProperty(
```



```
[
    "NAME:AllTabs",
    [
        "NAME:General",
        [
            "NAME:PropServers",
            "S Parameter Plot 1:General"
        ],
    ],
    [
        "NAME:ChangedProps",
        [
            "NAME:Auto Scale Fonts",
            "Value:=" , False
        ]
    ]
]
```

])

### Example For Rectangular Stacked Plot

```
oProject = oDesktop.SetActiveProject("antenna_test")
oDesign = oProject.SetActiveDesign("Design1")
oModule = oDesign.GetModule("ReportSetup")
oModule.ChangeProperty(
    [
        "NAME:AllTabs",
        [
            "NAME:Scaling",
            [
                "NAME:PropServers",
                "S Parameter Plot 1:AxisY2:Stack1",
                "S Parameter Plot 1:AxisY2:Stack2"
            ],
            [
                "NAME:ChangedProps",
                [
                    "NAME:Min",
                    "Value:="                , "-60"
                ]
            ]
        ]
    ]
)
```

```
    ])  
  
#### Example Change eye rect and eye plot:  
  
ScriptEnv.Initialize("Ansoft.ElectronicsDesktop")  
oDesktop.RestoreWindow()  
oProject = oDesktop.SetActiveProject("test_nport_synth2")  
oDesign = oProject.SetActiveDesign("Circuit1")  
oModule = oDesign.GetModule("ReportSetup")  
oModule.ChangeProperty(  
    [  
        "NAME:AllTabs",  
        [  
            "NAME:Grid",  
            [  
                "NAME:PropServers",  
                "QuickEye Voltage Plot 1:Grid:Eye"  
            ],  
            [  
                "NAME:ChangedProps",  
                [  
                    "NAME:Major grid line style",
```

```
        "Value:=" , "Dot"
    ],
    [
        "NAME:Minor grid line style",
        "Value:=" , "Dot"
    ]
],
[
    "NAME:Axis",
    [
        "NAME:PropServers",
        "QuickEye Voltage Plot 1:AxisX:Eye"
    ],
    [
        "NAME:ChangedProps",
        [
            "NAME:Axis Color",
            "R:=" , 255,
            "G:=" , 128,
            "B:=" , 128
```

```
    ]  
  ]  
],  
[  
  "NAME:Axis",  
  [  
    "NAME:PropServers",  
    "QuickEye Voltage Plot 1:AxisY1:Rect"  
  ],  
  [  
    "NAME:ChangedProps",  
    [  
      "NAME:Axis Color",  
      "R:=" , 255,  
      "G:=" , 128,  
      "B:=" , 128  
    ]  
  ]  
]  
]  
])
```

```
oModule.ChangeProperty(  
  [  
    "NAME:AllTabs",  
    [  
      "NAME:Grid",  
      [  
        "NAME:PropServers",  
        "QuickEye Voltage Plot 1:Grid:Rect"  
      ],  
      [  
        "NAME:ChangedProps",  
        [  
          "NAME:Major grid line style",  
          "Value:=", "LongDash"  
        ],  
        [  
          "NAME:Minor grid line style",  
          "Value:=", "LongDash"  
        ]  
      ]  
    ]  
  ]  
)
```

|  |    |
|--|----|
|  | ]) |
|--|----|

## ClearAllMarkers

Clears all markers from a report.

|              |                                 |        |                |
|--------------|---------------------------------|--------|----------------|
| UI Access    | Report2D > Markers > Clear All. |        |                |
| Parameters   | Name                            | Type   | Description    |
|              | <ReportName>                    | String | Name of Report |
| Return Value | None                            |        |                |

|                |                                      |
|----------------|--------------------------------------|
| Python Syntax  | ClearAllMarkers(<ReportName>)        |
| Python Example | oModule.ClearAllMarkers("XY Plot 1") |

## ClearAllTraceCharacteristics

Clears all trace characteristics from the legend in a report.

|            |                                               |        |                  |
|------------|-----------------------------------------------|--------|------------------|
| UI Access  | Report2D > Trace Characteristics > Clear All. |        |                  |
| Parameters | Name                                          | Type   | Description      |
|            | <PlotName>                                    | String | Name of the plot |

|                     |      |
|---------------------|------|
| <b>Return Value</b> | None |
|---------------------|------|

|                       |                                                                |
|-----------------------|----------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ClearAllTraceCharacteristics(&lt;PlotName&gt;)</code>    |
| <b>Python Example</b> | <code>oModule.ClearAllTraceCharacteristics("XY Plot 1")</code> |

## CloneReportsFromDatasetSolution

Clones a report for a solved solution from a dataset solution.

|                     |                                                                                                                   |        |                                 |
|---------------------|-------------------------------------------------------------------------------------------------------------------|--------|---------------------------------|
| <b>UI Access</b>    | Right-click the Project tree on the report and choose <b>Clone from Dataset Solution</b> > [Dataset_SolutionName] |        |                                 |
| <b>Parameters</b>   | Name                                                                                                              | Type   | Description                     |
|                     | <ReportsToClone>                                                                                                  | Array  | Array of report names to clone. |
|                     | <SoluNameToUse>                                                                                                   | String | Name of the dataset solution.   |
| <b>Return Value</b> | None.                                                                                                             |        |                                 |

|                       |                                                                                                         |
|-----------------------|---------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>CloneReportsFromDatasetSolution(&lt;ReportsToClone&gt;, &lt;SoluNameToUse&gt;)</code>             |
| <b>Python Example</b> | <code>oModule.CloneReportsFromDatasetSolution(["Rectangular Plot1"], "DatasetSolution_rsm_5812")</code> |



## CopyPlotSettings

Copies settings of a specified plot.

|                     |                                          |        |                           |
|---------------------|------------------------------------------|--------|---------------------------|
| <b>UI Access</b>    | Right-click a report, select <b>Copy</b> |        |                           |
| <b>Parameters</b>   | Name                                     | Type   | Description               |
|                     | <ReportName>                             | String | Name of specified report. |
| <b>Return Value</b> | None.                                    |        |                           |

|                       |                                    |
|-----------------------|------------------------------------|
| <b>Python Syntax</b>  | CopyPlotSettings(<ReportName>)     |
| <b>Python Example</b> | oModule.CopyPlotSettings("Plot 1") |

## CopyReportDefinitions

Copy the definition of a report for paste operations.

|                     |                                                                                    |       |                                                     |
|---------------------|------------------------------------------------------------------------------------|-------|-----------------------------------------------------|
| <b>UI Access</b>    | Select a report in the Project tree, right-click and select <b>Copy Definition</b> |       |                                                     |
| <b>Parameters</b>   | Name                                                                               | Type  | Description                                         |
|                     | <ReportsArray>                                                                     | Array | Names of reports from which to copy the definitions |
| <b>Return Value</b> | None                                                                               |       |                                                     |

|                       |                                                                            |
|-----------------------|----------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CopyReportDefinitions(<ReportsArray>)                                      |
| <b>Python Example</b> | <code>oModule.CopyReportDefinitions(["Transmission", "Reflection"])</code> |

## CopyReportsData

Copy all data corresponding to the specified reports.

|                     |                                                                              |       |                                          |
|---------------------|------------------------------------------------------------------------------|-------|------------------------------------------|
| <b>UI Access</b>    | Select a report in the Project tree, right-click and select <b>Copy Data</b> |       |                                          |
| <b>Parameters</b>   | Name                                                                         | Type  | Description                              |
|                     | <ReportsArray>                                                               | Array | Names of reports from which to copy data |
| <b>Return Value</b> | None                                                                         |       |                                          |

|                       |                                                                       |
|-----------------------|-----------------------------------------------------------------------|
| <b>Python Syntax</b>  | CopyReportsData (<ReportsArray>)                                      |
| <b>Python Example</b> | <code>oModule.CopyReportsData (["Transmission", "Reflection"])</code> |

## CopyTraceDefinitions

Copy trace definitions for a paste operation.

|                   |                                                                                   |        |                           |
|-------------------|-----------------------------------------------------------------------------------|--------|---------------------------|
| <b>UI Access</b>  | Select a trace in the Project tree, right-click and select <b>Copy Definition</b> |        |                           |
| <b>Parameters</b> | Name                                                                              | Type   | Description               |
|                   | <ReportName>                                                                      | String | Name of Report            |
|                   | <TracesArray>                                                                     | Array  | Trace definitions to copy |

|                     |      |
|---------------------|------|
| <b>Return Value</b> | None |
|---------------------|------|

|                       |                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>CopyTraceDefinitions(&lt;ReportName&gt;, &lt;TracesArray&gt;)</code>               |
| <b>Python Example</b> | <pre>oModule.CopyTraceDefinitions ("Transmission",<br/>["mag(S (Port1, Port2)) "])</pre> |

## CopyTracesData

Copies trace data for a paste operation.

|                     |                                                                               |             |                                                          |
|---------------------|-------------------------------------------------------------------------------|-------------|----------------------------------------------------------|
| <b>UI Access</b>    | Select a trace in the Project tree, right-click and select <b>Copy Data</b> . |             |                                                          |
| <b>Parameters</b>   | <b>Name</b>                                                                   | <b>Type</b> | <b>Description</b>                                       |
|                     | <ReportName>                                                                  | String      | Name of Report.                                          |
|                     | <TraceArray>                                                                  | Array       | Trace definitions from which to copy corresponding data. |
| <b>Return Value</b> | None.                                                                         |             |                                                          |

|                       |                                                                                    |
|-----------------------|------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>CopyTracesData(&lt;ReportName&gt;, &lt;TracesArray&gt;)</code>               |
| <b>Python Example</b> | <pre>oModule.CopyTracesData ("Transmission",<br/>["mag(S (Port1, Port2)) "])</pre> |

## CreateReport

Creates a new report with a single trace and adds it to the **Results** branch in the project tree.

| UI Access         | Right-click on <b>Results</b> > <b>Create [Type] Report</b> |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------|-------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                        | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                   | <ReportName>                                                | String | Name of report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                   | <ReportType>                                                | String | Type of report.<br><br>Possible values are:<br><br>"Modal S Parameters" - Only for Driven Modal solution-type problems with ports.<br><br>"Terminal S Parameters" - Only for Driven Terminal solution-type problems with ports.<br><br>"Eigenmode Parameters" - Only for Eigenmode solution-type problems.<br><br>"Fields"<br><br>"Far Fields" - Only for problems with radiation or PML boundaries.<br><br>"Near Fields" - Only for problems with radiation or PML boundaries.<br><br>"Emission Test" |
|                   | <DisplayType>                                               | String | Type of display.<br><br>If ReportType is "Modal S Parameters", "Terminal S Parameters", or "Eigenmode Parameters", then set to one of the following:<br><br>"Rectangular Plot", "Polar Plot", "Radiation Pattern", "Smith Chart", "Data Table", "3D Rectangular Plot", "3D Rectangular Bar Plot", "Rectangular Stacked Plot" or "3D Polar Plot".<br><br>If <ReportType> is "Fields", then set to one of the following:                                                                                 |

|                 |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |        | <p>"Rectangular Plot", "Polar Plot", "Radiation Pattern", "Rectangular Contour Plot", "Data Table", "3D Rectangular Plot", "Rectangular Stacked Plot" or "3D Rectangular Bar Plot".</p> <p>If &lt;ReportType&gt; is "Far Fields" or "Near Fields", then set to one of the following:</p> <p>"Rectangular Plot", "Radiation Pattern", "Rectangular Contour Plot", "Data Table", "3D Rectangular Plot", "3D Rectangular Bar Plot" "Rectangular Stacked Plot" or "3D Polar Plot"</p> <p>If &lt;ReportType&gt; is "Emission Test", then set to one of the following:</p> <p>"Rectangular Plot" or "Data Table"</p> |
| <SolutionName>  | String | Name of the solution as listed in the <b>Modify Report</b> dialog box.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <ContextArray>  | Array  | <p>Context for which the expression is being evaluated. This can be an empty string if there is no context.</p> <p>Array("Domain:=", &lt;DomainType&gt;)</p> <p>&lt;DomainType&gt; ex. "Sweep" or "Time"</p> <p>Array("Context:=", &lt;GeometryType&gt;)</p> <p>&lt;GeometryType&gt;</p> <p>ex. "Infinite Spheren", "Spheren", "Polylinen"</p>                                                                                                                                                                                                                                                                 |
| <FamiliesArray> | Array  | <p>Contains sweep definitions for the report.</p> <p>Array("&lt;VariableName&gt;:= ", &lt;ValueArray&gt;)</p> <p>&lt;ValueArray&gt;</p> <p>Array("All") or Array("Value1", "Value2", ... "Valuen")</p>                                                                                                                                                                                                                                                                                                                                                                                                         |

|                     |                   |                                                                                                                                                                                                                                                                                                             |
|---------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                   | examples of <VariableName> "Freq", "Theta", "Distance"                                                                                                                                                                                                                                                      |
|                     | <ReportDataArray> | <p>Array</p> <p>This array contains the report quantity and X, Y, and (Z) axis definitions.</p> <pre>Array("X Component:=", &lt;VariableName&gt;, "Y Component:=", &lt;VariableName&gt;   &lt;ReportQuantityArray&gt;)</pre> <p>&lt;ReportQuantityArray&gt;</p> <pre>ex. Array("dB(S(Port1, Port1))")</pre> |
| <b>Return Value</b> | None.             |                                                                                                                                                                                                                                                                                                             |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <pre>CreateReport(&lt;ReportName&gt;, &lt;ReportType&gt;, &lt;DisplayType&gt;, &lt;SolutionName&gt;, &lt;ContextArray&gt;, &lt;FamiliesArray&gt;, &lt;ReportDataArray&gt;, &lt;ExtendedInfo&gt;)</pre>                                                                                                                                                                                                                                                                                                                                        |
| <b>Python Example</b> | <p>Several examples are given below: (nominal, Optimetrics, spectral, Partial Discharge, 3D rectangular Bar Plot with Change Bar Properties, and Add a new orientation to a 3D model and 3D report)</p> <p><b>Nominal Example:</b></p> <pre>oModule.CreateReport( "XY Plot 2", "Standard",     "Rectangular Plot", "TR",     [         "NAME:Context",         "SimValueContext:=", [], 1, 0, 2, 0, false,         false, -1, 1, 0, 1, 1, "", 0, 0]     ],     [         "Time:=" , ["All"],         "aaa:=" , ["Nominal"]     ],     )</pre> |

```
[  
    "X Component:=", "Time",  
    "Y Component:=", ["E1.I"]  
],  
[])
```

**Optimetrics Example:**

```
oModule.CreateReport ("XY Plot 3", "Standard",  
    "Rectangular Plot", "TR",  
    [  
        "NAME:Context",  
        "OptiSetup:=", "ParametricSetup1", "SimValueContext:=",  
        [  
            1, 0, 2, 0, false, false, 0, 1, 0, 1, 1, "", 0, 0  
        ]  
    ],  
    [  
        "Time:=", ["All"], "aaa:=", ["Nominal"]  
    ],  
    [  
        "X Component:=", "Time",  
        "Y Component:=", ["E1.I"]  
    ],  
    [])
```

**Spectral Example:**

```
oModule.CreateReport ("XY Plot 4", "Standard",  
    "Rectangular Plot", "TR",  
    [  
        "NAME:Context",  
        "OptiSetup:=", "ParametricSetup1", "SimValueContext:=",  
        [  
            1, 0, 2, 0, false, false, 0, 1, 0, 1, 1, "", 0, 0  
        ]  
    ],  
    [  
        "Time:=", ["All"], "aaa:=", ["Nominal"]  
    ],  
    [  
        "X Component:=", "Time",  
        "Y Component:=", ["E1.I"]  
    ],  
    [])
```

```

        "NAME:Context",
        "SimValueContext:=",
        [
            2, 0, 2, 0, false, false, -1, 1, 0, 1, 1, "",
            0, 0, "CG", false, "0", "KP", false, "0", "MH",
            false, "100", "TE", false, "40ms", "TH", false,
            "40", "TS", false, "0ns", "UF", false, "0",
            "WT", false, "0", "WW", false, "100"
        ]
    ],
    [
        "Spectrum:=" , ["All"], "aaa:=", ["Nominal"]
    ],
    [
        "X Component:=", "Spectrum",
        "Y Component:=", ["mag(E1.I)"]
    ],
    [])

```

### Partial Discharge Example

```

oModule.CreateReport("Partial Discharge Plot 2",
    "Partial Discharge", "Rectangular Plot",
    "PartialDischarge1 : PartialDischarge", [],
    [
        "GasPressure:=", ["All"],
        "Freq:=" , ["All"],
        "bend_angle:=" , ["All"]
    ],
    [
        "X Component:=", "GasPressure",
        "Y Component:=", ["Power"]
    ]
)

```



**Example 3D Rectangular Bar Plot with Change Bar properties**

```
oModule = oDesign.GetModule("ReportSetup")
oModule.CreateReport("S Parameter Plot 4", "Modal Solution Data",
    "3D Rectangular Bar Plot", "Setup1 : Sweep", [],
    [
        "Freq:="          , ["All"],
        "UU:="            , ["All"],
        "ZZZ:="           , ["Nominal"]
    ],
    [
        "X Component:=", "Freq",
        "Y Component:=", "UU",
        "Z Component:=", ["dB(S(wDipole1_1_p1,wDipole1_1_p1))"]
    ])
oModule.ChangeProperty(
    [
        "NAME:AllTabs",
        [
            "NAME:Bar",
            [
                "NAME:PropServers"
```

```

        "S Parameter Plot 4:Traces-dB(S(wDipole1_1_p1,wDipole1_1_p1))"
    ],
    [
        "NAME:ChangedProps",
        [
            "NAME:Transparency",
            "Value:=", "0.5"
        ]
    ]
]
))

oModule.ChangeProperty(
[
    "NAME:AllTabs",
    [
        "NAME:Bar",
        [
            "NAME:PropServers",
            "S Parameter Plot 4:Traces-dB(S(wDipole1_1_p1,wDipole1_1_p1))"
        ],
        [
            "NAME:ChangedProps",
            [
                "NAME:Filled",
                "Value:=", False
            ]
        ]
    ]
]

```

```
[
    "NAME:Show Outline",
    "Value:=", True
]
]
])

oModule.ChangeProperty(
[
    "NAME:AllTabs",
    [
        "NAME:Bar",
        [
            "NAME:PropServers",
            "S Parameter Plot 4:Traces-dB(S(wDipole1_1_p1,wDipole1_1_p1))"
        ],
        [
            "NAME:ChangedProps",
            [
                "NAME:Outline Color",
                "R:=", 0,
                "G:=", 0,
                "B:=", 160
            ]
        ]
    ]
]
])
```

**Example Script to add a new orientation to a 3D model and 3D report**

### "AddViewOrientation" script command for 3D Report. The first argument must be the 3D report name.

```
import ScriptEnv
ScriptEnv.Initialize("Ansoft.ElectronicsDesktop")
oDesktop.RestoreWindow()
oDesktop.OpenProject("D:/Tee.aedt")
oProject = oDesktop.SetActiveProject("Project")
oDesign = oProject.SetActiveDesign("HFSSDesign1")
oModule = oDesign.GetModule("ReportSetup")
oModule.AddViewOrientation("Gain Plot 1", "3dreport", True,
[
    "NAME:OrientationVectorComponents",
    [
        "NAME:Direction",
        -0.634171009063721,
        0.12737800180912,
        -0.762628972530365
    ],
    [
        "NAME:Up",
```

```

        -0.577874004840851,
        0.577228009700775,
        0.57694798707962
    ]
],
[
    "NAME:ProjectionParams",
    [
        "NAME:Scaling",
        1.10227048397064,
        1.10227036476135,
        1.10227036476135
    ],
    [
        "NAME:Translation",
        -0.601842045783997,
        -0.352552056312561,
        -6.46677732467651
    ],
    "ProjectionType:=" , "Orthographic",

```

```
[
    "NAME:ProjectionLimits",
    -2.53312301635742,
    2.53312301635742,
    -1,
    1,
    0.994183540344238,
    10.5401248931885
]
])
oEditor = oDesign.SetActiveEditor("3D Modeler")
oEditor.AddViewOrientation("3dmodel", True,
[
    "NAME:OrientationVectorComponents",
    [
        "NAME:Direction",
        -0.627739012241364,
        -0.134194001555443,
        -0.766768991947174
    ],
    [
```

```

        "NAME:Up",
        -0.694571018218994,
        0.54128497838974,
        0.473899990320206
    ]
],
[
    "NAME:ProjectionParams",
    [
        "NAME:Scaling",
        0.0173665378242731,
        0.017366535961628,
        0.0173665322363377
    ],
    [
        "NAME:Translation",
        -0.0742612779140472,
        0.195189163088799,
        -5.89852476119995
    ]
],

```

|  |                                                                                                                                                                                                                                                                                               |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"ProjectionType:=" , "Orthographic",<br/><br/>  [<br/>    "NAME:ProjectionLimits",<br/>    -2.27072739601135,<br/>    2.27072739601135,<br/>    -1,<br/>    1,<br/>    0.424737930297852,<br/>    10.8078212738037<br/>  ]<br/><br/>  ])<br/><br/>oDesktop.CloseProject("Project")</pre> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CreateReportFromTemplate

Creates a report from a saved template.

|              |                                                                       |        |                         |
|--------------|-----------------------------------------------------------------------|--------|-------------------------|
| UI Access    | [product] > Results > Report Templates > PersonalLib > [TemplateName] |        |                         |
| Parameters   | Name                                                                  | Type   | Description             |
|              | <TemplatePath>                                                        | String | Path to report template |
| Return Value | None                                                                  |        |                         |



|                       |                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CreateReportFromTemplate( <TemplatePath>)                                                              |
| <b>Python Example</b> | oModule.CreateReportFromTemplate(<br>"C:/MyHFSSProjects/PersonalLib/ReportTemplates/TestTemplate.rpt") |

## CreateReportOfAllQuantities

Creates a report including all quantities in a category. Cannot create a report with expressions.

|                     |                            |        |                                                                 |
|---------------------|----------------------------|--------|-----------------------------------------------------------------|
| <b>UI Access</b>    | NA                         |        |                                                                 |
| <b>Parameters</b>   | Name                       | Type   | Description                                                     |
|                     | <ReportType>               | String | Report type name as input parameter                             |
|                     | <DisplayType>              | String | Display type name as input parameter                            |
|                     | <SolutionName>             | String | Solution name as input parameter                                |
|                     | <SimValueCtxt>             | String | A context name, or array of string that encoded the context(I). |
|                     | <CategoryName>             | String | Category name as input parameter                                |
|                     | <PointSet>                 | Array  | Array of strings(II)                                            |
|                     | <CommonComponentsOfTraces> | Array  | Array of strings(III)                                           |
|                     | <ExtTraceInfo>             | Array  | Array of strings(IV)                                            |
| <b>Return Value</b> | None.                      |        |                                                                 |

|                      |                                                                                                                                                                                         |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | CreateReportOfAllQuantities(<ReportNameArg>, <ReportType>, <DisplayType>,<br><SolutionName>, <SimValueCtxt>, <CategoryName>,<br><PointSet>, <CommonComponentsOfTraces>, <ExtTraceInfo>) |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oModule.CreateReportOfAllQuantities("Smith Chart all", "Modal Solution Data", "Smith Chart", "Setup1 : LastAdaptive", [], "S Parameter", ["Freq:=", ["All"], "offset:=", ["All"], "a:=", ["Nominal"], "b:=", ["Nominal"]], [], [])</pre> |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## DeleteMarker

*Use:*Deletes the specified marker.

|                     |                                                                       |        |                     |
|---------------------|-----------------------------------------------------------------------|--------|---------------------|
| <b>UI Access</b>    | [product] > <b>Fields &gt; Fields &gt; Marker &gt; Delete Marker.</b> |        |                     |
| <b>Parameters</b>   | Name                                                                  | Type   | Description         |
|                     | <MarkerName>                                                          | String | Name of the marker. |
| <b>Return Value</b> | None.                                                                 |        |                     |

|                       |                            |
|-----------------------|----------------------------|
| <b>Python Syntax</b>  | DeleteMarker(<MarkerName>) |
| <b>Python Example</b> | oModule.DeleteMarker("m1") |

## DeleteAllReports

Deletes all existing reports.

|                  |                                                                                                                      |
|------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b> | Right-click the report to delete in the project tree, and then click <b>Delete All Reports</b> on the shortcut menu. |
|------------------|----------------------------------------------------------------------------------------------------------------------|

|                     |       |
|---------------------|-------|
| <b>Parameters</b>   | None. |
| <b>Return Value</b> | None. |

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | DeleteAllReports()                      |
| <b>Python Example</b> | <code>oModule.DeleteAllReports()</code> |

## DeleteReports

Deletes an existing report or reports.

|                     |                                                                                                         |       |                                     |
|---------------------|---------------------------------------------------------------------------------------------------------|-------|-------------------------------------|
| <b>UI Access</b>    | Right-click the report to delete in the project tree, and then click <b>Delete</b> on the shortcut menu |       |                                     |
| <b>Parameters</b>   | Name                                                                                                    | Type  | Description                         |
|                     | <ReportNameArray>                                                                                       | Array | Array of report names to be deleted |
| <b>Return Value</b> | None.                                                                                                   |       |                                     |

|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteReports(<ReportNameArray>)                          |
| <b>Python Example</b> | <code>oModule.DeleteReports ( ["Rept2DRectFreq"] )</code> |

## DeleteTraces

Deletes an existing traces or traces.

|                     |                                                                                                        |             |                                                                                                        |
|---------------------|--------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click the Trace to delete in the project tree, and then click <b>Delete</b> on the shortcut menu |             |                                                                                                        |
| <b>Parameters</b>   | <b>Name</b>                                                                                            | <b>Type</b> | <b>Description</b>                                                                                     |
|                     | <TraceSelection>                                                                                       | Array       | Structured array define selections.<br><br>Array("<ReportName>:=", <TracesArray>, <TracesArray>, ... ) |
|                     | <ReportName>                                                                                           | String      | Name of Report                                                                                         |
|                     | <TracesArray>                                                                                          | Array       | Contains the traces to delete within a report<br><br>Array(<Trace>, <Trace>, ...)                      |
|                     | <Trace>                                                                                                | String      | A specific trace that the user wishes to delete                                                        |
| <b>Return Value</b> | None.                                                                                                  |             |                                                                                                        |

|                       |                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteTraces(<TraceSelection>)                                                                              |
| <b>Python Example</b> | <pre>oModule.DeleteTraces (["XY Plot 1:=", ["dB(S(LumpPort1,LumpPort1))"], "XY Plot 2:=", ["Mag_E"]])</pre> |

## DoesSupportTraceCharacteristics

Determines whether trace characteristics is supported in a specified display type.

|                   |               |             |                                  |
|-------------------|---------------|-------------|----------------------------------|
| <b>UI Access</b>  | N/A           |             |                                  |
| <b>Parameters</b> | <b>Name</b>   | <b>Type</b> | <b>Description</b>               |
|                   | <DisplayType> | String      | Specified display type to check. |

|                     |                                                                                                                                                                    |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Return Value</b> | Integer <ul style="list-style-type: none"><li>• <b>1</b> - trace characteristics is supported.</li><li>• <b>0</b> - trace characteristics not supported.</li></ul> |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                       |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DoesSupportTraceCharacteristics(<DisplayType>)                           |
| <b>Python Example</b> | <code>oModule.DoesSupportTraceCharacteristics("Rectangular Plot")</code> |

## EditCartesianXMarker

Edits an XMarker value.

|                     |              |        |                                             |
|---------------------|--------------|--------|---------------------------------------------|
| <b>UI Access</b>    | N/A          |        |                                             |
| <b>Parameters</b>   | Name         | Type   | Description                                 |
|                     | <ReportName> | String | Name of report.                             |
|                     | <MarkerName> | String | Marker name, including any trailing number. |
|                     | <XValue>     | Double | X coordinate.                               |
| <b>Return Value</b> | None.        |        |                                             |

|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| <b>Python Syntax</b>  | EditCartesianXMarker (<ReportName>, <MarkerName>, <XValue>)       |
| <b>Python Example</b> | <code>oModule.EditCartesianXMarker ("XY Plot 1", "MX1", 0)</code> |

## EditCartesianYMarker

Edits a YMarker value.

| UI Access    | N/A          |        |                                             |
|--------------|--------------|--------|---------------------------------------------|
| Parameters   | Name         | Type   | Description                                 |
|              | <ReportName> | String | Name of report.                             |
|              | <MarkerName> | String | Marker name, including any trailing number. |
|              | <AxisName>   | String | Name of axis.                               |
|              | <YValue>     | Double | Y coordinate.                               |
|              | <CurveName>  | String | Name of curve.                              |
| Return Value | None         |        |                                             |

| Python Syntax  | EditCartesianYMarker (<ReportName>, <MarkerName>, <AxisName>, <YValue>, <CurveName>)           |
|----------------|------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.EditCartesianYMarker("XY Plot 1", "MY1", "Y1", 0, "dB() : Setup1 : Sweep1")</pre> |

## EditMarker

Edits a marker on a report.

| UI Access  | N/A          |        |                 |
|------------|--------------|--------|-----------------|
| Parameters | Name         | Type   | Description     |
|            | <ReportName> | String | Name of report. |

|              |                     |        |                                             |
|--------------|---------------------|--------|---------------------------------------------|
|              | <MarkerName>        | String | Marker name, including any trailing number. |
|              | <CurveName>         | String | Full trace name.                            |
|              | <PrimarySweepValue> | String | Primary sweep value, including unit.        |
| Return Value | None.               |        |                                             |

|                |                                                                                                         |  |  |
|----------------|---------------------------------------------------------------------------------------------------------|--|--|
| Python Syntax  | EditMarker(<ReportName>, <MarkerName>, <CurveName>, <PrimarySweepValue>)                                |  |  |
| Python Example | <pre>oModule.EditMarker("XY Plot 1", "m5",<br/>"GS1.VAL : TR4 : Cartesian", "3.615999999999997s")</pre> |  |  |

## ExportEyeMaskViolation

Exports eye mask violations to a file.

|              |                  |        |                           |
|--------------|------------------|--------|---------------------------|
| UI Access    | N/A              |        |                           |
| Parameters   | Name             | Type   | Description               |
|              | <ReportName>     | String | Name of specified report. |
|              | <ExportFileName> | String | File name to export to.   |
| Return Value | N/A              |        |                           |

|               |                                                        |  |  |
|---------------|--------------------------------------------------------|--|--|
| Python Syntax | ExportEyeMaskViolation(<ReportName>, <ExportFileName>) |  |  |
|---------------|--------------------------------------------------------|--|--|

|                       |                                                                                    |
|-----------------------|------------------------------------------------------------------------------------|
| <b>Python Example</b> | <code>oModule.ExportEyeMaskViolation("Variables Plot 1", "C:/eyemask1.csv")</code> |
|-----------------------|------------------------------------------------------------------------------------|

## ExportImageToFile [Reporter]

Exports a report image in a specified format. This command is fully supports -ng (non-graphical) mode.

|                     |                           |         |                                                                                                                                                   |
|---------------------|---------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                       |         |                                                                                                                                                   |
| <b>Parameters</b>   | Name                      | Type    | Description                                                                                                                                       |
|                     | <ReportName>              | String  | Name of report to be exported.                                                                                                                    |
|                     | <FileName>                | String  | Full path of the exported image file name; with extension of jpg, gif, tiff, tif, bmp, or wrl.                                                    |
|                     | <Width>                   | Integer | Image width in pixels; if width or height is less or equal to zero, use the report window width, or 500 pixels if report window is closed.        |
|                     | <Height>                  | Integer | Image height in pixels; if width or height is less or equal to zero, use the report window height, or 500 pixels if report window is closed.      |
|                     | [<SaveImageParameters2D>] | Boolean | Whether to ShowLegend, ShowMarkerTable, ShowDeltaMarkerTable. Values can be True, False or Default. Default is True.                              |
|                     | [<SaveImageParameters3D>] |         | Whether to AutoFit [Default is "False"] ShowLegend, ShowMarkerTable, ShowDeltaMarkerTable. Values can be True, False or Default. Default is True. |
| <b>Return Value</b> | None.                     |         |                                                                                                                                                   |

|                       |                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportImageToFile(&lt;ReportName&gt;, &lt;FileName&gt;, &lt;Width&gt;, &lt;Height&gt;)</code> |
| <b>Python Example</b> | <pre>##### Script Recorded for Saving 2D oDesktop.OpenProject("E:/Ansoft/Tee2.aedt")</pre>          |



```
oProject = oDesktop.SetActiveProject("Tee2")
oDesign = oProject.SetActiveDesign("TeeModel")
oModule = oDesign.GetModule("ReportSetup")
oModule.ExportImageToFile("S Parameter Plot 1", "E:/Ansoft/S Parameter Plot 1.png",
1920, 1080)
oModule.ExportImageToFile("S Parameter Plot 12", "E:/Ansoft/S Parameter Plot 12.png",
1920, 1080)
oModule.ExportImageToFile("S Parameter Plot 1", "E:/Ansoft/S Parameter Plot 1.png",
1920, 1080,
[
    "NAME:SaveImageParams",
    "ShowLegend:=" , "False",
    "ShowMarkerTable:=" , "False"
    "ShowDeltaMarkerTable:=" , "False"
])
oModule.ExportImageToFile("S Parameter Plot 1", "E:/Ansoft/S Parameter Plot 1.png",
1920, 1080,
[
    "NAME:SaveImageParams",
    "ShowLegend:=" , "True",
    "ShowMarkerTable:=" , "True"
    "ShowDeltaMarkerTable:=" , "False"
```

```
    ])  
oModule.ExportImageToFile("S Parameter Plot 12", "E:/Ansoft/S Parameter Plot 12.png",  
1920, 1080,  
    [  
        "NAME:SaveImageParams",  
        "ShowLegend:=" , "False",  
        "ShowMarkerTable:=" , "Default"  
        "ShowDeltaMarkerTable:=" , "False"  
    ])  
oModule.ExportImageToFile("S Parameter Plot 12", "E:/Ansoft/S Parameter Plot 12.png",  
1920, 1080,  
    [  
        "NAME:SaveImageParams",  
        "ShowLegend:=" , "True",  
        "ShowMarkerTable:=" , "Default"  
        "ShowDeltaMarkerTable:=" , "True"  
    ])  
oDesktop.CloseProject("Tee2")  
  
### Script Recorded for saving as 3D:  
  
oDesktop.OpenProject("E:/Ansoft/Tee2.aedt")
```

```
oProject = oDesktop.SetActiveProject("Tee2")
oDesign = oProject.SetActiveDesign("TeeModel")
oModule = oDesign.GetModule("ReportSetup")
oModule.ExportImageToFile("S Parameter Plot 6", "E:/Ansoft/S Parameter Plot 11.png",
1335, 466,
[
    "NAME:SaveImageParams",
    "AutoFit:=" , "False",
    "Orientation:=" , "",
    "ShowOrientationGadget:=", "Default"
])
oModule.ExportImageToFile("S Parameter Plot 6", "E:/Ansoft/S Parameter Plot 11.png",
1335, 466,
[
    "NAME:SaveImageParams",
    "AutoFit:=" , "False",
    "Orientation:=" , "",
    "ShowOrientationGadget:=", "Default"
    "ShowLegend:=" , "True"
])
oModule.ExportImageToFile("S Parameter Plot 6", "E:/Ansoft/S Parameter Plot 10.png",
```

```

1335, 466,
[
  "NAME:SaveImageParams",
  "AutoFit:=" , "False",
  "Orientation:=" , "",
  "ShowOrientationGadget:=", "Default",
  "ShowLegend:=" , "False"
])

```

## ExportModelImageToFile

Exports the model as an image file (\*.avz, \*.bmp, \*.gif, \*.jpeg, \*.tiff, \*.wrl). In Release 23.1, this command is fully supports -ng (non-graphical) mode. To export to Ensign use \*.avz. For export to Ensign in -ng mode, the corresponding version of Ensign must be installed. On Linux, it might need manual set environment variable AWP\_ROOT212 to its installation path, e.g. AWP\_ROOT212-2=/installations/ansys\_inc/v212/ for AnsysEDT v21.2 and Ensign 21.2.

ExportModelImageToFile exports a model image with background type and color that respect the AEDT color scheme by default. You can specify the background type and color with following parameters:

| Parameter Name  | Description                                | Parameter Value                                                                     |
|-----------------|--------------------------------------------|-------------------------------------------------------------------------------------|
| BackgroundType  | Choose one out of four types of background | Default<br>Plain<br>LinearGradient<br>RadialGradient                                |
| BackgroundColor | Plain:<br>Background color Lin-            | 3 integers with a range of [0,255] that represent red, green, and blue respectively |

| Parameter Name          | Description                                                           | Parameter Value                                                                     |
|-------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                         | earGradient/RadialGradient: Background start color                    |                                                                                     |
| BackgroundContrastColor | Plain:<br>Ignored LinearGradient/RadialGradient: Background end color | 3 integers with a range of [0,255] that represent red, green, and blue respectively |

**Note:** Current scripts will not be affected, the image will be exported with default background color as it always does

If no BackgroundType is specified, or BackgroundType is Default, BackgroundColor and BackgroundContrastColor will be ignored, and the image will be exported with default background color

ExportModelImageToFile supports export overlay of polar plot 3D with existing transformation (scaling, rotation and translation) in -ng (non-graphical) mode.

| UI Access         | Modeler > Export. |         |                                                                                                                                                                                                                                                           |
|-------------------|-------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name              | Type    | Description                                                                                                                                                                                                                                               |
|                   | <path>            | String  | Full file path including extension.                                                                                                                                                                                                                       |
|                   | <width>           | Integer | Width in pixels (use 0 for default).                                                                                                                                                                                                                      |
|                   | <height>          | Integer | Height in pixels (use 0 for default).                                                                                                                                                                                                                     |
|                   | <Parameters>      | Array   | Structured array.                                                                                                                                                                                                                                         |
|                   |                   |         | <pre>Array ("NAME:SaveImageParams",       "ShowAxis:=" , &lt;string containing boolean&gt;,       "ShowGrid:=" , &lt;string containing boolean&gt;,       "ShowRuler:=" , &lt;string containing boolean&gt;,       "ShowRegion:=" , &lt;string&gt;,</pre> |

|                     |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       | <pre>"Selections:=" , &lt;string&gt;,  "FieldPlotSelections:=", &lt;string&gt;' # Comma delimited string. #Use to set which field plot to show.  "FitToSelections:=" , "",  <b>Note:</b> "FitToSelections" specify geometry objects for the "Fit" operation.  "FitToFieldPlotSelection:=" , ""  <b>Note:</b> "FitToFieldPlotSelections" specifies field plots for the "Fit" operation.  "AutoFit:=" , "True",  <b>Note:</b> If FitToSlections or FitToFieldPlotSelections are used , then AutoFit is True, it makes sure color key does not overlap field plot. It is False by default. If neither is used, then "AutoFit" will "Fit" to full model.  "Orientation:=" , &lt;string&gt;  "ShowOrientationGadget:=" , &lt;False&gt;</pre> |
| <b>Return Value</b> | None. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Python Syntax  | ExportModelImageToFile(<path> <width> <height> <Parameters>)                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.ExportModelImageToFile ("D:/Image.png", 1920, 1080, [     "NAME:SaveImageParams",         "ShowAxis:=" , "True",         "ShowGrid:=" , "True",         "ShowRuler:=" , "True",         "ShowRegion:=" , "Default",         "Selections:=" , "",         "FieldPlotSelections:=" , "",         "FitToSelections:=" , "",         "FitToFieldPlotSelections:=" , "",         "AutoFit:=" , "True",         "Orientation:=" , "" ])</pre> |

## ExportModelMeshToFile

Exports geometry model to a 3D model file (e.g. \*.obj, \*.wrl, etc.).

|                     |              |        |                                                       |
|---------------------|--------------|--------|-------------------------------------------------------|
| <b>UI Access</b>    | N/A          |        |                                                       |
| <b>Parameters</b>   | Name         | Type   | Description                                           |
|                     | <filePath>   | String | Full file path, including extension *.obj, *.wrl, etc |
|                     | <selections> | Array  | Selected parts.                                       |
| <b>Return Value</b> | None.        |        |                                                       |

|                       |                                                                                                                                          |  |  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | ExportModelMeshToFile <filePath>, <selections>)                                                                                          |  |  |
| <b>Python Example</b> | <pre>oEditor.ExportModelMeshToFile("E:/MyDir/scriptRun/2Selected-ng.obj", ["BotCover-", "AveragingVolumeAtPeakRMSEfieldLocation"])</pre> |  |  |

## ExportPlot3DToFile [Reporter]

*Use:* Exports 3D polar, spherical and rectangular plot to a case file. It works in both graphical and NG mode..

*Command:* None.

*Syntax:* ExportPlot3DToFile(<plotName>, <path>)

*Return Value:* A 3D plot file.

*Parameters:* <plotName>

Type: <string>

Plot name.

<Path>

Type: <string>

Path to file.



| Python Syntax  | ExportPlot3DToFile(<name> <Path>)                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre> oModule = oDesign.GetModule("ReportSetup") oModule.UpdateReports(["rE Plot 1"]) oModule.UpdateReports(["Directivity Plot 1"]) oModule.UpdateReports(["Gain Plot 1"]) oModule.ExportPlot3DToFile("rE Plot 1", "D:/projects/test2-output/rEPlot1.case") oModule.ExportPlot3DToFile("Directivity Plot 1", "D:/projects/test2-output/DirectivityPlot1.case") oModule.ExportPlot3DToFile("Gain Plot 1", "D:/projects/test2-output/GainPlot1.case") </pre> |

# ExportReport

**Note:**

The ExportReport script command has been replaced by the script command [ExportToFile](#). ExportReport remains in order to retain backward compatibility for existing scripts, but it is strongly recommended that you now use [ExportToFile](#).

Export a report to a data file.

*Command:* None

*Syntax:* ExportReport <ReportName>, <FileName>, <FileExtension>

*Return Value:* None

*Parameters:* <ReportName>

Type: string

<Filename>

Type: string

<FileExtension>

Type: string

|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportReport( <ReportName>, <FileName>)                             |
| <b>Python Example</b> | <pre>oDesign.ExportReport(<br/>    "Plot1", "c:\report1.dat")</pre> |

## ExportReportDataToFile

Exports report data to a file.

|                     |                  |        |                                                         |
|---------------------|------------------|--------|---------------------------------------------------------|
| <b>UI Access</b>    | N/A              |        |                                                         |
| <b>Parameters</b>   | Name             | Type   | Description                                             |
|                     | <ReportName>     | String | Name of specified report.                               |
|                     | <ExportFileName> | String | Name of export file. File extension "rdat" is expected. |
| <b>Return Value</b> | None.            |        |                                                         |

|                       |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportReportDataToFile(<ReportName>, <ExportFileName>)                   |
| <b>Python Example</b> | <pre>oModule.ExportReportDataToFile("Plot 1", "C:/Plot1data.rdat")</pre> |

# ExportTableToFile

Exports a marker table from a report to a file.

|              |                                                                                                                |        |                                                            |
|--------------|----------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------|
| UI Access    | Right-click on a plot, select <b>Marker &gt; Export Marker Table...</b> or <b>Export Delta Marker Table...</b> |        |                                                            |
| Parameters   | Name                                                                                                           | Type   | Description                                                |
|              | <ReportName>                                                                                                   | String | Name of specified report.                                  |
|              | <ExportFileName>                                                                                               | String | Name of export file.                                       |
|              | <TableType>                                                                                                    | String | Type of marker table to export. "Marker" or "DeltaMarker". |
| Return Value | None.                                                                                                          |        |                                                            |

|                |                                                                |
|----------------|----------------------------------------------------------------|
| Python Syntax  | ExportTableToFile(<ReportName>, <ExportFileName>, <TableType>) |
| Python Example | oModule.ExportTableToFile("Plot 1", "C:/Marker.csv", "Marker") |

# ExportToFile [Reporter]

From a data table or plot, generates text format, comma delimited, tab delimited, .dat, or .rdat type output files.

|            |                                                                           |        |                    |
|------------|---------------------------------------------------------------------------|--------|--------------------|
| UI Access  | Right-click on report name in the Project tree and select <b>Export</b> . |        |                    |
| Parameters | Name                                                                      | Type   | Description        |
|            | <ReportName>                                                              | String | Name of the report |
|            | <FileName>                                                                | String | Path and File Name |
|            |                                                                           |        | Supported formats  |

|              |      |  |       |                            |
|--------------|------|--|-------|----------------------------|
|              |      |  | .txt  | Post processor format file |
|              |      |  | .csv  | Comma-delimited data file  |
|              |      |  | .tab  | Tab-separated file         |
|              |      |  | .dat  | Ansys plot data file       |
|              |      |  | .rdat | Ansys report data file     |
| Return Value | None |  |       |                            |

|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportToFile (<ReportName>, <FileName>)                         |
| <b>Python Example</b> | <pre>oModule.ExportToFile(     "Plot1", "c:\report1.dat")</pre> |

## ExportUniformPointsToFile

Exports uniform points from a data table or plot report that includes the Export Uniform Points to File option enabled to text format, comma delimited, tab delimited, or .dat type output files.

File name:  Save

Save as type:  Cancel

Options

☒ Use Separate Columns for Curves

☒ Export Uniform Points

☒ Export with Full Sweep Range

Start:   Stop:   Step:

| UI Access  | Right-click on report name in the project tree and select <b>Export Data</b> . |         |                                                                                                                                                                                                   |
|------------|--------------------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                           | Type    | Description                                                                                                                                                                                       |
|            | <ReportName>                                                                   | String  | Name of report to be exported.                                                                                                                                                                    |
|            | <FileName>                                                                     | String  | Full path of the exported image file name; with extension of<br>.txt - Post processor format file<br>.csv - Comma-delimited data file<br>.tab - Tab-separated file<br>.dat - Ansys plot data file |
|            | <SweepRange>                                                                   | String  | Start, stop, and step range with units, for sweep.                                                                                                                                                |
|            | <UnitSpec>                                                                     | String  | For example, "kV, Mhz, yd"                                                                                                                                                                        |
|            | <UseTraceNumberFormat>                                                         | Boolean | "True", "False"                                                                                                                                                                                   |

|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportUniformPointsToFile(&lt;ReportName&gt;, &lt;FileName&gt;, &lt;SweepRange&gt;)</code>                                                    |
| <b>Python Example</b> | <code>oModule.ExportUniformPointsToFile("S Parameter Table 2", "D:/MyFiles/cftt.csv", "4GHz", "5GHz", "1GHz", False, " kV, MHz, yd ", False)</code> |

## GetAllCategories

Get all available category names (not including variable and output-variables) in a solution for a report type and display type, returned as an array of text strings.

|                     |                       |        |                                                               |
|---------------------|-----------------------|--------|---------------------------------------------------------------|
| <b>UI Access</b>    | NA                    |        |                                                               |
| <b>Parameters</b>   | Name                  | Type   | Description                                                   |
|                     | <ReportType>          | String | Report type name.                                             |
|                     | <DisplayType>         | String | Name of display type.                                         |
|                     | <SolutionName>        | String | Name of solution.                                             |
|                     | <SimValueCtxt>        | Array  | A context name, or array of strings that encode the contexts. |
| <b>Return Value</b> | Array of text strings |        |                                                               |

|                       |                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetAllCategories(&lt;ReportType&gt;, &lt;DisplayType&gt;, &lt;SolutionName&gt;, &lt;SimValueCtxt&gt;)</code>   |
| <b>Python Example</b> | <code>oModule.GetAllCategories("Far Fields", "Rectangular Plot", "Setup1 : LastAdaptive", "Infinite Sphere1")</code> |

# GetAllQuantities

Gets all available quantity names in category, returned as an array of text strings.

|              |                       |        |                                                                                                                          |
|--------------|-----------------------|--------|--------------------------------------------------------------------------------------------------------------------------|
| UI Access    | NA                    |        |                                                                                                                          |
| Parameters   | Name                  | Type   | Description                                                                                                              |
|              | <ReportType>          | String | Report type name.                                                                                                        |
|              | <DisplayType>         | String | Display type name.                                                                                                       |
|              | <SolutionName>        | String | Name of solution.                                                                                                        |
|              | <SimValueCtxt>        | Array  | A context name, or array of string that encoded the contexts(l).                                                         |
|              | <CategoryName>        | String | A category name as input parameter. a category name returned in GetAllCategories() or "Variables", or "Output Variables" |
| Return Value | Array of text strings |        |                                                                                                                          |

|                |                                                                                                                                                     |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | GetAllQuantities(<ReportType>,<DisplayType>, <SolutionName>, <SimValueCtxt>, <CategoryName>)                                                        |
| Python Example | <pre>oModule.GetAllQuantities(<br/>    "Far Fields", "Rectangular Plot",<br/>    "Setup1 : LastAdaptive",<br/>    "Infinite Sphere1", "Gain")</pre> |

## GetAllReportNames

Gets the names of existing reports in a design

|                     |                       |
|---------------------|-----------------------|
| <b>UI Access</b>    | N/A                   |
| <b>Parameters</b>   | None.                 |
| <b>Return Value</b> | Array of report names |

|                       |                                          |
|-----------------------|------------------------------------------|
| <b>Python Syntax</b>  | GetAllReportNames()                      |
| <b>Python Example</b> | <code>oModule.GetAllReportNames()</code> |

## GetAvailableDisplayTypes

Retrieves all supported display types in report type as an array of text strings.

|                     |                       |        |                   |
|---------------------|-----------------------|--------|-------------------|
| <b>UI Access</b>    | N/A                   |        |                   |
| <b>Parameters</b>   | Name                  | Type   | Description       |
|                     | <ReportType>          | String | Report type name. |
| <b>Return Value</b> | Array of text strings |        |                   |

|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| <b>Python Syntax</b>  | GetAvailableDisplayTypes(<ReportType>)                      |
| <b>Python Example</b> | <code>oModule.GetAvailableDisplayTypes("Far Fields")</code> |



## GetAvailableReportTypes

Retrieves all available report types in the current Design as an array of text string.

|                     |                       |
|---------------------|-----------------------|
| <b>UI Access</b>    | N/A                   |
| <b>Parameters</b>   | None.                 |
| <b>Return Value</b> | Array of text strings |

|                       |                                                |
|-----------------------|------------------------------------------------|
| <b>Python Syntax</b>  | GetAvailableReportTypes()                      |
| <b>Python Example</b> | <code>oModule.GetAvailableReportTypes()</code> |

## GetAvailableSolutions

Gets all available solutions in report type as an array of text strings.

|                     |                       |        |                   |
|---------------------|-----------------------|--------|-------------------|
| <b>UI Access</b>    | N/A                   |        |                   |
| <b>Parameters</b>   | Name                  | Type   | Description       |
|                     | <ReportType>          | String | Report type name. |
| <b>Return Value</b> | Array of text strings |        |                   |

|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetAvailableSolutions(&lt;ReportType&gt;)</code>   |
| <b>Python Example</b> | <code>oModule.GetAvailableSolutions("Far Fields")</code> |

## GetChildNames [Report Setup]

Gets a list of report names.

|                     |                                               |
|---------------------|-----------------------------------------------|
| <b>UI Access</b>    | N/A                                           |
| <b>Parameters</b>   | None.                                         |
| <b>Return Value</b> | Array of strings containing all report names. |

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Python Syntax</b>  | <code>GetChildNames()</code>         |
| <b>Python Example</b> | <code>oModule.GetChildNames()</code> |

## GetChildObject [Report Setup]

Gets a report object or report child object; the module's first level of child object is report. Report has trace, axis, header, Legend, and more children. Trace has curve as child etc. Those child objects can be accessed by calling all levels of parent object's GetChildObject(path) function.

|                   |              |        |                                                                             |
|-------------------|--------------|--------|-----------------------------------------------------------------------------|
| <b>UI Access</b>  | NA           |        |                                                                             |
| <b>Parameters</b> | Name         | Type   | Description                                                                 |
|                   | <ObjectPath> | String | Report Name or <a href="#">an object path</a> beginning with a report name. |

|                     |                                                                                                         |
|---------------------|---------------------------------------------------------------------------------------------------------|
| <b>Return Value</b> | A ReportSetup(Results) Module Child Object, <a href="#">[ReportSetup(Results) Module Child Objects]</a> |
|---------------------|---------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetChildObject(&lt;ObjectPath&gt;)</code>                                                                                                                                                              |
| <b>Python Example</b> | <pre>oRpt = oRptModule.GetChildObject("S Parameter Plot 1") oTrace = oRptModule.GetChildObject("S Parameter Plot 1/dB(S(Port1,Port1))") oAxisX = oRptModule.GetChildObject("S Parameter Plot 1/AxisX")</pre> |

## GetChildTypes [ReportSetup]

Gets child types of queried Report module object.

|                     |                                                 |
|---------------------|-------------------------------------------------|
| <b>UI Access</b>    | N/A                                             |
| <b>Parameters</b>   | None.                                           |
| <b>Return Value</b> | Array of strings containing child object types. |

|                       |                                       |
|-----------------------|---------------------------------------|
| <b>Python Syntax</b>  | <code>GetChildTypes ()</code>         |
| <b>Python Example</b> | <code>oModule.GetChildTypes ()</code> |

## GetCurvePropServerName

Gets the PropServer (the owner of the properties, or the list containing them) name of a curve.

|                     |                                                 |        |                           |
|---------------------|-------------------------------------------------|--------|---------------------------|
| <b>UI Access</b>    | N/A                                             |        |                           |
| <b>Parameters</b>   | Name                                            | Type   | Description               |
|                     | <ReportName>                                    | String | Name of specified report. |
|                     | <TraceName>                                     | String | Name of specified trace.  |
| <b>Return Value</b> | Array of string containing the PropServer name. |        |                           |

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| <b>Python Syntax</b>  | GetCurvePropServerName(<ReportName>, <TraceName>) |
| <b>Python Example</b> | oModule.GetCurvePropServerName("Plot 1", "Phase") |

## GetDisplayType

Gets the display type of a specified report.

|                     |                                 |        |             |
|---------------------|---------------------------------|--------|-------------|
| <b>UI Access</b>    | NA                              |        |             |
| <b>Parameters</b>   | Name                            | Type   | Description |
|                     | <ReportName>                    | String | Report name |
| <b>Return Value</b> | String containing display type. |        |             |

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | GetDisplayType(<ReportName>)                         |
| <b>Python Example</b> | <code>oModule.GetDisplayType("Design Plot 1")</code> |

## GetDynLinkIntrinsicVariables

Gets variable names from a trace included in dynamic link outputs.

|                     |                         |        |                                  |
|---------------------|-------------------------|--------|----------------------------------|
| <b>UI Access</b>    | N/A                     |        |                                  |
| <b>Parameters</b>   | Name                    | Type   | Description                      |
|                     | <TraceName>             | String | Trace name with its report name. |
| <b>Return Value</b> | Array of variable names |        |                                  |

|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetDynLinkIntrinsicVariables(<TraceName>)                         |
| <b>Python Example</b> | <code>oModule.GetDynLinkIntrinsicVariables("Plot 1:Trace")</code> |

## GetDynLinkQtyValueState

Gets the state of the quantity values from a source dynamic linked trace.

|                   |      |      |             |
|-------------------|------|------|-------------|
| <b>UI Access</b>  | N/A  |      |             |
| <b>Parameters</b> | Name | Type | Description |
|                   |      |      |             |

|              |                                     |        |                                   |
|--------------|-------------------------------------|--------|-----------------------------------|
|              | <TraceName>                         | String | Name of specified source trace.   |
|              | <QtyName>                           | String | Name of specified quantity value. |
| Return Value | Array of strings containing states. |        |                                   |

|                |                                                      |  |  |
|----------------|------------------------------------------------------|--|--|
| Python Syntax  | GetDynLinkQtyValueState(<TraceName>, <QtyName>)      |  |  |
| Python Example | oModule.GetDynLinkQtyValueState("Plot 1:Trace1", "") |  |  |

## GetDynLinkTraces

Gets the names of the dynamic linked traces.

|              |                                          |        |                                                                   |
|--------------|------------------------------------------|--------|-------------------------------------------------------------------|
| UI Access    | N/A                                      |        |                                                                   |
| Parameters   | Name                                     | Type   | Description                                                       |
|              | <SoluName>                               | String | Name of the source solution. If empty, refer to current solution. |
| Return Value | Array of strings containing trace names. |        |                                                                   |

|                |                              |  |  |
|----------------|------------------------------|--|--|
| Python Syntax  | GetDynLinkTraces(<SoluName>) |  |  |
| Python Example | oModule.GetDynLinkTraces("") |  |  |

## GetDynLinkVariableValues

Gets the values of a variable from a dynamic linked trace.

|                     |                                              |        |                                                               |
|---------------------|----------------------------------------------|--------|---------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                          |        |                                                               |
| <b>Parameters</b>   | Name                                         | Type   | Description                                                   |
|                     | <TraceName>                                  | String | Name of specified dynamic linked trace, with its report name. |
|                     | <VarName>                                    | String | Name of specified variable.                                   |
| <b>Return Value</b> | Array of strings containing variable values. |        |                                                               |

|                       |                                                                       |
|-----------------------|-----------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetDynLinkVariableValues(<TraceName>, <VarName>)                      |
| <b>Python Example</b> | <code>oModule.GetDynLinkVariableValues("Plot 1:Trace", "Var1")</code> |

## GetName

Returns the design ID and design name of the active design, in that order separated by a semicolon. If the active design is a sub-circuit, it also returns the parent ID and parent design name, listed before the active design information.

To get the *only* the design's name without the parent design name or design IDs, see `oDesign.GetDesignName()`.

|                     |                                                                                                                   |
|---------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                               |
| <b>Parameters</b>   | None.                                                                                                             |
| <b>Return Value</b> | String indicating the name and ID of the active design and parent design (if the active design is a sub-circuit). |

|                      |           |
|----------------------|-----------|
| <b>Python Syntax</b> | GetName() |
|----------------------|-----------|

|                       |                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <p><code>oDesign.GetName()</code> for a subcircuit <i>EMDesign2</i> in a parent design <i>EMDesign1</i></p> <pre>design_name = oDesign.GetName() 1;EMDesign1/2;EMDesign2</pre> <p>In the returned string:</p> <p>1 is the parent design ID; <i>EMDesign1</i> is the parent design name.</p> <p>2 is the active design ID; <i>EMDesign2</i> is the active design name.</p> |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## GetObjPath [Design]

Obtains the path to the design.

|                     |                                           |
|---------------------|-------------------------------------------|
| <b>UI Access</b>    | N/A                                       |
| <b>Parameters</b>   | None.                                     |
| <b>Return Value</b> | String containing the path to the design. |

|                       |                                   |
|-----------------------|-----------------------------------|
| <b>Python Syntax</b>  | <code>GetObjPath()</code>         |
| <b>Python Example</b> | <code>oDesign.GetObjPath()</code> |

## GetPropertyValue

Returns the value of a single property belonging to a specific *<PropServer>* and *<PropTab>*. This function is available with the Project, Design or Editor objects, including definition editors.



**Tip:** Use the script recording feature and edit a property, and then view the resulting script to see the format for that property.

| UI Access    | N/A                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------|-------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                          | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|              | <PropTab>                     | String | One of the following, where tab titles are shown in parentheses: <ul style="list-style-type: none"> <li>PassedParameterTab ("Parameter Values")</li> <li>DefinitionParameterTab (Parameter Defaults")</li> <li>LocalVariableTab ("Variables" or "Local Variables")</li> <li>ProjectVariableTab ("Project variables")</li> <li>ConstantsTab ("Constants")</li> <li>BaseElementTab ("Symbol" or "Footprint")</li> <li>ComponentTab ("General")</li> <li>Component("Component")</li> <li>CustomTab ("Intrinsic Variables")</li> <li>Quantities ("Quantities")</li> <li>Signals ("Signals")</li> </ul> |
|              | <PropServer>                  | String | An object identifier, generally returned from another script method, such as <code>CompInst@R;2;3</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|              | <PropName>                    | String | Name of the property.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Return Value | String value of the property. |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetPropertyValue (&lt;PropTab&gt;, &lt;PropServer&gt;, &lt;PropName&gt;)</code>                                                                |
| <b>Python Example</b> | <pre> selectionArray = oEditor.GetSelections()  for k in selectionArray:     val = oEditor.GetPropertyValue("PassedParameterTab", k, "R") ... </pre> |

## GetPropNames [Reporter]

Report setup module does not have its own property, this function always returns empty array.

|                     |              |
|---------------------|--------------|
| <b>UI Access</b>    | N/A          |
| <b>Parameters</b>   | None.        |
| <b>Return Value</b> | Empty array. |

|                       |                                     |
|-----------------------|-------------------------------------|
| <b>Python Syntax</b>  | <code>GetPropNames()</code>         |
| <b>Python Example</b> | <code>oModule.GetPropNames()</code> |

## GetPropValue [Report Setup]

Gets the property value for a Report, or reports' child object.

|              |                                       |        |                                                                                     |
|--------------|---------------------------------------|--------|-------------------------------------------------------------------------------------|
| UI Access    | N/A                                   |        |                                                                                     |
| Parameters   | Name                                  | Type   | Description                                                                         |
|              | <PropPath>                            | String | A child object's property path. See <a href="#">property path discussion here</a> . |
| Return Value | String containing the property value. |        |                                                                                     |

|                |                                                         |  |  |
|----------------|---------------------------------------------------------|--|--|
| Python Syntax  | GetPropValue(<PropPath>)                                |  |  |
| Python Example | oModule.GetPropValue("S Parameter Plot 1/Display Type") |  |  |

## GetQtyExpressionsForSourceTrace

Gets the quantity expressions from a specified source trace.

|              |                                                   |        |                                 |
|--------------|---------------------------------------------------|--------|---------------------------------|
| UI Access    | N/A                                               |        |                                 |
| Parameters   | Name                                              | Type   | Description                     |
|              | <SourceTraceName>                                 | String | Name of specified source trace. |
| Return Value | Array of strings containing quantity expressions. |        |                                 |

|                |                                                          |  |  |
|----------------|----------------------------------------------------------|--|--|
| Python Syntax  | GetQtyExpressionsForSourceTrace(<SourceTraceName>)       |  |  |
| Python Example | oModule.GetQtyExpressionsForSourceTrace("Plot 1:Trace1") |  |  |

## GetReportTraceNames

Gets the names of existing trace names in a plot.

|                     |                                          |        |                         |
|---------------------|------------------------------------------|--------|-------------------------|
| <b>UI Access</b>    | N/A                                      |        |                         |
| <b>Parameters</b>   | Name                                     | Type   | Description             |
|                     | <PlotName>                               | String | Name of specified plot. |
| <b>Return Value</b> | Array of strings containing trace names. |        |                         |

|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| <b>Python Syntax</b>  | GetReportTraceNames(<PlotName>)                               |
| <b>Python Example</b> | <code>oModule.GetReportTraceNames("SParameter Plot 1")</code> |

## GetReportSummaryForRegressionTesting

Gets report summary from a dumped report file.

|                     |                                   |        |                                    |
|---------------------|-----------------------------------|--------|------------------------------------|
| <b>UI Access</b>    | N/A                               |        |                                    |
| <b>Parameters</b>   | Name                              | Type   | Description                        |
|                     | <ReportName>                      | String | Name of a specified dumped report. |
| <b>Return Value</b> | String containing report summary. |        |                                    |

|                      |                                                    |
|----------------------|----------------------------------------------------|
| <b>Python Syntax</b> | GetReportSummaryForRegressionTesting(<ReportName>) |
|----------------------|----------------------------------------------------|

|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| <b>Python Example</b> | <code>oModule.GetReportSummaryForRegressionTesting("C:/report.rdat")</code> |
|-----------------------|-----------------------------------------------------------------------------|

## GetSolutionContexts

Gets all available solution context names in a solution as an array of text strings.

|                     |                       |        |                    |
|---------------------|-----------------------|--------|--------------------|
| <b>UI Access</b>    | N/A                   |        |                    |
| <b>Parameters</b>   | Name                  | Type   | Description        |
|                     | <ReportType>          | String | Report type name.  |
|                     | <DisplayType>         | String | Display type name. |
|                     | <SolutionName>        | String | Name of solution.  |
| <b>Return Value</b> | Array of text strings |        |                    |

|                       |                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetSolutionContexts(&lt;ReportType&gt;, &lt;DisplayType&gt;, &lt;SolutionName&gt;)</code>        |
| <b>Python Example</b> | <code>oModule.GetSolutionContexts(<br/>"Far Fields", "Rectangular Plot", "Setup1:LastAdaptive")</code> |

## GetSolutionDataPerVariation

Obtains solution data for a given report type and solution. You must have already run a simulation.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                            |                                                                                                        |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Type</b>                | <b>Description</b>                                                                                     |
|                     | <reportTypeArg>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | String                     | Report type name as input parameter.                                                                   |
|                     | <solutionNameArg>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | String                     | Solution name as input parameter.                                                                      |
|                     | <simValueCtxtArg>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Structured Array           | Same as ContextArray values created in the relevant <a href="#">CreateReport</a> script.               |
|                     | <familiesArg>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Array of Strings           | Same as FamiliesArray values created in the relevant <a href="#">CreateReport</a> script.              |
|                     | <expressionArg>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | String or Array of Strings | Text string or array of text strings; valid expression, may validate it as the data-table Y-component. |
| <b>Return Value</b> | <p>ARRAY of ISolutionDataResultComInterface objects, containing:</p> <ul style="list-style-type: none"> <li>• <a href="#">GetSweepNames()</a></li> <li>• <a href="#">GetSweepUnits()</a></li> <li>• <a href="#">GetSweepValues()</a></li> <li>• <a href="#">IsPerQuantityPrimarySweep()</a></li> <li>• <a href="#">GetPerQuantityPrimarySweepValues()</a></li> <li>• <a href="#">IsDataComplex()</a></li> <li>• <a href="#">GetDataUnits()</a></li> <li>• <a href="#">GetRealDataValues()</a></li> <li>• <a href="#">GetImagDataValues()</a></li> <li>• <a href="#">ReleaseData()</a></li> <li>• <a href="#">GetDesignVariableNames()</a></li> <li>• <a href="#">GetDesignVariableUnits()</a></li> <li>• <a href="#">GetDesignVariableValue()</a></li> <li>• <a href="#">GetDesignVariationKey()</a></li> </ul> |                            |                                                                                                        |

**Note:**

- This command is *not* recordable from the UI, but its parameters are similar to [CreateReport](#), so you may record a CreateReport script to get the parameter values.
- For the returned ISolutionDataResultComInterface object, some of its functions have an optional boolean parameter: SIValue. SIValue defaults to True. When the pass in value is True, return data values will be in Standard International values; when False, return data values will be in the current units.

**Example:** Freq Sweep with [1GHz, 2GHz,3GHz], GetSweepUnits("Freq") return "GHz"; GetSweepValues("Freq", True) return [1000000,2000000,3000000]; GetSweepValues("Freq", False) return [1,2,3].

|                |                                                                                                                                                                                                                                                            |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | GetSolutionDataPerVariation(reportTypeArg, solutionNameArg, simValueCtxtArg, familiesArg, expressionArg)                                                                                                                                                   |
| Python Example | <pre>oModule = oDesign.GetModule("ReportSetup")  arr = oModule.GetSolutionDataPerVariation('Modal Solution Data', 'Setup1 : Sweep', ['Domain:=' , 'Sweep'], ['Freq:=' , ['All']], 'offset:=' , ['All']], ['S (Port1,Port1)' , 'dB(S(Port1,Port3))'])</pre> |

**GetDataUnits**

Returns text string containing units.

**Important:**

This is a member function of ISolutionDataResultComInterface object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).

|                     |                                         |        |                                                        |
|---------------------|-----------------------------------------|--------|--------------------------------------------------------|
| <b>UI Access</b>    | N/A                                     |        |                                                        |
| <b>Parameters</b>   | Name                                    | Type   | Description                                            |
|                     | <expressionString>                      | String | Can be returned from <code>GetDataExpressions()</code> |
| <b>Return Value</b> | Text string of units; empty if no units |        |                                                        |

|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetDataUnits(&lt;expressionString&gt;)</code> |
| <b>Python Example</b> | <code>oModule.GetDataUnits(expressions)</code>      |

**GetDesignVariableNames**

Returns array of strings containing design variable names.

**Important:**

This is a member function of ISolutionDataResultComInterface object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).

|                  |    |
|------------------|----|
| <b>UI Access</b> | NA |
|------------------|----|



|                     |                  |
|---------------------|------------------|
| <b>Parameters</b>   | NA               |
| <b>Return Value</b> | Array of strings |

|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| <b>Python Syntax</b>  | GetDesignVariableNames()                            |
| <b>Python Example</b> | <pre>names = oModule.GetDesignVariableNames()</pre> |

## GetDesignVariableUnits

Returns array of strings containing design variable units.

### Important:

This is a member function of ISolutionDataResultComInterface object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).

|                     |                                          |        |                                                               |
|---------------------|------------------------------------------|--------|---------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                      |        |                                                               |
| <b>Parameters</b>   | Name                                     | Type   | Description                                                   |
|                     | <varName>                                | String | Can be returned from <a href="#">GetDesignVariableNames()</a> |
| <b>Return Value</b> | Text string of units; empty if no units. |        |                                                               |

|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetDesignVariableUnits(<varName>)                                    |
| <b>Python Example</b> | <code>units = oModule.GetDesignVariableUnits('Variable Name')</code> |

## GetDesignVariableValue

Returns a design variable's value.

### Important:

This is a member function of ISolutionDataResultComInterface object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).

|                     |              |         |                                                                                      |
|---------------------|--------------|---------|--------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A          |         |                                                                                      |
| <b>Parameters</b>   | Name         | Type    | Description                                                                          |
|                     | <varName>    | String  | Can be returned from <a href="#">GetDesignVariableNames()</a>                        |
|                     | <siValue>    | Boolean | True to return SI-value; False to return by <a href="#">GetDesignVariableUnits()</a> |
| <b>Return Value</b> | Double value |         |                                                                                      |

|                       |                                                                  |
|-----------------------|------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetDesignVariableValue(<varName>, <siValue>)                     |
| <b>Python Example</b> | <code>value = oModule.GetDesignVariableValue('varName',1)</code> |

## GetDesignVariationKey

Returns a design's Variation Key.

**Important:**

This is a member function of ISolutionDataResultComInterface object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).

|                     |                                  |
|---------------------|----------------------------------|
| <b>UI Access</b>    | N/A                              |
| <b>Parameters</b>   | N/A                              |
| <b>Return Value</b> | String containing variation key. |

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Python Syntax</b>  | GetDesignVariationKey()                      |
| <b>Python Example</b> | <code>oModule.GetDesignVariationKey()</code> |

## GetImagDataValues

Returns array of imaginary data values.

**Important:**

This is a member function of ISolutionDataResultComInterface object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).

|                     |                    |         |                                                                                                   |
|---------------------|--------------------|---------|---------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                |         |                                                                                                   |
| <b>Parameters</b>   | Name               | Type    | Description                                                                                       |
|                     | <expressionString> | String  | Can be returned from <code>GetDataExpressions()</code>                                            |
|                     | <siValue>          | Boolean | True to return SI-value; False to return with units returned in <a href="#">GetSweepUnits()</a> . |
| <b>Return Value</b> | Array of doubles   |         |                                                                                                   |

|                       |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetImagDataValues(&lt;expressionString&gt;,&lt;siValue&gt;)</code> |
| <b>Python Example</b> | <code>imaginaryvalues = oModule.GetImagDataValues('expression',1)</code> |

## GetPerQuantityPrimarySweepValues

Returns per quantity primary sweep values.

**Important:**

This is a member function of ISolutionDataResultComInterface object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).

|                     |                                                                                                        |         |                                                                               |
|---------------------|--------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                    |         |                                                                               |
| <b>Parameters</b>   | Name                                                                                                   | Type    | Description                                                                   |
|                     | <expressionString>                                                                                     | String  | Can be returned from <code>GetDataExpressions()</code>                        |
|                     | <siValue>                                                                                              | Boolean | True to return SI-value; False to return by <a href="#">GetSweepUnits()</a> . |
| <b>Return Value</b> | Array of doubles if <a href="#">IsPerQuantityPrimarySweep()</a> returned True; error if returned False |         |                                                                               |

|                       |                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetPerQuantitySweepValues(&lt;expressionString&gt;, &lt;siValue&gt;)</code>          |
| <b>Python Example</b> | <code>sweepvalues = oModule.GetPerQuantitySweepValues('0.111,0.201,0.345,0.231', 1)</code> |

## GetRealDataValues

Returns array of real data values.

### Important:

This is a member function of `ISolutionDataResultComInterface` object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).

|                   |                    |         |                                                                                                   |
|-------------------|--------------------|---------|---------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | N/A                |         |                                                                                                   |
| <b>Parameters</b> | Name               | Type    | Description                                                                                       |
|                   | <expressionString> | String  | Can be returned from <code>GetDataExpressions()</code>                                            |
|                   | <siValue>          | Boolean | True to return SI-value; False to return with units returned in <a href="#">GetSweepUnits()</a> . |

|                     |                  |
|---------------------|------------------|
| <b>Return Value</b> | Array of doubles |
|---------------------|------------------|

|                       |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetRealDataValues(&lt;expressionString&gt;,&lt;siValue&gt;)</code> |
| <b>Python Example</b> | <code>realvalues = oModule.GetRealDataValues('expression',1)</code>      |

## GetSweepNames

Returns array of text strings containing primary sweep name(s).

### Important:

This is a member function of ISolutionDataResultComInterface object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).

|                     |                       |
|---------------------|-----------------------|
| <b>UI Access</b>    | N/A                   |
| <b>Parameters</b>   | N/A                   |
| <b>Return Value</b> | Array of text strings |

|                       |                                                  |
|-----------------------|--------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetSweepNames()</code>                     |
| <b>Python Example</b> | <code>sweepnames = arr[0].GetSweepNames()</code> |

## GetSweepUnits

Returns text string containing units.

**Important:**

This is a member function of ISolutionDataResultComInterface object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).

|                     |                              |        |                    |
|---------------------|------------------------------|--------|--------------------|
| <b>UI Access</b>    | N/A                          |        |                    |
| <b>Parameters</b>   | Name                         | Type   | Description        |
|                     | <sweepName>                  | String | Primary sweep name |
| <b>Return Value</b> | Text string containing units |        |                    |

|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| <b>Python Syntax</b>  | GetSweepUnits(<sweepName>)                               |
| <b>Python Example</b> | <pre>sweepunits = oModule.GetSweepUnits('Sweep 1')</pre> |

## GetSweepValues

Returns sweep values.

**Important:**

This is a member function of ISolutionDataResultComInterface object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).

|                     |                  |         |                                                                               |
|---------------------|------------------|---------|-------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A              |         |                                                                               |
| <b>Parameters</b>   | Name             | Type    | Description                                                                   |
|                     | <sweepName>      | String  | Primary sweep name                                                            |
|                     | <siValue>        | Boolean | True to return SI-value; False to return by <a href="#">GetSweepUnits()</a> . |
| <b>Return Value</b> | Array of doubles |         |                                                                               |

|                       |                                                                  |
|-----------------------|------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetSweepValues(<sweepName>, <siValue>)                           |
| <b>Python Example</b> | <pre>sweepvalues = oModule.GetSweepValues('Sweep 1', True)</pre> |

**IsDataComplex**

Returns whether an expression is complex.

**Important:**

This is a member function of ISolutionDataResultComInterface object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).



|              |                                                            |        |                                                          |
|--------------|------------------------------------------------------------|--------|----------------------------------------------------------|
| UI Access    | NA                                                         |        |                                                          |
| Parameters   | Name                                                       | Type   | Description                                              |
|              | <expressionString>                                         | String | Can be returned from <code>GetDataExpressions()</code> . |
| Return Value | Boolean (True if expression is Complex data; False if not) |        |                                                          |

|                |                                                           |  |  |
|----------------|-----------------------------------------------------------|--|--|
| Python Syntax  | <code>IsDataComplex(&lt;expressionString&gt;)</code>      |  |  |
| Python Example | <code>oModule.IsDataComplex('.001,.234,.455,.434')</code> |  |  |

## IsPerQuantityPrimarySweep

Returns whether data expressions have different primary sweep values.

### Important:

This is a member function of `ISolutionDataResultComInterface` object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).

|              |                                                                        |  |  |
|--------------|------------------------------------------------------------------------|--|--|
| UI Access    | N/A                                                                    |  |  |
| Parameters   | N/A                                                                    |  |  |
| Return Value | Boolean (True if data expressions have different primary sweep values) |  |  |

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | IsPerQuantityPrimarySweep()                          |
| <b>Python Example</b> | <pre>var = oModule.IsPerQuantityPrimarySweep()</pre> |

## Release Data

Releases all cached data. After this function is called, all subsequent function calls to the object will fail.

### Important:

This is a member function of ISolutionDataResultComInterface object, which is the element of the returned array from function [GetSolutionDataPerVariation](#).

|                     |     |
|---------------------|-----|
| <b>UI Access</b>    | N/A |
| <b>Parameters</b>   | N/A |
| <b>Return Value</b> | N/A |

|                       |                                  |
|-----------------------|----------------------------------|
| <b>Python Syntax</b>  | ReleaseData()                    |
| <b>Python Example</b> | <pre>oModule.ReleaseData()</pre> |

## GroupPlotCurvesByGroupingStrategy

Groups curves in a Stacked Plot automatically based on a curve grouping strategy.

|                     |                 |        |                                                            |
|---------------------|-----------------|--------|------------------------------------------------------------|
| <b>UI Access</b>    | N/A             |        |                                                            |
| <b>Parameters</b>   | Name            | Type   | Description                                                |
|                     | <ReportName>    | String | Name of report.                                            |
|                     | <GroupStrategy> | String | Strategy for grouping, "Single", "By Trace" or "By Units". |
| <b>Return Value</b> | None.           |        |                                                            |

|                       |                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GroupPlotCurvesByGroupingStrategy(<ReportName>, <GroupStrategy>)                       |
| <b>Python Example</b> | <code>oModule.GroupPlotCurvesByGroupingStrategy("Transient Plot 1", "By Trace")</code> |

## ImportIntoReport

Imports .tab, .csv, and .dat format files into a report.

|              |                                                                             |        |                    |                           |
|--------------|-----------------------------------------------------------------------------|--------|--------------------|---------------------------|
| UI Access    | Right-click on report name in the Project tree and select <b>Import....</b> |        |                    |                           |
| Parameters   | Name                                                                        | Type   | Description        |                           |
|              | <ReportName>                                                                | String | Name of the Report |                           |
|              | <FileName>                                                                  | String | Path and File Name |                           |
|              |                                                                             |        | .csv               | Comma-delimited data file |
|              |                                                                             |        | .tab               | Tab-separated file        |
|              |                                                                             |        | .dat               | Ansys plot data file      |
| Return Value | None                                                                        |        |                    |                           |

|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ImportIntoReport (&lt;ReportName&gt;, &lt;FileName&gt;)</code> |
| <b>Python Example</b> | <code>oDesign.ImportIntoReport ("Plot1", "c:\report1.dat")</code>    |

## ImportReportDataIntoReport

Imports report data from a file into a specified report.

|                     |              |             |                                                                 |
|---------------------|--------------|-------------|-----------------------------------------------------------------|
| <b>UI Access</b>    | N/A          |             |                                                                 |
| <b>Parameters</b>   | <b>Name</b>  | <b>Type</b> | <b>Description</b>                                              |
|                     | <ReportName> | String      | Name of specified report.                                       |
|                     | <FileName>   | String      | Name of specified data file. File extension "rdat" is expected. |
| <b>Return Value</b> | None.        |             |                                                                 |

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ImportReportDataIntoReport(&lt;ReportName&gt;, &lt;FileName&gt;)</code>  |
| <b>Python Example</b> | <code>oModule.ImportReportDataIntoReport("Plot 1", "C:/Plot1data.rdat")</code> |

## MovePlotCurvesToGroup

In a Stacked Plot move curve(s) from its stack(s) to an existing stack. Here term 'group' is synonymous to 'stack' in the context of cartesian stacked plot.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

|                     |              |        |                               |
|---------------------|--------------|--------|-------------------------------|
| <b>Parameters</b>   | Name         | Type   | Description                   |
|                     | <ReportName> | String | Name of report.               |
|                     | <CurveArray> | Array  | Array of curve names to move. |
|                     | <StackName>  | String | Name of stack to move to.     |
| <b>Return Value</b> | None.        |        |                               |

|                       |                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | MovePlotCurvesToGroup(<ReportName>, <CurveArray>, <StackName>)                                       |
| <b>Python Example</b> | <pre>oModule.MovePlotCurvesToGroup("XY Stacked Plot 1", ["R2.V : TR", "R2.I : TR"], "Stack 2")</pre> |

## MovePlotCurvesToNewGroup

Move curve(s) from its stack(s) to a new stack. Here term 'group' is synonymous to 'stack' in the context of Cartesian stacked plot.

|                     |              |        |                               |
|---------------------|--------------|--------|-------------------------------|
| <b>UI Access</b>    | N/A          |        |                               |
| <b>Parameters</b>   | Name         | Type   | Description                   |
|                     | <ReportName> | String | Name of report.               |
|                     | <CurveArray> | Array  | Array of curve names to move. |
| <b>Return Value</b> | None.        |        |                               |

|                      |                                                       |
|----------------------|-------------------------------------------------------|
| <b>Python Syntax</b> | MovePlotCurvesToNewGroup (<ReportName>, <CurveArray>) |
|----------------------|-------------------------------------------------------|

|                       |                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oModule.MovePlotCurvesToNewGroup( "XY Stacked Plot 1", ["R2.V : TR", "R2.I : TR"])</pre> |
|-----------------------|-----------------------------------------------------------------------------------------------|

## OpenWindowForAllReports

Opens windows for all reports belong to current design.

|                     |       |
|---------------------|-------|
| <b>UI Access</b>    | N/A   |
| <b>Parameters</b>   | None. |
| <b>Return Value</b> | None. |

|                       |                                   |
|-----------------------|-----------------------------------|
| <b>Python Syntax</b>  | OpenWindowForAllReports()         |
| <b>Python Example</b> | oModule.OpenWindowForAllReports() |

## OpenWindowForReports

Opens windows for specified reports.

|                     |               |       |                                           |
|---------------------|---------------|-------|-------------------------------------------|
| <b>UI Access</b>    | N/A           |       |                                           |
| <b>Parameters</b>   | Name          | Type  | Description                               |
|                     | <ReportNames> | Array | Array of strings containing report names. |
| <b>Return Value</b> | None.         |       |                                           |

|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| <b>Python Syntax</b>  | OpenWindowForReports(<ReportNames>)                               |
| <b>Python Example</b> | <code>oModule.OpenWindowForReports(["Report1", "Report2"])</code> |

## PastePlotSettings

Paste plot settings to a specified report.

|                     |                                           |             |                                                        |
|---------------------|-------------------------------------------|-------------|--------------------------------------------------------|
| <b>UI Access</b>    | Right-click a report, select <b>Paste</b> |             |                                                        |
| <b>Parameters</b>   | <b>Name</b>                               | <b>Type</b> | <b>Description</b>                                     |
|                     | <ReportName>                              | String      | Name of specified report.                              |
|                     | <PropTypeToApply>                         | String      | Property type to paste. "Graphical", "Data", or "All". |
| <b>Return Value</b> | None.                                     |             |                                                        |

|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| <b>Python Syntax</b>  | PastePlotSettings(<ReportName>, <PropTypeToApply>)            |
| <b>Python Example</b> | <code>oModule.PastePlotSettings("Plot 1", "Graphical")</code> |

## PasteReports

Paste copied reports to results in the current project.

|                     |                        |
|---------------------|------------------------|
| <b>UI Access</b>    | <b>Edit &gt; Paste</b> |
| <b>Parameters</b>   | None.                  |
| <b>Return Value</b> | None.                  |

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Python Syntax</b>  | PasteReports ()                      |
| <b>Python Example</b> | <code>oModule.PasteReports ()</code> |

## PasteReportsWithLegacyNames

Pastes copied reports to results in the current project with legacy name definitions.

|                     |       |
|---------------------|-------|
| <b>UI Access</b>    | N/A   |
| <b>Parameters</b>   | None. |
| <b>Return Value</b> | None. |

|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| <b>Python Syntax</b>  | PasteReportsWithLegacyNames ()                      |
| <b>Python Example</b> | <code>oModule.PasteReportsWithLegacyNames ()</code> |



## PasteTraces

Pastes copied traces to a named plot.

|                     |              |        |              |
|---------------------|--------------|--------|--------------|
| <b>UI Access</b>    | Paste        |        |              |
| <b>Parameters</b>   | Name         | Type   | Description  |
|                     | <ReportName> | String | Name of plot |
| <b>Return Value</b> | None         |        |              |

|                       |                                  |
|-----------------------|----------------------------------|
| <b>Python Syntax</b>  | PasteTraces (<ReportName>)       |
| <b>Python Example</b> | oModule.PasteTraces ("XY Plot1") |

## PasteTracesWithLegacyNames

Pastes copied traces to a named plot using legacy name definitions.

|                     |              |        |              |
|---------------------|--------------|--------|--------------|
| <b>UI Access</b>    | N/A          |        |              |
| <b>Parameters</b>   | Name         | Type   | Description  |
|                     | <ReportName> | String | Name of plot |
| <b>Return Value</b> | None         |        |              |

|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| <b>Python Syntax</b>  | PasteTracesWithLegacyNames (<ReportName>)                   |
| <b>Python Example</b> | <code>oModule.PasteTracesWithLegacyNames("XY Plot1")</code> |

## RenameReport

Renames an existing report.

|                     |                                                                           |        |                 |
|---------------------|---------------------------------------------------------------------------|--------|-----------------|
| <b>UI Access</b>    | Select a report on the Project tree, right-click and select <b>Rename</b> |        |                 |
| <b>Parameters</b>   | Name                                                                      | Type   | Description     |
|                     | <OldReportName>                                                           | String | Old Report Name |
|                     | <NewReportName>                                                           | String | New Report Name |
| <b>Return Value</b> | None.                                                                     |        |                 |

|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| <b>Python Syntax</b>  | RenameReport (<OldReportName>, <NewReportName>)             |
| <b>Python Example</b> | <code>oModule.RenameReport("XY Plot1", "Reflection")</code> |

## RenameTrace

To rename a trace in a plot

|                   |      |      |             |
|-------------------|------|------|-------------|
| <b>UI Access</b>  | N/A  |      |             |
| <b>Parameters</b> | Name | Type | Description |

|              |              |        |                 |
|--------------|--------------|--------|-----------------|
|              | <ReportName> | String | Name of report. |
|              | <TraceName>  | String | Name of Trace   |
|              | <NewName>    | String | New trace name. |
| Return Value | None.        |        |                 |

|                |                                                                                            |
|----------------|--------------------------------------------------------------------------------------------|
| Python Syntax  | RenameTrace(<ReportName>, <TraceName>, <NewName>)                                          |
| Python Example | <pre>oModule.RenameTrace ("XY Plot1",<br/>"dB(S(WavePort1,WavePort1))1", "Port1dBs")</pre> |

## ResetPlotSettings

Resets plot settings to defaults.

|              |                                                                    |        |                         |
|--------------|--------------------------------------------------------------------|--------|-------------------------|
| UI Access    | Right-click on a plot, select <b>Edit &gt; Reset Plot Settings</b> |        |                         |
| Parameters   | Name                                                               | Type   | Description             |
|              | <PlotName>                                                         | String | Name of specified plot. |
| Return Value | None.                                                              |        |                         |

|                |                                                                   |
|----------------|-------------------------------------------------------------------|
| Python Syntax  | ResetPlotSettings(<PlotName>)                                     |
| Python Example | <pre>oModule.ResetPlotSettings("Differential S-parameters")</pre> |

## SavePlotSettingsAsDefault

Saves report plot settings as default.

| UI Access    | Report Templates > Save Settings as Default |        |                                        |
|--------------|---------------------------------------------|--------|----------------------------------------|
| Parameters   | Name                                        | Type   | Description                            |
|              | <PlotName>                                  | String | Name of plot to use for plot defaults. |
| Return Value | None.                                       |        |                                        |

| Python Syntax  | SavePlotSettingsAsDefault("<PlotName>")                     |
|----------------|-------------------------------------------------------------|
| Python Example | <code>oModule.SavePlotSettingsAsDefault ("XY Plot1")</code> |

## SetLinkOutputTraces

Specifies dynamic link output traces from the current design.

| UI Access    | Right-click the <b>Results</b> , select <b>Link Output...</b> |       |                                                                                                                                                                       |
|--------------|---------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                          | Type  | Description                                                                                                                                                           |
|              | <TraceArray>                                                  | Array | Array of traces to set.<br><br><code>Array("&lt;ReportName&gt;:=", &lt;array of trace names&gt;,<br/>"&lt;ReportName&gt;:=", &lt;array of trace names&gt;,...)</code> |
| Return Value | None.                                                         |       |                                                                                                                                                                       |

|                       |                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetLinkOutputTraces(<TraceArray>)                                                                    |
| <b>Python Example</b> | <pre>oModule.SetLinkOutputTraces ( [     "Plot 1:=", ["Trace1"],     "Plot 2:=", ["Trace1"] ])</pre> |

### SetPropValue [Report Setup]

Sets the property value for report module child object.

|                     |                                                                                   |                            |                                                                                     |
|---------------------|-----------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Select <b>Edit Properties</b> on Report objects.                                  |                            |                                                                                     |
| <b>Parameters</b>   | <b>Name</b>                                                                       | <b>Type</b>                | <b>Description</b>                                                                  |
|                     | <PropPath>                                                                        | String                     | A child object's property path. See <a href="#">property path discussion here</a> . |
|                     | <NewValue>                                                                        | String, Number, or Boolean | New value data type is depending on the property type,                              |
| <b>Return Value</b> | True if the property is found and the new value is valid. Otherwise return False. |                            |                                                                                     |

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Python Syntax</b> | SetPropValue(<PropPath>, <NewValue>) |
|----------------------|--------------------------------------|

|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <code>oRptModule.SetPropValue("S Parameter Plot 1/Display Type", "DataTable")</code>               |
|                       | <code>oRptModule.SetPropValue("S Parameter Plot 1/db(S(port1,port2)/Primary sweep", "Freq")</code> |

## UnGroupPlotCurvesInGroup

From a Stacked Plot, ungroups curves in a stack.

|                     |              |             |                    |
|---------------------|--------------|-------------|--------------------|
| <b>UI Access</b>    | N/A          |             |                    |
| <b>Parameters</b>   | <b>Name</b>  | <b>Type</b> | <b>Description</b> |
|                     | <ReportName> | String      | Name of report.    |
|                     | <GroupName>  | String      | Stack group name.  |
| <b>Return Value</b> | None.        |             |                    |

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>UnGroupPlotCurvesInGroup(&lt;ReportName&gt;, &lt;GroupName&gt;)</code>   |
| <b>Python Example</b> | <code>oModule.UngroupPlotCurvesInGroup("S Parameter Plot 3", "Stack 1")</code> |

## UpdateAllReports

Updates all reports in the **Results** branch in the project tree.

|                     |                                                                                     |
|---------------------|-------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click on <b>Results</b> in the project tree, select <b>Update All Reports</b> |
| <b>Parameters</b>   | None                                                                                |
| <b>Return Value</b> | None                                                                                |

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | UpdateAllReports()                      |
| <b>Python Example</b> | <code>oModule.UpdateAllReports()</code> |

## UpdateReports

Updates specified reports.

|                     |               |       |                                           |
|---------------------|---------------|-------|-------------------------------------------|
| <b>UI Access</b>    | N/A           |       |                                           |
| <b>Parameters</b>   | Name          | Type  | Description                               |
|                     | <ReportNames> | Array | Array of strings containing report names. |
| <b>Return Value</b> | None.         |       |                                           |

|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| <b>Python Syntax</b>  | UpdateReports(<ReportNames>)                                    |
| <b>Python Example</b> | <code>oModule.UpdateReports (["XY Plot 1", "XY Plot 4"])</code> |

## UpdateTraces

Update the traces in a report for which traces are not automatically updated by the Report Traces dialog box, Update Report, Real Time selection.

| UI Access           | In <b>Report</b> dialog, click <b>Apply Traces</b> button |        |                                                                                                                                                                                                                                                                                                                        |
|---------------------|-----------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | Name                                                      | Type   | Description                                                                                                                                                                                                                                                                                                            |
|                     | <ReportName>                                              | String | Name of Report.                                                                                                                                                                                                                                                                                                        |
|                     | <TraceNames>                                              | Array  | Array of strings containing trace names.                                                                                                                                                                                                                                                                               |
|                     | <SolutionName>                                            | String | Name of the solution.                                                                                                                                                                                                                                                                                                  |
|                     | <ContextArray>                                            | Array  | Context for which the expression is being evaluated. This can be an empty string if there is no context.<br><br><pre>Array("Domain:=", &lt;DomainType&gt;) &lt;DomainType&gt; ex. "Sweep" or "Time" Array("Context:=", &lt;GeometryType&gt;) &lt;GeometryType&gt; ex. "Infinite Spheren", "Spheren", "Polylinen"</pre> |
|                     | <FamiliesArray>                                           | Array  | Contains sweep definitions for the report.<br><br><pre>Array("&lt;VariableName&gt;:= ", &lt;ValueArray&gt;) &lt;ValueArray&gt; Array("All") or Array("Value1", "Value2", ... "Valuen") examples of &lt;VariableName&gt; "Freq", "Theta", "Distance"</pre>                                                              |
|                     | <ReportDataArray>                                         | Array  | This array contains the report quantity and X, Y, and (Z) axis definitions.<br><br><pre>Array("X Component:=", &lt;VariableName&gt;, "Y Component:=", &lt;VariableName&gt;   &lt;ReportQuantityArray&gt;) &lt;ReportQuantityArray&gt; ex. Array("dB(S(Port1, Port1))")</pre>                                           |
|                     | <ExtTraceInfo>                                            | Array  | Optional. Array defines extended trace information.                                                                                                                                                                                                                                                                    |
| <b>Return Value</b> | None.                                                     |        |                                                                                                                                                                                                                                                                                                                        |



| Python Syntax  | UpdateTraces(<ReportName>, <SolutionName>, <ContextArray>, <FamiliesArray>, <ReportDataArray>)                                                                                                                                                                                                                                                                                                                 |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.UpdateTraces("XY Plot 1", ["NEG1.VAL"], "TR4", [ "NAME:Context", "SimValueContext:=", [2,0,2,0,False,False, -1,1,0,1,1,"",0,0,"CG",False,"0","KP",False,"0","MH",False, "100","TE",False,"100s","TH",False,"40", "TS",False,"0ns","UF",False, "0","WT",False,"0","WW",False,"100"] ], [ "Spectrum:=", ["All"] ], [ "X Component:=", "Spectrum", "Y Component:=", ["mag (NEG1.VAL) "] ], [])</pre> |

## UpdateTracesContextAndSweeps

Edits sweeps and context of multiple traces without affecting their component expressions.

| UI Access    | Modify Report with multiple traces selected. |        |                                                                                                                                       |
|--------------|----------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                         | Type   | Description                                                                                                                           |
|              | <ReportName>                                 | String | Name of Report.                                                                                                                       |
|              | <TraceNames>                                 | Array  | Array of strings containing trace names.                                                                                              |
|              | <SolutionName>                               | String | Name of the solution as listed in the <b>Modify Report</b> dialog box.<br><br>For example: "Setup1 : Last Adaptive"                   |
|              | <ContextArray>                               | Array  | Context for which the expression is being evaluated. This can be an empty string if there is no context.<br><br>ex. "Sweep" or "Time" |
|              | <PointSet>                                   | Array  | Point set for the selected traces, for example, X and Y values for the plot.                                                          |
| Return Value | None                                         |        |                                                                                                                                       |

| Python Syntax  | UpdateTracesContextAndSweeps(<ReportName>, <TraceNames>, <SolutionName>, <ContextArray>, <PointSet>)                                                                                                   |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.UpdateTracesContextAndSweeps_ ("Active S Parameter Quick Report", ["dB(ActiveS(Port1:1))", "dB(ActiveS(Port2:1))"], "Setup1 : Sweep1", [], ["Freq:=", ["9GHz", "9.05GHz", "9.1GHz",</pre> |

|  |                                                                                                                                                                                                |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "9.15GHz", "9.2GHz", "9.25GHz", "9.3GHz", "9.35GHz", "9.4GHz", "9.45GHz", "9.5GHz", "9.55GHz", "9.6GHz", "9.65GHz", "9.7GHz", "9.9GHz", "9.95GHz", "10GHz"], "offset:=",["All"]]) </pre> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# 11 - Optimetrics Module Script Commands

Optimetrics script commands should be executed by the `Optimetrics` module.

```
Set oModule = oDesign.GetModule("Optimetrics")
```

```
oModule.CommandName <args>
```

## Conventions Used in this Chapter

<VarName>

Type: <string>

Name of a variable.

<VarValue>

Type: <string>

Value with unit (i.e., <value>, but cannot be an expression).

<StartV>

Type: <VarValue>

The starting value of a variable.

<StopV>

Type: <VarValue>

The stopping value of a variable.

<MinV>

Type: <VarValue>

The minimum value of a variable.

<MaxV>

Type: <VarValue>

The maximum value of a variable.

<IncludeVar>

Type: <bool>

Specifies whether the variable is included in the analysis.

<StartingPoint>

```
Array("NAME:StartingPoint", "<VarName>:=",  
      <VarValue>, .... "<VarName>:=", <VarValue>)
```

<SaveField>

Type: <bool>

Specifies whether HFSS will remove the non-nominal field solution.

<MaxIter>

Type: <int>

Maximum iteration allowed in an analysis.

<PriorSetup>

Type: <string>

The name of the embedded parametric setup.

<Precede>

Type: <bool>

If true, the embedded parametric setup will be solved before the analysis begins.

If false, the embedded parametric setup will be solved during each iteration of the analysis.

<Constraint>

```
Array("NAME:LCS",  
      "lc=", Array("<VarName>:=",  
                   "<Coeff>, ..."<VarName>:=", <Coeff>, "rel:=", <Cond>, "rhs:=", <Rhs>), ...  
      "lc=", Array("<VarName>:=", <Coeff>, ..."  
                   <VarName>:=", <Coeff>, "rel:=", <Cond>, "rhs:=",  
                   <Rhs>))
```

<Coeff>

Type: <double>

Coefficient for a variable in the linear constraint.

<Cond>

Type: <string>

Inequality condition.

<Rhs>

Type: <double>

Inequality value.

<OptiGoalSpec>

```
"Solution:=", <Soln>, "Calculation:=", <Calc>,  
"Context:=, <Geometry>  
Array("NAME:Ranges",  
    "Range:", Array("Var:=",  
        <VarName>, "Type:=", <RangeType>, "Start:=",  
        <StartV>, "Stop:=", <StopV>), ...  
    "Range:", Array("Var:=", <VarName>, "Type:=",  
        <RangeType>, "Start:=", <StartV>, "Stop:=",  
        <StopV>))  
<Soln>  
    Type: <string>  
    Name of the solution.  
<Calc>  
    Type: <string>  
    An expression that is composed of a basic solution quantity and an  
    output variable.  
<ContextName>  
    Type: <string>  
    Name of context needed in the evaluation of <Calc>.  
<Geometry>
```

Type: <string>

Name of geometry needed in the evaluation of <Calc>.

<RangeType>

Type: <string>

if "r", start and stop values specify a range for the variable.

if "s", start values specify the single value for the variable.

**The commands in this section include:**

[CopySetup](#)

[DeleteSetups \[Optimetrics\]](#)

[DistributedAnalyzeSetup](#)

[EditSetup](#)

[EditSetup \[Parametric\]](#)

[EditSetup \[Optimization\]](#)

[EditSetup \[Sensitivity\]](#)

[EditSetup \[Statistical\]](#)

[EnableSetup](#)

[ExportDXConfigFile](#)

[ExportOptimetricsProfile](#)

[ExportOptimetricsResult](#)

[ExportParametricResults](#)



[ExportParametricSetupTable](#)

[ExportRespSurfaceMinMaxTable](#)

[ExportRespSurfaceRefinePoints](#)

[ExportRespSurfaceResponsePoints](#)

[ExportRespSurfaceVerificationPoints](#)

[GenerateVariationData \[Parametric\]](#)

[GetChildNames \[Optimetrics\]](#)

[GetChildObject \[Optimetrics\]](#)

[GetChildTypes \[Optimetrics\]](#)

[GetName](#)

[GetObjPath \[Editor\]](#)

[GetOptimetricResult](#)

[GetPropNames \[Optimetrics\]](#)

[GetPropValue \[Optimetrics\]](#)

[GetSetupNames \[Optimetrics\]](#)

[GetSetupNamesByType \[Optimetrics\]](#)

[ImportSetup](#)

[InsertSetup](#)

[InsertSetup \[Parametric\]](#)

[InsertSetup \[Optimization\]](#)

[InsertSetup \[Sensitivity\]](#)[InsertSetup \[Statistical\]](#)[PasteSetup \[Optimetrics\]](#)[RenameSetup \[Optimetrics\]](#)[SetPropValue \[Optimetrics\]](#)[SolveAllSetup](#)[SolveSetup \[Optimetrics\]](#)

**The topics for this section include:**

[General Commands Recognized by the Optimetrics Module](#)[Parametric Script Commands](#)[Optimization Script Commands](#)[Sensitivity Script Commands](#)[Statistical Script Commands](#)

## CopySetup

Copy the specified Optimetrics setup.

|                     |             |        |                    |
|---------------------|-------------|--------|--------------------|
| <b>UI Access</b>    | NA          |        |                    |
| <b>Parameters</b>   | Name        | Type   | Description        |
|                     | <SetupName> | String | Name of the setup. |
| <b>Return Value</b> | None.       |        |                    |

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| <b>Python Syntax</b>  | <code>CopySetup (&lt;SetupName&gt;)</code>            |
| <b>Python Example</b> | <code>oModule.CopySetup ("OptimizationSetup1")</code> |

## DeleteSetups [Optimetrics]

Deletes the specified Optimetrics setups.

|                     |                                                                                              |                  |                         |
|---------------------|----------------------------------------------------------------------------------------------|------------------|-------------------------|
| <b>UI Access</b>    | Right-click the setup in the project tree, and then click <b>Delete</b> on the shortcut menu |                  |                         |
| <b>Parameters</b>   | Name                                                                                         | Type             | Description             |
|                     | <NameArray>                                                                                  | Array of Strings | An Array of Setup Names |
| <b>Return Value</b> | None                                                                                         |                  |                         |

|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>DeleteSetups (&lt;NameArray&gt;)</code>              |
| <b>Python Example</b> | <code>oModule.DeleteSetups (["OptimizationSetup1"])</code> |

## DistributedAnalyzeSetup

Distributes all variable value instances within a parametric sweep to different machines already specified from within the user interface

|                   |                                                                                           |      |             |
|-------------------|-------------------------------------------------------------------------------------------|------|-------------|
| <b>UI Access</b>  | Right-click the parametric setup name in the project tree and select Distribute Analysis. |      |             |
| <b>Parameters</b> | Name                                                                                      | Type | Description |
|                   |                                                                                           |      |             |

|                     |                       |         |                                                                                                                                                                                                                                                                             |
|---------------------|-----------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <ParametricSetupName> | String  | Name of the Setup                                                                                                                                                                                                                                                           |
|                     | isBlocking            | Boolean | An optional arg that defaults to <code>true</code> . If it's <code>false</code> , the command immediately returns while the analysis or analyses run in the background. The status of the analyses can be checked with the <code>AreThereSimulationsRunning</code> command. |
| <b>Return Value</b> | None                  |         |                                                                                                                                                                                                                                                                             |

|                       |                                                                    |
|-----------------------|--------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>DistributedAnalyzeSetup (&lt;ParametricSetupName&gt;)</code> |
| <b>Python Example</b> | <code>oModule.DistributedAnalyzeSetup ("ParametricSetup1")</code>  |

## EnableSetup

Enables and disables a defined optimetrics analysis setup.

|                     |                                                                                                |         |                                                                                                                                                                        |
|---------------------|------------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click on a setup in the project tree, select <b>Enable Setup</b> or <b>Disable Setup</b> |         |                                                                                                                                                                        |
| <b>Parameters</b>   | Name                                                                                           | Type    | Description                                                                                                                                                            |
|                     | <SetupName>                                                                                    | String  | Name of specified setup.                                                                                                                                               |
|                     | <Enable>                                                                                       | Boolean | Determines whether enable or disable a setup. <ul style="list-style-type: none"> <li>• <b>True</b> - enable setup.</li> <li>• <b>False</b> - disable setup.</li> </ul> |
| <b>Return Value</b> | None.                                                                                          |         |                                                                                                                                                                        |

|                       |                                                              |
|-----------------------|--------------------------------------------------------------|
| <b>Python Syntax</b>  | EnableSetup(<SetupName>, <Enable>)                           |
| <b>Python Example</b> | <code>oModule.EnableSetup("OptimizationSetup1", True)</code> |

## ExportDXConfigFile

Create an xml file with the setup information for Design Xplorer

|                     |                                                                                                                                |        |                                                    |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------|
| <b>UI Access</b>    | Right click on the Design Xplorer setup in the project tree and choose <b>Export External Connector Addin Configuration...</b> |        |                                                    |
| <b>Parameters</b>   | Name                                                                                                                           | Type   | Description                                        |
|                     | <SetupName>                                                                                                                    | String | Must be one of existing DesignExplorer setup names |
|                     | <FileName>                                                                                                                     | String | Must be a valid file path and name                 |
| <b>Return Value</b> | None                                                                                                                           |        |                                                    |

|                       |                                                                                                  |
|-----------------------|--------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportDXConfigFile (<SetupName>, <FileName>)                                                     |
| <b>Python Example</b> | <code>oModule.ExportDXConfigFile ("DesignXplorerSetup1",<br/>"c:/exportdir/DXSetup1.xml")</code> |

## ExportOptimetricsProfile

Export Optimetrics profile data

|              |                                                                                                                                                                                                                        |        |                                                                                                                   |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------|
| UI Access    | Right click on the Optimetrics setup in the project tree and choose <b>View Analysis Result...</b> On the <b>Post Analysis Display</b> dialog box, click the <b>Profile</b> tab and click on the <b>Export</b> button. |        |                                                                                                                   |
| Parameters   | Name                                                                                                                                                                                                                   | Type   | Description                                                                                                       |
|              | <SetupName>                                                                                                                                                                                                            | String | Must be one of the existing Parametric, Optimization, Sensitivity, Statistical or DesignXplorer setup names       |
|              | <FileName>                                                                                                                                                                                                             | String | Must be a valid file path and name with extension of csv, tab, dat, or txt                                        |
|              | [profileNum]                                                                                                                                                                                                           | String | Must be a numeric string. Optional: defaulted to last profile number. It should be a zero indexed profile number. |
| Return Value | None                                                                                                                                                                                                                   |        |                                                                                                                   |

|                       |                                                                                                |  |  |
|-----------------------|------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | ExportOptimetricsProfile (<SetupName>, <FileName>, [profileNum])                               |  |  |
| <b>Python Example</b> | <pre>oModule.ExportOptimetricsProfile     ("StatisticalSetup1", "c:/exportdir/test.csv")</pre> |  |  |

## ExportOptimetricsResult

Export an existing Optimization, Sensitivity, Statistical or DesignXplorer result. (Does not export Parametric results.)

|            |                                                                                                                                                                                                                                                              |         |                                                                                                  |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------------|
| UI Access  | Right click on the desired Optimetrics setup in the project tree and choose <b>View Analysis Result...</b> On the <b>Post Analysis Display</b> dialog box, click the <b>Result</b> tab, then select <b>Table</b> view, and click on the <b>Export</b> button |         |                                                                                                  |
| Parameters | Name                                                                                                                                                                                                                                                         | Type    | Description                                                                                      |
|            | <SetupName>                                                                                                                                                                                                                                                  | String  | Must be one of the existing Optimization, Sensitivity, Statistical, or DesignXplorer setup names |
|            | <FileName>                                                                                                                                                                                                                                                   | String  | Must be a valid file path and name with extension of csv, tab, dat, or txt..                     |
|            | [useFullOutputName]                                                                                                                                                                                                                                          | Boolean | Optional: defaulted to false. If set to true values will be printed with units.                  |

|              |                                                                                                                        |                                                                     |  |  |  |                                                                     |
|--------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--|--|--|---------------------------------------------------------------------|
|              | <table><tr><td></td><td></td><td>This parameter is ignored for Optimization and Statistical results.</td></tr></table> |                                                                     |  |  |  | This parameter is ignored for Optimization and Statistical results. |
|              |                                                                                                                        | This parameter is ignored for Optimization and Statistical results. |  |  |  |                                                                     |
| Return Value | None                                                                                                                   |                                                                     |  |  |  |                                                                     |

|                       |                                                                                                           |
|-----------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportOptimetricsResult (<SetupName>, <FileName>, [useFullOutputName])                                    |
| <b>Python Example</b> | <pre>oModule.ExportOptimetricsResult (<br/>    "StatisticalSetup1", "c:/exportdir/test.csv", false)</pre> |

## ExportParametricResults

Export existing Parametric results.

|                     |                                                                                                                                                                                                                                                              |             |                                                                           |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------|
| <b>UI Access</b>    | Right click on the desired Parametric setup in the project tree and choose <b>View Analysis Result...</b> On the <b>Post Analysis Display</b> dialog box, click the <b>Result</b> tab, then select <b>Table</b> view, and click on the <b>Export</b> button. |             |                                                                           |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                                                                                                                                                  | <b>Type</b> | <b>Description</b>                                                        |
|                     | <SetupName>                                                                                                                                                                                                                                                  | String      | Must be one of the existing Parametric setup names                        |
|                     | <FileName>                                                                                                                                                                                                                                                   | String      | Must be a valid file path and name with extension of csv, tab, dat or txt |
|                     | <bOutputUnits>                                                                                                                                                                                                                                               | Boolean     | If set to true, values will be printed with units                         |
| <b>Return Value</b> | None                                                                                                                                                                                                                                                         |             |                                                                           |

|                       |                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportParametricResults (<SetupName>, <FileName>, <bOutputUnits>)                                               |
| <b>Python Example</b> | <pre>oModule.ExportParametricResults (<br/>    &lt;SetupName&gt;, &lt;FileName&gt;, &lt;bOutputUnits&gt;)</pre> |

```
"ParametricSetup1", "c:/exportdir/test.csv", False)
```

## ExportParametricSetupTable

Exports the parametric setup table as a CSV file.

|                     |                                                                               |        |                            |
|---------------------|-------------------------------------------------------------------------------|--------|----------------------------|
| <b>UI Access</b>    | Double-click parametric setup. Select <b>Table</b> tab. Click <b>Export</b> . |        |                            |
| <b>Parameters</b>   | Name                                                                          | Type   | Description                |
|                     | <SetupName>                                                                   | String | Name of the setup.         |
|                     | <filePath>                                                                    | String | Full path for file export. |
| <b>Return Value</b> | None                                                                          |        |                            |

|                       |                                                                                                           |
|-----------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportParametricSetupTable (<SetupName>, <filePath>)                                                      |
| <b>Python Example</b> | <pre>oModule.ExportParametricSetupTable('ParametricSetup1', 'E:/Files/ParametricSetup1_ Table.csv')</pre> |

## ExportRespSurfaceMinMaxTable

Exports min-max table from a response surface to a file

|                  |                                                                                                                                  |
|------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b> | Click on <b>Export...</b> From the <b>Response Surface</b> tab of the Design of Experiments <b>Post Analysis Display</b> dialog. |
|------------------|----------------------------------------------------------------------------------------------------------------------------------|



|              |            |        |                                                |
|--------------|------------|--------|------------------------------------------------|
| Parameters   | Name       | Type   | Description                                    |
|              | <DOEName>  | String | Name of the Design of Experiments (DOE) setup. |
|              | <FileName> | String | Output file name with path.                    |
| Return Value | None.      |        |                                                |

|                |                                                                                                                                          |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ExportRespSurfaceMinMaxTable(<DOEName>, <FileName>)                                                                                      |
| Python Example | <pre>oModule.ExportRespSurfaceMinMaxTable("DesignOfExperimentsSetup1",<br/>"C:/temp/DesignOfExperimentsSetup1_Min-Max_Search.csv")</pre> |

## ExportRespSurfaceRefinePoints

Exports refinement points table to a file

|              |                                                                                                                                                                                                  |        |                                                |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------|
| UI Access    | From the <b>Response Surface</b> tab of the Design of Experiments <b>Post Analysis Display</b> dialog box, select <b>Refinement Points</b> option under <b>View</b> , Click on <b>Export....</b> |        |                                                |
| Parameters   | Name                                                                                                                                                                                             | Type   | Description                                    |
|              | <DOEName>                                                                                                                                                                                        | String | Name of the Design of Experiments (DOE) setup. |
|              | <FileName>                                                                                                                                                                                       | String | Output file name with path.                    |
| Return Value | None.                                                                                                                                                                                            |        |                                                |

|               |                                                      |
|---------------|------------------------------------------------------|
| Python Syntax | ExportRespSurfaceRefinePoints(<DOEName>, <FileName>) |
|---------------|------------------------------------------------------|

|                       |                                                                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oModule.ExportRespSurfaceRefinePoints("DesignOfExperimentsSetup1", "C:/temp/DesignOfExperimentsSetup1_Refine_Points.csv")</pre> |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------|

## ExportRespSurfaceResponsePoints

Exports response points table to a file

|                     |                                                                                                                                                                                                |        |                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------|
| <b>UI Access</b>    | From the <b>Response Surface</b> tab of the Design of Experiments <b>Post Analysis Display</b> dialog box, select <b>Response Points</b> option under <b>View</b> , Click on <b>Export....</b> |        |                                                |
| <b>Parameters</b>   | Name                                                                                                                                                                                           | Type   | Description                                    |
|                     | <DOEName>                                                                                                                                                                                      | String | Name of the Design of Experiments (DOE) setup. |
|                     | <FileName>                                                                                                                                                                                     | String | Output file name with path.                    |
| <b>Return Value</b> | None.                                                                                                                                                                                          |        |                                                |

|                       |                                                                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportRespSurfaceResponsePoints (&lt;DOEName&gt;, &lt;FileName&gt;)</code>                                                         |
| <b>Python Example</b> | <pre>oModule.ExportRespSurfaceResponsePoints("DesignOfExperimentsSetup1", "C:/temp/DesignOfExperimentsSetup1_Response_Points.csv")</pre> |

## ExportRespSurfaceVerificationPoints

Exports verification points table to a file

|                  |                                                                                                                                                                                                    |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b> | From the <b>Response Surface</b> tab of the Design of Experiments <b>Post Analysis Display</b> dialog box, select <b>Verification Points</b> option under <b>View</b> , Click on <b>Export....</b> |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|              |            |        |                                                |
|--------------|------------|--------|------------------------------------------------|
| Parameters   | Name       | Type   | Description                                    |
|              | <DOEName>  | String | Name of the Design of Experiments (DOE) setup. |
|              | <FileName> | String | Output file name with path.                    |
| Return Value | None.      |        |                                                |

|                |                                                                                                                                              |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ExportRespSurfaceVerificationPoints (<DOEName>, <FileName>)                                                                                  |
| Python Example | <pre>oModule.ExportRespSurfaceVerificationPoints("DesignOfExperimentsSetup1",<br/>"C:/temp/DesignOfExperimentsSetup1_Veri_Points.csv")</pre> |

## GenerateVariationData [Parametric]

Generate variation data before parametric solve for CAD integrated project

**Command:** Right click on the parametric setup in the project tree and choose "Generate Variation Data"

**Syntax:** GenerateVariationData <SetupName>

**Return Value:** None

**Parameters:** <SetupName>

Name of the setup.

## GetChildNames [Optimetrics]

If used without a specific optimization setup name, gets a list of all setups for all types. If a with a specific setup name, returns names for that optimization setup.

|                     |                       |             |                                                                                                                                                              |
|---------------------|-----------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | NA                    |             |                                                                                                                                                              |
| <b>Parameters</b>   | Name                  | Type        | Description                                                                                                                                                  |
|                     | typeName              | text string | Optional, default to get all types of setup names. Or one of type name return in GetChildTypes(). Also, the type name can be used without the prefix "Opti". |
| <b>Return Value</b> | Array of setup names. |             |                                                                                                                                                              |

|                       |                                                                                                                                                                                                                                           |  |  |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | GetChildNames()                                                                                                                                                                                                                           |  |  |
| <b>Python Example</b> | <pre>oOptimModule = oDesign.GetChildObject("Optimetrics") arrAllSetup = oOptimModule.GetChildNames() arrParamSetup = oOptimModule.GetChildNames("'OptiParametric'") arrOptimizeSetup = oOptimModule.GetChildNames("'Optimization'")</pre> |  |  |

## GetChildObject [Optimetrics]

Gets a Setup Object of the Optimetrics module

|                     |                                                                                                                                        |             |                                                                  |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------|
| <b>UI Access</b>    | NA                                                                                                                                     |             |                                                                  |
| <b>Parameters</b>   | Name                                                                                                                                   | Type        | Description                                                      |
|                     | Setup Name                                                                                                                             | text string | A optimetrics setup name, names returned by the GetChildNames(). |
| <b>Return Value</b> | A script object for the setup See discussion of Optimetrics Setup Objects in <a href="#">Object Script Property Function Summary</a> . |             |                                                                  |

|                       |                                                                                                                                    |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetChildObject()                                                                                                                   |
| <b>Python Example</b> | <pre>oParamSetup = oOptModule.GetChildObject('ParametricSetup1') oOptSetup = oOptModule.GetChildObject('OptimizationSetup1')</pre> |

## GetChildTypes [Optimetrics]

*Use:* Gets child types of queried Optimetrics module.

*Syntax:* GetChildTypes()

*Return Value:* Array of text string, it can be an empty array if there is no setup is defined. There are six types of setup, they are ['OptiParametric', 'OptiOptimization', 'OptiSensitivity', 'OptiStatistical', 'OptiDesignExplorer', 'OptiDXDOE'].

|                       |                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetChildTypes ()                                                                                             |
| <b>Python Example</b> | <pre>oOptimModule = oDesign.GetChildObject("Optimetrics") arrSetupTypes = oOptimModule.GetChildTypes()</pre> |

## GetName

Returns the design ID and design name of the active design, in that order separated by a semicolon. If the active design is a sub-circuit, it also returns the parent ID and parent design name, listed before the active design information.

To get the *only* the design's name without the parent design name or design IDs, see oDesign.GetDesignName().

|                     |                                                                                                                   |
|---------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                               |
| <b>Parameters</b>   | None.                                                                                                             |
| <b>Return Value</b> | String indicating the name and ID of the active design and parent design (if the active design is a sub-circuit). |

|                       |                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetName()                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Python Example</b> | <pre>oDesign.GetName( )</pre> for a subcircuit <i>EMDesign2</i> in a parent design <i>EMDesign1</i><br><pre>design_name = oDesign.GetName()</pre><br><pre>1;EMDesign1/2;EMDesign2</pre> <p>In the returned string:</p> <p>1 is the parent design ID; <i>EMDesign1</i> is the parent design name.</p> <p>2 is the active design ID; <i>EMDesign2</i> is the active design name.</p> |

## GetObjPath [Design]

Obtains the path to the design.

|                     |                                           |
|---------------------|-------------------------------------------|
| <b>UI Access</b>    | N/A                                       |
| <b>Parameters</b>   | None.                                     |
| <b>Return Value</b> | String containing the path to the design. |

|                       |                                  |
|-----------------------|----------------------------------|
| <b>Python Syntax</b>  | GetObjPath()                     |
| <b>Python Example</b> | <pre>oDesign.GetObjPath( )</pre> |

## GetOptimetricResult

Returns an Optimetric calculation. The specific calculation is determined by the setup.

|              |                                                                                                             |        |                                                                                                                                                                                                                                                                                            |
|--------------|-------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | N/A                                                                                                         |        |                                                                                                                                                                                                                                                                                            |
| Parameters   | Name                                                                                                        | Type   | Description                                                                                                                                                                                                                                                                                |
|              | <SetupName>                                                                                                 | String | Optimetrics setup name.                                                                                                                                                                                                                                                                    |
|              | <vars>                                                                                                      | Array  | Array containing string variable names.<br>Use the <b>Sweep Definitions</b> tab in the UI or the <SweepDefs> parameter in the <a href="#">InsertSetup</a> script to determine appropriate inputs.                                                                                          |
|              | <values>                                                                                                    | Array  | <i>Optional.</i> Array containing string values.<br>When multiple variables and values are provided, the order must be the same in both the <vars> and <values> arrays. The first variable is paired with the first value, the second variable is paired with the second value, and so on. |
| Return Value | Calculation result. If the setup contains more than one calculation, the output will be an array of values. |        |                                                                                                                                                                                                                                                                                            |

|                |                                                                                               |
|----------------|-----------------------------------------------------------------------------------------------|
| Python Syntax  | GetOptimetricResult(<SetupName>, <vars>, <values>)                                            |
| Python Example | <code>oModule.GetOptimetricResult('ParametricSetup1', ['AR', 'Re'], ['4.64', '6e+04'])</code> |

## GetOptimetricsResult

Get an existing Optimization, Sensitivity, Statistical, Parametric or DesignXplorer result.

|           |                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| UI Access | Right click on the desired Optimetrics setup in the project tree and choose <b>View Analysis Result...</b> On the <b>Post</b> |
|-----------|-------------------------------------------------------------------------------------------------------------------------------|

|                     |                                                                                                                                       |         |                                                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <b>Analysis Display</b> dialog box, click the <b>Result</b> tab, then select <b>Table</b> view, and click on the <b>Export</b> button |         |                                                                                                                                                     |
| <b>Parameters</b>   | Name                                                                                                                                  | Type    | Description                                                                                                                                         |
|                     | <SetupName>                                                                                                                           | String  | Must be one of the existing Optimization, Sensitivity, Statistical, or DesignXplorer setup names                                                    |
|                     | <FileName>                                                                                                                            | String  | Must be a valid file path and name with extension of csv, tab, dat, or txt..                                                                        |
|                     | [useFullOutputName]                                                                                                                   | Boolean | Optional: defaulted to false. If set to true values will be printed with units. This parameter is ignored for Optimization and Statistical results. |
| <b>Return Value</b> | None                                                                                                                                  |         |                                                                                                                                                     |

|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetOptimetricsResult (<SetupName>, <FileName>, [useFullOutputName])                                |
| <b>Python Example</b> | <pre>oModule.GetOptimetricsResult (     "StatisticalSetup1", "c:/exportdir/test.csv", false)</pre> |

## GetPropNames [Optimetrics]

*Use:* Always returns the empty set for Optimetrics objects since they do not have properties.

*Syntax:* GetPropNames(bIncludeReadOnly)

*Return Value:* Returns empty set.

*Parameters:* bIncludeReadOnly—optional, default to True.

|                       |                                |
|-----------------------|--------------------------------|
| <b>Python Syntax</b>  | GetPropNames ()                |
| <b>Python Example</b> | oOptModule.GetPropNames ()     |
|                       | oOptModule.GetPropNames (True) |



```
oOptModule.GetPropNames(False)
```

## GetPropValue [Optimetrics]

Returns the property value for a setup property.

| UI Access    | NA                                      |      |                                                                                     |
|--------------|-----------------------------------------|------|-------------------------------------------------------------------------------------|
| Parameters   | Name                                    | Type | Description                                                                         |
|              | property-path                           |      | a child object's property path. See <a href="#">property path discussion here</a> . |
| Return Value | Returns the value of an setup property. |      |                                                                                     |

| Python Syntax  | GetPropValue(propPath)                                                                                                                                                                                                                                      |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oOptModule.GetPropValue("OptimizationSetup1\Optimizer") //get the optimizer name for OptimizationSetup1  oOptModule.GetPropValue("OptimizationSetup1\Optimizer\Choices") //Get the menu property's menu items. In this case all Optimizer names.</pre> |

## GetSetupNames [Optimetrics]

Gets a list of Optimetrics setup names

| UI Access  | NA   |      |             |
|------------|------|------|-------------|
| Parameters | Name | Type | Description |
|            | None |      |             |

|                     |                                                                |
|---------------------|----------------------------------------------------------------|
| <b>Return Value</b> | IAnsoftCollectionObj – a collection of Optimetrics setup names |
|---------------------|----------------------------------------------------------------|

|                       |                                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetSetupNames()                                                                                |
| <b>Python Example</b> | <pre>oModule = oDesign.GetModule("Optimetrics")<br/>setupNames = oModule.GetSetupNames()</pre> |

## GetSetupNamesByType [Optimetrics]

Gets a list of Optimetrics setup names by type.

|                     |                                                     |        |                                                              |
|---------------------|-----------------------------------------------------|--------|--------------------------------------------------------------|
| <b>UI Access</b>    | NA                                                  |        |                                                              |
| <b>Parameters</b>   | Name                                                | Type   | Description                                                  |
|                     | <Optimetrics type>                                  | String | Examples: parametric, optimization, statistical, sensitivity |
| <b>Return Value</b> | Array of Optimetrics setup names of the given type. |        |                                                              |

|                       |                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetSetupNamesByType (<Optimetrics type>)                                                             |
| <b>Python Example</b> | <pre>for name in oModule.GetSetupNamesByType("optimization")<br/>    AddInfoMessage(str(name))</pre> |

# ImportSetup

Import an Optimetric setup from a file.

|              |                 |        |                                                                                                                                                                                          |
|--------------|-----------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | NA              |        |                                                                                                                                                                                          |
| Parameters   | Name            | Type   | Description                                                                                                                                                                              |
|              | <SetupTypeName> | String | Must be one of "OptiParametric" , "OptiOptimization" , "OptiSensitivity" , "OptiStatistical" , or "OptiDesignExplorer".                                                                  |
|              | <SetupInfo>     | Array  | Array("NAME:<SetupName>" , "FilePath")<br><br><SetupName><br>Type: <string><br>Name of the setup.<br><br><FilePath><br>Type : <string: file path><br>Must be a valid file path and name. |
| Return Value | None            |        |                                                                                                                                                                                          |

|                |                                                                                                                        |
|----------------|------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ImportSetup (<SetupTypeName>, <SetupInfo>)                                                                             |
| Python Example | <pre>oModule.ImportSetup ("OptiStatistical",<br/>["NAME:StatisticalSetup1",<br/>"c:/importdir/mySetupInfoFile"])</pre> |

## PasteSetup [Optimetrics]

Pastes the specified Optimetrics setup.

|                     |             |        |                   |
|---------------------|-------------|--------|-------------------|
| <b>UI Access</b>    | NA          |        |                   |
| <b>Parameters</b>   | Name        | Type   | Description       |
|                     | <SetupName> | String | Name of the Setup |
| <b>Return Value</b> | None        |        |                   |

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | PasteSetup (<SetupName>)                             |
| <b>Python Example</b> | <pre>oModule.PasteSetup ("OptimizationSetup1")</pre> |

## RenameSetup [Optimetrics]

Renames the specified Optimetrics setup.

|                     |                                                                                               |        |                                    |
|---------------------|-----------------------------------------------------------------------------------------------|--------|------------------------------------|
| <b>UI Access</b>    | <b>Right-click the setup in the project tree, and then click Rename on the shortcut menu.</b> |        |                                    |
| <b>Parameters</b>   | Name                                                                                          | Type   | Description                        |
|                     | <OldName>                                                                                     | String | The name that needs to be replaced |
|                     | <NewName>                                                                                     | String | Replacement name                   |
| <b>Return Value</b> | None                                                                                          |        |                                    |

|                       |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| <b>Python Syntax</b>  | RenameSetup (<OldName> <NewName>)                                        |
| <b>Python Example</b> | <code>oModule.RenameSetup ("OptimizationSetup1" "MyOptimization")</code> |

## SetPropValue [Optimetrics]

Sets the property value for the active Optimetrics setup.

|                     |                                                                                   |                                 |                                                                      |
|---------------------|-----------------------------------------------------------------------------------|---------------------------------|----------------------------------------------------------------------|
| <b>UI Access</b>    | Set Property value on Optimetrics objects                                         |                                 |                                                                      |
| <b>Parameters</b>   | Name                                                                              | Type                            | Description                                                          |
|                     | Property path                                                                     | text string                     | Setup property path. See discussion of <a href="#">Property Path</a> |
|                     | new Value                                                                         | Text String, Number, or Boolean | New value data type is depending on the property type,               |
| <b>Return Value</b> | True if the property is found and the new value is valid. Otherwise return False. |                                 |                                                                      |

|                       |                                                                                                                                                                         |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetPropValue(propPath, newValue)                                                                                                                                        |
| <b>Python Example</b> | <pre>oOptModule.SetPropValue("ParametricSetup1\Enabled", False) //disable ParametricSetup1 oOptModule.SetPropValue("OptimizationSetup1/Optimizer","Quasi Newton")</pre> |

## SolveAllSetup

Solves all Optimetrics setups

|                     |                                                                                                         |         |                                                                                                                                                                                                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click on <b>Optimetrics</b> in Project Manager and select <b>Analyze&gt;All</b> from context menu |         |                                                                                                                                                                                                                                                                             |
| <b>Parameters</b>   | Name                                                                                                    | Type    | Description                                                                                                                                                                                                                                                                 |
|                     | isBlocking                                                                                              | Boolean | An optional arg that defaults to <code>true</code> . If it's <code>false</code> , the command immediately returns while the analysis or analyses run in the background. The status of the analyses can be checked with the <code>AreThereSimulationsRunning</code> command. |
| <b>Return Value</b> | None                                                                                                    |         |                                                                                                                                                                                                                                                                             |

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Python Syntax</b>  | <code>SolveAllSetup()</code>         |
| <b>Python Example</b> | <code>oModule.SolveAllSetup()</code> |

## SolveSetup [Optimetrics]

Solves the specified Optimetrics setup.

|                   |                                                                                                |         |                                                                                                                                                                                                                                                                             |
|-------------------|------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | Right-click the setup in the project tree, and then click <b>Analyze</b> on the shortcut menu. |         |                                                                                                                                                                                                                                                                             |
| <b>Parameters</b> | Name                                                                                           | Type    | Description                                                                                                                                                                                                                                                                 |
|                   | <SetupName>                                                                                    | String  | Name of the setup to be solved                                                                                                                                                                                                                                              |
|                   | isBlocking                                                                                     | Boolean | An optional arg that defaults to <code>true</code> . If it's <code>false</code> , the command immediately returns while the analysis or analyses run in the background. The status of the analyses can be checked with the <code>AreThereSimulationsRunning</code> command. |

|              |                                                          |       |  |       |
|--------------|----------------------------------------------------------|-------|--|-------|
|              | <table><tr><td></td><td></td><td>mand.</td></tr></table> |       |  | mand. |
|              |                                                          | mand. |  |       |
| Return Value | None                                                     |       |  |       |

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| <b>Python Syntax</b>  | SolveSetup (<SetupName>)                               |
| <b>Python Example</b> | <code>oModule.SolveSetup ("OptimizationSetup1")</code> |

## ValidateSetup [Parametric]

Performs a validation of all design variations in a parametric setup.

For information on reviewing the output produced by this script command, see: [Validating a Parametric Setup](#)

|                     |                                                                                                                                                                             |        |                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|
| <b>UI Access</b>    | Under <i>Optimetrics</i> in the Project Manager, right-click the <b>&lt;Parametric Setup Name&gt;</b> and then click <b>Validate Parametric Setup</b> on the shortcut menu. |        |                               |
| <b>Parameters</b>   | Name                                                                                                                                                                        | Type   | Description                   |
|                     | <SetupName>                                                                                                                                                                 | String | Name of the parametric setup. |
| <b>Return Value</b> | None                                                                                                                                                                        |        |                               |

|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| <b>Python Syntax</b>  | ValidateSetup (<SetupName>)                              |
| <b>Python Example</b> | <code>oModule.ValidateSetup ('ParametricSetup1 ')</code> |

## General Commands Recognized by the Optimetrics Module

Following are general script commands recognized by the **Optimetrics** module:

[CopySetup](#)

[DeleteSetups \[Optimetrics\]](#)

[DistributedAnalyzeSetup](#)

[EditSetup](#)

[EnableSetup](#)

[ExportDXConfigFile](#)

[ExportOptimetricsProfile](#)

[ExportOptimetricsResult](#)

[ExportParametricResults](#)

[ExportRespSurfaceMinMaxTable](#)

[ExportRespSurfaceRefinePoints](#)

[ExportRespSurfaceResponsePoints](#)

[ExportRespSurfaceVerificationPoints](#)

[ExportDOEResponseCurve](#)

[ExportDOEResponseCurveSlices](#)

[ExportDOEResponseSurface](#)

[ExportDOELocalSensitivity](#)

[ExportDOELocalSensitivityCurve](#)



[GetChildNames \[Optimetrics\]](#)

[GetChildObject \[Optimetrics\]](#)

[GetChildTypes \[Optimetrics\]](#)

[GetName](#)

[GetObjPath \[Editor\]](#)

[GetOptimetricResult](#)

[GetPropNames \[Optimetrics\]](#)

[GetPropValue \[Optimetrics\]](#)

[GetSetupNames \[Optimetrics\]](#)

[GetSetupNamesByType \[Optimetrics\]](#)

[ImportSetup](#)

[InsertSetup](#)

[PasteSetup \[Optimetrics\]](#)

[RenameSetup \[Optimetrics\]](#)

[SetPropValue \[Optimetrics\]](#)

[SolveSetup \[Optimetrics\]](#)

[SolveAllSetup](#)

## **CopySetup**

Copy the specified Optimetrics setup.

|                  |    |
|------------------|----|
| <b>UI Access</b> | NA |
|------------------|----|

|              |             |        |                    |
|--------------|-------------|--------|--------------------|
| Parameters   | Name        | Type   | Description        |
|              | <SetupName> | String | Name of the setup. |
| Return Value | None.       |        |                    |

|                |                                          |
|----------------|------------------------------------------|
| Python Syntax  | CopySetup (<SetupName>)                  |
| Python Example | oModule.CopySetup ("OptimizationSetup1") |

## DeleteSetups [Optimetrics]

Deletes the specified Optimetrics setups.

|              |                                                                                              |                  |                         |
|--------------|----------------------------------------------------------------------------------------------|------------------|-------------------------|
| UI Access    | Right-click the setup in the project tree, and then click <b>Delete</b> on the shortcut menu |                  |                         |
| Parameters   | Name                                                                                         | Type             | Description             |
|              | <NameArray>                                                                                  | Array of Strings | An Array of Setup Names |
| Return Value | None                                                                                         |                  |                         |

|                |                                               |
|----------------|-----------------------------------------------|
| Python Syntax  | DeleteSetups (<NameArray>)                    |
| Python Example | oModule.DeleteSetups (["OptimizationSetup1"]) |

## DistributedAnalyzeSetup

Distributes all variable value instances within a parametric sweep to different machines already specified from within the user interface

|                     |                                                                                           |         |                                                                                                                                                                                                                                                                             |
|---------------------|-------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click the parametric setup name in the project tree and select Distribute Analysis. |         |                                                                                                                                                                                                                                                                             |
| <b>Parameters</b>   | Name                                                                                      | Type    | Description                                                                                                                                                                                                                                                                 |
|                     | <ParametricSetupName>                                                                     | String  | Name of the Setup                                                                                                                                                                                                                                                           |
|                     | isBlocking                                                                                | Boolean | An optional arg that defaults to <code>true</code> . If it's <code>false</code> , the command immediately returns while the analysis or analyses run in the background. The status of the analyses can be checked with the <code>AreThereSimulationsRunning</code> command. |
| <b>Return Value</b> | None                                                                                      |         |                                                                                                                                                                                                                                                                             |

|                       |                                                                |
|-----------------------|----------------------------------------------------------------|
| <b>Python Syntax</b>  | DistributedAnalyzeSetup (<ParametricSetupName>)                |
| <b>Python Example</b> | <pre>oModule.DistributedAnalyzeSetup("ParametricSetup1")</pre> |

## EnableSetup

Enables and disables a defined optimetrics analysis setup.

|                   |                                                                                                |         |                                               |
|-------------------|------------------------------------------------------------------------------------------------|---------|-----------------------------------------------|
| <b>UI Access</b>  | Right-click on a setup in the project tree, select <b>Enable Setup</b> or <b>Disable Setup</b> |         |                                               |
| <b>Parameters</b> | Name                                                                                           | Type    | Description                                   |
|                   | <SetupName>                                                                                    | String  | Name of specified setup.                      |
|                   | <Enable>                                                                                       | Boolean | Determines whether enable or disable a setup. |

|                     |                                                                                                                                                                   |  |  |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|                     | <div><div></div><div></div><div><ul style="list-style-type: none"><li>• <b>True</b> - enable setup.</li><li>• <b>False</b> - disable setup.</li></ul></div></div> |  |  |
| <b>Return Value</b> | None.                                                                                                                                                             |  |  |

|                       |                                                              |
|-----------------------|--------------------------------------------------------------|
| <b>Python Syntax</b>  | EnableSetup(<SetupName>, <Enable>)                           |
| <b>Python Example</b> | <code>oModule.EnableSetup("OptimizationSetup1", True)</code> |

## ExportDXConfigFile

Create an xml file with the setup information for Design Xplorer

|                     |                                                                                                                                |        |                                                    |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------|
| <b>UI Access</b>    | Right click on the Design Xplorer setup in the project tree and choose <b>Export External Connector Addin Configuration...</b> |        |                                                    |
| <b>Parameters</b>   | Name                                                                                                                           | Type   | Description                                        |
|                     | <SetupName>                                                                                                                    | String | Must be one of existing DesignExplorer setup names |
|                     | <FileName>                                                                                                                     | String | Must be a valid file path and name                 |
| <b>Return Value</b> | None                                                                                                                           |        |                                                    |

|                       |                                                                                                  |
|-----------------------|--------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportDXConfigFile (<SetupName>, <FileName>)                                                     |
| <b>Python Example</b> | <code>oModule.ExportDXConfigFile ("DesignXplorerSetup1",<br/>"c:/exportdir/DXSetup1.xml")</code> |

ExportOptimetricsProfile

Export Optimetrics profile data

|              |                                                                                                                                                                                                                        |        |                                                                                                                   |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------|
| UI Access    | Right click on the Optimetrics setup in the project tree and choose <b>View Analysis Result...</b> On the <b>Post Analysis Display</b> dialog box, click the <b>Profile</b> tab and click on the <b>Export</b> button. |        |                                                                                                                   |
| Parameters   | Name                                                                                                                                                                                                                   | Type   | Description                                                                                                       |
|              | <SetupName>                                                                                                                                                                                                            | String | Must be one of the existing Parametric, Optimization, Sensitivity, Statistical or DesignXplorer setup names       |
|              | <FileName>                                                                                                                                                                                                             | String | Must be a valid file path and name with extension of csv, tab, dat, or txt                                        |
|              | [profileNum]                                                                                                                                                                                                           | String | Must be a numeric string. Optional: defaulted to last profile number. It should be a zero indexed profile number. |
| Return Value | None                                                                                                                                                                                                                   |        |                                                                                                                   |

|                |                                                                                                                            |
|----------------|----------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ExportOptimetricsProfile (<SetupName>, <FileName>, [profileNum])                                                           |
| Python Example | <pre>oModule.ExportOptimetricsProfile                                 ("StatisticalSetup1", "c:/exportdir/test.csv")</pre> |

ExportOptimetricsResult

Export an existing Optimization, Sensitivity, Statistical or DesignXplorer result. (Does not export Parametric results.)

|           |                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| UI Access | Right click on the desired Optimetrics setup in the project tree and choose <b>View Analysis Result...</b> On the <b>Post</b> |
|-----------|-------------------------------------------------------------------------------------------------------------------------------|

|                     |                                                                                                                                       |         |                                                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <b>Analysis Display</b> dialog box, click the <b>Result</b> tab, then select <b>Table</b> view, and click on the <b>Export</b> button |         |                                                                                                                                                     |
| <b>Parameters</b>   | Name                                                                                                                                  | Type    | Description                                                                                                                                         |
|                     | <SetupName>                                                                                                                           | String  | Must be one of the existing Optimization, Sensitivity, Statistical, or DesignXplorer setup names                                                    |
|                     | <FileName>                                                                                                                            | String  | Must be a valid file path and name with extension of csv, tab, dat, or txt..                                                                        |
|                     | [useFullOutputName]                                                                                                                   | Boolean | Optional: defaulted to false. If set to true values will be printed with units. This parameter is ignored for Optimization and Statistical results. |
| <b>Return Value</b> | None                                                                                                                                  |         |                                                                                                                                                     |

|                       |                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportOptimetricsResult (<SetupName>, <FileName>, [useFullOutputName])                                |
| <b>Python Example</b> | <pre>oModule.ExportOptimetricsResult (     "StatisticalSetup1", "c:/exportdir/test.csv", false)</pre> |

## ExportParametricResults

Export existing Parametric results.

|                     |                                                                                                                                                                                                                                                              |         |                                                                           |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------------------------------------------|
| <b>UI Access</b>    | Right click on the desired Parametric setup in the project tree and choose <b>View Analysis Result...</b> On the <b>Post Analysis Display</b> dialog box, click the <b>Result</b> tab, then select <b>Table</b> view, and click on the <b>Export</b> button. |         |                                                                           |
| <b>Parameters</b>   | Name                                                                                                                                                                                                                                                         | Type    | Description                                                               |
|                     | <SetupName>                                                                                                                                                                                                                                                  | String  | Must be one of the existing Parametric setup names                        |
|                     | <FileName>                                                                                                                                                                                                                                                   | String  | Must be a valid file path and name with extension of csv, tab, dat or txt |
|                     | <bOutputUnits>                                                                                                                                                                                                                                               | Boolean | If set to true, values will be printed with units                         |
| <b>Return Value</b> | None                                                                                                                                                                                                                                                         |         |                                                                           |

|                       |                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportParametricResults (<SetupName>, <FileName>, <bOutputUnits>)                                        |
| <b>Python Example</b> | <pre>oModule.ExportParametricResults (<br/>    "ParametricSetup1", "c:/exportdir/test.csv", False)</pre> |

## ExportParametricSetupTable

Exports the parametric setup table as a CSV file.

|                     |                                                                               |        |                            |
|---------------------|-------------------------------------------------------------------------------|--------|----------------------------|
| <b>UI Access</b>    | Double-click parametric setup. Select <b>Table</b> tab. Click <b>Export</b> . |        |                            |
| <b>Parameters</b>   | Name                                                                          | Type   | Description                |
|                     | <SetupName>                                                                   | String | Name of the setup.         |
|                     | <filePath>                                                                    | String | Full path for file export. |
| <b>Return Value</b> | None                                                                          |        |                            |

|                       |                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportParametricSetupTable (<SetupName>, <filePath>)                                                          |
| <b>Python Example</b> | <pre>oModule.ExportParametricSetupTable('ParametricSetup1', 'E:/Files/ParametricSetup1_<br/>Table.csv')</pre> |

## ExportRespSurfaceMinMaxTable

Exports min-max table from a response surface to a file

|                     |                                                                                                                                  |        |                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------|
| <b>UI Access</b>    | Click on <b>Export...</b> From the <b>Response Surface</b> tab of the Design of Experiments <b>Post Analysis Display</b> dialog. |        |                                                |
| <b>Parameters</b>   | Name                                                                                                                             | Type   | Description                                    |
|                     | <DOEName>                                                                                                                        | String | Name of the Design of Experiments (DOE) setup. |
|                     | <FileName>                                                                                                                       | String | Output file name with path.                    |
| <b>Return Value</b> | None.                                                                                                                            |        |                                                |

|                       |                                                                                                                                          |  |  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | ExportRespSurfaceMinMaxTable(<DOEName>, <FileName>)                                                                                      |  |  |
| <b>Python Example</b> | <pre>oModule.ExportRespSurfaceMinMaxTable("DesignOfExperimentsSetup1",<br/>"C:/temp/DesignOfExperimentsSetup1_Min-Max_Search.csv")</pre> |  |  |

## ExportRespSurfaceRefinePoints

Exports refinement points table to a file

|                     |                                                                                                                                                                                                  |        |                                                |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------|
| <b>UI Access</b>    | From the <b>Response Surface</b> tab of the Design of Experiments <b>Post Analysis Display</b> dialog box, select <b>Refinement Points</b> option under <b>View</b> , Click on <b>Export....</b> |        |                                                |
| <b>Parameters</b>   | Name                                                                                                                                                                                             | Type   | Description                                    |
|                     | <DOEName>                                                                                                                                                                                        | String | Name of the Design of Experiments (DOE) setup. |
|                     | <FileName>                                                                                                                                                                                       | String | Output file name with path.                    |
| <b>Return Value</b> | None.                                                                                                                                                                                            |        |                                                |



|                       |                                                                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportRespSurfaceRefinePoints(&lt;DOEName&gt;, &lt;FileName&gt;)</code>                                                            |
| <b>Python Example</b> | <pre>oModule.ExportRespSurfaceRefinePoints("DesignOfExperimentsSetup1",<br/>"C:/temp/DesignOfExperimentsSetup1_Refine_Points.csv")</pre> |

## ExportRespSurfaceResponsePoints

Exports response points table to a file

|                     |                                                                                                                                                                                                |        |                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------|
| <b>UI Access</b>    | From the <b>Response Surface</b> tab of the Design of Experiments <b>Post Analysis Display</b> dialog box, select <b>Response Points</b> option under <b>View</b> , Click on <b>Export....</b> |        |                                                |
| <b>Parameters</b>   | Name                                                                                                                                                                                           | Type   | Description                                    |
|                     | <DOEName>                                                                                                                                                                                      | String | Name of the Design of Experiments (DOE) setup. |
|                     | <FileName>                                                                                                                                                                                     | String | Output file name with path.                    |
| <b>Return Value</b> | None.                                                                                                                                                                                          |        |                                                |

|                       |                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportRespSurfaceResponsePoints (&lt;DOEName&gt;, &lt;FileName&gt;)</code>                                                             |
| <b>Python Example</b> | <pre>oModule.ExportRespSurfaceResponsePoints("DesignOfExperimentsSetup1",<br/>"C:/temp/DesignOfExperimentsSetup1_Response_Points.csv")</pre> |

## ExportRespSurfaceVerificationPoints

Exports verification points table to a file

|                     |                                                                                                                                                                                                   |        |                                                |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------|
| <b>UI Access</b>    | From the <b>Response Surface</b> tab of the Design of Experiments <b>Post Analysis Display</b> dialog box, select <b>Verification Points</b> option under <b>View</b> , Click on <b>Export...</b> |        |                                                |
| <b>Parameters</b>   | Name                                                                                                                                                                                              | Type   | Description                                    |
|                     | <DOEName>                                                                                                                                                                                         | String | Name of the Design of Experiments (DOE) setup. |
|                     | <FileName>                                                                                                                                                                                        | String | Output file name with path.                    |
| <b>Return Value</b> | None.                                                                                                                                                                                             |        |                                                |

|                       |                                                                                                                                          |  |  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | ExportRespSurfaceVerificationPoints (<DOEName>, <FileName>)                                                                              |  |  |
| <b>Python Example</b> | <pre>oModule.ExportRespSurfaceVerificationPoints("DesignOfExperimentsSetup1", "C:/temp/DesignOfExperimentsSetup1_Veri_Points.csv")</pre> |  |  |

## ExportDOEResponseCurve

Exports response curve from a response surface to a file.

|                     |                                                                                                                                  |        |                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------|
| <b>UI Access</b>    | Click on <b>Export...</b> From the <b>Response Surface</b> tab of the Design of Experiments <b>Post Analysis Display</b> dialog. |        |                                                |
| <b>Parameters</b>   | Name                                                                                                                             | Type   | Description                                    |
|                     | <DOEName>                                                                                                                        | String | Name of the Design of Experiments (DOE) setup. |
|                     | <FileName>                                                                                                                       | String | Output file name with path.                    |
| <b>Return Value</b> | None                                                                                                                             |        |                                                |

|                       |                                                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <i>DOEName</i> (<FileName>)                                                                                                                           |
| <b>Python Example</b> | <pre>oModule.ExportDOEResponseCurve("DesignOfExperimentsSetup1",<br/>    "C:/Users/AEDT/R24.1/D/DesignOfExperimentsSetup1_Response_Points.csv")</pre> |

## ExportDOEResponseCurveSlices

Exports response curve slices from a response surface to a file.

|                     |                                                                                                                                  |        |                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------|
| <b>UI Access</b>    | Click on <b>Export...</b> From the <b>Response Surface</b> tab of the Design of Experiments <b>Post Analysis Display</b> dialog. |        |                                                |
| <b>Parameters</b>   | Name                                                                                                                             | Type   | Description                                    |
|                     | <DOEName>                                                                                                                        | String | Name of the Design of Experiments (DOE) setup. |
|                     | <FileName>                                                                                                                       | String | Output file name with path.                    |
| <b>Return Value</b> | None                                                                                                                             |        |                                                |

|                       |                                                                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <i>DOEName</i> (<FileName>)                                                                                                                                 |
| <b>Python Example</b> | <pre>oModule.ExportDOEResponseCurveSlices("DesignOfExperimentsSetup1",<br/>    "C:/Users/AEDT/R24.1/D/DesignOfExperimentsSetup1_Response_Points.csv")</pre> |

## ExportDOEResponseSurface

Exports response surface to a file.

|                     |                                                                                                                                  |        |                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------|
| <b>UI Access</b>    | Click on <b>Export...</b> From the <b>Response Surface</b> tab of the Design of Experiments <b>Post Analysis Display</b> dialog. |        |                                                |
| <b>Parameters</b>   | Name                                                                                                                             | Type   | Description                                    |
|                     | <DOEName>                                                                                                                        | String | Name of the Design of Experiments (DOE) setup. |
|                     | <FileName>                                                                                                                       | String | Output file name with path.                    |
| <b>Return Value</b> | None                                                                                                                             |        |                                                |

|                       |                                                                                                                                                         |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <i>DOEName (&lt;FileName&gt;)</i>                                                                                                                       |
| <b>Python Example</b> | <pre>oModule.ExportDOEResponseSurface("DesignOfExperimentsSetup1",<br/>    "C:/Users/AEDT/R24.1/D/DesignOfExperimentsSetup1_Response_Points.csv")</pre> |

## ExportDOELocalSensitivity

Exports local sensitivity to a file.

|                     |                                                                                                                                  |        |                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------|
| <b>UI Access</b>    | Click on <b>Export...</b> From the <b>Response Surface</b> tab of the Design of Experiments <b>Post Analysis Display</b> dialog. |        |                                                |
| <b>Parameters</b>   | Name                                                                                                                             | Type   | Description                                    |
|                     | <DOEName>                                                                                                                        | String | Name of the Design of Experiments (DOE) setup. |
|                     | <FileName>                                                                                                                       | String | Output file name with path.                    |
| <b>Return Value</b> | None                                                                                                                             |        |                                                |

|                       |                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <i>DOEName</i> (<FileName>)                                                                                                                              |
| <b>Python Example</b> | <pre>oModule.ExportDOELocalSensitivity("DesignOfExperimentsSetup1",<br/>    "C:/Users/AEDT/R24.1/D/DesignOfExperimentsSetup1_Response_Points.csv")</pre> |

## ExportDOELocalSensitivityCurve

Exports local sensitivity curves to a file.

|                     |                                                                                                                                  |             |                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------|
| <b>UI Access</b>    | Click on <b>Export...</b> From the <b>Response Surface</b> tab of the Design of Experiments <b>Post Analysis Display</b> dialog. |             |                                                |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                      | <b>Type</b> | <b>Description</b>                             |
|                     | <DOEName>                                                                                                                        | String      | Name of the Design of Experiments (DOE) setup. |
|                     | <FileName>                                                                                                                       | String      | Output file name with path.                    |
| <b>Return Value</b> | None                                                                                                                             |             |                                                |

|                       |                                                                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <i>DOEName</i> (<FileName>)                                                                                                                                   |
| <b>Python Example</b> | <pre>oModule.ExportDOELocalSensitivityCurve("DesignOfExperimentsSetup1",<br/>    "C:/Users/AEDT/R24.1/D/DesignOfExperimentsSetup1_Response_Points.csv")</pre> |

## GenerateVariationData [Parametric]

Generate variation data before parametric solve for CAD integrated project

**Command:** Right click on the parametric setup in the project tree and choose "Generate Variation Data"

**Syntax:** GenerateVariationData <SetupName>

**Return Value:** None

**Parameters:** <SetupName>

Name of the setup.

## GetChildNames [Optimetrics]

If used without a specific optimization setup name, gets a list of all setups for all types. If a with a specific setup name, returns names for that optimization setup.

| UI Access    | NA                    |             |                                                                                                                                                              |
|--------------|-----------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                  | Type        | Description                                                                                                                                                  |
|              | typeName              | text string | Optional, default to get all types of setup names. Or one of type name return in GetChildTypes(). Also, the type name can be used without the prefix "Opti". |
| Return Value | Array of setup names. |             |                                                                                                                                                              |

| Python Syntax  | GetChildNames()                                                                                                                                                                                                                          |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oOptimModule = oDesign.GetChildObject("Optimetrics") arrAllSetup = oOptimModule.GetChildNames() arrParmSetup = oOptimModule.GetChildNames("'OptiParametric'") arrOptimizeSetup = oOptimModule.GetChildNames("'Optimization'")</pre> |

## GetChildObject [Optimetrics]

Gets a Setup Object of the Optimetrics module

|                     |                                                                                                                                        |             |                                                                  |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------|
| <b>UI Access</b>    | NA                                                                                                                                     |             |                                                                  |
| <b>Parameters</b>   | Name                                                                                                                                   | Type        | Description                                                      |
|                     | Setup Name                                                                                                                             | text string | A optimetrics setup name, names returned by the GetChildNames(). |
| <b>Return Value</b> | A script object for the setup See discussion of Optimetrics Setup Objects in <a href="#">Object Script Property Function Summary</a> . |             |                                                                  |

|                       |                                                                                                                                    |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetChildObject()                                                                                                                   |
| <b>Python Example</b> | <pre>oParamSetup = oOptModule.GetChildObject('ParametricSetup1') oOptSetup = oOptModule.GetChildObject('OptimizationSetup1')</pre> |

## GetChildTypes [Optimetrics]

*Use:* Gets child types of queried Optimetrics module.

*Syntax:* GetChildTypes()

*Return Value:* Array of text string, it can be an empty array if there is no setup is defined. There are six types of setup, they are ['OptiParametric', 'OptiOptimization', 'OptiSensitivity', 'OptiStatistical', 'OptiDesignExplorer', 'OptiDXDOE'].

|                       |                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetChildTypes ()                                                                                             |
| <b>Python Example</b> | <pre>oOptimModule = oDesign.GetChildObject("Optimetrics") arrSetupTypes = oOptimModule.GetChildTypes()</pre> |

## GetName

Returns the design ID and design name of the active design, in that order separated by a semicolon. If the active design is a sub-circuit, it also returns the parent ID and parent design name, listed before the active design information.

To get the *only* the design's name without the parent design name or design IDs, see oDesign.GetDesignName().

|                     |                                                                                                                   |
|---------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                               |
| <b>Parameters</b>   | None.                                                                                                             |
| <b>Return Value</b> | String indicating the name and ID of the active design and parent design (if the active design is a sub-circuit). |

|                       |                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetName()                                                                                                                                                                                                                                                                                                                                             |
| <b>Python Example</b> | <pre>oDesign.GetName() for a subcircuit <i>EMDesign2</i> in a parent design <i>EMDesign1</i> design_name = oDesign.GetName() 1;EMDesign1/2;EMDesign2</pre> <p>In the returned string:</p> <p>1 is the parent design ID; <i>EMDesign1</i> is the parent design name.</p> <p>2 is the active design ID; <i>EMDesign2</i> is the active design name.</p> |



## GetObjPath [Design]

Obtains the path to the design.

|                     |                                           |
|---------------------|-------------------------------------------|
| <b>UI Access</b>    | N/A                                       |
| <b>Parameters</b>   | None.                                     |
| <b>Return Value</b> | String containing the path to the design. |

|                       |                                   |
|-----------------------|-----------------------------------|
| <b>Python Syntax</b>  | GetObjPath()                      |
| <b>Python Example</b> | <code>oDesign.GetObjPath()</code> |

## GetOptimetricResult

Returns an Optimetric calculation. The specific calculation is determined by the setup.

|                   |             |             |                                                                                                                                                                                                                         |
|-------------------|-------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | N/A         |             |                                                                                                                                                                                                                         |
| <b>Parameters</b> | <b>Name</b> | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                      |
|                   | <SetupName> | String      | Optimetrics setup name.                                                                                                                                                                                                 |
|                   | <vars>      | Array       | Array containing string variable names.<br><br>Use the <b>Sweep Definitions</b> tab in the UI or the <SweepDefs> parameter in the <a href="#">InsertSetup</a> script to determine appropriate inputs.                   |
|                   | <values>    | Array       | <i>Optional.</i> Array containing string values.<br><br>When multiple variables and values are provided, the order must be the same in both the <vars> and <values> arrays. The first variable is paired with the first |

|                     |                                                                                                             |  |                                                                        |
|---------------------|-------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------|
|                     |                                                                                                             |  | value, the second variable is paired with the second value, and so on. |
| <b>Return Value</b> | Calculation result. If the setup contains more than one calculation, the output will be an array of values. |  |                                                                        |

|                       |                                                                                  |  |  |
|-----------------------|----------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | GetOptimetricResult(<SetupName>, <vars>, <values>)                               |  |  |
| <b>Python Example</b> | oModule.GetOptimetricResult('ParametricSetup1', ['AR', 'Re'], ['4.64', '6e+04']) |  |  |

## GetPropNames [Optimetrics]

*Use:* Always returns the empty set for Optimetrics objects since they do not have properties.

*Syntax:* GetPropNames(bIncludeReadOnly)

*Return Value:* Returns empty set.

*Parameters:* bIncludeReadOnly—optional, default to True.

|                       |                                                                                                      |  |  |
|-----------------------|------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | GetPropNames ()                                                                                      |  |  |
| <b>Python Example</b> | <pre>oOptModule.GetPropNames () oOptModule.GetPropNames (True) oOptModule.GetPropNames (False)</pre> |  |  |

## GetPropValue [Optimetrics]

Returns the property value for a setup property.

|                   |      |      |             |
|-------------------|------|------|-------------|
| <b>UI Access</b>  | NA   |      |             |
| <b>Parameters</b> | Name | Type | Description |

|                     |                                                                                                                                           |               |                                                                                     |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|
|                     | <table><tr><td>property-path</td><td>a child object's property path. See <a href="#">property path discussion here</a>.</td></tr></table> | property-path | a child object's property path. See <a href="#">property path discussion here</a> . |
| property-path       | a child object's property path. See <a href="#">property path discussion here</a> .                                                       |               |                                                                                     |
| <b>Return Value</b> | Returns the value of an setup property.                                                                                                   |               |                                                                                     |

|                       |                                                                                                                                                                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetPropValue(propPath)                                                                                                                                                                                                                                      |
| <b>Python Example</b> | <pre>oOptModule.GetPropValue("OptimizationSetup1\Optimizer") //get the optimizer name for OptimizationSetup1  oOptModule.GetPropValue("OptimizationSetup1\Optimizer\Choices") //Get the menu property's menu items. In this case all Optimizer names.</pre> |

## GetSetupNames [Optimetrics]

Gets a list of Optimetrics setup names

|                     |                                                                |      |             |
|---------------------|----------------------------------------------------------------|------|-------------|
| <b>UI Access</b>    | NA                                                             |      |             |
| <b>Parameters</b>   | Name                                                           | Type | Description |
|                     | None                                                           |      |             |
| <b>Return Value</b> | IAnsoftCollectionObj – a collection of Optimetrics setup names |      |             |

|                       |                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetSetupNames()                                                                             |
| <b>Python Example</b> | <pre>oModule = oDesign.GetModule("Optimetrics")  setupNames = oModule.GetSetupNames()</pre> |

|  |  |
|--|--|
|  |  |
|--|--|

## GetSetupNamesByType [Optimetrics]

Gets a list of Optimetrics setup names by type.

|                     |                                                     |        |                                                              |
|---------------------|-----------------------------------------------------|--------|--------------------------------------------------------------|
| <b>UI Access</b>    | NA                                                  |        |                                                              |
| <b>Parameters</b>   | Name                                                | Type   | Description                                                  |
|                     | <Optimetrics type>                                  | String | Examples: parametric, optimization, statistical, sensitivity |
| <b>Return Value</b> | Array of Optimetrics setup names of the given type. |        |                                                              |

|                       |                                                                                                  |
|-----------------------|--------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetSetupNamesByType (<Optimetrics type>)                                                         |
| <b>Python Example</b> | <pre>for name in oModule.GetSetupNamesByType("optimization")     AddInfoMessage(str(name))</pre> |

## ImportSetup

Import an Optimetric setup from a file.

|                   |                 |        |                                                                                                                     |
|-------------------|-----------------|--------|---------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | NA              |        |                                                                                                                     |
| <b>Parameters</b> | Name            | Type   | Description                                                                                                         |
|                   | <SetupTypeName> | String | Must be one of "OptiParametric", "OptiOptimization", "OptiSensitivity", "OptiStatistical", or "OptiDesignExplorer". |
|                   | <SetupInfo>     | Array  | Array("NAME:<SetupName>", "FilePath")                                                                               |

|              |      |  |                                                                                                                                                                                      |
|--------------|------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |      |  | <b>&lt;SetupName&gt;</b><br><br>Type: <string><br><br>Name of the setup.<br><br><b>&lt;FilePath&gt;</b><br><br>Type : <string: file path><br><br>Must be a valid file path and name. |
| Return Value | None |  |                                                                                                                                                                                      |

|                |                                                                                                                        |
|----------------|------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ImportSetup (<SetupTypeName>, <SetupInfo>)                                                                             |
| Python Example | <pre>oModule.ImportSetup ("OptiStatistical",<br/>["NAME:StatisticalSetup1",<br/>"c:/importdir/mySetupInfoFile"])</pre> |

PasteSetup [Optimetrics]

Pastes the specified Optimetrics setup.

|            |             |        |                   |
|------------|-------------|--------|-------------------|
| UI Access  | NA          |        |                   |
| Parameters | Name        | Type   | Description       |
|            | <SetupName> | String | Name of the Setup |

|                     |      |
|---------------------|------|
| <b>Return Value</b> | None |
|---------------------|------|

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| <b>Python Syntax</b>  | PasteSetup (<SetupName>)                               |
| <b>Python Example</b> | <code>oModule.PasteSetup ("OptimizationSetup1")</code> |

## RenameSetup [Optimetrics]

Renames the specified Optimetrics setup.

|                     |                                                                                               |        |                                    |
|---------------------|-----------------------------------------------------------------------------------------------|--------|------------------------------------|
| <b>UI Access</b>    | <b>Right-click the setup in the project tree, and then click Rename</b> on the shortcut menu. |        |                                    |
| <b>Parameters</b>   | Name                                                                                          | Type   | Description                        |
|                     | <OldName>                                                                                     | String | The name that needs to be replaced |
|                     | <NewName>                                                                                     | String | Replacement name                   |
| <b>Return Value</b> | None                                                                                          |        |                                    |

|                       |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| <b>Python Syntax</b>  | RenameSetup (<OldName> <NewName>)                                        |
| <b>Python Example</b> | <code>oModule.RenameSetup ("OptimizationSetup1" "MyOptimization")</code> |

## SetPropValue [Optimetrics]

Sets the property value for the active Optimetrics setup.

|                     |                                                                                   |                                 |                                                                      |
|---------------------|-----------------------------------------------------------------------------------|---------------------------------|----------------------------------------------------------------------|
| <b>UI Access</b>    | Set Property value on Optimetrics objects                                         |                                 |                                                                      |
| <b>Parameters</b>   | Name                                                                              | Type                            | Description                                                          |
|                     | Property path                                                                     | text string                     | Setup property path. See discussion of <a href="#">Property Path</a> |
|                     | new Value                                                                         | Text String, Number, or Boolean | New value data type is depending on the property type,               |
| <b>Return Value</b> | True if the property is found and the new value is valid. Otherwise return False. |                                 |                                                                      |

|                       |                                                                                                                                                                                   |  |  |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | SetPropValue(propPath, newValue)                                                                                                                                                  |  |  |
| <b>Python Example</b> | <pre>oOptModule.SetPropValue("ParametricSetup1\Enabled", False) //disable ParametricSetup1<br/><br/>oOptModule.SetPropValue("OptimizationSetup1/Optimizer", "Quasi Newton")</pre> |  |  |

## SolveAllSetup

Solves all Optimetrics setups

|                   |                                                                                                         |         |                                                                                                                                                                                                                                                                             |
|-------------------|---------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | Right-click on <b>Optimetrics</b> in Project Manager and select <b>Analyze&gt;All</b> from context menu |         |                                                                                                                                                                                                                                                                             |
| <b>Parameters</b> | Name                                                                                                    | Type    | Description                                                                                                                                                                                                                                                                 |
|                   | isBlocking                                                                                              | Boolean | An optional arg that defaults to <code>true</code> . If it's <code>false</code> , the command immediately returns while the analysis or analyses run in the background. The status of the analyses can be checked with the <code>AreThereSimulationsRunning</code> command. |

|                     |      |
|---------------------|------|
| <b>Return Value</b> | None |
|---------------------|------|

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Python Syntax</b>  | SolveAllSetup()                      |
| <b>Python Example</b> | <code>oModule.SolveAllSetup()</code> |

## SolveSetup [Optimetrics]

Solves the specified Optimetrics setup.

|                     |                                                                                                |         |                                                                                                                                                                                                                                                                             |
|---------------------|------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click the setup in the project tree, and then click <b>Analyze</b> on the shortcut menu. |         |                                                                                                                                                                                                                                                                             |
| <b>Parameters</b>   | Name                                                                                           | Type    | Description                                                                                                                                                                                                                                                                 |
|                     | <SetupName>                                                                                    | String  | Name of the setup to be solved                                                                                                                                                                                                                                              |
|                     | isBlocking                                                                                     | Boolean | An optional arg that defaults to <code>true</code> . If it's <code>false</code> , the command immediately returns while the analysis or analyses run in the background. The status of the analyses can be checked with the <code>AreThereSimulationsRunning</code> command. |
| <b>Return Value</b> | None                                                                                           |         |                                                                                                                                                                                                                                                                             |

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| <b>Python Syntax</b>  | SolveSetup (<SetupName>)                               |
| <b>Python Example</b> | <code>oModule.SolveSetup ("OptimizationSetup1")</code> |



## ValidateSetup [Parametric]

Performs a validation of all design variations in a parametric setup.

For information on reviewing the output produced by this script command, see: [Validating a Parametric Setup](#)

|              |                                                                                                                                                                             |        |                               |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|
| UI Access    | Under <i>Optimetrics</i> in the Project Manager, right-click the <b>&lt;Parametric Setup Name&gt;</b> and then click <b>Validate Parametric Setup</b> on the shortcut menu. |        |                               |
| Parameters   | Name                                                                                                                                                                        | Type   | Description                   |
|              | <SetupName>                                                                                                                                                                 | String | Name of the parametric setup. |
| Return Value | None                                                                                                                                                                        |        |                               |

|                |                                                        |
|----------------|--------------------------------------------------------|
| Python Syntax  | ValidateSetup (<SetupName>)                            |
| Python Example | <code>oModule.ValidateSetup('ParametricSetup1')</code> |

## Parametric Script Commands

[EditSetup \[Parametric\]](#)

[ExportParametricSetupTable](#)

[GenerateVariationData \[Parametric\]](#)

[InsertSetup \[Parametric\]](#)

[ValidateSetup \[Parametric\]](#)

## EditSetup [Parametric]

Modifies an existing parametric setup

|                     |                                                                                                   |        |                                                                                      |
|---------------------|---------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click the setup in the project tree, and then click <b>Properties</b> on the shortcut menu. |        |                                                                                      |
| <b>Parameters</b>   | Name                                                                                              | Type   | Description                                                                          |
|                     | <SetupName>                                                                                       | String | Name of the Setup                                                                    |
|                     | <ParametricParams>                                                                                | List   | List that defines the parameters of the parametric setup; examples are listed below. |
| <b>Return Value</b> | None                                                                                              |        |                                                                                      |

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Python Syntax</b>  | EditSetup (<SetupName>, <ParametricParams>)  |
| <b>Python Example</b> | See <a href="#">EditSetup [Optimization]</a> |

## ExportParametricSetupTable

Exports the parametric setup table as a CSV file.

|                     |                                                                               |        |                            |
|---------------------|-------------------------------------------------------------------------------|--------|----------------------------|
| <b>UI Access</b>    | Double-click parametric setup. Select <b>Table</b> tab. Click <b>Export</b> . |        |                            |
| <b>Parameters</b>   | Name                                                                          | Type   | Description                |
|                     | <SetupName>                                                                   | String | Name of the setup.         |
|                     | <filePath>                                                                    | String | Full path for file export. |
| <b>Return Value</b> | None                                                                          |        |                            |

|                |                                                                                               |
|----------------|-----------------------------------------------------------------------------------------------|
| Python Syntax  | ExportParametricSetupTable (<SetupName>, <filePath>)                                          |
| Python Example | oModule.ExportParametricSetupTable('ParametricSetup1', 'E:/Files/ParametricSetup1_Table.csv') |

GenerateVariationData [Parametric]

Generate variation data before parametric solve for CAD integrated project

Command: Right click on the parametric setup in the project tree and choose "Generate Variation Data"

Syntax: GenerateVariationData <SetupName>

Return Value: None

Parameters: <SetupName>

Name of the setup.

InsertSetup [Parametric]

Inserts a new parametric setup.

|            |                                                                                                                               |       |                                                                                                                                |
|------------|-------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | Right-click the <b>Optimetrics</b> folder in the project tree, and then click <b>Add&gt; Parametric</b> on the shortcut menu. |       |                                                                                                                                |
| Parameters | Name                                                                                                                          | Type  | Description                                                                                                                    |
|            | <Parametric Params>                                                                                                           | Array | Array("NAME:<SetupName>", "SaveFields:=", <SaveField>, <StartingPoint>, "Sim. Setups:=", <SimSetups>, <SweepDefs>, <SweepOps>, |

|                     |             |                     |                                                                                                                                                                                                                                                                  |
|---------------------|-------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |             |                     | Array("NAME:Goals", Array("NAME:Goal",<br><OptiGoalSpec>), ... Array("NAME:Goal",<br><OptiGoalSpec>))                                                                                                                                                            |
|                     | <SetupName> | String              | Name of the parametric setup.                                                                                                                                                                                                                                    |
|                     | <SimSetups> | Array of<br>Strings | An array of Twin Builder solution setup names.                                                                                                                                                                                                                   |
|                     | <SweepDefs> | Array               | Array("NAME:Sweeps",<br>Array("NAME:SweepDefinition", "Variable:=",<br><VarName>, "Data:=", <SweepData>,<br>"Synchronize:=", <SyncNum>), ...<br>Array("NAME:SweepDefinition", "Variable:=",<br><VarName>, "Data:=", <SweepData>,<br>"Synchronize:=", <SyncNum>)) |
|                     | <SweepData> | String              | "<SweepType>, <StartV>, <StopV>, <StepV>"                                                                                                                                                                                                                        |
|                     | <SweepType> | String              | The type of sweep data.                                                                                                                                                                                                                                          |
|                     | <SyncNum>   | Integer             | <i>SweepData</i> s with the same value are synchronized.                                                                                                                                                                                                         |
|                     | <SweepOps>  |                     | Array("NAME:Sweep Operations", "<OpType>:=",<br>Array(<VarValue>, ..., <VarValue>), ...<br><OpType>:=, Array(<VarValue>, ..., <VarValue>))                                                                                                                       |
|                     | <OpType>    | String              | The sweep operation type.                                                                                                                                                                                                                                        |
| <b>Return Value</b> | None        |                     |                                                                                                                                                                                                                                                                  |

|                      |                                                    |
|----------------------|----------------------------------------------------|
| <b>Python Syntax</b> | InsertSetup ("OptiParametric", <ParametricParams>) |
|----------------------|----------------------------------------------------|

**Python Example**

```
oModule.InsertSetup("OptiParametric",
[
    "NAME:ParametricSetup1",
    "SaveFields:=", true,
    [
        "NAME:StartingPoint"
    ],
    "Sim. Setups:=", ["Setup1"],
    [
        "NAME:Sweeps",
        [
            "NAME:SweepDefinition",
            "Variable:=", "$width",
            "Data:=", "LIN 12mm 17mm 2.5mm",
            "OffsetF1:=", false,
            "Synchronize:=", 0
        ],
        [
            "NAME:SweepDefinition",
            "Variable:=", "$length",
```

```
"Data:=", "LIN 8mm 12mm 2mm",  
"OffsetF1:=", false,  
"Synchronize:=", 0  
]  
],  
[  
  "NAME:Sweep Operations"  
],  
[  
  "NAME:Goals",  
  [  
    "NAME:Goal",  
    "Solution:=", "Setup1 : LastAdaptive",  
    "Calculation:=", "returnloss",  
    "Context:=", ""  
    [  
      "NAME:Ranges",  
      "Range:=",  
      [  
        "Var:=", "Freq", "Type:=", "s"  
        "Start:=", "8GHz",
```

```
        "Stop:=", "8GHz"
    ]
],
[
    "NAME:Goal",
    "Solution:=", "Setup1 : LastAdaptive"
    "Calculation:=", "reflect",
    "Context:=", "",
    [
        "NAME:Ranges",
        "Range:=",
        [
            "Var:=", "Freq",
            "Type:=", "s",
            "Start:=", "8GHz",
            "Stop:=", "8GHz"
        ]
    ]
]
]
```

|  |     |
|--|-----|
|  | ]   |
|  | ] ) |

## ValidateSetup [Parametric]

Performs a validation of all design variations in a parametric setup.

For information on reviewing the output produced by this script command, see: [Validating a Parametric Setup](#)

|                     |                                                                                                                                                                             |        |                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|
| <b>UI Access</b>    | Under <i>Optimetrics</i> in the Project Manager, right-click the <b>&lt;Parametric Setup Name&gt;</b> and then click <b>Validate Parametric Setup</b> on the shortcut menu. |        |                               |
| <b>Parameters</b>   | Name                                                                                                                                                                        | Type   | Description                   |
|                     | <SetupName>                                                                                                                                                                 | String | Name of the parametric setup. |
| <b>Return Value</b> | None                                                                                                                                                                        |        |                               |

|                       |                                            |
|-----------------------|--------------------------------------------|
| <b>Python Syntax</b>  | ValidateSetup (<SetupName>)                |
| <b>Python Example</b> | oModule.ValidateSetup ('ParametricSetup1') |

## Optimization Script Commands

[EditSetup \[Optimization\]](#)

[InsertSetup \[Optimization\]](#)

### EditSetup [Optimization]

Modifies an existing optimization setup.



|              |                                                                                                            |        |                                                              |
|--------------|------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------|
| UI Access    | Right-click the setup in the Project Manager tree, and then click <b>Properties</b> from the shortcut menu |        |                                                              |
| Parameters   | Name                                                                                                       | Type   | Description                                                  |
|              | <SetupName>                                                                                                | String | Name of the Setup                                            |
|              | <OptimizationParams>                                                                                       | List   | Parameters that define the setup; examples are listed below. |
| Return Value | None                                                                                                       |        |                                                              |

|                |                                                                                                                                                                                                                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | EditSetup (<SetupName>, <OptimizationParams>)                                                                                                                                                                                                                                                                      |
| Python Example | <pre>oModule.EditSetup("OptimizationSetup1", [     "NAME:OptimizationSetup1",     "UseFastCalculationUpdateAlgo:=", False,     "FastCalcOptCtrledByUser:=", False,     "IsEnabled:=", True,     "SaveSolutions:=", False,     [         "NAME:StartingPoint"     ],     "Optimizer:=", "Quasi Newton",     [</pre> |

```
"NAME:AnalysisStopOptions",  
  "StopForNumIteration:=", True,  
  "StopForElapsTime:=", False,  
  "StopForSlowImprovement:=", False,  
  "StopForGrdTolerance:=", False,  
  "MaxNumIteration:=", 1000,  
  "MaxSolTimeInSec:=", 3600,  
  "RelGradientTolerance:=", 0,  
  "MinNumIteration:=", 10  
],  
"CostFuncNormType:=", "L2",  
"PriorPSetup:=", "",  
"PreSolvePSetup:=", True,  
[  
  "NAME:Variables"  
],  
[  
  "NAME:LCS"  
],  
[  
  "NAME:Goals",
```

```
[
  "NAME:Goal",
  "ReportType:=", "Standard",
  "Solution:=", "TR",
  [
    "NAME:SimValueContext",
    "SimValueContext:=", [1,0,2,0,False,False,-1,1,0,1,1,"",0,0
  ]
],
"Calculation:=", "acosh(Time)",
"Name:=", "Time",
[
  "NAME:Ranges",
  "Range:=", ["Var:=", "Time","Type:=", "a"]
],
"Condition:=", "==",
[
  "NAME:GoalValue",
  "GoalValueType:=", "Independent",
```

```

        "Format:=", "Real/Imag",
        "bG:=", ["v:=", "[1;]"]
    ],
    "Weight:=", "[1;]"
],
"Acceptable_Cost:=", 0,
"Noise:=", 0.0001,
"UpdateDesign:=", False,
"UpdateIteration:=", 5,
"KeepReportAxis:=", True,
"UpdateDesignWhenDone:=", True
] )

```

## InsertSetup [Optimization]

*Use:* Inserts a new optimization setup.

| UI Access         | Right-click the <b>Optimetrics</b> folder in the project tree, and then click <b>Add &gt; Optimization</b> on the shortcut menu. |       |                                                                                                           |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                                                             | Type  | Description                                                                                               |
|                   | <OptimizationParams>                                                                                                             | Array | Array("NAME:<SetupName>", "SaveFields:=",<br><SaveField>, <StartingPoint>, "Optimizer:=",<br><Optimizer>, |

|                        |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        |          | <pre> "MaxIterations:=", &lt;MaxIter&gt;, "PriorPSetup:=", &lt;PriorSetup&gt;, "PreSolvePSetup:=", &lt;Preceed&gt;, &lt;OptimizationVars&gt;, &lt;Constraint&gt;, Array("NAME:Goals", Array("NAME:Goal", &lt;OptiGoalSpec&gt;, &lt;OptimizationGoalSpec&gt;)), ... Array("NAME:Goal", &lt;OptiGoalSpec&gt;, &lt;OptimizationGoalSpec&gt;)), "Acceptable_Cost:=", &lt;AcceptableCost&gt;, "Noise:=", &lt;Noise&gt;, "UpdateDesignWhenDone:=", &lt;UpdateDesign&gt; </pre> |
| <OptimizationVars>     | Array    | <pre> Array("NAME:Variables", "VarName:=", Array("i:=", &lt;IncludeVar&gt;, "Min:=", &lt;MinV&gt;, "Max:=", &lt;MaxV&gt;, "MinStep:=", &lt;MinStepV&gt;, "MaxStep:=", &lt;MaxStepV&gt;), ..... "VarName:=", Array("i:=", &lt;IncludeVar&gt;, "Min:=", &lt;MinV&gt;, "Max:=", &lt;MaxV&gt;, "MinStep:=", &lt;MinStepV&gt;, "MaxStep:=", &lt;MaxStepV&gt;)) </pre>                                                                                                         |
| <MinStepV>             | VarValue | The minimum step of the variable.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <MaxStepV>             | VarValue | The maximum step of the variable.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <AcceptableCost>       | Double   | The acceptable cost value for the optimizer to stop.                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <Noise>                | Double   | The noise of the design.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <UpdateDesign>         | Boolean  | Specifies whether or not to apply the optimal variation to the design after the optimization is done.                                                                                                                                                                                                                                                                                                                                                                    |
| <OptimizationGoalSpec> | Array    | <pre> "Condition:=", &lt;OptimizationCond&gt;, Array("NAME:GoalValue", "GoalValeType:=", </pre>                                                                                                                                                                                                                                                                                                                                                                          |

|                     |                    |        |                                                                                                                 |
|---------------------|--------------------|--------|-----------------------------------------------------------------------------------------------------------------|
|                     |                    |        | <GoalValueType>,<br>"Format:=", <GoalValueFormat>, "bG:=",<br>Array("v:=", <GoalValue>)), "Weight:=", <Weight>) |
|                     | <OptimizationCond> | String | Either "<=", "==", or ">="                                                                                      |
|                     | <GoalValueType>    | String | Either "Independent" or "Dependent"                                                                             |
|                     | <GoalValueFormat>  | String | Either "Real/Imag" or "Mag/Ang".                                                                                |
|                     | <GoalValue>        | String | Value in string. Value can be a real number, complex number, or expression.                                     |
| <b>Return Value</b> | None               |        |                                                                                                                 |

<MinStepV>

Type : <VarValue>

The minimum step of the variable.

<MaxStepV>

Type: <VarValue>

The maximum step of the variable.

<AcceptableCost>

Type: <double>

The acceptable cost value for the optimizer to stop.

<Noise>

Type: <double>

The noise of the design.

<UpdateDesign>

Type: <bool>

Specifies whether or not to apply the optimal variation to the design after the optimization is done.

<OptimizationGoalSpec>

```
"Condition:=", <OptimizationCond>,
Array("NAME:GoalValue", "GoalValueType:=",
<GoalValueType>,
"Format:=", <GoalValueFormat>, "bG:=",
Array("v:=", <GoalValue>)), "Weight:=", <Weight>)
```

<OptimizationCond>

Type: <string>

Either "<=", "==", or ">="

<GoalValueType>

Type: <string>

Either "Independent" or "Dependent"

<GoalValueFormat>

Type: <string>

Either "Real/Imag" or "Mag/Ang".

<GoalValue>

Type: <string>

Value in string. Value can be a real number, complex number, or expression.

| Python Syntax         | InsertSetup ("OptiOptimization", <OptimizationParams>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oModule.InsertSetup("OptiOptimization", ["NAME:OptimizationSetup1", "SaveFields:=", false, _ ["NAME:StartingPoint", "\$length:=", "8mm", "\$width:=", "14.5mm"], "Optimizer:=", "Quasi Newton", "MaxIterations:=", 100, "PriorPSetup:=", "ParametricSetup1", "PreSolvePSetup:=", true, ["NAME:Variables", "\$length:=", ["i:=", true, "Min:=", "6mm", "Max:=", "18mm", "MinStep:=", "0.001mm", "MaxStep:=", "1.2mm"], "\$width:=", ["i:=", true, "Min:=", "6.5mm", "Max:=", "19.5mm", "MinStep:=", "0.001mm", "MaxStep:=", "1.3mm"]], ["NAME:LCS"], </pre> |



```
["NAME:Goals",  
["NAME:Goal",  
"Solution:=", "Setup1 : LastAdaptive",  
"Calculation:=", "reflect",  
"Context:=", "",  
["NAME:Ranges",  
"Range:=", ["Var:=", "Freq",  
"Type:=", "s",  
"Start:=", "8GHz", "Stop:=", "8GHz"]],  
"Condition:=", "<=",  
["NAME:GoalValue",  
"GoalValueType:=", "Independent",  
"Format:=", "Real/Imag",  
"bG:=", ["v:=", "[0.0001]"]],  
"Weight:=", "[1]"]],  
"Acceptable_Cost:=", 0.0002,  
"Noise:=", 0.0001,  
"UpdateDesign:=", true,  
"UpdateIteration:=", 5,
```

|  |                                                                        |
|--|------------------------------------------------------------------------|
|  | <pre>"KeepReportAxis:=", true, "UpdateDesignWhenDone:=", true ])</pre> |
|--|------------------------------------------------------------------------|

## Sensitivity Script Commands

[EditSetup \[Sensitivity\]](#)

[InsertSetup \[Sensitivity\]](#)

### EditSetup [Sensitivity]

Modifies an existing sensitivity setup.

|                     |                                                                                           |             |                    |
|---------------------|-------------------------------------------------------------------------------------------|-------------|--------------------|
| <b>UI Access</b>    | Right-click the setup in the project tree, and then click Properties on the shortcut menu |             |                    |
| <b>Parameters</b>   | <b>Name</b>                                                                               | <b>Type</b> | <b>Description</b> |
|                     | <SetupName>                                                                               | String      | Name of the Setup  |
|                     |                                                                                           |             |                    |
| <b>Return Value</b> | None                                                                                      |             |                    |

|                       |                                                                                                                           |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | EditSetup (<SetupName>, <SensitivityParams>)                                                                              |
| <b>Python Example</b> | <pre>oModule.EditSetup ("OptimizationSetup1", [ "NAME:OptimizationSetup1", "UseFastCalculationUpdateAlgo:=", False,</pre> |

```
"FastCalcOptCtrledByUser:=", False,  
"IsEnabled:=", True,  
"SaveSolutions:=", False,  
[  
"NAME:StartingPoint"  
],  
"Optimizer:=", "Quasi Newton",  
[  
"NAME:AnalysisStopOptions",  
"StopForNumIteration:=", True,  
"StopForElapsTime:=", False,  
"StopForSlowImprovement:=", False,  
"StopForGrdTolerance:="          , False,  
"MaxNumIteration:=", 1001,  
"MaxSolTimeInSec:=", 3600,  
"RelGradientTolerance:=", 0,  
"MinNumIteration:=", 10  
],  
"CostFuncNormType:=", "L2",
```

```
"PriorPSetup:=", "",
"PreSolvePSetup:=", True,
[
"NAME:Variables"
],
[
"NAME:LCS"
],
[
"NAME:Goals",
[
"NAME:Goal",
"ReportType:=", "Standard",
"Solution:=", "TR3",
[
"NAME:SimValueContext",
"SimValueContext:=", [1,0,2,0,False,False,-1,1,0,1,1,"",0,0]
],
"Calculation:=", "mag(DIFF1.VAL)",
"Name:=", "DIFF1.VAL",
```

```
[  
  "NAME:Ranges",  
  "Range:=", [  
    "Var:=", "Time","Type:=", "a"]  
  ],  
  "Condition:=", "==",  
  [  
    "NAME:GoalValue",  
    "GoalValueType:=", "Independent",  
    "Format:=", "Real/Imag",  
    "bG:=", ["v:=", "[1;]"]  
  ],  
  "Weight:=", "[1;]"  
]  
],  
"Acceptable_Cost:=", 0,  
"Noise:=", 0.0001,  
"UpdateDesign:=", False,  
"UpdateIteration:=", 5,  
"KeepReportAxis:=", True,
```

```
"UpdateDesignWhenDone:=", True  
])
```

## Statistical Script Commands

[EditSetup \[Statistical\]](#)

[InsertSetup Statistical](#)

### EditSetup [Statistical]

Modifies an existing statistical setup.

|                     |                                                                                              |             |                    |
|---------------------|----------------------------------------------------------------------------------------------|-------------|--------------------|
| <b>UI Access</b>    | Right-click the setup in the project tree, and click <b>Properties</b> on the shortcut menu. |             |                    |
| <b>Parameters</b>   | <b>Name</b>                                                                                  | <b>Type</b> | <b>Description</b> |
|                     | <SetupName>                                                                                  | String      | Name of the Setup  |
|                     |                                                                                              |             |                    |
| <b>Return Value</b> | None                                                                                         |             |                    |

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Python Syntax</b>  | EditSetup (<SetupName>, <StatisticalParams>) |
| <b>Python Example</b> | See EditSetup [Optimization]                 |

### InsertSetup [Statistical]

Inserts a new statistical setup.

|                  |                                                                                                                    |
|------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b> | Right-click <b>Optimetrics</b> in the project tree, and then click <b>Add&gt;Statistical</b> on the shortcut menu. |
|------------------|--------------------------------------------------------------------------------------------------------------------|

| <b>Parameters</b> | Name                | Type     | Description                                                                                                                                                                                                                                                                                                                                              |
|-------------------|---------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <StatisticalParams> | Array    | Array("NAME:<SetupName>", "SaveFields:=",<br><SaveField>, <StartingPoint>, "MaxIterations:=",<br><MaxIter>, "PriorPSetup:=", <PriorSetup>,<br>"PreSolvePSetup:=", <Preceed>, <StatisticalVars>,<br>Array("NAME:Goals", Array("NAME:Goal",<br><OptiGoalSpec>), ..., Array("NAME:Goal",<br><OptiGoalSpec>)))                                               |
|                   | <StatisticalVars>   | Array    | Array("NAME:Variables",<br>"VarName:=", Array("i:=", <IncludeVar>, "Dist:=",<br><DistType>, "Tol:=", <Tolerance>,<br>"StdD:=", <StdD>, "Min:=", <MinCutoff>, "Max:=",<br><MaxCutoff>, ...<br>"VarName:=", Array("i:=", <IncludeVar>, "Dist:=",<br><DistType>, "Tol:=", <Tolerance>, "StdD:=",<br><StdD>, "Min:=", <MinCutoff>, "Max:=",<br><MaxCutoff>)) |
|                   | <DistType>          | String   | Distrbution can be "Gaussian" or "Uniform".                                                                                                                                                                                                                                                                                                              |
|                   | <Tolerance>         | VarValue | The tolerance for the variable when distribution is Uniform                                                                                                                                                                                                                                                                                              |
|                   | <StdD>              | VarValue | The standard deviation for the variable when distribution is Gaussian.                                                                                                                                                                                                                                                                                   |
|                   | <MinCutoff>         | Double   | The minimum cut-off for the variable when distribution is Gaussian.                                                                                                                                                                                                                                                                                      |
|                   | <MaxCutoff>         | Double   | The maximum cut-off for the variable when distribution is Gaussian.                                                                                                                                                                                                                                                                                      |

|                     |      |
|---------------------|------|
| <b>Return Value</b> | None |
|---------------------|------|

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <b>InsertSetup ("OptiStatistical", &lt;StatisticalParams&gt;)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Python Example</b> | <pre>oModule.InsertSetup(<br/>    "OptiStatistical", _<br/>    ["NAME:StatisticalSetup1", _<br/>    "SaveFields:=", true, _<br/>    ["NAME:StartingPoint"], _<br/>    "MaxIterations:=", 50, _<br/>    "PriorPSetup:=", "", _<br/>    ["NAME:Variables"], _<br/>    ["NAME:Goals", _<br/>    ["NAME:Goal", _<br/>    "Solution:=", "Setup1 : LastAdaptive", _<br/>    "Calculation:=", "returnloss", _<br/>    "Context:=", "", _<br/>    ["NAME:Ranges", _<br/>    "Range:=", ["Var:=", "Freq", _<br/>    "Type:=", "s", _<br/>    "Start:=", "8GHz", "Stop:=", "8GHz"]]], _</pre> |



|  |                                                                                                                                                                                                                          |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>["NAME:Goal",_ "Solution:=", "Setup1 : LastAdaptive",_ "Calculation:=", "reflect",_ "Context:=", "", _ ["NAME:Ranges",_ "Range:=", ["Var:=", "Freq", "Type:=",_ "s", "Start:=", "8GHz", "Stop:=", "8GHz"]]]])</pre> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**For Q3D Extractor and Circuit the command details are as follows:**

Inserts a new statistical setup.

**Command:** Right-click **Optimetrics** in the project tree, and then click **Add>Statistical** on the shortcut menu.

**Syntax:** InsertSetup "OptiStatistical", <StatisticalParams>

**Return Value:** None

**Parameters:** <StatisticalParams>

```
Array("NAME:<SetupName>", "SaveFields:=",
<SaveField>, <StartingPoint>, "MaxIterations:=",
<MaxIter>, "PriorPSetup:=", <PriorSetup>,
"PreSolvePSetup:=", <Preceed>, <StatisticalVars>,
Array("NAME:Goals", Array("NAME:Goal",
<OptiGoalSpec>), ..., Array("NAME:Goal",
```

```
<OptiGoalSpec>))),  
<StatisticalVars>  
  Array("NAME:Variables",  
    "VarName:=", Array("i:=", <IncludeVar>, "Dist:=",  
      <DistType>, "Tol:=", <Tolerance>,  
      "StdD:=", <StdD>, "Min:=", <MinCutoff>, "Max:=",  
      <MaxCutoff>, ...  
    "VarName:=", Array("i:=", <IncludeVar>, "Dist:=",  
      <DistType>, "Tol:=", <Tolerance>, "StdD:=",  
      <StdD>, "Min:=", <MinCutoff>, "Max:=",  
      <MaxCutoff>))
```

**Parameters:**

<DistType>

Type : <string>

Distribution can be "Gaussian" or "Uniform".

<Tolerance>

Type: <VarValue>

The tolerance for the variable when distribution is Uniform.

<StdD>

Type: <VarValue>

The standard deviation for the variable when distribution is Gaussian.

<MinCutoff>

Type: <double>

The minimum cut-off for the variable when distribution is Gaussian.

<MaxCutoff>

Type: <double>

The maximum cut-off for the variable when distribution is Gaussian.

## 12 - Solutions Module Script Commands

Solutions commands should be executed by the "Solutions" module.

```
Set oModule = oDesign.GetModule("Solutions")
```

```
oModule.CommandName <args>
```

[DeleteSolutionVariation](#)

[EditSources \(Layout Editor\)](#)

[ExportEigenmodes](#)

[ExportNetworkData](#)

[FFTONReport](#)

[GetAvailableVariations](#)

[SetQ3DSATNetChanges \(Layout Editor\)](#)

### DeleteImportData

Deletes imported solution or table data in HFSS. Not in HFSS-IE

|                     |                                                                                              |             |                                                                                  |
|---------------------|----------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click on <b>Results &gt; Import Solutions</b> , click <b>Delete Selections</b> button. |             |                                                                                  |
| <b>Parameters</b>   | <b>Name</b>                                                                                  | <b>Type</b> | <b>Description</b>                                                               |
|                     | <i>&lt;ImportSpecArray&gt;</i>                                                               | Array       | Array of import solutions.<br><br>Array(<ImportName:SolnName OR TableName>, ...) |
| <b>Return Value</b> | None.                                                                                        |             |                                                                                  |

|                       |                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteImportData(<ImportSpecArray>)                                                    |
| <b>Python Example</b> | <pre>oModule.DeleteImportData([     "Import1:Adaptive_1", "Import2:DataTable" ])</pre> |

## DeleteSolutionVariation

Deletes all solution data for specific solutions and design variations. This is obsolete and is supported only for backward compatibility. You should use DeleteFullVariation.

|                     |                                                                                                               |             |                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click on <b>Results</b> , select <b>Browse Solutions...</b> , click <b>Delete</b> button in the dialog. |             |                                                                                   |
| <b>Parameters</b>   | <b>Name</b>                                                                                                   | <b>Type</b> | <b>Description</b>                                                                |
|                     | <SoluParams>                                                                                                  | Array       | Structured array.<br><br>Array(<DataSpecifierArray>, ...)                         |
|                     | <DataSpecifierArray>                                                                                          | Array       | Structured array.<br><br>Array(<DesignVariationKey>, <SetupName>, <SolutionName>) |
| <b>Return Value</b> | None.                                                                                                         |             |                                                                                   |

|                       |                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteSolutionVariation(<SoluParams>)                                                     |
| <b>Python Example</b> | <pre>oModule.DeleteSolutionVariation([     ["width='2in'", "Setup1", "Adaptive_1"],</pre> |

```
[ "width='2in'", "Setup1", "Sweep1" ]
]
```

## EditQ3DSources (Layout Editor)

Edits the parameters of the Q3D simulation's source excitations.

| UI Access         | From the <b>Project Manager</b> window, right-click a Q3D setup and select <b>Q3D Edit Sources</b> . |        |                                                                                                                                                                                                                                             |
|-------------------|------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                                 | Type   | Description                                                                                                                                                                                                                                 |
|                   | <Contents>                                                                                           | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:EditSourcesCmd&gt;</li> <li>• &lt;Q3D Setup Name&gt;</li> <li>• &lt;N Sources Value Type&gt;</li> <li>• &lt;Sources&gt;</li> </ul> |
|                   | <NAME:EditSourcesCmd>                                                                                | String | Identifies the contents of the array (i.e., "EditSourcesCmd").                                                                                                                                                                              |
|                   | <Q3D Setup Name>                                                                                     | String | Name of the new solver setup (e.g., Q3D1).                                                                                                                                                                                                  |
|                   | <N Sources Value Type>                                                                               | String | Type of the source value, where <i>N</i> is any of the following:<br><b>A</b> — current.<br><b>V</b> — voltage.<br><b>N</b> — not defined.                                                                                                  |
|                   | <DC Loss Type>                                                                                       | String | Identifies the DC volume loss calculation assumption.<br><br>String "True DC Loss" or "DC Loss Low Frequency Sinusoidals"                                                                                                                   |
|                   | <Sources>                                                                                            | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:Sources&gt;</li> <li>• &lt;IndividualSource&gt;</li> </ul>                                                                         |
|                   | <NAME:Sources>                                                                                       | String | Identifies the contents of the following arrays (i.e., "Sources").                                                                                                                                                                          |

|              |                    |         |                                                                                                                                                                                                                                |
|--------------|--------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <IndividualSource> | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"><li>• &lt;NAME:N Sources&gt;</li><li>• &lt;Entry&gt;</li></ul>                                                                        |
|              | <NAME:N Sources>   | String  | Identifies the contents of the array (e.g., "AC Sources"), where <i>N</i> is <b>AC</b> , <b>DC</b> , or <b>CG</b> .                                                                                                            |
|              | <Entry>            | Array   | Structured array containing some of these parameters in order: <ul style="list-style-type: none"><li>• &lt;ID&gt;</li><li>• &lt;Name&gt;</li><li>• &lt;Value&gt;</li><li>• &lt;Magnitude&gt;</li><li>• &lt;Phase&gt;</li></ul> |
|              | <ID>               | Integer | Assigned ID number of the excitation (e.g., 372).                                                                                                                                                                              |
|              | <Name>             | String  | Name of the excitation (e.g., Port1).                                                                                                                                                                                          |
|              | <Value>            | String  | Value of the excitation (e.g., 0A).                                                                                                                                                                                            |
|              | <Magnitude>        | String  | Magnitude value of the excitation (e.g., 0V).                                                                                                                                                                                  |
|              | <Phase>            | String  | Phase value of the excitation (e.g., 0deg).                                                                                                                                                                                    |
|              |                    |         |                                                                                                                                                                                                                                |
| Return Value | None.              |         |                                                                                                                                                                                                                                |

|                |                                                                                        |
|----------------|----------------------------------------------------------------------------------------|
| Python Syntax  | EditQ3DSources([<Contents>])                                                           |
| Python Example | <pre>oModule.EditQ3DSources (<br/>[<br/>    [<br/>        "NAME:EditSourcesCmd",</pre> |

```

"Q3D Setup Name:=" , "Q3D1",
"AC Sources Value Type:=", "A",
"CG Sources Value Type:=", "N",
"DC Sources Value Type:=", "A",
"DC Loss Type:=", "DC Loss Low Frequency Sinusoidals",
[
  "NAME:Sources",
  [
    "NAME:AC Sources",
    "Entry:=", ["ID:=", 372, "Name:=", "Port1", "Magnitude:=",
    "0A","Phase:=", "0deg"],
    "Entry:=", ["ID:=", 366, "Name:=", "Port2", "Magnitude:=",
    "1A","Phase:=", "30deg"],
    "Entry:=", ["ID:=", 370, "Name:=", "Port2#ref", "Value:=",
    "0V","Phase:=", "0deg"],
    "Entry:=", ["ID:=", 374, "Name:=", "Port3#ref", "Value:=",
    "0V","Phase:=", "0deg"]
  ],
  [
    "NAME:CG Sources",
    "Entry:=", ["ID:=", 0, "Name:=", "backplane", "Magnitude:=", "0V",
    "Phase:=", "0deg"],
    "Entry:=", ["ID:=", 2, "Name:=", "RXnet_pin1", "Magnitude:=", "1V",
    "Phase:=", "90deg"],
  ]
]

```



```
"Entry:=", ["ID:=", 1, "Name:=", "RXnet_pin3", "Magnitude:=", "0V",  
"Phase:=", "0deg"]  
  
],  
  
[  
  "NAME:DC Sources",  
  "Entry:=", ["ID:=", 372, "Name:=", "Port1", "Magnitude:=", "0A",  
"Phase:=", "0deg"],  
  "Entry:=", ["ID:=", 366, "Name:=", "Port2", "Magnitude:=", "1A",  
"Phase:=", "0deg"],  
  "Entry:=", ["ID:=", 370, "Name:=", "Port2#ref", "Magnitude:=", "0A",  
"Phase:=", "0deg"],  
  "Entry:=", ["ID:=", 374, "Name:=", "Port3#ref", "Magnitude:=",  
"0A", "Phase:=", "0deg"]  
]  
]  
])
```

## EditSources (Layout Editor)

Indicates which source excitations should be used for fields post-processing.

| UI Access         | From the <b>Project Manager</b> window, right-click a Q3D setup and select <b>Q3D Net Settings/Q3D Edit Sources</b> . |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------|-----------------------------------------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                                                  | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                   | <acData>                                                                                                              | Array | <p>Structured array that corresponds to the <b>AC RL</b> tab in the UI. Within this array, each sub-array corresponds to columns in the UI. The <b>Name</b> column is represented by &lt;sourceNames&gt;, and &lt;sourceValues&gt; assigns the <b>Value</b> and <b>Unit</b> to those sources, in the same order.</p> <pre>Array("NAME:AC",       "Value Type:=" , &lt;string "V" for Voltage or "A" for Current&gt;,       &lt;sourceNames array&gt;, &lt;magnitudeArray&gt;     )</pre>                                                                       |
|                   | <capData>                                                                                                             | Array | <p>Structured array that corresponds to the <b>CG</b> tab in the UI. Within this array, each sub-array corresponds to columns in the UI. The <b>Name</b> column is represented by &lt;sourceNames&gt;. The first &lt;sourceValues&gt; array assigns the <b>Magnitude</b> and its <b>Unit</b>, while the second &lt;sourceValues&gt; array assigns the <b>Phase</b> and its <b>Unit</b>.</p> <pre>Array("NAME:Cap",       "Value Type:=" , &lt;string "N" for null&gt;,       &lt;sourceNames array&gt;, &lt;magnitudeArray&gt;, &lt;phaseArray&gt;     )</pre> |
|                   | <dcData>                                                                                                              | Array | <p>Structured array that corresponds to the <b>DC RL</b> tab in the UI. Within this array, each sub-array corresponds to columns in the UI. The <b>Name</b> column is represented by &lt;sourceNames&gt;, and &lt;sourceValues&gt; assigns the <b>Value</b> and <b>Unit</b> to those sources, in the same order.</p> <pre>Array("NAME:DC",       "Value Type:=" , &lt;string "V" for Voltage or "A" for Current&gt;,       &lt;sourceNames array&gt;, &lt;magnitudeArray&gt;, &lt;phaseArray&gt;     )</pre>                                                   |

|                     |                                     |       |                                                                                                                                                                                                                                                                     |
|---------------------|-------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                     |       | <pre>&lt;sourceNames array&gt;, &lt;magnitudeArray&gt; )</pre>                                                                                                                                                                                                      |
|                     | <code>&lt;sourceNames&gt;</code>    | Array | Structured array.<br><pre>Array("NAME:Source Names",     &lt;string source name&gt;,     &lt;string source name&gt;, ... )</pre>                                                                                                                                    |
|                     | <code>&lt;magnitudeArray&gt;</code> | Array | Structured array containing magnitude values in the same order as the sources in <code>&lt;sourceNames&gt;</code> .<br><pre>Array("NAME:Source Magnitudes",     &lt;string containing value and unit&gt;,     &lt;string containing value and unit&gt;, ... )</pre> |
|                     | <code>&lt;phaseArray&gt;</code>     | Array | Structured array containing phase values in the same order as the sources in <code>&lt;sourceNames&gt;</code> .<br><pre>Array("NAME:Source Phases",     &lt;string containing value and unit&gt;,     &lt;string containing value and unit&gt;, ... )</pre>         |
| <b>Return Value</b> | None.                               |       |                                                                                                                                                                                                                                                                     |

| Python Syntax         | EditSources(<acData>, <capData>, <dcData>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oModule.EditSources(<br/>[<br/>  "NAME:AC",<br/>  "Value Type:=" , "A",<br/>    [<br/>      "NAME:Source Names",<br/>      "Port2",<br/>      "Port2#ref<br/>    ],<br/>    [<br/>      "NAME:Source Magnitudes",<br/>      "0A",<br/>      "1A"<br/>    ]<br/>  ],<br/>[<br/>  "NAME:Cap",<br/>  "Value Type:=" , "N",<br/>    [<br/>      "NAME:Source Names",<br/>      "Port1_SINK",<br/>      "Port1#ref_SINK"<br/>    ],<br/>    [<br/>      "NAME:Source Magnitudes",<br/>      "0V",<br/>      "1V"<br/>    ],<br/>    [<br/>      "NAME:Source Phases",<br/>      "0deg",</pre> |

|  |                                                                                                                                                                                                                                                                         |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>        "1deg"       ]     ],     [       "NAME:DC",       "Value Type:=" , "A",       [         "NAME:Source Names",         "Port2",         "Port2#ref"       ],       [         "NAME:Source Magnitudes",         "0A",         "1A"       ]     ]   ] )</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## ExportEigenmodes

Exports a tab delimited table of Eigenmodes in HFSS. Not in HFSS-IE.

| UI Access  | N/A               |        |                             |
|------------|-------------------|--------|-----------------------------|
| Parameters | Name              | Type   | Description                 |
|            | <SoluName>        | String | Name of specified solution. |
|            | <DesignVariation> | String | Design variation key.       |
|            | <FileName>        | String | Output file name with path. |

|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportEigenmodes(<SoluName>, <DesignVariation>, <FileName>)                                    |
| <b>Python Example</b> | <pre>oModule.ExportEigenmodes ( "Setup1 : LastAdaptive", "", "C:\mydir\myeigenmode.eig")</pre> |

## ExportForHSpice

Exports matrix solution data to a file in a format suitable for HSpice analysis. Available only for Driven Terminal solution types with ports. Output in an appropriate format will be generated for each of the non-empty file names provided.

|                   |                       |         |                                                         |
|-------------------|-----------------------|---------|---------------------------------------------------------|
| <b>UI Access</b>  | N/A                   |         |                                                         |
| <b>Parameters</b> | Name                  | Type    | Description                                             |
|                   | <DesignVariation>     | String  | Design variation key.                                   |
|                   | <SoluSelections>      | Array   | Array of selected solutions.                            |
|                   | <SpiceType>           | Integer | 1 - HSpice.                                             |
|                   | <BandWidth>           | Integer | 0 - Low (narrow) band width.                            |
|                   | <FWSFile>             | String  | Full wave spice file name.                              |
|                   | <LumpedElementFile>   | String  | Lumped element file name.                               |
|                   | <PoleZeroSpiceFile>   | String  | Pole zero spice file name.                              |
|                   | <PoleZeroMatlabFile>  | String  | Pole zero Matlab file name.                             |
|                   | <PartialFractionFile> | String  | Partial fraction file name.                             |
|                   | <FittingError>        | Double  | The accuracy to use in fitting the pole zero model.     |
|                   | <MinimumOrder>        | Integer | Minimum number of poles in rational function expansion. |
|                   | <MaximumOrder>        | Integer | Maximum number of poles in rational function expansion. |

|                     |                                 |         |                                                |
|---------------------|---------------------------------|---------|------------------------------------------------|
|                     | <i>&lt;UseCommonGround&gt;</i>  | Integer | Optional. 1 to use common ground, 0 otherwise. |
|                     | <i>&lt;EnforcePassivity&gt;</i> | Integer | Optional. 1 to enforce passivity, 0 otherwise. |
| <b>Return Value</b> | None.                           |         |                                                |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | ExportForHSpice( <i>&lt;DesignVariation&gt;</i> , <i>&lt;SolnSelections&gt;</i> , <i>&lt;SpiceType&gt;</i> , <i>&lt;BandWidth&gt;</i> , <i>&lt;FWSFile&gt;</i> , <i>&lt;LumpedElementFile&gt;</i> , <i>&lt;PoleZeroSpiceFile&gt;</i> , <i>&lt;PoleZeroMatlabFile&gt;</i> , <i>&lt;PartialFractionFile&gt;</i> , <i>&lt;FittingError&gt;</i> , <i>&lt;MinimumOrder&gt;</i> , <i>&lt;MaximumOrder&gt;</i> , [Optional <i>&lt;UseCommonGround&gt;</i> ], [Optional <i>&lt;EnforcePassivity&gt;</i> ]) |  |  |
| <b>Python Example</b> | <pre>oModule.ExportForHSpice("width='2in'",     ["Setup1:Sweep1"], 1, 0,     "c:\mydir\Sweep1.fws", "", "", "", "",     .005, 20, 200)</pre>                                                                                                                                                                                                                                                                                                                                                       |  |  |

## ExportNetworkData

Exports matrix solution data to a file.

|                   |                                   |             |                                                                                                             |
|-------------------|-----------------------------------|-------------|-------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | N/A                               |             |                                                                                                             |
| <b>Parameters</b> | <b>Name</b>                       | <b>Type</b> | <b>Description</b>                                                                                          |
|                   | <i>&lt;DesignVariationKey&gt;</i> | String      | Design variation key. Pass empty string for the current nominal variation.                                  |
|                   | <i>&lt;SolnSelectionArray&gt;</i> | Array       | Array of selected solutions.<br><br>Array( <i>&lt;SolnSelector&gt;</i> , <i>&lt;SolnSelector&gt;</i> , ...) |

If more than one array entry, this indicates a combined Interpolating

|                 |         |                                                                                                                                                                                                                             |
|-----------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |         | sweep.                                                                                                                                                                                                                      |
| <SolnSelector>  | String  | Solution setup name and solution name, separated by a colon.                                                                                                                                                                |
| <FileFormat>    | Integer | File format value.<br><br>2 : Tab delimited spreadsheet format (.tab)<br>3 : Touchstone (.sNp)<br>4 : CitiFile (.cit)<br>7 : Matlab (.m)<br>8 : Terminal Z0 spreadsheet                                                     |
| <OutFile>       | String  | Full path to the file to write out.                                                                                                                                                                                         |
| <FreqsArray>    | Array   | The frequencies to export. The <FreqsArray> argument contains a vector (e.g. "1GHz", "2GHz", ...) to use, or "all". To export all frequencies, use Array("all"). If no frequencies are specified, all frequencies are used. |
| <DoRenorm>      | Boolean | For Touchstone format only. Specifies whether to renormalize the data before export.                                                                                                                                        |
| <RenormImped>   | Double  | For Touchstone format only. Real impedance value in ohms, for renormalization. Required in syntax, but ignored if DoRenorm is false.                                                                                        |
| <DataType>      | Array   | Optional. Type: "S", "Y", or "Z". The matrix to export.                                                                                                                                                                     |
| <pass>          | Integer | Optional. The pass to export. This is ignored if the sourceName is a frequency sweep. Leaving out this value or specifying -1 gets all passes.                                                                              |
| <ComplexFormat> | Integer | Optional. Type: "0", "1", or "2"<br><br>The format to use for the exported data.<br><br>0 = Magnitude/Phase.<br>1 = Real/Imaginary.<br>2 = db/Phase.                                                                        |



|                     |                        |         |                                                                                                |
|---------------------|------------------------|---------|------------------------------------------------------------------------------------------------|
|                     | <Precision>            | Integer | Optional. Touchstone number of digits precision. Default if not specified is 15.               |
|                     | <UseExportFreqs>       | Boolean | Specifies whether to use export frequencies.                                                   |
|                     | <IncludeGammaComments> | Boolean | Touchstone only. Specifies whether to include Gamma and Impedance comments.                    |
|                     | <SupportNonStdExport>  | Boolean | Specifies whether to support non-standard Touchstone extensions for mixed reference impedance. |
| <b>Return Value</b> | None.                  |         |                                                                                                |

|                       |                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportNetworkData(<DesignVariationKey>, <SolnSelectionArray>, <SolnSelector>, <FileFormat>, <OutFile>, <FreqsArray>, <DoRenorm>, <RenormImped>, [Optional <DataType>], [Optional <pass>], [Optional <ComplexFormat>], [Optional <Precision>], [Optional <UseExportFreqs>], [Optional <IncludeGammaComments>], [Optional <SupportNonStdExport>]) |
| <b>Python Example</b> | oModule.ExportNetworkData("", ["Setup1:Sweep1"], 3, "C://Documents/package_HFSSDesign1.s4p",<br>['all'], True, 50, "S", -1, 0, 15, True, True, True                                                                                                                                                                                             |

## ExportNMFData

Exports matrix solution data to a file in neutral model format. Available only for Driven solution types with ports. Variables can be held constant by setting their values in the variation field. For example: "length='50mm' width='30mm'". All other independent variables will be treated as NMF parameters.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

|                     |                      |             |                                                                                                                                                                                                                             |
|---------------------|----------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>          | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                          |
|                     | <sourceName>         | Array       | Array of selected solutions.                                                                                                                                                                                                |
|                     | <OutFile>            | String      | Full path to the file to write out, including the .nmf extension                                                                                                                                                            |
|                     | <FreqsArray>         | Array       | The frequencies to export. The <FreqsArray> argument contains a vector (e.g. "1GHz", "2GHz", ...) to use, or "all". To export all frequencies, use Array("all"). If no frequencies are specified, all frequencies are used. |
|                     | <DesignVariationKey> | String      | Design variation.                                                                                                                                                                                                           |
|                     | <DoRenorm>           | Boolean     | Specifies whether to renormalize the data before export.                                                                                                                                                                    |
|                     | <RenormImped>        | Double      | Real impedance value in ohms, for renormalization. Required in syntax, but ignored if DoRenorm is false.                                                                                                                    |
|                     | <Pass>               | Integer     | Optional. The pass to export. This is ignored if the sourceName is a frequency sweep. Leaving out this value or specifying -1 gets all passes.                                                                              |
|                     | <ComplexFormat>      | Integer     | Optional. The format to use for the exported data. Options are<br>0 = Magnitude/Phase<br>1= Real/Imaginary.<br>2= db/Phase.                                                                                                 |
|                     | <Precision>          | Integer     | Optional. Number of digits precision. If not specified, the default is 6.                                                                                                                                                   |
| <b>Return Value</b> | None                 |             |                                                                                                                                                                                                                             |

|                       |                                                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportNMFData(<sourceName>, <OutFile>, <FreqsArray>, <DesignVariationKey>, <DoRenorm>, <RenormImped>, <Pass>, <ComplexFormat>, <Precision>) |
| <b>Python Example</b> | oModule.ExportNMFData(["Setup1:Sweep1"],<br>"c:\mydir\out.nmf", ["all"], "", False, 0)                                                      |

## FFTOnReport

Performs an FFT on a selected report.

|                     |                                                                                           |        |                                                                                                                                                                                                             |
|---------------------|-------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click on <b>Results</b> in the project tree, select <b>Perform FFT On Report...</b> |        |                                                                                                                                                                                                             |
| <b>Parameters</b>   | Name                                                                                      | Type   | Description                                                                                                                                                                                                 |
|                     | <ReportName>                                                                              | String | Name of specified report.                                                                                                                                                                                   |
|                     | <WindowName>                                                                              | String | Name of window to apply for FFT. Possible values are "Rectangular", "Tri", "Van Hann", "Hamming", "Blackman", "Lanczos", "Weber", "Welch".                                                                  |
|                     | <Function>                                                                                | String | Function to apply on transformation values. Possible values are "none", "ang_deg", "ang_rad", "arg", "cang_deg", "cang_rad", "dB", "dB1 normalize", "dB20normalize", "dBc", "im", "mag", "normalize", "re". |
| <b>Return Value</b> | None.                                                                                     |        |                                                                                                                                                                                                             |

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| <b>Python Syntax</b>  | FFTOnReport <ReportName>, <WindowName>, <Function>    |
| <b>Python Example</b> | oModule.FFTOnReport("XY Plot 1", "Rectangular", "dB") |

## GetAdaptiveFreq

Obtains an adaptive frequency for a specified setup.

|                   |             |        |                          |
|-------------------|-------------|--------|--------------------------|
| <b>UI Access</b>  | N/A         |        |                          |
| <b>Parameters</b> | Name        | Type   | Description              |
|                   | <SetupName> | String | Name of specified setup. |

|                     |                         |
|---------------------|-------------------------|
| <b>Return Value</b> | Double frequency value. |
|---------------------|-------------------------|

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetAdaptiveFreq(&lt;SetupName&gt;)</code> |
| <b>Python Example</b> | <code>oModule.GetAdaptiveFreq("Setup1")</code>  |

## GetAvailableVariations

Returns the available variation for a solution.

|                     |                                                   |        |                             |
|---------------------|---------------------------------------------------|--------|-----------------------------|
| <b>UI Access</b>    | N/A                                               |        |                             |
| <b>Parameters</b>   | Name                                              | Type   | Description                 |
|                     | <SoluName>                                        | String | Name of specified solution. |
| <b>Return Value</b> | Array of strings containing available variations. |        |                             |

|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetAvailableVariations(&lt;SoluName&gt;)</code>                |
| <b>Python Example</b> | <code>oModule.GetAvailableVariations("Setup1 : LastAdaptive")</code> |

## GetExcitationScaling

Gets source scaling parameters.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|

| Parameters   | Name                                                   | Type    | Description                                               |
|--------------|--------------------------------------------------------|---------|-----------------------------------------------------------|
|              | <portName>                                             | String  | Port ID.                                                  |
|              | <Index>                                                | Integer | Optional. Port/mode/terminal/eigenmode index, if present. |
| Return Value | Array of strings containing source scaling parameters. |         |                                                           |

| Python Syntax  | GetExcitationScaling(<portName>, <portIndex>)         |
|----------------|-------------------------------------------------------|
| Python Example | <code>oModule.GetExcitationScaling("Port1", 2)</code> |

## GetSolutionVersionID

*Use:* To obtain the solution ID to help track solution validity.

*Syntax:* GetSolutionVersionID(BSTR fullSolutionName)

*Return Value:* Returns a solution ID.

*Parameters:* None

## GetSolveRangeInfo

Determines the frequency range of a particular simulation setup. For fast sweeps and interpolating sweeps this command returns the start and stop frequencies. For discrete sweeps, it returns a list of frequencies. For an adaptive solution, it returns the adaptive frequency.

| UI Access | N/A |
|-----------|-----|
|-----------|-----|

| Parameters   | Name                                          | Type    | Description                                                           |
|--------------|-----------------------------------------------|---------|-----------------------------------------------------------------------|
|              | <SoluName>                                    | String  | Name of specified solution.                                           |
|              | <IncludeRangeFieldSaved>                      | Boolean | Optional. Specify whether to only include the range with field saved. |
| Return Value | Array of strings containing frequency values. |         |                                                                       |

| Python Syntax  | GetSolveRangeInfo(<SoluName>, [Optional <IncludeRangeFieldSaved>]) |
|----------------|--------------------------------------------------------------------|
| Python Example | <code>oModule.GetSolveRangeInfo("Setup1:Sweep1")</code>            |

## GetSourceContexts

Obtains sources currently enabled as context in the Edit Sources dialog Source Context tab.

| UI Access    | N/A                           |
|--------------|-------------------------------|
| Parameters   | None.                         |
| Return Value | Array of enabled source names |

| Python Syntax  | GetSourceContexts()                      |
|----------------|------------------------------------------|
| Python Example | <code>oModule.GetSourceContexts()</code> |

## GetSourceData (Layout Editor)

Takes a source name as input and returns a VARIANT array containing a data block of the source data.

*Command:* None

*Syntax:* GetSourceData

*Return Value:* Type: Array of i/o block data

*Parameters:* <SourceName>

Type: string

## GetValidISolutionList

Gets all available solution names that exist in a design.

|                     |                                             |         |                                                                              |
|---------------------|---------------------------------------------|---------|------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                         |         |                                                                              |
| <b>Parameters</b>   | Name                                        | Type    | Description                                                                  |
|                     | <IncludeImportedSolutions>                  | Boolean | Optional. Specifies whether to include imported solutions. Default is false. |
| <b>Return Value</b> | Array of strings containing solution names. |         |                                                                              |

|                       |                                                              |
|-----------------------|--------------------------------------------------------------|
| <b>Python Syntax</b>  | GetValidISolutionList([Optional <IncludeImportedSolutions>]) |
| <b>Python Example</b> | oModule.GetValidISolutionList()                              |

## HasFields

Determines if fields exist for a particular solution.

|                     |                                |        |                             |
|---------------------|--------------------------------|--------|-----------------------------|
| <b>UI Access</b>    | N/A                            |        |                             |
| <b>Parameters</b>   | Name                           | Type   | Description                 |
|                     | <SoluName>                     | String | Name of specified solution. |
|                     | <DesignVar>                    | String | Design variation.           |
| <b>Return Value</b> | Integer (1 - True, 0 - False). |        |                             |

|                       |                                                               |  |  |
|-----------------------|---------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | HasFields(<SoluName>, <DesignVar>)                            |  |  |
| <b>Python Example</b> | <code>oModule.HasFields("Setup1:Sweep1", "x_size=2mm")</code> |  |  |

## HasMatrixData

Determines if matrix data exists for a particular solution.

|                     |                                |        |                             |
|---------------------|--------------------------------|--------|-----------------------------|
| <b>UI Access</b>    | N/A                            |        |                             |
| <b>Parameters</b>   | Name                           | Type   | Description                 |
|                     | <SoluName>                     | String | Name of specified solution. |
|                     | <DesignVar>                    | String | Design variation.           |
| <b>Return Value</b> | Integer (1 - True, 0 - False). |        |                             |

|                       |                                                         |  |  |
|-----------------------|---------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | HasMatrixData(<SoluName>, <DesignVar>)                  |  |  |
| <b>Python Example</b> | <code>oModule.HasMatrixData("Setup1:Sweep1", "")</code> |  |  |



## HasMesh

Determines if a current mesh exists for a particular simulation setup, not including the initial mesh.

|                     |                                |             |                           |
|---------------------|--------------------------------|-------------|---------------------------|
| <b>UI Access</b>    | N/A                            |             |                           |
| <b>Parameters</b>   | <b>Name</b>                    | <b>Type</b> | <b>Description</b>        |
|                     | <DesignName>                   | String      | Name of specified design. |
|                     | <DesignVar>                    | String      | Design variation.         |
| <b>Return Value</b> | Integer (1 - True, 0 - False). |             |                           |

|                       |                                    |
|-----------------------|------------------------------------|
| <b>Python Syntax</b>  | HasMesh(<DesignName>, <DesignVar>) |
| <b>Python Example</b> | oModule.HasMesh("Setup1", "")      |

## ImportSolution

Imports a matrix solution in HFSS, which can then be used in creating reports or in the display of matrix data. The imported solution need not have the same characteristics as the current design. Imported terminal data that meets the required criteria can be used for full-wave Spice export. Not used in HFSS-IE.

|                   |                                                                                                                          |             |                                                                                                                                                                                                      |
|-------------------|--------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | Right-click on <b>Results &gt; Import Solutions...</b> , click on <b>Import Solution...</b> in the opened dialog window. |             |                                                                                                                                                                                                      |
| <b>Parameters</b> | <b>Name</b>                                                                                                              | <b>Type</b> | <b>Description</b>                                                                                                                                                                                   |
|                   | <FileName>                                                                                                               | String      | Location of the source data. The type of the data file will be determined strictly by its file extension. Supported types are Touchstone (.sNp or .yNp or .zNp or .tou), and Ansoft Designer (.flp). |

|                     |              |        |                                                                                                                                                   |
|---------------------|--------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <ImportName> | String | Identifying name to use for the import, analogous to solution setup name.                                                                         |
|                     | <SoluArray>  | Array  | The names of the solutions selected for import from the file. The only import format supporting multiple solutions in one file is HFSS8.x format. |
| <b>Return Value</b> | None.        |        |                                                                                                                                                   |

|                       |                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ImportSolution(<FileName>, <ImportName>, <SoluArray>)                                 |
| <b>Python Example</b> | <pre>oModule.ImportSolution(     "c:\mydir\in.s2p", "MeasuredData", ["Sweep1"])</pre> |

## ImportTable

Imports a data table for use in plotting reports in HFSS. Not used in HFSS-IE. The table can have multiple independent real-valued columns of data, and multiple dependent real- or complex-valued columns of data. The data supported imports are either tab delimited format (.tab) or comma delimited format (.csv). The first row may contain column names. Complex data columns are inferred from the column data format. In tab delimited format, "(double, double)" denotes a complex number. In comma delimited format, "(double, double)" denotes a complex number.

|                   |                                                                                                                       |         |                                                                                                           |
|-------------------|-----------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | Right-click on <b>Results &gt; Import Solutions...</b> , click on <b>Import Table...</b> in the opened dialog window. |         |                                                                                                           |
| <b>Parameters</b> | Name                                                                                                                  | Type    | Description                                                                                               |
|                   | <FileName>                                                                                                            | String  | Location of the source data.                                                                              |
|                   | <ImportName>                                                                                                          | String  | Identifying name to use for the import, analogous to solution setup name.                                 |
|                   | <TableName>                                                                                                           | String  | Identifying name for the table, analogous to solution name.                                               |
|                   | <IsReallmag>                                                                                                          | Boolean | Whether to use real/imag to interpret data for any complex column. If false, then use mag/phase(degrees). |
|                   | <ContainsSoluData>                                                                                                    | Boolean | Whether contains solution data.                                                                           |
|                   | <ColNames>                                                                                                            | Array   | Non-empty array used only if intend to override the column names                                          |

|                     |                              |       |                                                                                                                                                                                                          |
|---------------------|------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                              |       | obtained from the table data file, in which case all column names are required.                                                                                                                          |
|                     | <i>&lt;ColIndepFlags&gt;</i> | Array | Indicates which columns are independent. If this is the empty array, the default is that only the first column is independent. If this is the non- empty array, a flag must be present for every column. |
| <b>Return Value</b> | None.                        |       |                                                                                                                                                                                                          |

|                       |                                                                                                                                                 |  |  |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | ImportTable(<FileName>, <ImportName>, <TableName>, <IsReallmag>, <ContainsSoluData>, <ColNames>, <ColIndepFlags>)                               |  |  |
| <b>Python Example</b> | <pre>oModule.ImportTable("c:\mydir\mytable.tab",     "ImportData", "Measurements", True, True,     [], [True, True, False, False, False])</pre> |  |  |

## IsFieldAvailableAt

Determines if a field solution exists for a particular frequency in a simulation.

|                     |                                 |        |                             |
|---------------------|---------------------------------|--------|-----------------------------|
| <b>UI Access</b>    | N/A                             |        |                             |
| <b>Parameters</b>   | Name                            | Type   | Description                 |
|                     | <i>&lt;SoluName&gt;</i>         | String | Name of specified solution. |
|                     | <i>&lt;DesignVar&gt;</i>        | String | Design varitaiton.          |
|                     | <i>&lt;Freq&gt;</i>             | Double | Specified frequency.        |
| <b>Return Value</b> | Integer ( 1 - True, 0 - False). |        |                             |

|                       |                                                                                    |
|-----------------------|------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>IsFieldAvailableAt(&lt;SoluName&gt;, &lt;DesignVar&gt;, &lt;Freq&gt;)</code> |
| <b>Python Example</b> | <code>oModule.IsFieldAvailableAt("Setup1:Sweep1", "", 100.0)</code>                |

## ListMatchingVariations

Gets a list of solved variations that include the specified variable values.

|                     |                                                                                                                                                                                                 |             |                                                           |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------|
| <b>UI Access</b>    | N/A                                                                                                                                                                                             |             |                                                           |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                                                                                     | <b>Type</b> | <b>Description</b>                                        |
|                     | <SoluName>                                                                                                                                                                                      | String      | Name of specified solutions.                              |
|                     | <MatchVarNames>                                                                                                                                                                                 | Array       | Array of matching variable names.                         |
|                     | <MatchValStrings>                                                                                                                                                                               | Array       | Array of matching variable value strings including units. |
| <b>Return Value</b> | Array of strings corresponding to solved variations. The match variables may be a partial set of design variables and the match values are one per variable in the same order as the variables. |             |                                                           |

|                       |                                                                                                                         |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ListMatchingVariations(&lt;SoluName&gt;, &lt;MatchVarNames&gt;, &lt;MatchValStrings&gt;)</code>                   |
| <b>Python Example</b> | <pre>oModule.ListMatchingVariations(<br/>    "Setup1:LastAdaptive",<br/>    ["x_size", "y_size"], ["2mm", "1mm"])</pre> |

## ListValuesOfVariable

Gets the values of a specified variable corresponding to the solved variations.

|                     |                                                                                                                            |        |                             |
|---------------------|----------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------|
| <b>UI Access</b>    | N/A                                                                                                                        |        |                             |
| <b>Parameters</b>   | Name                                                                                                                       | Type   | Description                 |
|                     | <SoluName>                                                                                                                 | String | Name of specified solution. |
|                     | <VariableName>                                                                                                             | String | Name of specified variable. |
| <b>Return Value</b> | Array of double precision values in SI units interpreted as the specified variable corresponding to the solved variations. |        |                             |

|                       |                                                                            |
|-----------------------|----------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ListValuesOfVariable(<SoluName>, <VariableName>)                           |
| <b>Python Example</b> | <code>oModule.ListValuesOfVariable("Setup1:LastAdaptive", "x_size")</code> |

## SetQ3DSATNetChanges (Layout Editor)

Edits nets in a Q3D setup, including combining and changing net states.

|                   |                                                                                                      |        |                                                                                                                     |
|-------------------|------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | From the <b>Project Manager</b> window, right-click a Q3D setup and select <b>Q3D Net Settings</b> . |        |                                                                                                                     |
| <b>Parameters</b> | Name                                                                                                 | Type   | Description                                                                                                         |
|                   | <SetupName>                                                                                          | String | The name of the setup.                                                                                              |
|                   | <Q3DSATNetChangesArray>                                                                              | Array  | An array that contains these parameters in order: <ul style="list-style-type: none"><li>• &lt;SATFile&gt;</li></ul> |

|                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  |        | <ul style="list-style-type: none"> <li>• &lt;NetGroupsArray&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p>                                                                                                                                                                                                                                              |
| <SATFile>        | String | Directory path to the SAT file.                                                                                                                                                                                                                                                                                                                                                                                                              |
| <NetGroupsArray> | Array  | <p>An array that contains these parameters in order:</p> <ul style="list-style-type: none"> <li>• &lt;NAME:NetGroups&gt;</li> <li>• &lt;NAMEArray&gt;</li> </ul> <p>The parameter &lt;NAMEArray&gt; may repeat, as necessary, for each user-selected change (e.g., changing net states, combining nets, et cetera).</p> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p> |
| <NAME:NetGroups> | String | Identifies the contents of the array (i.e., NetGroups).                                                                                                                                                                                                                                                                                                                                                                                      |
| <NAMEArray>      | Array  | <p>An array that contains these parameters in order:</p> <ul style="list-style-type: none"> <li>• &lt;NAME&gt;</li> <li>• &lt;Name&gt;</li> <li>• &lt;NetArray&gt;</li> <li>• &lt;NetType&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p>                                                                                                                |
| <NAME>           | String | Identifies the net or net group being created or modified (e.g., NAME:Nets3).                                                                                                                                                                                                                                                                                                                                                                |
| <Name>           | String | Identifies the net or net group being created or modified (e.g., Nets3).                                                                                                                                                                                                                                                                                                                                                                     |
| <NetsArray>      | Array  | An array that contains the parameter <NAME:Nets> and then either a list of nets to combine, or a single restatement of the net name.                                                                                                                                                                                                                                                                                                         |
| <NAME:Nets>      | String | Identifies the contents of the array (i.e., Nets).                                                                                                                                                                                                                                                                                                                                                                                           |
| <Nets>           | String | A list of nets to modify combine, or the name of the net or net group being modified.                                                                                                                                                                                                                                                                                                                                                        |

|              |                                                                                                                                                              |                                                                                      |  |           |        |                                                                                      |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--|-----------|--------|--------------------------------------------------------------------------------------|
|              | <table><tr><td>&lt;NetType&gt;</td><td>String</td><td>The state of the net being created or modified (i.e., REGULAR, FLOATING, or GROUND).</td></tr></table> |                                                                                      |  | <NetType> | String | The state of the net being created or modified (i.e., REGULAR, FLOATING, or GROUND). |
| <NetType>    | String                                                                                                                                                       | The state of the net being created or modified (i.e., REGULAR, FLOATING, or GROUND). |  |           |        |                                                                                      |
| Return Value | None                                                                                                                                                         |                                                                                      |  |           |        |                                                                                      |

|                |                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | <code>oProject.SetQ3DSATNetChanges(&lt;SetupName&gt;, [&lt;SATFile&gt;, [&lt;NAME:NetGroups&gt;, [&lt;NAME&gt;, &lt;Name&gt;], [&lt;NetType&gt;]]])</code>                                                                                                                                                                                                                                                |
| Python Example | <pre>oModule.SetQ3DSATNetChanges ("Q3D1", [     "SATFile:=" , "C:/User- s/USERNAME/AppData/Local/Temp/ZC38E33379616974771197.aedtresults/Test_Design/- model.sat",     [         "NAME:NetGroups",         [             "NAME:Nets3",             "Name:=" , "Nets3",             [                 "NAME:Nets",                 "Nets1",                 "Nets2"             ]         ]     ] ],</pre> |

```
        "NetType:=" , "SIGNAL"  
    ],  
    [  
        "NAME:Nets3",  
        "Name:=" , "Nets3",  
        [  
            "NAME:Nets",  
            "NETS3"  
        ],  
        "NetType:=" , "FLOATING"  
    ],  
    ]  
])
```



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left blank.

## 13 - Field Overlays Module Script Commands

Field overlay commands should be executed by the Field Overlays module, which is called "FieldsReporter" in scripts.

Set oModule = oDesign.GetModule("FieldsReporter")

oModule.CommandName <args>

[AddMarker](#)

[AddMarkerToPlot](#)

[AddNamedExpression](#)

[CalcOp](#)

[CalcStack](#)

[CalculatorRead](#)

[CalculatorWrite](#)

[ChangeGeomSettings](#)

[ChangeProperty \(Marker\)](#)

[ClcEval](#)

[ClcMaterial](#)

[ClcMaterialValue](#)

[ClearAllMarkers](#)

[ClearAllNamedExpr](#)

[CopyNamedExprToStack](#)

[DeleteFieldPlot](#)

[DeleteMarker](#)

[DeleteNamedExpr](#)

[DeleteUneditablePlot](#)

[DoesNamedExpressionExists](#)

[EditSurfaceMeshSummaryData](#)

[EnterComplex](#)

[EnterComplexVector](#)

[EnterCoord](#)

[EnterEdge](#)

[EnterLine](#)

[EnterOutputVar](#)

[EnterPoint](#)

[EnterQty](#)

[EnterScalar](#)

[EnterScalarFunc](#)

[EnterSurf](#)

[EnterVector](#)

[EnterVectorFunc](#)

[EnterVol](#)

[ExportFieldPlot](#)

[ExportOnGrid \[Field Overlays\]](#)

[ExportPlotImageToFile](#)

[ExportPlotImageWithViewToFile](#)

[ExportSurfaceMeshSummary](#)

[ExportToFile](#)

[GetFieldFolderNames](#)

[GetFieldPlotNames](#)

[GetFieldPlotQuantityName](#)

[GetMeshPlotNames](#)

[GetTopEntryValue](#)

[HideAntennaParametersOverlay](#)

[HideRadiatedPlotOverlay](#)

[HidePolarPlot](#)

[LoadNamedExpressions](#)

ModifyInceptionParameters

[ReassignFieldPlot](#)

[RenamePlotFolder](#)

[SaveFieldsPlots](#)

[SaveNamedExpressions](#)

[SetFieldPlotSettings](#)

SetPlotsViewSolutionContext

[SaveFieldsPlots](#)

[UpdateAllFieldsPlots](#)

[UpdateQuantityFieldsPlots](#)

## AddMarkerToPlot

Adds a marker to a trace on a named field plot.

|              |            |        |                                                                    |
|--------------|------------|--------|--------------------------------------------------------------------|
| UI Access    | N/A        |        |                                                                    |
| Parameters   | Name       | Type   | Description                                                        |
|              | <Location> | Array  | Array of strings containing X.Y, and Z coordinates for the marker. |
|              | <PlotName> | String | Name of the field plot.                                            |
| Return Value | None.      |        |                                                                    |

|                |                                                                                                                                                                                                              |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | AddMarkerToPlot( <Location>, <PlotName> )                                                                                                                                                                    |
| Python Example | <pre>oModule.AddMarkerToPlot ( ["0.290455877780914in", "-0.616900205612183in", "1.77635683940025e-015in"], "Mag_H1" ) oModule.AddMarkerToPlot ( ["-0.317279517650604in", "1.22481322288513in", "0in"],</pre> |

|  |           |
|--|-----------|
|  | "Mag_H1") |
|--|-----------|

## AddNamedExpression

Creates a named expression using the expression at the top of the stack.

| UI Access    | Click <b>Add</b> in the <b>Fields Calculator</b> window. |        |                                                       |
|--------------|----------------------------------------------------------|--------|-------------------------------------------------------|
| Parameters   | Name                                                     | Type   | Description                                           |
|              | <ExprName>                                               | String | Name for the new named expression.                    |
|              | <FieldType>                                              | String | Type of field.                                        |
|              | <Expression>                                             | Array  | Defines an expression to be solved in the calculator. |
| Return Value | None                                                     |        |                                                       |

| Python Syntax  | AddNamedExpression(<ExprName>, <FieldType>)                  |
|----------------|--------------------------------------------------------------|
| Python Example | <code>oModule.AddNamedExpression("Mag_JxE", "Fields")</code> |

```
oModule.AddNamedExpression("new2", "Fields",
```

## CalcOp

Performs a calculator operation.

| UI Access  | Operation commands like <b>Mag</b> , <b>+</b> , etc. |        |                                                  |
|------------|------------------------------------------------------|--------|--------------------------------------------------|
| Parameters | Name                                                 | Type   | Description                                      |
|            | <OpString>                                           | String | The text on the corresponding calculator button. |

|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                       |
|-----------------------|---------------------------------------|
| <b>Python Syntax</b>  | <code>CalcOp(&lt;OpString&gt;)</code> |
| <b>Python Example</b> | <code>oModule.CalcOp("+")</code>      |

## CalcStack

Performs an operation on the stack.

|                     |                                                              |        |                                                  |
|---------------------|--------------------------------------------------------------|--------|--------------------------------------------------|
| <b>UI Access</b>    | Stack operation buttons such as <b>Push</b> and <b>Pop</b> . |        |                                                  |
| <b>Parameters</b>   | Name                                                         | Type   | Description                                      |
|                     | <OpString>                                                   | String | The text on the corresponding calculator button. |
| <b>Return Value</b> | None.                                                        |        |                                                  |

|                       |                                          |
|-----------------------|------------------------------------------|
| <b>Python Syntax</b>  | <code>CalcStack(&lt;OpString&gt;)</code> |
| <b>Python Example</b> | <code>oModule.CalcStack("push")</code>   |

## CalculatorRead

Gets a register file and applies it to the calculator stack.

|                     |                                                              |        |                                                    |
|---------------------|--------------------------------------------------------------|--------|----------------------------------------------------|
| <b>UI Access</b>    | Click <b>Read...</b> in the <b>Fields Calculator</b> dialog. |        |                                                    |
| <b>Parameters</b>   | Name                                                         | Type   | Description                                        |
|                     | <FileName>                                                   | String | Path to and including name of input register file. |
|                     | <SoluName>                                                   | String | Specified solution to read in.                     |
|                     | <FieldType>                                                  | String | Type of specified field.                           |
|                     | <VarArray>                                                   | Array  | Array of variable names, value pairs.              |
| <b>Return Value</b> | None.                                                        |        |                                                    |

|                       |                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CalculatorRead(<FileName>, <SoluName>, <FieldType>, <VarArray>)                                                                                        |
| <b>Python Example</b> | <pre>oModule.CalculatorRead(<br/>    "c:\example.reg",<br/>    "Setup1: LastAdaptive", "Fields",<br/>    ["Freq:=", "10GHz", "Phase:=", "0deg"])</pre> |

## CalculatorWrite

Writes contents of top register to file.

|                   |                                                               |        |                                                     |
|-------------------|---------------------------------------------------------------|--------|-----------------------------------------------------|
| <b>UI Access</b>  | Click <b>Write...</b> in the <b>Fields Calculator</b> window. |        |                                                     |
| <b>Parameters</b> | Name                                                          | Type   | Description                                         |
|                   | <OutputFilePath>                                              | String | Path to and including name of output register file. |
|                   | <SoluNameArray>                                               | Array  | Array of strings containing solution names.         |
|                   | <VarArray>                                                    | Array  | Array of variable names, value pairs.               |



|                     |      |
|---------------------|------|
| <b>Return Value</b> | None |
|---------------------|------|

|                       |                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CalculatorWrite(<OutputFilePath>, <SoluNameArray>, <VarArray>)                                                                                         |
| <b>Python Example</b> | <pre>oModule.CalculatorWrite("C:\test.reg",<br/>    ["Solution:=", "Setup1 : LastAdaptive"],<br/>    ["Freq:=", "1GHz", "Phase:=", "0deg"]<br/>)</pre> |

## ChangeProperty

Changes the properties of a field plot marker.

|                     |                                                 |       |                   |
|---------------------|-------------------------------------------------|-------|-------------------|
| <b>UI Access</b>    | Select a field plot marker in the marker table. |       |                   |
| <b>Parameters</b>   | Name                                            | Type  | Description       |
|                     | <propertyArgs>                                  | Array | Structured array. |
| <b>Return Value</b> | None.                                           |       |                   |

|                      |                                |
|----------------------|--------------------------------|
| <b>Python Syntax</b> | ChangeProperty(<propertyArgs>) |
|----------------------|--------------------------------|

**Python Example**

```
oDesign.ChangeProperty(
    [
        "NAME:AllTabs",
        [
            "NAME:FieldPlotMarkerDataTab",
            [
                "NAME:PropServers",
                "FieldsReporter:FieldsPlotMarker:m1"
            ],
            [
                "NAME:ChangedProps",
                [
                    "NAME:Name",
                    "Value:=" , "Temp"
                ]
            ]
        ]
    ])
oDesign.ChangeProperty(
    [
        "NAME:AllTabs",
        [
            "NAME:FieldPlotMarkerDataTab",
            [
                "NAME:PropServers",
                "FieldsReporter:FieldsPlotMarker:Temp"
            ],
            [
                "NAME:ChangedProps",
```

```
[
    "NAME:Display Value",
    "Value:=",
    , True
]
]
]
])
oDesign.ChangeProperty(
[
    "NAME:AllTabs",
    [
        "NAME:FieldPlotMarkerDataTab",
        [
            "NAME:PropServers",
            "FieldsReporter:FieldsPlotMarker:Temp"
        ],
        [
            "NAME:ChangedProps",
            [
                "NAME:Display Name",
                "Value:=",
                , False
            ]
        ]
    ]
]
])
oDesign.ChangeProperty(
[
    "NAME:AllTabs",
    [
```

```

Value:="                                , True
                                ]
                                ]
                                ]
    ])
oDesign.ChangeProperty(
[
    "NAME:AllTabs",
    [
        "NAME:FieldPlotMarkerDataTab",
        [
            "NAME:PropServers",
            "FieldsReporter:FieldsPlotMarker:Temp"
        ],
        [
            "NAME:ChangedProps",
            [
                "NAME:Color",
                "R:="                                , 255,
                "G:="                                , 255,
                "B:="                                , 255
            ]
        ]
    ]
])
oDesign.ChangeProperty(
[
    "NAME:AllTabs",
    [
        "NAME:FieldPlotMarkerDataTab",
        [
            "NAME:PropServers",
            "FieldsReporter:FieldsPlotMarker:Temp"
        ],
    ],

```

|  |  |
|--|--|
|  |  |
|--|--|

## ChangeGeomSettings

Changes the line discretization setting.

|              |                                                                              |         |                            |
|--------------|------------------------------------------------------------------------------|---------|----------------------------|
| UI Access    | In the <b>Fields Calculator</b> dialog box, click on <b>Geom Settings...</b> |         |                            |
| Parameters   | Name                                                                         | Type    | Description                |
|              | <LineDiscr>                                                                  | Integer | Line discretization value. |
| Return Value | None.                                                                        |         |                            |

|                |                                 |
|----------------|---------------------------------|
| Python Syntax  | ChangeGeomSettings(<LineDiscr>) |
| Python Example | oModule.ChangeGeomSettings(500) |

## ClcEval

Evaluates the expression at the top of the stack using the provided solution name and variable values.

|            |                                                           |        |                                      |
|------------|-----------------------------------------------------------|--------|--------------------------------------|
| UI Access  | Click <b>Eval</b> in the <b>Fields Calculator</b> dialog. |        |                                      |
| Parameters | Name                                                      | Type   | Description                          |
|            | <SoluName>                                                | String | Name of specified solution.          |
|            | <VarArray>                                                | Array  | Array of variable name, value pairs. |

|                     |                          |        |                                    |
|---------------------|--------------------------|--------|------------------------------------|
|                     | <i>&lt;FieldType&gt;</i> | String | Optional. Type of specified field. |
| <b>Return Value</b> | None                     |        |                                    |

|                       |                                                                                                    |  |  |
|-----------------------|----------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | ClcEval(<SoluName>, <VarArray>, [Optional <FieldType>])                                            |  |  |
| <b>Python Example</b> | <pre>oModule.ClcEval("Setup1: LastAdaptive",     ["Freq:=", "10GHz",     "Phase:=", "0deg"])</pre> |  |  |

## ClcMaterial

Performs a material operation on the top stack element.

|                     |                                                              |        |                                                          |
|---------------------|--------------------------------------------------------------|--------|----------------------------------------------------------|
| <b>UI Access</b>    | Click <b>Matl...</b> in the <b>Fields Calculator</b> dialog. |        |                                                          |
| <b>Parameters</b>   | Name                                                         | Type   | Description                                              |
|                     | <i>&lt;MatString&gt;</i>                                     | String | The material property to apply.                          |
|                     | <i>&lt;OpString&gt;</i>                                      | String | Name of operation. Possible values are "mult", or "div". |
| <b>Return Value</b> | None.                                                        |        |                                                          |

|                       |                                                            |  |  |
|-----------------------|------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | ClcMaterial(<MatString>, <OpString>)                       |  |  |
| <b>Python Example</b> | <pre>oModule.ClcMaterial("Permeability (mu)" "mult")</pre> |  |  |

## ClearAllNamedExpr

Clears all user-defined named expressions from the list.

|                     |                                                               |
|---------------------|---------------------------------------------------------------|
| <b>UI Access</b>    | Click <b>ClearAll</b> in the <b>Fields Calculator</b> dialog. |
| <b>Parameters</b>   | None.                                                         |
| <b>Return Value</b> | None.                                                         |

|                       |                                          |
|-----------------------|------------------------------------------|
| <b>Python Syntax</b>  | ClearAllNamedExpr()                      |
| <b>Python Example</b> | <code>oModule.ClearAllNamedExpr()</code> |

## CopyNamedExprToStack

Copies the named expression selected to the calculator stack.

|                     |                                                                 |        |                                                              |
|---------------------|-----------------------------------------------------------------|--------|--------------------------------------------------------------|
| <b>UI Access</b>    | Select a named expression and then click <b>Copy to stack</b> . |        |                                                              |
| <b>Parameters</b>   | Name                                                            | Type   | Description                                                  |
|                     | <ExprName>                                                      | String | Name of the expression to be copied to the top of the stack. |
| <b>Return Value</b> | None.                                                           |        |                                                              |

|                      |                                  |
|----------------------|----------------------------------|
| <b>Python Syntax</b> | CopyNamedExprToStack(<ExprName>) |
|----------------------|----------------------------------|

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Example</b> | <code>oModule.CopyNamedExprToStack("Mag_JxE")</code> |
|-----------------------|------------------------------------------------------|

## CreateFieldPlot

### Note:

Use in conjunction with [GetGeometryIdsForNetLayerCombinations](#) and [GetGeometryIdsForAllNetLayerCombinations](#).

- GetGeometryIdsForNetLayerCombinations returns ID numbers of all faces and edges of the active design related to the current target combination of nets and layers.
- GetGeometryIdsForAllNetLayerCombinations returns ID numbers for all possible combinations of nets and layers it is possible to choose.

*Use:* Creates a field/mesh plot "Field" or a visual ray trace ("VRT") plot.

**Syntax:** `CreateFieldPlot <PlotParameterArray> ["Field" | "VRT"]`

**Return Value:** None

**Parameters:** `<PlotParameterArray> "Field"`

```
Array("NAME:<PlotName>",
      "SolutionName:=", <string>,
      "QuantityName:=", <string>,
      "PlotFolder:=", <string>,
      "UserSpecifyName:=", <int>,
      "UserSpecifyFolder:=", <int>,
      "IntrinsicVar:=", <string>,
      "PlotGeomInfo:=", <PlotGeomArray>,
      "FilterBoxes:=", <FilterBoxArray>,
      <PlotOnPointsSettings>,
```



```
<PlotOnLineSettings>,  
<PlotOnSurfaceSettings>,  
<PlotOnVolumeSettings>)
```

*SolutionName:*

Name of the solution setup and solution formatted as

```
"<SolveSetupName>: <WhichSolution>",
```

where <WhichSolution> can be "Adaptive\_<n>", "LastAdaptive", or "PortOnly".

For example: "Setup1 : Adaptive\_2"

A space is required on either side of the colon ( : ) character. If omitted, the plot will not be created.

*QuantityName:*

Type of plot to create. Possible values vary according to the solver.

**Mesh plots:** "Mesh"

*PlotFolder:*

Name of the folder to which the plot should be added. (Values vary with the design type.) Some possible values include

```
"E Field", "H Field", "Jvol", "Jsurf", "SAR Field",  
"Jc", "Surface-Loss", "QSurf", "Temperature", "Energy",  
"Average-Surface-Loss-Density", "Dielectric_Loss",  
"MeshPlots", "Heat Flux", and "Displacement"
```

*UserSpecifyName*

0 if default name for plot is used, 1 otherwise.

Not needed. <PlotName> will be respected regardless of whether this flag is set.

*UserSpecifyFolder*

0 if default folder for plot is used, 1 otherwise.

Not needed. The specified PlotFolder will be respected regardless of whether this flag is set.

*IntrinsicVar:*

Formatted string that specifies the frequency and phase at which to make the plot.

For example: "Freq='1GHz' Phase='30deg' "

*PlotGeomInfo:*

Creating field plot on selected layer-net pairs:

For example, Maxwell: "PlotGeomInfo:=", [1, "Volume", "ObjList",  
2, "LC1\_1:Top", "LC1\_1:Top#L1"]

HFSS example with "Plot on surface" option is not checked:

```
"PlotGeomInfo:=", [1, "Volume", "LayerNets", 2, "Top", 2,  
"net1", "net2", "Ground", 1, "GND"]
```

The command creates field plot on two layer-nets combinations. It starts with type "Volume", and subtype "LayerNets", followed by the number of layer-nets combinations which is 2 in this example.

The two layer-nets combinations are (1) "Top" layer, two nets, net names are "net1" and "net2", i.e., [Top, net1] pair, and [Top, net2] pair. (2) "Ground" layer and one net, net name is "GND", i.e., [Ground, GND] pair.

HFSS example with "Plot on surface" option checked:

```
"PlotGeomInfo:=", [1, "Surface", "LayerNetsExtFace", 2,  
"Top", 2, "net1", "net2", "Ground", 1, "GND"]
```

The command creates field plot on two layer-nets combinations. It starts with type "Surface", and subtype "LayerNetsExtFace", followed by the number of layer-nets combinations which is 2 in this example.

The two layer-nets combinations are (1) "Top" layer, two nets, net names are "net1" and "net2", i.e., [Top, net1] pair, and [Top, net2] pair. (2) "Ground" layer and one net, net name is "GND", i.e., [Ground, GND] pair.

Limitations:

- No Layer/Nets name is supported for field plot command recording should be able to add it based on this change.
- No Layer/Nets name support for pure Layout design field plot command.

<PlotGeomArray>

Array(<NumGeomTypes>, <GeomTypeData>, <GeomTypeData>, ...)

**For example:** Array(4, "Volume", "ObjList", 1, "Box1",  
"Surface", "FacesList", 1, "12", "Line", 1,  
"Polyline1", "Point", 2, "Point1", "Point2")

<NumGeomTypes>

Type: <int>

Number of different geometry types (volume, surface, line, point) plotted on at the same time.

<GeomTypeData>

<GeomType>, <ListType>, <NumIDs>, <ID>, <ID>, ...)

<GeomType>

Type: <string>

Possible values are "Volume", "Surface", "Line", "Point".

<ListType>

Type: <string>

Possible values are "ObjList", or "FacesList".

These are used for the GeomType of "Line" or "Point".

<NumIDs>

Type: <int>

Number of IDs or object names that will follow.

<ID>

Type: <int> or <string>

ID of a face or name of an object, line, or point on which to plot.

<FilterBoxArray>

Array of names of objects to use to restrict the plot range.

Array(<NumFilters>, <ObjName>, <ObjName>, ...)

Example: Array(1, "Box1")

Example: Array(0) *no filtering*

<PlotOnPointSettings>

```
Array("NAME:PlotOnPointSettings",  
      "PlotMarker:=", <bool>,  
      "PlotArrow:=", <bool>)
```

<PlotOnLineSettings>

```
Array("NAME:PlotOnLineSettings",  
      Array("NAME:LineSettingsID",  
            "Width:=", <int>,  
            "Style:=", <string>),  
      "IsoValType:=", <string>,  
      "ArrowUniform:=", <bool>,  
      "NumofArrow:=", <int>)
```

Style

Possible values are: "Cylinder", "Solid", "Dashdash", "Dotdot", "Dotdash"

IsoValType

Possible values are "Tone", "Fringe", "Gourard"

<PlotOnSurfaceSettings>

```
Array("NAME:PlotOnSurfaceSettings",  
      "Filled:=", <bool>,  
      "IsoValType:=", <string>,  
      "SmoothShade:=", <bool>,  
      "AddGrid:=", <bool>,  
      "MapTransparency:=", <bool>,  
      "Transparency:=", <double>,  
      "ArrowUniform:=", <bool>  
      "ArrowSpacing:=", <double>  
      "GridColor:=", Array(<int>, <int>, <int>))
```

IsoValType

Possible values are "Tone", "Line", "Fringe", "Gourard"

GridColor

Array containing the R, G, B components of the color. Components should be in the range 0 to 255.

<PlotOnVolumeSettings>

```
Array("NAME:PlotOnVolumeSettings",  
      "PlotIsoSurface:=", <bool>,  
      "CloudDensity:=", <double>,  
      "PointSize:=", <int>,  
      "ArrowUniform:=", <bool>,  
      "ArrowSpacing:=", <double>)
```

### Python Example – E Magnitude Field Plot:

```
oModule.CreateFieldPlot(  
[
```

```

"NAME:Mag_E1",
"SolutionName:="      , "Setup1 : LastAdaptive",
"QuantityName:="      , "Mag_E",
"PlotFolder:="        , "E Field1",
"UserSpecifyName:="    , 0,
"UserSpecifyFolder:="  , 0,
"IntrinsicVar:="       , "Freq='1GHz' Phase='0deg'",
"PlotGeomInfo:="      , [1 , "Surface", "FacesList", 1, "7"],
"FilterBoxes:="        , [0],
[
  "NAME:PlotOnSurfaceSettings",
  "Filled:="           , False,
  "IsoValType:="       , "Fringe",
  "SmoothShade:="      , True,
  "AddGrid:="          , False,
  "MapTransparency:="  , True,
  "Transparency:="     , 0,
  "ArrowUniform:="     , True,
  "ArrowSpacing:="     , 0.100000001490116,
  "GridColor:="        , [255, 255, 255]
]
], "Field")

```

### Electron Density Field Plot:

```

oModule = oDesign.GetModule("FieldsReporter")
oModule.CreateFieldPlot(
[
  "NAME:Electron_Density3",
  "SolutionName:="      , "AIR : RFDischarge",
  "UserSpecifyName:="    , 0,
  "UserSpecifyFolder:="  , 0,

```

```
"QuantityName:="      , "Electron_Density",
"PlotFolder:="        , "RF Discharge Fields",
"StreamlinePlot:="    , False,
"AdjacentSidePlot:="   , False,
"FullModelPlot:="      , False,
"IntrinsicVar:="       , "Freq='\0.200000000000000001GHz\'
                        GasPressure='\0.02kPascal\'",
"PlotGeomInfo:="      , [1,"Surface","FacesList",1,"48"],
"FilterBoxes:="        , [0],
[
  "NAME:PlotOnSurfaceSettings",
  "Filled:="           , False,
  "IsoValType:="       , "Tone",
  "AddGrid:="          , False,
  "MapTransparency:="  , True,
  "Refinement:="       , 0,
  "Transparency:="     , 0,
  "SmoothingLevel:="   , 0,
  "ShadingType:="      , 0,
  [
    "NAME:Arrow3DSpacingSettings",
    "ArrowUniform:="    , True,
    "ArrowSpacing:="    , 0,
    "MinArrowSpacing:=" , 0,
    "MaxArrowSpacing:=" , 0,
    "GridColor:="       , [255,255,255]
  ],
],
"EnableGaussianSmoothing:=" , False,
"SurfaceOnly:="             , False
], "Field")
```

**HFSS Multipaction SEY Plot**

```
# -----  
# Script Recorded by Ansys Electronics Desktop Version 2025.2.0  
# 15:36:54 Jan 15, 2025  
# -----  
  
import ScriptEnv  
  
ScriptEnv.Initialize("Ansoft.ElectronicsDesktop")  
oDesktop.RestoreWindow()  
  
oProject = oDesktop.SetActiveProject("JPL_coax_r251")  
oDesign = oProject.SetActiveDesign("Coaxial_7-8")  
oModule = oDesign.GetModule("FieldsReporter")  
oModule.CreateFieldPlot(  
    [  
        "NAME:SEY_Plot1",  
        "SolutionName:=" , "300MHz_low : Power",  
        "UserSpecifyName:=" , 0,  
        "UserSpecifyFolder:=" , 0,  
        "QuantityName:=" , "Unknown",  
        "PlotFolder:=" , "SEY_Plot",  
        "StreamlinePlot:=" , False,  
        "AdjacentSidePlot:=" , False,
```



```
"FullModelPlot:=" , False,
"IntrinsicVar:=" , "PowerMultiplier=\ '250\ ' Time=\ '0s\ '",
"PlotGeomInfo:=" , [1,"Surface","FacesList",4,"16","17","18","24"],
"FilterBoxes:=" , [0],
[
  "NAME:PlotOnSurfaceSettings",
  "Filled:=" , False,
  "IsoValType:=" , "Tone",
  "AddGrid:=" , False,
  "MapTransparency:=" , True,
  "Refinement:=" , 0,
  "Transparency:=" , 0,
  "SmoothingLevel:=" , 0,
  "ShadingType:=" , 0,
  [
    "NAME:Arrow3DSpacingSettings",
    "ArrowUniform:=" , True,
    "ArrowSpacing:=" , 0,
    "MinArrowSpacing:=" , 0,
    "MaxArrowSpacing:=" , 0
  ]
]
```

```
    ],  
    "GridColor:=" , [255,255,255]  
],  
"EnableGaussianSmoothing:=", False,  
"SurfaceOnly:=" , False,  
"QuantityName:=" , "QuantityName_SecondaryEmission",  
"PlotFolder:=" , "SEY_Plot",  
"IntrinsicVar:=" , "PowerMultiplier=\'250\' Time=\'0s\'"  
], "SecondaryEmission")
```

## DeleteFieldPlot

Deletes one or more field plots.

|                     |                                                       |       |                                                               |
|---------------------|-------------------------------------------------------|-------|---------------------------------------------------------------|
| <b>UI Access</b>    | Right-click on one filed plot, select <b>Delete</b> . |       |                                                               |
| <b>Parameters</b>   | Name                                                  | Type  | Description                                                   |
|                     | <NameArray>                                           | Array | Array of strings containing the names of the plots to delete. |
| <b>Return Value</b> | None.                                                 |       |                                                               |

|                       |                                                  |
|-----------------------|--------------------------------------------------|
| <b>Python Syntax</b>  | DeleteFieldPlot(<NameArray>)                     |
| <b>Python Example</b> | oModule.DeleteFieldPlot(["Mag_E1", "Vector_E1"]) |

## DeleteMarker[Fields Reporter]

Deletes one or more marker in the current field plot.

|                     |                                                                                     |       |                                           |
|---------------------|-------------------------------------------------------------------------------------|-------|-------------------------------------------|
| <b>UI Access</b>    | Right-click <b>Field Overlays &gt; Plot Fields &gt; Marker &gt; Delete Marker</b> . |       |                                           |
| <b>Parameters</b>   | Name                                                                                | Type  | Description                               |
|                     | <MarkerNames>                                                                       | Array | Array of strings containing marker names. |
| <b>Return Value</b> | None.                                                                               |       |                                           |

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| <b>Python Syntax</b>  | DeleteMarker(<MarkerNames>)                     |
| <b>Python Example</b> | <code>oModule.DeleteMarker(["m1", "m2"])</code> |

## DeleteNamedExpr

Deletes the selected named expression from the list.

|                     |                                                          |        |                                     |
|---------------------|----------------------------------------------------------|--------|-------------------------------------|
| <b>UI Access</b>    | Select a named expression and then click <b>Delete</b> . |        |                                     |
| <b>Parameters</b>   | Name                                                     | Type   | Description                         |
|                     | <ExprName>                                               | String | Name of specified named expression. |
| <b>Return Value</b> | None.                                                    |        |                                     |

|                       |                                     |
|-----------------------|-------------------------------------|
| <b>Python Syntax</b>  | DeleteNamedExpr(<ExprName>)         |
| <b>Python Example</b> | oModule.DeleteNamedExpr ("Mag_JxE") |

## DeleteUneditablePlot

Deletes one or more uneditable plots.

|                     |             |       |                                    |
|---------------------|-------------|-------|------------------------------------|
| <b>UI Access</b>    | N/A         |       |                                    |
| <b>Parameters</b>   | Name        | Type  | Description                        |
|                     | <NameArray> | Array | Array of the plot names to delete. |
| <b>Return Value</b> | None.       |       |                                    |

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteUneditablePlot(<NameArray>)                     |
| <b>Python Example</b> | oModule.DeleteUneditablePlot(["Mag_E1", "Vector_E1"]) |

## DoesNamedExpressionExists

Determines whether specified named expression exists.

|                     |           |        |                                         |
|---------------------|-----------|--------|-----------------------------------------|
| <b>UI Access</b>    | N/A       |        |                                         |
| <b>Parameters</b>   | Name      | Type   | Description                             |
|                     | <ExpName> | String | Name of the specified named expression. |
| <b>Return Value</b> | Boolean:  |        |                                         |

|  |                                                                                                                                             |
|--|---------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"><li>• <b>1</b> - named expression exists.</li><li>• <b>0</b> - named expression does not exist.</li></ul> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------|

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Python Syntax</b>  | DoesNamedExpressionExists(<ExpName>)         |
| <b>Python Example</b> | oModule.DoesNamedExpressionExists("Mag_JxE") |

## EditSurfaceMeshSummaryData

*Use:* Defines or Edits Surface Mesh Summary Data.

*Command:* Create Surface Mesh Summary, **Setup...**

*Syntax:* EditSurfaceMeshSummaryData Array(Array(<Parameters Array>))

*Return Value:* None

*Parameters:*

"NAME:SurfaceMeshSummary"

Type: <string>

"NAME:SurfaceMeshSummary"

"SolutionName:=" <string>

Type: <string>

Solution Name.

"Variation Name:=" <string>

Type: <string>

Variation name.

<RowItemsArray>

Array<MeshRowItems>

Row data.

<ItemPerRow>

Array<EntityPerRow>

Entity ID.

<MeshDataPer Item>

Array<Mesh Data Category and Stats>

| Python Syntax  | RenameReport (<OldReportName>, <NewReportName>)                                                                                                                                                                                                                               |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.EditSurfaceMeshSummaryData (     [         [             "NAME:SurfaceMeshSummary",             "SolutionName:="          , "Setup1 : LastAdaptive",             "Variation:="             , "Nominal",             [                 "NAME:MeshRowItems",</pre> |

```
[
  "NAME:ItemPerRow",
    "EntityPerRow:="      , "annular_rng",
  [
    "NAME:MeshDataPerItem",
      "Min Edge Len:="      , 0.000166961133900917,
      "Max Edge Len:="      , 0.00145730991671888,
      "Mean Edge Len:="     , 0.000524160923260581,
      "Std Devn Edge Len:=" , 0.000217758706109324,
      "Min Tri Area:="      , 3.4982570283924E-09,
      "Max Tri Area:="      , 3.73116346661249E-07,
      "Mean Tri Area:="     , 8.91526236529066E-08,
      "Std Devn Tri Area:=" , 6.89482807990471E-08,
      "DataState:="        , 2
    ]
  ],
  [
    "NAME:ItemPerRow",
      "EntityPerRow:="      , "gap",
    ]
  ]
```

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "NAME:MeshDataPerItem",  "Min Edge Len:="          , 0.000105681286042456,  "Max Edge Len:="          , 0.000362084671538928,  "Mean Edge Len:="         , 0.000233090954707978,  "Std Devn Edge Len:="     , 7.55387369793154E-05,  "Min Tri Area:="          , 1.74640378345369E-09,  "Max Tri Area:="          , 3.78166789228631E-08,  "Mean Tri Area:="         , 1.56497981245286E-08,  "Std Devn Tri Area:="     , 1.04691637802914E-08,  "DataState:="             , 2  ]  ]  ]  ] 1) </pre> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# EnterComplex

Enters a complex number onto the stack.

|            |                                                                                         |        |                                        |
|------------|-----------------------------------------------------------------------------------------|--------|----------------------------------------|
| UI Access  | Click <b>Number</b> , and then click <b>Scalar</b> . <b>Complex</b> option is selected. |        |                                        |
| Parameters | Name                                                                                    | Type   | Description                            |
|            | <ComplexNum>                                                                            | String | String of complex value. Ex. "1 + 2j". |



|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Python Syntax</b>  | EnterComplex(<ComplexNum>)                   |
| <b>Python Example</b> | <code>oModule.EnterComplex("1 + 2 j")</code> |

## EnterComplexVector

Enters a complex vector onto the stack.

|              |                                                                                         |       |                                                        |
|--------------|-----------------------------------------------------------------------------------------|-------|--------------------------------------------------------|
| UI Access    | Click <b>Number</b> , and then click <b>Vector</b> . <b>Complex</b> option is selected. |       |                                                        |
| Parameters   | Name                                                                                    | Type  | Description                                            |
|              | <ComplexVector>                                                                         | Array | Array of strings containing X, Y and Z complex values. |
| Return Value | None.                                                                                   |       |                                                        |

|                       |                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | EnterComplexVector(<ComplexVector>)                                                  |
| <b>Python Example</b> | <pre>oModule.EnterComplexVector ([     "1 + 2 j",     "1 + 2 j",     "1 + 2 j"</pre> |

|  |    |
|--|----|
|  | 1) |
|--|----|

## EnterCoord

Enters a coordinate system defined in the 3D Modeler editor.

|                     |                                                      |        |                                                               |
|---------------------|------------------------------------------------------|--------|---------------------------------------------------------------|
| <b>UI Access</b>    | Click <b>Geometry</b> and then select <b>Coord</b> . |        |                                                               |
| <b>Parameters</b>   | Name                                                 | Type   | Description                                                   |
|                     | <CoordName>                                          | String | Name of a coordinate system defined in the 3D Modeler editor. |
| <b>Return Value</b> | None.                                                |        |                                                               |

|                       |                              |
|-----------------------|------------------------------|
| <b>Python Syntax</b>  | EnterCoord(<CoordName>)      |
| <b>Python Example</b> | oModule.EnterCoord("Global") |

## EnterEdge

Enters an edge defined in the 3D Modeler editor.

|                     |            |        |                                                   |
|---------------------|------------|--------|---------------------------------------------------|
| <b>UI Access</b>    | N/A        |        |                                                   |
| <b>Parameters</b>   | Name       | Type   | Description                                       |
|                     | <EdgeName> | String | Name of an edge defined in the 3D Modeler editor. |
| <b>Return Value</b> | None.      |        |                                                   |

|                       |                              |
|-----------------------|------------------------------|
| <b>Python Syntax</b>  | EnterEdge(<EdgeName>)        |
| <b>Python Example</b> | oModule.EnterPoint("Edge_1") |

## EnterLine

Enters a line defined in the 3D Modeler editor.

|                     |                                                   |        |                                                  |
|---------------------|---------------------------------------------------|--------|--------------------------------------------------|
| <b>UI Access</b>    | Click <b>Geometry</b> and then select <b>Line</b> |        |                                                  |
| <b>Parameters</b>   | Name                                              | Type   | Description                                      |
|                     | <LineName>                                        | String | Name of a line defined in the 3D Modeler editor. |
| <b>Return Value</b> | None.                                             |        |                                                  |

|                       |                            |
|-----------------------|----------------------------|
| <b>Python Syntax</b>  | EnterLine(<LineName>)      |
| <b>Python Example</b> | oModule.EnterLine("Line1") |

## EnterOutputVar

Enters Output Vars, only valid for Eigenmode problems.

|                   |                                                            |        |                                                    |
|-------------------|------------------------------------------------------------|--------|----------------------------------------------------|
| <b>UI Access</b>  | Click <b>Geometry</b> and then select <b>Output Vars</b> . |        |                                                    |
| <b>Parameters</b> | Name                                                       | Type   | Description                                        |
|                   | <VarName>                                                  | String | Name of the output vars. Only 'freq' is supported. |

|                     |                        |        |                                          |
|---------------------|------------------------|--------|------------------------------------------|
|                     | <i>&lt;VarType&gt;</i> | String | Type of the output vars. 'Complex' type. |
| <b>Return Value</b> | None.                  |        |                                          |

|                       |                                                                   |  |  |
|-----------------------|-------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | EnterOutputVar( <i>&lt;VarName&gt;</i> , <i>&lt;VarType&gt;</i> ) |  |  |
| <b>Python Example</b> | oModule.EnterOutputVar("Freq", "Complex")                         |  |  |

## EnterPoint

Enters a point defined in the 3D Modeler editor.

|                     |                                                      |        |                                                   |
|---------------------|------------------------------------------------------|--------|---------------------------------------------------|
| <b>UI Access</b>    | Click <b>Geometry</b> and then select <b>Point</b> . |        |                                                   |
| <b>Parameters</b>   | Name                                                 | Type   | Description                                       |
|                     | <i>&lt;PointName&gt;</i>                             | String | Name of a point defined in the 3D Modeler editor. |
| <b>Return Value</b> | None.                                                |        |                                                   |

|                       |                                        |  |  |
|-----------------------|----------------------------------------|--|--|
| <b>Python Syntax</b>  | EnterPoint( <i>&lt;PointName&gt;</i> ) |  |  |
| <b>Python Example</b> | oModule.EnterPoint("Point1")           |  |  |

## EnterQty

Enters a field quantity.

|                     |                                                        |        |                                                  |
|---------------------|--------------------------------------------------------|--------|--------------------------------------------------|
| <b>UI Access</b>    | Click <b>Quantity</b> , and then select from the list. |        |                                                  |
| <b>Parameters</b>   | Name                                                   | Type   | Description                                      |
|                     | <FieldQty>                                             | String | The field quantity to be entered onto the stack. |
| <b>Return Value</b> | None.                                                  |        |                                                  |

|                       |                       |  |  |
|-----------------------|-----------------------|--|--|
| <b>Python Syntax</b>  | EnterQty(<FieldQty>)  |  |  |
| <b>Python Example</b> | oModule.EnterQty("E") |  |  |

## EnterScalar

Enters a scalar onto the stack.

|                     |                                                                                        |        |                                          |
|---------------------|----------------------------------------------------------------------------------------|--------|------------------------------------------|
| <b>UI Access</b>    | Click <b>Number</b> and then click <b>Scalar</b> . <b>Complex</b> option not selected. |        |                                          |
| <b>Parameters</b>   | Name                                                                                   | Type   | Description                              |
|                     | <Scalar>                                                                               | Double | The real number to enter onto the stack. |
| <b>Return Value</b> | None.                                                                                  |        |                                          |

|                       |                                       |  |  |
|-----------------------|---------------------------------------|--|--|
| <b>Python Syntax</b>  | EnterScalar(<Scalar>)                 |  |  |
| <b>Python Example</b> | oModule.EnterScalar(3.14159265358979) |  |  |

## EnterScalarFunc

Enters a scalar function.

|                     |                                                       |        |                                                                  |
|---------------------|-------------------------------------------------------|--------|------------------------------------------------------------------|
| <b>UI Access</b>    | Click <b>Function</b> and then select <b>Scalar</b> . |        |                                                                  |
| <b>Parameters</b>   | Name                                                  | Type   | Description                                                      |
|                     | <VarName>                                             | String | Name of a variable to enter as a scalar function onto the stack. |
| <b>Return Value</b> | None.                                                 |        |                                                                  |

|                       |                                               |
|-----------------------|-----------------------------------------------|
| <b>Python Syntax</b>  | EnterScalarFunc(<VarName>)                    |
| <b>Python Example</b> | <code>oModule.EnterScalarFunc("Phase")</code> |

## EnterSurf

Enters a surface defined in the 3D Modeler editor.

|                     |                                                        |        |                                                     |
|---------------------|--------------------------------------------------------|--------|-----------------------------------------------------|
| <b>UI Access</b>    | Click <b>Geometry</b> and then select <b>Surface</b> . |        |                                                     |
| <b>Parameters</b>   | Name                                                   | Type   | Description                                         |
|                     | <SurfName>                                             | String | Name of a surface defined in the 3D Modeler editor. |
| <b>Return Value</b> | None.                                                  |        |                                                     |

|                      |                       |
|----------------------|-----------------------|
| <b>Python Syntax</b> | EnterSurf(<SurfName>) |
|----------------------|-----------------------|

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Python Example</b> | <code>oModule.EnterSurf("Rectangle1")</code> |
|-----------------------|----------------------------------------------|

## EnterVector

Enters a vector onto the stack.

|                     |                                                                                          |       |                                                                  |
|---------------------|------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------|
| <b>UI Access</b>    | Click <b>Number</b> , and then click <b>Vector</b> . <b>Complex</b> option not selected. |       |                                                                  |
| <b>Parameters</b>   | Name                                                                                     | Type  | Description                                                      |
|                     | <VectorArray>                                                                            | Array | Array of strings containing X, Y and Z components of the vector. |
| <b>Return Value</b> | None.                                                                                    |       |                                                                  |

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| <b>Python Syntax</b>  | <code>EnterVector(&lt;VectorArray&gt;)</code>     |
| <b>Python Example</b> | <code>oModule.EnterVector([1.0, 1.0, 1.0])</code> |

## EnterVectorFunc

Enters a vector function.

|                   |                                                       |       |                                                                                                                                            |
|-------------------|-------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | Click <b>Function</b> and then select <b>Vector</b> . |       |                                                                                                                                            |
| <b>Parameters</b> | Name                                                  | Type  | Description                                                                                                                                |
|                   | <VarNames>                                            | Array | Array of strings containing names of a variable for the X, Y, and Z coordinates, respectively, to enter as a vector function on the stack. |

|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | EnterVectorFunc(<VarNames>)             |
| <b>Python Example</b> | oModuleEnterVectorFunc(["X", "Y", "Z"]) |

## EnterVol

Enters a volume defined in the 3D Modeler editor.

|                     |                                                       |        |                                                    |
|---------------------|-------------------------------------------------------|--------|----------------------------------------------------|
| <b>UI Access</b>    | Click <b>Geometry</b> and then select <b>Volume</b> . |        |                                                    |
| <b>Parameters</b>   | Name                                                  | Type   | Description                                        |
|                     | <VolumeName>                                          | String | Name of a volume defined in the 3D Modeler editor. |
| <b>Return Value</b> | None.                                                 |        |                                                    |

|                       |                          |
|-----------------------|--------------------------|
| <b>Python Syntax</b>  | EnterVol(<VolumeName>)   |
| <b>Python Example</b> | oModule.EnterVol("Box1") |

## ExportFieldPlot

Exports a field plot to a file.

|                  |     |
|------------------|-----|
| <b>UI Access</b> | N/A |
|------------------|-----|



|                     |              |         |                                                                                        |
|---------------------|--------------|---------|----------------------------------------------------------------------------------------|
| <b>Parameters</b>   | Name         | Type    | Description                                                                            |
|                     | <PlotName>   | String  | Name of the field plot to export.                                                      |
|                     | <ShowHeader> | Boolean | <b>True</b> - export field plot header to a file.<br><b>False</b> - export field plot. |
|                     | <FileName>   | String  | Name of file to save as, including the file path.                                      |
| <b>Return Value</b> | None.        |         |                                                                                        |

|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportFieldPlot(<PlotName>, <ShowHeader>, <FileName>)                         |
| <b>Python Example</b> | <pre>oModule.ExportFieldPlot("Mag_E1",<br/>True, "C:/field_report.dsp")</pre> |

## ExportMarkerTable

Exports the marker table to a .csv or .tab file.

|                     |                                                                                               |        |                                   |
|---------------------|-----------------------------------------------------------------------------------------------|--------|-----------------------------------|
| <b>UI Access</b>    | [product] > <b>Fields</b> > <b>Plot Fields</b> > <b>Marker</b> > <b>Export Marker Table</b> . |        |                                   |
| <b>Parameters</b>   | Name                                                                                          | Type   | Description                       |
|                     | <FileName>                                                                                    | String | Name of export file include path. |
| <b>Return Value</b> | None.                                                                                         |        |                                   |

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportMarkerTable(&lt;FileName&gt;)</code>                       |
| <b>Python Example</b> | <code>oModule.ExportMarkerTable("C:/work/FieldMarkerTable.csv")</code> |

## ExportOnGrid [Field Overlays]

Evaluates the top stack element at a set of points specified by a grid and exports the data to a file.

|                     |                                                       |         |                                                                                                                                        |
|---------------------|-------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Click <b>Export</b> , and then click <b>On Grid</b> . |         |                                                                                                                                        |
| <b>Parameters</b>   | Name                                                  | Type    | Description                                                                                                                            |
|                     | <OutputFile>                                          | String  | Name of the output file.                                                                                                               |
|                     | <Min>                                                 | Array   | Minimum values for the coordinate components of the grid system                                                                        |
|                     | <Max>                                                 | Array   | Maximum values for the coordinate components of the grid system                                                                        |
|                     | <Spacing>                                             | Array   | Spacing values for the coordinate components of the grid system                                                                        |
|                     | <SolnName>                                            | String  | Name of the simulation setup                                                                                                           |
|                     | <VarVals>                                             | Array   | Array of strings containing setup definitions.                                                                                         |
|                     | <IncludePoints>                                       | Boolean | Optional. Specifies whether include points in the output file.                                                                         |
|                     | <CSType>                                              | String  | Optional. Type of coordinate system. "Cartesian" (default)   "Cylindrical"   "Spherical"                                               |
|                     | <Offsets>                                             | Array   | Optional. Origin for the offset coordinate system. For Cartesian, x, y, z, for Cylindrical, R, Phi, Z, for Spherical, Rho, Theta, Phi. |
|                     | <ByCount>                                             | Boolean | Optional.                                                                                                                              |
| <b>Return Value</b> | None.                                                 |         |                                                                                                                                        |

**Note:** Regarding the **ExportOnGrid** legacy script which only has “IncludePtInOutput” argument (the last Boolean one), AEDT can still read it and assign other new arguments as default values. Those default values are RefCSName = “global”, PtInSI = “True”, FieldInRefCS = “False”

|                      |                                                                                                                                                                                                                                                                                     |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | <code>ExportOnGrid(&lt;OutputFile&gt;, &lt;Min&gt;, &lt;Max&gt;, &lt;Spacing&gt;, &lt;SolnName&gt;, &lt;SolnParameters&gt;, [&lt;ExportOption&gt;, "IncludePointsInOutput:=", &lt;boolean&gt;], "RefCSName:=", &lt;CSName&gt;, "PtsInSI:=", &lt;boolean&gt;, "FieldRefCS:=",</code> |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | <boolean>], "<CSType>", [ <Offsets>, <ByCount>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Python Example | <pre>oModule.ExportOnGrid("C:\offset_grid_model_unit_ref.fld",     ["-1mm", "16mm", "0mm"],     ["1mm", "18mm", "1mm"],     ["2mm", "2mm", "1mm"],     "4500MHz : LastAdaptive",     ["Freq:=", "4.5GHz", "Phase:="      , "0deg"],     [         "NAME:ExportOption",         "IncludePtInOutput:="      , True,         "RefCSName:="              , "offset",         "PtInSI:="                  , False,         "FieldInRefCS:="            , True     ],     "Cartesian", ["0mm", "0mm", "0mm"], False )</pre> |

## ExportPlotImageToFile

Deprecated. Use [ExportPlotImageWithViewToFile](#).

Creates field plot exports of existing field plots from a given view points, and with the model being auto-sized automatically for each view.

|                     |                                |        |                                                                         |
|---------------------|--------------------------------|--------|-------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                            |        |                                                                         |
| <b>Parameters</b>   | Name                           | Type   | Description                                                             |
|                     | <FileName>                     | String | Full path plus file name.                                               |
|                     | <FolderName>                   | String | Plot folder name.                                                       |
|                     | <ItemName>                     | String | Name of fields to plot.                                                 |
|                     | <SetViewTopDownDirectionByRCS> | String | Optional. Name of relative coordinate system to use for the field plot. |
| <b>Return Value</b> | None.                          |        |                                                                         |

|                       |                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportPlotImageToFile(<FileName>, <FolderName>, <ItemName>, <SetViewTopDownDirectionByRCS>) |
| <b>Python Example</b> | <pre>oModule.ExportPlotImageToFile( "C:\TestEPITF2.jpg", "", "Mag_E2", "RelativeCS1")</pre> |

## ExportPlotImageWithViewToFile [Reporter]

Exports a field plot image to a specified file.

### Note:

This script replaces ExportPlotImageToFile, which is deprecated.

| UI Access    | N/A                                           |         |                                                       |
|--------------|-----------------------------------------------|---------|-------------------------------------------------------|
| Parameters   | Name                                          | Type    | Description                                           |
|              | <FileName>                                    | String  | Full path of file to export.                          |
|              | <PlotQuantityName>                            | String  | Name of quantity to plot.                             |
|              | <PlotItemName>                                | String  | Name of fields to plot.                               |
|              | <PixelSizeX>                                  | Integer | Desired image width, in pixels.                       |
|              | <PixelSizeY>                                  | Integer | Desired image height, in pixels.                      |
|              | <ViewOrientation>                             | String  | <i>Optional.</i> Name of orientation to use for plot. |
| Return Value | Image file is exported to the specified path. |         |                                                       |

|                |                                                                                                                              |
|----------------|------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ExportPlotImageWithViewToFile(<FileName>, <PlotQuantityName>, <PlotItemName>, <PixelSizeX>, <PixelSizeY>, <ViewOrientation>) |
| Python Example | oModule.ExportPlotImageWithViewToFile("E:/MyDir/OptimToutput/magE2.gif", "E Field", "Mag_E2", 1920, 1080, "newot2")          |

## ExportSurfaceMeshSummary

*Use:* Exports a Surface Mesh Summary.

*Command:* **Create Surface Mesh Summary.**

*Syntax:* ExportSurfaceMeshSummary Array(<SolutionName>, <DesignVariationKey> <ExportFileName>)

*Return Value:* None

*Parameters:* <SolutionName>

Type: <string>

*Original name of the plot.*

<DesignVariationKey>

Type: <string>

*New name of the plot.*

| Python Syntax  | ExportSurfaceMeshSummary (<SolutionName>, <DesignVariationKey>, <ExportFileName>)                                                                                                                                                                      |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.ExportSurfaceMeshSummary(     [         "SolutionName:=" , "Setup1 : LastAdaptive",         "DesignVariationKey:=" , "Nominal",         "ExportFileName:=" , "D:\\Program Files\\Docu- ments\\surfaceMeshSummaryReport.csv"     ]) </pre> |

## ExportToFile

### Note:

The ExportToFile script command has replaced the script command [ExportReport](#). ExportReport remains in order to retain backward compatibility for existing scripts, but it is strongly recommended that you now use ExportToFile.

From a data table or plot, generates text format, comma delimited, tab delimited, or .dat type output files.

|                     |                                                                                |         |                                                                                                                                                                                                   |
|---------------------|--------------------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right-click on report name in the project tree and select <b>Export Data</b> . |         |                                                                                                                                                                                                   |
| <b>Parameters</b>   | Name                                                                           | Type    | Description                                                                                                                                                                                       |
|                     | <ReportName>                                                                   | String  | Name of report to be exported.                                                                                                                                                                    |
|                     | <FileName>                                                                     | String  | Full path of the exported image file name; with extension of<br>.txt - Post processor format file<br>.csv - Comma-delimited data file<br>.tab - Tab-separated file<br>.dat - Ansys plot data file |
|                     | <UnitSpec>                                                                     | String  | For example, "kV, Mhz, yd"                                                                                                                                                                        |
|                     | <UseTraceNumberFormat>                                                         | Boolean | "True", "False"                                                                                                                                                                                   |
| <b>Return Value</b> | None.                                                                          |         |                                                                                                                                                                                                   |

|                       |                                                                                                                                                                               |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportToFile(<ReportName>, <FileName>)                                                                                                                                        |
| <b>Python Example</b> | oModule.ExportToFile("rETotal", "C:/Users/Documents/rETotal.csv")<br>oModule.ExportToFile("S Parameter Table 1", "D:/Users/Documents/cfft.csv", False, " kV, MHz, yd ", True) |

## GetFieldFolderNames

Gets the folder names of the field plots.

|                     |                        |
|---------------------|------------------------|
| <b>UI Access</b>    | N/A                    |
| <b>Parameters</b>   | None.                  |
| <b>Return Value</b> | Array of folder names. |

|                       |                                            |
|-----------------------|--------------------------------------------|
| <b>Python Syntax</b>  | GetFieldFolderNames()                      |
| <b>Python Example</b> | <code>oModule.GetFieldFolderNames()</code> |

## GetFieldPlotNames

Gets the names of field overlay plots defined in a design.

|                     |                                                |
|---------------------|------------------------------------------------|
| <b>UI Access</b>    | N/A                                            |
| <b>Parameters</b>   | None.                                          |
| <b>Return Value</b> | Array of strings containing field plots names. |

|                       |                                          |
|-----------------------|------------------------------------------|
| <b>Python Syntax</b>  | GetFieldPlotNames()                      |
| <b>Python Example</b> | <code>oModule.GetFieldPlotNames()</code> |

## GetFieldPlotQuantityName

Gets the quantity name of a specified field plot.



|                     |                            |        |                         |
|---------------------|----------------------------|--------|-------------------------|
| <b>UI Access</b>    | N/A                        |        |                         |
| <b>Parameters</b>   | Name                       | Type   | Description             |
|                     | <PlotName>                 | String | Name of specified plot. |
| <b>Return Value</b> | String plot quantity name. |        |                         |

|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| <b>Python Syntax</b>  | GetFieldPlotQuantityName(<PlotName>)                    |
| <b>Python Example</b> | <code>oModule.GetFieldPlotQuantityName("Mag_H1")</code> |

## GetMeshPlotNames

Gets the names of mesh plots defined in a design.

|                     |                     |
|---------------------|---------------------|
| <b>UI Access</b>    | N/A                 |
| <b>Parameters</b>   | None..              |
| <b>Return Value</b> | Array of plot name. |

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | GetMeshPlotNames                        |
| <b>Python Example</b> | <code>oModule.GetMeshPlotNames()</code> |

## GetTopEntryValue

Gets the value of the top entry of the calculator stack.

|                     |                                               |        |                                      |
|---------------------|-----------------------------------------------|--------|--------------------------------------|
| <b>UI Access</b>    | N/A                                           |        |                                      |
| <b>Parameters</b>   | Name                                          | Type   | Description                          |
|                     | <SolnName>                                    | String | Name of specified solution.          |
|                     | <VarVals>                                     | Array  | Array of variable name, value pairs. |
| <b>Return Value</b> | Array of strings containing top entry values. |        |                                      |

|                       |                                                                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetTopEntryValue(<SolnName>, <VarVals>)                                                                                                    |
| <b>Python Example</b> | <pre>oModule.GetTopEntryValue(<br/>    "Setup1:LastAdaptive",<br/>    ["Freq:=", "1GHz", "Phase:=", "0deg", "x_size:=", "2mm"]<br/>)</pre> |

## HideAntennaParameterOverlay

Hides a currently visible antenna parameter overlay.

|                   |                                                                          |        |                                             |
|-------------------|--------------------------------------------------------------------------|--------|---------------------------------------------|
| <b>UI Access</b>  | <b>HFSS or HFSS-IE &gt; Fields &gt; Plot Fields &gt; Radiation Field</b> |        |                                             |
| <b>Parameters</b> | Name                                                                     | Type   | Description                                 |
|                   | <Name>                                                                   | String | The name of the antenna parameters overlay. |

|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | HideAntennaParameterOverlay(<Name>)                                                   |
| <b>Python Example</b> | <pre>oModule.HideAntennaParameterOverlay(<br/>    "Antenna Parameter Overlay1")</pre> |

## HidePolarPlot

Hides a currently visible polar plot.

|                     |             |             |                         |
|---------------------|-------------|-------------|-------------------------|
| <b>UI Access</b>    | N/A         |             |                         |
| <b>Parameters</b>   | <b>Name</b> | <b>Type</b> | <b>Description</b>      |
|                     | <PlotName>  | String      | Name of the polar plot. |
| <b>Return Value</b> | None.       |             |                         |

|                       |                                               |
|-----------------------|-----------------------------------------------|
| <b>Python Syntax</b>  | HidePolarPlot(<PlotName>)                     |
| <b>Python Example</b> | <pre>oModule.HidePolarPlot("rE Plot 1")</pre> |

## HideRadiatedPlotOverlay

Hides overlay radiation fields plot.

|              |            |        |                         |
|--------------|------------|--------|-------------------------|
| UI Access    | N/A        |        |                         |
| Parameters   | Name       | Type   | Description             |
|              | <PlotName> | String | Name of specified plot. |
| Return Value | None.      |        |                         |

|                |                                                |  |  |
|----------------|------------------------------------------------|--|--|
| Python Syntax  | HideRadiatedPlotOverlay(<PlotName>)            |  |  |
| Python Example | oModule.HideRadiatedPlotOverlay("Gain Plot 1") |  |  |

## LoadNamedExpressions

Loads a named expression definition from a saved file.

|              |                                                                          |        |                                                                                         |
|--------------|--------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------|
| UI Access    | In the Fields Calculator, click <b>Load From...</b> in the Library area. |        |                                                                                         |
| Parameters   | Name                                                                     | Type   | Description                                                                             |
|              | <FileName>                                                               | String | Filename and full path to the file to hold the named expression definition.             |
|              | <FieldType>                                                              | String | For products with just one filed type, it is set to "Fields".                           |
|              | <NamedExpr>                                                              | Array  | rarray of strings containing the names of expression definitions to load from the file. |
| Return Value | None.                                                                    |        |                                                                                         |

|                |                                                            |  |  |
|----------------|------------------------------------------------------------|--|--|
| Python Syntax  | LoadNamedExpressions(<FileName>, <FieldType>, <NamedExpr>) |  |  |
| Python Example | oModule.LoadNamedExpressions (                             |  |  |

|  |                                                                  |
|--|------------------------------------------------------------------|
|  | "C:\Ansoft\PersonalLib\smth.clc",<br>"Fields", ["smoothedtemp"]) |
|--|------------------------------------------------------------------|

## ModifyFieldPlot

Modifies a plot definition.

| UI Access    | [product] > <b>Fields</b> > <b>Modify Plot</b> |        |                                     |
|--------------|------------------------------------------------|--------|-------------------------------------|
| Parameters   | Name                                           | Type   | Description                         |
|              | <OriginalName>                                 | String | Name of the plot to be modified.    |
|              | <PlotParams>                                   | Array  | Array containing modified settings. |
| Return Value | None.                                          |        |                                     |

| Python Syntax  | ModifyFieldPlot(<OriginalName>, <PlotParams>)                                                                                                                                                                                            |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.ModifyFieldPlot("Vector_E1" ,<br/>    ["NAME:Vector_E2",<br/>    "SolutionName:=", "Setup1 : LastAdaptive",<br/>    "QuantityName:=", "Vector_E",<br/>    "PlotFolder:=", "E Field1",<br/>    "UserSpecifyName:=", 0,</pre> |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"UserSpecifyFolder:=", 0,     "IntrinsicVar:=", "Freq='1GHz' Phase='30deg'",     "PlotGeomInfo:=", [1, "Surface", "FacesList", 1, "7"],     "FilterBoxes:=", [0],     ["NAME:PlotOnSurfaceSettings",     "Filled:=", False,     "IsoValType:=", "Fringe",     "SmoothShade:=", True,     "AddGrid:=", False,     "MapTransparency:=", True,     "Transparency:=", 0, _     "ArrowUniform:=", True,     "ArrowSpacing:=", 0.100000001490116,     "GridColor:=", [255, 255, 255]]     ])</pre> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

ReassignFieldPlot

Reassigns a field plot.

|            |                                                 |        |                                     |
|------------|-------------------------------------------------|--------|-------------------------------------|
| UI Access  | Right-click on a field plot > <b>Reassign</b> . |        |                                     |
| Parameters | Name                                            | Type   | Description                         |
|            | <PlotName>                                      | String | Name of specified plot to reassign. |

|              |                                                                                                                |
|--------------|----------------------------------------------------------------------------------------------------------------|
|              | <div><div>&lt;PlotParameterArray&gt;</div><div>Array</div><div>See <a href="#">CreateFieldPlot</a></div></div> |
| Return Value | None.                                                                                                          |

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ReassignFieldPlot(<PlotName>, <PlotParameterArray>)                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Python Example | <pre>oModule.ReassignFieldPlot "Mag_H1", Array("NAME:Mag_H1", _ "SolutionName:=", "Setup1 : LastAdaptive", _ "UserSpecifyName:=", 0, _ "UserSpecifyFolder:=", 0, _ "QuantityName:=", "Mag_H", _ "PlotFolder:=", "H Field", _ "StreamlinePlot:=", False, "AdjacentSidePlot:=", False, "FullModelPlot:=", False, "IntrinsicVar:=", "Freq=\'20GHz\' Phase=\'0deg\'", "PlotGeomInfo:=", [1,"Surface","FacesList",1,"117"], "FilterBoxes:=", [0], ["NAME:PlotOnSurfaceSettings",     "Filled:=", False,</pre> |

```
"IsoValType:=", "Fringe",  
"AddGrid:=", False,  
"MapTransparency:=", True,  
"Refinement:=", 0,  
"Transparency:=", 0,  
"SmoothingLevel:=", 0,  
"ShadingType:=", 0,  
["NAME:Arrow3DSpacingSettings",  
    "ArrowUniform:=", True,  
    "ArrowSpacing:=", 0,  
    "MinArrowSpacing:=", 0,  
    "MaxArrowSpacing:=", 0  
],  
"GridColor:=", [255,255,255]  
],  
"EnableGaussianSmoothing:=", False  
])
```

## RenameFieldPlot

Renames a plot.



|                     |                                                                                                                 |        |                            |
|---------------------|-----------------------------------------------------------------------------------------------------------------|--------|----------------------------|
| <b>UI Access</b>    | Right-click the plot you want to rename in the project tree, and then click <b>Rename</b> on the shortcut menu. |        |                            |
| <b>Parameters</b>   | Name                                                                                                            | Type   | Description                |
|                     | <OldName>                                                                                                       | String | Original name of the plot. |
|                     | <NewName>                                                                                                       | String | New name of the plot.      |
| <b>Return Value</b> | None.                                                                                                           |        |                            |

|                       |                                                                       |  |  |
|-----------------------|-----------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | RenameFieldPlot(<OldName>, <NewName>)                                 |  |  |
| <b>Python Example</b> | <pre>oModule.RenameFieldPlot(<br/>    "Vector_E1", "Vector_E2")</pre> |  |  |

## RenamePlotFolder

Renames a plot folder.

|                     |                                                                                                   |        |                              |
|---------------------|---------------------------------------------------------------------------------------------------|--------|------------------------------|
| <b>UI Access</b>    | Right-click a plot folder in the project tree, and then click <b>Rename</b> on the shortcut menu. |        |                              |
| <b>Parameters</b>   | Name                                                                                              | Type   | Description                  |
|                     | <OldName>                                                                                         | String | Original name of the folder. |
|                     | <NewName>                                                                                         | String | New name of the folder.      |
| <b>Return Value</b> | None.                                                                                             |        |                              |

|                       |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>RenamePlotFolder(&lt;OldName&gt;, &lt;NewName&gt;)</code>          |
| <b>Python Example</b> | <pre>oModule.RenamePlotFolder(<br/>    "E Field", "Surface Plots")</pre> |

## SaveFieldsPlots

Saves field plot(s) to a file.

|                     |                                         |             |                                                       |
|---------------------|-----------------------------------------|-------------|-------------------------------------------------------|
| <b>UI Access</b>    | <b>HFSS &gt; Fields &gt; Save As...</b> |             |                                                       |
| <b>Parameters</b>   | <b>Name</b>                             | <b>Type</b> | <b>Description</b>                                    |
|                     | <PlotNames>                             | Array       | Array of plot names.                                  |
|                     | <FileName>                              | String      | Name of the file to save as, including the file path. |
| <b>Return Value</b> | None.                                   |             |                                                       |

|                       |                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>SaveFieldsPlots(&lt;PlotNames&gt;, &lt;FileName&gt;)</code>                       |
| <b>Python Example</b> | <pre>oModule.SaveFieldsPlots(["Mag_E1", "Mag_E2"],<br/>    "C:/field_report.dsp")</pre> |

## SaveNamedExpressions

Saves a named expression definition to a file.

|                  |                                                                        |
|------------------|------------------------------------------------------------------------|
| <b>UI Access</b> | In the Fields Calculator, click <b>Save To...</b> in the Library area. |
|------------------|------------------------------------------------------------------------|

|                     |              |             |                                                                                        |
|---------------------|--------------|-------------|----------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>  | <b>Type</b> | <b>Description</b>                                                                     |
|                     | <FileName>   | String      | Filename and full path to the file to hold the named expression definition.            |
|                     | <NamedExprs> | Array       | Array of strings containing the names of expression definitions to load from the file. |
|                     | <Overwrite>  | Boolean     | Specifies whether to overwrite the file.                                               |
| <b>Return Value</b> | None.        |             |                                                                                        |

|                       |                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SaveNamedExpressions(<FileName>, <NamedExprs>, <Overwrite>)                                                        |
| <b>Python Example</b> | <pre>oModule.SaveNamedExpressions(<br/>    "C:\Ansoft\PersonalLib\smth.clc",<br/>    ["smoothedtemp"], True)</pre> |

## SetFieldPlotSettings

Sets plot attributes.

|                   |                                                           |             |                                                                                         |
|-------------------|-----------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------|
| <b>UI Access</b>  | [product] > <b>Fields</b> > <b>Modify Plot Attributes</b> |             |                                                                                         |
| <b>Parameters</b> | <b>Name</b>                                               | <b>Type</b> | <b>Description</b>                                                                      |
|                   | <PlotName>                                                | String      | Name of the plot to modify.                                                             |
|                   | <PlotItemAttributes>                                      | Array       | Structured array.                                                                       |
|                   |                                                           |             | <pre>Array("NAME:FieldsPlotItemSettings",<br/>      &lt;PlotOnPointsSettings&gt;,</pre> |

|                     |       |  |                                                                                                                                                |
|---------------------|-------|--|------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       |  | <PlotOnLineSettings>,<br><PlotOnSurfaceSettings>,<br><PlotOnVolumeSettings>)<br><i>See description of CreateFieldPlot command for details.</i> |
| <b>Return Value</b> | None. |  |                                                                                                                                                |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetFieldPlotSettings(<PlotName> <PlotItemAttributes>)                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Python Example</b> | <pre>oModule.SetFieldPlotSettings("Mag_E2",     ["NAME:FieldsPlotItemSettings",         ["NAME:PlotOnLineSettings",             ["NAME:LineSettingsID",                 "Width:=", 4,                 "Style:=", "Cylinder"),             "IsoValType:=", "Tone",             "ArrowUniform:=", True,             "NumofArrow:=", 100),         ["NAME:PlotOnSurfaceSettings",             "Filled:=", False,             "IsoValType:=", "Tone",             "SmoothShade:=", True,</pre> |

|  |                                                                                                                                                                               |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"AddGrid:=", False, "MapTransparency:=", True, "Transparency:=", 0, "ArrowUniform:=", True, "ArrowSpacing:=", 0.100000001490116, "GridColor:=", [255, 255, 255]] )</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## SetPlotFolderSettings

Sets the attributes of all plots in the specified folder.

| UI Access         | [product] > <b>Fields</b> > <b>Modify Plot Attributes</b> |        |                                                                                                                                                                                                                   |
|-------------------|-----------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                      | Type   | Description                                                                                                                                                                                                       |
|                   | <PlotFolderName>                                          | String | Name of the folder with the attributes to modify.                                                                                                                                                                 |
|                   | <PlotFolderAttributes>                                    | Array  | Structured array.                                                                                                                                                                                                 |
|                   |                                                           |        | <pre>Array("NAME:FieldsPlotSettings",       "Real time mode:=", &lt;bool&gt;,       &lt;ColorMapSettings&gt;,       &lt;Scale3DSettings&gt;,       &lt;Marker3DSettings&gt;,       &lt;Arrow3DSettings&gt;)</pre> |

|  |                    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--|--------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ColorMapSettings> | Array | <p>Structured array.</p> <pre> Array("NAME:ColorMapSettings",     "ColorMapType:=", &lt;string Possible values are     "Uniform", "Ramp", "Spectrum"&gt;,     "SpectrumType:=", &lt;string Possible values are     "Rainbow", "Temperature", "Magenta", "Gray"&gt;,     "UniformColor:=", &lt;array containing the R, G, B     components of the color. Components should be in     the range 0 to 255.&gt;,     "RampColor:=", &lt;array containing the R, G, B com-     ponents of the color. Components should be in     the range 0 to 255.&gt;) </pre> |
|  | <Scale3DSettings>  | Array | <p>Structured array.</p> <pre> Array("NAME:Scale3DSettings",     "m_nLevels:=", &lt;int&gt;,     "m_autoScale:=", &lt;bool&gt;,     "minvalue:=", &lt;double&gt;,     "maxvalue:=", &lt;double&gt;,     "log:=", &lt;bool&gt;,     "IntrinsicMin:=", &lt;double&gt;,     "IntrinsicMax:=", &lt;double&gt;) </pre>                                                                                                                                                                                                                                           |
|  | <Marker3DSettings> | Array | <p>Structured array.</p> <pre> Array("NAME:Marker3DSettings",     "MarkerType:=", &lt;integer </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

|              |                   |       |                                                                                                                                                                                                                                                                |
|--------------|-------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                   |       | 9: Sphere<br>10: Box<br>11: Tetrahedron<br>12: Octahedron<br>default: Sphere><br>"MarkerMapSize:=", <bool>,<br>"MarkerMapColor:=", <bool>,<br>"MarkerSize:=", <double>)                                                                                        |
|              | <Arrow3DSettings> | Array | Structured array.<br>Array("NAME:Arrow3DSettings",<br>"ArrowType:=", <integer<br>0: Line<br>1: Cylinder<br>2: Umbrella<br>default: Line>,<br>"ArrowMapSize:=", <bool>,<br>"ArrowMapColor:=", <bool>,<br>"ShowArrowTail:=", <bool>,<br>"ArrowSize:=", <double>) |
| Return Value | None.             |       |                                                                                                                                                                                                                                                                |

| Python Syntax         | SetPlotFolderSettings(<PlotFolderName>, <PlotFolderAttributes>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oModule.SetPlotFolderSettings("E Field1",     ["NAME:FieldsPlotSettings",         "Real time mode:=", True,         ["NAME:ColorMapSettings",             "ColorMapType:=", "Spectrum",             "SpectrumType:=", "Rainbow",             "UniformColor:=", [127, 255, 255],             "RampColor:=", [255, 127, 127]],         ["NAME:Scale3DSettings",             "m_nLevels:=", 27,             "m_autoScale:=", True,             "minvalue:=", 9.34379863739014,             "maxvalue:=", 13683.755859375,             "log:=", False,             "IntrinsicMin:=", 9.34379863739014,             "IntrinsicMax:=", 13683.755859375),         ["NAME:Marker3DSettings",             "MarkerType:=", 0,             "MarkerMapSize:=", True,</pre> |



|  |                                                                                                                                                                                                                                           |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"MarkerMapColor:=", False,<br/>"MarkerSize:=", 0.25],<br/>["NAME:Arrow3DSettings",<br/>"ArrowType:=", 1,<br/>"ArrowMapSize:=", True,<br/>"ArrowMapColor:=", True,<br/>"ShowArrowTail:=", True,<br/>"ArrowSize:=", 0.25]]<br/>)</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## ShowAntennaParameterOverlay

Displays an existing antenna parameters overlay as a table on a far field plot.

| UI Access    | HFSS or HFSS-IE > Fields > Plot > Radiation Fields |        |                                             |
|--------------|----------------------------------------------------|--------|---------------------------------------------|
| Parameters   | Name                                               | Type   | Description                                 |
|              | <Name>                                             | String | The name of the antenna parameters overlay. |
| Return Value | None.                                              |        |                                             |

| Python Syntax  | ShowAntennaParameterOverlay(<Name>)      |
|----------------|------------------------------------------|
| Python Example | oModule.ShowAntennaParameterOverlay(<br> |

|  |                               |
|--|-------------------------------|
|  | "Antenna Parameter Overlay1") |
|--|-------------------------------|

## UpdateAllFieldsPlots

Updates the All Fields Plots.

|                     |       |
|---------------------|-------|
| <b>UI Access</b>    | N/A   |
| <b>Parameters</b>   | None. |
| <b>Return Value</b> | None. |

|                       |                                |
|-----------------------|--------------------------------|
| <b>Python Syntax</b>  | UpdateAllFieldsPlots()         |
| <b>Python Example</b> | oModule.UpdateAllFieldsPlots() |

## UpdateQuantityFieldsPlots

Updates the Quantity Fields Plots.

|                     |              |        |                                           |
|---------------------|--------------|--------|-------------------------------------------|
| <b>UI Access</b>    | N/A          |        |                                           |
| <b>Parameters</b>   | Name         | Type   | Description                               |
|                     | <FolderName> | String | Folder containing the plotted quantities. |
| <b>Return Value</b> | None.        |        |                                           |

|                       |                                                  |
|-----------------------|--------------------------------------------------|
| <b>Python Syntax</b>  | UpdateQuantityFieldsPlots(< <i>FolderName</i> >) |
| <b>Python Example</b> | oModule.UpdateQuantityFieldsPlots("fldplt")      |

## 14 - Fields Calculator Script Commands

Fields Calculator commands should be executed by the Field Overlays module, which is called "FieldsReporter" in HFSS 3D Layout scripts.

```
Set oModule = oDesign.GetModule("FieldsReporter")  
oModule.CommandName <args>
```

The command associated with each of the following scripting commands will be a button pressed in the Fields Calculator.

[AddNamedExpression](#)

[CalcOp](#)

[CalculatorRead](#)

[CalcStack](#)

[CalculatorWrite](#)

[ChangeGeomSettings](#)

[ClcEval](#)

[ClcMaterial](#)

[ClearAllNamedExpr](#)

[CopyNamedExprToStack](#)

[DeleteNamedExpr](#)

[EnterComplex](#)

[EnterComplexVector](#)

[EnterLine](#)

[EnterPoint](#)

[EnterQty](#)

[EnterScalar](#)

[EnterScalarFunc](#)

[EnterSurf](#)

[EnterVector](#)

[EnterVectorFunc](#)

[EnterVol](#)

[ExportOnGrid \[Fields Calculator\]](#)

[ExportToFile \[Fields Calculator\]](#)

[GetTopEntryValue](#)

[LoadNamedExpressions](#)

[SaveNamedExpressions](#)

## AddNamedExpression

Creates a named expression using the expression at the top of the stack.

| UI Access    | Click <b>Add</b> in the <b>Fields Calculator</b> window. |        |                                                       |
|--------------|----------------------------------------------------------|--------|-------------------------------------------------------|
| Parameters   | Name                                                     | Type   | Description                                           |
|              | <ExprName>                                               | String | Name for the new named expression.                    |
|              | <FieldType>                                              | String | Type of field.                                        |
|              | <Expression>                                             | Array  | Defines an expression to be solved in the calculator. |
| Return Value | None                                                     |        |                                                       |

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| <b>Python Syntax</b>  | AddNamedExpression(<ExprName>, <FieldType>)     |
| <b>Python Example</b> | oModule.AddNamedExpression("Mag_JxE", "Fields") |

```
oModule.AddNamedExpression("new2", "Fields",
```

## CalcOp

Performs a calculator operation.

|                     |                                                      |        |                                                  |
|---------------------|------------------------------------------------------|--------|--------------------------------------------------|
| <b>UI Access</b>    | Operation commands like <b>Mag</b> , <b>+</b> , etc. |        |                                                  |
| <b>Parameters</b>   | Name                                                 | Type   | Description                                      |
|                     | <OpString>                                           | String | The text on the corresponding calculator button. |
| <b>Return Value</b> | None.                                                |        |                                                  |

|                       |                     |
|-----------------------|---------------------|
| <b>Python Syntax</b>  | CalcOp(<OpString>)  |
| <b>Python Example</b> | oModule.CalcOp("+") |

## CalcRead(deprecated)

Reads a file that is written out by the CalcWrite command, and puts the result into a calculator numeric.

|                  |                                                              |
|------------------|--------------------------------------------------------------|
| <b>UI Access</b> | Click <b>Read...</b> in the <b>Fields Calculator</b> dialog. |
|------------------|--------------------------------------------------------------|

|                     |            |        |                                |
|---------------------|------------|--------|--------------------------------|
| <b>Parameters</b>   | Name       | Type   | Description                    |
|                     | <FileName> | String | Name of the file to be read.   |
|                     | <SoluName> | String | Specified solution to read in. |
|                     | <VarArray> | Array  | Array of variables to read.    |
| <b>Return Value</b> | None.      |        |                                |

|                       |                                                                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CalcRead(<FileName>, <SoluName>, <VarArray>)                                                                                           |
| <b>Python Example</b> | <pre>oModule.CalcRead(<br/>    "c:\example.reg",<br/>    "Setup1: LastAdaptive",<br/>    ["Freq:=", "10GHz", "Phase:=", "0deg"])</pre> |

## CalculatorRead

Gets a register file and applies it to the calculator stack.

|                   |                                                              |        |                                                    |
|-------------------|--------------------------------------------------------------|--------|----------------------------------------------------|
| <b>UI Access</b>  | Click <b>Read...</b> in the <b>Fields Calculator</b> dialog. |        |                                                    |
| <b>Parameters</b> | Name                                                         | Type   | Description                                        |
|                   | <FileName>                                                   | String | Path to and including name of input register file. |
|                   | <SoluName>                                                   | String | Specified solution to read in.                     |
|                   | <FieldType>                                                  | String | Type of specified field.                           |
|                   | <VarArray>                                                   | Array  | Array of variable names, value pairs.              |

|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CalculatorRead(<FileName>, <SoluName>, <FieldType>, <VarArray>)                                                                                        |
| <b>Python Example</b> | <pre>oModule.CalculatorRead(<br/>    "c:\example.reg",<br/>    "Setup1: LastAdaptive", "Fields",<br/>    ["Freq:=", "10GHz", "Phase:=", "0deg"])</pre> |

## CalcStack

Performs an operation on the stack.

|                     |                                                              |             |                                                  |
|---------------------|--------------------------------------------------------------|-------------|--------------------------------------------------|
| <b>UI Access</b>    | Stack operation buttons such as <b>Push</b> and <b>Pop</b> . |             |                                                  |
| <b>Parameters</b>   | <b>Name</b>                                                  | <b>Type</b> | <b>Description</b>                               |
|                     | <OpString>                                                   | String      | The text on the corresponding calculator button. |
| <b>Return Value</b> | None.                                                        |             |                                                  |

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Python Syntax</b>  | CalcStack(<OpString>)                |
| <b>Python Example</b> | <pre>oModule.CalcStack("push")</pre> |



# CalculatorWrite

Writes contents of top register to file.

|              |                                                               |        |                                                     |
|--------------|---------------------------------------------------------------|--------|-----------------------------------------------------|
| UI Access    | Click <b>Write...</b> in the <b>Fields Calculator</b> window. |        |                                                     |
| Parameters   | Name                                                          | Type   | Description                                         |
|              | <OutputFilePath>                                              | String | Path to and including name of output register file. |
|              | <SoluNameArray>                                               | Array  | Array of strings containing solution names.         |
|              | <VarArray>                                                    | Array  | Array of variable names, value pairs.               |
| Return Value | None                                                          |        |                                                     |

|                |                                                                                                                                            |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | CalculatorWrite(<OutputFilePath>, <SoluNameArray>, <VarArray>)                                                                             |
| Python Example | <pre>oModule.CalculatorWrite("C:\test.reg",     ["Solution:=", "Setup1 : LastAdaptive"],     ["Freq:=", "1GHz", "Phase:=", "0deg"] )</pre> |

# ChangeGeomSettings

Changes the line discretization setting.

|           |                                                                              |
|-----------|------------------------------------------------------------------------------|
| UI Access | In the <b>Fields Calculator</b> dialog box, click on <b>Geom Settings...</b> |
|-----------|------------------------------------------------------------------------------|

|                     |             |         |                            |
|---------------------|-------------|---------|----------------------------|
| <b>Parameters</b>   | Name        | Type    | Description                |
|                     | <LineDiscr> | Integer | Line discretization value. |
| <b>Return Value</b> | None.       |         |                            |

|                       |                                 |
|-----------------------|---------------------------------|
| <b>Python Syntax</b>  | ChangeGeomSettings(<LineDiscr>) |
| <b>Python Example</b> | oModule.ChangeGeomSettings(500) |

## ClcEval

Evaluates the expression at the top of the stack using the provided solution name and variable values.

|                     |                                                           |        |                                      |
|---------------------|-----------------------------------------------------------|--------|--------------------------------------|
| <b>UI Access</b>    | Click <b>Eval</b> in the <b>Fields Calculator</b> dialog. |        |                                      |
| <b>Parameters</b>   | Name                                                      | Type   | Description                          |
|                     | <SoluName>                                                | String | Name of specified solution.          |
|                     | <VarArray>                                                | Array  | Array of variable name, value pairs. |
|                     | <FieldType>                                               | String | Optional. Type of specified field.   |
| <b>Return Value</b> | None                                                      |        |                                      |

|                       |                                                                                                  |
|-----------------------|--------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ClcEval(<SoluName>, <VarArray>, [Optional <FieldType>])                                          |
| <b>Python Example</b> | <pre>oModule.ClcEval("Setup1: LastAdaptive",     ["Freq:", "10GHz",     "Phase:", "0deg"])</pre> |

## ClcMaterial

Performs a material operation on the top stack element.

|                     |                                                              |        |                                                          |
|---------------------|--------------------------------------------------------------|--------|----------------------------------------------------------|
| <b>UI Access</b>    | Click <b>Matl...</b> in the <b>Fields Calculator</b> dialog. |        |                                                          |
| <b>Parameters</b>   | Name                                                         | Type   | Description                                              |
|                     | <MatString>                                                  | String | The material property to apply.                          |
|                     | <OpString>                                                   | String | Name of operation. Possible values are "mult", or "div". |
| <b>Return Value</b> | None.                                                        |        |                                                          |

|                       |                                                              |
|-----------------------|--------------------------------------------------------------|
| <b>Python Syntax</b>  | ClcMaterial(<MatString>, <OpString>)                         |
| <b>Python Example</b> | <code>oModule.ClcMaterial("Permeability (mu)" "mult")</code> |

## ClcMaterialValue

Shows the value of the material property without performing any operation.

|                     |                                                             |        |                                      |
|---------------------|-------------------------------------------------------------|--------|--------------------------------------|
| <b>UI Access</b>    | Select <b>None</b> in the <b>Material Operation</b> dialog. |        |                                      |
| <b>Parameters</b>   | Name                                                        | Type   | Description                          |
|                     | <MaterialName>                                              | String | Name of specified material property. |
| <b>Return Value</b> | None.                                                       |        |                                      |

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ClcMaterialValue(&lt;MaterialName&gt;)</code>   |
| <b>Python Example</b> | <code>oModule.ClcMaterialValue("Mass Density")</code> |

## ClearAllNamedExpr

Clears all user-defined named expressions from the list.

|                     |                                                               |
|---------------------|---------------------------------------------------------------|
| <b>UI Access</b>    | Click <b>ClearAll</b> in the <b>Fields Calculator</b> dialog. |
| <b>Parameters</b>   | None.                                                         |
| <b>Return Value</b> | None.                                                         |

|                       |                                          |
|-----------------------|------------------------------------------|
| <b>Python Syntax</b>  | <code>ClearAllNamedExpr()</code>         |
| <b>Python Example</b> | <code>oModule.ClearAllNamedExpr()</code> |

## CopyNamedExprToStack

Copies the named expression selected to the calculator stack.

|                   |                                                                 |        |                                                              |
|-------------------|-----------------------------------------------------------------|--------|--------------------------------------------------------------|
| <b>UI Access</b>  | Select a named expression and then click <b>Copy to stack</b> . |        |                                                              |
| <b>Parameters</b> | Name                                                            | Type   | Description                                                  |
|                   | <ExprName>                                                      | String | Name of the expression to be copied to the top of the stack. |

|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | CopyNamedExprToStack(<ExprName>)                     |
| <b>Python Example</b> | <code>oModule.CopyNamedExprToStack("Mag_JxE")</code> |

## DeleteNamedExpr

Deletes the selected named expression from the list.

|                     |                                                          |             |                                     |
|---------------------|----------------------------------------------------------|-------------|-------------------------------------|
| <b>UI Access</b>    | Select a named expression and then click <b>Delete</b> . |             |                                     |
| <b>Parameters</b>   | <b>Name</b>                                              | <b>Type</b> | <b>Description</b>                  |
|                     | <ExprName>                                               | String      | Name of specified named expression. |
| <b>Return Value</b> | None.                                                    |             |                                     |

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| <b>Python Syntax</b>  | DeleteNamedExpr(<ExprName>)                     |
| <b>Python Example</b> | <code>oModule.DeleteNamedExpr("Mag_JxE")</code> |

## DoesNamedExpressionExists

Determines whether specified named expression exists.

|              |                                                                                                                                                      |        |                                         |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------|
| UI Access    | N/A                                                                                                                                                  |        |                                         |
| Parameters   | Name                                                                                                                                                 | Type   | Description                             |
|              | <ExpName>                                                                                                                                            | String | Name of the specified named expression. |
| Return Value | Boolean: <ul style="list-style-type: none"><li>• <b>1</b> - named expression exists.</li><li>• <b>0</b> - named expression does not exist.</li></ul> |        |                                         |

|                |                                                           |  |  |
|----------------|-----------------------------------------------------------|--|--|
| Python Syntax  | DoesNamedExpressionExists(<ExpName>)                      |  |  |
| Python Example | <code>oModule.DoesNamedExpressionExists("Mag_JxE")</code> |  |  |

## EnterComplex

Enters a complex number onto the stack.

|              |                                                                                 |        |                                        |
|--------------|---------------------------------------------------------------------------------|--------|----------------------------------------|
| UI Access    | Click <b>Number</b> , and then click <b>Scalar. Complex</b> option is selected. |        |                                        |
| Parameters   | Name                                                                            | Type   | Description                            |
|              | <ComplexNum>                                                                    | String | String of complex value. Ex. "1 + 2j". |
| Return Value | None.                                                                           |        |                                        |

|                |                                              |  |  |
|----------------|----------------------------------------------|--|--|
| Python Syntax  | EnterComplex(<ComplexNum>)                   |  |  |
| Python Example | <code>oModule.EnterComplex("1 + 2 j")</code> |  |  |

# EnterComplexVector

Enters a complex vector onto the stack.

|              |                                                                                 |       |                                                        |
|--------------|---------------------------------------------------------------------------------|-------|--------------------------------------------------------|
| UI Access    | Click <b>Number</b> , and then click <b>Vector. Complex</b> option is selected. |       |                                                        |
| Parameters   | Name                                                                            | Type  | Description                                            |
|              | <ComplexVector>                                                                 | Array | Array of strings containing X, Y and Z complex values. |
| Return Value | None.                                                                           |       |                                                        |

|                |                                                                                        |
|----------------|----------------------------------------------------------------------------------------|
| Python Syntax  | EnterComplexVector(<ComplexVector>)                                                    |
| Python Example | <pre>oModule.EnterComplexVector (     "1 + 2 j",     "1 + 2 j",     "1 + 2 j" ])</pre> |

# EnterCoord

Enters a coordinate system defined in the 3D Modeler editor.

|                     |                                                      |        |                                                               |
|---------------------|------------------------------------------------------|--------|---------------------------------------------------------------|
| <b>UI Access</b>    | Click <b>Geometry</b> and then select <b>Coord</b> . |        |                                                               |
| <b>Parameters</b>   | Name                                                 | Type   | Description                                                   |
|                     | <CoordName>                                          | String | Name of a coordinate system defined in the 3D Modeler editor. |
| <b>Return Value</b> | None.                                                |        |                                                               |

|                       |                              |  |  |
|-----------------------|------------------------------|--|--|
| <b>Python Syntax</b>  | EnterCoord(<CoordName>)      |  |  |
| <b>Python Example</b> | oModule.EnterCoord("Global") |  |  |

## EnterEdge

Enters an edge defined in the 3D Modeler editor.

|                     |            |        |                                                   |
|---------------------|------------|--------|---------------------------------------------------|
| <b>UI Access</b>    | N/A        |        |                                                   |
| <b>Parameters</b>   | Name       | Type   | Description                                       |
|                     | <EdgeName> | String | Name of an edge defined in the 3D Modeler editor. |
| <b>Return Value</b> | None.      |        |                                                   |

|                       |                              |  |  |
|-----------------------|------------------------------|--|--|
| <b>Python Syntax</b>  | EnterEdge(<EdgeName>)        |  |  |
| <b>Python Example</b> | oModule.EnterPoint("Edge_1") |  |  |



## EnterLine

Enters a line defined in the 3D Modeler editor.

|                     |                                                   |        |                                                  |
|---------------------|---------------------------------------------------|--------|--------------------------------------------------|
| <b>UI Access</b>    | Click <b>Geometry</b> and then select <b>Line</b> |        |                                                  |
| <b>Parameters</b>   | Name                                              | Type   | Description                                      |
|                     | <LineName>                                        | String | Name of a line defined in the 3D Modeler editor. |
| <b>Return Value</b> | None.                                             |        |                                                  |

|                       |                            |
|-----------------------|----------------------------|
| <b>Python Syntax</b>  | EnterLine(<LineName>)      |
| <b>Python Example</b> | oModule.EnterLine("Line1") |

## EnterOutputVar

Enters Output Vars, only valid for Eigenmode problems.

|                     |                                                            |        |                                                    |
|---------------------|------------------------------------------------------------|--------|----------------------------------------------------|
| <b>UI Access</b>    | Click <b>Geometry</b> and then select <b>Output Vars</b> . |        |                                                    |
| <b>Parameters</b>   | Name                                                       | Type   | Description                                        |
|                     | <VarName>                                                  | String | Name of the output vars. Only 'freq' is supported. |
|                     | <VarType>                                                  | String | Type of the output vars. 'Complex' type.           |
| <b>Return Value</b> | None.                                                      |        |                                                    |

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| <b>Python Syntax</b>  | EnterOutputVar(<VarName>, <VarType>)                   |
| <b>Python Example</b> | <code>oModule.EnterOutputVar("Freq", "Complex")</code> |

## EnterPoint

Enters a point defined in the 3D Modeler editor.

|                     |                                                      |        |                                                   |
|---------------------|------------------------------------------------------|--------|---------------------------------------------------|
| <b>UI Access</b>    | Click <b>Geometry</b> and then select <b>Point</b> . |        |                                                   |
| <b>Parameters</b>   | Name                                                 | Type   | Description                                       |
|                     | <PointName>                                          | String | Name of a point defined in the 3D Modeler editor. |
| <b>Return Value</b> | None.                                                |        |                                                   |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | EnterPoint(<PointName>)                   |
| <b>Python Example</b> | <code>oModule.EnterPoint("Point1")</code> |

## EnterQty

Enters a field quantity.

|                     |                                                        |        |                                                  |
|---------------------|--------------------------------------------------------|--------|--------------------------------------------------|
| <b>UI Access</b>    | Click <b>Quantity</b> , and then select from the list. |        |                                                  |
| <b>Parameters</b>   | Name                                                   | Type   | Description                                      |
|                     | <FieldQty>                                             | String | The field quantity to be entered onto the stack. |
| <b>Return Value</b> | None.                                                  |        |                                                  |

|                       |                                    |
|-----------------------|------------------------------------|
| <b>Python Syntax</b>  | EnterQty(<FieldQty>)               |
| <b>Python Example</b> | <code>oModule.EnterQty("E")</code> |

## EnterScalar

Enters a scalar onto the stack.

|                     |                                                                                        |        |                                          |
|---------------------|----------------------------------------------------------------------------------------|--------|------------------------------------------|
| <b>UI Access</b>    | Click <b>Number</b> and then click <b>Scalar</b> . <b>Complex</b> option not selected. |        |                                          |
| <b>Parameters</b>   | Name                                                                                   | Type   | Description                              |
|                     | <Scalar>                                                                               | Double | The real number to enter onto the stack. |
| <b>Return Value</b> | None.                                                                                  |        |                                          |

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | EnterScalar(<Scalar>)                              |
| <b>Python Example</b> | <code>oModule.EnterScalar(3.14159265358979)</code> |

## EnterScalarFunc

Enters a scalar function.

|                  |                                                       |
|------------------|-------------------------------------------------------|
| <b>UI Access</b> | Click <b>Function</b> and then select <b>Scalar</b> . |
|------------------|-------------------------------------------------------|

|                     |           |        |                                                                  |
|---------------------|-----------|--------|------------------------------------------------------------------|
| <b>Parameters</b>   | Name      | Type   | Description                                                      |
|                     | <VarName> | String | Name of a variable to enter as a scalar function onto the stack. |
| <b>Return Value</b> | None.     |        |                                                                  |

|                       |                                  |
|-----------------------|----------------------------------|
| <b>Python Syntax</b>  | EnterScalarFunc(<VarName>)       |
| <b>Python Example</b> | oModule.EnterScalarFunc("Phase") |

## EnterSurf

Enters a surface defined in the 3D Modeler editor.

|                     |                                                        |        |                                                     |
|---------------------|--------------------------------------------------------|--------|-----------------------------------------------------|
| <b>UI Access</b>    | Click <b>Geometry</b> and then select <b>Surface</b> . |        |                                                     |
| <b>Parameters</b>   | Name                                                   | Type   | Description                                         |
|                     | <SurfName>                                             | String | Name of a surface defined in the 3D Modeler editor. |
| <b>Return Value</b> | None.                                                  |        |                                                     |

|                       |                                 |
|-----------------------|---------------------------------|
| <b>Python Syntax</b>  | EnterSurf(<SurfName>)           |
| <b>Python Example</b> | oModule.EnterSurf("Rectangle1") |

## EnterVector

Enters a vector onto the stack.

|                     |                                                                                          |       |                                                                  |
|---------------------|------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------|
| <b>UI Access</b>    | Click <b>Number</b> , and then click <b>Vector</b> . <b>Complex</b> option not selected. |       |                                                                  |
| <b>Parameters</b>   | Name                                                                                     | Type  | Description                                                      |
|                     | <VectorArray>                                                                            | Array | Array of strings containing X, Y and Z components of the vector. |
| <b>Return Value</b> | None.                                                                                    |       |                                                                  |

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Python Syntax</b>  | EnterVector(<VectorArray>)           |
| <b>Python Example</b> | oModule.EnterVector([1.0, 1.0, 1.0]) |

## EnterVectorFunc

Enters a vector function.

|                     |                                                       |       |                                                                                                                                            |
|---------------------|-------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Click <b>Function</b> and then select <b>Vector</b> . |       |                                                                                                                                            |
| <b>Parameters</b>   | Name                                                  | Type  | Description                                                                                                                                |
|                     | <VarNames>                                            | Array | Array of strings containing names of a variable for the X, Y, and Z coordinates, respectively, to enter as a vector function on the stack. |
| <b>Return Value</b> | None.                                                 |       |                                                                                                                                            |

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | EnterVectorFunc(<VarNames>)             |
| <b>Python Example</b> | oModuleEnterVectorFunc(["X", "Y", "Z"]) |

## EnterVol

Enters a volume defined in the 3D Modeler editor.

|                     |                                                       |        |                                                    |
|---------------------|-------------------------------------------------------|--------|----------------------------------------------------|
| <b>UI Access</b>    | Click <b>Geometry</b> and then select <b>Volume</b> . |        |                                                    |
| <b>Parameters</b>   | Name                                                  | Type   | Description                                        |
|                     | <VolumeName>                                          | String | Name of a volume defined in the 3D Modeler editor. |
| <b>Return Value</b> | None.                                                 |        |                                                    |

|                       |                                       |
|-----------------------|---------------------------------------|
| <b>Python Syntax</b>  | EnterVol(<VolumeName>)                |
| <b>Python Example</b> | <code>oModule.EnterVol("Box1")</code> |

## ExportOnGrid [Fields Calculator]

Evaluates the top stack element at a set of points specified by a grid and exports the data to a file.

|                   |                                                       |        |                                                                 |
|-------------------|-------------------------------------------------------|--------|-----------------------------------------------------------------|
| <b>UI Access</b>  | Click <b>Export</b> , and then click <b>On Grid</b> . |        |                                                                 |
| <b>Parameters</b> | Name                                                  | Type   | Description                                                     |
|                   | <OutputFile>                                          | String | Name of the output file.                                        |
|                   | <Min>                                                 | Array  | Minimum values for the coordinate components of the grid system |
|                   | <Max>                                                 | Array  | Maximum values for the coordinate components of the grid system |
|                   | <Spacing>                                             | Array  | Spacing values for the coordinate components of the grid system |
|                   | <SolnName>                                            | String | Name of the simulation setup                                    |
|                   | <VarVals>                                             | Array  | Array of strings containing setup definitions.                  |

|                     |                 |         |                                                                                                                                        |
|---------------------|-----------------|---------|----------------------------------------------------------------------------------------------------------------------------------------|
|                     | <IncludePoints> | Boolean | Optional. Specifies whether include points in the output file.                                                                         |
|                     | <CSType>        | String  | Optional. Type of coordinate system. "Cartesian" (default)   "Cylindrical"   "Spherical"                                               |
|                     | <Offsets>       | Array   | Optional. Origin for the offset coordinate system. For Cartesian, x, y, z, for Cylindrical, R, Phi, Z, for Spherical, Rho, Theta, Phi. |
|                     | <ByCount>       | Boolean | Optional.                                                                                                                              |
| <b>Return Value</b> | None.           |         |                                                                                                                                        |

**Note:** Regarding the **ExportOnGrid** legacy script which only has “IncludePtInOutput” argument (the last Boolean one), AEDT can still read it and assign other new arguments as default values. Those default values are RefCSName = “global”, PtInSI = “True”, FieldInRefCS = “False”

|                       |                                                                                                                                                                                                                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportOnGrid(<OutputFile>, <Min>, <Max>, <Spacing>, <SolnName>, <SolnParameters>, [<ExportOption>, "IncludePointsInOutput:=", <boolean>], "RefCSName:=", <CSName>, "PtsInSI:=", <boolean>, "FieldRefCS:=", <boolean>], "<CSType>", [<Offsets>, <ByCount>])                                                    |
| <b>Python Example</b> | <pre>oModule.ExportOnGrid("C:\offset_grid_model_unit_ref.fld",     ["-1mm", "16mm", "0mm"],     ["1mm", "18mm", "1mm"],     ["2mm", "2mm", "1mm"],     "4500MHz : LastAdaptive",     ["Freq:=", "4.5GHz", "Phase:=" , "0deg"],     [         "NAME:ExportOption",         "IncludePtInOutput:=" , True,</pre> |

|  |                                                                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "RefCSName:="          , "offset", "PtInSI:="              , False, "FieldInRefCS:="        , True  ], "Cartesian", ["0mm", "0mm", "0mm"], False ) </pre> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|

## ExportToFile [Fields Calculator]

Evaluates the top stack element at a set of points specified in an external file and exports the data to a file.

**Note:** Regarding to legacy **ExportToFile** script which only has “IncludePtInOutput” argument (the last Boolean one), AEDT can still read it and assign other new arguments as default values. Those default values are RefCSName = “global”, PtInSI = “True”, FieldInRefCS = “False”

| UI Access         | Click <b>Export</b> , and then click <b>To File</b> . |        |                                                                                                                                   |
|-------------------|-------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                  | Type   | Description                                                                                                                       |
|                   | <ReportName>                                          | String | Name of report to be exported.                                                                                                    |
|                   | <FileName>                                            | String | Full path of the exported image file name; with extension of                                                                      |
|                   |                                                       |        | .txt - Post processor format file<br>.csv - Comma-delimited data file<br>.tab - Tab-separated file<br>.dat - Ansys plot data file |



|                     |                                                                                                                                                                                                                                                                                                                                      |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <div> <div>&lt;solution&gt;</div> <div>&lt;freq&gt;</div> <div>&lt;phase&gt;</div> <div>&lt;Export Options&gt;</div> </div> <div> <div>Solution Name</div> <div>frequency</div> <div>phase</div> <div>Whether to include points in output, RefCSName, Pts in SI units &lt;boolean&gt;, Field in RefCS, &lt;boolean&gt;.</div> </div> |
| <b>Return Value</b> | None.                                                                                                                                                                                                                                                                                                                                |

|                       |                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportToFile(<ReportName>, <FileName>, <solution>, ["Freq:=", <freq>, "Phase:=", "<phase>"], <ExportOptions>)                                                                                                                                                                                                                                                      |
| <b>Python Example</b> | <pre>oModule.ExportToFile("C:\\offset_file_model_unit_ref.fld", "C:\\offset_SI.pts", "4500MHz : LastAdaptive",     [         "Freq:="          , "4.5GHz",         "Phase:="         , "0deg"     ],     [         "NAME:ExportOption",         "IncludePtInOutput:=" , True,         "RefCSName:="        , "offset",         "PtInSI:="           , False,</pre> |

|  |                                                          |
|--|----------------------------------------------------------|
|  | <code>"FieldInRefCS:=" , True</code><br><code>] )</code> |
|--|----------------------------------------------------------|

## GetTopEntryValue

Gets the value of the top entry of the calculator stack.

|                     |                                               |             |                                      |
|---------------------|-----------------------------------------------|-------------|--------------------------------------|
| <b>UI Access</b>    | N/A                                           |             |                                      |
| <b>Parameters</b>   | <b>Name</b>                                   | <b>Type</b> | <b>Description</b>                   |
|                     | <SolnName>                                    | String      | Name of specified solution.          |
|                     | <VarVals>                                     | Array       | Array of variable name, value pairs. |
| <b>Return Value</b> | Array of strings containing top entry values. |             |                                      |

|                       |                                                                                                                                |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetTopEntryValue(&lt;SolnName&gt;, &lt;VarVals&gt;)</code>                                                               |
| <b>Python Example</b> | <pre>oModule.GetTopEntryValue(     "Setup1:LastAdaptive",     ["Freq:=", "1GHz", "Phase:=", "0deg", "x_size:=", "2mm"] )</pre> |

## LoadNamedExpressions

Loads a named expression definition from a saved file.

|                     |                                                                          |        |                                                                                       |
|---------------------|--------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------|
| <b>UI Access</b>    | In the Fields Calculator, click <b>Load From...</b> in the Library area. |        |                                                                                       |
| <b>Parameters</b>   | Name                                                                     | Type   | Description                                                                           |
|                     | <FileName>                                                               | String | Filename and full path to the file to hold the named expression definition.           |
|                     | <FieldType>                                                              | String | For products with just one filed type, it is set to "Fields".                         |
|                     | <NamedExpr>                                                              | Array  | rray of strings containing the names of expression definitions to load from the file. |
| <b>Return Value</b> | None.                                                                    |        |                                                                                       |

|                       |                                                                                                                         |  |  |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | LoadNamedExpressions(<FileName>, <FieldType>, <NamedExpr>)                                                              |  |  |
| <b>Python Example</b> | <pre>oModule.LoadNamedExpressions (<br/>    "C:\Ansoft\PersonalLib\smth.clc",<br/>    "Fields", ["smoothedtemp"])</pre> |  |  |

## SaveNamedExpressions

Saves a named expression definition to a file.

|                  |                                                                        |
|------------------|------------------------------------------------------------------------|
| <b>UI Access</b> | In the Fields Calculator, click <b>Save To...</b> in the Library area. |
|------------------|------------------------------------------------------------------------|

|                     |              |             |                                                                                        |
|---------------------|--------------|-------------|----------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>  | <b>Type</b> | <b>Description</b>                                                                     |
|                     | <FileName>   | String      | Filename and full path to the file to hold the named expression definition.            |
|                     | <NamedExprs> | Array       | Array of strings containing the names of expression definitions to load from the file. |
|                     | <Overwrite>  | Boolean     | Specifies whether to overwrite the file.                                               |
| <b>Return Value</b> | None.        |             |                                                                                        |

|                       |                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SaveNamedExpressions(<FileName>, <NamedExprs>, <Overwrite>)                                                        |
| <b>Python Example</b> | <pre>oModule.SaveNamedExpressions(<br/>    "C:\Ansoft\PersonalLib\smth.clc",<br/>    ["smoothedtemp"], True)</pre> |

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left blank.

## 15 - Radiation Module Script Commands

Radiation field commands should be executed by the **RadField** module.

```
oModule = oDesign.GetModule("RadField")
```

```
oModule.CommandName <args>
```

### Conventions Used in this Chapter

<SetupName>

Type: <string>

Name of a radiation setup.

<FaceListName>

Type: <string>

Name of a qualifying face list. Used for specifying custom radiation surfaces. In order to be valid for use in a radiation surface, the face list should not contain any faces on PML objects and should contain only model faces.

<CSName>

Type: string

Name of a coordinate system.

### The topics for this section include:

[General Commands Recognized by the Radiation Module](#)

[Script Commands for Creating and Modifying Radiation Setups](#)

[Script Commands for Modifying Antenna Array Setups](#)

[Script Commands for Exporting Antenna Parameters and Max Field Parameters](#)

## General Commands Recognized by the Radiation Module

[DeleteFarFieldSetup](#)

[DeleteNearFieldSetup](#)

[GetSetupNames](#)

[RenameSetup](#)

[SetPropValue \[Radiation\]](#)

### CopyRadFieldSetup

Copies a radiation field setup to clipboard.

|              |             |        |                                             |
|--------------|-------------|--------|---------------------------------------------|
| UI Access    | N/A         |        |                                             |
| Parameters   | Name        | Type   | Description                                 |
|              | <SetupName> | String | Name of radiation field setup to be copied. |
| Return Value | None.       |        |                                             |

|                |                                                     |
|----------------|-----------------------------------------------------|
| Python Syntax  | CopyRadFieldSetup(<SetupName>)                      |
| Python Example | <code>oModule.CopyRadFieldSetup("RadField1")</code> |

### DeleteFarFieldSetup

Deletes an existing far-field setup.

|                     |                                                                                                     |       |                                 |
|---------------------|-----------------------------------------------------------------------------------------------------|-------|---------------------------------|
| <b>UI Access</b>    | Right-click on a far field setup under <b>Radiation</b> in the project tree, select <b>Delete</b> . |       |                                 |
| <b>Parameters</b>   | Name                                                                                                | Type  | Description                     |
|                     | <SetupName>                                                                                         | Array | Name of setup(s) to be deleted. |
| <b>Return Value</b> | None.                                                                                               |       |                                 |

|                       |                                                                |
|-----------------------|----------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteFarFieldSetup(<SetupName>)                               |
| <b>Python Example</b> | <code>oModule.DeleteFarFieldSetup(["Infinite Sphere1"])</code> |

## DeleteNearFieldSetup

Deletes an existing near-field line radiation setup.

|                     |                                                                                       |       |                              |
|---------------------|---------------------------------------------------------------------------------------|-------|------------------------------|
| <b>UI Access</b>    | <b>Project Manager &gt; Radiation</b> . Right-click a setup and click <b>Delete</b> . |       |                              |
| <b>Parameters</b>   | Name                                                                                  | Type  | Description                  |
|                     | <NameArray>                                                                           | Array | List of fields for deletion. |
| <b>Return Value</b> | None.                                                                                 |       |                              |

|                       |                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteNearFieldSetup(NameArray)                                                       |
| <b>Python Example</b> | <code>oModule.DeleteNearFieldSetup(['Line1', 'Sphere1', 'Box2', 'Rectangle1'])</code> |



## DeleteSetup

Deletes specified radiation field setup(s).

|              |                                                                                      |       |                                     |
|--------------|--------------------------------------------------------------------------------------|-------|-------------------------------------|
| UI Access    | Right-click on a setup under <b>Radiation</b> in the project, select <b>Delete</b> . |       |                                     |
| Parameters   | Name                                                                                 | Type  | Description                         |
|              | <SetupName>                                                                          | Array | Array of setup names to be deleted. |
| Return Value | None.                                                                                |       |                                     |

|                |                                                  |
|----------------|--------------------------------------------------|
| Python Syntax  | DeleteSetup(<SetupName>)                         |
| Python Example | <code>oModule.DeleteSetup(["Rad Field1"])</code> |

## EditRadiatedPowerCalculationMethod

Selects the method used to calculate radiated power.

|              |                                                                                              |        |                                                                        |
|--------------|----------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------|
| UI Access    | Right-click Radiation in the project tree, select <b>Radiated Power Calculation Method</b> . |        |                                                                        |
| Parameters   | Name                                                                                         | Type   | Description                                                            |
|              | <PowerCalculationMethod>                                                                     | String | One of: "Auto", "Raidation Surface Integral", or "Far Field Integral". |
| Return Value | None.                                                                                        |        |                                                                        |

|                       |                                                                                                                                                                                                         |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>EditRadiatedPowerCalculationMethod(&lt;PowerCalculationMethod&gt;)</code>                                                                                                                         |
| <b>Python Example</b> | <pre>oModule.EditRadiatedPowerCalculationMethod("Auto") oModule.EditRadiatedPowerCalculationMethod("Radiation Surface Integral") oModule.EditRadiatedPowerCalculationMethod("Far Field Integral")</pre> |

## GetChildNames [Radiation]

*Use:* Gets setup names .

*Syntax:* GetChildNames()

*Return Value:* All setup names.

*Parameters:* Optional, this parameter is ignored.

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetChildNames ()</code>                        |
| <b>Python Example</b> | <pre>GetChildNames() //return all setup names.</pre> |

## GetChildObject [Radiation]

Gets a Setup Object of the Radiation module.

|                       |                                                                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetChildObject()</code>                                                                                                        |
| <b>Python Example</b> | <pre>oOverlay= oRadModule.GetChildObject('Antenna Parameter Overlay1') oSphere = oRadModule.GetChildObject('Infinite Sphere1')</pre> |

## GetChildTypes [Radiation]

*Use:* Gets child types of queried Radiation module object.

*Syntax:* GetChildTypes()

*Return Value:* Returns empty array.

| Python Syntax  | GetChildTypes ()                                                                |
|----------------|---------------------------------------------------------------------------------|
| Python Example | <pre>oRad = oDesign.GetChildObject("RadField") oRadModule.GetChildTypes()</pre> |

## GetPropNames [Radiation]

*Use:* Radiation module does not have its own property, this function always returns empty array.

*Syntax:* GetPropNames(bIncludeReadOnly)

*Return Value:* Returns empty set.

*Parameters:* bIncludeReadOnly—optional, default to True.

| Python Syntax  | GetPropNames ()                                                                                   |
|----------------|---------------------------------------------------------------------------------------------------|
| Python Example | <pre>oRadModule.GetPropNames() oRadModule.GetPropNames(True) oRadModule.GetPropNames(False)</pre> |

## GetProperty [Radiation]

Get the property value for a setup object.

|                     |                     |             |                                                                                              |
|---------------------|---------------------|-------------|----------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | NA                  |             |                                                                                              |
| <b>Parameters</b>   | Name                | Type        | Description                                                                                  |
|                     | PropPath Value      | text string | A Property path begin with a setup name. See <a href="#">property path discussion here</a> . |
| <b>Return Value</b> | The property value. |             |                                                                                              |

|                       |                                                                                                             |  |  |
|-----------------------|-------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | GetPropValue(propPath)                                                                                      |  |  |
| <b>Python Example</b> | <pre>oRadModule.GetPropValue('Line1/Num Points') //Get the Line1 setups' "Num Points" property value.</pre> |  |  |

## GetSetupNames

Gets the names of far field and near field radiation setups in a design.

|                     |                                          |        |                    |
|---------------------|------------------------------------------|--------|--------------------|
| <b>UI Access</b>    | N/A                                      |        |                    |
| <b>Parameters</b>   | Name                                     | Type   | Description        |
|                     | <RadiationType>                          | String | Type of radiation. |
| <b>Return Value</b> | Array of strings containing setup names. |        |                    |

|                       |                                                     |  |  |
|-----------------------|-----------------------------------------------------|--|--|
| <b>Python Syntax</b>  | GetSetupNames(<RadiationType>)                      |  |  |
| <b>Python Example</b> | <pre>oModule.GetSetupNames("Infinite Sphere")</pre> |  |  |

## PasteRadFieldSetup

Pastes a copied radiation field setup.

|                     |                              |
|---------------------|------------------------------|
| <b>UI Access</b>    | N/A                          |
| <b>Parameters</b>   | None.                        |
| <b>Return Value</b> | String name of pasted setup. |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | PasteRadFieldSetup()                      |
| <b>Python Example</b> | <code>oModule.PasteRadFieldSetup()</code> |

## RenameSetup [Radiation]

Renames an existing radiation setup.

|                     |                                                                                                       |        |                                        |
|---------------------|-------------------------------------------------------------------------------------------------------|--------|----------------------------------------|
| <b>UI Access</b>    | Right-click a radiation setup in the project tree, and then click <b>Rename</b> on the shortcut menu. |        |                                        |
| <b>Parameters</b>   | Name                                                                                                  | Type   | Description                            |
|                     | <OldName>                                                                                             | String | Name of specified setup to be renamed. |
|                     | <NewName>                                                                                             | String | New name for the setup.                |
| <b>Return Value</b> | None.                                                                                                 |        |                                        |

|                      |                                   |
|----------------------|-----------------------------------|
| <b>Python Syntax</b> | RenameSetup(<OldName>, <NewName>) |
|----------------------|-----------------------------------|

|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| <b>Python Example</b> | <code>oModule.RenameSetup("Sphere1", "MyNearSphere")</code> |
|-----------------------|-------------------------------------------------------------|

## SetPropValue [Radiation]

Sets the property value for the active Radiation property object.

|                     |                                                                                   |                                 |                                                                                              |
|---------------------|-----------------------------------------------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Edit Properties on ProjectTree objects                                            |                                 |                                                                                              |
| <b>Parameters</b>   | Name                                                                              | Type                            | Description                                                                                  |
|                     | propPath                                                                          | text string                     | A Property path begin with a setup name. See <a href="#">property path discussion here</a> . |
|                     | Value                                                                             | Text String, Number, or Boolean | New value data type is depending on the property type.                                       |
| <b>Return Value</b> | True if the property is found and the new value is valid. Otherwise return False. |                                 |                                                                                              |

|                       |                                                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>SetPropValue(propPath, value)</code>                                                                          |
| <b>Python Example</b> | <code>oRadModule.SetPropValue('Line1/Num Points', 100) ; Set the Line1 setups' "Num Points" property to 100.</code> |

## Script Commands for Creating and Modifying Radiation Setups

[EditBoxSetup](#)

[EditFarFieldSphereSetup](#)

[EditNearFieldLineSetup](#)

[EditNearFieldRectangleSetup](#)

[EditNearFieldSphereSetup](#)

[InsertBoxSetup](#)

[InsertFarFieldSphereSetup](#)

[InsertNearFieldLineSetup](#)

[InsertNearFieldRectangleSetup](#)

[InsertNearFieldSphereSetup](#)

## AddAntennaOverlay

Saves a table of antenna parameters for use an overlay on far field plots.

|                   |                                                                           |      |             |
|-------------------|---------------------------------------------------------------------------|------|-------------|
| <b>UI Access</b>  | Click on <b>Save for Overlay</b> in the <b>Antenna Parameters</b> dialog. |      |             |
| <b>Parameters</b> | Name                                                                      | Type | Description |

|                     |                              |              |                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <b>&lt;AntennaParams&gt;</b> | <b>Array</b> | <p>Structured array.</p> <pre>Array("NAME:&lt;AntennaOverlayName&gt;", "Setup:=", &lt;string far field radiation setup name&gt;, "Solution:=", &lt;string for the Solution Setup and Pass&gt;, "IntrinsicVariation:=", &lt;string for variation definition&gt;, "UseNominalDesign:=", &lt;boolean&gt;, "DesignVariation:=", &lt;string&gt;, "Calculations:=", &lt;list of each antenna parameter to display&gt;)</pre> |
| <b>Return Value</b> | None.                        |              |                                                                                                                                                                                                                                                                                                                                                                                                                        |

|                       |                                                                                                                                                                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <b>AddAntennaOverlay(&lt;AntennaParams&gt;)</b>                                                                                                                                                                                                 |
| <b>Python Example</b> | <pre>oModule.AddAntennaOverlay( [ "NAME:Antenna Parameter Overlay1", "Setup:=", "Infinite Sphere1", "Solution:=", "4500MHz : LastAdaptive", "IntrinsicVariation:=", "Freq=4.5GHz ", "UseNominalDesign:=", False, "DesignVariation:=", "",</pre> |



|  |                                                                                                                                                 |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"Calculations:=", "Max U,Peak Directivity,Peak Gain,Radiation Efficiency, Front To Back Ratio,Total Efficiency,System Efficiency" ])</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------|

AddRadFieldSourceGroup

Adds source group definitions for radiation field setup.

|              |                                                                                                                |       |                                                                                                                             |
|--------------|----------------------------------------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------|
| UI Access    | Right-click on <b>Radiation</b> in the project tree, select <b>Insert Far Field Setup &gt; Source Group...</b> |       |                                                                                                                             |
| Parameters   | Name                                                                                                           | Type  | Description                                                                                                                 |
|              | <SourceGroupParams>                                                                                            | Array | Structured array<br><br>Array("NAME:<SourceGroupName>",<br><br>Array("NAME:Sources",<br><br><SourceName>, <SourceName>...)) |
| Return Value | None.                                                                                                          |       |                                                                                                                             |

|                |                                                                                                                |
|----------------|----------------------------------------------------------------------------------------------------------------|
| Python Syntax  | AddRadFieldSourceGroup(<SourceGroupParams>)                                                                    |
| Python Example | <pre>oModule.AddRadFieldSourceGroup( [     "NAME:Source Group1",     ["NAME:Sources",     "feedpin1_T1",</pre> |

|  |                                  |
|--|----------------------------------|
|  | <pre>"feedpin1_T2"]<br/>l)</pre> |
|--|----------------------------------|

## EditAntennaOverlay

Edits parameters in an existing antenna overlay.

| UI Access    | N/A                  |        |                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------|----------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                 | Type   | Description                                                                                                                                                                                                                                                                                                                                                                          |
|              | <AntennaOverlayName> | String | Name of the antenna overlay to be edited.                                                                                                                                                                                                                                                                                                                                            |
|              | <AntennaParams>      | Array  | Structured array.<br><br>Array("NAME:<AntennaOverlayName>",<br>"Setup:=", <string far field radiation setup name>,<br>"Solution:=", <string for the Solution Setup and Pass>,<br>"IntrinsicVariation:=", <string for variation definition>,<br>"UseNominalDesign:=", <boolean>,<br>"DesignVariation:=", <string>,<br>"Calculations:=" , <list of each antenna parameter to display>) |
| Return Value | None.                |        |                                                                                                                                                                                                                                                                                                                                                                                      |

| Python Syntax | EditAntennaOverlay(<AntennaOverlayName>, <AntennaParams>) |
|---------------|-----------------------------------------------------------|
|---------------|-----------------------------------------------------------|

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.EditAntennaOverlay("Antenna Parameter Overlay1",<br/>[<br/>    "NAME:Antenna Parameter Overlay1",<br/>    "Setup:=", "Infinite Sphere1",<br/>    "Solution:=", "4500MHz : LastAdaptive",<br/>    "IntrinsicVariation:=", "Freq=4.5GHz ",<br/>    "UseNominalDesign:=", False,<br/>    "DesignVariation:=", "",<br/>    "Calculations:=", "Max U,Peak Directivity,Peak Gain,Radiation Efficiency,<br/>    Front To Back Ratio,Total Efficiency,System Efficiency"<br/>])</pre> |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

EditBoxSetup

Edits a near-field box radiation setup.

| UI Access  | Project Manager > Radiation > Box. Double-click and edit information. |       |                                                                                                                             |
|------------|-----------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                  | Type  | Description                                                                                                                 |
|            | <BoxParams>                                                           | Array | Structured array.<br><br>Array("NAME:<SetupName>",<br>"UseCustomRadiationSurface:=", <bool>,<br>"CustomRadiationSurface:=", |

|                     |       |  |                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|-------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       |  | <pre> &lt;FaceListName&gt;, "Length:=", &lt;string&gt;, "Width:=", &lt;string&gt;, "LengthSamples:=", &lt;int&gt;, "WidthSamples:=", &lt;int&gt;, "CoordSystem:=", &lt;CSname&gt; "Height:=", &lt;string&gt;, "HeightSamples:=", &lt;int&gt;) </pre> <p>For UseCustomRadiationSurface parameter, provide value if True. If False, radiation boundary/PML boundaries will be used as radiation surfaces.</p> |
| <b>Return Value</b> | None. |  |                                                                                                                                                                                                                                                                                                                                                                                                             |

| Python Syntax         | EditBoxSetup(<BoxParams>)                                                                                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oModule.EditBoxSetup( ['NAME:MyBox', 'UseCustomRadiationSurface:=', False, 'Length:=', '20mm', 'Width:=', '20mm', 'LengthSamples:=', 21, 'WidthSamples:=', 21, 'CoordSystem:=', 'Global', </pre> |

|  |                                                                   |
|--|-------------------------------------------------------------------|
|  | <pre>'Height:=' , '20mm',<br/>'HeightSamples:=' , 21<br/>])</pre> |
|--|-------------------------------------------------------------------|

EditFarFieldSphereSetup

Modifies an existing far-field sphere setup.

| UI Access  | Double-click a radiation setup in the project tree to modify its settings. |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------|----------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                       | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|            | <FarFieldSphereName>                                                       | String | Name of the Far Field Sphere Radiation Setup to be edited.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|            | <FarFieldSphereParams>                                                     | Array  | Structured array.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|            |                                                                            |        | <pre>Array("NAME:&lt;InfSphereName&gt;",<br/>      "UseCustomRadiationSurface:=", &lt;boolean&gt;,<br/>      "CSDefinition:=", &lt;string, "Theta-Phi"   "Az<br/>Over EI"   "EI Over AS"&gt;,<br/>      "Polarization:=", &lt;string, "Linear"   "Slant"&gt;,<br/>      "ThetaStart:=", "&lt;value&gt;&lt;unit&gt;",<br/>      "ThetaStop:=", "&lt;value&gt;&lt;unit&gt;",<br/>      "ThetaStep:=", "&lt;value&gt;&lt;unit&gt;",<br/>      "PhiStart:=", "&lt;value&gt;&lt;unit&gt;",<br/>      "PhiStop:=", "&lt;value&gt;&lt;unit&gt;",</pre> |

|                     |      |  |                                                           |
|---------------------|------|--|-----------------------------------------------------------|
|                     |      |  | "PhiStep:=", "<value><unit>",<br>"UseLocalCS:=", boolean) |
| <b>Return Value</b> | None |  |                                                           |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | EditFarFieldSphereSetup(<FarFieldSphereName>, <FarFieldSphereParams>)                                                                                                                                                                                                                                                                                                                                                        |
| <b>Python Example</b> | <pre>oModule.EditFarFieldSphereSetup("Infinite Sphere1", [     "NAME:Infinite Sphere1",     "UseCustomRadiationSurface:=", False,     "ThetaStart:="          , "0deg",     "ThetaStop:="           , "180deg",     "ThetaStep:="           , "3deg",     "PhiStart:="             , "-180deg",     "PhiStop:="              , "180deg",     "PhiStep:="              , "3deg",     "UseLocalCS:="          , False ])</pre> |

## EditInfiniteSphereSetup

Modifies an infinite sphere radiation field setup.

|              |                                                                     |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------|---------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | Double-click on a setup under <b>Radiation</b> in the project tree. |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Parameters   | Name                                                                | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|              | <InfSphereName>                                                     | String | Name of the infinite sphere setup to be edited.                                                                                                                                                                                                                                                                                                                                                                                                                               |
|              | <InfSphereParams>                                                   | Array  | Structured array.<br><br>Array("NAME:<InfSphereName>",<br>"UseCustomRadiationSurface:=", <boolean>,<br>"CSDefinition:=", <string, "Theta-Phi"   "Az Over EI"  <br>"EI Over AS">,<br>"Polarization:=", <string, "Linear"   "Slant">,<br>"ThetaStart:=", "<value><unit>",<br>"ThetaStop:=", "<value><unit>",<br>"ThetaStep:=", "<value><unit>",<br>"PhiStart:=", "<value><unit>",<br>"PhiStop:=", "<value><unit>",<br>"PhiStep:=", "<value><unit>",<br>"UseLocalCS:=", boolean) |
| Return Value | None.                                                               |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|                |                                                             |
|----------------|-------------------------------------------------------------|
| Python Syntax  | EditInfiniteSphereSetup(<InfSphereName>, <InfSphereParams>) |
| Python Example | oModule.EditInfiniteSphereSetup("Infinite Sphere1",         |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>[<br/>  "NAME:Infinite Sphere1",<br/>  "UseCustomRadiationSurface:=", False,<br/>  "CSDefinition:="          , "Theta-Phi",<br/>  "Polarization:="          , "Linear",<br/>  "ThetaStart:="            , "0deg",<br/>  "ThetaStop:="             , "180deg",<br/>  "ThetaStep:="             , "2deg",<br/>  "PhiStart:="              , "-180deg",<br/>  "PhiStop:="               , "180deg",<br/>  "PhiStep:="               , "2deg",<br/>  "UseLocalCS:="           , False<br/>]</pre> |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

EditLineSetup

Modifies a near field line setup.

| UI Access  | Double-click on a setup under <b>Radiation</b> in the project tree. |        |                                                   |
|------------|---------------------------------------------------------------------|--------|---------------------------------------------------|
| Parameters | Name                                                                | Type   | Description                                       |
|            | <SetupName>                                                         | String | Name of the setup to be edited.                   |
|            | <LineParams>                                                        | Array  | Structured array.<br><br>Array("NAME:<LineName>", |



|                     |                                                                                                                                                                                                                           |                                                                                                                                                                        |  |                                                                                                                                                                        |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <table><tr><td></td><td></td><td><code>"UseCustomRadiationSurface:=", &lt;boolean&gt;,<br/>"Line:=", &lt;string, name of specified line&gt;,<br/>"NumPts:=", "&lt;integer, number of points&gt;"</code></td></tr></table> |                                                                                                                                                                        |  | <code>"UseCustomRadiationSurface:=", &lt;boolean&gt;,<br/>"Line:=", &lt;string, name of specified line&gt;,<br/>"NumPts:=", "&lt;integer, number of points&gt;"</code> |
|                     |                                                                                                                                                                                                                           | <code>"UseCustomRadiationSurface:=", &lt;boolean&gt;,<br/>"Line:=", &lt;string, name of specified line&gt;,<br/>"NumPts:=", "&lt;integer, number of points&gt;"</code> |  |                                                                                                                                                                        |
| <b>Return Value</b> | None.                                                                                                                                                                                                                     |                                                                                                                                                                        |  |                                                                                                                                                                        |

|                |                                                                                                                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | <code>EditLineSetup(&lt;SetupName&gt;, &lt;LineParams&gt;)</code>                                                                                                                                                  |
| Python Example | <pre>oModule.EditLineSetup("Line1",<br/>[<br/>    "NAME:Line1",<br/>    "UseCustomRadiationSurface:=", False,<br/>    "Line:="                , "Polyline1",<br/>    "NumPts:="              , "1000"<br/>])</pre> |

EditNearFieldBoxSetup

Modifies a near field box radiation field setup.

|            |                                   |        |                                                |
|------------|-----------------------------------|--------|------------------------------------------------|
| UI Access  | N/A                               |        |                                                |
| Parameters | Name                              | Type   | Description                                    |
|            | <code>&lt;BoxSetupName&gt;</code> | String | Name of the near field box setup to be edited. |

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <div> <div>&lt;BoxSetupParams&gt;</div> <div>Array</div> <div>           Structured array.<br/> <pre> Array ("NAME:&lt;BoxSetupName&gt;",       "UseCustomRadiationSurface:=", &lt;boolean&gt;,       "Length:=", "&lt;value&gt;&lt;unit&gt;",       "Width:=", "&lt;value&gt;&lt;unit&gt;",       "LengthSamples:=", &lt;value&gt;,       "WidthSamples:=", &lt;value&gt;,       "CoordSystem:=", &lt;string name of coordinate system&gt;,       "Height:=", "&lt;value&gt;&lt;unit&gt;",       "HeightSamples:=", &lt;value&gt;) </pre> </div> </div> |
| <b>Return Value</b> | None.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                                                                                                                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | EditNearFieldBoxSetup(<BoxSetupName>, <BoxSetupParams>)                                                                                                                                                                                     |
| <b>Python Example</b> | <pre> oModule.EditNearFieldBoxSetup("Box1", [     "NAME:Box1",     "UseCustomRadiationSurface:=", False,     "Length:="                , "20meter",     "Width:="                  , "20meter",     "LengthSamples:="          , 21, </pre> |

|  |                                                                                                                                              |
|--|----------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"WidthSamples:="      , 21, "CoordSystem:="       , "Global", "Height:="             , "20meter", "HeightSamples:="      , 21 ] )</pre> |
|--|----------------------------------------------------------------------------------------------------------------------------------------------|

EditNearFieldLineSetup

Modifies a near field line setup.

|              |              |        |                                                                                                                                                                                             |
|--------------|--------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | N/A          |        |                                                                                                                                                                                             |
| Parameters   | Name         | Type   | Description                                                                                                                                                                                 |
|              | <SetupName>  | String | Name of the setup to be edited.                                                                                                                                                             |
|              | <LineParams> | Array  | Structured array.<br><br>Array("NAME:<LineName>",<br>"UseCustomRadiationSurface:=", <boolean>,<br>"Line:=", <string, name of specified line>,<br>"NumPts:=", "<integer, number of points>") |
| Return Value | None.        |        |                                                                                                                                                                                             |

|               |                                                   |
|---------------|---------------------------------------------------|
| Python Syntax | EditNearFieldLineSetup(<SetupName>, <LineParams>) |
|---------------|---------------------------------------------------|

|                       |                                                                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oModule.EditNearFieldLineSetup("Line1", [     "NAME:Line1",     "UseCustomRadiationSurface:=", False,     "Line:="                , "Polyline1",     "NumPts:="              , "1000" ])</pre> |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## EditNearFieldRectangleSetup

Modifies a near field rectangle radiation setup.

| UI Access         | N/A.                   |        |                                                                                                                                                                                                                                                                                                                                     |
|-------------------|------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                   | Type   | Description                                                                                                                                                                                                                                                                                                                         |
|                   | <RectangleSetupName>   | String | Name of rectangle radiation setup to be edited.                                                                                                                                                                                                                                                                                     |
|                   | <RectangleSetupParams> | Array  | Structured array.                                                                                                                                                                                                                                                                                                                   |
|                   |                        |        | <pre>Array("NAME:&lt;RectangleSetupName&gt;",     "UseCustomRadiationSurface:=", &lt;boolean&gt;,     "Length:=", "&lt;value&gt;&lt;unit&gt;",     "Width:=", "&lt;value&gt;&lt;unit&gt;",     "LengthSamples:=", &lt;value&gt;,     "WidthSamples:=", &lt;value&gt;,     "CoordSystem:=", &lt;string name of coordinate sys-</pre> |

|              |                                             |
|--------------|---------------------------------------------|
|              | <div></div> <div></div> <div>tem&gt;)</div> |
| Return Value | None.                                       |

|                |                                                                                                                                                                                                                                                                                                                                               |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | EditNearFieldRectangleSetup(<RectangleSetupName>, <RectangleSetupParams>)                                                                                                                                                                                                                                                                     |
| Python Example | <pre>oModule.EditNearFieldRectangleSetup("Rectangle1", [     "NAME:Rectangle1",     "UseCustomRadiationSurface:=", False,     "Length:="                , "20meter",     "Width:="                  , "20meter",     "LengthSamples:="          , 41,     "WidthSamples:="           , 41,     "CoordSystem:="            , "Global" ])</pre> |

EditNearFieldSphereSetup

Modifies a near field sphere radiation setup.

|           |     |
|-----------|-----|
| UI Access | N/A |
|-----------|-----|

|                     |                     |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------|---------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>         | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                     | <SphereSetupName>   | String      | Name of sphere radiation field setup to be edited.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                     | <SphereSetupParams> | Array       | Structured array.<br><br><pre>Array("NAME:&lt;SphereSetupName&gt;",       "UseCustomRadiationSurface:=", &lt;boolean&gt;,       "Radius:=", "&lt;value&gt;&lt;unit&gt;",       "ThetaStart:=", "&lt;value&gt;&lt;unit&gt;",       "ThetaStop:=", "&lt;value&gt;&lt;unit&gt;",       "ThetaStep:=", "&lt;value&gt;&lt;unit&gt;",       "PhiStart:=", "&lt;value&gt;&lt;unit&gt;",       "PhiStop:=", "&lt;value&gt;&lt;unit&gt;",       "PhiStep:=", "&lt;value&gt;&lt;unit&gt;",       "UseLocalCS:=", &lt;boolean&gt;)</pre> |
| <b>Return Value</b> | None.               |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|                       |                                                                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>EditNearFieldSphereSetup(&lt;SphereSetupName&gt;, &lt;SphereSetupParams&gt;)</code>                                                                  |
| <b>Python Example</b> | <pre>oModule.EditNearFieldSphereSetup("Sphere1", [     "NAME:Sphere2",     "UseCustomRadiationSurface:=", False,     "Radius:="         , "20meter",</pre> |

|  |                                                                                                                                                                                                                                                                       |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "ThetaStart:="          , "0deg", "ThetaStop:="           , "180deg", "ThetaStep:="           , "2deg", "PhiStart:="             , "-180deg", "PhiStop:="              , "180deg", "PhiStep:="              , "2deg", "UseLocalCS:="          , False 1) </pre> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### EditRadFieldSourceGroup

Modifies an existing source group definitions for radiation field setup.

| UI Access    | Double-click on a source group setup under <b>Radiation</b> in the project tree. |        |                                                                                                                                                            |
|--------------|----------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                                             | Type   | Description                                                                                                                                                |
|              | <SourceGroupName>                                                                | String | Name of the source group setup to be edited.                                                                                                               |
|              | <SourceGroupParams>                                                              | Array  | Structured array<br><pre> Array("NAME:&lt;SourceGroupName&gt;",       Array("NAME:Sources",             &lt;SourceName&gt;, &lt;SourceName&gt;...)) </pre> |
| Return Value | None.                                                                            |        |                                                                                                                                                            |

| Python Syntax  | EditRadFieldSourceGroup(<SourceGroupName>, <SourceGroupParams>)                                                                                   |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.EditRadFieldSourceGroup("Source Group1", [     "NAME:Source Group1",     ["NAME:Sources",     "IncPWave1",     "IncPWave2"] ])</pre> |

## EditRectangleSetup

Modifies a near field rectangle radiation setup.

| UI Access  | Double-click on a rectangle setup under <b>Radiation</b> in the project tree. |        |                                                                                                                                                                                                                                                                             |
|------------|-------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                          | Type   | Description                                                                                                                                                                                                                                                                 |
|            | <RectangleSetupName>                                                          | String | Name of rectangle radiation setup to be edited.                                                                                                                                                                                                                             |
|            | <RectangleSetupParams>                                                        | Array  | Structured array.                                                                                                                                                                                                                                                           |
|            |                                                                               |        | <pre>Array("NAME:&lt;RectangleSetupName&gt;",     "UseCustomRadiationSurface:=", &lt;boolean&gt;,     "Length:=", "&lt;value&gt;&lt;unit&gt;",     "Width:=", "&lt;value&gt;&lt;unit&gt;",     "LengthSamples:=", &lt;value&gt;,     "WidthSamples:=", &lt;value&gt;,</pre> |



|              |                                                                                                      |  |                                                      |
|--------------|------------------------------------------------------------------------------------------------------|--|------------------------------------------------------|
|              | <table><tr><td></td><td>"CoordSystem:=", &lt;string name of coordinate system&gt;)</td></tr></table> |  | "CoordSystem:=", <string name of coordinate system>) |
|              | "CoordSystem:=", <string name of coordinate system>)                                                 |  |                                                      |
| Return Value | None.                                                                                                |  |                                                      |

|                |                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | EditRectangleSetup(<RectangleSetupName>, <RectangleSetupParams>)                                                                                                                                                                                                                                                                                                         |
| Python Example | <pre>oModule.EditRectangleSetup("Rectangle1",<br/>[<br/>    "NAME:Rectangle1",<br/>    "UseCustomRadiationSurface:=", False,<br/>    "Length:="                , "20meter",<br/>    "Width:="                  , "20meter",<br/>    "LengthSamples:="          , 41,<br/>    "WidthSamples:="           , 41,<br/>    "CoordSystem:="            , "Global"<br/>])</pre> |

### EditSphereSetup

Modifies a near field sphere radiation setup.

| UI Access    | Double-click on a sphere setup under <b>Radiation</b> in the project tree. |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------|----------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                                       | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|              | <SphereSetupName>                                                          | String | Name of sphere radiation field setup to be edited.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|              | <SphereSetupParams>                                                        | Array  | Structured array.<br><br><pre>Array("NAME:&lt;SphereSetupName&gt;",       "UseCustomRadiationSurface:=", &lt;boolean&gt;,       "Radius:=", "&lt;value&gt;&lt;unit&gt;",       "ThetaStart:=", "&lt;value&gt;&lt;unit&gt;",       "ThetaStop:=", "&lt;value&gt;&lt;unit&gt;",       "ThetaStep:=", "&lt;value&gt;&lt;unit&gt;",       "PhiStart:=", "&lt;value&gt;&lt;unit&gt;",       "PhiStop:=", "&lt;value&gt;&lt;unit&gt;",       "PhiStep:=", "&lt;value&gt;&lt;unit&gt;",       "UseLocalCS:=", &lt;boolean&gt;)</pre> |
| Return Value | None.                                                                      |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

| Python Syntax  | EditSphereSetup(<SphereSetupName>, <SphereSetupParams>)                                                       |
|----------------|---------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.EditSphereSetup("Sphere1", [     "NAME:Sphere2",     "UseCustomRadiationSurface:=", False,</pre> |

|  |                                                                                                                                                                                                                  |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"Radius:=" , "20meter", "ThetaStart:=" , "0deg", "ThetaStop:=" , "180deg", "ThetaStep:=" , "2deg", "PhiStart:=" , "-180deg", "PhiStop:=" , "180deg", "PhiStep:=" , "2deg", "UseLocalCS:=" , False ] )</pre> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

InsertBoxSetup

Inserts a near-field box radiation setup.

| UI Access  | HFSS > Radiation > Insert Near Field Setup > Box. |       |                                                                                                                                                                         |
|------------|---------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                              | Type  | Description                                                                                                                                                             |
|            | <BoxParams>                                       | Array | Structured array.<br><br>Array("NAME:<SetupName>",<br>"UseCustomRadiationSurface:=", <bool>,<br>"CustomRadiationSurface:=",<br><FaceListName>,<br>"Length:=", <string>, |

|                     |       |  |                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|-------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       |  | <pre>"Width:=", &lt;string&gt;, "LengthSamples:=", &lt;int&gt;, "WidthSamples:=", &lt;int&gt;, "CoordSystem:=", &lt;CSname&gt; "Height:=", &lt;string&gt;, "HeightSamples:=", &lt;int&gt;)</pre> <p>For UseCustomRadiationSurface parameter, provide value if True. If False, radiation boundary/PML boundaries will be used as radiation surfaces.</p> |
| <b>Return Value</b> | None. |  |                                                                                                                                                                                                                                                                                                                                                         |

| Python Syntax         | InsertBoxSetup(<BoxParams>)                                                                                                                                                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oModule.InsertBoxSetup( [ 'NAME:MyBox', 'UseCustomRadiationSurface:=', False, 'Length:=', '20mm', 'Width:=', '20mm', 'LengthSamples:=', 21, 'WidthSamples:=', 21, 'CoordSystem:=', 'Global', 'Height:=', '20mm', 'HeightSamples:=', 21</pre> |

|  |     |
|--|-----|
|  | ] ) |
|--|-----|

InsertFarFieldSphereSetup

Inserts a far field infinite sphere setup.

|              |                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------|----------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | N/A            |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Parameters   | Name           | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|              | <SphereParams> | Array | Structured array.<br><br>Array("NAME:<InfSphereName>",<br>"UseCustomRadiationSurface:=", <boolean>,<br>"CSDefinition:=", <string, "Theta-Phi"   "Az Over EI"  <br>"EI Over AS">,<br>"Polarization:=", <string, "Linear"   "Slant">,<br>"ThetaStart:=", "<value><unit>",<br>"ThetaStop:=", "<value><unit>",<br>"ThetaStep:=", "<value><unit>",<br>"PhiStart:=", "<value><unit>",<br>"PhiStop:=", "<value><unit>",<br>"PhiStep:=", "<value><unit>",<br>"UseLocalCS:=", boolean) |
| Return Value | None.          |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

| Python Syntax  | InsertFarFieldSphereSetup(<SphereParams>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.InsertFarFieldSphereSetup(<br/>[<br/>    "NAME:Infinite Sphere1",<br/>    "UseCustomRadiationSurface:=", False,<br/>    "CSDefinition:="          , "Theta-Phi",<br/>    "Polarization:="          , "Linear",<br/>    "ThetaStart:="            , "0deg",<br/>    "ThetaStop:="             , "180deg",<br/>    "ThetaStep:="             , "2deg",<br/>    "PhiStart:="               , "-180deg",<br/>    "PhiStop:="                , "180deg",<br/>    "PhiStep:="                , "2deg",<br/>    "UseLocalCS:="            , False<br/>])</pre> |

## InsertInfiniteSphereSetup

Inserts an infinite sphere radiation field setup.

|           |                                                                                                                   |
|-----------|-------------------------------------------------------------------------------------------------------------------|
| UI Access | Right-click on <b>Radiation</b> in the project tree, select <b>Insert Far Field Setup &gt; Infinite Sphere...</b> |
|-----------|-------------------------------------------------------------------------------------------------------------------|

|                     | Name                           | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|--------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <i>&lt;InfSphereParams&gt;</i> | Array | Structured array.<br><br>Array("NAME:<InfSphereName>",<br>"UseCustomRadiationSurface:=", <boolean>,<br>"CSDefinition:=", <string, "Theta-Phi"   "Az Over EI"<br>  "EI Over AS">,<br>"Polarization:=", <string, "Linear"   "Slant">,<br>"ThetaStart:=", "<value><unit>",<br>"ThetaStop:=", "<value><unit>",<br>"ThetaStep:=", "<value><unit>",<br>"PhiStart:=", "<value><unit>",<br>"PhiStop:=", "<value><unit>",<br>"PhiStep:=", "<value><unit>",<br>"UseLocalCS:=", boolean) |
| <b>Parameters</b>   |                                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Return Value</b> | None.                          |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|                       |                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | InsertInfiniteSphereSetup(<InfSphereParams>)                                         |
| <b>Python Example</b> | <pre>oModule.InsertInfiniteSphereSetup(<br/>[<br/>    "NAME:Infinite Sphere1",</pre> |

```

"UseCustomRadiationSurface:=", False,
"CSDefinition:="          , "Theta-Phi",
"Polarization:="          , "Linear",
"ThetaStart:="            , "0deg",
"ThetaStop:="             , "180deg",
"ThetaStep:="             , "2deg",
"PhiStart:="              , "-180deg",
"PhiStop:="               , "180deg",
"PhiStep:="               , "2deg",
"UseLocalCS:="            , False
] )

```

## InsertLineSetup

Inserts a near field line setup.

| UI Access  | Right-click on <b>Radiation</b> in the project tree, select <b>Insert Near Field Setup &gt; Line...</b> |       |                                                                                                                                                                                         |
|------------|---------------------------------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                                    | Type  | Description                                                                                                                                                                             |
|            | <LineParams>                                                                                            | Array | Structured array.<br>Array("NAME:<LineName>",<br>"UseCustomRadiationSurface:=", <boolean>,<br>"Line:=", <string, name of specified line>,<br>"NumPts:=", "<integer, number of points>") |



|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                                                                                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | InsertLineSetup(<LineParams>)                                                                                                                                                                                |
| <b>Python Example</b> | <pre>oModule.InsertLineSetup(<br/>[<br/>    "NAME:Line1",<br/>    "UseCustomRadiationSurface:=", False,<br/>    "Line:="                , "Polyline1",<br/>    "NumPts:="              , "1000"<br/>])</pre> |

## InsertNearFieldBoxSetup

Inserts a near field box radiation field setup.

|                   |                  |             |                                                                                                                                    |
|-------------------|------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | N/A              |             |                                                                                                                                    |
| <b>Parameters</b> | <b>Name</b>      | <b>Type</b> | <b>Description</b>                                                                                                                 |
|                   | <BoxSetupParams> | Array       | Structured array.<br><br>Array("NAME:<BoxSetupName>",<br>"UseCustomRadiationSurface:=", <boolean>,<br>"Length:=", "<value><unit>", |

|                     |       |  |                                                                                                                                                                                                                        |
|---------------------|-------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       |  | "Width:=", "<value><unit>",<br>"LengthSamples:=", "<value>,"<br>"WidthSamples:=", "<value>,"<br>"CoordSystem:=", "<string name of coordinate system>,"<br>"Height:=", "<value><unit>,"<br>"HeightSamples:=", "<value>" |
| <b>Return Value</b> | None. |  |                                                                                                                                                                                                                        |

| Python Syntax         | InsertNearFieldBoxSetup(<BoxSetupParams>)                                                                                                                                                                                                                                                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oModule.InsertNearFieldBoxSetup( [   "NAME:Box1",   "UseCustomRadiationSurface:=", False,   "Length:="                , "20meter",   "Width:="                  , "20meter",   "LengthSamples:="          , 21,   "WidthSamples:="           , 21,   "CoordSystem:="            , "Global",   "Height:="                  , "20meter",   "HeightSamples:="          , 21 </pre> |

|  |    |
|--|----|
|  | ]) |
|--|----|

InsertNearFieldLineSetup

Inserts a near field line setup.

|              |              |       |                                                                                                                                                                                                         |
|--------------|--------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | N/A          |       |                                                                                                                                                                                                         |
| Parameters   | Name         | Type  | Description                                                                                                                                                                                             |
|              | <LineParams> | Array | Structured array.<br><br>Array("NAME:<LineName>",<br><br>"UseCustomRadiationSurface:=", <boolean>,<br><br>"Line:=", <string, name of specified line>,<br><br>"NumPts:=", "<integer, number of points>") |
| Return Value | None.        |       |                                                                                                                                                                                                         |

|                |                                                                                                                                                                       |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | InsertNearFieldLineSetup(<LineParams>)                                                                                                                                |
| Python Example | <pre>oModule.InsertNearFieldLineSetup(<br/>[<br/>    "NAME:Line1",<br/>    "UseCustomRadiationSurface:=", False,<br/>    "Line:="                , "Polyline1",</pre> |

|  |                                                     |
|--|-----------------------------------------------------|
|  | <code>"NumPts:=" , "1000"</code><br><code>l)</code> |
|--|-----------------------------------------------------|

## InsertNearFieldRectangleSetup

Inserts a near field rectangle radiation setup.

| UI Access    | N/A                                       |       |                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------|-------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                      | Type  | Description                                                                                                                                                                                                                                                                                                                                                                     |
|              | <code>&lt;RectangleSetupParams&gt;</code> | Array | Structured array.<br><br><pre>Array("NAME:&lt;RectangleSetupName&gt;",       "UseCustomRadiationSurface:=", &lt;boolean&gt;,       "Length:=", "&lt;value&gt;&lt;unit&gt;",       "Width:=", "&lt;value&gt;&lt;unit&gt;",       "LengthSamples:=", &lt;value&gt;,       "WidthSamples:=", &lt;value&gt;,       "CoordSystem:=", &lt;string name of coordinate system&gt;)</pre> |
| Return Value | None.                                     |       |                                                                                                                                                                                                                                                                                                                                                                                 |

| Python Syntax  | <code>InsertNearFieldRectangleSetup(&lt;RectangleSetupParams&gt;)</code> |
|----------------|--------------------------------------------------------------------------|
| Python Example | <code>oModule.InsertNearFieldRectangleSetup(</code>                      |

|  |                                                                                                                                                                                                                                                                                                           |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>[<br/>  "NAME:Rectangle1",<br/>  "UseCustomRadiationSurface:=", False,<br/>  "Length:="                , "20meter",<br/>  "Width:="                  , "20meter",<br/>  "LengthSamples:="         , 41,<br/>  "WidthSamples:="          , 41,<br/>  "CoordSystem:="           , "Global"<br/>]</pre> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

InsertNearFieldSphereSetup

Inserts a near field sphere radiation setup.

|            |                     |       |                                                                                                                                                                                                              |
|------------|---------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | N/A                 |       |                                                                                                                                                                                                              |
| Parameters | Name                | Type  | Description                                                                                                                                                                                                  |
|            | <SphereSetupParams> | Array | Structured array.<br><br>Array("NAME:<SphereSetupName>",<br>"UseCustomRadiationSurface:=", <boolean>,<br>"Radius:=", "<value><unit>",<br>"ThetaStart:=", "<value><unit>",<br>"ThetaStop:=", "<value><unit>", |

|                     |       |  |                                                                                                                                                                     |
|---------------------|-------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       |  | "ThetaStep:=", "<value><unit>",<br>"PhiStart:=", "<value><unit>",<br>"PhiStop:=", "<value><unit>",<br>"PhiStep:=", "<value><unit>",<br>"UseLocalCS:=", "<boolean>") |
| <b>Return Value</b> | None. |  |                                                                                                                                                                     |

| Python Syntax         | InsertNearFieldSphereSetup(<SphereSetupParams>)                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oModule.InsertNearFieldSphereSetup( [     "NAME:Sphere2",     "UseCustomRadiationSurface:=", False,     "Radius:="                , "20meter",     "ThetaStart:="            , "0deg",     "ThetaStop:="             , "180deg",     "ThetaStep:="             , "2deg",     "PhiStart:="               , "-180deg",     "PhiStop:="                , "180deg",     "PhiStep:="                , "2deg",     "UseLocalCS:="            , False </pre> |

|  |    |
|--|----|
|  | 1) |
|--|----|

InsertRectangleSetup

Inserts a near field rectangle radiation setup.

|              |                                                                                                              |       |                                                                                                                                                                                                                                                                                                   |
|--------------|--------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | Right-click on <b>Radiation</b> in the project tree ,select <b>Insert Near Field Setup &gt; Rectangle...</b> |       |                                                                                                                                                                                                                                                                                                   |
| Parameters   | Name                                                                                                         | Type  | Description                                                                                                                                                                                                                                                                                       |
|              | <RectangleSetupParams>                                                                                       | Array | Structured array.<br><br>Array("NAME:<RectangleSetupName>",<br>"UseCustomRadiationSurface:=", <boolean>,<br>"Length:=", "<value><unit>",<br>"Width:=", "<value><unit>",<br>"LengthSamples:=", <value>,<br>"WidthSamples:=", <value>,<br>"CoordSystem:=", <string name of coordinate sys-<br>tem>) |
| Return Value | None.                                                                                                        |       |                                                                                                                                                                                                                                                                                                   |

|                |                                              |
|----------------|----------------------------------------------|
| Python Syntax  | InsertRectangleSetup(<RectangleSetupParams>) |
| Python Example | oModule.InsertRectangleSetup(                |

```
[
  "NAME:Rectangle1",
  "UseCustomRadiationSurface:=", False,
  "Length:="                , "20meter",
  "Width:="                  , "20meter",
  "LengthSamples:="         , 41,
  "WidthSamples:="          , 41,
  "CoordSystem:="           , "Global"
]
```

## InsertSphereSetup

Inserts a near field sphere radiation setup.

| UI Access         | Right-click on <b>Radiation</b> in the project tree ,select <b>Insert Near Field Setup &gt; Sphere...</b> |       |                                                                                                                                                                                                                                             |
|-------------------|-----------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                                      | Type  | Description                                                                                                                                                                                                                                 |
|                   | <SphereSetupParams>                                                                                       | Array | Structured array.<br>Array("NAME:<SphereSetupName>",<br>"UseCustomRadiationSurface:=", <boolean>,<br>"Radius:=", "<value><unit>",<br>"ThetaStart:=", "<value><unit>",<br>"ThetaStop:=", "<value><unit>",<br>"ThetaStep:=", "<value><unit>", |



|                     |       |  |                                                                                                                                                                                                                              |
|---------------------|-------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       |  | <code>"PhiStart:=", "&lt;value&gt;&lt;unit&gt;",</code><br><code>"PhiStop:=", "&lt;value&gt;&lt;unit&gt;",</code><br><code>"PhiStep:=", "&lt;value&gt;&lt;unit&gt;",</code><br><code>"UseLocalCS:=", &lt;boolean&gt;)</code> |
| <b>Return Value</b> | None. |  |                                                                                                                                                                                                                              |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>InsertSphereSetup(&lt;SphereSetupParams&gt;)</code>                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Python Example</b> | <pre> oModule.InsertSphereSetup ( [     "NAME:Sphere2",     "UseCustomRadiationSurface:=", False,     "Radius:="                , "20meter",     "ThetaStart:="            , "0deg",     "ThetaStop:="              , "180deg",     "ThetaStep:="              , "2deg",     "PhiStart:="               , "-180deg",     "PhiStop:="                , "180deg",     "PhiStep:="                , "2deg",     "UseLocalCS:="            , False </pre> |

|  |    |
|--|----|
|  | 1) |
|--|----|

## Script Commands for Modifying Antenna Array Setups

### [EditAntennaArraySetup](#)

#### EditAntennaArraySetup

Modifies the antenna array setup. There are 3 choices in the setup. The default is set to **No Array Setup**. There are two (other) kinds of arrays that the user can set: **Regular Array Setup** and **Custom Array Setup**.

| UI Access         | Right-click on <b>Radiation</b> in the project tree, select <b>Antenna Array Setup...</b> |       |                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|-------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                      | Type  | Description                                                                                                                                                                                                                                                                                                                                                                        |
|                   | <code>&lt;AntennaArrayParams&gt;</code>                                                   | Array | Structured array.<br><br><pre>Array("NAME:ArraySetupInfo",       "UseOption:=", &lt;string "No Array"   "Parametric Array"   "Custom Array"&gt;,       &lt;ParametricArrayParams&gt;   &lt;CustomArrayParams&gt;)</pre>                                                                                                                                                            |
|                   | <code>&lt;ParametricArrayParams&gt;<br/>&gt;</code>                                       | Array | Structured array.<br><br><pre>Array("NAME:ParametricArray",       "DesignFrequency:=", "&lt;value&gt;&lt;unit&gt;",       "LayoutType:=", &lt;integer&gt;,       "CenterCellX:=", "&lt;value&gt;&lt;unit&gt;",       "CenterCellY:=", "&lt;value&gt;&lt;unit&gt;",       "CenterCellZ:=", "&lt;value&gt;&lt;unit&gt;",       "SpecifyDesignInWavelength:=", &lt;boolean&gt;,</pre> |

|  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  | <pre>"WidthSpacing:=", "&lt;value&gt;&lt;unit&gt;",<br/>"WidthSpacingInWavelength:=", "&lt;value&gt;",<br/>"Width:=", "&lt;value&gt;&lt;unit&gt;",<br/>"WidthInWavelength:=", "&lt;value&gt;",<br/>"LengthSpacing:=", "&lt;value&gt;&lt;unit&gt;",<br/>"LengthSpacingInWavelength:=", "&lt;value&gt;",<br/>"Length:=", "&lt;value&gt;&lt;unit&gt;",<br/>"LengthInWavelength:=", "&lt;value&gt;",<br/>"SymmetryType:=", &lt;integer&gt;,<br/>"StaggerAngle:=", "&lt;value&gt;&lt;unit&gt;",<br/>"StaggerType:=", &lt;integer&gt;,<br/>"UDirnX:=", "&lt;integer&gt;",<br/>"UDirnY:=", "&lt;integer&gt;",<br/>"UDirnZ:=", "&lt;integer&gt;",<br/>"VDirnX:=", "&lt;integer&gt;",<br/>"VDirnY:=", "&lt;integer&gt;",<br/>"VDirnZ:=", "&lt;integer&gt;",<br/>"WeightType:=", &lt;integer&gt;,<br/>"EdgeTaperX_db:=", "&lt;integer&gt;",<br/>"CosineExp:=", "&lt;integer&gt;",</pre> |
|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                     |                     |       |                                                                                                                                                                                                                                                           |
|---------------------|---------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                     |       | "DifferentialType:=", <integer>,<br>"Behavior:=", <string>,<br>"ScanAnglePhi:=", "<value><unit>",&br/>         "ScanAngleTheta:=", "<value><unit>",&br/>         "UDirnPhaseShift:=", "<value><unit>",&br/>         "VDirnPhaseShift:=", "<value><unit>") |
|                     | <CustomArrayParams> | Array | Structured array.<br>Array("NAME:CustomArray",<br>"NumCells:=", <int>,<br><CellsParamsArray>)                                                                                                                                                             |
|                     | <CellsParamsArray>  | Array | Structured array.<br>Array("NAME:Cell",<br><CellParams>, <CellParams>, ...)                                                                                                                                                                               |
|                     | <CellParams>        | Array | Structured array.<br>Array("Name:<CellName>",&br/>         "XCoord:=", <double>,<br>"YCoord:=", <double>,<br>"ZCoord:=", <double>,<br>"Amplitude:=", <double>,<br>"Phase:=", <double>)                                                                    |
| <b>Return Value</b> | None.               |       |                                                                                                                                                                                                                                                           |

| Python Syntax  | EditAntennaArraySetup(<AntennaArrayParams>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.EditAntennaArraySetup(<br/>[<br/>"NAME:ArraySetupInfo",<br/>"UseOption:="          , "ParametricArray",<br/>["NAME:ParametricArray",<br/>"DesignFrequency:="    , "1GHz",<br/>"LayoutType:="         , 1,<br/>"CenterCellX:="        , "0mm",<br/>"CenterCellY:="        , "0mm",<br/>"CenterCellZ:="        , "0mm",<br/>"SpecifyDesignInWavelength:=", False,<br/>"WidthSpacing:="       , "60mm",<br/>"WidthSpacingInWavelength:=", "0.200138457118891",<br/>"Width:="              , "480mm",<br/>"WidthInWavelength:="  , "1.60110765695113",<br/>"LengthSpacing:="      , "60mm",<br/>"LengthSpacingInWavelength:=", "0.200138457118891",<br/>"Length:="             , "360mm",<br/>"LengthInWavelength:=" , "1.20083074271335",</pre> |

```

"SymmetryType:="      , 0,
"StaggerAngle:="      , "0deg",
"StaggerType:="       , 0,
"UDirnX:="            , "0",
"UDirnY:="            , "0",
"UDirnZ:="            , "-1",
"VDirnX:="            , "1",
"VDirnY:="            , "0",
"VDirnZ:="            , "0",
"WeightType:="        , 3,
"EdgeTaperX_db:="     , "-200",
"CosineExp:="         , "1",
"DifferentialType:="   , 0,
"Behavior:="          , "UseSlaveSettings",
"ScanAnglePhi:="      , "135deg",
"ScanAngleTheta:="    , "45deg",
"UDirnPhaseShift:="   , "0deg",
"VDirnPhaseShift:="   , "0deg"]
] )

```

# Script Commands for Exporting Antenna Parameters and Max Field Parameters

[ExportRadiationParametersToFile](#)

[ExportElementPatternToFile](#)

## ExportElementPatternToFile

Exports far field data for specified elements to a file.

| UI Access  | Export Element Pattern button in Antenna Parameters dialog box. |       |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------|-----------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                            | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                      |
|            | <ExportElementPatternFileParams>                                | Array | Structured array.<br><br>Array(<br>"ExportFileName:=", <string file name include path>,<br>"SetupName:=" , <string radiation setup to use>,<br>"IntrinsicVariationKey:=", <string frequency at which to extract the parameters>,<br>"DesignVariationKey:=", <string design variations at which to extract the parameters.>,<br>"SolutionName:=", <string solution to use>,<br>"SourceGroupName:=", <string source group to use>) |

|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportElementPatternToFile(&lt;ExportElementPatternFileParams&gt;)</code>                                                                                                                                                                                                                                                                                        |
| <b>Python Example</b> | <pre>oModule.ExportElementPatternToFile(     [         "ExportFileName:=",      , "C:\Documents\exportelement2.ffd",         "SetupName:=",          , "3D",         "IntrinsicVariationKey:=", "Freq=\'28GHz\'",         "DesignVariationKey:=",   , "antipad_rad=\'0.1499999999999999mm\'",         "SolutionName:=",        , "Setup1 : LastAdaptive"     ]) </pre> |

## ExportFieldsToFile

Exports fields to a file.

|            |                                                                                   |       |                                                                                                                                                                         |
|------------|-----------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | From the <b>Antenna Parameters</b> dialog box, <b>Export Fields</b> to .ffd file. |       |                                                                                                                                                                         |
| Parameters |                                                                                   |       |                                                                                                                                                                         |
|            | Name                                                                              | Type  | Description                                                                                                                                                             |
|            | <ExportParams>                                                                    | Array | Structured array.<br><br>Array("ExportFileName:=", <string file name include path>,<br><br>"SetupName:=", <string name of the Radiation Far Field or Near Field setup>, |



|                     |       |  |                                                                                                                                                                                                                                                                                               |
|---------------------|-------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       |  | <code>"IntrinsicVariationKey:=", &lt;string from the Antenna Parameters dialog.&gt;,  "DesignVariationKey:=", &lt;string&gt;,  "SolutionName:=", &lt;string name of solution to use&gt;,  "Quantity:=", &lt;string antenna Parameter name. If empty, all parameters are exported.&gt;)</code> |
| <b>Return Value</b> | None. |  |                                                                                                                                                                                                                                                                                               |

|                       |                                                                                                                                                                                                                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <b>ExportFieldsToFile (&lt;ExportParams&gt;)</b>                                                                                                                                                                                                                                         |
| <b>Python Example</b> | <pre>oModule.ExportFieldsToFile( [     "ExportFileName:=", "C:/exportfields.ffd",     "SetupName:=", "Infinite Sphere1",     "IntrinsicVariationKey:=", "Freq=\'4.5GHz\'",     "DesignVariationKey:=", "",     "SolutionName:=", "4500MHz : LastAdaptive",     "Quantity:=", "" ])</pre> |

## ExportParametersToFile

Exports antenna parameters to a file.

| UI Access    | Click <b>Export</b> in the <b>Antenna Parameters</b> dialog. |       |                                                                                                                                                                                                                                                                                                                                                       |
|--------------|--------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                         | Type  | Description                                                                                                                                                                                                                                                                                                                                           |
|              | <DefParams>                                                  | Array | Structured array.<br><br>Array(<br>"ExportFileName:=", <string file name include path>,<br>"SetupName:=", <string name of setup to export>,<br>"IntrinsicVariationKey:=", <string>,<br>"DesignVariationKey:=" , <string>,<br>"SolutionName:=", <string name of solution to export>,<br>"Quantity:=" , <string name of quantity, empty to export all>) |
| Return Value | None.                                                        |       |                                                                                                                                                                                                                                                                                                                                                       |

| Python Syntax  | ExportParametersToFile(<DefParams>)                                                                                                                                                                  |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.ExportParametersToFile(<br/>[<br/>    "ExportFileName:=", "C:/exportparams.txt",<br/>    "SetupName:=", "Infinite Sphere1",<br/>    "IntrinsicVariationKey:=", "Freq=\'4.5GHz\'",</pre> |

|  |                                                                                                                    |
|--|--------------------------------------------------------------------------------------------------------------------|
|  | <pre>"DesignVariationKey:=", "",<br/>"SolutionName:=", "4500MHz : LastAdaptive",<br/>"Quantity:=", ""<br/>1)</pre> |
|--|--------------------------------------------------------------------------------------------------------------------|

**ExportRadiationFieldsToFile**

Exports radiation fields to a file.

|              |                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------|----------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | N/A            |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Parameters   | Name           | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|              | <ExportParams> | Array | Structured array.<br><br>Array("ExportFileName:=", <string file name include path>,<br><br>"SetupName:=", <string name of the Radiation Far Field or Near Field setup>,<br><br>"IntrinsicVariationKey:=", <string from the Antenna Parameters dialog.>,<br><br>"DesignVariationKey:=", <string>,<br><br>"SolutionName:=" , <string name of solution to use>,<br><br>"Quantity:=" , <string antenna Parameter name. If empty, all parameters are exported.>) |
| Return Value | None.          |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Python Syntax  | ExportRadiationFieldsToFile (<ExportParams>)                                                                                                                                                                                                                                                      |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oModule.ExportRadiationFieldsToFile( [     "ExportFileName:=", "C:/exportfields.ffd",     "SetupName:=", "Infinite Sphere1",     "IntrinsicVariationKey:=", "Freq=\'4.5GHz\'",     "DesignVariationKey:=", "",     "SolutionName:=", "4500MHz : LastAdaptive",     "Quantity:=", "" ])</pre> |

## ExportRadiationParametersToFile

Exports radiation parameters to a file. This command can be used to export the max quantities of a near-field setup and, in the case of far fields, the antenna parameters to the specified file.

| UI Access  | HFSS > Radiation > Compute Max/Antenna Params |       |                                                                                                                                         |
|------------|-----------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                          | Type  | Description                                                                                                                             |
|            | <ExportToFileParams>                          | Array | <p>Structured array.</p> <pre>Array("ExportFileName:=", &lt;string file name include path&gt;       "SetupName:=", &lt;string&gt;</pre> |

|              |       |  |                                                                                                          |
|--------------|-------|--|----------------------------------------------------------------------------------------------------------|
|              |       |  | "IntrinsicVariationKey:=", <string>,<br>"DesignVariationKey:=", <string>,<br>"SolutionName:=", <string>) |
| Return Value | None. |  |                                                                                                          |

|                |                                                                                                                                                                                                                                                                                                            |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ExportRadiationParametersToFile(<ExportToFileParams>)                                                                                                                                                                                                                                                      |
| Python Example | <pre>oModule.ExportRadiationParametersToFile(<br/>[<br/>    "ExportFileName:=", "C:\projects\exportantparams.txt",<br/>    "SetupName:=", "Infinite Sphere1",<br/>    "IntrinsicVariationKey:=", "Freq='10GHz'",<br/>    "DesignVariationKey:=", "",<br/>    "SolutionName:=", "LastAdaptive"<br/>])</pre> |

## 16 - Radiation Setup Manager Module Script Commands

Radiation Setup Manager commands should be executed by the **RadiationSetupMgr** module.

```
oModule = oDesign.GetModule("RadiationSetupMgr")
```

```
oModule.CommandName <args>
```

The commands in this module create and change radiation boundaries which can be modified by the [Radiation module](#) script commands. Radiation boundaries are divided into a far-field boundary in the shape of an infinite sphere and near-field boundaries in the shapes of a sphere, line, or plane. Each boundary uses a different set of parameters. The following commands create and edit the radiation boundaries.

- [Add](#) or [edit](#) a far field infinite sphere
- [Add](#) or [edit](#) a near-field line
- [Add](#) or [edit](#) a near-field plane
- [Add](#) or [edit](#) a near-field sphere

### Add (Infinite Sphere)

Adds a far-field radiation boundary in the shape of an infinite sphere.

**Note:** Only *Name* and *Type* are required parameters. If you set a custom Theta or Phi parameter, then you must set all Theta and Phi parameters. If you have a local coordinate system, then you must set the *CS* and *UseLocalCS* parameters.

| UI Access  | In the Project Manager under the design name, right click <b>Radiation</b> and in the right-click menu, click <b>Insert Far Field Setup&gt;Infinite Sphere</b> . |         |                                                                       |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------|
| Parameters | Name                                                                                                                                                             | Type    | Description                                                           |
|            | <Name>                                                                                                                                                           | String  | A user-defined name for the infinite sphere.                          |
|            | <Type>                                                                                                                                                           | String  | Type of radiation setup. It should be <b>IntiniteSphereFarField</b> . |
|            | <VersionID>                                                                                                                                                      | Integer | Optional. Set to <b>0</b> .                                           |

|                     |               |         |                                                                                                                                                                                                                                    |
|---------------------|---------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <ID>          | Integer | Optional. Identifier that is created differently for every setup.                                                                                                                                                                  |
|                     | <StartTheta > | String  | Optional. Starting point for theta in the spherical coordinate system for the sphere being defined. The default value is " <b>0deg</b> ". Use the form "<num> <b>deg</b> ".                                                        |
|                     | <StartPhi>    | String  | Optional. Starting point for phi in the spherical coordinate system for the sphere being defined. The default value is " <b>-180deg</b> ". Use the form "<num> <b>deg</b> ".                                                       |
|                     | <StopTheta>   | String  | Optional. Stopping point for theta in the spherical coordinate system for the sphere being defined. The default value is " <b>180deg</b> ". Use the form "<num> <b>deg</b> ".                                                      |
|                     | <StopPhi>     | String  | Optional. Stopping point for phi in the spherical coordinate system for the sphere being defined. The default value is " <b>180deg</b> ". Use the form "<num> <b>deg</b> ".                                                        |
|                     | <StepTheta>   | String  | Optional. Step size between the start and the stop theta values at which the far field is calculated. The default value is " <b>2deg</b> ". Use the form "<num> <b>deg</b> ".                                                      |
|                     | <StepPhi>     | String  | Optional. Step size between the start and the stop phi values at which the far field is calculated. The default value is " <b>2deg</b> ". Use the form "<num> <b>deg</b> ".                                                        |
|                     | <CS>          | Integer | Optional. The coordinate system to use. When coordinate system is local, set this number to the index of the local coordinate system. Set this value to <b>-1</b> for a global coordinate system. The default value is <b>-1</b> . |
|                     | <UseLocalCS>  | Boolean | Optional. <b>True</b> to select a local coordinate system, and <b>False</b> to use the global coordinate system. The default value is <b>False</b> .                                                                               |
| <b>Return Value</b> | None.         |         |                                                                                                                                                                                                                                    |

|                      |              |
|----------------------|--------------|
| <b>Python Syntax</b> | oModule.Add( |
|----------------------|--------------|

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <pre> [   "NAME:&lt;Name&gt;",   "Type:=", "InfiniteSphereFarField",   "VersionID:=", 0,   "ID:=", &lt;ID&gt;,   "StartTheta:=", "&lt;StartTheta&gt;deg",   "StartPhi:=", "&lt;StartPhi&gt;deg",   "StopTheta:=", "&lt;StopTheta&gt;deg",   "StopPhi:=", "&lt;StopPhi&gt;deg",   "StepTheta:=", "&lt;StepTheta&gt;deg",   "StepPhi:=", "&lt;StepPhi&gt;deg",   "CS:=", &lt;CS&gt;,   "UseLocalCS:=", &lt;UseLocalCS&gt; ] </pre> |
| <b>Python Example</b> | <pre> oDesign = oDesign.GetModule("RadiationSetupMgr") oModule.Add( [   "NAME:Infinite Sphere 1",   "Type:=", "InfiniteSphereFarField",   "VersionID:=", 0,   "ID:=", 5, </pre>                                                                                                                                                                                                                                                  |



|  |                                                                                                                                                                                                |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "StartTheta:=", "0deg", "StartPhi:=", "-180deg", "StopTheta:=", "180deg", "StopPhi:=", "180deg", "StepTheta:=", "2deg", "StepPhi:=", "2deg", "CS:=", 1, "UseLocalCS:=", False  1) </pre> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Edit (RadiationSetupMgr for Infinite Sphere)

Changes a far-field radiation boundary in the shape of an infinite sphere.

**Note:** Only *Name* and *Type* are required parameters. If you set a custom Theta or Phi parameter, then you must set all Theta and Phi parameters. If you have a local coordinate system, then you must set the *CS* and *UseLocalCS* parameters.

| UI Access  | In the Project Manager under the design name > <b>Radiation</b> , double click on the name of the infinite sphere. |         |                                                                       |
|------------|--------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------|
| Parameters | Name                                                                                                               | Type    | Description                                                           |
|            | <Name>                                                                                                             | String  | A user-defined name for the infinite sphere.                          |
|            | <Type>                                                                                                             | String  | Type of radiation setup. It should be <b>IntiniteSphereFarField</b> . |
|            | <VersionID>                                                                                                        | Integer | Optional. Set to <b>0</b> .                                           |
|            | <ID>                                                                                                               | Integer | Optional. Identifier that is created differently for every setup.     |
|            | <StartTheta >                                                                                                      | String  | Optional. Starting point for theta in the spherical coordinate system |

|                     |              |         |                                                                                                                                                                                                   |
|---------------------|--------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |              |         | for the sphere being defined. Use the form "<num>deg".                                                                                                                                            |
|                     | <StartPhi>   | String  | Optional. Starting point for phi in the spherical coordinate system for the sphere being defined. Use the form "<num>deg".                                                                        |
|                     | <StopTheta>  | String  | Optional. Stopping point for theta in the spherical coordinate system for the sphere being defined. Use the form "<num>deg".                                                                      |
|                     | <StopPhi>    | String  | Optional. Stopping point for phi in the spherical coordinate system for the sphere being defined. Use the form "<num>deg".                                                                        |
|                     | <StepTheta>  | String  | Optional. Step size between the start and the stop theta values at which the far field is calculated. Use the form "<num>deg".                                                                    |
|                     | <StepPhi>    | String  | Optional. Step size between the start and the stop phi values at which the far field is calculated. Use the form "<num>deg".                                                                      |
|                     | <CS>         | Integer | Optional. The coordinate system to use. When coordinate system is local, set this number to the index of the local coordinate system. Set this value to <b>-1</b> for a global coordinate system. |
|                     | <UseLocalCS> | Boolean | Optional. <b>True</b> to select a local coordinate system, and <b>False</b> to use the global coordinate system.                                                                                  |
| <b>Return Value</b> | None.        |         |                                                                                                                                                                                                   |

|                      |                                                                                                                                                                                                                                                             |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | <pre>oModule.Edit(     [         "NAME:&lt;Name&gt;",         "Type:=", "InfiniteSphereFarField",         "VersionID:=", 0,         "ID:=", &lt;ID&gt;,         "StartTheta:=", "&lt;StartTheta&gt;deg",         "StartPhi:=", "&lt;StartPhi&gt;deg",</pre> |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <pre>"StopTheta:=", "&lt;StopTheta&gt;deg",<br/>"StopPhi:=", "&lt;StopPhi&gt;deg",<br/>"StepTheta:=", "&lt;StepTheta&gt;deg",<br/>"StepPhi:=", "&lt;StepPhi&gt;deg",<br/>"CS:=", &lt;CS&gt;,<br/>"UseLocalCS:=", &lt;UseLocalCS&gt;<br/>])</pre>                                                                                                                                                            |
| <b>Python Example</b> | <pre>oDesign = oDesign.GetModule("RadiationSetupMgr")<br/>oModule.Edit(<br/>[<br/>    "NAME:Infinite Sphere 1",<br/>    "Type:=", "InfiniteSphereFarField",<br/>    "VersionID:=", 0,<br/>    "ID:=", 5,<br/>    "StartTheta:=", "0deg",<br/>    "StartPhi:=", "-180deg",<br/>    "StopTheta:=", "180deg",<br/>    "StopPhi:=", "180deg",<br/>    "StepTheta:=", "2deg",<br/>    "StepPhi:=", "2deg",</pre> |

|  |                                                |
|--|------------------------------------------------|
|  | <pre>"CS:=", 1, "UseLocalCS:=", False 1)</pre> |
|--|------------------------------------------------|

## Add (Near Field Line)

Adds a near-field radiation boundary in the shape of a line. To calculate the near fields, you must have a 3D line defined across the design area before creating this type of radiation boundary.

| UI Access    | In the Project Manager under the design name, right click <b>Radiation</b> and in the right-click menu, click <b>Insert Near Field Setup&gt;Line</b> . |         |                                                                                                                                                      |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                                                                                                                   | Type    | Description                                                                                                                                          |
|              | <Name>                                                                                                                                                 | String  | A user-defined name for the near field line.                                                                                                         |
|              | <Type>                                                                                                                                                 | String  | Type of radiation setup. It should be <b>NearFieldLine</b> .                                                                                         |
|              | <VersionID>                                                                                                                                            | Integer | Optional. Set to <b>0</b> .                                                                                                                          |
|              | <ID>                                                                                                                                                   | Integer | Optional. Identifier that is created differently for every setup.                                                                                    |
|              | <NFLineID >                                                                                                                                            | Integer | Optional. Index of the 3D line in the design area across which the near fields are calculated.                                                       |
|              | <NumSamples>                                                                                                                                           | String  | Optional. Number of points (samples) needed to calculate the near fields across the line. Use the form "<num>". The default value is <b>"1000"</b> . |
| Return Value | None.                                                                                                                                                  |         |                                                                                                                                                      |

| Python Syntax | <pre>oModule.Add( [</pre> |
|---------------|---------------------------|
|---------------|---------------------------|

|                       |                                                                                                                                                                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <pre>"NAME:&lt;Name&gt;",<br/>"Type:=", "NearFieldLine",<br/>"VersionID:=", 0,<br/>"ID:=", &lt;ID&gt;,<br/>"NFLineID:=", "&lt;NFLineID&gt;",<br/>"NumSamples:=", "&lt;NumSamples&gt;"<br/>])</pre>                                                         |
| <b>Python Example</b> | <pre>oDesign = oDesign.GetModule("RadiationSetupMgr")<br/>oModule.Add(<br/>[<br/>    "NAME:Line 1",<br/>    "Type:=", "NearFieldLine",<br/>    "VersionID:=", 0,<br/>    "ID:=", 7,<br/>    "NFLineID:=", 312,<br/>    "NumSamples:=", "1000"<br/>])</pre> |

## Edit (RadiationSetupMgr for Near Field Line)

Changes a near-field radiation boundary in the shape of a line. To calculate the near fields, you must have a 3D line defined across the design area before creating this type of radiation boundary.

|                     |                                                                                                         |         |                                                                                                                 |
|---------------------|---------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | In the Project Manager under the design name > <b>Radiation</b> , double click on the name of the line. |         |                                                                                                                 |
| <b>Parameters</b>   | Name                                                                                                    | Type    | Description                                                                                                     |
|                     | <Name>                                                                                                  | String  | A user-defined name for the near field line.                                                                    |
|                     | <Type>                                                                                                  | String  | Type of radiation setup. It should be <b>NearFieldLine</b> .                                                    |
|                     | <VersionID>                                                                                             | Integer | Optional. Set to <b>0</b> .                                                                                     |
|                     | <ID>                                                                                                    | Integer | Optional. Identifier that is created differently for every setup.                                               |
|                     | <NFLineID >                                                                                             | Integer | Optional. Index of the 3D line in the design area across which the near fields are calculated.                  |
|                     | <NumSamples>                                                                                            | String  | Optional. Number of points (samples) needed to calculate the near fields across the line. Use the form "<num>". |
| <b>Return Value</b> | None.                                                                                                   |         |                                                                                                                 |

|                      |                                                                                                                                                                                                                                                     |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | <pre>oModule.Edit(     [         "NAME:&lt;Name&gt;",         "Type:=", "NearFieldLine",         "VersionID:=", 0,         "ID:=", &lt;ID&gt;,         "NFLineID:=", "&lt;NFLineID&gt;",         "NumSamples:=", "&lt;NumSamples&gt;"     ] )</pre> |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                |                                                                                                                                                                                                                         |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | ])                                                                                                                                                                                                                      |
| Python Example | <pre>oDesign = oDesign.GetModule("RadiationSetupMgr") oModule.Edit( [     "NAME:Line 1",     "Type:=", "NearFieldLine",     "VersionID:=", 0,     "ID:=", 7,     "NFLineID:=", 312,     "NumSamples:=", "1000" ])</pre> |

Add (Near Field Plane)

Adds a near-field radiation boundary in the shape of a plane. This plane is calculated in reference to a rectangle defined by the X and Y parameters.

|            |                                                                                                                                                         |         |                                                                |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------|
| UI Access  | In the Project Manager under the design name, right click <b>Radiation</b> and in the right-click menu, click <b>Insert Near Field Setup&gt;Plane</b> . |         |                                                                |
| Parameters | Name                                                                                                                                                    | Type    | Description                                                    |
|            | <Name>                                                                                                                                                  | String  | A user-defined name for the near field sphere.                 |
|            | <Type>                                                                                                                                                  | String  | Type of radiation setup. It should be <b>NearFieldSphere</b> . |
|            | <VersionID>                                                                                                                                             | Integer | Optional. Set to <b>0</b> .                                    |

|                     |                |         |                                                                                                                                                                                                                                                                                                                             |
|---------------------|----------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <ID>           | Integer | Optional. Identifier that is created differently for every setup.                                                                                                                                                                                                                                                           |
|                     | <MinX >        | String  | Optional. Starting X value for the plane that the near fields will be calculated for. The default value is " <b>-41.5mm</b> ". Use the form "<num><unit>".                                                                                                                                                                  |
|                     | <MaxX>         | String  | Optional. Final X value for the plane that the near fields will be calculated for. The default value is " <b>8.5mm</b> ". Use the form "<num><unit>".                                                                                                                                                                       |
|                     | <MinY>         | String  | Optional. Starting Y value for the plane that the near fields will be calculated for. The default value is " <b>16mm</b> ". Use the form "<num><unit>".                                                                                                                                                                     |
|                     | <MaxY>         | String  | Optional. Final Y value for the plane that the near fields will be calculated for. The default value is " <b>16mm</b> ". Use the form "<num><unit>".                                                                                                                                                                        |
|                     | <Height>       | String  | Optional. Height of the reference rectangle. The default value is " <b>1.652145mm</b> ". Use the form "<num>".                                                                                                                                                                                                              |
|                     | <ExpFactor>    | String  | Optional. The X and Y dimensions are multiplied by this exponential factor to determine new dimensions for the plane. For example, set to <b>1</b> to use the default calculated dimensions of the plane or set to <b>2</b> to double each dimension of the plane. The default value is " <b>1</b> ". Use the form "<num>". |
|                     | <UseExpFactor> | Boolean | Optional. Set to <b>True</b> to add the exponent factor to the plane dimensions or <b>False</b> to use the automatically calculated plane dimensions or user-defined plane dimensions. The default value is <b>False</b> .                                                                                                  |
|                     | <CSID>         | Integer | Optional. An identifier for the coordinate system.                                                                                                                                                                                                                                                                          |
| <b>Return Value</b> | None.          |         |                                                                                                                                                                                                                                                                                                                             |

|                      |                                                            |
|----------------------|------------------------------------------------------------|
| <b>Python Syntax</b> | <pre>oModule.Add(     [         "NAME:&lt;Name&gt;",</pre> |
|----------------------|------------------------------------------------------------|



|                       |                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <pre>"Type:=", "NearFieldPlane",<br/>"VersionID:=", 0,<br/>"ID:=", &lt;ID&gt;,<br/>"MinX:=", "&lt;MinX&gt;",<br/>"MaxX:=", "&lt;MaxX&gt;",<br/>"MinY:=", "&lt;MinY&gt;",<br/>"MaxY:=", "&lt;MaxY&gt;",<br/>"Height:=", "&lt;Height&gt;",<br/>"ExpFactor:=", "&lt;ExpFactor&gt;",<br/>"UseExpFactor:=", &lt;UseExpFactor&gt;,<br/>"CSID:=", &lt;CSID&gt;<br/><br/>])</pre> |
| <b>Python Example</b> | <pre>oDesign = oDesign.GetModule("RadiationSetupMgr")<br/>oModule.Add(<br/>[<br/>    "NAME:Plane 1",<br/>    "Type:=", "NearFieldPlane",<br/>    "VersionID:=", 0,<br/>    "ID:=", 7,<br/>    "MinX:=", "-50mm",</pre>                                                                                                                                                    |

|  |                                                                                                                                                           |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "MaxX:=", "25mm", "MinY:=", "-18.5mm", "MaxY:=", "31.5mm", "Height:=", "5.6mm", "ExpFactor:=", "1", "UseExpFactor:=", False, "CSID:=", -4 1) </pre> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------|

## Edit (RadiationSetupMgr for Near Field Plane)

Changes a near-field radiation boundary in the shape of a plane. This plane is calculated in reference to a rectangle defined by the X and Y parameters.

| UI Access  | In the Project Manager under the design name > <b>Radiation</b> , double click on the name of the plane. |         |                                                                                                                   |
|------------|----------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                                     | Type    | Description                                                                                                       |
|            | <Name>                                                                                                   | String  | A user-defined name for the near field sphere.                                                                    |
|            | <Type>                                                                                                   | String  | Type of radiation setup. It should be <b>NearFieldSphere</b> .                                                    |
|            | <VersionID>                                                                                              | Integer | Optional. Set to <b>0</b> .                                                                                       |
|            | <ID>                                                                                                     | Integer | Optional. Identifier that is created differently for every setup.                                                 |
|            | <MinX >                                                                                                  | String  | Optional. Starting X value for the plane that the near fields will be calculated for. Use the form "<num><unit>". |
|            | <MaxX>                                                                                                   | String  | Optional. Final X value for the plane that the near fields will be calculated for. Use the form "<num><unit>".    |
|            | <MinY>                                                                                                   | String  | Optional. Starting Y value for the plane that the near fields will be calculated for. Use the form "<num><unit>". |

|              |                |         |                                                                                                                                                                                                                                                                                   |
|--------------|----------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <MaxY>         | String  | Optional. Final Y value for the plane that the near fields will be calculated for. Use the form "<num><unit>".                                                                                                                                                                    |
|              | <Height>       | String  | Optional. Height of the reference rectangle. Use the form "<num>".                                                                                                                                                                                                                |
|              | <ExpFactor>    | String  | Optional. The X and Y dimensions are multiplied by this exponential factor to determine new dimensions for the plane. For example, set to <b>1</b> to use the default calculated dimensions of the plane or set to 2 to double each dimension of the plane. Use the form "<num>". |
|              | <UseExpFactor> | Boolean | Optional. Set to <b>True</b> to add the exponent factor to the plane dimensions or <b>False</b> to use the automatically calculated plane dimensions or user-defined plane dimensions.                                                                                            |
|              | <CSID>         | Integer | Optional. An identifier for the coordinate system.                                                                                                                                                                                                                                |
| Return Value | None.          |         |                                                                                                                                                                                                                                                                                   |

|               |                                                                                                                                                                                                                                                                                                                                   |  |  |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Python Syntax | <pre>oModule.Edit(<br/>    [<br/>        "NAME:&lt;Name&gt;",<br/>        "Type:=", "NearFieldPlane",<br/>        "VersionID:=", 0,<br/>        "ID:=", &lt;ID&gt;,<br/>        "MinX:=", "&lt;MinX&gt;",<br/>        "MaxX:=", "&lt;MaxX&gt;",<br/>        "MinY:=", "&lt;MinY&gt;",<br/>        "MaxY:=", "&lt;MaxY&gt;",</pre> |  |  |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|

|                       |                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <pre> "Height:=", "&lt;Height&gt;", "ExpFactor:=", "&lt;ExpFactor&gt;", "UseExpFactor:=", "&lt;UseExpFactor&gt;", "CSID:=", "&lt;CSID&gt;"  ]) </pre>                                                                                                                                                                                                                  |
| <b>Python Example</b> | <pre> oDesign = oDesign.GetModule("RadiationSetupMgr") oModule.Edit( [     "NAME:Plane 1",     "Type:=", "NearFieldPlane",     "VersionID:=", 0,     "ID:=", 7,     "MinX:=", "-50mm",     "MaxX:=", "25mm",     "MinY:=", "-18.5mm",     "MaxY:=", "31.5mm",     "Height:=", "5.6mm",     "ExpFactor:=", "1",     "UseExpFactor:=", False,     "CSID:=", -4 ]) </pre> |

## Add (Near Field Sphere)

Adds a near-field radiation boundary in the shape of a sphere.

**Note:** Only *Name* and *Type* are required parameters. If you set a custom Theta or Phi parameter, then you must set all Theta and Phi parameters. If you have a local coordinate system, then you must set the *CS* and *UseLocalCS* parameters.

| UI Access         | In the Project Manager under the design name, right click <b>Radiation</b> and in the right-click menu, click <b>Insert Near Field Setup&gt;Sphere</b> . |         |                                                                                                                                                                               |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                                                                                     | Type    | Description                                                                                                                                                                   |
|                   | <Name>                                                                                                                                                   | String  | A user-defined name for the near field sphere.                                                                                                                                |
|                   | <Type>                                                                                                                                                   | String  | Type of radiation setup. It should be <b>NearFieldSphere</b> .                                                                                                                |
|                   | <VersionID>                                                                                                                                              | Integer | Optional. Set to <b>0</b> .                                                                                                                                                   |
|                   | <ID>                                                                                                                                                     | Integer | Optional. Identifier that is created differently for every setup.                                                                                                             |
|                   | <StartTheta >                                                                                                                                            | String  | Optional. Starting point for theta in the spherical coordinate system for the sphere being defined. The default value is " <b>0deg</b> ". Use the form "<num> <b>deg</b> ".   |
|                   | <StartPhi>                                                                                                                                               | String  | Optional. Starting point for phi in the spherical coordinate system for the sphere being defined. The default value is " <b>-180deg</b> ". Use the form "<num> <b>deg</b> ".  |
|                   | <StopTheta>                                                                                                                                              | String  | Optional. Stopping point for theta in the spherical coordinate system for the sphere being defined. The default value is " <b>180deg</b> ". Use the form "<num> <b>deg</b> ". |
|                   | <StopPhi>                                                                                                                                                | String  | Optional. Stopping point for phi in the spherical coordinate system for the sphere being defined. The default value is " <b>180deg</b> ". Use the form "<num> <b>deg</b> ".   |
|                   | <StepTheta>                                                                                                                                              | String  | Optional. Step size between the start and the stop theta values at                                                                                                            |

|                     |                           |         |                                                                                                                                                                                                                                    |
|---------------------|---------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                           |         | which the far field is calculated. The default value is <b>"2deg"</b> . Use the form " <b>&lt;num&gt;deg</b> ".                                                                                                                    |
|                     | <b>&lt;StepPhi&gt;</b>    | String  | Optional. Step size between the start and the stop phi values at which the far field is calculated. The default value is <b>"2deg"</b> . Use the form " <b>&lt;num&gt;deg</b> ".                                                   |
|                     | <b>&lt;CS&gt;</b>         | Integer | Optional. The coordinate system to use. When coordinate system is local, set this number to the index of the local coordinate system. Set this value to <b>-1</b> for a global coordinate system. The default value is <b>-1</b> . |
|                     | <b>&lt;UseLocalCS&gt;</b> | Boolean | Optional. <b>True</b> to select a local coordinate system, and <b>False</b> to use the global coordinate system. The default value is <b>False</b> .                                                                               |
|                     | <b>&lt;NFRadius&gt;</b>   | String  | Optional. Radius of the sphere we want to calculate near fields on. The default value is <b>"20mm"</b> . Use the form " <b>&lt;num&gt;&lt;unit&gt;</b> ".                                                                          |
| <b>Return Value</b> | None.                     |         |                                                                                                                                                                                                                                    |

|                      |                                                                                                                                                                                                                                                                                                                                                                |  |  |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b> | <pre> oModule.Add(     [         "NAME:&lt;Name&gt;",         "Type:=", "InfiniteSphereFarField",         "VersionID:=", 0,         "ID:=", &lt;ID&gt;,         "StartTheta:=", "&lt;StartTheta&gt;deg",         "StartPhi:=", "&lt;StartPhi&gt;deg",         "StopTheta:=", "&lt;StopTheta&gt;deg",         "StopPhi:=", "&lt;StopPhi&gt;deg",     ] ) </pre> |  |  |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <pre>"StepTheta:=", "&lt;StepTheta&gt;deg",<br/>"StepPhi:=", "&lt;StepPhi&gt;deg",<br/>"CS:=", "&lt;CS&gt;,"<br/>"UseLocalCS:=", "&lt;UseLocalCS&gt;,"<br/>"NFRadius:=", "&lt;NFRadius&gt;"<br/>])</pre>                                                                                                                                                                                                       |
| <b>Python Example</b> | <pre>oDesign = oDesign.GetModule("RadiationSetupMgr")<br/>oModule.Add(<br/>[<br/>    "NAME:Sphere 1",<br/>    "Type:=", "NearFieldSphere",<br/>    "VersionID:=", 0,<br/>    "ID:=", 7,<br/>    "StartTheta:=", "0deg",<br/>    "StartPhi:=", "-180deg",<br/>    "StopTheta:=", "180deg",<br/>    "StopPhi:=", "180deg",<br/>    "StepTheta:=", "2deg",<br/>    "StepPhi:=", "2deg",<br/>    "CS:=", -1,</pre> |

```
"UseLocalCS:=", False,
"NFRadius:=", "20mm"
])
```

## Edit (RadiationSetupMgr for Near Field Sphere)

Changes a near-field radiation boundary in the shape of a sphere.

**Note:** Only *Name* and *Type* are required parameters. If you set a custom Theta or Phi parameter, then you must set all Theta and Phi parameters. If you have a local coordinate system, then you must set the *CS* and *UseLocalCS* parameters.

| UI Access  | In the Project Manager under the design name > <b>Radiation</b> , double click on the name of the near-field sphere. |         |                                                                                                                                |
|------------|----------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                                                 | Type    | Description                                                                                                                    |
|            | <Name>                                                                                                               | String  | A user-defined name for the near field sphere.                                                                                 |
|            | <Type>                                                                                                               | String  | Type of radiation setup. It should be <b>NearFieldSphere</b> .                                                                 |
|            | <VersionID>                                                                                                          | Integer | Optional. Set to <b>0</b> .                                                                                                    |
|            | <ID>                                                                                                                 | Integer | Optional. Identifier that is created differently for every setup.                                                              |
|            | <StartTheta >                                                                                                        | String  | Optional. Starting point for theta in the spherical coordinate system for the sphere being defined. Use the form "<num>deg".   |
|            | <StartPhi>                                                                                                           | String  | Optional. Starting point for phi in the spherical coordinate system for the sphere being defined. Use the form "<num>deg".     |
|            | <StopTheta>                                                                                                          | String  | Optional. Stopping point for theta in the spherical coordinate system for the sphere being defined. Use the form "<num>deg".   |
|            | <StopPhi>                                                                                                            | String  | Optional. Stopping point for phi in the spherical coordinate system for the sphere being defined. Use the form "<num>deg".     |
|            | <StepTheta>                                                                                                          | String  | Optional. Step size between the start and the stop theta values at which the far field is calculated. Use the form "<num>deg". |
|            | <StepPhi>                                                                                                            | String  | Optional. Step size between the start and the stop phi values at                                                               |



|                     |              |         |                                                                                                                                                                                                   |
|---------------------|--------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |              |         | which the far field is calculated. Use the form "<num>deg".                                                                                                                                       |
|                     | <CS>         | Integer | Optional. The coordinate system to use. When coordinate system is local, set this number to the index of the local coordinate system. Set this value to <b>-1</b> for a global coordinate system. |
|                     | <UseLocalCS> | Boolean | Optional. <b>True</b> to select a local coordinate system, and <b>False</b> to use the global coordinate system.                                                                                  |
|                     | <NFRadius>   | String  | Optional. Radius of the sphere we want to calculate near fields on. Use the form "<num><unit>".                                                                                                   |
| <b>Return Value</b> | None.        |         |                                                                                                                                                                                                   |

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | <pre> oModule.Edit(     [         "NAME:&lt;Name&gt;",         "Type:=", "InfiniteSphereFarField",         "VersionID:=", 0,         "ID:=", &lt;ID&gt;,         "StartTheta:=", "&lt;StartTheta&gt;deg",         "StartPhi:=", "&lt;StartPhi&gt;deg",         "StopTheta:=", "&lt;StopTheta&gt;deg",         "StopPhi:=", "&lt;StopPhi&gt;deg",         "StepTheta:=", "&lt;StepTheta&gt;deg",         "StepPhi:=", "&lt;StapPhi&gt;deg",     ] ) </pre> |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <pre>"CS:=", &lt;CS&gt;, "UseLocalCS:=", &lt;UseLocalCS&gt;, "NFRadius:=", "&lt;NFRadius&gt;" ])</pre>                                                                                                                                                                                                                                                                                                             |
| <b>Python Example</b> | <pre>oDesign = oDesign.GetModule("RadiationSetupMgr") oModule.Edit( [     "NAME:Sphere 1",     "Type:=", "NearFieldSphere",     "VersionID:=", 0,     "ID:=", 7,     "StartTheta:=", "0deg",     "StartPhi:=", "-180deg",     "StopTheta:=", "180deg",     "StopPhi:=", "180deg",     "StepTheta:=", "2deg",     "StepPhi:=", "2deg",     "CS:=", -1,     "UseLocalCS:=", False,     "NFRadius:=", "20mm" ])</pre> |



## 17 - User Defined Document Script Commands

The product has to implement the [GetModule](#) call to create the UserDefinedDocument scripting object (e.g., Check AltraSimDesign.cpp (function GetMgrIDispatch())). To access the UserDefinedDocuments scripting object, use:

```
oModule = oDesign.GetModule("UserDefinedDocuments")
```

Once you have the scripting object, you can use the following methods:

- [AddDocument](#)
- [EditDocument](#)
- [RenameDocument](#)
- [DeleteDocument](#)
- [UpdateDocument](#)
- [ViewHtmlDocument](#)
- [ViewPdfDocument](#)
- [SaveHtmlDocumentAs](#)
- [SavePdfDocumentAs](#)
- [GetDocumentDefinitionNames](#)
- [DeleteAllDocuments](#)
- [UpdateAllDocuments](#)

You can find examples of how to use these methods on each of the methods' pages. A complete [example of a Python script](#) is also available, as is an example with a line by line explanation.

### AddDocument

Creates a new document based on provided data and traces. The document names come from UserDefinedDocument folder under syslib, userlib, and personallib. This creates a document and places it in the Project Manager under **Results > Documents**.

|              |                                                                              |       |                                            |
|--------------|------------------------------------------------------------------------------|-------|--------------------------------------------|
| UI Access    | Right click on <b>Results &gt; Create Document</b> . Choose a document name. |       |                                            |
| Parameters   | Name                                                                         | Type  | Description                                |
|              | <data>                                                                       | Array | Data the defines the document.             |
|              | <traces>                                                                     | Array | trace data for the inputs in the document. |
| Return Value | None                                                                         |       |                                            |

|                |                                                                                                                                                      |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | AddDocument (<data>, <traces>)                                                                                                                       |
| Python Example | <pre>oModule.AddDocument ( [     "NAME:Design Summary",     "",     "SysLib",     "DesignSummary",     ["NAME:Inputs"] ], ["NAME:DocTraces"] )</pre> |

## DeleteAllDocuments

Deletes all documents in the object.

|                     |                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right click on <b>Documents</b> in the Project Manager and click <b>Delete All Documents</b> . |
| <b>Parameters</b>   | None.                                                                                          |
| <b>Return Value</b> | None.                                                                                          |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | DeleteAllDocuments()                      |
| <b>Python Example</b> | <code>oModule.DeleteAllDocuments()</code> |

## DeleteDocument

Deletes a specified document.

|                     |                                                                                                                          |        |                                     |
|---------------------|--------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------|
| <b>UI Access</b>    | Right click on the created document in the Project Manager under <b>Results &gt; Documents</b> and click <b>Delete</b> . |        |                                     |
| <b>Parameters</b>   | Name                                                                                                                     | Type   | Description                         |
|                     | <name>                                                                                                                   | String | Name of the document to be deleted. |
| <b>Return Value</b> | None.                                                                                                                    |        |                                     |

|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteDocument(<names>)                                       |
| <b>Python Example</b> | <code>oModule.DeleteDocument("Project Design Summary")</code> |

# EditDocument

Edits specified documents. If the document pops up a dialog box, the user can make a change the inputs for the document. The document is regenerated and updated. A new one is *not* created.

|              |                                                                                                                                   |        |                                           |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------|
| UI Access    | Right click on the created document in the Project Manager under <b>Results &gt; Documents</b> and click <b>Modify document</b> . |        |                                           |
| Parameters   | Name                                                                                                                              | Type   | Description                               |
|              | <originalName>                                                                                                                    | String | Name of the original document             |
|              | <modifiedData>                                                                                                                    | Array  | New data to add to or modify the document |
|              | <modifiedtraces>                                                                                                                  | Array  | Trace data for the inputs of the document |
| Return Value | None.                                                                                                                             |        |                                           |

|                |                                                                                                                                                  |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | EditDocument( <name>,<data>,<traces>)                                                                                                            |
| Python Example | <pre>oModule.EditDocument("Design Summary", [     "NAME:Design Summary",     "",     "SysLib",     "DesignSummary",     ["NAME:Inputs"] ],</pre> |

|  |                                   |
|--|-----------------------------------|
|  | <pre>[ "NAME:DocTraces" ] )</pre> |
|--|-----------------------------------|

## GetDocumentDefinitionNames

Document definition names are the list of names that can be used to create a document. They appear when you click on **Create document**. This method returns the filenames of document definitions according to the files in the installation directories:

- syslib/UserDefinedDocuments
- userlib/UserDefinedDocuments
- personallb/UserDefinedDocuments

|                     |             |        |                                                |
|---------------------|-------------|--------|------------------------------------------------|
| <b>UI Access</b>    | NA          |        |                                                |
| <b>Parameters</b>   | Name        | Type   | Description                                    |
|                     | <separator> | String | Separator used to convey the directory "level" |
| <b>Return Value</b> | None.       |        |                                                |

|                       |                                          |
|-----------------------|------------------------------------------|
| <b>Python Syntax</b>  | GetDocumentDefinitionNames(<separator>)  |
| <b>Python Example</b> | oModule.GetDocumentDefinitionNames ("/") |

## GetDocumentNames

Retrieves the names for all documents.



|                     |                                             |
|---------------------|---------------------------------------------|
| <b>UI Access</b>    | N/A                                         |
| <b>Parameters</b>   | None.                                       |
| <b>Return Value</b> | Array of strings containing document names. |

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | GetDocumentNames()                      |
| <b>Python Example</b> | <code>oModule.GetDocumentNames()</code> |

## RenameDocument

Changes the name of a document.

|                     |                                                                                                                         |             |                              |
|---------------------|-------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------|
| <b>UI Access</b>    | Right click on the created document in the Project Manager under <b>Results&gt; Documents</b> and click <b>Rename</b> . |             |                              |
| <b>Parameters</b>   | <b>Name</b>                                                                                                             | <b>Type</b> | <b>Description</b>           |
|                     | <oldName>                                                                                                               | String      | Current name of the document |
|                     | <newName>                                                                                                               | String      | New name of the document     |
| <b>Return Value</b> | None.                                                                                                                   |             |                              |

|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | RenameDocument(<oldName>, <newName>)                                            |
| <b>Python Example</b> | <code>oModule.RenameDocument("Design Summary", "Project Design Summary")</code> |

## SaveHtmlDocumentAs

Saves a pre-existing HTML file to a different name and/or location.

|                     |                                                                                                                                     |        |                                    |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------|
| <b>UI Access</b>    | Right click on the created document in the Project Manager under <b>Results &gt; Documents</b> and click <b>Save As &gt; HTML</b> . |        |                                    |
| <b>Parameters</b>   | Name                                                                                                                                | Type   | Description                        |
|                     | <name>                                                                                                                              | String | Name of the document to be saved.  |
|                     | <saveTo>                                                                                                                            | String | File path to save the document to. |
| <b>Return Value</b> | none                                                                                                                                |        |                                    |

|                       |                                                                         |
|-----------------------|-------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SaveHtmlDocumentAs(<name>, <saveTo>)                                    |
| <b>Python Example</b> | <code>oModule.SaveHtmlDocumentAs("Design Summary 1", "DS1.html")</code> |

## SavePdfDocumentAs

Saves a pre-existing PDF file to a different name and/or location.

|                     |                                                                                                                                    |        |                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------|
| <b>UI Access</b>    | Right click on the created document in the Project Manager under <b>Results &gt; Documents</b> and click <b>Save As &gt; PDF</b> . |        |                                    |
| <b>Parameters</b>   | Name                                                                                                                               | Type   | Description                        |
|                     | <name>                                                                                                                             | String | Name of the document to be saved.  |
|                     | <saveTo>                                                                                                                           | String | File path to save the document at. |
| <b>Return Value</b> | None.                                                                                                                              |        |                                    |

|                       |                                                                       |
|-----------------------|-----------------------------------------------------------------------|
| <b>Python Syntax</b>  | SavePdfDocumentAs(<name>, <saveTo>)                                   |
| <b>Python Example</b> | <code>oModule.SavePdfDocumentAs("Design Summary 1", "DS1.pdf")</code> |

## UpdateAllDocuments

Refreshes the contents of all created documents. This action is made on the folder rather than the individual document.

|                     |                                                                                                             |
|---------------------|-------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Right click on <b>Results &gt; Documents</b> in the Project Manager and click <b>Update All Documents</b> . |
| <b>Parameters</b>   | None.                                                                                                       |
| <b>Return Value</b> | None.                                                                                                       |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | UpdateAllDocuments()                      |
| <b>Python Example</b> | <code>oModule.UpdateAllDocuments()</code> |

## UpdateDocument

Refreshes the contents of the selected document.

|                  |                                                                                                                                   |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b> | Right click on the created document in the Project Manager under <b>Results &gt; Documents</b> and click <b>Update Document</b> . |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------|

|                     |        |        |                                    |
|---------------------|--------|--------|------------------------------------|
| <b>Parameters</b>   | Name   | Type   | Description                        |
|                     | <name> | String | Name of the document to be updated |
| <b>Return Value</b> | None.  |        |                                    |

|                       |                                           |
|-----------------------|-------------------------------------------|
| <b>Python Syntax</b>  | UpdateDocument(<name>)                    |
| <b>Python Example</b> | oModule.UpdateDocument("Test UDD Report") |

## ViewHtmlDocument

Displays a pre-existing document as HTML.

|                     |                                                                                                                                     |        |                                             |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------|
| <b>UI Access</b>    | Right click on the created document in the Project Manager under <b>Results &gt; Documents</b> and click <b>View Xml Document</b> . |        |                                             |
| <b>Parameters</b>   | Name                                                                                                                                | Type   | Description                                 |
|                     | <name>                                                                                                                              | String | Name of the document to be viewed as a HTML |
| <b>Return Value</b> | None                                                                                                                                |        |                                             |

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Python Syntax</b>  | ViewHtmlDocument(<name>)                     |
| <b>Python Example</b> | oModule.ViewHtmlDocument("Design Summary 1") |

## ViewPdfDocument

Displays a pre-existing document as a PDF file.

|                     |                                                                                                                                     |        |                                            |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------|
| <b>UI Access</b>    | Right click on the created document in the Project Manager under <b>Results &gt; Documents</b> and click <b>View PDF Document</b> . |        |                                            |
| <b>Parameters</b>   | Name                                                                                                                                | Type   | Description                                |
|                     | <name>                                                                                                                              | String | Name of the document to be viewed as a PDF |
| <b>Return Value</b> | None.                                                                                                                               |        |                                            |

|                       |                                             |
|-----------------------|---------------------------------------------|
| <b>Python Syntax</b>  | ViewPdfDocument(<name>)                     |
| <b>Python Example</b> | oModule.ViewPdfDocument("Design Summary 1") |

## Example Python Script: Defining a Document

This script creates a user-defined solution and a document.

```
import ScriptEnv
ScriptEnv.Initialize("Ansoft.ElectronicsDesktop")
oDesktop.RestoreWindow()
oProject = oDesktop.SetActiveProject("BJT_Inverter")
oDesign = oProject.SetActiveDesign("Nexxim1")
oModule = oDesign.GetModule("UserDefinedSolutionModule")

oModule.CreateUserDefinedSolution("UDS Distance Trace Arithmetic Result1", "SysLib",
```

```

"TraceArithmetic/Distance Sweep Trace Arithmetic",
[
    "Offset 1:=", "0",
    "Scale 1:=", "1",
    "Offset 2:=", "0",
    "Scale 2:=", "1",
    "Operation:=", "Add"
],
[
    [
        "Standard",
        "probe1",
        "Transient",
        [
            style="font-family: monospace;">"NAME:Context",
            style="font-family: monospace;">"SimValueContext:=", [1,0,2,0,False,False,-
1,1,0,1,1,"",0,0,"DE",False,"0","DP",False,"500000000","DT",False,"0.001","NUMLEVELS",False,"0",-
"WE",False,"10us","WM",False,"10us","WN",False,"0ns","WS",False,"0ns"]
        ],
        [
            "Time:=", ["All"]
        ],
        [
            "Probe Component:=", ["V(Port1)"]
        ],
        []
    ],
    [
        "Standard",
        "probe2",
        "Transient",
        [
            "NAME:Context",
            "SimValueContext:=", [1,0,2,0,False,False,-

```

```

1,1,0,1,1,"",0,0,"DE",False,"0","DP",False,"500000000","DT",False,"0.001","NUMLEVELS",False,"0","-
WE",False,"10us","WM",False,"10us","WN",False,"0ns","WS",False,"0ns"]
    ],
    [
        "Time:=", ["All"]
    ],
    [
        "Probe Component:=", ["V(Port1)"]
    ],
    []
]
],
[])
oModule = oDesign.GetModule("UserDefinedDocuments")
oModule.AddDocument(
[
    "NAME:Test Report",
    "Test Report",
    "SysLib",
    "TestUDDInputs",
    [
        "NAME:Inputs",
        [
            "NAME:UDS1",
            "Solution",
            "UDS Distance Trace Arithmetic Result1",
            1000000,
            0
        ],
        [
            "NAME:UDS2",
            "Solution",

```

```

        "UDS Distance Trace Arithmetic Result2",
        1000000,
        2
    ]
]
],
[
    "NAME:DocTraces",
    [
        "NAME:UDS1",
        [
            "User Defined",
            "",
            "UDS Distance Trace Arithmetic Result1",
            [
                "Context:=", ""
            ],
            [
                "Distance:=", ["All"]
            ],
            [
                "Probe Component:=", [""]
            ],
            []
        ]
    ],
    [
        "NAME:UDS2",
        [
            "User Defined",
            "",
            "UDS Distance Trace Arithmetic Result1",
            [
                "Context:=", ""
            ]
        ]
    ]
]

```



```
],  
[  
    "Distance:=", ["All"]  
],  
[  
    "Probe Component:=", [""]  
],  
[]  
]  
]  
])
```

## 18 - User Defined Solutions Commands

User Defined Solution commands should be executed by the "UserDefinedSolutionModule" module.

```
oDesign = oProject.SetActiveDesign("TestDesign1")
oModule = oDesign.GetModule("UserDefinedSolutionModule")
```

The list of commands is as follows:

[CreateUserDefinedSolution](#)

[DeleteUserDefinedSolutions](#)

[EditUserDefinedSolution](#)

[GetUserDefinedSolutionNames](#)

[GetUserDefinedSolutionProperties](#)

### CreateUserDefinedSolution

Creates a new user defined solution.

| UI Access         | Right-click on <b>Results</b> > <b>Create User Defined Solution</b> . |        |                                                                                                                                                     |
|-------------------|-----------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                  | Type   | Description                                                                                                                                         |
|                   | <SoluName>                                                            | String | Name of user defined solution.                                                                                                                      |
|                   | <LibType>                                                             | String | Indicates the library where the UDS plugin file is located. This parameter must be one of the following values: "SysLib", "UserLib", "Personallib". |
|                   | <RelativePath>                                                        | String | The path of the UDS plugin file relative to the "UserDefinedOutputs" sub-directory of the library specified by <LibType>.                           |
|                   | <PropList>                                                            | Array  | Strings specify name-value pairs corresponding to the UDS properties specified in the plugin file.<br><br>For example:                              |

|                     |                                               |       |                                                                                                         |
|---------------------|-----------------------------------------------|-------|---------------------------------------------------------------------------------------------------------|
|                     |                                               |       | Array("multiply_factor:=", "2.0", "component_name:=", "resistor1")                                      |
|                     | <ProbeSelections>                             | Array | Name of the probe being specified. Note: this must match a probe name specified in the UDS plugin file. |
|                     | <DynamicProbes>                               | Array | Array of <ProbeSelection>'s, representing the probes that are used by dynamic-probes.                   |
| <b>Return Value</b> | String name of created user defined solution. |       |                                                                                                         |

|                       |                                                                                                                      |  |  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | CreateUserDefinedSolution(<SoluName>, <LibType>, <RelativePath>, <PropList>, <ProbeSelections>, <DynamicProbes>)     |  |  |
| <b>Python Example</b> | <pre>oModule.CreateUserDefinedSolution(     "ConstantTimestep1", "SysLib",     "ConstantTimestep", [], [], [])</pre> |  |  |

## DeleteUserDefinedSolutions

Deletes one or more user defined solutions.

|                     |                                                                     |       |                                                                            |
|---------------------|---------------------------------------------------------------------|-------|----------------------------------------------------------------------------|
| <b>UI Access</b>    | <b>Delete</b> button from the <b>User Defined Solutions</b> dialog. |       |                                                                            |
| <b>Parameters</b>   | Name                                                                | Type  | Description                                                                |
|                     | <SoluNames>                                                         | Array | Array of strings containing names of User Defined Solutions to be deleted. |
| <b>Return Value</b> | None.                                                               |       |                                                                            |

|                       |                                                                |
|-----------------------|----------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteUserDefinedSolutions(<SoluNames>)                        |
| <b>Python Example</b> | oModule.DeleteUserDefinedSolutions(["Solution1", "Solution2"]) |

## EditUserDefinedSolution

Modifies an existing user defined solution.

|                     |                                                                       |        |                                                                                                                                                                                                  |
|---------------------|-----------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | <b>Edit</b> button from the <b>User Defined Solutions</b> dialog box. |        |                                                                                                                                                                                                  |
| <b>Parameters</b>   | Name                                                                  | Type   | Description                                                                                                                                                                                      |
|                     | <SoluName>                                                            | String | Name of user defined solution to be edited.                                                                                                                                                      |
|                     | <NewSoluName>                                                         | String | New name for the specified user defined solution.                                                                                                                                                |
|                     | <LibType>                                                             | String | Indicates the library where the UDS plugin file is located. This parameter must be one of the following values: "SysLib", "UserLib", "PersonalLib".                                              |
|                     | <RelativePath>                                                        | String | The path of the UDS plugin file relative to the "UserDefinedOutputs" sub-directory of the library specified by <LibType>.                                                                        |
|                     | <PropList>                                                            | Array  | Strings specify name-value pairs corresponding to the UDS properties specified in the plugin file.<br><br>For example:<br><br>Array("multiply_factor:=", "2.0", "component_name:=", "resistor1") |
|                     | <ProbeSelections>                                                     | Array  | Name of the probe being specified. Note: this must match a probe name specified in the UDS plugin file.                                                                                          |
|                     | <DynamicProbes>                                                       | Array  | Array of <ProbeSelection>'s, representing the probes that are used by dynamic-probes.                                                                                                            |
| <b>Return Value</b> | String name of update user defined solution.                          |        |                                                                                                                                                                                                  |

|                       |                                                                                                                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>EditUserDefinedSolution(&lt;SoluName&gt;, &lt;NewSoluName&gt;, &lt;LibType&gt;, &lt;RelativePath&gt;, &lt;PropList&gt;, &lt;ProbeSelections&gt;, &lt;DynamicProbes&gt;)</code> |
| <b>Python Example</b> | <pre>oModule.EditUserDefinedSolution("ConstantTimestep1"<br/>"ConstantTimestep1After", "SysLib",<br/>"ConstantTimestep", [], [], [])</pre>                                           |

## GetUserDefinedSolutionNames

Retrieves user defined solution names.

|                     |                                             |
|---------------------|---------------------------------------------|
| <b>UI Access</b>    | N/A                                         |
| <b>Parameters</b>   | None.                                       |
| <b>Return Value</b> | Array of strings containing solution names. |

|                       |                                                  |
|-----------------------|--------------------------------------------------|
| <b>Python Syntax</b>  | <code>GetUserDefinedSolutionNames()</code>       |
| <b>Python Example</b> | <pre>oModule.GetUserDefinedSolutionNames()</pre> |

## GetUserDefinedSolutionProperties

Obtains properties for a specified user defined solution.

|                     |                                                |        |                                            |
|---------------------|------------------------------------------------|--------|--------------------------------------------|
| <b>UI Access</b>    | N/A                                            |        |                                            |
| <b>Parameters</b>   | Name                                           | Type   | Description                                |
|                     | < <i>SoluName</i> >                            | String | Name of a specified user defined solution. |
| <b>Return Value</b> | Array of strings containing properties values. |        |                                            |

|                       |                                                                            |
|-----------------------|----------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetUserDefinedSolutionProperties(< <i>SoluName</i> >)                      |
| <b>Python Example</b> | <code>oModule.GetUserDefinedSolutionProperties("ConstantTimestep1")</code> |

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left blank.

## 19 - Network Data Explorer Script Commands

Network Data Explorer (NDE) scripting uses three objects, each with unique script commands:

- **Network Data Explorer** – top-level object obtained by calling `oNDE=oDesktop.GetTool("ndExplorer")`. Network Data Explorer commands are called using `oNDE`.
- **Network Data** – single set of S-parameters, corresponding to a single entry in the UI tree. Network Data commands are called using `oData`.
- **Post Process Settings** – settings that can be applied and removed from network data without making permanent changes to the underlying data. Post Process Settings commands are called using `oPostProc`.

Examples using the above objects:

```
oNDE = oDesktop.GetTool("ndExplorer")  
  
oData = oNDE.Open("D:\folder\test.s2p")  
  
success = oPostProc.AddDiffPair(2, 1, "Diff1", "Comm1", 100, 25)
```

The following commands are described in this section:

[AddDiffPair](#)

[Cascade \(SPISim\)](#)

[ClearDiffPairs](#)

[Clone](#)

[Close](#)

[Combine \(SPISim\)](#)

[Deembed \(SPISim\)](#)

[DeembedBack \(SPISim\)](#)

[DeembedFront \(SPISim\)](#)



[DisableDiffPairs](#)

[EnableDiffPairs](#)

[ExportCitiFile](#)

[ExportFullWaveSpice](#)

[ExportMatlab](#)

[ExportNMFData](#)

[ExportNetworkData](#)

[ExportSpreadsheet](#)

[ExportTouchstone](#)

[ExportTouchstone2](#)

[Extract \(SPISim\)](#)

[GetFrequencies](#)

[GetFrequencyCount](#)

[GetName](#)

[GetPortCount](#)

[GetPortNumber](#)

[GetPostProcSettings](#)

[GetSolutionVariation](#)

[GetVariation](#)

[HasSameData](#)

- [LoadSolution](#)
- [Open](#)
- [Rename \(SPISim\)](#)
- [Renormalize \(SPISim\)](#)
- [Reorder](#)
- [Reorder \(SPISim\)](#)
- [Reset](#)
- [SetAllPortImpedances](#)
- [SetAllPortImpedances](#)
- [SetPortDeembedDistance](#)
- [SetPortImpedance](#)
- [SetPostProcSettings](#)
- [Smooth](#)
- [Stretch \(SPISim\)](#)
- [Terminate](#)

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## AddDiffPair

Specifies a differential pair from two terminal ports.

|           |                                                                                                                                      |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
| UI Access | From the <b>Network Data Explorer</b> tab, select <b>Differential Pairs</b> in the <b>NDE</b> ribbon to open the <b>Differential</b> |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------|

|              |                                                                                                                    |             |                                                     |
|--------------|--------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------|
|              | Pairs window. Then select differential pairs from the <b>Pairs</b> group box and click <b>Add Pairs &gt;&gt;</b> . |             |                                                     |
| Parameters   | <b>Name</b>                                                                                                        | <b>Type</b> | <b>Description</b>                                  |
|              | <positiveTerminal>                                                                                                 | Integer     | The portNumber of the positive terminal.            |
|              | <negativeTerminal>                                                                                                 | Integer     | The portNumber of the negative terminal.            |
|              | <diffName>                                                                                                         | String      | The new name of the differential pin (e.g., Diff1). |
|              | <commName>                                                                                                         | String      | The new name of the common pin (e.g., Comm1).       |
|              | <diffImpedance>                                                                                                    | Double      | The differential pin characteristic impedance.      |
|              | <commImpedance>                                                                                                    | Double      | The common pin characteristic impedance.            |
|              | <matched>                                                                                                          | Boolean     | Specify whether to use matched pair.                |
|              |                                                                                                                    |             | <b>Note:</b> The default value is <b>False</b> .    |
| Return Value | Boolean.                                                                                                           |             |                                                     |

|                |                                                                             |
|----------------|-----------------------------------------------------------------------------|
| Python Syntax  | AddDiffPair()                                                               |
| Python Example | <pre>success = oPostProc.AddDiffPair(2, 1, "Diff1", "Comm1", 100, 25)</pre> |

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## Cascade (SPISim)

Creates new network data from a group of network data objects cascaded together. The network data must have an even number of terminal ports and must have the same number of ports.

**Note:** Cascade opens and interacts with **SPISim** to complete.

|                     |                                                                                                                                                   |             |                                                                                  |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Network Data Explorer</b> tab, select <b>Transforms</b> in the <b>NDE</b> ribbon. Then select <b>Cascade</b> from the drop-down menu. |             |                                                                                  |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                                       | <b>Type</b> | <b>Description</b>                                                               |
|                     | <dataArray>                                                                                                                                       | Array       | These network data objects are cascaded together to create the new network data. |
| <b>Return Value</b> | Network IDispatch.<br><b>Note:</b> Cascade returns <b>None</b> if the specified network data does not have compatible terminal ports defined.     |             |                                                                                  |

|                       |                                                                                                  |
|-----------------------|--------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Cascade()                                                                                        |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") oData2 = oNDE.Cascade([oData1, oData2, oData3])</pre> |

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## ClearDiffPairs

Clears all differential pair definitions. All other post-processing settings remain the same.

|                     |                                                                                                                                                                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Network Data Explorer</b> tab, select <b>Differential Pairs</b> in the <b>NDE</b> ribbon to open the <b>Differential Pairs</b> window. Then select differential pairs from the rightmost box and click <b>&lt;&lt; Remove Pairs</b> . |
| <b>Parameters</b>   | None.                                                                                                                                                                                                                                             |
| <b>Return Value</b> | None.                                                                                                                                                                                                                                             |

|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ClearDiffPairs()</code>                                                   |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer")<br/>oPostProc.ClearDiffPairs()</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## Clone

Creates a copy of the network data object.

|                     |                                                                                                                                          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Network Data Explorer</b> tab, select the network data object to clone. Then select <b>Clone</b> from the <b>NDE</b> ribbon. |
| <b>Parameters</b>   | None.                                                                                                                                    |
| <b>Return Value</b> | Network IDispatch.                                                                                                                       |

|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Clone()                                                                     |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer")<br/>oData1 = oData.Clone()</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## Close

Closes the network data object. The object will no longer be accessible.

|                     |                                                                                                                            |
|---------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Network Data Explorer</b> tab, click <b>Close</b> in the <b>NDE</b> ribbon, or select <b>File &gt; Close</b> . |
| <b>Parameters</b>   | None.                                                                                                                      |
| <b>Return Value</b> | None.                                                                                                                      |

|                       |                                                                    |
|-----------------------|--------------------------------------------------------------------|
| <b>Python Syntax</b>  | Close()                                                            |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer")<br/>oData.Close()</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

# Combine (SPISim)

Combines frequencies from multiple network data objects to create a new network data with all of the frequencies.

**Note:** Combine opens and interacts with **SPISim** to complete.

|              |                                                                                                                                                   |             |                                                                                                                                                |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | From the <b>Network Data Explorer</b> tab, select <b>Transforms</b> in the <b>NDE</b> ribbon. Then select <b>Combine</b> from the drop-down menu. |             |                                                                                                                                                |
| Parameters   | <b>Name</b>                                                                                                                                       | <b>Type</b> | <b>Description</b>                                                                                                                             |
|              | <dataArray>                                                                                                                                       | Array       | These network data objects are combined to create the new network data.                                                                        |
|              | <freqTol>                                                                                                                                         | Double      | If $\text{abs}(f1 - f2) < \text{freqTol}$ , $f1$ and $f2$ are considered the same frequency.<br><b>Note:</b> The default value is <b>100</b> . |
| Return Value | Network IDispatch.<br><b>Note:</b> Combine returns <b>None</b> if the network data does not have the same number of ports.                        |             |                                                                                                                                                |

|                |                                                                                                        |
|----------------|--------------------------------------------------------------------------------------------------------|
| Python Syntax  | Combine()                                                                                              |
| Python Example | <pre>oNDE = oDesktop.GetTool("ndExplorer") oData4 = oNDE.Combine([oData1, oData2, oData3], 1000)</pre> |

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## Deembed (SPISim)

Creates a new network data, dembedding the frontData and the backData from the front and back of the originalData.

**Note:** Deembed opens and interacts with **SPISim** to complete.

|                     |                                                                                                                                                                                                                                                                                               |             |                                                                |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Network Data Explorer</b> tab, select <b>Transforms</b> in the <b>NDE</b> ribbon. Then select <b>Deembed</b> from the drop-down menu to open the <b>Deembed...</b> window, and choose <b>Given 3 S-params in order of: Total, Front, Back</b> from the <b>Settings</b> group box. |             |                                                                |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                                                                                                                                                                                   | <b>Type</b> | <b>Description</b>                                             |
|                     | <originalData>                                                                                                                                                                                                                                                                                | Object      | Original network data that is deembeded.                       |
|                     | <frontData>                                                                                                                                                                                                                                                                                   | Object      | Network data that is deembeded from the front of the original. |
|                     | <backData>                                                                                                                                                                                                                                                                                    | Object      | Network data that is deembeded from the back of the original.  |
| <b>Return Value</b> | Network IDispatch.<br><br><b>Note:</b> Deembed returns <b>None</b> if the specified network data does not have compatible terminal ports defined.                                                                                                                                             |             |                                                                |

|                       |                                       |
|-----------------------|---------------------------------------|
| <b>Python Syntax</b>  | Deembed()                             |
| <b>Python Example</b> | oNDE = oDesktop.GetTool("ndExplorer") |



|  |                                                                   |
|--|-------------------------------------------------------------------|
|  | <code>oData2 = oNDE.Deembed(oData1, oDataFront, oDataBack)</code> |
|--|-------------------------------------------------------------------|

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

DeembedBack (SPISim)

Creates a new network data, dembedding the backData from the back of the originalData.

**Note:** DeembedBack opens and interacts with **SPISim** to complete.

|              |                                                                                                                                                                                                                                                                                        |             |                                                                |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------|
| UI Access    | From the <b>Network Data Explorer</b> tab, select <b>Transforms</b> in the <b>NDE</b> ribbon. Then select <b>Deembed</b> from the drop-down menu to open the <b>Deembed...</b> window, and choose <b>Given 3 S-params in order of: Total, Back</b> from the <b>Settings</b> group box. |             |                                                                |
| Parameters   | <b>Name</b>                                                                                                                                                                                                                                                                            | <b>Type</b> | <b>Description</b>                                             |
|              | <originalData>                                                                                                                                                                                                                                                                         | Object      | Original network data that is deembedded.                      |
|              | <backData>                                                                                                                                                                                                                                                                             | Object      | Network data that is deembedded from the back of the original. |
| Return Value | Network IDispatch.<br><br><b>Note:</b> DeembedBack returns <b>None</b> if the specified network data does not have compatible terminal ports defined.                                                                                                                                  |             |                                                                |

|                       |                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DeembedBack()                                                                                 |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") oData2 = oNDE.DeembedBack(oData1, oDataBack)</pre> |

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## DeembedFront (SPISim)

Creates a new network data, dembedding the frontData from the front of the originalData.

**Note:** DeembedFront opens and interacts with **SPISim** to complete.

|                     |                                                                                                                                                                                                                                                                                         |             |                                                                 |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Network Data Explorer</b> tab, select <b>Transforms</b> in the <b>NDE</b> ribbon. Then select <b>Deembed</b> from the drop-down menu to open the <b>Deembed...</b> window, and choose <b>Given 3 S-params in order of: Total, Front</b> from the <b>Settings</b> group box. |             |                                                                 |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                                                                                                                                                                             | <b>Type</b> | <b>Description</b>                                              |
|                     | <originalData>                                                                                                                                                                                                                                                                          | Object      | Original network data that is deembedded.                       |
|                     | <frontData>                                                                                                                                                                                                                                                                             | Object      | Network Data that is deembedded from the front of the original. |
| <b>Return Value</b> | Network IDispatch.<br><br><b>Note:</b> DeembedFront returns <b>None</b> if the specified network data does not have compatible terminal ports defined.                                                                                                                                  |             |                                                                 |

|                       |                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DeembedFront()                                                                                  |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") oData2 = oNDE.DeembedFront(oData1, oDataFront)</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## DisableDiffPairs

Deactivates all differential pair definitions. This script does not remove them, so they [can be reactivated](#).

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Network Data Explorer</b> tab, select <b>Differential Pairs</b> in the <b>NDE</b> ribbon to open the <b>Differential Pairs</b> window. Once differential pairs have been added to the rightmost box (i.e., select differential pairs from the Pairs group box and click <b>Add Pairs &gt;&gt;</b> ), remove check marks from the <b>Enabled</b> column to deactivate the corresponding differential pairs. |
| <b>Parameters</b>   | None.                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Return Value</b> | None.                                                                                                                                                                                                                                                                                                                                                                                                                  |

|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DisableDiffPairs()                                                            |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") oPostProc.DisableDiffPairs()</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## EnableDiffPairs

Enables all differential pair definitions.

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Network Data Explorer</b> tab, select <b>Differential Pairs</b> in the <b>NDE</b> ribbon to open the <b>Differential Pairs</b> window. Once differential pairs have been added to the rightmost box (i.e., select differential pairs from the Pairs group box and click <b>Add Pairs &gt;&gt;</b> ), add check marks to the <b>Enabled</b> column to activate the corresponding differential pairs. |
| <b>Parameters</b>   | None.                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Return Value</b> | None.                                                                                                                                                                                                                                                                                                                                                                                                           |

|                       |                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | EnableDiffPairs()                                                                      |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") success = oPostProc.EnableDiffPairs()</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## ExportCitiFile

Writes the S-parameters to disk in Citifile format (\*.cit text file).

|            |                                                                                                                                                                                                        |                  |                                                                                                                                                                                                                                                   |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | From the <b>Network Data Explorer</b> tab, select <b>File &gt; Save As</b> to open a <b>Save As</b> explorer window. Then select <b>Citifile (*.cit)</b> from the <b>Save as type:</b> drop-down menu. |                  |                                                                                                                                                                                                                                                   |
| Parameters | <b>Name</b>                                                                                                                                                                                            | <b>Type</b>      | <b>Description</b>                                                                                                                                                                                                                                |
|            | <filePath>                                                                                                                                                                                             | String           | The full path to the file.                                                                                                                                                                                                                        |
|            | <matrixType>                                                                                                                                                                                           | Integer          | One of the following: <ul style="list-style-type: none"><li>• 0 – S-Parameters</li><li>• 1 – Y-Parameters</li><li>• 2 – Z-Parameters</li><li>• 3 – Gamma</li><li>• 4 – Impedance</li></ul> <div><b>Note:</b> The default value is <b>0</b>.</div> |
|            | <formalType>                                                                                                                                                                                           | Integer          | One of the following: <ul style="list-style-type: none"><li>• 0 – Magnitude/Angle (degrees)</li><li>• 1 – Real/Imaginary</li><li>• 2 – dB/Angle (degrees)</li></ul> <div><b>Note:</b> The default value is <b>0</b>.</div>                        |
|            | <precision>                                                                                                                                                                                            | Integer          | The number of significant figures. <div><b>Note:</b> The default value is <b>10</b>.</div>                                                                                                                                                        |
|            | <frequencies>                                                                                                                                                                                          | Array of Doubles | A subset of the calculated frequencies. Any array values that don't have calculated data will be ignored. An empty array will cause all frequencies to be written.                                                                                |

|                     |                                                            |  |                                                   |
|---------------------|------------------------------------------------------------|--|---------------------------------------------------|
|                     |                                                            |  | <b>Note:</b> The default value is an empty array. |
| <b>Return Value</b> | Boolean True if file was successfully written; else False. |  |                                                   |

|                       |                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportCitiFile()                                                                                                     |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") success = oData.ExportCitiFile("D:\folder\nel33.cit", 0, 1, 12, [])</pre> |

## ExportFullWaveSpice

*Use:* Export FullWaveSpice data in a format of your choice.

*Command:* File > Export MacroModel > Broadband (SYZ, FWS....)

*Syntax:* ExportFullWaveSpice

```
"DesignName", // Design name. Can be left blank, if loading solution from a file.
true/false, // true - solution loaded from file, false- loaded from design
"Name", // If loading from design this is the solution name, else this is the
           // full path of the file from which the solution is loaded
"variation", // Pick a particular variation. Leave blank if no variation.
Array("NAME:Frequencies"), // Optional; if none defined all frequencies are used
Array("NAME:SpiceData", // Spice export options object
"SpiceType:=", "SSS", // SpiceType can be "PSpice", "HSpice", "Spectre", "SSS",
```

```

        // "Simplorer", "TouchStone1.0", "TouchStone2.0"
"EnforcePassivity:=", false, // Enforce Passivity true/false
"EnforceCausality:=", false, // Enforce Causality true/false
"UseCommonGround:=", false, // Use common ground true/false
"FittingError:=", 0.5, // Fitting error
"MaxPoles:=", 400, // Maximum Order
"PassivityType:=", "ConvexOptimization", // Passivity Type can be "ConvexOptimization",
        // "PassivityByPerturbation", or "IteratedFittingOfPV"
"ColumnFittingType:=", "Column", // Column FittingType can be "Column", "Entry", "Matrix"
"SSFittingType:=", "TWA", // SS Fitting Type can be "TWA", "IterativeRational"
"RelativeErrorToleranc:=", false, // Relative error tolerance true/false
"TouchstoneFormat:=", "MA", // Touchstone Format "MA", "RI", "DB"
"TouchstoneUnits:=", "Hz", // Touchstone Units "Hz", "KHz", "MHz", "MHz"
"TouchStonePrecision:=", 8, // Touchstone precision
"ExportDirectory:=", "C:/Examples/LNA/", // Directory to export to
"ExportSpiceFileName:=", "Linckt_HBTest_2.sss", // Spice export file
"FullwaveSpiceFileName:=", "Linckt_HBTest.sss", // FWS file
"CreateNPortModel:=", true // Create a model based on the exported file true/false
)

```

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## ExportMatlab

Writes the S-parameters to disk in Matlab format (\*.m text file).

| UI Access  | From the <b>Network Data Explorer</b> tab, select <b>File &gt; Save As</b> to open a <b>Save As</b> explorer window. Then select <b>MATLAB (*.m)</b> from the <b>Save as type:</b> drop-down menu. |         |                                                                                                                                                                                                                                              |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                                                                                                                               | Type    | Description                                                                                                                                                                                                                                  |
|            | <filePath>                                                                                                                                                                                         | String  | The full path to the file.                                                                                                                                                                                                                   |
|            | <matrixType>                                                                                                                                                                                       | Integer | One of the following: <ul style="list-style-type: none"> <li>• 0 – S-Parameters</li> <li>• 1 – Y-Parameters</li> <li>• 2 – Z-Parameters</li> <li>• 3 – Gamma</li> <li>• 4 – Impedance</li> </ul> <p><b>Note:</b> The default value is 0.</p> |
|            | <formalType>                                                                                                                                                                                       | Integer | One of the following: <ul style="list-style-type: none"> <li>• 0 – Magnitude/Angle (degrees)</li> <li>• 1 – Real/Imaginary</li> <li>• 2 – dB/Angle (degrees)</li> </ul> <p><b>Note:</b> The default value is 0.</p>                          |



|                     |                                                            |                  |                                                                                                                                                                                                                             |
|---------------------|------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <precision>                                                | Integer          | The number of significant figures.<br><br><b>Note:</b> The default value is <b>10</b> .                                                                                                                                     |
|                     | <frequencies>                                              | Array of Doubles | A subset of the calculated frequencies. Any array values that don't have calculated data will be ignored. An empty array will cause all frequencies to be written.<br><br><b>Note:</b> The default value is an empty array. |
| <b>Return Value</b> | Boolean True if file was successfully written; else False. |                  |                                                                                                                                                                                                                             |

|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportMatlab()                                                                                                   |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") success = oData.ExportMatlab("D:\folder\ne133.m", 0, 1, 12, [])</pre> |

## ExportNMFData

Exports s-parameters in neutral file format (\*.nmf).

|                   |                                                                                                                                                                           |       |                                                                                              |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | <b>Results &gt; Solution Data.</b> On the <b>Matrix</b> tab, click <b>Export</b> tab. Then click <b>Export &gt; S-parameter</b> . Select Neutral Model format and export. |       |                                                                                              |
| <b>Parameters</b> | Name                                                                                                                                                                      | Type  | Description                                                                                  |
|                   | <sourceName>                                                                                                                                                              | Array | String names of solutions. Use more than one array entry for a combined Interpolating sweep. |

|                     |                  |         |                                                                                                                                                       |
|---------------------|------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <outputFileName> | String  | Full path of output file, including *.nmf extension.                                                                                                  |
|                     | <reduceMat>      | String  | Either "Original" or name of reduced matrix.                                                                                                          |
|                     | <refImp>         | Double  | Reference impedance.                                                                                                                                  |
|                     | <freqs>          | Array   | Either "All" or array of doubles representing frequencies.                                                                                            |
|                     | <variationKey>   | String  | Design variation key. Pass empty string for the current nominal variation.                                                                            |
|                     | <displayFormat>  | String  | "MagPhase", "Reallmag", "DbPhase".                                                                                                                    |
|                     | <pass>           | Integer | Optional. The pass to export. This is ignored if the <i>sourceName</i> is a frequency sweep. Leaving out this value or specifying -1 gets all passes. |
|                     | <ComplexFormat>  | Integer | Optional. The format to use for the exported data. Options are<br>0 = Magnitude/Phase<br>1= Real/Imaginary.<br>2= db/Phase.                           |
|                     | <Precision>      | Integer | Optional. Number of digits precision. If not specified, the default is 6.                                                                             |
| <b>Return Value</b> | None.            |         |                                                                                                                                                       |

|                       |                                                                                                                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportNMFData (<sourceName>, <outputFileName>, <reduceMat>, <refImp>, <freqs>, <variationKey>, <displayFormat>, <pass>, <ComplexFormat>, <Precision>)                                                                  |
| <b>Python Example</b> | oDesign.ExportNMFData("Setup2 : LastAdaptive", "C:/outputs/data.nmf", "Original", 50, [10000000, 20000000, 30000000, 40000000, 50000000, 60000000, 70000000, 80000000, 90000000, 100000000], "", "MagPhase", 0, 1, 11) |

## ExportNetworkData

Exports matrix solution data to a file.

| UI Access  | N/A                  |         |                                                                                                                                                                                                                             |
|------------|----------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                 | Type    | Description                                                                                                                                                                                                                 |
|            | <DesignVariationKey> | String  | Design variation key. Pass empty string for the current nominal variation.                                                                                                                                                  |
|            | <SolnSelectionArray> | Array   | Array of selected solutions.<br><br>Array(<SolnSelector>, <SolnSelector>, ...)<br><br>If more than one array entry, this indicates a combined Interpolating sweep.                                                          |
|            | <SolnSelector>       | String  | Solution setup name and solution name, separated by a colon.                                                                                                                                                                |
|            | <FileFormat>         | Integer | File format value.<br><br>2 : Tab delimited spreadsheet format (.tab)<br><br>3 : Touchstone (.sNp)<br><br>4 : CitiFile (.cit)<br><br>7 : Matlab (.m)<br><br>8 : Terminal Z0 spreadsheet                                     |
|            | <OutFile>            | String  | Full path to the file to write out.                                                                                                                                                                                         |
|            | <FreqsArray>         | Array   | The frequencies to export. The <FreqsArray> argument contains a vector (e.g. "1GHz", "2GHz", ...) to use, or "all". To export all frequencies, use Array("all"). If no frequencies are specified, all frequencies are used. |
|            | <DoRenorm>           | Boolean | For Touchstone format only. Specifies whether to renormalize the data before export.                                                                                                                                        |
|            | <RenormImped>        | Double  | For Touchstone format only. Real impedance value in ohms, for renormalization. Required in syntax, but ignored if DoRenorm is false.                                                                                        |
|            | <DataType>           | Array   | Optional. Type: "S", "Y", or "Z". The matrix to export.                                                                                                                                                                     |

|                     |                                           |         |                                                                                                                                                              |
|---------------------|-------------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <code>&lt;pass&gt;</code>                 | Integer | Optional. The pass to export. This is ignored if the sourceName is a frequency sweep. Leaving out this value or specifying -1 gets all passes.               |
|                     | <code>&lt;ComplexFormat&gt;</code>        | Integer | Optional. Type: "0", "1", or "2"<br><br>The format to use for the exported data.<br><br>0 = Magnitude/Phase.<br><br>1 = Real/Imaginary.<br><br>2 = db/Phase. |
|                     | <code>&lt;Precision&gt;</code>            | Integer | Optional. Touchstone number of digits precision. Default if not specified is 15.                                                                             |
|                     | <code>&lt;UseExportFreqs&gt;</code>       | Boolean | Specifies whether to use export frequencies.                                                                                                                 |
|                     | <code>&lt;IncludeGammaComments&gt;</code> | Boolean | Touchstone only. Specifies whether to include Gamma and Impedance comments.                                                                                  |
|                     | <code>&lt;SupportNonStdExport&gt;</code>  | Boolean | Specifies whether to support non-standard Touchstone extensions for mixed reference impedance.                                                               |
| <b>Return Value</b> | None.                                     |         |                                                                                                                                                              |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportNetworkData(&lt;DesignVariationKey&gt;, &lt;SolnSelectionArray&gt;, &lt;SolnSelector&gt;, &lt;FileFormat&gt;, &lt;OutFile&gt;, &lt;FreqsArray&gt;, &lt;DoRenorm&gt;, &lt;RenormImped&gt;, [Optional &lt;DataType&gt;], [Optional &lt;pass&gt;], [Optional &lt;ComplexFormat&gt;], [Optional &lt;Precision&gt;], [Optional &lt;UseExportFreqs&gt;], [Optional &lt;IncludeGammaComments&gt;], [Optional &lt;SupportNonStdExport&gt;])</code> |
| <b>Python Example</b> | <pre>oModule.ExportNetworkData("", ["Setup1:Sweep1"], 3, "C://Documents/package_ HFSSDesign1.s4p", ['all'], True, 50, "S", -1, 0, 15, True, True, True</pre>                                                                                                                                                                                                                                                                                           |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

# ExportSpreadsheet

Writes the S-parameters to disk in spreadsheet format (\*.tab text file).

| UI Access  | From the <b>Network Data Explorer</b> tab, select <b>File &gt; Save As</b> to open a <b>Save As</b> explorer window. Then select <b>Data Table (spreadsheet) (*.tab)</b> from the <b>Save as type:</b> drop-down menu. |         |                                                                                                                                                                                                                                                    |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                                                                                                                                                   | Type    | Description                                                                                                                                                                                                                                        |
|            | <filePath>                                                                                                                                                                                                             | String  | The full path to the file.                                                                                                                                                                                                                         |
|            | <matrixType>                                                                                                                                                                                                           | Integer | One of the following: <ul style="list-style-type: none"> <li>• 0 – S-Parameters</li> <li>• 1 – Y-Parameters</li> <li>• 2 – Z-Parameters</li> <li>• 3 – Gamma</li> <li>• 4 – Impedance</li> </ul> <div> <b>Note:</b> The default value is 0. </div> |
|            | <formalType>                                                                                                                                                                                                           | Integer | One of the following: <ul style="list-style-type: none"> <li>• 0 – Magnitude/Angle (degrees)</li> <li>• 1 – Real/Imaginary</li> <li>• 2 – dB/Angle (degrees)</li> </ul>                                                                            |

|                     |                                                            |                  |                                                                                                                                                                                                                         |
|---------------------|------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                                            |                  | <b>Note:</b> The default value is <b>0</b> .                                                                                                                                                                            |
|                     | <precision>                                                | Integer          | The number of significant figures.<br><b>Note:</b> The default value is <b>10</b> .                                                                                                                                     |
|                     | <frequencies>                                              | Array of Doubles | A subset of the calculated frequencies. Any array values that don't have calculated data will be ignored. An empty array will cause all frequencies to be written.<br><b>Note:</b> The default value is an empty array. |
|                     | <renormalize>                                              | Boolean          | If <b>True</b> , will renormalize the data to the value of renormImpedance before writing.<br><b>Note:</b> The default value is <b>False</b> .                                                                          |
|                     | <renormImpedance>                                          | Double           | Data will be renormalized to this impedance before writing only if renormalize is <b>True</b> .<br><b>Note:</b> The default value is <b>50 ohms</b> .                                                                   |
| <b>Return Value</b> | Boolean True if file was successfully written; else False. |                  |                                                                                                                                                                                                                         |

|                       |                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportSpreadsheet()                                                                    |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") oData = oNDE.Open(&lt;model path&gt;)</pre> |

```
success = oData.ExportSpreadsheet("D:\folder\ne133.tab", 0, 1, 12, [], True, 23)
```

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## ExportTouchstone

Writes the S-parameters to disk in Touchstone 1.0 format (\*.snp text file).

| UI Access  | From the <b>Network Data Explorer</b> tab, select <b>File &gt; Save As</b> to open a <b>Save As</b> explorer window. Then select <b>Touchstone Format 1.0 (*.snp)</b> from the <b>Save as type:</b> drop-down menu. |         |                                                                                                                                                                                                                                                    |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                                                                                                                                                | Type    | Description                                                                                                                                                                                                                                        |
|            | <filePath>                                                                                                                                                                                                          | String  | The full path to the file.                                                                                                                                                                                                                         |
|            | <matrixType>                                                                                                                                                                                                        | Integer | One of the following: <ul style="list-style-type: none"> <li>• 0 – S-Parameters</li> <li>• 1 – Y-Parameters</li> <li>• 2 – Z-Parameters</li> <li>• 3 – Gamma</li> <li>• 4 – Impedance</li> </ul> <div> <b>Note:</b> The default value is 0. </div> |
|            | <formalType>                                                                                                                                                                                                        | Integer | One of the following: <ul style="list-style-type: none"> <li>• 0 – Magnitude/Angle (degrees)</li> <li>• 1 – Real/Imaginary</li> </ul>                                                                                                              |

|                     |                                                            |                  |                                                                                                                                                                                                                                    |
|---------------------|------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                                            |                  | <ul style="list-style-type: none"> <li>• 2 – dB/Angle (degrees)</li> </ul> <p><b>Note:</b> The default value is <b>0</b>.</p>                                                                                                      |
|                     | <precision>                                                | Integer          | <p>The number of significant figures.</p> <p><b>Note:</b> The default value is <b>10</b>.</p>                                                                                                                                      |
|                     | <frequencies>                                              | Array of Doubles | <p>A subset of the calculated frequencies. Any array values that don't have calculated data will be ignored. An empty array will cause all frequencies to be written.</p> <p><b>Note:</b> The default value is an empty array.</p> |
|                     | <renormalize>                                              | Boolean          | <p>If <b>True</b>, will renormalize the data to the value of renormImpedance before writing.</p> <p><b>Note:</b> The default value is <b>False</b>.</p>                                                                            |
|                     | <renormImpedance>                                          | Double           | <p>Data will be renormalized to this impedance before writing only if renormalize is <b>True</b>.</p> <p><b>Note:</b> The default value is <b>50 ohms</b>.</p>                                                                     |
|                     | <freqUnits>                                                | String           | <p>One of the following: "Hz", "KHz", "MHz", "GHz".</p> <p><b>Note:</b> The default value is <b>"Hz"</b>.</p>                                                                                                                      |
| <b>Return Value</b> | Boolean True if file was successfully written; else False. |                  |                                                                                                                                                                                                                                    |



|                |                                                                                                                                          |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ExportTouchstone()                                                                                                                       |
| Python Example | <pre>oNDE = oDesktop.GetTool("ndExplorer") success = oData.ExportTouchstone("D:\folder\nel133.s2p", 0, 1, 12, [], True, 23, "GHz")</pre> |

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## ExportTouchstone2

Writes the S-parameters to disk in Touchstone 2 format (\*.ts text file).

|            |                                                                                                                                                                                                                  |             |                                                                                                                                                                      |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | From the <b>Network Data Explorer</b> tab, select <b>File &gt; Save As</b> to open a <b>Save As</b> explorer window. Then select <b>Touchstone 2 Format (*.ts)</b> from the <b>Save as type:</b> drop-down menu. |             |                                                                                                                                                                      |
| Parameters | <b>Name</b>                                                                                                                                                                                                      | <b>Type</b> | <b>Description</b>                                                                                                                                                   |
|            | <filePath>                                                                                                                                                                                                       | String      | The full path to the file.                                                                                                                                           |
|            | <matrixType>                                                                                                                                                                                                     | Integer     | One of the following:                                                                                                                                                |
|            |                                                                                                                                                                                                                  |             | <ul style="list-style-type: none"><li>• 0 – S-Parameters</li><li>• 1 – Y-Parameters</li><li>• 2 – Z-Parameters</li><li>• 3 – Gamma</li><li>• 4 – Impedance</li></ul> |

|                                      |                  |                                                                                                                                                                                                                                    |
|--------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                      |                  | <b>Note:</b> The default value is <b>0</b> .                                                                                                                                                                                       |
| <code>&lt;formalType&gt;</code>      | Integer          | <p>One of the following:</p> <ul style="list-style-type: none"> <li>• 0 – Magnitude/Angle (degrees)</li> <li>• 1 – Real/Imaginary</li> <li>• 2 – dB/Angle (degrees)</li> </ul> <p><b>Note:</b> The default value is <b>0</b>.</p>  |
| <code>&lt;precision&gt;</code>       | Integer          | <p>The number of significant figures.</p> <p><b>Note:</b> The default value is <b>10</b>.</p>                                                                                                                                      |
| <code>&lt;frequencies&gt;</code>     | Array of Doubles | <p>A subset of the calculated frequencies. Any array values that don't have calculated data will be ignored. An empty array will cause all frequencies to be written.</p> <p><b>Note:</b> The default value is an empty array.</p> |
| <code>&lt;renormalize&gt;</code>     | Boolean          | <p>If <b>True</b>, will renormalize the data to the value of renormImpedance before writing.</p> <p><b>Note:</b> The default value is <b>False</b>.</p>                                                                            |
| <code>&lt;renormImpedance&gt;</code> | Double           | <p>Data will be renormalized to this impedance before writing only if renormalize is <b>True</b>.</p> <p><b>Note:</b> The default value is <b>50 ohms</b>.</p>                                                                     |
| <code>&lt;freqUnits&gt;</code>       | String           | One of the following: "Hz", "KHz", "MHz", "GHz".                                                                                                                                                                                   |

|                     |                                                            |  |                                         |
|---------------------|------------------------------------------------------------|--|-----------------------------------------|
|                     |                                                            |  | <b>Note:</b> The default value is "Hz". |
| <b>Return Value</b> | Boolean True if file was successfully written; else False. |  |                                         |

|                       |                                                                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportTouchstone2()                                                                                                                     |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") success = oData.ExportTouchstone2("D:\folder\ne133.ts", 0, 1, 12, [], True, 23, "GHz")</pre> |

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## Extract (SPISim)

Creates a new smaller network data after removing data for the specified terminal port numbers.

**Note:** Extract opens and interacts with **SPISim** to complete.

|                   |                                                                                                                                                   |             |                                                                    |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------|
| <b>UI Access</b>  | From the <b>Network Data Explorer</b> tab, select <b>Transforms</b> in the <b>NDE</b> ribbon. Then select <b>Extract</b> from the drop-down menu. |             |                                                                    |
| <b>Parameters</b> | <b>Name</b>                                                                                                                                       | <b>Type</b> | <b>Description</b>                                                 |
|                   | <oData>                                                                                                                                           | Object      | Data from this object is copied to a new network data and the copy |

|                     |                                  |                   |                                                                            |
|---------------------|----------------------------------|-------------------|----------------------------------------------------------------------------|
|                     |                                  |                   | is transformed.                                                            |
|                     | <code>&lt;portNumbers&gt;</code> | Array of Integers | The port numbers that will be retained (integers between 1 and <i>n</i> ). |
| <b>Return Value</b> | Network IDispatch.               |                   |                                                                            |

|                       |                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Extract()                                                                              |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") oData2 = oNDE.Extract(oData1, [3, 2])</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## GetFrequencies

Returns the frequency values with calculated data in the network data.

|                     |                   |
|---------------------|-------------------|
| <b>UI Access</b>    | None.             |
| <b>Parameters</b>   | None.             |
| <b>Return Value</b> | Array of doubles. |

|                       |                                                  |
|-----------------------|--------------------------------------------------|
| <b>Python Syntax</b>  | GetFrequencies()                                 |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer")</pre> |

|  |                                           |
|--|-------------------------------------------|
|  | <pre>Freqs = oData.GetFrequencies()</pre> |
|--|-------------------------------------------|

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## GetFrequencyCount

Returns the number of frequencies with calculated data in the network data.

|              |                                |
|--------------|--------------------------------|
| UI Access    | None.                          |
| Parameters   | None.                          |
| Return Value | Integer number of frequencies. |

|                |                                                                                            |
|----------------|--------------------------------------------------------------------------------------------|
| Python Syntax  | <pre>GetFrequencyCount()</pre>                                                             |
| Python Example | <pre>oData = oDesktop.GetTool("ndExplorer")<br/>numFreqs = oData.GetFrequencyCount()</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## GetName

Returns the name of the network data.

|              |              |
|--------------|--------------|
| UI Access    | None.        |
| Parameters   | None.        |
| Return Value | String name. |

|                |                                                                                |
|----------------|--------------------------------------------------------------------------------|
| Python Syntax  | GetName()                                                                      |
| Python Example | <pre>oNDE = oDesktop.GetTool("ndExplorer")<br/>strName = oData.GetName()</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## GetPortCount

Returns the total number of ports.

|              |                                                                                                                                         |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | From the <b>Network Data Explorer</b> tab, select <b>Edit Ports</b> in the <b>NDE</b> ribbon to open the <b>Port properties</b> window. |
| Parameters   | None.                                                                                                                                   |
| Return Value | Integer number of ports.                                                                                                                |

|                |                                                                                 |
|----------------|---------------------------------------------------------------------------------|
| Python Syntax  | GetPortCount()                                                                  |
| Python Example | <pre>oNDE = oDesktop.GetTool("ndExplorer")<br/>num = oData.GetPortCount()</pre> |

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## GetPortNumber

Returns the terminal port number for a given terminal port name.

**Note:** GetPortNumber can be used in other commands that require a port number, if a port name is preferable.

The PortNumber is the index of the name port in the original data and is not changed by any other settings applied to the oPostProc, including the Reorder settings. It is permanently linked to the port name and can be used interchangeably with the port name in many of the PostProcSettings script functions.

|              |                                                                                                                                                                |             |                                     |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------|
| UI Access    | From the <b>Network Data Explorer</b> tab, ensure the <b>Full Port Names</b> check box is activated. Port numbers will be represented in the object portNames. |             |                                     |
| Parameters   | <b>Name</b>                                                                                                                                                    | <b>Type</b> | <b>Description</b>                  |
|              | <portName>                                                                                                                                                     | String      | The designation of the port number. |
| Return Value | Integer.                                                                                                                                                       |             |                                     |

|                       |                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetPortNumber()                                                                             |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") index = oPostProc.GetPortNumber("Input35")</pre> |

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## GetPostProcSettings

Returns a copy of the IDispatch to the postprocessing settings for the network data (oPostProc).

**Note:** Making changes to the PostProcSettings will not change the network data. To make changes, call oData.SetPostProcSettings to change the network data.

|                     |                            |
|---------------------|----------------------------|
| <b>UI Access</b>    | None.                      |
| <b>Parameters</b>   | None.                      |
| <b>Return Value</b> | PostProcSettings IDispatch |

|                       |                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetPostProcSettings()                                                                    |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") oPostProc = oData.GetPostProcSettings()</pre> |



**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

# GetSolutionVariation

Returns the network data object corresponding to a variation of the solution.

|              |                    |         |                                                  |
|--------------|--------------------|---------|--------------------------------------------------|
| UI Access    | None.              |         |                                                  |
| Parameters   | Name               | Type    | Description                                      |
|              | <solutionID>       | Integer | ID of the solution (obtained with LoadSolution). |
|              | <variation>        | String  | The variation key.                               |
| Return Value | Network IDispatch. |         |                                                  |

|                |                                                                                                        |
|----------------|--------------------------------------------------------------------------------------------------------|
| Python Syntax  | GetSolutionVariation()                                                                                 |
| Python Example | <pre>oNDE = oDesktop.GetTool("ndExplorer") oData = oNDE.GetSolutionVariation("0, "offset='0.1'")</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## GetVariation

Returns the variation key for the network data.

|              |                       |
|--------------|-----------------------|
| UI Access    | None.                 |
| Parameters   | None.                 |
| Return Value | String variation key. |

|                |                                                                                       |
|----------------|---------------------------------------------------------------------------------------|
| Python Syntax  | GetVariation()                                                                        |
| Python Example | <pre>oNDE = oDesktop.GetTool("ndExplorer")<br/>variation = oData.GetVariation()</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## HasSameData

Compares one network data object with another network data. Actual calculated values will be compared and no interpolation will be done.

|            |               |             |                                             |
|------------|---------------|-------------|---------------------------------------------|
| UI Access  | None.         |             |                                             |
| Parameters | <b>Name</b>   | <b>Type</b> | <b>Description</b>                          |
|            | <NetworkData> | Object      | The second network data to compare against. |
|            | <matrixType>  | Integer     | One of the following:                       |

|                     |                                                                                                        |         |                                                                                                                                                                                                                                                                            |
|---------------------|--------------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                                                                                        |         | <ul style="list-style-type: none"> <li>• 0 – S-Parameters</li> <li>• 1 – Y-Parameters</li> <li>• 2 – Z-Parameters</li> <li>• 3 – Gamma</li> <li>• 4 – Impedance</li> </ul> <p><b>Note:</b> The default value is <b>0</b>.</p>                                              |
|                     | <code>&lt;comparePortNames&gt;</code>                                                                  | Boolean | <p>If <b>True</b>, port names must be identical.</p> <p><b>Note:</b> The default value is <b>True</b>.</p>                                                                                                                                                                 |
|                     | <code>&lt;compareNoise&gt;</code>                                                                      | Boolean | <p>If <b>True</b>, and both network data have noise data, the comparison will fail unless the noise values also match.</p> <p><b>Note:</b> The default value is <b>10</b>.</p>                                                                                             |
|                     | <code>&lt;relativeTolerance&gt;</code>                                                                 | Double  | <p>If the absoluteTolerance test fails, then <math>\text{abs}(\text{value1} - \text{value2}) / \max(\text{abs}(\text{value1}), \text{abs}(\text{value2}))</math> must be less than this to be considered equal.</p> <p><b>Note:</b> The default value is <b>1e-14</b>.</p> |
|                     | <code>&lt;absoluteTolerance&gt;</code>                                                                 | Double  | <p>If <b>True</b>, then <math>\text{abs}(\text{value1} - \text{value2}) &lt; \text{absoluteTolerance}</math>.</p> <p><b>Note:</b> The default value is <b>0</b>.</p>                                                                                                       |
| <b>Return Value</b> | Boolean True if the compared network data have the same frequency and matrix values; otherwise, False. |         |                                                                                                                                                                                                                                                                            |

|                |                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | HasSameData()                                                                                                      |
| Python Example | <pre>oNDE = oDesktop.GetTool("ndExplorer")<br/>success = oData.HasSameData(oData2, 0, True, False, 1e-10, 0)</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## LoadSolution

Loads the specified design (all variations) and returns an integer ID.

|              |                                                                                                                                                                                                                                                                              |             |                                            |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------|
| UI Access    | After analyzing a design, from the <b>Project Manager</b> window, expand the <b>Project Tree</b> and Analysis folders. Then right-click on the completed analysis icon and select <b>Network Data Explorer</b> to open the solution in the <b>Network Data Explorer</b> tab. |             |                                            |
| Parameters   | <b>Name</b>                                                                                                                                                                                                                                                                  | <b>Type</b> | <b>Description</b>                         |
|              | <projectName>                                                                                                                                                                                                                                                                | String      | Full path to the Electronics Desktop file. |
|              | <designName>                                                                                                                                                                                                                                                                 | String      | Name of the design.                        |
|              | <solutionName>                                                                                                                                                                                                                                                               | String      | Name of the solution.                      |
| Return Value | Integer ID (identifying the solution); < 0 if the solution is not loaded.                                                                                                                                                                                                    |             |                                            |

|               |                |
|---------------|----------------|
| Python Syntax | LoadSolution() |
|---------------|----------------|

|                       |                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") id = oNDE.LoadSolution("D:\folder\Tee.aedt", "HFSS_Test", "Setup1:Sweep1")</pre> |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------|

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## Open

Reads contents of file and returns the IDispatch for the new network data.

|                     |                                                                                                                                                                                                     |             |                                                |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------|
| <b>UI Access</b>    | From the <b>Network Data Explorer</b> tab, select <b>Open</b> in the <b>NDE</b> ribbon, or select <b>File &gt; Open</b> to open an explorer window. Then navigate to the required S-parameter file. |             |                                                |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                                                                                         | <b>Type</b> | <b>Description</b>                             |
|                     | <fileName>                                                                                                                                                                                          | String      | Full path to the file containing S-parameters. |
| <b>Return Value</b> | Network IDispatch.                                                                                                                                                                                  |             |                                                |

|                       |                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Open()                                                                                   |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") oData = oNDE.Open("D:\folder\test.s2p")</pre> |

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## Rename (SPISim)

Creates a new network data of the same size with the terminal ports renamed.

**Note:** Rename opens and interacts with **SPISim** to complete.

|                     |                                                                                                                                                  |                       |                                                                                                          |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Network Data Explorer</b> tab, select <b>Transforms</b> in the <b>NDE</b> ribbon. Then select <b>Rename</b> from the drop-down menu. |                       |                                                                                                          |
| <b>Parameters</b>   | <b>Name</b><br><oData>                                                                                                                           | <b>Type</b><br>Object | <b>Description</b><br>Data from this object is copied to a new network data and the copy is transformed. |
|                     | <portNames>                                                                                                                                      | Array of Strings      | The new names (one for each port).                                                                       |
| <b>Return Value</b> | Network IDispatch.                                                                                                                               |                       |                                                                                                          |

|                       |                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Rename()                                                                                                      |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") oData2 = oNDE.Rename(oData1, ["input", "control", "output"])</pre> |

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## Renormalize (SPISim)

Creates a new network data of the same size after renormalizing the terminal ports using the specified impedance values.

**Note:** Rename opens and interacts with **SPISim** to complete.

|              |                                                                                                                                                       |                  |                                                                                    |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------|
| UI Access    | From the <b>Network Data Explorer</b> tab, select <b>Transforms</b> in the <b>NDE</b> ribbon. Then select <b>Renormalize</b> from the drop-down menu. |                  |                                                                                    |
| Parameters   | <b>Name</b>                                                                                                                                           | <b>Type</b>      | <b>Description</b>                                                                 |
|              | <oData>                                                                                                                                               | Object           | Data from this object is copied to a new network data and the copy is transformed. |
|              | <portImpedances>                                                                                                                                      | Array of Doubles | The new impedance values to be applied to each port.                               |
| Return Value | Network IDispatch. <div><b>Note:</b> Renormalize returns <b>None</b> if there is not an impedance value for each port.</div>                          |                  |                                                                                    |

|                |                                                                                            |
|----------------|--------------------------------------------------------------------------------------------|
| Python Syntax  | Renormalize()                                                                              |
| Python Example | <pre>oNDE = oDesktop.GetTool("ndExplorer") oData2 = oNDE.Renormalize(oData1, [3, 2])</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## Reorder

Rearranges the terminal port entries but does not change the port names (i.e., switching first and third terminal port positions will give switched values for S(1,1) and S(3,3) but S(Port1,Port1) and S(Port3,Port3) do not change).

|                     |                                                                                                                                                                                                                                                      |                   |                                                                               |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Network Data Explorer</b> tab, select <b>Edit Ports</b> in the <b>NDE</b> ribbon to open the <b>Port properties</b> window. <b>Click+drag</b> the terminal port rows to reorder them. Make changes, as necessary, then click <b>OK</b> . |                   |                                                                               |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                                                                                                                                          | <b>Type</b>       | <b>Description</b>                                                            |
|                     | <newOrder>                                                                                                                                                                                                                                           | Array of Integers | Must have one entry for each port; all numbers 1 to <i>n</i> must be present. |
| <b>Return Value</b> | None.                                                                                                                                                                                                                                                |                   |                                                                               |

|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Reorder()                                                                     |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") oPostProc.Reorder([3, 2, 1])</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**



# Reorder (SPISim)

Creates a new network data with the same number of terminal ports and with the port names in the same order. The data is also reordered so it corresponds to the new order (e.g., the data for S(Port1, Port1) may correspond to S(Port3, Port3).

**Note:** Reorder opens and interacts with **SPISim** to complete.

|              |                                                                                                                                                        |                   |                                                                                    |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------|
| UI Access    | From the <b>Network Data Explorer</b> tab, select <b>Transforms</b> in the <b>NDE</b> ribbon. Then select <b>Reorder</b> from the drop-down menu.      |                   |                                                                                    |
| Parameters   | <b>Name</b>                                                                                                                                            | <b>Type</b>       | <b>Description</b>                                                                 |
|              | <oData>                                                                                                                                                | Object            | Data from this object is copied to a new network data and the copy is transformed. |
|              | <portNumbers>                                                                                                                                          | Array of Integers | The port numbers in new order (integers between 1 and <i>n</i> ).                  |
| Return Value | Network IDispatch.<br><br><b>Note:</b> Reorder returns <b>None</b> if the array argument does not contain all the terminal port numbers, in any order. |                   |                                                                                    |

|                |                                                                                       |
|----------------|---------------------------------------------------------------------------------------|
| Python Syntax  | Reorder()                                                                             |
| Python Example | <pre>oNDE = oDesktop.GetTool("ndExplorer")<br/>oData2 = oNDE.Reorder([3, 2, 1])</pre> |

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## Reset

Resets the post-processing to what it was when the network data was created.

**Note:** This is not equivalent to setting post-processing to an empty state. The network data may have been read from a file or created from solution data that already had post-processing settings.

Resetting the oPostProcSetting object does not change any data; it only changes the settings object. If you want to change a data object to apply the changed settings, you must follow the Reset function call with oData.SetPostProcSettings (oPostProc)

|                     |                                                                                                         |
|---------------------|---------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Network Data Explorer</b> tab, select <b>Reset postprocessing</b> in the <b>NDE</b> ribbon. |
| <b>Parameters</b>   | None.                                                                                                   |
| <b>Return Value</b> | None.                                                                                                   |

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Reset()                                                                |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer")<br/>oPostProc.Reset()</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## SetAllPortImpedances

Sets all terminal port impedances in a single call. The impedances are in an array of real or complex values.

|              |                                                                                                                                                                                                                                                         |                            |                                                                                                           |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------|
| UI Access    | Through the UI, the terminal ports can <b>only</b> be edited individually. From the <b>Network Data Explorer</b> tab, select <b>Edit Ports</b> in the <b>NDE</b> ribbon to open the <b>Port properties</b> window. Make changes, then click <b>OK</b> . |                            |                                                                                                           |
| Parameters   | <b>Name</b>                                                                                                                                                                                                                                             | <b>Type</b>                | <b>Description</b>                                                                                        |
|              | <i>&lt;impedances&gt;</i>                                                                                                                                                                                                                               | Array of Doubles or String | Must have one entry for each port or a single complex (or real) value which will be applied to all ports. |
| Return Value | None.                                                                                                                                                                                                                                                   |                            |                                                                                                           |

|                |                                                                                                                                       |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | SetAllPortImpedances()                                                                                                                |
| Python Example | <pre>oNDE = oDesktop.GetTool("ndExplorer") oPostProc.SetAllPortImpedances([23, "2+3i", 50]) -or- oData.SetAllPortImpedances(50)</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## SetPortDeembedDistance

Sets terminal port impedance for a single port.

|              |                                                                                                                                                                              |             |                                                                                  |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------|
| UI Access    | From the <b>Network Data Explorer</b> tab, select <b>Edit Ports</b> in the <b>NDE</b> ribbon to open the <b>Port properties</b> window. Make changes, then click <b>OK</b> . |             |                                                                                  |
| Parameters   | <b>Name</b>                                                                                                                                                                  | <b>Type</b> | <b>Description</b>                                                               |
|              | <portNumber>                                                                                                                                                                 | Integer     | The port number of the changed terminal port (integers between 1 and <b>n</b> ). |
|              | <distance>                                                                                                                                                                   | String      | Impedance with units (e.g., "20mm"); if no units, meters are assumed             |
| Return Value | None.                                                                                                                                                                        |             |                                                                                  |

|                |                                                                                              |
|----------------|----------------------------------------------------------------------------------------------|
| Python Syntax  | SetPortDeembedDistance()                                                                     |
| Python Example | <pre>oNDE = oDesktop.GetTool("ndExplorer") oPostProc.SetPortDeembedDistance(2, "20mm")</pre> |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## SetPortImpedance

Sets port impedance for a single port.

|           |                                                                                                                                      |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------|
| UI Access | From the <b>Network Data Explorer</b> tab, select <b>Edit Ports</b> in the <b>NDE</b> ribbon to open the <b>Port properties</b> win- |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------|

|                     |                                           |                  |                                                                                        |
|---------------------|-------------------------------------------|------------------|----------------------------------------------------------------------------------------|
|                     | dow. Make changes, then click <b>OK</b> . |                  |                                                                                        |
| <b>Parameters</b>   | <b>Name</b>                               | <b>Type</b>      | <b>Description</b>                                                                     |
|                     | <portNumber>                              | Integer          | The port number of the changed terminal port (integers between 1 and $n$ ).            |
|                     | <impedance>                               | Double or String | Double if impedance value is real; string format (e.g., 24+10i) for complex impedance. |
| <b>Return Value</b> | None.                                     |                  |                                                                                        |

|                       |                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetPortImpedance()                                                                      |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") oPostProc.SetPortImpedance(2, "25+3i")</pre> |

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## SetPostProcSettings

Applies postprocessing settings (oPostProc) to the specified network data.

**Note:** Making changes to the PostProcSettings will not change the network data. To make changes, call oData.SetPostProcSettings to change the network data.

|                     |                    |             |                                                |
|---------------------|--------------------|-------------|------------------------------------------------|
| <b>UI Access</b>    | None.              |             |                                                |
| <b>Parameters</b>   | <b>Name</b>        | <b>Type</b> | <b>Description</b>                             |
|                     | <PostProcSettings> | Object      | The settings that will be applied to the data. |
| <b>Return Value</b> | None.              |             |                                                |

|                       |                                                                                       |  |  |
|-----------------------|---------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | SetPostProcSettings()                                                                 |  |  |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") oData.SetPostProcSettings(oPostProc)</pre> |  |  |

**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## Smooth

Creates a new network data with values smoothed. The number of adjacent points smoothed is user-specified.

|                   |                                                                                                                                                  |             |                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------|
| <b>UI Access</b>  | From the <b>Network Data Explorer</b> tab, select <b>Transforms</b> in the <b>NDE</b> ribbon. Then select <b>Smooth</b> from the drop-down menu. |             |                                                                                    |
| <b>Parameters</b> | <b>Name</b>                                                                                                                                      | <b>Type</b> | <b>Description</b>                                                                 |
|                   | <oData>                                                                                                                                          | Object      | Data from this object is copied to a new network data and the copy is transformed. |
|                   | <order>                                                                                                                                          | Integer     | The number of adjacent points that are smoothed.                                   |

|                     |                                                                                                                                                                                                                                                                                                                                                                                          |         |                                                  |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------------|
|                     |                                                                                                                                                                                                                                                                                                                                                                                          |         | <b>Note:</b> The default value is <b>10</b> .    |
|                     | <code>&lt;enforceCausality&gt;</code>                                                                                                                                                                                                                                                                                                                                                    | Boolean | Casual data is calculated before smoothing.      |
|                     |                                                                                                                                                                                                                                                                                                                                                                                          |         | <b>Note:</b> The default value is <b>False</b> . |
| <b>Return Value</b> | <p>Network IDispatch</p> <p><b>Note:</b> Network IDispatch is returned only if the Smooth function was successfully able to perform the smoothing operation on the supplied data and meet the maximum 0.025 error tolerance. Otherwise it will return a &lt; null object &gt;. The user may want to try changing other input parameters, for example, <code>enforceCausality</code>.</p> |         |                                                  |

|                       |                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Smooth()                                                                               |
| <b>Python Example</b> | <pre>oNDE = oDesktop.GetTool("ndExplorer") oData2 = oNDE.Smooth(oData1, 3, True)</pre> |

**Warning:** The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.

## Stretch (SPISim)

Creates a new network data representing a matrix of transmission lines with the length of those transmission lines multiplied by a factor of  $n$ .

**Note:** Stretch opens and interacts with **SPISim** to complete.

|              |                                                                                                                                                    |             |                                                                                    |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------|
| UI Access    | From the <b>Network Data Explorer</b> tab, select <b>Transforms</b> in the <b>NDE</b> ribbon. Then select <b>Stretch</b> from the drop-down menu.  |             |                                                                                    |
| Parameters   | <b>Name</b>                                                                                                                                        | <b>Type</b> | <b>Description</b>                                                                 |
|              | <oData>                                                                                                                                            | Object      | Data from this object is copied to a new network data and the copy is transformed. |
|              | <factor>                                                                                                                                           | Double      | The transmission line lengths are multiplied by this number.                       |
| Return Value | Network IDispatch.<br><br><b>Note:</b> Stretch returns <b>None</b> if the network data argument does not represent a matrix of transmission lines. |             |                                                                                    |

|                |                                                                                     |
|----------------|-------------------------------------------------------------------------------------|
| Python Syntax  | Stretch()                                                                           |
| Python Example | <pre>oNDE = oDesktop.GetTool("ndExplorer") oData2 = oNDE.Stretch(oData1, 3.1)</pre> |



**Warning: The following command is preliminary. Its syntax may change. Be prepared to make changes to legacy scripts.**

## Terminate

Creates a new network data with specified ports terminated.

|                     |                                                                                                                                                                     |                          |                                                                                    |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Network Data Explorer</b> tab, select <b>Transforms</b> in the <b>NDE</b> ribbon. Then select <b>Terminate</b> from the drop-down menu.                 |                          |                                                                                    |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                                                         | <b>Type</b>              | <b>Description</b>                                                                 |
|                     | <oData>                                                                                                                                                             | Object                   | Data from this object is copied to a new network data and the copy is transformed. |
|                     | <portNumbers>                                                                                                                                                       | Array of Integers        | The port numbers that are terminated (integers between 1 and $n$ ).                |
|                     | <termImpedances>                                                                                                                                                    | Array of Complex Numbers | The impedance values used to terminate the specified ports.                        |
| <b>Return Value</b> | <p>Network IDispatch.</p> <p><b>Note:</b> Terminate returns <b>None</b> if the port numbers are not valid or there are no impedance value for the port numbers.</p> |                          |                                                                                    |

|                       |                                       |
|-----------------------|---------------------------------------|
| <b>Python Syntax</b>  | Terminate()                           |
| <b>Python Example</b> | oNDE = oDesktop.GetTool("ndExplorer") |

|  |                                                                     |
|--|---------------------------------------------------------------------|
|  | <code>oData2 = oNDE.Terminate(oData1, [2, 3], [23, "10+2i"])</code> |
|--|---------------------------------------------------------------------|

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## 20 - CompInstance Script Commands

CompInstance commands should be executed by the **oDesign2** or **oPropHost2** object.

```
Set oDesign2 = CompInstance.GetParentDesign
```

```
Set oPropHost2 = CompInstance.GetPropHost
```

### Callback Scripting Using CompInstance Object

Callback scripts are scripts that can be set in the Property Dialog for individual properties by clicking the button in the Callback column and choosing a script that is saved with the project. Callback scripts can contain any legal script commands including general Ansys script function calls ( e.g., `GetApplicationName()` ). In addition, Callback scripts can also call functions on a special object named `CompInstance`.

You can obtain an interface to a `CompInstance` in a schematic or layout by calling `oEditor.GetCompInstanceFromRefDes(refDes)`. For more information see [Layout Scripting](#) and Schematic Scripting. This interface is also available as a `CompInstance` object in `CompInstance` event callbacks, such as placing a component in a layout or schematic.

#### Definitions

<propName> = text string

<value> = double

<valueText> = text string

<fileName> = full path file name

<choices> = string containing menu choices separated by commas

<initialChoice> = string containing initial choice for menu; must be one of the <choices>

<scriptName> = string containing name of script stored in project

<bool> is 1 for true or 0 for false

<editorName> is either "Layout" or "SchematicEditor"

The topics for this section include:

[ComplInstance Functions](#)

## ComplInstance Functions

Following are commands that can be used to manipulate properties from a ComplInstance script.

The topics for this section include:

[GetComponentName](#)

[GetEditor](#)

[GetInstanceID](#)

[GetInstanceName](#)

[GetParentDesign](#)

[GetPropHost](#)

[GetPropServerName](#)

### GetComponentName

Returns the name of the component corresponding to this ComplInstance.

|            |      |      |             |
|------------|------|------|-------------|
| UI Access  | NA   |      |             |
| Parameters | Name | Type | Description |

|                     |                                                                   |
|---------------------|-------------------------------------------------------------------|
|                     | None                                                              |
| <b>Return Value</b> | String<br>name of component (e.g. MS_TRL) and stores it in "name" |

|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| <b>Python Syntax</b>  | GetComponentName()                                  |
| <b>Python Example</b> | <code>name = CompInstance.GetComponentName()</code> |

### GetInstanceID [Component Instance]

*Use:* Returns the instanceID of the CompInstance.

*Command:* None

*Syntax:* GetInstanceID()

*Return Value:* String

|                       |                                                |
|-----------------------|------------------------------------------------|
| <b>Python Syntax</b>  | GetInstanceID()                                |
| <b>Python Example</b> | <code>id = CompInstance.GetInstanceID()</code> |

### GetInstanceName [Component Instance]

*Use:* Returns the instance name of the component corresponding to this CompInstance.

*Command:* None

*Syntax:* GetInstanceName()

*Return Value:* String

Returns instanceName (e.g. A7) of compInstance and stores it in "name".

Note that the Instance Name is not the same as the RefDes.

## GetParentDesign

*Use:* Returns an interface to the compInstance's parent design. This interface can be used to call Design functions. See: [Design Object Script Commands](#).

*Command:* None

*Syntax:* GetParentDesign()

*Return Value:* Returns interface to design.

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| <b>Python Syntax</b>  | GetParentDesign()                                      |
| <b>Python Example</b> | <code>oDesign2 = CompInstance.GetParentDesign()</code> |

## GetPropHost

*Use:* Returns an interface to the PropHost of the CompInstance, which gives access to its properties. This interface can be used to call PropHost functions; for more information see [Callback Scripting Using PropHost Object](#).

*Command:* None

*Syntax:* GetPropHost()

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | GetPropHost()                                        |
| <b>Python Example</b> | <code>oPropHost2 = CompInstance.GetPropHost()</code> |

## GetPropServerName

*Use:* Returns the PropServerName of the Component corresponding to this CompInstance.

*Command:* None

*Syntax:* GetPropServerName()

*Return Value:* String

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | GetPropServerName()                                  |
| <b>Python Example</b> | <code>name = CompInstance.GetPropServerName()</code> |



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## 21 - Simulation Setup Commands

This section presents the commands that are available in the SolveSetups module. These commands should be executed by the **oDesign** object. For example:

```
oDesign.GetModule("SolveSetups")
```

```
oModule.CommandName <args>
```

The following commands are described in this section:

[Add \(Layout Editor\)](#)

AddSimulationSetup [Nexxim]

[AddMeshOperation](#)

[AddSweep](#)

[Analyze](#)

[AnalyzeSweep](#)

[Delete](#)

[DeleteGFD](#)

[DeleteSweep](#)

[DynamicMeshOverlays](#)

[Edit](#)

[EditSweep](#)

[ExportToHFSS](#)

[ExportToQ3D](#)

[GenerateMesh](#)

[GetAllSolutionNames](#)

[GetGFDDData](#)

[GetMeshOperations](#)

[GetSetupData](#)

[GetSetups](#)

[GetSweeps](#)

[LayoutMeshOverlay](#)

[Layout3DMeshOverlay](#)

[ListVariations](#)

[RefreshMeshOverlays](#)

[Rename](#)

RenameSimulationSetup

[RenameSweep](#)

[Validate](#)

## Add (Layout Editor)

Adds a new setup.

**Note:** The following tables display **example** parameters applicable to a Near Field solution setup. Selecting a different setup will also add, remove, or change the applicable parameters.

| UI Access         | From <b>HFSS 3D Layout</b> , choose <b>Solution Setup</b> and then select from the available solution setups. |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------|---------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                                          | Type    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                   | <SetupArray>                                                                                                  | Array   | <p>An array that contains these parameters in order:</p> <ul style="list-style-type: none"> <li>• &lt;NAME:SetupName&gt;</li> <li>• &lt;NameArray&gt;</li> <li>• &lt;CustomSetup&gt;</li> <li>• &lt;Position&gt;</li> <li>• &lt;SimSetupType&gt;</li> <li>• &lt;SimSettingsArray&gt;</li> <li>• &lt;SolveSetupType&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p> |
|                   | <NAME:SetupName>                                                                                              | String  | User-entered name of the new setup.                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                   | <NameArray>                                                                                                   | Array   | <p>An array that contains these parameters in order:</p> <ul style="list-style-type: none"> <li>• &lt;NAME:Properties&gt;</li> <li>• &lt;Enable&gt;</li> </ul>                                                                                                                                                                                                                                                                                         |
|                   | <NAME:Properties>                                                                                             | String  | Identifies the contents of the array (i.e., Properties).                                                                                                                                                                                                                                                                                                                                                                                               |
|                   | <Enable>                                                                                                      | Boolean | <p><b>True</b> – setup is active</p> <p><b>False</b> – setup is inactive</p>                                                                                                                                                                                                                                                                                                                                                                           |
|                   | <SimSetupType>                                                                                                | String  | Identifies the type of setup (e.g., kSIwaveNearField).                                                                                                                                                                                                                                                                                                                                                                                                 |
|                   | <SimSettingArray>                                                                                             | Array   | <p><i>Optional.</i> An array that contains these parameters in order:</p> <ul style="list-style-type: none"> <li>• &lt;NAME:SimulationSettings&gt;</li> <li>• &lt;Enabled&gt;</li> <li>• &lt;UseSISettings&gt;</li> <li>• &lt;UseCustomSettings&gt;</li> <li>• &lt;SISliderPros&gt;</li> <li>• &lt;PISliderPros&gt;</li> </ul>                                                                                                                         |

|                           |         |                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           |         | <ul style="list-style-type: none"> <li>• &lt;SIWAdvancedArray&gt;</li> <li>• &lt;SIWDCArray&gt;</li> <li>• &lt;SIWDCAdvancedArray&gt;</li> <li>• &lt;SIWSPARAMArray&gt;</li> <li>• &lt;NearFieldSettingArray&gt;</li> <li>• &lt;NAME:SweepDataList&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p> |
| <NAME:SimulationSettings> | String  | Identifies the contents of the array (i.e., SimulationSettings).                                                                                                                                                                                                                                                                                                                       |
| <Enabled>                 | Boolean | <b>True</b> – array settings are active<br><b>False</b> – array settings are inactive                                                                                                                                                                                                                                                                                                  |
| <UseSISettings>           | Boolean | <b>True</b> – uses SI Simulation settings<br><b>False</b> – uses PI Simulation settings                                                                                                                                                                                                                                                                                                |
| <UseCustomSettings>       | Boolean | <b>True</b> – overrides <UseSISettings> and activates <SIWAdvancedArray> parameters<br><b>False</b> groups by range                                                                                                                                                                                                                                                                    |
| <SISliderPros>            | Integer | <b>0</b> – optimizes simulation for speed<br><b>1</b> – optimizes simulation to balance speed and accuracy<br><b>2</b> – optimizes simulation for accuracy                                                                                                                                                                                                                             |
| <PISliderPros>            | Integer | <b>0</b> – optimizes simulation for speed<br><b>1</b> – optimizes simulation to balance speed and accuracy<br><b>2</b> – optimizes simulation for accuracy                                                                                                                                                                                                                             |
| <SIWAdvancedArray>        | Array   | <i>Optional.</i> An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:SIWAdvancedSettings&gt;</li> <li>• &lt;IncludeCoPlaneCoupling&gt;</li> <li>• &lt;IncludeInterPlaneCoupling&gt;</li> <li>• &lt;IncludeSplitPlaneCoupling&gt;</li> </ul>                                                                                            |

|                             |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             |         | <ul style="list-style-type: none"> <li>• &lt;IncludeFringeCoupling&gt;</li> <li>• &lt;IncludeTraceCoupling&gt;</li> <li>• &lt;XtalkThreshold&gt;</li> <li>• &lt;MaxCoupledLines&gt;</li> <li>• &lt;MinVoidArea&gt;</li> <li>• &lt;MinPadAreaToMesh&gt;</li> <li>• SnapLengthThreshold&gt;</li> <li>• &lt;MeshAutoMatic&gt;</li> <li>• &lt;MeshFrequency&gt;</li> <li>• &lt;ReturnCurrentDistribution&gt;</li> <li>• &lt;INcludeVISources&gt;</li> <li>• &lt;IncludeInfGnd&gt;</li> <li>• &lt;InfGndLocation&gt;</li> <li>• &lt;PerformERC&gt;</li> <li>• &lt;IgnoreNonFunctionalPads&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p> |
| <NAME:SIWAdvancedSettings>  | String  | Identifies the contents of the array (i.e., SIWAdvancedSettings).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <IncludeCoPlaneCoupling>    | Boolean | <b>True</b> – coplane coupling active<br><b>False</b> – coplane coupling inactive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <IncludeInterPlaneCoupling> | Boolean | <b>True</b> – intra-plane coupling active<br><b>False</b> – intra-plane coupling inactive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <IncludeSplitPlaneCoupling> | Boolean | <b>True</b> – split-plane coupling active<br><b>False</b> – split-plane coupling inactive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <IncludeFringeCoupling>     | Boolean | <b>True</b> – cavity field coupling active<br><b>False</b> – cavity field coupling inactive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <IncludeTraceCoupling>      | Boolean | <b>True</b> – trace coupling active<br><b>False</b> – trace coupling inactive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                             |         |                                                                                                                                                                                                                      |
|-----------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <XtalkThreshold>            | Integer | Maximum cross-talk threshold, in decibels.                                                                                                                                                                           |
| <MaxCoupledLines>           | Integer | The number of allowed coupled lines.                                                                                                                                                                                 |
| <MinVoidArea>               | Integer | Minimum size of voids; voids larger than the minimum are meshed.                                                                                                                                                     |
| <MinPadAreaToMesh>          | Integer | Minimum size of pads; pads larger than the minimum are meshed.                                                                                                                                                       |
| SnapLengthThreshold>        | Integer | Minimum distance of vertices; vertices less than the minimum are snapped.                                                                                                                                            |
| <MeshAutoMatic>             | Boolean | <b>True</b> – mesh are automatically refined<br><b>False</b> – mesh are not automatically refined                                                                                                                    |
| <MeshFrequency>             | Integer | Specific frequency at which mesh are refined.                                                                                                                                                                        |
| <ReturnCurrentDistribution> | Boolean | <b>True</b> – returns current distribution is traced<br><b>False</b> – returns current distribution is not traced                                                                                                    |
| <IncludeVISources>          | Boolean | <b>True</b> – parasitic elements from voltage/current sources are included<br><b>False</b> – parasitic elements are not included                                                                                     |
| <IncludeInfGnd>             | Boolean | <b>True</b> – infinite ground plane is included<br><b>False</b> – infinite ground plane is not included                                                                                                              |
| <InfGndLocation>            | Integer | Distance below bottom layer in stackup to place infinite ground plane.                                                                                                                                               |
| <PerformERC>                | Boolean | <b>True</b> – performs ERC during simulation<br><b>False</b> – does not perform ERC during simulation                                                                                                                |
| <IgnoreNonFunctionalPads>   | Boolean | <b>True</b> – excludes non-functional pads from resonant mode, frequency sweep, and SYZ simulations<br><b>False</b> – does not exclude non-functional pads from resonant mode, frequency sweep, and SYZ simulations. |
| <SIWSPParamSettings>        | Array   | <i>Optional.</i> An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;UseStateSpace&gt;</li> <li>• &lt;Interpolation&gt;</li> <li>• &lt;Extrapolation&gt;</li> </ul>       |

|                      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      |         | <ul style="list-style-type: none"> <li>• &lt;DCBehavior&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p>                                                                                                                                                                                                                                                                               |
| <UseStateSpace>      | Boolean | <b>True</b> – uses the <b>State Space Model</b><br><b>False</b> – uses a <b>Custom Model</b>                                                                                                                                                                                                                                                                                                                                                                              |
| <Interpolation>      | Integer | <b>0</b> – sets <b>Interpolation</b> to <b>Point</b><br><b>1</b> – sets <b>Interpolation</b> to <b>Point</b><br><b>2</b> – sets <b>Interpolation</b> to <b>Point</b>                                                                                                                                                                                                                                                                                                      |
| <Extrapolation>      | Integer | <b>0</b> – sets <b>Extrapolation</b> to <b>Zero padding</b><br><b>1</b> – sets <b>Extrapolation</b> to <b>Same as last point</b><br><b>2</b> – sets <b>Extrapolation</b> to <b>Linear extrapolation from last 2 points</b><br><b>3</b> – sets <b>Extrapolation</b> to <b>Constant magnitude linear phase extrapolation</b>                                                                                                                                                |
| <DCBehavior>         | Integer | <b>0</b> – sets <b>DC Behavior</b> to <b>Zero padding</b><br><b>1</b> – sets <b>DC Behavior</b> to <b>Same as last point</b><br><b>2</b> – sets <b>DC Behavior</b> to <b>Linear extrapolation from last 2 points</b><br><b>3</b> – sets <b>DC Behavior</b> to <b>Constant magnitude linear phase extrapolation</b><br><b>4</b> – sets <b>DC Behavior</b> to <b>Series Capacitor</b><br><b>5</b> – sets <b>DC Behavior</b> to <b>Leave all signal lines open circuited</b> |
| <SIWSNearFieldArray> | Array   | <p>An array that contains these parameters in order:</p> <ul style="list-style-type: none"> <li>• &lt;NAME:SIWNearFieldSettings&gt;</li> <li>• &lt;UseExternalSources&gt;</li> <li>• &lt;ExternalSourceFilePath&gt;</li> <li>• &lt;InterpolateSpectrum&gt;</li> <li>• &lt;IncludeInfGnd&gt;</li> <li>• &lt;PosXoffset&gt;</li> <li>• &lt;NegXoffset&gt;</li> </ul>                                                                                                        |



|                             |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             |         | <ul style="list-style-type: none"> <li>• &lt;PosYoffset&gt;</li> <li>• &lt;NegYoffset&gt;</li> <li>• &lt;PosZoffset&gt;</li> <li>• &lt;NegZoffset&gt;</li> <li>• &lt;MinAdaptPasses&gt;</li> <li>• &lt;MaxAdaptPasses&gt;</li> <li>• &lt;NewTrianglesPerPass&gt;</li> <li>• &lt;GlobalErrorTol&gt;</li> <li>• &lt;UseUserEdgeLength&gt;</li> <li>• &lt;MeshEdgeLength&gt;</li> <li>• &lt;ExportData&gt;</li> <li>• &lt;ExportDataPath&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p> |
| <NAME:SIWNearFieldSettings> | String  | Identifies the contents of the array (i.e., SIWNearFieldSettings).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <UseExternalSources>        | Boolean | <b>True</b> – uses external <b>Excitations</b> definitions<br><b>False</b> – uses <b>Excitations</b> definitions defined in project                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <ExternalSourceFilePath>    | String  | Directory path to external <b>Excitations</b> definitions file.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <InterpolateSpectrum>       | Boolean | <b>True</b> – interpolates spectrum at missing frequency points (external <b>Excitations</b> definitions file only)<br><b>False</b> – does not interpolate spectrum at missing frequency points                                                                                                                                                                                                                                                                                                                                                                           |
| <IncludeInfGnd>             | Boolean | <b>True</b> – infinite ground plane is included<br><b>False</b> – infinite ground plane is not included                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <PosXoffset>                | Integer | Value determines the +X offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <NegXoffset>                | Integer | Value determines the -X offset of a cube that encloses the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                     |                       |         |                                                                                                                               |
|---------------------|-----------------------|---------|-------------------------------------------------------------------------------------------------------------------------------|
|                     |                       |         | design; the Near Field is evaluated on the surface of this cuboid.                                                            |
|                     | <PosYoffset>          | Integer | Value determines the +Y offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid. |
|                     | <NegYoffset>          | Integer | Value determines the -Y offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid. |
|                     | <PosZoffset>          | Integer | Value determines the +Z offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid. |
|                     | <NegZoffset>          | Integer | Value determines the -Z offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid. |
|                     | <MinAdaptPasses>      | Integer | Minimum number of passes the adaptive analysis will make, even if convergence criteria are met.                               |
|                     | <MaxAdaptPasses>      | Integer | Maximum number of passes the adaptive analysis will make, unless convergence criteria are met.                                |
|                     | <NewTrianglesPerPass> | Integer | Percentage of triangles to add per pass.                                                                                      |
|                     | <GlobalErrorTol>      | Integer | Maximum relative number of errors to allow between two successive adaptive passes.                                            |
|                     | <UseUserEdgeLength>   | Boolean | <b>True</b> – uses custom maximum edge length<br><b>False</b> – automatically determines maximum edge length                  |
|                     | <MeshEdgeLength>      | Integer | Maximum edge length.                                                                                                          |
|                     | <ExportData>          | Boolean | <b>True</b> – exports Near Field data<br><b>False</b> – does not export Near Field data                                       |
|                     | <ExportDataPath>      | String  | Path to directory in which to save Near Field data.                                                                           |
|                     | <NAME:SweepDataList>  | String  | Identifies the determining factors of the Near Field simulation (i.e., sweeps) (i.e., SweepDataList).                         |
|                     | <SolveSetupType>      | String  | Identifies the type of setup (i.e., SIwaveNearField).                                                                         |
| <b>Return Value</b> | None                  |         |                                                                                                                               |

|                      |                                                                                                                                                                                                  |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | oModule.Add([<NAME:SIwaveNearField1>, [<NAME:Properties>, <Enable>], <SimSetupType>, [<NAME:SimulationSettings>, <Enabled>, <UseSISettings>, <UseCustomSettings>, <SISliderPos>, <PISliderPos>], |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | <pre>[&lt;NAME:SIWAdvancedSettings&gt;, &lt;IncludeCoPlaneCoupling&gt;, &lt;IncludeInterPlaneCoupling&gt;, &lt;IncludeSplitPlaneCoupling&gt;, &lt;IncludeFringeCoupling&gt;, &lt;IncludeTraceCoupling&gt;, &lt;XtalkThreshold&gt;, &lt;MaxCoupledLines&gt;, &lt;MinVoidArea&gt;, &lt;MinPadAreaToMesh&gt;, &lt;SnapLengthThreshold&gt;, &lt;MeshAutoMatic&gt;, &lt;MeshFrequency&gt;, &lt;ReturnCurrentDistribution&gt;, &lt;IncludeVISources&gt;, &lt;IncludeInfGnd&gt;, &lt;InfGndLocation&gt;, &lt;PerformERC&gt;, &lt;IgnoreNonFunctionalPads&gt;], [&lt;NAME:SIWSPParamSettings&gt;, &lt;UseStateSpace&gt;, &lt;Inter- polation&gt;, &lt;Extrapolation&gt;, &lt;DCBehavior&gt;], [&lt;NAME:SIWNearFieldSettings&gt;, &lt;UseExternalSources&gt;, &lt;Extern- alSourceFilePath&gt;, &lt;InterpolateSpectrum&gt;, &lt;IncludeInfGnd&gt;, &lt;PosXoffset&gt;, &lt;NegXoffset&gt;, &lt;PosYoffset&gt;, &lt;NegYoffset&gt;, &lt;PosZoffset&gt;, &lt;NegZoffset&gt;, &lt;MinAdaptPasses&gt;, &lt;MaxAdaptPasses&gt;, &lt;NewTri- anglesPerPass&gt;, &lt;GlobalErrorTol&gt;, &lt;UseUserEdgeLength&gt;, &lt;MeshEdgeLength&gt;, &lt;ExportData&gt;, &lt;ExportDataPath&gt;]], [&lt;NAME:SweepDataList&gt;], &lt;SolveSetupType&gt;])</pre> |
| Python Example | <pre>oModule.Add(     [         "NAME:SIwaveNearField1",         [             "NAME:Properties",             "Enable:=" , "true"         ],         "SimSetupType:=" , "kSIwaveNearField",         [             "NAME:SimulationSettings",             "Enabled:=" , True,             "UseSISettings:=" , False,             "UseCustomSettings:=" , False,</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

```

        "SISliderPos:="          , 2,
        "PISliderPos:="          , 0,

    [
        "NAME:SIWAdvancedSettings",
        "IncludeCoPlaneCoupling:=", False,
        "IncludeInterPlaneCoupling:=", False,
        "IncludeSplitPlaneCoupling:=", False,
        "IncludeFringeCoupling:=", False,
        "IncludeTraceCoupling:=", False,
        "XtalkThreshold:="        , "-34",
        "MaxCoupledLines:="        , 12,
        "MinVoidArea:="            , "2mm2",
        "MinPadAreaToMesh:="        , "1mm2",
        "MinPlaneAreaToMesh:="      , "6.25e-6mm2",
        "SnapLengthThreshold:="     , "2.5um",
        "MeshAutoMatic:="           , True,
        "MeshFrequency:="           , "4GHz",
        "ReturnCurrentDistribution:=", False,
        "IncludeVISources:="        , False,
        "IncludeInfGnd:="            , False,
        "InfGndLocation:="          , "0mm",
    ]

```

```
"PerformERC:="          , False,
"IgnoreNonFunctionalPads:=", True
],
[
  "NAME:SIWSParmSettings",
  "UseStateSpace:="      , True,
  "Interpolation:="      , 1,
  "Extrapolation:="      , 3,
  "DCBehavior:="         , 3
],
[
  "NAME:SIWNearFieldSettings",
  "UseExternalSources:=" , False,
  "ExternalSourceFilePath:=", "",
  "InterpolateSpectrum:=" , True,
  "IncludeInfGnd:="      , False,
  "PosXoffset:="         , "1mm",
  "NegXoffset:="         , "1mm",
  "PosYoffset:="         , "1mm",
  "NegYoffset:="         , "1mm",
```

```
"PosZoffset:="          , "1mm",
"NegZoffset:="          , "1mm",
"MinAdaptPasses:="      , 1,
"MaxAdaptPasses:="      , 10,
"NewTrianglesPerPass:=" , 20,
"GlobalErrorTol:="      , 3,
"UseUserEdgeLength:="   , False,
"MeshEdgeLength:="      , "1mm",
"ExportData:="          , False,
"ExportDataPath:="      , ""
]
],
[
    "NAME:SweepDataList"
],
"SolveSetupType:="      , "SIwaveNearField"
])
```

## AddMeshOperation

Adds a mesh operation to a specified solution.

| UI Access         | From the <b>Project Manager</b> , right-click a <b>solution</b> and select <b>Assign Mesh Operation</b> > [Any Submenu Item]. |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                                                          | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                   | <name>                                                                                                                        | String | The name of the solution for which you want to apply a mesh operation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                   | <MeshArray>                                                                                                                   | Array  | <p>Structured array:</p> <pre> Array("NAME:&lt;mesh operation name&gt;", "RefineInside:=" , &lt;boolean True for inside; False for on surface&gt;, "Type:=" , &lt;string "LengthBased" or "SkinDepthLengthBased"&gt;, "Enabled:=" , &lt;boolean True to enable operation; False to disable&gt;,     Array("NAME:Assignment",         &lt;MeshEntityInfo&gt;, &lt;MeshEntityInfo&gt;,         &lt;MeshEntityInfo&gt;,...) "Region:=" , &lt;string name of region, if selecting one&gt;, "RestrictElem:=" , &lt;boolean True to restrict number of mesh elements&gt;, "NumMaxElem:=" , &lt;string containing maximum number of mesh elements&gt;, "RestrictLength:=" , &lt;boolean True to restrict length of mesh elements&gt;, "MaxLength:=" , &lt;string containing maximum length of mesh element&gt;)</pre> |

|                     |                                     |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------|-------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <code>&lt;MeshEntityInfo&gt;</code> | Array | <p>Structured array. Add one MeshEntityInfo array for each entity selected.</p> <pre> Array("NAME:MeshEntityInfo", "IsFcSel:=" , &lt;boolean&gt;, "EntID:=" , &lt;integer&gt;, "FcIDs:=" , &lt;array&gt;, [ "NAME:MeshBody", "Id:=" , &lt;integer&gt;, "Nam:=" , &lt;string&gt;, "Layer:=" , &lt;string layer name&gt;, "Sheet:=" , &lt;boolean&gt;, "Net:=" , &lt;string net name or "&lt;no-net&gt;"&gt;, "OrigNet:=" , &lt;string net name or "&lt;no-net&gt;"&gt; ], "BBox:=" , &lt;array&gt; ] </pre> |
| <b>Return Value</b> | None.                               |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>AddMeshOperation(&lt;SolutionName&gt;, &lt;MeshArray&gt;)</code> |
| <b>Python Example</b> | <code>oModule.AddMeshOperation('HFSS Solution 1',</code>               |



```
[
  "NAME:Length 2",
  "RefineInside:="          , False,
  "Type:="                  , "LengthBased",
  "Enabled:="                , True,
  [
    "NAME:Assignment",
    [
      "NAME:MeshEntityInfo",
      "IsFcSel:="            , False,
      "EntID:="              , -1,
      "FcIDs:="              , [],
      [
        "NAME:MeshBody",
        "Id:="                , -1,
        "Nam:="               , "",
        "Layer:="             , "UNNAMED_ 0",
        "Sheet:="             , True,
        "Net:="               , "<no-net>",
        "OrigNet:="           , "<no-net>"
      ]
    ]
  ]
]
```

```

    ],
    "BBox:="          , []
  ],
  [
    "NAME:MeshEntityInfo",
    "IsFcSel:="       , False,
    "EntID:="         , -1,
    "FcIDs:="         , [],
    [
      "NAME:MeshBody",
      "Id:="          , -1,
      "Nam:="         , "",
      "Layer:="       , "UNNAMED_ 0",
      "Sheet:="       , True,
      "Net:="         , "PCIE_VSS_C",
      "OrigNet:="     , "PCIE_VSS_C"
    ],
    "BBox:="          , []
  ],
],
"Region:="          , "EXTENTS:rect_1076",

```

|  |                                                                                                                                      |
|--|--------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"RestrictElem:="    , False, "NumMaxElem:="      , "1000", "RestrictLength:="  , True, "MaxLength:="        , "0.2mm" ] )</pre> |
|--|--------------------------------------------------------------------------------------------------------------------------------------|

## AddSweep (Layout Editor)

Adds a sweep to a setup.

|              |                                                                                                     |        |                                                                                    |
|--------------|-----------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------|
| UI Access    | From the <b>Project Manager</b> window, right-click a setup and select <b>Add Frequency Sweep</b> . |        |                                                                                    |
| Parameters   | Name                                                                                                | Type   | Description                                                                        |
|              | <SetupName>                                                                                         | String | Name of the setup.                                                                 |
|              | <Parameters>                                                                                        | Array  | A structured array containing the name and parameters for the new frequency sweep. |
| Return Value | None                                                                                                |        |                                                                                    |

|                |                                                                        |
|----------------|------------------------------------------------------------------------|
| Python Syntax  | <code>oModule.AddSweep(&lt;SetupName&gt;, [&lt;Parameters&gt;])</code> |
| Python Example | <pre>oModule.AddSweep("Q3D1", [</pre>                                  |

```
"NAME:Sweep1",  
[  
  "NAME:Properties",  
  "Enable:=" , "true"  
],  
[  
  "NAME:Sweeps",  
  "Variable:=" , "Sweep1",  
  "Data:=" , "LIN 10MHz 100MHz 10MHz",  
  "OffsetF1:=" , False,  
  "Synchronize:=" , 0  
],  
"GenerateSurfaceCurrent:=", False,  
"SaveRadFieldsOnly:=" , False,  
"ZoSelected:=" , False,  
"SAbsError:=" , 0.005,  
"ZoPercentError:=" , 1,  
"GenerateStateSpace:=" , False,  
"EnforcePassivity:=" , False,  
"PassivityTolerance:=" , 0.0001,  
"UseQ3DForDC:=" , False,
```

```
"ResimulateDC:=" , False,  
"MaxSolutions:=" , 250,  
"InterpUseSMatrix:=" , True,  
"InterpUsePortImpedance:=", True,  
"InterpUsePropConst:=" , True,  
"InterpUseFullBasis:=" , True,  
"AdvDCExtrapolation:=" , False,  
"MinSolvedFreq:=" , "0.01GHz",  
"AutoSMatOnlySolve:=" , True,  
"MinFreqSMatrixOnlySolve:=", "1MHz",  
"CustomFrequencyString:=", "",  
"AllEntries:=" , False,  
"AllDiagEntries:=" , False,  
"AllOffDiagEntries:=" , False,  
"MagMinThreshold:=" , 0.01,  
"InterpMinSubranges:=" , 1,  
"InterpMinSolutions:=" , 0,  
"FreqSweepType:=" , "kDiscrete"  
  
])
```

## Analyze (Layout Editor)

*Use:* Simulates the given setup

*Syntax:* Analyze(String setup1) // setup name

## AnalyzeSweep (Layout Editor)

*Use:* Simulates the given sweep

*Syntax:* AnalyzeSweep(String setup1) // setup name  
                  String sweep1) // sweep name

## Delete (Layout Editor)

Deletes a setup.

|                     |                                                                                        |        |                    |
|---------------------|----------------------------------------------------------------------------------------|--------|--------------------|
| <b>UI Access</b>    | From the <b>Project Manager</b> window, right-click a setup and select <b>Delete</b> . |        |                    |
| <b>Parameters</b>   | Name                                                                                   | Type   | Description        |
|                     | <SetupName>                                                                            | String | Name of the setup. |
| <b>Return Value</b> | None                                                                                   |        |                    |

|                       |                             |
|-----------------------|-----------------------------|
| <b>Python Syntax</b>  | oModule.Delete(<SetupName>) |
| <b>Python Example</b> | oModule.Delete("Q3D2")      |

## DeleteGFD (Setup HFSS 3D Layout)

Deletes the specified GFD (i.e., Green's Function Data).

|                     |           |        |                                                          |
|---------------------|-----------|--------|----------------------------------------------------------|
| <b>UI Access</b>    | None.     |        |                                                          |
| <b>Parameters</b>   | Name      | Type   | Description                                              |
|                     | <GFDName> | String | Name of Green's Function Data file in the active design. |
| <b>Return Value</b> | None      |        |                                                          |

|                       |                                                |
|-----------------------|------------------------------------------------|
| <b>Python Syntax</b>  | DeleteGFD(<GFDName>)                           |
| <b>Python Example</b> | <code>oEditor.DeleteGFD("GDS_File.gds")</code> |

## DeleteSweep (Layout Editor)

Deletes a sweep.

|                     |                                                                                        |        |                    |
|---------------------|----------------------------------------------------------------------------------------|--------|--------------------|
| <b>UI Access</b>    | From the <b>Project Manager</b> window, right-click a setup and select <b>Delete</b> . |        |                    |
| <b>Parameters</b>   | Name                                                                                   | Type   | Description        |
|                     | <SetupName>                                                                            | String | Name of the setup. |
|                     | <SweepName>                                                                            | String | Name of the sweep. |
| <b>Return Value</b> | None                                                                                   |        |                    |

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>oModule.DeleteSweep(&lt;SetupName&gt;, &lt;SweepName&gt;)</code> |
| <b>Python Example</b> | <code>oModule.DeleteSweep("Q3D2", "Sweep2")</code>                     |

## DynamicMeshOverlays (Layout Editor)

*Use:* Turns on dynamic mesh overlays

*Syntax:* DynamicMeshOverlays(String setup) // setup name

## Edit (Layout Editor)

Edits a setup.

**Note:** The following tables display **example** parameters applicable to a Near Field solution setup. Selecting a different setup will also add, remove, or change the applicable parameters.

| UI Access         | From the <b>Project Manager</b> window, right-click a setup and select <b>Properties</b> . |        |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|--------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                       | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                   | <SetupArray>                                                                               | Array  | An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:SetupName&gt;</li> <li>• &lt;NameArray&gt;</li> <li>• &lt;CustomSetup&gt;</li> <li>• &lt;Position&gt;</li> <li>• &lt;SimSetupType&gt;</li> <li>• &lt;SimSettingsArray&gt;</li> <li>• &lt;SolveSetupType&gt;</li> </ul> This array's placeholder does not appear in the syntax or examples below but instead has its contents listed. |
|                   | <NAME:SetupName>                                                                           | String | User-entered name of the setup.                                                                                                                                                                                                                                                                                                                                                                                                          |
|                   | <NameArray>                                                                                | Array  | An array that contains these parameters in order:                                                                                                                                                                                                                                                                                                                                                                                        |



|                           |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           |         | <ul style="list-style-type: none"> <li>• &lt;NAME:Properties&gt;</li> <li>• &lt;Enable&gt;</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <NAME:Properties>         | String  | Identifies the contents of the array (i.e., Properties).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <Enable>                  | Boolean | <b>True</b> – setup is active<br><b>False</b> – setup is inactive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <SimSetupType>            | String  | Identifies the type of setup (e.g., kSIwaveNearField).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <SimSettingArray>         | Array   | <i>Optional.</i> An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:SimulationSettings&gt;</li> <li>• &lt;Enabled&gt;</li> <li>• &lt;UseSISettings&gt;</li> <li>• &lt;UseCustomSettings&gt;</li> <li>• &lt;SISliderPros&gt;</li> <li>• &lt;PISliderPros&gt;</li> <li>• &lt;SIWAdvancedArray&gt;</li> <li>• &lt;SIWDCArray&gt;</li> <li>• &lt;SIWDCAdvancedArray&gt;</li> <li>• &lt;SIWSPParamArray&gt;</li> <li>• &lt;NearFieldSettingArray&gt;</li> <li>• &lt;NAME:SweepDataList&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p> |
| <NAME:SimulationSettings> | String  | Identifies the contents of the array (i.e., SimulationSettings).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <Enabled>                 | Boolean | <b>True</b> – array settings are active<br><b>False</b> – array settings are inactive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <UseSISettings>           | Boolean | <b>True</b> – uses SI Simulation settings<br><b>False</b> – uses PI Simulation settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <UseCustomSettings> | Boolean | <b>True</b> – overrides <UseSISettings> and activates <SIWAdvancedArray> parameters<br><b>False</b> groups by range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <SISliderPros>      | Integer | <b>0</b> – optimizes simulation for speed<br><b>1</b> – optimizes simulation to balance speed and accuracy<br><b>2</b> – optimizes simulation for accuracy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <PISliderPros>      | Integer | <b>0</b> – optimizes simulation for speed<br><b>1</b> – optimizes simulation to balance speed and accuracy<br><b>2</b> – optimizes simulation for accuracy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <SIWAdvancedArray>  | Array   | <i>Optional.</i> An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:SIWAdvancedSettings&gt;</li> <li>• &lt;IncludeCoPlaneCoupling&gt;</li> <li>• &lt;IncludeInterPlaneCoupling&gt;</li> <li>• &lt;IncludeSplitPlaneCoupling&gt;</li> <li>• &lt;IncludeFringeCoupling&gt;</li> <li>• &lt;IncludeTraceCoupling&gt;</li> <li>• &lt;XtalkThreshold&gt;</li> <li>• &lt;MaxCoupledLines&gt;</li> <li>• &lt;MinVoidArea&gt;</li> <li>• &lt;MinPadAreaToMesh&gt;</li> <li>• &lt;SnapLengthThreshold&gt;</li> <li>• &lt;MeshAutoMatic&gt;</li> <li>• &lt;MeshFrequency&gt;</li> <li>• &lt;ReturnCurrentDistribution&gt;</li> <li>• &lt;INcludeVISources&gt;</li> <li>• &lt;IncludeInfGnd&gt;</li> <li>• &lt;InfGndLocation&gt;</li> <li>• &lt;PerformERC&gt;</li> </ul> |

|                             |         |                                                                                                                                                                                                          |
|-----------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             |         | <ul style="list-style-type: none"> <li>• &lt;IgnoreNonFunctionalPads&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p> |
| <NAME:SIWAdvancedSettings>  | String  | Identifies the contents of the array (i.e., SIWAdvancedSettings).                                                                                                                                        |
| <IncludeCoPlaneCoupling>    | Boolean | <b>True</b> – coplane coupling active<br><b>False</b> – coplane coupling inactive                                                                                                                        |
| <IncludeInterPlaneCoupling> | Boolean | <b>True</b> – intra-plane coupling active<br><b>False</b> – intra-plane coupling inactive                                                                                                                |
| <IncludeSplitPlaneCoupling> | Boolean | <b>True</b> – split-plane coupling active<br><b>False</b> – split-plane coupling inactive                                                                                                                |
| <IncludeFringeCoupling>     | Boolean | <b>True</b> – cavity field coupling active<br><b>False</b> – cavity field coupling inactive                                                                                                              |
| <IncludeTraceCoupling>      | Boolean | <b>True</b> – trace coupling active<br><b>False</b> – trace coupling inactive                                                                                                                            |
| <XtalkThreshold>            | Integer | Maximum cross-talk threshold, in decibels.                                                                                                                                                               |
| <MaxCoupledLines>           | Integer | The number of allowed coupled lines.                                                                                                                                                                     |
| <MinVoidArea>               | Integer | Minimum size of voids; voids larger than the minimum are meshed.                                                                                                                                         |
| <MinPadAreaToMesh>          | Integer | Minimum size of pads; pads larger than the minimum are meshed.                                                                                                                                           |
| <SnapLengthThreshold>       | Integer | Minimum distance of vertices; vertices less than the minimum are snapped.                                                                                                                                |
| <MeshAutoMatic>             | Boolean | <b>True</b> – mesh are automatically refined<br><b>False</b> – mesh are not automatically refined                                                                                                        |
| <MeshFrequency>             | Integer | Specific frequency at which mesh are refined.                                                                                                                                                            |
| <ReturnCurrentDistribution> | Boolean | <b>True</b> – returns current distribution is traced<br><b>False</b> – returns current distribution is not traced                                                                                        |
| <IncludeVISources>          | Boolean | <b>True</b> – parasitic elements from voltage/current sources are included<br><b>False</b> – parasitic elements are not included                                                                         |

|                           |         |                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <IncludeInfGnd>           | Boolean | <b>True</b> – infinite ground plane is included<br><b>False</b> – infinite ground plane is not included                                                                                                                                                                                                                                                    |
| <InfGndLocation>          | Integer | Distance below bottom layer in stackup to place infinite ground plane.                                                                                                                                                                                                                                                                                     |
| <PerformERC>              | Boolean | <b>True</b> – performs ERC during simulation<br><b>False</b> – does not perform ERC during simulation                                                                                                                                                                                                                                                      |
| <IgnoreNonFunctionalPads> | Boolean | <b>True</b> – excludes non-functional pads from resonant mode, frequency sweep, and SYZ simulations<br><b>False</b> – does not exclude non-functional pads from resonant mode, frequency sweep, and SYZ simulations.                                                                                                                                       |
| <SIWSParmSettings>        | Array   | <i>Optional.</i> An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;UseStateSpace&gt;</li> <li>• &lt;Interpolation&gt;</li> <li>• &lt;Extrapolation&gt;</li> <li>• &lt;DCBehavior&gt;</li> </ul> This array's placeholder does not appear in the syntax or examples below but instead has its contents listed. |
| <UseStateSpace>           | Boolean | <b>True</b> – uses the <b>State Space Model</b><br><b>False</b> – uses a <b>Custom Model</b>                                                                                                                                                                                                                                                               |
| <Interpolation>           | Integer | <b>0</b> – sets <b>Interpolation</b> to <b>Point</b><br><b>1</b> – sets <b>Interpolation</b> to <b>Point</b><br><b>2</b> – sets <b>Interpolation</b> to <b>Point</b>                                                                                                                                                                                       |
| <Extrapolation>           | Integer | <b>0</b> – sets <b>Extrapolation</b> to <b>Zero padding</b><br><b>1</b> – sets <b>Extrapolation</b> to <b>Same as last point</b><br><b>2</b> – sets <b>Extrapolation</b> to <b>Linear extrapolation from last 2 points</b><br><b>3</b> – sets <b>Extrapolation</b> to <b>Constant magnitude linear phase extrapolation</b>                                 |
| <DCBehavior>              | Integer | <b>0</b> – sets <b>DC Behavior</b> to <b>Zero padding</b><br><b>1</b> – sets <b>DC Behavior</b> to <b>Same as last point</b><br><b>2</b> – sets <b>DC Behavior</b> to <b>Linear extrapolation from last 2</b>                                                                                                                                              |

|  |                      |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--|----------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                      |       | <b>points</b><br><b>3</b> – sets <b>DC Behavior</b> to <b>Constant magnitude linear phase extrapolation</b><br><b>4</b> – sets <b>DC Behavior</b> to <b>Series Capacitor</b><br><b>5</b> – sets <b>DC Behavior</b> to <b>Leave all signal lines open circuited</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|  | <SIWSNearFieldArray> | Array | An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:SIWNearFieldSettings&gt;</li> <li>• &lt;UseExternalSources&gt;</li> <li>• &lt;ExternalSourceFilePath&gt;</li> <li>• &lt;InterpolateSpectrum&gt;</li> <li>• &lt;IncludeInfGnd&gt;</li> <li>• &lt;PosXoffset&gt;</li> <li>• &lt;NegXoffset&gt;</li> <li>• &lt;PosYoffset&gt;</li> <li>• &lt;NegYoffset&gt;</li> <li>• &lt;PosZoffset&gt;</li> <li>• &lt;NegZoffset&gt;</li> <li>• &lt;MinAdaptPasses&gt;</li> <li>• &lt;MaxAdaptPasses&gt;</li> <li>• &lt;NewTrianglesPerPass&gt;</li> <li>• &lt;GlobalErrorTol&gt;</li> <li>• &lt;UseUserEdgeLength&gt;</li> <li>• &lt;MeshEdgeLength&gt;</li> <li>• &lt;ExportData&gt;</li> <li>• &lt;ExportDataPath&gt;</li> </ul> |

|                             |         |                                                                                                                                                                                                 |
|-----------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             |         | This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.                                                                                   |
| <NAME:SIWNearFieldSettings> | String  | Identifies the contents of the array (i.e., SIWNearFieldSettings).                                                                                                                              |
| <UseExternalSources>        | Boolean | <b>True</b> – uses external <b>Excitations</b> definitions<br><b>False</b> – uses <b>Excitations</b> definitions defined in project                                                             |
| <ExternalSourceFilePath>    | String  | Directory path to external <b>Excitations</b> definitions file.                                                                                                                                 |
| <InterpolateSpectrum>       | Boolean | <b>True</b> – interpolates spectrum at missing frequency points (external <b>Excitations</b> definitions file only)<br><b>False</b> – does not interpolate spectrum at missing frequency points |
| <IncludeInfGnd>             | Boolean | <b>True</b> – infinite ground plane is included<br><b>False</b> – infinite ground plane is not included                                                                                         |
| <PosXoffset>                | Integer | Value determines the +X offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid.                                                                   |
| <NegXoffset>                | Integer | Value determines the -X offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid.                                                                   |
| <PosYoffset>                | Integer | Value determines the +Y offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid.                                                                   |
| <NegYoffset>                | Integer | Value determines the -Y offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid.                                                                   |
| <PosZoffset>                | Integer | Value determines the +Z offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid.                                                                   |
| <NegZoffset>                | Integer | Value determines the -Z offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid.                                                                   |
| <MinAdaptPasses>            | Integer | Minimum number of passes the adaptive analysis will make, even if convergence criteria are met.                                                                                                 |
| <MaxAdaptPasses>            | Integer | Maximum number of passes the adaptive analysis will make, unless convergence criteria are met.                                                                                                  |
| <NewTrianglesPerPass>       | Integer | Percentage of triangles to add per pass.                                                                                                                                                        |
| <GlobalErrorTol>            | Integer | Maximum relative number of errors to allow between two successive adaptive passes.                                                                                                              |
| <UseUserEdgeLength>         | Boolean | <b>True</b> – uses custom maximum edge length                                                                                                                                                   |

|                     |                      |         |                                                                                                       |
|---------------------|----------------------|---------|-------------------------------------------------------------------------------------------------------|
|                     |                      |         | <b>False</b> – automatically determines maximum edge length                                           |
|                     | <MeshEdgeLength>     | Integer | Maximum edge length.                                                                                  |
|                     | <ExportData>         | Boolean | <b>True</b> – exports Near Field data<br><b>False</b> – does not export Near Field data               |
|                     | <ExportDataPath>     | String  | Path to directory in which to save Near Field data.                                                   |
|                     | <NAME:SweepDataList> | String  | Identifies the determining factors of the Near Field simulation (i.e., sweeps) (i.e., SweepDataList). |
|                     | <SolveSetupType>     | String  | Identifies the type of setup (i.e., SIwaveNearField).                                                 |
| <b>Return Value</b> | None                 |         |                                                                                                       |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | oModule.Edit([<NAME:SIwaveNearField1>, [<NAME:Properties>, <Enable>], <SimSetupType>, [<NAME:SimulationSettings>, <Enabled>, <UseSISettings>, <UseCustomSettings>, <SISliderPos>, <PISliderPos>], [<NAME:SIWAdvancedSettings>, <IncludeCoPlaneCoupling>, <IncludeInterPlaneCoupling>, <IncludeSplitPlaneCoupling>, <IncludeFringeCoupling>, <IncludeTraceCoupling>, <XtalkThreshold>, <MaxCoupledLines>, <MinVoidArea>, <MinPadAreaToMesh>, <SnapLengthThreshold>, <MeshAutoMatic>, <MeshFrequency>, <ReturnCurrentDistribution>, <IncludeVISources>, <IncludeInfGnd>, <InfGndLocation>, <PerformERC>, <IgnoreNonFunctionalPads>], [<NAME:SIWSParmSettings>, <UseStateSpace>, <Interpolation>, <Extrapolation>, <DCBehavior>], [<NAME:SIWNearFieldSettings>, <UseExternalSources>, <ExternalSourceFilePath>, <InterpolateSpectrum>, <IncludeInfGnd>, <PosXoffset>, <NegXoffset>, <PosYoffset>, <NegYoffset>, <PosZoffset>, <NegZoffset>, <MinAdaptPasses>, <MaxAdaptPasses>, <NewTrianglesPerPass>, <GlobalErrorTol>, <UseUserEdgeLength>, <MeshEdgeLength>, <ExportData>, <ExportDataPath>]], [<NAME:SweepDataList>], <SolveSetupType>]) |
| <b>Python Example</b> | <pre>oModule.Edit(     [         "NAME:SIwaveNearField1",         [</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

```

        "NAME:Properties",
        "Enable:="                , "true"
    ],
    "SimSetupType:="              , "kSIwaveNearField",
    [
        "NAME:SimulationSettings",
        "Enabled:="                , True,
        "UseSISettings:="          , False,
        "UseCustomSettings:="      , False,
        "SISliderPos:="            , 2,
        "PISliderPos:="            , 0,
        [
            "NAME:SIWAdvancedSettings",
            "IncludeCoPlaneCoupling:=", False,
            "IncludeInterPlaneCoupling:=", False,
            "IncludeSplitPlaneCoupling:=", False,
            "IncludeFringeCoupling:=", False,
            "IncludeTraceCoupling:=", False,
            "XtalkThreshold:="      , "-34",
            "MaxCoupledLines:="     , 12,
            "MinVoidArea:="         , "2mm2",

```



```
"MinPadAreaToMesh:="      , "1mm2",
"MinPlaneAreaToMesh:="    , "6.25e-6mm2",
"SnapLengthThreshold:="   , "2.5um",
"MeshAutoMatic:="         , True,
"MeshFrequency:="          , "4GHz",
"ReturnCurrentDistribution:=", False,
"IncludeVISources:="       , False,
"IncludeInfGnd:="          , False,
"InfGndLocation:="         , "0mm",
"PerformERC:="             , False,
"IgnoreNonFunctionalPads:=", True
],
[
  "NAME:SIWSParamSettings",
  "UseStateSpace:="        , True,
  "Interpolation:="        , 1,
  "Extrapolation:="        , 3,
  "DCBehavior:="           , 3
],
[
```

```

"NAME:SIWNearFieldSettings",
"UseExternalSources:=" , False,
"ExternalSourceFilePath:=", "",
"InterpolateSpectrum:=" , True,
"IncludeInfGnd:="      , False,
"PosXOffset:="         , "1mm",
"NegXOffset:="         , "1mm",
"PosYOffset:="         , "1mm",
"NegYOffset:="         , "1mm",
"PosZOffset:="         , "1mm",
"NegZOffset:="         , "1mm",
"MinAdaptPasses:="     , 1,
"MaxAdaptPasses:="     , 10,
"NewTrianglesPerPass:=" , 20,
"GlobalErrorTol:="     , 3,
"UseUserEdgeLength:="  , False,
"MeshEdgeLength:="     , "1mm",
"ExportData:="         , False,
"ExportDataPath:="     , ""
]
],

```

|  |                                                                                                         |
|--|---------------------------------------------------------------------------------------------------------|
|  | <pre>[<br/>    "NAME:SweepDataList"<br/>],<br/>"SolveSetupType:="      , "SIwaveNearField"<br/>])</pre> |
|--|---------------------------------------------------------------------------------------------------------|

## EditSweep (Layout Editor)

Edits a sweep.

|              |                                                                                                     |        |                                                                                |
|--------------|-----------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------|
| UI Access    | From the <b>Project Manager</b> window, right-click a setup and select <b>Add Frequency Sweep</b> . |        |                                                                                |
| Parameters   | Name                                                                                                | Type   | Description                                                                    |
|              | <SetupName>                                                                                         | String | Name of the setup.                                                             |
|              | <Parameters>                                                                                        | Array  | A structured array containing the name and parameters for the frequency sweep. |
| Return Value | None                                                                                                |        |                                                                                |

|                |                                                |
|----------------|------------------------------------------------|
| Python Syntax  | oModule.EditSweep(<SetupName>, [<Parameters>]) |
| Python Example | <pre>oModule.EditSweep("Q3D1",<br/>[</pre>     |

```
"NAME:Sweep1",  
[  
  "NAME:Properties",  
  "Enable:=" , "true"  
],  
[  
  "NAME:Sweeps",  
  "Variable:=" , "Sweep1",  
  "Data:=" , "LIN 10MHz 100MHz 10MHz",  
  "OffsetF1:=" , False,  
  "Synchronize:=" , 0  
],  
"GenerateSurfaceCurrent:=" , False,  
"SaveRadFieldsOnly:=" , False,  
"ZoSelected:=" , False,  
"SAbsError:=" , 0.005,  
"ZoPercentError:=" , 1,  
"GenerateStateSpace:=" , False,  
"EnforcePassivity:=" , False,  
"PassivityTolerance:=" , 0.0001,  
"UseQ3DForDC:=" , False,
```

```
"ResimulateDC:=" , False,  
"MaxSolutions:=" , 250,  
"InterpUseSMatrix:=" , True,  
"InterpUsePortImpedance:=" , True,  
"InterpUsePropConst:=" , True,  
"InterpUseFullBasis:=" , True,  
"AdvDCExtrapolation:=" , False,  
"MinSolvedFreq:=" , "0.01GHz",  
"AutoSMatOnlySolve:=" , True,  
"MinFreqSMatrixOnlySolve:=" , "1MHz",  
"CustomFrequencyString:=" , "",  
"AllEntries:=" , False,  
"AllDiagEntries:=" , False,  
"AllOffDiagEntries:=" , False,  
"MagMinThreshold:=" , 0.01,  
"InterpMinSubranges:=" , 1,  
"InterpMinSolutions:=" , 0,  
"FreqSweepType:=" , "kDiscrete"  
  
])
```

## ExportToHFSS (Layout Editor)

*Use:* Exports an HFSS 3D Layout design to a new project with an equivalent HFSS 3D design. This command is only valid on HFSS Setup types.

*Syntax:* ExportToHfss(<setupName>, <pathToExportFile>)

## ExportToQ3D (Layout Editor)

*Use:* Exports an HFSS 3D Layout design to a new project containing an equivalent Q3D design. This command is only valid on HFSS Setup types.

*Syntax:* ExportToQ3d(<setupName>, <pathToExportFile>)

## GetAllSolutionNames (Layout Editor)

*Use:* Returns a list of Ensemble solution names

*Syntax:* GetAllSolutionNames

*Return Value:* Array of Strings

*Parameters:* None

## GetGFDData (Setup HFSS 3D Layout)

Shows all available GFD (i.e., Green's Function Data) files.

|                     |                                                                                  |
|---------------------|----------------------------------------------------------------------------------|
| <b>UI Access</b>    | None.                                                                            |
| <b>Parameters</b>   | None.                                                                            |
| <b>Return Value</b> | Array of strings containing the names of identified Green's Function Data files. |

|                       |                                  |
|-----------------------|----------------------------------|
| <b>Python Syntax</b>  | GetGFDData()                     |
| <b>Python Example</b> | <code>oEditor.GetGDData()</code> |

## GetMeshOperations

Get the names of all mesh operations for a given setup.

|                     |                                        |
|---------------------|----------------------------------------|
| <b>UI Access</b>    | N/A                                    |
| <b>Parameters</b>   | None.                                  |
| <b>Return Value</b> | Array of names of all mesh operations. |

|                       |                                                                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetMeshOperations                                                                                                                          |
| <b>Python Example</b> | <pre>oModule.GetMeshOperations()<br/><br/>res = oModule.GetMeshOperations("Setup1")<br/><br/>['Length 1', 'Length 2', 'SkinDepth 1']</pre> |

## GetSetupData (Layout Editor)

Get setup data.

*Command:* None

*Syntax:* GetSetupData <setup>

*Return Value:* String array of setup information.

*Parameters:* <setup>

Type: string

## LayoutMeshOverlay (Layout Editor)

*Use:* Overlay a mesh for a setup in layout

*Syntax:* LayoutMeshOverlay(String setup) // setup name

## Layout3DMeshOverlay (Layout Editor)

*Use:* Overlay a mesh for a setup in 3D

*Syntax:* Layout3DMeshOverlay(String setup) // setup name

*Example:* oModule. Layout3DMeshOverlay <setup>

## ListVariations (Layout Editor)

*Use:* Get a list of solution variations for a given solution

*Syntax:* ListVariations(String SolutionName) // solution name

*Example:* oModule.ListVariations("NWA1")

## PullExcitationsFromTransient (Layout Editor)

Uses a Circuit or HFSS 3D Layout transient excitation source as an external source for a near field simulation.

| UI Access  | From the <b>Project Manager</b> window, right-click a setup and select <b>Pull Excitations</b> . |        |                               |
|------------|--------------------------------------------------------------------------------------------------|--------|-------------------------------|
| Parameters | Name                                                                                             | Type   | Description                   |
|            | <SetupName>                                                                                      | String | Name of the near field setup. |
|            | <ExcitationSource>                                                                               | String | Name of the transient setup.  |



|                            |                                                                                                                                                                                                                        |                                                                                                                             |  |                            |         |                                                                                                                             |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--|----------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------|
|                            | <table><tr><td>&lt;EnableExternalExcitation&gt;</td><td>Boolean</td><td><b>True</b> – transient excitation used as an external source<br/><b>False</b> – transient excitation not used as the source</td></tr></table> |                                                                                                                             |  | <EnableExternalExcitation> | Boolean | <b>True</b> – transient excitation used as an external source<br><b>False</b> – transient excitation not used as the source |
| <EnableExternalExcitation> | Boolean                                                                                                                                                                                                                | <b>True</b> – transient excitation used as an external source<br><b>False</b> – transient excitation not used as the source |  |                            |         |                                                                                                                             |
| <b>Return Value</b>        | None                                                                                                                                                                                                                   |                                                                                                                             |  |                            |         |                                                                                                                             |

|                       |                                                                                                                                  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>oModule.PullExcitationsFromTransient(&lt;SetupName&gt;, &lt;ExcitationSource&gt;, &lt;EnableExternalExcitation&gt;)</code> |
| <b>Python Example</b> | <code>oModule.PullExcitationsFromTransient("Near Field Setup 1", "TransientSetup1", True)</code>                                 |

## RefreshMeshOverlays (Layout Editor)

*Use:* Refreshes mesh display for a setup

*Syntax:* RefreshMeshOverlays(String setup) // setup name

*Example:* `oModule.RefreshMeshOverlays <setup>`

## Rename (Layout Editor)

Renames a setup.

|                   |                                                                                        |        |                                     |
|-------------------|----------------------------------------------------------------------------------------|--------|-------------------------------------|
| <b>UI Access</b>  | From the <b>Project Manager</b> window, right-click a setup and select <b>Rename</b> . |        |                                     |
| <b>Parameters</b> | Name                                                                                   | Type   | Description                         |
|                   | <SetupName>                                                                            | String | Current name of the setup.          |
|                   | <NewName>                                                                              | String | User-entered new name of the setup. |

|                     |      |
|---------------------|------|
| <b>Return Value</b> | None |
|---------------------|------|

|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>oModule.Rename(&lt;SetupName&gt;, &lt;NewName&gt;)</code> |
| <b>Python Example</b> | <code>oModule.Rename("Q3D1", "Q3D2")</code>                     |

## RenameSweep (Layout Editor)

Renames a simulation sweep.

|                     |                                                                                                             |        |                                     |
|---------------------|-------------------------------------------------------------------------------------------------------------|--------|-------------------------------------|
| <b>UI Access</b>    | From the <b>Project Manager</b> window, expand a setup. Then right-click a sweep and select <b>Rename</b> . |        |                                     |
| <b>Parameters</b>   | Name                                                                                                        | Type   | Description                         |
|                     | <SetupName>                                                                                                 | String | Name of the setup.                  |
|                     | <SweepName>                                                                                                 | String | Current name of the sweep.          |
|                     | <NewSweepName>                                                                                              | String | User-entered new name of the sweep. |
| <b>Return Value</b> | None                                                                                                        |        |                                     |

|                       |                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>oModule.RenameSweep(&lt;SetupName&gt;, &lt;SweepName&gt;, &lt;NewSweepName&gt;)</code> |
| <b>Python Example</b> | <code>oModule.RenameSweep("Q3D2", "Sweep1", "Sweep2")</code>                                 |

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left blank.

## 22 - Excitations Commands

The following commands are available in the Excitations module. These commands should be executed by the **oDesign** object. For example:

```
oDesign.GetModule("Excitations" or "Boundaries")  
oModule.CommandName <args>
```

The following commands are described in this section:

[Add](#)

[AddRefPort](#)

[AddRefPortUsingEdges](#)

[ConvertPlaneToTrace](#)

[CoupleEdgePorts](#)

[DecoupleEdgePorts](#)

[Delete](#)

[DeleteExcitation](#)

[DeleteSource](#)

[DeleteProbePortAndVia](#)

[Edit](#)

[EditCircuitPort](#)

[EditExcitations](#)

[GetAllBoundariesList](#)

[GetAllPortsList](#)

[RemoveRefPort](#)

[Rename](#)

[RenameSource](#)

[SelectInLayout](#)

## Add [Excitation HFSS 3D Layout]

*Use:* Adds an excitation

*Syntax:* Add(ARRAY excitation\_data) // excitation data

*Example:*

```
oModule. Add <excitation_data>
```

## AddRefPort (Layout Editor)

*Use:* Adds a reference to an existing port

*Syntax:* AddRefPort(STRING portname) // name of the port  
                  STRING edgeportname) // name of the edgeport

## AddRefPortUsingEdges (Layout Editor)

*Use:* Creates an edge port with reference using the specified edge

*Command:* None

*Syntax:* <port name>,

    Array("Name:EdgeRefs",

"edge:=", Array(<edge information>)

*Return Value:* None

*Parameters:* <port name>: string that will name the created edge port

    <edge information>: describes the edge.

There are two choices: primitive edge or via edge.

<edge information> for a primitive edge:

"et:=", "pe", "prim:=", <primitive name>, "edge:=", <edge number>

<primitive name>: text that is the name of the primitive to use

<edge number>: an integer indexing the edge of the primitive to use

<edge information> for via edge:

"et:=", "pse", "sel:=", <via name>, "layer:=", <layer id>,

"sx:=", <start X location>, "sy:=", <start Y location>,

"ex:=", <end X location>, "ey:=", <end Y location>,

"h:=", <arc height>, "rad:=", <radians>

<via name>: text that is the name of the via to use

<layer id>: an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc

<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>: double giving the height of the edge arc (0 for a straight edge)

<radians>: double giving the arc size in radians (0 for a straight edge)

```
oModule.AddRefPortUsingEdges "Port1", Array("NAME:EdgeRefs", "edge=",  
Array("et=", "pe", "prim=", "rect_3", "edge=", 1))
```

```
oModule.AddRefPortUsingEdges "Port1", Array("NAME:EdgeRefs", "edge=",  
Array("et=", "pse", "sel=", "via_5", "layer=", 10, "sx=", 0.0015, "sy=", 0.0015,  
"ex=", -0.0015, "ey=", 0.0015, "h=", 0, "rad=", 0))
```

## ConvertPlaneToTrace (Layout Editor)

*Use:* Convert planes to traces

*Syntax:* ConvertPlaneToTrace <polygon information>

*Return Value:* None

*Parameters:* <Polygon\_Data>

Type: array

## **ConvertTraceToPlane (Layout Editor)**

*Use:* Convert traces to planes

*Syntax:* ConvertTraceToPlane <line information>

*Return Value:* None

*Parameters:* <Line\_Data>

Type: array

## **CoupleEdgePorts**

*Use:* Couples valid edge ports

*Syntax:* CoupleEdgePorts(VARIANT coupledlist) //entry containing ports to be coupled

## **CreateGroundPortComponent (Layout Editor)**

*Use:* Create a ground port component

*Command:* Right-click selected port > Port > Nexxim Ports > Add Grounds at Unconnected Pins

*Return Value:* None

*Parameters:* <Component\_Data>

Type: array

## **CreateInterfaceGround (Layout Editor)**

*Use:* Create an interface ground

*Command:* Right-click selected port > Port > Nexxim Ports > Circuit Ground



*Return Value:* None

*Parameters:* <Port\_Data>

Type: array

## CreateInterfacePort (Layout Editor)

*Use:* Create an interface port

*Command:* Right-click selected port > Port > Nexxim Ports > Circuit Interface

*Syntax:* CreateInterfacePort <Port\_Data>

*Parameters:* <Port\_Data>

Type: array

## CreateInterfacePortComponent (Layout Editor)

*Use:* Create an interface port component

*Command:* Right-click selected port > Port > Nexxim Ports > Add Interface Ports at Unconnected Pins

*Syntax:* CreateInterfacePortComponent <Port\_Data>

*Parameters:* <Component\_Data>

Type: array

## DecoupleEdgePorts

*Use:* Decouples edge ports

*Syntax:* DecoupleEdgePorts(  
VARIANT decoupledlist) //entry containing ports to be decoupled

## Delete[Excitation HFSS 3D Layout]

*Use:* Deletes an excitation

*Syntax:* Delete( STRING excitation\_name) // excitation name

*Example:* oModule. Delete <excitation\_name>

## Delete [Interface Port]

*Use:* Deletes an interface port

*Syntax:* Delete( STRING: Interface Port name)

## Delete[Excitation HFSS 3D Layout]

*Use:* Deletes an excitation

*Syntax:* Delete( STRING excitation\_name) // excitation name

*Example:* oModule. Delete <excitation\_name>

## DeleteProbePortAndVia (Layout Editor)

*Use:* Deletes a coaxial probe port and the associated via

*Syntax:* DeleteProbePortAndVia( STRING port\_name) // Probe Port name

STRING via\_name) //Via name

*Example:* oModule. DeleteProbePortAndVia <port\_name> <via\_name>

## DeleteSource [Interface Source]

*Use:* Deletes an interface source

Syntax: DeleteSource (STRING: Interface Source name)

## Edit (Layout Editor)

Edits a setup.

**Note:** The following tables display **example** parameters applicable to a Near Field solution setup. Selecting a different setup will also add, remove, or change the applicable parameters.

| UI Access  | From the <b>Project Manager</b> window, right-click a setup and select <b>Properties</b> . |        |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------|--------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                       | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                      |
|            | <SetupArray>                                                                               | Array  | An array that contains these parameters in order: <ul style="list-style-type: none"><li>• &lt;NAME:SetupName&gt;</li><li>• &lt;NameArray&gt;</li><li>• &lt;CustomSetup&gt;</li><li>• &lt;Position&gt;</li><li>• &lt;SimSetupType&gt;</li><li>• &lt;SimSettingsArray&gt;</li><li>• &lt;SolveSetupType&gt;</li></ul> This array's placeholder does not appear in the syntax or examples below but instead has its contents listed. |
|            | <NAME:SetupName>                                                                           | String | User-entered name of the setup.                                                                                                                                                                                                                                                                                                                                                                                                  |
|            | <NameArray>                                                                                | Array  | An array that contains these parameters in order: <ul style="list-style-type: none"><li>• &lt;NAME:Properties&gt;</li></ul>                                                                                                                                                                                                                                                                                                      |

|                           |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           |         | <ul style="list-style-type: none"> <li>• &lt;Enable&gt;</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <NAME:Properties>         | String  | Identifies the contents of the array (i.e., Properties).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <Enable>                  | Boolean | <b>True</b> – setup is active<br><b>False</b> – setup is inactive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <SimSetupType>            | String  | Identifies the type of setup (e.g., kSIwaveNearField).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <SimSettingArray>         | Array   | <i>Optional.</i> An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:SimulationSettings&gt;</li> <li>• &lt;Enabled&gt;</li> <li>• &lt;UseSISettings&gt;</li> <li>• &lt;UseCustomSettings&gt;</li> <li>• &lt;SISliderPros&gt;</li> <li>• &lt;PISliderPros&gt;</li> <li>• &lt;SIWAdvancedArray&gt;</li> <li>• &lt;SIWDCArray&gt;</li> <li>• &lt;SIWDCAdvancedArray&gt;</li> <li>• &lt;SIWSParamArray&gt;</li> <li>• &lt;NearFieldSettingArray&gt;</li> <li>• &lt;NAME:SweepDataList&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p> |
| <NAME:SimulationSettings> | String  | Identifies the contents of the array (i.e., SimulationSettings).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <Enabled>                 | Boolean | <b>True</b> – array settings are active<br><b>False</b> – array settings are inactive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <UseSISettings>           | Boolean | <b>True</b> – uses SI Simulation settings<br><b>False</b> – uses PI Simulation settings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <UseCustomSettings>       | Boolean | <b>True</b> – overrides <UseSISettings> and activates <SIWAdvancedArray> parameters<br><b>False</b> groups by range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|  |                    |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--|--------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <SISliderPros>     | Integer | <b>0</b> – optimizes simulation for speed<br><b>1</b> – optimizes simulation to balance speed and accuracy<br><b>2</b> – optimizes simulation for accuracy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|  | <PISliderPros>     | Integer | <b>0</b> – optimizes simulation for speed<br><b>1</b> – optimizes simulation to balance speed and accuracy<br><b>2</b> – optimizes simulation for accuracy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|  | <SIWAdvancedArray> | Array   | <i>Optional.</i> An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:SIWAdvancedSettings&gt;</li> <li>• &lt;IncludeCoPlaneCoupling&gt;</li> <li>• &lt;IncludeInterPlaneCoupling&gt;</li> <li>• &lt;IncludeSplitPlaneCoupling&gt;</li> <li>• &lt;IncludeFringeCoupling&gt;</li> <li>• &lt;IncludeTraceCoupling&gt;</li> <li>• &lt;XtalkThreshold&gt;</li> <li>• &lt;MaxCoupledLines&gt;</li> <li>• &lt;MinVoidArea&gt;</li> <li>• &lt;MinPadAreaToMesh&gt;</li> <li>• SnapLengthThreshold&gt;</li> <li>• &lt;MeshAutoMatic&gt;</li> <li>• &lt;MeshFrequency&gt;</li> <li>• &lt;ReturnCurrentDistribution&gt;</li> <li>• &lt;INcludeVISources&gt;</li> <li>• &lt;IncludeInfGnd&gt;</li> <li>• &lt;InfGndLocation&gt;</li> <li>• &lt;PerformERC&gt;</li> <li>• &lt;IgnoreNonFunctionalPads&gt;</li> </ul> |

|                             |         |                                                                                                                                  |
|-----------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------|
|                             |         | This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.                    |
| <NAME:SIWAdvancedSettings>  | String  | Identifies the contents of the array (i.e., SIWAdvancedSettings).                                                                |
| <IncludeCoPlaneCoupling>    | Boolean | <b>True</b> – coplane coupling active<br><b>False</b> – coplane coupling inactive                                                |
| <IncludeInterPlaneCoupling> | Boolean | <b>True</b> – intra-plane coupling active<br><b>False</b> – intra-plane coupling inactive                                        |
| <IncludeSplitPlaneCoupling> | Boolean | <b>True</b> – split-plane coupling active<br><b>False</b> – split-plane coupling inactive                                        |
| <IncludeFringeCoupling>     | Boolean | <b>True</b> – cavity field coupling active<br><b>False</b> – cavity field coupling inactive                                      |
| <IncludeTraceCoupling>      | Boolean | <b>True</b> – trace coupling active<br><b>False</b> – trace coupling inactive                                                    |
| <XtalkThreshold>            | Integer | Maximum cross-talk threshold, in decibels.                                                                                       |
| <MaxCoupledLines>           | Integer | The number of allowed coupled lines.                                                                                             |
| <MinVoidArea>               | Integer | Minimum size of voids; voids larger than the minimum are meshed.                                                                 |
| <MinPadAreaToMesh>          | Integer | Minimum size of pads; pads larger than the minimum are meshed.                                                                   |
| <SnapLengthThreshold>       | Integer | Minimum distance of vertices; vertices less than the minimum are snapped.                                                        |
| <MeshAutoMatic>             | Boolean | <b>True</b> – mesh are automatically refined<br><b>False</b> – mesh are not automatically refined                                |
| <MeshFrequency>             | Integer | Specific frequency at which mesh are refined.                                                                                    |
| <ReturnCurrentDistribution> | Boolean | <b>True</b> – returns current distribution is traced<br><b>False</b> – returns current distribution is not traced                |
| <IncludeVISources>          | Boolean | <b>True</b> – parasitic elements from voltage/current sources are included<br><b>False</b> – parasitic elements are not included |
| <IncludeInfGnd>             | Boolean | <b>True</b> – infinite ground plane is included<br><b>False</b> – infinite ground plane is not included                          |
| <InfGndLocation>            | Integer | Distance below bottom layer in stackup to place infinite ground plane.                                                           |

|                           |         |                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <PerformERC>              | Boolean | <b>True</b> – performs ERC during simulation<br><b>False</b> – does not perform ERC during simulation                                                                                                                                                                                                                                                      |
| <IgnoreNonFunctionalPads> | Boolean | <b>True</b> – excludes non-functional pads from resonant mode, frequency sweep, and SYZ simulations<br><b>False</b> – does not exclude non-functional pads from resonant mode, frequency sweep, and SYZ simulations.                                                                                                                                       |
| <SIWSPParamSettings>      | Array   | <i>Optional.</i> An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;UseStateSpace&gt;</li> <li>• &lt;Interpolation&gt;</li> <li>• &lt;Extrapolation&gt;</li> <li>• &lt;DCBehavior&gt;</li> </ul> This array's placeholder does not appear in the syntax or examples below but instead has its contents listed. |
| <UseStateSpace>           | Boolean | <b>True</b> – uses the <b>State Space Model</b><br><b>False</b> – uses a <b>Custom Model</b>                                                                                                                                                                                                                                                               |
| <Interpolation>           | Integer | <b>0</b> – sets <b>Interpolation</b> to <b>Point</b><br><b>1</b> – sets <b>Interpolation</b> to <b>Point</b><br><b>2</b> – sets <b>Interpolation</b> to <b>Point</b>                                                                                                                                                                                       |
| <Extrapolation>           | Integer | <b>0</b> – sets <b>Extrapolation</b> to <b>Zero padding</b><br><b>1</b> – sets <b>Extrapolation</b> to <b>Same as last point</b><br><b>2</b> – sets <b>Extrapolation</b> to <b>Linear extrapolation from last 2 points</b><br><b>3</b> – sets <b>Extrapolation</b> to <b>Constant magnitude linear phase extrapolation</b>                                 |
| <DCBehavior>              | Integer | <b>0</b> – sets <b>DC Behavior</b> to <b>Zero padding</b><br><b>1</b> – sets <b>DC Behavior</b> to <b>Same as last point</b><br><b>2</b> – sets <b>DC Behavior</b> to <b>Linear extrapolation from last 2 points</b><br><b>3</b> – sets <b>DC Behavior</b> to <b>Constant magnitude linear phase extrapolation</b>                                         |

|                             |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             |         | <b>4 – sets DC Behavior to Series Capacitor</b><br><b>5 – sets DC Behavior to Leave all signal lines open circuited</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <SIWSNearFieldArray>        | Array   | <p>An array that contains these parameters in order:</p> <ul style="list-style-type: none"> <li>• &lt;NAME:SIWNearFieldSettings&gt;</li> <li>• &lt;UseExternalSources&gt;</li> <li>• &lt;ExternalSourceFilePath&gt;</li> <li>• &lt;InterpolateSpectrum&gt;</li> <li>• &lt;IncludeInfGnd&gt;</li> <li>• &lt;PosXoffset&gt;</li> <li>• &lt;NegXoffset&gt;</li> <li>• &lt;PosYoffset&gt;</li> <li>• &lt;NegYoffset&gt;</li> <li>• &lt;PosZoffset&gt;</li> <li>• &lt;NegZoffset&gt;</li> <li>• &lt;MinAdaptPasses&gt;</li> <li>• &lt;MaxAdaptPasses&gt;</li> <li>• &lt;NewTrianglesPerPass&gt;</li> <li>• &lt;GlobalErrorTol&gt;</li> <li>• &lt;UseUserEdgeLength&gt;</li> <li>• &lt;MeshEdgeLength&gt;</li> <li>• &lt;ExportData&gt;</li> <li>• &lt;ExportDataPath&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p> |
| <NAME:SIWNearFieldSettings> | String  | Identifies the contents of the array (i.e., SIWNearFieldSettings).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <UseExternalSources>        | Boolean | <b>True</b> – uses external <b>Excitations</b> definitions<br><b>False</b> – uses <b>Excitations</b> definitions defined in project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |



|                          |         |                                                                                                                                                                                                 |
|--------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ExternalSourceFilePath> | String  | Directory path to external <b>Excitations</b> definitions file.                                                                                                                                 |
| <InterpolateSpectrum>    | Boolean | <b>True</b> – interpolates spectrum at missing frequency points (external <b>Excitations</b> definitions file only)<br><b>False</b> – does not interpolate spectrum at missing frequency points |
| <IncludeInfGnd>          | Boolean | <b>True</b> – infinite ground plane is included<br><b>False</b> – infinite ground plane is not included                                                                                         |
| <PosXoffset>             | Integer | Value determines the +X offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid.                                                                   |
| <NegXoffset>             | Integer | Value determines the -X offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid.                                                                   |
| <PosYoffset>             | Integer | Value determines the +Y offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid.                                                                   |
| <NegYoffset>             | Integer | Value determines the -Y offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid.                                                                   |
| <PosZoffset>             | Integer | Value determines the +Z offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid.                                                                   |
| <NegZoffset>             | Integer | Value determines the -Z offset of a cube that encloses the design; the Near Field is evaluated on the surface of this cuboid.                                                                   |
| <MinAdaptPasses>         | Integer | Minimum number of passes the adaptive analysis will make, even if convergence criteria are met.                                                                                                 |
| <MaxAdaptPasses>         | Integer | Maximum number of passes the adaptive analysis will make, unless convergence criteria are met.                                                                                                  |
| <NewTrianglesPerPass>    | Integer | Percentage of triangles to add per pass.                                                                                                                                                        |
| <GlobalErrorTol>         | Integer | Maximum relative number of errors to allow between two successive adaptive passes.                                                                                                              |
| <UseUserEdgeLength>      | Boolean | <b>True</b> – uses custom maximum edge length<br><b>False</b> – automatically determines maximum edge length                                                                                    |
| <MeshEdgeLength>         | Integer | Maximum edge length.                                                                                                                                                                            |
| <ExportData>             | Boolean | <b>True</b> – exports Near Field data                                                                                                                                                           |

|                     |                      |        |                                                                                                       |
|---------------------|----------------------|--------|-------------------------------------------------------------------------------------------------------|
|                     |                      |        | <b>False</b> – does not export Near Field data                                                        |
|                     | <ExportDataPath>     | String | Path to directory in which to save Near Field data.                                                   |
|                     | <NAME:SweepDataList> | String | Identifies the determining factors of the Near Field simulation (i.e., sweeps) (i.e., SweepDataList). |
|                     | <SolveSetupType>     | String | Identifies the type of setup (i.e., SIwaveNearField).                                                 |
| <b>Return Value</b> | None                 |        |                                                                                                       |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | oModule.Edit([<NAME:SIwaveNearField1>, [<NAME:Properties>, <Enable>], <SimSetupType>, [<NAME:SimulationSettings>, <Enabled>, <UseSISettings>, <UseCustomSettings>, <SISliderPos>, <PISliderPos>], [<NAME:SIWAdvancedSettings>, <IncludeCoPlaneCoupling>, <IncludeInterPlaneCoupling>, <IncludeSplitPlaneCoupling>, <IncludeFringeCoupling>, <IncludeTraceCoupling>, <XtalkThreshold>, <MaxCoupledLines>, <MinVoidArea>, <MinPadAreaToMesh>, <SnapLengthThreshold>, <MeshAutoMatic>, <MeshFrequency>, <ReturnCurrentDistribution>, <IncludeVISources>, <IncludeInfGnd>, <InfGndLocation>, <PerformERC>, <IgnoreNonFunctionalPads>], [<NAME:SIWSPParamSettings>, <UseStateSpace>, <Interpolation>, <Extrapolation>, <DCBehavior>], [<NAME:SIWNearFieldSettings>, <UseExternalSources>, <ExternalSourceFilePath>, <InterpolateSpectrum>, <IncludeInfGnd>, <PosXoffset>, <NegXoffset>, <PosYoffset>, <NegYoffset>, <PosZoffset>, <NegZoffset>, <MinAdaptPasses>, <MaxAdaptPasses>, <NewTrianglesPerPass>, <GlobalErrorTol>, <UseUserEdgeLength>, <MeshEdgeLength>, <ExportData>, <ExportDataPath>]], [<NAME:SweepDataList>, <SolveSetupType>]) |  |  |
| <b>Python Example</b> | <pre>oModule.Edit(     [         "NAME:SIwaveNearField1",         [             "NAME:Properties",             "Enable:="             , "true"         ]     ],     )</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |

```
"SimSetupType:="          , "kSIwaveNearField",  
  
[  
  "NAME:SimulationSettings",  
  "Enabled:="              , True,  
  "UseSISettings:="        , False,  
  "UseCustomSettings:="    , False,  
  "SISliderPos:="          , 2,  
  "PISliderPos:="          , 0,  
  
  [  
    "NAME:SIWAdvancedSettings",  
    "IncludeCoPlaneCoupling:=", False,  
    "IncludeInterPlaneCoupling:=", False,  
    "IncludeSplitPlaneCoupling:=", False,  
    "IncludeFringeCoupling:=", False,  
    "IncludeTraceCoupling:=", False,  
    "XtalkThreshold:="      , "-34",  
    "MaxCoupledLines:="     , 12,  
    "MinVoidArea:="         , "2mm2",  
    "MinPadAreaToMesh:="    , "1mm2",  
    "MinPlaneAreaToMesh:="  , "6.25e-6mm2",
```

```

        "SnapLengthThreshold:=" , "2.5um",
        "MeshAutoMatic:="      , True,
        "MeshFrequency:="      , "4GHz",
        "ReturnCurrentDistribution:=", False,
        "IncludeVISources:="    , False,
        "IncludeInfGnd:="       , False,
        "InfGndLocation:="      , "0mm",
        "PerformERC:="          , False,
        "IgnoreNonFunctionalPads:=", True
    ],
    [
        "NAME:SIWSParamSettings",
        "UseStateSpace:="      , True,
        "Interpolation:="      , 1,
        "Extrapolation:="      , 3,
        "DCBehavior:="          , 3
    ],
    [
        "NAME:SIWNearFieldSettings",
        "UseExternalSources:=" , False,
        "ExternalSourceFilePath:=", "",

```

```
"InterpolateSpectrum:=" , True,  
"IncludeInfGnd:="      , False,  
"PosXOffset:="         , "1mm",  
"NegXOffset:="         , "1mm",  
"PosYOffset:="         , "1mm",  
"NegYOffset:="         , "1mm",  
"PosZOffset:="         , "1mm",  
"NegZOffset:="         , "1mm",  
"MinAdaptPasses:="     , 1,  
"MaxAdaptPasses:="     , 10,  
"NewTrianglesPerPass:=" , 20,  
"GlobalErrorTol:="     , 3,  
"UseUserEdgeLength:="  , False,  
"MeshEdgeLength:="     , "1mm",  
"ExportData:="         , False,  
"ExportDataPath:="     , ""  
  
]  
],  
[  
  
"NAME:SweepDataList"
```

|  |                                                                        |
|--|------------------------------------------------------------------------|
|  | <pre>],<br/>  "SolveSetupType:="      , "SIwaveNearField"<br/>])</pre> |
|--|------------------------------------------------------------------------|

## EditCircuitExcitations (Layout Editor)

*Use:* Edits the properties of all the existing circuit excitations

*Syntax:* EditCircuitExcitations Array("NAME:NexximPostProcess", Array("NAME:portname", do-post-proc, "de-embedding distance", "re-normalization impedance"...))

*Return Value:* None

## EditCircuitPort [Interface Port]

*Use:* Edit a circuit port

*Command:* None

*Syntax:* EditCircuitPort <Port Name> <Port Info> <Port Properties>

*Return Value:* None

*Parameters:* <Port Name> - Type: string

<Port Info> - Type: array

<Port Properties> - Type: array

# EditExcitations (Layout Editor)

Edits the properties of all existing excitations.

**Note:** GapSource should always be set.

|              |                |                  |                                    |
|--------------|----------------|------------------|------------------------------------|
| UI Access    | None.          |                  |                                    |
| Parameters   | Name           | Type             | Description                        |
|              | <exciteArray>  | Structured Array | Excitations block.                 |
|              | <ppArray>      | Structured Array | Post-processing block.             |
|              | <gapSource>    | String           | Gap source.                        |
|              | <pushExParams> | Structured Array | PushExParams block. "" by default. |
| Return Value | None.          |                  |                                    |

|                |                                                                                                                                                                                                                                                  |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | EditExcitations (<exciteArray>, <ppArray>, <gapSource>, <pushExParams>))                                                                                                                                                                         |
| Python Example | <pre>oModule.EditExcitations(<br/>    [ "NAME:Excitations",<br/>      ["Port1", "0deg", "0.099V"],<br/>      ["Port2", "0deg", "0.099V"]<br/>    ],<br/>    ["NAME:PostProcess",<br/>      ["Port1", True, True, "0mm", "50ohm + 0i ohm"],</pre> |

|  |                                                                                                            |
|--|------------------------------------------------------------------------------------------------------------|
|  | <pre>["Port2", True, True, "0mm", "50ohm + 0i ohm"]<br/>],<br/>"GapSource, IncidentVoltage",<br/>[])</pre> |
|--|------------------------------------------------------------------------------------------------------------|

## GetAllBoundariesList (Layout Editor)

*Use:* Get a list of all boundaries.

*Command:* None

*Syntax:* GetAllBoundariesList <bounds>

*Return Value:* String array of list of all boundaries.

*Parameters:* <bounds>

Type: string

*Example:* oEx = oDesign.GetModule('Excitations')

bounds = oEx.GetAllBoundariesList()

## GetAllPortsList (Layout Editor)

*Use:* Returns the names of all Ensemble ports

*Syntax:* GetAllPortsList

*Return Value:* Array of Strings

*Parameters:* None

## Rename [Interface Port]

*Use:* Renames an interface port



*Syntax:* Rename (STRING: Interface Port name)(STRING: New name)

*Example:* oModule.Rename "OldName" "NewName"

## **RenameSource [Interface Source]**

*Use:* Renames an interface source

*Syntax:* RenameSource (STRING: Interface Source name)

*Example:* oModule.RenameSource "OldName" "NewName"

## **Rename (Layout Editor)**

*Use:* Renames an excitation

*Syntax:* Rename(STRING oldname) // old excitation name

STRING newname) // new excitation name

*Example:* oModule. Rename <oldname> <newname>

## **RemoveRefPort (Layout Editor)**

*Use:* Removes the reference for an existing port

*Syntax:* RemoveRefPort(

STRING portname) // name of the port

*Example:* oModule. RemoveRefPort portname

## **SelectInLayout (Layout Editor)**

*Use:* Selects and highlights an excitation in the layout editor

**Syntax:** SelectInLayout( STRING excitation\_name) // excitation name

*Example:* oModule. SelectInLayout <excitation\_name>

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## 23 - 2.5D Via Commands

The following commands are available in the LayoutVias module. These commands should be executed by the **oDesign** object. For example:

```
oDesign.GetModule("LayoutVias")  
oModule.CommandName <args>
```

The following commands are described in this section:

[ConvertPrimitives](#)

[Delete](#)

[Edit](#)

[MultipleEdit](#)

[Rename](#)

[SelectInLayout](#)

### ConvertPrimitives (Layout Editor)

*Use:* Convert the selected primitives to 2.5D vias

*Syntax:* ConvertPrimitives(ARRAY primvia\_data) // primitive data

*Example:* oModule.ConvertPrimitives primvia\_data

### Delete [Via HFSS 3D Layout]

*Use:* Delete a 2.5 via

*Syntax:* Delete(

STRING via) // 2.5 via name

*Example:* oModule. Delete via

## Edit [Via HFSS 3D Layout]

*Use:* Edits a 2.5 via

*Syntax:* Edit(STRING via) // 2.5 via name

ARRAY via\_data) // data for the 2.5 via

*Example:* oModule. Edit via via\_data

## MultipleEdit [multiple via HFSS 3D Layout]

*Use:* Edit the properties of a collection of 2.5D via

*Syntax:* MultipleEdit(ARRAY multiplevia\_data) // multiple 2.5 via data

*Example:* oModule. MultipleEdit multiplevia\_data

## Rename [Via HFSS 3D Layout]

*Use:* Renames a 2.5 via

*Syntax:* Rename(STRING oldname) // old 2.5 via name

STRING newname) // new 2.5 via name

*Example:* oModule. Rename oldname newname

## SelectInLayout [Via HFSS 3D Layout]

*Use:* Selects and highlights the 2.5 via in the layout editor

*Syntax:* SelectInLayout(String via) // 2.5 via name

*Example:* oModule. SelectInLayout via

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## 24 - Cavity Commands

The following commands are available in the Cavities module. These commands should be executed by the **oDesign** object. For example:

```
oDesign.GetModule("Cavities")  
oModule.CommandName <args>
```

The following commands are described in this section:

[Add](#)

[Delete](#)

[Edit](#)

[Rename](#)

[SelectInLayout](#)

### Add [Cavity HFSS 3D Layout]

*Use:* Add a cavity to the design

*Syntax:* Add(ARRAY cavity\_data) // cavity data

*Example:* oModule. Add cavity\_data

### Delete [Cavity HFSS 3D Layout]

*Use:* Delete a cavity

*Syntax:* Delete( STRING cavity) // cavity name

*Example:* oModule. Delete cavity



## Edit [Cavity HFSS 3D Layout]

*Use:* Edits a cavity

*Syntax:* Edit(String name) // cavity name

ARRAY cavity\_data) // data for the cavity

*Example:* oModule. Edit name cavity\_data

## Rename [Cavity HFSS 3D Layout]

*Use:* Renames a cavity

*Syntax:* Rename(String oldname) // old cavity name

STRING newname) // new cavity name

*Example:* oModule. Rename oldname newname

## SelectInLayout [Cavity HFSS 3D Layout]

*Use:* Selects and highlights the cavity in the layout editor

*Syntax:* SelectInLayout(String cavity) // cavity name

*Example:* oModule. SelectInLayout cavity

## 25 - Layout Scripting

The Layout scripting interface is a set of commands that can be executed by the *Layout Editor* interface of *Design* objects. Accessing the *Layout Editor* interface can be done by the *SetActiveEditor* method of a *Design* object, for example:

```
Dim oEditor  
oEditor = DesignObject.SetActiveEditor ("Layout")
```

The call to each scripting method contains three elements:

- Layout editor
- Method name
- Method arguments (if any)

For instance, in Visual Basic, a call might look like this:

```
oEditor.Delete ("rect_1")
```

The behavior of the scripting methods is similar to the corresponding commands in the Layout editor. This correspondence is particularly evident when recording a script in Layout Editor (**Tools>Record Script**).

**Note:** A subsection of the Layout Scripting commands are only accessible once **Electronics Desktop** has been placed in IC Editor mode (i.e., **IC** mode). These commands are all located within the [IC Editor Script Commands](#) directory. There are commands common to both the **General** mode and **IC** mode environments in every topic within Layout Scripting, but they are designated (**General Mode and IC Mode**) at the **Table of Contents** level. Unless otherwise noted, common commands function identically in either environment (e.g., **RemoveLayer** is divided into two sections for each mode since the command function is similar but not identical).

The topics for this section include:

[Object Identifiers and Script Recording](#)

[Create Primitives](#)

[Create Voids in Primitives](#)

[Other Creation Methods](#)

[Object Movement and Modification Methods](#)

[Activation and Deactivation Methods](#)

[Layout and Geometry Interrogation Methods](#)

[Boolean Operations on Primitives](#)

[Coordinate System Methods](#)

[IC Editor Script Commands \(IC Mode Only\)](#)

[Layers Methods](#)

[NetClass Methods](#)

[Port Methods](#)

[Miscellaneous Methods](#)

## Object Identifiers and Script Recording

Many scripting methods apply to one or more *existing* objects. Objects in scripts are uniquely identified by their *names*, and the object names are typically referenced as:

`Array("name1", "name2")` // name1 and name2 are the names of the objects.

While working interactively in the Layout Editor, the user may observe (but not modify, except in some special cases) the *names* of the currently selected objects through the "Selected Object Properties" dialogs. These same names are the ones that the scripting methods use in order to identify the object the method applies to.

When particular objects are involved in interactive script recording, they are typically selected before the actual execution the particular interactive command. In this case, the *selected objects'* names would appear within the generated script method argument(s).

## Create Primitives

The following create primitives are available.

[Create3DLine](#)

[CreateCircle](#)

[CreateLine](#)

[CreatePolygon](#)

[CreateRectangle](#)

[CreateText](#)

### AddObject ("3D Line") (Layout Editor)

Adds a 3D line to the active design.

| UI Access         | From the <b>Layout</b> ribbon, select <b>Draw 3D line</b> . |        |                                                                                                                                                                                                  |
|-------------------|-------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                        | Type   | Description                                                                                                                                                                                      |
|                   | <ObjectType>                                                | String | Type of object to add (i.e., must have the value "3D Line").                                                                                                                                     |
|                   | <Parameters>                                                | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:Contents&gt;</li> <li>• &lt;3D LineGeometry&gt;</li> </ul>                              |
|                   | <NAME:Contents>                                             | String | Identifies the contents of the array (i.e., "Contents").                                                                                                                                         |
|                   | <3D LineGeometry><br>>                                      | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;Name&gt;</li> <li>• &lt;LayerName&gt;</li> <li>• &lt;lw&gt;</li> <li>• &lt;gm&gt;</li> </ul> |
|                   | <Name>                                                      | String | Name of the new object.                                                                                                                                                                          |

|                     |                                      |         |                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|--------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <LayerName>                          | String  | Name of the target layer.                                                                                                                                                                                                                                                                                                                        |
|                     | <lw>                                 | Integer | Line width of the new object.                                                                                                                                                                                                                                                                                                                    |
|                     | <gm>                                 | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;m&gt;</li> <li>• &lt;pnt&gt;</li> </ul>                                                                                                                                                                                                      |
|                     | <m>                                  | Integer | "Placement Mode" - species one of the following:<br><b>0</b> 3D - points are placed according to user-specified XYZ coordinates.<br><b>1</b> Top - points are placed on top of the target layer.<br><b>2</b> Middle - points are placed in the middle of the target layer.<br><b>3</b> Bottom - points are placed on bottom of the target layer. |
|                     | <pnt>                                | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;lid&gt;</li> <li>• &lt;pos&gt;</li> </ul>                                                                                                                                                                                                    |
|                     | <lid>                                | Integer | Identifies the layer identification number on which the 3D line's position will be affixed (e.g., "2").                                                                                                                                                                                                                                          |
|                     | <pos>                                | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;X&gt;</li> <li>• &lt;Y&gt;</li> <li>• &lt;Z&gt;</li> </ul>                                                                                                                                                                                   |
|                     | <X>                                  | Integer | X coordinate of the new object (e.g., -0.08mm).                                                                                                                                                                                                                                                                                                  |
|                     | <Y>                                  | Integer | Y coordinate of the new object (e.g., 0.03mm).                                                                                                                                                                                                                                                                                                   |
|                     | <Z>                                  | Integer | Z coordinate of the new object (e.g., 0mm).                                                                                                                                                                                                                                                                                                      |
| <b>Return Value</b> | Returns the name of the new 3D line. |         |                                                                                                                                                                                                                                                                                                                                                  |

|                      |                                         |
|----------------------|-----------------------------------------|
| <b>Python Syntax</b> | AddObject(<ObjectType>, [<Parameters>]) |
|----------------------|-----------------------------------------|

**Python Example**

```

oEditor.AddObject("3D Line",
[
    "NAME:Contents",
    "3D LineGeometry:=",
    [
        "Name:=", "3D Line_12904",
        "LayerName:=", "Postprocessing",
        "lw:=" , "0",
        "gm:=",
        [
            "m:=", 1,
            "pnt:=", [ "lid:=", 2, "pos:=", [ "X:=", "-0.08mm", "Y:=", "0.03mm",
            "Z:=", "0"]],
            "pnt:=" , [ "lid:=" , 2, "pos:=" , [ "X:=" , "-0.07mm", "Y:=" , "0.03mm",
            "Z:=" , "0"]],
            "pnt:=" , [ "lid:=" , 2, "pos:=" , [ "X:=" , "-0.07mm", "Y:=" ,
            "0.021mm", "Z:=" , "0"]],
            "pnt:=" , [ "lid:=" , 2, "pos:=" , [ "X:=" , "-0.08mm", "Y:=" ,
            "0.02mm", "Z:=" , "0"]],
            "pnt:=" , [ "lid:=" , 2, "pos:=" , [ "X:=" , "-0.08mm", "Y:=" ,
            "0.03mm", "Z:=" , "0"]],
            "pnt:=" , [ "lid:=" , 2, "pos:=" , [ "X:=" , "-0.08mm", "Y:=" ,
            "0.03mm", "Z:=" , "0"]],
            "pnt:=" , [ "lid:=" , 2, "pos:=" , [ "X:=" , "-0.08mm", "Y:=" ,

```

|  |                                                        |
|--|--------------------------------------------------------|
|  | <pre>        "0.03mm", "Z:=" , "0"] ]     ] ] ])</pre> |
|--|--------------------------------------------------------|

## CreateCircle (Layout Editor)

*Use:* Creates a circle primitive object and adds it to the current layout. Returns the name of the newly created object.

*Syntax:* **CreateCircle**<circle\_description>

*Parameters:* **<circle\_description>:**

```
Array("NAME:Contents",
"circleGeometry:=", <circle_geometry>) // object description
```

**<circle\_geometry> :**

```
Array("LayerName:=", <layer_name>, // name of the layer
"lw:=", <value>, // border line width
"x:=", <value>, // center x coordinate
"y:=", <value>, // center y coordinate
"r:=", <value>) // radius
```

**<layer\_id> :**

integer; never used in scripting

**<object\_name> :**

quoted string, uniquely identifying an object

**<value> :**

quoted\_string\_parseable\_as\_value (e.g. "0.111mm")

## CreateLine (Layout Editor)

*Use:* Creates a line primitive object.

*Syntax:* **CreateLine** <line\_description>

*Return Value:* Returns the name of the newly created object.

*Parameters:* **<line\_description>:**

```
Array("NAME:Contents",  
      "lineGeometry:=", <line_geometry>)
```

**<line\_geometry> :**

```
Array("LayerName:=", <layer_name>,  
      "lw:=", <value>, // line width  
      "endstyle:=", <end_style>,  
      "joinstyle:=", <join_style>,  
      <vertex_sequence> )
```



**<end\_style>** : integer

FlatEnd = 0

ExtendedEnd = 1

RoundEnd = 2

**<join\_style>** : integer

UnmiteredJoin = 0

MiteredJoin = 1

OptimallyMiteredJoin = 2

RadiallyMiteredJoin = 3

ChordMiteredJoin = 4

**<vertex\_sequence>**:

"n:=", integer, // the total count of the vertices

"x0:=", <value>, "y0:=", <value>,

"x1:=", <value>, "y1:=", <value>,

*etc. up to vertex count*)

### AddObject ("Partition Line") (IC Editor)

Create an additional partition line for a mesh region (i.e., CreateMeshRegion).

| UI Access         | From the <b>Layout Editor</b> , select a mesh region. Then right-click and select <b>Mesh Region &gt; Add a partition line</b> . |        |                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                                                             | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                          |
|                   | <ObjectType>                                                                                                                     | String | Type of object to add (i.e., must have the value "mesh region partition line").                                                                                                                                                                                                                                                                                                                      |
|                   | <Contents>                                                                                                                       | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:Contents&gt;</li> <li>• &lt;owner&gt;</li> <li>• &lt;mesh region partition lineGeometry&gt;</li> <li>• &lt;snap start&gt;</li> <li>• &lt;snap end&gt;</li> </ul>                                                                                                                            |
|                   | <NAME:Contents>                                                                                                                  | String | Identifies the contents of the array (i.e., "Contents").                                                                                                                                                                                                                                                                                                                                             |
|                   | <owner>                                                                                                                          | String | Name of the mesh region in which to create the new partition line.                                                                                                                                                                                                                                                                                                                                   |
|                   | <mesh region partition lineGeometry>                                                                                             | Array  | Name of the array containing the geometry of the new partition line, containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;Name&gt;</li> <li>• &lt;LayerName&gt;</li> <li>• &lt;lw&gt;</li> <li>• &lt;endstyle&gt;</li> <li>• &lt;StartCap&gt;</li> <li>• &lt;EndCap&gt;</li> <li>• &lt;n&gt;</li> <li>• &lt;U&gt;</li> <li>• &lt;x&gt;</li> <li>• &lt;y&gt;</li> </ul> |

|                     |                                             |         |                                                                                                                                                                                                                      |
|---------------------|---------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                             |         | <ul style="list-style-type: none"> <li>• &lt;MR&gt;</li> </ul>                                                                                                                                                       |
|                     | <Name>                                      | String  | Name of the new partition line.                                                                                                                                                                                      |
|                     | <LayerName>                                 | Integer | Name of the layer on which to create the new partition line (i.e., "MeshRegions").                                                                                                                                   |
|                     | <lw>                                        | Integer | Line width of the new partition line, including unit of measurement (i.e., "0.01mm").                                                                                                                                |
|                     | <endstyle>                                  | Integer | Of the new partition line, all vertices (i.e., points) will be:<br><b>0</b> — round.<br><b>1</b> — corner (i.e., square).<br><b>2</b> — mitered (i.e., extended to a point where it meets a corner).                 |
|                     | <StartCap>                                  | Integer | Of the new partition line, the starting point of the line will be:<br><b>0</b> — round.<br><b>1</b> — flat.<br><b>2</b> — extended (i.e., extended from the starting point beyond the actual beginning of its path). |
|                     | <Endcap>                                    | Integer | Of the new partition line, the ending point of the line will be:<br><b>0</b> — round.<br><b>1</b> — flat.<br><b>2</b> — extended (i.e., extended beyond the actual end point).<br><b>3</b> — Same as Start.          |
|                     | <n>                                         | Integer | The number of vertices in the new partition line.                                                                                                                                                                    |
|                     | <U>                                         | String  | The unit of measurement by which the new partition will be created.                                                                                                                                                  |
|                     | <x>                                         | Integer | X coordinate of a point in the new partition line.                                                                                                                                                                   |
|                     | <y>                                         | Integer | Y coordinate of a point in the new partition line.                                                                                                                                                                   |
|                     | <MR>                                        | String  | A number and unit of measurement representing the miter ratio (i.e., of the new partition line, assuming multiple segments, the size of the point where two segments meet).                                          |
|                     | <snap start>                                | Boolean | <b>True</b> start of the new partition line will snap to a border of the mesh region.                                                                                                                                |
|                     | <snap end>                                  | Boolean | <b>True</b> end of the new partition line will snap to a border of the mesh region.                                                                                                                                  |
| <b>Return Value</b> | Returns the name of the new partition line. |         |                                                                                                                                                                                                                      |

| Python Syntax  | AddObject(<ObjectType>, [<Contents>])                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.AddObject("mesh region partition line", [     "NAME:Contents",     "owner:=" , "meshregion__11",     "mesh region partition lineGeometry:=",     [ "Name:=" , "line__18",       "LayerName:=" , "MeshRegions",       "lw:=" , "0.01mm",       "endstyle:=" , 0,       "StartCap:=" , 0,       "EndCap:=" , 0,       "n:=" , 3,       "U:=" , "mm",       "x:=" , 19,       "y:=" , 9,       "x:=" , 15,       "y:=" , 4,       "x:=" , 20,       "y:=" , 1,</pre> |

|  |                                                                                         |
|--|-----------------------------------------------------------------------------------------|
|  | <pre>"MR:=" , "600mm"],<br/>"snap start:=" , True,<br/>"snap end:=" , True<br/>])</pre> |
|--|-----------------------------------------------------------------------------------------|

## CreatePolygon (Layout Editor)

*Use:* Creates a polygon primitive object.

*Syntax:* **CreatePolygon**<polygon\_description>

*Return Value:* Returns the name of the newly created object.

*Parameters:* <polygon\_description>:

```
Array("NAME:Contents",  
      "lineGeometry:=", <polygon_geometry>)
```

**<polygon\_geometry> :**

```
Array("LayerName:=", <layer_name>, // layer  
      "lw:=", <value>, // border line width  
      <vertex_sequence> ) // polygon boundary
```

## CreateRectangle (Layout Editor)

*Use:* Creates a rectangle primitive object and adds it to the current layout.

**Syntax:** **CreateRectangle**<rectangle\_description>

**Return Value:** Returns the name of the newly created object.

**Syntax:** <rectangle\_description>:

```
Array("NAME:Contents",  
      "rectGeometry:=", <rectangle_geometry>)  
  
    <rectangle_geometry> :  
  
    Array("LayerName:=", <layer_name>, // placement layer  
          "lw:=", <value>, // line width  
          "x:=", <value>, // center X coordinate  
          "y:=", <value>, // center Y coordinate  
          "w:=", <value>, // width (X-direction size)  
          "h:=", <value>, // height (Y-direction size)  
          "ang:=", <value>)) // rotation
```

## CreateText (Layout Editor)

**Use:** Creates a text primitive object and adds it to the current layout.

**Syntax:** **CreateText** <text\_description>

**Return Value:** Returns the name of the newly created object.

**Parameters:** <text\_description>:

```
Array("NAME:Contents",  
      "textGeometry:=", <text_geometry>)
```

### **<text\_geometry> :**

```
Array("LayerName:=", <layer_name>,  
"x:=", <value>, // origin X  
"y:=", <value>, // origin Y  
"ang:=", <value>, // rotation  
"isPlot:=", <bool>, // is it plotted or not  
"font:=", <font_name>,  
"size:=", <value>,  
"weight:=", <text_weight>,  
"just:=", <text_justification>,  
"mirror:=", <bool>,  
"text:=", <quoted_string>) // text itself
```

**<bool>** : *true | false*

**<font\_name>** : quoted string, a font name

**<text\_weight>** : integer

```
Thin = 0,  
ExtraLight = 1
```

```
Light = 2  
Normal = 3  
Medium = 4  
SemiBold = 5  
Bold = 6  
ExtraBold = 7  
Heavy = 8
```

**<text\_justification>** : integer

```
LeftTop = 0  
LeftBase = 1  
LeftBottom = 2  
CenterTop = 3  
CenterBase = 4  
CenterBottom = 5  
RightTop = 6  
RightBase = 7  
RightBottom = 8
```

## Create Voids in Primitives

The following primitives are available.

[CreateCircleVoid](#)



[CreateLineVoid](#)

[CreatePolygonVoid](#)

[CreateRectangleVoid](#)

[GetPolygonVoids](#)

### CreateCircleVoid (Layout Editor)

*Use:* Creates a circle void and adds it to a particular parent primitive.

*Syntax:* **CreateCircleVoid**<circle\_void\_description>

*Return Value:* Returns the name of the newly created object

*Parameters:* <circle\_void\_description>:

```
Array("NAME:Contents",  
"owner:=", <object_name>, // parent primitive name  
"circle voidGeometry:=", <circle_geometry>) // definition
```

### CreateLineVoid (Layout Editor)

*Use:* Creates a line void and adds it to a specified as parameter parent primitive.

*Syntax:* **CreateLineVoid**<line\_void\_description>

*Return Value:* Returns the name of the newly created object.

*Parameters:* <line\_void\_description>:

```
Array("NAME:Contents",  
"owner:=", <object_name>, // parent primitive name
```

```
"line voidGeometry:=", <line_geometry>) // definition
```

### CreatePolygonVoid (Layout Editor)

*Use:* Creates a polygon void and adds it to a specified as parameter parent primitive.

*Syntax:* **CreatePolygonVoid** <polygon\_void\_description>

*Return Value:* Returns the name of the newly created object.

*Parameters:* <polygon\_void\_description>:

```
Array("NAME:Contents",  
      "owner:=", <object_name>, // owner name  
      "poly voidGeometry:=", <polygon_geometry>) // definition
```

### CreateRectangleVoid (Layout Editor)

*Use:* Creates a rectangle void and adds it to a specified as parameter parent primitive.

*Syntax:* **CreateRectangleVoid**<rectangle\_void\_description>

*Return Value:* Returns the name of the newly created object.

*Syntax:* <rectangle\_void\_description>:

```
Array("NAME:Contents",  
      "owner:=", <object_name>, // owner_name  
      "rect voidGeometry:=", <rectangle_geometry>)
```

### GetPolygonVoids (Layout Editor)

Returns the names of the voids inside the selected polygon.

|           |      |
|-----------|------|
| UI Access | N/A. |
|-----------|------|

|              |                                                                                                                    |        |                                                |
|--------------|--------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------|
| Parameters   | Name                                                                                                               | Type   | Description                                    |
|              | <PolyName>                                                                                                         | String | target name of a polygon in the active design. |
| Return Value | Array of the names of the polygon voids inside the target polygon, separated by commas, or None if no voids exist. |        |                                                |

|                |                                                                                                      |
|----------------|------------------------------------------------------------------------------------------------------|
| Python Syntax  | GetPolygonVoids (<PolyName>)                                                                         |
| Python Example | <pre>oEditor.GetPolygonVoids('rect_0')<br/>['circle void_1', 'circle void_2', 'circle_void 3']</pre> |

## Other Creation Methods

The following creation methods are available.

[AddPinGroupRefPort](#)

[CreateComponent](#)

[CreateCurrentSourcePort](#)

[CreateHole](#)

[CreateMeasure](#)

[CreatePin](#)

[CreatePinGroup](#)

[CreatePinGroupPort](#)

[CreatePinGroups](#)

[CreateTrace](#)[CreateVia](#)[CreateViaGroups](#)[CreateVoltageProbePort](#)[CreateVoltageSourcePort](#)[DeletePinGroup](#)

## AddPinGroupRefPort (Layout Editor)

Assigns a reference port to a pin group.

**Note:**

AddPinGroupRefPort is also called when the command [CreatePinGroupPort \(Layout Editor\)](#) is used.

| UI Access    | From <b>Layout</b> , select <b>Draw Ports/Sources</b> . |       |                                                                                               |
|--------------|---------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------|
| Parameters   | Name                                                    | Type  | Description                                                                                   |
|              | <PinGroup>                                              | Array | Array consisting of the name of a pingroup that requires a reference port (e.g., PinGroup_2). |
|              | <PortRef>                                               | Array | Array consisting of the name of a pingroup that acts as reference port (e.g., PinGroup_1).    |
| Return Value | None                                                    |       |                                                                                               |

| Python Syntax  | AddPinGroupRefPort ([<PinGroup>], [<PortRef>])                          |
|----------------|-------------------------------------------------------------------------|
| Python Example | <code>oEditor.AddPinGroupRefPort(["PinGroup_2"], ["PinGroup_1"])</code> |

## CreateComponent (Layout Editor)

*Use:* Places a component.

*Syntax:* **CreateComponent** <Array>

*Return Value:* Returns the name of the newly created component.

```
Parameters: Array("NAME:Contents",  
"definition_name:=", <component name>,  
"placement:=", Array("x:=", <x position>, "y:=", <y position>),  
"layer:=", <placement layer name>,  
"StackupLayers:=", Array("<footprint stackup layer>:<design stackup layer>", ...),  
"DrawLayers:=", Array("<footprint layer>:<design layer>", ...))
```

### Notes:

Each Layer mapping is specified as a single text string in quotes, "<footprint layer>:<design layer>". If the layer does not map to anything, use a "0" for the layer. For example, you can use "Measures:0", if the footprint "Measures" layer does not map to a design layer. Use "0:Dielectric", if the design "Dielectric" layer does not map to a footprint layer.

Note, also, that the "StackupLayers" and the "DrawLayers" arguments may be omitted, in which case, the mappings are determined automatically.

## CreateCurrentSourcePort (Layout Editor)

Create a current source port and enable placement on the **Layout Editor**.

| UI Access    | Draw > Port.    |         |                                                                                                           |
|--------------|-----------------|---------|-----------------------------------------------------------------------------------------------------------|
| Parameters   | Name            | Type    | Description                                                                                               |
|              | <NAME:Location> | String  | Required first parameter which designates the contents of the array (i.e., the Location of the new port). |
|              | <PosLayer>      | String  | Name of the stackup layer on which to place the positive end of the new port (e.g., Trace).               |
|              | <X0>            | Integer | X coordinate of the positive end of the new port.                                                         |
|              | <Y0>            | Integer | Y coordinate of the positive end of the new port.                                                         |
|              | <NegLayer>      | String  | Name of the stackup layer on which to place the negative end of the new port.                             |
|              | <X0>            | Integer | X coordinate of the negative end of the new port.                                                         |
|              | <Y0>            | Integer | Y coordinate of the negative end of the new port.                                                         |
| Return Value | None            |         |                                                                                                           |

| Python Syntax  | CreateCurrentSourcePort([<NAME:Location>, <PosLayer>, <X0>, <Y0>, <NegLayer>, <X1>, <Y1>])                                                                                       |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.CreateCurrentSourcePort (["NAME:Location", "PosLayer:=" , "Trace", "X0:=" , -0.011, "Y0:=" , 0.004, "NegLayer:=" , "Trace", "X1:=" , -0.011, "Y1:=" , 0.004])</pre> |

## CreateHole (Layout Editor)

*Use:* Places a Hole object.

*Syntax:* **CreateHole** <Array>

*Return Value:* Returns the name of the newly created Hole

*Parameters:* Array("NAME:Contents",

```
Array("NAME:full_definition",  
      "type:=", "hole",  
      Array("NAME:Properties",  
            "VariableProp:=",  
            Array("radius", "D", "", <value>), // radius  
            "VariableProp:=",  
            Array("sides", "D", "", integer)), //side count  
            "from_layer:=", <layer_name>,  
            "to_layer:=", <layer_name>),  
            "placement:=", <vpoint>, // placement position  
            "layer:=", <layer_name>) // placement layer
```

### **<vpoint> :**

```
Array("x:=", <value>, // X coordinate  
      "y:=", <value>) // Y coordinate
```

## **CreateMeasure (Layout Editor)**

*Use:* Creates a measurement.

*Syntax:* CreateMeasure

*Use:* Returns the name of the created object.

*Parameters:* Array("NAME:Contents",

```
"MeasurementGeometry:=",  
Array("LayerName:=", <layer_name>, // layer  
"lw:=", <value>, // line width  
"sx:=", <value>, // start X coordinate  
"sy:=", <value>, // start Y coordinate  
"ex:=", <value>, // end X coordinate  
"ey:=", <value>, // end Y coordinate  
<text_style>)
```

**<text\_style> :**

```
"name:=", <quoted string>, // its name  
"isPlot:=", <bool>,  
"font:=", <font_name>,  
"size:=", double, // size in current units  
"angle:=", <value>,  
"weight:=", <text_weight>,  
"just:=", <text_justification>,  
"mirror:=", <bool>,  
"scales:=", <bool>))
```

## **CreatePin (Layout Editor)**

*Use:* Creates a pin.



**Syntax:** **CreatePin** <pin\_description>

**Return Value:** Returns the name of the newly created pin.

**Parameters:** <pin\_description>:  
    Array("NAME:Contents",  
    Array("NAME:Port", "Name:=", <object\_name>), // not used  
    "Rotation:=", Array(<value>), // rotation  
    "Offset:=", <vpoint>, // position  
    "Padstack:=", <quoted\_string>) // padstack name

**CreatePinGroup (Layout Editor)**

**Use:** Create a pin group from a selection of pins.

**Syntax:** **CreatePinGroup**(STRING *pin-group-name*, ["NAME:elements", STRING *pin*, STRING *pin*, ...])

**CreatePinGroupPort (Layout Editor)**

**Use:** Create a pin group port from two pin-groups; first is positive, second is negative.

**Syntax:** **CreatePinGroupPort**(["Name:elements", STRING *pos-pin-group*, STRING *neg-pin-group*])

**CreatePinGroups (Layout Editor)**

Creates pin groups from a selection of pins.

| UI Access  | After selecting two or more pins, right-click within the <b>Layout Editor</b> and select <b>Port &gt; Create Pin Group</b> . |       |                                                                                                                                     |
|------------|------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                                                         | Type  | Description                                                                                                                         |
|            | <Parameters>                                                                                                                 | Array | Structured array containing these parameters in order: <ul style="list-style-type: none"><li>• &lt;NAME:PinGroupDatas&gt;</li></ul> |

|                     |                      |        |                                                                                                                                                                                                      |
|---------------------|----------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                      |        | <ul style="list-style-type: none"> <li>• &lt;PinGroup&gt;</li> </ul>                                                                                                                                 |
|                     | <NAME:PinGroupDatas> | String | Required first parameter which must have the specified value (i.e., "PinGroupDatas").                                                                                                                |
|                     | <PinGroup>           | Array  | Structured array containing these parameters in order, followed by <PinGroup2>, <PinGroup3>, etcetera: <ul style="list-style-type: none"> <li>• &lt;NAME:&gt;</li> <li>• &lt;PinNames&gt;</li> </ul> |
|                     | <NAME:>              | String | Required first parameter which must have the name of the pin group (e.g., "PinGroup_3").                                                                                                             |
|                     | <PinNames>           | String | Names of the pins to group, separated by commas.                                                                                                                                                     |
| <b>Return Value</b> | None.                |        |                                                                                                                                                                                                      |

|                       |                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CreatePinGroups([<NAME:PinGroupDatas>, [<NAME:>, <PinNames>]])                                                             |
| <b>Python Example</b> | <pre>oEditor.CreatePinGroups ( [     "NAME:PinGroupDatas",     ["NAME:PinGroup_3",     "via_2",     "via_1"     ] ])</pre> |

## CreateTrace (Layout Editor)

*Use:* Create a trace with a manually specified path between pins, ports, or selected edges.

*Command:* **Draw > Route > Manual**

*Syntax:* CreateTrace

```
Array("NAME:options", "Layer1:=", <"layer">, "Layer2:=", <"layer">),  
Array("NAME:Lines", "Num:=", <n_lines>, "l0:=",  
Array("Name:=", <"line">, "LayerName:=", <"layer">, "lw:=", <"width">,  
"endstyle:=", <endstyle>, "joinstyle:=", <joinstyle>, "n:=", <n_vertex>,  
"U:=", <"units">, "x:=", <value>, "y:=", <value>, ), ...),  
Array("NAME:Vias", "Num:=", <n_vias>,  
Array("NAME:v1", "name:=", <"via">, "ReferencedPadstack:=", <"padstack">,  
"vposition:=", Array("x:=", <"vertex">, "y:=", <"vertex">), "vrotation:=",  
Array(<"angle">), "overrides hole:=", <override>, "hole diameter:=",  
Array(<"diameter">), "highest_layer:=", <"layer">, "lowest_layer:=", <"layer">), ...),  
Array("NAME:elements", <"port">, ...),  
Array("NAME:EdgeRefs", "edge:=", Array(<edge description>), ...)
```

*Return Value:* None

*Parameters:* <"layer">

Type: text

Description: layer name

<n\_lines>

Type: integer

Description: number of line definitions following

<"line">

Type: text

Description: line name

<"width">

Type: text

Description: line width; value with units, e.g. "1mm"

<endstyle>

Type: integer

Description: end (cap) style value for the line.

<joinstyle>

Type: integer

Description: join style value.

<n\_vertex>

Type: integer

Description: number of vertices in the line

<value>

Type: double

Description: simple value, e.g. 10

<n\_vias>

Type: integer

Description: number of via definitions following

<"via">

Type: text

Description: via name

<"padstack">

Type: text

Description: padstack definition name.

<"angle">

Type: text

Description: via orientation; value with units, e.g. "180deg"

<override>

Type: boolean (true or false)

Description: if true, the diameter is used to override the via hole definition.

<"diameter">

Type: text

Description: via hole diameter override; a value with units, e.g. "1mm"

<"port">

Type: text

Description: a port or pin name.

<edge description>

for primitive edges

"et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>

<"prim">

Type: text

Description: primitive name

<edge#>

Type: integer

Description: edge number on the primitive

<edge description>

for via edges

```
"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,  
"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,  
"ey:=", <end Y location>, "h:=", <arc height>, "rad:=", <radians>
```

<"via">:

text that is the name of the via to use

<layer id>:

an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc

<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>:

double giving the height of the edge arc (0 for a straight edge)

<radians>:

double giving the arc size in radians (0 for a straight edge)

## CreateVia (Layout Editor)

*Use:* Creates a new via.

*Syntax:* **CreateVia** <via\_description>

*Return Value:* Returns the name of the created via

*Parameters:* <via\_description>:

```
Array("NAME:Contents",  
"name:=", <object_name>, // not used  
"vposition:=", <vpoint>, // position  
"rotation:=", double, // rotation in radians  
"overrides hole:=", <bool>, // overrides or not padstack hole  
"hole diameter:=", Array(<value>), // via diameter  
"ReferencedPadstack:=", <quoted_string>, // padstack name  
"highest_layer:=", <layer_name>,
```



```
"lowest_layer:=", <layer_name>)
```

CreateViaGroups (Layout Editor)

Creates via groups on the target layer.

|              |                                                                                                                       |         |                                                                                                                                                                                                                 |
|--------------|-----------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | After selecting two or more vias, navigate to <b>Draw &gt; Via Groups &gt; Create &gt; Persistent/Non-Persistent.</b> |         |                                                                                                                                                                                                                 |
| Parameters   | Name                                                                                                                  | Type    | Description                                                                                                                                                                                                     |
|              | <Parameters>                                                                                                          | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"><li>• &lt;NAME:vias&gt;</li><li>• &lt;TargetObjects&gt;</li><li>• &lt;GroupName&gt;</li><li>• &lt;Enable&gt;</li></ul> |
|              | <NAME:vias>                                                                                                           | String  | Required first parameter which must have the specified value (i.e., "vias").                                                                                                                                    |
|              | <TargetObjects>                                                                                                       | String  | Names of the target primitives to add to a via group, separated by commas.                                                                                                                                      |
|              | <GroupName>                                                                                                           | String  | Names of the new via group.                                                                                                                                                                                     |
|              | <Enable>                                                                                                              | Boolean | <b>True</b> creates persistent via group.<br><b>False</b> creates non-persistent via group.                                                                                                                     |
| Return Value | None.                                                                                                                 |         |                                                                                                                                                                                                                 |

|                |                                                                        |
|----------------|------------------------------------------------------------------------|
| Python Syntax  | CreateViaGroups([<NAME:vias>, <TargetObjects>, <GroupName>], <Enable>) |
| Python Example | oEditor.CreateViaGroups (                                              |

```
[
    "NAME:vias",
    "circle_8651",
    "rect_825",
    "ViaGroup_1"
], False)
```

## CreateVoltageProbePort (Layout Editor)

Create a voltage probe port and enable placement on the **Layout Editor**.

| UI Access    | Draw > Port.                                                                                                  |         |                                                                                                           |
|--------------|---------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                                                                          | Type    | Description                                                                                               |
|              | <NAME:Location>                                                                                               | String  | Required first parameter which designates the contents of the array (i.e., the Location of the new port). |
|              | <PosLayer>                                                                                                    | String  | Name of the stackup layer on which to place the positive end of the new port (e.g., Trace).               |
|              | <X0>                                                                                                          | Integer | X coordinate of the positive end of the new port.                                                         |
|              | <Y0>                                                                                                          | Integer | Y coordinate of the positive end of the new port.                                                         |
|              | <NegLayer>                                                                                                    | String  | Name of the stackup layer on which to place the negative end of the new port.                             |
|              | <X0>                                                                                                          | Integer | X coordinate of the negative end of the new port.                                                         |
|              | <Y0>                                                                                                          | Integer | Y coordinate of the negative end of the new port.                                                         |
| Return Value | String<br>PortID, the identifier that can be used for this port in script operations involving this schematic |         |                                                                                                           |

|                       |                                                                                                                                                                                |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CreateVoltageProbePort([<NAME:Location>, <PosLayer>, <X0>, <Y0>, <NegLayer>, <X1>, <Y1>])                                                                                      |
| <b>Python Example</b> | <pre>oEditor.CreateVoltageProbePort (["NAME:Location", "PosLayer:=" , "Trace", "X0:=" , -0.011, "Y0:=" , 0.004, "NegLayer:=" , "Trace", "X1:=" , -0.011, "Y1:=" , 0.004)</pre> |

## CreateVoltageSourcePort (Layout Editor)

Create a voltage source port and enable placement on the **Layout Editor**.

|                     |                        |         |                                                                                                           |
|---------------------|------------------------|---------|-----------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | <b>Draw &gt; Port.</b> |         |                                                                                                           |
| <b>Parameters</b>   | Name                   | Type    | Description                                                                                               |
|                     | <NAME:Location>        | String  | Required first parameter which designates the contents of the array (i.e., the Location of the new port). |
|                     | <PosLayer>             | String  | Name of the stackup layer on which to place the positive end of the new port (e.g., Trace).               |
|                     | <X0>                   | Integer | X coordinate of the positive end of the new port.                                                         |
|                     | <Y0>                   | Integer | Y coordinate of the positive end of the new port.                                                         |
|                     | <NegLayer>             | String  | Name of the stackup layer on which to place the negative end of the new port.                             |
|                     | <X0>                   | Integer | X coordinate of the negative end of the new port.                                                         |
|                     | <Y0>                   | Integer | Y coordinate of the negative end of the new port.                                                         |
| <b>Return Value</b> | None                   |         |                                                                                                           |

|                      |                                                                                            |
|----------------------|--------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | CreateVoltageSourcePort([<NAME:Location>, <PosLayer>, <X0>, <Y0>, <NegLayer>, <X1>, <Y1>]) |
|----------------------|--------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oEditor.CreateVoltageSourcePort (["NAME:Location", "PosLayer:=" , "Trace", "X0:=" , -0.011, "Y0:=" , 0.004, "NegLayer:=" , "Trace", "X1:=" , -0.011, "Y1:=" , 0.004)</pre> |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## DeletePinGroup (Layout Editor)

*Use:* Deletes a pin group.

*Syntax:* **DeletePinGroup**(STRING *pin-group-name*)

## Object Movement and Modification Methods

The documented object movement methods are available.

[Connect \(Layout Editor\)](#)

[Copy \(Layout Editor\)](#)

[Delete \(Layout Editor\)](#)

[Disconnect \(Layout Editor\)](#)

[Edit \(Layout Editor\)](#)

[Expand \(Layout Editor\)](#)

[ExpandWithPorts \(Layout Editor\)](#)

[FlipHorizontal \(Layout Editor\)](#)

[FlipVertical \(Layout Editor\)](#)

[Move \(Layout Editor\)](#)

[Paste \(Layout Editor\)](#)

### [Rotate \(Layout Editor\)](#)

#### **Connect (Layout Editor)**

*Use:* Causes connecting of the referenced object. After the command the objects will be in the same electrical net.

*Syntax:* **Connect** Array ("NAME: *elements*",

<object\_name>, // 1<sup>st</sup> object

<object\_name>, // 2<sup>nd</sup> object, if any

...) // etc

#### **Copy (Layout Editor)**

*Use:* Copies the referenced objects to the clipboard.

*Syntax:* **Copy** Array (<object\_name>, // 1<sup>st</sup> object

<object\_name>, // 2<sup>nd</sup> object

*Return Value:* Returns the name of the new net.

#### **Delete (Layout Editor)**

*Use:* Deletes one or more objects.

*Syntax:* **Delete** <object\_name\_list> // names of the objects to be deleted

<object\_name\_list>:

Array ("NAME: *elements*", <object\_name>, <object\_name>, ...)

## Disconnect (Layout Editor)

*Use:* Removes the specified object(s) from their current electrical net(s) (if any).

*Syntax:* **Disconnect** Array ("NAME: *elements*",

<object\_name>, // 1<sup>st</sup> object

<object\_name>, // 2<sup>nd</sup> object, if any

...) // etc

## Edit (Layout Editor)

*Use:* Causes modification of one or more existing object(s).

*Syntax:* **Edit** <Array("NAME:items".....)>,

*Parameters:* <Array("NAME:items"

<edit\_object\_info>, // one object info

<edit\_object\_info>, // another one

...) // etc

**<edit\_object\_info>:**

Array("NAME:item",

"name:=", <object\_name>, // name of the object

<object\_description>) // 'new' object state, type should be consistent with <object\_name>:

<object\_description>:

<circle\_description> |

<rectangle\_description> |

```

<line_description> |
<polyon_description> |
<text_description> |
<circle_void_description> |
<rectangle_void_description> |
<line_void_description> |
<polyon_void_description> |
<component_description> |
<pin_description> |
<via_description>

```

### Expand (Layout Editor)

Scales an existing circle, square, or polygon. To expand an object while preserving ports, use [ExpandWithPorts](#).

| UI Access  | Draw > Expand. |         |                                                                                                                    |
|------------|----------------|---------|--------------------------------------------------------------------------------------------------------------------|
| Parameters | Name           | Type    | Description                                                                                                        |
|            | <expansion>    | String  | Expansion amount, including unit. Value can be negative to shrink an object.                                       |
|            | <join>         | String  | Corner style. One of: <ul style="list-style-type: none"> <li>"ROUND"</li> <li>"MITER"</li> <li>"CORNER"</li> </ul> |
|            | <replace>      | Boolean | True to replace original object; False to create new object.                                                       |

|                     |                      |       |                                                                                                                  |
|---------------------|----------------------|-------|------------------------------------------------------------------------------------------------------------------|
|                     | <i>&lt;items&gt;</i> | Array | Structured array containing object to expand:<br><br>Array("NAME:elements",<br><br>"<Name of Object to Expand>") |
| <b>Return Value</b> | None.                |       |                                                                                                                  |

|                       |                                                                     |  |  |
|-----------------------|---------------------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | Expand (<expansion>, <join>, <replace>, <items>)                    |  |  |
| <b>Python Example</b> | oEditor.Expand("2mm", "ROUND", True, ["NAME:elements", "circle_0"]) |  |  |

## ExpandWithPorts (Layout Editor)

Scales an existing circle, square, or polygon and preserves ports. To expand an object without preserving ports, use [Expand](#).

|                   |                          |         |                                                                                                                    |
|-------------------|--------------------------|---------|--------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | <b>Draw &gt; Expand.</b> |         |                                                                                                                    |
| <b>Parameters</b> | Name                     | Type    | Description                                                                                                        |
|                   | <expansion>              | String  | Expansion amount, including unit. Value can be negative to shrink an object.                                       |
|                   | <join>                   | String  | Corner style. One of: <ul style="list-style-type: none"> <li>"ROUND"</li> <li>"MITER"</li> <li>"CORNER"</li> </ul> |
|                   | <replace>                | Boolean | True to replace original object; False to create new object.                                                       |
|                   | <items>                  | Array   | Structured array containing object to expand:<br><br>Array("NAME:elements",<br><br>"<Name of Object to Expand>")   |



|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExpandWithPorts (<expansion>, <join>, <replace>, <items>)                                 |
| <b>Python Example</b> | <code>oEditor.ExpandWithPorts("2mm", "ROUND", True, ["NAME:elements", "circle_0"])</code> |

### FlipHorizontal (Layout Editor)

*Use:* Causes horizontal flipping of one or more specified objects (mirroring about a vertical axis given its X coordinate).

*Syntax:* **FlipHorizontal** <object\_name\_list>, //objects to be flipped <position\_or\_center> // (X of flip\_axis / not used)

### FlipVertical (Layout Editor)

*Use:* Causes vertical flipping of one or more specified objects (mirroring about a horizontal axis given its Y coordinate).

*Syntax:* **FlipVertical** <object\_name\_list>, //objects to be flipped <position\_or\_center> // not used, flip axis

### Move (Layout Editor)

*Use:* Translate this Polygon by the vector specified in the provided Point. Return this Polygon.

*Syntax:* `oPolygon.Move(<oPoint>)`

*Return Value:* This Polygon object.

### Paste (Layout Editor)

*Use:* Pastes the objects currently in clipboard; the argument specifies the offset of the new (copy) object(s) from their initial position(s).

**Syntax:** **Paste** Array("NAME:offset",

"xy:=",

Array(double, double)) // X/Y offset

## Rotate (Layout Editor)

**Use:** Rotate this Polygon counter clockwise (CCW) about a center specified by the provided Point. Angle is in radians. Return this Polygon.

**Syntax:** oPolygon.Rotate(<AngRad>, <oPoint>)

**Return Value:** This Polygon object.

**Example:** oPolygon = oPolygon.Rotate(pi/2, oLayout.Point)

## Activation and Deactivation Methods

The following activation/deactivation methods are available.

[Activate](#)

[DeactivateOpen](#)

[DeactivateShort](#)

[Delete](#)

## DeactivateOpen (Layout Editor)

**Use:** Causes deactivation of one or more components to *open circuit* state.

**Syntax:** **ActivateOpen** Array ("NAME:components",

<object\_name>, // 1<sup>st</sup> component name

<object\_name>, // 2<sup>nd</sup> component, if any

...)// etc

### DeactivateShort (Layout Editor)

*Use:* Causes deactivation of one or more components to *short circuit* state.

*Syntax:* **ActivateShort** Array("NAME:components",

<object\_name>, // 1<sup>st</sup> component name

<object\_name>, // 2<sup>nd</sup> component, if any

...)// etc

### Delete (Layout Editor)

*Use:* Deletes one or more objects.

*Syntax:* **Delete** <object\_name\_list>// names of the objects to be deleted

<object\_name\_list>:

Array ("NAME:elements", <object\_name>, <object\_name>, ...)

## Layout and Geometry Interrogation Methods

From the Layout scripting object, the following methods are available for layout and geometry interrogation.

The topics for this section include:

[Layout Interrogation](#)

[Point Object](#)

[Polygon Object](#)

## Layout Interrogation (Layout Editor)

Methods employing Point and Polygon objects are specified in SI units (e.g. meters).

The following methods are available.

[CreateLineFromPolygon \(Layout Editor\)](#)

[CreateObjectFromPolygon \(Layout Editor\)](#)

[FindObjects \(Layout Editor\)](#)

[FilterObjectList \(Layout Editor\)](#)

[FindObjectsByPoint \(Layout Editor\)](#)

[FindObjectsByPolygon \(Layout Editor\)](#)

[GetBBox \(Layout Editor\)](#)

[GetCSObjects \(Layout Editor\)](#)

[GetPolygon \(Layout Editor\)](#)

[GetPolygonDef \(Layout Editor\)](#)

[Point \(Layout Editor\)](#)

[Polygon \(Layout Editor\)](#)

### CreateLineFromPolygon (Layout Editor)

*Use:* Create a line/trace object on the specified layer and net from the provided Polygon object. Net is optional.

*Syntax:* oLayout.CreateLineFromPolygon(<oPolygon>, <width>, <bendType>, <startCapType>, <endCapType>, <Layer>, <Net>)

*Parameters:* width - line width, in meters

bendType - {'corner', 'round'}

startCapType, endCapType - {'flat', 'extended', 'round'}

### CreateObjectFromPolygon (Layout Editor)

*Use:* Create a polygon on the specified layer and net from the provided Polygon object. Return the name of the new object. Net is optional.

*Syntax:* oLayout.CreateObjectFromPolygon(<oPolygon>, <Layer>, <Net>)

*Return Value:* Object name.

### FindObjects (Layout Editor)

Returns a list of object names using a key/value pair.

| UI Access  | N/A.  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------|-------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name  | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|            | <key> | String | <p>One of:</p> <ul style="list-style-type: none"> <li>• <b>"Name"</b> to search by object name.</li> <li>• <b>"Type"</b> to search by object type.</li> </ul> <p>Valid &lt;value&gt; strings for this type include: 'pin', 'via', 'rect', 'arc', 'line', 'poly', 'plg', 'circle void', 'line void', 'rect void', 'poly void', 'plg void', 'text', 'cell', 'Measurement', 'Port', 'Port Instance', 'Port Instance Port', 'Edge Port', 'component', 'CS', 'S3D', 'ViaGroup'</p> <ul style="list-style-type: none"> <li>• <b>"Layer"</b> to search by layer.</li> </ul> <p>An asterisk (*) in the &lt;value&gt; string matches all layers. Vias and pins match using their defined layer range. 'Multi' matches (non via/pin) multi-layer objects.</p> <ul style="list-style-type: none"> <li>• <b>"Net"</b> to search by net assignment.</li> </ul> |

|                     |                            |        |                                                                                                                                     |
|---------------------|----------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------|
|                     | <code>&lt;value&gt;</code> | String | Specific query. Queries use a basic string match. For instance, an asterisk (*) matches anything. All matching is case insensitive. |
| <b>Return Value</b> | List of object names.      |        |                                                                                                                                     |

|                       |                                                       |  |  |
|-----------------------|-------------------------------------------------------|--|--|
| <b>Python Syntax</b>  | <code>FindObjects (&lt;key&gt;, &lt;value&gt;)</code> |  |  |
| <b>Python Example</b> | <code>oLayout.FindObjects('Type', 'Via')</code>       |  |  |

### FilterObjectList (Layout Editor)

Filters a list of object names using a key/value pair. See: [FindObjects](#).

|                   |                          |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------|--------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | N/A.                     |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Parameters</b> | <b>Name</b>              | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                   | <code>&lt;key&gt;</code> | String      | <p>One of:</p> <ul style="list-style-type: none"> <li>• <b>"Name"</b> to search by object name.</li> <li>• <b>"Type"</b> to search by object type.</li> </ul> <p>Valid &lt;value&gt; strings for this type include: 'pin', 'via', 'rect', 'arc', 'line', 'poly', 'plg', 'circle void', 'line void', 'rect void', 'poly void', 'plg void', 'text', 'cell', 'Measurement', 'Port', 'Port Instance', 'Port Instance Port', 'Edge Port', 'component', 'CS', 'S3D', 'ViaGroup'</p> <ul style="list-style-type: none"> <li>• <b>"Layer"</b> to search by layer.</li> </ul> <p>An asterisk (*) in the &lt;value&gt; string matches all layers. Vias and pins match using their defined layer range. 'Multi' matches (non via/pin) multi-layer objects.</p> |

|                     |                                |        |                                                                                                                                     |
|---------------------|--------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                |        | <ul style="list-style-type: none"> <li>• <b>"Net"</b> to search by net assignment.</li> </ul>                                       |
|                     | <value>                        | String | Specific query. Queries use a basic string match. For instance, an asterisk (*) matches anything. All matching is case insensitive. |
| <b>Return Value</b> | Filtered list of object names. |        |                                                                                                                                     |

|                       |                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | FilterObjectList (<key>, <value>)                                                       |
| <b>Python Example</b> | RFIN_pins = oLayout.FilterObjectList('Type', 'Pin', oLayout.FindObjects('Net', 'RFIN')) |

### FindObjectsByPoint (Layout Editor)

*Use:* Get a list of all objects intersected by the specified Point object on a given layer.

*Syntax:* oLayout.FindObjectsByPoint(<oPoint>, <Layer>)

*Return Value:* Object list.

### FindObjectsByPolygon (Layout Editor)

*Use:* Get a list of all objects intersecting the specified Polygon object on the given layer.

*Syntax:* oLayout.FindObjectsByPolygon(<oPolygon>, <Layer>)

*Return Value:* Object list.

### GetBBox (Layout Editor)

*Use:* Get a [Polygon Object](#) defining the bounding box for the specified object name, or None if the object does not exist.

*Syntax:* oLayout.GetBBox(<Name>)

*Return Value:* Polygon object.

### **GetCSObjects (Layout Editor)**

*Use:* Given a coordinate system name, returns a list of the objects inside. Coordinate system names can be found using FindObjects ('Type', 'CS'). See [Find Objects](#).

*Syntax:* oLayout.GetCSObjects(<CS\_name>)

*Return Value:* List of objects in the coordinate system.

### **GetPolygon (Layout Editor)**

*Use:* Get a [Polygon Object](#) for the specified object name, or None if the object does not exist. Returned polygon is as rendered, in SI units

*Syntax:* oLayout.GetPolygon(<Name>)

*Return Value:* Polygon object.

### **GetPolygonDef (Layout Editor)**

*Use:* Get a [Polygon Object](#) for the specified object name, or None if the object does not exist. Returned polygon is as rendered, in SI units. For trace types, this corresponds to the center line.

*Syntax:* oLayout.GetPolygonDef(<Name>)

*Return Value:* Polygon object.

### **Point (Layout Editor)**

*Use:* Create and return a [Point Object](#).

*Syntax:* oLayout.Point()

*Return Value:* Point object.

### **Polygon (Layout Editor)**

*Use:* Create and return a [Polygon Object](#).



*Syntax:* oLayout.Polygon()

*Return Value:* Polygon object.

## **Point Object (Layout Editor)**

The Point object provides a point container in a 2D Cartesian coordinate system. Point objects have no link to specific Layout primitives. All values and interfaces are specified in meters.

A Layout object is used to create a Point as:

```
oPoint = oLayout.Point()
```

The following methods are available.

[Set](#)

[SetX](#)

[GetX](#)

[SetY](#)

[GetY](#)

[SetArc](#)

[IsArc](#)

[IsEqual](#)

[Mag](#)

[Distance](#)

[Cross](#)

[Move](#)

[Rotate](#)

[Normalize](#)

[DistanceFromLine](#)

[ClosestPointOnLine](#)

### **Set (Layout Editor)**

*Use:* Set both the x and y -coordinates of the Point, in meters. Return *this* Point.

*Syntax:* oPoint.Set(<x>, <y>)

*Return Value:* This Point object.

*Example:* oPoint = oPoint.Set(1e-3, 1e-3)

### **SetX (Layout Editor)**

*Use:* Set the x-coordinate of the Point, in meters. Return *this* Point.

*Syntax:* oPoint.SetX(<x>)

*Return Value:* This Point object.

*Example:* oPoint = oPoint.SetX(1e-3)

### **GetX (Layout Editor)**

*Use:* Get the x-coordinate of the Point, in meters.

*Syntax:* oPoint.GetX()

*Return Value:* X-coordinate.

### **SetY (Layout Editor)**

*Use:* Set the y-coordinate of the Point, in meters. Return *this* Point.

*Syntax:* oPoint.SetY(<y>)

*Return Value:* This Point object.

*Example:* oPoint = oPoint.SetY(1e-3)

### **GetY (Layout Editor)**

*Use:* Get the y-coordinate of the Point, in meters.

*Syntax:* oPoint.GetY()

*Return Value:* Y-coordinate.

### **SetArc (Layout Editor)**

*Use:* Set whether the given point is an arc. For arc-points, the x-coordinate is used to specify signed height. Return *this* Point.

*Syntax:* oPoint.SetArc(<isArc>)

*Return Value:* This Point object.

*Example:* oPoint = oPoint.SetArc(True)

### **IsArc (Layout Editor)**

*Use:* Check whether this Polygon is defined by an arc-segment.

*Syntax:* oPolygon.IsArc()

**IsEqual (Layout Editor)**

*Use:* Test whether this point is equal to another. If tolerance is not specified, a default 1e-9 is used.

*Syntax:* oPoint.IsEqual(<oPoint>, [<Tolerance>])

**Mag (Layout Editor)**

*Use:* Get the magnitude of the given Point

*Syntax:* oPoint.Mag()

**Distance (Layout Editor)**

*Use:* Get the distance from this point to another.

*Syntax:* oPointThis.Distance(oPointOther)

**Cross (Layout Editor)**

*Use:* Get the cross product of this point with another. In 2D, this is simply the determinant of [x1 x2; y1 y2].

*Syntax:* oPointThis.Cross(oPointOther)

**Move (Layout Editor)**

*Use:* Translate this Polygon by the vector specified in the provided Point. Return this Polygon.

*Syntax:* oPolygon.Move(<oPoint>)

*Return Value:* This Polygon object.

**Rotate (Layout Editor)**

*Use:* Rotate this Polygon counter clockwise (CCW) about a center specified by the provided Point. Angle is in radians. Return this Polygon.

*Syntax:* oPolygon.Rotate(<AngRad>, <oPoint>)

*Return Value:* This Polygon object.

*Example:* `oPolygon = oPolygon.Rotate(pi/2, oLayout.Point)`

### **Normalize (Layout Editor)**

*Use:* Normalize this point. Return this point.

*Syntax:* `oPoint.Normalize()`

*Return Value:* This Point object.

### **DistanceFromLine (Layout Editor)**

*Use:* Get the distance from this point to a line defined by two additional points.

*Syntax:* `oPoint.DistanceFromLine(<oPoint>, <oPoint>)`

### **ClosestPointOnLine (Layout Editor)**

*Use:* Get the closest point to this on a line defined by the two input points.

*Syntax:* `oPoint.ClosestPointOnLine(<oPoint>, <oPoint>)`

*Return Value:* The closest point, as a Point Object.

## **Polygon Object (Layout Editor)**

The Polygon object provides a polygon container in a 2D Cartesian coordinate system. Objects have no link to specific Layout primitives. All values and interfaces are specified in meters.

A Layout object can be used to create an empty, and open, Polygon as:

```
oPolygon = oLayout.Polygon()
```

The following methods are available.

[AddPoint](#)

[SetClosed](#)

[IsClosed](#)

[Move](#)

[Rotate](#)

[Scale](#)

[MirrorX](#)

[GetPoints](#)

[AddHole](#)

[HasHoles](#)

[GetHoles](#)

[HasArcs](#)

[HasSelfIntersections](#)

[BBoxLL](#)

[BBoxUR](#)

[IsParametric](#)

[IsConvex](#)

[IsPoint](#)

[IsSegment](#)

[IsArc](#)

[IsBox](#)

[IsCircle](#)

[GetBoundingCircleCenter](#)

[GetBoundingCircleRadius](#)

[Area](#)

[PointInPolygon](#)

[CircleIntersectsPolygon](#)

[GetIntersectionType](#)

[GetClosestPoint](#)

[GetClosestPoints](#)

[Unite](#)

[Intersect](#)

[Subtract](#)

[Xor](#)

### **AddPoint (Layout Editor)**

*Command:* Add a point to the polygon. Return this Polygon.

*Syntax:* oPolygon.AddPoint(<oPoint>)

*Return Value:* This Polygon object.

### **SetClosed (Layout Editor)**

*Use:* Set whether a polygon is open or closed. Return this Polygon.

*Syntax:* oPolygon.SetClosed(isClosed)

*Return Value:* This Polygon object.

*Example:* oPolygon = oPolygon.SetClosed(True)

### **IsClosed (Layout Editor)**

*Use:* Get whether a polygon is open or closed.

*Syntax:* oPolygon.IsClosed()

### **Move (Layout Editor)**

*Use:* Translate this Polygon by the vector specified in the provided Point. Return this Polygon.

*Syntax:* oPolygon.Move(<oPoint>)

*Return Value:* This Polygon object.

### **Rotate (Layout Editor)**

*Use:* Rotate this Polygon counter clockwise (CCW) about a center specified by the provided Point. Angle is in radians. Return this Polygon.

*Syntax:* oPolygon.Rotate(<AngRad>, <oPoint>)

*Return Value:* This Polygon object.

*Example:* oPolygon = oPolygon.Rotate(pi/2, oLayout.Point)

### **Scale (Layout Editor)**

Scales the polygon by the specified factor.



|                     |                 |         |                                                        |
|---------------------|-----------------|---------|--------------------------------------------------------|
| <b>UI Access</b>    | N/A.            |         |                                                        |
| <b>Parameters</b>   | Name            | Type    | Description                                            |
|                     | <factor>        | Integer | Scaling factor.                                        |
|                     | <centerPoint>   | Object  | Any oPoint object. See: <a href="#">Point Object</a> . |
| <b>Return Value</b> | Polygon object. |         |                                                        |

|                       |                                |
|-----------------------|--------------------------------|
| <b>Python Syntax</b>  | Scale(<factor>, <centerPoint>) |
| <b>Python Example</b> | oPolygon.Scale(2, oPoint)      |

### MirrorX (Layout Editor)

*Use:* Mirror this Polygon about the line defined by the provided X-coordinate. Return this Polygon.

*Syntax:* oPolygon.MirrorX(x-coord)

*Return Value:* This Polygon object.

### GetPoints (Layout Editor)

*Use:* Get a list of Point objects defining this Polygon.

*Syntax:* oPolygon.GetPoints()

*Return Value:* List of Point objects.

### AddHole (Layout Editor)

*Use:* Add a hole to a Polygon. The hole is defined by the input Polygon object. Return this Polygon.

*Syntax:* oPolygon.AddHole(oPolygon)

*Return Value:* This Polygon object.

### **HasHoles (Layout Editor)**

*Use:* Get whether a Polygon has holes.

*Syntax:* oPolygon.HasHoles()

### **GetHoles (Layout Editor)**

*Use:* Get a list of holes owned by this Polygon.

*Syntax:* oPolygon.GetHoles()

*Return Value:* List of holes as Polygon objects.

### **HasArcs (Layout Editor)**

*Use:* Get whether this Polygon has any arc-segments.

*Syntax:* oPolygon.HasArcs()

### **HasSelfIntersections (Layout Editor)**

*Use:* Check whether this Polygon has any self-intersections. Default tolerance is 1e-9, or it may be explicitly provided.

*Syntax:* oPolygon.HasSelfIntersections(<tolerance>)

### **BBoxLL (Layout Editor)**

*Use:* Get the lower-left point for the bounding-box region of this Polygon.

*Syntax:* oPolygon.BBoxLL()

*Return Value:* A Point object defining the lower-left coordinate.

### **BBoxUR (Layout Editor)**

*Use:* Get the upper-right point for the bounding-box region of this Polygon.

*Syntax:* oPolygon.BBoxUR()

*Return Value:* A Point object defining the upper-right coordinate.

### **IsParametric (Layout Editor)**

*Use:* Check whether this Polygon is defined parametrically.

*Syntax:* oPolygon.IsParametric()

### **IsConvex (Layout Editor)**

*Use:* Check whether this Polygon is convex.

*Syntax:* oPolygon.IsConvex()

### **IsPoint (Layout Editor)**

*Use:* Check whether this Polygon is defined by a point.

*Syntax:* oPolygon.IsPoint()

### **IsSegment (Layout Editor)**

*Use:* Check whether this Polygon is defined by a segment.

*Syntax:* oPolygon.IsSegment

### **IsArc (Layout Editor)**

*Use:* Check whether this Polygon is defined by an arc-segment.

*Syntax:* oPolygon.IsArc()

**IsBox (Layout Editor)**

*Use:* Check whether this Polygon defines a box.

*Syntax:* oPolygon.IsBox()

**IsCircle (Layout Editor)**

*Use:* Check whether this Polygon defines a circle.

*Syntax:* oPolygon.IsCircle()

**GetBoundingCircleCenter (Layout Editor)**

*Use:* Get a Point defining the center of a bounding circle for this Polygon.

*Syntax:* oPolygon.GetBoundingCircleCenter()

*Return Value:* A Point object defining the bounding circle's center coordinate.

**GetBoundingCircleRadius (Layout Editor)**

*Use:* Get the radius of a bounding circle for this Polygon.

*Syntax:* oPolygon.GetBoundingCircleRadius()

*Return Value:* The bounding circle's radius.

**Area (Layout Editor)**

*Use:* Get the area of the Polygon, in square meters.

*Syntax:* oPolygon.Area()

**PointInPolygon (Layout Editor)**

*Use:* Test whether the provided Point is in this Polygon. Points on the Polygon's boundary are considered in the Polygon.

*Syntax:* oPolygon.PointInPolygon(<oPoint>)

### **CircleIntersectsPolygon (Layout Editor)**

*Use:* Test whether the circle defined by the input Point and radius hit this Polygon. Circles tangent to the Polygon's boundary are considered intersecting.

*Syntax:* oPolygon.CircleIntersectsPolygon(<oPointCenter>, <radius>)

### **GetIntersectionType (Layout Editor)**

*Use:* Get the intersection type of this Polygon with another. A tolerance can be optionally specified, or the default 1e-9 will be used.

*Syntax:* oPolygon.GetIntersectionType(<oPolygon>)

*Return Value:* Integer:

- 0 - No intersection
- 1 - This fully inside other
- 2 - Other fully inside this
- 3 - Common contour points
- 4 - Undefined intersection

typ2 = oPolygon.GetIntersectionType(oPolygonOther, 1e-6)

### **GetClosestPoint (Layout Editor)**

*Use:* Find the closest Point on this Polygon's boundary to the Point provided.

*Syntax:* oPolygon.GetClosestPoint(<oPoint>)

*Return Value:* A Point object defining the closest location on this Polygon's boundary.

**GetClosestPoints (Layout Editor)**

*Use:* Given another Polygon, find the closest Points on each. The closest Point on this Polygon is returned as the first Point in the list. The closest Point on the other Polygon is returned as the last (or second) Point in the list.

*Syntax:* oPolygon.GetClosestPoints(oPolygon)

*Return Value:* A list of Point objects.

**Unite (Layout Editor)**

*Use:* Causes Boolean uniting of 2 or more *primitive* (polygons, rectangles, lines, or circles) objects.

*Syntax:* **Unite** Array ("NAME: *primitives*",

<object\_name>, // 1<sup>st</sup> primitive name

<object\_name>, // 2<sup>nd</sup> primitive, if any

...) // etc

*Example:*

```
oEditor.Unite ["NAME:primitives", "circle_0", "rect_2"]
```

**Intersect (Layout Editor)**

*Use:* Causes Boolean intersecting of 2 or more *primitive* (polygons, rectangles, lines, or circles) objects.

*Syntax:* **Intersect** Array ("NAME: *primitives*",

<object\_name>, // 1<sup>st</sup> primitive name

<object\_name>, // 2<sup>nd</sup> primitive, if any

...) // etc

### Subtract (Layout Editor)

*Use:* Causes boolean subtracting of one or more *primitive* (polygons, rectangles, lines, or circles) object(s) from another one.

*Syntax:* **Subtract** Array ("NAME: *primitives*",

<object\_name>, // Primitive to subtract from

<object\_name>, // 1<sup>nd</sup> primitive to subtract, if any

...) // etc

*Example:*

```
oEditor.Intersect Subtract ("NAME:primitives", "circle_0", "rect_2")
```

### Xor (Layout Editor)

*Use:* Exclusive or (XOR) this Polygon with another and return as a list of Polygons.

*Syntax:* oPolygon.Xor(oPolygon)

*Return Value:* Xor as a list of Polygon objects.

*Example:*

```
resList = oPolygon.Xor(oPolygonOther)
```

## Boolean Operations on Primitives

The following boolean operations on primitives are available.

[ConvertPrimitives \(Layout Editor\)](#)

[ConvertPrimitivesToVias \(Layout Editor\)](#)

[Unite \(Layout Editor\)](#)

[Intersect \(Layout Editor\)](#)

[SplitRegion \(Layout Editor\)](#)

[Subtract \(Layout Editor\)](#)

[ToggleViaPin \(Symbol Editor\)](#)

## ConvertPrimitives (Layout Editor)

*Use:* Convert the selected primitives to 2.5D vias

*Syntax:* ConvertPrimitives(**ARRAY** primvia\_data) // primitive data

*Example:* oModule.ConvertPrimitives primvia\_data

## ConvertPrimitivesToVias (Layout Editor)

Converts primitives in the active design to vias.

| UI Access           | After selecting one or more primitives, navigate to <b>Draw &gt; Convert &gt; Primitives to Vias</b> . |        |                                                                                                                                                                      |
|---------------------|--------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | Name                                                                                                   | Type   | Description                                                                                                                                                          |
|                     | <Parameters>                                                                                           | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:elements&gt;</li> <li>• &lt;TargetPrimitives&gt;</li> </ul> |
|                     | <NAME:elements>                                                                                        | String | Required first parameter which must have the specified value (i.e., "elements").                                                                                     |
|                     | <TargetPrimitives>                                                                                     | String | Names of the target primitives to convert to vias, separated by commas.                                                                                              |
| <b>Return Value</b> | None.                                                                                                  |        |                                                                                                                                                                      |



| Python Syntax  | ConvertPrimitivesToVias([<NAME:elements>, <TargetPrimitives>])                                                            |
|----------------|---------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.ConvertPrimitivesToVias(<br/>    [<br/>        "NAME:elements",<br/>        "rect_395"<br/>    ]<br/>)</pre> |

## Unite (Layout Editor)

**Use:** Causes Boolean uniting of 2 or more *primitive* (polygons, rectangles, lines, or circles) objects.

**Syntax:** **Unite** Array ("NAME: *primitives*",

<object\_name>, // 1<sup>st</sup> primitive name

<object\_name>, // 2<sup>nd</sup> primitive, if any

...) // etc

*Example:*

```
oEditor.Unite ["NAME:primitives", "circle_0", "rect_2"]
```

## Intersect (Layout Editor)

**Use:** Causes Boolean intersecting of 2 or more *primitive* (polygons, rectangles, lines, or circles) objects.

**Syntax:** **Intersect** Array ("NAME: *primitives*",

<object\_name>, // 1<sup>st</sup> primitive name

```
<object_name>, // 2nd primitive, if any  
...)// etc
```

## SplitRegion (Layout Editor)

Split geometry against a polygon region.

|                     |                                                                                                                                      |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | After the polygon is created and the design and polygon are selected, right-click and select <b>Draw &gt; Split Polygon Region</b> . |
| <b>Parameters</b>   | None.                                                                                                                                |
| <b>Return Value</b> | "Name:Poly_#"                                                                                                                        |

|                       |                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SplitRegion                                                                                                    |
| <b>Python Example</b> | <pre>oEditor.SplitRegion(<br/>    [<br/>        "NAME:ExampleName",<br/>        "Poly_1"<br/>    ]<br/>)</pre> |

## Subtract (Layout Editor)

*Use:* Causes boolean subtracting of one or more *primitive* (polygons, rectangles, lines, or circles) object(s) from another one.

*Syntax:* **Subtract** Array ("NAME: *primitives*",

```
<object_name>, // Primitive to subtract from
```

<object\_name>, // 1<sup>nd</sup> primitive to subtract, if any

...) // etc

*Example:*

```
oEditor.Intersect Subtract ("NAME:primitives", "circle_0", "rect_2")
```

### **ToggleViaPin (Symbol Editor)**

Selected pins are changed to vias. Selected vias are changed to pins.

*Syntax:* ToggleViaPin <NAME:elements", <object\_name> ... // objects to be toggled

*Return Value:* None.

*Parameters:* <object\_name>

Type: <String>

*Example:* oEditor.ToggleViaPin ["NAME:elements", "via\_195"]

## **Coordinate System Methods**

The following scripts are available for use with the Designer Coordinate System.

[CreateCS \(Layout Editor\)](#)

[ClearRelative \(Layout Editor\)](#)

[Create3DStructure \(Layout Editor\)](#)

[GetCSObjects \(Layout Editor\)](#)

[Group \(Layout Editor\)](#)

[CreateGroupSelected \(Layout Editor\)](#)

[PositionRelative \(Layout Editor\)](#)

[SetCS \(Layout Editor\)](#)

[Ungroup \(Layout Editor\)](#)

## CreateCS (Layout Editor)

*Use:* Inserts a new coordinate system (CS) into the currently active Layout design.

*Command:* Draw > Coordinate System > Create.

*Syntax:* There are two forms available:

```
CreateCS  
Array("NAME:Contents",  
Array("NAME:full_definition", "type:=", "CS", "N:=", <"CS name">),  
"placement:=", Array("x:=", <"x_coord">, "y:=", <"y_coord">),  
"Clf:=", <color flag>, "Col:=", <color> )
```

```
CreateCS  
Array("NAME:Contents",  
"Name:=", <"CS name">),  
"RelPos:=", Array(edge description))
```

*Return Value:* Text containing the name of the created relative coordinate system.

*Parameters:* <"CS name">

Text with the requested name for the relative coordinate system

<x\_coord>

Text that is the X location for the relative coordinate system origin

<y\_coord>

Text that is the Y location for the relative coordinate system origin

// the following arguments are optional

<color flag>

True if a color is being specified by the next parameter

<color>

Integer specifying the color for the relative coordinate system.

Only used if color flag is true;

<edge description> for primitive edges

```
"t:=", "pe", "from:=", <"prim">, "pos:=", <edge position>, "et:=", "pe", "prim:=",  
<"prim">, "edge:=", <edge#>
```

<"prim">: text that is the primitive name

<edge position>

double between 0 and 1, inclusive

0 indicates the start of the edge

1 indicates the end of the edge

values in between are positions along the edge

<edge#>: integer that is the edge number on the primitive

<edge description> for via edges

```
"t:=", "pe", "from:=", <"via">, "pos:=", <edge position>, "et:=", "pse", "sel:=", <"via">, "lay-  
er:=", <layer id>, "sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X loc-  
ation>, "ey:=", <end Y location>,
```

```
"h:=", <arc height>, "rad:=", <radians>
```

<"via">:

text that is the name of the via to use

`<layer id>:`

an integer that is the id of the layer of the pad of the via to use `<start X location>`,

`<start Y Location>:`

doubles that are the X, Y location of the start point of the edge arc `<end X location>`, `<end Y Location>`:

doubles that are the X, Y location of the end point of the edge arc

`<arc height>:`

double giving the height of the edge arc (0 for a straight edge)

`<radians>:`

double giving the arc size in radians (0 for a straight edge)

### **ClearRelative (Layout Editor)**

*Use:* Clear the relative positioning between a coordinate system (CS) and another object.

*Command:* None.

*Syntax:* oEditor.ClearRelative Array("NAME:elements", <CS1>, <CS2>, ...)

*Return Value:* None.

### **Create3DStructure (Layout Editor)**

*Use:* Place a set of primitives into a 3D structure coordinate system (i.e. a 3D via or cross-layer plate).

*Command:* None.

*Syntax:* oEditor.Create3DStructure <3D structure name>, Array("NAME:elements", <element1>, <element2>, ...)

*Return Value:* None.

### **GetCSObjects (Layout Editor)**

*Use:* Given a coordinate system name, returns a list of the objects inside. Coordinate system names can be found using FindObjects ('Type', 'CS'). See [Find Objects](#).

*Syntax:* oLayout.GetCSObjects(<CS\_name>)

*Return Value:* List of objects in the coordinate system.

### **Group (Layout Editor)**

*Use:* Groups a set of primitives into a coordinate system.

*Command:* None.

*Syntax:* oEditor.Group <CS name>, Array("NAME:elements", <element1>, <element2>, ...)

*Return Value:* None.

### **CreateGroupSelected (Layout Editor)**

*Use:* Groups a set of primitives into a subdesign.

*Command:* Layout > Group into Subdesign

*Syntax:* oEditor.CreateGroupSelected Array("NAME:elements", <selectable name>, ...)

*Return Value:* None.

### **PositionRelative (Layout Editor)**

*Use:* Position a coordinate system (CS), including 3D structures and components, relative to another object.

*Command:* Draw > Position Relative

*Syntax:* There are two forms available:



PositionRelative

```
Array("NAME:Contents",  
"RelPos:=", Array(<edge description>)),  
Array("NAME:elements", <coordinate system name>, < coordinate system name >, ...)
```

```
PositionRelative Array("NAME:Contents",  
"RelPos:=", Array("t:=", "pr", "from:=", <edge port or pin name>)),  
Array("NAME:elements", <coordinate system name>, <coordinate system name>, ...)
```

*Return Value:* None.

*Parameters:*

```
Array("NAME:elements", "CS_23")
```

<edge description> for primitive edges

"t:=", "pe", "from:=", <"prim">, "pos:=", <edge position>, "et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>

<"prim">: text that is the primitive name

<edge position>

double between 0 and 1, inclusive

0 indicates the start of the edge

1 indicates the end of the edge

values in between are positions along the edge

<edge#>: integer that is the edge number on the primitive

<edge description> for via edges

"t:=", "pe", "from:=", <"via">, "pos:=", <edge position>, "et:=", "pse",

"sel:=", <"via">, "layer:=", <layer id>, "sx:=", <start X location>,

"sy:=", <start Y location>, "ex:=", <end X location>, "ey:=",

<end Y location>, "h:=", <arc height>, "rad:=", <radians>

<"via">: text that is the name of the via to use

<layer id>: an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc

<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>: double giving the height of the edge arc (0 for a straight edge)

<radians>: double giving the arc size in radians (0 for a straight edge)

< coordinate system name >

Text that contains the name of the coordinate system

<edge port or pin name>

Text that contains the name of the edge port or via

## **SetCS (Layout Editor)**

*Use:* Activate a coordinate system (CS).

*Command:* None.

*Syntax:* oEditor.SetCS <CS name or blank>

*Return Value:* None.

*Example:* oEditor.SetCS "CS\_7" // activate CS\_7

oEditor.SetCS "" // activate the 'global CS', i.e. no CS is active

## **Ungroup (Layout Editor)**

*Use:* Reverses a group operation; deletes a coordinate system but leaves the primitives.

*Command:* None.

*Syntax:* oEditor.Ungroup Array("NAME:elements", <CS1>, <CS2>, ...)

*Return Value:* None.

*Example:* oEditor.Ungroup ["NAME:elements", "CS\_7"]

## IC Editor Script Commands (IC Mode Only)

IC Editor scripting commands are accessible once **Electronics Desktop** has been placed in IC Editor mode (i.e., **IC** mode).

Enter the following commands to place **Electronics Desktop** in **IC** mode and access the *IC Editor* interface by executing the **SetActiveEditor** command.

```
oDesign = oProject.SetActiveDesign("Design_Example1")
```

```
oDesign.SetDesignMode("IC")
```

```
oEditor = oDesign.SetActiveEditor("ICEditor")
```

The call to each scripting method contains three elements:

- Layout editor
- Method name
- Method argument(s) (if any)

For example, in Visual Basic:

```
oEditor.Delete ("rect_1")
```

The behavior of the scripting methods is similar to the corresponding commands in the **Layout Editor**. This correspondence is evident when recording a script in Layout Editor (i.e., **Tools > Record Script**).

The following commands can only be executed from the **IC** mode environment.

[ApplyTechnology \(IC Editor\)](#)

[ChangeActiveLayout \(IC Editor\)](#)

[CompressPrimitives \(IC Editor\)](#)

[CreateViaGroupsOnLayer \(IC Editor\)](#)

[ReconstructArcs \(IC Editor\)](#)

[ReconstructArcsOnLayer \(IC Editor\)](#)

[RemoveSmall Holes \(IC Editor\)](#)

[RemoveSmallLines \(IC Editor\)](#)

[RemoveSmallMetalIslands \(IC Editor\)](#)

[ResetTechnology \(IC Editor\)](#)

[SnapPrimitives \(IC Editor\)](#)

[SnapPrimitivesOnLayer \(IC Editor\)](#)

[SnapVias \(IC Editor\)](#)

[SnapViasOnLayer \(IC Editor\)](#)

[UnitePrimitivesOnLayer \(IC Editor\)](#)

[WrapGeometries \(IC Editor\)](#)

[WrapGeometry \(IC Editor\)](#)

[WrapGeometry \(IC Editor\)](#)

## **Common to General Mode**

The following commands are common to **General** mode and **IC** mode environment. Unless otherwise noted, the commands function identically in either environment (e.g., **RemoveLayer** is divided into two sections for each mode since the command function is similar

but not identical).

[AddObject \(IC Editor and Layout Editor\)](#)

[AddPinGroupRefPort \(Layout Editor\)](#)

[AddPortsToNet \(Layout Editor\)](#)

[AddRefPort \(Layout Editor\)](#)

[AssignRefPort \(Layout Editor\)](#)

[ChangeLayer \(Layout Editor\)](#)

[ChangeLayers \(Layout Editor\)](#)

[ChangeOptions \(Layout Editor\)](#)

[ChangeProperty \(Schematic Editor and Layout Editor\)](#)

[ClearRefPort \(Layout Editor\)](#)

[ClipPlane \(Layout Editor\)](#)

[ConvertPrimitives \(Layout Editor\)](#)

[ConvertPrimitivesToVias \(Layout Editor\)](#)

[Copy \(Layout Editor\)](#)

[CreateCircle \(Layout Editor\)](#)

[CreateCircuitPort \(Layout Editor\)](#)

[CreateComponent \(Layout Editor\)](#)

[CreateDifferentialPair \(Layout Editor\)](#)

[CreateEdgePort \(Layout Editor\)](#)

[CreateLine \(Layout Editor\)](#)

[CreateLineFromPolygon \(Layout Editor\)](#)

[CreateNetClass \(Layout Editor\)](#)

[CreateObjectFromPolygon \(Layout Editor\)](#)

[CreatePinGroup \(Layout Editor\)](#)

[CreatePinGroupPort \(Layout Editor\)](#)

[CreatePinGroups \(Layout Editor\)](#)

[CreatePolygon \(Layout Editor\)](#)

[CreatePortsOnComponents \(Layout Editor\)](#)

[CreatePortsOnComponentsByNet \(Layout Editor\)](#)

[CreateRectangle \(Layout Editor\)](#)

[CreateViaGroups \(Layout Editor\)](#)

[CutOutSubDesign \(Layout Editor\)](#)

[Delete \(Layout Editor\)](#)

[DeleteNets \(Layout Editor\)](#)

[DeletePinGroup \(Layout Editor\)](#)

[DelNetClass \(Layout Editor\)](#)

[DissolveComponents \(Layout Editor\)](#)

[Duplicate \(Layout Editor\)](#)

[DuplicateAcrossLays \(Layout Editor\)](#)

[Edit \(Layout Editor\)](#)

[EditComponent \(Layout Editor\)](#)

[EditPinGroup \(Layout Editor\)](#)

[EnableComponents \(Layout Editor\)](#)

[ExportStackupXML \(Layout Editor\)](#)

[FilterObjectList \(Layout Editor\)](#)

[FindObjects \(Layout Editor\)](#)

[FindObjectsByPoint \(Layout Editor\)](#)

[FindObjectsByPolygon \(Layout Editor\)](#)

[GetActiveUnits \(Layout Editor\)](#)

[GetAllLayerNames \(Layout Editor\)](#)

[GetBBox \(Layout Editor\)](#)

[GetCSObjects \(Layout Editor\)](#)

[GetEditorName \(Layout Editor\)](#)

[GetLayerInfo \(Layout Editor\)](#)

[GetMaterialList \(Layout Editor\)](#)

[GetNetClasses \(Layout Editor\)](#)

[GetNetClassNets \(Layout Editor\)](#)

[GetNets \(Layout Editor\)](#)

[GetPolygon \(Layout Editor\)](#)

[GetPolygonDef \(Layout Editor\)](#)

[GetPolygonVoids \(Layout Editor\)](#)



[GetPortInfo \(Layout Editor\)](#)

[GetProperties \(Layout Editor\)](#)

[GetPropertyValue \(Layout Editor\)](#)

[GetSelections \(Layout Editor\)](#)

[GetStackupLayerNames \(Layout Editor\)](#)

[HighlightNet \(Layout Editor\)](#)

[ImportStackupXML \(Layout Editor\)](#)

[Intersect \(Layout Editor\)](#)

[ModifyDifferentialPair \(Layout Editor\)](#)

[ModifyNetClass \(Layout Editor\)](#)

[Move \(Layout Editor\)](#)

[Paste \(Layout Editor\)](#)

[Point \(Layout Editor\)](#)

[Polygon \(Layout Editor\)](#)

[RemoveLayer \(Layout Editor\)](#)

[RemovePort \(Symbol Editor\)](#)

[RemovePortsFromAllNets \(Layout Editor\)](#)

[RemovePortsOnComponents \(Layout Editor\)](#)

[ResetDifferentialPairs \(Layout Editor\)](#)

[Select \(Layout Editor\)](#)

[SelectAll \(Layout Editor\)](#)

[SelectNetConnected \(Layout Editor\)](#)

[SelectPhysicallyConnected \(Layout Editor\)](#)

[SetActiveUnits \(Layout Editor\)](#)

[SetCS \(Layout Editor\)](#)

[SetHfssExtentsVisible \(Layout Editor\)](#)

[SetHfssPortsVisible \(Layout Editor\)](#)

[SetNetColor \(Layout Editor\)](#)

[SetNetVisible \(Layout Editor\)](#)

[SetPropertyValue \(Layout Editor\)](#)

[Subtract \(Layout Editor\)](#)

[ToggleNetHighlight \(Layout Editor\)](#)

[ToggleViaPin \(Symbol Editor\)](#)

[Ungroup \(Layout Editor\)](#)

[Unite \(Layout Editor\)](#)

[UnselectAll \(Layout Editor\)](#)

## ApplyTechnology (IC Editor)

Applies the specified technology to the active design's stackup.

| UI Access  | From the <b>Layout</b> ribbon, select <b>Apply Technology</b> from the <b>Technology</b> drop-down menu. |      |             |
|------------|----------------------------------------------------------------------------------------------------------|------|-------------|
| Parameters | Name                                                                                                     | Type | Description |

|              |                                                                                                                                     |                                                             |  |           |        |                                                             |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|--|-----------|--------|-------------------------------------------------------------|
|              | <table><tr><td>&lt;DefName&gt;</td><td>String</td><td>Name of technology to apply to the active design's stackup.</td></tr></table> |                                                             |  | <DefName> | String | Name of technology to apply to the active design's stackup. |
| <DefName>    | String                                                                                                                              | Name of technology to apply to the active design's stackup. |  |           |        |                                                             |
| Return Value | None                                                                                                                                |                                                             |  |           |        |                                                             |

|                |                                                        |
|----------------|--------------------------------------------------------|
| Python Syntax  | ApplyTechnology(<DefName>)                             |
| Python Example | <code>oEditor.ApplyTechnology("Model.vlc.tech")</code> |

## ChangeActiveLayout (IC Editor)

Switches the active layout.

|              |                                                                                                                                     |         |                                                                                                                                                                                                                    |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | Navigate to the <b>Cells</b> window > <b>Hierarchical</b> tab. Then double-click the appropriate instance in the hierarchical tree. |         |                                                                                                                                                                                                                    |
| Parameters   | Name                                                                                                                                | Type    | Description                                                                                                                                                                                                        |
|              | <Parameters>                                                                                                                        | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"><li>• &lt;NAME:CellInstances&gt;</li><li>• &lt;SelectedLayout&gt;</li></ul>                                               |
|              | <NAME:CellInstances>                                                                                                                | String  | Required first parameter which must have the specified value (i.e., "CellInstances").                                                                                                                              |
|              | <SelectedLayout>                                                                                                                    | Integer | A comma-separated list of two integers, where the first integer always represents the top of the hierarchical tree (i.e., "0") and the second identifies the layer to make active (i.e., "1", "2", "3", etcetera). |
| Return Value | None                                                                                                                                |         |                                                                                                                                                                                                                    |

|                       |                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ChangeActiveLayout([&lt;NAME:CellInstances&gt;, &lt;SelectedLayout&gt;])</code>                        |
| <b>Python Example</b> | <pre>oEditor.ChangeActiveLayout (     [         "NAME:CellInstances",         "0",         "1"     ] )</pre> |

## ChangeActiveLayout (IC Editor)

Switches the active layout.

|                     |                                                                                                                                     |             |                                                                                                                                                                                                                    |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Navigate to the <b>Cells</b> window > <b>Hierarchical</b> tab. Then double-click the appropriate instance in the hierarchical tree. |             |                                                                                                                                                                                                                    |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                         | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                 |
|                     | <code>&lt;Parameters&gt;</code>                                                                                                     | Array       | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• <code>&lt;NAME:CellInstances&gt;</code></li> <li>• <code>&lt;SelectedLayout&gt;</code></li> </ul>                  |
|                     | <code>&lt;NAME:CellInstances&gt;</code>                                                                                             | String      | Required first parameter which must have the specified value (i.e., "CellInstances").                                                                                                                              |
|                     | <code>&lt;SelectedLayout&gt;</code>                                                                                                 | Integer     | A comma-separated list of two integers, where the first integer always represents the top of the hierarchical tree (i.e., "0") and the second identifies the layer to make active (i.e., "1", "2", "3", etcetera). |
| <b>Return Value</b> | None                                                                                                                                |             |                                                                                                                                                                                                                    |

|                       |                                                                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ChangeActiveLayout([<NAME:CellInstances>, <SelectedLayout>])                                                                         |
| <b>Python Example</b> | <pre>oEditor.ChangeActiveLayout (<br/>    [<br/>        "NAME:CellInstances",<br/>        "0",<br/>        "1"<br/>    ]<br/>)</pre> |

## Compress Primitives (IC Editor)

Compress geometrically identical primitives to improve system and simulation performance.

|                     |                                                                                                               |
|---------------------|---------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Project Manager</b> window, right-click the active design and select <b>Compress Primitives</b> . |
| <b>Parameters</b>   | None                                                                                                          |
| <b>Return Value</b> | None                                                                                                          |

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | CompressPrimitives()                    |
| <b>Python Example</b> | <pre>oEditor.CompressPrimitives()</pre> |

## CreateMeshRegion (IC Editor)

Designate a mesh region in a design and create partitions for simulation.

| UI Access  | From the <b>Layout Editor</b> , select a component. Then right-click and select <b>Mesh Region &gt; Create</b> . |         |                                                                                                                                                                                                                                                                                                                                                                                              |
|------------|------------------------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                                             | Type    | Description                                                                                                                                                                                                                                                                                                                                                                                  |
|            | <MeshRegionSettings>                                                                                             | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:MeshRegionSettings&gt;</li> <li>• &lt;NumPrimaryPartitions&gt;</li> <li>• &lt;NumSecondaryPartitions&gt;</li> <li>• &lt;XY&gt;</li> <li>• &lt;PosZ&gt;</li> <li>• &lt;NegZ&gt;</li> <li>• &lt;UseActiveNets&gt;</li> <li>• &lt;InclRef&gt;</li> <li>• &lt;ExtentType&gt;</li> </ul> |
|            | <NAME:MeshRegionSettings>                                                                                        | String  | Identifies the contents of the array (i.e., "MeshRegionSettings").                                                                                                                                                                                                                                                                                                                           |
|            | <NumPrimaryPartitions>                                                                                           | Integer | Number of primary partitions to create in the new mesh region.                                                                                                                                                                                                                                                                                                                               |
|            | <NumSecondaryPartitions>                                                                                         | Integer | Number of secondary partitions to create in the new mesh region.                                                                                                                                                                                                                                                                                                                             |
|            | <XY>                                                                                                             | Integer | Horizontal padding on both sides of the new mesh.                                                                                                                                                                                                                                                                                                                                            |
|            | <PosZ>                                                                                                           | Integer | Vertical padding above the new mesh region.                                                                                                                                                                                                                                                                                                                                                  |
|            | <NegZ>                                                                                                           | Integer | Vertical padding below the new mesh region.                                                                                                                                                                                                                                                                                                                                                  |
|            | <UseActiveNets>                                                                                                  | Boolean | <b>True</b> will create a new mesh region defined by the active nets in the design.<br><b>False</b> will create a new mesh region defined by the dielectric extents in the design.                                                                                                                                                                                                           |

|                     |              |         |                                                                                                                                                                                                                    |
|---------------------|--------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <InclRef>    | Boolean | <b>True</b> will include bot positive nets and reference nets in the definition of the new mesh region, if <UseActiveNets> is <b>True</b> .<br><b>False</b> will not include bot positive nets and reference nets. |
|                     | <ExtentType> | Integer | Define the new mesh region within a:<br><b>0</b> — bounding box.<br><b>1</b> — conformal coat.<br><b>2</b> — convex hull.                                                                                          |
| <b>Return Value</b> | None.        |         |                                                                                                                                                                                                                    |

|                       |                                                                                                                                                                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CreatMeshRegion([<NAME:MeshRegionSettings>, <NumPrimaryPartitions>, <NumSecondaryPartitions>, <XY>, <PosZ>, <NegZ>, <UseActiveNets>, <InclRef>, <ExtentType>])                                                                                                |
| <b>Python Example</b> | <pre>oEditor.CreateMeshRegion( [     "NAME:MeshRegionSettings",     "NumPrimaryPartitions:=", 6,     "NumSecondaryPartitions:=", 1,     "XY:=", "0.005",     "PosZ:=", "0.1",     "NegZ:=", "0.1",     "UseActiveNets:=", True,     "InclRef:=", False,</pre> |

|  |                                 |
|--|---------------------------------|
|  | <pre>"ExtentType:=", 0 ])</pre> |
|--|---------------------------------|

## CreateMeshRegionPartitionLine (IC Editor)

Create an additional partition line for a mesh region (i.e., CreateMeshRegion).

| UI Access         | From the <b>Layout Editor</b> , select a mesh region. Then right-click and select <b>Mesh Region &gt; Add a partition line</b> . |        |                                                                                                                                                                                                                                                                           |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                                                             | Type   | Description                                                                                                                                                                                                                                                               |
|                   | <Contents>                                                                                                                       | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:Contents&gt;</li> <li>• &lt;owner&gt;</li> <li>• &lt;mesh region partition lineGeometry&gt;</li> <li>• &lt;snap start&gt;</li> <li>• &lt;snap end&gt;</li> </ul> |
|                   | <NAME:Contents>                                                                                                                  | String | Identifies the contents of the array (i.e., "Contents").                                                                                                                                                                                                                  |
|                   | <owner>                                                                                                                          | String | Name of the mesh region in which to create the new partition line.                                                                                                                                                                                                        |
|                   | <mesh region partition lineGeometry>                                                                                             | Array  | Name of the array containing the geometry of the new partition line, containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;Name&gt;</li> <li>• &lt;LayerName&gt;</li> <li>• &lt;lw&gt;</li> <li>• &lt;endstyle&gt;</li> </ul>                |



|             |         |                                                                                                                                                                                                                      |
|-------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |         | <ul style="list-style-type: none"> <li>• &lt;StartCap&gt;</li> <li>• &lt;EndCap&gt;</li> <li>• &lt;n&gt;</li> <li>• &lt;U&gt;</li> <li>• &lt;x&gt;</li> <li>• &lt;y&gt;</li> <li>• &lt;MR&gt;</li> </ul>             |
| <Name>      | String  | Name of the new partition line.                                                                                                                                                                                      |
| <LayerName> | Integer | Name of the layer on which to create the new partition line (i.e., "MeshRegions").                                                                                                                                   |
| <lw>        | Integer | Line width of the new partition line, including unit of measurement (i.e., "0.01mm").                                                                                                                                |
| <endstyle>  | Integer | Of the new partition line, all vertices (i.e., points) will be:<br><b>0</b> — round.<br><b>1</b> — corner (i.e., square).<br><b>2</b> — mitered (i.e., extended to a point where it meets a corner).                 |
| <StartCap>  | Integer | Of the new partition line, the starting point of the line will be:<br><b>0</b> — round.<br><b>1</b> — flat.<br><b>2</b> — extended (i.e., extended from the starting point beyond the actual beginning of its path). |
| <Endcap>    | Integer | Of the new partition line, the ending point of the line will be:<br><b>0</b> — round.<br><b>1</b> — flat.<br><b>2</b> — extended (i.e., extended beyond the actual end point).<br><b>3</b> — Same as Start.          |
| <n>         | Integer | The number of vertices in the new partition line.                                                                                                                                                                    |

|                     |                                             |         |                                                                                                                                                                             |
|---------------------|---------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <U>                                         | String  | The unit of measurement by which the new partition will be created.                                                                                                         |
|                     | <x>                                         | Integer | X coordinate of a point in the new partition line.                                                                                                                          |
|                     | <y>                                         | Integer | Y coordinate of a point in the new partition line.                                                                                                                          |
|                     | <MR>                                        | String  | A number and unit of measurement representing the miter ratio (i.e., of the new partition line, assuming multiple segments, the size of the point where two segments meet). |
|                     | <snap start>                                | Boolean | <b>True</b> start of the new partition line will snap to a border of the mesh region.                                                                                       |
|                     | <snap end>                                  | Boolean | <b>True</b> end of the new partition line will snap to a border of the mesh region.                                                                                         |
| <b>Return Value</b> | Returns the name of the new partition line. |         |                                                                                                                                                                             |

|                       |                                                                                                                                                                                                                                                                           |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CreatMeshRegionPartitionLine([<NAME:Contents>, <owner>, <mesh region partition lineGeometry>, [<Name>, <LayerName>, <lw>, <endstyle>, <StartCap>, <EndCap>, <n>, <U>, <x>, <y>, <MR>], <snap start>, <snap end>])                                                         |
| <b>Python Example</b> | <pre>oEditor.CreateMeshRegionPartitionLine( [     "NAME:Contents",     "owner:=" , "meshregion__11",     "mesh region partition lineGeometry:=",     [ "Name:=" , "line__18",       "LayerName:=" , "MeshRegions",       "lw:=" , "0.01mm",       "endstyle:=" , 0,</pre> |

|  |                                                                                                                                                                                                             |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"StartCap:=" , 0, "EndCap:=" , 0, "n:=" , 3, "U:=" , "mm", "x:=" , 19, "y:=" , 9, "x:=" , 15, "y:=" , 4, "x:=" , 20, "y:=" , 1, "MR:=" , "600mm"], "snap start:=" , True, "snap end:=" , True ])</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CreateViaGroupsOnLayer (IC Editor)

Creates a via group on the target layer.

|            |                                                                                                                                     |        |                           |
|------------|-------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------|
| UI Access  | From the <b>Layers</b> window, right-click the target layer and select <b>Group Vias &gt; Persistent</b> or <b>Non-Persistent</b> . |        |                           |
| Parameters | Name                                                                                                                                | Type   | Description               |
|            | <NAME>                                                                                                                              | String | Name of the target layer. |

|              |                          |         |                                                                                                                                                                                                                                                                                                  |
|--------------|--------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <Parameters>             | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:Setting Contents&gt;</li> <li>• &lt;Group_By_Proximity&gt;</li> <li>• &lt;Via_Grouping_Tolerance&gt;</li> <li>• &lt;Check_Containment&gt;</li> <li>• &lt;Via_Persistence&gt;</li> </ul> |
|              | <NAME:Setting Contents>  | String  | Required first parameter which must have the specified value (i.e., "Setting Contents").                                                                                                                                                                                                         |
|              | <Group_By_Proximity>     | Boolean | <b>True</b> groups via by proximity.<br><b>False</b> groups by range.                                                                                                                                                                                                                            |
|              | <Via_Grouping_Tolerance> | Integer | When <Group_By_Proximity> = <b>False</b> , vias at or within this tolerance are grouped.                                                                                                                                                                                                         |
|              | <Check_Containment>      | Boolean | <b>True</b> analyzes the placement of via primitives. When the possibility of an electrical short is detected, <Check_Containment> attempts to prevent the short.<br><b>False</b> deactivates the check.                                                                                         |
|              | <Via_Persistence>        | Boolean | <b>True</b> maintains the new via group.<br><b>False</b> selects the group of vias but does not maintain a new via group.                                                                                                                                                                        |
| Return Value | None.                    |         |                                                                                                                                                                                                                                                                                                  |

|                |                                                                                                                                                   |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | CreateViaGroupsOnLayer(<NAME>, [<NAME:Setting Contents>, <Group_By_Proximity>, <Via_Grouping_Tolerance>, <Check_Containment>, <Via_Persistence>]) |
| Python Example | <pre>oEditor.CreateViaGroupsOnLayer(     ["Trace",      "NAME:Setting Contents",</pre>                                                            |

|  |                                                                                                                                                 |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "group_by_proximity:=", "True", "via_grouping_tolerance:=", "100um", "check_containment:=", "True", "via_persistence:=", "False" ] </pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------|

### ReconstructArcs (IC Editor)

Fits arcs and circles to the selected polygons.

| UI Access         | After choosing polygons, select <b>Reconstruct Arcs</b> from the <b>Layout</b> ribbon. |         |                                                                                                                                                                                               |
|-------------------|----------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                   | Type    | Description                                                                                                                                                                                   |
|                   | <Parameters>                                                                           | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:polygons&gt;</li> <li>• &lt;Objects&gt;</li> <li>• &lt;Arcs_Tolerance&gt;</li> </ul> |
|                   | <NAME:polygons>                                                                        | String  | Required first parameter which must have the specified value (i.e., "polygons").                                                                                                              |
|                   | <Objects>                                                                              | List    | A comma-separated list of integers, where each integer represents a selected polygon (i.e., "poly_30", "poly_31", "poly_32", etcetera)                                                        |
|                   | <Arcs_Tolerance>                                                                       | Integer | Arcs and circles at or within this tolerance are fitted.                                                                                                                                      |
| Return Value      | None.                                                                                  |         |                                                                                                                                                                                               |

|                       |                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ReconstructArcs([<NAME:polygons>, <Objects>], <Arcs_Tolerance>)                                            |
| <b>Python Example</b> | <pre>oEditor.ReconstructArcs( [     "NAME:polygons",     "poly_30", "poly_31", "poly_32" ], 0.00254)</pre> |

## ReconstructArcsOnLayer (IC Editor)

Fits arcs and circles to the selected polygons on a target layer.

|                     |                                                                                                                                       |         |                                                          |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------|
| <b>UI Access</b>    | After choosing polygons, navigate to the <b>Layers</b> window. Then right-click the target layer and select <b>Reconstruct Arcs</b> . |         |                                                          |
| <b>Parameters</b>   | Name                                                                                                                                  | Type    | Description                                              |
|                     | <NAME>                                                                                                                                | String  | Name of the target layer.                                |
|                     | <Arcs_Tolerance>                                                                                                                      | Integer | Arcs and circles at or within this tolerance are fitted. |
| <b>Return Value</b> | None.                                                                                                                                 |         |                                                          |

|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| <b>Python Syntax</b>  | ReconstructArcsOnLayer(<NAME>, <Arcs_Tolerance>)                     |
| <b>Python Example</b> | <pre>oEditor.ReconstructArcsOnLayer(     "Trace",     0.00254)</pre> |

## RemoveSmallHoles (IC Editor)

Removes small holes at or within tolerance from the target layer.

|                     |                                                           |         |                                                                                                                                                             |
|---------------------|-----------------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | Select <b>Remove Holes</b> from the <b>Layout</b> ribbon. |         |                                                                                                                                                             |
| <b>Parameters</b>   | Name                                                      | Type    | Description                                                                                                                                                 |
|                     | <Max_Area_Tolerance>                                      | Integer | Holes at or within this tolerance are removed.                                                                                                              |
|                     | <Exclusion_Tolerance>                                     | Integer | Distance around nets to exclude from removal.                                                                                                               |
|                     | <Parameters>                                              | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"><li>• &lt;NAME:Nets&gt;</li><li>• &lt;SelectedLayout&gt;</li></ul> |
|                     | <NAME:Nets>                                               | String  | Required first parameter which must have the specified value (i.e., "Nets").                                                                                |
|                     | <NetName>                                                 | String  | Name of the target net.                                                                                                                                     |
| <b>Return Value</b> | None                                                      |         |                                                                                                                                                             |

|                       |                                                                                                                                  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddObject(<ObjectType>, <LayerName>)                                                                                             |
| <b>Python Example</b> | <pre>oEditor.RemoveSmallHoles("1000um2", "1um",<br/><br/>    [<br/>        "NAME:Nets",<br/>        "net1"<br/>    ]<br/>)</pre> |

## RemoveSmallLines (IC Editor)

Removes small lines at or within tolerance from the target layer.

|                     |                                                                                                    |         |                                                |
|---------------------|----------------------------------------------------------------------------------------------------|---------|------------------------------------------------|
| <b>UI Access</b>    | From the <b>Layers</b> window, right-click the target layer and select <b>Remove Small Lines</b> . |         |                                                |
| <b>Parameters</b>   | Name                                                                                               | Type    | Description                                    |
|                     | <NAME>                                                                                             | String  | Name of the target layer.                      |
|                     | <Max_Length_Tolerance>                                                                             | Integer | Lines at or within this tolerance are removed. |
| <b>Return Value</b> | None                                                                                               |         |                                                |

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| <b>Python Syntax</b>  | RemoveSmallLines(<NAME>, <Max_Length_Tolerance>)      |
| <b>Python Example</b> | <code>oEditor.RemoveSmallLines("Trace", "1mm")</code> |

## RemoveSmallMetallIslands (IC Editor)

Removes primitives and vias at or within tolerance from the target layer.

|                   |                                                                                         |         |                                                              |
|-------------------|-----------------------------------------------------------------------------------------|---------|--------------------------------------------------------------|
| <b>UI Access</b>  | After choosing primitives, select <b>Remove Islands</b> from the <b>Layout Ribbon</b> . |         |                                                              |
| <b>Parameters</b> | Name                                                                                    | Type    | Description                                                  |
|                   | <NAME>                                                                                  | String  | Name of the target layer.                                    |
|                   | <Max_Area_Tolerance>                                                                    | Integer | Primitives and vias at or within this tolerance are removed. |



|                     |      |
|---------------------|------|
| <b>Return Value</b> | None |
|---------------------|------|

|                       |                                                              |
|-----------------------|--------------------------------------------------------------|
| <b>Python Syntax</b>  | RemoveSmallMetalIslands(<NAME>, <Max_Area_Tolerance>)        |
| <b>Python Example</b> | <code>oEditor.RemoveSmallMetalIslands("Trace", "1mm")</code> |

## ResetTechnology (IC Editor)

Disassociates the applied technology from the active design's stackup.

|                     |                                                                                                          |
|---------------------|----------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Layout</b> ribbon, select <b>Reset Technology</b> from the <b>Technology</b> drop-down menu. |
| <b>Parameters</b>   | None                                                                                                     |
| <b>Return Value</b> | None                                                                                                     |

|                       |                                        |
|-----------------------|----------------------------------------|
| <b>Python Syntax</b>  | ResetTechnology()                      |
| <b>Python Example</b> | <code>oEditor.ResetTechnology()</code> |

## SnapPrimitives (IC Editor)

Aligns the edge of the selected primitives.

|                     |                                                                                         |             |                                                                                                                                                                                                                                          |
|---------------------|-----------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | After choosing primitives, select <b>Snap Primitives</b> from the <b>Layout</b> ribbon. |             |                                                                                                                                                                                                                                          |
| <b>Parameters</b>   | <b>Name</b>                                                                             | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                       |
|                     | <LAYER_NAME>                                                                            | String      | Name of the target layer.                                                                                                                                                                                                                |
|                     | <Parameters>                                                                            | Array       | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:primitives&gt;</li> <li>• &lt;Objects&gt;</li> <li>• &lt;Snap_Dis_Tolerance&gt;</li> <li>• &lt;CheckConnectivity&gt;</li> </ul> |
|                     | <NAME:primitives>                                                                       | String      | Required first parameter which must have the specified value (i.e., "primitives").                                                                                                                                                       |
|                     | <Objects>                                                                               | List        | A comma-separated list of integers, where each integer represents a selected primitive (i.e., "rect_0", "rect_1", "rect_2", etcetera)                                                                                                    |
|                     | <Snap_Dis_Tolerance>                                                                    | Integer     | Primitives at or within this tolerance are snapped.                                                                                                                                                                                      |
|                     | <CheckConnectivity>                                                                     | Boolean     | <b>True</b> analyzes the placement of primitives to ensure snapping does not violate the connectivity of the original objects.<br><b>False</b> deactivates the check.                                                                    |
| <b>Return Value</b> | None.                                                                                   |             |                                                                                                                                                                                                                                          |

|                       |                                                                                                           |
|-----------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SnapPrimitives(<LAYER_NAME> [<NAME:primitives>, <Objects>], <Snap_Dis_Tolerance>, <Check-Connectivity>)   |
| <b>Python Example</b> | <pre>oEditor.SnapPrimitives (     ["Trace",      "NAME:primitives",      "rect_0:=",      "rect_1",</pre> |

|  |                                          |
|--|------------------------------------------|
|  | <pre>"rect_2",<br/>], "5mm", True)</pre> |
|--|------------------------------------------|

## SnapPrimitivesOnLayer (IC Editor)

Aligns the edge of the selected primitives on the target layer.

|                     |                                                                                                 |             |                                                                                                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Layers</b> window, right-click the target layer and select <b>Snap Primitives</b> . |             |                                                                                                                                                                       |
| <b>Parameters</b>   | <b>Name</b>                                                                                     | <b>Type</b> | <b>Description</b>                                                                                                                                                    |
|                     | <LAYER_NAME>                                                                                    | String      | Name of the target layer.                                                                                                                                             |
|                     | <Snap_Dis_Tolerance>                                                                            | Integer     | Primitives at or within this tolerance are snapped.                                                                                                                   |
|                     | <CheckConnectivity>                                                                             | Boolean     | <b>True</b> analyzes the placement of primitives to ensure snapping does not violate the connectivity of the original objects.<br><b>False</b> deactivates the check. |
| <b>Return Value</b> | None.                                                                                           |             |                                                                                                                                                                       |

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SnapPrimitivesOnLayer(<LAYER_NAME>, <Snap_Dis_Tolerance>, <CheckConnectivity>) |
| <b>Python Example</b> | <pre>oEditor.SnapPrimitivesOnLayer("Trace", "5mm", True)</pre>                 |

## SnapVias (IC Editor)

Forces the edges of selected vias to snap to alignment.

|                  |                                                                             |
|------------------|-----------------------------------------------------------------------------|
| <b>UI Access</b> | After choosing vias, select <b>Snap Vias</b> from the <b>Layout</b> ribbon. |
|------------------|-----------------------------------------------------------------------------|

| <b>Parameters</b>   | Name                    | Type    | Description                                                                                                                                                                                                                                                            |
|---------------------|-------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <Parameters>            | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:vias&gt;</li> <li>• &lt;Objects&gt;</li> </ul>                                                                                                                |
|                     | <NAME:vias>             | String  | Required first parameter which must have the specified value (i.e., "vias").                                                                                                                                                                                           |
|                     | <Objects>               | Integer | A comma-separated list of integers, where each integer represents a selected via (i.e., "via_0", "via_1", "via_2", etcetera)                                                                                                                                           |
|                     | <Parameters2>           | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:Setting Contents&gt;</li> <li>• &lt;IsFactorBased&gt;</li> <li>• &lt;SnapTol&gt;</li> <li>• &lt;AlignTol&gt;</li> <li>• &lt;RemoveDanglingVias&gt;</li> </ul> |
|                     | <NAME:Setting Contents> | String  | Required first parameter which must have the specified value (i.e., "Setting Contents").                                                                                                                                                                               |
|                     | <IsFactorBased>         | Boolean | <b>True</b> selected via groups are snapped by a maximum area equal to the tolerance (i.e., <Snaptol> and <AlignTol>) times the surface area of the via group.<br><b>False</b> selected via groups are snapped by a maximum distance of the tolerance.                 |
|                     | <SnapTol>               | Integer | Vias at or within this tolerance are snapped.                                                                                                                                                                                                                          |
|                     | <AlignTol>              | Integer | Vias at or within this tolerance are aligned.                                                                                                                                                                                                                          |
|                     | <RemoveDanglingVias>    | Boolean | <b>True</b> removes vias from selection that have no connectivity or have connectivity only to a single layer.<br><b>False</b> deactivates this check.                                                                                                                 |
| <b>Return Value</b> | None.                   |         |                                                                                                                                                                                                                                                                        |

| Python Syntax  | SnapVias([<NAME:vias>, <Objects>], [<NAME:Setting Contents>, <IsFactorBased>, <SnapTol>, <AlignTol>, <RemoveDanglingVias>])                                                                                                               |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.SnapVias( [     "NAME:vias",     "via_0",     "via_1",     "via_2" ], [     "NAME:Setting Contents",     "IsFactorBased:=", True,     "snapTol:=", "3",     "AlignTol:=", "300um",     "removeDanglingVias:=", True ])</pre> |

### SnapViasOnLayer (IC Editor)

Forces the edges of selected vias to snap to alignment on the target layer.

|           |                                                                                           |
|-----------|-------------------------------------------------------------------------------------------|
| UI Access | From the <b>Layers</b> window, right-click the target layer and select <b>Snap Vias</b> . |
|-----------|-------------------------------------------------------------------------------------------|

| <b>Parameters</b>   | Name                  | Type   | Description                                                                                                                                                                                                                                                            |
|---------------------|-----------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <Layer_Name>          | String | Name of the target layer.                                                                                                                                                                                                                                              |
|                     | <Parameters>          | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:Setting Contents&gt;</li> <li>• &lt;IsFactorBased&gt;</li> <li>• &lt;SnapTol&gt;</li> <li>• &lt;AlignTol&gt;</li> <li>• &lt;RemoveDanglingVias&gt;</li> </ul> |
|                     | NAME:Setting Contents | Array  | Required first parameter which must have the specified value (i.e., "Setting Contents").                                                                                                                                                                               |
|                     | IsFactorBased         | Array  | <b>True</b> selected via groups are snapped by a maximum area equal to the tolerance (i.e., <Snaptol> and <AlignTol>) times the surface area of the via group.<br><b>False</b> selected via groups are snapped by a maximum distance of the tolerance.                 |
|                     | SnapTol               | Array  | Vias at or within this tolerance are snapped.                                                                                                                                                                                                                          |
|                     | AlignTol              | Array  | Vias at or within this tolerance are aligned.                                                                                                                                                                                                                          |
| <b>Return Value</b> | RemoveDanglingVias    | Array  | <b>True</b> removes vias from selection that have no connectivity or have connectivity only to a single layer.<br><b>False</b> deactivates this check.                                                                                                                 |
|                     | None.                 |        |                                                                                                                                                                                                                                                                        |

|                       |                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SnapVias(<Layer_Name>, [<NAME:Setting Contents>, <IsFactorBased>, <SnapTol>, <AlignTol>, <RemoveDanglingVias>]) |
| <b>Python Example</b> | oEditor.SnapViasOnLayer(<br>["Trace",                                                                           |

|  |                                                                                                                                         |
|--|-----------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "NAME:Setting Contents", "IsFactorBased:=", False, "snapTol:=", "5mm", "AlignTol:=", "5mm", "removeDanglingVias:=", True ] </pre> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------|

### UnitePrimitivesOnLayer (IC Editor)

Unites primitives on the target layer.

|                     |                                                                                                  |        |                           |
|---------------------|--------------------------------------------------------------------------------------------------|--------|---------------------------|
| <b>UI Access</b>    | From the <b>Layers</b> window, right-click the target layer and select <b>Unite Primitives</b> . |        |                           |
| <b>Parameters</b>   | Name                                                                                             | Type   | Description               |
|                     | <NAME>                                                                                           | String | Name of the target layer. |
| <b>Return Value</b> | None.                                                                                            |        |                           |

|                       |                                         |
|-----------------------|-----------------------------------------|
| <b>Python Syntax</b>  | UnitePrimitivesOnLayer(<NAME>)          |
| <b>Python Example</b> | oEditor.UnitePrimitivesOnLayer("Trace") |

### WrapGeometries (IC Editor)

Wraps the selected polygons.

| UI Access         | After choosing the appropriate geometries, select <b>Wrap Geometry</b> from the <b>Layout</b> ribbon. |        |                                                                                                                                                                                         |
|-------------------|-------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                                  | Type   | Description                                                                                                                                                                             |
|                   | <Parameters>                                                                                          | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:Contents&gt;</li> <li>• &lt;Elements&gt;</li> <li>• &lt;Objects&gt;</li> </ul> |
|                   | <NAME:Contents>                                                                                       | String | Required first parameter which must have the specified value (i.e., "Contents").                                                                                                        |
|                   | <Elements>                                                                                            | String | Required first parameter which must have the specified value (i.e., "Elements").                                                                                                        |
|                   | <Objects>                                                                                             | Array  | A structured array containing a comma-separated list of integers, where each integer represents a selected polygon (i.e., "rect_2577", "rect_2578", "rect_2579", etcetera)              |
| Return Value      | None.                                                                                                 |        |                                                                                                                                                                                         |

| Python Syntax         | WrapGeometries ([<NAME:Contents>, Elements, Objects])                                                                   |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oEditor.WrapGeometries ( [     "NAME:Contents",     "elements:=", ["rect_2577", "rect_2578", "rect_2579"] ])</pre> |

## WrapGeometry (IC Editor)

Sets a tolerance and wraps polygons beginning with the selected polygon.



|                     |                                                                                                                                                                                         |         |                                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------|
| <b>UI Access</b>    | From the <b>Layout</b> ribbon, select <b>Wrap Geometry</b> . Right-click the selected geometry within the design and Adjust the tolerance slider as necessary. Then click <b>Wrap</b> . |         |                                               |
| <b>Parameters</b>   | Name                                                                                                                                                                                    | Type    | Description                                   |
|                     | <SEED_OBJECT_NAME>                                                                                                                                                                      | String  | Name of the selected polygon.                 |
|                     | <Snap_Dis_Tolerance>                                                                                                                                                                    | Integer | Polygons at or within this range are wrapped. |
| <b>Return Value</b> | None.                                                                                                                                                                                   |         |                                               |

|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| <b>Python Syntax</b>  | WrapGeometry (<SEED_OBJECT_NAME>, <Snap_Dis_Tolerance>) |
| <b>Python Example</b> | oEditor.WrapGeometry("rect_1855", "5um")                |

## Layers Methods

The following methods are available to manipulate layers:

[AddLayer \(Layout Editor\)](#)

[AddObject \(IC Editor and Layout Editor\)](#)

[AddStackupLayer \(Layout Editor\)](#)

[ChangeLayer \(Layout Editor\)](#)

[ChangeLayers \(Layout Editor\)](#)

[ClearLayerMappings \(Layout Editor\)](#)

CreateBoardBend (Layout Editor)

[DuplicateAcrossLyrs \(Layout Editor\)](#)

[ExportStackupXML \(Layout Editor\)](#)

[GetAllLayerNames \(Layout Editor\)](#)

[GetLayerInfo \(Layout Editor\)](#)

[GetStackupLayerNames \(Layout Editor\)](#)

[ImportStackupXML \(Layout Editor\)](#)

[ProcessBentModelCmd \(Layout Editor\)](#)

[RemoveLayer \(Layout Editor\)](#)

[SetLayerMapping \(Layout Editor\)](#)

[SyncRigidFlexSandbox \(Layout Editor\)](#)

## AddObject (Layout Editor and IC Editor)

Adds a user-selected object to the active design.

| UI Access  | Not strictly applicable, although objects <i>can</i> be drawn by making the appropriate selection from the <b>Layout</b> ribbon (i.e., <b>Draw polygon</b> , <b>Draw line</b> , <b>Draw rectangle</b> , <b>Draw arc</b> , <b>Draw circle</b> ). |        |                                                                                                                                                                                                                                                                                                                       |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                                                                                                                                                                            | Type   | Description                                                                                                                                                                                                                                                                                                           |
|            | < <i>ObjectType</i> >                                                                                                                                                                                                                           | String | Type of object to add (i.e., rect (i.e., rectangle), circle, poly (i.e., polygon), line, or 3D line).                                                                                                                                                                                                                 |
| Parameters | < <i>Parameters</i> >                                                                                                                                                                                                                           | Array  | Structured array containing the parameters required for the type of object selected. The parameters differ for each object. Refer to the following pages: <ul style="list-style-type: none"> <li>• <a href="#">CreateRectangle (Layout Editor)</a></li> <li>• <a href="#">CreateCircle (Layout Editor)</a></li> </ul> |

|                     |                                                                      |  |                                                                                                                                                                                                                                                                       |
|---------------------|----------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                                                      |  | <ul style="list-style-type: none"><li>• <a href="#">CreatePolygon (Layout Editor)</a></li><li>• <a href="#">CreateLine (Layout Editor)</a></li><li>• <a href="#">Create3DLine (Layout Editor)</a></li><li>• <a href="#">CreatePartitionLine (IC Editor)</a></li></ul> |
| <b>Return Value</b> | Returns the name of the newly created object ( <b>IC Mode</b> only). |  |                                                                                                                                                                                                                                                                       |

|                       |                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddObject(<ObjectType>, [<Parameters>])                                                                                                                                                                                                                                                                                                                                         |
| <b>Python Example</b> | <pre>oEditor.AddObject("rect",<br/>    [<br/>        "NAME:Contents",<br/>        "rectGeometry:=", [<br/>            "Name:=", "rect_5",<br/>            "LayerName:=", "Trace",<br/>            "lw:=", "0",<br/>            "Ax:=", "-84mm",<br/>            "Ay:=", "16mm",<br/>            "Bx:=", "-77mm",<br/>            "By:=", "12mm"]<br/>        ]<br/>    ])</pre> |

## AddLayer (Layout Editor)

Adds a layer in a layout definition. This command can take all parameters available in [ChangeLayers \(Layout Editor\)](#) but cannot be recorded.

**Note:** As with other Layout scripting interface commands that modify the layout, this command is not intended for use within scripts that define footprints. The command behavior from within such a script is undefined and may be unexpected. Use the LayoutHost scripting interface commands within scripts that define footprints.

| UI Access  | None           |         |                                                                                                                                                                                                                                                                                                                                               |
|------------|----------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name           | Type    | Description                                                                                                                                                                                                                                                                                                                                   |
|            | <LayerArray>   | Array   | An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;Layername&gt;</li> <li>• &lt;Type&gt;</li> <li>• &lt;TopBottom&gt;</li> <li>• &lt;Color&gt;</li> <li>• &lt;Transparency&gt;</li> <li>• &lt;Pattern&gt;</li> <li>• &lt;VisFlag&gt;</li> <li>• &lt;Locked&gt;</li> <li>• &lt;Draw&gt;</li> </ul> |
|            | <LayerName>    | String  | Name of layer.                                                                                                                                                                                                                                                                                                                                |
|            | <Type>         | String  | Type of layer, such as "user", "soldermask", "solderpaste", "silkscreen", "assembly", "wirebond", "glue", "user", "Postprocessing", or "outline".                                                                                                                                                                                             |
|            | <TopBottom>    | String  | Optional. Indicates whether the layer is the top or bottom. Acceptable values are "top", "bottom", or "neither".                                                                                                                                                                                                                              |
|            | <Color>        | Integer | Optional. A code to indicate the color of the layer. It is an RGB code in the hex format <i>bbggrr</i> . For example red (#0000ff) is 255, green (#00ff00) is 65280, and blue (#ff0000) is 16711680.                                                                                                                                          |
|            | <Transparency> | Integer | Optional. A percentage that indicates the transparency of the layer between 0                                                                                                                                                                                                                                                                 |

|                     |           |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|-----------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |           |         | (opaque) and 100 (completely transparent and not visible).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                     | <Pattern> | Integer | Optional. A code for the pattern of the layer: 0 is hollow, 1 is solid, and the other patterns 3-8 are various hatch patterns.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                     | <VisFlag> | Integer | <p>Sets visibility for all objects on the layer using the following additive code:</p> <ul style="list-style-type: none"> <li>• 1 makes primitives (rectangles, circles, polygons) visible.</li> <li>• 2 makes lines (also known as paths or traces) visible.</li> <li>• 4 makes pads (from padstacks, aka vias) visible.</li> <li>• 8 makes holes (or vias) visible.</li> <li>• 16 makes components visible.</li> <li>• 32 makes the mesh overlay visible if they are plotted.</li> <li>• 64 makes the mesh for the background material visible.</li> </ul> <p>For example, a value of 25 (1+8+16) makes primitives, vias, and components visible. Use 127 to show everything and 0 to hide all.</p> |
|                     | <Locked>  | Boolean | Optional. Whether the layer is locked.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                     | <Draw>    | Integer | Optional. Allows drawing on the layer as wireframe, outlines, or solid. Acceptable values are -1 for wireframe, 0 for normal, and 1 for solid.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Return Value</b> | None      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                      |                                                                                                                                    |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | <pre>oEditor.AddLayer(     [         "NAME:layers",         "Name:=", "&lt;LayerName&gt;",         "Type:=", "&lt;Type&gt;",</pre> |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <pre>"Top Bottom:=", "&lt;TopBottom&gt;",<br/>"Color:=", &lt;Color&gt;,<br/>"Transparency:=", &lt;Transparency&gt;,<br/>"Pattern:=", &lt;Pattern&gt;,<br/>"VisFlag:=", &lt;VisFlag&gt;,<br/>"Locked:=", &lt;Locked&gt;,<br/>"DrawOverride:=", &lt;Draw&gt;,<br/>])</pre>                                                                                                                                               |
| <b>Python Example</b> | <pre>oEditor = oDesign.SetActiveEditor("Layout")<br/>oEditor.AddLayer(<br/>    [<br/>        "NAME:layers",<br/>        "Name:=", "signal",<br/>        "Type:=", "assembly",<br/>        "Top Bottom:=", "neither",<br/>        "Color:=", 16711680,<br/>        "Transparency:=", 0,<br/>        "Pattern:=", 1,<br/>        "VisFlag:=", 127,<br/>        "Locked:=", False,<br/>        "DrawOverride:=", 0,</pre> |

|  |    |
|--|----|
|  | ]) |
|--|----|

AddStackupLayer (Layout Editor)

Adds a stackup layer in the Layout editor. This command can take all parameters available in [ChangeLayers \(Layout Editor\)](#) but cannot be recorded.

| UI Access  | None         |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------|--------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name         | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|            | <LayerArray> | Array  | An array that contains these parameters in order: <ul style="list-style-type: none"><li>• &lt;Layername&gt;</li><li>• &lt;Type&gt;</li><li>• &lt;TopBottom&gt;</li><li>• &lt;Color&gt;</li><li>• &lt;Transparency&gt;</li><li>• &lt;Pattern&gt;</li><li>• &lt;VisFlag&gt;</li><li>• &lt;Locked&gt;</li><li>• &lt;Draw&gt;</li><li>• and an array with the parameters:<ul style="list-style-type: none"><li>• &lt;Thickness&gt;</li><li>• &lt;LowerElevation&gt;</li><li>• &lt;Material&gt;</li></ul></li></ul> |
|            | <LayerName>  | String | Name of layer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|            | <Type>       | String | Type of layer, either "signal" or "dielectric".                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                     |                  |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <TopBottom>      | String  | Optional. Indicates whether the layer is the top or bottom. Acceptable values are "top", "bottom", or "neither".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                     | <Color>          | Integer | Optional. A code to indicate the color of the layer. It is an RGB code in the hex format <i>bbggrr</i> . For example red (#0000ff) is 255, green (#00ff00) is 65280, and blue (#ff0000) is 16711680.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                     | <Transparency>   | Integer | Optional. A percentage that indicates the transparency of the layer between 0 (opaque) and 100 (completely transparent and not visible).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                     | <Pattern>        | Integer | Optional. A code for the pattern of the layer: 0 is hollow, 1 is solid, and the other patterns 3-8 are various hatch patterns.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                     | <VisFlag>        | Integer | Sets visibility for all objects on the layer using the following additive code: <ul style="list-style-type: none"> <li>• 1 makes primitives (rectangles, circles, polygons) visible.</li> <li>• 2 makes lines (also known as paths or traces) visible.</li> <li>• 4 makes pads (from padstacks, aka vias) visible.</li> <li>• 8 makes holes (or vias) visible.</li> <li>• 16 makes components visible.</li> <li>• 32 makes the mesh overlay visible if they are plotted.</li> <li>• 64 makes the mesh for the background material visible.</li> </ul> For example, a value of 25 (1+8+16) makes primitives, vias, and components visible. Use 127 to show everything and 0 to hide all. |
|                     | <Locked>         | Boolean | Optional. Whether the layer is locked.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                     | <Draw>           | Integer | Optional. Allows drawing on the layer as wireframe, outlines, or solid. Acceptable values are -1 for wireframe, 0 for normal, and 1 for solid.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                     | <Thickness>      | String  | Thickness of the layer, contains the measurement and units.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                     | <LowerElevation> | String  | The elevation of the lower edge of the layer, contains the measurement and units.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                     | <Material>       | String  | The material the layer is made of.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Return Value</b> | None             |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <pre>oEditor.AddStackupLayers(<br/>    [<br/>        "NAME:stackup layer",<br/>        "Name:=", "&lt;LayerName&gt;",<br/>        "Type:=", "&lt;Type&gt;",<br/>        "Top Bottom:=", "&lt;TopBottom&gt;",<br/>        "Color:=", "&lt;Color&gt;",<br/>        "Transparency:=", "&lt;Transparency&gt;",<br/>        "Pattern:=", "&lt;Pattern&gt;",<br/>        "VisFlag:=", "&lt;VisFlag&gt;",<br/>        "Locked:=", "&lt;Locked&gt;",<br/>        "DrawOverride:=", "&lt;Draw&gt;",<br/>        [<br/>            "NAME:sublayer",<br/>            "Thickness:=", "&lt;Thickness&gt;",<br/>            "LowerElevation:=", "&lt;LowerElevation&gt;",<br/>            "Material:=", "&lt;Material&gt;",<br/>        ]<br/>    ]<br/>)</pre> |
| <b>Python Example</b> | <pre>oEditor = oDesign.SetActiveEditor("Layout")</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

```
oEditor.AddStackupLayer(  
  [  
    "NAME:stackup layer",  
    "Name:=", "Cover",  
    "Type:=", "signal",  
    "Top Bottom:=", "neither",  
    "Color:=", 16711680,  
    "Transparency:=", 0,  
    "Pattern:=", 1,  
    "VisFlag:=", 127,  
    "Locked:=", False,  
    "DrawOverride:=", 0,  
    [  
      "NAME:Sublayer",  
      "Thickness:=", "0mil",  
      "LowerElevation:=", "20mil",  
      "Material:=", "gold",  
    ]  
  ]  
)
```

ChangeLayer (Layout Editor)

Changes one or more attributes or parameters of a single layer.

**Note:** To execute the command, all of the following parameters must be entered in the command line even if the user only intends to change one attribute.

|            |                                                                                      |         |                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------|--------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | Limited to showing/hiding element and object visibility in the <b>Layers</b> window. |         |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Parameters | Name                                                                                 | Type    | Description                                                                                                                                                                                                                                                                                                                                                                                                |
|            | <LayerArray>                                                                         | Array   | An array that contains these parameters in order: <ul style="list-style-type: none"><li>• &lt;mode&gt;</li><li>• &lt;Layername&gt;</li><li>• &lt;ID&gt;</li><li>• &lt;Type&gt;</li><li>• &lt;TopBottom&gt;</li><li>• &lt;Color&gt;</li><li>• &lt;Transparency&gt;</li><li>• &lt;Pattern&gt;</li><li>• &lt;VisFlag&gt;</li><li>• &lt;Locked&gt;</li><li>• &lt;Draw&gt;</li><li>• &lt;Subarray&gt;</li></ul> |
|            | <mode>                                                                               | String  | Type of stackup. Can be "Laminate", "Multizone", or "Overlap" .                                                                                                                                                                                                                                                                                                                                            |
|            | <LayerName>                                                                          | String  | Name of layer.                                                                                                                                                                                                                                                                                                                                                                                             |
|            | <ID>                                                                                 | Integer | A numerical identification for the layer.                                                                                                                                                                                                                                                                                                                                                                  |

|                |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <Type>         | String  | Type of layer, such as "user", "signal", "dielectric", "soldermask", "solderpaste", "silkscreen", "assembly", "wirebond", "dielectric", "glue", "user", "Post-processing", or "outline".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <TopBottom>    | String  | <i>Optional</i> . Indicates whether the layer is the top or bottom. Acceptable values are "top", "bottom", or "neither".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <Color>        | Integer | <i>Optional</i> . A code to indicate the color of the layer. It is an RGB code in the hex format <i>bbggrr</i> . For example red (#0000ff) is 255, green (#00ff00) is 65280, and blue (#ff0000) is 16711680.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <Transparency> | Integer | <i>Optional</i> . A percentage that indicates the transparency of the layer between 0 (opaque) and 100 (completely transparent and not visible).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <Pattern>      | Integer | <i>Optional</i> . A code for the pattern of the layer: 0 is hollow, 1 is solid, and the other patterns 3-8 are various hatch patterns.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <VisFlag>      | Integer | Sets visibility for all objects on the layer using the following additive code: <ul style="list-style-type: none"> <li>• 1 makes primitives (rectangles, circles, polygons) visible.</li> <li>• 2 makes lines (also known as paths or traces) visible.</li> <li>• 4 makes pads (from padstacks, aka vias) visible.</li> <li>• 8 makes holes (or vias) visible.</li> <li>• 16 makes components visible.</li> <li>• 32 makes the mesh overlay visible if they are plotted.</li> <li>• 64 makes the mesh for the background material visible.</li> </ul> For example, a value of 25 (1+8+16) makes primitives, vias, and components visible. Use 127 to show everything and 0 to hide all. |
| <Locked>       | Boolean | <i>Optional</i> . Whether the layer is locked.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <DrawOverride> | Integer | <i>Optional</i> . Allows drawing on the layer as wireframe, outlines, or solid. Acceptable values are -1 for wireframe, 0 for normal, and 1 for solid.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <Zones>        |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <Subarray>     | Array   | <i>Optional</i> . An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;Thickness&gt;</li> <li>• &lt;LowerElevation&gt;</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|                     |                  |        |                                                                                                                                                                                                                                                                                                                         |
|---------------------|------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                  |        | <ul style="list-style-type: none"> <li>• &lt;Roughness&gt;</li> <li>• &lt;BotRoughness&gt;</li> <li>• &lt;SideRoughness&gt;</li> <li>• &lt;Material&gt;</li> <li>• &lt;FillMaterial&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p> |
|                     | <Thickness>      | String | Thickness of the layer, contains the measurement and units.                                                                                                                                                                                                                                                             |
|                     | <LowerElevation> | String | The elevation of the lower edge of the layer, contains the measurement and units.                                                                                                                                                                                                                                       |
|                     | <Roughness>      | String | The roughness of the top of the layer, contains the measurement and units.                                                                                                                                                                                                                                              |
|                     | <BotRoughness>   | String | The roughness of the bottom of the layer, contains the measurement and units.                                                                                                                                                                                                                                           |
|                     | <SideRoughness>  | String | The roughness of the side of the layer, contains the measurement and units.                                                                                                                                                                                                                                             |
|                     | <Material>       | String | The material the layer is made of.                                                                                                                                                                                                                                                                                      |
|                     | <FillMaterial>   | String | The material to use to fill in around geometry on the layer.                                                                                                                                                                                                                                                            |
| <b>Return Value</b> | None             |        |                                                                                                                                                                                                                                                                                                                         |

|                       |                                                                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>oEditor.ChangeLayer(&lt;LayerArray&gt;)</code>                                                                                                                 |
| <b>Python Example</b> | <pre> oEditor = oDesign.SetActiveEditor("Layout")  oEditor.ChangeLayer(     ["NAME:stackup layer",      "Name:="          , "MQ",      "ID:="            , 20,</pre> |

```
"Type:="          , "signal",
"Top Bottom:="    , "neither",
"Color:="         , 6136303,
"Transparency:="  , 60,
"Pattern:="       , 1,
"VisFlag:="       , 96,
"Locked:="        , False,
"DrawOverride:="  , 0,
"Zones:="         , [],
  ["NAME:Sublayer",
    "Thickness:="      , "0.745um",
    "LowerElevation:=" , "737.155um",
    "Roughness:="      , "0um",
    "BotRoughness:="   , "0um",
    "SideRoughness:="  , "0um",
    "Material:="       , "MQ",
    "FillMaterial:="   , "FR4_epoxy"
  ]
]
)
```

## ClearLayerMappings (Layout Editor)

*Use:* Clear layer mappings.

*Command:* None.

*Syntax:* ClearLayerMappings <component name>

*Return Value:* None.

*Parameters:* <component name> is a string that specifies the name of the component.

## DuplicateAcrossLyrs (Layout Editor)

*Use:* Duplicate selected objects (layout and footprint) to other layers.

*Command:* Draw > Duplicate > Across Layers

*Syntax:* DuplicateAcrossLyrs Array("NAME:elements", "element-name",...), Array("NAME:layers", "layer-name",...)

*Return Value:* None

*Parameters:* <element-name> // The name of the element to be duplicated.

<layer-name> // The name of the layer to duplicate elements to.

## ExportGDSII (Layout Editor)

Exports results to GDSII.

|                  |                                     |
|------------------|-------------------------------------|
| <b>UI Access</b> | <b>File &gt; Export &gt; GDSII.</b> |
|------------------|-------------------------------------|

| <b>Parameters</b>   | Name                                  | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|---------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <code>&lt;OptionParameters&gt;</code> | Array | <p>Structured array.</p> <pre>Array("NAME:options",       "FileName:=", &lt;string, GDSII export file name.&gt;,       "NumVertices:=", &lt;integer, maximum number of vertices allowed in a polygon (specify zero if unlimited).&gt;,       "ArcTol:=", &lt;double, arc tolerance (in meters); the value used to discretize arcs. Smaller the value the greater the number of edges exported. For 0.1mm use 0.0001.&gt;,       "LayerMap:=", Array(       "entry:=", Array(       "layer:=", &lt;string, name of a layer to export.&gt;,       "id:=", &lt;integer, GDSII layer ID to assign the exported layer.&gt;,       "include:=", &lt;boolean, if true, the layer is exported.&gt;))</pre> |
| <b>Return Value</b> | None.                                 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportGDSII(&lt;OptionParameters&gt;)</code> |
| <b>Python Example</b> | <code>oEditor.ExportGDSII [(</code>                |



|  |                                                                                                                                                                                                                                                                                                                           |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"NAME:options", "FileName:=", "C:/Projects/ design.gds", "NumVertices:=", 0, "ArcTol:=", 2E-006, "LayerMap:=", [     "entry:=", [         "layer:=", "Bottom",         "id:=", 2,         "include:=", true],     "entry:=", [         "layer:=", "Top",         "id:=", 1,         "include:=", true]     ] ]</pre> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**ExportStackupXML (Layout Editor)**

Exports the stackup in XML format.

|                  |                                                                                                                                                                                                 |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b> | From the <b>Edit Layers</b> window, select <b>Stackup &gt; Export XML</b> to open an explorer window. Navigate to an appropriate directory, choose a <b>File name</b> , and click <b>Save</b> . |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                     |          |        |                                                                     |
|---------------------|----------|--------|---------------------------------------------------------------------|
| <b>Parameters</b>   | Name     | Type   | Description                                                         |
|                     | <SaveAs> | String | User-specified directory in which to save the new stackup XML file. |
| <b>Return Value</b> | None.    |        |                                                                     |

|                       |                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportStackupXML(<SaveAs>)                                                        |
| <b>Python Example</b> | <code>oEditor.ExportStackupXML("C:\\Users\\USERNAME\\Downloads\\test.xml")</code> |

## GetAllLayerNames (Layout Editor)

*Use:* Informational.

*Command:* None.

*Syntax:* GetAllLayerNames

*Return Value:* Array of strings which are the names of all layers in the layout, blackbox, or footprint.

## GetLayerInfo (Layout Editor)

Retrieves information on a specified layer in the Layout editor.

|                     |                                                                                                                                                                                    |        |                   |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------|
| <b>UI Access</b>    | None                                                                                                                                                                               |        |                   |
| <b>Parameters</b>   | Name                                                                                                                                                                               | Type   | Description       |
|                     | <LayerName>                                                                                                                                                                        | String | Name of the layer |
| <b>Return Value</b> | An array of strings, as follows: <ul style="list-style-type: none"> <li>Type: type of name</li> <li>TopBottomAssociation: "Top" "Neither" "Bottom" "Template" "Invalid"</li> </ul> |        |                   |

- Color: integer [representing rgb in hex]
- IsVisible: "true"|"false". This is true if any these types of objects are visible:
  - IsVisibleShape: "true"|"false"[for stackup layer only]
  - IsVisiblePath: "true"|"false"[for stackup layer only]
  - IsVisiblePad: "true"|"false"[for stackup layer only]
  - IsVisibleHole: "true"|"false"[for stackup layer only]
  - IsVisibleComponent: "true"|"false"[for stackup layer only]
- IsLocked: "true"|"false"
- LayerId: integer [the ID for the layer]

The following are also in the array if the layer is a stackup layer:

- Index: integer [the stackup order index]
- LayerThickness: double [total layer thickness, in meters]
- EtchFactor: double [This will not appear if the layer has no etch factor defined.]
- IsIgnored: "true"|"false"
- NumberOfSublayers: 1 [This is always 1.]
- Material0: material name
- FillMaterial0: material name
- Thickness0: expression with units
- LowerElevation0: expression with units
- If roughness is defined, some or all of the following appear:
  - Roughness0Type: Groiss | Huray
  - Roughness0: value and units or surface ratio value for Huray
  - BottomRoughness0 Type: Groiss | Huray
  - BottomRoughness0: value and units or surface ratio value for Huray

- SideRoughness0 Type: Groiss | Huray
- SideRoughness0: value and units or surface ratio value for Huray

For example:

```
[ 'Type: signal', 'TopBottomAssociation: Neither', 'Color: 32512d', 'IsVisible: true', ' IsVisibleShape: true', ' IsVisiblePath: true', ' IsVisiblePad: true', ' IsVisibleHole: true', ' IsVisibleComponent: true', 'IsLocked: false', 'LayerId: 7', 'Index: 0', 'LayerThickness: 0', 'IsIgnored: false', 'NumberOfSublayers: 1', 'Material0: copper', 'FillMaterial0: FR4_epoxy', 'Thickness0: 0mil', 'Lower-Elevation0: 62mil', 'Roughness0 Type: Huray', 'Roughness0: 0mil, 2.9', 'BottomRoughness0 Type: Huray', 'BottomRoughness0: 0mil, 2.9', 'SideRoughness0 Type: Huray', 'SideRoughness0: 0mil, 2.9']
```

|                       |                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetLayerInfo(<layer_name>)                                                              |
| <b>Python Example</b> | <pre>oEditor = oDesign.SetActiveEditor("Layout") oEditor.GetLayerInfo("TopLayer")</pre> |

## GetStackupLayerNames (Layout Editor)

*Use:* Informational.

*Command:* None.

*Syntax:* GetStackupLayerNames

*Return Value:* array of strings which are the names of all layers in the layout, blackbox, or footprint.

*Parameters:* None

**ImportStackupXML (Layout Editor)**

Imports an XML file into an active project.

|              |                                                                             |        |                        |
|--------------|-----------------------------------------------------------------------------|--------|------------------------|
| UI Access    | From the <b>Edit Layers</b> window, select <b>Stackup &gt; Import XML</b> . |        |                        |
| Parameters   | Name                                                                        | Type   | Description            |
|              | <XMLFileName>                                                               | String | Full path to XML file. |
| Return Value | None.                                                                       |        |                        |

|                |                                                                                                                                                                                                               |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ImportStackupXML(<XMLFileName>)                                                                                                                                                                               |
| Python Example | <pre>oProject = oDesktop.SetActiveProject("Project_Name") oDesign = oProject.SetActiveDesign("DesignName") oEditor = oDesign.SetActiveEditor("Layout") oEditor.ImportStackupXML("C:/Files/example.xml")</pre> |

**RemoveLayer (Layout Editor)**

|           |                                                                                        |
|-----------|----------------------------------------------------------------------------------------|
| UI Access | From the <b>Layers</b> window, right-click the target layer and select <b>Remove</b> . |
|-----------|----------------------------------------------------------------------------------------|

## General Mode

Removes the target layer or target stackup layer.

| Parameters   | Name        | Type   | Description               |
|--------------|-------------|--------|---------------------------|
|              | <LayerName> | String | Name of the target layer. |
| Return Value | None.       |        |                           |

| Python Syntax  | RemoveLayer(<LayerName>)                   |
|----------------|--------------------------------------------|
| Python Example | <code>oEditor.RemoveLayer("Ground")</code> |

## IC Mode (IC Editor)

Removes all objects from the target layer or remove all objects *and* the target layer.

| Parameters   | Name            | Type    | Description                                                                                                                                                                             |
|--------------|-----------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <Parameters>    | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:Contents&gt;</li> <li>• &lt;NAME&gt;</li> <li>• &lt;RemoveLayer&gt;</li> </ul> |
|              | <NAME:Contents> | String  | Required first parameter which must have the specified value (i.e., "Contents").                                                                                                        |
|              | <LayerName>     | String  | Name of the target layer.                                                                                                                                                               |
|              | <RemoveLayer>   | Boolean | <b>True</b> removes the layer and all objects on the target layer.<br><b>False</b> removes only all objects.                                                                            |
|              |                 |         |                                                                                                                                                                                         |
| Return Value | None.           |         |                                                                                                                                                                                         |

| Python Syntax  | RemoveLayer([<NAME:Contents>, <LayerName>], <RemoveLayer>)                                                    |
|----------------|---------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.RemoveLayer(<br/>    [<br/>        "NAME:Contents",<br/>        "Ground"<br/>    ], False)</pre> |

## SetLayerMapping (Layout Editor)

*Use:* Set layer mapping.

*Command:* None.

*Syntax:* SetLayerMapping <component name>, <design layer>, <footprint layer>

*Return Value:* None.

*Parameters:* <component name> is a string that specifies the name of the component

<design layer> is a string that specifies the name of the design layer

<footprint layer> is a string that specifies the name of the footprint layer

*Example:* oEditor.SetLayerMapping "2", "Bottom Signal", "Top"

SyncRigidFlexSandbox (Layout Editor)

Create or modify geometry and define zones and rigid-flex bends in a design. Existing elements not included in the argument are deleted.

|            |            |       |                                                                                                                                                                                                                                                                                                                                                        |
|------------|------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | None       |       |                                                                                                                                                                                                                                                                                                                                                        |
| Parameters | Name       | Type  | Description                                                                                                                                                                                                                                                                                                                                            |
|            | <Contents> | Array | Structured Array containing:<br><br>Array("Name:contents",<br><br><Geometry1Array>,<Geometry2Array>,<Geometry3Array>...<br><br><div>Note: The number and order of geometries and bends will differ for each design and at the user's discretion. The order of zones in the array implies the <b>Zone Order</b> parameter in Electronics Desktop.</div> |
|            | <Geometry> | Array | Structured Array containing:<br><br>"Name:=", <string zone# name>,<br><br>"LayerName:=", "Outline",                                                                                                                                                                                                                                                    |



|                       |                                                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------|--------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       |                                                  |  | <p><b>Note:</b> Depending on the type of geometry ( i.e., <a href="#">polygon</a>, <a href="#">rect-angle</a>, <a href="#">circle</a>, <a href="#">line</a>, or board bend), additional parameters may be applicable. For example, adding "Is Fixed:=true within a <i>&lt;Geometry&gt;</i> array will assign the <b>Fixed</b> status to the primitive. The primitive will then become a fixed reference position during the bending process. Fixing more than one primitive in a design is outside the scope of this function and results are therefore unpredictable.</p> |
| <b>Return Value</b>   | None.                                            |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Python Syntax</b>  | SyncRigidFlexSandbox (<Contents>, <Geometry>...) |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Python Example</b> |                                                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## Net and NetClass Methods

The following net and net class primitives are available:

[CreateDifferentialPair](#)

[CreateNetClass](#)

[DeleteNets](#)

[DelNetClass](#)

[GetNetClasses](#)

[GetNetClassNets](#)

[GetNetConnections](#)

[GetNets](#)[HighlightNet](#)[ModifyDifferentialPair](#)[ModifyNetClass](#)[ResetDifferentialPairs](#)[SelectNetConnected](#)[SelectNetConnected](#)[SetNetColor](#)[SetNetVisible](#)[ToggleNetHighlight](#)

## CreateDifferentialPair (Layout Editor)

Creates a differential pair from two target nets.

| UI Access  | From the <b>Nets</b> window, <b>Ctrl+click</b> two nets from the list. Then right-click within the <b>Nets</b> window and select <b>Create Differential Pair</b> . |        |                                                                                                                                 |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                                                                                               | Type   | Description                                                                                                                     |
|            | <DiffPairName>                                                                                                                                                     | String | Name of the new differential pair being created (e.g., DiffPair1)                                                               |
|            | <Description>                                                                                                                                                      | String | Redundant parameter, intentionally left blank.                                                                                  |
|            | <Parameters>                                                                                                                                                       | Array  | Array containing two target net names: <ul style="list-style-type: none"> <li>• &lt;Net1&gt;</li> <li>• &lt;Net2&gt;</li> </ul> |
|            | <Net1>                                                                                                                                                             | String | One of two target nets used to create the new differential pair (e.g., GND).                                                    |

|              |                                                                                                                                                     |                                                                                |  |        |        |                                                                                |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--|--------|--------|--------------------------------------------------------------------------------|
|              | <table><tr><td>&lt;Net2&gt;</td><td>String</td><td>One of two target nets used to create the new differential pair (e.g., Port1).</td></tr></table> |                                                                                |  | <Net2> | String | One of two target nets used to create the new differential pair (e.g., Port1). |
| <Net2>       | String                                                                                                                                              | One of two target nets used to create the new differential pair (e.g., Port1). |  |        |        |                                                                                |
| Return Value | None                                                                                                                                                |                                                                                |  |        |        |                                                                                |

|                |                                                                                |
|----------------|--------------------------------------------------------------------------------|
| Python Syntax  | CreateDifferentialPair(<DiffPairName>, <Description>, [<Net1>, <Net2>])        |
| Python Example | <code>oEditor.CreateDifferentialPair("DiffPair1", "", ["GND", "Port1"])</code> |

## CreateNetClass

*Use:*Create a new net class into a layout.

*Command:*CreateNetClass.

*Syntax:*CreateNetClass (<name> <description> <nets name list>)

*Return Value:*None

## DeleteNets (Layout Editor)

Removes specified nets from the project.

|              |           |        |                       |
|--------------|-----------|--------|-----------------------|
| UI Access    | None.     |        |                       |
| Parameters   | Name      | Type   | Description           |
|              | <netName> | String | Name of unwanted net. |
| Return Value | None.     |        |                       |

| Python Syntax  | DeleteNets ([<netName>, ...])                                                                                           |
|----------------|-------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oEditor.DeleteNets (<br/>    [<br/>        "NET_1",<br/>        "NET_2",<br/>        "NET_3"<br/>    ]<br/>)</pre> |

## DelNetClass

*Use:*Delete a net class in a layout.

*Command:*DelNetClass

*Syntax:*DelNetClass (<names>)

*Return Value:*None

## GetNetClasses

*Use:*Gets all the net classes in a layout.

*Command:*GetNetClasses

*Syntax:*GetNetClasses ()

*Return Value:*None

## GetNetClassNets

*Use:*Gets the list of nets in a net class.

*Command:*GetNetClassNets

*Syntax:*GetNetClassNets (<name>)

*Return Value:*None

### **GetNetConnections (Layout Editor)**

*Use:* Informational.

*Command:* None.

*Syntax:* GetNetConnections(<netName>)

*Return Value:* Array of strings containing the connections for the net identified by the

netName argument. The strings in the array are in one of four formats:

"ComponentPin compID pinname x y EdgePort"

"ComponentPin compID pinname x y PinPadstack: padstackName"

"InterfacePort portname portID x y Padstack: padstackName"

"EdgePort portname portID EdgeInfo: Primitive id, edge index[Primitive id, edge index]"

where *compID* is the component instance identifier, *pinname* is the name of the connected pin, *x* and *y* are the connection point, *padstackName* is the name of the padstack, *portname* is the name of the port, *portID* is the identifier for the interface port, and *id* and *index* identify edges involved in an edgeport.

*Parameters:* <netName>

Type: String

The name of the net.

## GetNets (Layout Editor)

Returns the names of all nets in the active design.

|                     |                                                                                                     |
|---------------------|-----------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A.                                                                                                |
| <b>Parameters</b>   | None.                                                                                               |
| <b>Return Value</b> | Array of the names of the nets in the active design, separated by commas, or None if no nets exist. |

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | GetNets()                                            |
| <b>Python Example</b> | <pre>oEditor.GetNets() ['gnd', 'net1', 'net2']</pre> |

## HighlightNet (Layout Editor)

Highlights or removes the highlight from all elements in a net.

|                   |                            |             |                                                                                                         |
|-------------------|----------------------------|-------------|---------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | None.                      |             |                                                                                                         |
| <b>Parameters</b> | <b>Name</b>                | <b>Type</b> | <b>Description</b>                                                                                      |
|                   | <requiredParameterKeyword> | String      | Required first parameter which must have the value "Name:Args".                                         |
|                   | <requiredNetKeyword>       | String      | Required second parameter which must have the value "Name:=". Must be the first parameter for each net. |
|                   | <netName>                  | String      | Name of the net.                                                                                        |
|                   | <requiredFlagKeyword>      | String      | Required fourth parameter which must have the value "Hi:=". Must be the third parameter for each net.   |

|                 |                                                                                                                                               |                                                                |  |                 |         |                                                                |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|--|-----------------|---------|----------------------------------------------------------------|
|                 | <table><tr><td>&lt;highlightFlag&gt;</td><td>Boolean</td><td>True if the net should be highlighted. False if it should not.</td></tr></table> |                                                                |  | <highlightFlag> | Boolean | True if the net should be highlighted. False if it should not. |
| <highlightFlag> | Boolean                                                                                                                                       | True if the net should be highlighted. False if it should not. |  |                 |         |                                                                |
| Return Value    | None.                                                                                                                                         |                                                                |  |                 |         |                                                                |

|                |                                                                                                                                             |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | HighlightNet(["Name:Args", "Name:=", " <netName>", "Hi:=", <highlightFlag>, ...])                                                           |
| Python Example | <pre>oEditor.HighlightNet(<br/>    [<br/>        "NAME:Args",<br/>        "Name:=", "net_0",<br/>        "Hi:=", True<br/>    ]<br/>)</pre> |

ModifyDifferentialPair (Layout Editor)

Modifies a differential pair from two target nets.

|            |                                                                                                                                |        |                                                                                     |
|------------|--------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------|
| UI Access  | From the <b>Nets</b> window, select the <b>Differential</b> tab. Then right-click a differential pair and select <b>Swap</b> . |        |                                                                                     |
| Parameters | Name                                                                                                                           | Type   | Description                                                                         |
|            | <DiffPairName>                                                                                                                 | String | Name of the target differential pair (i.e., Sig_0).                                 |
|            | <NewName>                                                                                                                      | String | New name of the target differential pair (i.e., since it will be unchanged, Sig_0). |
|            | <Description>                                                                                                                  | String | Redundant parameter, intentionally left blank.                                      |
|            | <Parameters>                                                                                                                   | Array  | Array containing the nets in the differential pair in their new swapped order:      |

|                     |        |        |                                                                                          |
|---------------------|--------|--------|------------------------------------------------------------------------------------------|
|                     |        |        | <ul style="list-style-type: none"> <li>• &lt;Net1&gt;</li> <li>• &lt;Net2&gt;</li> </ul> |
|                     | <Net1> | String | A net in the differential pair, presumably now in the swapped position (e.g., Sig_P).    |
|                     | <Net2> | String | A net in the differential pair, presumably now in the swapped position (e.g., Sig_N).    |
| <b>Return Value</b> | None   |        |                                                                                          |

|                       |                                                                                    |
|-----------------------|------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ModifyDifferentialPair(<DiffPairName>, <NewName>, <Description>, [<Net1>, <Net2>]) |
| <b>Python Example</b> | oEditor.ModifyDifferentialPair("Sig_0", "Sig_0", "", ["Sig_P", "Sig_N"])           |

## ModifyNetClass

*Use:* Modify an existing net class in a layout.

*Command:* ModifyNetClass

*Syntax:* ModifyNetClass (<name> <new name> <new description> <new nets name list>)

*Return Value:* None

## ResetDifferentialpairs (Layout Editor)

Resets a differential pair to its original state.

|                  |                                                                                                                                |
|------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b> | From the <b>Nets</b> window, select the <b>Differential</b> tab. Then right-click a differential pair and select <b>Edit</b> . |
|------------------|--------------------------------------------------------------------------------------------------------------------------------|



|            |                               |        |                                                                                                                                                                                                                                |
|------------|-------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                          | Type   | Description                                                                                                                                                                                                                    |
|            | <Parameters1>                 | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:New Differential Pairs&gt;</li> <li>• &lt;DiffPair1&gt;</li> <li>• &lt;DiffPair2&gt;</li> </ul>                       |
|            | <NAME:New Differential Pairs> | String | Required first parameter which must have the specified value (i.e., "New Differential Pairs").                                                                                                                                 |
|            | <DiffPair1>                   | Array  | Array containing the following parameters for the target differential pair in order: <ul style="list-style-type: none"> <li>• &lt;DiffPairName&gt;</li> <li>• &lt;Description1&gt;</li> <li>• &lt;DiffPair1Nets&gt;</li> </ul> |
|            | <DiffPair1Name>               | String | Name of the target differential pair (i.e., 1).                                                                                                                                                                                |
|            | <Description1>                | String | Redundant parameter, intentionally left blank.                                                                                                                                                                                 |
|            | <DiffPair1Nets>               | Array  | Array containing the nets in the target differential pair: <ul style="list-style-type: none"> <li>• &lt;Net1&gt;</li> <li>• &lt;Net2&gt;</li> </ul>                                                                            |
|            | <Net1>                        | String | The first net in the target differential pair (e.g., Port1).                                                                                                                                                                   |
|            | <Net2>                        | String | The second net in the target differential pair (e.g., Sig_P).                                                                                                                                                                  |
|            | <DiffPair2>                   | Array  | Array containing the following parameters for the target differential pair in order: <ul style="list-style-type: none"> <li>• &lt;DiffPairName&gt;</li> <li>• &lt;Description2&gt;</li> <li>• &lt;DiffPair2Nets&gt;</li> </ul> |
|            | <DiffPair2Name>               | String | Name of the target differential pair (i.e., 2).                                                                                                                                                                                |
|            | <Description2>                | String | Redundant parameter, intentionally left blank.                                                                                                                                                                                 |
|            | <DiffPair2Nets>               | Array  | Array containing the nets in the target differential pair:                                                                                                                                                                     |

|                     |        |        |                                                                                       |
|---------------------|--------|--------|---------------------------------------------------------------------------------------|
|                     |        |        | <ul style="list-style-type: none"><li>• &lt;Net3&gt;</li><li>• &lt;Net4&gt;</li></ul> |
|                     | <Net3> | String | The first net in the target differential pair (e.g., Sig_N).                          |
|                     | <Net4> | String | The second net in the target differential pair (e.g., Port2).                         |
| <b>Return Value</b> | None   |        |                                                                                       |

|                      |                                                                                                                                                           |  |  |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b> | ResetDifferentialPairs([<NAME:New Differential Pairs>, [<DiffPair1>, <Description1>, [<Net1>, <Net2>]], [<DiffPair2>, <Description2>, [<Net3>, <Net4>]]]) |  |  |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|

|                       |                                                                                                                                                                                                                                                                                                                                  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oEditor.ResetDifferentialPairs(<br/>    [<br/>        "NAME:New Differential Pairs",<br/>        [<br/>            "1",<br/>            "",<br/>            ["Port1", "Sig_P"]<br/>        ],<br/>        [<br/>            "2",<br/>            "",<br/>            ["Sig_N", "Port2"]<br/>        ]<br/>    ]<br/>)</pre> |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**SelectNetConnected (Layout Editor)**

Select all elements in the active design connected to the target net.

|                  |                                                                                                                           |
|------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b> | From the <b>Layout</b> tab, right-click an object in the active design and select <b>Nets &gt; Select Net Connected</b> . |
|------------------|---------------------------------------------------------------------------------------------------------------------------|

|                     |                 |             |                                                                                                                                                               |
|---------------------|-----------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>     | <b>Type</b> | <b>Description</b>                                                                                                                                            |
|                     | <Parameters>    | Array       | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:elements&gt;</li> <li>• &lt;TargetNet&gt;</li> </ul> |
|                     | <NAME:elements> | String      | Required first parameter which must have the specified value (i.e., "elements").                                                                              |
|                     | <TargetNet>     | String      | Name of the target net.                                                                                                                                       |
| <b>Return Value</b> | None.           |             |                                                                                                                                                               |

|                       |                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SelectNetConnected([<NAME:elements>, <TargetNet>])                                                   |
| <b>Python Example</b> | <pre>oEditor.SelectNetConnected(     [         "NAME:elements",         "circle_1288",     ]) </pre> |

## SelectPhysicallyConnected (Layout Editor)

Selects all elements physically connected to the target object.

|                   |                                                                                                                                  |             |                                                        |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------|
| <b>UI Access</b>  | From the <b>Layout</b> tab, right-click an object in the active design and select <b>Nets &gt; Select Physically Connected</b> . |             |                                                        |
| <b>Parameters</b> | <b>Name</b>                                                                                                                      | <b>Type</b> | <b>Description</b>                                     |
|                   | <Parameters>                                                                                                                     | Array       | Structured array containing these parameters in order: |

|                     |                 |        |                                                                                                           |
|---------------------|-----------------|--------|-----------------------------------------------------------------------------------------------------------|
|                     |                 |        | <ul style="list-style-type: none"> <li>• &lt;NAME:elements&gt;</li> <li>• &lt;TargetObject&gt;</li> </ul> |
|                     | <NAME:elements> | String | Required first parameter which must have the specified value (i.e., "elements").                          |
|                     | <TargetObject>  | String | Name of the target object.                                                                                |
| <b>Return Value</b> | None.           |        |                                                                                                           |

|                       |                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SelectPhysicallyConnected([<NAME:elements>, <TargetObject>])                                                |
| <b>Python Example</b> | <pre>oEditor.SelectPhysicallyConnected(     [         "NAME:elements",         "circle_1288",     ]) </pre> |

## SetNetColor (Layout Editor)

Sets the color of a target net.

|                   |                                                                                                                                                                                                                                                                                 |       |                                                        |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------|
| <b>UI Access</b>  | From the <b>Nets</b> window, right-click a net and select <b>List</b> to open the <b>Design List</b> window. From any row, double-click the bar in the <b>Color</b> column to open the <b>Color</b> window. Select a new color, then click <b>OK</b> to change the net's color. |       |                                                        |
| <b>Parameters</b> | Name                                                                                                                                                                                                                                                                            | Type  | Description                                            |
|                   | <Parameters>                                                                                                                                                                                                                                                                    | Array | Structured array containing these parameters in order: |

|                     |             |         |                                                                                                                                                                                                                                                                                               |
|---------------------|-------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |             |         | <ul style="list-style-type: none"> <li>• &lt;NAME:Args&gt;</li> <li>• &lt;Name&gt;</li> <li>• &lt;Color&gt;</li> </ul>                                                                                                                                                                        |
|                     | <NAME:Args> | String  | Required first parameter which must have the specified value (i.e., "Args").                                                                                                                                                                                                                  |
|                     | <Name>      | String  | Name of the target net.                                                                                                                                                                                                                                                                       |
|                     | <Color>     | Array   | Structured array containing the RGB (i.e., Red, Green, Blue) color code, which the target net will be set to: <ul style="list-style-type: none"> <li>• &lt;R&gt;</li> <li>• &lt;G&gt;</li> <li>• &lt;B&gt;</li> <li>• &lt;Check_Containment&gt;</li> <li>• &lt;Via_Persistence&gt;</li> </ul> |
|                     | <R>         | Integer | Value of red color.                                                                                                                                                                                                                                                                           |
|                     | <G>         | Integer | Value of green color.                                                                                                                                                                                                                                                                         |
|                     | <B>         | Integer | Value of blue color.                                                                                                                                                                                                                                                                          |
| <b>Return Value</b> | None.       |         |                                                                                                                                                                                                                                                                                               |

|                       |                                                                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetNetColor([<NAME:Args>, <Name>, <Color>, [<R>, <G>, <B>]])                                                                              |
| <b>Python Example</b> | <pre>oEditor.SetNetColor(     [         "NAME:Args",         "Name:=", "Net_1",         "Color:=", ["R:=", 0, "G:=", 0, "B:=", 160]</pre> |

|  |    |
|--|----|
|  | ]) |
|--|----|

## SetNetVisible (Layout Editor)

Shows and highlights or hides specified nets in the Layout Editor. Multiple nets can be highlighted or hidden at once.

|                     |                                                                                                                                                       |             |                                                                                                         |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | On the <b>Nets</b> tab of the <b>Nets</b> window, highlight and right click on one or more nets. Click <b>Hide</b> or any of the <b>Show</b> options. |             |                                                                                                         |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                                           | <b>Type</b> | <b>Description</b>                                                                                      |
|                     | <requiredParameterKeyword>                                                                                                                            | String      | Required first parameter which must have the value "Name:Args".                                         |
|                     | <requiredNameKeyword>                                                                                                                                 | String      | Required second parameter which must have the value "Name:=". Must be the first parameter for each net. |
|                     | <netName>                                                                                                                                             | String      | Name of the net                                                                                         |
|                     | <requiredFlagKeyword>                                                                                                                                 | String      | Required fourth parameter which must have the value "Vis:=". Must be the third parameter for each net.  |
|                     | <visibilityFlag>                                                                                                                                      | Boolean     | True if the net should be visible. False if it should be hidden.                                        |
| <b>Return Value</b> | None.                                                                                                                                                 |             |                                                                                                         |

|                       |                                                                                    |
|-----------------------|------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetNetVisible(["Name:Args", "Name:=", "<netName>", "Vis:=", <highlightFlag>, ...]) |
| <b>Python Example</b> | oEditor.SetNetVisible(<br>[                                                        |

|  |                                                                                                                                                                                                                         |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"NAME:Args", "Name:=", "Net_1", "Vis:=", True ]) oEditor.SetNetVisible( [ "NAME:Args", "Name:=", "&lt;NO-NET&gt;", "Vis:=", False, "Name:=", "Ground", "Vis:=", False, "Name:=", "Chassis", "Vis:=", True ])</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**ToggleNetHighlight (Layout Editor)**

Highlights or removes the highlight from all objects in the nets of the target elements.

|            |                                                                                                                                        |       |                                                        |
|------------|----------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------|
| UI Access  | After selecting one or more elements within the <b>Layout Editor</b> , navigate to <b>Layout &gt; Nets &gt; Toggle Net Highlight</b> . |       |                                                        |
| Parameters | Name                                                                                                                                   | Type  | Description                                            |
|            | <Parameters>                                                                                                                           | Array | Structured array containing these parameters in order: |



|                     |                 |        |                                                                                                 |
|---------------------|-----------------|--------|-------------------------------------------------------------------------------------------------|
|                     |                 |        | <ul style="list-style-type: none"><li>• &lt;NAME:elements&gt;</li><li>• &lt;Names&gt;</li></ul> |
|                     | <NAME:elements> | String | Required first parameter which must have the specified value (i.e., "elements").                |
|                     | <Names>         | String | Names of the target elements to highlight, separated by commas.                                 |
| <b>Return Value</b> | None.           |        |                                                                                                 |

|                       |                                                                                                                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ToggleNetHighlight([<NAME:elements>, <Names>])                                                                                                                                       |
| <b>Python Example</b> | <pre>oEditor.ToggleNetHighlight(<br/>    [<br/>        "NAME:elements",<br/>        "rect_0",<br/>        "rect_2",<br/>        "circle_1"<br/>        "R96-2"<br/>    ]<br/>)</pre> |

## Port Methods

The following port methods are available:

[AddCircuitRefPort](#)

[AddPortsToAllNets](#)

[AddPortsToNets](#)

[AddRefPort](#)

[AlignPorts](#)

[AssignCircuitRefPort](#)

[AssignRefPort](#)

[ClearRefPort](#)

[CreateCircuitPort](#)

[CreateEdgePort](#)

[CreateNPort](#)

[CreatePortInstancePorts](#)

[CreatePortsOnComponents](#)

[CreatePortsOnComponentsByNet](#)

[GetPortInfo](#)

[RemovePort](#)

[RemovePortsFromAllNets](#)

[RemovePortsFromNet](#)

[RemovePortsOnComponents](#)

[SetHfssExtentsVisible](#)

[SetHfssPortsVisible](#)

## AddCircuitRefPort (Layout Editor)

*Use:* Assign an edge as a reference to an existing port; model as a circuit port.

*Command:* AddCircuitRefPort

*Syntax:* AddCircuitRefPort

```
Array(<"port name">, <"port name">, ...),  
Array("NAME:Contents",  
"edge:=", Array(<edge description>), "edge:=", Array(<edge description>), ...)
```

*Return Value:* None.

*Parameters:* <edge description> for primitive edges

"et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>

<"prim">:

text that is the primitive name

<edge#>:

integer that is the edge number on the primitive

<edge description>:

for via edges

```
"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,  
"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,  
"ey:=", <end Y location>, "h:=", <arc height>, "rad:=", <radians>
```

```
<"via">:
```

text that is the name of the via to use

```
<layer id>:
```

an integer that is the id of the layer of the pad of the via to use

```
<start X location>, <start Y Location>:
```

doubles that are the X, Y location of the start point of the edge arc

```
<end X location>, <end Y Location>:
```

doubles that are the X, Y location of the end point of the edge arc

```
<arc height>:
```

double giving the height of the edge arc (0 for a straight edge)

```
<radians>:
```

double giving the arc size in radians (0 for a straight edge)

## **AddPortsToAllNets (Layout Editor)**

*Use:* Adds ports to all the pins in all the nets.

*Command:* Layout tab under Nets right-click and click **Create Ports**.

*Syntax:* AddPortsToAllNets

*Return Value:* None

*Parameters:* None.

### **AddPortsToNet (Layout Editor)**

*Use:* Add ports to all the pins on the designated nets.

*Command:* In Layout right-click and click **Port > Create Ports on Net**.

Layout tab under Nets, right-click and click **Create Ports**.

*Syntax:* AddPortsToNet Array("NAME:Nets", "net-name", ...)

*Return Value:* None

*Parameters:* net-name the name of a net; all pins on this particular net receive ports.

### **AddRefPort (Layout Editor)**

*Use:* Create a reference port from edges and associate with each of the named ports.

*Command:* (When more than 2 edges are selected.)

**Draw > Port > Create**

**Right-click > Port > Create**

Also available through toolbar icon.

*Syntax:* AddRefPort

```
Array(<"port name">, <"port name">, ...),
```

```
Array("NAME:Contents",
```

```
"edge:=", Array(<edge description>), "edge:=", Array(<edge description>), ...)
```

**Return Value:** None.

*Parameters:* <edge description> for primitive edges

"et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>

<"prim">:

text that is the primitive name

<edge#>:

integer that is the edge number on the primitive

<edge description>

for via edges

"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,  
"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,  
"ey:=", <end Y location>, "h:=", <arc height>, "rad:=", <radians>

<"via">:

text that is the name of the via to use

<layer id>:

an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc

<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>:

double giving the height of the edge arc (0 for a straight edge)

<radians>:

double giving the arc size in radians (0 for a straight edge)

### **AlignPorts (Layout Editor)**

*Use:* Causes automatic alignment of the microwave ports of the components, EdgePorts, and Pins referenced in the argument. In case the list is empty, aligns ALL the microwave ports in the layout.

*Command:* None.

*Syntax:* **AlignPorts** Array ("NAME: *elements*",

<object\_name>, // 1<sup>st</sup> object

<object\_name>, // 2<sup>nd</sup> object, if any

...) // etc

*Return Value:* None.

*Parameters:* The LayoutComp's ID

## **AssignCircuitRefPort (Layout Editor)**

*Use:* Assign the internal port as a reference to an existing port; model as a circuit port.

*Command:* AssignCircuitRefPort

*Syntax:* AssignCircuitRefPort

```
Array(<"port name">, <"port name">, ...),  
Array("NAME:Contents",  
"edge:=", Array(<edge description>), "edge:=", Array(<edge description>), ...)
```

*Return Value:* None

*Parameters:* <"layer">

Type: text

Description: layer name.

<"port">

Type: text

Description: a port or pin name.

<edge description> for primitive edges

"et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>



<"prim">

Type: text

Description: primitive name

<edge#>

Type: integer

Description: edge number on the primitive

<edge description> for via edges

"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,

"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,

"ey:=", <end Y location>, "h:=", <arc height>, "rad:=", <radians>

<"via">:

text that is the name of the via to use

<layer id>:

an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc

<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>:

double giving the height of the edge arc (0 for a straight edge)

<radians>:

double giving the arc size in radians (0 for a straight edge)

## AssignRefPort (Layout Editor)

*Use:* Assign the named internal port as a reference for each of the named ports.

*Command:* AssignRefPort

*Syntax:* AssignRefPort

```
Array(<"port name">, <"port name">, ...),  
Array("NAME:Contents",  
"edge=", Array(<edge description>), "edge=", Array(<edge description>), ...)
```

*Return Value:* None

*Parameters:* <"layer">

Type: text

Description: layer name.

<"port">

Type: text

Description: a port or pin name.

<edge description>

for primitive edges

"et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>

<"prim">

Type: text

Description: primitive name

<edge#>

Type: integer

Description: edge number on the primitive

<edge description>

for via edges

"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,

"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,

"ey:=", <end Y location>, "h:=", <arc height>, "rad:=", <radians>

<"via">:

text that is the name of the via to use

`<layer id>:`

an integer that is the id of the layer of the pad of the via to use

`<start X location>, <start Y Location>:`

doubles that are the X, Y location of the start point of the edge arc

`<end X location>, <end Y Location>:`

doubles that are the X, Y location of the end point of the edge arc

`<arc height>:`

double giving the height of the edge arc (0 for a straight edge)

`<radians>:`

double giving the arc size in radians (0 for a straight edge)

## **ClearRefPort (Layout Editor)**

*Use:* Clear references (or referencing) ports from each of the named ports.

*Command:* Draw > Clear reference Port

*Syntax:* **ClearRefPort** Array("Port1", ...)

*Return Value:* None.

## **CreateCircuitPort (Layout Editor)**

*Use:* Create a circuit port between two points.

*Command:* Draw > Create Circuit Ports

*Syntax:* CreateCircuitPort Array("NAME:Location", "PosLayer:=", "layer name", "X0:=", \_  
x-value, "Y0:=", y-value, "NegLayer:=", "layer name", "X1:=", x-value, "Y1:=", y-value)

*Return Value:* None

*Parameters:* <"layer">

Type: text

Description: layer name.

<"port">

Type: text

Description: a port or pin name.

<edge description>

for primitive edges

"et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>

<"prim">

Type: text

Description: primitive name

<edge#>

Type: integer

Description: edge number on the primitive

<edge description>

for via edges

"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,  
"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,  
"ey:=", <end Y location>, "h:=", <arc height>, "rad:=", <radians>

<"via">:

text that is the name of the via to use

<layer id>:

an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc

<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>:

double giving the height of the edge arc (0 for a straight edge)

<radians>:

double giving the arc size in radians (0 for a straight edge)

### CreateEdgePort (Layout Editor)

Creates an edge port using the specified edges.

| UI Access  | Draw > Port > Create or Right-click > Port > Create. |        |                                                                                                                                                    |
|------------|------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                 | Type   | Description                                                                                                                                        |
|            | <EdgePortArray>                                      | Array  | Identifies the contents of the array (i.e., "Contents") containing the following arguments:<br><br><NAME:Contents><br><br><Edge><br><br><External> |
|            | <NAME:Contents>                                      | String | Identifies the contents of the array (i.e., "Contents").                                                                                           |
|            | <Edge>                                               | Array  | Array containing separate arrays for primitive edges and via edges.                                                                                |

|          |         |                                                                                                                                                                                                                                                                                                                                                                                     |
|----------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |         | <p>For primitive edges, array contains:</p> <p>&lt;Et&gt;</p> <p>&lt;Prim&gt;</p> <p>&lt;Edge&gt;</p> <p>For via edges, array contains:</p> <p>&lt;Et&gt;</p> <p>&lt;Sel&gt;</p> <p>&lt;Layers&gt;</p> <p>&lt;Sx&gt;</p> <p>&lt;Sy&gt;</p> <p>&lt;Ex&gt;</p> <p>&lt;Ey&gt;</p> <p>&lt;H&gt;</p> <p>&lt;Rad&gt;</p> <p><b>Note:</b></p> <p>Array can repeat in the same command.</p> |
| <Et>     | String  | Type of new edge port (i.e., "pe" for primitive edge or "pse" for pad-stack edge or via).                                                                                                                                                                                                                                                                                           |
| <Prim>   | String  | Name of the target primitive.                                                                                                                                                                                                                                                                                                                                                       |
| <Edge#>  | Integer | Edge number of the target primitive.                                                                                                                                                                                                                                                                                                                                                |
| <Sel>    | String  | Name of the target via.                                                                                                                                                                                                                                                                                                                                                             |
| <Layers> | Integer | Layer ID of the pad of the target via.                                                                                                                                                                                                                                                                                                                                              |



|                     |                                                                                                             |         |                                                                      |
|---------------------|-------------------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------|
|                     | <Sx>                                                                                                        | Integer | Starting X coordinate for the arc of the new edge port.              |
|                     | <Sy>                                                                                                        | Integer | Starting Y coordinate for the arc of the new edge port.              |
|                     | <Ex>                                                                                                        | Integer | Ending X coordinate for the arc of the new edge port.                |
|                     | <Ey>                                                                                                        | Integer | Ending Y coordinate for the arc of the new edge port.                |
|                     | <H>                                                                                                         | Integer | Arc height of the new edge port (e.g., enter 0 for a straight edge). |
|                     | <rad>                                                                                                       | String  | Arc size of the new edge port (e.g., enter 0 for a straight edge).   |
|                     | <External>                                                                                                  | Boolean | True — the port is external.<br>False — the port is internal.        |
| <b>Return Value</b> | Text containing the name of the created edge port. (Returns an empty name if the edge port is not created.) |         |                                                                      |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CreateEdgePort(<EdgePortArray>)                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Python Example</b> | <p>Primitive edge port:</p> <pre>oEditor.CreateEdgePort (("NAME:Contents", "edge:=", ("et:=", "pe", "prim:=", "rect_167", "edge:=", 0), "edge:=", ("et:=", "pe", "prim:=", "rect_167", "edge:=", 3), "external:=", true))</pre> <p>Via edge port:</p> <pre>oEditor.CreateEdgePort (("NAME:Contents", "edge:=", ("et:=", "pse", "sel:=", "via_0", "layer:=", 10, "sx:=", -0.0015, "sy:=", -0.0015, "ex:=", 0.0015, "ey:=", -0.0015, "h:=", 0, "rad:=", 0), "external:=", true))</pre> |

## CreateNPort (Layout Editor)

*Use:* Creates an N-Port definition and component and adds them to the current project, layout, and schematic.

*Syntax:* **CreateNPort**<Array>

*Return Value:* Returns the name of the newly created component.

```
Parameters:  Array("NAME:Contents",  
"definition_name:=", <nport_definition_name>,  
"placement:=", <component_placement>,  
"layer:=", <placement_layer_name>,  
<nport_data_definition>)
```

**<nport\_definition\_name>:**

quoted string (name of the component definition)

**<component\_placement>:**

Array("x:=", <value>, // x coordinate

"y:=", <value>, // y coordinate

"scaling:=", <value>) // double

**<nport\_data\_definition>** - see the I/O format in TODO

### CreatePortInstancePorts (Layout Editor)

*Use:* Create port on port instances.

*Command:* Right-Click-Menu > Port > Create

*Syntax:* CreatePortInstancePorts Array("NAME:elements", "element-name",...)

*Return Value:* None

*Parameters:* <element-name>

Type: string

// Name of a port instance on which ports will be created.

### CreatePortsOnComponents (Layout Editor)

*Use:* Create port on port instances of selected components.

*Command:* Right-Click-Menu > Port > Create Ports on Component

*Syntax:* CreatePortsOnComponentsArray("NAME:elements", "element-name",...)

*Return Value:* None

*Parameters:* <element-name>

Type: string

// Name of a component.

// Ports are created on the unconnected port instances of the selected components.

### CreatePortsOnComponentsByNet (Layout Editor)

|                  |                                                                                                                                                                                                                                                                   |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b> | After selecting one or more components, right-click within the <b>Layout Editor</b> and select <b>Port &gt; Create Ports On Component</b> to open the <b>Create Ports</b> window. Select a net from the <b>Net Filter</b> area, then click <b>OK</b> to close the |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                     |                             |         |                                                                                                                                                                      |
|---------------------|-----------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <b>Create Ports</b> window. |         |                                                                                                                                                                      |
| <b>Parameters</b>   | Name                        | Type    | Description                                                                                                                                                          |
|                     | <Parameters>                | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:Components&gt;</li> <li>• &lt;ComponentNames&gt;</li> </ul> |
|                     | <NAME:Components>           | String  | Required first parameter which must have the specified value (i.e., "Components").                                                                                   |
|                     | <ComponentNames>            | String  | Names of the target components, separated by commas.                                                                                                                 |
|                     | <Parameters>                | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:Nets&gt;</li> <li>• &lt;NetNames&gt;</li> </ul>             |
|                     | <NAME:Nets>                 | String  | Required first parameter which must have the specified value (i.e., "Nets").                                                                                         |
|                     | <NetNames>                  | String  | Names of the target net(s), separated by commas (if more than one).                                                                                                  |
|                     | <Type>                      | String  | Required parameter which must have the value "Port".                                                                                                                 |
|                     | <R>                         | Integer | Value of resistor.                                                                                                                                                   |
|                     | <L>                         | Integer | Value of inductor.                                                                                                                                                   |
|                     | <C>                         | Integer | Value of capacitor.                                                                                                                                                  |
| <b>Return Value</b> | None.                       |         |                                                                                                                                                                      |

|                       |                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CreatePortsOnComponentsByNet([<NAME:Components>, <ComponentNames>], [<NAME:Nets>, <NetNames>], <Type>, <R>, <L>, <C>) |
| <b>Python Example</b> | oEditor.CreatePortsOnComponentsByNet (<br>[                                                                           |

|  |                                                                                                                         |
|--|-------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"NAME:Components",<br/>"U0"<br/>"U1"<br/>],<br/>[<br/>"NAME:Nets",<br/>"trace"<br/>], "Port", "0", "0", "0")</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------|

**GetPortInfo (Layout Editor)**

*Use:* Request information on a port or pin.

*Command:* None.

*Syntax:* GetPortInfo<"name">

*Return Value:* an array of text as follows:

For pins and ports that are not edge ports:

Name=<name>

Type=Pin, Padstack: <padstack definition name>

X=<X coordinate>

Y=<Y coordinate>

ConnectionPoints=<connection description>; <connection description>,...

NetName=<net name>

For edge ports:

Name=<name>

Type=EdgePort

X=<X coordinate>

Y=<Y coordinate>

ConnectionPoints=<connection description>; <connection description>,...

NetName=<net name>

<name>

Text containing the name of the pin or port

<padstack definition name>

Text containing the name of the associated padstack definition

<X coordinate>

Double indicating the X location of the pin or port location

<Y coordinate>

Double indicating the Y location of the pin or port location

<connection description>

< X coordinate> <Y coordinate> Dir:<direction> Layer: <layer name>

<direction>

Either NONE or a double giving the angle in degrees for the connection direction

<layer name>

Name of the layer for the connection point being described.

Example returned values:

Name=Pin1

Type=Pin, Padstack: Padstack

X=0.000744

Y=0.015537

ConnectionPoints= 0.000744 0.015537 Dir:NONE Layer: Top; 0.000744 0.015537

Dir:NONE Layer: Ground; 0.000744 0.015537 Dir:NONE Layer: Bottom

NetName=Pin1

Name=Port1

Type=EdgePort

X=-0.008120

Y=0.004264

ConnectionPoints= -0.008120 0.004264 Dir:90.000000 Layer: Bottom

NetName=Port1

*Parameters:* <"name">

Text that contains the name of the port or pin for which information is being requested.

## RemovePort (Symbol Editor)

Selected pins are changed to vias. Selected edge terminal ports are removed.

*Syntax:* RemovePort <NAME:elements", <object\_name> ... // objects to be removed

*Return Value:* None.

*Parameters:* <object\_name>

Type: <String>

*Example:* oEditor.RemovePort ["NAME:elements", "via\_195", "Port1"]

## RemovePortsFromAllNets (Layout Editor)

*Use:* Removes ports from all the pins in all the nets.

*Command:* Layout tab under Nets right-click and click **Remove Ports**.

*Syntax:* RemovePortsFromAllNets

*Return Value:* None

*Parameters:* None.

*Example:* oEditor.RemovePortsFromAllNets

## RemovePortsFromNet (Layout Editor)

Removes ports from all the pins on the designated nets.

|                  |                                                                                                                                    |
|------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b> | In the <b>Layout</b> window, right click the net and click <b>Port &gt; Remove Ports from Net</b> or on the <b>Nets</b> tab of the |
|------------------|------------------------------------------------------------------------------------------------------------------------------------|



|                     |                                                                                                 |        |                                                                                    |
|---------------------|-------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------|
|                     | <b>Nets</b> window, highlight and right click one or more nets and choose <b>Remove Ports</b> . |        |                                                                                    |
| <b>Parameters</b>   | Name                                                                                            | Type   | Description                                                                        |
|                     | <requiredKeyword>                                                                               | String | Required parameter that must proceed all element names with the value "NAME:Nets". |
|                     | <netName>                                                                                       | String | Name of a net. Ports are removed from the port instances of the selected nets.     |
| <b>Return Value</b> | None.                                                                                           |        |                                                                                    |

|                       |                                                                                                                              |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | RemovePortsFromNet(["NAME:Nets", <netName>, ...])                                                                            |
| <b>Python Example</b> | <pre>oEditor.RemovePortsFromNet (     [         "NAME:Nets",         "NET_1",         "NET_2",         "NET_3"     ] )</pre> |

## RemovePortsOnComponents (Layout Editor)

Remove ports on port instances of selected components. Multiple nets can be listed.

|                  |                                                                       |
|------------------|-----------------------------------------------------------------------|
| <b>UI Access</b> | Right click and choose <b>Port &gt; Remove Ports From Component</b> . |
|------------------|-----------------------------------------------------------------------|

|                     |                   |             |                                                                                            |
|---------------------|-------------------|-------------|--------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>       | <b>Type</b> | <b>Description</b>                                                                         |
|                     | <requiredKeyword> | String      | Required parameter that must proceed all element names with the value "NAME:elements".     |
|                     | <elementName>     | String      | Name of a component. Ports are removed from the port instances of the selected components. |
| <b>Return Value</b> | None.             |             |                                                                                            |

|                       |                                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | RemovePortsOnComponents (["NAME:elements", <elementName>,...])                                 |
| <b>Python Example</b> | <pre>oEditor.RemovePortsOnComponents (     [         "NAME:elements",         ""     ] )</pre> |

## SetHfssExtentsVisible (Layout Editor)

Hides or reveals HFSS extents.

|                     |                                                                         |             |                                                                        |
|---------------------|-------------------------------------------------------------------------|-------------|------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Layout</b> tab, select <b>HFSS Extents &gt; Show/Hide</b> . |             |                                                                        |
| <b>Parameters</b>   | <b>Name</b>                                                             | <b>Type</b> | <b>Description</b>                                                     |
|                     | <Enable>                                                                | Boolean     | <b>True</b> displays HFSS extents.<br><b>False</b> hides HFSS extents. |
| <b>Return Value</b> | None.                                                                   |             |                                                                        |

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| <b>Python Syntax</b>  | SetHfssExtentsVisible(<Enable>)                   |
| <b>Python Example</b> | <code>oEditor.SetHfssExtentsVisible(False)</code> |

## SetHfssPortsVisible (Layout Editor)

Enables or disables target components.

|                     |                                                         |             |                                                                    |
|---------------------|---------------------------------------------------------|-------------|--------------------------------------------------------------------|
| <b>UI Access</b>    | From <b>Layout</b> , select <b>Draw Ports/Sources</b> . |             |                                                                    |
| <b>Parameters</b>   | <b>Name</b>                                             | <b>Type</b> | <b>Description</b>                                                 |
|                     | <Enable>                                                | Boolean     | <b>True</b> displays HFSS ports.<br><b>False</b> hides HFSS ports. |
| <b>Return Value</b> | None.                                                   |             |                                                                    |

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| <b>Python Syntax</b>  | SetHfssPortsVisible(<Enable>)                   |
| <b>Python Example</b> | <code>oEditor.SetHfssPortsVisible(False)</code> |

## Miscellaneous Methods

The following miscellaneous methods are available.

[AlignObjects \(Layout Editor\)](#)

[ChangeOptions \(Layout Editor\)](#)

[ChangeProperty \(Schematic Editor and Layout Editor\)](#)

[ClipPlane \(Layout Editor\)](#)

[CopyToHFSS 3D Layout \(Layout Editor\)](#)

[CutOutSubDesign \(Layout Editor\)](#)

[DefeatureObjects \(Layout Editor\)](#)

[DissolveComponents \(Layout Editor\)](#)

[Duplicate \(Layout Editor\)](#)

[Edit3DComponentDefinition \(Layout Editor\)](#)

[EditComponent \(Layout Editor\)](#)

[EditPinGroup \(Layout Editor\)](#)

[EnableComponents \(Layout Editor\)](#)

[EraseMeasurements \(Layout Editor\)](#)

[ExportDXF \(Layout Editor\)](#)

[ExportGDSII \(Layout Editor\)](#)

[ExportGerber \(Layout Editor\)](#)

[ExportNCDrill \(Layout Editor\)](#)

[GetActiveUnits \(Layout Editor\)](#)

[GetComponentInfo \(Layout Editor\)](#)

[GetCompInstanceFromRefDes \(Layout Editor\)](#)

[GetComponentPins \(Layout Editor\)](#)

[GetComponentPinInfo \(Layout Editor\)](#)

[GetEditorName \(Layout Editor\)](#)

[GetMaterialList \(Layout Editor\)](#)

[GetProperties \(Layout Editor\)](#)

[GetPropertyValue \(Layout Editor\)](#)

[GetSelections \(Layout Editor\)](#)

[Heal \(Layout Editor\)](#)

[PageSetup \(Layout Editor\)](#)

[PushExcitations \(Layout Editor\)](#)

[Select \(Layout Editor\)](#)

[SelectAll \(Layout Editor\)](#)

[SetActiveUnits \(Layout Editor\)](#)

[SetPropertyValue \(Layout Editor\)](#)

[StitchLines \(Layout Editor\)](#)

[UnselectAll \(Layout Editor\)](#)

[ZoomToFit \(Layout Editor\)](#)

## **AlignObjects (Layout Editor)**

*Use:* Align objects, e.g. primitives, relative to each other.

*Command:* AlignObjects

*Syntax:* AlignObjects

Array("NAME:align", <"alignment">, ...),

Array("NAME:elements", <"elem">, ...)

*Return Value:* Return Value: None

*Parameters:* <"alignment">

Type: text

Description: any one of:

"AlignLeft"

"AlignRight"

"CenterHorz" - align centers horizontally

"DistributeCentersHorz" - distribute object centers evenly horizontally

"SpaceEdgesHorz" - space objects equal distances apart horizontally

"AlignTop"

"AlignBottom"

"CenterVert" - align centers vertically

"DistributeCentersVert" - distribute object centers evenly vertically

"SpaceEdgesVert" - space objects equal distances apart vertically

"elem">

Type: text

Description: name of element (primitive, component, etc.) to align

*Example:*

```
Set oDesign = oProject.SetActiveDesign("HFSS 3D Layout1")
```

```
Set oEditor = oDesign.SetActiveEditor("Layout")
```

```
oEditor.AlignObjects Array("NAME:align", "AlignLeft"), Array("NAME:elements", "circle_2", "rect_1", "poly_3")
```

## ChangeOptions (Layout Editor)

*Use:* Changes options for an existing layout. (Does not change global options specified in the registry.) Only those options being changed need to be specified. Options not specified are not affected.

*Command:* None.

*Syntax:* ChangeOptions Array("NAME:options",<OptionData>,...)

*Return Value:* None

*Parameters:* <OptionData> can be of varying forms:

Type: <String>

Type: integer

Type: Array(float, float, float, float)

### Note:

**An error will be returned if this script command is not used at the top-level hierarchy.**

- Global layout defaults are stored in the registry (Layout\Preferences\)
- Names of registry items were selected for backwards compatibility and are consistent with adsn, technology file, and scripting naming
- Local options are both script-able and undo-able
- Global options are neither script-able nor undo-able

| Option                     | Description                                                                                                  | Installed default                                                                                                                                                                               | Registry, Scripting Names, Data Type                                                                                                      |
|----------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Arc Drawing Resolution     | Controls drawing of segments for arcs - either dynamic and based on current zoom or fixed to specified value | Dynamic                                                                                                                                                                                         | "useFixedDrawingResolution" <sup>1</sup><br>"DrawingResolution" <sup>2</sup>                                                              |
| Major and Minor Grid lines | Spacing, color, and visibility                                                                               | The grid is displayed. Spacing based on current default length units. Major grid lines are 10 minor grid lines apart. The line colors are light blue grays, with major grid lines being darker. | "MajorColor" <sup>3</sup><br>"MinorColor" <sup>3</sup><br>"MajorSize" <sup>2</sup><br>"MinorSize" <sup>2</sup><br>"ShowGrid" <sup>1</sup> |
| Drawing Extent             | Specifies size and coordinates of the layout                                                                 | Lower left of the layout is (-0.1, -0.1) and the upper right is (0.1, 0.1)                                                                                                                      | "PageExtent" <sup>4</sup>                                                                                                                 |
| Background color           | Color of the layout background                                                                               | white                                                                                                                                                                                           | "background color" <sup>3</sup>                                                                                                           |
| Sketch Mode                | Fill patterns and center lines are not drawn.                                                                | off                                                                                                                                                                                             | "DefaultToSketchMode" <sup>1</sup>                                                                                                        |
| Solid Mode                 | Objects are filled in with solid color.                                                                      | off                                                                                                                                                                                             | "fillMode" <sup>1</sup>                                                                                                                   |
| Draw Connection Points     | Display pin symbols in the layout.                                                                           | off                                                                                                                                                                                             | "show connection points" <sup>1</sup>                                                                                                     |
| Draw Rats                  | Display lines indicating missing physical connections in nets                                                | on                                                                                                                                                                                              | "draw rats" <sup>1</sup>                                                                                                                  |
| Label Vertices             | Display property text labeling the vertices of selected polygons and lines.                                  | off                                                                                                                                                                                             | "display vertex labels" <sup>1</sup>                                                                                                      |



|                                        |                                                                                                                                     |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Net Color                              | Color used for highlighting nets                                                                                                    | light yellow                                                                                                                                                                                                   | "NetColor" <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                      |
| Rectangle Description                  | Specifies if rectangles are described with two points or center point, width, and height                                            | 2 points                                                                                                                                                                                                       | "rectangle description" <sup>5</sup>                                                                                                                                                                                                                                                                                                                                                                         |
| Default Hole Size                      | Default size for actual holes in a PC board                                                                                         | 25 mil                                                                                                                                                                                                         | "defaultholesize" <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                               |
| Align Microwave Components             | Snaps components on entry.                                                                                                          | on                                                                                                                                                                                                             | "snaptoport" <sup>1</sup>                                                                                                                                                                                                                                                                                                                                                                                    |
| Symbol Footprint Scaling               | Used to size symbol footprints placed in layout.                                                                                    | Based on data extent and current length units.                                                                                                                                                                 | "sym footprint scaling" <sup>6</sup>                                                                                                                                                                                                                                                                                                                                                                         |
| Primary and Secondary Selection Colors | Colors used to indicate the first item selected and other items currently selected.                                                 | Primary color is red, secondary color is a darker red                                                                                                                                                          | "primary selectioncolor" <sup>3</sup><br>"secondary selection color" <sup>3</sup>                                                                                                                                                                                                                                                                                                                            |
| Preview Selection                      | Highlight the object that would be selected with a left mouse button click in the current location.                                 | off                                                                                                                                                                                                            | "preview selection" <sup>1</sup>                                                                                                                                                                                                                                                                                                                                                                             |
| Snapping options                       | Choose snapping sources and targets and the maximum distance (in pixels) for snapping to occur. Constrain edits to grid if desired. | Snap distance is 20 pixels. Snapping sources are vertex, edge center, object center, & elec. conn. Snapping targets are vertex, edge center, object center, elec. conn, & grid. Edits are constrained to grid. | "PixelSnapTolerance" <sup>7</sup><br>"SnapTargetVertex_on" <sup>1</sup><br>"SnapTargetEdgeCenter_on" <sup>1</sup><br>"SnapTargetObjCenter_on" <sup>1</sup><br>"SnapTargetEdge_on" <sup>1</sup><br>"SnapTargetElecConnection_on" <sup>1</sup><br>"SnapTargetIntersection_on" <sup>1</sup><br>"SnapTargetGrid_on" <sup>1</sup><br>"SnapSourceVertex_on" <sup>1</sup><br>"SnapSourceEdgeCenter_on" <sup>1</sup> |

|                                 |                                                                           |                                                        |                                                                                                                  |
|---------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
|                                 | <b>Note:</b> Off-grid objects are ignored if ConstrainToGrid is asserted. |                                                        | "SnapSourceEdge_on" <sup>1</sup><br>"SnapSourceElecConnection_on" <sup>1</sup><br>"ConstrainToGrid" <sup>1</sup> |
| Always Show Merge Layers Dialog | Controls display of the layer merging dialog.                             | off – Only show dialog when the user must be involved. | "AlwaysShowLayerMergeDlg" <sup>1</sup>                                                                           |
| Rotation Increment              | During rotation, objects are rotated by multiples of this amount.         | Based on current angle units.                          | "anglesnap" <sup>2</sup>                                                                                         |
| Allow Drag on first click       | Selection and move with one left mouse button click.                      | false                                                  | "AllowDragOnFirstClick" <sup>1</sup>                                                                             |

The footnotes in the table above correspond to the following:

<sup>1</sup> = Integer with a value of 1 for on/true and 0 for off/false

<sup>2</sup> = String containing a amount and units

<sup>3</sup> = Integer representing a Color

<sup>4</sup> = An Array containing (lower left x, lower left y, upper right x, upper right y)

<sup>5</sup> = Integer with a value of 0 for two points, and 1 for center/width/height

<sup>6</sup> = String holding a double.

<sup>7</sup> = Integer

## ChangeProperty (Schematic Editor and Layout Editor)

*Use:* Changes to properties are scripted using the ChangeProperty command.

This command can be executed by the oEditor to change editor properties, by the oDesign to change design level properties, and by the oProject to change project level properties. The command can be used to create, edit, and/or remove properties. In HFSS and Maxwell, only Variable and Separator properties can be deleted.

Use the script recording feature and edit a property, and then view the resulting script entry or use GetPropertyValue for the desired property to see the expected format.

**Command:** None

**Syntax:** ChangeProperty Array("Name:AllTabs", <PropTabArray>, <PropTabArray>, ...)

ChangeProperty(<modulename>:<setup name>:<sweep name>)

**Return Value:** None

**Parameters:** <PropTabArray>

```
Array("Name:<PropTab>",  
      <PropServersArray>,  
      <NewPropArray>,  
      <ChangedPropsArray>,  
      <DeletedPropsArray>)
```

<PropServersArray>

```
Array("Name:PropServers", <PropServer>,  
      <PropServer>, ...)
```

<NewPropArray>

```
Array("Name:NewProps", <PropDataArray>,  
<PropDataArray>,...)
```

<ChangedPropsArray>

```
Array("Name:ChangedProps",<PropDataArray>,  
<PropDataArray>, ...)
```

<DeletedPropsArray>

```
Array("Name:DeletedProps", <PropName>,  
<PropName>, ...)
```

<PropDataArray>

```
Array("NAME:<PropName>",  
      "PropType:=", <PropType>,  
      "NewName:=", <string>,  
      "Description:=", <string>,  
      "NewRowPosition:=", <int>,  
      "ReadOnly:=", <bool>,  
      "Hidden:=", <bool>,  
      <PropTypeSpecificArgs>)
```

<PropType>

Type: string

Identifies the type of property when a new property is added. In HFSS and Maxwell, only separator properties and variable properties can be added.

"SeparatorProp"

"VariableProp"

"TextProp"

"NumberProp"

"ValueProp"

"CheckboxProp"

"MenuProp"

"PointProp"

"VPointProp"

"V3DPointProp"

"ButtonProp"

### **NewName**

Specify the new name of a property if the property's name is being edited. In HFSS and Maxwell, the name can only be changed for separators and variables.

### **Description**

Specify a description of the property. In HFSS and Maxwell, the description can only be changed for separators and variables.

#### **NewRowPosition**

Used to reorder rows in the **Property** dialog box.

In HFSS, this only applies to the **Project>Project Variables** panel and the **Hfss>DesignProperties** panel.

In Maxwell, this only applies to the **Project>Project Variables** panel and the **Maxwell3D>DesignProperties**, **Maxwell2D>Design Properties**, or **RMxpert>Design Properties** panels. Specify the new zero-based row index of the variable or separator.

#### **ReadOnly**

Used to mark a property as "read only" so it can not be modified. In HFSS and Maxwell, this flag can only be set for variables and separators.

#### **Hidden**

Used to hide a property so it can not be viewed outside of the **Property** dialog box. In HFSS and Maxwell, this flag can only be set for variables and separators.

`<PropTypeSpecificArgs>`

`SeparatorProp: no arguments`

`TextProp: "Value:=", <string>`

`NumberProp: "Value:=", <double>`

`ValueProp: "Value:=", <value>`

```
CheckboxProp: "Value:=", <bool>
MenuProp: "Value:=", <string>
PointProp "X:=", <double>, "Y:=", <double>
VPointProp: "X:=", <value>, "Y:=", <value>
V3DPointProp: "X:=", <value>, "Y:=", <value>,
    "Z:=", <value>
Material Button: "Material:=", <string>
Color Button: "R:=", <int>, "G:=", <int>, "B:=", <int>
Transparency Button: "Value:=", <double>
```

<PropTypeSpecificArgs> for VariableProps

**Syntax:**

```
"Value:=", <value>, <OptimizationFlagsArray>,
<TuningFlagsArray>, <SensitivityFlagsArray>,
<StatisticsFlagsArray>
```

**Parameters:**

```
<OptimizationFlagsArray>
```

```
Array("NAME:Optimization",
```

```
"Included:=", <bool>,
```

```
"Min:=", <value>,  
"Max:=", <value>)
```

```
    <Tuning flagsArray>  
        Array("NAME:Tuning",  
"Included:=", <bool>,  
"Step:=", <value>,  
"Min:=", <value>,  
"Max:=", <value>)
```

```
    <SensitivityFlagsArray>  
        Array("NAME:Sensitivity",  
"Included:=", <bool>,  
"Min:=", <value>,  
"Max:=", <value>,  
"IDisp:=", <value> )
```

```
    <StatisticsFlagsArray>  
        Array("NAME:Statistical",  
"Included:=", <bool>,  
"Dist:=", <Distribution>,
```



```
"StdD:=", <value>,  
"Min:=", <value>,  
"Max:=", <value>,  
"Tol:=", <string>)
```

**<Distribution>**

Type: string

Value should be "Gaussian" or "Uniform"

**StdD**

Standard deviation.

**Min**

Low cut-off for the distribution.

**Max**

High cut-off for the distribution.

**Tol**

Tolerance for uniform distributions. Format is "<int>%".

Example: "20%".

## ClipPlane (Layout Editor)

Truncates graphics at the XY-plane in the +Z direction. Clip planes can be used to truncate graphics in the Layout view, including mesh and fields plots.

|                     |                                                                                                                          |
|---------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>View</b> menu, select <b>Clip Plane</b> , or from the <b>View</b> ribbon, select <b>Add Clipping Plane</b> . |
| <b>Parameters</b>   | None.                                                                                                                    |
| <b>Return Value</b> | None.                                                                                                                    |

|                       |                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ClipPlane()                                                                                                                                            |
| <b>Python Example</b> | <pre>oEditor = oDesign.SetActiveEditor("Layout") Editor.ClipPlane ("n1, n2, n3, et cetera") success = oEditor.ClipPlane("n1, n2, n3, et cetera")</pre> |

## CopyToHFSS 3D Layout (Layout Editor)

*Use:* Generate a single, flat, HFSS 3D Layout design from a selection of components and/or sub-circuits.

*Command:* CopyToHFSS 3D Layout

*Syntax:* CopyToHFSS 3D Layout Array("NAME:elements", <"obj1">, <"obj2">, ...)

*Return Value:* None

*Parameters:* <"obj1">

Type: text

// component or sub-circuit instance name.

## CutOutSubDesign (Layout Editor)

*Use:* Cut out a subdesign.

*Command:* CutOutSubDesign

*Syntax:* oEditor.CutOutSubDesign Array(

```
"NAME:Params",
"Name:=", <"name">,
"EMDesign:=", <boolean>,
"SubDesign:=", <boolean>,
"Within:=", <boolean>,
"Without:=", <boolean>,
"AutoGenExtent":=<boolean>,
"Expansion":=<double>,
"RoundCorner":=<boolean>,
"Increments":=<integer>,
"ExtentSel:=", Array(<"extent-poly">, ...),
Array("NAME:Nets", "net:=", Array(<"net-name">, <clip>), ...))
```

In place of "ExtentSel:=", Array(<"extent-poly">, ...) an explicit polygon can be used:

```
"Extent:=", Array("cl:=", true,
```

```
"pt:=", Array(U:=, <"units">, "x:=", <double>, "y:=" <double>, ...))
```

*Parameters:* Name — name of the cutout design.

EMDesign — if true, create an EM design, otherwise create a Nexxim design.

Within — boolean; cut out the interior region.

Without — boolean; cut out the exterior region.

AutoGenExtent — boolean; when true, Circuit disregards both ExtentSel and Extent. Circuit will instead generate a polygonal shape around all nets which are not clipped.

Expansion — double; similar to the Auto Generate Extent dialog box. However, this is always a unitless fraction. By default it is set to .1.

RoundCorner — boolean; identical to the Auto Generate dialog box. By default this is set to true. In general, rounded corners are preferred when the cutout shape has acute or nea-acute angles

Increments — integer; this is from the Auto Generate Dialog, and by default is set to true. This can greatly increase the running time and a small increase can make a big difference. It is probably best to experiment with this parameter first, rather than set it arbitrarily.

ExtentSel— an array of extent polygon names.

Extent — alternative to ExtentSel; an explicit polygon defined by coordinates.

cl — must always be true; indicates that the polygon is closed.

U — coordinate units, e.g. "mm"

pt — array of coordinate values.

x — x coordinate value

y — y coordinate value

Nets — the net information.

net — array of net information.

<"net-name">

"<no net trace>" — special value referring to traces not in a net.

"<no net fill>" — special value referring to fill polygons not in a net.

<design>:<net> — net within a particular design.

<net> — net within the active design.

<clip> — boolean true/false; if true, the net is clipped against the extent else the net is included but not clipped.

**Return Value:** None

*Example:* Using "extent\_poly" as the selection extent:

```
oEditor.CutOutSubDesign Array("NAME:Params",  
"Name:=", "EMDesign1_cutout",  
"EMDesign:=", true,  
"SubDesign:=", false,  
"Within:=", true,  
"Without:=", false,  
"ExtentSel:=", Array("extent_poly", ...),  
Array("NAME:Nets",  
"net:=", Array("<no net trace>", true),  
"net:=", Array("<no net fill>", true),  
"net:=", Array("EMDesign1:GND", true) ... ))
```

*Example:* Example using an explicit polygon as the selection extent:

```
oEditor.CutOutSubDesign Array("NAME:Params",
"Name:=", "EMDesign1_cutout",
"EMDesign:=", true,
"SubDesign:=", false,
"Within:=", true,
"Without:=", false,
"Extent:=", Array(
"cl:=", true,
"pt:=", Array(
"U:=", "mm",
"x:=", 0,
"y:=" 0, ) ),
Array("NAME:Nets",
"net:=", Array("<no net trace>", true),
"net:=", Array("<no net fill>", true),
"net:=", Array("EMDesign1:GND", true) ... ))
```

## Defeature Objects (Layout Editor)

*Use:* Remove irrelevant features from a primitive. Vertices that deviate less than the tolerance from a chord are removed; narrow concave regions less than the tolerance wide are also eliminated. The command can also be used to fix self-intersections (only the 'positive' areas are kept).

*Command:* DefeatureObjects

*Syntax:* DefeatureObjects Array("NAME:options", "tolerance:=", <value>, "fix:=", <fix>), Array("NAME:elements", <"primitive">, ...)

*Return Value:* None

*Parameters:* <"value">

Type: double, e.g. 0.001

Description: tolerance value

<fix>

Type: boolean (true or false)

Description: if true, then self-intersections are fixed.

< primitive >

Type: text

Description: primitive name.

### DissolveComponents (Layout Editor)

Dissolves the named components.

| UI Access  |                 | After selecting one or more vias, right-click within the Layout Editor and select <b>Components &gt; Dissolve</b> . |                                                                                                                                                                   |  |
|------------|-----------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Parameters | Name            | Type                                                                                                                | Description                                                                                                                                                       |  |
|            | <Parameters>    | Array                                                                                                               | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:elements&gt;</li> <li>• &lt;TargetObjects&gt;</li> </ul> |  |
|            | <NAME:elements> | String                                                                                                              | Required first parameter which must have the specified value (i.e., "vias").                                                                                      |  |

|                     |                              |        |                                                                                   |
|---------------------|------------------------------|--------|-----------------------------------------------------------------------------------|
|                     | <b>&lt;TargetObjects&gt;</b> | String | Names of the target primitives, vias, or groups to dissolve, separated by commas. |
| <b>Return Value</b> | None.                        |        |                                                                                   |

|                       |                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DissolveComponents([<NAME:elements>, <TargetObjects>])                                                   |
| <b>Python Example</b> | <pre>oEditor.DissolveComponents (     ["NAME:elements",      "poly_801",      "ViaGroup_2"     ] )</pre> |

## Duplicate (Layout Editor)

*Use:* Duplicates layout objects.

*Command:* The specified objects are duplicated by the given count with the specified offset.

*Syntax:* Duplicate Array("NAME:options", "count:=", <count data>), Array("NAME:elements", <element names>), Array( <x>, <y>)

*Return Value:* None

*Parameters:* <count data> is the number of sets of new objects to be generated (and does not include the original objects)

<element names> is one or more strings with the names of layout objects

<x> is the x value for the offset



<y> is the y value for the offset

Edit3DComponentDefinition

Edits definitions of a specified 3D component.

|                |                                                                                                                                                     |       |                                                                                                                                                                                                                                                                                                                                                                             |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access      | Layout > 3D Component Definitions. Select component and click <b>Edit Definition</b> .                                                              |       |                                                                                                                                                                                                                                                                                                                                                                             |
| Parameters     | Name                                                                                                                                                | Type  | Description                                                                                                                                                                                                                                                                                                                                                                 |
|                | <Parameters>                                                                                                                                        | Array | Structured array.<br><br>Array("NAME:3D Components",<br><br>"Definitions:=" , [<string component name>],<br><br>"IsLocal:=" , <boolean True for local definition;<br>False to save to file>,<br><br>"EditFilePath:=" , <string path of new component<br>file location>)<br><br>If saving locally or leaving the file path unaltered, pass empty string for<br>EditFilePath. |
| Return Value   | None.                                                                                                                                               |       |                                                                                                                                                                                                                                                                                                                                                                             |
| Python Syntax  | Edit3DComponentDefinition (<Parameters>)                                                                                                            |       |                                                                                                                                                                                                                                                                                                                                                                             |
| Python Example | <pre>oEditor.Update3DComponentDefinitions(<br/>["NAME:3D Components",<br/>    "Definitions:=" , ["My_Component"],<br/>    "IsLocal:=" , True,</pre> |       |                                                                                                                                                                                                                                                                                                                                                                             |

|  |                                   |
|--|-----------------------------------|
|  | <pre>"EditFilePath:=", "" )</pre> |
|--|-----------------------------------|

## EditComponent (Layout Editor)

Modifies a current source.

Identifies the selected component to add or remove pins

| UI Access           | After choosing a component, navigate to the <b>Properties</b> window. From the <b>Pins</b> row, select <b>Edit</b> to open the <b>Edit Component</b> window. From the <b>Edit Component</b> window, remove pins as necessary. |         |                                                                                                                                                                                                                                                              |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | Name                                                                                                                                                                                                                          | Type    | Description                                                                                                                                                                                                                                                  |
|                     | <Parameters>                                                                                                                                                                                                                  | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:Contents&gt;</li> <li>• &lt;definition_name&gt;</li> <li>• &lt;ref_des:=&gt;</li> <li>• &lt;add&gt;</li> <li>• &lt;modified_elements&gt;</li> </ul> |
|                     | <NAME:Contents>                                                                                                                                                                                                               | String  | Required first parameter which must have the specified value (i.e., "Contents").                                                                                                                                                                             |
|                     | <definition_name>                                                                                                                                                                                                             | String  | Identifies the component (e.g., Component_0).                                                                                                                                                                                                                |
|                     | <ref_des>                                                                                                                                                                                                                     | String  | Identifies the selected component's reference port (e.g., U0).                                                                                                                                                                                               |
|                     | <add>                                                                                                                                                                                                                         | Boolean | <b>True</b> adds pins<br><b>False</b> removes pins                                                                                                                                                                                                           |
|                     | <modified_elements>                                                                                                                                                                                                           | Array   | Structured array containing the names of pins to add or remove (e.g., via_246, via_247).                                                                                                                                                                     |
| <b>Return Value</b> | None.                                                                                                                                                                                                                         |         |                                                                                                                                                                                                                                                              |

|                |                                                                                                                                                                                                                              |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | EditComponent([<NAME:Contents>, <definition_name>, <ref_des>, <add>, <modified_elements>])                                                                                                                                   |
| Python Example | <pre>oEditor.EditComponent(<br/>[<br/>    "NAME:Contents",<br/>    "definition_name:=", "Component_0",<br/>    "ref_des:=", "U0",<br/>    "add:=", "False",<br/>    "modified_elements", ["via_246", "via_247"]<br/>])</pre> |

EditPinGroup (Layout Editor)

Allows the user to edit the target pin group.

|            |                                                                                                                                                                                                                                                                                                                                                                                             |        |                                                                                                                                                                    |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | From <b>Draw</b> , select <b>Create/Manage Pin Groups</b> to open the <b>Create/Manage Pin Groups</b> window. Select a group from the <b>Pin Group List</b> , then click <b>Edit Pin Group</b> to open the <b>Edit Pin Group</b> window. Check the adjacent box next to any pins to remove them, then click <b>Delete Pins</b> . Click <b>OK</b> to close the <b>Edit Pin Group</b> window. |        |                                                                                                                                                                    |
| Parameters | Name                                                                                                                                                                                                                                                                                                                                                                                        | Type   | Description                                                                                                                                                        |
|            | <NAME>                                                                                                                                                                                                                                                                                                                                                                                      | String | Name of the target pin group.                                                                                                                                      |
|            | <Parameters1>                                                                                                                                                                                                                                                                                                                                                                               | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"><li>• &lt;NAME:elements_remove&gt;</li><li>• &lt;PinsRemove&gt;</li></ul> |
|            | <NAME:elements_                                                                                                                                                                                                                                                                                                                                                                             | String | Required first parameter which must have the specified value                                                                                                       |

|                     |                     |        |                                                                                                                                                                 |
|---------------------|---------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <i>remove</i> >     |        | (i.e., "elements_remove").                                                                                                                                      |
|                     | <PinsRemove>        | String | Names of the pins to remove from the group, separated by commas.                                                                                                |
|                     | <Parameters2>       | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:elements_add&gt;</li> <li>• &lt;PinsAdd&gt;</li> </ul> |
|                     | <NAME:elements_add> | String | Required first parameter which must have the specified value (i.e., "elements_add").                                                                            |
|                     | <PinsAdd>           | String | Names of the pins to add to the group, separated by commas.                                                                                                     |
| <b>Return Value</b> | None.               |        |                                                                                                                                                                 |

|                       |                                                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | EditPinGroup(<NAME>, [<NAME:elements_remove>, <PinsRemove>], [<NAME:elements_add>, <PinsAdd>])                                                                  |
| <b>Python Example</b> | <pre>oEditor.EditPinGroup("GND_30_SQFP28X28_208_U1",     ["NAME:elements_remove",     "U1-50",     "U1-82"],     ["Name:elements_add",     "U1-51"     ])</pre> |

## EnableComponents (Layout Editor)

Enables or disables target components.

|                     |                                                                                                                                                                                                                         |         |                                                                                                                                                               |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Components</b> window, right-click a component and select <b>Enable/Disable</b> or <b>Ctrl+click</b> multiple components, then right-click any of the selected components and click <b>Enable/Disable</b> . |         |                                                                                                                                                               |
| <b>Parameters</b>   | Name                                                                                                                                                                                                                    | Type    | Description                                                                                                                                                   |
|                     | <Parameters>                                                                                                                                                                                                            | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"><li>• &lt;NAME:Components&gt;</li><li>• &lt;ObjectName&gt;</li></ul> |
|                     | <NAME:Components>                                                                                                                                                                                                       | String  | Required first parameter which must have the specified value (i.e., "Components").                                                                            |
|                     | <ObjectName>                                                                                                                                                                                                            | String  | List of target objects, separated by commas.                                                                                                                  |
|                     | <Enable>                                                                                                                                                                                                                | Boolean | <b>True</b> enables selected components.<br><b>False</b> disables selected components                                                                         |
| <b>Return Value</b> | None.                                                                                                                                                                                                                   |         |                                                                                                                                                               |

|                       |                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | EnableComponents ([<NAME:Components>, <ObjectName>], (<Enable>))                                                |
| <b>Python Example</b> | <pre>oEditor.EnableComponents (     [         "NAME:Components",         "U0",         "U1"     ], False)</pre> |

## EraseMeasurements (Layout Editor)

*Use:* Causes erasing of ALL measurements currently present.

*Command:* None.

*Syntax:* EraseMeasurements

*Return Value:* None.

*Parameters:* None.

## ExportDXF (Layout Editor)

*Use:* Export DXF

*Command:* File > Export > AutoCAD

*Syntax:* ExportDXF

Array("NAME:options", "FileName:=", <"filename">, "AcadVersion:=", <version>, "ScaleFactor:=", <scale>),  
Array("NAME:layers", <"layer">, ...)

*Return Value:* None

*Parameters:*

<"filename">

Type: text

Description: file path for the export file

<version>

Type: integer

Description: version of AutoCAD. Acceptable values are:

- **0** corresponding to AutoCAD version 13
- **1** corresponding to AutoCAD version 14
- **2** corresponding to AutoCAD 2000-2003
- **3** corresponding to AutoCAD 2004-2006
- **4** corresponding to AutoCAD 2007-2009
- **5** corresponding to AutoCAD 2010-2012

<scale>

Type: double

Description: the scaling of the values written out, e.g. if the data is written out in "mm", the scaling factor will be 1000.

<"layer">

Type: text

Description: names of the layers to be exported.

## ExportGDSII (Layout Editor)

Exports results to GDSII.

| UI Access  | File > Export > GDSII. |       |                                                                                                           |
|------------|------------------------|-------|-----------------------------------------------------------------------------------------------------------|
| Parameters | Name                   | Type  | Description                                                                                               |
|            | <OptionParameters>     | Array | Structured array.<br><br>Array("NAME:options",<br><br>"FileName:=", <string, GDSII export file<br>name.>, |

|                     |       |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------|-------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |       |  | <p>"NumVertices:=", &lt;integer, maximum number of vertices allowed in a polygon (specify zero if unlimited).&gt;,<br/><br/>         "ArcTol:=", &lt;double, arc tolerance (in meters); the value used to discretize arcs. Smaller the value the greater the number of edges exported. For 0.1mm use 0.0001.&gt;,<br/><br/>         "LayerMap:=", Array(<br/>         "entry:=", Array(<br/>         "layer:=", &lt;string, name of a layer to export.&gt;,<br/><br/>         "id:=", &lt;integer, GDSII layer ID to assign the exported layer.&gt;,<br/><br/>         "include:=", &lt;boolean, if true, the layer is exported.&gt;))</p> |
| <b>Return Value</b> | None. |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                       |                                                                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportGDSII(<OptionParameters>)                                                                                                                    |
| <b>Python Example</b> | <pre>oEditor.ExportGDSII [(     "NAME:options",     "FileName:=", "C:/Projects/ design.gds",     "NumVertices:=", 0,     "ArcTol:=", 2E-006,</pre> |



|  |                                                                                                                                                                                                                                                                  |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"LayerMap:=", [<br/>    "entry:=", [<br/>        "layer:=", "Bottom",<br/>        "id:=", 2,<br/>        "include:=", true],<br/>    "entry:=", [<br/>        "layer:=", "Top",<br/>        "id:=", 1,<br/>        "include:=", true]<br/>    ]<br/>]</pre> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## ExportGerber (Layout Editor)

*Use:* Export the current design to Gerber files.

*Command:* File > Export > Gerber

*Syntax:* ExportGerber

```
Array("NAME:options",  
    "FileName:=", <"file name">,  
    "Units:=", <"units">,  
    "IntPlace:=", <integer places>,  
    "DecimalPlace:=", <decimal places>,
```

```
"Suppress:=", <"suppress">,  
Array("NAME:GerberPages",  
"<page>:=", Array(<"layer">, ...), ...))
```

*Return Value:* None

*Parameters:* <"file name">

Type: text

Description: prefix for the exported Gerber files; the actual files will be named <file name>\_<page>.ger

<"units">

Type: text

Description: unit code, e.g. "in", "mm", etc.

<integer places>

Type: integer

Description: number of integer places to use when formatting the numerical output.

<decimal places>

Type: integer

Description: number of decimal places to use when formatting the numerical output.

<"suppress">

Type: text

Description: either "Leading Zeros", or "Trailing Zeros".

<page>

Type: integer

Description: Gerber page number

<"layer">

Type: text

Description: Layers to be exported to the specified Gerber page.

## **ExportNCDrill (Layout Editor)**

*Use:* Export the vias to an NC Drill file

*Command:* File > Export > NCDrill

*Syntax:* ExportNCDrill

```
Array("NAME:options",  
"FileName:=", <"file name">,  
"Units:=", <"units">,  
"IntPlace:=", <integer places>,  
"DecimalPlace:=", <decimal places>,  
"SuppressLeadingZero:=", <suppress leading zeros>,  
Array("NAME:NCDFileOptsVec",  
Array("NAME:NCDrillOptions",  
"Top:=", <"layer">,  
"Bottom:=", <"layer">,  
"Create:=", <create>), ...))
```

*Return Value:* None

*Parameters:* <"file name">

Type: text

Description: prefix for the exported Gerber files; the actual files will be named <file name>\_<page>.ger

<"units">

Type: text

Description: unit code, e.g. "in", "mm", etc.

<integer places>

Type: integer

Description: number of integer places to use when formatting the numerical output.

<decimal places>

Type: integer

Description: number of decimal places to use when formatting the numerical output.

<suppress leading zeros>

Type: boolean

Description: if true, then suppress leading zeros in the output file.

<layer>

Type: text

Description: Start/end layer names; each layer range is written to a separate NC drill file.

<create>

Type: boolean

Description: if true, create the corresponding NC drill file.

### GetActiveUnits (Layout Editor)

Returns the current active unit of measurement.

|              |                                                |
|--------------|------------------------------------------------|
| UI Access    | N/A.                                           |
| Parameters   | None.                                          |
| Return Value | Current active unit of measurement (e.g., mm). |

|                |                                              |
|----------------|----------------------------------------------|
| Python Syntax  | GetActiveUnits()                             |
| Python Example | <pre>oEditor.GetActiveUnits()<br/>'mm'</pre> |

### GetComponentInfo (Layout Editor)

Use: Informational.

Command: None.

Syntax: GetComponentInfo<compID>

Return Value: array of strings, as follows:

"ComponentName=*string*"

"PlacementLayer=*string*"

"LocationX=*number*"  
"LocationY=*number*"  
"BBoxLLx=*number*"  
"BBoxLLy=*number*"  
"BBoxURx=*number*"  
"BBoxURy=*number*"  
"Angle=*number*" (*in degrees*)  
"Flip=true or false"  
"Scale=*number*"

*Parameters:* The LayoutComp's ID

### **GetCompInstanceFromRefDes (Layout Editor)**

*Use:* Informational.

*Command:* None.

*Syntax:* GetCompInstanceFromRefDes (<object\_name>)

*Return Value:* Returns IDispatch for CompInstance.

*Parameters:* <object\_name>                      // string is refDes

### **GetComponentPins (Layout Editor)**

*Use:* Informational.

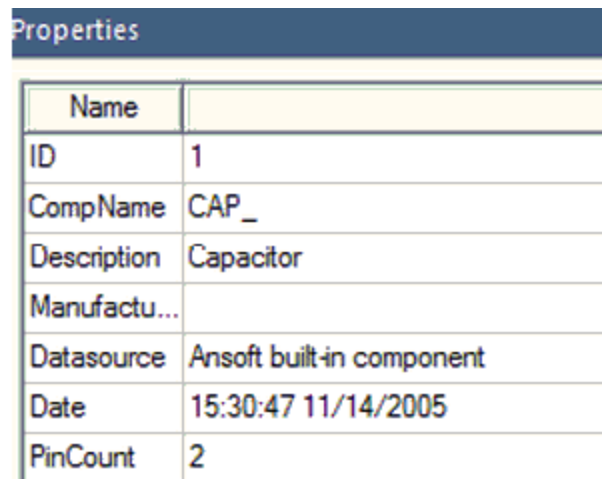
*Command:* None.

**Syntax:** GetComponentPins<compID>

**Return Value:** array of strings, which are the names of all the component's pins

**Parameters:** The LayoutComp's ID  
CompInst@<ComponentName>; <CompInstID>

**Note:** For the documented example, the capacitor component name is CAP\_ and its ID is 1. If you can select the item of interest in the schematic, the **Properties** window gets updated with the corresponding component name, its ID, and other details as shown in the following figure.



| Properties   |                           |
|--------------|---------------------------|
| Name         |                           |
| ID           | 1                         |
| CompName     | CAP_                      |
| Description  | Capacitor                 |
| Manufactu... |                           |
| Datasource   | Ansoft built-in component |
| Date         | 15:30:47 11/14/2005       |
| PinCount     | 2                         |

## GetComponentPinInfo (Layout Editor)

**Use:** Informational.

**Command:** None.

**Syntax:** GetComponentPinInfo<compID, pinName>

*Return Value:* retval = array of strings, as follows:

"X=val"

"Y=val"

"Angle=val"

"Flip=true/false"

"WireID=string"

*Parameters:* compID = The LayoutComp's ID

pinName = The name of the pin

### **GetEditorName (Layout Editor)**

*Use:* Informational.

*Command:* None.

*Syntax:* GetEditorName()

*Return Value:* Returns the name of the editor.

### **GetMaterialList (Layout Editor)**

*Use:* Get the names of all the materials for a layout.

*Command:* None.

*Syntax:* GetMaterialList

*Return Value:* Array of strings.

*Parameters:* None.

materialNames = oEditor.GetMaterialList



### GetProperties (Layout Editor)

*Use:* Gets a list of all the properties belonging to a specific **PropServer** and **PropTab**. This can be executed by the **oProject**, **oDesign**, or **oEditor** objects.

*Command:* None

*Syntax:* GetProperties( <PropTab>, <PropServer> )

*Return Value:* Variant array of strings – the names of the properties belonging to the prop server.

### GetPropertyValue (Layout Editor)

*Use:* Gets the value of a single property. This can be executed by the **oProject**, **oDesign**, or **oEditor** objects.

*Command:* None

*Syntax:* GetPropertyValue(<PropTab>, <PropServer>, <PropName>)

*Return Value:* String representing the property value.

### GetSelections (Layout Editor)

Returns an array of currently selected objects.

|                     |                             |
|---------------------|-----------------------------|
| <b>UI Access</b>    | N/A                         |
| <b>Parameters</b>   | None.                       |
| <b>Return Value</b> | Array containing object IDs |

|                       |                                      |
|-----------------------|--------------------------------------|
| <b>Python Syntax</b>  | GetSelections()                      |
| <b>Python Example</b> | <code>oEditor.GetSelections()</code> |

## GetSelectionsInHierarchy (Layout Editor)

Returns an array of currently selected objects including the ones inside a subdesign (i.e., an inactive design).

|                     |                             |
|---------------------|-----------------------------|
| <b>UI Access</b>    | N/A                         |
| <b>Parameters</b>   | None.                       |
| <b>Return Value</b> | Array containing object IDs |

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| <b>Python Syntax</b>  | GetSelectionsInHierarchy()                      |
| <b>Python Example</b> | <code>oEditor.GetSelectionsInHierarchy()</code> |

## Heal (Layout Editor)

Heals imprecise geometry.

|                   |                                                       |             |                                                                                                                                                                                          |
|-------------------|-------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | From the <b>Layout</b> ribbon, click <b>Healing</b> . |             |                                                                                                                                                                                          |
| <b>Parameters</b> | <b>Name</b>                                           | <b>Type</b> | <b>Description</b>                                                                                                                                                                       |
|                   | <HealArray>                                           | Array       | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:category&gt;</li> <li>• &lt;Type&gt;</li> <li>• &lt;OptionalArgs&gt;</li> </ul> |

|                     |                       |         |                                                                                                                                                                                                                                                                                                           |
|---------------------|-----------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                       |         | <ul style="list-style-type: none"> <li>• &lt;Tol&gt;</li> </ul>                                                                                                                                                                                                                                           |
|                     | <NAME:category>       | String  | Required first parameter which identifies the category of healing (i.e., " <b>Snap</b> ", " <b>Feature</b> ", or " <b>Repair</b> ", such as <NAME:Snap>.                                                                                                                                                  |
|                     | <Type>                | String  | Dependent on <NAME:category>. Identifies the type of healing, per category:<br><b>Snap</b> — "Point", "Arc", or "Grid"<br><b>Feature</b> — "Voids" or "FloatingBodies"<br><b>Repair</b> — "Colinear" or "SelfIntersecting"                                                                                |
|                     | <OptionalArgs>        | String  | Optional parameters (i.e., "Antipads", "ModifyArcs", and/or "InsertPointsInEdges". Multiple <OptionalArgs> can be entered, depending on <NAME:category> and <Type>.                                                                                                                                       |
|                     | <Antipads>            | Boolean | If <NAME:Feature> and <Type>="Voids", then this optional argument is available:<br><br><b>True</b> — voids are converted to antipads<br><b>False</b> — voids are not converted to antipads                                                                                                                |
|                     | <ModifyArcs>          | Boolean | If <NAME:Snap> and <Type>="Voids", then this optional argument is available:<br><br><b>0</b> — arcs do not snap to close primitive edges<br><b>1</b> — arcs snap to close primitive edges                                                                                                                 |
|                     | <InsertPointsInEdges> | Boolean | If <NAME:Snap> and <Type>="Voids", then this optional argument is available:<br><br><b>0</b> — new points will not appear when healed primitives snap together<br><b>1</b> — new points will appear at midpoints between existing edges and at the new edges created when healed primitives snap together |
|                     | <Tol>                 | Integer | Primitives at or within this tolerance are healed.                                                                                                                                                                                                                                                        |
| <b>Return Value</b> | None                  |         |                                                                                                                                                                                                                                                                                                           |

| Python Syntax         | oEditor.Heal([<NAME:<category>, <Type>, <OptionalArgs>, <Tol>])                                                                                                                                                                                                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre> oProject = oDesktop.SetActiveProject("GeometryHealing") oDesign = oProject.SetActiveDesign("TestDesign") oEditor = oDesign.SetActiveEditor("Layout") oEditor.Heal(     [         "NAME:Snap",         "Type:=" , "Point",         "ModifyArcs:=" , 1,         "InsertPointsInEdges:=" , 1,         "Tol:=" , "2mm",         "Tol:=" , "2mm"     ] ) </pre> |

## PageSetup (Layout Editor)

*Use:* Specifies page setup for printing.

*Command:* **File>Page Setup**

*Syntax:* PageSetup <ArgArray>

*Return Value:* None.

*Parameters:* <Margins>: Page margins in implicit units of inches.

<Border>: Integer value indicating to draw border (1) or not to draw (0).

<DesignVars>: Integer value indicating to draw design vars (1) or not to draw (0).

PushExcitations

Allows access to computed excitations for transient and linear frequency solutions. The script command can be accessed from three locations.

|            |                                                                                                                                                                                                 |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access  | <ul style="list-style-type: none"><li>Layout Editor</li><li>Schematic Editor</li><li>Select a Nexxim solution in a 3D Layout design, right click, and choose <b>Push Excitations</b>.</li></ul> |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|            | Name                                                                                                                                                                                            | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|            | <Reference Designation>                                                                                                                                                                         | String | "<refdes>"<br><br>This argument is empty when excitations are pushed from a Nexxim solution.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Parameters | <PushExcitations Parameters>                                                                                                                                                                    | Array  | This parameter changes depending on whether the excitations comes from a transient or linear frequency solution. The keyword "transient:=" indicates to AEDT which solution generated the excitations. If "transient:=" is present, "CalcThevenin =" and its value are ignored.<br><br>For a linear frequency solution, use this array:<br><br>Array("NAME:options",<br>"CalcThevenin =" , <true false>,<br>"Sol:=", "<solution name>")<br><br>If CalcThevenin is true, Thevenin's equivalent is calculated. Para- |
|            |                                                                                                                                                                                                 |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <p>meters for the linear frequency solution do not include a Freq argument, so all frequencies from the solution are used.</p> <p>For a transient solution, use:</p> <pre>Array("NAME:options",     "transient:=", Array(         "start:=", &lt;start time&gt;,         "stop:=", &lt;stop time&gt;,         "maxHarmonics:=", &lt;max harmonics&gt;,         "winType:=", &lt;window&gt;,         ["widthPct:=", &lt;width percentage&gt;],         ["kaiser:=", &lt;Kaiser value&gt;],         ["correctCoherentGain:=", true]),     "Sol:=", "&lt;solution name&gt;")</pre> <p>winType can have the following values:</p> <ul style="list-style-type: none"> <li>• Rectangular</li> <li>• Bartlett</li> <li>• Blackman</li> <li>• Hamming</li> <li>• Hanning</li> <li>• Kaiser</li> <li>• Welch</li> <li>• Weber</li> <li>• Lanczos</li> </ul> |
|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                     |      |
|---------------------|------|
| <b>Return Value</b> | None |
|---------------------|------|

**Note:**

For more information about the component name, schematic IDs, and formats, see the section [Editor Scripting IDs](#).

## Select (Layout Editor)

Chooses a target list of objects to make active.

|                     |              |       |                                                                                                |
|---------------------|--------------|-------|------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A.         |       |                                                                                                |
| <b>Parameters</b>   | Name         | Type  | Description                                                                                    |
|                     | <ObjectName> | Array | Array consisting of target object names, separated by commas (e.g., rect_0, rect_1, circle_0). |
| <b>Return Value</b> | None.        |       |                                                                                                |

|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| <b>Python Syntax</b>  | Select(<ObjectName>)                                          |
| <b>Python Example</b> | <code>oEditor.Select(['rect_0', 'rect_1', 'circle_0'])</code> |

## SelectAll (Layout Editor)

*Use:* Select all elements in the layout editor.

*Command:* None.

**Syntax:** SelectAll()

**Parameters:** None

**Example:** Dim removedDefs

```
removedDefs = oDefinitionEditor.SelectAll()
```

## SetActiveUnits (Layout Editor)

Sets the current active unit of measurement to the target unit.

|                     |                                          |         |                                                                 |
|---------------------|------------------------------------------|---------|-----------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                      |         |                                                                 |
| <b>Parameters</b>   | Name                                     | Type    | Description                                                     |
|                     | <SelectedUnits>                          | Integer | User-specified unit of measurement to set to active (e.g., mm). |
| <b>Return Value</b> | The previous active unit of measurement. |         |                                                                 |

|                       |                                 |  |  |
|-----------------------|---------------------------------|--|--|
| <b>Python Syntax</b>  | SetActiveUnits(<SelectedUnits>) |  |  |
| <b>Python Example</b> | oEditor.SetActiveUnits('um')    |  |  |
|                       | 'mm'                            |  |  |

## SetPropertyValue (Layout Editor)

**Use:** Sets the value of one property. This is not supported for properties of the following types: **ButtonProp**, **PointProp**, and **VPointProp**. Only the **ChangeProperty** command can be used to modify these properties. This can be executed by the **oProject**,



**oDesign**, or **oEditor** objects.

*Command:* None

*Syntax:* SetPropertyValue <PropTab>, <PropServer>, <PropName>, <PropValue>

*Return Value:* None

*Parameters:* <PropValue>

**Type: String**

Contains the value to set the property. The formatting is different depending on what type of property is being edited. Use

**GetPropertyValue** for the desired property to see the expected format.

*Example:* oEditor.SetPropertyValue

"BaseElementTab", "rect\_1",

"LineWidth", "3mm"

## **StitchLines (Layout Editor)**

*Use:* Stitch together connected or crossing lines into polygons and lines.

*Command:* StitchLines

*Syntax:* StitchLines Array("NAME:elements", <"line">, ...)

*Return Value:* None

*Parameters:* <"line">

Type: text

Description: line name.

*Example:*

```
oDesign = oProject.SetActiveDesign("HFSS3D1")  
oEditor = oDesign.SetActiveEditor("Layout")  
oEditor.StitchLines ["NAME:elements", "line_1", "line_2", "line_3"]
```

## **UnselectAll (Layout Editor)**

*Use:* Unselect all active selections in the layout editor.

*Command:* Edit > Unselect All

*Syntax:* UnselectAll()

*Parameters:* None

*Example:* oLayout.UnselectAll()

## **ZoomToFit (Layout Editor)**

*Use:* Set the current schematic zoom to fit the contents of the currently visible page

*Command:* None

*Syntax:* ZoomToFit()

*Return Value:* None

This page intentionally  
left blank.

## 26 - Definition Manager Script Commands

The definition manager controls the use of materials and scripts in a project. It also provides access to the managers for symbols, footprints, padstacks, and components in a project.

```
Set oProject = oDesktop.SetActiveProject("Project1")
```

```
Set oDefinitionManager = oProject.GetDefinitionManager()
```

**The topics for this section include:**

[AddComponentManager](#)

[AddDataset](#)

[AddMaterial](#)

[AddPadstackManager](#)

[AddSymbolManager](#)

[AreMaterialPropertiesEqual](#)

[AreSurfaceMaterialPropertiesEqual](#)

[ChangeProperty](#)

[CloneMaterial](#)

[ComputeCoreLossCoefficients](#)

[DeleteDataset](#)

[DoesMaterialExist](#)

[EditComponentManager](#)

[EditDataset](#)

[EditMaterial](#)

[EditPadstackManager](#)

[ExportDataset](#)

[ExportFootprintManager](#)

[ExportMaterial](#)

[ExportPadstackManager](#)

[ExportScript](#)

[ExportSymbolManager](#)

[GetProjectMaterialNames](#)

[GetPropertyValue](#)

[ImportDataset](#)

[RemoveComponentManager](#)

[RemoveFootprintManager](#)

[RemoveMaterial](#)

[RemovePadstackManager](#)

[RemoveScript](#)

[RemoveSymbolManager](#)

[SetPropertyValue](#)

[UpdateDefFromBlock](#)

[UpdateDefFromBlockEx](#)

**Related Topics:**[Component Manager Script Commands](#)[Material Manager Script Commands](#)[Model Manager Script Commands](#)[Network Data Explorer Manager Script Commands](#)[Script and Library Scripts](#)[Symbol Manager Script Commands](#)

## Add [component manager]

*Use:*Add a component

*Command:* Tools > Edit Configured Libraries > Components > Add Component

*Syntax:*Add Array("NAME:<ComponentName>",  
    "Info:=", <ComponentInfo>,  
    "RefBase:=", <string>, // reference designator  
    "NumParts:=", <int>, // parts per component  
    "OriginalComponent:=", <string>  
    "Terminal:=", <TerminalInfo>,  
    "Terminal:=", <TerminalInfo>, ...  
    // The remaining parameters are optional  
    Array("NAME:Parameters", // any combo of the following  
    "VariableProp:=", <VariableInfo>,

```

"CheckboxProp:=", <CheckBoxInfo>,
"ButtonProp:=", <ButtonInfo>,
"TextProp:=", <TextInfo>,
"NumberProp:=", <NumberInfo>,
"SeparatorProp:=", <SeparatorInfo>,
"ValueProp:=", <ValueInfo>,
"MenuProp:=", <MenuInfo>),
Array("NAME:Properties", // any combo of the following
"CheckboxProp:=", <CheckBoxInfo>,
"TextProp:=", <TextInfo>,
"NumberProp:=", <NumberInfo>,
"SeparatorProp:=", <SeparatorInfo>,
"ValueProp:=", <ValueInfo>,
"MenuProp:=", <MenuInfo>),
"VPointProp:=", <VPointInfo>,
"PointProp:=", <PointInfo>),
Array("Quantities",
"QuantityProp:=", <QuantityPropInfo>...),
Array("NAME:CosimDefinitions",
<CosimDefInfo>,

```

<CosimDefInfo>...)

*Return Value:*<string>

// composite name of the component.

// If the name requested conflicts with the name of an existing

// component, the requested name is altered to be unique.

// The name returned reflects any change made to be unique.

*Parameters:*<ComponentName>:

<string> // simple name of the component

<ComponentInfo>:

Array("Type:=", <TypeInfo>,

"NumTerminals:=", <int>,

"DataSource:=", <string>,

"ModifiedOn:=", <ModifiedOnInfo>,

"Manufacturer:=", "<string>,"

"Symbol:=", <string>,"

"Footprint:=", <string>,"

"Description:=", <string>,"

"InfoTopic:=", <string>,"

"InfoHelpFile:=", <string>,"



```
"IconFile:=", <string>,  
"LibraryName:=", "",  
"OriginalLocation:=", "Project", // Project Location  
"Author:=", <string>,  
"OriginalAuthor:=", <string>,  
"CreationDate:= ", <int>)
```

**<TypeInfo>:**

An integer that is the or-ing of bits for each product listed below. The default setting is 0xffffffff (4294967295) which indicates valid for all products. In the component editing dialog, checking different boxes in the "Specify products for which this component is valid" grid control sets specific flags that correspond to the following hex/decimal settings:

Nexxim -- 100 binary, 4 decimal, 0x4

SlwaveDeNovo -- 1000 binary, 8 decimal, 0x8

Simplorer -- 10000 binary, 16 decimal, 0x10

MaxwellCircuit -- 100000 binary, 32 decimal, 0x20

**<ModifiedOnInfo>:**

An integer that corresponds to the number of seconds that have elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.

**<TerminalInfo>:**

```
Array(<string>, // symbol pin
<string> // footprint pin
<string>, // gate name
<bool>, // shared
<int>, // equivalence number
<int>, // what to do if unconnected: flag as error:0, ignore:1
<string> // description
<Nature>)
```

```
<Nature>:
<string> // content varies as follows
```

```
Nexxim/Circuit:
"Electrical" // the only choice
```

```
Simplorer:
// several choices
"Electrical", "Magnetic", "Fluidic", "Translational",
"Translational_V", "Rotational", "Rotational_V",
""Radiant", "Thermal", or <VHDLPackageName>
```

<VHDLPackageName>:

<string> // in the form <Library>.<Package>

<Library>:

<string> // name of the VHDL library

<Package>:

<string> // name of the VHDL package

<VariableInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<string>) // value: number, variable, or expression

<FlagLetters>:

<string> // "D" - has description parameter,

// "RD" - readonly & has description parameter,

// or "RHD" - readonly, hidden, & has description parameter

<CheckBoxInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<bool>) // value: true or false

<ButtonInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

<string>, // button title

<string>, // extra text

<ClientID>,

"ButtonPropClientData:= ", <ClientDataArray>)

<ClientID>:

<int> // specifies Button Prop Client

// 0 - unknown, ButtonPropClientData

// array will be empty

// 1 - Netlist Prop Client  
// 2 - not used  
// 3 - File Name Prop Client

<ClientDataArray>:  
varies with <ClientID>

<ClientID> is 0 or 1: empty array  
Array()

<ClientID> is 3:  
Array("InternalFormatText:=", "<prefix><RelativePath>")

<prefix>:  
<string> // "<Project>", "<PersonalLib>", "<UserLib>", or "<SysLib>"

<RelativePath>:  
<string> // relative path to file from <prefix>

<TextInfo>:

```
Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
"CB:=", <string>, // optional - script for call back  
<string>) // value: a text string
```

```
<NumberInfo>:  
Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
"CB:=", <string>, // optional - script for call back  
<real>, // value: a number  
<string>) // units
```

```
<SeparatorInfo>:  
Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
"CB:=", <string>, // optional - script for call back  
<string>) // value: a text string
```

```
<ValueInfo>:
```

```
Array(<string>, // name
<FlagLetters>,
<string>, // description
"CB:=", <string>, // optional - script for call back
<string>) // value: a number, variable or expression
```

```
<MenuPropInfo>:
Array(<string>, // name
<FlagLetters>,
<string>, // description
<string>, // menu choices - separated by commas
<int>) // 0 based index of current menu choice
```

```
<VPointInfo>:
Array(<string>, // name
<FlagLetters>,
<string>, // description
"CB:=", <string>, // optional - script for call back
<string>, // x value: number with length units
<string>) // y value: number with length units
```

<PointInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<real>, // x value

<real>) // y value

<QuantityPropInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

<string>, // value

<TypeString>,

<TypeStringDependentInfo>)

<TypeString>:

<string> // "Across", "Through", or "Free"

<TypeStringDependentInfo>:



<TypeString> is "Free" :

<string>, // direction: "In", "Out", "InOut", or "DontCare"

// Following <string> is not present if direction is "DontCare"

<string> // when to calculate: "BeforeAnalogSolver",

// "BeforeStateGraph", "AfterStateGraph", or "DontCareWhen"

<TypeString> is "Across" or "Through":

<int>, // terminal 1

<int> // terminal 2

<CosimDefInfo>:

Array("NAME:CosimDefinition",

"CosimulatorType:=", <int>,

"CosimDefName:=", <string> // "HFSS 3D Layout", "Circuit",

// "Custom", or "Netlist"

"IsDefinition:=", <bool>,

final array member(s) vary with CosimDefName)

final array members for HFSS 3D Layout:

"CosimStackup:=", <string>,

"CosimDmbedRatio:=", <int>

final array members for Circuit:

"ExportAsNport:=", <int>,

"UsePjt:=", <int>

final array member for Custom:

"DefinitionCompName:=", <string>

final array member for Netlist:

"NetlistString:=", <string>

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | <pre>Add [("NAME:&lt;ComponentName&gt;",       "Info:=", &lt;ComponentInfo&gt;,       "RefBase:=", &lt;string&gt;, // reference designator       "NumParts:=", &lt;int&gt;, // parts per component       "OriginalComponent:=", &lt;string&gt;       "Terminal:=", &lt;TerminalInfo&gt;,       "Terminal:=", &lt;TerminalInfo&gt;, ...  <b>The remaining parameters are optional.</b>        ["NAME:Parameters", // any combo of the following       "VariableProp:=", &lt;VariableInfo&gt;,</pre> |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

```
"CheckboxProp:=", <CheckBoxInfo>,
"ButtonProp:=", <ButtonInfo>,
"TextProp:=", <TextInfo>,
"NumberProp:=", <NumberInfo>,
"SeparatorProp:=", <SeparatorInfo>,
"ValueProp:=", <ValueInfo>,
"MenuProp:=", <MenuInfo>],
["NAME:Properties", Any combination of the following:
"CheckboxProp:=", <CheckBoxInfo>,
"TextProp:=", <TextInfo>,
"NumberProp:=", <NumberInfo>,
"SeparatorProp:=", <SeparatorInfo>,
"ValueProp:=", <ValueInfo>,
"MenuProp:=", <MenuInfo>,
"VPointProp:=", <VPointInfo>,
"PointProp:=", <PointInfo>],
["Quantities",
"QuantityProp:=", <QuantityPropInfo>...],
["NAME:CosimDefinitions",
<CosimDefInfo>,
```

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | <CosimDefInfo>...]]                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Python Example | <pre>oComponentManager.Add(<br/>[<br/>"NAME:Component",<br/>"Info:=", [<br/>"Type:=", 0,<br/>"NumTerminals:=", 0,<br/>"DataSource:=", "",<br/>"ModifiedOn:=", 1467910752,<br/>"Manufacturer:=", "",<br/>"Symbol:=", "Component",<br/>"ModelNames:=", "",<br/>"Footprint:=", "",<br/>"Description:=", "",<br/>"InfoTopic:=", "",<br/>"InfoHelpFile:=", "",<br/>"IconFile:=", "",<br/>"Library:=", "",<br/>"OriginalLocation:=", "Project",<br/>"IEEE:=", "",<br/>"Author:=", "",</pre> |

|  |                                                                                                                                                                                |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | "OriginalAuthor:=", "",<br>"CreationDate:=", 1467910746,<br>"ExampleFile:=", ""],<br>"Refbase:=", "U",<br>"NumParts:=", 1,<br>"ModSinceLib:=", True,<br>"CompExtID:=", 2<br>]) |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

AddDataset

Adds a dataset. This can be executed by the oProject, or oDesign variables.

|              |                           |        |                                                                                                             |
|--------------|---------------------------|--------|-------------------------------------------------------------------------------------------------------------|
| UI Access    | Project > Datasets > Add. |        |                                                                                                             |
| Parameters   | Name                      | Type   | Description                                                                                                 |
|              | <DatasetDataArray>        | Array  | Array("NAME:<DatasetName>",<br>><br>Array("NAME:Coordinates", <CoordinateArray>,<br><CoordinateArray>, ...) |
|              | <DatasetName>             | String | Name of the dataset.                                                                                        |
|              | <CoordinateArray>         | Array  | Array("NAME:Coordinate", "X:=", <double>, "Y:=",<double>)                                                   |
| Return Value | None.                     |        |                                                                                                             |

| Python Syntax  | AddDataset <DatasetDataArray>                                                                                                                                                                                                                                                                                                    |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oProject.AddDataset(<br/>[<br/>  "NAME:\$ds1",<br/>  [<br/>    "NAME:Coordinates",<br/>    [<br/>      "NAME:Coordinate",<br/>      "X:=", 2,<br/>      "Y:=", 4<br/>    ],<br/>    [<br/>      "NAME:Coordinate",<br/>      "X:=", 6,<br/>      "Y:=", 8<br/>    ]<br/>  ]<br/>]<br/>)<br/>oDesign.AddDataset(<br/>[</pre> |

```
"NAME:$dsl",  
  
[  
  "NAME:Coordinates",  
  
  [  
    "NAME:Coordinate",  
    "X:=", 2,  
    "Y:=", 4  
  ],  
  
  [  
    "NAME:Coordinate",  
    "X:=", 6,  
    "Y:=", 8  
  ]  
]  
  
]  
  
)
```

## AddDefinitionFromBlock

Adds a material definition from block text (same definition format as would be contained in the material library file) by library type (using definition folder name). This scripting command directly supports the .AMAT (or .ASURF) definition formats.

|                     |                                                 |             |                                                                                                                |
|---------------------|-------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                             |             |                                                                                                                |
| <b>Parameters</b>   | <b>Name</b>                                     | <b>Type</b> | <b>Description</b>                                                                                             |
|                     | <code>&lt;defBlock&gt;</code>                   | String      | Text of the new material definition in block form.                                                             |
|                     | <code>&lt;defFolderName&gt;</code>              | String      | Library type (by definition folder name)                                                                       |
|                     | <code>&lt;newTimeStamp&gt;</code>               | String      | New timestamp (time_t as integer number of seconds since 1/1/1970 12:00am, as string), default is current time |
|                     | <code>&lt;replaceExisting&gt;</code>            | Boolean     | True to replace existing, False to choose a new unique name if an existing definition is found                 |
| <b>Return Value</b> | A property scripting object for the definition. |             |                                                                                                                |

|                                                                                 |                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>P-<br/>yt-<br/>h-<br/>o-<br/>n<br/>S-<br/>y-<br/>nt-<br/>ax</b>              | AddDefinitionFromBlock( <code>&lt;defBlock&gt;</code> , <code>&lt;defFolderName&gt;</code> , <code>&lt;newTimeStamp&gt;</code> , <code>&lt;replaceExisting&gt;</code> )                                                              |
| <b>P-<br/>yt-<br/>h-<br/>o-<br/>n<br/>E-<br/>x-<br/>a-<br/>m-<br/>pl-<br/>e</b> | <pre> oProject = oDesktop.NewProject() oProject.InsertDesign("HFSS", "HFSSDesign1", "DrivenModal", "") oDesign = oProject.SetActiveDesign("HFSSDesign1") oEditor = oDesign.SetActiveEditor("3D Modeler") oEditor.CreateBox( [ </pre> |



```
"NAME:BoxParameters",  
  
"XPosition:="          , "-0.4mm",  
    "YPosition:="      , "-1mm",  
    "ZPosition:="      , "0mm",  
    "XSize:="          , "1.4mm",  
    "YSize:="          , "1.6mm",  
    "ZSize:="          , "0.6mm"  
  
    ],  
  
[  
  
    "NAME:Attributes",  
        "Name:="          , "Box1",  
  
    "Flags:="          , "",  
  
    "Color:="          , "(143 175 143)",  
  
    "Transparency:="    , 0,
```

```

"PartCoordinateSystem:=", "Global",

"UDMId:="                , "",

"MaterialValue:="        , "\"vacuum\"",

"SurfaceMaterialValue:=", "\"\"",

"SolveInside:="          , True,

    "ShellElement:="      , False,

"ShellElementThickness:=", "0mm",

"IsMaterialEditable:="    , True,

"UseMaterialAppearance:=", False,

"IsLightweight:="         , False

])

oDefinitionManager = oProject.GetDefinitionManager()

defBlock = "$begin 'vacuum2' $begin 'AttachedData' $begin 'MatAppearanceData' property_data-
='appearance_data' Red=230 Green=230 Blue=230 Transparency=0.95 $end 'MatAppearanceData'
$end 'AttachedData' simple('permittivity', 1) ModTime=1499970477 $end 'vacuum2'"

added = oDefinitionManager.AddDefinitionFromBlock(defBlock, "Materials", "10101010", True)

```

```
addedName = ''

if isinstance(added, basestring):
    addedName = added
elif isinstance(added, list):
    addedName = added[0]
else:

    addedName = added.GetName().replace("Materials:", "")
AddInfoMessage(os.path.basename(__file__) + " result: " + addedName)
materialNameInQuotes = "\"" + addedName + "\""
oEditor.ChangeProperty(
    [
        "NAME:AllTabs",

        [
            "NAME:Geometry3DAttributeTab",

            [
                "NAME:PropServers",
```

```
        "Box1"

    ],

    [

        "NAME:ChangedProps",

        [

            "NAME:Material",

            "Value:=", materialNameInQuotes

        ]

    ]

]

])
```

AddMaterial

Adds a local material.

|            |                                      |      |             |
|------------|--------------------------------------|------|-------------|
| UI Access  | Add Material in the material editor. |      |             |
| Parameters | Name                                 | Type | Description |

|                  |        |                                                                                                                                                                                                                                                                              |
|------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  |        |                                                                                                                                                                                                                                                                              |
| <MaterialParams> | Array  | [<br>"NAME: <name of the material to be added>",<br><MatProperty>, <MatProperty>, ...<br>]                                                                                                                                                                                   |
| <MatProperty>    | Array  | For simple material:<br>"<PropertyName>:=", <value><br><br>For anisotropic material:<br>[<br>"NAME:<PropertyName>",<br>"property_type:=", "AnisoProperty",<br>"unit:=", <Unit>,"<br>"component1:=", <value>,"<br>"component2:=", <value>,"<br>"component3:=", <value>))<br>] |
| <PropertyName>   | String | Should be one of the following (depending on the material, design, and solution types):                                                                                                                                                                                      |

|        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |        | <p>Electromagnetic (Maxwell-exclusive material properties omitted, see Maxwell Scripting help):</p> <p>"permittivity", "permeability", "conductivity", "dielectric_loss_tangent", "magnetic_loss_tangent", "electric_coercivity", "magnetic_coercivity", "saturation_mag", "lande_g_factor", "delta_H", "delta_h_freq", "mass_density"</p> <p>Thermal (including solids, Icepak fluid flow, and Mechanical rotating fluid modeling):</p> <p>"thermal_conductivity", "mass_density", "specific_heat", "thermal_expansion_coefficient", "thermal_material_type", "viscosity", "diffusivity", "molecular_mass", "clarity_type"</p> <p>Structural:</p> <p>"mass_density", "youngs_modulus", "poissons_ratio", "thermal_expansion_coefficient"</p> |
| <Unit> | String | <p>Possible values (Maxwell-exclusive properties omitted, see Maxwell Scripting Help; other missing entries are unitless):</p> <p>conductivity: "siemens/m"</p> <p>saturation_mag: "uTesla", "mTesla", "tesla", "kTesla", "uGauss", "mGauss", "gauss", "kGauss"</p> <p>delta_H: "A_per_meter", "kA_per_meter", "Oe", "kOe"</p> <p>delta_h_frequency: "Hz", "kHz", "MHz", "GHz", "THz", "rps", "per_sec"</p> <p>mass_density: "kg/m^3"</p>                                                                                                                                                                                                                                                                                                     |

|                     |      |  |                                                                                                                             |
|---------------------|------|--|-----------------------------------------------------------------------------------------------------------------------------|
|                     |      |  | thermal_conductivity: "W/m-C"<br>specific_heat: "J/kg-C"<br>youngs_modulus: "N/m^2"<br>thermal_expansion_coefficient: "1/C" |
| <b>Return Value</b> | None |  |                                                                                                                             |

|                       |                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddMaterial ("NAME:<MaterialName>",<br><MatProperty>, <MatProperty>, ...)                                                                                                                                                                                                                                                                                    |
| <b>Python Example</b> | <pre> oDefinitionManager.AddMaterial( ["permittivity:=", "2.2", "0.002"])  oDefinitionManager.AddMaterial [ ("NAME:Material2", _     "dielectric_loss_tangent:=", "44",     Array("NAME:saturation_mag", _         "property_type:=", "AnisoProperty", _         "unit:=", "Gauss", _         "component1:=", "11", _         "component2:=", "22", _ </pre> |

|  |                                                            |
|--|------------------------------------------------------------|
|  | <pre>"component3:=", "33"), _ "delta_H:=", "440e") ]</pre> |
|--|------------------------------------------------------------|

## Add [padstack manager]

*Use:* Add a padstack

*Command:* Tools > Edit Configured Libraries > Padstacks > Add Padstack

*Syntax:* Add Array("NAME:<PadstackName>",

"ModTime:=", <ModifiedOnInfo>,

"Library:=", "", // name of the library

"LibLocation:=", "Project", // location of the named library

Array("NAME:psd",

"nam:=", <PadstackName>,

"lib:=", "", // name of the library

"mat:=", "", // hole plating material

"plt:=", "0", // percent of hole's radius filled by plating

Array("NAME:pds",

<LayerGeometryArray>,

<LayerGeometryArray....>),

"hle:=", <PadInfo>

"hRg:=", <HoleRange>,

"sbsh:=", <SolderballShape>,



```
"sbpl:=", <SolderballPlacement>,  
"sbr:=", <string>, // solderball diameter, real with units  
"sb2:=", <string>, // solderball mid diameter, real with units  
"sbn:=", <string>), // name of solderball material  
"ppl:=", <PadPortLayerArray>)
```

*Return Value:* simple name of the added padstack

```
// If the name requested conflicts with the name of an existing  
// padstack, the requested name is altered to be unique.  
// The name returned reflects any change made to be unique.
```

*Parameters:* <PadstackName>:

```
<string> // simple name of padstack to create
```

<ModifiedOnInfo>:

An integer that corresponds to the number of seconds that have elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.

<LayerGeometryArray>:

```
Array("Name:lgm",
```

```
"lay:=", <string>, // definition layer name
```

```
"id:=", <int>, // definition layer id
"pad:=", <PadInfo>, // pad
"ant:=", <PadInfo>, // antipad
"thm:=", <PadInfo>, // themal pad
"X:=", <string>, // pad x connection, real with units
"Y:=", <string>, // pad y connection, real with units
"dir:=", <DirectionString>) // pad connection direction
```

<PadInfo>:

```
Array("shp:=", <PadShape>,
"Szs:=", <DimensionArray>,
"X:=", <string>, // x offset, real with units
"Y:=", <string>, // y offset, real with units
"R:=", <string>) // rotation, real with units
```

<PadShape>:

<string> one of these choices

"No" // no pad

"Cir" // Circle

"Sq" // Square

"Rct" // Rectangle

"Ov" // Oval

"Bl" // Bullet

"Ply" // Polygons

"R45" // Round 45 thermal

"R90" // Round 90 thermal

"S45" // Square 45 thermal

"S90" // Square 90 thermal

<DimensionArray>:

Array(<string>, ...) // each string is a real with units for one of the dimensions of the shape

<DirectionString>:

<string> one of these choices

"No" // no direction

"Any" // any direction

"0" // 0 degrees

"45" // 45 degrees

"90" // 90 degrees

"135" // 135 degrees

"180" // 180 degrees

"225" // 225 degrees

"270" // 270 degrees

"315" // 315 degrees

<HoleRange>:

<string> one of these choices

"Thr" // through all layout layers

"Beg" // from upper pad layer to lowest layout layer

"End" // from upper layout layer to lowest pad layer

"UTL" // from upper pad layer to lowest pad layer

<SolderballShape>:

<string> one of these choices

"None" // no solderball

"Cyl" // cylinder solderball

"Sph" // spheroid solderball

<SolderballPlacement>:

<string> one of these choices

"abv" // above padstack

"blw" // below padstack

<PadPortLayerArray>:

Array( <int>, <int>,.....) where each int is a layer id

## Add [symbol manager]

*Use:* Add a symbol

*Command:* Tools > Edit Configured Libraries > Symbols > Add Symbol

*Syntax:* Add Array("NAME:<SymbolName>",  
"ModTime:=", <ModifiedTimeInfo>,  
"Library:=", "", // Library name  
"LibLocation:=", "Project", // Project Location  
<PinDefInfo>,  
<PinDefInfo>,... // optional, to define pins  
<GraphicsDataInfo>, // optional, to define graphics  
<PropDisplayMapInfo>)) // optional, to define property displays

*Return Value:* <string>

// composite name of the symbol.  
// If the name requested conflicts with the name of an existing  
// symbol, the requested name is altered to be unique.  
// The name returned reflects any change made to be unique.

*Parameters:* <SymbolName>:

<string> // simple name of the symbol being added

<ModifiedOnInfo>:

An integer that corresponds to the number of seconds that have elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.

<PinDefInfo>:

```
Array("NAME:PinDef",  
"Pin:=", Array (<string>, // pin name  
<real>, // x location  
<real>, // y location  
<real>, // angle in radians  
<PinType>,  
<real>, // line width  
<real>, // line length  
<bool>, // mirrored  
<int>, // color  
<bool>, // true if visible, false if not  
<string>, // hidden net name  
<OptionalPinInfo>, // optional info  
<PropDisplayMapInfo>)) // optional
```

<PinType>:

<string> // "N" : normal pin

// "I" : input pin

// "O" : output pin

<OptionalPinInfo>:

// Specify both or neither

<bool>, // true if name is to be shown

<bool>, // true if number is to be shown

<PropDisplayMapInfo>:

Array("NAME:PropDisplayMap",

<PropDisplayInfo>,

<PropDisplayInfo>,...)

<PropDisplayInfo>:

<NameString>, Array(<DisplayTypeInfo>,

<DisplayLocationInfo>,

<int>, // optional, level number

```
<TextInfo>)  
<NameString>:  
<string> // PropertyName:=, where PropertyName is the name of  
// the property to be displayed
```

```
<DisplayTypeInfo>:  
<int> // 0 : No display  
// 1 : Display name only  
// 2 : Display value only  
// 3 : Display both name and value  
// 4: Display evaluated value only  
// 5: Display both name and evaluated value
```

```
<DisplayLocationInfo>:  
<int> // 0 : Left  
// 1 : Top  
// 2 : Right  
// 3 : Bottom  
// 4 : Center  
// 5 : Custom placement
```



<GraphicsDataInfo>:

```
Array("NAME:Graphics",  
// one or more of the following  
<RectInfo>,  
<CircleInfo>,  
<ArcInfo>,  
<LineInfo>,  
<PolygonInfo>,  
<TextInfo>,  
<ImageInfo>)
```

<RectInfo>:

```
"Rect:=", Array(<real>, // line width  
<int>, // fill pattern  
<int>, // color  
<real>, // angle, in radians  
<real>, // x position of center  
<real>, // y position of center  
<real>, // width  
< real>) // height
```

<CircleInfo>:

"Circle:=", Array(<real>, // line width

<int>, // fill pattern

<int>, // color

<real>, // x position of center

<real>, // y position of center

< real>) // radius

<ArcInfo>:

"Arc:=", Array(<real>, // line width

<int>, // line pattern

<int>, // color

<real>, // x position of center

<real>, // y position of center

< real>, // radius

<real>, // start angle, in radians

<end>) // end angle, in radians

<LineInfo>:

"Line:=", Array(<real>, // line width

<int>, // line pattern

<int>, // color

<PointInfo>, // must specify at least 2 points

<PointInfo>...)

<PointInfo>:

<real>, // x position

<real> // y position

<PolygonInfo>:

"Polygon:=", Array(<real>, // line width

<int>, // fill pattern

<int>, // color

<PointInfo>, // must specify at least 3 points

<PointInfo>...)

<TextInfo>:

"Text:=", Array(<real>, // x position

<real>, // y position

<real>, // angle, in radians

<Justification>,

<bool>, // is plotter font

<string>, // font name

<int>, // color

<string>) // text string

<Justification>:

<int> // 0 : left top

// 1 : left base

// 2 : left bottom

// 3 : center top

// 4 : center base

// 5 : center bottom

// 6 : right top

// 7 : right base

// 8 : right bottom

<ImageInfo>:

"Image:=", Array(<RectInfo>,

<ImageData>,

<bool>) // is mirrored

<ImageData>:

<string>, // file path

<int>, // 0 : use the file path and link to it

// 1 : ignore file path and use next parameter

<string> // text data, only present if preceding int is 1

## AreMaterialPropertiesEqual

Checks whether named material compared to added material data have equivalent major properties.

| UI Access    | None.                                                                                                                                                                                                        |          |                                                                                                                                                                                                                                                                                                                                                                    |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                                                                                                                                                                                                         | Type     | Description                                                                                                                                                                                                                                                                                                                                                        |
|              | material_data                                                                                                                                                                                                | <string> | This will be the same format as the AddMaterial() input parameter, material_data. For example, material_data can be something like this.["NAME:Mold_Material", "CoordinateSystemType:=", "Cartesian", "BulkOrSurfaceType:=", 1, ["NAME:PhysicsTypes", "set:=", ["Thermal"]], "thermal_conductivity:=", "0.8", "mass_density:=", "1980", "specific_heat:=", "960"]. |
|              | <MaterialName>                                                                                                                                                                                               | <String> | Name of the material to compare with material database                                                                                                                                                                                                                                                                                                             |
| Return Value | Boolean: <ul style="list-style-type: none"><li>• <b>True</b> – named materials have equivalent major properties.</li><li>• <b>False</b> – named materials do not have equivalent major properties.</li></ul> |          |                                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>AreMaterialPropertiesEqual(&lt;material_data&gt;, '&lt;MaterialName&gt;')</code>     |
| <b>Python Example</b> | <code>oDefinitionManager.AreMaterialPropertiesEqual(material_data, 'Mold_Material')</code> |

## AreSurfaceMaterialPropertiesEqual

Checks whether named surface material compared to added surface material data have equivalent major properties.

|                     |                                                                                                                                                                                                                                 |             |                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | None.                                                                                                                                                                                                                           |             |                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Parameters</b>   | <b>Name</b>                                                                                                                                                                                                                     | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                |
|                     | material_data                                                                                                                                                                                                                   | <string>    | This will be the same format as the AddMaterial() input parameter, material_data. For example, material_data can be something like this.["NAME:Mold_Material", "CoordinateSystemType:=", "Cartesian", "BulkOrSurfaceType:=", 1, ["NAME:PhysicsTypes", "set:=", ["Thermal"]], "thermal_conductivity:=", "0.8", "mass_density:=", "1980", "specific_heat:=", "960"] |
|                     | <MaterialName>                                                                                                                                                                                                                  | <String>    | Name of the surface material to compare with material database                                                                                                                                                                                                                                                                                                    |
| <b>Return Value</b> | Boolean: <ul style="list-style-type: none"> <li>• <b>True</b> – named surface materials have equivalent major properties.</li> <li>• <b>False</b> – named surface materials do not have equivalent major properties.</li> </ul> |             |                                                                                                                                                                                                                                                                                                                                                                   |

|                      |                                                                                               |
|----------------------|-----------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | <code>AreSurfaceMaterialPropertiesEqual(&lt;material_data&gt;, '&lt;MaterialName&gt;')</code> |
|----------------------|-----------------------------------------------------------------------------------------------|

**Python  
Example**

```
oDefinitionManager.AreSurfaceMaterialPropertiesEqual(material_data, 'Mold_Material')
```

## ChangeProperty (Symbol Editor)

*Use:* Changes to properties are scripted using the **ChangeProperty** command. This command can be executed by the **oEditor** to change editor properties, by the **oDesign** to change design level properties, and by the **oProject** to change project level properties. The command can be used to create, edit, and/or remove properties. In Circuit, only Variable and Separator properties can be deleted.

*Command:* None

*Syntax:* ChangeProperty Array("Name:AllTabs", <PropTabArray>, <PropTabArray>, ...)

*Return Value:* None

*Parameters:* <PropTabArray>

```
Array("Name:<PropTab>",  
      <PropServersArray>,  
      <NewPropArray>,  
      <ChangedPropsArray>,  
      <DeletedPropsArray>)
```

```
<PropServersArray>  
Array("Name:PropServers", <PropServer>,  
      <PropServer>, ...)
```

<NewPropArray>

```
Array("Name:NewProp", <PropDataArray>,  
<PropDataArray>,...)
```

<ChangedPropsArray>

```
Array("Name:ChangedProps",<PropDataArray>,  
<PropDataArray>, ...)
```

<DeletedPropsArray>

```
Array("Name:DeletedProps", <PropName>,  
<PropName>, ...)
```

OR (for PropDisplay deletions only)

```
Array("Name:DeletedProps",<PropDataArray>,  
<PropDataArray>, ...)
```

<PropDataArray>

```
Array("NAME:<PropName>",  
"PropType:=", <PropType>,  
"NewName:=", <string>,
```



```
"Description:=", <string>,  
"Callback:=", <string>,  
"NewRowPosition:=", <int>,  
"ReadOnly:=", <bool>,  
"Hidden:=", <bool>,  
<PropTypeSpecificArgs>)OR (for PropDisplays only)  
Array("Name:<PropName>",<PropDisplayData>)
```

<PropDisplayData>

for adding, changing, deleting PropDisplays

<PropDisplayAttributes>

for changing PropDisplays only

<PropDisplayNewAttributes>

<PropDisplayAttributes>

Layer & Location only used for PropDisplays in layout

For adding PropDisplays, this will add a single PropDisplay with attributes as shown; if an attribute is missing, a default value will be assigned. Adding PropDisplay to schematic with attributes that are identical to one already existing there will fail without an error message.

For deleting PropDisplays, these attributes are used to identify an existing PropDisplay to delete. If there doesn't exist a PropDisplay that matches the given attributes, then nothing will be deleted. If multiple PropDisplays match the given attributes, then all of them will be deleted. If an attribute is missing, then all PropDisplays match that missing attribute. For example, if Layer is missing, then PropDisplays on all layers that match the remaining given attributes will be deleted.

For changing PropDisplays, these attributes are used to identify an existing PropDisplay to change. If no PropDisplay matching the attributes is found, no changes will be made. If multiple PropDisplays match the attributes, all of them will be changed. If an attribute is missing, it matches all PropDisplays. For example, to change the format of PropDisplays that are on the bottom, but have any layer, style or format to show the name only, this command should have Location set to "Bottom" and all other attributes omitted.

"Format:=", <PropDisplayType>,

"Location:=", <PropDisplayLocation>,

"Layer:=", <string>,

"Style:=", <string>

<PropDisplayNewAttributes>

NewLayer & NewLocation only used for PropDisplays in layout

For changing PropDisplays, these attributes are used to identify which attributes to change and what the new value is. If the attribute should not be changed, the corresponding entry should be omitted.

"NewName:=", <string>,

"NewFormat:=", <PropDisplayType>,

"NewLocation:=", <PropDisplayLocation>,

"NewLayer:=", <string>,

"NewStyle:=", <string>

<PropDisplayType>

Type: string

Identifies the format of PropDisplay.

"Name"

"Value"

"NameAndValue"

"EvaluatedValue"

"NameAndEvaluatedValue"

<PropDisplayLocation>

Type: string

Identifies where PropDisplay is located with respect to object

"Left"

"Top"

"Right"

"Bottom"

"Custom"

<PropType>

Type: string

Identifies the type of property when a new property is added. In Circuit, only separator properties and variable properties can be added.

"SeparatorProp"

"VariableProp"

"TextProp"

"NumberProp"

"ValueProp"

"CheckboxProp"

"MenuProp"

"PointProp"

"VPointProp"

"ButtonProp"

newName

Specify the new name of a property if the property's name is being edited. In Circuit, the name can only be changed for separators and variables.

Description

Specify a description of the property. In Circuit, the description can only be changed for separators and variables.

Callback

Specify the name of the script callback to be run when the property value is changed.

#### NewRowPosition

Used to reorder rows in the **Property** dialog box. In Circuit, this only applies to the **Project>Project Variables** panel and the **Designer>DesignProperties** panel. Specify the new zero-based row index of the variable or separator.

#### ReadOnly

Used to mark a property as "read only" so it can not be modified. In Circuit, this flag can only be set for variables and separators.

#### Hidden

Used to hide a property so it can not be viewed outside of the **Property** dialog box. In Circuit, this flag can only be set for variables and separators.

#### <PropTypeSpecificArgs>

**SeparatorProp**: no arguments

**TextProp**: "Value:=", <string>

**NumberProp**: "Value:=", <double>

**ValueProp**: "Value:=", <value>

**CheckboxProp**: "Value:=", <bool>

**MenuProp**: "Value:=", <string>

PointProp "X:=", <double>, "Y:=", <double>

VPointProp: "X:=", <value>, "Y:=", <value>

Material Button: "Material:=", <string>

Color Button: "R:=", <int>, "G:=", <int>, "B:=", <int>

Transparency Button: "Value:=", <double>

<PropTypeSpecificArgs> for MenuProps

Syntax for NewProps array: "AllChoices:=",

<"choice1,choice2,..."> or <Array("choice1" "choice2", ... )>,

"Value:=", <string>

Syntax for ChangedProps array: "Value:=", <string>

<PropTypeSpecificArgs> for VariableProps

Syntax:

**"Value:=", <value>, <OptimizationFlagsArray>,**

**<TuningFlagsArray>, <SensitivityFlagsArray>,**

**<StatisticsFlagsArray>**

Parameters:

**<OptimizationFlagsArray>**

**Array("NAME:Optimization",**

```
"Included:=", <bool>,  
"Min:=", <value>,  
"Max:=", <value>)
```

**<TuningFlagsArray>**

```
Array("NAME:Tuning",  
"Included:=", <bool>,  
"Step:=", <value>,  
"Min:=", <value>,  
"Max:=", <value>)
```

**<SensitivityFlagsArray>**

```
Array("NAME:Sensitivity",  
"Included:=", <bool>,  
"Min:=", <value>,  
"Max:=", <value>,  
"IDisp:=", <value> )
```

**<StatisticsFlagsArray>**

```
Array("NAME:Statistical",  
"Included:=", <bool>,
```

"Dist:=", <Distribution>,

"StdD:=", <value>,

"Min:=", <value>,

"Max:=", <value>,

"Tol:=", <string>)

<Distribution>

Type: string

Value should be **"Gaussian"** or **"Uniform"**

StdD

Standard deviation.

Min

Low cut-off for the distribution.

Max

High cut-off for the distribution.

Tol

Tolerance for uniform distributions. Format is "**<int>%**".



Example: "20%".

## CloneMaterial

Clones a local material.

|              |                                                                                                                                                                        |        |                                 |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------|
| UI Access    | N/A                                                                                                                                                                    |        |                                 |
| Parameters   | Name                                                                                                                                                                   | Type   | Description                     |
|              | <matName>                                                                                                                                                              | String | Name of existing material.      |
|              | <newName>                                                                                                                                                              | String | Name for newly cloned material. |
| Return Value | Boolean: <ul style="list-style-type: none"><li>• 1 - Material is cloned.</li><li>• 0 - Existing material not found or a conflict with the new material name.</li></ul> |        |                                 |

|                |                                                                     |
|----------------|---------------------------------------------------------------------|
| Python Syntax  | CloneMaterial (<matName>, <newName>)                                |
| Python Example | <code>oDefinitionManager.CloneMaterial("copper1", "copper3")</code> |

## DeleteDataset

Deletes a specified dataset. This can be executed by the oProject, or oDesign variables.

|            |                              |      |             |
|------------|------------------------------|------|-------------|
| UI Access  | Project > Datasets > Remove. |      |             |
| Parameters | Name                         | Type | Description |

|               |                                                                                                                       |                                           |        |                                           |
|---------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------|--------|-------------------------------------------|
|               | <table><tr><td>&lt;DatasetName&gt;</td><td>String</td><td>Name of the dataset found in the project.</td></tr></table> | <DatasetName>                             | String | Name of the dataset found in the project. |
| <DatasetName> | String                                                                                                                | Name of the dataset found in the project. |        |                                           |
| Return Value  | None.                                                                                                                 |                                           |        |                                           |

|                       |                                                                           |
|-----------------------|---------------------------------------------------------------------------|
| <b>Python Syntax</b>  | DeleteDataset (<DatasetName>)                                             |
| <b>Python Example</b> | <pre>oProject.DeleteDataset('\$ds1') oDesign.DeleteDataset('\$ds1')</pre> |

## DoesMaterialExist

Checks for the presence of a material in the library by name

|                     |                                                                                                                                                                    |          |                                                             |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------|
| <b>UI Access</b>    | None.                                                                                                                                                              |          |                                                             |
| <b>Parameters</b>   | Name                                                                                                                                                               | Type     | Description                                                 |
|                     | <MaterialName>                                                                                                                                                     | <String> | Name of the material to search for in the material database |
| <b>Return Value</b> | Boolean: <ul style="list-style-type: none"> <li>• <b>True</b> – specified material exists.</li> <li>• <b>False</b> – specified material does not exist.</li> </ul> |          |                                                             |

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| <b>Python Syntax</b>  | DoesMaterialExist(<MaterialName>)                      |
| <b>Python Example</b> | oDefinitionManager.DoesMaterialExist("modified_epoxy") |

## Edit [component manager]

Modifies an existing component

*Command:* Tools > Edit Configured Libraries > Components > Edit Component

*Syntax:* Edit <ComponentName>,

```
    Array("NAME:<NewComponentName>",  
    "Info:=", <ComponentInfo>,  
    "RefBase:=", <string>, // reference designator  
    "NumParts:=", <int>, // parts per component  
    "OriginalComponent:=", <string>  
    "Terminal:=", <TerminalInfo>,  
    "Terminal:=", <TerminalInfo>, ...  
    // The remaining parameters are optional  
    Array("NAME:Parameters", // any combo of the following  
    "VariableProp:=", <VariableInfo>,  
    "CheckboxProp:=", <CheckBoxInfo>,  
    "ButtonProp:=", <ButtonInfo>,  
    "TextProp:=", <TextInfo>,  
    "NumberProp:=", <NumberInfo>,  
    "SeparatorProp:=", <SeparatorInfo>,  
    "ValueProp:=", <ValueInfo>,
```

```
"MenuProp:=", <MenuInfo>),  
Array("NAME:Properties", // any combo of the following  
"CheckboxProp:=", <CheckBoxInfo>,  
"TextProp:=", <TextInfo>,  
"NumberProp:=", <NumberInfo>,  
"SeparatorProp:=", <SeparatorInfo>,  
"ValueProp:=", <ValueInfo>,  
"MenuProp:=", <MenuInfo>),  
"VPointProp:=", <VPointInfo>,  
"PointProp:=", <PointInfo>),  
Array("Quantities",  
"QuantityProp:=", <QuantityPropInfo>...),  
Array("NAME:CosimDefinitions",  
  <CosimDefInfo>,  
  <CosimDefInfo>...)
```

*Return Value:* <string>

```
// composite name of the component.  
// If the name requested conflicts with the name of an existing  
// component, the requested name is altered to be unique.  
// The name returned reflects any change made to be unique.
```

*Parameters:* <ComponentName>:

<string> // composite name of the component to edit

<NewComponentName>:

<string> // new simple name for the component

<ComponentInfo>:

Array("Type:=", <TypeInfo>,

"NumTerminals:=", <int>,

"DataSource:=", <string>,

"ModifiedOn:=", <ModifiedOnInfo>,

"Manufacturer:=", "<string>,"

"Symbol:=", <string>,"

"Footprint:=", <string>,"

"Description:=", <string>,"

"InfoTopic:=", <string>,"

"InfoHelpFile:=", <string>,"

"IconFile:=", <string>,"

"LibraryName:=", <string>,"

"OriginalLocation:=", <string>, // Project Location

```
"Author:=", <string>,  
"OriginalAuthor:=", <string>,  
"CreationDate:= ", <int>)
```

**<TypeInfo>:**

An integer that is the or-ing of bits for each product listed below. The default setting is 0xffffffff (4294967295) which indicates valid for all products. In the component editing dialog, checking different boxes in the "Specify products for which this component is valid" grid control sets specific flags that correspond to the following hex/decimal settings:

```
Nexxim -- 100 binary, 4 decimal, 0x4  
SIwaveDeNovo -- 1000 binary, 8 decimal, 0x8  
Simplorer -- 10000 binary, 16 decimal, 0x10  
MaxwellCircuit -- 100000 binary, 32 decimal, 0x20
```

**<ModifiedOnInfo>:**

An integer that corresponds to the number of seconds that have elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.

**<TerminalInfo>:**

```
Array(<string>, // symbol pin  
<string> // footprint pin  
<string>, // gate name  
<bool>, // shared  
<int>, // equivalence number
```

<int>, // what to do if unconnected: flag as error:0, ignore:1

<string>, // description

<Nature>)

<Nature>:

<string> // content varies as follows

Nexxim/Circuit:

"Electrical" // the only choice

Simplorer:

// several choices

"Electrical", "Magnetic", "Fluidic", "Translational",

"Translational\_V", "Rotational", "Rotational\_V",

""Radiant", "Thermal", or <VHDLPackageName>

<VHDLPackageName>:

<string> // in the form <Library>.<Package>

<Library>:

<string> // name of the VHDL library

<Package>:

<string> // name of the VHDL package

<VariableInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<string>) // value: number, variable, or expression

<FlagLetters>:

<string> // "D" - has description parameter,

// "RD" - readonly & has description parameter,

// or "RHD" - readonly, hidden, & has description parameter

<CheckBoxInfo>:

Array(<string>, // name

<FlagLetters>,



```
<string>, // description  
"CB:=", <string>, // optional - script for call back  
<bool>) // value: true or false
```

```
<ButtonInfo>:  
Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
<string>, // button title  
<string>, // extra text  
<ClientID>,  
"ButtonPropClientData:= ", <ClientDataArray>)
```

```
<ClientID>:  
<int> // specifies Button Prop Client  
// 0 - unknown, "ButtonPropClientData  
// array will be empty  
// 1 - Netlist Prop Client  
// 2 - not used  
// 3 - File Name Prop Client
```

<ClientDataArray>:

varies with <ClientID>

<ClientID> is 0 or 1: empty array

Array()

<ClientID> is 3:

Array("InternalFormatText:=", "<prefix><RelativePath>")

<prefix>:

<string> // "<Project>", "<PersonalLib>", "<UserLib>", or "<SysLib>"

<RelativePath>:

<string> // relative path to file from <prefix>

<TextInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<string>) // value: a text string

<NumberInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<real>, // value: a number

<string>) // units

<SeparatorInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<string>) // value: a text string

<ValueInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back  
<string>) // value: a number, variable or expression

<MenuPropInfo>:

Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
<string>, // menu choices - separated by commas  
<int>) // 0 based index of current menu choice

<VPointInfo>:

Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
"CB:=", <string>, // optional - script for call back  
<string>, // x value: number with length units  
<string>) // y value: number with length units

<PointInfo>:

Array(<string>, // name  
<FlagLetters>,  
<string>, // description

"CB:=", <string>, // optional - script for call back

<real>, // x value

<real>) // y value

<QuantityPropInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

<string>, // value

<TypeString>,

<TypeStringDependentInfo>)

<TypeString>:

<string> // "Across", "Through", or "Free"

<TypeStringDependentInfo>:

"Free" :

<string>, // direction: "In", "Out", "InOut", or "DontCare"

// Following <string> is not present if direction is "DontCare"

```
<string> // when to calculate: "BeforeAnalogSolver",  
// "BeforeStateGraph", "AfterStateGraph", or "DontCareWhen"
```

"Across" or "Through"

```
<int>, // terminal 1
```

```
<int> // terminal 2
```

```
<CosimDefInfo>:
```

```
Array("NAME:CosimDefinition",
```

```
"CosimulatorType:=", <int>,
```

```
"CosimDefName:=", <string> // "HFSS3D", "Circuit",
```

```
// "Custom", or "Netlist"
```

```
"IsDefinition:=", <bool>,
```

```
final array member(s) vary with CosimDefName)
```

final array members for HFSS 3D Layout:

```
"CosimStackup:=", <string>,
```

```
"CosimDmbedRatio:=", <int>
```

final array members for Circuit:

```
"ExportAsNport:=", <int>,
```

```
"UsePjt:=", <int>
```

final array member for Custom:

"DefinitionCompName:=", <string>

final array member for Netlist:

"NetlistString:=", <string>

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | <pre>Edit &lt;ComponentName&gt;,<br/>    ["NAME:&lt;NewComponentName&gt;","<br/>"Info:=", &lt;ComponentInfo&gt;,<br/>"RefBase:=", &lt;string&gt;, // reference designator<br/>"NumParts:=", &lt;int&gt;, // parts per component<br/>"OriginalComponent:=", &lt;string&gt;<br/>"Terminal:=", &lt;TerminalInfo&gt;,<br/>"Terminal:=", &lt;TerminalInfo&gt;, ...<br/>#The remaining parameters are optional<br/>["NAME:Parameters", // any combo of the following<br/>"VariableProp:=", &lt;VariableInfo&gt;,<br/>"CheckboxProp:=", &lt;CheckBoxInfo&gt;,<br/>"ButtonProp:=", &lt;ButtonInfo&gt;,<br/>"TextProp:=", &lt;TextInfo&gt;,</pre> |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <pre> "NumberProp:=", &lt;NumberInfo&gt;, "SeparatorProp:=", &lt;SeparatorInfo&gt;, "ValueProp:=", &lt;ValueInfo&gt;, "MenuProp:=", &lt;MenuInfo&gt;], ["NAME:Properties", # any combo of the following "CheckboxProp:=", &lt;CheckBoxInfo&gt;, "TextProp:=", &lt;TextInfo&gt;, "NumberProp:=", &lt;NumberInfo&gt;, "SeparatorProp:=", &lt;SeparatorInfo&gt;, "ValueProp:=", &lt;ValueInfo&gt;, "MenuProp:=", &lt;MenuInfo&gt;), "VPointProp:=", &lt;VPointInfo&gt;, "PointProp:=", &lt;PointInfo&gt;), ["Quantities", "QuantityProp:=", &lt;QuantityPropInfo&gt;...], ["NAME:CosimDefinitions", &lt;CosimDefInfo&gt;, &lt;CosimDefInfo&gt;...]) </pre> |
| <b>Python Example</b> | <pre> name = oComponentManager.Edit ("Simplorer Circuit Elements\BJTs:Level01_NPN", _ ["NAME:Level01_NPN", "Info:=", ["Type:=", 4294901764,_ "NumTerminals:=", 3, "DataSource:=", "Ansoft built-in component",_ </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                  |



```

"ModifiedOn:=", 1152722112, "Manufacturer:=", "", _
"Symbol:=", "nexx_bjt_npn", "Footprint:=", "", _
"Description:=", "BJT, GP, NPN", "InfoTopic:=", "NXBJT1.htm", _
"InfoHelpFile:=", "nexximcomponents.chm", "IconFile:=", "bjtsn.bmp", _
"Library:=", "Nexxim Circuit Elements\BJTs", _
"OriginalLocation:=", "SysLibrary ", "Author:=", "", _
"OriginalAuthor:=", "", "CreationDate:=", 1152722102], _
"Refbase:=", "Q", "NumParts:=", 1, "Terminal:=", ["collector", _
"collector", "A", false, 6, 0, "", "Electrical"], _
"Terminal:=", ["base", "base", "A", false, _
7, 0, "", "Electrical"], "Terminal:=", ["emitter", _
"emitter", "A", false, 8, 0, "", "Electrical"], _
["NAME:Parameters", "TextProp:=", ["LabelID", _
"HD", "Property string for netlist ID", _
"Q@ID"], "TextProp:=", ["MOD", "D", _
"Name of model data reference", "required"], _
"VariableProp:=", ["AREA", "D", _
"Emitter area multiplying factor, which affects
currents, resistances, and capacitances", "1"], _

```

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | <pre> "VariableProp:=", ["AREAB", "D", "Base AREA", _ "1"], "VariableProp:=", ["AREAC", "D", "Collector AREA", _ "1"], "VariableProp:=", ["DTEMP", "D", _ "The difference between element and circuit temperature (deg Cel)", _ "0"], "VariableProp:=", ["M", "D", _ "Multiplier factor to simulate multiple BJTs in parallel", _ "1"], "ButtonProp:=", ["NexximNetlist", "HD", "", _ "Q@ID %0 %1 %2 *MOD(@MOD) *AREA (AREA=@AREA) "&amp; _  " *AREAB (AREAB=@AREAB) *AREAC (AREAC=@&amp; _ "AREAC) *DTEMP (DTEMP=@DTEMP) *M (M=@M) ", _ "Q@ID %0 %1 %2 *MOD(@MOD) " &amp; "*AREA (AREA=@AREA) *AREAB (AREAB=@AREAB) *AREAC (AREAC=@&amp; _ "AREAC) *DTEMP (DTEMP=@DTEMP) *M (M=@M) ", 1, _ "ButtonPropClientData:=", [], "TextProp:=", ["ModelName", "HD", "", "Q"]]]) </pre> |
| <b>Python<br/>Example<br/>2</b> | <pre> name2 = oComponentManager.Edit ("MyComponent",_  (["NAME:MyOtherComponent","Info:=", ["Type:=", 4294901767, _  "NumTerminals:=", 2, "DataSource:=", "", _ </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

```
"ModifiedOn:=", 1071096503, "Manufacturer:=", "Ansoft", _  
  
"Symbol:=", "bendo", "Footprint:=", "BENDO", _  
  
"Description:=", "", "InfoTopic:=", "", _  
  
"InfoHelpFile:=", "", "IconFile:=", "", _  
  
"LibraryName:=", "", "OriginalLocation:=", "Project", _  
  
"Author:=", "", "OriginalAuthor:=", "", _  
  
"CreationDate:= ", 1147460679], "Refbase:=", "U", _  
  
"NumParts:=", 1, "OriginalComponent:=", "", _  
  
"Terminal:=", ["n1", "n1", "A", false, 0, 0, "", _
```

```
"Electrical"]], "Terminal:=", ["n2", "n2", "A", _  
  
false, 1, 0, "", Electrical"], ["NAME:Parameters", _  
  
"MenuProp:=", ["CoSimulator", "D", "", _  
  
"Default,Custom,Netlist", 0], "ButtonProp:=", ["CosimDefinition", _  
  
"D", "", "", "Edit", 0, "ButtonPropClientData:=", []], _  
  
["NAME:CosimDefinitions", ["NAME:CosimDefinition", _  
  
"CosimulatorType:=", 0, "CosimDefName:=", "HFSS3D", _  
  
"IsDefinition:=", true, "CosimStackup:=", "Layout stackup", _  
  
"CosimDmbedRatio:=", 3], ["NAME:CosimDefinition", _
```

```
"CosimulatorType:=", 1, "CosimDefName:=", "", _  
  
"IsDefinition:=", true, "ExportAsNport:=", 0, _  
  
"UsePjt:=", 0], ["NAME:CosimDefinition", _  
  
"CosimulatorType:=", 2, "CosimDefName:=", "Custom", _  
  
"IsDefinition:=", true, "DefinitionCompName:=", ""], _  
  
["NAME:CosimDefinition", "CosimulatorType:=", 3, _  
  
"CosimDefName:=", "Netlist", "IsDefinition:=", true, _  
  
"NetlistString:=", ""]]])
```

## EditDataset

Modifies a dataset. This can be executed by the oProject, or oDesign variables.

|                     |                                         |        |                                |
|---------------------|-----------------------------------------|--------|--------------------------------|
| <b>UI Access</b>    | <b>Project &gt; Datasets &gt; Edit.</b> |        |                                |
| <b>Parameters</b>   | Name                                    | Type   | Description                    |
|                     | <OriginalName>                          | String | Name of the original dataset.  |
|                     | <DatasetDataArray>                      | Array  | Data for the modified dataset. |
| <b>Return Value</b> | None.                                   |        |                                |

|                       |                                                                                                                                                                                                                   |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>EditDataset (&lt;OriginalName&gt; &lt;DatasetDataArray&gt;)</code>                                                                                                                                          |
| <b>Python Example</b> | <pre> oProject.EditDataset ("ds1" ["NAME:ds2",   ["NAME:Coordinates",     [       "NAME:Coordinate",       "X:=", 1, "Y:=", 2     ],     [       "NAME:Coordinate",       "X:=", 3, "Y:=", 4     ]   ] ] ) </pre> |

|  |                                                                                                                                                                                                                                                                                            |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>oDesign.EditDataset ("ds1"<br/>  ["NAME:ds2",<br/>    ["NAME:Coordinates",<br/>      [<br/>        "NAME:Coordinate",<br/>        "X:=", 1, "Y:=", 2<br/>      ],<br/>      [<br/>        "NAME:Coordinate",<br/>        "X:=", 3, "Y:=", 4<br/>      ]<br/>    ]<br/>  ]<br/>)</pre> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

EditMaterial

Modifies an existing material.

|            |                                                    |      |             |
|------------|----------------------------------------------------|------|-------------|
| UI Access  | View/Edit Materials command in the material editor |      |             |
| Parameters | Name                                               | Type | Description |

|                     |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <OriginalName>      | String | Name of the material before editing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <MatProperties>     | Array  | <p>Structured array containing material properties:</p> <pre>[   "NAME:&lt;New material name&gt;",   "CoordinateSystemType:=", &lt;string&gt;,   "BulkOrSurfaceType:=" , &lt;integer&gt;,   [     "NAME:PhysicsTypes",     "set:=" , &lt;array containing string physics types&gt;   ],   &lt;Optional ModifierDataArray&gt;,   "permeability:=" , &lt;string containing value&gt;,   "conductivity:=" , &lt;string containing value&gt;,   "thermal_conductivity:=", &lt;string containing value&gt;,   "mass_density:=" , &lt;string containing value&gt;,   "specific_heat:=" , &lt;string containing value&gt;,   "youngs_modulus:=" , &lt;string containing value&gt;,   "poissons_ratio:=" , &lt;string containing value&gt;,   "thermal_expansion_coefficient:=", &lt;string containing value&gt; ]</pre> |
| <ModifierDataArray> | Array  | Optional structured array containing thermal or spatial modifiers:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |



```
[
  "NAME:ModifierData",
  [
    "NAME:<ThermalModifierData or SpatialModifierData>",
    "modifier_data:=" , <"thermal_modifier_data" or "spa-
      tial_modifier_data">,
    [
      "NAME:<all_thermal_modifiers or all_spatial_mod-
        ifiers>",
      [
        "NAME:<modifierName>",
        "Property::=" , <string property being mod-
          ified>,
        "Index::=" , <integer>,
        "prop_modifier:=" , <"thermal_modifier" or "spa-
          tial_modifier">,
        "use_free_form:=" , <Boolean>,
        "free_form_value:=" , <string modifier value>,
      ]
    ]
  ]
]
```

|              |       |
|--------------|-------|
| Return Value | None. |
|--------------|-------|

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | EditMaterial (<OriginalName>, <MatProperties>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Python Example | <p><b>Without Modifiers:</b></p> <pre>oDefinitionManager.EditMaterial("alumina_92pct",<br/>[<br/>    "NAME:alumina_92pct",<br/>    "CoordinateSystemType:=" , "Cartesian",<br/>    "BulkOrSurfaceType:=" , 1,<br/>    [<br/>        "NAME:PhysicsTypes",<br/>        "set:=" , ["Electromagnetic","Thermal","Structural"]<br/>    ],<br/>    "permittivity:=" , "9.3",<br/>    "dielectric_loss_tangent:=" , "0.008",<br/>    "thermal_conductivity:=" , "26",<br/>    "mass_density:=" , "3720",<br/>    "specific_heat:=" , "790",<br/>    "youngs_modulus:=" , "267000000000",<br/>    "poissons_ratio:=" , "0.26",</pre> |

```
"thermal_expansion_coefficient:=", "7.2e-006"
]
)

With Thermal Modifier:

oDefinitionManager.EditMaterial("copper",
[
  "NAME:copper",
  "CoordinateSystemType:=", "Cartesian",
  "BulkOrSurfaceType:=" , 1,
  [
    "NAME:PhysicsTypes",
    "set:=" , ["Electromagnetic","Thermal","Structural"]
  ],
[
  "NAME:ModifierData",
  [
    "NAME:ThermalModifierData",
    "modifier_data:=" , "thermal_modifier_data",
    [
      "NAME:all_thermal_modifiers",
```

```

        [
            "NAME:one_thermal_modifier",
            "Property:=" , "permittivity",
            "Index:=" , 0,
            "prop_modifier:=" , "thermal_modifier",
            "use_free_form:=" , True,
            "free_form_value:=" , "if(Temp > 1000cel, 1, if(Temp < -273.15cel, 1, 1))"
        ]
    ]
]
],
"permeability:=" , "0.999991",
"conductivity:=" , "58000000",
"thermal_conductivity:=" , "400",
"mass_density:=" , "8933",
"specific_heat:=" , "385",
"youngs_modulus:=" , "120000000000",
"poissons_ratio:=" , "0.38",
"thermal_expansion_coefficient:=" , "1.77e-05"
])

```

**Transient Solve, Non-linear Drude Data Plasma**

```
import ScriptEnv

ScriptEnv.Initialize("Ansoft.ElectronicsDesktop")

oDesktop.RestoreWindow()

oProject = oDesktop.SetActiveProject("Drude_plasma_parameters_r231")
oDefinitionManager = oProject.GetDefinitionManager()
oDefinitionManager.EditMaterial("Drude",

[
    "NAME:Drude",
    "CoordinateSystemType:=", "Cartesian",
    "BulkOrSurfaceType:="    , 1,
    [
        "NAME:PhysicsTypes",
        "set:="                , ["Electromagnetic"]
    ],
    [
        "NAME:AttachedData",
        [
            "NAME:MatNonLinearDrudeFreqDepData",
            "property_data:="    , "nonlinear_drude_data",
            "EpsilonInfinity:="  , "1",
```

|  |                                                                                                                                                                                                                                                                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> "PlasmaFrequency:=" , "4.62348462366278GHz", "CollisionFrequency:=" , "0.00054491190162662GHz", "FieldBreakdown:=" , "10000V_per_meter", "PlasmaMaintainFrequency:=", "2.31174231183139GHz", "NeutralDensity:=" , 2.65164580488373E+20, "ElectronDensity:=" , 2.65164580488373E+17, "CollisionRateConstant:=", 2.05499505485618E-15      ]   ] ] ) </pre> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Edit [padstack manager]

*Use:* Edit an existing padstack.

*Command:* Tools > Edit Configured Libraries > Padstacks > Edit Padstack

*Syntax:* Edit <PadstackName> ,

```

Array("NAME:<NewPadstackName>",
"ModTime:=", <ModifiedOnInfo>,
"Library:=", "", // name of the library
"LibLocation:=", "Project", // location of the named library
Array("NAME:psd",
"nam:=", <PadstackName>,

```

```
"lib:=", "", // name of the library
"mat:=", "", // hole plating material
"plt:=", "0", // percent of hole's radius filled by plating
Array("NAME:pds",
<LayerGeometryArray>,
<LayerGeometryArray....>,
"hle:=", <PadInfo>
"hRg:=", <HoleRange>,
"sbsh:=", <SolderballShape>,
"sbpl:=", <SolderballPlacement>,
"sbr:=", <string>, // solderball diameter, real with units
"sb2:=", <string>, // solderball mid diameter, real with units
"sbn:=", <string>), // name of solderball material
"ppl:=", <PadPortLayerArray>)
```

*Return Value:* <string> // composite name of the padstack

// If the name requested conflicts with the name of an existing

// padstack, the requested name is altered to be unique.

// The name returned reflects any change made to be unique.

*Parameters:* <PadstackName>:

<string> // composite name of padstack to edit

<NewPadstackName>:

<string> // new simple name for padstack

<ModifiedOnInfo>:

An integer that corresponds to the number of seconds that have elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.

<LayerGeometryArray>:

Array("Name:lgn",

"lay:=", <string>, // definition layer name

"id:=", <int>, // definition layer id

"pad:=", <PadInfo>, // pad

"ant:=", <PadInfo>, // antipad

"thm:=", <PadInfo>, // thermal pad

"X:=", <string>, // pad x connection, real with units

"Y:=", <string>, // pad y connection, real with units

"dir:=", <DirectionString>) // pad connection direction

<PadInfo>:



```
Array("shp:=", <PadShape>,  
"Szs:=", <DimensionArray>,  
"X:=", <string>, // x offset, real with units  
"Y:=", <string>, // y offset, real with units  
"R:=", <string>) // rotation, real with units
```

<PadShape>:

<string> one of these choices

"No" // no pad

"Cir" // Circle

"Sq" // Square

"Rct" // Rectangle

"Ov" // Oval

"Blt" // Bullet

"Ply" // Polygons

"R45" // Round 45 thermal

"R90" // Round 90 thermal

"S45" // Square 45 thermal

"S90" // Square 90 thermal

<DimensionArray>:

Array(<string>, ...) // each string is a real with units for one of the  
// dimensions of the shape

<DirectionString>:

<string> one of these choices

"No" // no direction

"Any" // any direction

"0" // 0 degrees

"45" // 45 degrees

"90" // 90 degrees

"135" // 135 degrees

"180" // 180 degrees

"225" // 225 degrees

"270" // 270 degrees

"315" // 315 degrees

<HoleRange>:

<string> one of these choices

"Thr" // through all layout layers

"Beg" // from upper pad layer to lowest layout layer

"End" // from upper layout layer to lowest pad layer

"UTL" // from upper pad layer to lowest pad layer

<SolderballShape>:

<string> one of these choices

"None" // no solderball

"Cyl" // cylinder solderball

"Sph" // spheroid solderball

<SolderballPlacement>:

<string> one of these choices

"abv" // above padstack

"blw" // below padstack

<PadPortLayerArray>:

Array( <int>, <int>,....) where each int is a layer id

# ExportDataset

Exports a dataset to a named file. This can be executed by the oProject, or oDesign variables.

| UI Access  | Project > Datasets > Export. |        |                            |
|------------|------------------------------|--------|----------------------------|
| Parameters | Name                         | Type   | Description                |
|            | <datasetFileFullPath>        | String | The full path to the file. |

|                     |       |
|---------------------|-------|
| <b>Return Value</b> | None. |
|---------------------|-------|

|                       |                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportDataset (&lt;datasetFilePath&gt;)</code>                                              |
| <b>Python Example</b> | <pre>oProject.ExportDataset('e:/tmp/dsdata.txt') oDesign.ExportDataset('e:/tmp/dsdata.txt')</pre> |

## Export [footprint manager]

*Use:* Export a footprint to a library

*Command:* Tools > Edit Configured Libraries > Footprints > Export to Library

*Syntax:* Export Array("NAME:<LibraryName>",

    <FootprintName>,  
    <FootprintName>...),  
    <LibraryLocation>

*Return Value:* None

*Parameters:* <LibraryName>:

    <string> // name of the library

    <FootprintName>:

    <string> // composite name of footprint to export

<LibraryLocation>:  
<string> // location of the library in <LibraryName>  
// One of "Project", "PersonalLib", or "UserLib"

ExportMaterial

Exports a local material to a library.

|              |                                                   |        |                                                                             |
|--------------|---------------------------------------------------|--------|-----------------------------------------------------------------------------|
| UI Access    | Export to Library command in the material editor. |        |                                                                             |
| Parameters   | Name                                              | Type   | Description                                                                 |
|              | <ExportData>                                      | Array  | ["NAME:<LibraryName>",<br><MaterialName>, <MaterialName>, ...]              |
|              | <LibraryName>                                     | String | Name of the exported library.                                               |
|              | <MaterialName>                                    | String | Name of the material to be exported.                                        |
|              | <LibraryLocation>                                 | String | Location to save the library. Only "PersonalLib" and "UserLib" are allowed. |
| Return Value | None.                                             |        |                                                                             |

|                |                                                                                                              |
|----------------|--------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ExportMaterial (<ExportData>, <LibraryLocation>)                                                             |
| Python Example | oDefinitionManager.ExportMaterial (["NAME:mylib",_<br>"Material1", "Material2", "Material3"], "PersonalLib") |

## Export [padstack manager]

*Use:* Export a padstack to a library

*Command:* Tools > Edit Configured Libraries > Padstacks > Export to Library

*Syntax:* Export Array("NAME:<LibraryName>",

    <PadstackName>,

    <PadstackName>...),

    <LibraryLocation>

*Return Value:* None

*Parameters:* <LibraryName>:

    <string> // name of the library

    <PadstackName>:

    <string> // simple name of padstack to export

    <LibraryLocation>:

    <string> // location of the library in <LibraryName>

    // One of "Project", "PersonalLib", or "UserLib"

## ExportScript

*Use:* Export to Library in the script definition manager

*Command:* None

**Syntax:** ExportScript <ExportData>,<Library location>

**Return Value:** None

**Parameters:** <ExportData>

Array("NAME:<LibraryName>",<ScriptName>,<ScriptName>,...)

|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportScript( <ExportData>,<Library location>)                                  |
| <b>Python Example</b> | <pre>oProject.ExportComponent (["NAME:mylib", "myscript"], "PersonalLib")</pre> |

## Export [symbol manager]

**Use:** Exports symbol(s) to a library

**Command:** Tools > Edit Configured Libraries > Symbols > Export to Library

**Syntax:** Export Array("NAME:<LibraryName>",

<SymbolName>,

<SymbolName>...),

<LibraryLocation>

**Return Value:** None

**Parameters:** <LibraryName>:

<string> // name of the library

<SymbolName>:

<string> // composite name of symbol to export

<LibraryLocation>:

<string> // location of the library in <LibraryName>

// One of "Project", "PersonalLib", or "UserLib"

## GetProjectMaterialNames

Returns the material names belonging to an active Project.

|                     |                                                      |      |             |
|---------------------|------------------------------------------------------|------|-------------|
| <b>UI Access</b>    | N/A                                                  |      |             |
| <b>Parameters</b>   | Name                                                 | Type | Description |
|                     | None                                                 |      |             |
| <b>Return Value</b> | String names of the materials in the active project. |      |             |

|                       |                                                                                                                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetProjectMaterialNames()                                                                                                                                                                         |
| <b>Python Example</b> | <pre>oProject = oDesktop.GetActiveProject() oDefinitionManager = oProject.GetDefinitionManager() materials = oDefinitionManager.GetProjectMaterialNames() AddWarningMessage(str(materials))</pre> |



## GetPropertyValue

Returns the value of a single property belonging to a specific *<PropServer>* and *<PropTab>*. This function is available with the Project, Design or Editor objects, including definition editors.

**Tip:** Use the script recording feature and edit a property, and then view the resulting script to see the format for that property.

| UI Access  | N/A                       |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------|---------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                      | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|            | <i>&lt;PropTab&gt;</i>    | String | One of the following, where tab titles are shown in parentheses: <ul style="list-style-type: none"> <li>PassedParameterTab ("Parameter Values")</li> <li>DefinitionParameterTab (Parameter Defaults")</li> <li>LocalVariableTab ("Variables" or "Local Variables")</li> <li>ProjectVariableTab ("Project variables")</li> <li>ConstantsTab ("Constants")</li> <li>BaseElementTab ("Symbol" or "Footprint")</li> <li>ComponentTab ("General")</li> <li>Component("Component")</li> <li>CustomTab ("Intrinsic Variables")</li> <li>Quantities ("Quantities")</li> <li>Signals ("Signals")</li> </ul> |
|            | <i>&lt;PropServer&gt;</i> | String | An object identifier, generally returned from another script method, such as <code>CompInst@R;2;3</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|            | <i>&lt;PropName&gt;</i>   | String | Name of the property.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|                     |                               |
|---------------------|-------------------------------|
| <b>Return Value</b> | String value of the property. |
|---------------------|-------------------------------|

|                       |                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetPropertyValue (<PropTab>, <PropServer>, <PropName>)                                                                                                 |
| <b>Python Example</b> | <pre>selectionArray = oEditor.GetSelections()  for k in selectionArray:     val = oEditor.GetPropertyValue("PassedParameterTab", k, "R")     ...</pre> |

## ImportDataset

Imports a dataset from a named file. This can be executed by the oProject, or oDesign variables. The name of the dataset is file-name+index number (e.g., dsdata1) unless the filename ends with a trailing number. When there is a trailing number at the end, we will remove the number and use first unused index. Alternatively, the name of the dataset can be explicitly defined by providing a string as an optional second argument.

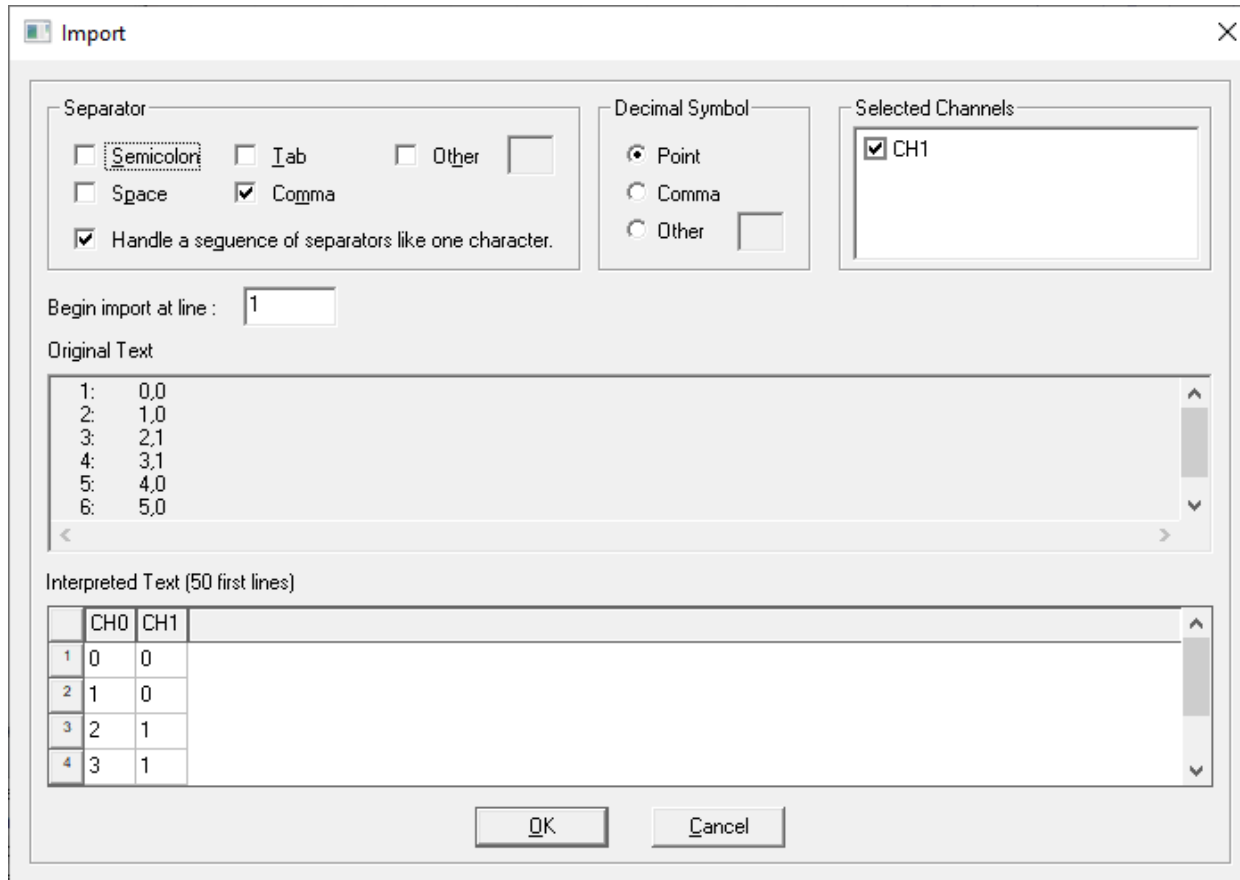
|                     |                                           |        |                                                                                                                    |
|---------------------|-------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | <b>Project &gt; Datasets &gt; Import.</b> |        |                                                                                                                    |
| <b>Parameters</b>   | Name                                      | Type   | Description                                                                                                        |
|                     | <datasetFileFullPath>                     | String | The full path to the file containing the dataset values. *.tab files recommended (see <a href="#">note</a> below). |
|                     | <optionalDatasetName>                     | String | <i>Optional.</i> User-defined dataset name.                                                                        |
| <b>Return Value</b> | None.                                     |        |                                                                                                                    |

|                       |                                                                                                                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ImportDataset (&lt;datasetFilePath&gt;,&lt;optionalDatasetName&gt;)</code>                                                                                                                                           |
| <b>Python Example</b> | <pre>oProject.ImportDataset('e:\tmp\dsdata.tab') oDesign.ImportDataset('e:\tmp\dsdata.tab') oProject.ImportDataset('e:\tmp\dsdata.tab', 'MyDatasetName') oDesign.ImportDataset('e:\tmp\dsdata.tab', 'MyDatasetName')</pre> |

## Note About File Types:

Tab-delimited or space-delimited files with the extension \*.tab are the recommended file type. When using ImportDataset at the Design level, \*.tab is the only file type supported.

At the Project level, other file types are supported (for example, \*.csv). However, after calling the command, you must configure the file import format manually through the Electronics Desktop GUI by selecting **Project > Datasets** and clicking **Import**.



## Remove [component manager]

Remove a component from a library

**Command:** Tools > Edit Configured Libraries > Components > Remove Component

*Syntax:* Remove <ComponentName>,  
          <IsProjectComponent>,  
          <LibraryName>,  
          <LibraryLocation>

*Return Value:* None

*Parameters:* <ComponentName>:  
                  <string> // composite name of the component to remove

                  <IsProjectComponent>:  
                  <bool>

                  <LibraryName>:  
                  <string> // name of the library

                  <LibraryLocation>:  
                  <string> // location of the library in <LibraryName>  
                  // One of "Project", "PersonalLib", or "UserLib"

|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Remove (<ComponentName>, <IsProjectComponent>, <LibraryName>, <LibraryLocation>) |
| <b>Python Example</b> | oComponentManager.Remove ("Simplorer Circuit                                     |

|  |                                                             |
|--|-------------------------------------------------------------|
|  | <code>Elements\BJTs:Level01_NPN", _ true, "Project")</code> |
|--|-------------------------------------------------------------|

## Remove [footprint manager]

*Use:* Removes a footprint from a library

*Command:* Tools > Edit Configured Libraries > Footprints > Remove Footprint

*Syntax:* Remove <FootprintName>,

    <IsProjectFootprint>,

    <LibraryName>,

    <LibraryLocation>

*Return Value:* None

*Parameters:* <FootprintName>:

    <string> // composite name of the footprint to remove

    <IsProjectFootprint>:

    <bool>

    <LibraryName>:

    <string> // name of the library

    <LibraryLocation>:

    <string> // location of the library in <LibraryName>

    // One of "Project", "PersonalLib", or "UserLib"

# RemoveMaterial

Removes a material from a library.

|              |                                                   |         |                                                                                                                                                        |
|--------------|---------------------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | Remove Material(s) command in the material editor |         |                                                                                                                                                        |
| Parameters   | Name                                              | Type    | Description                                                                                                                                            |
|              | <MaterialName>                                    | String  | Name of the material to be removed.                                                                                                                    |
|              | <IsProjectMaterial>                               | Boolean | If True, assumes the material is a project material. The last two parameters will be ignored.<br><br>If False, the material is not a project material. |
|              | <LibraryName>                                     | String  | Name of the user or personal library where the material resides.                                                                                       |
|              | <LibraryLocation>                                 | String  | Location of library. Valid options:"UserLib" or "PersonalLib".                                                                                         |
| Return Value | None.                                             |         |                                                                                                                                                        |

|                |                                                                                           |
|----------------|-------------------------------------------------------------------------------------------|
| Python Syntax  | RemoveMaterial (<MaterialName>, <IsProjectMaterial>,<br><LibraryName>, <LibraryLocation>) |
| Python Example | oDefinitionManager.RemoveMaterial ([<br>"Material1", false, "mo0907","UserLib"])          |

# Remove [padstack manager]

Use: Removes a padstack from a library

*Command:* Tools > Edit Configured Libraries > Padstacks > Remove Padstacks

*Syntax:* Remove <PadstackName>,

    <IsProjectPadstack>,

    <LibraryName>,

    <LibraryLocation>

*Return Value:* None

*Parameters:* <PadstackName>:

    <string> // simple name of the padstack to remove

    <IsProjectPadstack>:

    <bool>

    <LibraryName>:

    <string> // name of the library

    <LibraryLocation>:

    <string> // location of the library in <LibraryName>

    // One of "Project", "PersonalLib", or "UserLib"

## RemoveScript

*Use:* Remove Script in the script definition manager

*Command:* None



**Syntax:** RemoveScript <ScriptName>,<IsProjectScript>, <LibraryName>,<LibraryLocation>

**Return Value:** None

**Parameters:** <ScriptName>

Type: <string>

<IsProjectScript>

Type: <bool>

<LibraryName>

Type: <string>

<LibraryLocation>

Type: <string>

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | RemoveScript (<ScriptName>,<IsProjectScript>, <LibraryName>,<LibraryLocation>) |
| <b>Python Example</b> | oDefinitionManager.RemoveScript(<br>"myscript", true, "Local", "Project")      |

## Remove [symbol manager]

**Use:** Removes a symbol from a library

**Command:** Tools > Edit Configured Libraries > Symbols > Remove Symbol

**Syntax:** Remove <SymbolName>,  
                  <IsProjectSymbol>,

<LibraryName>,  
<LibraryLocation>

*Return Value:* None

*Parameters:* <SymbolName>:

<string> // composite name of the symbol to remove

**<IsProjectSymbol>:**

<bool>

**<LibraryName>:**

<string> // name of the library

**<LibraryLocation>:**

<string> // location of the library in <LibraryName>

// One of "Project", "PersonalLib", or "UserLib"

*Example:*

```
oSymbolManager.Remove "Nexxim Circuit Elements\Distributed\Distributed:bendo", true, "Project"
```

## RemoveUnusedDefinitions

Removes any unused project definitions.

|              |                                                    |       |                                                                     |
|--------------|----------------------------------------------------|-------|---------------------------------------------------------------------|
| UI Access    | Tools > Project Tools > Remove Unused Definitions. |       |                                                                     |
| Parameters   | Name                                               | Type  | Description                                                         |
|              | <Definitions>                                      | Array | Definitions to be removed, such as materials and surface materials. |
| Return Value | None.                                              |       |                                                                     |

|                |                                                                                                                                                                                                                                                                                   |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | RemoveUnusedDefinitions(<Definitions>)                                                                                                                                                                                                                                            |
| Python Example | <pre>oProject.RemoveUnusedDefinitions(<br/>    [<br/>        [<br/>            "NAME:Materials",<br/>            "Al-Extruded"<br/>        ],<br/>        [<br/>            "NAME:SurfaceMaterials",<br/>            "Steel-oxidised-surface"<br/>        ]<br/>    ]<br/>)</pre> |

## SetPropertyValue

Sets the value of a single property belonging to a specific PropServer and PropTab. This function is available with the Project, Design or Editor objects, including definition editors. This is not supported for properties of the following types: ButtonProp, PointProp, V3DPointProp, and VPointProp. Only the ChangeProperty command can be used to modify these properties.

Use the script recording feature and edit a property, and then view the resulting script entry or use GetPropertyValue for the desired property to see the expected format.

| UI Access         | N/A          |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|--------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name         | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                   | <propTab>    | String | One of the following, where tab titles are shown in parentheses: <ul style="list-style-type: none"> <li>PassedParameterTab ("Parameter Values")</li> <li>DefinitionParameterTab (Parameter Defaults")</li> <li>LocalVariableTab ("Variables" or "Local Variables")</li> <li>ProjectVariableTab ("Project variables")</li> <li>ConstantsTab ("Constants")</li> <li>BaseElementTab ("Symbol" or "Footprint")</li> <li>ComponentTab ("General")</li> <li>Component("Component")</li> <li>CustomTab ("Intrinsic Variables")</li> <li>Quantities ("Quantities")</li> <li>Signals ("Signals")</li> </ul> |
|                   | <propServer> | String | An object identifier, generally returned from another script method, such as CompInst@R;2;3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                   | <propName>   | String | Name of the property.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                   | <propValue>  | String | The value for the property                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Return Value      | None.        |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                       |                                                                    |
|-----------------------|--------------------------------------------------------------------|
| <b>Python Syntax</b>  | SetPropertyValue(<propTab>, <propServer>, <propName>, <propValue>) |
| <b>Python Example</b> | oEditor.SetPropertyValue("PassedParameterTab", "k", "R", "2200")   |

## UpdateDefFromBlock

Updates a material definition from block text (same definition format as would be contained in the material library file) by library type (using definition folder name). This scripting command directly supports the .AMAT (or .ASURF) definition formats.

|                     |                                                 |        |                                                                                                                                                            |
|---------------------|-------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | N/A                                             |        |                                                                                                                                                            |
| <b>Parameters</b>   | Name                                            | Type   | Description                                                                                                                                                |
|                     | <targetDefName>                                 | String | Name of the target definition, i.e. the name of the material to update.                                                                                    |
|                     | <defBlock>                                      | String | Text of the new material definition in block format (string); this block could use a new definition name, which will cause a rename as part of the update. |
|                     | <defFolderName>                                 | String | Library type (by definition, folder name).                                                                                                                 |
|                     | <newTimeStamp>                                  | String | New timestamp string (time_t as integer, number of seconds since 1/1/1970 12:00am), default is current time.                                               |
| <b>Return Value</b> | A property scripting object for the definition. |        |                                                                                                                                                            |

|                                       |                                                                                  |
|---------------------------------------|----------------------------------------------------------------------------------|
| <b>P-<br/>y-<br/>t-<br/>h-<br/>o-</b> | UpdateDefFromBlock(<targetDefName>, <defBlock>, <defFolderName>, <newTimeStamp>) |
|---------------------------------------|----------------------------------------------------------------------------------|

| n<br>S-<br>y-<br>nt-<br>ax                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P-<br>y-<br>t-<br>h-<br>o-<br>n<br>E-<br>x-<br>a-<br>m-<br>pl-<br>e | <pre> oProject = oDesktop.NewProject()  oProject.InsertDesign("HFSS", "HFSSDesign1", "DrivenModal", "")  oDesign = oProject.SetActiveDesign("HFSSDesign1")  oEditor = oDesign.SetActiveEditor("3D Modeler")  oDefinitionManager = oProject.GetDefinitionManager()  defBlock = "\$begin 'vacuum2' \$begin 'AttachedData' \$begin 'MatAppearanceData' property_data- ='appearance_data' Red=230 Green=230 Blue=230 Transparency=0.95 \$end 'MatAppearanceData' \$end 'AttachedData' simple('permittivity', 1) ModTime=1499970477 \$end 'vacuum2'"  added = oDefinitionManager.AddDefinitionFromBlock(defBlock, "Materials", "10101010", True)  addedName = ''      if isinstance(added, basestring):         addedName = added     elif isinstance(added, list):         addedName = added[0] else:      addedName = added.GetName().replace("Materials:", "")  AddInfoMessage(os.path.basename(__file__) + " result: " + addedName)  materialNameInQuotes = "\"" + addedName + "\"" </pre> |

```
# rename vacuum2 to vacuum3

newDefBlock = "$begin 'vacuum3' $begin 'AttachedData' $begin 'MatAppearanceData' property_
data='appearance_data' Red=230 Green=230 Blue=230 Transparency=0.95 $end 'MatAppearanceData'
$end 'AttachedData' simple('permittivity', 1) ModTime=1499970477 $end 'vacuum3'"

updatedObj = UpdateDefFromBlock(addedName, newDefBlock, "Materials")
```

## UpdateDefFromBlockEx

Updates a material definition from block text (same definition format as would be contained in the material library file) by library type (using definition folder name). This scripting command directly supports the .AMAT (or .ASURF) definition formats. This resembles the UpdateDefFromBlock command, except UpdateDefFromBlockEx also allows for:

- updating a definition using a block where the name has changed without triggering a rename of the definition being updated
- updating multiple definitions from the same block
- renaming a definition to something other than the name in the block

| UI Access  | N/A             |        |                                                                                  |
|------------|-----------------|--------|----------------------------------------------------------------------------------|
| Parameters | Name            | Type   | Description                                                                      |
|            | <targetDefName> | String | Name of the target definition, i.e. the name of the material to update.          |
|            |                 |        | Name of the target definition, i.e. the name of the material to update (string). |
|            |                 |        | Name of the target definition, i.e. the name of the material to update (string). |

|  |                                         |         |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                   |                                                                                                                                                                                                   |
|--|-----------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <code>&lt;desiredDefName&gt;</code>     | String  | New name to use for a rename. If this is the same as <i>targetDefName</i> , it means the definition is not being renamed. If this is blank, the block name will be used for this purpose instead.                                                                                                                                                         | New name to use for a rename. If this is the same as <i>targetDefName</i> , it means the definition is not being renamed. If this is blank, the block name will be used for this purpose instead. | New name to use for a rename. If this is the same as <i>targetDefName</i> , it means the definition is not being renamed. If this is blank, the block name will be used for this purpose instead. |
|  | <code>&lt;defBlock&gt;</code>           | String  | Text of the updated material definition in block form. (Same form as the <i>defBlock</i> input to the <i>AddDefinitionFromBlock</i> and <i>UpdateDefFromBlock</i> commands, for example.) Note that, unlike in the <i>UpdateDefFromBlock</i> command, the name of the definition in the block can be ignored, provided that <i>desiredDefName</i> is set. |                                                                                                                                                                                                   |                                                                                                                                                                                                   |
|  | <code>&lt;defFolderName&gt;</code>      | String  | Library type (by definition, folder name).                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                   |                                                                                                                                                                                                   |
|  | <code>&lt;newTimeStamp&gt;</code>       | String  | New timestamp string (time_t as integer, number of seconds since 1/1/1970 12:00am), default is current time.                                                                                                                                                                                                                                              |                                                                                                                                                                                                   |                                                                                                                                                                                                   |
|  | <code>&lt;continueIfConflict&gt;</code> | Boolean | A flag for whether to continue processing if there is some sort of conflict. A conflict only comes from the target definition being in use, such as a material assigned to a particular part, and if trying to rename the target definition. If this argument is                                                                                          |                                                                                                                                                                                                   |                                                                                                                                                                                                   |



|                     |                                                                                                                                                                        |  |                                                                                                                                                                                                                                             |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                                                                                                                                                        |  | True, and there's a rename conflict, the tactic is to add/update the definition with the new name and leave the target definition untouched. If this argument is False, and there's a rename conflict, the command results in an exception. |
| <b>Return Value</b> | A property scripting object (extended definition object) for the definition. (In the event of a failure, the command throws an exception and there will be no result.) |  |                                                                                                                                                                                                                                             |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | UpdateDefFromBlockEx(<targetDefName>, <desiredDefName>, <defBlock>, <defFolderName>, <newTimeStamp>, <continueIfConflict>)                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Python Example</b> | <pre># Note that the material block name will be ignored in this case defBlock = "\$begin 'unused_name' \$begin 'AttachedData' \$begin \     'MatAppearanceData' property_data='appearance_data' \     Red=255 Green=0 Blue=0 Transparency=0.19 \$end \     'MatAppearanceData' \$end 'AttachedData' \     simple('permittivity', 1.9) ModTime=1509090909 \     \$end 'unused_name'"  try:     updated = oDefinitionManager.UpdateDefFromBlockEx("red_material",         "red_material",         defBlock,</pre> |

```

        "Materials",
        "1609090909")

    updatedName = updated.GetName().replace("Materials:", "")
    AddInfoMessage("Result: " + updatedName)
except:
    AddErrorMessage("Unexpected error in UpdateDefFromBlockEx")

```

## UpdateDefinitions

Updates all definitions. The **Messages** window reports when definitions are updated, or warns when definitions cannot be found.

|                     |                                                                                                         |
|---------------------|---------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | <b>Tools &gt; Project Tools &gt; Update Definitions.</b> Click <b>Select All</b> , then <b>Update</b> . |
| <b>Parameters</b>   | None.                                                                                                   |
| <b>Return Value</b> | None.                                                                                                   |

|                       |                              |
|-----------------------|------------------------------|
| <b>Python Syntax</b>  | UpdateDefinitions()          |
| <b>Python Example</b> | oProject.UpdateDefinitions() |

## Component Manager Script Commands

The component manager provides access to components in a project. The manager object is accessed via the definition manager.

```
Set oDefinitionManager = oProject.GetDefinitionManager()
```

```
Set oComponentManager = oDefinitionManager.GetManager("Component")
```

**The topics for this section include:**

[Add](#)

[AddNPortData](#)

[AddSolverOnDemandModel](#)

[Edit](#)

[EditSolverOnDemandModel](#)

[EditWithComps](#)

[Export](#)

[GetNPortData](#)

[GetSolverOnDemandData](#)

[GetSolverOnDemandModelList](#)

[Remove](#)

[RemoveSolverOnDemandMode](#)

[UpdateDynamicLink](#)

## **Add [component manager]**

*Use:*Add a component

*Command:* Tools > Edit Configured Libraries > Components > Add Component

*Syntax:*Add Array("NAME:<ComponentName>",  
                  "Info:=", <ComponentInfo>,

```
"RefBase:=", <string>, // reference designator
"NumParts:=", <int>, // parts per component
"OriginalComponent:=", <string>
"Terminal:=", <TerminalInfo>,
"Terminal:=", <TerminalInfo>, ...
// The remaining parameters are optional
Array("NAME:Parameters", // any combo of the following
"VariableProp:=", <VariableInfo>,
"CheckboxProp:=", <CheckBoxInfo>,
"ButtonProp:=", <ButtonInfo>,
"TextProp:=", <TextInfo>,
"NumberProp:=", <NumberInfo>,
"SeparatorProp:=", <SeparatorInfo>,
"ValueProp:=", <ValueInfo>,
"MenuProp:=", <MenuInfo>),
Array("NAME:Properties", // any combo of the following
"CheckboxProp:=", <CheckBoxInfo>,
"TextProp:=", <TextInfo>,
"NumberProp:=", <NumberInfo>,
"SeparatorProp:=", <SeparatorInfo>,
"ValueProp:=", <ValueInfo>,
```

```
"MenuProp:=", <MenuInfo>),
"VPointProp:=", <VPointInfo>,
"PointProp:=", <PointInfo>),
Array("Quantities",
"QuantityProp:=", <QuantityPropInfo>...),
Array("NAME:CosimDefinitions",
<CosimDefInfo>,
<CosimDefInfo>...)
```

*Return Value:*<string>

```
// composite name of the component.
// If the name requested conflicts with the name of an existing
// component, the requested name is altered to be unique.
// The name returned reflects any change made to be unique.
```

*Parameters:*<ComponentName>:

<string> // simple name of the component

<ComponentInfo>:

```
Array("Type:=", <TypeInfo>,
"NumTerminals:=", <int>,
```

```
"DataSource:=", <string>,  
"ModifiedOn:=", <ModifiedOnInfo>,  
"Manufacturer:=", "<string>,  
"Symbol:=", <string>,  
"Footprint:=", <string>,  
"Description:=", <string>,  
"InfoTopic:=", <string>,  
"InfoHelpFile:=", <string>,  
"IconFile:=", <string>,  
"LibraryName:=", "",  
"OriginalLocation:=", "Project", // Project Location  
"Author:=", <string>,  
"OriginalAuthor:=", <string>,  
"CreationDate:= ", <int>)
```

**<TypeInfo>:**

An integer that is the or-ing of bits for each product listed below. The default setting is 0xffffffff (4294967295) which indicates valid for all products. In the component editing dialog, checking different boxes in the "Specify products for which this component is valid" grid control sets specific flags that correspond to the following hex/decimal settings:

Nexxim -- 100 binary, 4 decimal, 0x4

SIwaveDeNovo -- 1000 binary, 8 decimal, 0x8

Simplorer -- 10000 binary, 16 decimal, 0x10

MaxwellCircuit -- 100000 binary, 32 decimal, 0x20

**<ModifiedOnInfo>:**

An integer that corresponds to the number of seconds that have elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.

**<TerminalInfo>:**

Array(<string>, // symbol pin

<string> // footprint pin

<string>, // gate name

<bool>, // shared

<int>, // equivalence number

<int>, // what to do if unconnected: flag as error:0, ignore:1

<string> // description

<Nature>)

<Nature>:

<string> // content varies as follows

Nexxim/Circuit:

"Electrical" // the only choice

Simplorer:

// several choices

"Electrical", "Magnetic", "Fluidic", "Translational",

"Translational\_V", "Rotational", "Rotational\_V",

""Radiant", "Thermal", or <VHDLPackageName>

<VHDLPackageName>:

<string> // in the form <Library>.<Package>

<Library>:

<string> // name of the VHDL library

<Package>:

<string> // name of the VHDL package

<VariableInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description



"CB:=", <string>, // optional - script for call back  
<string>) // value: number, variable, or expression

<FlagLetters>:

<string> // "D" - has description parameter,  
// "RD" - readonly & has description parameter,  
// or "RHD" - readonly, hidden, & has description parameter

<CheckBoxInfo>:

Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
"CB:=", <string>, // optional - script for call back  
<bool>) // value: true or false

<ButtonInfo>:

Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
<string>, // button title  
<string>, // extra text

```
<ClientID>,  
"ButtonPropClientData:= ", <ClientDataArray>)
```

```
<ClientID>:  
<int> // specifies Button Prop Client  
// 0 - unknown, ButtonPropClientData  
// array will be empty  
// 1 - Netlist Prop Client  
// 2 - not used  
// 3 - File Name Prop Client
```

```
<ClientDataArray>:  
varies with <ClientID>
```

```
<ClientID> is 0 or 1: empty array  
Array()
```

```
<ClientID> is 3:  
Array("InternalFormatText:=", "<prefix><RelativePath>")
```

```
<prefix>:
```

<string> // "<Project>", "<PersonalLib>", "<UserLib>", or "<SysLib>"

<RelativePath>:

<string> // relative path to file from <prefix>

<TextInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<string>) // value: a text string

<NumberInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<real>, // value: a number

<string>) // units

<SeparatorInfo>:

```
Array(<string>, // name
<FlagLetters>,
<string>, // description
"CB:=", <string>, // optional - script for call back
<string>) // value: a text string
```

```
<ValueInfo>:
Array(<string>, // name
<FlagLetters>,
<string>, // description
"CB:=", <string>, // optional - script for call back
<string>) // value: a number, variable or expression
```

```
<MenuPropInfo>:
Array(<string>, // name
<FlagLetters>,
<string>, // description
<string>, // menu choices - separated by commas
<int>) // 0 based index of current menu choice
```

```
<VPointInfo>:
Array(<string>, // name
```

```
<FlagLetters>,  
<string>, // description  
"CB:=", <string>, // optional - script for call back  
<string>, // x value: number with length units  
<string>) // y value: number with length units
```

```
<PointInfo>:  
Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
"CB:=", <string>, // optional - script for call back  
<real>, // x value  
<real>) // y value
```

```
<QuantityPropInfo>:  
Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
<string>, // value  
<TypeString>,
```

<TypeStringDependentInfo>)

<TypeString>:

<string> // "Across", "Through", or "Free"

<TypeStringDependentInfo>:

<TypeString> is "Free" :

<string>, // direction: "In", "Out", "InOut", or "DontCare"

// Following <string> is not present if direction is "DontCare"

<string> // when to calculate: "BeforeAnalogSolver",

// "BeforeStateGraph", "AfterStateGraph", or "DontCareWhen"

<TypeString> is "Across" or "Through":

<int>, // terminal 1

<int> // terminal 2

<CosimDefInfo>:

Array("NAME:CosimDefinition",

"CosimulatorType:=", <int> ,

"CosimDefName:=", <string> // "HFSS 3D Layout", "Circuit",

// "Custom", or "Netlist"

"IsDefinition:=", <bool>,  
 final array member(s) vary with CosimDefName)

final array members for HFSS 3D Layout:

"CosimStackup:=", <string>,  
 "CosimDmbedRatio:=", <int>

final array members for Circuit:

"ExportAsNport:=", <int>,  
 "UsePjt:=", <int>

final array member for Custom:

"DefinitionCompName:=", <string>

final array member for Netlist:

"NetlistString:=", <string>

|                      |                                                                                                                                  |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | Add [("NAME:<ComponentName>",<br>"Info:=", <ComponentInfo>,<br>"RefBase:=", <string>, // reference designator                 )] |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------|

```

"NumParts:=", <int>, // parts per component
"OriginalComponent:=", <string>
"Terminal:=", <TerminalInfo>,
"Terminal:=", <TerminalInfo>, ...

The remaining parameters are optional.

["NAME:Parameters", // any combo of the following
"VariableProp:=", <VariableInfo>,
"CheckboxProp:=", <CheckBoxInfo>,
"ButtonProp:=", <ButtonInfo>,
"TextProp:=", <TextInfo>,
"NumberProp:=", <NumberInfo>,
"SeparatorProp:=", <SeparatorInfo>,
"ValueProp:=", <ValueInfo>,
"MenuProp:=", <MenuInfo>],

["NAME:Properties", Any combination of the following:
"CheckboxProp:=", <CheckBoxInfo>,
"TextProp:=", <TextInfo>,
"NumberProp:=", <NumberInfo>,
"SeparatorProp:=", <SeparatorInfo>,
"ValueProp:=", <ValueInfo>,
"MenuProp:=", <MenuInfo>,

```



|                       |                                                                                                                                                                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <pre>"VPointProp:=", &lt;VPointInfo&gt;, "PointProp:=", &lt;PointInfo&gt;, ["Quantities", "QuantityProp:=", &lt;QuantityPropInfo&gt;...], ["NAME:CosimDefinitions", &lt;CosimDefInfo&gt;, &lt;CosimDefInfo&gt;...]]</pre>                                      |
| <b>Python Example</b> | <pre>oComponentManager.Add( [ "NAME:Component", "Info:=", [ "Type:=", 0, "NumTerminals:=", 0, "DataSource:=", "", "ModifiedOn:=", 1467910752, "Manufacturer:=", "", "Symbol:=", "Component", "ModelNames:=", "", "Footprint:=", "", "Description:=", "",</pre> |

```

"InfoTopic:=", "",
"InfoHelpFile:=", "",
"IconFile:=", "",
"Library:=", "",
"OriginalLocation:=", "Project",
"IEEE:=", "",
"Author:=", "",
"OriginalAuthor:=", "",
"CreationDate:=", 1467910746,
"ExampleFile:=", ""],
"Refbase:=", "U",
"NumParts:=", 1,
"ModSinceLib:=", True,
"CompExtID:=", 2
])

```

### AddNPortData [component manager]

*Use:* Adds a component using the specified data

*Command:* Project Menu > Add Model > Add Nport Model

*Syntax:* AddNPortData Array("NAME:<ComponentDataName>",

"ComponentDataType:=", "NportData",

"name:=", <string>, // Name of the item

```
"filename:=", <string>, // Path to the file to find the data
"numberOfports:=", <int>,
"filelocation:=", <LocationType>,
"domain:=", <string>, // "time" or "frequency"
"datamode:=", <string> // "EnterData", "Import", or "Link"
"devicename:=", <string>,
"ImpedanceTab:=", <bool>,
"NoiseDataTab:=", <bool>,
"DCBehaviorTab:=", <bool>,
"SolutionName:=", <string>,
"displayformat:=", <DisplayInfo>,
"datatype:=", <string>, // "SMatrix", "YMatrix", or "ZMatrix"
"ShowRefPin:=", <bool>,
"RefNodeCheckbox:=", <bool>, ...
<ProductOptionsInfo>)
```

*Return Value:* <string>

```
// composite name of the component.
// If the name requested conflicts with the name of an existing
// component, the requested name is altered to be unique.
// The name returned reflects any change made to be unique.
```

*Parameters:* <ComponentDataName>:

<string> // simple name of the component

<LocationType>:

<string> // one of "UsePath", "PersonalLib", "UserLib", "SysLib",  
// or "Project".

<dcInfo>:

<string> // one of "DCOpen", "DCShort", "DCShShort",  
// "DCNone", or "DCEmpty".

<DisplayInfo>:

<string> // one of "MagnitudePhase", "Reallmaginary",  
// or "DbPhase".

<ProductOptionsInfo>:

// The remaining parameters differ by product

// HFSS 3D Layout - doesn't support interpolation/DC behavior

"DCOption:=", -1,

```
"InterpOption:=", -1,
```

```
"ExtrapOption:=", -1,
```

```
"DataType:=", 0
```

```
// Nexxim
```

```
"DCOption:=", <NexximDCOption>,
```

```
"InterpOption:=", <NexximInterpOption>,
```

```
"ExtrapOption:=", <NexximExtrapOption>,
```

```
"DataType:=", 2
```

```
<NexximDCOption>:
```

```
<int> // 0 : Zero Padding
```

```
// 1 : Same as last point
```

```
// 2 : Linear extrapolation from last 2 points
```

```
// 3 : Constant magnitude, linear phase extrapolation
```

```
// 4 : Leave all signal lines open circuited
```

```
// 5 : Short all signal lines together
```

```
// 6 : Short all signal lines to ground
```

```
<NexximInterpOption>:
```

<int> // 0 : Step

// 1 : Linear

<NexximExtrapOption>:

<int> // 0 : Zero padding

// 1 : Same as last point

// 2 : Linear extrapolation from last 2 points

// 3 : Constant magnitude, linear phase extrapolation

<CircuitDCOption>:

<int> // 0 : Leave all signal lines open circuited

// 1 : Short all signal lines together

// 2 : Short all signal lines to ground

// 3 : Extrapolate from data provided (not recommended)

<CircuitInterpOption>:

<int> // 0 : Linear

// 1 : Cubic spline

// 2 : Rational polynomial

<CircuitExtrapOption>:

<int> // 0 : Same as interpolation

// 1 : Zero padding

// 2 : Same as last point

## AddSolverOnDemandModel

*Use:* This method looks for a local component of the name passed in, and to this component it adds an SOD model definition using the information passed in the VARIANT. It returns the name of the SOD model added.

*Parameters:* BSTR component name.

*Parameters:* VARIANT which is the SOD model data.

*Return Value:* Returns the name of the model added.

## ClearSolutionCache [component manager]

*Use:* Clear the solution cache for dynamic link component.

*Command:* Each of the following commands will clear the solution cache:

— **Dynamic Link Item RCM > Clear Solution Cache**

— **Dynamic Link Component in schematic RCM > Clear Solution Cache**

*Syntax:* ClearSolutionCache <Component Name >

*Return Value:* None

*Parameters:* <component name> is the name of the dynamic link component

## Edit [component manager]

Modifies an existing component

*Command:* Tools > Edit Configured Libraries > Components > Edit Component

*Syntax:* Edit <ComponentName>,  
    Array("NAME:<NewComponentName>",  
    "Info:=", <ComponentInfo>,  
    "RefBase:=", <string>, // reference designator  
    "NumParts:=", <int>, // parts per component  
    "OriginalComponent:=", <string>  
    "Terminal:=", <TerminalInfo>,  
    "Terminal:=", <TerminalInfo>, ...  
    // The remaining parameters are optional  
    Array("NAME:Parameters", // any combo of the following  
    "VariableProp:=", <VariableInfo>,  
    "CheckboxProp:=", <CheckBoxInfo>,  
    "ButtonProp:=", <ButtonInfo>,  
    "TextProp:=", <TextInfo>,  
    "NumberProp:=", <NumberInfo>,  
    "SeparatorProp:=", <SeparatorInfo>,  
    "ValueProp:=", <ValueInfo>,  
    "MenuProp:=", <MenuInfo>),  
    Array("NAME:Properties", // any combo of the following  
    "CheckboxProp:=", <CheckBoxInfo>,  
    "TextProp:=", <TextInfo>,



```
"NumberProp:=", <NumberInfo>,
"SeparatorProp:=", <SeparatorInfo>,
"ValueProp:=", <ValueInfo>,
"MenuProp:=", <MenuInfo>),
"VPointProp:=", <VPointInfo>,
"PointProp:=", <PointInfo>),
Array("Quantities",
"QuantityProp:=", <QuantityPropInfo>...),
Array("NAME:CosimDefinitions",
<CosimDefInfo>,
<CosimDefInfo>...)
```

*Return Value:* <string>

```
// composite name of the component.
// If the name requested conflicts with the name of an existing
// component, the requested name is altered to be unique.
// The name returned reflects any change made to be unique.
```

*Parameters:* <ComponentName>:

```
<string> // composite name of the component to edit
```

<NewComponentName>:

<string> // new simple name for the component

<ComponentInfo>:

Array("Type:=", <TypeInfo>,

"NumTerminals:=", <int>,

"DataSource:=", <string>,

"ModifiedOn:=", <ModifiedOnInfo>,

"Manufacturer:=", "<string>,"

"Symbol:=", <string>,"

"Footprint:=", <string>,"

"Description:=", <string>,"

"InfoTopic:=", <string>,"

"InfoHelpFile:=", <string>,"

"IconFile:=", <string>,"

"LibraryName:=", <string>,"

"OriginalLocation:=", <string>, // Project Location

"Author:=", <string>,"

"OriginalAuthor:=", <string>,"

"CreationDate:=", <int>)

**<TypeInfo>:**

An integer that is the or-ing of bits for each product listed below. The default setting is 0xffffffff (4294967295) which indicates valid for all products. In the component editing dialog, checking different boxes in the "Specify products for which this component is valid" grid control sets specific flags that correspond to the following hex/decimal settings:

Nexxim -- 100 binary, 4 decimal, 0x4

SIwaveDeNovo -- 1000 binary, 8 decimal, 0x8

Simplorer -- 10000 binary, 16 decimal, 0x10

MaxwellCircuit -- 100000 binary, 32 decimal, 0x20

**<ModifiedOnInfo>:**

An integer that corresponds to the number of seconds that have elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.

**<TerminalInfo>:**

Array(<string>, // symbol pin

<string> // footprint pin

<string>, // gate name

<bool>, // shared

<int>, // equivalence number

<int>, // what to do if unconnected: flag as error:0, ignore:1

<string>, // description

<Nature>)

<Nature>:

<string> // content varies as follows

Nexxim/Circuit:

"Electrical" // the only choice

Simplorer:

// several choices

"Electrical", "Magnetic", "Fluidic", "Translational",

"Translational\_V", "Rotational", "Rotational\_V",

""Radiant", "Thermal", or <VHDLPackageName>

<VHDLPackageName>:

<string> // in the form <Library>.<Package>

<Library>:

<string> // name of the VHDL library

<Package>:

<string> // name of the VHDL package

<VariableInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<string>) // value: number, variable, or expression

<FlagLetters>:

<string> // "D" - has description parameter,

// "RD" - readonly & has description parameter,

// or "RHD" - readonly, hidden, & has description parameter

<CheckBoxInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<bool>) // value: true or false

<ButtonInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

<string>, // button title

<string>, // extra text

<ClientID>,

"ButtonPropClientData:= ", <ClientDataArray>)

<ClientID>:

<int> // specifies Button Prop Client

// 0 - unknown, "ButtonPropClientData

// array will be empty

// 1 - Netlist Prop Client

// 2 - not used

// 3 - File Name Prop Client

<ClientDataArray>:

varies with <ClientID>

<ClientID> is 0 or 1: empty array

Array()

<ClientID> is 3:

Array("InternalFormatText:=", "<prefix><RelativePath>")

<prefix>:

<string> // "<Project>", "<PersonalLib>", "<UserLib>", or "<SysLib>"

<RelativePath>:

<string> // relative path to file from <prefix>

<TextInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<string>) // value: a text string

<NumberInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<real>, // value: a number

<string>) // units

<SeparatorInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<string>) // value: a text string

<ValueInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

"CB:=", <string>, // optional - script for call back

<string>) // value: a number, variable or expression



<MenuPropInfo>:

Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
<string>, // menu choices - separated by commas  
<int>) // 0 based index of current menu choice

<VPointInfo>:

Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
"CB:=", <string>, // optional - script for call back  
<string>, // x value: number with length units  
<string>) // y value: number with length units

<PointInfo>:

Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
"CB:=", <string>, // optional - script for call back  
<real>, // x value

<real>) // y value

<QuantityPropInfo>:

Array(<string>, // name

<FlagLetters>,

<string>, // description

<string>, // value

<TypeString>,

<TypeStringDependentInfo>)

<TypeString>:

<string> // "Across", "Through", or "Free"

<TypeStringDependentInfo>:

"Free" :

<string>, // direction: "In", "Out", "InOut", or "DontCare"

// Following <string> is not present if direction is "DontCare"

<string> // when to calculate: "BeforeAnalogSolver",

// "BeforeStateGraph", "AfterStateGraph", or "DontCareWhen"

"Across" or "Through"

<int>, // terminal 1

<int> // terminal 2

<CosimDefInfo>:

Array("NAME:CosimDefinition",

"CosimulatorType:=", <int>,

"CosimDefName:=", <string> // "HFSS3D", "Circuit",

// "Custom", or "Netlist"

"IsDefinition:=", <bool>,

final array member(s) vary with CosimDefName)

final array members for HFSS 3D Layout:

"CosimStackup:=", <string>,

"CosimDmbedRatio:=", <int>

final array members for Circuit:

"ExportAsNport:=", <int>,

"UsePjt:=", <int>

final array member for Custom:

"DefinitionCompName:=", <string>

final array member for Netlist:

"NetlistString:=", <string>

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | <pre>Edit &lt;ComponentName&gt;,<br/>    ["NAME:&lt;NewComponentName&gt;"],<br/>"Info:=", &lt;ComponentInfo&gt;,<br/>"RefBase:=", &lt;string&gt;, // reference designator<br/>"NumParts:=", &lt;int&gt;, // parts per component<br/>"OriginalComponent:=", &lt;string&gt;<br/>"Terminal:=", &lt;TerminalInfo&gt;,<br/>"Terminal:=", &lt;TerminalInfo&gt;, ...<br/>#The remaining parameters are optional<br/>["NAME:Parameters", // any combo of the following<br/>"VariableProp:=", &lt;VariableInfo&gt;,<br/>"CheckboxProp:=", &lt;CheckBoxInfo&gt;,<br/>"ButtonProp:=", &lt;ButtonInfo&gt;,<br/>"TextProp:=", &lt;TextInfo&gt;,<br/>"NumberProp:=", &lt;NumberInfo&gt;,<br/>"SeparatorProp:=", &lt;SeparatorInfo&gt;,<br/>"ValueProp:=", &lt;ValueInfo&gt;</pre> |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | <pre>"MenuProp:=", &lt;MenuInfo&gt;],<br/>["NAME:Properties", # any combo of the following<br/>"CheckboxProp:=", &lt;CheckBoxInfo&gt;,<br/>"TextProp:=", &lt;TextInfo&gt;,<br/>"NumberProp:=", &lt;NumberInfo&gt;,<br/>"SeparatorProp:=", &lt;SeparatorInfo&gt;,<br/>"ValueProp:=", &lt;ValueInfo&gt;,<br/>"MenuProp:=", &lt;MenuInfo&gt;),<br/>"VPointProp:=", &lt;VPointInfo&gt;,<br/>"PointProp:=", &lt;PointInfo&gt;),<br/>["Quantities",<br/>"QuantityProp:=", &lt;QuantityPropInfo&gt;...],<br/>["NAME:CosimDefinitions",<br/>&lt;CosimDefInfo&gt;,<br/>&lt;CosimDefInfo&gt;...])</pre> |
| <b>Python<br/>Example</b> | <pre>name = oComponentManager.Edit ("Simplorer Circuit Elements\BJTs:Level01_NPN", _<br/>["NAME:Level01_NPN", "Info:=", ["Type:=", 4294901764,_<br/>"NumTerminals:=", 3, "DataSource:=", "Ansoft built-in component",_<br/>"ModifiedOn:=", 1152722112, "Manufacturer:=", "", _<br/>"Symbol:=", "nexx_bjt_npn", "Footprint:=", "", _</pre>                                                                                                                                                                                                                                                     |

```

"Description:=", "BJT, GP, NPN", "InfoTopic:=", "NXBJT1.htm", _
"InfoHelpFile:=", "nexximcomponents.chm", "IconFile:=", "bjtsn.bmp", _
"Library:=", "Nexxim Circuit Elements\BJTs", _
"OriginalLocation:=", "SysLibrary ", "Author:=", "", _
"OriginalAuthor:=", "", "CreationDate:=", 1152722102], _
"Refbase:=", "Q", "NumParts:=", 1, "Terminal:=", ["collector", _
"collector", "A", false, 6, 0, "", "Electrical"], _
"Terminal:=", ["base", "base", "A", false, _
7, 0, "", "Electrical"], "Terminal:=", ["emitter", _
"emitter", "A", false, 8, 0, "", "Electrical"], _
["NAME:Parameters", "TextProp:=", ["LabelID", _
"HD", "Property string for netlist ID", _
"Q@ID"], "TextProp:=", ["MOD", "D", _
"Name of model data reference", "required"], _
"VariableProp:=", ["AREA", "D", _
"Emitter area multiplying factor, which affects
currents, resistances, and capacitances", "1"], _
"VariableProp:=", ["AREAB", "D", "Base AREA", _
"1"], "VariableProp:=", ["AREAC", "D", "Collector AREA", _
"1"], "VariableProp:=", ["DTEMP", "D", _

```

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | <pre> "The difference between element and circuit temperature (deg Cel)", _ "0"], "VariableProp:=", ["M", "D", _ "Multiplier factor to simulate multiple BJTs in parallel", _ "1"], "ButtonProp:=", ["NexximNetlist", "HD", "", _ "Q@ID %0 %1 %2 *MOD(@MOD) *AREA (AREA=@AREA) "&amp; _  " *AREAB (AREAB=@AREAB) *AREAC (AREAC=@" &amp; _ "AREAC) *DTEMP (DTEMP=@DTEMP) *M (M=@M) ", _ "Q@ID %0 %1 %2 *MOD(@MOD) " &amp; "*AREA (AREA=@AREA) *AREAB (AREAB=@AREAB) *AREAC (AREAC=@" &amp; _ "AREAC) *DTEMP (DTEMP=@DTEMP) *M (M=@M) ", 1, _ "ButtonPropClientData:=", [], "TextProp:=", ["ModelName", "HD", "", "Q"]]]) </pre> |
| <b>Python<br/>Example<br/>2</b> | <pre> name2 = oComponentManager.Edit ("MyComponent",_  (["NAME:MyOtherComponent","Info:=", ["Type:=", 4294901767, _  "NumTerminals:=", 2, "DataSource:=", "", _ </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

```

"ModifiedOn:=", 1071096503, "Manufacturer:=", "Ansoft", _

"Symbol:=", "bendo", "Footprint:=", "BENDO", _

"Description:=", "", "InfoTopic:=", "", _

"InfoHelpFile:=", "", "IconFile:=", "", _

"LibraryName:=", "", "OriginalLocation:=", "Project", _

"Author:=", "", "OriginalAuthor:=", "", _

"CreationDate:= ", 1147460679], "Refbase:=", "U", _

"NumParts:=", 1, "OriginalComponent:=", "", _

"Terminal:=", ["n1", "n1", "A", false, 0, 0, "", _

"Electrical"], "Terminal:=", ["n2", "n2", "A", _

```



```
false, 1, 0, "", Electrical"], ["NAME:Parameters", _  
  
"MenuProp:=", ["CoSimulator", "D", "", _  
  
"Default,Custom,Netlist", 0], "ButtonProp:=", ["CosimDefinition", _  
  
"D", "", "", "Edit", 0, "ButtonPropClientData:=", []], _  
  
["NAME:CosimDefinitions", ["NAME:CosimDefinition", _  
  
"CosimulatorType:=", 0, "CosimDefName:=", "HFSS3D", _  
  
"IsDefinition:=", true, "CosimStackup:=", "Layout stackup", _  
  
"CosimDmbedRatio:=", 3], ["NAME:CosimDefinition", _  
  
"CosimulatorType:=", 1, "CosimDefName:=", "", _
```

```

"IsDefinition:=", true, "ExportAsNport:=", 0, _
"UsePjt:=", 0], ["NAME:CosimDefinition", _
"CosimulatorType:=", 2, "CosimDefName:=", "Custom", _
"IsDefinition:=", true, "DefinitionCompName:=", ""], _
["NAME:CosimDefinition", "CosimulatorType:=", 3, _
"CosimDefName:=", "Netlist", "IsDefinition:=", true, _
"NetlistString:=", ""]]])

```

### EditSolverOnDemandModel

**Use:** This method looks for a local component of the name passed in, and in this component it looks for an SOD model using the name passed in the second BSTR. It modifies the SOD model using the data in the VARIANT. It returns the name of the SOD model edited.

**Return Value:** Returns the name of the model edited.

**Parameters:** BSTR component name.

**Parameters:** BSTR SOD model name.

*Parameters:* VARIANT which is the new SOD model data (can include changed name).

## **EditWithComps [component manager]**

Edit an existing component.

*Command:* None

*Syntax:* EditWithComps <ComponentName>,  
    Array("NAME:<NewComponentName>",  
    "ModTime:=", <ModifiedTimeInfo>,  
    "Library:=", <string>, // Library name  
    "LibLocation:=", <string>, // Project Location  
    <PinDefInfo>,  
    <PinDefInfo>,... // optional, to define pins  
    <GraphicsDataInfo>, // optional, to define graphics  
    <PropDisplayMapInfo>), // optional, to define property displays  
    Array(<ListOfComponentNames>) // Component names

*Return Value:* <string>

    // composite name of the component.  
    // If the name requested conflicts with the name of an existing  
    // component, the requested name is altered to be unique.  
    // The name returned reflects any change made to be unique.

*Parameters:* <ComponentName>:

<string> // composite name of the component being edited

<NewComponentName>:

<string> // new simple name for the component

<ModifiedOnInfo>:

An integer that corresponds to the number of seconds that have elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.

<PinDefInfo>:

Array("NAME:PinDef",  
"Pin:=", Array (<string>, // pin name  
<real>, // x location  
<real>, // y location  
<real>, // angle in radians  
<PinType>,  
<real>, // line width  
<real>, // line length  
<bool>, // mirrored

```
<int>, // color  
<bool>, // true if visible, false if not  
<string>, // hidden net name  
<OptionalPinInfo>, // optional info  
<PropDisplayMapInfo>)) // optional
```

```
<PinType>:  
<string> // "N" : normal pin  
// "I" : input pin  
// "O" : output pin
```

```
<OptionalPinInfo>:  
// Specify both or neither  
<bool>, // true if name is to be shown  
<bool>, // true if number is to be shown
```

```
<PropDisplayMapInfo>:  
Array("NAME:PropDisplayMap",  
<PropDisplayInfo>,  
<PropDisplayInfo>,...)
```

<PropDisplayInfo>:

<NameString>, Array(<DisplayTypeInfo>,

<DisplayLocationInfo>,

<int>, // optional, level number

<TextInfo>)

<NameString>:

<string> // PropertyName:=, where PropertyName is the name of

// the property to be displayed

<DisplayTypeInfo>:

<int> // 0 : No display

// 1 : Display name only

// 2 : Display value only

// 3 : Display both name and value

// 4: Display evaluated value only

// 5: Display both name and evaluated value

<DisplayLocationInfo>:

<int> // 0 : Left

// 1 : Top

// 2 : Right

// 3 : Bottom

// 4 : Center

// 5 : Custom placement

<GraphicsDataInfo>:

Array("NAME:Graphics",

// one or more of the following

<RectInfo>,

<CircleInfo>,

<ArcInfo>,

<LineInfo>,

<PolygonInfo>,

<TextInfo>,

<ImageInfo>)

<RectInfo>:

"Rect:=", Array(<real>, // line width

<int>, // fill pattern

<int>, // color

<real>, // angle, in radians

<real>, // x position of center

<real>, // y position of center

<real>, // width

< real>) // height

<CircleInfo>:

"Circle:=", Array(<real>, // line width

<int>, // fill pattern

<int>, // color

<real>, // x position of center

<real>, // y position of center

< real>) // radius

<ArcInfo>:

"Arc:=", Array(<real>, // line width

<int>, // line pattern

<int>, // color

<real>, // x position of center

<real>, // y position of center



< real>, // radius

<real>, // start angle, in radians

<end>) // end angle, in radians

<LineInfo>:

"Line:=", Array(<real>, // line width

<int>, // line pattern

<int>, // color

<PointInfo>, // must specify at least 2 points

<PointInfo>...)

<PointInfo>:

<real>, // x position

<real> // y position

<PolygonInfo>:

"Polygon:=", Array(<real>, // line width

<int>, // fill pattern

<int>, // color

<PointInfo>, // must specify at least 3 points

<PointInfo>...)

<TextInfo>:

"Text:=", Array(<real>, // x position

<real>, // y position

<real>, // angle, in radians

<Justification>,

<bool>, // is plotter font

<string>, // font name

<int>, // color

<string>) // text string

<Justification>:

<int> // 0 : left top

// 1 : left base

// 2 : left bottom

// 3 : center top

// 4 : center base

// 5 : center bottom

// 6 : right top

// 7 : right base

// 8 : right bottom

<ImageInfo>:

"Image:=", Array(<RectInfo>,

<ImageData>,

<bool>) // is mirrored

<ImageData>:

<string>, // file path

<int>, // 0 : use the file path and link to it

// 1 : ignore file path and use next parameter

<string> // text data, only present if preceding int is 1

<ListOfComponentNames>:

<string>, <string> ...

// The list may be empty. When not empty, each string that is listed is a component

// that references the component to be edited. Prior to editing, a clone of the component is

// made, and the components that are listed are modified so that they now refer to

// the clone.

## **Export [component manager]**

Export component(s) to a library

**Command:** Tools > Edit Configured Libraries > Components > Export to Library

**Syntax:** Export Array("NAME:<LibraryName>",

    <ComponentName>,

    <ComponentName>...),

    <LibraryLocation>

**Return Value:** None

**Parameters:** <LibraryName>:

    <string> // name of the library

    <ComponentName>:

    <string> // composite name of the component to export

    <LibraryLocation>:

    <string> // location of the library in <LibraryName>

    // One of "Project", "PersonalLib", or "UserLib"

| Python Syntax  | Export(["NAME:<LibraryName>", <ComponentName>, <ComponentName>...], <LibraryLocation>)                                      |
|----------------|-----------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oComponentManager.Export ( ["NAME:mylib",<br/>"Simplorer Circuit Elements\BJTs:Level01_NPN"],<br/>"PersonalLib")</pre> |

## GetNames [component manager]

Returns the names of the components (used and unused) in a design. The following script command, **IsUsed**, can then be used to separate used and unused components.

*Command:* None

*Syntax:* GetNames()

*Return Value:* An array of strings

*Parameters:* None

|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| <b>Python Syntax</b>  | GetNames()                                                 |
| <b>Python Example</b> | <code>componentNames = oComponentManager.GetNames()</code> |

## GetNPortData [component manager]

Returns NPort data for the component with the specified name.

*Command:* None

*Return Value:* Variant array, whose contents depend on the type of component. The array will be empty if the component does not have NPort data. See the syntax for AddDynamicNPortData and AddNPortData for descriptions of the array contents for components with those types of NPort data.

## GetSolverOnDemandData

*Use:* This method looks for a local component of the name passed in, and in this component it looks for an SOD model of the name passed in and returns the SOD data pertaining to that model.

*Parameters:* BSTR component name.

*Parameters:* BSTR SOD model name

*Return Value:* VARIANT which is the SOD data.

## GetSolverOnDemandModelList

*Use:* This method looks for a local component of the name passed in, and returns a list of SOD model names defined in the component.

*Parameters:* BSTR component name.

*Return Value:* VARIANT which is a list of SOD model names.

## IsUsed [component manager]

Used to determine if a component is used in the design.

*Command:* None

*Syntax:* IsUsed(<ComponentName>)

*Return Value:* <Boolean> // true if the specified component is used in the design

*Parameters:* <ComponentName>:

<string>

|                       |                                                  |
|-----------------------|--------------------------------------------------|
| <b>Python Syntax</b>  | IsUsed(<ComponentName>)                          |
| <b>Python Example</b> | IsUsed = oComponentManager.IsUsed("MyComponent") |

## Remove [component manager]

Remove a component from a library

*Command:* Tools > Edit Configured Libraries > Components > Remove Component

*Syntax:* Remove <ComponentName>,

<IsProjectComponent>,

<LibraryName>,

<LibraryLocation>

*Return Value:* None

*Parameters:* <ComponentName>:

<string> // composite name of the component to remove

<IsProjectComponent>:

<bool>

<LibraryName>:

<string> // name of the library

<LibraryLocation>:

<string> // location of the library in <LibraryName>

// One of "Project", "PersonalLib", or "UserLib"

|                       |                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Remove (<ComponentName>, <IsProjectComponent>, <LibraryName>, <LibraryLocation>)                           |
| <b>Python Example</b> | <pre>oComponentManager.Remove ("Simplorer Circuit<br/>Elements\BJTs:Level01_NPN", _ true, "Project")</pre> |

## RemoveSolverOnDemandModel

*Use:* This method looks for a local component of the name passed in, and in this component it looks for an SOD model of the name passed in and deletes the SOD model definition from the component.

*Parameters:* BSTR component name.

*Parameters:* BSTR SOD model name

*Return Value:* None.

## RemoveUnused [component manager]

Removes components that are not used in the design.

*Command:* **Project->Remove Unused Definitions** is similar but operates slightly different and does not record script commands.

*Syntax:* RemoveUnused()

*Return Value:* <bool> True if one or more components are removed.

*Parameters:* None

### Note:

The order of calls to RemoveUnused is significant. As a result, removing definitions in an unordered fashion may cause other components in dependent definitions to be rendered unusable.

Also, the symbol and footprint of an unused component are not unusable until after the component itself is removed using the Component Manager Remove script.



|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| <b>Python Syntax</b>  | RemoveUnused()                                              |
| <b>Python Example</b> | <code>removedDefs = oComponentManager.RemoveUnused()</code> |

## Update Dynamic Link [component manager]

*Use:* Reads data from the linked design and updates the dynamic link component. This will update the following: properties, solutions, ports, geometry.

*Command:* Each of the following commands will record a non-undoable script command:

- **Dynamic Link Item RCM > Refresh Dynamic Link**
- **Dynamic Link Component in schematic RCM > Refresh Dynamic Link**
- Click the **Refresh Dynamic Link** button in the Footprint tab of the **Properties Window** for selected Dynamic Link components in the Layout Editor.

*Syntax:* UpdateDynamicLink(<component name>)

*Return Value:* None

*Parameters:* <component name> is the name of the dynamic link component

*Example:*

```
oComponentManager.UpdateDynamicLink("TeeModel_L1")
```

## Footprint Manager Script Commands

The footprint manager provides access to footprints in a project. The manager object is accessed via the definition manager.

```
Set oDefinitionManager = oProject.GetDefinitionManager()
```

```
Set oFootprintManager = oDefinitionManager.GetManager("Footprint")
```

The footprint manager script commands are listed below:

[Add](#)

[Edit](#)[EditWithComps](#)[Export](#)[GetData](#)[GetNames](#)[IsUsed](#)[Remove](#)[RemoveUnused](#)

## Add [footprint manager]

Use: Add a footprint

| UI Access    | Tools > Edit Configured Libraries > Footprints > Add Footprint                                                                                                                                                                                                                                        |      |             |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------|
| Parameters   | Name                                                                                                                                                                                                                                                                                                  | Type | Description |
|              | Name                                                                                                                                                                                                                                                                                                  | Type | Description |
| Return Value | Returns a string: <ul style="list-style-type: none"><li>• Composite name of the footprint.</li><li>• If the name requested conflicts with the name of an existing Footprint, the requested name is altered to be unique.</li><li>• The name returned reflects any change made to be unique.</li></ul> |      |             |

Syntax: Add Array("NAME:<FootprintName>,"  
"ModTime:=", <ModifiedOnInfo>,"  
"Library:=", "",

```

"LibLocation:=", "Project",
"OkayToMirror:=", <bool>,
"DefUnits:=", <UnitType>,
Array(NAME:Lyrs",
"Layer:=", <LayerArray>,
"Layer:=", <LayerArray>...,
"SLayer:=", <StackupLayerArray>,
"SLayer:=", <StackupLayerArray>...),
"ActLyr:=", <string>, // name of active layer
"Tol:=", <ToleranceArray> // optional
<PrimitivesInfo>, // optional
<PinsInfo>, // optional
<ViasInfo>, // optional
<EdgeportsInfo>, // optional
<ComponentPropertyInfo>,
<ScriptInfo>) // optional, specified for scripted footprints

```

*Parameters:* <FootprintName>:

```

<string> // simple name of footprint to create
<ModifiedOnInfo>:

```

An integer that corresponds to the number of seconds that have elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.

<UnitType>:

<string> // default length units to use if units are not specified in other  
// parameters

<LayerArray>:

Array("N:=", <string>, // layer name  
"ID:=", <int> ,  
"T:=", <LayerTypeInfo>, // layer type  
"TB:=", <TopBottomInfo>,  
"Col:=", <int>, // optional - color  
"Pat:=", <int>, // optional - fill pattern  
"Vis:=", <bool>, // optional - are objects on layer visible  
"Sel:=", <bool>, // optional - are objects on layer selectable  
"L:=", <bool>) // optional  
// are objects on layer locked (can't be edited)

<LayerTypeInfo>:

<string> // one of: signal, dielectric, metalized signal, assembly, silkscreen, soldermask, solderpaste, glue, or user

<TopBottomInfo>:

<string> // one of: top, neither, bottom, or template

<StackupLayerArray>:

```
Array(<LayerArray>,  
"Elev:=", <ElevationInfo>,  
"SubL:=", Array("Th:=", <Dimension>,  
"LElev:=", <Dimension>,  
"R:=", <Dimension>,  
"M:=", <MaterialInfo>))
```

<ElevationInfo>:

```
<string> // "top" - snap to top  
// "mid" - snap to middle  
// "bot" - snap to bottom  
// "edit" - manual edit  
// "none"
```

<Dimension>:

<string> // real number, may include units

<MaterialInfo>:

<string> // name of the layer material

<ToleranceArray>:

Array(<real>, // distance tolerance

<real>, // angle tolerance (radians)

<real>) // dimensionless tolerance

<PrimitivesInfo>:

Array("NAME:Prims",

// one or more of the following

<RectInfo>,

<CircleInfo>,

<ArcInfo>,

<LineInfo>,

<PolygonInfo>,

<TextInfo>,

<ImageInfo>)

<RectInfo>:

```
"Rect:=", Array(<real>, // line width  
<int>, // fill pattern  
<int>, // color  
<real>, // angle, in radians  
<real>, // x position of center  
<real>, // y position of center  
<real>, // width  
< real>) // height
```

<CircleInfo>:

```
"Circle:=", Array(<real>, // line width  
<int>, // fill pattern  
<int>, // color  
<real>, // x position of center  
<real>, // y position of center  
< real>) // radius
```

<ArcInfo>:

```
"Arc:=", Array(<real>, // line width  
<int>, // line pattern
```

```
<int>, // color  
<real>, // x position of center  
<real>, // y position of center  
< real>, // radius  
<real>, // start angle, in radians  
<end>) // end angle, in radians
```

<LineInfo>:

```
"Line:=", Array(<real>, // line width  
<int>, // line pattern  
<int>, // color  
<PointInfo>, // must specify at least 2 points  
<PointInfo>...)  
<PointInfo>:  
<real>, // x position  
<real> // y position
```

<PolygonInfo>:

```
"Polygon:=", Array(<real>, // line width  
<int>, // fill pattern  
<int>, // color
```



<PointInfo>, // must specify at least 3 points

<PointInfo>...)

<TextInfo>:

"Text:=", Array(<real>, // x position

<real>, // y position

<real>, // angle, in radians

<Justification>,

<bool>, // is plotter font

<string>, // font name

<int>, // color

<string>) // text string

<Justification>: <int>

// 0 : left top

// 1 : left base

// 2 : left bottom

// 3 : center top

// 4 : center base

// 5 : center bottom

// 6 : right top

// 7 : right base

// 8 : right bottom

<ImageInfo>:

"Image:=", Array(<RectInfo>,

<ImageData>,

<bool>) // is mirrored

<ImageData>:

<string>, // file path

<int>, // 0 : use the file path and link to it

// 1 : ignore file path and use next parameter

<string> // text data, only present if preceding int is 1

<PinsInfo>:

Array("NAME:Pins",

"P:=", <PinArray>,

"P:=", <PinArray>,...)

<PinArray>:

Array("Port:=", Array("Id:=", <int>,

"Clr:=", <real>, // optional - clearance  
"N:=", <string>), // pin name  
"Pos:=", Array("x:=", <Location>, // padstack (x,y) position  
"y:=", <Location>),  
"VRt:=", <Angle>, // optional - rotation  
"HD:=", <Size>, // optional - hole diameter  
<PadstackImplementationInfo>)

<Location>:

<string> specifying real number and units (may use variables)

<Angle>:

<string> specifying angle with a real number and units

<Size>:

<string> specifying size with a real number and units

<PadstackImplementationInfo>:

If another with the same implementation has already been specified:

"Ref:=", <int> // id of the other

If not:

"Ref:=", <string>, // name

"Frm:=", <int>, // id of highest layer

"To:=", <int>, // id of lowest layer

<LayerPlacementInfo>,

"Man:=", <int>, // optional, 1 if manually placed, 0 if not (default)

"Use:=", Array(<PadUseInfo>, <PadUseInfo>...) // array may be empty

<LayerPlacementInfo>:

"Lyr:=", Array("Mrg:=", <int>, // optional,

// 1 if all layers have been merged (default)

// 0 if layer are not merged

"Flp:=", <int>, // optional,

// 1 if placed bottom up

// 0 if not (default)

"Map:=", <ParentToLocalLayerInfo>)

<ParentToLocalLayerInfo>:

Array("U:=", <DirectionOfUniqueness>,

"F:=", Array(<int>, <int>, ...), // forward mapping

// -1 is not mapped

```
"B:=", Array(<int>, <int>, ...) // backward mapping  
// -1 is not mapped
```

```
<PadUseInfo>:
```

```
"Pad:=", Array("Lid:=", <int>, // layer id  
"T:=", <string>, // type : "connected", "thermal",  
// "no_pad", "not_connected",  
// or "not_connected_thermal"  
"Man:=", <int>) // optional, 1 if manually placed  
// 0 if not (default)
```

```
<DirectionOfUniqueness>:
```

```
<string> // one of "forward", "backward", or "two ways"
```

```
<ViasInfo>:
```

```
Array("NAME:Vias", <VialInfo>, <VialInfo>...)
```

```
<VialInfo>:
```

```
"V:=", Array("Id:=", <int>,  
"N:=", <string>, // name
```

"Pos:=", Array("x:=", <Location>, // via (x,y) position

"y:=", <Location>),

"VRt:=", <Angle>, // optional - rotation

<ImplementationInfo>

<EdgeportsInfo>:

Array("NAME:EPorts", <EdgePortArray>, <EdgePortArray>...)

<EdgePortArray>:

Array("NAME:EP",

"LP:=", Array("Id:=", <int>, // port id

"N:=", <string>), // port name

"Eo:=", Array(<edge description>, <edge description>,...))

<edge description> for primitive edges

"et:=", "pe", "pr:=", <id>, "ei:=", <edge#>

<id>: integer that is the primitive id

<edge#>: integer that is the edge number on the primitive

<edge description> for via edges

"et:=", "pse", "layer:=", <layer id>, "se:=", <via id>,  
"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,  
"ey:=", <end Y location>, "h:=", <arc height>, "rad:=", <radians>

<via id>: an integer that is the id of the via to use

<layer id>: an integer that is the id of the layer of the pad of the via to use

<start X location>

<start Y Location>:

doubles that are the X, Y location of the start point of the edge arc <end X location>

<end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>: double giving the height of the edge arc (0 for a straight edge)

<radians>: double giving the arc size in radians (0 for a straight edge)

<ComponentPropertyInfo>:

```
Array("NAME:CProps",  
"VariableProp:=", <VariableInfo>,  
"VariableProp:=", <VariableInfo>,  
...)
```

```
<VariableInfo>:  
Array(<string>, // name  
<FlagLetters>,  
<string>, // description  
"CB:=", <string>, // optional - script for call back  
<string>) // value: number, variable, or expression
```

```
<ScriptInfo>:  
Array("NAME:script",  
"language:=", <string>, // script language  
"UsesScript:=", true,  
"script:=", <string>) // contents of script
```

## Edit [footprint manager]

Deprecated command — please use [EditWithComps](#).



## EditWithComps [footprint manager]

*Use:* Edit an existing footprint.

*Command:* None

*Syntax:* EditWithComps <FootprintName>,  
    Array("NAME:<NewFootprintName>,"  
    "ModTime:=", <ModifiedOnInfo>,"  
    "Library:=", "",  
    "LibLocation:=", "Project",  
    "OkayToMirror:=", <bool>,"  
    "DefUnits:=", <UnitType>,"  
    Array(NAME:Lyrs",  
    "Layer:=", <LayerArray>,"  
    "Layer:=", <LayerArray>...,  
    "SLayer:=", <StackupLayerArray>,"  
    "SLayer:=", <StackupLayerArray>...),  
    "ActLyr:=", <string>, // name of active layer  
    "Tol:=", <ToleranceArray> // optional  
    <PrimitivesInfo>, // optional  
    <PinsInfo>, // optional  
    <ViasInfo>, // optional

```
<EdgeportsInfo>, // optional
<ComponentPropertyInfo>,
<ScriptInfo>, // optional, specified for scripted footprints
Array(<ListOfComponentNames>) // Component names
```

*Return Value:* <string>

```
// composite name of the footprint.
// If the name requested conflicts with the name of an existing
// footprint, the requested name is altered to be unique.
// The name returned reflects any change made to be unique.
```

*Parameters:* <FootprintName>:

```
<string> // composite name of the footprint being edited
```

<NewFootprintName>:

```
<string> // new simple name for the footprint
```

<ModifiedOnInfo>:

An integer that corresponds to the number of seconds that have elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.

<UnitType>:

<string> // default length units to use if units are not specified in other  
// parameters

**<LayerArray>:**

Array("N:=", <string>, // layer name  
"ID:=", <int> ,  
"T:=", <LayerTypeInfo>, // layer type  
"TB:=", <TopBottomInfo>,  
"Col:=", <int>, // optional - color  
"Pat:=", <int>, // optional - fill pattern  
"Vis:=", <bool>, // optional - are objects on layer visible  
"Sel:=", <bool>, // optional - are objects on layer selectable  
"L:=", <bool>) // optional  
// are objects on layer locked (can't be edited)

**<LayerTypeInfo>:**

<string> // one of: signal, dielectric, metalized signal, assembly, silkscreen, soldermask, solderpaste, glue, or user

**<TopBottomInfo>:**

<string> // one of: top, neither, bottom, or template

**<StackupLayerArray>:**

```
Array(<LayerArray>,  
"Elev:=", <ElevationInfo>,  
"SubL:=", Array("Th:=", <Dimension>,  
"LElev:=", <Dimension>,  
"R:=", <Dimension>,  
"M:=", <MaterialInfo>))
```

**<ElevationInfo>:**

```
<string> // "top" - snap to top  
// "mid" - snap to middle  
// "bot" - snap to bottom  
// "edit" - manual edit  
// "none"
```

**<Dimension>:**

```
<string> // real number, may include units
```

**<MaterialInfo>:**

```
<string> // name of the layer material
```

**<ToleranceArray>:**

```
Array(<real>, // distance tolerance  
<real>, // angle tolerance (radians)  
<real>) // dimensionless tolerance
```

**<PrimitivesInfo>:**

```
Array("NAME:Prims",  
// one or more of the following  
<RectInfo>,  
<CircleInfo>,  
<ArcInfo>,  
<LineInfo>,  
<PolygonInfo>,  
<TextInfo>,  
<ImageInfo>)
```

**<RectInfo>:**

```
"Rect:=", Array(<real>, // line width  
<int>, // fill pattern
```

<int>, // color  
<real>, // angle, in radians  
<real>, // x position of center  
<real>, // y position of center  
<real>, // width  
< real>) // height

**<CircleInfo>:**

"Circle:=", Array(<real>, // line width  
<int>, // fill pattern  
<int>, // color  
<real>, // x position of center  
<real>, // y position of center  
< real>) // radius

**<ArcInfo>:**

"Arc:=", Array(<real>, // line width  
<int>, // line pattern  
<int>, // color  
<real>, // x position of center  
<real>, // y position of center

< real>, // radius

<real>, // start angle, in radians

<end>) // end angle, in radians

**<LineInfo>:**

"Line:=", Array(<real>, // line width

<int>, // line pattern

<int>, // color

<PointInfo>, // must specify at least 2 points

<PointInfo>...)

<PointInfo>:

<real>, // x position

<real> // y position

**<PolygonInfo>:**

"Polygon:=", Array(<real>, // line width

<int>, // fill pattern

<int>, // color

<PointInfo>, // must specify at least 3 points

<PointInfo>...)

**<TextInfo>:**

"Text:=", Array(<real>, // x position

<real>, // y position

<real>, // angle, in radians

<Justification>,

<bool>, // is plotter font

<string>, // font name

<int>, // color

<string>) // text string

<Justification>: <int>

// 0 : left top

// 1 : left base

// 2 : left bottom

// 3 : center top

// 4 : center base

// 5 : center bottom

// 6 : right top

// 7 : right base

// 8 : right bottom



**<ImageInfo>:**

```
"Image:=", Array(<RectInfo>,  
<ImageData>,  
<bool>) // is mirrored
```

**<ImageData>:**

```
<string>, // file path  
<int>, // 0 : use the file path and link to it  
// 1 : ignore file path and use next parameter  
<string> // text data, only present if preceding int is 1
```

**<PinsInfo>:**

```
Array("NAME:Pins",  
"P:=", <PinArray>,  
"P:=", <PinArray>,...)
```

**<PinArray>:**

```
Array("Port:=", Array("Id:=", <int>,  
"Clr:=", <real>, // optional - clearance  
"N:=", <string>), // pin name
```

```
"Pos:=", Array("x:=", <Location>, // padstack (x,y) position  
"y:=", <Location>),  
"VRt:=", <Angle>, // optional - rotation  
"HD:=", <Size>, // optional - hole diameter  
<PadstackImplementationInfo>)
```

**<Location>:**

<string> specifying real number and units (may use variables)

**<Angle>:**

<string> specifying angle with a real number and units

**<Size>:**

<string> specifying size with a real number and units

**<PadstackImplementationInfo>:**

If another with the same implementation has already been specified:

```
"Ref:=", <int> // id of the other
```

If not:

```
"Ref:=", <string>, // name
```

```
"Frm:=", <int>, // id of highest layer
```

```
"To:=", <int>, // id of lowest layer
<LayerPlacementInfo>,
"Man:=", <int>, // optional, 1 if manually placed, 0 if not (default)
"Use:=", Array(<PadUseInfo>, <PadUseInfo>...) // array may be empty
```

**<LayerPlacementInfo>:**

```
"Lyr:=", Array("Mrg:=", <int>, // optional,
// 1 if all layers have been merged (default)
// 0 if layer are not merged
"Flp:=", <int>, // optional,
// 1 if placed bottom up
// 0 if not (default)
"Map:=", <ParentToLocalLayerInfo>)
```

**<ParentToLocalLayerInfo>:**

```
Array("U:=", <DirectionOfUniqueness>,
"F:=", Array(<int>, <int>, ...), // forward mapping
// -1 is not mapped
"B:=", Array(<int>, <int>, ...)) // backward mapping
// -1 is not mapped
```

**<PadUseInfo>:**

```
"Pad:=", Array("Lid:=", <int>, // layer id
"T:=", <string>, // type : "connected", "thermal",
// "no_pad", "not_connected",
// or "not_connected_thermal"
"Man:=", <int>) // optional, 1 if manually placed
// 0 if not (default)
```

**<DirectionOfUniqueness>:**

```
<string> // one of "forward", "backward", or "two ways"
```

**<ViasInfo>:**

```
Array("NAME:Vias", <VialInfo>, <VialInfo>...)
```

**<VialInfo>:**

```
"V:=", Array("Id:=", <int>,
"N:=", <string>, // name
"Pos:=", Array("x:=", <Location>, // via (x,y) position
"y:=", <Location>),
"VRt:=", <Angle>, // optional - rotation
```

<ImplementationInfo>

**<EdgeportsInfo>:**

Array("NAME:EPorts", <EdgePortArray>, <EdgePortArray>...)

**<EdgePortArray>**

Array("NAME:EP",  
"LP:=", Array("Id:=", <int>, // port id  
"N:=", <string>), // port name  
"Eo:=", Array(<edge description>, <edge description>,...))

<edgedescription> for primitive edges

"et:=", "pe", "pr:=", <id>, "ei:=", <edge#>

<id>: integer that is the primitive id

<edge#>: integer that is the edge number on the primitive

<edge description> for via edges

"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,

"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>, "ey:=", <end Y location>, "h:=", <arc height>,  
"rad:=", <radians>

<"via">: text that is the name of the via to use

<layer id>: an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc

<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>: double giving the height of the edge arc (0 for a straight edge)

<radians>: double giving the arc size in radians (0 for a straight edge)

**<ComponentPropertyInfo>:**

Array("NAME:CProps",

"VariableProp:=", <VariableInfo>,

"VariableProp:=", <VariableInfo>,

...)

**<VariableInfo>:**

```
Array(<string>, // name
<FlagLetters>,
<string>, // description
"CB:=", <string>, // optional - script for call back
<string>) // value: number, variable, or expression
```

**<ScriptInfo>:**

```
Array("NAME:script",
"language:=", <string>, // script language
"UsesScript:=", true,
"script:=", <string>) // contents of script
```

**<ListOfComponentNames>:**

```
<string>,<string> ...
```

```
// The list may be empty. When not empty, each string that is listed is a component
// that references the footprint to be edited. Prior to editing, a clone of the footprint is
// made, and the components that are listed are modified so that they now refer to
// the clone.
```

## Export [footprint manager]

*Use:* Export a footprint to a library

*Command:* Tools > Edit Configured Libraries > Footprints > Export to Library

*Syntax:* Export Array("NAME:<LibraryName>",

<FootprintName>,  
    <FootprintName>...),  
    <LibraryLocation>

*Return Value:* None

*Parameters:* <LibraryName>:

<string> // name of the library

<FootprintName>:

<string> // composite name of footprint to export

<LibraryLocation>:

<string> // location of the library in <LibraryName>

// One of "Project", "PersonalLib", or "UserLib"

## GetNames [footprint manager]

*Use:* Returns the names of the footprints (used and unused) in a design. The following script command, **IsUsed**, can then be used to separate used and unused footprints.

*Command:* None

*Syntax:* GetNames()



*Return Value:* An array of strings

*Parameters:* None

### **IsUsed [footprint manager]**

*Use:* Used to determine if a footprint is used in the design.

*Command:* None

*Syntax:* IsUsed(<FootprintName>)

*Return Value:* <Boolean> // true if the specified footprint is used in the design

*Parameters:* <FootprintName>:

<string>

### **Remove [footprint manager]**

*Use:* Removes a footprint from a library

*Command:* Tools > Edit Configured Libraries > Footprints > Remove Footprint

*Syntax:* Remove <FootprintName>,

<IsProjectFootprint>,

<LibraryName>,

<LibraryLocation>

*Return Value:* None

*Parameters:* <FootprintName>:

<string> // composite name of the footprint to remove

<IsProjectFootprint>:

<bool>

<LibraryName>:

<string> // name of the library

<LibraryLocation>:

<string> // location of the library in <LibraryName>

// One of "Project", "PersonalLib", or "UserLib"

## **RemoveUnused [footprint manager]**

*Use:* Removes footprints that are not used in the design.

*Command:* **Project->Remove Unused Definitions** is similar but operates slightly different and does not record script commands.

*Syntax:* RemoveUnused()

*Return Value:* <bool> True if one or more footprints are removed.

*Parameters:* None

**Note:**

The order of calls to RemoveUnused is significant. As a result, removing definitions in an unordered fashion may cause other footprints in dependent definitions to be rendered unusable.

Also, the symbol and footprint of an unused component are not unusable until after the component itself is removed using the Component ManagerRemove script.

## Material Manager Script Commands

The material manager provides access to materials in a project. The manager object is accessed via the definition manager.

```
Set oDefinitionManager = oProject.GetDefinitionManager()
```

```
Set oMaterialManager = oDefinitionManager.GetManager("Material")
```

**The topics for this section include:**

[GetNames](#)

[GetProperties](#)

[IsUsed](#)

[RemoveUnused](#)

### **GetNames [material manager]**

*Use:* Get the names of the materials in a project

*Command:* None

*Syntax:* GetNames

**Return Value:** Names of the materials in a project

**Parameters:** None

**Example:**

```
materialNames = oMaterialMgr.GetNames()
```

|                       |                                             |
|-----------------------|---------------------------------------------|
| <b>Python Syntax</b>  | GetNames()                                  |
| <b>Python Example</b> | materialnames = oMaterialManager.GetNames() |

## GetProperties [material manager]

Get material properties. Differs from GetData in that only material properties available to the user are returned by GetProperties.

|                     |                        |                       |                                                                                                                                                                                     |
|---------------------|------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | NA                     |                       |                                                                                                                                                                                     |
| <b>Parameters</b>   | Name                   | Type                  | Description                                                                                                                                                                         |
|                     | <material_name>        | string<br><br>Boolean | Name of the project material<br><br>True or False. If you use False or only a single argument, then GetProperties returns only the properties that are different from the defaults. |
| <b>Return Value</b> | Array of material data |                       |                                                                                                                                                                                     |

|                       |                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetProperties (<materialname>)                                                             |
| <b>Python Example</b> | oMaterialManager.GetProperties ("Gold", True)<br>oMaterialManager.GetProperties ("vacuum") |

**IsUsed [material manager]**

*Use:* Checks if a project material is in use

*Command:* None

*Syntax:* IsUsed <material\_name>

*Return Value:* Returns 'True' if the material is in use.

*Parameters:* <material\_name>

Type: string

Value: Name of the project material to check.

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | IsUsed(<ComboName>)                                  |
| <b>Python Example</b> | isused = oMaterialManager.IsUsed("mylib:mymaterial") |

**RemoveUnused [material manager]**

*Use:* Remove all unused materials from the project.

*Command:* None

*Syntax:* RemoveUnused

*Return Value:* None

*Parameters:* None

|                       |                                                                |
|-----------------------|----------------------------------------------------------------|
| <b>Python Syntax</b>  | RemoveUnused()                                                 |
| <b>Python Example</b> | <code>thereWereExtras = oMaterialManager.RemoveUnused()</code> |

## Model Manager Script Commands

The model manager provides access to models in a project. The manager object is accessed via the definition manager.

```
Set oDefinitionManager = oProject.GetDefinitionManager()
```

```
Set oModelManager = oDefinitionManager.GetManager("Model")
```

The model manager script commands are listed below:

[Add](#)

[ConvertToDynamic](#)

[ConvertToParametric](#)

[Edit](#)

[EditWithComps](#)

[Export](#)

[GetNames](#)

[IsUsed](#)

[Remove](#)

[RemoveUnused](#)

### Add [model manager]

*Use:* Add a model

*Command:* Tools > Edit Configured Libraries > Models > Add Model

*Syntax:* Add Array("NAME:<modelName>",

```
"ModTime:=", <ModifiedTimeInfo>,  
"Library:=", "", // Library name  
"LibLocation:=", "Project", // Project Location  
<PinDefInfo>,  
<PinDefInfo>,... // optional, to define pins  
<GraphicsDataInfo>, // optional, to define graphics  
<PropDisplayMapInfo>)) // optional, to define property displays
```

*Return Value:* <string>

```
// composite name of the model.  
// If the name requested conflicts with the name of an existing  
// model, the requested name is altered to be unique.  
// The name returned reflects any change made to be unique.
```

*Parameters:* <modelName>:

```
<string> // simple name of the model being added
```

<ModifiedOnInfo>:

An integer that corresponds to the number of seconds that have elapsed  
since 00:00 hours, Jan 1, 1970 UTC from the system clock.

```
<PinDefInfo>:  
Array("NAME:PinDef",  
"Pin:=", Array (<string>, // pin name  
<real>, // x location  
<real>, // y location  
<real>, // angle in radians  
<PinType>,  
<real>, // line width  
<real>, // line length  
<bool>, // mirrored  
<int>, // color  
<bool>, // true if visible, false if not  
<string>, // hidden net name  
<OptionalPinInfo>, // optional info  
<PropDisplayMapInfo>)) // optional
```

```
<PinType>:  
<string> // "N" : normal pin  
// "I" : input pin  
// "O" : output pin
```



<OptionalPinInfo>:

// Specify both or neither

<bool>, // true if name is to be shown

<bool>, // true if number is to be shown

<PropDisplayMapInfo>:

Array("NAME:PropDisplayMap",

<PropDisplayInfo>,

<PropDisplayInfo>,...)

<PropDisplayInfo>:

<NameString>, Array(<DisplayTypeInfo>,

<DisplayLocationInfo>,

<int>, // optional, level number

<TextInfo>)

<NameString>:

<string> // PropertyName:=, where PropertyName is the name of

// the property to be displayed

<DisplayTypeInfo>:

<int> // 0 : No display

// 1 : Display name only

// 2 : Display value only

// 3 : Display both name and value

// 4: Display evaluated value only

// 5: Display both name and evaluated value

<DisplayLocationInfo>:

<int> // 0 : Left

// 1 : Top

// 2 : Right

// 3 : Bottom

// 4 : Center

// 5 : Custom placement

<GraphicsDataInfo>:

Array("NAME:Graphics",

// one or more of the following

<RectInfo>,

```
<CircleInfo>,  
<ArcInfo>,  
<LineInfo>,  
<PolygonInfo>,  
<TextInfo>,  
<ImageInfo>)
```

```
<RectInfo>:  
"Rect:=", Array(<real>, // line width  
<int>, // fill pattern  
<int>, // color  
<real>, // angle, in radians  
<real>, // x position of center  
<real>, // y position of center  
<real>, // width  
< real>) // height
```

```
<CircleInfo>:  
"Circle:=", Array(<real>, // line width  
<int>, // fill pattern
```

<int>, // color

<real>, // x position of center

<real>, // y position of center

< real>) // radius

<ArcInfo>:

"Arc:=", Array(<real>, // line width

<int>, // line pattern

<int>, // color

<real>, // x position of center

<real>, // y position of center

< real>, // radius

<real>, // start angle, in radians

<end>) // end angle, in radians

<LineInfo>:

"Line:=", Array(<real>, // line width

<int>, // line pattern

<int>, // color

<PointInfo>, // must specify at least 2 points

<PointInfo>...)

<PointInfo>:

<real>, // x position

<real> // y position

<PolygonInfo>:

"Polygon:=", Array(<real>, // line width

<int>, // fill pattern

<int>, // color

<PointInfo>, // must specify at least 3 points

<PointInfo>...)

<TextInfo>:

"Text:=", Array(<real>, // x position

<real>, // y position

<real>, // angle, in radians

<Justification>,

<bool>, // is plotter font

<string>, // font name

<int>, // color

<string>) // text string

<Justification>:

<int> // 0 : left top

// 1 : left base

// 2 : left bottom

// 3 : center top

// 4 : center base

// 5 : center bottom

// 6 : right top

// 7 : right base

// 8 : right bottom

<ImageInfo>:

"Image:=", Array(<RectInfo>,

<ImageData>,

<bool>) // is mirrored

<ImageData>:

<string>, // file path

<int>, // 0 : use the file path and link to it

// 1 : ignore file path and use next parameter

<string> // text data, only present if preceding int is 1

## ConvertToDynamic

*Use:* Build a new dynamic model based on an existing parametric model.

*Command:* Right-click on a model under Definitions/Models in the Project Tree and choose ConvertToDynamic.

*Syntax:* ConvertToDynamic(defName, newname)

*Return Value:* <newname> // Name of the new model added

*Parameters:* <defName> // Model that is the base for the new conversion

## ConvertToParametric

*Use:* Build a new parametric model based on an existing dynamic model.

*Command:* Right-click on a model under Definitions/Models in the Project Tree and choose ConvertToParametric.

*Syntax:* ConvertToParametric(defName, newname)

*Return Value:* <newname> // Name of the new model added

*Parameters:* <defName> // Model that is the base for the new conversion

## Edit [deprecated]

Deprecated command — please use [EditSymbolAndUpdateComps](#).

## EditWithComps [model manager]

*Use:* Edit an existing model.

*Command:* None

*Syntax:* EditWithComps <ModelName>,  
                   Array("NAME:<NewModelName>",

```
"ModTime:=", <ModifiedTimeInfo>,  
"Library:=", <string>, // Library name  
"LibLocation:=", <string>, // Project Location  
<PinDefInfo>,  
<PinDefInfo>,... // optional, to define pins  
<GraphicsDataInfo>, // optional, to define graphics  
<PropDisplayMapInfo>), // optional, to define property displays  
Array(<ListOfComponentNames>) // Component names
```

*Return Value:* <string>

```
// composite name of the model.  
// If the name requested conflicts with the name of an existing  
// model, the requested name is altered to be unique.  
// The name returned reflects any change made to be unique.
```

*Parameters:* <ModelName>:

```
<string> // composite name of the model being edited
```

<NewModelName>:

```
<string> // new simple name for the model
```



<ModifiedOnInfo>:

An integer that corresponds to the number of seconds that have elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.

<PinDefInfo>:

```
Array("NAME:PinDef",
"Pin:=", Array (<string>, // pin name
<real>, // x location
<real>, // y location
<real>, // angle in radians
<PinType>,
<real>, // line width
<real>, // line length
<bool>, // mirrored
<int>, // color
<bool>, // true if visible, false if not
<string>, // hidden net name
<OptionalPinInfo>, // optional info
<PropDisplayMapInfo>)) // optional
```

<PinType>:

<string> // "N" : normal pin

// "I" : input pin

// "O" : output pin

<OptionalPinInfo>:

// Specify both or neither

<bool>, // true if name is to be shown

<bool>, // true if number is to be shown

<PropDisplayMapInfo>:

Array("NAME:PropDisplayMap",

<PropDisplayInfo>,

<PropDisplayInfo>,...)

<PropDisplayInfo>:

<NameString>, Array(<DisplayTypeInfo>,

<DisplayLocationInfo>,

<int>, // optional, level number

<TextInfo>)

<NameString>:

<string> // PropertyName:=, where PropertyName is the name of  
// the property to be displayed

<DisplayTypeInfo>:

<int> // 0 : No display

// 1 : Display name only

// 2 : Display value only

// 3 : Display both name and value

// 4: Display evaluated value only

// 5: Display both name and evaluated value

<DisplayLocationInfo>:

<int> // 0 : Left

// 1 : Top

// 2 : Right

// 3 : Bottom

// 4 : Center

// 5 : Custom placement

<GraphicsDataInfo>:

```
Array("NAME:Graphics",  
// one or more of the following  
<RectInfo>,  
<CircleInfo>,  
<ArcInfo>,  
<LineInfo>,  
<PolygonInfo>,  
<TextInfo>,  
<ImageInfo>)
```

<RectInfo>:

```
"Rect:=", Array(<real>, // line width  
<int>, // fill pattern  
<int>, // color  
<real>, // angle, in radians  
<real>, // x position of center  
<real>, // y position of center  
<real>, // width  
< real>) // height
```

<CircleInfo>:

```
"Circle:=", Array(<real>, // line width  
<int>, // fill pattern  
<int>, // color  
<real>, // x position of center  
<real>, // y position of center  
< real>) // radius
```

<ArcInfo>:

```
"Arc:=", Array(<real>, // line width  
<int>, // line pattern  
<int>, // color  
<real>, // x position of center  
<real>, // y position of center  
< real>, // radius  
<real>, // start angle, in radians  
<end>) // end angle, in radians
```

<LineInfo>:

```
"Line:=", Array(<real>, // line width
```

<int>, // line pattern

<int>, // color

<PointInfo>, // must specify at least 2 points

<PointInfo>...)

<PointInfo>:

<real>, // x position

<real> // y position

<PolygonInfo>:

"Polygon:=", Array(<real>, // line width

<int>, // fill pattern

<int>, // color

<PointInfo>, // must specify at least 3 points

<PointInfo>...)

<TextInfo>:

"Text:=", Array(<real>, // x position

<real>, // y position

<real>, // angle, in radians

<Justification>,

<bool>, // is plotter font

<string>, // font name

<int>, // color

<string>) // text string

<Justification>:

<int> // 0 : left top

// 1 : left base

// 2 : left bottom

// 3 : center top

// 4 : center base

// 5 : center bottom

// 6 : right top

// 7 : right base

// 8 : right bottom

<ImageInfo>:

"Image:=", Array(<RectInfo>,

<ImageData>,

<bool>) // is mirrored

<ImageData>:

<string>, // file path

<int>, // 0 : use the file path and link to it

// 1 : ignore file path and use next parameter

<string> // text data, only present if preceding int is 1

<ListOfComponentNames>:

<string>, <string> ...

// The list may be empty. When not empty, each string that is listed is a component

// that references the model to be edited. Prior to editing, a clone of the model is

// made, and the components that are listed are modified so that they now refer to

// the clone.

## **Export [model manager]**

*Use:* Exports model(s) to a library

*Command:* Tools > Edit Configured Libraries > Models > Export to Library

*Syntax:* Export Array("NAME:<LibraryName>",

<ModelName>,

<ModelName>...),

<LibraryLocation>

*Return Value:* None

*Parameters:* <LibraryName>:



<string> // name of the library

<ModelName>:

<string> // composite name of model to export

<LibraryLocation>:

<string> // location of the library in <LibraryName>

// One of "Project", "PersonalLib", or "UserLib"

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Export(["NAME:<LibraryName>", <ComboName>, <ComboName>...], <LibraryLocation>) |
| <b>Python Example</b> | oModelManager.Export(["NAME:mylib", "model1", "model2"])                       |

### GetNames [model manager]

*Use:* Returns the names of the models (used and unused) in a design. The following script command, **IsUsed**, can then be used to separate used and unused models.

*Command:* None

*Syntax:* GetNames()

*Return Value:* An array of strings

*Parameters:* None

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| <b>Python Syntax</b>  | GetNames()                                         |
| <b>Python Example</b> | <code>modelnames = oModelManager.GetNames()</code> |

## IsUsed [model manager]

*Use:* Used to determine if a model is used in the design.

*Command:* None

*Syntax:* IsUsed(<ModelName>)

*Return Value:* <Boolean> // true if the specified model is used in the design

*Parameters:* <ModelName>:

<string>

|                       |                                                              |
|-----------------------|--------------------------------------------------------------|
| <b>Python Syntax</b>  | IsUsed(<ComboName>)                                          |
| <b>Python Example</b> | <code>isused = oModelManager.IsUsed ("mylib:mymodel")</code> |

## Remove [model manager]

*Use:* Removes a model from a library

*Command:* Tools > Edit Configured Libraries > Models > Remove Model

*Syntax:* Remove <ModelName>,

<IsProjectModel>,

<LibraryName>,

<LibraryLocation>

*Return Value:* None

*Parameters:* <ModelName>:  
    <string> // composite name of the model to remove

**<IsProjectModel>:**  
    <bool>

**<LibraryName>:**  
    <string> // name of the library

**<LibraryLocation>:**  
    <string> // location of the library in <LibraryName>  
    // One of "Project", "PersonalLib", or "UserLib"

|                       |                                                                              |
|-----------------------|------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Remove (<ModelName>, <IsLocal>, <LibraryName>, <LibraryLocation>)            |
| <b>Python Example</b> | <pre>oModelManager.Export([<br/>    "NAME:mylib", "model1", "model2"])</pre> |

**RemoveUnused [model manager]**

*Use:* Removes models that are not used in the design.

*Command:* **Project->Remove Unused Definitions** is similar but operates slightly different and does not record script commands.

*Syntax:* RemoveUnused()

*Return Value:* <bool> True if one or more models are removed.

*Parameters:* None

**Note:**

The order of calls to RemoveUnused is significant. As a result, removing definitions in an unordered fashion may cause other models in dependent definitions to be rendered unusable.

Also, the model and footprint of an unused component are not unusable until after the component itself is removed using the Component Manager Remove script.

|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| <b>Python Syntax</b>  | RemoveUnused()                                              |
| <b>Python Example</b> | <code>thereWereExtras = oModelManager.RemoveUnused()</code> |

## Network Data Explorer Manager Script Commands

The network data Explorer (NDE) Manager provides access to certain NDE data.

```
Set oDefinitionManager = oProject.GetDefinitionManager()
```

```
Set oNdExplorerManager = oDefinitionManager.GetManager("NdExplorer")
```

For NDE scripts accessed via the ndExplorer tool, see: [Network Data Explorer Script Commands](#).

**The topics for this section include:**

[ExportFullWaveSpice](#)

[ExportNetworkData](#)

## [ExportNMFData](#)

### **ExportFullWaveSpice**

*Use:* Export FullWaveSpice data in a format of your choice.

*Command:* File > Export MacroModel > Broadband (SYZ, FWS....)

*Syntax:* ExportFullWaveSpice

```
"DesignName", // Design name. Can be left blank, if loading solution from a file.
true/false, // true - solution loaded from file, false- loaded from design
"Name", // If loading from design this is the solution name, else this is the
           // full path of the file from which the solution is loaded
"variation", // Pick a particular variation. Leave blank if no variation.
Array("NAME:Frequencies"), // Optional; if none defined all frequencies are used
Array("NAME:SpiceData", // Spice export options object
"SpiceType:=", "SSS", // SpiceType can be "PSpice", "HSpice", "Spectre", "SSS",
                       // "Simplorer", "TouchStone1.0", "TouchStone2.0"
"EnforcePassivity:=", false, // Enforce Passivity true/false
"EnforceCausality:=", false, // Enforce Causality true/false
"UseCommonGround:=", false, // Use common ground true/false
"FittingError:=", 0.5, // Fitting error
"MaxPoles:=", 400, // Maximum Order
"PassivityType:=", "ConvexOptimization", // Passivity Type can be "ConvexOptimization",
```

```

// "PassivityByPerturbation", or "IteratedFittingOfPV"
"ColumnFittingType:=", "Column", // Column FittingType can be "Column", "Entry", "Matrix"
"SSFittingType:=", "TWA", // SS Fitting Type can be "TWA", "IterativeRational"
"RelativeErrorToleranc:=", false, // Relative error tolerance true/false
"TouchstoneFormat:=", "MA", // Touchstone Format "MA", "RI", "DB"
"TouchstoneUnits:=", "Hz", // Touchstone Units "Hz", "KHz", "MHz", "MHz"
"TouchStonePrecision:=", 8, // Touchstone precision
"ExportDirectory:=", "C:/Examples/LNA/", // Directory to export to
"ExportSpiceFileName:=", "Linckt_HBTest_2.sss", // Spice export file
"FullwaveSpiceFileName:=", "Linckt_HBTest.sss", // FWS file
"CreateNPortModel:=", true // Create a model based on the exported file true/false
)

```

## ExportNetworkData

Exports matrix solution data to a file.

| UI Access  | N/A                  |        |                                                                                                                                                            |
|------------|----------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                 | Type   | Description                                                                                                                                                |
|            | <DesignVariationKey> | String | Design variation key. Pass empty string for the current nominal variation.                                                                                 |
|            | <SolnSelectionArray> | Array  | Array of selected solutions.<br>Array(<SolnSelector>, <SolnSelector>, ...)<br>If more than one array entry, this indicates a combined Interpolating sweep. |

|                 |         |                                                                                                                                                                                                                             |
|-----------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <SolnSelector>  | String  | Solution setup name and solution name, separated by a colon.                                                                                                                                                                |
| <FileFormat>    | Integer | File format value.<br><br>2 : Tab delimited spreadsheet format (.tab)<br>3 : Touchstone (.sNp)<br>4 : CitiFile (.cit)<br>7 : Matlab (.m)<br>8 : Terminal Z0 spreadsheet                                                     |
| <OutFile>       | String  | Full path to the file to write out.                                                                                                                                                                                         |
| <FreqsArray>    | Array   | The frequencies to export. The <FreqsArray> argument contains a vector (e.g. "1GHz", "2GHz", ...) to use, or "all". To export all frequencies, use Array("all"). If no frequencies are specified, all frequencies are used. |
| <DoRenorm>      | Boolean | For Touchstone format only. Specifies whether to renormalize the data before export.                                                                                                                                        |
| <RenormImped>   | Double  | For Touchstone format only. Real impedance value in ohms, for renormalization. Required in syntax, but ignored if DoRenorm is false.                                                                                        |
| <DataType>      | Array   | Optional. Type: "S", "Y", or "Z". The matrix to export.                                                                                                                                                                     |
| <pass>          | Integer | Optional. The pass to export. This is ignored if the sourceName is a frequency sweep. Leaving out this value or specifying -1 gets all passes.                                                                              |
| <ComplexFormat> | Integer | Optional. Type: "0", "1", or "2"<br><br>The format to use for the exported data.<br><br>0 = Magnitude/Phase.<br>1= Real/Imaginary.<br>2= db/Phase.                                                                          |

|                     |                        |         |                                                                                                |
|---------------------|------------------------|---------|------------------------------------------------------------------------------------------------|
|                     | <Precision>            | Integer | Optional. Touchstone number of digits precision. Default if not specified is 15.               |
|                     | <UseExportFreqs>       | Boolean | Specifies whether to use export frequencies.                                                   |
|                     | <IncludeGammaComments> | Boolean | Touchstone only. Specifies whether to include Gamma and Impedance comments.                    |
|                     | <SupportNonStdExport>  | Boolean | Specifies whether to support non-standard Touchstone extensions for mixed reference impedance. |
| <b>Return Value</b> | None.                  |         |                                                                                                |

|                       |                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportNetworkData(<DesignVariationKey>, <SolnSelectionArray>, <SolnSelector>, <FileFormat>, <OutFile>, <FreqsArray>, <DoRenorm>, <RenormImped>, [Optional <DataType>], [Optional <pass>], [Optional <ComplexFormat>], [Optional <Precision>], [Optional <UseExportFreqs>], [Optional <IncludeGammaComments>], [Optional <SupportNonStdExport>]) |
| <b>Python Example</b> | oModule.ExportNetworkData("", ["Setup1:Sweep1"], 3, "C://Documents/package_HFSSDesign1.s4p",<br>['all'], True, 50, "S", -1, 0, 15, True, True, True                                                                                                                                                                                             |

## ExportNMFData

Exports s-parameters in neutral file format (\*.nmf).

|                   |                                                                                                                                                                           |        |                                                                                              |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | <b>Results &gt; Solution Data.</b> On the <b>Matrix</b> tab, click <b>Export</b> tab. Then click <b>Export &gt; S-parameter</b> . Select Neutral Model format and export. |        |                                                                                              |
| <b>Parameters</b> | Name                                                                                                                                                                      | Type   | Description                                                                                  |
|                   | <sourceName>                                                                                                                                                              | Array  | String names of solutions. Use more than one array entry for a combined Interpolating sweep. |
|                   | <outputFileName>                                                                                                                                                          | String | Full path of output file, including *.nmf extension.                                         |



|                     |                                    |         |                                                                                                                                                       |
|---------------------|------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <code>&lt;reduceMat&gt;</code>     | String  | Either "Original" or name of reduced matrix.                                                                                                          |
|                     | <code>&lt;refImp&gt;</code>        | Double  | Reference impedance.                                                                                                                                  |
|                     | <code>&lt;freqs&gt;</code>         | Array   | Either "All" or array of doubles representing frequencies.                                                                                            |
|                     | <code>&lt;variationKey&gt;</code>  | String  | Design variation key. Pass empty string for the current nominal variation.                                                                            |
|                     | <code>&lt;displayFormat&gt;</code> | String  | "MagPhase", "Reallmag", "DbPhase".                                                                                                                    |
|                     | <code>&lt;pass&gt;</code>          | Integer | Optional. The pass to export. This is ignored if the <i>sourceName</i> is a frequency sweep. Leaving out this value or specifying -1 gets all passes. |
|                     | <code>&lt;ComplexFormat&gt;</code> | Integer | Optional. The format to use for the exported data. Options are<br>0 = Magnitude/Phase<br>1= Real/Imaginary.<br>2= db/Phase.                           |
|                     | <code>&lt;Precision&gt;</code>     | Integer | Optional. Number of digits precision. If not specified, the default is 6.                                                                             |
| <b>Return Value</b> | None.                              |         |                                                                                                                                                       |

|                       |                                                                                                                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ExportNMFData (&lt;sourceName&gt;, &lt;outputFileName&gt;, &lt;reduceMat&gt;, &lt;refImp&gt;, &lt;freqs&gt;, &lt;variationKey&gt;, &lt;displayFormat&gt;, &lt;pass&gt;, &lt;ComplexFormat&gt;, &lt;Precision&gt;)</code>      |
| <b>Python Example</b> | <code>oDesign.ExportNMFData("Setup2 : LastAdaptive", "C:/outputs/data.nmf", "Original", 50, [10000000, 20000000, 30000000, 40000000, 50000000, 60000000, 70000000, 80000000, 90000000, 100000000], "", "MagPhase", 0, 1, 11)</code> |

## Padstack Manager Script Commands

The padstack manager provides access to padstacks in a project. The manager object is accessed via the definition manager.

```
oDefinitionManager = oProject.GetDefinitionManager()
```

```
oPadstackManager = oDefinitionManager.GetManager("Padstack")
```

The padstack manager script commands are listed below.

[Add](#)

[Edit](#)

[EditWithComps](#)

[Export](#)

[GetData](#)

[GetNames](#)

[IsUsed](#)

[Remove](#)

[RemoveUnused](#)

## **Add [padstack manager]**

*Use:* Add a padstack

*Command:* Tools > Edit Configured Libraries > Padstacks > Add Padstack

*Syntax:* Add Array("NAME:<PadstackName>",

    "ModTime:=", <ModifiedOnInfo>,

    "Library:=", "", // name of the library

    "LibLocation:=", "Project", // location of the named library

    Array("NAME:psd",

        "nam:= ", <PadstackName>,

        "lib:=", "", // name of the library

```

"mat:=", "", // hole plating material
"plt:=", "0", // percent of hole's radius filled by plating
Array("NAME:pds",
<LayerGeometryArray>,
<LayerGeometryArray....>,
"hle:=", <PadInfo>
"hRg:=", <HoleRange>,
"sbsh:=", <SolderballShape>,
"sbpl:=", <SolderballPlacement>,
"sbr:=", <string>, // solderball diameter, real with units
"sb2:=", <string>, // solderball mid diameter, real with units
"sbn:=", <string>), // name of solderball material
"ppl:=", <PadPortLayerArray>)

```

*Return Value:* simple name of the added padstack

```

// If the name requested conflicts with the name of an existing
// padstack, the requested name is altered to be unique.
// The name returned reflects any change made to be unique.

```

*Parameters:* <PadstackName>:

```

<string> // simple name of padstack to create

```

<ModifiedOnInfo>:

An integer that corresponds to the number of seconds that have elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.

<LayerGeometryArray>:

```
Array("Name:lgm",  
"lay:=", <string>, // definition layer name  
"id:=", <int>, // definition layer id  
"pad:=", <PadInfo>, // pad  
"ant:=", <PadInfo>, // antipad  
"thm:=", <PadInfo>, // themal pad  
"X:=", <string>, // pad x connection, real with units  
"Y:=", <string>, // pad y connection, real with units  
"dir:=", <DirectionString>) // pad connection direction
```

<PadInfo>:

```
Array("shp:=", <PadShape>,  
"Szs:=", <DimensionArray>,  
"X:=", <string>, // x offset, real with units  
"Y:=", <string>, // y offset, real with units
```

"R:=", <string>) // rotation, real with units

<PadShape>:

<string> one of these choices

"No" // no pad

"Cir" // Circle

"Sq" // Square

"Rct" // Rectangle

"Ov" // Oval

"Blit" // Bullet

"Ply" // Polygons

"R45" // Round 45 thermal

"R90" // Round 90 thermal

"S45" // Square 45 thermal

"S90" // Square 90 thermal

<DimensionArray>:

Array(<string>, ...) // each string is a real with units for one of the dimensions of the shape

<DirectionString>:

<string> one of these choices

"No" // no direction

"Any" // any direction

"0" // 0 degrees

"45" // 45 degrees

"90" // 90 degrees

"135" // 135 degrees

"180" // 180 degrees

"225" // 225 degrees

"270" // 270 degrees

"315" // 315 degrees

<HoleRange>:

<string> one of these choices

"Thr" // through all layout layers

"Beg" // from upper pad layer to lowest layout layer

"End" // from upper layout layer to lowest pad layer

"UTL" // from upper pad layer to lowest pad layer

<SolderballShape>:

<string> one of these choices

"None" // no solderball

"Cyl" // cylinder solderball

"Sph" // spheroid solderball

<SolderballPlacement>:

<string> one of these choices

"abv" // above padstack

"blw" // below padstack

<PadPortLayerArray>:

Array( <int>, <int>,....) where each int is a layer id

## **Edit [padstack manager]**

*Use:* Edit an existing padstack.

*Command:* Tools > Edit Configured Libraries > Padstacks > Edit Padstack

*Syntax:* Edit <PadstackName>,

Array("NAME:<NewPadstackName>",

"ModTime:=", <ModifiedOnInfo>,

"Library:=", "", // name of the library

"LibLocation:=", "Project", // location of the named library

Array("NAME:psd",

"nam:= ", <PadstackName>,

"lib:=", "", // name of the library

"mat:=", "", // hole plating material

```
"plt:=", "0", // percent of hole's radius filled by plating
Array("NAME:pds",
<LayerGeometryArray>,
<LayerGeometryArray....>,
"hle:=", <PadInfo>
"hRg:=", <HoleRange>,
"sbsh:=", <SolderballShape>,
"sbpl:=", <SolderballPlacement>,
"sbr:=", <string>, // solderball diameter, real with units
"sb2:=", <string>, // solderball mid diameter, real with units
"sbn:=", <string>), // name of solderball material
"ppl:=", <PadPortLayerArray>)
```

*Return Value:* <string> // composite name of the padstack

// If the name requested conflicts with the name of an existing  
// padstack, the requested name is altered to be unique.  
// The name returned reflects any change made to be unique.

*Parameters:* <PadstackName>:

<string> // composite name of padstack to edit

<NewPadstackName>:



<string> // new simple name for padstack

<ModifiedOnInfo>:

An integer that corresponds to the number of seconds that have elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.

<LayerGeometryArray>:

Array("Name:lgm",

"lay:=", <string>, // definition layer name

"id:=", <int>, // definition layer id

"pad:=", <PadInfo>, // pad

"ant:=", <PadInfo>, // antipad

"thm:=", <PadInfo>, // thermal pad

"X:=", <string>, // pad x connection, real with units

"Y:=", <string>, // pad y connection, real with units

"dir:=", <DirectionString>) // pad connection direction

<PadInfo>:

Array("shp:=", <PadShape>,

"Szs:=", <DimensionArray>,

"X:=", <string>, // x offset, real with units  
"Y:=", <string>, // y offset, real with units  
"R:=", <string>) // rotation, real with units

<PadShape>:

<string> one of these choices

"No" // no pad

"Cir" // Circle

"Sq" // Square

"Rct" // Rectangle

"Ov" // Oval

"Blt" // Bullet

"Ply" // Polygons

"R45" // Round 45 thermal

"R90" // Round 90 thermal

"S45" // Square 45 thermal

"S90" // Square 90 thermal

<DimensionArray>:

Array(<string>, ...) // each string is a real with units for one of the  
// dimensions of the shape

<DirectionString>:

<string> one of these choices

"No" // no direction

"Any" // any direction

"0" // 0 degrees

"45" // 45 degrees

"90" // 90 degrees

"135" // 135 degrees

"180" // 180 degrees

"225" // 225 degrees

"270" // 270 degrees

"315" // 315 degrees

<HoleRange>:

<string> one of these choices

"Thr" // through all layout layers

"Beg" // from upper pad layer to lowest layout layer

"End" // from upper layout layer to lowest pad layer

"UTL" // from upper pad layer to lowest pad layer

<SolderballShape>:

<string> one of these choices

"None" // no solderball

"Cyl" // cylinder solderball

"Sph" // spheroid solderball

<SolderballPlacement>:

<string> one of these choices

"abv" // above padstack

"blw" // below padstack

<PadPortLayerArray>:

Array( <int>, <int>,....) where each int is a layer id

## **EditWithComps [padstack manager]**

*Use:* Edit an existing padstack.

*Command:* None

*Syntax:* EditWithComps <PadstackName>,

Array("NAME:<NewPadstackName>",

"ModTime:=", <ModifiedOnInfo>,

"Library:=", "", // name of the library

"LibLocation:=", "Project", // location of the named library

```
Array("NAME:psd",  
      "nam:=", <PadstackName>,  
      "lib:=", "", // name of the library  
      "mat:=", "", // hole plating material  
      "plt:=", "0", // percent of hole's radius filled by plating  
      Array("NAME:pds",  
            <LayerGeometryArray>,  
            <LayerGeometryArray....>),  
      "hle:=", <PadInfo>  
      "hRg:=", <HoleRange>,  
      "sbsh:=", <SolderballShape>,  
      "sbpl:=", <SolderballPlacement>,  
      "sbr:=", <string>, // solderball diameter, real with units  
      "sb2:=", <string>, // solderball mid diameter, real with units  
      "sbn:=", <string>), // name of solderball material  
      "ppl:=", <PadPortLayerArray>,  
      Array(<ListOfComponentNames>) // Component names
```

*Return Value:* <string>

// composite name of the padstack.

// If the name requested conflicts with the name of an existing  
// padstack, the requested name is altered to be unique.  
// The name returned reflects any change made to be unique.

*Parameters:* <PadstackName>:

<string> // composite name of the padstack being edited

<NewPadstackName>:

<string> // new simple name for the padstack

<ModifiedOnInfo>:

An integer that corresponds to the number of seconds that have elapsed  
since 00:00 hours, Jan 1, 1970 UTC from the system clock.

<LayerGeometryArray>:

Array("Name:lgm",

"lay:=", <string>, // definition layer name

"id:=", <int>, // definition layer id

"pad:=", <PadInfo>, // pad

"ant:=", <PadInfo>, // antipad

"thm:=", <PadInfo>, // thermal pad

"X:=", <string>, // pad x connection, real with units  
"Y:=", <string>, // pad y connection, real with units  
"dir:=", <DirectionString>) // pad connection direction

<PadInfo>:

Array("shp:=", <PadShape>,  
"Szs:=", <DimensionArray>,  
"X:=", <string>, // x offset, real with units  
"Y:=", <string>, // y offset, real with units  
"R:=", <string>) // rotation, real with units

<PadShape>:

<string> one of these choices

"No" // no pad

"Cir" // Circle

"Sq" // Square

"Rct" // Rectangle

"Ov" // Oval

"Blit" // Bullet

"Ply" // Polygons

"R45" // Round 45 thermal

"R90" // Round 90 thermal

"S45" // Square 45 thermal

"S90" // Square 90 thermal

<DimensionArray>:

Array(<string>, ...) // each string is a real with units for one of the  
// dimensions of the shape

<DirectionString>:

<string> one of these choices

"No" // no direction

"Any" // any direction

"0" // 0 degrees

"45" // 45 degrees

"90" // 90 degrees

"135" // 135 degrees

"180" // 180 degrees

"225" // 225 degrees

"270" // 270 degrees

"315" // 315 degrees



<HoleRange>:

<string> one of these choices

"Thr" // through all layout layers

"Beg" // from upper pad layer to lowest layout layer

"End" // from upper layout layer to lowest pad layer

"UTL" // from upper pad layer to lowest pad layer

<SolderballShape>:

<string> one of these choices

"None" // no solderball

"Cyl" // cylinder solderball

"Sph" // spheroid solderball

<SolderballPlacement>:

<string> one of these choices

"abv" // above padstack

"blw" // below padstack

<PadPortLayerArray>:

Array( <int>, <int>,....) where each int is a layer id

<ListOfComponentNames>:

<string>, <string> ...

// The list may be empty. When not empty, each string that is listed is a component

// that references the padstack to be edited. Prior to editing, a clone of the padstack is

// made, and the components that are listed are modified so that they now refer to

// the clone.

## **Export [padstack manager]**

*Use:* Export a padstack to a library

*Command:* Tools > Edit Configured Libraries > Padstacks > Export to Library

*Syntax:* Export Array("NAME:<LibraryName>",

<PadstackName> ,

<PadstackName>...),

<LibraryLocation>

*Return Value:* None

*Parameters:* <LibraryName>:

<string> // name of the library

<PadstackName>:

<string> // simple name of padstack to export

<LibraryLocation>:

<string> // location of the library in <LibraryName>  
// One of "Project", "PersonalLib", or "UserLib"

### **GetNames [padstack manager]**

*Use:* Returns the names of the padstack (used and unused) in a design. The following script command, **IsUsed**, can then be used to separate used and unused padstacks.

*Command:* None

*Syntax:* GetNames()

*Return Value:* An array of strings

*Parameters:* None

### **IsUsed [padstack manager]**

*Use:* Used to determine if a component is used in the design.

*Command:* None

*Syntax:* IsUsed(<PadstackName>)

*Return Value:* <Boolean> // true if the specified padstack is used in the design

*Parameters:* <PadstackName>:

<string>

### **Remove [padstack manager]**

*Use:* Removes a padstack from a library

*Command:* Tools > Edit Configured Libraries > Padstacks > Remove Padstacks

**Syntax:** Remove <PadstackName>,  
    <IsProjectPadstack>,  
    <LibraryName>,  
    <LibraryLocation>

**Return Value:** None

**Parameters:** <PadstackName>:

    <string> // simple name of the padstack to remove

    <IsProjectPadstack>:

    <bool>

    <LibraryName>:

    <string> // name of the library

    <LibraryLocation>:

    <string> // location of the library in <LibraryName>

    // One of "Project", "PersonalLib", or "UserLib"

## **RemoveUnused [padstack manager]**

**Use:** Removes padstacks that are not used in the design.

**Command:** **Project->Remove Unused Definitions** is similar but operates slightly different and does not record script commands.

**Syntax:** RemoveUnused()

*Return Value:* <bool> True if one or more padstacks are removed.

*Parameters:* None

**Note:**

The order of calls to RemoveUnused is significant. As a result, removing definitions in an unordered fashion may cause other padstacks in dependent definitions to be rendered unusable.

# Script and Library Scripts

The definition manager provides access to materials in a project. The manager object is accessed via the definition manager.

`oDefinitionManager = oProject.GetDefinitionManager()`

The script and library script commands are listed below.

[AddScript](#)

[EditScript](#)

[ExportScript](#)

[RemoveScript](#)

[ModifyLibraries](#)

## AddScript

Adds a script to the definition manager.

|            |      |      |             |
|------------|------|------|-------------|
| UI Access  | N/A  |      |             |
| Parameters | Name | Type | Description |

|                  |                                                                                                                                                                                                                                                         |                                                                                                                                                     |       |                                                                                                                                                     |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <table><tr><td>&lt;AddScriptArray&gt;</td><td>Array</td><td>Structured array.<br/><br/>Array("NAME:&lt;string script name&gt;",<br/>"ScriptLang:=", &lt;string script language&gt;<br/>"ScriptText:=", &lt;string text of script&gt;)</td></tr></table> | <AddScriptArray>                                                                                                                                    | Array | Structured array.<br><br>Array("NAME:<string script name>",<br>"ScriptLang:=", <string script language><br>"ScriptText:=", <string text of script>) |
| <AddScriptArray> | Array                                                                                                                                                                                                                                                   | Structured array.<br><br>Array("NAME:<string script name>",<br>"ScriptLang:=", <string script language><br>"ScriptText:=", <string text of script>) |       |                                                                                                                                                     |
| Return Value     | None.                                                                                                                                                                                                                                                   |                                                                                                                                                     |       |                                                                                                                                                     |

|                       |                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddScript(<AddScriptArray>)                                                                                                                            |
| <b>Python Example</b> | <pre>oDefinitionManager.AddScript(     ["NAME:MyScript",      "ScriptLang:=", "language",      "ScriptText:=", "MsgBox(\"HelloWorld\") "     ] )</pre> |

## EditScript

Edits a script in the definition manager.

|                   |                   |        |                                  |
|-------------------|-------------------|--------|----------------------------------|
| <b>UI Access</b>  | N/A               |        |                                  |
| <b>Parameters</b> | Name              | Type   | Description                      |
|                   | <OriginalName>    | String | Name of the script to be edited. |
|                   | <EditScriptArray> | Array  | Structured array.                |

|              |       |  |                                                                                                                            |
|--------------|-------|--|----------------------------------------------------------------------------------------------------------------------------|
|              |       |  | Array("NAME:<string script name>",<br>"ScriptLang:=", <string script language><br>"ScriptText:=", <string text of script>) |
| Return Value | None. |  |                                                                                                                            |

|                |                                                                                                                                                                                           |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | EditScript(<OriginalName>, <EditScriptArray>)                                                                                                                                             |
| Python Example | <pre>oDefinitionManager.EditScript("MyScript",<br/>    ["NAME:MyNewScript",<br/>     "ScriptLang:=", "language",<br/>     "ScriptText:=", "MsgBox(\"HelloAgain\") "<br/>    ]<br/>)</pre> |

### ExportScript

*Use:* Export to Library in the script definition manager

*Command:* None

*Syntax:* ExportScript <ExportData>,<Library location>

*Return Value:* None

*Parameters:* <ExportData>

```
Array("NAME:<LibraryName>",<ScriptName>,<ScriptName>,...)
```

|                       |                                                                         |
|-----------------------|-------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExportScript( <ExportData>,<Library location>)                          |
| <b>Python Example</b> | oProject.ExportComponent<br>(["NAME:mylib", "myscript"], "PersonalLib") |

## ModifyLibraries

*Use:* Configure Libraries on the Tools menu

*Command:* None

*Syntax:* ModifyLibraries <DesignName>,Array(<ConfigLibArray>)

*Return Value:* None

*Parameters:* <DesignName>

Type: <string>

<ConfigLibArray>

Array("NAME:<LibraryType>,<ConfiguredLib>,<ConfiguredLib>,...),...

<ConfiguredLib> // blank to leave unchanged

<DefinitionType>

Array("<libraryname >","<libraryname>","...)

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| <b>Python Syntax</b>  | ModifyLibraries (<DesignName>,<ConfigLibArray>)]      |
| <b>Python Example</b> | oDefinitionManager.ModifyLibraries(<br>"MyCircuit", _ |



|  |                                                                                                                                                                                                                     |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>[ "NAME:PersonalLib"], _<br/>[ "NAME:UserLib"], _<br/>[ "NAME:SystemLib", _<br/>"Symbols:=", [ "Circuit Elements", "Symbols",_<br/>"ParamExtraElements\PE_Symbols", _<br/>"Vendor Elements\Nonlinear"]])</pre> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**RemoveScript**

*Use:* Remove Script in the script definition manager

*Command:* None

*Syntax:* RemoveScript <ScriptName>,<IsProjectScript>, <LibraryName>,<LibraryLocation>

*Return Value:* None

*Parameters:* <ScriptName>

Type: <string>

<IsProjectScript>

Type: <bool>

<LibraryName>

Type: <string>

<LibraryLocation>

Type: <string>

|                       |                                                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>RemoveScript (&lt;ScriptName&gt;,&lt;IsProjectScript&gt;, &lt;LibraryName&gt;,&lt;LibraryLocation&gt;)</code> |
| <b>Python Example</b> | <code>oDefinitionManager.RemoveScript(<br/>"myscript", true, "Local", "Project")</code>                             |

## Symbol Manager Script Commands

The symbol manager provides access to symbols in a project. The manager object is accessed via the definition manager.

```
oDefinitionManager = oProject.GetDefinitionManager()  
oSymbolManager = oDefinitionManager.GetManager("Symbol")
```

The symbol manager script commands are listed below.

[Add](#)

[BringToFront](#)

[Edit](#)

[EditSymbolAndUpdateComps](#)

[Export](#)

[GetNames](#)

[IsUsed](#)

[Remove](#)

[RemoveUnused](#)

### Add [symbol manager]

*Use:* Add a symbol

*Command:* Tools > Edit Configured Libraries > Symbols > Add Symbol

*Syntax:* Add Array("NAME:<SymbolName>",

```
"ModTime:=", <ModifiedTimeInfo>,  
"Library:=", "", // Library name  
"LibLocation:=", "Project", // Project Location  
<PinDefInfo>,  
<PinDefInfo>,... // optional, to define pins  
<GraphicsDataInfo>, // optional, to define graphics  
<PropDisplayMapInfo>)) // optional, to define property displays
```

*Return Value:* <string>

```
// composite name of the symbol.  
// If the name requested conflicts with the name of an existing  
// symbol, the requested name is altered to be unique.  
// The name returned reflects any change made to be unique.
```

*Parameters:* <SymbolName>:

```
<string> // simple name of the symbol being added
```

<ModifiedOnInfo>:

An integer that corresponds to the number of seconds that have elapsed  
since 00:00 hours, Jan 1, 1970 UTC from the system clock.

```
<PinDefInfo>:  
Array("NAME:PinDef",  
"Pin:=", Array (<string>, // pin name  
<real>, // x location  
<real>, // y location  
<real>, // angle in radians  
<PinType>,  
<real>, // line width  
<real>, // line length  
<bool>, // mirrored  
<int>, // color  
<bool>, // true if visible, false if not  
<string>, // hidden net name  
<OptionalPinInfo>, // optional info  
<PropDisplayMapInfo>)) // optional
```

```
<PinType>:  
<string> // "N" : normal pin  
// "I" : input pin  
// "O" : output pin
```

<OptionalPinInfo>:

// Specify both or neither

<bool>, // true if name is to be shown

<bool>, // true if number is to be shown

<PropDisplayMapInfo>:

Array("NAME:PropDisplayMap",

<PropDisplayInfo>,

<PropDisplayInfo>,...)

<PropDisplayInfo>:

<NameString>, Array(<DisplayTypeInfo>,

<DisplayLocationInfo>,

<int>, // optional, level number

<TextInfo>)

<NameString>:

<string> // PropertyName:=, where PropertyName is the name of

// the property to be displayed

<DisplayTypeInfo>:

<int> // 0 : No display

// 1 : Display name only

// 2 : Display value only

// 3 : Display both name and value

// 4: Display evaluated value only

// 5: Display both name and evaluated value

<DisplayLocationInfo>:

<int> // 0 : Left

// 1 : Top

// 2 : Right

// 3 : Bottom

// 4 : Center

// 5 : Custom placement

<GraphicsDataInfo>:

Array("NAME:Graphics",

// one or more of the following

<RectInfo>,

```
<CircleInfo>,  
<ArcInfo>,  
<LineInfo>,  
<PolygonInfo>,  
<TextInfo>,  
<ImageInfo>)
```

```
<RectInfo>:
```

```
"Rect:=", Array(<real>, // line width  
<int>, // fill pattern  
<int>, // color  
<real>, // angle, in radians  
<real>, // x position of center  
<real>, // y position of center  
<real>, // width  
< real>) // height
```

```
<CircleInfo>:
```

```
"Circle:=", Array(<real>, // line width  
<int>, // fill pattern
```

<int>, // color

<real>, // x position of center

<real>, // y position of center

< real>) // radius

<ArcInfo>:

"Arc:=", Array(<real>, // line width

<int>, // line pattern

<int>, // color

<real>, // x position of center

<real>, // y position of center

< real>, // radius

<real>, // start angle, in radians

<end>) // end angle, in radians

<LineInfo>:

"Line:=", Array(<real>, // line width

<int>, // line pattern

<int>, // color

<PointInfo>, // must specify at least 2 points

<PointInfo>...)



<PointInfo>:

<real>, // x position

<real> // y position

<PolygonInfo>:

"Polygon:=", Array(<real>, // line width

<int>, // fill pattern

<int>, // color

<PointInfo>, // must specify at least 3 points

<PointInfo>...)

<TextInfo>:

"Text:=", Array(<real>, // x position

<real>, // y position

<real>, // angle, in radians

<Justification>,

<bool>, // is plotter font

<string>, // font name

<int>, // color

<string>) // text string

<Justification>:

<int> // 0 : left top

// 1 : left base

// 2 : left bottom

// 3 : center top

// 4 : center base

// 5 : center bottom

// 6 : right top

// 7 : right base

// 8 : right bottom

<ImageInfo>:

"Image:=", Array(<RectInfo>,

<ImageData>,

<bool>) // is mirrored

<ImageData>:

<string>, // file path

<int>, // 0 : use the file path and link to it

// 1 : ignore file path and use next parameter

<string> // text data, only present if preceding int is 1

## BringToFront [symbol manager]

*Use:* Changes the drawing for the symbol so that the specified objects are drawn on top of other overlapping objects.

*Command:* Draw > Bring To Front

*Syntax:* BringToFront Array("NAME:Selections", "Selections:=", Array (<Object>, <Object>, ...))

*Return Value:* None

*Parameters:* <Object>

<string> // object to bring to the front

## Edit [deprecated]

Deprecated command — please use [EditSymbolAndUpdateComps](#).

## EditSymbolAndUpdateComps [symbol manager]

*Use:* Edit an existing symbol.

*Command:* None

*Syntax:* EditSymbolAndUpdateComps <SymbolName>,

Array("NAME:<NewSymbolName>",  
       "ModTime:=", <ModifiedTimeInfo>,  
       "Library:=", <string>, // Library name  
       "LibLocation:=", <string>, // Project Location  
       <PinDefInfo>,

<PinDefInfo>,... // optional, to define pins  
<GraphicsDataInfo>, // optional, to define graphics  
<PropDisplayMapInfo>), // optional, to define property displays  
Array(<ListOfComponentNames>), // Component names  
<EditContext> //optional

*Return Value:* <string>

// composite name of the symbol.  
// If the name requested conflicts with the name of an existing  
// symbol, the requested name is altered to be unique.  
// The name returned reflects any change made to be unique.

*Parameters:* <SymbolName>:

<string> // composite name of the symbol being edited

<NewSymbolName>:

<string> // new simple name for the symbol

<ModifiedOnInfo>:

An integer that corresponds to the number of seconds that have elapsed  
since 00:00 hours, Jan 1, 1970 UTC from the system clock.

```

<PinDefInfo>:
Array("NAME:PinDef",
"Pin:=", Array (<string>, // pin name
<real>, // x location
<real>, // y location
<real>, // angle in radians
<PinType>,
<real>, // line width
<real>, // line length
<bool>, // mirrored
<int>, // color
<bool>, // true if visible, false if not
<string>, // hidden net name
<OptionalPinInfo>, // optional info
<PropDisplayMapInfo>)) // optional

<PinType>:
<string> // "N" : normal pin
// "I" : input pin

```

// "O" : output pin

<OptionalPinInfo>:

// Specify both or neither

<bool>, // true if name is to be shown

<bool>, // true if number is to be shown

<PropDisplayMapInfo>:

Array("NAME:PropDisplayMap",

<PropDisplayInfo>,

<PropDisplayInfo>,...)

<PropDisplayInfo>:

<NameString>, Array(<DisplayTypeInfo>,

<DisplayLocationInfo>,

<int>, // optional, level number

<TextInfo>)

<NameString>:

<string> // PropertyName:=, where PropertyName is the name of

// the property to be displayed

<DisplayTypeInfo>:

<int> // 0 : No display

// 1 : Display name only

// 2 : Display value only

// 3 : Display both name and value

// 4: Display evaluated value only

// 5: Display both name and evaluated value

<DisplayLocationInfo>:

<int> // 0 : Left

// 1 : Top

// 2 : Right

// 3 : Bottom

// 4 : Center

// 5 : Custom placement

<GraphicsDataInfo>:

Array("NAME:Graphics",

// one or more of the following

```
<RectInfo>,  
<CircleInfo>,  
<ArcInfo>,  
<LineInfo>,  
<PolygonInfo>,  
<TextInfo>,  
<ImageInfo>)
```

<RectInfo>:

```
"Rect:=", Array(<real>, // line width  
<int>, // fill pattern  
<int>, // color  
<real>, // angle, in radians  
<real>, // x position of center  
<real>, // y position of center  
<real>, // width  
< real>) // height
```

<CircleInfo>:

```
"Circle:=", Array(<real>, // line width  
<int>, // fill pattern
```



<int>, // color

<real>, // x position of center

<real>, // y position of center

< real>) // radius

<ArcInfo>:

"Arc:=", Array(<real>, // line width

<int>, // line pattern

<int>, // color

<real>, // x position of center

<real>, // y position of center

< real>, // radius

<real>, // start angle, in radians

<end>) // end angle, in radians

<LineInfo>:

"Line:=", Array(<real>, // line width

<int>, // line pattern

<int>, // color

<PointInfo>, // must specify at least 2 points

<PointInfo>...)

<PointInfo>:

<real>, // x position

<real> // y position

<PolygonInfo>:

"Polygon:=", Array(<real>, // line width

<int>, // fill pattern

<int>, // color

<PointInfo>, // must specify at least 3 points

<PointInfo>...)

<TextInfo>:

"Text:=", Array(<real>, // x position

<real>, // y position

<real>, // angle, in radians

<Justification>,

<bool>, // is plotter font

<string>, // font name

<int>, // color

<string>) // text string

<Justification>:

<int> // 0 : left top

// 1 : left base

// 2 : left bottom

// 3 : center top

// 4 : center base

// 5 : center bottom

// 6 : right top

// 7 : right base

// 8 : right bottom

<ImageInfo>:

"Image:=", Array(<RectInfo>,

<ImageData>,

<bool>) // is mirrored

<ImageData>:

<string>, // file path

<int>, // 0 : use the file path and link to it

// 1 : ignore file path and use next parameter

<string> // text data, only present if preceding int is 1

<ListOfComponentNames>:

<string>,<string> ...

// The list may be empty. When not empty, each string that is listed is a component

// that references the symbol to be edited. Prior to editing, a clone of the symbol is

// made, and the components that are listed are modified so that they now refer to

// the clone.

<EditContext>:

// Changes that will be made to the component in support of the symbol changes

<RefPinOption>:

// <int>

// 0 = implied reference to ground,

// 1 = single common reference port,

// 2 = individual hidden reference pins for each port,

// 3 = individual reference pin per port

<CompName> // <string>

```
<TermAttributes>:  
//<array>  
<Terminal Name> // <string>  
<Symbol Pin Name> // <string>  
<InOut> // <int>  
// 0=in  
// 1=out  
// 2= inout  
<Domain> // <array>  
// kConservative=0  
// kSignal  
// kQuantity  
// kParameter  
// kState  
// kFlexible  
<ID> // <int>  
//-1, not used.  
<Description>
```

## Export [symbol manager]

*Use:* Exports symbol(s) to a library

*Command:* Tools > Edit Configured Libraries > Symbols > Export to Library

*Syntax:* Export Array("NAME:<LibraryName>",

<SymbolName>,  
<SymbolName>...),  
<LibraryLocation>

*Return Value:* None

*Parameters:* <LibraryName>:

<string> // name of the library

<SymbolName>:

<string> // composite name of symbol to export

<LibraryLocation>:

<string> // location of the library in <LibraryName>

// One of "Project", "PersonalLib", or "UserLib"

## GetNames [symbol manager]

*Use:* Returns the names of the symbols (used and unused) in a design. The following script command, **IsUsed**, can then be used to separate used and unused symbols.

*Command:* None

*Syntax:* GetNames()

*Return Value:* An array of strings

*Parameters:* None

### **IsUsed [symbol manager]**

*Use:* Used to determine if a symbol is used in the design.

*Command:* None

*Syntax:* IsUsed(<SymbolName>)

*Return Value:* <Boolean> // true if the specified symbol is used in the design

*Parameters:* <SymbolName>:

<string>

### **Remove [symbol manager]**

*Use:* Removes a symbol from a library

*Command:* Tools > Edit Configured Libraries > Symbols > Remove Symbol

*Syntax:* Remove <SymbolName>,

<IsProjectSymbol>,

<LibraryName>,

<LibraryLocation>

*Return Value:* None

*Parameters:* <SymbolName>:

<string> // composite name of the symbol to remove

**<IsProjectSymbol>:**

<bool>

**<LibraryName>:**

<string> // name of the library

**<LibraryLocation>:**

<string> // location of the library in <LibraryName>

// One of "Project", "PersonalLib", or "UserLib"

*Example:*

```
oSymbolManager.Remove "Nexxim Circuit Elements\Distributed\Distributed:bendo", true, "Project"
```

## **RemoveUnused [symbol manager]**

*Use:* Removes symbols that are not used in the design.

*Command:* **Project->Remove Unused Definitions** is similar but operates slightly different and does not record script commands.

*Syntax:* RemoveUnused()

*Return Value:* <bool> True if one or more symbols are removed.

*Parameters:* None



**Note:**

The order of calls to RemoveUnused is significant. As a result, removing definitions in an unordered fashion may cause other symbols in dependent definitions to be rendered unusable.

Also, the symbol and footprint of an unused component are not unusable until after the component itself is removed using the Component Manager Remove script.

## Technology Manager Script Commands

The technology manager provides access to technologies in a project. The manager object is accessed via the definition manager.

```
oDefinitionManager = oProject.GetDefinitionManager()
```

```
oTechnologyManager = oDefinitionManager.GetManager("Technology")
```

The technology manager script commands are listed below.

[Add](#)

[GetData](#)

[GetNames](#)

[IsUsed](#)

[Remove](#)

### Add (Technology Manager)

Adds a technology definition to the library.

| UI Access           | From the <b>Project Manager</b> window, right-click <b>Definitions &gt; Technology</b> and select <b>Add Definition</b> . |         |                                                                                                                                                                                                                                                                                         |
|---------------------|---------------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | Name                                                                                                                      | Type    | Description                                                                                                                                                                                                                                                                             |
|                     | <propertyArgs>                                                                                                            | Array   | An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;Name&gt;</li> <li>• &lt;ModifiedOn&gt;</li> <li>• &lt;Library&gt;</li> <li>• &lt;VLCTech&gt;</li> <li>• &lt;GFD&gt;</li> <li>• &lt;LayerFilter&gt;</li> <li>• &lt;IsLocal&gt;</li> </ul> |
|                     | <NAME>                                                                                                                    | String  | Name and extension of the technology file.                                                                                                                                                                                                                                              |
|                     | <ModifiedOn>                                                                                                              | Integer | <i>Optional</i> . An integer corresponding to the number of seconds that elapsed since 00:00 hours, Jan 1, 1970 UTC from the system clock.                                                                                                                                              |
|                     | <Library>                                                                                                                 | String  | <i>Optional</i> . Identifies a unique definition library.                                                                                                                                                                                                                               |
|                     | <VLCTech>                                                                                                                 | String  | Directory path to a technology file.                                                                                                                                                                                                                                                    |
|                     | <GFD>                                                                                                                     | String  | <i>Optional</i> . Directory path to the Green's Function Data file.                                                                                                                                                                                                                     |
|                     | <LayerFilter>                                                                                                             | String  | <i>Optional</i> . Directory path to the layer map file.                                                                                                                                                                                                                                 |
| <b>Return Value</b> | <IsLocal>                                                                                                                 | Boolean | <i>Optional</i> .<br><b>True</b> – technology file is saved/stored locally<br><b>False</b> – technology file is saved/stored on an external drive                                                                                                                                       |
|                     | None.                                                                                                                     |         |                                                                                                                                                                                                                                                                                         |

|                       |                                                                              |
|-----------------------|------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Add([<NAME>:, <ModifiedOn>, <Library>, <VLCTech>, <LayerFilter>, <IsLocal>]) |
| <b>Python Example</b> | <pre>oTechnologyManager.Add(     [</pre>                                     |

|  |                                                                                                                                                                                                            |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"NAME:Model.vlc.tech",<br/>"ModifiedOn:" , 1694708380,<br/>"Library:" , "",<br/>"VLCTech:" , "C:/raptorx/gds/gpdsimport/Model.vlc.tech",<br/>"LayerFilter:" , "",<br/>"IsLocal:" , False<br/>])</pre> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

GetNames (Technology Manager)

Shows the complete list of technologies in the active design's **Technology Library**.

|              |                                                                                                           |
|--------------|-----------------------------------------------------------------------------------------------------------|
| UI Access    | From the <b>Project Manager</b> window, right-click <b>Technology</b> and select <b>Edit Definition</b> . |
| Parameters   | None.                                                                                                     |
| Return Value | Array of strings containing the names of identified technology files.                                     |

|                |                                |
|----------------|--------------------------------|
| Python Syntax  | GetNames()                     |
| Python Example | oTechnologyManager.GetNames () |

IsUsed (Technology Manager)

Confirms whether a specified technology is applied to the active design.

|                     |                                                                                                                                                       |        |                                                               |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------|
| <b>UI Access</b>    | None.                                                                                                                                                 |        |                                                               |
| <b>Parameters</b>   | Name                                                                                                                                                  | Type   | Description                                                   |
|                     | <TechName>                                                                                                                                            | String | Name of technology in the active design's Technology Library. |
| <b>Return Value</b> | <b>True</b> – the specified technology is applied to the active design<br><b>False</b> – the specified technology is not applied to the active design |        |                                                               |

|                       |                                             |
|-----------------------|---------------------------------------------|
| <b>Python Syntax</b>  | IsUsed(<TechName>)                          |
| <b>Python Example</b> | oTechnologyManager.IsUsed("Model.vlc.tech") |

## Remove (Technology Manager)

Removes a technology definition from the library.

|                     |                                                                                                                                                                                                                                    |         |                                                                                                                 |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>    | From the <b>Project Manager</b> window, right-click <b>Definitions &gt; Technology</b> and select <b>Edit Definition</b> . to open the <b>Edit Libraries</b> window. Then select a technology and click <b>Remove Technology</b> . |         |                                                                                                                 |
| <b>Parameters</b>   | Name                                                                                                                                                                                                                               | Type    | Description                                                                                                     |
|                     | <Name>                                                                                                                                                                                                                             | String  | Name and extension of the technology file.                                                                      |
|                     | <ProjectDefinition>                                                                                                                                                                                                                | Boolean | <b>True</b> – removes (i.e., deletes) the technology file<br><b>False</b> – does not remove the technology file |
|                     | <LibraryName>                                                                                                                                                                                                                      | String  | Identifies a unique definition library.                                                                         |
|                     | <LibraryLocation>                                                                                                                                                                                                                  | String  | Directory path to a technology file.                                                                            |
| <b>Return Value</b> | None.                                                                                                                                                                                                                              |         |                                                                                                                 |

|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | Remove(<Name>, <ProjectDefinition>, <LibraryName>, <LibraryLocation>)         |
| <b>Python Example</b> | <code>oTechnologyManager.Remove("Model.vlc.tech", True, "", "Project")</code> |

## 27 - Definition Editor Script Commands

The Definition Editor controls the use of materials and scripts in a project. Symbol editor script commands and footprint editor script commands are accessed using the Definition Editor.

```
Set oDefinitionEditor = oProject.SetActiveDefinitionEditor("SymbolEditor", "MySymbol")
```

```
Set oDefinitionEditor = oProject.SetActiveDefinitionEditor("FootprintEditor", "MyFootprint")
```

**The topics for this section include:**

[Activate](#)

[AddCircuitRefPort](#)

[AddLayer](#)

[AddPortsToAllNets](#)

[AddPortsToNet](#)

[AddRefPort](#)

[AddStackupLayer](#)

[AlignObjects](#)

[AlignPorts](#)

[AssignCircuitRefPort](#)

[AssignRefPort](#)

[ChangeLayers](#)

[ChangeOptions](#)

[ChangeProperty](#)

[ClearLayerMappings](#)

[ClearRefPort](#)

[ClearRelative](#)

[Connect](#)

[ConvertPlanetoTrace](#)

[ConvertTracetoPlane](#)

[Copy](#)

[Create3DStructure](#)

[CreateCS](#)

[CreateCircle](#)

[CreateCircleVoid](#)

[CreateCircuitPort](#)

[CreateCircuitPortsOnComponents](#)

[CreateComponent](#)

[CreateEdgePort](#)

[CreateGroundPortComponent](#)

[CreateGroupSelected](#)

[CreateHole](#)

[CreateInterfaceGround](#)

[CreateInterfacePort](#)

[CreateInterfacePortComponent](#)

[CreateLine](#)

[CreateLineFromPolygon](#)

[CreateLineVoid](#)

[CreateMeasure](#)

[CreateNPort](#)

[CreateNetClass](#)

[CreateObjectFromPolygon](#)

[CreatePin](#)

[CreatePinGroup](#)

[CreatePinGroupPort](#)

[CreatePinGroupPortsOnComponents](#)

[CreatePolygon](#)

[CreatePolygonVoid](#)

[CreatePortInstancePorts](#)

[CreatePortsOnComponents](#)

[CreateRectangle](#)

[CreateRectangleVoid](#)

[Create Text](#)

[CreateTrace](#)

[CreateVia](#)

[CutOutSubDesign](#)



[DeactivateOpen](#)

[DeactivateShort](#)

[DefeatureObjects](#)

[DelNetClass](#)

[Delete](#)

[DeleteNets](#)

[DeletePinGroup](#)

[Disconnect](#)

[Duplicate](#)

[DuplicateAcrossLys](#)

[Edit](#)

[Edit3DComponentDefinition](#)

[EraseMeasurements](#)

[Expand](#)

[ExpandWithPorts](#)

[ExportDXF](#)

[ExportGDSII](#)

[ExportGerber](#)

[ExportImage](#)

[ExportNCDrill](#)

[ExportToHFSS](#)

[ExportToQ3D](#)

[FilterObjectList](#)

[FindObjectsByPoint](#)

[FindObjectsByPolygon](#)

[FlipHorizontal](#)

[FlipVertical](#)

[GeometryCheckAndAutofix](#)

[GetAllLayerNames](#)

[GetBBox](#)

[GetCSObjects](#)

[GetCompInstanceFromRefDes](#)

[GetComponentInfo](#)

[GetComponentPinInfo](#)

[GetComponentPins](#)

[GetEditorName](#)

[GetLayerInfo](#)

[GetMaterialList](#)

[GetNetClassNets](#)

[GetNetClasses](#)

[GetNetConnections](#)

[GetPolygon](#)

[GetPolygonDef](#)

[GetPortInfo](#)

[GetProperties](#)

[GetPropertyValue](#)

[GetSelections](#)

[Group](#)

[Heal](#)

[HighlightNet](#)

[ImportDXF](#)

[ImportGDSII](#)

[ModifyNetClass](#)

[Move](#)

[PageSetup](#)

[Paste](#)

[Point](#)

[Polygon](#)

[PositionRelative](#)

[PushExcitations](#)

[RemoveLayer](#)

[RemovePortsFromAllNets](#)

[RemovePortsFromNet](#)

[RemovePortsOnComponents](#)

[Rotate](#)

[SelectAll](#)

[SetCS](#)

[SetLayerMapping](#)

[SetNetVisible](#)

[StitchLines](#)

[Subtract](#)

[ToggleViaPin](#)

[Ungroup](#)

[Unite](#)

[UnselectAll](#)

[ZoomToFit](#)

**Also refer to the following subtopics:**

[Symbol Editor Scripts](#)

[Footprint Editor Scripts](#)

## **AddCircuitRefPort (Layout Editor)**

*Use:* Assign an edge as a reference to an existing port; model as a circuit port.

**Command:** AddCircuitRefPort

**Syntax:** AddCircuitRefPort

```
Array(<"port name">, <"port name">, ...),  
Array("NAME:Contents",  
"edge:=", Array(<edge description>), "edge:=", Array(<edge description>), ...)
```

**Return Value:** None.

**Parameters:** <edge description> for primitive edges

```
"et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>
```

<"prim">:

text that is the primitive name

<edge#>:

integer that is the edge number on the primitive

<edge description>:

for via edges

```
"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,
```

```
"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,  
"ey:=", <end Y location>, "h:=", <arc height>, "rad:=", <radians>
```

```
<"via">:
```

text that is the name of the via to use

```
<layer id>:
```

an integer that is the id of the layer of the pad of the via to use

```
<start X location>, <start Y Location>:
```

doubles that are the X, Y location of the start point of the edge arc

```
<end X location>, <end Y Location>:
```

doubles that are the X, Y location of the end point of the edge arc

```
<arc height>:
```

double giving the height of the edge arc (0 for a straight edge)

```
<radians>:
```

double giving the arc size in radians (0 for a straight edge)

## AddLayer (Layout Editor)

Adds a layer in a layout definition. This command can take all parameters available in [ChangeLayers \(Layout Editor\)](#) but cannot be recorded.

**Note:** As with other Layout scripting interface commands that modify the layout, this command is not intended for use within scripts that define footprints. The command behavior from within such a script is undefined and may be unexpected. Use the LayoutHost scripting interface commands within scripts that define footprints.

| UI Access  | None           |         |                                                                                                                                                                                                                                                                                                                                               |
|------------|----------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name           | Type    | Description                                                                                                                                                                                                                                                                                                                                   |
|            | <LayerArray>   | Array   | An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;Layername&gt;</li> <li>• &lt;Type&gt;</li> <li>• &lt;TopBottom&gt;</li> <li>• &lt;Color&gt;</li> <li>• &lt;Transparency&gt;</li> <li>• &lt;Pattern&gt;</li> <li>• &lt;VisFlag&gt;</li> <li>• &lt;Locked&gt;</li> <li>• &lt;Draw&gt;</li> </ul> |
|            | <LayerName>    | String  | Name of layer.                                                                                                                                                                                                                                                                                                                                |
|            | <Type>         | String  | Type of layer, such as "user", "soldermask", "solderpaste", "silkscreen", "assembly", "wirebond", "glue", "user", "Postprocessing", or "outline".                                                                                                                                                                                             |
|            | <TopBottom>    | String  | Optional. Indicates whether the layer is the top or bottom. Acceptable values are "top", "bottom", or "neither".                                                                                                                                                                                                                              |
|            | <Color>        | Integer | Optional. A code to indicate the color of the layer. It is an RGB code in the hex format <i>bbggrr</i> . For example red (#0000ff) is 255, green (#00ff00) is 65280, and blue (#ff0000) is 16711680.                                                                                                                                          |
|            | <Transparency> | Integer | Optional. A percentage that indicates the transparency of the layer between 0 (opaque) and 100 (completely transparent and not visible).                                                                                                                                                                                                      |
|            | <Pattern>      | Integer | Optional. A code for the pattern of the layer: 0 is hollow, 1 is solid, and the other patterns 3-8 are various hatch patterns.                                                                                                                                                                                                                |
|            | <VisFlag>      | Integer | Sets visibility for all objects on the layer using the following additive code: <ul style="list-style-type: none"> <li>• 1 makes primitives (rectangles, circles, polygons) visible.</li> <li>• 2 makes lines (also known as paths or traces) visible.</li> </ul>                                                                             |

|                     |          |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|----------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |          |         | <ul style="list-style-type: none"> <li>• 4 makes pads (from padstacks, aka vias) visible.</li> <li>• 8 makes holes (or vias) visible.</li> <li>• 16 makes components visible.</li> <li>• 32 makes the mesh overlay visible if they are plotted.</li> <li>• 64 makes the mesh for the background material visible.</li> </ul> <p>For example, a value of 25 (1+8+16) makes primitives, vias, and components visible. Use 127 to show everything and 0 to hide all.</p> |
|                     | <Locked> | Boolean | Optional. Whether the layer is locked.                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                     | <Draw>   | Integer | Optional. Allows drawing on the layer as wireframe, outlines, or solid. Acceptable values are -1 for wireframe, 0 for normal, and 1 for solid.                                                                                                                                                                                                                                                                                                                        |
| <b>Return Value</b> | None     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                      |                                                                                                                                                                                                                                                                                                                                                                                             |  |  |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Python Syntax</b> | <pre>oEditor.AddLayer(     [         "NAME:layers",         "Name:=", "&lt;LayerName&gt;",         "Type:=", "&lt;Type&gt;",         "Top Bottom:=", "&lt;TopBottom&gt;",         "Color:=", "&lt;Color&gt;",         "Transparency:=", "&lt;Transparency&gt;",         "Pattern:=", "&lt;Pattern&gt;",         "VisFlag:=", "&lt;VisFlag&gt;",         "Locked:=", "&lt;Locked&gt;",</pre> |  |  |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|



|                |                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | <pre>"DrawOverride:=", &lt;Draw&gt;, ])</pre>                                                                                                                                                                                                                                                                                                                                   |
| Python Example | <pre>oEditor = oDesign.SetActiveEditor("Layout") oEditor.AddLayer(     [         "NAME:layers",         "Name:=", "signal",         "Type:=", "assembly",         "Top Bottom:=", "neither",         "Color:=", 16711680,         "Transparency:=", 0,         "Pattern:=", 1,         "VisFlag:=", 127,         "Locked:=", False,         "DrawOverride:=", 0,     ] ])</pre> |

## AddPortsToAllNets (Layout Editor)

*Use:* Adds ports to all the pins in all the nets.

*Command:* Layout tab under Nets right-click and click **Create Ports**.

*Syntax:* AddPortsToAllNets

*Return Value:* None

*Parameters:* None.

## AddPortsToNet (Layout Editor)

*Use:* Add ports to all the pins on the designated nets.

*Command:* In Layout right-click and click **Port > Create Ports on Net**.

Layout tab under Nets, right-click and click **Create Ports**.

*Syntax:* AddPortsToNet Array("NAME:Nets", "net-name", ...)

*Return Value:* None

*Parameters:* net-name the name of a net; all pins on this particular net receive ports.

## AddRefPort (Layout Editor)

*Use:* Create a reference port from edges and associate with each of the named ports.

*Command:* (When more than 2 edges are selected.)

**Draw > Port > Create**

**Right-click > Port > Create**

Also available through toolbar icon.

*Syntax:* AddRefPort

Array(<"port name">, <"port name">, ...),

Array("NAME:Contents",

"edge:=", Array(<edge description>), "edge:=", Array(<edge description>), ...)

*Return Value:* None.

*Parameters:* <edge description> for primitive edges

```
"et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>
```

```
<"prim">:
```

text that is the primitive name

```
<edge#>:
```

integer that is the edge number on the primitive

```
<edge description>
```

for via edges

```
"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,  
"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,  
"ey:=", <end Y location>, "h:=", <arc height>, "rad:=", <radians>
```

```
<"via">:
```

text that is the name of the via to use

```
<layer id>:
```

an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc

<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>:

double giving the height of the edge arc (0 for a straight edge)

<radians>:

double giving the arc size in radians (0 for a straight edge)

## AlignObjects (Layout Editor)

*Use:* Align objects, e.g. primitives, relative to each other.

*Command:* AlignObjects

*Syntax:* AlignObjects

Array("NAME:align", <"alignment">, ...),

Array("NAME:elements", <"elem">, ...)

*Return Value:* Return Value: None

*Parameters:* <"alignment">

Type: text

Description: any one of:

"AlignLeft"

"AlignRight"

"CenterHorz" - align centers horizontally

"DistributeCentersHorz" - distribute object centers evenly horizontally

"SpaceEdgesHorz" - space objects equal distances apart horizontally

"AlignTop"

"AlignBottom"

"CenterVert" - align centers vertically

"DistributeCentersVert" - distribute object centers evenly vertically

"SpaceEdgesVert" - space objects equal distances apart vertically

"elem">

Type: text

Description: name of element (primitive, component, etc.) to align

*Example:*

```
Set oDesign = oProject.SetActiveDesign("HFSS 3D Layout1")
```

```
Set oEditor = oDesign.SetActiveEditor("Layout")
```

```
oEditor.AlignObjects Array("NAME:align", "AlignLeft"), Array("NAME:elements", "circle_2", "rect_1", "poly_3")
```

## AlignPorts (Layout Editor)

*Use:* Causes automatic alignment of the microwave ports of the components, EdgePorts, and Pins referenced in the argument. In case the list is empty, aligns ALL the microwave ports in the layout.

*Command:* None.

*Syntax:* **AlignPorts** Array ("NAME: *elements*",  
    <object\_name>, // 1<sup>st</sup> object  
    <object\_name>, // 2<sup>nd</sup> object, if any  
    ...) // etc

*Return Value:* None.

*Parameters:* The LayoutComp's ID

## AssignCircuitRefPort (Layout Editor)

*Use:* Assign the internal port as a reference to an existing port; model as a circuit port.

*Command:* AssignCircuitRefPort

*Syntax:* AssignCircuitRefPort  
    Array(<"port name">, <"port name">, ...),  
    Array("NAME:Contents",  
    "edge:=", Array(<edge description>), "edge:=", Array(<edge description>), ...)

*Return Value:* None

*Parameters:* <"layer">

Type: text

Description: layer name.

<"port">

Type: text

Description: a port or pin name.

<edge description> for primitive edges

"et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>

<"prim">

Type: text

Description: primitive name

<edge#>

Type: integer

Description: edge number on the primitive

<edge description> for via edges

"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,

"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,

"ey:=", <end Y location>, "h:=", <arc height>, "rad:=", <radians>

<"via">:

text that is the name of the via to use

<layer id>:

an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc

<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>:

double giving the height of the edge arc (0 for a straight edge)

<radians>:

double giving the arc size in radians (0 for a straight edge)

## AssignRefPort (Layout Editor)

*Use:* Assign the named internal port as a reference for each of the named ports.

*Command:* AssignRefPort

*Syntax:* AssignRefPort

Array(<"port name">, <"port name">, ...),

Array("NAME:Contents",



"edge=", Array(<edge description>), "edge=", Array(<edge description>), ...)

**Return Value:** None

*Parameters:* <"layer">

Type: text

Description: layer name.

<"port">

Type: text

Description: a port or pin name.

<edge description>

for primitive edges

"et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>

<"prim">

Type: text

Description: primitive name

<edge#>

Type: integer

Description: edge number on the primitive

<edge description>

for via edges

```
"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,  
"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,  
"ey:=", <end Y location>, "h:=", <arc height>, "rad:=", <radians>
```

<"via">:

text that is the name of the via to use

<layer id>:

an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc

<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>:

double giving the height of the edge arc (0 for a straight edge)

<radians>:

double giving the arc size in radians (0 for a straight edge)

## ChangeProperty

Changes the properties of an object in the history tree.

|              |                                                                          |       |                                                                                                                                                                                                     |
|--------------|--------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UI Access    | Right-click an object in the History Tree and select <b>Properties</b> . |       |                                                                                                                                                                                                     |
| Parameters   | Name                                                                     | Type  | Description                                                                                                                                                                                         |
|              | <propertyArgs>                                                           | Array | Structured array. The properties vary depending on the object. Due to the number of potential configurations, it is recommended that you generate this script using the UI's <b>Automation</b> tab. |
| Return Value | None.                                                                    |       |                                                                                                                                                                                                     |

|                |                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ChangeProperty(<propertyArgs>)                                                                                     |
| Python Example | <b>Example: Changing the Position of a Box</b><br><pre>oEditor.ChangeProperty(<br/>[<br/>    "NAME:AllTabs",</pre> |

```

[
  "NAME:Geometry3DCmdTab",
  [
    "NAME:PropServers" ,
    "Box1:CreateBox:1"
  ],
  [
    "NAME:ChangedProps",
    [
      "NAME:Position",
      "X:="          , "0.35in",
      "Y:="          , "0.55in",
      "Z:="          , "0in"
    ]
  ]
]
])

```

**Example: Offset the Position of a 3D Component or Layout Component with a Variable**

```

oDesign.ChangeProperty(
[
  "NAME:AllTabs",
  [
    "NAME:LocalVariableTab",
    [
      "NAME:PropServers",
      "LocalVariables"
    ],
    [
      "NAME:NewProps",
      [
        "NAME:zH",
        "PropType:="          , "VariableProp",
        "UserDef:="           , True,
        "Value:="              , "50mm"
      ]
    ]
  ]
]
)

```

```
    ]
  ]
])
oEditor = oDesign.SetActiveEditor("3D Modeler")
oEditor.ChangeProperty(
[
  "NAME:AllTabs",
  [
    "NAME:General",
    [
      "NAME:PropServers",
      "LC1_1"
    ],
    [
      "NAME:ChangedProps",
      [
        "NAME:Position",
        "X:=",
        "Y:=",
        "Z:=",
        , "Omm",
        , "Omm",
        , "zH"
      ]
    ]
  ]
])
```

**Example: Changing a Box's Material and Wireframe Display**

```
oEditor.ChangeProperty(
[
  "NAME:AllTabs",
  [
    "NAME:Geometry3DAttributeTab",
```

```

        [
            "NAME:PropServers" ,
            "Box1"
        ],
        [
            "NAME:ChangedProps",
            [
                "NAME:Material",
                "Value:="          , "\"vacuum\""
            ],
            [
                "NAME:Display Wireframe",
                "Value:="          , True
            ]
        ]
    ]
]
])

```

**Example: Change Default Handle (reference coordinate system) for a 3D Component or Layout Component**

```

oEditor.ChangeProperty(
    [
        "NAME:AllTabs",
        [
            "NAME:General",
            [
                "NAME:PropServers",
                "LC1_1"
            ],
            [
                "NAME:ChangedProps",
                [
                    "NAME:Handle",
                    "Value:="          , " NotchOutY"
                ]
            ]
        ]
    ]
)

```

|  |                          |
|--|--------------------------|
|  | <pre>    ]   ] ] )</pre> |
|--|--------------------------|

## ClearLayerMappings (Layout Editor)

*Use:* Clear layer mappings.

*Command:* None.

*Syntax:* ClearLayerMappings <component name>

*Return Value:* None.

*Parameters:* <component name> is a string that specifies the name of the component.

## ClearRefPort (Layout Editor)

*Use:* Clear references (or referencing) ports from each of the named ports.

*Command:* Draw > Clear reference Port

*Syntax:* **ClearRefPort** Array("Port1", ...)

*Return Value:* None.

## ClearRelative (Layout Editor)

*Use:* Clear the relative positioning between a coordinate system (CS) and another object.

*Command:* None.

*Syntax:* oEditor.ClearRelative Array("NAME:elements", <CS1>, <CS2>, ...)

*Return Value:* None.

## Connect (Layout Editor)

*Use:* Causes connecting of the referenced object. After the command the objects will be in the same electrical net.

*Syntax:* **Connect** Array ("NAME: *elements*",

<object\_name>, // 1<sup>st</sup> object

<object\_name>, // 2<sup>nd</sup> object, if any

...) // etc

## ConvertPlaneToTrace (Layout Editor)

*Use:* Convert planes to traces

*Syntax:* ConvertPlaneToTrace <polygon information>

*Return Value:* None

*Parameters:* <Polygon\_Data>

Type: array

## ConvertTraceToPlane (Layout Editor)

*Use:* Convert traces to planes

*Syntax:* ConvertTraceToPlane <line information>

*Return Value:* None



*Parameters:* <Line\_Data>

Type: array

## Copy (Layout Editor)

*Use:* Copies the referenced objects to the clipboard.

*Syntax:* **Copy** Array (<object\_name>, // 1<sup>st</sup> object

<object\_name>, // 2<sup>nd</sup> object

*Return Value:* Returns the name of the new net.

## CopyToHFSS 3D Layout (Layout Editor)

*Use:* Generate a single, flat, HFSS 3D Layout design from a selection of components and/or sub-circuits.

*Command:* CopyToHFSS 3D Layout

*Syntax:* CopyToHFSS 3D Layout Array("NAME:elements", <"obj1">, <"obj2">, ...)

*Return Value:* None

*Parameters:* <"obj1">

Type: text

// component or sub-circuit instance name.

## Create3DStructure (Layout Editor)

*Use:* Place a set of primitives into a 3D structure coordinate system (i.e. a 3D via or cross-layer plate).

*Command:* None.

*Syntax:* oEditor.Create3DStructure <3D structure name>, Array("NAME:elements", <element1>, <element2>, ...)

*Return Value:* None.

## CreateCS (Layout Editor)

*Use:* Inserts a new coordinate system (CS) into the currently active Layout design.

*Command:* Draw > Coordinate System > Create.

*Syntax:* There are two forms available:

```
CreateCS  
Array("NAME:Contents",  
Array("NAME:full_definition", "type:=", "CS", "N:=", <"CS name">),  
"placement:=", Array("x:=", <"x_coord">, "y:=", <"y_coord">),  
"Clf:=", <color flag>, "Col:=", <color> )
```

```
CreateCS  
Array("NAME:Contents",  
"Name:=", <"CS name">),  
"RelPos:=", Array(edge description))
```

*Return Value:* Text containing the name of the created relative coordinate system.

*Parameters:* <"CS name">

Text with the requested name for the relative coordinate system

`<x_coord>`

Text that is the X location for the relative coordinate system origin

`<y_coord>`

Text that is the Y location for the relative coordinate system origin

// the following arguments are optional

`<color flag>`

True if a color is being specified by the next parameter

`<color>`

Integer specifying the color for the relative coordinate system.

Only used if color flag is true;

`<edge description>` for primitive edges

"t:=", "pe", "from:=", "<prim">, "pos:=", <edge position>, "et:=", "pe", "prim:=",

<"prim">, "edge:=", <edge#>

<"prim">: text that is the primitive name

<edge position>

double between 0 and 1, inclusive

0 indicates the start of the edge

1 indicates the end of the edge

values in between are positions along the edge

<edge#>: integer that is the edge number on the primitive

<edge description> for via edges

"t=", "pe", "from=", <"via">, "pos=", <edge position>, "et=", "pse", "sel=", <"via">, "layer=", <layer id>, "sx=", <start X location>, "sy=", <start Y location>, "ex=", <end X location>, "ey=", <end Y location>,

"h=", <arc height>, "rad=", <radians>

<"via">:

text that is the name of the via to use

<layer id>:

an integer that is the id of the layer of the pad of the via to use <start X location>,

<start Y Location>:

doubles that are the X, Y location of the start point of the edge arc <end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>:

double giving the height of the edge arc (0 for a straight edge)

<radians>:

double giving the arc size in radians (0 for a straight edge)

## CreateCircle (Layout Editor)

*Use:* Creates a circle primitive object and adds it to the current layout. Returns the name of the newly created object.

*Syntax:* **CreateCircle**<circle\_description>

*Parameters:* **<circle\_description>:**

```
Array("NAME:Contents",  
      "circleGeometry:=", <circle_geometry>) // object description
```

**<circle\_geometry> :**

```
Array("LayerName:=", <layer_name>, // name of the layer
```

```
"lw:=", <value>, // border line width
"x:=", <value>, // center x coordinate
"y:=", <value>, // center y coordinate
"r:=", <value>) // radius
```

**<layer\_id> :**

integer; never used in scripting

**<object\_name> :**

quoted string, uniquely identifying an object

**<value> :**

quoted\_string\_parseable\_as\_value (e.g. "0.111mm")

## CreateCircleVoid (Layout Editor)

*Use:* Creates a circle void and adds it to a particular parent primitive.

*Syntax:* **CreateCircleVoid**<circle\_void\_description>

*Return Value:* Returns the name of the newly created object

*Parameters:* **<circle\_void\_description>:**

```
Array("NAME:Contents",
```

```
"owner:=", <object_name>, // parent primitive name
```

```
"circle voidGeometry:=", <circle_geometry>) // definition
```

## CreateCircuitPort (Layout Editor)

*Use:* Create a circuit port between two points.

*Command:* Draw > Create Circuit Ports

*Syntax:* CreateCircuitPort Array("NAME:Location", "PosLayer:=", "layer name", "X0:=", \_  
x-value, "Y0:=", y-value, "NegLayer:=", "layer name", "X1:=", x-value, "Y1:=", y-value)

*Return Value:* None

*Parameters:* <"layer">

Type: text

Description: layer name.

<"port">

Type: text

Description: a port or pin name.

<edge description>

for primitive edges

"et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>

<"prim">

Type: text

Description: primitive name

<edge#>

Type: integer

Description: edge number on the primitive

<edge description>

for via edges

```
"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,  
"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,  
"ey:=", <end Y location>, "h:=", <arc height>, "rad:=", <radians>
```

<"via">:

text that is the name of the via to use

<layer id>:

an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc



<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>:

double giving the height of the edge arc (0 for a straight edge)

<radians>:

double giving the arc size in radians (0 for a straight edge)

# CreateCircuitPortsOnComponents (Layout Editor)

Creates circuit ports on a selected component.

| UI Access  | After selecting a component, right-click within the <b>Layout Editor</b> and select <b>Port &gt; Create Ports on Component</b> . |        |                                                                                                                                                                 |
|------------|----------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                                                             | Type   | Description                                                                                                                                                     |
|            | <Parameters>                                                                                                                     | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>&lt;NAME:Components&gt;</li> <li>&lt;ComponentName&gt;</li> </ul> |
|            | <NAME:Components>                                                                                                                | String | Required first parameter which must have the specified value (i.e., "Components").                                                                              |
|            | <ComponentName>                                                                                                                  | String | Names of the target components, separated by commas.                                                                                                            |
|            | <Parameters>                                                                                                                     | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>&lt;NAME:Nets&gt;</li> <li>&lt;NetNames&gt;</li> </ul>            |

|                     |                |        |                                                                             |
|---------------------|----------------|--------|-----------------------------------------------------------------------------|
|                     | <NAME:Nets>    | String | Required first parameter which must have the specified value (i.e., "Nets") |
|                     | <NetNames>     | String | Names of the nets to place ports on, separated by commas.                   |
|                     | <ReferenceNet> | String | Name of the net to use as a reference.                                      |
| <b>Return Value</b> | None.          |        |                                                                             |

|                       |                                                                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CreateCircuitPortsOnComponents ([<NAME:Components>,<ComponentName>], [<NAME:Nets>,<NetNames>], <ReferenceNet>)                           |
| <b>Python Example</b> | <pre>oEditor.CreateCircuitPortsOnComponents ( [     "NAME:Components",     U0 ], ["NAME:Nets",     "net3",     "net4" ], "net5" ])</pre> |

## CreateComponent (Layout Editor)

*Use:* Places a component.

**Syntax: CreateComponent <Array>**

**Return Value:** Returns the name of the newly created component.

```
Parameters: Array("NAME:Contents",  
"definition_name:=", <component name>,  
"placement:=", Array("x:=", <x position>, "y:=", <y position>),  
"layer:=", <placement layer name>,  
"StackupLayers:=", Array("<footprint stackup layer>:<design stackup layer>", ...),  
"DrawLayers:=", Array("<footprint layer>:<design layer>", ...))
```

**Notes:**

Each Layer mapping is specified as a single text string in quotes, "<footprint layer>:<design layer>". If the layer does not map to anything, use a "0" for the layer. For example, you can use "Measures:0", if the footprint "Measures" layer does not map to a design layer. Use "0:Dielectric", if the design "Dielectric" layer does not map to a footprint layer.

Note, also, that the "StackupLayers" and the "DrawLayers" arguments may be omitted, in which case, the mappings are determined automatically.

**CreateEdgePort (Layout Editor)**

Creates an edge port using the specified edges.

| UI Access  | Draw > Port > Create or Right-click > Port > Create. |       |                                                                             |
|------------|------------------------------------------------------|-------|-----------------------------------------------------------------------------|
| Parameters | Name                                                 | Type  | Description                                                                 |
|            | <EdgePortArray>                                      | Array | Identifies the contents of the array (i.e., "Contents") containing the fol- |

|  |                 |        |                                                                                                                                                                                                                                                        |
|--|-----------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                 |        | lowing arguments:<br><NAME:Contents><br><Edge><br><External>                                                                                                                                                                                           |
|  | <NAME:Contents> | String | Identifies the contents of the array (i.e., "Contents").                                                                                                                                                                                               |
|  | <Edge>          | Array  | Array containing separate arrays for primitive edges and via edges.<br>For primitive edges, array contains:<br><Et><br><Prim><br><Edge><br>For via edges, array contains:<br><Et><br><Sel><br><Layers><br><Sx><br><Sy><br><Ex><br><Ey><br><H><br><Rad> |
|  |                 |        |                                                                                                                                                                                                                                                        |

|                     |                                                                                                             |         |                                                                                           |
|---------------------|-------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------|
|                     |                                                                                                             |         | <b>Note:</b><br>Array can repeat in the same command.                                     |
|                     | <Et>                                                                                                        | String  | Type of new edge port (i.e., "pe" for primitive edge or "pse" for pad-stack edge or via). |
|                     | <Prim>                                                                                                      | String  | Name of the target primitive.                                                             |
|                     | <Edge#>                                                                                                     | Integer | Edge number of the target primitive.                                                      |
|                     | <Sel>                                                                                                       | String  | Name of the target via.                                                                   |
|                     | <Layers>                                                                                                    | Integer | Layer ID of the pad of the target via.                                                    |
|                     | <Sx>                                                                                                        | Integer | Starting X coordinate for the arc of the new edge port.                                   |
|                     | <Sy>                                                                                                        | Integer | Starting Y coordinate for the arc of the new edge port.                                   |
|                     | <Ex>                                                                                                        | Integer | Ending X coordinate for the arc of the new edge port.                                     |
|                     | <Ey>                                                                                                        | Integer | Ending Y coordinate for the arc of the new edge port.                                     |
|                     | <H>                                                                                                         | Integer | Arc height of the new edge port (e.g., enter 0 for a straight edge).                      |
|                     | <rad>                                                                                                       | String  | Arc size of the new edge port (e.g., enter 0 for a straight edge).                        |
|                     | <External>                                                                                                  | Boolean | True — the port is external.<br>False — the port is internal.                             |
| <b>Return Value</b> | Text containing the name of the created edge port. (Returns an empty name if the edge port is not created.) |         |                                                                                           |

|                       |                                                                                                                                                                              |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CreateEdgePort(<EdgePortArray>)                                                                                                                                              |
| <b>Python Example</b> | Primitive edge port:<br><pre>oEditor.CreateEdgePort (("NAME:Contents", "edge:=", ("et:=", "pe", "prim:=", "rect_167", "edge:=", 0), "edge:=", ("et:=", "pe", "prim:=",</pre> |

```
"rect_167", "edge:=", 3), "external:=", true))

Via edge port:

oEditor.CreateEdgePort (("NAME:Contents", "edge:=", ("et:=", "pse",
"sel:=", "via_0", "layer:=", 10, "sx:=", -0.0015, "sy:=", -0.0015, "ex:=",
0.0015,
"ey:=", -0.0015, "h:=", 0, "rad:=", 0), "external:=", true))
```

## CreateGroundPortComponent (Layout Editor)

*Use:* Create a ground port component

*Command:* Right-click selected port > Port > Nexxim Ports > Add Grounds at Unconnected Pins

*Return Value:* None

*Parameters:* <Component\_Data>

Type: array

## CreateGroupSelected (Layout Editor)

*Use:* Groups a set of primitives into a subdesign.

*Command:* Layout > Group into Subdesign

*Syntax:* oEditor.CreateGroupSelected Array("NAME:elements", <selectable name>, ...)

*Return Value:* None.

## CreateHole (Layout Editor)

*Use:* Places a Hole object.

*Syntax:* **CreateHole** <Array>

**Return Value:** Returns the name of the newly created Hole

```
Parameters: Array("NAME:Contents",
Array("NAME:full_definition",
"type:=", "hole",
Array("NAME:Properties",
"VariableProp:=",
Array("radius", "D", "", <value>), // radius
"VariableProp:=",
Array("sides", "D", "", integer)), //side count
"from_layer:=", <layer_name>,
"to_layer:=", <layer_name>),
"placement:=", <vpoint>, // placement position
"layer:=", <layer_name>) // placement layer
```

**<vpoint> :**

```
Array("x:=", <value>, // X coordinate
"y:=", <value>) // Y coordinate
```

## CreateInterfaceGround (Layout Editor)

**Use:** Create an interface ground

**Command:** Right-click selected port > Port > Nexxim Ports > Circuit Ground

*Return Value:* None

*Parameters:* <Port\_Data>

Type: array

## CreateInterfacePort (Layout Editor)

*Use:* Create an interface port

*Command:* Right-click selected port > Port > Nexxim Ports > Circuit Interface

*Syntax:* CreateInterfacePort <Port\_Data>

*Parameters:* <Port\_Data>

Type: array

## CreateInterfacePortComponent (Layout Editor)

*Use:* Create an interface port component

*Command:* Right-click selected port > Port > Nexxim Ports > Add Interface Ports at Unconnected Pins

*Syntax:* CreateInterfacePortComponent <Port\_Data>

*Parameters:* <Component\_Data>

Type: array

## CreateLine (Layout Editor)

*Use:* Creates a line primitive object.

*Syntax:* **CreateLine** <line\_description>

*Return Value:* Returns the name of the newly created object.

*Parameters:* <line\_description>:



```
Array("NAME:Contents",  
      "lineGeometry:=", <line_geometry>)
```

**<line\_geometry> :**

```
Array("LayerName:=", <layer_name>,  
      "lw:=", <value>, // line width  
      "endstyle:=", <end_style>,  
      "joinstyle:=", <join_style>,  
      <vertex_sequence> )
```

**<end\_style> :** integer

```
FlatEnd = 0  
ExtendedEnd = 1  
RoundEnd = 2
```

**<join\_style> :** integer

```
UnmiteredJoin = 0  
MiteredJoin = 1  
OptimallyMiteredJoin = 2  
RadiallyMiteredJoin = 3  
ChordMiteredJoin = 4
```

**<vertex\_sequence>:**

```
"n:=", integer, // the total count of the vertices
"x0:=", <value>, "y0:=", <value>,
"x1:=", <value>, "y1:=", <value>,
etc. up to vertex count)
```

## CreateLineFromPolygon (Layout Editor)

*Use:* Create a line/trace object on the specified layer and net from the provided Polygon object. Net is optional.

*Syntax:* oLayout.CreateLineFromPolygon(<oPolygon>, <width>, <bendType>, <startCapType>, <endCapType>, <Layer>, <Net>)

*Parameters:* width - line width, in meters

bendType - {'corner', 'round'}

startCapType, endCapType - {'flat', 'extended', 'round'}

## CreateLineVoid (Layout Editor)

*Use:* Creates a line void and adds it to a specified as parameter parent primitive.

*Syntax:* **CreateLineVoid**<line\_void\_description>

*Return Value:* Returns the name of the newly created object.

*Parameters:* **<line\_void\_description>:**

```
Array("NAME:Contents",
"owner:=", <object_name>, // parent primitive name
"line voidGeometry:=", <line_geometry>) // definition
```

## CreateMeasure (Layout Editor)

*Use:* Creates a measurement.

*Syntax:* CreateMeasure

*Use:* Returns the name of the created object.

```
Parameters: Array("NAME:Contents",  
"MeasurementGeometry:=",  
Array("LayerName:=", <layer_name>, // layer  
"lw:=", <value>, // line width  
"sx:=", <value>, // start X coordinate  
"sy:=", <value>, // start Y coordinate  
"ex:=", <value>, // end X coordinate  
"ey:=", <value>, // end Y coordinate  
<text_style>)
```

**<text\_style> :**

```
"name:=", <quoted string>, // its name  
"isPlot:=", <bool>,  
"font:=", <font_name>,  
"size:=", double, // size in current units  
"angle:=", <value>,
```

```
"weight:=", <text_weight>,
"just:=", <text_justification>,
"mirror:=", <bool>,
"scales:=", <bool>))
```

CreateNportCircuitElements

Creates an HFSS Circuit Element from one or more ports.

|              |                                                                                                                                             |       |                                                                                                                |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------|
| UI Access    | Right-click <b>Circuit Elements</b> > <b>Create Single Port Model...</b> or <b>Circuit Elements</b> > <b>Create Multi-Terminal Model...</b> |       |                                                                                                                |
| Parameters   | Name                                                                                                                                        | Type  | Description                                                                                                    |
|              | <NPortArray>                                                                                                                                | Array | Structured array.<br><br>Array ("NAME:<NPortName>",<br><br>"Definition:=", <string>,<br><br><AssignmentArray>) |
| Return Value | None.                                                                                                                                       |       |                                                                                                                |

|                |                                                                                                                        |
|----------------|------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | CreateNportCircuitElement (<NPortArray>)                                                                               |
| Python Example | oModule.CreateNportCircuitElement (<br><br>["NAME:Nport1",<br><br>"Definition:=", "Model",<br><br>["NAME:Assignments", |

```
        ["NAME:Model",  
        "Assign:=", "1"]  
    ]  
])  
oModule.CreateNportCircuitElement(  
    ["NAME:Nport2",  
    "Definition:=", "Model2",  
    ["NAME:Assignments",  
    ["NAME:P01__NET179__T1",  
    "Assign:=", "2"],  
    ["NAME:P02__NET178__T1",  
    "Assign:=", "3"],  
    ["NAME:P03__NET178__T1",  
    "Assign:=", "4"],  
    ["NAME:P04__NET179__T1",  
    "Assign:=", "5"],  
    ]  
])
```

## CreateNetClass

*Use:* Create a new net class into a layout.

*Command:* CreateNetClass.

*Syntax:* CreateNetClass (<name> <description> <nets name list>)

*Return Value:* None

## CreateObjectFromPolygon (Layout Editor)

*Use:* Create a polygon on the specified layer and net from the provided Polygon object. Return the name of the new object. Net is optional.

*Syntax:* oLayout.CreateObjectFromPolygon(<oPolygon>, <Layer>, <Net>)

*Return Value:* Object name.

## CreatePin (Layout Editor)

*Use:* Creates a pin.

*Syntax:* **CreatePin** <pin\_description>

*Return Value:* Returns the name of the newly created pin.

*Parameters:* <pin\_description>:

```
Array("NAME:Contents",  
Array("NAME:Port", "Name:=", <object_name>), // not used  
"Rotation:=", Array(<value>), // rotation  
"Offset:=", <vpoint>, // position  
"Padstack:=", <quoted_string>) // padstack name
```

## CreatePinGroup (Layout Editor)

*Use:* Create a pin group from a selection of pins.

*Syntax:* **CreatePinGroup**(STRING *pin-group-name*, ["NAME:elements", STRING *pin*, STRING *pin*, ...])

## CreatePinGroupPort (Layout Editor)

*Use:* Create a pin group port from two pin-groups; first is positive, second is negative.

*Syntax:* **CreatePinGroupPort**(["Name:elements", STRING *pos-pin-group*, STRING *neg-pin-group*])

## CreatePinGroupPortsOnComponents (Layout Editor)

Creates pin group ports on a selected component.

| UI Access         | After selecting a component, right-click within the <b>Layout Editor</b> and select <b>Port &gt; Create Ports on Component</b> . |        |                                                                                                                                                                 |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                                                                                             | Type   | Description                                                                                                                                                     |
|                   | <Parameters>                                                                                                                     | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>&lt;NAME:Components&gt;</li> <li>&lt;ComponentName&gt;</li> </ul> |
|                   | <NAME:Components>                                                                                                                | String | Required first parameter which must have the specified value (i.e., "Components").                                                                              |
|                   | <ComponentName>                                                                                                                  | String | Names of the target components, separated by commas.                                                                                                            |
|                   | <Parameters>                                                                                                                     | Array  | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>&lt;NAME:Nets&gt;</li> <li>&lt;NetNames&gt;</li> </ul>            |
|                   | <NAME:Nets>                                                                                                                      | String | Required first parameter which must have the specified value (i.e., "Nets").                                                                                    |

|                     |                  |         |                                                                                                                     |
|---------------------|------------------|---------|---------------------------------------------------------------------------------------------------------------------|
|                     | <NetNames>       | String  | Names of the nets to place ports on, separated by commas.                                                           |
|                     | <ReferenceNet>   | String  | Name of the net to use as a reference.                                                                              |
|                     | <PinGroupPerNet> | Boolean | <b>True</b> creates a different pin group for each net.<br><b>False</b> creates a single pin group across all nets. |
| <b>Return Value</b> | None.            |         |                                                                                                                     |

|                       |                                                                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | CreatePinGroupPortsOnComponents([<NAME:Components>,<ComponentName>], [<NAME:Nets>,<NetNames>], <ReferenceNet>, <PinGroupPerNet>)         |
| <b>Python Example</b> | <pre>oEditor.CreatePinGroupPortsOnComponents ( [     "NAME:Components",     U0 ], ["NAME:Nets", "net3", "net4" ], "net5", False ])</pre> |

## CreatePolygon (Layout Editor)

*Use:* Creates a polygon primitive object.



**Syntax:** **CreatePolygon**<polygon\_description>

**Return Value:** Returns the name of the newly created object.

**Parameters:** <polygon\_description>:

```
Array("NAME:Contents",  
      "lineGeometry:=", <polygon_geometry>)
```

**<polygon\_geometry> :**

```
Array("LayerName:=", <layer_name>, // layer  
      "lw:=", <value>, // border line width  
      <vertex_sequence> ) // polygon boundary
```

## CreatePolygonVoid (Layout Editor)

**Use:** Creates a polygon void and adds it to a specified as parameter parent primitive.

**Syntax:** **CreatePolygonVoid** <polygon\_void\_description>

**Return Value:** Returns the name of the newly created object.

**Parameters:** <polygon\_void\_description>:

```
Array("NAME:Contents",  
      "owner:=", <object_name>, // owner name  
      "poly voidGeometry:=", <polygon_geometry>) // definition
```

## CreatePortInstancePorts (Layout Editor)

*Use:* Create port on port instances.

*Command:* Right-Click-Menu > Port > Create

*Syntax:* CreatePortInstancePorts Array("NAME:elements", "element-name",...)

*Return Value:* None

*Parameters:* <element-name>

Type: string

// Name of a port instance on which ports will be created.

## CreatePortsOnComponents (Layout Editor)

*Use:* Create port on port instances of selected components.

*Command:* Right-Click-Menu > Port > Create Ports on Component

*Syntax:* CreatePortsOnComponentsArray("NAME:elements", "element-name",...)

*Return Value:* None

*Parameters:* <element-name>

Type: string

// Name of a component.

// Ports are created on the unconnected port instances of the selected components.

## CreateRectangle (Layout Editor)

*Use:* Creates a rectangle primitive object and adds it to the current layout.

*Syntax:* **CreateRectangle**<rectangle\_description>

*Return Value:* Returns the name of the newly created object.

*Syntax:* **<rectangle\_description>**:

```
Array("NAME:Contents",  
      "rectGeometry:=", <rectangle_geometry>)  
  
  <rectangle_geometry> :  
  Array("LayerName:=", <layer_name>, // placement layer  
        "lw:=", <value>, // line width  
        "x:=", <value>, // center X coordinate  
        "y:=", <value>, // center Y coordinate  
        "w:=", <value>, // width (X-direction size)  
        "h:=", <value>, // height (Y-direction size)  
        "ang:=", <value>)) // rotation
```

## CreateRectangleVoid (Layout Editor)

*Use:* Creates a rectangle void and adds it to a specified as parameter parent primitive.

*Syntax:* **CreateRectangleVoid**<rectangle\_void\_description>

*Return Value:* Returns the name of the newly created object.

*Syntax:* **<rectangle\_void\_description>**:

```
Array("NAME:Contents",  
      "owner:=", <object_name>, // owner_name
```

```
"rect voidGeometry:=", <rectangle_geometry>)
```

## CreateText (Layout Editor)

*Use:* Creates a text primitive object and adds it to the current layout.

*Syntax:* **CreateText** <text\_description>

*Return Value:* Returns the name of the newly created object.

*Parameters:* <text\_description>:

```
    Array("NAME:Contents",  
    "textGeometry:=", <text_geometry>)
```

**<text\_geometry>** :

```
    Array("LayerName:=", <layer_name>,  
    "x:=", <value>, // origin X  
    "y:=", <value>, // origin Y  
    "ang:=", <value>, // rotation  
    "isPlot:=", <bool>, // is it plotted or not  
    "font:=", <font_name>,  
    "size:=", <value>,  
    "weight:=", <text_weight>,  
    "just:=", <text_justification>,  
    "mirror:=", <bool>,  
    "text:=", <quoted_string>) // text itself
```

**<bool>** : *true* | *false*

**<font\_name>** : quoted string, a font name

**<text\_weight>** : integer

Thin = 0,

ExtraLight = 1

Light = 2

Normal = 3

Medium = 4

SemiBold = 5

Bold = 6

ExtraBold = 7

Heavy = 8

**<text\_justification>** : integer

LeftTop = 0

LeftBase = 1

LeftBottom = 2

CenterTop = 3

```

CenterBase= 4
CenterBottom = 5
RightTop = 6
RightBase = 7
RightBottom = 8

```

## CreateTrace (Layout Editor)

*Use:* Create a trace with a manually specified path between pins, ports, or selected edges.

**Command:** Draw > Route > Manual

**Syntax:** CreateTrace

```

Array("NAME:options", "Layer1:=", <"layer">, "Layer2:=", <"layer">),
Array("NAME:Lines", "Num:=", <n_lines>, "l0:=",
Array("Name:=", <"line">, "LayerName:=", <"layer">, "lw:=", <"width">,
"endstyle:=", <endstyle>, "joinstyle:=", <joinstyle>, "n:=", <n_vertex>,
"U:=", <"units">, "x:=", <value>, "y:=", <value>, ), ...),
Array("NAME:Vias", "Num:=", <n_vias>,
Array("NAME:v1", "name:=", <"via">, "ReferencedPadstack:=", <"padstack">,
"vposition:=", Array("x:=", <"vertex">, "y:=", <"vertex">), "vrotation:=",
Array(<"angle">), "overrides hole:=", <override>, "hole diameter:=",
Array(<"diameter">), "highest_layer:=", <"layer">, "lowest_layer:=", <"layer">), ...),
Array("NAME:elements", <"port">, ...),
Array("NAME:EdgeRefs", "edge:=", Array(<edge description>), ...)

```

*Return Value:* None

*Parameters:* <"layer">

Type: text

Description: layer name

<n\_lines>

Type: integer

Description: number of line definitions following

<"line">

Type: text

Description: line name

<"width">

Type: text

Description: line width; value with units, e.g. "1mm"

<endstyle>

Type: integer

Description: end (cap) style value for the line.

<joinstyle>

Type: integer

Description: join style value.

<n\_vertex>

Type: integer

Description: number of vertices in the line

<value>

Type: double

Description: simple value, e.g. 10

<n\_vias>

Type: integer

Description: number of via definitions following

<"via">

Type: text

Description: via name



<"padstack">

Type: text

Description: padstack definition name.

<"angle">

Type: text

Description: via orientation; value with units, e.g. "180deg"

<override>

Type: boolean (true or false)

Description: if true, the diameter is used to override the via hole definition.

<"diameter">

Type: text

Description: via hole diameter override; a value with units, e.g. "1mm"

<"port">

Type: text

Description: a port or pin name.

<edge description>

for primitive edges

"et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>

<"prim">

Type: text

Description: primitive name

<edge#>

Type: integer

Description: edge number on the primitive

<edge description>

for via edges

"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,  
"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,  
"ey:=", <end Y location>, "h:=", <arc height>, "rad:=", <radians>

<"via">:

text that is the name of the via to use

<layer id>:

an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc

<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>:

double giving the height of the edge arc (0 for a straight edge)

<radians>:

double giving the arc size in radians (0 for a straight edge)

## CreateVia (Layout Editor)

*Use:* Creates a new via.

*Syntax:* **CreateVia** <via\_description>

*Return Value:* Returns the name of the created via

*Parameters:* <via\_description>:

Array("NAME:Contents",

"name:=", <object\_name>, // not used

"vposition:=", <vpoint>, // position

```
"rotation:=", double, // rotation in radians
"overrides hole:=", <bool>, // overrides or not padstack hole
"hole diameter:=", Array(<value>), // via diameter
"ReferencedPadstack:=", <quoted_string>, // padstack name
"highest_layer:=", <layer_name>,
"lowest_layer:=", <layer_name>)
```

## CutOutSubDesign (Layout Editor)

*Use:* Cut out a subdesign.

*Command:* CutOutSubDesign

*Syntax:* oEditor.CutOutSubDesign Array(

```
    "NAME:Params",
    "Name:=", <"name">,
    "EMDesign:=", <boolean>,
    "SubDesign:=", <boolean>,
    "Within:=", <boolean>,
    "Without:=", <boolean>,
    "AutoGenExtent":=<boolean>,
    "Expansion":=<double>,
    "RoundCorner":=<boolean>,
    "Increments":=<integer>,
```

```
"ExtentSel:=", Array(<"extent-poly">, ...),  
Array("NAME:Nets", "net:=", Array(<"net-name">, <clip>), ...))
```

In place of "ExtentSel:=", Array(<"extent-poly">, ...) an explicit polygon can be used:

```
"Extent:=", Array("cl:=", true,  
"pt:=", Array(U:=", <"units">, "x:=", <double>, "y:=", <double>, ...))
```

*Parameters:* Name — name of the cutout design.

EMDesign — if true, create an EM design, otherwise create a Nexxim design.

Within — boolean; cut out the interior region.

Without — boolean; cut out the exterior region.

AutoGenExtent — boolean; when true, Circuit disregards both ExtentSel and Extent. Circuit will instead generate a polygonal shape around all nets which are not clipped.

Expansion — double; similar to the Auto Generate Extent dialog box. However, this is always a unitless fraction. By default it is set to .1.

RoundCorner — boolean; identical to the Auto Generate dialog box. By default this is set to true. In general, rounded corners are preferred when the cutout shape has acute or near-acute angles

Increments — integer; this is from the Auto Generate Dialog, and by default is set to true. This can greatly increase the running time and a small increase can make a big difference. It is probably best to experiment with this parameter first, rather than set it arbitrarily.

ExtentSel— an array of extent polygon names.

Extent — alternative to ExtentSel; an explicit polygon defined by coordinates.

cl — must always be true; indicates that the polygon is closed.

U — coordinate units, e.g. "mm"

pt — array of coordinate values.

x — x coordinate value

y — y coordinate value

Nets — the net information.

net — array of net information.

<"net-name">

"<no net trace>" — special value referring to traces not in a net.

"<no net fill>" — special value refereeing to fill polygons not in a net.

<design>:<net> — net within a particular design.

<net> — net within the active design.

<clip> — boolean true/false; if true, the net is clipped against the extent else the net is included but not clipped.

**Return Value:** None

*Example:* Using "extent\_poly" as the selection extent:

```
oEditor.CutOutSubDesign Array("NAME:Params",  
"Name:=", "EMDesign1_cutout",  
"EMDesign:=", true,  
"SubDesign:=", false,  
"Within:=", true,  
"Without:=", false,  
"ExtentSel:=", Array("extent_poly", ...),
```

```
Array("NAME:Nets",  
"net:=", Array("<no net trace>", true),  
"net:=", Array("<no net fill>", true),  
"net:=", Array("EMDesign1:GND", true) ... ))
```

*Example:* Example using an explicit polygon as the selection extent:

```
oEditor.CutOutSubDesign Array("NAME:Params",  
"Name:=", "EMDesign1_cutout",  
"EMDesign:=", true,  
"SubDesign:=", false,  
"Within:=", true,  
"Without:=", false,  
"Extent:=", Array(  
"cl:=", true,  
"pt:=", Array(  
"U:=", "mm",  
"x:=", 0,  
"y:=", 0, ) ),  
Array("NAME:Nets",  
"net:=", Array("<no net trace>", true),  
"net:=", Array("<no net fill>", true),
```

```
"net:=", Array("EMDesign1:GND", true) ... ))
```

## DeactivateOpen (Layout Editor)

*Use:* Causes deactivation of one or more components to *open circuit* state.

**Syntax:** **ActivateOpen** Array ("NAME:components",  
    <object\_name>, // 1<sup>st</sup> component name  
    <object\_name>, // 2<sup>nd</sup> component, if any  
    ...) // etc

## DeactivateShort (Layout Editor)

*Use:* Causes deactivation of one or more components to *short circuit* state.

**Syntax:** **ActivateShort** Array("NAME:components",  
    <object\_name>, // 1<sup>st</sup> component name  
    <object\_name>, // 2<sup>nd</sup> component, if any  
    ...) // etc

## Defeature Objects (Layout Editor)

*Use:* Remove irrelevant features from a primitive. Vertices that deviate less than the tolerance from a chord are removed; narrow concave regions less than the tolerance wide are also eliminated. The command can also be used to fix self-intersections (only the 'positive' areas are kept).

**Command:** DefeatureObjects

**Syntax:** DefeatureObjects Array("NAME:options", "tolerance:=", <value>, "fix:=", <fix>), Array("NAME:elements", <"primitive">, ...)

**Return Value:** None



*Parameters:* <"value">

Type: double, e.g. 0.001

Description: tolerance value

<fix>

Type: boolean (true or false)

Description: if true, then self-intersections are fixed.

< primitive >

Type: text

Description: primitive name.

## DelNetClass

*Use:*Delete a net class in a layout.

*Command:*DelNetClass

*Syntax:*DelNetClass (<names>)

*Return Value:*None

## Delete (Layout Editor)

*Use:* Deletes one or more objects.

*Syntax:* **Delete** <object\_name\_list>// names of the objects to be deleted

<object\_name\_list>:

Array ("NAME:elements", <object\_name>, <object\_name>, ...)

## DeleteNets (Layout Editor)

Removes specified nets from the project.

|              |           |        |                       |
|--------------|-----------|--------|-----------------------|
| UI Access    | None.     |        |                       |
| Parameters   | Name      | Type   | Description           |
|              | <netName> | String | Name of unwanted net. |
| Return Value | None.     |        |                       |

|                |                                                                                                                         |
|----------------|-------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | DeleteNets ([<netName>, ...])                                                                                           |
| Python Example | <pre>oEditor.DeleteNets (<br/>    [<br/>        "NET_1",<br/>        "NET_2",<br/>        "NET_3"<br/>    ]<br/>)</pre> |

## DeletePinGroup (Layout Editor)

*Use:* Deletes a pin group.

*Syntax:* DeletePinGroup(**STRING** *pin-group-name*)

## Disconnect (Layout Editor)

*Use:* Removes the specified object(s) from their current electrical net(s) (if any).

*Syntax:* **Disconnect** Array ("NAME: elements",

<object\_name>, // 1<sup>st</sup> object

<object\_name>, // 2<sup>nd</sup> object, if any

...) // etc

## Duplicate (Layout Editor)

*Use:* Duplicates layout objects.

*Command:* The specified objects are duplicated by the given count with the specified offset.

*Syntax:* Duplicate Array("NAME:options", "count:", <count data>), Array("NAME:elements", <element names>), Array( <x>, <y>)

*Return Value:* None

*Parameters:* <count data> is the number of sets of new objects to be generated (and does not include the original objects)

<element names> is one or more strings with the names of layout objects

<x> is the x value for the offset

<y> is the y value for the offset

## DuplicateAcrossLyrs (Layout Editor)

*Use:* Duplicate selected objects (layout and footprint) to other layers.

**Command:** Draw > Duplicate > Across Layers

**Syntax:** DuplicateAcrossLyrs Array("NAME:elements", "element-name",...), Array("NAME:layers", "layer-name",...)

**Return Value:** None

**Parameters:** <element-name> // The name of the element to be duplicated.

<layer-name> // The name of the layer to duplicate elements to.

## Edit (Layout Editor)

**Use:** Causes modification of one or more existing object(s).

**Syntax:** Edit <Array("NAME:items".....)>,

**Parameters:** <Array("NAME:items"  
<edit\_object\_info>, // one object info  
<edit\_object\_info>, // another one  
...) // etc

**<edit\_object\_info>:**

Array("NAME:item",  
"name:=", <object\_name>, // name of the object  
<object\_description>) // 'new' object state, type should be consistent with <object\_name>:

<object\_description>:

<circle\_description> |

<rectangle\_description> |

```
<line_description> |
<polyon_description> |
<text_description> |
<circle_void_description> |
<rectangle_void_description> |
<line_void_description> |
<polyon_void_description> |
<component_description> |
<pin_description> |
<via_description>
```

# Edit3DComponentDefinition

Edits definitions of a specified 3D component.

| UI Access  | Layout > 3D Component Definitions. Select component and click <b>Edit Definition</b> . |       |                                                                                                                                                                                              |
|------------|----------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                   | Type  | Description                                                                                                                                                                                  |
|            | <Parameters>                                                                           | Array | Structured array.<br><br>Array("NAME:3D Components",<br><br>"Definitions:=" , [<string component name>],<br><br>"IsLocal:=" , <boolean True for local definition;<br>False to save to file>, |

|                       |                                                                                                                                                                                               |  |                                                                                                                                                                  |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       |                                                                                                                                                                                               |  | "EditFilePath:=", <string path of new component file location>)<br><br>If saving locally or leaving the file path unaltered, pass empty string for EditFilePath. |
| <b>Return Value</b>   | None.                                                                                                                                                                                         |  |                                                                                                                                                                  |
| <b>Python Syntax</b>  | Edit3DComponentDefinition (< <i>Parameters</i> >)                                                                                                                                             |  |                                                                                                                                                                  |
| <b>Python Example</b> | <pre>oEditor.Update3DComponentDefinitions(     ["NAME:3D Components",         "Definitions:=" , ["My_Component"],         "IsLocal:="      , True,         "EditFilePath:=", ""     ] )</pre> |  |                                                                                                                                                                  |

## EraseMeasurements (Layout Editor)

*Use:* Causes erasing of ALL measurements currently present.

*Command:* None.

*Syntax:* EraseMeasurements

*Return Value:* None.

*Parameters:* None.

## Expand (Layout Editor)

Scales an existing circle, square, or polygon. To expand an object while preserving ports, use [ExpandWithPorts](#).

| UI Access    | Draw > Expand.                 |         |                                                                                                                                |
|--------------|--------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                           | Type    | Description                                                                                                                    |
|              | <code>&lt;expansion&gt;</code> | String  | Expansion amount, including unit. Value can be negative to shrink an object.                                                   |
|              | <code>&lt;join&gt;</code>      | String  | Corner style. One of: <ul style="list-style-type: none"><li>"ROUND"</li><li>"MITER"</li><li>"CORNER"</li></ul>                 |
|              | <code>&lt;replace&gt;</code>   | Boolean | True to replace original object; False to create new object.                                                                   |
|              | <code>&lt;items&gt;</code>     | Array   | Structured array containing object to expand:<br><br><code>Array("NAME:elements",<br/>"<br/>"Name of Object to Expand")</code> |
| Return Value | None.                          |         |                                                                                                                                |

|                |                                                                                      |
|----------------|--------------------------------------------------------------------------------------|
| Python Syntax  | <code>Expand(&lt;expansion&gt;, &lt;join&gt;, &lt;replace&gt;, &lt;items&gt;)</code> |
| Python Example | <code>oEditor.Expand("2mm", "ROUND", True, ["NAME:elements", "circle_0"])</code>     |

## ExpandWithPorts (Layout Editor)

Scales an existing circle, square, or polygon and preserves ports. To expand an object without preserving ports, use [Expand](#).

|           |                |
|-----------|----------------|
| UI Access | Draw > Expand. |
|-----------|----------------|

|                     |             |             |                                                                                                                     |
|---------------------|-------------|-------------|---------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b> | <b>Type</b> | <b>Description</b>                                                                                                  |
|                     | <expansion> | String      | Expansion amount, including unit. Value can be negative to shrink an object.                                        |
|                     | <join>      | String      | Corner style. One of: <ul style="list-style-type: none"> <li>"ROUND"</li> <li>"MITER"</li> <li>"CORNER"</li> </ul>  |
|                     | <replace>   | Boolean     | True to replace original object; False to create new object.                                                        |
|                     | <items>     | Array       | Structured array containing object to expand: <pre>Array("NAME:elements", "&lt;Name of Object to Expand&gt;")</pre> |
| <b>Return Value</b> | None.       |             |                                                                                                                     |

|                       |                                                                              |
|-----------------------|------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | ExpandWithPorts (<expansion>, <join>, <replace>, <items>)                    |
| <b>Python Example</b> | oEditor.ExpandWithPorts("2mm", "ROUND", True, ["NAME:elements", "circle_0"]) |

## ExportDXF (Layout Editor)

*Use:* Export DXF

*Command:* File > Export > AutoCAD

*Syntax:* ExportDXF

```
Array("NAME:options", "FileName:=", "<filename>", "AcadVersion:=", <version>, "ScaleFactor:=", <scale>),
```

```
Array("NAME:layers", "<layer>", ...)
```

*Return Value:* None



*Parameters:*

<"filename">

Type: text

Description: file path for the export file

<version>

Type: integer

Description: version of AutoCAD. Acceptable values are:

- **0** corresponding to AutoCAD version 13
- **1** corresponding to AutoCAD version 14
- **2** corresponding to AutoCAD 2000-2003
- **3** corresponding to AutoCAD 2004-2006
- **4** corresponding to AutoCAD 2007-2009
- **5** corresponding to AutoCAD 2010-2012

<scale>

Type: double

Description: the scaling of the values written out, e.g. if the data is written out in "mm", the scaling factor will be 1000.

<"layer">

Type: text

Description: names of the layers to be exported.

## ExportGDSII (Layout Editor)

Exports results to GDSII.

| UI Access    | File > Export > GDSII. |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------|------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters   | Name                   | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|              | <OptionParameters>     | Array | <p>Structured array.</p> <pre> Array("NAME:options",     "FileName:=", &lt;string, GDSII export file name.&gt;,     "NumVertices:=", &lt;integer, maximum number of vertices allowed in a polygon (specify zero if unlimited).&gt;,     "ArcTol:=", &lt;double, arc tolerance (in meters); the value used to discretize arcs. Smaller the value the greater the number of edges exported. For 0.1mm use 0.0001.&gt;,     "LayerMap:=", Array(     "entry:=", Array(     "layer:=", &lt;string, name of a layer to export.&gt;,     "id:=", &lt;integer, GDSII layer ID to assign the exported layer.&gt;,     "include:=", &lt;boolean, if true, the layer is exported.&gt;)) </pre> |
| Return Value | None.                  |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|               |                                 |
|---------------|---------------------------------|
| Python Syntax | ExportGDSII(<OptionParameters>) |
|---------------|---------------------------------|

|                       |                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oEditor.ExportGDSII [(     "NAME:options",     "FileName:=", "C:/Projects/ design.gds",     "NumVertices:=", 0,     "ArcTol:=", 2E-006,     "LayerMap:=", [         "entry:=", [             "layer:=", "Bottom",             "id:=", 2,             "include:=", true],         "entry:=", [             "layer:=", "Top",             "id:=", 1,             "include:=", true]     ] ]</pre> |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## ExportGerber (Layout Editor)

*Use:* Export the current design to Gerber files.

*Command:* File > Export > Gerber

**Syntax:** ExportGerber

```
Array("NAME:options",  
      "FileName:=", <"file name">,  
      "Units:=", <"units">,  
      "IntPlace:=", <integer places>,  
      "DecimalPlace:=", <decimal places>,  
      "Suppress:=", <"suppress">,  
      Array("NAME:GerberPages",  
            "<page>:=", Array(<"layer">, ...), ...))
```

**Return Value:** None**Parameters:** <"file name">

Type: text

Description: prefix for the exported Gerber files; the actual files will be named &lt;file name&gt;\_&lt;page&gt;.ger

&lt;"units"&gt;

Type: text

Description: unit code, e.g. "in", "mm", etc.

&lt;integer places&gt;

Type: integer

Description: number of integer places to use when formatting the numerical output.

&lt;decimal places&gt;

Type: integer

Description: number of decimal places to use when formatting the numerical output.

<"suppress">

Type: text

Description: either "Leading Zeros", or "Trailing Zeros".

<page>

Type: integer

Description: Gerber page number

<"layer">

Type: text

Description: Layers to be exported to the specified Gerber page.

## ExportNCDrill (Layout Editor)

*Use:* Export the vias to an NC Drill file

*Command:* File > Export > NCDrill

*Syntax:* ExportNCDrill

```
Array("NAME:options",  
"FileName:=", <"file name">,  
"Units:=", <"units">,  
"IntPlace:=", <integer places>,  
"DecimalPlace:=", <decimal places>,
```

```
"SuppressLeadingZero:=", <suppress leading zeros>,  
Array("NAME:NCDFileOptsVec",  
Array("NAME:NCDrillOptions",  
"Top:=", <"layer">,  
"Bottom:=", <"layer">,  
"Create:=", <create>), ...))
```

***Return Value:*** None

*Parameters:* <"file name">

Type: text

Description: prefix for the exported Gerber files; the actual files will be named <file name>\_<page>.ger

<"units">

Type: text

Description: unit code, e.g. "in", "mm", etc.

<integer places>

Type: integer

Description: number of integer places to use when formatting the numerical output.

<decimal places>

Type: integer

Description: number of decimal places to use when formatting the numerical output.

<suppress leading zeros>

Type: boolean

Description: if true, then suppress leading zeros in the output file.

<layer>

Type: text

Description: Start/end layer names; each layer range is written to a separate NC drill file.

<create>

Type: boolean

Description: if true, create the corresponding NC drill file.

## ExportToHFSS (Layout Editor)

*Use:* Exports an HFSS 3D Layout design to a new project with an equivalent HFSS 3D design. This command is only valid on HFSS Setup types.

*Syntax:* ExportToHfss(<setupName>, <pathToExportFile>)

## ExportToQ3D (Layout Editor)

*Use:* Exports an HFSS 3D Layout design to a new project containing an equivalent Q3D design. This command is only valid on HFSS Setup types.

*Syntax:* ExportToQ3d(<setupName>, <pathToExportFile>)

## FilterObjectList (Layout Editor)

Filters a list of object names using a key/value pair. See: [FindObjects](#).

|           |      |
|-----------|------|
| UI Access | N/A. |
|-----------|------|

|                     |                                |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|--------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b>   | <b>Name</b>                    | <b>Type</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                     | <key>                          | String      | <p>One of:</p> <ul style="list-style-type: none"> <li>• <b>"Name"</b> to search by object name.</li> <li>• <b>"Type"</b> to search by object type.</li> </ul> <p>Valid &lt;value&gt; strings for this type include: 'pin', 'via', 'rect', 'arc', 'line', 'poly', 'plg', 'circle void', 'line void', 'rect void', 'poly void', 'plg void', 'text', 'cell', 'Measurement', 'Port', 'Port Instance', 'Port Instance Port', 'Edge Port', 'component', 'CS', 'S3D', 'ViaGroup'</p> <ul style="list-style-type: none"> <li>• <b>"Layer"</b> to search by layer.</li> </ul> <p>An asterisk (*) in the &lt;value&gt; string matches all layers. Vias and pins match using their defined layer range. 'Multi' matches (non via/pin) multi-layer objects.</p> <ul style="list-style-type: none"> <li>• <b>"Net"</b> to search by net assignment.</li> </ul> |
|                     | <value>                        | String      | Specific query. Queries use a basic string match. For instance, an asterisk (*) matches anything. All matching is case insensitive.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Return Value</b> | Filtered list of object names. |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | FilterObjectList (<key>, <value>)                                                                  |
| <b>Python Example</b> | <pre>RFIN_pins = oLayout.FilterObjectList('Type', 'Pin', oLayout.FindObjects('Net', 'RFIN'))</pre> |

## FindObjectsByPoint (Layout Editor)

*Use:* Get a list of all objects intersected by the specified Point object on a given layer.



*Syntax:* oLayout.FindObjectsByPoint(<oPoint>, <Layer>)

*Return Value:* Object list.

## FindObjectsByPolygon (Layout Editor)

*Use:* Get a list of all objects intersecting the specified Polygon object on the given layer.

*Syntax:* oLayout.FindObjectsByPolygon(<oPolygon>, <Layer>)

*Return Value:* Object list.

## FlipHorizontal (Layout Editor)

*Use:* Causes horizontal flipping of one or more specified objects (mirroring about a vertical axis given its X coordinate).

*Syntax:* **FlipHorizontal** <object\_name\_list>, //objects to be flipped <position\_or\_center> // (X of flip\_axis / not used)

## FlipVertical (Layout Editor)

*Use:* Causes vertical flipping of one or more specified objects (mirroring about a horizontal axis given its Y coordinate).

*Syntax:* **FlipVertical** <object\_name\_list>, //objects to be flipped <position\_or\_center> // not used, flip axis

## GeometryCheckAndAutofix

*Use:* Runs Geometry Check and optionally applies autofixes.

*Command:* **HFSS 3D Layout > Geometry Check**

*Syntax:* GeometryCheckAndAutofix <ChecksArray>,  
minimum\_area\_meters\_squared,

**<FixesArray>**

**Return Value:** None

**Parameters:** **<ChecksArray>** - **Array("NAME:checks", <check 1>, <check 2>, ..., <check n>)**

Specify the checks that should be included. Specifying fewer checks may speed up execution but may also result in less problems reported in the message manager (or the logfile) and consequently less problems that can be fixed by autofixes.

The following are valid checks that can be specified:

- "Self-Intersecting Polygons"
- "Disjoint Nets (Floating Nodes)"
- "DC-Short Errors"
- "Identical/Overlapping Vias"
- "Misalignments"

There may be no checks, all 5 of the checks, or anything in between. The order that checks are specified in is not relevant.

### **minimum\_area\_meters\_squared**

Specify a decimal value for the minimum area (e.g. .000015) optionally in scientific notation (e.g. 2E-006). Cutouts smaller than this minimum area may be ignored during validation check.

**<FixesArray>** - **Array("NAME:fixes", <fix 1>, <fix 2>, ..., <fix n>)**

Specify the autofixes that should be applied if they are found by a check.

The following are valid fixes that can be specified:

- "Self-Intersecting Polygons"

- "Disjoint Nets",
- "Identical/Overlapping Vias"
- "Traces-Inside-Traces Errors"
- "Misalignments (Planes/Traces/Vias) "

There may be no fixes specified, all 5 fixes specified, or anything in between. The order that fixes are specified in is not relevant.

## GetAllLayerNames (Layout Editor)

*Use:* Informational.

*Command:* None.

*Syntax:* GetAllLayerNames

*Return Value:* Array of strings which are the names of all layers in the layout, blackbox, or footprint.

## GetBBox (Layout Editor)

*Use:* Get a [Polygon Object](#) defining the bounding box for the specified object name, or None if the object does not exist.

*Syntax:* oLayout.GetBBox(<Name>)

*Return Value:* Polygon object.

## GetCSObjects (Layout Editor)

*Use:* Given a coordinate system name, returns a list of the objects inside. Coordinate system names can be found using FindObjects ('Type', 'CS'). See [Find Objects](#).

*Syntax:* oLayout.GetCSObjects(<CS\_name>)

*Return Value:* List of objects in the coordinate system.

## GetCompInstanceFromRefDes (Layout Editor)

*Use:* Informational.

*Command:* None.

*Syntax:* GetCompInstanceFromRefDes (<object\_name>)

*Return Value:* Returns IDispatch for CompInstance.

*Parameters:* <object\_name>                      // string is refDes

## GetComponentInfo (Layout Editor)

*Use:* Informational.

*Command:* None.

*Syntax:* GetComponentInfo<compID>

*Return Value:* array of strings, as follows:

"ComponentName=string"

"PlacementLayer=string"

"LocationX=number"

"LocationY=number"

"BBoxLLx=number"

"BBoxLLy=number"

"BBoxURx=number"

"BBoxURy=number"

"Angle=number" (in degrees)

"Flip=true or false"

"Scale=number"

*Parameters:* The LayoutComp's ID

## GetComponentPinInfo (Layout Editor)

*Use:* Informational.

*Command:* None.

*Syntax:* GetComponentPinInfo<compID, pinName>

*Return Value:* retval = array of strings, as follows:

"X=val"

"Y=val"

"Angle=val"

"Flip=true/false"

"WireID=string"

*Parameters:* compID = The LayoutComp's ID

pinName = The name of the pin

## GetComponentPins (Layout Editor)

*Use:* Informational.

*Command:* None.

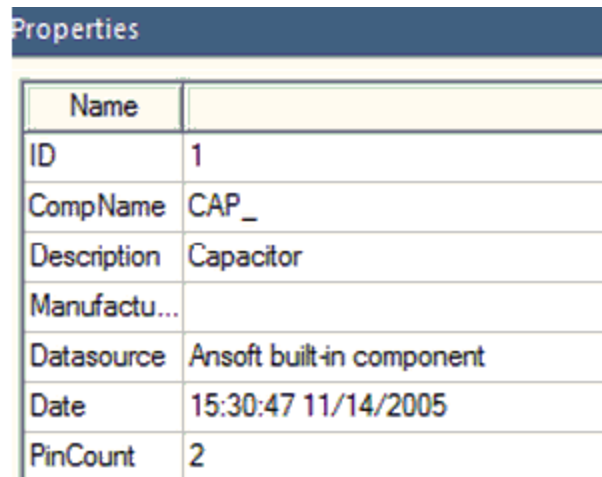
*Syntax:* GetComponentPins<compID>

*Return Value:* array of strings, which are the names of all the component's pins

*Parameters:* The LayoutComp's ID

CompInst@<ComponentName>;<CompInstID>

**Note:** For the documented example, the capacitor component name is CAP\_ and its ID is 1. If you can select the item of interest in the schematic, the **Properties** window gets updated with the corresponding component name, its ID, and other details as shown in the following figure.



| Properties   |                           |
|--------------|---------------------------|
| Name         |                           |
| ID           | 1                         |
| CompName     | CAP_                      |
| Description  | Capacitor                 |
| Manufactu... |                           |
| Datasource   | Ansoft built-in component |
| Date         | 15:30:47 11/14/2005       |
| PinCount     | 2                         |

## GetEditorName (Layout Editor)

*Use:* Informational.

*Command:* None.

*Syntax:* GetEditorName()

*Return Value:* Returns the name of the editor.

## GetMaterialList (Layout Editor)

*Use:* Get the names of all the materials for a layout.

*Command:* None.

*Syntax:* GetMaterialList

*Return Value:* Array of strings.

*Parameters:* None.

```
materialNames = oEditor.GetMaterialList
```

## GetNetClassNets

*Use:* Gets the list of nets in a net class.

*Command:* GetNetClassNets

*Syntax:* GetNetClassNets (<name>)

*Return Value:* None

## GetNetClasses

*Use:* Gets all the net classes in a layout.

*Command:* GetNetClasses

*Syntax:* GetNetClasses ()

*Return Value:* None

## GetNetConnections (Layout Editor)

*Use:* Informational.

*Command:* None.

*Syntax:* GetNetConnections(<netName>)

*Return Value:* Array of strings containing the connections for the net identified by the netName argument. The strings in the array are in one of four formats:

"ComponentPin compID pinname x y EdgePort"

"ComponentPin compID pinname x y PinPadstack: padstackName"

"InterfacePort portname portID x y Padstack: padstackName"

"EdgePort portname portID EdgeInfo: Primitive id, edge index[Primitive id, edge index]"

where *compID* is the component instance identifier, *pinname* is the name of the connected pin, *x* and *y* are the connection point, *padstackName* is the name of the padstack, *portname* is the name of the port, *portID* is the identifier for the interface port, and *id* and *index* identify edges involved in an edgeport.

*Parameters:* <netName>

Type: String

The name of the net.

## GetPolygon (Layout Editor)

*Use:* Get a [Polygon Object](#) for the specified object name, or None if the object does not exist. Returned polygon is as rendered, in SI units



*Syntax:* oLayout.GetPolygon(<Name>)

*Return Value:* Polygon object.

## GetPolygonDef (Layout Editor)

*Use:* Get a [Polygon Object](#) for the specified object name, or None if the object does not exist. Returned polygon is as rendered, in SI units. For trace types, this corresponds to the center line.

*Syntax:* oLayout.GetPolygonDef(<Name>)

*Return Value:* Polygon object.

## GetPortInfo (Layout Editor)

*Use:* Request information on a port or pin.

*Command:* None.

*Syntax:* GetPortInfo<"name">

*Return Value:* an array of text as follows:

For pins and ports that are not edge ports:

Name=<name>

Type=Pin, Padstack: <padstack definition name>

X=<X coordinate>

Y=<Y coordinate>

ConnectionPoints=<connection description>; <connection description>,...

NetName=<net name>

For edge ports:

Name=<name>

Type=EdgePort

X=<X coordinate>

Y=<Y coordinate>

ConnectionPoints=<connection description>; <connection description>,...

NetName=<net name>

<name>

Text containing the name of the pin or port

<padstack definition name>

Text containing the name of the associated padstack definition

<X coordinate>

Double indicating the X location of the pin or port location

<Y coordinate>

Double indicating the Y location of the pin or port location

<connection description>

< X coordinate> <Y coordinate> Dir:<direction> Layer: <layer name>

<direction>

Either NONE or a double giving the angle in degrees for the connection direction

<layer name>

Name of the layer for the connection point being described.

Example returned values:

Name=Pin1

Type=Pin, Padstack: Padstack

X=0.000744

Y=0.015537

ConnectionPoints= 0.000744 0.015537 Dir:NONE Layer: Top; 0.000744 0.015537

Dir:NONE Layer: Ground; 0.000744 0.015537 Dir:NONE Layer: Bottom

NetName=Pin1

Name=Port1

Type=EdgePort

X=-0.008120

Y=0.004264

ConnectionPoints= -0.008120 0.004264 Dir:90.000000 Layer: Bottom

NetName=Port1

*Parameters:* <"name">

Text that contains the name of the port or pin for which information is being requested.

## GetProperties (Layout Editor)

*Use:* Gets a list of all the properties belonging to a specific **PropServer** and **PropTab**. This can be executed by the **oProject**, **oDesign**, or **oEditor** objects.

*Command:* None

*Syntax:* GetProperties( <PropTab>, <PropServer> )

*Return Value:* Variant array of strings – the names of the properties belonging to the prop server.

## GetPropertyValue (Layout Editor)

*Use:* Gets the value of a single property. This can be executed by the **oProject**, **oDesign**, or **oEditor** objects.

*Command:* None

*Syntax:* GetPropertyValue(<PropTab>, <PropServer>, <PropName>)

*Return Value:* String representing the property value.

## GetSelections [Design]

This script serves no function at the Design level. See: [GetSelections \(Layout Editor\)](#), [GetSelections \(Model Editor\)](#), or Get Selections (Schematic Editor).

## Group (Layout Editor)

*Use:* Groups a set of primitives into a coordinate system.

*Command:* None.

*Syntax:* oEditor.Group <CS name>, Array("NAME:elements", <element1>, <element2>, ...)

*Return Value:* None.

## Heal (Layout Editor)

Heals imprecise geometry.

| UI Access         | From the <b>Layout</b> ribbon, click <b>Healing</b> . |         |                                                                                                                                                                                                                            |
|-------------------|-------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name                                                  | Type    | Description                                                                                                                                                                                                                |
|                   | <HealArray>                                           | Array   | Structured array containing these parameters in order: <ul style="list-style-type: none"> <li>• &lt;NAME:category&gt;</li> <li>• &lt;Type&gt;</li> <li>• &lt;OptionalArgs&gt;</li> <li>• &lt;Tol&gt;</li> </ul>            |
|                   | <NAME:category>                                       | String  | Required first parameter which identifies the category of healing (i.e., " <b>Snap</b> ", " <b>Feature</b> ", or " <b>Repair</b> ", such as <NAME:Snap>.                                                                   |
|                   | <Type>                                                | String  | Dependent on <NAME:category>. Identifies the type of healing, per category:<br><b>Snap</b> — "Point", "Arc", or "Grid"<br><b>Feature</b> — "Voids" or "FloatingBodies"<br><b>Repair</b> — "Colinear" or "SelfIntersecting" |
|                   | <OptionalArgs>                                        | String  | Optional parameters (i.e., "Antipads", "ModifyArcs", and/or "InsertPointsInEdges". Multiple <OptionalArgs> can be entered, depending on <NAME:category> and <Type>.                                                        |
|                   | <Antipads>                                            | Boolean | If <NAME:Feature> and <Type>="Voids", then this optional argument is available:<br><br><b>True</b> — voids are converted to antipads<br><b>False</b> — voids are not converted to antipads                                 |
|                   | <ModifyArcs>                                          | Boolean | If <NAME:Snap> and <Point>="Voids", then this optional argument is available:<br><br><b>0</b> — arcs do not snap to close primitive edges                                                                                  |

|                     |                       |         |                                                                                                                                                                                                                                                                                                            |
|---------------------|-----------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                       |         | <b>1</b> — arcs snap to close primitive edges                                                                                                                                                                                                                                                              |
|                     | <InsertPointsInEdges> | Boolean | If <NAME:Snap> and <Point>="Voids", then this optional argument is available:<br><br><b>0</b> — new points will not appear when healed primitives snap together<br><b>1</b> — new points will appear at midpoints between existing edges and at the new edges created when healed primitives snap together |
|                     | <Tol>                 | Integer | Primitives at or within this tolerance are healed.                                                                                                                                                                                                                                                         |
| <b>Return Value</b> | None                  |         |                                                                                                                                                                                                                                                                                                            |

|                       |                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | oEditor.Heal([<NAME:<category>, <Type>, <OptionalArgs>, <Tol>])                                                                                                                                                                                                                                                                                                  |
| <b>Python Example</b> | <pre> oProject = oDesktop.SetActiveProject("GeometryHealing") oDesign = oProject.SetActiveDesign("TestDesign") oEditor = oDesign.SetActiveEditor("Layout") oEditor.Heal(     [         "NAME:Snap",         "Type:=" , "Point",         "ModifyArcs:=" , 1,         "InsertPointsInEdges:=" , 1,         "Tol:=" , "2mm",         "Tol:=" , "2mm"     ] ) </pre> |

# HighlightNet (Layout Editor)

Highlights or removes the highlight from all elements in a net.

|              |                            |         |                                                                                                         |
|--------------|----------------------------|---------|---------------------------------------------------------------------------------------------------------|
| UI Access    | None.                      |         |                                                                                                         |
| Parameters   | Name                       | Type    | Description                                                                                             |
|              | <requiredParameterKeyword> | String  | Required first parameter which must have the value "Name:Args".                                         |
|              | <requiredNetKeyword>       | String  | Required second parameter which must have the value "Name:=". Must be the first parameter for each net. |
|              | <netName>                  | String  | Name of the net.                                                                                        |
|              | <requiredFlagKeyword>      | String  | Required fourth parameter which must have the value "Hi:=". Must be the third parameter for each net.   |
|              | <highlightFlag>            | Boolean | True if the net should be highlighted. False if it should not.                                          |
| Return Value | None.                      |         |                                                                                                         |

|                |                                                                                                                             |
|----------------|-----------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | HighlightNet(["Name:Args", "Name:=", "<netName>", "Hi:=", <highlightFlag>, ...])                                            |
| Python Example | <pre>oEditor.HighlightNet(<br/>    [<br/>        "NAME:Args",<br/>        "Name:=", "net_0",<br/>        "Hi:=", True</pre> |

|  |    |
|--|----|
|  | ]) |
|--|----|

## ImportDXF [Modeler]

Imports a DXF model file.

| UI Access  | Modeler > Import. |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------|-------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name              | Type  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|            | <Parameters>      | Array | Structured array.<br><pre>Array("NAME:options",   "FileName:=" , &lt;string&gt;,   "Scale:=" , &lt;float&gt;,   "AutoDetectClosed:=" , &lt;boolean&gt;,   "SelfStitch:=" , &lt;boolean&gt;,   "DefeatureGeometry:=" , &lt;boolean&gt;,   "DefeatureDistance:=" , &lt;integer&gt;,   "RoundCoordinates:=" , &lt;boolean&gt;,   "RoundNumDigits:=" , &lt;integer&gt;,   "WritePolyWithWidthAsFilledPoly:=" , &lt;boolean&gt;,   "ImportMethod:=" , &lt;integer&gt;,   "2DSheetBodies:=" , &lt;boolean&gt;,   &lt;layersArray&gt;)</pre> |
|            | <layersArray>     | Array | Structured array.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



|              |         |       |                                                                                                                                                                                                                               |
|--------------|---------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |         |       | Array("NAME:LayerInfo",<br><layer>, <layer>, <layer>,...)                                                                                                                                                                     |
|              | <layer> | Array | Structured array.<br>Array("NAME:<layerName>",<br>"source:=" , <string>,<br>"display_source:=" , <string>,<br>"import:=" , <boolean>,<br>"dest:=" , <string>,<br>"dest_selected:=" , <boolean>,<br>"layer_type:=" , <string>) |
| Return Value | None.   |       |                                                                                                                                                                                                                               |

|                |                                                                                                                                                                                                                                                                                                          |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | ImportDXF(<Parameters>)                                                                                                                                                                                                                                                                                  |
| Python Example | <pre>oEditor.ImportDXF(<br/>    ["NAME:options",<br/>    "FileName:=", "C:/Users/jdoe/Desktop/export.dxf",<br/>    "Scale:="                    , 0.001,<br/>    "AutoDetectClosed:="         , True,<br/>    "SelfStitch:="                , True,<br/>    "DefeatureGeometry:="         , False,</pre> |

```

"DefeatureDistance:="      , 0,
"RoundCoordinates:="      , False,
"RoundNumDigits:="        , 4,
"WritePolyWithWidthAsFilledPoly:=", False,
"ImportMethod:="          , 1,
"2DSheetBodies:="         , False,
["NAME:LayerInfo",
  ["NAME:0",
    "source:="              , "0",
    "display_source:="      , "0",
    "import:="              , True,
    "dest:="                , "0",
    "dest_selected:="       , False,
    "layer_type:="          , "signal"
  ],
  ["NAME:LAYER_1",
    "source:="              , "LAYER_1",
    "display_source:="      , "LAYER_1",
    "import:="              , True,
    "dest:="                , "LAYER_1",
    "dest_selected:="       , False,

```

|  |                                                                                                                                                                                                                                                                                                          |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"layer_type:="          , "signal"  ],  ["NAME:LAYER_2",  "source:="              , "LAYER_2",  "display_source:="      , "LAYER_2",  "import:="              , True,  "dest:="                 , "LAYER_2",  "dest_selected:="       , False,  "layer_type:="          , "signal"  ]  ]  ] )</pre> |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

ImportGDSII

Imports a GDSII file into a new project.

| UI Access  | File > Import > GDSII. |        |                                                                                   |
|------------|------------------------|--------|-----------------------------------------------------------------------------------|
| Parameters | Name                   | Type   | Description                                                                       |
|            | <gdsiiFileName>        | String | Full path of GDSII file.                                                          |
|            | <outputPathName>       | String | Full path of EDB file to create during import.                                    |
|            | <controlFileName>      | String | Optional. Full path of XML control file. Full path of “technology” (corresponding |

|                     |                                  |        |                                                                                                                                                                                                                                               |
|---------------------|----------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                  |        | to <code>-t=technologyfile</code> argument in <code>anstranslator</code> ). Pass empty string if none.                                                                                                                                        |
|                     | <code>&lt;mapFileName&gt;</code> | String | If technology file was used in place of the control file. Full path to either gdsii mapping file (corresponding to <code>-g=gdsMappingFile</code> argument in <code>anstranslator</code> ) or XML control file. Otherwise, pass empty string. |
| <b>Return Value</b> | None.                            |        |                                                                                                                                                                                                                                               |

|                       |                                                                                                                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>ImportGDSII(&lt;gdsiiFileName&gt;, &lt;outputPathName&gt;, &lt;controlFileName&gt;, &lt;mapFileName&gt;)</code>                                                                      |
| <b>Python Example</b> | <pre>oDesktop.RestoreWindow()  Set oTool = oDesktop.GetTool('ImportExport')  oTool.ImportGDSII('C:/Files/test.gds', 'C:/Files/test.aedb', 'C:/Files/test.ircx', 'C:/Files/test.xml')</pre> |

## Intersect (Layout Editor)

*Use:* Causes Boolean intersecting of 2 or more *primitive* (polygons, rectangles, lines, or circles) objects.

*Syntax:* **Intersect** Array ("NAME: *primitives*",

`<object_name>`, // 1<sup>st</sup> primitive name

`<object_name>`, // 2<sup>nd</sup> primitive, if any

...)// etc

## ModifyNetClass

*Use:* Modify an existing net class in a layout.

*Command:*ModifyNetClass

*Syntax:*ModifyNetClass (<name> <new name> <new description> <new nets name list>)

*Return Value:*None

## Move (Layout Editor)

*Use:* Translate this Polygon by the vector specified in the provided Point. Return this Polygon.

*Syntax:* oPolygon.Move(<oPoint>)

*Return Value:* This Polygon object.

## PageSetup (Layout Editor)

*Use:* Specifies page setup for printing.

*Command:* **File>Page Setup**

*Syntax:* PageSetup <ArgArray>

*Return Value:* None.

*Parameters:* <Margins>: Page margins in implicit units of inches.

<Border>: Integer value indicating to draw border (1) or not to draw (0).

<DesignVars>: Integer value indicating to draw design vars (1) or not to draw (0).

## Point (Layout Editor)

*Use:* Create and return a [Point Object](#).

*Syntax:* oLayout.Point()

*Return Value:* Point object.

## Polygon (Layout Editor)

*Use:* Create and return a [Polygon Object](#).

*Syntax:* oLayout.Polygon()

*Return Value:* Polygon object.

## PositionRelative (Layout Editor)

*Use:* Position a coordinate system (CS), including 3D structures and components, relative to another object.

*Command:* Draw > Position Relative

*Syntax:* There are two forms available:

PositionRelative

Array("NAME:Contents",

"RelPos:=", Array(<edge description>)),

Array("NAME:elements", <coordinate system name>, < coordinate system name >, ...)

PositionRelative Array("NAME:Contents",

"RelPos:=", Array("t:=", "pr", "from:=", <edge port or pin name>)),

Array("NAME:elements", <coordinate system name>, <coordinate system name>, ...)

*Return Value:* None.

*Parameters:*

Array("NAME:elements", "CS\_23")

<edge description> for primitive edges

"t:=", "pe", "from:=", <"prim">, "pos:=", <edge position>, "et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>

<"prim">: text that is the primitive name

<edge position>

double between 0 and 1, inclusive

0 indicates the start of the edge

1 indicates the end of the edge

values in between are positions along the edge

<edge#>: integer that is the edge number on the primitive

<edge description> for via edges

```
"t:=", "pe", "from:=", <"via">, "pos:=", <edge position>, "et:=", "pse",  
"sel:=", <"via">, "layer:=", <layer id>, "sx:=", <start X location>,  
"sy:=", <start Y location>, "ex:=", <end X location>, "ey:=",  
<end Y location>, "h:=", <arc height>, "rad:=", <radians>
```

<"via">: text that is the name of the via to use

<layer id>: an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc

<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>: double giving the height of the edge arc (0 for a straight edge)

<radians>: double giving the arc size in radians (0 for a straight edge)

< coordinate system name >

Text that contains the name of the coordinate system



<edge port or pin name>

Text that contains the name of the edge port or via

## PushExcitations

Allows access to computed excitations for transient and linear frequency solutions. The script command can be accessed from three locations.

|                   |                                                                                                                                                                                                       |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UI Access</b>  | <ul style="list-style-type: none"><li>• Layout Editor</li><li>• Schematic Editor</li><li>• Select a Nexxim solution in a 3D Layout design, right click, and choose <b>Push Excitations</b>.</li></ul> |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Parameters</b> | Name                                                                                                                                                                                                  | Type   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                   | <Reference Designation>                                                                                                                                                                               | String | "<refdes>"<br><br>This argument is empty when excitations are pushed from a Nexxim solution.                                                                                                                                                                                                                                                                                                                                                                                 |
|                   | <PushExcitations Parameters>                                                                                                                                                                          | Array  | This parameter changes depending on whether the excitations comes from a transient or linear frequency solution. The keyword "transient:=" indicates to AEDT which solution generated the excitations. If "transient:=" is present, "CalcThevenin =" and its value are ignored.<br><br>For a linear frequency solution, use this array:<br><br><pre>Array("NAME:options",<br/>      "CalcThevenin =" , &lt;true false&gt;,<br/>      "Sol:=", "&lt;solution name&gt;")</pre> |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <p>If CalcThevenin is true, Thevenin's equivalent is calculated. Parameters for the linear frequency solution do not include a Freq argument, so all frequencies from the solution are used.</p> <p>For a transient solution, use:</p> <pre>Array("NAME:options",     "transient:=", Array(         "start:=", &lt;start time&gt;,         "stop:=", &lt;stop time&gt;,         "maxHarmonics:=", &lt;max harmonics&gt;,         "winType:=", &lt;window&gt;,         ["widthPct:=", &lt;width percentage&gt;],         ["kaiser:=", &lt;Kaiser value&gt;],         ["correctCoherentGain:=", true]),     "Sol:=", "&lt;solution name&gt;")</pre> <p>winType can have the following values:</p> <ul style="list-style-type: none"> <li>• Rectangular</li> <li>• Bartlett</li> <li>• Blackman</li> <li>• Hamming</li> <li>• Hanning</li> <li>• Kaiser</li> <li>• Welch</li> <li>• Weber</li> </ul> |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|              |             |  |            |
|--------------|-------------|--|------------|
|              | <div></div> |  | • LanzaCos |
| Return Value | None        |  |            |

**Note:**

For more information about the component name, schematic IDs, and formats, see the section [Editor Scripting IDs](#).

## RemoveLayer (Layout Editor)

*Use:* Removes a layer or stackup layer.

*Command:* Remove Layer from a layout or footprint definition

*Syntax:* RemoveLayer (<LayerName>)

*Return Value:* None.

*Parameters:* <LayerName>

Type: <String>

**Note** As with other Layout scripting interface commands that modify the layout, this command is not intended for use within scripts that define footprints. The command behavior from within such a script is undefined and may be unexpected. Use the LayoutHost scripting interface commands within scripts that define footprints. Users can, however, execute the **RemoveLayer** command from both general and **IC** modes, although the command functions differently in each environment. Refer to [RemoveLayer \(IC Editor\)](#).

## RemovePortsFromAllNets (Layout Editor)

*Use:* Removes ports from all the pins in all the nets.

**Command:** Layout tab under Nets right-click and click **Remove Ports**.

**Syntax:** RemovePortsFromAllNets

**Return Value:** None

**Parameters:** None.

**Example:** oEditor.RemovePortsFromAllNets

## RemovePortsFromNet (Layout Editor)

Removes ports from all the pins on the designated nets.

|                     |                                                                                                                                                                                                                                    |        |                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------|
| <b>UI Access</b>    | In the <b>Layout</b> window, right click the net and click <b>Port &gt; Remove Ports from Net</b> or on the <b>Nets</b> tab of the <b>Nets</b> window, highlight and right click one or more nets and choose <b>Remove Ports</b> . |        |                                                                                    |
| <b>Parameters</b>   | Name                                                                                                                                                                                                                               | Type   | Description                                                                        |
|                     | <requiredKeyword>                                                                                                                                                                                                                  | String | Required parameter that must proceed all element names with the value "NAME:Nets". |
|                     | <netName>                                                                                                                                                                                                                          | String | Name of a net. Ports are removed from the port instances of the selected nets.     |
| <b>Return Value</b> | None.                                                                                                                                                                                                                              |        |                                                                                    |

|                       |                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | RemovePortsFromNet(["NAME:Nets", <netName>, ...])                                                                    |
| <b>Python Example</b> | <pre>oEditor.RemovePortsFromNet (<br/>    [<br/>        "NAME:Nets",<br/>        "NET_1",<br/>        "NET_2",</pre> |

|  |                           |
|--|---------------------------|
|  | <pre>"NET_3"<br/>])</pre> |
|--|---------------------------|

## RemovePortsOnComponents (Layout Editor)

Remove ports on port instances of selected components. Multiple nets can be listed.

|              |                                                                       |        |                                                                                            |
|--------------|-----------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------|
| UI Access    | Right click and choose <b>Port &gt; Remove Ports From Component</b> . |        |                                                                                            |
| Parameters   | Name                                                                  | Type   | Description                                                                                |
|              | <i>&lt;requiredKeyword&gt;</i>                                        | String | Required parameter that must proceed all element names with the value "NAME:elements".     |
|              | <i>&lt;elementName&gt;</i>                                            | String | Name of a component. Ports are removed from the port instances of the selected components. |
| Return Value | None.                                                                 |        |                                                                                            |

|                |                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------|
| Python Syntax  | RemovePortsOnComponents (["NAME:elements", <elementName>,...])                                                     |
| Python Example | <pre>oEditor.RemovePortsOnComponents (<br/>    [<br/>        "NAME:elements",<br/>        ""<br/>    ]<br/>)</pre> |

## Rotate (Layout Editor)

*Use:* Rotate this Polygon counter clockwise (CCW) about a center specified by the provided Point. Angle is in radians. Return this Polygon.

*Syntax:* `oPolygon.Rotate(<AngRad>, <oPoint>)`

*Return Value:* This Polygon object.

*Example:* `oPolygon = oPolygon.Rotate(pi/2, oLayout.Point)`

## SelectAll (Layout Editor)

*Use:* Select all elements in the layout editor.

*Command:* None.

*Syntax:* `SelectAll()`

*Parameters:* None

*Example:* `Dim removedDefs`

`removedDefs = oDefinitionEditor.SelectAll()`

## SetCS (Layout Editor)

*Use:* Activate a coordinate system (CS).

*Command:* None.

*Syntax:* `oEditor.SetCS <CS name or blank>`

*Return Value:* None.

```
Example: oEditor.SetCS "CS_7" // activate CS_7
oEditor.SetCS "" // activate the 'global CS', i.e. no CS is active
```

## SetLayerMapping (Layout Editor)

*Use:* Set layer mapping.

*Command:* None.

*Syntax:* SetLayerMapping <component name>, <design layer>, <footprint layer>

*Return Value:* None.

*Parameters:* <component name> is a string that specifies the name of the component

<design layer> is a string that specifies the name of the design layer

<footprint layer> is a string that specifies the name of the footprint layer

```
Example: oEditor.SetLayerMapping "2", "Bottom Signal", "Top"
```

## SetNetVisible (Layout Editor)

Shows and highlights or hides specified nets in the Layout Editor. Multiple nets can be highlighted or hidden at once.

| UI Access  | On the <b>Nets</b> tab of the <b>Nets</b> window, highlight and right click on one or more nets. Click <b>Hide</b> or any of the <b>Show</b> options. |        |                                                                                                         |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                                                                                  | Type   | Description                                                                                             |
|            | <requiredParameterKeyword>                                                                                                                            | String | Required first parameter which must have the value "Name:Args".                                         |
|            | <requiredNameKeyword>                                                                                                                                 | String | Required second parameter which must have the value "Name:=". Must be the first parameter for each net. |

|                     |                                          |         |                                                                                                       |
|---------------------|------------------------------------------|---------|-------------------------------------------------------------------------------------------------------|
|                     | <code>&lt;netName&gt;</code>             | String  | Name of the net                                                                                       |
|                     | <code>&lt;requiredFlagKeyword&gt;</code> | String  | Required fourth parameter which must have the value "Vis:". Must be the third parameter for each net. |
|                     | <code>&lt;visibilityFlag&gt;</code>      | Boolean | True if the net should be visible. False if it should be hidden.                                      |
| <b>Return Value</b> | None.                                    |         |                                                                                                       |

|                       |                                                                                                                                                                                                                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>SetNetVisible(["Name:Args", "Name:=", "&lt;netName&gt;", "Vis:=", &lt;highlightFlag&gt;, ...])</code>                                                                                                                                                                                                           |
| <b>Python Example</b> | <pre> oEditor.SetNetVisible(     [         "NAME:Args",         "Name:=", "Net_1",         "Vis:=", True     ]) oEditor.SetNetVisible(     [         "NAME:Args",         "Name:=", "&lt;NO-NET&gt;",         "Vis:=", False,         "Name:=", "Ground",         "Vis:=", False,         "Name:=", "Chassis", </pre> |



|  |                                 |
|--|---------------------------------|
|  | <pre>"Vis:=", True<br/>])</pre> |
|--|---------------------------------|

## StitchLines (Layout Editor)

*Use:* Stitch together connected or crossing lines into polygons and lines.

*Command:* StitchLines

*Syntax:* StitchLines Array("NAME:elements", <"line">, ...)

*Return Value:* None

*Parameters:* <"line">

Type: text

Description: line name.

*Example:*

```
oDesign = oProject.SetActiveDesign("HFSS3D1")  
oEditor = oDesign.SetActiveEditor("Layout")  
oEditor.StitchLines ["NAME:elements", "line_1", "line_2", "line_3"]
```

## Subtract (Layout Editor)

*Use:* Causes boolean subtracting of one or more *primitive* (polygons, rectangles, lines, or circles) object(s) from another one.

*Syntax:* **Subtract** Array ("NAME: *primitives*",

```
<object_name>, // Primitive to subtract from  
<object_name>, // 1nd primitive to subtract, if any  
...) // etc
```

*Example:*

```
oEditor.Intersect Subtract ("NAME:primitives", "circle_0", "rect_2")
```

## ToggleViaPin (Footprint Editor)

*Use:* Selected pins are changed to vias. Selected vias are changed to pins.

*Syntax:* ToggleViaPin <NAME:elements", <object\_name> ... // objects to be toggled

*Return Value:* None.

*Parameters:* <object\_name>

Type: <String>

*Example:* oEditor.ToggleViaPin ["NAME:elements", "via\_195"]

## Ungroup (Layout Editor)

*Use:* Reverses a group operation; deletes a coordinate system but leaves the primitives.

*Command:* None.

*Syntax:* oEditor.Ungroup Array("NAME:elements", <CS1>, <CS2>, ...)

*Return Value:* None.

*Example:* oEditor.Ungroup ["NAME:elements", "CS\_7"]

## Unite (Layout Editor)

*Use:* Causes Boolean uniting of 2 or more *primitive* (polygons, rectangles, lines, or circles) objects.

*Syntax:* **Unite** Array ("NAME: *primitives*",

<object\_name>, // 1<sup>st</sup> primitive name

<object\_name>, // 2<sup>nd</sup> primitive, if any

...) // etc

*Example:*

```
oEditor.Unite ["NAME:primitives", "circle_0", "rect_2"]
```

## UnselectAll (Layout Editor)

*Use:* Unselect all active selections in the layout editor.

*Command:* Edit > Unselect All

*Syntax:* UnselectAll()

*Parameters:* None

*Example:* oLayout.UnselectAll()

## ZoomToFit (Layout Editor)

*Use:* Set the current schematic zoom to fit the contents of the currently visible page

*Command:* None

*Syntax:* ZoomToFit()

*Return Value:* None

## Symbol Editor Scripts

Symbol editor script commands are accessed with a definition editor.

```
oDefinitionEditor = oProject.SetActiveDefinitionEditor("SymbolEditor", "MySymbol")
```

The symbol editor script commands are listed below.

[ChangeProperty \(Symbol Editor\)](#)

[CreateCircle \(Symbol Editor\)](#)

[CreateLine \(Symbol Editor\)](#)

[CreatePin \(Symbol Editor\)](#)

[CreatePolygon \(Symbol Editor\)](#)

[CreateRectangle \(Symbol Editor\)](#)

[CreateText \(Symbol Editor\)](#)

[Delete \(Symbol Editor\)](#)

[FlipHorizontal \(Symbol Editor\)](#)

[FlipVertical \(Symbol Editor\)](#)

[GetProperties \(Symbol Editor\)](#)

[GetPropertyValue \(Symbol Editor\)](#)

[Move \(Symbol Editor\)](#)

[Paste \(Symbol Editor\)](#)

[RemovePort \(Symbol Editor\)](#)

[Rotate \(Symbol Editor\)](#)

[SelectAll \(Symbol Editor\)](#)

[SetPropertyValue \(Symbol Editor\)](#)

[Undo \(Symbol Editor\)](#)

[ZoomToFit \(Symbol Editor\)](#)

### AddLevel (Symbol Editor)

To add a graphics level to the symbol.

| UI Access    | Add Level in the <b>View &gt; Levels</b> dialog box                                    |         |                                           |
|--------------|----------------------------------------------------------------------------------------|---------|-------------------------------------------|
| Parameters   | Name                                                                                   | Type    | Description                               |
|              | <level>                                                                                | Integer | The new level, an integer greater than 1. |
| Return Value | Integer, the previous active level. The current active level is the newly added level. |         |                                           |

### AlignHorizontal (Symbol Editor)

Align items horizontally

**Syntax:** AlignHorizontal(

```
Array("NAME:Selections", _  
"Page:=", page number, _ // [Opt=1] Page number  
"Selections:=", IDs to modify)),  
Array("NAME:AlignParameters", _
```

```
"Disconnect:=", bool _ // [Opt=0] Should wires disconnect
"Rubberband:=", bool) _ // [Opt=1] Should wires staircase
// Note: Alignment occurs relative to the first item in ids
```

| Python Syntax  | AlignHorizontal ("NAME:Selections", "Selections:=", [<selections>]], 0)                                                                                                                                                                |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oSymbolEditor = oProject.SetActiveDefinitionEditor("SymbolEditor", _ "Simplorer Elements\basic Elements\Circuit\PassiveElements:R")  oSymbolEditor.AlignHorizontal (["NAME:Selections",_ "Selections:=", ["SchObj@11"]], 0)</pre> |

## AlignVertical (Symbol Editor)

Align items vertically

**Syntax:** AlignVertical(

```
Array("NAME:Selections", _
"Page:=", page number, _ // [Opt=1] Page number
"Selections:=", IDs to modify)),
Array("NAME:AlignParameters", _
"Disconnect:=", bool _ // [Opt=0] Should wires disconnect
"Rubberband:=", bool) _ // [Opt=1] Should wires staircase
// Note: Alignment occurs relative
to the first item in ids
```

|                       |                                                                                                                                                                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <code>AlignVertical(["NAME:Selections", "Selections:=", [&lt;selections&gt;]], 0)</code>                                                                                                                                          |
| <b>Python Example</b> | <pre>oSymbolEditor = oProject.SetActiveDefinitionEditor("SymbolEditor", _ "Simplorer Elements\basic Elements\Circuit\PassiveElements:R") oSymbolEditor.AlignVertical(["NAME:Selections", "Selections:=", ["SchObj@11"]], 0)</pre> |

### BringToFront (Symbol Editor)

Changes the drawing for the symbol so that the specified objects are drawn on top of other overlapping objects.

**Command:** Draw > Bring To Front

**Syntax:** BringToFront Array("NAME:Selections", "Selections:=", Array(<Object>, <Object>, ...))

**Return Value:** None.

**Parameters:** <stri<Object>

<string> // object to bring to the front

### ChangeProperty (Symbol Editor)

**Use:** Changes to properties are scripted using the **ChangeProperty** command. This command can be executed by the **oEditor** to change editor properties, by the **oDesign** to change design level properties, and by the **oProject** to change project level properties. The command can be used to create, edit, and/or remove properties. In Circuit, only Variable and Separator properties can be deleted.

**Command:** None

**Syntax:** ChangeProperty Array("Name:AllTabs", <PropTabArray>, <PropTabArray>, ...)

**Return Value:** None

*Parameters:* <PropTabArray>

```
Array("Name:<PropTab>",  
      <PropServersArray>,  
      <NewPropArray>,  
      <ChangedPropsArray>,  
      <DeletedPropsArray>)
```

```
<PropServersArray>  
Array("Name:PropServers", <PropServer>,  
      <PropServer>, ...)
```

```
<NewPropArray>  
Array("Name:NewProp", <PropDataArray>,  
      <PropDataArray>,...)
```

```
<ChangedPropsArray>  
Array("Name:ChangedProps",<PropDataArray>,  
      <PropDataArray>, ...)
```

```
<DeletedPropsArray>  
Array("Name:DeletedProps", <PropName>,
```



<PropName>, ...)

OR (for PropDisplay deletions only)

Array("Name:DeletedProps",<PropDataArray>,  
<PropDataArray>, ...)

<PropDataArray>

Array("NAME:<PropName>",  
"PropType:=", <PropType>,  
"NewName:=", <string>,  
"Description:=", <string>,  
"Callback:=", <string>,  
"NewRowPosition:=", <int>,  
"ReadOnly:=", <bool>,  
"Hidden:=", <bool>,  
<PropTypeSpecificArgs>)OR (for PropDisplays only)  
Array("Name:<PropName>",<PropDisplayData>)

<PropDisplayData>

for adding, changing, deleting PropDisplays

<PropDisplayAttributes>

for changing PropDisplays only

<PropDisplayNewAttributes>

<PropDisplayAttributes>

Layer & Location only used for PropDisplays in layout

For adding PropDisplays, this will add a single PropDisplay with attributes as shown; if an attribute is missing, a default value will be assigned. Adding PropDisplay to schematic with attributes that are identical to one already existing there will fail without an error message.

For deleting PropDisplays, these attributes are used to identify an existing PropDisplay to delete. If there doesn't exist a PropDisplay that matches the given attributes, then nothing will be deleted. If multiple PropDisplays match the given attributes, then all of them will be deleted. If an attribute is missing, then all PropDisplays match that missing attribute. For example, if Layer is missing, then PropDisplays on all layers that match the remaining given attributes will be deleted.

For changing PropDisplays, these attributes are used to identify an existing PropDisplay to change. If no PropDisplay matching the attributes is found, no changes will be made. If multiple PropDisplays match the attributes, all of them will be changed. If an attribute is missing, it matches all PropDisplays. For example, to change the format of PropDisplays that are on the bottom, but have any layer, style or format to show the name only, this command should have Location set to "Bottom" and all other attributes omitted.

"Format:=", <PropDisplayType>,

"Location:=", <PropDisplayLocation>,

"Layer:=", <string>,

"Style:=", <string>

<PropDisplayNewAttributes>

NewLayer & NewLocation only used for PropDisplays in layout

For changing PropDisplays, these attributes are used to identify which attributes to change and what the new value is. If the attribute should not be changed, the corresponding entry should be omitted.

"NewName:=", <string>,

"NewFormat:=", <PropDisplayType>,

"NewLocation:=", <PropDisplayLocation>,

"NewLayer:=", <string>,

"NewStyle:=", <string>

<PropDisplayType>

Type: string

Identifies the format of PropDisplay.

"Name"

"Value"

"NameAndValue"

"EvaluatedValue"

"NameAndEvaluatedValue"

<PropDisplayLocation>

Type: string

Identifies where PropDisplay is located with respect to object

"Left"

"Top"

"Right"

"Bottom"

"Custom"

<PropType>

Type: string

Identifies the type of property when a new property is added. In Circuit, only separator properties and variable properties can be added.

"SeparatorProp"

"VariableProp"

"TextProp"

"NumberProp"

"ValueProp"

"CheckboxProp"

"MenuProp"

"PointProp"

"VPointProp"

"ButtonProp"

#### newName

Specify the new name of a property if the property's name is being edited. In Circuit, the name can only be changed for separators and variables.

#### Description

Specify a description of the property. In Circuit, the description can only be changed for separators and variables.

#### Callback

Specify the name of the script callback to be run when the property value is changed.

#### NewRowPosition

Used to reorder rows in the **Property** dialog box. In Circuit, this only applies to the **Project>Project Variables** panel and the **Designer>DesignProperties** panel. Specify the new zero-based row index of the variable or separator.

#### ReadOnly

Used to mark a property as "read only" so it can not be modified. In Circuit, this flag can only be set for variables and separators.

#### Hidden

Used to hide a property so it can not be viewed outside of the **Property** dialog box. In Circuit, this flag can only be set for variables and separators.

<PropTypeSpecificArgs>

**SeparatorProp:** no arguments

TextProp: "Value:=", <string>

NumberProp: "Value:=", <double>

ValueProp: "Value:=", <value>

CheckboxProp: "Value:=", <bool>

MenuProp: "Value:=", <string>

PointProp "X:=", <double>, "Y:=", <double>

VPointProp: "X:=", <value>, "Y:=", <value>

Material Button: "Material:=", <string>

Color Button: "R:=", <int>, "G:=", <int>, "B:=", <int>

Transparency Button: "Value:=", <double>

<PropTypeSpecificArgs> for MenuProps

Syntax for NewProps array: "AllChoices:=",

<"choice1,choice2,..."> or <Array("choice1" "choice2", ... )>,

"Value:=", <string>

Syntax for ChangedProps array: "Value:=", <string>

<PropTypeSpecificArgs> for VariableProps

Syntax:

**"Value:=", <value>, <OptimizationFlagsArray>,  
<TuningFlagsArray>, <SensitivityFlagsArray>,  
<StatisticsFlagsArray>**

Parameters:

**<OptimizationFlagsArray>**  
**Array("NAME:Optimization",**  
**"Included:=", <bool>,**  
**"Min:=", <value>,**  
**"Max:=", <value>)**

**<TuningFlagsArray>**  
**Array("NAME:Tuning",**  
**"Included:=", <bool>,**  
**"Step:=", <value>,**  
**"Min:=", <value>,**  
**"Max:=", <value>)**

**<SensitivityFlagsArray>**  
**Array("NAME:Sensitivity",**  
**"Included:=", <bool>,**

```
"Min:=", <value>,  
"Max:=", <value>,  
"IDisp:=", <value> )
```

```
<StatisticsFlagsArray>  
Array("NAME:Statistical",  
"Included:=", <bool>,  
"Dist:=", <Distribution>,  
"StdD:=", <value>,  
"Min:=", <value>,  
"Max:=", <value>,  
"Tol:=", <string>)
```

<Distribution>

Type: string

Value should be **"Gaussian"** or **"Uniform"**

StdD

Standard deviation.

Min



Low cut-off for the distribution.

Max

High cut-off for the distribution.

Tol

Tolerance for uniform distributions. Format is "<int>%".

Example: "20%".

## CloseEditor (Symbol Editor)

Closes the specified editor.

*Command:* None

*Syntax:* CloseEditor (VARIANT ptDelta)

*Return Value:* None

|                       |                                 |
|-----------------------|---------------------------------|
| <b>Python Syntax</b>  | CloseEditor()                   |
| <b>Python Example</b> | oDefinitionEditor.CloseEditor() |

## Copy (Symbol Editor)

Copy items for pasting.

*Command:* **Edit > Copy**

**Syntax:** Copy Array("NAME:Selections", "Selections:=", Array(<selections>))

**Return Value:** None.

**Parameters:** <selections>

Type: Comma-separated list of strings

Identifiers for each selected item to be copied, in the form SchObj@<id>, where id is the value of the SchematicID property for each element.

## CreateArc (Symbol Editor)

Draws an arc in the symbol editor

**Command:** None

**Syntax:** CreateArc

**Return Value:** None

| Python Syntax         | CreateArc()                                                                                                                                                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oDefinitionEditor.CreateArc ( ["NAME:ArcData", _   "X:=", -0.004318, "Y:=", -0.00127, _   "Radius:=", 0.00297299377732279, _   "StartAng:=", 1.9195673303788, _   "EndAng:=", 3.32144615338227, _   "Id:=", 10], _   ["NAME:Attributes", "Page:=", 1])</pre> |

### CreateCircle (Symbol Editor)

Draws a circle in the symbol editor

*Command:* None

*Syntax:* CreateCircle

*Return Value:* None

| Python Syntax  | CreateCircle()                                                                                                                                                                |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oDefinitionEditor.CreateCircle (["NAME:CircleData", _ "X:=", -0.004572, "Y:=", -0.000508, _ "Radius:=", 0.001778, "Id:=", 12], _ ["NAME:Attributes", "Page:=", 1])</pre> |

### CreateImage (Symbol Editor)

Create picture from a BMP or GIF file.

*Command:***Draw>Image**

*Syntax:* CreateImage(

*Return Value:* None.

*Parameters:* Array("NAME:ImageData",  
"X1:=", double, // the image rectangle left X value, in meters

"Y1:=", double, // the image rectangle upper Y value, in meters  
"X2:=", double, // the image rectangle right X value, in meters  
"Y2:=", double, // the image rectangle lower Y value, in meters  
"File:=", string, // the name of the BMP or GIF file  
"DisplayBorder:=", bool, // true or false, whether to display the image border  
"LineWidth:=", double, // the width of the image border, in meters  
"Color:=", int, // the RGB value of the image border color  
"Id:=", int), // Id for this item  
Array("NAME:Attributes",  
"Page:=", int) // [Opt=1] The page number (one-based)

### CreateLine (Symbol Editor)

Draws a line in the symbol editor

*Command:* None

*Syntax:* CreateLine

| Python Syntax  | CreateLine()                                                                                                                                                                                                                            |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oDefinitionEditor.CreateLine<br/>(["NAME:LineData", _Return Value: None<br/>"Points:=", [ "(0.001778, -0.001270)",_<br/>"(0.004572, 0.002794)", "(0.003048, 0.003556)"],_<br/>"Id:=", 14], ["NAME:Attributes", "Page:=", 1])</pre> |

## CreatePin (Symbol Editor)

Draws a pin in the symbol editor

*Command:* None

*Syntax:* CreatePin

*Return Value:* None

| Python Syntax  | CreatePin()                                                                                                                                                                          |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oDefinitionEditor.CreatePin (["NAME:PinData", _<br/>"Name:=", "newpin3"], ["NAME:PinParams", _<br/>"X:=", -0.00762, "Y:=", 0.00254, "Angle:=", _<br/>0, "Flip:=", false])</pre> |

## CreatePolygon (Symbol Editor)

Draws a polygon in the symbol editor

*Command:* None

*Syntax:* CreatePolygon

*Return Value:* None

| Python Syntax  | CreatePolygon()                                                                                               |
|----------------|---------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oDefinitionEditor.CreatePolygon (["NAME:PolygonData", _<br/>"X1:=", -0.001524, "Y1:=", 0.000508, _</pre> |

|  |                                                                                                      |
|--|------------------------------------------------------------------------------------------------------|
|  | <pre>"X2:=", 0.002286, "Y2:=", -0.002032, "Id:=", 18], _<br/>["NAME:Attributes", "Page:=", 1])</pre> |
|--|------------------------------------------------------------------------------------------------------|

### CreateRectangle (Symbol Editor)

Draws a rectangle in the symbol editor

*Command:* None

*Syntax:* CreateRectangle

*Return Value:* None

| Python Syntax  | CreateRectangle()                                                                                                                                                                                          |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oDefinitionEditor.CreateRectangle (["NAME:RectData", _<br/>"X1:=", -0.001524, "Y1:=", 0.000508, _<br/>"X2:=", 0.002286, "Y2:=", -0.002032, "Id:=", 18], _<br/>["NAME:Attributes", "Page:=", 1])</pre> |

### CreateText (Symbol Editor)

Draws text in the symbol editor

*Command:* None

*Syntax:* CreateText

*Return Value:* None

| Python Syntax  | CreateText()                                                                                                                                                                            |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oDefinitionEditor.CreateText(<br/>    ["NAME:TextData", "X:=", 0.001524, "Y:=",<br/>    0.00127, "Text:=", "My text", "Id:=", 20],<br/>    ["NAME:Attributes", "Page:=", 1])</pre> |

### Cut (Symbol Editor)

Cut page selection.

*Command:* None

*Syntax:* Cut(PageNumber, Selections)

*Return Value:* None

| Python Syntax  | Cut(["NAME:Selections", "Selections:=", [<selections>]])                                                                                                                                                                                             |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oSymbolEditor = oProject.SetActiveDefinitionEditor("SymbolEditor",_<br/>    "Simplorer Elements\basic Elements\Circuit\PassiveElements:R")<br/>oSymbolEditor.Cut (["NAME:Selections",<br/>    "Selections:=", ["SchObj@11", "SchObj@3"]])</pre> |

### Delete (Symbol Editor)

Delete items - remove from the symbol.

*Command:* **Edit>Delete**

**Syntax:** Delete Array("NAME:Selections", "Selections:=", Array(<selections>))

**Return Value:** None.

**Parameters:** <selections>

Type: Comma-separated list of strings

Identifiers for each selected item to be deleted, in the form SchObj@<id>, where id is the value of the SchematicID property for each element.

### **DisplayPinNames (Symbol Editor)**

To turn on or off the display of pin names.

**Command:**None.

**Syntax:** DisplayPinNames <onoff>

**Return Value:** None.

**Parameters:** <onoff>

Type: Boolean

TRUE or FALSE to turn on or off the display of pin names.

**Example:** Dim oSymbolEditor

```
Set oSymbolEditor = oProject.SetActiveDefinitionEditor("SymbolEditor", "Simplorer Elements\basic  
Elements\Circuit\Passive Elements:R")
```

```
oSymbolEditor.DisplayPinNames TRUE
```

### **ExportFile (Symbol Editor)**

Export file of symbol.

**Command:**Symbol>Export File

**Syntax:** ExportFile <type>, <filename>



*Return Value:* None.

*Parameters:* <type>

Type: String

Type of file to export - only "EMF" is supported currently.

<filename>

Type: String

Path, name and extension for the file to be saved.

### **FlipHorizontal (Symbol Editor)**

To flip the specified objects about the horizontal (x) axis.

*Command:***Draw>Flip Horizontal**

*Syntax:* FlipHorizontal Array("NAME:Selections", "Selections:=", Array(<selections>)), 0

*Return Value:* None.

*Parameters:* <selections>

Type: Comma-separated list of strings

Identifiers for each selected item to be flipped, in the form SchObj@<id>, where id is the value of the SchematicID property for each element.

### **FlipVertical (Symbol Editor)**

To flip the specified objects about the horizontal (x) axis.

*Command:***Draw>Flip Vertical**

*Syntax:* FlipVertical Array("NAME:Selections", "Selections:=", Array(<selections>)), 0

*Return Value:* None.

*Parameters:* <selections>

Type: Comma-separated list of strings

Identifiers for each selected item to be flipped, in the form SchObj@<id>, where id is the value of the SchematicID property for each element.

### **GetProperties (Symbol Editor)**

Gets a list of all the properties belonging to a specific **PropServer** and **PropTab**. This can be executed by the **oProject**, **oDesign**, or **oEditor** objects.

*Command:* None

*Syntax:* GetProperties( <PropTab>, <PropServer> )

*Return Value:* Variant array of strings – the names of the properties belonging to the prop server.

### **GetPropertyValue (Symbol Editor)**

Gets the value of a single property. This can be executed by the **oProject**, **oDesign**, or **oEditor** objects.

*Command:* None

*Syntax:* GetPropertyValue(<PropTab>, <PropServer>, <PropName>)

*Return Value:* String representing the property value.

### **GetVisibleLevels (Symbol Editor)**

To determine the levels in the symbol.

*Command:*None.

*Syntax:* GetVisibleLevels

*Return Value:* An array of integers, which are the levels defined for the particular symbol.

*Parameters:* None.

### **GridSetup (Symbol Editor)**

Changes the settings on the symbol grid.

**Command:**Symbol>Grid Setup

**Syntax:** GridSetup(

*Return Value:* None.

*Parameters:* Array("NAME:Options", \_  
    "MajorGrid:=", string, \_ // Major grid size with units  
    "Divisions:=", int, \_ // Number of minor grid divisions  
    "MajorColor:=", int, \_ // RGB Color of major grid lines  
    "MinorColor:=", int, \_ // RGB Color of minor grid lines  
    "ShowGrid:=", bool, \_ // Should the grid be shown?  
    "SnapToGrid:=", bool, \_ // Should objects snap to grid?  
    "BackgroundColor:=", int, \_ // RGB Color of the background  
    "SaveAsDefault:=", bool)) // Should these settings be the default for new schematics

*Example:* oEditor.GridSetup Array(  
    "NAME:Options",  
    "MajorGrid:=", "10mm",  
    "Divisions:=", 10,

```
"MajorColor:=", 0x00ff0000, // Red
"MinorColor:=", 0x0000ff00, // Green
"ShowGrid:=", true,
"SnapToGrid:=", true,
"BackgroundColor:=", 0x00ffffff, // White
"SaveAsDefault:=", false)
```

## Move (Symbol Editor)

To move the specified objects in X and Y.

*Command:*None.

*Syntax:* Move Array("NAME:Selections", "Selections:=", Array(<selections>)), Array("NAME:FlipParameters", "xdelta:=", <xval>, "ydelta:=", <yval>)

*Return Value:* None.

*Parameters:* <selections>

Type: Comma-separated list of strings

Identifiers for each selected item to be moved, in the form SchObj@<id>, where id is the value of the SchematicID property for each element.

<xval>

Type: Real number

The X delta to move.

<yval>

Type: Real number

The Y delta to move.

## Pan (Symbol Editor)

Pans the display.

| UI Access    | View > Pan.     |                  |                                                                  |
|--------------|-----------------|------------------|------------------------------------------------------------------|
| Parameters   | Name            | Type             | Description                                                      |
|              | <argSelections> | Array of doubles | First double pans along x-axis; second double pans along y-axis. |
| Return Value | None.           |                  |                                                                  |

| Python Syntax  | Pan (<argSelections>)                                                         |
|----------------|-------------------------------------------------------------------------------|
| Python Example | <pre>oDefinitionEditor.Pan([-0.00922653869663931, 0.00686839904222147])</pre> |

## Paste (Symbol Editor)

To paste copied objects to a specified X and Y location.

**Command:** Edit>Paste

**Syntax:** Paste Array("NAME:Attributes", "X:=", <xval>, "Y:=", <yval>)

**Return Value:** None.

**Parameters:** <xval>

Type: Real number

The X placement value.

<yval>

Type: Real number

The Y placement value.

## Redo (Symbol Editor)

Redo the last operation

*Command:* Click **Edit>Redo**

*Syntax:* Redo

*Return Value:* None

*Parameters:* None

## RemoveLevels (Symbol Editor)

Removes one or more graphics levels from a symbol.

| UI Access    | Tools > Edit Libraries > Symbols. From Symbol editor, click View > Levels > Remove Level. |                   |                           |
|--------------|-------------------------------------------------------------------------------------------|-------------------|---------------------------|
| Parameters   | Name                                                                                      | Type              | Description               |
|              | <levels>                                                                                  | Array of integers | The levels to be deleted. |
| Return Value | None.                                                                                     |                   |                           |

| Python Syntax  | RemoveLevels (<levels>)             |
|----------------|-------------------------------------|
| Python Example | oSymbolEditor.RemoveLevels ([3, 4]) |

## RemovePort (Symbol Editor)

Selected pins are changed to vias. Selected edge terminal ports are removed.

**Syntax:** RemovePort <NAME:elements", <object\_name> ... // objects to be removed

**Return Value:** None.

**Parameters:** <object\_name>

Type: <String>

**Example:** oEditor.RemovePort ["NAME:elements", "via\_195", "Port1"]

## Rotate (Symbol Editor)

To rotate the specified objects about their common center.

**Command:**Draw>Rotate

**Syntax:** Rotate Array("NAME:Selections", "Selections:=", Array(<selections>)), Array("NAME:FlipParameters", <angle>)

**Return Value:** None.

**Parameters:** <selections>

Type: Comma-separated list of strings

Identifiers for each selected item to be rotated, in the form SchObj@<id>, where id is the value of the SchematicID property for each element.

<angle>

Type: A comma-separated string and real number

Either "Angle:=", <rad>, where <rad> is the angle in radians, or "Degrees:=", <deg>, where <deg> is the angle in degrees.

## Save (Symbol Editor)

Saves any changes in the current symbol to the project.

**Command:** Symbol>Update Project

**Syntax:** Save

**Return Value:** None.

**Parameters:** None.

**Example:**

```
oSymbolEditor = oProject.SetActiveDefinitionEditor("SymbolEditor", "Simplorer Elements\basic Elements\Circuit\Passive Elements:R")
```

## SelectAll (Symbol Editor)

Select all elements in the symbol editor.

**Command:** None.

**Syntax:** SelectAll()

**Parameters:** None

**Example:** removedDefs = oDefinitionEditor.SelectAll()

|                       |                                          |
|-----------------------|------------------------------------------|
| <b>Python Syntax</b>  | SelectAll()                              |
| <b>Python Example</b> | removedDefs = oSymbolManager.SelectAll() |

## SendToBack (Symbol Editor)

Changes the drawing for the symbol so that the specified objects are drawn behind other overlapping objects.

**Command:** Draw > Send To Back



**Syntax:** SendToBack Array("NAME:Selections", "Selections:=", Array (<Object>, <Object>, ...))

**Return Value:** None

**Parameters:** <Object>

<string> // object to send to the back

**Example:** oDefinitionEditor.SendToBack ["NAME:Selections", "Selections:=", ["SchObj@10"]]

|                       |                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | SendToBack (["NAME:Selections", "Selections:=", [<Object>, <Object>, ...]])          |
| <b>Python Example</b> | oDefinitionEditor.SendToBack (["NAME:Selections",<br>"Selections:=", ["SchObj@10"]]) |

## SetActiveLevel (Symbol Editor)

To set the active graphics level in the symbol editor.

**Command:** "Current" radio button for a level in the **View>Levels** dialog.

**Syntax:** SetActiveLevel <level>

**Return Value:** None.

**Parameters:** <level>

Type: Integer

The new active level.

**Example:**

```
oSymbolEditor = oProject.SetActiveDefinitionEditor("SymbolEditor", _  
    "Simplorer Elements\basic Elements\Circuit\Passive Elements:R")
```

```
oldLevel = oSymbolEditor.SetActiveLevel (4)
```

## SetInitialLevels (Symbol Editor)

Sets one or more graphics levels as the default visible levels for a symbol. The levels submitted do not need to contain 1 or 0, which are always visible.

|                     |                                                                                                                                                            |                   |                            |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------|
| <b>UI Access</b>    | <b>Tools &gt; Edit Libraries &gt; Symbols.</b> From Symbol editor, click <b>View &gt; Levels</b> . Select the <b>Default</b> check box for desired levels. |                   |                            |
| <b>Parameters</b>   | Name                                                                                                                                                       | Type              | Description                |
|                     | <levels>                                                                                                                                                   | Array of integers | The levels to be selected. |
| <b>Return Value</b> | None.                                                                                                                                                      |                   |                            |

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| <b>Python Syntax</b>  | SetInitialLevels (<levels>)                          |
| <b>Python Example</b> | <code>oSymbolEditor.SetInitialLevels ([3, 4])</code> |

## SetPropertyValue (Symbol Editor)

Set a property.

**Command: None.**

**Syntax:** SetPropertyValue(tab, item, propname, value)

**Parameters:** None

**Example:**

```
removedDefs = oDefinitionEditor.SetPropertyValue(string tab, // Tab with the property
string item, // Name of the object
```

```
string proptime, // Name of the property  
string value) // The new value of the prop
```

## SetVisibleLevels (Symbol Editor)

Makes one or more graphics levels visible in the symbol editor.

|                     |                                                                                                                                                                |                   |                                |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------|
| <b>UI Access</b>    | <b>Tools &gt; Edit Libraries &gt; Symbols.</b> From Symbol editor, click <b>View &gt; Levels</b> . Select the <b>Visible</b> check box for the desired levels. |                   |                                |
| <b>Parameters</b>   | Name                                                                                                                                                           | Type              | Description                    |
|                     | <levels>                                                                                                                                                       | Array of integers | The levels to be made visible. |
| <b>Return Value</b> | None.                                                                                                                                                          |                   |                                |

|                       |                                        |
|-----------------------|----------------------------------------|
| <b>Python Syntax</b>  | SetVisibleLevels (<levels>)            |
| <b>Python Example</b> | oSymbolEditor.SetVisibleLevels ([3,4]) |

## ToggleLevel (Symbol Editor)

To toggle display of the graphics level in the symbol editor.

**Command:** "Visible" checkbox for a level in the **View>Levels** dialog.

**Syntax:** ToggleLevel <level>

*Return Value:* None.

*Parameters:* <level>

Type: Integer

The level to turn on or off.

*Example:*

```
oSymbolEditor = oProject.SetActiveDefinitionEditor("SymbolEditor",  
    "Simplorer Elements\basic Elements\Circuit\Passive Elements:R")  
oSymbolEditor.ToggleLevel (2)
```

### **ToggleViaPin (Symbol Editor)**

Selected pins are changed to vias. Selected vias are changed to pins.

*Syntax:* ToggleViaPin <NAME:elements", <object\_name> ... // objects to be toggled

*Return Value:* None.

*Parameters:* <object\_name>

Type: <String>

*Example:* oEditor.ToggleViaPin ["NAME:elements", "via\_195"]

### **Undo (Symbol Editor)**

Undo the last operation

*Command:* Edit>Undo

*Syntax:* Undo

*Return Value:* None

*Parameters:* None

*Example:* `oDesign.Undo`

| Python Syntax  | Undo()                                                                                                                                                             |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Example | <pre>oSymbolEditor = oProject.SetActiveDefinitionEditor("SymbolEditor",_ "Simplorer Elements\basic Elements\Circuit\PassiveElements:R") oSymbolEditor.Undo()</pre> |

### ZoomArea (Symbol Editor)

To change the current graphics view area.

**Command:** **View>Zoom Area**

**Syntax:** `ZoomArea Array(<xpt>, <ypt>), Array(<xdelta>, <ydelta>)`

**Return Value:** None.

**Parameters:** `<xpt>`

Type: Real number

The X value of the zoom area box, in meters.

`<ypt>`

Type: Real number

The X value of the zoom area box, in meters.

`<xdelta>`

Type: Real number

The width of the zoom area box, in meters.

<ydelta>

Type: Real number

The height of the zoom area box, in meters.

*Example:*

```
oSymbolEditor = oProject.SetActiveDefinitionEditor("SymbolEditor",  
    "Simplorer Elements\basic Elements\Circuit\Passive Elements:R")  
oSymbolEditor.ZoomArea [0, 0], [0.004, 0.004]
```

### **ZoomIn (Symbol Editor)**

To zoom in a standard amount to the current graphics view area.

**Command:**View>Zoom In

**Syntax:** ZoomIn

**Return Value:** None.

**Parameters:** None.

*Example:*

```
oSymbolEditor = oProject.SetActiveDefinitionEditor("SymbolEditor",  
    "Simplorer Elements\basic Elements\Circuit\Passive Elements:R")  
oSymbolEditor.ZoomIn
```

### **ZoomOut (Symbol Editor)**

To zoom out a standard amount to the current graphics view area.

**Command:**View>Zoom Out

**Syntax:** ZoomOut

**Return Value:** None.

**Parameters:** None.

**Example:**

```
oSymbolEditor = oProject.SetActiveDefinitionEditor("SymbolEditor",  
    "Simplorer Elements\basic Elements\Circuit\Passive Elements:R")  
oSymbolEditor.ZoomOut
```

### **ZoomPrevious (Symbol Editor)**

To zoom the current graphics view area to the previous extents.

**Command:**View>Zoom Previous

**Syntax:** ZoomPrevious

**Return Value:** None.

**Parameters:** None.

**Example:**

```
oSymbolEditor = oProject.SetActiveDefinitionEditor("SymbolEditor",  
    "Simplorer Elements\basic Elements\Circuit\Passive Elements:R")  
oSymbolEditor.ZoomPrevious
```

### **ZoomToFit (Symbol Editor)**

Set the current symbol zoom to fit the contents of the currently visible page

**Command:** None

*Syntax:* ZoomToFit()

*Return Value:* None

| Python Syntax         | ZoomToFit()                                                                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Example</b> | <pre>oSymbolEditor = oProject.SetActiveDefinitionEditor("SymbolEditor",_ "Simplorer Elements\basic Elements\Circuit\PassiveElements:R") oSymbolEditor.ZoomToFit()</pre> |

## Footprint Editor Scripts

Footprint editor script commands are accessed with a definition editor.

```
Set oDefinitionEditor = oProject.SetActiveDefinitionEditor("FootprintEditor", "MyFootprint")
```

The footprint editor script commands are listed below.

[AddLayer \(Footprint Editor\)](#)

[AddStackupLayer \(Footprint Editor\)](#)

[ChangeLayers \(Footprint Editor\)](#)

[ChangeOptions \(Footprint Editor\)](#)

[CreateCircle \(Footprint Editor\)](#)

[CreateCircleVoid \(Footprint Editor\)](#)

[CreateEdgePort \(Footprint Editor\)](#)

[CreateLine \(Footprint Editor\)](#)

[CreateLineVoid \(Footprint Editor\)](#)



[CreateMeasure \(Footprint Editor\)](#)

[CreatePolygonVoid \(Footprint Editor\)](#)

[CreatePin \(Footprint Editor\)](#)

[CreatePolygon \(Footprint Editor\)](#)

[CreateRectangle \(Footprint Editor\)](#)

[CreateText \(Footprint Editor\)](#)

[CreateVia \(Footprint Editor\)](#)

[Duplicate \(Footprint Editor\)](#)

[Edit \(Footprint Editor\)](#)

[EraseMeasurements \(Footprint Editor\)](#)

[FlipHorizontal \(Footprint Editor\)](#)

[FlipVertical \(Footprint Editor\)](#)

[GetAllLayerNames \(Footprint Editor\)](#)

[GetLayerInfo \(Footprint Editor\)](#)

[GetProperties \(Footprint Editor\)](#)

[GetStackupLayerNames \(Footprint Editor\)](#)

[Intersect \(Footprint Editor\)](#)

[Move \(Footprint Editor\)](#)

[PageSetup \(Footprint Editor\)](#)

[RemoveLayer \(Footprint Editor\)](#)

[RemovePort \(Footprint Editor\)](#)[Rotate \(Footprint Editor\)](#)[SetPropertyValue \(Footprint Editor\)](#)[Subtract \(Footprint Editor\)](#)[ToggleViaPin \(Footprint Editor\)](#)[Unite \(Footprint Editor\)](#)[ZoomToFit \(Footprint Editor\)](#)**AddLayer (Footprint Editor)**

Add a layer in a footprint definition. This command can take all parameters available in [ChangeLayers \(Footprint Editor\)](#) but cannot be recorded.

| UI Access         | None         |        |                                                                                                                                                                                                                                                                                                                                               |
|-------------------|--------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameters</b> | Name         | Type   | Description                                                                                                                                                                                                                                                                                                                                   |
|                   | <LayerArray> | Array  | An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;Layername&gt;</li> <li>• &lt;Type&gt;</li> <li>• &lt;TopBottom&gt;</li> <li>• &lt;Color&gt;</li> <li>• &lt;Transparency&gt;</li> <li>• &lt;Pattern&gt;</li> <li>• &lt;VisFlag&gt;</li> <li>• &lt;Locked&gt;</li> <li>• &lt;Draw&gt;</li> </ul> |
|                   | <LayerName>  | String | Name of layer.                                                                                                                                                                                                                                                                                                                                |
|                   | <Type>       | String | Type of layer, such as "user", "signal", "dielectric", "soldermask", "solder-                                                                                                                                                                                                                                                                 |

|                     |                |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|----------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                |         | paste", "silkscreen", "assembly", "wirebond", "dielectric", "glue", "user", "Post-processing", or "outline".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                     | <TopBottom>    | String  | Optional. Indicates whether the layer is the top or bottom. Acceptable values are "top", "bottom", or "neither".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                     | <Color>        | Integer | Optional. A code to indicate the color of the layer. It is an RGB code in the hex format <i>bbggrr</i> . For example red (#0000ff) is 255, green (#00ff00) is 65280, and blue (#ff0000) is 16711680.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                     | <Transparency> | Integer | Optional. A percentage that indicates the transparency of the layer between 0 (opaque) and 100 (completely transparent and not visible).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                     | <Pattern>      | Integer | Optional. A code for the pattern of the layer: 0 is hollow, 1 is solid, and the other patterns 3-8 are various hatch patterns.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                     | <VisFlag>      | Integer | <p>Sets visibility for all objects on the layer using the following additive code:</p> <ul style="list-style-type: none"> <li>• 1 makes primitives (rectangles, circles, polygons) visible.</li> <li>• 2 makes lines (also known as paths or traces) visible.</li> <li>• 4 makes pads (from padstacks, aka vias) visible.</li> <li>• 8 makes holes (or vias) visible.</li> <li>• 16 makes components visible.</li> <li>• 32 makes the mesh overlay visible if they are plotted.</li> <li>• 64 makes the mesh for the background material visible.</li> </ul> <p>For example, a value of 25 (1+8+16) makes primitives, vias, and components visible. Use 127 to show everything and 0 to hide all.</p> |
|                     | <Locked>       | Boolean | Optional. Whether the layer is locked.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                     | <Draw>         | Integer | Optional. Allows drawing on the layer as wireframe, outlines, or solid. Acceptable values are -1 for wireframe, 0 for normal, and 1 for solid.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Return Value</b> | None           |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | <pre>oEditor.AddLayer(<br/>    [<br/>        "NAME:layers",<br/>        "Name:=", "&lt;LayerName&gt;",<br/>        "Type:=", "&lt;Type&gt;",<br/>        "Top Bottom:=", "&lt;TopBottom&gt;",<br/>        "Color:=", "&lt;Color&gt;",<br/>        "Transparency:=", "&lt;Transparency&gt;",<br/>        "Pattern:=", "&lt;Pattern&gt;",<br/>        "VisFlag:=", "&lt;VisFlag&gt;",<br/>        "Locked:=", "&lt;Locked&gt;",<br/>        "DrawOverride:=", "&lt;Draw&gt;",<br/>    ]<br/>)</pre> |
| <b>Python Example</b> | <pre>oEditor = oDesign.SetActiveEditor("Footprint")<br/>oEditor.AddLayer(<br/>    [<br/>        "NAME:layers",<br/>        "Name:=", "signal",<br/>        "Type:=", "signal",<br/>        "Top Bottom:=", "neither",<br/>        "Color:=", 16711680,</pre>                                                                                                                                                                                                                                      |

|  |                                                                                                                                  |
|--|----------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"Transparency:=", 0,<br/>"Pattern:=", 1,<br/>"VisFlag:=", 127,<br/>"Locked:=", False,<br/>"DrawOverride:=", 0,<br/>])</pre> |
|--|----------------------------------------------------------------------------------------------------------------------------------|

**AddStackupLayer (Footprint Editor)**

Adds a stackup layer in a footprint definition. This command can take all parameters available in [ChangeLayers \(Footprint Editor\)](#) but cannot be recorded.

| UI Access  | None         |       |                                                                                                                                                                                                                                                                                     |
|------------|--------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name         | Type  | Description                                                                                                                                                                                                                                                                         |
|            | <LayerArray> | Array | An array that contains these parameters in order: <ul style="list-style-type: none"><li>• &lt;Layername&gt;</li><li>• &lt;Type&gt;</li><li>• &lt;TopBottom&gt;</li><li>• &lt;Color&gt;</li><li>• &lt;Transparency&gt;</li><li>• &lt;Pattern&gt;</li><li>• &lt;VisFlag&gt;</li></ul> |

|                |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |         | <ul style="list-style-type: none"> <li>• &lt;Locked&gt;</li> <li>• &lt;Draw&gt;</li> <li>• and an array with the parameters: <ul style="list-style-type: none"> <li>• &lt;Thickness&gt;</li> <li>• &lt;LowerElevation&gt;</li> <li>• &lt;Material&gt;</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <LayerName>    | String  | Name of layer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <Type>         | String  | Type of layer, such as "user", "signal", "dielectric", "soldermask", "solderpaste", "silkscreen", "assembly", "wirebond", "dielectric", "glue", "user", "Post-processing", or "outline".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <TopBottom>    | String  | Optional. Indicates whether the layer is the top or bottom. Acceptable values are "top", "bottom", or "neither".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <Color>        | Integer | Optional. A code to indicate the color of the layer. It is an RGB code in the hex format <i>bbggrr</i> . For example red (#0000ff) is 255, green (#00ff00) is 65280, and blue (#ff0000) is 16711680.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <Transparency> | Integer | Optional. A percentage that indicates the transparency of the layer between 0 (opaque) and 100 (completely transparent and not visible).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <Pattern>      | Integer | Optional. A code for the pattern of the layer: 0 is hollow, 1 is solid, and the other patterns 3-8 are various hatch patterns.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <VisFlag>      | Integer | <p>Sets visibility for all objects on the layer using the following additive code:</p> <ul style="list-style-type: none"> <li>• 1 makes primitives (rectangles, circles, polygons) visible.</li> <li>• 2 makes lines (also known as paths or traces) visible.</li> <li>• 4 makes pads (from padstacks, aka vias) visible.</li> <li>• 8 makes holes (or vias) visible.</li> <li>• 16 makes components visible.</li> <li>• 32 makes the mesh overlay visible if they are plotted.</li> <li>• 64 makes the mesh for the background material visible.</li> </ul> <p>For example, a value of 25 (1+8+16) makes primitives, vias, and components visible. Use 127 to show everything and 0 to hide all.</p> |

|                     |                  |         |                                                                                                                                                |
|---------------------|------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <Locked>         | Boolean | Optional. Whether the layer is locked.                                                                                                         |
|                     | <Draw>           | Integer | Optional. Allows drawing on the layer as wireframe, outlines, or solid. Acceptable values are -1 for wireframe, 0 for normal, and 1 for solid. |
|                     | <Thickness>      | String  | Thickness of the layer, contains the measurement and units.                                                                                    |
|                     | <LowerElevation> | String  | The elevation of the lower edge of the layer, contains the measurement and units.                                                              |
|                     | <Material>       | String  | The material the layer is made of.                                                                                                             |
| <b>Return Value</b> | None             |         |                                                                                                                                                |

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b> | <pre>oEditor.AddStackupLayers(<br/>    [<br/>        "NAME:stackup layer",<br/>        "Name:=", "&lt;LayerName&gt;",<br/>        "Type:=", "&lt;Type&gt;",<br/>        "Top Bottom:=", "&lt;TopBottom&gt;",<br/>        "Color:=", &lt;Color&gt;,<br/>        "Transparency:=", &lt;Transparency&gt;,<br/>        "Pattern:=", &lt;Pattern&gt;,<br/>        "VisFlag:=", &lt;VisFlag&gt;,<br/>        "Locked:=", &lt;Locked&gt;,<br/>        "DrawOverride:=", &lt;Draw&gt;,<br/>    ]<br/>)</pre> |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <pre>[<br/>    "NAME:sublayer",<br/>    "Thickness:=", "&lt;Thickness&gt;",<br/>    "LowerElevation:=", "&lt;LowerElevation&gt;",<br/>    "Material:=", "&lt;Material&gt;",<br/>]<br/>])</pre>                                                                                                                                                                                                                                                 |
| <b>Python Example</b> | <pre>oEditor = oDesign.SetActiveEditor("Footprint")<br/>oEditor.AddStackupLayer(<br/>    [<br/>        "NAME:stackup layer",<br/>        "Name:=", "Cover",<br/>        "Type:=", "signal",<br/>        "Top Bottom:=", "neither",<br/>        "Color:=", 16711680,<br/>        "Transparency:=", 0,<br/>        "Pattern:=", 1,<br/>        "VisFlag:=", 127,<br/>        "Locked:=", False,<br/>        "DrawOverride:=", 0,<br/>    ]</pre> |



|  |                                                                                                                                     |
|--|-------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>"NAME:Sublayer",<br/>"Thickness:=", "0mil",<br/>"LowerElevation:=", "20mil",<br/>"Material:=", "gold",<br/><br/>]<br/>])</pre> |
|--|-------------------------------------------------------------------------------------------------------------------------------------|

ChangeLayer (Footprint Editor)

Changes one or more attributes or parameters of a single layer.

**Note:** To execute the command, all of the following parameters must be entered in the command line even if the user only intends to change one attribute.

| UI Access  | Create or change a layer in the <b>Edit Layers</b> window. |       |                                                                                                                                                                                                                                              |
|------------|------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                       | Type  | Description                                                                                                                                                                                                                                  |
|            | <LayerArray>                                               | Array | An array that contains these parameters in order: <ul style="list-style-type: none"><li>• &lt;mode&gt;</li><li>• &lt;Layername&gt;</li><li>• &lt;ID&gt;</li><li>• &lt;Type&gt;</li><li>• &lt;TopBottom&gt;</li><li>• &lt;Color&gt;</li></ul> |

|                |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |         | <ul style="list-style-type: none"> <li>• &lt;Transparency&gt;</li> <li>• &lt;Pattern&gt;</li> <li>• &lt;VisFlag&gt;</li> <li>• &lt;Locked&gt;</li> <li>• &lt;Draw&gt;</li> <li>• &lt;Subarray&gt;</li> </ul>                                                                                                                                                                                                                                                                                                                                          |
| <mode>         | String  | Type of stackup. Can be "Laminate", "Multizone", or "Overlap" .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <LayerName>    | String  | Name of layer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <ID>           | Integer | A numerical identification for the layer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <Type>         | String  | Type of layer, such as "user", "signal", "dielectric", "soldermask", "solderpaste", "silkscreen", "assembly", "wirebond", "dielectric", "glue", "user", "Post-processing", or "outline".                                                                                                                                                                                                                                                                                                                                                              |
| <TopBottom>    | String  | <i>Optional</i> . Indicates whether the layer is the top or bottom. Acceptable values are "top", "bottom", or "neither".                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <Color>        | Integer | <i>Optional</i> . A code to indicate the color of the layer. It is an RGB code in the hex format <i>bbggrr</i> . For example red (#0000ff) is 255, green (#00ff00) is 65280, and blue (#ff0000) is 16711680.                                                                                                                                                                                                                                                                                                                                          |
| <Transparency> | Integer | <i>Optional</i> . A percentage that indicates the transparency of the layer between 0 (opaque) and 100 (completely transparent and not visible).                                                                                                                                                                                                                                                                                                                                                                                                      |
| <Pattern>      | Integer | <i>Optional</i> . A code for the pattern of the layer: 0 is hollow, 1 is solid, and the other patterns 3-8 are various hatch patterns.                                                                                                                                                                                                                                                                                                                                                                                                                |
| <VisFlag>      | Integer | Sets visibility for all objects on the layer using the following additive code: <ul style="list-style-type: none"> <li>• 1 makes primitives (rectangles, circles, polygons) visible.</li> <li>• 2 makes lines (also known as paths or traces) visible.</li> <li>• 4 makes pads (from padstacks, aka vias) visible.</li> <li>• 8 makes holes (or vias) visible.</li> <li>• 16 makes components visible.</li> <li>• 32 makes the mesh overlay visible if they are plotted.</li> <li>• 64 makes the mesh for the background material visible.</li> </ul> |

|                     |                  |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                  |         | For example, a value of 25 (1+8+16) makes primitives, vias, and components visible. Use 127 to show everything and 0 to hide all.                                                                                                                                                                                                                                                                                                                  |
|                     | <Locked>         | Boolean | <i>Optional.</i> Whether the layer is locked.                                                                                                                                                                                                                                                                                                                                                                                                      |
|                     | <DrawOverride>   | Integer | <i>Optional.</i> Allows drawing on the layer as wireframe, outlines, or solid. Acceptable values are -1 for wireframe, 0 for normal, and 1 for solid.                                                                                                                                                                                                                                                                                              |
|                     | <Zones>          |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                     | <Subarray>       | Array   | <i>Optional.</i> An array that contains these parameters in order: <ul style="list-style-type: none"> <li>• &lt;Thickness&gt;</li> <li>• &lt;LowerElevation&gt;</li> <li>• &lt;Roughness&gt;</li> <li>• &lt;BotRoughness&gt;</li> <li>• &lt;SideRoughness&gt;</li> <li>• &lt;Material&gt;</li> <li>• &lt;FillMaterial&gt;</li> </ul> This array's placeholder does not appear in the syntax or examples below but instead has its contents listed. |
|                     | <Thickness>      | String  | Thickness of the layer, contains the measurement and units.                                                                                                                                                                                                                                                                                                                                                                                        |
|                     | <LowerElevation> | String  | The elevation of the lower edge of the layer, contains the measurement and units.                                                                                                                                                                                                                                                                                                                                                                  |
|                     | <Roughness>      | String  | The roughness of the top of the layer, contains the measurement and units.                                                                                                                                                                                                                                                                                                                                                                         |
|                     | <BotRoughness>   | String  | The roughness of the bottom of the layer, contains the measurement and units.                                                                                                                                                                                                                                                                                                                                                                      |
|                     | <SideRoughness>  | String  | The roughness of the side of the layer, contains the measurement and units.                                                                                                                                                                                                                                                                                                                                                                        |
|                     | <Material>       | String  | The material the layer is made of.                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                     | <FillMaterial>   | String  | The material to use to fill in around geometry on the layer.                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Return Value</b> | None             |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Python Syntax                | oEditor.ChangeLayer(<LayerArray>)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Python Example</b></p> | <pre> oEditor = oDesign.SetActiveEditor("Footprint") oEditor.ChangeLayer(     ["NAME:stackup layer",         "Name:="          , "MQ",         "ID:="            , 20,         "Type:="          , "signal",         "Top Bottom:="    , "neither",         "Color:="         , 6136303,         "Transparency:="  , 60,         "Pattern:="       , 1,         "VisFlag:="       , 96,         "Locked:="        , False,         "DrawOverride:="  , 0,         "Zones:="         , [],         ["NAME:Sublayer",             "Thickness:="      , "0.745um",             "LowerElevation:=" , "737.155um",             "Roughness:="      , "0um",             "BotRoughness:="   , "0um",             "SideRoughness:="  , "0um",         ]     ] </pre> |

|  |                                                                                                                                       |
|--|---------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>        "Material:="          , "MQ",<br/>        "FillMaterial:="      , "FR4_epoxy"<br/><br/>    ]<br/><br/>]<br/><br/>)</pre> |
|--|---------------------------------------------------------------------------------------------------------------------------------------|

ChangeLayers (Footprint Editor)

Changes one or more attributes or parameters of a layer.

**Note:** To execute the command, all of the following parameters must be entered in the command line even if the user only intends to change one attribute.

| UI Access  | Create or change a layer in the Footprint editor with the <b>Edit Layers</b> window. |       |                                                                                                                                                                                                                                                      |
|------------|--------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameters | Name                                                                                 | Type  | Description                                                                                                                                                                                                                                          |
|            | <LayerArray>                                                                         | Array | An array that contains these parameters in order: <ul style="list-style-type: none"><li>• &lt;Layername&gt;</li><li>• &lt;ID&gt;</li><li>• &lt;Type&gt;</li><li>• &lt;TopBottom&gt;</li><li>• &lt;Color&gt;</li><li>• &lt;Transparency&gt;</li></ul> |

|                |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |         | <ul style="list-style-type: none"> <li>• &lt;Pattern&gt;</li> <li>• &lt;VisFlag&gt;</li> <li>• &lt;Locked&gt;</li> <li>• &lt;Draw&gt;</li> <li>• &lt;Subarray&gt;</li> <li>• &lt;Neg&gt;</li> </ul>                                                                                                                                                                                                                                                                                                                                                   |
| <mode>         | String  | Type of stackup. Can be "Laminate", "Multizone", or "Overlap" .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <LayerName>    | String  | Name of layer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <ID>           | Integer | A numerical identification for the layer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <Type>         | String  | Type of layer, such as "user", "signal", "dielectric", "soldermask.", "solder-paste", "silkscreen", "assembly", "wirebond", "dielectric", "glue", "user", "Post-processing", or "outline".                                                                                                                                                                                                                                                                                                                                                            |
| <TopBottom>    | String  | Optional. Indicates whether the layer is the top or bottom. Acceptable values are "top", "bottom", or "neither".                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <Color>        | Integer | Optional. A code to indicate the color of the layer. It is an RGB code in the hex format <i>bbggrr</i> . For example red (#0000ff) is 255, green (#00ff00) is 65280, and blue (#ff0000) is 16711680.                                                                                                                                                                                                                                                                                                                                                  |
| <Transparency> | Integer | Optional. A percentage that indicates the transparency of the layer between 0 (opaque) and 100 (completely transparent and not visible).                                                                                                                                                                                                                                                                                                                                                                                                              |
| <Pattern>      | Integer | Optional. A code for the pattern of the layer: 0 is hollow, 1 is solid, and the other patterns 3-8 are various hatch patterns.                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <VisFlag>      | Integer | Sets visibility for all objects on the layer using the following additive code: <ul style="list-style-type: none"> <li>• 1 makes primitives (rectangles, circles, polygons) visible.</li> <li>• 2 makes lines (also known as paths or traces) visible.</li> <li>• 4 makes pads (from padstacks, aka vias) visible.</li> <li>• 8 makes holes (or vias) visible.</li> <li>• 16 makes components visible.</li> <li>• 32 makes the mesh overlay visible if they are plotted.</li> <li>• 64 makes the mesh for the background material visible.</li> </ul> |

|                     |                  |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                  |         | For example, a value of 25 (1+8+16) makes primitives, vias, and components visible. Use 127 to show everything and 0 to hide all.                                                                                                                                                                                                                                                                                                               |
|                     | <Locked>         | Boolean | Optional. Whether the layer is locked.                                                                                                                                                                                                                                                                                                                                                                                                          |
|                     | <Draw>           |         | Optional. Allows drawing on the layer as wireframe, outlines, or solid. Acceptable values are -1 for wireframe, 0 for normal, and 1 for solid.                                                                                                                                                                                                                                                                                                  |
|                     | <Subarray>       | Array   | <p>An array that contains these parameters in order:</p> <ul style="list-style-type: none"> <li>• &lt;Thickness&gt;</li> <li>• &lt;LowerElevation&gt;</li> <li>• &lt;Roughness&gt;</li> <li>• &lt;BotRoughness&gt;</li> <li>• &lt;SideRoughness&gt;</li> <li>• &lt;Material&gt;</li> <li>• &lt;FillMaterial&gt;</li> </ul> <p>This array's placeholder does not appear in the syntax or examples below but instead has its contents listed.</p> |
|                     | <Thickness>      | String  | Thickness of the layer, contains the measurement and units.                                                                                                                                                                                                                                                                                                                                                                                     |
|                     | <LowerElevation> | String  | The elevation of the lower edge of the layer, contains the measurement and units.                                                                                                                                                                                                                                                                                                                                                               |
|                     | <Roughness>      | String  | The roughness of the top of the layer, contains the measurement and units.                                                                                                                                                                                                                                                                                                                                                                      |
|                     | <BotRoughness>   | String  | The roughness of the bottom of the layer, contains the measurement and units.                                                                                                                                                                                                                                                                                                                                                                   |
|                     | <SideRoughness>  | String  | The roughness of the side of the layer, contains the measurement and units.                                                                                                                                                                                                                                                                                                                                                                     |
|                     | <Material>       | String  | The material the layer is made of.                                                                                                                                                                                                                                                                                                                                                                                                              |
|                     | <FillMaterial>   | String  | The material to use to fill in around geometry on the layer.                                                                                                                                                                                                                                                                                                                                                                                    |
|                     | <Neg>            | Boolean | Whether the geometry on the layer is cut away from the layer.                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Return Value</b> | None             |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Python Syntax | <pre>oEditor.ChangeLayers(<br/>    [<br/>        "NAME:layers",<br/>        "Mode:=", "&lt;mode&gt;",<br/>        [<br/>            "NAME:pps"<br/>        ],<br/>        [<br/>            "NAME:stackup layer",<br/>            "Name:=", "&lt;LayerName&gt;",<br/>            "ID:=", &lt;ID&gt;,<br/>            "Type:=", "&lt;Type&gt;",<br/>            "Top Bottom:=", "&lt;TopBottom&gt;",<br/>            "Color:=", &lt;Color&gt;,<br/>            "Transparency:=", &lt;Transparency&gt;,<br/>            "Pattern:=", &lt;Pattern&gt;,<br/>            "VisFlag:=", &lt;VisFlag&gt;,<br/>            "Locked:=", &lt;Locked&gt;,<br/>            "DrawOverride:=", &lt;Draw&gt;,<br/>            [<br/>                "NAME:Sublayer",</pre> |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



|                       |                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <pre>"Thickness:=", "&lt;Thickness&gt;",<br/>"LowerElevation:=", "&lt;LowerElevation&gt;",<br/>"Roughness:=", "&lt;Roughness&gt;",<br/>"BotRoughness:=", "&lt;BotRoughness&gt;",<br/>"SideRoughness:=", "&lt;SideRoughness&gt;",<br/>"Material:=", "&lt;Material&gt;",<br/>"FillMaterial:=", "&lt;FillMaterial&gt;"<br/><br/>],<br/>"Neg:=", "&lt;Neg&gt;"<br/><br/>]<br/>])</pre> |
| <b>Python Example</b> | <pre>oEditor = oDesign.SetActiveEditor("Footprint")<br/>oEditor.ChangeLayers(<br/>    [<br/>        "NAME:layers",<br/>        "Mode:=", "Laminate",<br/>        [<br/>            "NAME:pps"<br/>        ],<br/>    ],<br/>    [<br/>        "</pre>                                                                                                                              |

```
"NAME:stackup layer",
"Name:=", "Cover",
"ID:=", 10,
"Type:=", "signal",
"Top Bottom:=", "neither",
"Color:=", 16711680,
"Transparency:=", 0,
"Pattern:=", 1,
"VisFlag:=", 127,
"Locked:=", False,
"DrawOverride:=", 0,
[
  "NAME:Sublayer",
  "Thickness:=", "0mil",
  "LowerElevation:=", "20mil",
  "Roughness:=", "0um",
  "BotRoughness:=", "0um",
  "SideRoughness:=", "0um",
  "Material:=", "gold",
  "FillMaterial:=", "FR4_epoxy"
],
```

|  |                                                 |
|--|-------------------------------------------------|
|  | <pre>"Neg:=", True<br/><br/>]<br/><br/>])</pre> |
|--|-------------------------------------------------|

## ChangeOptions (Footprint Editor)

*Use:* Changes options for an existing layout. (Does not change global options specified in the registry.) Only those options being changed need to be specified. Options not specified are not affected.

*Command:* None.

*Syntax:* ChangeOptions Array("NAME:options",<OptionData>,...)

*Return Value:* None

*Parameters:* <OptionData> can be of varying forms:

Type: <String>

Type: integer

Type: Array(float, float, float, float)

### Note:

An error will be returned if this script command is not used at the top-level hierarchy.

- Global layout defaults are stored in the registry (Layout\Preferences\)
- Names of registry items were selected for backwards compatibility and are consistent with adsn, technology file, and scripting naming
- Local options are both script-able and undo-able
- Global options are neither script-able nor undo-able

| Option                     | Description                                                                                                  | Installed default                                                                                                                                                                               | Registry, Scripting Names, Data Type                                                                                                      |
|----------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Arc Drawing Resolution     | Controls drawing of segments for arcs - either dynamic and based on current zoom or fixed to specified value | Dynamic                                                                                                                                                                                         | "useFixedDrawingResolution" <sup>1</sup><br>"DrawingResolution" <sup>2</sup>                                                              |
| Major and Minor Grid lines | Spacing, color, and visibility                                                                               | The grid is displayed. Spacing based on current default length units. Major grid lines are 10 minor grid lines apart. The line colors are light blue grays, with major grid lines being darker. | "MajorColor" <sup>3</sup><br>"MinorColor" <sup>3</sup><br>"MajorSize" <sup>2</sup><br>"MinorSize" <sup>2</sup><br>"ShowGrid" <sup>1</sup> |
| Drawing Extent             | Specifies size and coordinates of the layout                                                                 | Lower left of the layout is (-0.1, -0.1) and the upper right is (0.1, 0.1)                                                                                                                      | "PageExtent" <sup>4</sup>                                                                                                                 |
| Background color           | Color of the layout background                                                                               | white                                                                                                                                                                                           | "background color" <sup>3</sup>                                                                                                           |
| Sketch Mode                | Fill patterns and center lines are not drawn.                                                                | off                                                                                                                                                                                             | "DefaultToSketchMode" <sup>1</sup>                                                                                                        |
| Solid Mode                 | Objects are filled in with solid color.                                                                      | off                                                                                                                                                                                             | "fillMode" <sup>1</sup>                                                                                                                   |
| Draw Con-                  | Display pin symbols in the layout.                                                                           | off                                                                                                                                                                                             | "show connection points" <sup>1</sup>                                                                                                     |

|                                        |                                                                                                                            |                                                                                                                                                                                                          |                                                                                                                   |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Connection Points                      |                                                                                                                            |                                                                                                                                                                                                          |                                                                                                                   |
| Draw Rats                              | Display lines indicating missing physical connections in nets                                                              | on                                                                                                                                                                                                       | "draw rats" <sup>1</sup>                                                                                          |
| Label Vertices                         | Display property text labeling the vertices of selected polygons and lines.                                                | off                                                                                                                                                                                                      | "display vertex labels" <sup>1</sup>                                                                              |
| Net Color                              | Color used for highlighting nets                                                                                           | light yellow                                                                                                                                                                                             | "NetColor" <sup>3</sup>                                                                                           |
| Rectangle Description                  | Specifies if rectangles are described with two points or center point, width, and height                                   | 2 points                                                                                                                                                                                                 | "rectangle description" <sup>5</sup>                                                                              |
| Default Hole Size                      | Default size for actual holes in a PC board                                                                                | 25 mil                                                                                                                                                                                                   | "defaultholesize" <sup>2</sup>                                                                                    |
| Align Microwave Components             | Snaps components on entry.                                                                                                 | on                                                                                                                                                                                                       | "snaptoport" <sup>1</sup>                                                                                         |
| Symbol Footprint Scaling               | Used to size symbol footprints placed in layout.                                                                           | Based on data extent and current length units.                                                                                                                                                           | "sym footprint scaling" <sup>6</sup>                                                                              |
| Primary and Secondary Selection Colors | Colors used to indicate the first item selected and other items currently selected.                                        | Primary color is red, secondary color is a darker red                                                                                                                                                    | "primary selectioncolor" <sup>3</sup><br>"secondary selection color" <sup>3</sup>                                 |
| Preview Selection                      | Highlight the object that would be selected with a left mouse button click in the current location.                        | off                                                                                                                                                                                                      | "preview selection" <sup>1</sup>                                                                                  |
| Snapping options                       | Choose snapping sources and targets and the maximum distance (in pixels) for snapping to occur. Constrain edits to grid if | Snap distance is 20 pixels. Snapping sources are vertex, edge center, object center, & elec. conn. Snapping targets are vertex, edge center, object center, elec. conn, & grid. Edits are constrained to | "PixelSnapTolerance" <sup>7</sup><br>"SnapTargetVertex_on" <sup>1</sup><br>"SnapTargetEdgeCenter_on" <sup>1</sup> |

|                                 |                                                                                                  |                                                        |                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | desired.<br><br><b>Note:</b><br><br>Off-grid objects are ignored if ConstrainToGrid is asserted. | grid.                                                  | "SnapTargetElecConnection_on" <sup>1</sup><br>"SnapTargetIntersection_on" <sup>1</sup><br>"SnapTargetGrid_on" <sup>1</sup><br>"SnapSourceVertex_on" <sup>1</sup><br>"SnapSourceEdgeCenter_on" <sup>1</sup><br>"SnapSourceObjCenter_on" <sup>1</sup><br>"SnapSourceEdge_on" <sup>1</sup><br>"SnapSourceElecConnection_on" <sup>1</sup><br>"ConstrainToGrid" <sup>1</sup> |
| Always Show Merge Layers Dialog | Controls display of the layer merging dialog.                                                    | off – Only show dialog when the user must be involved. | "AlwaysShowLayerMergeDlg" <sup>1</sup>                                                                                                                                                                                                                                                                                                                                  |
| Rotation Increment              | During rotation, objects are rotated by multiples of this amount.                                | Based on current angle units.                          | "anglesnap" <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                |
| Allow Drag on first click       | Selection and move with one left mouse button click.                                             | false                                                  | "AllowDragOnFirstClick" <sup>1</sup>                                                                                                                                                                                                                                                                                                                                    |

The footnotes in the table above correspond to the following:

<sup>1</sup> = Integer with a value of 1 for on/true and 0 for off/false

<sup>2</sup> = String containing a amount and units

<sup>3</sup> = Integer representing a Color

<sup>4</sup> = An Array containing (lower left x, lower left y, upper right x, upper right y)

<sup>5</sup> = Integer with a value of 0 for two points, and 1 for center/width/height

<sup>6</sup> = String holding a double.

7 = Integer

### **CloseEditor (Footprint Editor)**

*Use:* Closes the active definition editor.

*Command:* None

*Syntax:* CloseEditor

*Return Value:* None

*Parameters:* None

### **CreateCircle (Footprint Editor)**

*Use:* Draws a circle in the footprint editor

*Command:* None

*Syntax:* CreateCircle

*Return Value:* None

### **CreateCircleVoid (Footprint Editor)**

*Use:* Creates a circle void and adds it to a particular parent primitive. Returns the name of the newly created object.

*Syntax:* CreateCircleVoid <circle\_void\_description>

<circle\_void\_description>:

```
Array("NAME:Contents",
```

```
"owner:=", <object_name>, // parent primitive name
```

```
"circle voidGeometry:=", <circle_geometry>)//definition
```

## CreateEdgePort (Footprint Editor)

*Use:* Creates an edge port using the specified edges.

*Command:* Draw > Port > Create

Right-click > Port > Create

Also available through Tool Bar icon

*Syntax:* CreateEdgePort

```
Array("NAME:Contents",  
"edge:=", Array(<edge description>), "edge:=", Array(<edge description>), ...  
"external:=", <flag>)
```

*Return Value:* Text containing the name of the created edge port. (Returns an empty name if the edge port is not created.)

*Parameters:* <edge description> for primitive edges

"et:=", "pe", "prim:=", <"prim">, "edge:=", <edge#>

<"prim">: text that is the primitive name

<edge#>: integer that is the edge number on the primitive

<edge description> for via edges

"et:=", "pse", "sel:=", <"via">, "layer:=", <layer id>,

"sx:=", <start X location>, "sy:=", <start Y location>, "ex:=", <end X location>,



"ey=", <end Y location>, "h=", <arc height>, "rad=", <radians>

<"via">: text that is the name of the via to use

<layer id>:

an integer that is the id of the layer of the pad of the via to use

<start X location>, <start Y Location>:

doubles that are the X, Y location of the start point of the edge arc

<end X location>, <end Y Location>:

doubles that are the X, Y location of the end point of the edge arc

<arc height>: double giving the height of the edge arc (0 for a straight edge)

<radians>: double giving the arc size in radians (0 for a straight edge)

<flag>

true if the port is an external port

false if the port is an internal port

### **CreateLine (Footprint Editor)**

*Use:* Draws a line in the footprint editor

*Command:* None

*Syntax:* CreateLine

*Return Value:* None

### **CreateLineVoid (Footprint Editor)**

*Use:* Creates a line void and adds it to a specified as parameter parent primitive. Returns the name of the newly created object.

*Syntax:* CreateLineVoid<line\_void\_description>

```
<line_void_description>:  
Array("NAME:Contents",  
      "owner:=", <object_name>, // parent primitive name  
      "line voidGeometry:=", <line_geometry>) // definition
```

### **CreateMeasure (Footprint Editor)**

*Use:* Creates a measurement. Returns the name of the created object.

*Syntax:* CreateMeasure

```
Array("NAME:Contents",  
      "MeasurementGeometry:=",  
      Array("LayerName:=", <layer_name>, // layer  
            "lw:=", <value>, // line width  
            "sx:=", <value>, // start X coordinate  
            "sy:=", <value>, // start Y coordinate  
            "ex:=", <value>, // end X coordinate  
            "ey:=", <value>, // end Y coordinate
```

```
<text_style>)
```

**<text\_style> :**

```
"name:=", <quoted string>, // its name
"isPlot:=", <bool>,
"font:=", <font_name>,
"size:=", double, // size in current units
"angle:=", <value>,
"weight:=", <text_weight>,
"just:=", <text_justification>,
"mirror:=", <bool>,
"scales:=", <bool>))
```

**CreatePolygonVoid (Footprint Editor)**

*Use:* Creates a polygon void and adds it to a specified as parameter parent primitive.

*Syntax:* CreatePolygonVoid<polygon\_void\_description>

<polygon\_void\_description>:

```
Array("NAME:Contents",
"owner:=", <object_name>, // owner name
"poly voidGeometry:=", <polygon_geometry>) // definition
```

*Return Value:* Returns the name of the newly created object.

**CreatePin (Footprint Editor)**

*Use:* Creates a pin in the footprint editor

*Command:* None

*Syntax:* CreatePin

*Return Value:* None

**CreatePolygon (Footprint Editor)**

*Use:* Draws a polygon in the footprint editor

*Command:* None

*Syntax:* CreatePolygon

*Return Value:* None

**CreateRectangle (Footprint Editor)**

*Use:* Draws a rectangle in the footprint editor

*Command:* None

*Syntax:* CreateRectangle

*Return Value:* None

**CreateText (Footprint Editor)**

*Use:* Draws text in the footprint editor

*Command:* None

*Syntax:* CreateText

*Return Value:* None

### **CreateVia (Footprint Editor)**

*Use:* Creates a via in the footprint editor

*Command:* None

*Syntax:* CreateVia

*Return Value:* Name of the created via.

### **Duplicate (Footprint Editor)**

*Use:* Duplicates footprint objects.

*Command:* The specified objects are duplicated by the given count with the specified offset.

*Syntax:* Duplicate Array("NAME:options", "count:=", <count data>), Array("NAME:elements", <element names>), Array( <x>, <y>)

*Return Value:* None

*Parameters:* <count data> is an integer

<element names> is one or more strings with the names of footprint objects

<x> is the x value for the offset

<y> is the y value for the offset

### **Edit (Footprint Editor)**

*Use:* Edits an object in the footprint editor

*Command:* None

*Syntax:* Edit

*Return Value:* None

**EraseMeasurements (Footprint Editor)**

*Use:* Causes erasing of ALL measurements currently present.

*Command:* None.

*Syntax:* EraseMeasurements

*Return Value:* None.

*Parameters:* None.

**FlipHorizontal (Footprint Editor)**

*Use:* Flips the selected object horizontally

*Command:* None

*Syntax:* FlipHorizontal

*Return Value:* None

**FlipVertical (Footprint Editor)**

*Use:* Flips the selected object vertically

*Command:* None

*Syntax:* FlipVertical

*Return Value:* None

**GetAllLayerNames (Footprint Editor)**

*Use:* Informational.

*Command:* None.

*Syntax:* GetAllLayerNames

*Return Value:* Array of strings which are the names of all layers in the layout, blackbox, or footprint.

*Parameters:* None.

**GetLayerInfo (Footprint Editor)**

Retrieves information on a specified layer in the Footprint editor.

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                   |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------|
| UI Access    | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                   |
| Parameters   | Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Type   | Description       |
|              | <LayerName>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | String | Name of the layer |
| Return Value | <div>An array of strings, as follows:<ul style="list-style-type: none"><li>Type: typename</li><li>TopBottomAssociation: "Top" "Neither" "Bottom" "Template" "Invalid"</li><li>Color: integer [representing rgb in hex]</li><li>IsVisible: "true" "false"</li><li>IsVisible: "true" "false". This is true if any these types of objects are visible:<ul style="list-style-type: none"><li>IsVisibleShape: "true" "false"[for stackup layer only]</li><li>IsVisiblePath: "true" "false"[for stackup layer only]</li><li>IsVisiblePad: "true" "false"[for stackup layer only]</li><li>IsVisibleHole: "true" "false"[for stackup layer only]</li><li>IsVisibleComponent: "true" "false"[for stackup layer only]</li></ul></li><li>IsLocked: "true" "false"</li><li>LayerId: integer [the ID for the layer]</li><li>IsLocked: "true" "false"</li><li>LayerId: integer [the ID for the layer]</li></ul></div> |        |                   |

The following are also in the array if the layer is a stackup layer:

- Index: integer [the stackup order index]
- LayerThickness: double [total layer thickness, in meters]
- EtchFactor: double [This will not appear if the layer has no etch factor defined.]
- IsIgnored: "true"|"false"
- NumberOfSublayers: 1 [This is always 1.]
- Material0: material name
- FillMaterial0: material name
- Thickness0: expression with units
- LowerElevation0: expression with units
- If roughness is defined, some or all of the following appear:
  - Roughness0Type: Groiss | Huray
  - Roughness0: value and units or surface ratio value for Huray
  - BottomRoughness0 Type: Groiss | Huray
  - BottomRoughness0: value and units or surface ratio value for Huray
  - SideRoughness0 Type: Groiss | Huray
  - SideRoughness0: value and units or surface ratio value for Huray

For example:

```
[ 'Type: signal', 'TopBottomAssociation: Neither', 'Color: 32512d', 'IsVisible:
true', ' IsVisibleShape: true', ' IsVisiblePath: true', ' IsVisiblePad: true', '
IsVisibleHole: true', ' IsVisibleComponent: true', 'IsLocked: false', 'LayerId:
7', 'Index: 0', 'LayerThickness: 0', 'IsIgnored: false', 'NumberOfSublayers: 1',
'Material0: copper', 'FillMaterial0: FR4_epoxy', 'Thickness0: 0mil', 'Lower-
Elevation0: 62mil', 'Roughness0 Type: Huray', 'Roughness0: 0mil, 2.9', 'Bot-
tomRoughness0 Type: Huray', 'BottomRoughness0: 0mil, 2.9', 'SideRoughness0 Type:
Huray', 'SideRoughness0: 0mil, 2.9']
```



|                       |                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | GetLayerInfo(<layer_name>)                                                                |
| <b>Python Example</b> | <pre>oModule = oDesign.GetModule("Footprint")<br/>oModule.GetLayerInfo ("TopLayer")</pre> |

### GetProperties (Footprint Editor)

*Use:* Gets a list of all the properties belonging to a specific **PropServer** and **PropTab**. This can be executed by the **oProject**, **oDesign**, or **oEditor** objects.

*Command:* None

*Syntax:* GetProperties( <PropTab>, <PropServer> )

*Return Value:* Variant array of strings – the names of the properties belonging to the prop server.

### GetStackupLayerNames (Footprint Editor)

*Use:* Informational.

*Command:* None.

*Syntax:* GetStackupLayerNames

*Return Value:* array of strings which are the names of all layers in the layout, blackbox, or footprint.

*Parameters:* None.

### Intersect (Footprint Editor)

*Use:* Causes Boolean intersecting of 2 or more *primitive* (polygons, rectangles, lines, or circles) objects.

*Syntax:* Intersect Array ("NAME: *primitives*",

<object\_name>, // 1<sup>st</sup> primitive name

<object\_name>, // 2<sup>nd</sup> primitive, if any

...) // etc

## **Move (Footprint Editor)**

*Use:* Moves an object in the footprint editor

*Command:* None

*Syntax:* Move

*Return Value:* None

## **PageSetup (Footprint Editor)**

*Use:* Specifies page setup for printing.

*Command:* **File>Page Setup**

*Syntax:* PageSetup <ArgArray>

*Return Value:* None.

*Parameters:* <Margins>: Page margins in implicit units of inches.

<Border>: Integer value indicating to draw border (1) or not to draw (0).

<DesignVars>: Integer value indicating to draw design vars (1) or not to draw (0).

## **RemoveLayer (Footprint Editor)**

*Use:* Removes a layer or stackup layer.

*Command:* Remove Layer from a layout or footprint definition

*Syntax:* RemoveLayer (<LayerName>)

*Return Value:* None.

*Parameters:* <LayerName>

Type: <String>

**Note** As with other Layout scripting interface commands that modify the layout, this command is not intended for use within scripts that define footprints. The command behavior from within such a script is undefined and may be unexpected. Use the LayoutHost scripting interface commands within scripts that define footprints.

## RemovePort (Footprint Editor)

*Use:* Selected pins are changed to vias. Selected edge ports are removed.

*Syntax:* RemovePort <NAME:elements", <object\_name> ... // objects to be removed

*Return Value:* None.

*Parameters:* <object\_name>

Type: <String>

*Example:*

```
oEditor.RemovePort ["NAME:elements", "via_195", "Port1"]
```

## Rotate [Footprint Editor]

*Use:* Rotates the selected object

*Command:* None

*Syntax:* Rotate

*Return Value:* None

*Example:*

```
oDefinitionEditor.Rotate ["NAME:elements", "poly118"],  
[0.000469978969405443, 0.000742770842193945]
```

## **Save (Footprint Editor)**

*Use:* Saves changes during editing of symbols and footprints

*Command:* None

*Syntax:* Save

*Return Value:* None

*Parameters:* None

*Example:*

```
oDefinitionEditor.Save
```

## **SetActiveDefinitionEditor (Footprint Editor)**

*Use:* Selects the symbol or footprint editor.

*Command:* None

*Syntax:* SetActiveDefinitionEditor < EditorName >,<Name>

*Return Value:* None

*Parameters:* <EditorName>

Type: <string>

Possible Values: SymbolEditor; FootprintEditor

<Name>

Type: <string>

Name of symbol or footprint to be modified

*Example:*

```
oProject.SetActiveDefinitionEditor("SymbolEditor", "tqtrx_cap")
```

## SetPropertyValue (Footprint Editor)

*Use:* Sets the value of one property. This is not supported for properties of the following types: **ButtonProp**, **PointProp**, and **VPointProp**. Only the **ChangeProperty** command can be used to modify these properties. This can be executed by the **oProject**, **oDesign**, or **oEditor** objects.

*Command:* None

*Syntax:* SetPropertyValue <PropTab>, <PropServer>, <PropName>, <PropValue>

*Return Value:* None

*Parameters:* <PropValue>

### **Type: String**

Contains the value to set the property. The formatting is different depending on what type of property is being edited. Use

**GetPropertyValue** for the desired property to see the expected format.

*Example:* oEditor.SetPropertyValue

```
"BaseElementTab", "rect_1",
```

```
"LineWidth", "3mm"
```

## Subtract (Footprint Editor)

*Use:* Causes boolean subtracting of one or more *primitive* (polygons, rectangles, lines, or circles) object(s) from another one.

```
Subtract Array ("NAME: primitives",  
  <object_name>, // Primitive to subtract from  
  <object_name>, // 1nd primitive to subtract, if any  
  ...) // etc
```

*Example:*

```
oEditor.Intersect Subtract ("NAME:primitives", "circle_0", "rect_2")
```

## ToggleViaPin (Footprint Editor)

*Use:* Selected pins are changed to vias. Selected vias are changed to pins.

*Syntax:* ToggleViaPin <NAME:elements", <object\_name> ... // objects to be toggled

*Return Value:* None.

*Parameters:* <object\_name>

Type: <String>

*Example:* oEditor.ToggleViaPin ["NAME:elements", "via\_195"]

## Unite (Footprint Editor)

*Use:* Causes Boolean uniting of 2 or more *primitive* (polygons, rectangles, lines, or circles) objects.

**Syntax:** Unite Array ("NAME: *primitives*",  
    <object\_name>, // 1<sup>st</sup> primitive name  
    <object\_name>, // 2<sup>nd</sup> primitive, if any  
    ...) // etc

*Example:*

```
oEditor.Unite ["NAME:primitives", "circle_0", "rect_2"]
```

## **ZoomToFit (Footprint Editor)**

**Use:** Set the current zoom to fit the contents of the currently visible page

**Command:** None

**Syntax:** ZoomToFit()

**Return Value:** None

## 28 - Core Global Script Context Commands

To run these commands:

```
import CoreGlobalScriptContextFunctions

CoreGlobalScriptContextFunctions.[CommandName]
```

The following are general script commands recognized by the **CoreGlobalScriptContextFunctions** object:

- [AddErrorMessage](#)
- [AddFatalMessage](#)
- [AddInfoMessage](#)
- [AddWarningMessage](#)
- [LogDebug](#)
- [LogError](#)

### AddErrorMessage

Adds an error message to the **Message Manager** window. AddErrorMessage is a function of CoreGlobalScriptContextFunctions.

|                     |           |        |                |
|---------------------|-----------|--------|----------------|
| <b>UI Access</b>    | N/A       |        |                |
| <b>Parameters</b>   | Name      | Type   | Description    |
|                     | <message> | String | Error message. |
| <b>Return Value</b> | None.     |        |                |

|                       |                                                                                                                           |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddErrorMessage(<message>)                                                                                                |
| <b>Python Example</b> | <pre>import CoreGlobalScriptContextFunctions  CoreGlobalScriptContextFunctions.AddErrorMessage('My error message.')</pre> |

### AddFatalMessage

Adds a fatal error message to the **Message Manager** window. AddFatalMessage is a function of CoreGlobalScriptContextFunctions.

|                   |      |      |             |
|-------------------|------|------|-------------|
| <b>UI Access</b>  | N/A  |      |             |
| <b>Parameters</b> | Name | Type | Description |



|              |                                                                                        |                |        |                |
|--------------|----------------------------------------------------------------------------------------|----------------|--------|----------------|
|              | <table><tr><td>&lt;message&gt;</td><td>String</td><td>Error message.</td></tr></table> | <message>      | String | Error message. |
| <message>    | String                                                                                 | Error message. |        |                |
| Return Value | None.                                                                                  |                |        |                |

|                       |                                                                                                                                |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddFatalMessage(<message>)                                                                                                     |
| <b>Python Example</b> | <pre>import CoreGlobalScriptContextFunctions CoreGlobalScriptContextFunctions.AddFatalMessage('My fatal error message.')</pre> |

## AddInfoMessage

Adds an informational message to the **Message Manager** window. AddInfoMessage is a function of CoreGlobalScriptContextFunctions.

|              |           |        |                        |
|--------------|-----------|--------|------------------------|
| UI Access    | N/A       |        |                        |
| Parameters   | Name      | Type   | Description            |
|              | <message> | String | Informational message. |
| Return Value | None.     |        |                        |

|                       |                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddInfoMessage(<message>)                                                                                      |
| <b>Python Example</b> | <pre>import CoreGlobalScriptContextFunctions CoreGlobalScriptContextFunctions.AddInfoMessage('My info.')</pre> |

## AddWarningMessage

Adds a warning message to the **Message Manager** window. AddWarningMessage is a function of CoreGlobalScriptContextFunctions.

|              |           |        |                  |
|--------------|-----------|--------|------------------|
| UI Access    | N/A       |        |                  |
| Parameters   | Name      | Type   | Description      |
|              | <message> | String | Warning message. |
| Return Value | None.     |        |                  |

|                       |                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | AddWarningMessge(<message>)                                                                                          |
| <b>Python Example</b> | <pre>import CoreGlobalScriptContextFunctions CoreGlobalScriptContextFunctions.AddWarningMessage('My warning.')</pre> |

## LogDebug

Adds a debug line to the log specified at **Tools > Debug Logging**. LogDebug is a function of CoreGlobalScriptContextFunctions.

|                     |           |        |                |
|---------------------|-----------|--------|----------------|
| <b>UI Access</b>    | N/A       |        |                |
| <b>Parameters</b>   | Name      | Type   | Description    |
|                     | <message> | String | Debug message. |
| <b>Return Value</b> | None.     |        |                |

|                       |                                                                                                                   |
|-----------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>Python Syntax</b>  | LogDebug(<message>)                                                                                               |
| <b>Python Example</b> | <pre>import CoreGlobalScriptContextFunctions CoreGlobalScriptContextFunctions.LogDebug('My debug message.')</pre> |

## LogError

Adds an error line to the log specified at **Tools > Debug Logging**. LogError is a function of CoreGlobalScriptContextFunctions.

|                     |         |        |               |
|---------------------|---------|--------|---------------|
| <b>UI Access</b>    | N/A     |        |               |
| <b>Parameters</b>   | Name    | Type   | Description   |
|                     | <error> | String | Error to log. |
| <b>Return Value</b> | None.   |        |               |

|                      |                   |
|----------------------|-------------------|
| <b>Python Syntax</b> | LogError(<error>) |
|----------------------|-------------------|

|                           |                                                                                                               |
|---------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Python<br/>Example</b> | <pre>import CoreGlobalScriptContextFunctions<br/>CoreGlobalScriptContextFunctions.LogError('My error.')</pre> |
|---------------------------|---------------------------------------------------------------------------------------------------------------|

## 29 - Example Scripts

This section contains [IronPython example scripts](#).

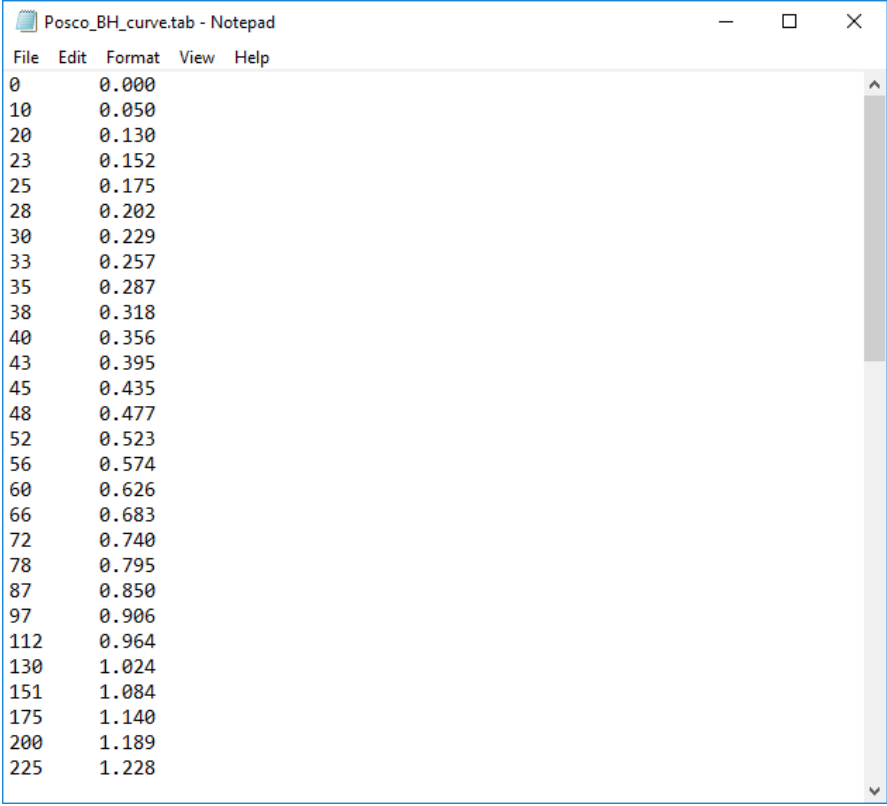
### IronPython Example Scripts

IronPython Examples:

- [BH Coordinates Python Script](#)
- [Equation Based Curve Python Script](#)

#### BH Coordinates Python Script

This sample Python script adds a material ("Posco 35PN250") with BH coordinates from a specified file (Posco\_BH\_curve.tab):



|     |       |
|-----|-------|
| 0   | 0.000 |
| 10  | 0.050 |
| 20  | 0.130 |
| 23  | 0.152 |
| 25  | 0.175 |
| 28  | 0.202 |
| 30  | 0.229 |
| 33  | 0.257 |
| 35  | 0.287 |
| 38  | 0.318 |
| 40  | 0.356 |
| 43  | 0.395 |
| 45  | 0.435 |
| 48  | 0.477 |
| 52  | 0.523 |
| 56  | 0.574 |
| 60  | 0.626 |
| 66  | 0.683 |
| 72  | 0.740 |
| 78  | 0.795 |
| 87  | 0.850 |
| 97  | 0.906 |
| 112 | 0.964 |
| 130 | 1.024 |
| 151 | 1.084 |
| 175 | 1.140 |
| 200 | 1.189 |
| 225 | 1.228 |

To recreate this tab file, paste [the text below the script](#) into a text editor and save as Posco\_BH\_curve.tab.

The script itself includes comment lines, which are preceded by # and offer explanations for the subsequent line(s).

**Script Contents**

```
# specify path to the file with BH coordinates
path_to_file = r"D:\Posco_BH_curve.tab"

# specify name of the material
material_name = "Posco 35PN250"

oProject = oDesktop.GetActiveProject()
oDefinitionManager = oProject.GetDefinitionManager()

""" create list with B and H points to pass to AddMaterial command
bh_coordinates list is a three dimensional array: 1D: name, 2D:
Coordinate list, 3D: BH point"""

bh_coordinates = ["NAME:BHCoordinates", ["NAME:DimUnits", "", ""]]

with open(path_to_file) as input_file:
    for line in input_file:
        h, b = line.split()

        bh_coordinates.append(["NAME:Coordinate", [
            "NAME:CoordPoint",
            float(h),
            float(b)
        ]
        ])

# create a new magnetic material with BH curve
oDefinitionManager.AddMaterial(
[
    "NAME:" + material_name,
    "CoordinateSystemType:=", "Cartesian",
    "BulkOrSurfaceType:=" , 1,
    [
        "NAME:PhysicsTypes",
        "set:=" , ["Electromagnetic"]
    ]
]
```

```

],
[
    "NAME:permeability",
    "property_type:=" , "nonlinear",
    "BTypeForSingleCurve:=" , "normal",
    "HUnit:=" , "A_per_meter", # unit can be specified as variable
    "BUnit:=" , "tesla", # unit can be specified as variable
    "IsTemperatureDependent:=", False,
    bh_coordinates,
    [
        "NAME:Temperatures"
    ]
],
"conductivity:=" , "1818181.82",
[
    "NAME:magnetic_coercivity",
    "property_type:=" , "VectorProperty",
    "Magnitude:=" , "0A_per_meter",
    "DirComp1:=" , "1",
    "DirComp2:=" , "0",
    "DirComp3:=" , "0"
]
])

```

### Posco\_BH\_Curve.tab Contents

|    |       |
|----|-------|
| 0  | 0.000 |
| 10 | 0.050 |
| 20 | 0.130 |
| 23 | 0.152 |
| 25 | 0.175 |
| 28 | 0.202 |

|     |       |
|-----|-------|
| 30  | 0.229 |
| 33  | 0.257 |
| 35  | 0.287 |
| 38  | 0.318 |
| 40  | 0.356 |
| 43  | 0.395 |
| 45  | 0.435 |
| 48  | 0.477 |
| 52  | 0.523 |
| 56  | 0.574 |
| 60  | 0.626 |
| 66  | 0.683 |
| 72  | 0.740 |
| 78  | 0.795 |
| 87  | 0.850 |
| 97  | 0.906 |
| 112 | 0.964 |
| 130 | 1.024 |
| 151 | 1.084 |
| 175 | 1.140 |
| 200 | 1.189 |
| 225 | 1.228 |
| 252 | 1.258 |
| 282 | 1.283 |
| 317 | 1.304 |
| 357 | 1.324 |
| 402 | 1.343 |
| 450 | 1.360 |
| 500 | 1.375 |
| 550 | 1.387 |

|       |       |
|-------|-------|
| 602   | 1.398 |
| 657   | 1.407 |
| 717   | 1.417 |
| 784   | 1.426 |
| 867   | 1.437 |
| 974   | 1.448 |
| 1117  | 1.461 |
| 1299  | 1.478 |
| 1515  | 1.495 |
| 1752  | 1.513 |
| 2000  | 1.529 |
| 2253  | 1.543 |
| 2521  | 1.557 |
| 2820  | 1.570 |
| 3167  | 1.584 |
| 3570  | 1.600 |
| 4021  | 1.617 |
| 4503  | 1.634 |
| 5000  | 1.652 |
| 5503  | 1.669 |
| 6021  | 1.685 |
| 6570  | 1.701 |
| 7167  | 1.717 |
| 7839  | 1.733 |
| 8667  | 1.749 |
| 9745  | 1.769 |
| 11167 | 1.793 |
| 12992 | 1.820 |
| 15146 | 1.851 |
| 17518 | 1.882 |



|       |       |
|-------|-------|
| 20000 | 1.909 |
| 22552 | 1.931 |
| 25417 | 1.948 |
| 28906 | 1.961 |
| 33333 | 1.971 |
| 38932 | 1.981 |

### Equation Based Curve Python Script

This sample Python script creates an equation based curve that produces a helix.

```
from math import pi, sin, cos

oProject = oDesktop.GetActiveProject()
oDesign = oProject.GetActiveDesign()
oEditor = oDesign.SetActiveEditor("3D Modeler")

Start_t = 0
End_t = pi*2

Npoint = 128
Nsection = Npoint-1

d_t = (End_t-Start_t)/Nsection

for n in range(1,Nsection):

    P1 = Start_t+d_t*(n-1)
    P2 = P1+d_t
    X_t1 = cos(P1*6)
    Y_t1 = sin(P1*6)
    Z_t1 = P1
    X_t2 = cos(P2*6)
```

```
Y_t2 = sin(P2*6)
```

```
Z_t2 = P2
```

```
oEditor.CreatePolyline(  
  [  
    "NAME:PolylineParameters",  
    "IsPolylineCovered:=" , True,  
    "IsPolylineClosed:=" , False,  
    [  
      "NAME:PolylinePoints",  
      [  
        "NAME:PLPoint",  
        "X:=" , '1mm*' + str(X_t1),  
        "Y:=" , '1mm*' + str(Y_t1),  
        "Z:=" , '1mm*' + str(Z_t1)  
      ],  
      [  
        "NAME:PLPoint",  
        "X:=" , '1mm*' + str(X_t2),  
        "Y:=" , '1mm*' + str(Y_t2),  
        "Z:=" , '1mm*' + str(Z_t2)  
      ]  
    ],  
    [  
      "NAME:PolylineSegments",  
      [  
        "NAME:PLSegment",  
        "SegmentType:=" , "Line",  
        "StartIndex:=" , 0,
```

```
"NoOfPoints:=" , 2
]
],
[
"NAME:PolylineXSection",
"XSectionType:=" , "None",
"XSectionOrient:=" , "Auto",
"XSectionWidth:=" , "0mm",
"XSectionTopWidth:=" , "0mm",
"XSectionHeight:=" , "0mm",
"XSectionNumSegments:=" , "0",
"XSectionBendType:=" , "Corner"
]
],
[
"NAME:Attributes",
"Name:=" , "Polyline"+str(n),
"Flags:=" , "",
"Color:=" , "(132 132 193)",
"Transparency:=" , 0,
"PartCoordinateSystem:=" , "Global",
"UDMId:=" , "",
"MaterialValue:=" , "\"vacuum\"",
"SurfaceMaterialValue:=" , "\"\"",
"SolveInside:=" , True,
"IsMaterialEditable:=" , True,
"UseMaterialAppearance:=" , False,
"IsLightweight:=" , False
])
```

# Index

## #

- 2.5D Via Commands 23-1
- 3D Modeler editor commands 8-1
  - AlignFaces 8-101
  - AssignMaterial 8-101
  - AssignSurfaceMaterial 8-202
  - Chamfer 8-103
  - ChangeProperty 6-10, 8-205, 13-8, 27-22
  - CleanUpModel 8-105
  - CloseAllWindows 8-209
  - Connect 8-105
  - Copy 8-84
  - CoverLines 8-106
  - CoverSurfaces 8-107
  - Create3DComponent 8-6
  - CreateBondwire 8-11
  - CreateBox 8-14
  - CreateCircle 8-16
  - CreateCone 8-18
  - CreateCutplane 8-20
  - CreateCylinder 8-22
  - CreateEllipse 8-24
  - CreateEntityList 8-107, 8-114
  - CreateEquationCurve 8-26
  - CreateEquationSurface 8-29
  - CreateFaceCS 8-109, 8-115
  - CreateGroup 8-113
  - CreateHelix 8-31
  - CreateObjectFromEdges 8-121
  - CreateObjectFromFace 8-122
  - CreateObjectFromFaces 8-124
  - CreatePoint 8-33
  - CreatePolyline 8-34
  - CreateRectangle 8-38
  - CreateRegion 8-41
  - CreateRegularPolygon 8-43
  - CreateRegularPolyhedron 8-46
  - CreateRelativeCS 8-125
  - CreateSphere 8-48
  - CreateSpiral 8-50
  - CreateTorus 8-52
  - CreateUserDefinedPart 8-54
- Delete 8-210
- DeleteEmptyGroups 8-127
- DeleteLastOperation 8-127
- DeleteOperation 8-128
- DeletePolylinePoint 8-85

|                                                    |                                                            |
|----------------------------------------------------|------------------------------------------------------------|
| DetachEdges 8-129                                  | GetEdgeByPosition 8-219                                    |
| DetachFaces 8-131                                  | GetEdgeIDsfromFace 8-221                                   |
| DuplicateAlongLine 8-85                            | GetEdgeIDsfromObject 8-221                                 |
| DuplicateAroundAxi 8-87                            | GetEdgeLength 8-222                                        |
| DuplicateMirror 8-89                               | GetEntityListIDByName 8-222, 8-223                         |
| EditEntityList 8-132, 8-137                        | GetFaceArea 8-223                                          |
| EditFaceCS 8-133                                   | GetFaceByPosition 8-225                                    |
| EditObjectCS 8-138                                 | GetFaceCenter 8-224                                        |
| EditPolyline 8-64                                  | GetFacelDs 8-226                                           |
| EditRelativeCS 8-144                               | GetFacelDsOfSheet 8-226                                    |
| Export 8-146                                       | GetModelBoundingBox 8-228                                  |
| ExportModelImagetoFile 8-148,<br>10-57             | GetPartsForUserDefinedModel 8-236                          |
| Fillet 8-152                                       | GetPoints 8-236                                            |
| FlattenGroup 8-153                                 | GetProperties 2-85, 6-41, 7-86                             |
| GenerateAllUserDefinedModels<br>8-211              | GetPropertyValue 2-86, 6-42, 7-87, 8-<br>237, 10-77, 26-94 |
| GenerateHistory 8-154                              | GetPropEvaluatedValue 6-38, 8-237                          |
| GenerateUserDefinedModel 8-<br>211                 | GetPropSIValue 6-40, 8-240                                 |
| Get3DComponentParameters<br>8-69                   | GetRelativeCoordinateSystems 8-242                         |
| Get3DComponentPartNames 8-<br>70                   | GetUser Position 8-244                                     |
| GetActiveCoordinateSystem 8-<br>155                | GetVertexIDFromNameForFirstOperation<br>8-244              |
| GetAct-<br>iveCoordin-<br>ateSystemTransform 8-155 | GetVertexIDsFromEdge 8-245                                 |
| GetBodyNamesByPosition 8-<br>213                   | GetVertexIDsFromFace 8-245                                 |
| GetCoordinateSystems 8-155                         | GetVertexIDsFromObject 8-246                               |
|                                                    | GetVertexPosition 8-246                                    |
|                                                    | GetWireBodyNames 8-247                                     |
|                                                    | HealObject 8-156                                           |
|                                                    | Import 8-159                                               |

- ImportDXF 8-162, 27-99
- ImportFromClipboard 8-165
- ImportGDSII 8-166
- Imprint 8-169
- ImprintProjection 8-170
- Insert3DComponent 8-70
- InsertComponent 8-72
- Intersect 8-171
- Mirror 8-91
- Move 8-93
- MoveCSToEnd 8-172
- MoveEntityToGroup 8-173
- MoveFaces 8-174
- OffsetFaces 8-94
- PageSetup 8-247
- ProjectSheet 8-175
- RemoveBadEdges 8-249
- RemoveBadFaces 8-249
- RemoveBadVertices 8-250
- RenamePart 8-251
- Replacewith3DComponent 8-177
- Rotate 8-96
- Scale 8-97
- Section 8-179
- SeparateBody 8-180
- SetModelUnits 8-181
- SetPropValue Modeler 8-252
- SetTopDownViewDirectionForActiveView 8-252
- SetTopDownViewDirectionForAllViews 8-253
- SetWCS 8-182
- Simplify 8-183
- Split 8-185
- Stitch 8-187
- Subtract 8-188
- SweepAlongPath 8-75
- SweepAlongVector 8-76
- SweepAroundAxis 8-78
- SweepFacesAlongNormal 8-79, 8-79, 8-189, 8-189
- SweepFacesAlongNormalWithAttributes 8-81
- ThickenSheet 8-191
- UncoverFaces 8-192
- Ungroup 8-194
- Unite 8-193
- UpdateComponentDefinition 8-82
- UpdatePriorityList 8-253
- UpgradeVersion 8-254
- Validate3DComponent 8-255
- WrapSheet 8-195
- WriteHistoryTreeLayoutForTest 8-256
- 3D Modeler editor object commands
  - GetNumObjects 8-229
  - GetObjectIDByName 8-229
  - GetObjectName 8-230
  - GetObjectNameByEdgeID 8-230

GetObjectNameByFaceID 8-231  
 GetObjectNameByID 8-231  
 GetObjectNameByVertexID 8-232  
 GetObjectShapeType 8-233  
 GetObjectVolume 8-235  
 GetObjPath 8-235

## A

Activation and Deactivation Methods 25-41  
 Add 16-1, 16-7, 16-10, 16-16, 21-2, 22-2, 24-1, 26-3, 26-29, 26-34, 26-112, 26-167, 26-203, 26-231, 26-255  
 AddAddSolverOnDemandModel 26-132  
 AddAllEyeMeasurements 10-6  
 AddAntennaOverlay 15-10  
 AddCableToBundle 8-258  
 AddCartesianLimitLine 10-6  
 AddCartesianLimitLineFromCurve 10-7  
 AddCartesianLimitLineFromEquation 10-9  
 AddCartesianXMarker 10-10  
 AddCartesianYMarker 10-11  
 AddCartesianYMarkerToStack 10-11  
 AddCircuitRefPort 25-146, 27-7  
 AddDataset 6-4, 7-7, 26-18  
 AddDefinitionFromBlock 26-20

AddDefinitionFromLibFile 8-198  
 AddDeltaMarker 10-12  
 AddDiffPair 19-3  
 AddDynamicLink 7-9  
 AddHole 25-56  
 AddLevel 27-120  
 AddMarker 10-13  
 AddMarkerToPlot 13-4  
 AddMaterial 6-6, 26-25, 26-55  
 AddMenuProp 2-54  
 AddMenuProp2 2-55  
 AddMessage 4-6  
 AddModelingProperties 7-11  
 AddNote 10-14  
 AddNPortData 26-127  
 AddPoint 25-54  
 AddPortsToAllNets 25-148, 25-148, 27-13, 27-13  
 AddPortsToNet 25-148, 27-13  
 AddProp 2-57  
 AddProp2 2-60  
 AddRadFieldSourceGroup 15-12  
 AddRefPort 22-2, 25-148, 27-13  
 AddRefPortUsingEdges 22-4  
 AddSweep 21-18  
 AddTraceCharacteristics 10-15  
 AddTraces 10-17  
 AlignFaces 8-101  
 AlignHorizontal 27-120

AlignObjects 25-172, 27-15  
AlignPorts 25-150, 27-17  
AlignVertical 27-121  
Analysis module commands  
    Analyze 7-11  
    AnalyzeAll 7-12  
    AnalyzeAllNominal 7-12  
    CopySetup 11-7, 11-30  
Analyze 21-21, 21-21  
    Analysis module command 7-11  
AnalyzeSweep 21-21  
Ansoft Application Object commands 3-1  
    GetAppDesktop 3-2  
ApplyMeshOps 7-13, 7-70  
ApplyReportTemplate 10-18  
Area 25-59  
AreMaterialPropertiesEqual 26-42  
AreSurfaceMaterialPropertiesEqual 26-43  
AreThereSimulationsRunning 4-7  
AssignCircuitRefPort 25-151, 25-153, 27-17, 27-19  
AssignMaterial 8-101  
AssignSurfaceMaterial 8-202

## **B**

BBoxLL 25-57  
BBoxUR 25-58  
Boolean Operations on Primitives 25-62

Boundary/Excitation module commands  
    CreateNportCircuitElements 27-47  
BreakUDMConnection 8-204  
BringToFront 26-264, 27-122

## **C**

Cable Modeling Commands 8-257  
Cable Modeling commands  
    AddCableToBundle 8-258  
    CreateCableBundle 8-259  
    CreateCableHarness 8-260  
    CreateClockSource 8-262  
    CreatePWLSource 8-263  
    CreateStraightWireCable 8-265, 8-266  
    ExportCableLibrary 8-268  
    ImportCableLibrary 8-268  
    RemoveCables 8-269  
    UpdateCableHarness 8-269  
CalcOp 13-5, 14-3  
CalcRead (deprecated) 14-3  
CalcStack 13-6, 14-5  
CalculatorRead 13-6, 14-4  
CalculatorWrite 13-7, 14-6  
Cascade 19-4  
Cavity Commands 24-1  
Chamfer 8-103  
ChangeGeomSettings 13-12, 14-6  
ChangeOptions 25-174, 27-174



- ChangeProperty 6-10, 7-13, 8-205, 10-19, 13-8, 26-44, 27-22, 27-122
- CircleIntersectsPolygon 25-60
- ClcEval 13-12, 14-7
- ClcMaterial 13-13, 14-8
- ClcMaterialValue 14-8
- CleanUpModel 8-105
- ClearAllMarkers 10-28
- ClearAllNamedExpr 13-14, 14-9
- ClearAllTraceCharacteristics 10-28
- ClearDiffPairs 19-5
- ClearLayerMappings 25-118, 27-26
- ClearMessages 4-7, 6-14
- ClearRefPort 25-155, 27-26
- ClearRelative 25-70, 27-26
- ClearSolutionCache 26-132
- ClipPlane 25-185
- Clone 19-6
- CloneMaterial 6-15, 26-54
- CloneReportsFromDatasetSolution 10-29
- Close 6-16, 19-7
- CloseAllWindows 4-11, 8-209
- CloseEditor 27-132, 27-178
- CloseProject 4-12
- CloseProjectNoForce 4-12
- ClosestPointOnLine 25-52
- Combine 19-8
- ComplInstance Functions 54
- ComplInstance Script Commands (multiple)
- Component Manager Script Commands 26-111
- Connect 8-105, 25-36, 27-27
- conventions
  - scripting help 1-1
- ConvertPlaneToTrace 22-4, 27-27
- ConvertPrimitives 23-1, 25-63
- ConvertToDynamic 26-212
- ConvertToParametric 26-212
- ConvertTraceToPlane 22-5, 27-27
- Coordinate System Methods 25-66
- Copy 8-84, 25-36, 27-28, 27-132
- CopyDesign 6-16
- CopyItemCommand 7-22
- CopyNamedExprToStack 13-14, 14-9
- CopyPlotSettings 10-30
- CopyRadFieldSetup 15-2
- CopyReportDefinition 10-30
- CopyReportsData 10-31
- Copyright and Trademark Information 2
- CopySetup
  - Analysis module command 11-7, 11-30
  - Optimetrics module command 11-7, 11-30
- CopyTraceDefinitions 10-31
- CopyTracesData 10-32
- Core Global Script Context Commands 28-1

|                                                |                                          |
|------------------------------------------------|------------------------------------------|
| Count 4-13                                     | CreateFaceCS 8-109, 8-115                |
| CoupleEdgePorts 22-5                           | CreateFieldPlot 13-15                    |
| CoverLines 8-106                               | CreateGroundPortComponent 22-5, 27-41    |
| CoverSurfaces 8-107                            | CreateGroup 8-113                        |
| CPython 1-44                                   | CreateGroupSelected 25-71, 27-41         |
| Create Primitives 25-3                         | CreateHelix 8-31                         |
| Create Voids in Primitives 25-15               | CreateHole 25-21, 27-41                  |
| Create3DComponent 8-6                          | CreateImage 27-134                       |
| Create3DStructure 25-70, 27-28                 | CreateInterfaceGround 22-5, 27-42        |
| CreateArc 27-133                               | CreateInterfacePort 22-6, 27-43          |
| CreateBondwire 8-11                            | CreateInterfacePortComponent 22-6, 27-43 |
| CreateBox 8-14                                 | CreateLine 25-7, 27-43, 27-135, 27-181   |
| CreateCableBundle 8-259                        | CreateLineFromPolygon 25-43, 27-45       |
| CreateCableHarness 8-260                       | CreateLineVoid 25-16, 27-45, 27-181      |
| CreateCircle 8-16, 25-6, 27-32, 27-134, 27-178 | CreateMeasure 25-22, 27-46, 27-181       |
| CreateCircleVoid 25-16, 27-33, 27-178          | CreateNetClass 25-130, 27-49             |
| CreateCircuitPort 25-156, 27-34                | CreateNPort 25-161                       |
| CreateClockSource 8-262                        | CreateNportCircuitElements 27-47         |
| CreateComponent 25-20, 27-37                   | CreateObjectFromEdges 8-121              |
| CreateCone 8-18                                | CreateObjectFromFace 8-122               |
| CreateCS 25-67, 27-29                          | CreateObjectFromFaces 8-124              |
| CreateCutplane 8-20                            | CreateObjectFromPolygon 25-44, 27-49     |
| CreateCylinder 8-22                            | CreateOutputVariable 9-1                 |
| CreateEdgePort 27-179                          | CreatePin 25-24, 27-49, 27-136, 27-183   |
| CreateEllipse 8-24                             | CreatePinGroup 25-24, 27-50              |
| CreateEntityList 8-107, 8-114                  |                                          |
| CreateEquationCurve 8-26                       |                                          |
| CreateEquationSurface 8-29                     |                                          |

CreatePinGroupPort 25-24, 27-50  
 CreatePoint 8-33  
 CreatePolygon 25-12, 27-52, 27-136, 27-183  
 CreatePolygonVoid 25-17, 27-52, 27-182  
 CreatePolyline 8-34  
 CreatePortInstancePorts 25-162, 27-53  
 CreatePortsOnComponents 25-162, 27-53  
 CreatePWLSource 8-263  
 CreateRectangle 8-38, 25-13, 27-53, 27-137, 27-183  
 CreateRectangleVoid 25-17, 27-54  
 CreateRegion 8-41  
 CreateRegularPolygon 8-43  
 CreateRegularPolyhedron 8-46  
 CreateRelativeCS 8-125  
 CreateReport 7-22, 10-33  
 CreateReportFromTemplate 10-45  
 CreateReportofAllQuantities 10-46  
 CreateSphere 8-48  
 CreateSpiral 8-50  
 CreateText 25-13, 27-55, 27-137, 27-183  
 CreateTorus 8-52  
 CreateTrace 25-26, 27-57  
 CreateUserDefinedPart 8-54  
 CreateUserDefinedSolution 18-1  
 CreateVia 25-31, 27-62, 27-184

Cross 25-51  
 Cut 27-138  
 CutDesign 6-17  
 CutOutSubDesign 25-186, 27-63

## D

dataset commands  
     AddDataset 6-4, 7-7, 26-18  
     DeleteDataset 6-18, 7-35, 26-54  
     EditDataset 6-19, 7-39, 26-74  
     ExportDataset 6-28, 7-55, 26-88  
     ImportDataset 6-46, 7-91, 26-95  
 DeactivateOpen 25-41, 27-67  
 DeactivateShort 25-42, 27-67  
 DecoupleEdgePorts 22-6  
 Deembed 19-9  
 DeembedBack 19-10  
 DeembedFront 19-11  
 DefeatureObjects 25-189, 27-67  
 Definition Editor Script Commands 27-1  
 Definition Manager commands  
     AddDefinitionFromBlock 26-20  
     AddDefinitionFromLibFile 8-198  
     GetProjectMaterialNames 26-93  
     UpdateDefFromBlock 26-106, 26-108  
 Definition Manager Script Commands 26-1  
 Delete 8-210, 21-21, 22-7, 22-7, 23-1, 24-1, 25-36, 25-36, 25-42, 25-42, 27-68, 27-68, 27-138  
 Delete [Interface Port] 22-7

- DeleteAllReports 10-47
- DeleteDataset 6-18, 7-35, 26-54
- DeleteDesign 6-18
- DeleteDesignInstance 7-36, 7-36
- DeleteEmptyGroups 8-127
- DeleteFarFieldSetup 15-2
- DeleteFieldPlot 13-25
- DeleteFieldVariation 7-36
- DeleteFullVariation 7-37
- DeleteImportData 12-1
- DeleteLastOperation 8-127
- DeleteMarker 10-47
- DeleteMarker[Fields Reporter] 13-26
- DeleteNamedExpr 13-26, 14-10
- DeleteNearFieldSetup 15-3
- DeleteOperation 8-128
- DeleteOutputVariable 7-38, 9-3
- DeletePinGroup 25-35, 27-69
- DeletePolylinePoint 8-85
- DeleteProbePortAndVia 22-7
- DeleteProject 4-13
- DeleteReport 10-48
- DeleteSetup 15-4
- DeleteSetups
  - Optimetrics module command 11-8, 11-31
- DeleteSolutionVariation 7-38, 12-2
- DeleteSource [Interface Source] 22-7
- Deletetraces 10-48
- DeleteUneditablePlot 13-27
- DeleteUserDefinedSolutions 18-2
- DelNetClass 25-131, 27-68
- Design object commands 10-67, 10-67, 10-69, 10-70, 10-70, 10-82
  - AddCartesianLimitLine 10-6
  - AddCartesianXMarker 10-10
  - AddCartesianYMarker 10-11
  - AddDeltaMarker 10-12
  - AddDynamicLink 7-9
  - AddMarker 10-13
  - AddMarkerToPlot 13-4
  - AddNote 10-14
  - AddTraceCharacteristics 10-15
  - AddTraces 10-17
  - ApplyMeshOps 7-13, 7-70
  - CalculatorRead 13-6, 14-4
  - ClearAllMarkers 10-28
  - ClearAllTraceCharacteristics 10-28
  - CloseAllWindows 4-11
  - CopyReportDefinition 10-30
  - CreateOutputVariable 9-1
  - CreateReportFromTemplate 10-45
  - DeleteAllReports 10-47
  - DeleteOutputVariable 7-38, 9-3
  - DeleteReport 10-48
  - DeleteTraces 10-48

|                                      |                                                        |
|--------------------------------------|--------------------------------------------------------|
| DoesOutputVariableExist 9-3          | GetOutputVariableValue 7-84, 9-7                       |
| Edit Layout 7-44                     | GetProjectDirectory 4-31                               |
| EditMarker 10-51                     | GetProperties 2-85, 6-41, 7-86                         |
| EditOutputVariable 7-46, 9-4         | GetPropertyValue 2-86, 6-42, 7-87, 8-237, 10-77, 26-94 |
| ExportConvergence 7-54               | GetPropEvaluatedValue 6-38, 8-237                      |
| ExportMeshStats 7-60                 | GetPropNames 7-89, 15-6                                |
| ExportModelMeshToFile 8-151, 10-60   | GetPropSIValue 6-40, 8-240                             |
| ExportPlot3DToFile 10-61             | GetRegistryInt 4-32, 4-68                              |
| ExportPlotImageToFile 13-42          | GetRegistryString 4-33, 4-69                           |
| ExportPlotImageWithViewToFile 13-43  | GetSelections 8-242                                    |
| ExportProfile 7-66                   | GetSubGroupsInGroup 8-243                              |
| ExportReport 7-67, 10-62             | GetTempDirectory 4-36                                  |
| ExportToFile 10-64                   | GetVariables 2-88, 6-45, 7-90                          |
| Fast Transformation 7-112, 7-113     | GetVariableValue 2-88, 6-44, 7-91                      |
| GeometryCheckAndAutofix 8-212, 27-84 | GetVersion 4-37                                        |
| GetDesignValidationInfo 7-74         | ImportIntoReport 10-96                                 |
| GetDisplayType 10-73                 | IsFeaturEnabled 4-38                                   |
| GetLibraryDirectory 4-26             | PasteDesign 7-96                                       |
| GetMatchedObjectName 8-227           | PasteReports 10-100                                    |
| GetModelUnits 8-228                  | PasteReportsWithLegacyNames 10-101                     |
| GetModule 7-78, 7-79, 7-80           | PasteTracesWithLegacyNames 10-102                      |
| GetName 7-81, 10-76, 11-18, 11-45    | Redo 7-99                                              |
| GetObjectsByMaterial 8-233           | RenameDesignInstance 7-101                             |
| GetObjectsInGroup 8-234              | RenameReport 10-103                                    |
| GetObjPath 7-83, 10-77, 11-19, 11-46 | RenameTraces 10-103                                    |
|                                      | RunToolkit 6-55, 7-103                                 |
|                                      | SavePlotSettingsAsDefault 10-105                       |

- SetActiveEditor 7-85, 7-104
- SetLibraryDirectory 4-58
- SetProjectDirectoryVBCommand> 4-58
- SetPropertyValue 2-89, 6-63, 7-117, 26-105
- SetTempDirectory 4-62
- SetVariableValue 2-90, 6-64, 7-118
- Show Layout 7-118
- ShowWindow 8-183
- Solve 7-119, 7-120
- UpdateAllReports 10-107
- Design Object Script Commands 7-1
- Design Object SScripting commands
  - ExportNetworkData 7-61
- Desktop Commands For Registry Values 4-66
- Desktop object commands
  - AddMessage 4-6
  - AreThereSimulationsRunning 4-7
  - ClearMessages 4-7
  - CloseProject 4-12
  - CloseProjectNoForce 4-12
  - Count 4-13
  - DeleteProject 4-13
  - DownloadJobResults 4-14
  - EnableAutosave 4-16
  - ExportOptionsFiles 4-17
  - GetActiveProject 4-18
  - GetActiveScheduler 4-18
  - GetActiveSchedulerInfo 4-19
  - GetAutosaveEnabled 4-20
  - GetBuildTimeDateString 4-20
  - GetChildNames 6-31, 7-70, 15-5
  - GetChildNames Modeler 8-215
  - GetChildTypes 6-32, 7-72, 8-218, 15-6
  - GetChildTypes Optimetrics 11-18, 11-44
  - GetCustomMenuSet 4-21
  - GetDesigns 6-35
  - GetDesktopConfiguration 4-24
  - GetDistributedAnalysisMachines 4-24
  - GetDis-trib-utedAna-lysisMachinesForDesignType 4-25
  - GetMonitorData 4-29
  - GetProjectList 4-31
  - GetProjects 4-28, 4-32
  - GetPropNames 6-39, 11-21, 11-47
  - GetSchematicEnvironment 4-34
  - KeepDesktopResponsive 4-39
  - LaunchJobMonitor 4-40
  - NewProject 4-40
  - OpenMultipleProjects 4-42
  - OpenProject 4-42

PageSetup 4-43, 25-211, 27-104, 27-189  
 PauseRecording 4-44  
 PauseScript 4-44  
 Print 4-45  
 QuitApplication 4-45  
 RefreshJobMonitor 4-46  
 ResetLogging 4-47  
 RestoreWindow 4-48  
 ResumeRecording 4-49  
 RunProgram 4-50  
 RunScript 4-51  
 SelectScheduler 4-53  
 SetActiveProject 4-55  
 SetActiveProjectByPath 4-55  
 SetCustomMenuSet 4-56  
 SetDesktopConfiguration 4-57  
 SetSchematicEnvironment 4-61  
 Sleep 4-63  
 StopSimulations 4-63  
 SubmitJob 4-64  
 TileWindows 4-65  
 Desktop Object Script Commands 4-1  
 Desktop Scripting Conventions 1-57  
 DetachEdges 8-129  
 DetachFaces 8-131  
 DisableDiffPairs 19-12  
 Disconnect 25-37, 27-70

DisplayPinNames 27-139  
 Distance 25-51  
 DistanceFromLine 25-52  
 DistributedAnalyzeSetup, Optimetrics module command 11-8, 11-32  
 DoesNamedExpressionExists 13-27, 14-10  
 DoesOutputVariableExist 9-3  
 DoesSupportTraceCharacteristics 10-49  
 Draw Menu commands 8-4  
 Duplicate 25-191, 27-70, 27-184  
 DuplicateAcrossLyrs 25-118, 27-70  
 DuplicateAlongLine 8-85  
 DuplicateAroundAxis 8-87  
 DuplicateMirror 8-89  
 DynamicMeshOverlays 21-23

## E

Edit 7-42, 16-4, 16-9, 16-13, 16-19, 21-23, 21-23, 22-8, 22-8, 23-2, 24-2, 25-37, 26-56, 26-83, 26-132, 26-181, 26-212, 26-236, 26-264, 27-71  
 Edit Menu Commands 8-83  
 Edit3DComponent 8-60  
 Edit3DComponentDefinition 8-62, 25-192, 27-72  
 EditAntennaArraySetup 15-45  
 EditAntennaOverlay 15-13  
 EditBoxSetup 15-14  
 EditCartesianXMarker 10-50  
 EditCartesianYMarker 10-51

EditCircuitExcitations 22-19

EditCircuitPort [Interface Port] 22-19

EditCoSimulationOptions 7-39

EditDataset 6-19, 7-39, 26-74

EditEntityList 8-132, 8-137

EditFaceCS 8-133

EditFarFieldSphereSetup 15-16

EditImportData 7-41

EditInfiniteArray 7-42

EditInfiniteSphereSetup 15-17

EditLayoutForLayoutComponent 7-44

EditLineSetup 15-19

EditMarker 10-51

EditMaterial 6-21, 26-76

EditNearFieldBoxSetup 15-20

EditNearFieldLineSetup 15-22

EditNearFieldRectangleSetup 15-23

EditNearFieldSphereSetup 15-24

EditNotes 7-44, 7-45

EditObjectCS 8-138

EditOptions 7-45

Editor object commands

- SetPropertyValue 2-89, 6-63, 7-117, 26-105

EditOutputVariable 7-46, 9-4

EditPolyline 8-64

EditQ3DSources 12-3

EditRadFieldSourceGroup 15-26

EditRectangleSetup 15-27

EditRelativeCS 8-144

EditSetup

- optimization command 11-61
- parametric command 11-54
- sensitivity command 11-71
- statistical command 11-75

EditSolverOnDemandModel 26-151

EditSources 12-6

EditSphereSetup 15-28

EditSurfaceMeshSummaryData 13-28

EditUserDefinedSolution 18-3

EditWithComps 26-152, 26-182, 26-212, 26-241, 26-264

EMDesignOptions 7-47

EnableAutoSave 4-16

EnableDiffPairs 19-13

EnableSetup 11-9, 11-32

EnterComplex 13-31, 14-11

EnterComplexVector 13-32, 14-12

EnterCoord 13-33, 14-12

EnterEdge 13-33, 14-13

EnterLine 13-34, 14-14

EnterOutputVar 13-34, 14-14

EnterPoint 13-35, 14-15

EnterQty 13-35, 14-15

EnterScalar 13-36, 14-16



- EnterScalarFunc 13-37, 14-16
- EnterSurf 13-37, 14-17
- EnterVector 13-38, 14-17
- EnterVectorFunc 13-38, 14-18
- EnterVol 13-39, 14-19
- EraseMeasurements 25-197, 27-73, 27-185
- Example Scripts 29-1
- Excitations Commands 22-1
- ExecuteScript 2-62
- Export 8-146, 26-89, 26-91, 26-92, 26-160, 26-197, 26-221, 26-247, 26-275
- ExportCableLibrary 8-268
- ExportCitiFile 19-13
- ExportConvergence 7-54
- ExportDataset 6-28, 7-55, 26-88
- ExportDOELocalSensitivity 11-41
- ExportDOELocalSensitivityCurve 11-42
- ExportDOEResponseCurve 11-39
- ExportDOEResponseCurveSlices 11-40
- ExportDOEResponseSurface 11-41
- ExportDXConfigFile, Optimetrics module command 11-10, 11-33
- ExportDXF 25-197, 27-75
- ExportEigenmodes 12-10
- ExportEignemodes 12-10
- ExportElementPatternToFile 15-50
- ExportEyeMaskViolation 10-52
- ExportFieldPlot 13-39
- ExportFieldsToFile 15-51
- ExportFile 27-139
- ExportForHSpice 7-56, 12-11
- ExportForHSpice (Layout Editor) 7-57
- ExportForSpice (Layout Editor) 7-58
- ExportFullWaveSpice 19-15, 26-226
- ExportGDSII 25-118, 25-198, 27-76
- ExportGerber 25-200, 27-78
- ExportImageToFile 10-53
- ExportMarkerTable 13-40
- ExportMaterial 6-29, 26-90
- ExportMatlab 19-17
- ExportMesh Stats 7-60
- ExportModelMeshToFile 8-151, 10-60
- ExportNCDrill 25-202, 27-80
- ExportNMFData 12-14
- ExportOptimetricsProfile, Optimetrics module command 11-10, 11-34
- ExportOptimetricsResults, Optimetrics module command 11-11, 11-34
- ExportOptionsFiles 4-17
- ExportOutputVariables 9-5
- ExportParametersToFile 15-53
- ExportParametricResults, Optimetrics module command 11-12, 11-35
- ExportPlot3DToFile 10-61
- ExportPlotImageToFile 13-42
- ExportPlotImageWithViewToFile 13-43

- ExportProfile 7-66
- ExportRadiationFieldsToFile 15-54
- ExportRadiationParametersToFile 15-55
- ExportReport 7-67, 10-62
- ExportReportDataToFile 10-63
- ExportRespSurfaceMinMaxTable 11-13, 11-37
- ExportRespSurfaceRefinePoints 11-14, 11-37
- ExportRespSurfaceResponsePoints 11-15, 11-38
- ExportRespSurfaceVerificationPoints 11-15, 11-39
- ExportScript 26-92, 26-252
- ExportSpreadsheet 19-22
- ExportSurfaceMeshSummary 13-44
- ExportTableToFile 10-64
- ExportToFile 13-45
- ExportToHFSS 21-37, 27-82
- ExportToQ3D 21-37, 27-82
- ExportTouchstone 19-24
- ExportTouchstone2 19-26
- ExportUniformPointsToFile 10-65
- Extract 19-28
- F**
- FFTONReport 12-16
- Field Calculator commands
  - DoesNamedExpressionExists 13-27, 14-10
- Field Overlay module commands,
  - GetFieldPlotNames 13-47
- field overlay script commands 13-1
- Field Overlays module commands
  - CalcOp 13-5, 14-3
  - CalcStack 13-6, 14-5
  - ChangeGeomSettings 13-12, 14-6
  - ClcMaterial 13-13, 14-8
  - ClearAllNamedExpr 13-14, 14-9
  - CopyNamedExprToStack 13-14, 14-9
  - CreateFieldPlot 13-15
  - DeleteFieldPlot 13-25
  - DeleteNamedExpr 13-26, 14-10
  - DeleteUneditablePlot 13-27
  - EditSurfaceMeshSummaryData 13-28
  - EnterComplex 13-31, 14-11
  - EnterComplexVector 13-32, 14-12
  - EnterCoord 13-33, 14-12
  - EnterEdge 13-33, 14-13
  - EnterLine 13-34, 14-14
  - EnterOutputVar 13-34, 14-14
  - EnterPoint 13-35, 14-15
  - EnterQty 13-35, 14-15
  - EnterScalar 13-36, 14-16
  - EnterScalarFunc 13-37, 14-16
  - EnterSurf 13-37, 14-17
  - EnterVector 13-38, 14-17

- EnterVectorFunc 13-38, 14-18
- EnteVol 13-39, 14-19
- ExportFieldPlot 13-39
- ExportOnGrid 13-41
- ExportSurfaceMeshSummary 13-44
- GetFieldFolderNames 13-46
- GetFieldPlotQuantityName 13-47
- GetMeshPlotNames 13-48, 21-38
- HidePolarPlot 13-50
- HideRadiatedPlotOverlay 13-50
- ModifyFieldPlot 13-52
- ReassignFieldPlot 13-53
- RenameFieldPlot 13-55
- RenamePlotFolder 13-56
- SaveFieldsPlots 13-57
- SetFieldPlotSettings 13-58
- SetPlotFolderSettings 13-60
- UpdateAllFieldsPlots 13-65
- UpdateQuantityFieldsPlots 13-65
- Fields Calculator commands
  - AddNamedExpr 13-5, 14-2
  - CalcOp 13-5, 14-3
  - CalcStack 13-6, 14-5
  - CalculatorWrite 13-7, 14-6
  - ChangeGeomSettings 13-12, 14-6
  - ClcEval 13-12, 14-7
  - ClcMaterial 13-13, 14-8
  - ClcMaterialValue 14-8
  - ClearAllNamedExpr 13-14, 14-9
  - CopyNamedExprToStack 13-14, 14-9
  - DeleteNamedExpr 13-26, 14-10
  - EnterComplex 13-31, 14-11
  - EnterComplexVector 13-32, 14-12
  - EnterCoord 13-33, 14-12
  - EnterEdge 13-33, 14-13
  - EnterLine 13-34, 14-14
  - EnterOutputVar 13-34, 14-14
  - EnterPoint 13-35, 14-15
  - EnterQty 13-35, 14-15
  - EnterScalar 13-36, 14-16
  - EnterScalarFunc 13-37, 14-16
  - EnterSurf 13-37, 14-17
  - EnterVector 13-38, 14-17
  - EnterVectorFunc 13-38, 14-18
  - EnterVol 13-39, 14-19
  - ExportOnGrid 14-19
  - ExportToFile 14-21
- Fields Calculator Script Commands 14-1
- Fields reporter module commands
  - DeleteMarker[Fields Reporter] 13-26
  - ExportMarkerTable 13-40
- Fillet 8-152
- FilterObjectList 25-45, 27-82
- FindObjects 25-44

FindObjectsByPoint 25-46, 27-83  
FindObjectsByPolygon 25-46, 27-84  
FlattenGroup 8-153  
FlipHorizontal 25-40, 27-84, 27-140, 27-185  
FlipVertical 25-40, 27-84, 27-140, 27-185  
footprint  
    editor scripts 27-155  
    manager script commands 26-166

## G

GenerateAllUserDefinedModels 8-211  
GenerateHistory 8-154  
GenerateUserDefinedModel 8-211  
GenerateVariationData Parametric, parametric command 11-16, 11-43, 11-56  
GeometryCheckAndAutofix 8-212, 27-84  
Get3DComponentDefinitionNames 8-67  
Get3DComponentInstanceNames 8-68  
Get3DComponentMaterialNames 8-68  
Get3DComponentMaterialProperties 8-69  
Get3DComponentParameters 8-69  
Get3DComponentPartNames 8-70

GetActiveCoordinateSystem 8-155  
GetActiveCoordinateSystemTransform 8-155  
GetActiveDesign 6-29  
GetActiveProject 4-18  
GetActiveScheduler 4-18  
GetActiveSchedulerInfo 4-19  
GetAdaptiveFreq 12-16  
GetAllBoundariesList 22-21  
GetAllCategories 10-67  
GetAllLayerNames 25-121, 27-86, 27-185  
GetAllPortsList 22-21  
GetAllQuantities 10-68  
GetAllReportNames 10-69  
GetAllSolutionNames 21-37  
GetApplication 2-62  
GetArrayVariables 2-85, 6-30  
GetAutoSaveEnabled 4-20  
GetAvailableDisplayTypes 10-69  
GetAvailableReportTypes 10-70  
GetAvailableSolutions 10-70  
GetAvailableVariations 12-17  
GetBBox 25-46, 27-86  
GetBodyNamesByPosition 8-213  
GetBoundingCircleCenter 25-59  
GetBoundingCircleRadius 25-59  
GetBuildDateTimeString 4-20  
GetCallback 2-63

- GetChangedProperty 2-64
- GetChild Object (Report Setup),  
Report module command 10-71
- GetChildNames 6-31, 7-70, 15-5
- GetChildNames (Optimetrics),  
Report module command 10-71
- GetChildNames Modeler 8-215
- GetChildObject Design 6-31, 7-71
- GetChildObject Modeler 8-217
- GetChildObject Radiation 15-5
- GetChildTypes 6-32, 7-72, 8-218,  
15-6
- GetChildTypes Optimetrics 11-18,  
11-44
- GetChildTypes ReportSetup 10-72
- GetClosestPoint 25-60
- GetClosestPoints 25-61
- GetCompInstanceFromRefDes 25-205, 27-87
- GetComponentInfo 25-204, 27-87
- GetComponentName 54
- GetComponentPinInfo 25-206, 27-88
- GetComponentPins 25-205, 27-88
- GetCoordinateSystems 8-155
- GetCSObjects
  - Coordinate Systems 25-47, 25-71, 27-86
- GetCurvePropServerName 10-73
- GetDataUnits 10-84
- GetDefinitionManager 6-33
- GetDependentFiles 6-33
- GetDescription 2-64
- GetDesign 2-65, 2-65
- GetDesignID 7-72
- GetDesignName 7-73
- GetDesigns 6-35
- GetDesignType 7-73
- GetDesignValidationInfo 7-74
- GetDesignVariableNames 10-85
- GetDesignVariableUnits 10-86
- GetDesignVariableValue 10-87
- GetDesignVariationKey 10-88
- GetDisplayType 10-73
- GetDistributedAnalysisMachines 4-24
- GetDis-trib-utedAna-lysisMachinesForDesignType 4-25
- GetDocumentNames 17-5
- GetDynLinkIntrinsicVariables 10-74
- GetDynLinkQtyValueState 10-74
- GetDynLinkTraces 10-75
- GetDynLinkVariableValues 10-75
- GetEdgeByPosition 8-219
- GetEdgeIDsFromFace 8-221
- GetEdgeIDsFromObject 8-221
- GetEdgeLength 8-222
- GetEditor 2-65, 7-75
- GetEditor (Layout Editor) 7-75

|                                                       |                                                         |
|-------------------------------------------------------|---------------------------------------------------------|
| GetEditorName [Layout] 25-207, 27-89                  | GetIntersectionType 25-60                               |
| GetEntityIDsContainedByNamedSelection 8-222           | GetLayerInfo 25-121, 27-186                             |
| GetEntityListIDByName 8-223                           | GetLibraryDirectory 4-26                                |
| GetEvaluatedText 2-66                                 | GetMatchedObjectName 8-227                              |
| GetExeDir 4-25                                        | GetMaterialList 25-207, 27-90                           |
| GetFaceArea 8-223                                     | GetMeshOperations 21-38                                 |
| GetFaceByPosition 8-225                               | GetMeshPlotNames 13-48                                  |
| GetFaceCenter 8-224                                   | GetModelBoundingBox 8-228                               |
| GetFaceIDs 8-226                                      | GetModelUnits 8-228                                     |
| GetFaceIDsOfSheet 8-226                               | GetModule 7-78, 7-79, 7-80                              |
| GetFieldFolderNames 13-46                             | GetMonitorData 4-29                                     |
| GetFieldPlotNames, Field Overlay module command 13-47 | GetName 6-36, 7-81, 7-82, 10-76, 11-18, 11-45, 19-31    |
| GetFieldPlotQuantityName 13-47                        | GetNames 26-162, 26-197, 26-200, 26-222, 26-248, 26-276 |
| GetFileName 2-66                                      | GetNetClasses 25-131, 27-90                             |
| GetFrequencies 19-29                                  | GetNetClassNets 25-131, 27-90                           |
| GetFrequencyCount 19-30                               | GetNetConnections 25-132, 27-91                         |
| GetGeo-metryIDsForAllNetLayerCombinations 7-77        | GetNumObjects 8-229                                     |
| GetGeo-metryIDsForNetLayerCombinations 7-76           | GetObjectIDByName 8-229                                 |
| GetHidden 2-67                                        | GetObjectName 8-230                                     |
| GetHoles 25-57                                        | GetObjectNameByEdgeID 8-230                             |
| GetImagDataValues 10-88                               | GetObjectNameByFaceID 8-231                             |
| GetInstanceID 55                                      | GetObjectNameByID 8-231                                 |
| GetInstanceName 55                                    | GetObjectNameByVertexID 8-232                           |
|                                                       | GetObjectsByMaterial 8-233                              |
|                                                       | GetObjectShapeType 8-233                                |
|                                                       | GetObjectsIngroup 8-234                                 |
|                                                       | GetObjectVolume 8-235                                   |

- GetObjPath 6-37, 7-83, 8-235, 10-77, 11-19, 11-46
- GetOptimetricsResults, Optimetrics module command 11-20
- GetOutputVariableValue 7-84, 9-7
- GetParentDesign 56
- GetPartsForUserDefinedModel 8-236
- GetPath 6-38
- GetPer-Quant-ityPrimarySweepValues 10-89
- GetPersonalLibDirectory 4-30
- GetPoints 8-236, 25-56
- GetPolygon 25-47, 27-91
- GetPolygonDef 25-47, 27-92
- GetPortCount 19-31
- GetPortInfo 25-164, 27-92
- GetPortNumber 19-32
- GetPostProcSettings 19-33
- GetProcessID 4-30
- GetProgress 2-68, 2-68
- GetProjectDirectory 4-31
- GetProjectList 4-31
- GetProjectMaterialNames 26-93
- GetProjects 4-28, 4-32
- GetProperties 2-85, 6-41, 7-86, 25-208, 26-201, 27-95, 27-141, 27-188
- GetPropertyValue 2-86, 6-42, 7-87, 8-237, 10-77, 25-208, 26-94, 27-95, 27-141
- GetPropEvaluatedValue 6-38, 8-237
- GetPropHost 2-68, 2-68, 7-86, 7-86, 56
- GetPropNames 6-39, 7-89, 10-79, 11-21, 11-47, 15-6
- GetPropNames Modeler 8-239
- GetPropServerName 57
- GetPropServers 2-68
- GetPropSIValue 6-40, 8-240
- GetPropTabType 2-69
- GetPropValue Modeler 8-241
- GetPropValue Optimetrics 11-22, 11-47
- GetPropValue Project 6-41, 7-89, 15-6
- GetPropValue Reporter 10-79
- GetQtyExpressionsForSourceTrace 10-80
- GetReadOnly 2-69
- GetRealDataValues 10-90
- GetRegistryInt 4-32, 4-68
- GetRegistryString 4-33, 4-69
- GetRelativeCoordinateSystems 8-242
- GetReportSummaryForRegressionTesting 10-81
- GetReportTraceNames 10-81
- GetRunStatus 2-70
- GetSelections 8-242, 25-208, 25-209, 27-95
- GetSetupData 21-38
- GetSetupNames 15-4, 15-7
- GetSetupNames (Optimetrics), Optimetrics module command 11-16, 11-17, 11-22, 11-43, 11-44, 11-48

- GetSetupNamesByType (Optimetrics), Optimetrics module command 11-23, 11-49
  - GetSolutionContexts 10-82
  - GetSolutionDataPerVariation 10-82
  - GetSolutionVariation 19-34
  - GetSolutionVersionID 12-18
  - GetSolveRangeInfo 12-18
  - GetSolverOnDemandData 26-162
  - GetSolverOnDemandModelList 26-163
  - GetSourceContexts 12-19
  - GetSourceData 12-20
  - GetStackupLayerNames 25-123, 27-188
  - GetSubGroupsInGroup 8-243
  - GetSweepNames 10-91
  - GetSweepUnits 10-92
  - GetSweepValues 10-92
  - GetSysLibDirectory 4-36
  - GetTabTypeName 2-70
  - GetTempDirectory 4-36
  - GetText 2-71
  - GetTool 4-71
  - GetTopDesignList 6-44
  - GetTopEntryValue 13-49, 14-23
  - GetUserDefinedSolutionNames 18-4
  - GetUserDefinedSolutionProperties 18-4
  - GetUserLibDirectory 4-37
  - GetUserPosition 8-244
  - GetValidISolutionList 12-20
  - GetValue 2-72
  - GetVariables 2-88, 6-45, 7-90
  - GetVariableValue 2-88, 6-44, 7-91
  - GetVariation 19-35
  - GetVersion 4-37
  - GetVertexIDFromNameForFirstOperation 8-244
  - GetVertexIDsFromEdge 8-245
  - GetVertexIDsFromFace 8-245
  - GetVertexIDsFromObject 8-246
  - GetVertexPosition 8-246
  - GetVisibleLevels 27-141
  - GetWireBodyNames 8-247
  - GetX (Layout Editor) 25-49
  - GetY 25-50
  - GridSetup 27-142
  - Group 25-71, 27-95
  - GroupPlotCurvesByGroupingStrategy 10-95
- H**
- HasArcs 25-57
  - HasFields 12-20
  - HasHoles 25-57
  - HasMatrixData 12-21
  - HasSameData 19-35
  - HasSelfIntersections 25-57



Heal (Layout Editor) 25-209, 27-96  
 HealObject 8-156  
 HideAntennaParametersOverlay 13-49  
 HidePolarPlot 13-50  
 HideRadiatedPlotOverlay 13-50  
 hierarchy of variables in HFSS 1-50  
 HighlightNet 25-133, 27-98

## I

Icepak boundary condition commands  
     ExportDOELocalSensitivity 11-41  
     ExportDOELocalSensitivityCurve 11-42  
     ExportDOEResponseCurve 11-39  
     ExportDOEResponseCurveSlices 11-40  
     ExportDOEResponseSurface 11-41  
     ImportIDX 4-82  
 Import (3D Modeler command) 8-159  
 ImportANF 4-72, 4-73  
 ImportAutoCAD 4-74  
 ImportAWRMicrowaveOffice 4-74  
 ImportCableLibrary 8-268  
 ImportDataset 6-46, 7-91, 26-95  
 ImportDXF 8-162, 27-99  
 ImportEDB 4-75

ImportExport Tool 4-71  
 ImportExtracta 4-76  
 ImportFromClipboard 8-165  
 ImportGDSII 4-77, 4-78, 8-166, 27-102  
 ImportIDF 4-78, 4-81  
 ImportIDX 4-82  
 ImportIntoReport 10-96  
 ImportIPC 4-84  
 ImportODB 4-85  
 ImportOutputVariables 9-8  
 ImportReportDataIntoReport 10-97  
 ImportSetup, Optimetrics module command 11-23, 11-49  
 ImportSolution 12-22  
 ImportTable 12-23  
 ImportXFL 4-86  
 Imprint 8-169  
 ImprintProjection 8-170  
 Insert3DComponent 8-70  
 InsertBoxSetup 15-30  
 InsertComponent 8-72  
 InsertDesign 6-48, 6-49, 7-93  
 InsertDesignWithWorkflow 6-50  
 InsertFarFieldSphereSetup 15-32  
 InsertInfiniteSphereSetup 15-33  
 InsertLineSetup 15-35  
 InsertNearFieldBoxSetup 15-36  
 InsertNearFieldLineSetup 15-38  
 InsertNearFieldRectangleSetup 15-39

InsertNearFieldSphereSetup 15-40

InsertRectangleSetup 15-42

InsertSetup

    optimization command 11-65

    parametric command 11-28, 11-53, 11-56, 11-61

    statistical command 11-75

InsertSphereSetup 15-43

Intersect 8-171, 25-61, 25-61, 25-64, 25-64, 27-103, 27-103, 27-188

IronPython 1-2

IsArc 25-50, 25-50, 25-58, 25-58

IsBox 25-59

IsCircle 25-59

IsClosed 25-55

IsConvex 25-58

IsDataComplex 10-93

IsEqual 25-51

IsFeatureEnabled 4-38

IsFieldAvailableAt 12-24

IsParametric 25-58

IsPerQuantityPrimarySweep 10-94

IsPoint 25-58

IsSegment 25-58

IsUsed 26-163, 26-198, 26-202, 26-223, 26-248, 26-276

IsValueConstant 2-72

## K

KeepDesktopResponsive 4-39

## L

LaunchJobMonitor 4-40

Layers Methods 25-104

layout

    script interrogation methods 25-42

Layout Interrogation 25-43

Layout Scripting 1-59, 25-1, 25-75, 25-170

Layout3DMeshOverlay 21-39

LayoutMeshOverlay 21-39

ListMatchingVariations 12-25

ListValuesOfVariable 12-26

ListVariations 21-39

LoadNamedExpressions 13-51, 14-24

LoadSolution 19-37

## M

Mag (Layout Editor) 25-51

material commands

    AddDefinitionFromBlock 26-20

    AddDefinitionFromLibFile 8-198

    AddMaterial 6-6, 26-25, 26-55

    AreMaterialPropertiesEqual 26-42

    AreSurfaceMaterialPropertiesEqual 26-43

    CloneMaterial 6-15, 26-54

    EditMaterial 6-21, 26-76

    ExportMaterial 6-29, 26-90

    RemoveMaterial 6-53, 26-100

UpdateDefFromBlock 26-106  
 UpdateDefFromBlockEx 26-108  
 Materials Scripting Support 2-22  
 Mirror 8-91  
 MirrorX 25-56  
 Model Manager Script  
     Commands 26-203  
 Modeler Menu Commands 8-98  
 ModifyFieldPlot 13-52  
 ModifyLibraries 26-253  
 ModifyNetClass 25-135, 27-103  
 module script commands  
     field overlay 13-1  
     radiation 15-2  
 ModuleHasMesh 12-21  
 modules in HFSS scripting 1-50  
 Move 8-93, 25-40, 25-40, 25-40,  
     25-51, 25-51, 25-51, 25-55,  
     25-55, 25-55, 27-104, 27-104,  
     27-104, 27-143, 27-189  
 MoveCSToEnd 8-172  
 MoveEntityToGroup 8-173  
 MoveFaces 8-174  
 MovePlotCurveToGroup 10-97  
 MovePlotCurveToNewGroup 10-  
     98  
 MultipleEdit 23-2

## N

Named Arguments 1-57

NdExplorer  
     Script Commands 19-1  
 NetClass Methods 25-128  
 Network Data Explorer Manager Com-  
     mands 26-225  
 NewProject 4-40  
 Normalize 25-52

## O

oAnsoftApp object 1-50  
 Object Identifiers and Script Recording 25-  
     2  
 Object Movement and Modification Meth-  
     ods 25-35  
 Object Oriented Property Scripting 2-1  
 oDesign object 1-50  
 oDesktop object 1-50  
 oEditor object 1-50  
 OffsetFaces 8-94  
 oModule object 1-50  
 Open 19-38  
 OpenAndConvertProject 4-41  
 OpenMultipleProjects 4-42  
 OpenProject 4-42, 27-189  
 OpenWindowForAllReports 10-99  
 OpenWindowForReports 10-99  
 oProject object 1-50  
 Optimetrics module commands  
     DeleteSetups 11-8, 11-31  
     DistributeAnalyzeSetup 11-8, 11-32

- EnableSetup 11-9, 11-32
  - ExportDXConfigFile 11-10, 11-33
  - ExportOptimetricsProfile 11-10, 11-34
  - ExportOptimetricsResults 11-11, 11-34
  - ExportParametricResults 11-12, 11-35
  - ExportRespSurfaceMinMaxTable 11-13, 11-37
  - ExportRespSurfaceRefinePoints 11-14, 11-37
  - ExportRespSurfaceResponsePoints 11-15, 11-38
  - ExportRespSurfaceVerificationPoints 11-15, 11-39
  - GetChildNames 11-16, 11-17, 11-43, 11-44
  - GetOptimetricResult 11-20, 11-46
  - GetOptimetricsResults 11-20
  - GetSetupNames 11-22, 11-48
  - GetSetupNamesByType 11-23, 11-49
  - ImportSetup 11-24, 11-49
  - RenameSetup 11-25, 11-51
  - SolveSetup 11-7, 11-26, 11-27, 11-30, 11-52, 11-53
  - Optimetrics Module Script Commands 11-1
  - optimization commands
    - EditSetup 11-61
    - InsertSetup 11-65
  - Optimization Script Commands 11-61
  - Other Creation Methods 25-18
  - Other oEditor Commands 8-196
  - output variable commands
    - CreateOutputVariable 9-1
    - DeleteOutputVariable 7-38, 9-3
    - DoesOutputVariableExist 9-3
    - EditOutputVariable 7-46, 9-4
    - GetOutputVariableValue 7-84, 9-7
  - Output variable commands
    - ExportOutputVariables 9-5
    - ImportOutputVariables 9-8
  - Output Variable Script Commands 9-1
  - OverlayCurrents 7-94
  - OverlayFarField 7-95
  - OverlayMesh 7-95
  - OverlayNearField 7-96
- P**
- Padstack Manager Script Commands 26-230
  - PageSetup 8-247
  - PageSetup (Layout Editor) 4-43, 25-211, 27-104
  - Pan 27-144
  - parametric commands
    - EditSetup 11-55
    - GenerateVariationData

- Parametric 11-16, 11-43, 11-56
- InsertSetup 11-28, 11-54, 11-56, 11-61
- Parametric Script Commands 11-54
- Paste 6-51, 8-265, 8-266, 25-40, 27-144
- Paste (Model Editor) 8-95
- Paste (Project Object) 6-51
- PasteDesign 7-96
- PasteItemCommand 7-97
- PastePlotSettings 10-100
- PasteRadFieldSetup 15-8
- PasteReports 10-100
- PasteReportsWithLegacyNames 10-101
- PasteSetup
  - Optimetrics module command 11-25, 11-50
- PasteTraces 10-102
- PasteTracesWithLegacyNames 10-102
- PauseRecording 4-44
- PauseScript 4-44
- Point (Layout Editor) 25-47, 27-105
- Point Object 25-48
- PointInPolygon 25-59
- Polygon 25-47, 27-105
- Polygon Object 25-52
- Port Methods 25-144
- PositionRelative 25-71, 27-105
- Print 4-45
- Project object commands
  - AddDataset 6-4, 7-7, 26-18
  - AddMaterial 6-6, 26-25, 26-55
  - AreMaterialPropertiesEqual 26-42
  - AreSurfaceMaterialPropertiesEqual 26-43
  - ChangeProperty 26-44, 27-122
  - CloneMaterial 6-15, 26-54
  - Close 6-16
  - CopyDesign 6-16
  - CutDesign 6-17
  - DeleteDataset 6-18, 7-35, 26-54
  - DeleteDesign 6-18
  - EditDataset 6-19, 6-28, 6-45, 7-39, 7-55, 7-91, 26-74, 26-88, 26-95
  - EditMaterial 6-21, 26-76
  - ExportMaterial 6-29, 26-90
  - GetActiveDesign 6-29
  - GetArrayVariables 2-85, 6-30
  - GetChildObject Design 6-31, 7-71
  - GetChildObject Modeler 8-217
  - GetChildObject Radiation 15-5
  - GetDependentFiles 6-33
  - GetDesign 2-65
  - GetDesignID 7-72
  - GetDesignName 7-73
  - GetDesignType 7-73

|                                                                               |                                                               |
|-------------------------------------------------------------------------------|---------------------------------------------------------------|
| GetName 6-36                                                                  | RemoveMaterial 6-53, 26-100                                   |
| GetObjPath 6-37                                                               | RemoveUnusedDefinitions 6-53, 26-103                          |
| GetPath 6-38                                                                  | Rename 6-55                                                   |
| GetProjectMaterialNames 26-93                                                 | RestoreProjectArchive 4-48                                    |
| GetProperties 2-85, 6-41, 7-86, 25-208, 27-95, 27-141, 27-188                 | Save 6-56                                                     |
| GetPropertyValue 2-86, 6-42, 7-87, 8-237, 10-77, 25-208, 26-94, 27-95, 27-141 | SaveAs 6-57                                                   |
| GetPropEvaluatedValue 6-38, 8-237                                             | SaveAsStandAloneProject 6-59                                  |
| GetPropNames Modeler 8-239                                                    | SaveProjectArchive 6-60                                       |
| GetPropSIValue 6-40, 8-240                                                    | SetActiveDesign 6-61                                          |
| GetPropvalue Modeler 8-241                                                    | SetPropertyValue 2-89, 6-63, 7-117, 25-215, 26-105, 27-192    |
| GetPropvalue Optimetrics 11-22, 11-47                                         | SetPropValue Design 7-116, 15-9                               |
| GetPropvalue Project 6-41, 7-89                                               | SetPropValue Optimetrics 11-26, 11-51                         |
| GetPropvalue Radiation 15-6                                                   | SetPropValue Project 6-62, 10-106                             |
| GetPropvalue Reporter 10-79                                                   | SetVariableValue 2-90, 6-64, 7-118                            |
| GetSolutionVariation 19-34                                                    | SimulateAll 6-10, 6-65                                        |
| GetTopDesignList 6-44                                                         | Undo 6-65                                                     |
| GetTopEntryValue 13-49, 14-23                                                 | UpdateDefinitions 6-66, 26-111                                |
| GetVariables 2-88, 6-45, 7-90                                                 | Project Object Script Commands 6-1                            |
| GetVariableValue 2-88, 6-44, 7-91                                             | ProjectSheet 8-175                                            |
| InsertDesign 6-48, 7-93                                                       | property commands                                             |
| LoadSolution 19-37                                                            | ChangeProperty 26-44, 27-122                                  |
| Paste 6-51, 6-51                                                              | GetArrayVariables 2-85, 6-30                                  |
| Redo 6-52                                                                     | GetProjectMaterialNames 26-93                                 |
| RemoveAllUnusedDefinitions 6-52                                               | GetProperties 2-85, 6-41, 7-86, 25-208, 27-95, 27-141, 27-188 |

GetPropertyValue 2-86, 6-42, 7-87, 8-237, 10-77, 25-208, 26-94, 27-95, 27-141

GetPropEvaluatedValue 6-38, 8-237

GetPropSIValue 6-40, 8-240

GetTopEntryValue 13-49, 14-23

GetVariables 2-88, 6-45, 7-90

GetVariableValue 2-88, 6-44, 7-91

SetPropertyValue 2-89, 6-63, 7-117, 25-215, 26-105, 27-192

SetVariableValue 2-90, 6-64, 7-118

Property Script Commands 2-30

    Conventions uSed in thie Chapter 2-41

    Object Script Property Function Summary 2-32

PropertyExists 2-73

PropHost Functions 2-54

PullExcitations 21-39

PurgeHistory 8-176

PushExcitations 7-97, 25-212, 27-108

    Layout Editor 7-97, 25-212, 27-108

## Q

QuitApplication 4-45

## R

Radiation boundary

    Infinite Sphere 16-1, 16-4

    Near Field Line 16-7, 16-9

    Near Field Plane 16-10, 16-13

    Near Field Sphere 16-16, 16-19

Radiation module commands

    AddAntennaOverlay 15-10

    AddRadFieldSourceGroup 15-12

    CopyRadFieldSetup 15-2

    DeleteFarFieldSetup 15-2

    DeleteNearFieldSetup 15-3

    DeleteSetup 15-4

    EditAntennaArraySetup 15-45

    EditAntennaOverlay 15-13

    EditBoxSetup 15-14

    EditFarFieldSphereSetup 15-16

    EditInfiniteSphereSetup 15-17

    EditLineSetup 15-19

    EditNearFieldBoxSetup 15-20

    EditNearFieldLineSetup 15-22

    EditNearFieldRectangleSetup 15-23

    EditNearFieldSphereSetup 15-24

    EditRadFieldSourceGroup 15-26

    EditRadiatedPowerCalculationMethod 15-4

    EditRectangleSetup 15-27

    EditSphereSetup 15-28

- ExportElementPatternToFile 15-50
- ExportFieldsToFile 15-51
- ExportParametersToFile 15-53
- ExportRadiationFieldsToFile 15-54
- ExportRadiationParametersToFile 15-55
- GetSetupNames 15-7
- InsertBoxSetup 15-30
- InsertFarFieldSphereSetup 15-32
- InsertInfiniteSphereSetup 15-33
- InsertLineSetup 15-35
- InsertNearFieldBoxSetup 15-36
- InsertNearFieldLineSetup 15-38
- InsertNearFieldRectangleSetup 15-39
- InsertRectangleSetup 15-42
- InsertSphereSetup 15-40, 15-43
- PasteRadFieldSetup 15-8
- RenameSetup 15-8
- Radiation Module Script Commands 15-1, 16-1
- radiation script commands 15-2
- ReassignFieldPlot 13-53
- Redo 7-100, 27-145
  - design-level command 7-99
  - project-level command 6-52
- RefreshJobMonitor 4-46
- RefreshMeshOverlays 21-40
- ReleaseData 10-95
- Remove 26-97, 26-99, 26-100, 26-102, 26-163, 26-198, 26-223, 26-248, 26-276
- RemoveAllUnusedDefinitions 6-52
- RemoveBadEdges 8-249
- RemoveBadFaces 8-249
- RemoveBadVertices 8-250
- RemoveCables 8-269
- RemoveImportData 7-100
- RemoveLayer 27-110, 27-189
- RemoveLevels 27-145
- RemoveMaterial 6-53, 26-100
- RemoveModelingProperties 7-101
- RemovePort 25-167, 27-146, 27-190
- RemovePortsFromAllNets 25-167, 27-110
- RemovePortsFromNet 25-168, 27-111
- RemovePortsOnComponents 25-168, 27-112
- RemoveProp 2-73
- RemoveRefPort 22-22
- RemoveScript 26-102, 26-254
- RemoveSolverOnDemandModel 26-164
- RemoveUnused 26-165, 26-199, 26-202, 26-224, 26-249, 26-277
- RemoveUnusedDefinitions 6-53, 26-103
- Rename 6-55, 19-39, 21-40, 22-22, 23-2, 24-2



|                                              |                                       |
|----------------------------------------------|---------------------------------------|
| Rename [Interface Port] 22-21                | AddDeltaMarker 10-12                  |
| RenameDesignInstance 7-101, 7-102            | AddMarker 10-13                       |
| RenameFieldPlot 13-55                        | AddMarkerToPlot 13-4                  |
| RenameImportData 7-102                       | AddNote 10-14                         |
| RenamePart 8-251                             | AddTraceCharacteristics 10-15         |
| RenamePlotFolder 13-56                       | AddTraces 10-17                       |
| RenameReport 10-103                          | ApplyReportTemplate 10-18             |
| RenameSetup                                  | ChangeProperty 7-13, 10-19            |
| Optimetrics module                           | ClearAllMarkers 10-28                 |
| command 11-25, 11-51                         | ClearAllTraceCharacteristics 10-28    |
| Radiation module command 15-8                | CloneReportsFromDatasetSolution 10-29 |
| RenameSource [Interface Source] 7-103, 22-22 | CopyPlotSettings 10-30                |
| RenameTraces 10-103                          | CopyReportDefinition 10-30            |
| Renormalize 19-40                            | CopyReportsData 10-31                 |
| Reorder 19-41, 19-42                         | CopyTraceDefinitions 10-31            |
| Replacewith3DComponent 8-177                 | CopyTracesData 10-32                  |
| Report module commands                       | CreateReport 7-22, 10-33              |
| GetChildNames 10-71                          | CreateReportFromTemplate 10-45        |
| Reporter editor commands                     | CreateReportOfAllQuantities 10-46     |
| AddAllEyeMeasurements 10-6                   | DeleteAllReports 10-47                |
| AddCartesianLimitLine 10-6                   | DeleteReport 10-48                    |
| AddCartesianLimitLineFromCurve 10-7          | DeleteTraces 10-48                    |
| AddCartesianLimitLineFromEquation 10-9       | DoesSupportTraceCharacteristics 10-49 |
| AddCartesianXMarker 10-10, 10-11             | EditCartesianXMarker 10-50            |
| AddCartesianYMarkerToStack 10-11             | EditCartesianYMarker 10-51            |
|                                              | EditMarker 10-51                      |
|                                              | ExportEyeMaskViolation 10-52          |

|                                          |                                            |
|------------------------------------------|--------------------------------------------|
| ExportImageToFile 10-53                  | GetRe-                                     |
| ExportPlot3DToFile 10-61                 | portSum-                                   |
| ExportPlotImageToFile 13-42,<br>13-43    | maryForRegressionTesting 10-<br>81         |
| ExportReport 7-67, 10-62                 | GetReportTraceNames 10-81                  |
| ExportReportDataToFile 10-63             | GetSolutionContexts 10-82, 10-82           |
| ExportTableToFile 10-64                  | GroupPlotCurvesByGroupingStrategy<br>10-95 |
| ExportToFile 10-64, 10-96                | ImportReportDataIntoReport 10-<br>97       |
| ExportUniformPointsToFile 10-<br>65      | MovePlotCurveToGroup 10-97                 |
| FFTONReport 12-16                        | MovePlotCurveToNewGroup 10-<br>98          |
| GetAllCategories 10-67                   | OpenWindowForAllReports 10-99              |
| GetAllQuantities 10-68                   | OpenWindowForReports 10-99                 |
| GetAllReportNames 10-69                  | PastePlotSettings 10-100                   |
| GetAvailableDisplayTypes 10-69           | PasteReports 10-100                        |
| GetAvailableReportTypes 10-70            | PasteReportsWithLegacyNames<br>10-101      |
| GetAvailableSolutionss 10-70             | PasteTraces 10-102                         |
| GetChildTypes ReportSetup 10-<br>72      | PasteTracesWithLegacyNames<br>10-102       |
| GetCurvePropServerName 10-<br>73         | RenameReport 10-103                        |
| GetDisplayType 10-73                     | RenameTraces 10-103                        |
| GetDynLinkIntrinsicVariables<br>10-74    | ResetPlotSettings 10-104                   |
| GetDynLinkQtyValueState 10-74            | SavePlotSettingsAsDefault 10-105           |
| GetDynLinkTraces 10-75                   | SetLinkOutputTraces 10-105                 |
| GetDynLinkVariableValues 10-<br>75       | UnGroupPlotCurvesInGroup 10-<br>107        |
| GetPropNames 10-79                       | UpdateAllReports 10-107                    |
| GetQtyExpressionsForSourceTrace<br>10-80 | UpdateReports 10-108                       |
|                                          | UpdateTraces 10-108                        |

- UpdateTracesContextAndSweeps 10-111
- Reporter Editor Script Commands 10-1
- Reporter module commands
  - GetChildObject 10-71
- ReportTemplates 7-103
- Reset 19-43
- ResetLogging 4-47
- ResetPlotSettings 10-104
- RestoreWindow 4-48
- ResumeRecording 4-49
- Rotate 8-96, 25-41, 25-51, 25-55, 27-113, 27-146, 27-190
- Running Instance Manager Script Commands 5-1
- RunProgram 4-50
- RunScript 4-51
- RunScriptWithArguments 4-52
- RunToolkit 6-55, 7-103
- S**
- sample scripts
  - variable helix 29-6
- Save 6-56, 27-147, 27-191
- SaveAs 6-57
- SaveAsStandAloneProject 6-59
- SaveFieldsPlots 13-57
- SaveNamedExpressions 13-57, 14-24
- SavePlotSettingsAsDefault 10-105
- Scale 8-97, 25-55
- Script and Library Scripts 26-250
- script commands
  - field overlay 13-1
  - radiation 15-2
- Script Commands for Creating and Modifying Radiation Setups 15-9
- Script Commands for Exporting Antenna Parameters and Max Field Parameters 15-50
- Script Commands for Modifying Antenna Array Setups 15-45
- scripts
  - CPython 1-44
  - IronPython 1-2
  - overview 1-1
  - pausing 1-54
  - recording 1-54
  - running 1-53
  - stopping 1-53
- Scripts and Locked Layers 1-60
- Section 8-179
- SelectAll 25-214, 27-113, 27-147
- SelectInLayout 22-23, 23-3, 24-2
- SelectScheduler 4-14, 4-53
- SendToBack 27-148
- sensitivity commands
  - EditSetup 11-71
- Sensitivity Script Commands 11-71
- SeparateBody 8-180

|                                         |                     |                                      |                                                   |
|-----------------------------------------|---------------------|--------------------------------------|---------------------------------------------------|
| Set                                     | 25-49               | SetPropertyValue                     | 2-89, 6-63, 7-117, 25-215, 26-105, 27-149, 27-192 |
| SetActiveDefinitionEditor               | 6-61, 27-191        | SetPropValue Design                  | 7-116, 15-9                                       |
| SetActiveDesign                         | 6-61                | SetPropValue Modeler                 | 8-252                                             |
| SetActiveEditor                         | 7-104, 7-105, 7-106 | SetPropValue Optimetrics             | 11-26, 11-51                                      |
| SetActiveLevel                          | 27-148              | SetPropValue Project                 | 6-62, 10-106                                      |
| SetActiveProject                        | 4-55                | SetReadOnly                          | 2-76                                              |
| SetActiveProjectByPath                  | 4-55                | SetShowLayoutForLayoutComponent      | 7-118                                             |
| SetAllPortImpedance                     | 19-44               | SetTempDirectory                     | 4-62                                              |
| SetArc (Layout Editor)                  | 25-50               | SetText                              | 2-76                                              |
| SetCallback                             | 2-74                | Setting Numerical Values             | 1-59                                              |
| SetClosed                               | 25-55               | SetTopDownViewDirectionForActiveView | 8-252                                             |
| SetCS                                   | 25-74, 27-113       | SetTopDownViewDirectionForAllViews   | 8-253                                             |
| SetDescription                          | 2-75                | SetValue                             | 2-77                                              |
| SetFastTransformationForLayoutComponent | 7-112, 7-113        | SetVariableValue                     | 2-90, 6-64, 7-118                                 |
| SetFieldPlotSettings                    | 13-58               | SetVisibleLevels                     | 27-150                                            |
| SetHidden                               | 2-75                | SetWCS                               | 8-182                                             |
| SetInitialLevels                        | 27-149              | SetX                                 | 25-49                                             |
| SetLayerMapping                         | 25-126, 27-114      | SetY                                 | 25-50                                             |
| SetLibraryDirectory                     | 4-58                | SGetAppDesktop                       | 3-1                                               |
| SetLinkOutputTraces                     | 10-105              | ShowAntennaParameterOverlay          | 13-64                                             |
| SetModelUnits                           | 8-181               | ShowWindow                           | 8-183                                             |
| SetPlotFolderSettings                   | 13-60               | Simplify                             | 8-183                                             |
| SetPortDeembedDistance                  | 19-45               | SimulateAll                          | 6-10, 6-65                                        |
| SetPortImpedance                        | 19-45               | Simulation Setup Commands            | 21-1                                              |
| SetPostProcSettings                     | 19-46               | SimValueContext                      | 9-9                                               |
| SetProjectDirectory                     | 4-58                |                                      |                                                   |

- Sleep 4-63
- Smooth 19-47
- Solution module commands
  - GetSourceContexts 12-19
- Solutions module commands
  - DeleteFieldVariation 7-36
  - DeleteFullVariation 7-37
  - DeleteImportData 12-1
  - DeleteSolutionVariation 7-38, 12-2
  - EditQ3DSources 12-3
  - EditSources 12-6
  - ExportEigenmodes 12-10
  - ExportForHSpice 7-56, 12-11
  - ExportNMF 12-14
  - GetAdaptiveFreq 12-16
  - GetAvailableVariations 12-17
  - GetSolutionVersionID 12-18
  - GetSolveRangeInfo 12-18
  - GetValidSolutionList 12-20
  - HasFields 12-20
  - HasMatrixData 12-21
  - ImportSolution 12-22
  - ImportTable 12-23
  - IsFieldAvailableAt 12-24
  - ListMatchingVariations 12-25
  - ListValuesOfVariable 12-26
  - ModuleHasMesh 12-21
- Solutions Module commands
  - ExportNetworkData 12-12
- Solutions Module Script Commands 12-1
- Solve 7-119
- SolveAllSetup, Optimetrics module command 11-26, 11-52
- SolveSetup, Optimetrics module command 11-27, 11-53
- Split 8-185
- SplitRegion 25-65
- statistical commands
  - EditSetup 11-75
  - InsertSetup 11-75
- Statistical Script Commands 11-75
- Stitch 8-187
- StitchLines 25-216, 27-116
- StopSimulations 4-63
- Stretch 19-49
- Structures 1-30
- SubmitJob 4-64
- Subtract 8-188, 25-62, 25-62, 25-65, 25-65, 27-116, 27-116, 27-193
- SweepAlongPath 8-75
- SweepAlongVector 8-76
- SweepAroundAxis 8-78
- SweepFacesAlongNormal 8-79, 8-79, 8-189, 8-189
- SweepFacesAlongNormalWithAttributes 8-81
- Symbol Editor Scripts 27-119

Symbol Manager Script  
Commands 26-255, 26-278

## T

Terminate 19-50

ThickenSheet 8-191

ToggleLevel 27-150

ToggleViaPin 25-66, 27-117, 27-151, 27-193

## U

UDM Structures 1-30

UncoverFaces 8-192

Undo 7-120, 27-151

project-level command 6-65

Ungroup 8-194, 25-74, 27-117

UnGroupPlotCurvesInGroup 10-107

Unite 8-193, 25-61, 25-61, 25-64, 25-64, 27-118, 27-118, 27-194

UnselectAll 25-217, 27-118

UpdateAllFieldsPlots 13-65

UpdateAllReports 10-107

UpdateCableHarness 8-269

UpdateComponentDefinition 8-82

UpdateDefFromBlock 26-106

UpdateDefFromBlockEx 26-108

UpdateDefinitions, project-level command 6-66, 26-111

UpdateDynamicLink 26-166

UpdatePriorityList 8-253

UpdateQuantityFieldsPlots 13-65

UpdateReports 10-108

UpdateTraces 10-108

UpdateTracesContextAndSweeps  
10-111

UpgradeVersion 8-254

User defined documents module commands

GetDocumentNames 17-5

User defined solution module commands

CreateUserDefinedSolution 18-1

DeleteUserDefinedSolutions 18-2

EditUserDefinedSolution 18-3

GetUserDefinedSolutionNames  
18-4

GetUserDefinedSolutionProperties  
18-4

User Defined Solutions  
Commands 18-1

## V

Validate3DComponent 8-255

ValidateCircuit 7-121

variables

hierarchy in HFSS 1-50

used in HFSS scripts 1-50

## W

WrapSheet 8-195

WriteHistoryTreeLayoutForTest 8-256

**X**

Xor 25-62

**Z**

ZoomArea 27-152

ZoomIn 27-153

ZoomOut 27-153

ZoomPrevious 27-154

ZoomToFit 25-217, 27-118, 27-  
154, 27-194