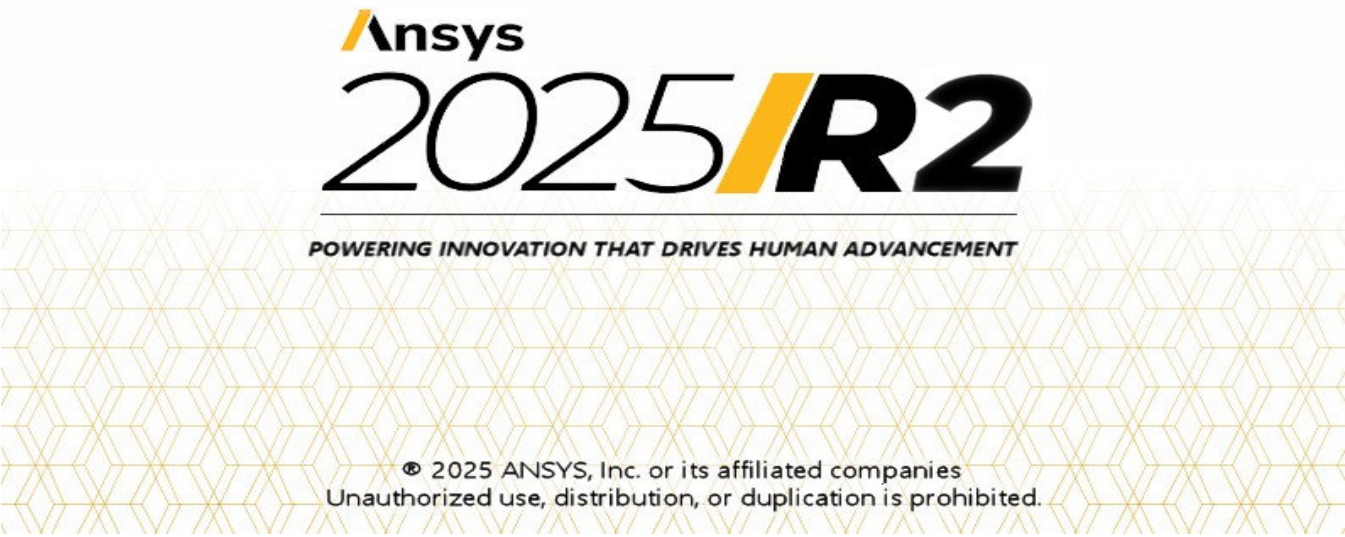

SIwave™ Scripting Guide

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1 - Introduction to Scripting

SIwave has the ability to run saved scripts in Python. It also contains a native Python command shell.

The following topics contain more information about scripting in SIwave:

Running a Script

SIwave Script Commands

Running a Script

To run a script file in SIwave:

1. Click **Tools**. From the **Scripting** area, click **Run Script**.

   The **Open** window appears.
2. Use the file browser to locate and select a *.py script file.
3. Click **Open**.

   The script is executed.

To run a script file from a command line:

1. Type the following:

   ```
   <path to siwave.exe> <path to *.siw file> -RunScript <path to *.py file>
   ```

   SIwave opens and the script is executed.

   Alternatively, type the following to run the script and close SIwave:

   ```
   <path to siwave.exe> <path to *.siw file> -RunScriptAndExit <path to *.py file>
   ```

To run a script from the Python command shell:

1. Click **Tools**. From the **Scripting** area, click **IronPython Command Shell**.

   The command window appears.
2. Type an appropriate script commands and press **Enter**.

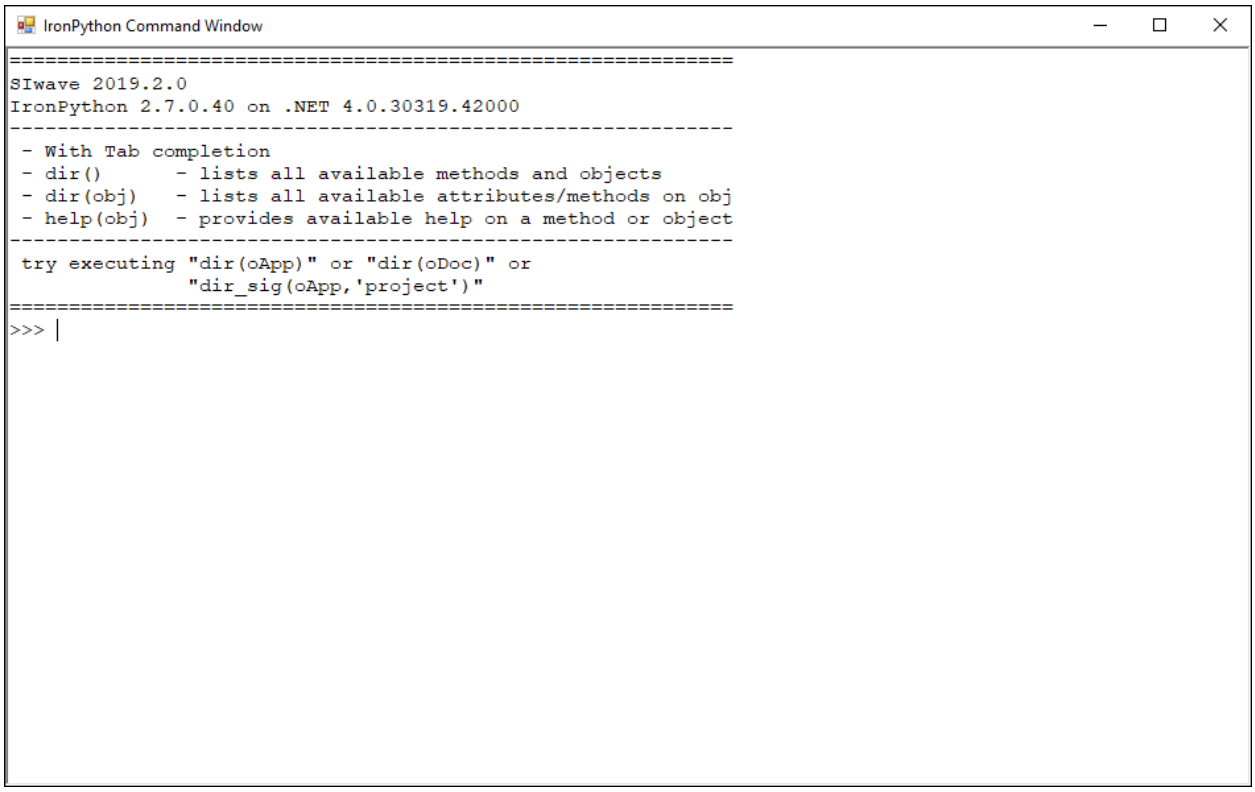
Using the IronPython Command Shell

This section describes IronPython and using the IronPython Command Shell in SIwave. It is written for those already familiar with scripting in any language.

To launch the IronPython Command Shell:

1. Click **Tools**. From the **Scripting** area, click **IronPython Command Shell**.

   The **IronPython Command Window** appears.



Introduction to IronPython

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

Scope

This section of the help provides a basic introduction to the use of IronPython in SIwave. If you require a full tutorial on Python or IronPython, there are many online resources.

Python Compatibility

The version of IronPython in use is **2.7** and built on .NET framework version 4.0. 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) cannot be expected to work in 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/).

Advantages of IronPython

The advantages that IronPython provides are significant:

- Python has a large ecosystem with plenty of supporting libraries, Visual IDEs and debuggers. It is actively developed and enhanced.
- IronPython has access to the entire .NET ecosystem. 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.
- The Python syntax of dictionaries is somewhat easier to read and write when supplying arguments to the scripting methods.

Indentation in IronPython

Python is a language in which white space (spaces and tabs) is syntactically significant. You must understand the basics of indentation before scripting in python.

Any statement that introduces a block of code should be written so that every line of the block has the same indent (leading spaces or tabs) and the indent should be at least one more than the indent of the introducing statement.

> **Note:**
>
> Python recommends the use of spaces over tabs.

Indenting Functions

Define a function that starts at 0 indentation:

```
def multInt(a,b):
```

Every line following `def multInt` that is expected to be a part of the function, must be indented to line up with the function.

```
def multInt(a,b):
    return a
```

Indenting If Conditions

Each line that belongs to the body of this function should have an indent that is more than the indent used by the if statement.

```
def multInt(a,b):
```

```
If a%2 == 0:
       return (a * b) + 100
    else:
       return (a * b) + 1000
```

Methods in IronPython

Finding Methods

To list all methods available in the string module,import the module:

```
import string
```

Then get the directory listing:

```
dir(string)
```

This returns a list of all the methods available (as well as some `__somename__` internal names that can be ignored).

Help

Once you know a function name, you can get more help on it using the built-in `help` method.

2 - Script Commands

The following scripts are available in SIwave:

- ScrImportSettingsFile
- ScrImportSIwaveSimulationOptions
- ScrImportXfl
- ScrInterpolateSpectrum
- ScrLogMessage
- ScrMergeConnectedNets
- ScrNetGetLength
- ScrNetIsDisjoint
- ScrNetIsSelected
- ScrNetSeparate
- ScrNetSetDummy
- ScrNetSetSelected
- ScrPlaceCircuitElement
- ScrPlaceCircuitElementsToNearestRefPin
- ScrPlaceFreqDependentSrc
- ScrPlacePortsAcrossRLCs
- ScrPlacePortsAtPinsOnSelectedNets
- ScrPlacePortsAtPinsOnSelectedNetsExcludePart
- ScrPlacePortsAtPinsOnSelectedNetsPinNamesOut
- ScrPlotResModeVoltageDiff
- ScrPreserveNetsGivenInFile
- ScrReadDCLoopResInfo'
- ScrRestoreResonantModeMinFreq
- ScrRestoreSIwaveDCGeometryProcessingDefaultValues
- ScrRestoreSIwaveSIPIGeometryProcessingDefaultValues
- ScrRunDcSimulation
- ScrRunDDRWizard
- ScrRunFarFieldSimulation
- ScrRunFrequencySweepSimulation
- ScrRunIcepakSimulation
- ScrRunInducedVoltageSimulation
- ScrRunNearFieldSimulation
- ScrRunResonantModeSimulation
- ScrRunSimulation
- ScrRunSpiceSubcktSimulation
- ScrRunSyzParameterSimulation
- ScrRunValidationCheck

- Solve
- StopSimLink
- SupportSParamLink

Note:

- This list contains all current SIwave scripting functions. Running `dir(oApp)` or `dir(oDoc)` from the Command Window may show additional scripts. These are scripts that are either obsolete or that are part of the Electronics Desktop scripting environment and do not serve any function in SIwave.
- TPA is no longer supported. Ansys recommends using CPA.

CloseProject

Closes the specified project and opens a new "Untitled" project.	
UI Command:	Click **File** > **New**.
Syntax:	`obj.CloseProject(<projectName>)`
Parameters:	BSTR projectName
Return Value:	None.
PY Example:	`oApp.CloseProject('project.siw')`

Note:

The behavior of CloseProject() and CloseProjectNoForce() is identical when the SIwave UI is invoked in graphical/interactive mode.

However, when invoked in extractor/non-interactive mode:

- CloseProject() will result in termination of the siwave.exe process.
- CloseProjectNoForce() will close any open projects, but will keep the siwave.exe process active (so that subsequent script commands can be issued).

CloseProjectNoForce

Closes the specified project and opens a new "Untitled" project.	
UI Command:	Click **File** > **New**.
Syntax:	`obj.CloseProjectNoForce(<projectName>)`
Parameters:	BSTR projectName
Return Value:	None.
PY Example:	`oApp.CloseProjectNoForce('project.siw')`

Note:

The behavior of CloseProjectNoForce() and CloseProject() is identical when the SIwave UI is invoked in graphical/interactive mode.

However, when invoked in extractor/non-interactive mode:

- CloseProject() will result in termination of the siwave.exe process.
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Equals

Comparison operator. Returns whether two objects are equal.	
UI Command:	N/A
Syntax:	`obj.Equals(<comparisonObject>)`
Parameters:	VAR comparisonObject
Return Value:	TRUE or FALSE
PY Example:	`oDoc.Equals(oDoc)`

GetActiveProject

Returns the active project in SIwave.	
UI Command:	None.
Syntax:	`obj.GetActiveProject()`
Parameters:	None.
Return Value:	Object of active project.
PY Example:	`oDoc = oApp.GetActiveProject()`

GetFileDir

Returns the directory path of the open project.	
UI Command:	None.
Syntax:	`obj.GetFileDir()`
Parameters:	None.
Return Value:	BSTR directory path
PY Example:	`oDoc.GetFileDir()`

GetFilePath

Returns the directory path of the open project.	
UI Command:	None.
Syntax:	`obj.GetFilePath()`
Parameters:	None.
Return Value:	BSTR directory path
PY Example:	`oDoc.GetFilePath()`

GetName

Returns the name of the open SIwave project.	
UI Command:	None.
Syntax:	`obj.GetName()`
Parameters:	None.
Return Value:	BSTR project name
PY Example:	`oDoc.GetName()`

GetNetworkDataSolution

Returns network data for a previously run SYZ simulation.	
UI Command:	None.
Syntax:	`obj.GetNetworkDataSolution(<solnName>)`
Parameters:	BSTR solnName (name of a previously run SYZ simulation)
Return Value:	BSTR network data
PY Example:	`oDoc.GetNetworkDataSolution('SYZ Sim 1')`

GetNetworkDataSolutionDefinition

Returns port names for a previously run SYZ simulation.	
UI Command:	None.
Syntax:	`obj.GetNetworkDataSolutionDefinition(<solnName>)`
Parameters:	BSTR solnName (name of a previously run SYZ simulation)
Return Value:	ARRAY of BSTR port names
PY Example:	`oDoc.GetNetworkDataSolutionDefinition('SYZ Sim 1')`

GetProjectDirectory

Returns the directory path of the open project.	
UI Command:	None.
Syntax:	`obj.GetProjectDirectory()`
Parameters:	None.
Return Value:	BSTR directory path
PY Example:	`oApp.GetProjectDirectory()`

GetProjectList

Returns a list of all projects that are open in SIwave.	
UI Command:	None.
Syntax:	`obj.GetProjectList()`
Parameters:	None.
Return Value:	ARRAY of strings containing names of all open projects.
PY Example:	`oDoc.GetProjectList()`

GetTopDesignList

Returns a list of all designs that are open in SIwave.	
UI Command:	None.
Syntax:	`obj.GetTopDesignList()`
Parameters:	None.
Return Value:	ARRAY of strings containing names of all open designs.
PY Example:	`oDoc.GetTopDesignList()`

GetVersion

Returns SIwave version information.	
UI Command:	None.
Syntax:	`obj.GetVersion()`
Parameters:	None.
Return Value:	BSTR version information
PY Example:	`oApp.GetVersion()`

ImportAnfFile

Imports an ANF file into a new project.	
UI Command:	**Import** > **ANF**.
Syntax:	`obj.ImportAnfFile(<filePath>)`
Parameters:	BSTR filePath
Return Value:	None.
PY Example:	`oApp.ImportAnfFile('C:/KWH/GSG.anf')`

ImportOdb

Imports an ODB++ file into a new project.	
UI Command:	**Import** > **ODB++**.
Syntax:	`obj.ImportOdb (<ODB++Filename>, <controlFilename>)`
Parameters:	BSTR ODB++Filename BSTR controlFilename (this string can be empty if no XML control file is used)
Return Value:	None.
PY Example:	`oApp.ImportOdb('test.tgz','test.xml')`

IsSolutionDataAvailable

Checks for the existence of an SYZ simulation.	
UI Command:	None.
Syntax:	`obj.IsSolutionDataAvailable(<solnName>)`
Parameters:	BSTR solnName (name of a previously run SYZ simulation)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.IsSolutionDataAvailable('SYZ Sim 1')`

OpenProject

Opens a previously created project, or imports an EDB folder, IPC2581 file, or ODB++ file.	
UI Command:	**File** > **Open**.
Syntax:	`obj.OpenProject(<filePath>)`
Parameters:	BSTR filePath
Return Value:	None.
PY Example:	`oApp.OpenProject('C:/KWH/GSG_model.siw')`

Quit

Quits SIwave and closes the IronPython Command Window.	
UI Command:	**File** > **Exit**.
Syntax:	`obj.Quit`
Parameters:	None.
Return Value:	None.
PY Example:	`oApp.Quit()`

ReferenceEquals

Compares two objects and returns whether they are the same.	
UI Command:	None.
Syntax:	`obj.ReferenceEquals(<obj1>, <obj2>)`
Parameters:	obj1, obj2 (any type)
Return Value:	BOOL
PY Example:	`oDoc.ReferenceEquals(obj1, obj2)`

RestoreWindow

Restores a minimized SIwave window.	
UI Command:	None.
Syntax:	`obj.RestoreWindow`
Parameters:	None.
Return Value:	None.
PY Example:	`oApp.RestoreWindow()`

Save

Saves all changes made until the point in the scripting file where this function is called.	
UI Command:	**File** > **Save**.
Syntax:	`obj.Save`
Parameters:	None.
Return Value:	None.
PY Example:	`oDoc.Save()`

ScrActivateCktElem

Activates or deactivates specified circuit elements.	
UI Command:	None.
Syntax:	`obj.ScrActivateCktElem(<elementName>, <elementType>, <activate?>)`
Parameters:	BSTR elementName BSTR elementType (select from: cap, ind, res, port, vprobe, csource, vsource) BOOL activate? (True to activate or False to deactivate)
Return Value:	INT result: • **0** – Function succeeded • **1** – Invalid input parameters (i.e., empty strings) • **2** – Invalid second parameter (does not match cap, ind, res, port, vprobe, csource, vsource) • **3** – Specified circuit element could not be located in layout
PY Example:	`oDoc.ScrActivateCktElem ('Port1','port',False)` `oDoc.ScrActivateCktElem ('Port2','port',True)`

ScrActivateDcPowerTreePinAggregation

Aggregates or unsets pins in a Power Tree on a net within a component.	
UI Command:	**Results** Tab > **DC IR Drop** > **[Simulation Name]** > **Export Power Tree** > **Aggregate pins on a net within a component as one block**.
Syntax:	`obj.ScrActivateDcPowerTreePinAggregation (<aggregatePins>)`
Parameters:	BOOL aggregatePins (True to activate or False to deactivate)
Return Value:	INT: • **0** – if False; unset pins aggregation for the next power tree export • **1** – if True; sets pins aggregation for the next power tree export
PY Example:	`oDoc.ScrActivateDcPowerTreePinAggregation('1')`

Note:

Use before ScrExportDcPowerTree.

ScrActivateInfiniteGroundPlane

Activates an infinite ground plane.	
UI Command:	**Simulation** > **Options** > **SI/PI Advanced**. Check/uncheck the **Introduce infinite ground plane** box.
Syntax:	`obj.ScrActivateInfiniteGroundPlane(<activate>)`
Parameters:	BOOL activate (True to activate infinite ground plane or False to deactivate infinite ground plane)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrActivateInfiniteGroundPlane('1')`

Note:

To activate an infinite ground layer a specified distance beneath the bottom layer, refer to ScrSetInfiniteGroundPlaneLocation.

ScrAddEquipotentialRegion

Creates an equipotential region located at a specified pin.	
UI Command:	None.
Syntax:	`obj.ScrAddEquipotentialRegion (<partName>, <refDes>, <pinName> , <regionOnTop>)`
Parameters:	BSTR partName BSTR refDes BSTR pinName BOOL regionOnTop (True to create the equipotential region above the top metal layer, False to create it below the bottom metal layer)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrAddEquipotentialRegion('T1_A','U1','10',True)`

ScrAddError

Logs an error to the Information / Errors / Warnings window.	
UI Command:	None.
Syntax:	`obj.ScrAddError(<error>)`
Parameters:	BSTR error
Return Value:	None.
PY Example:	`oDoc.ScrAddError('This is my error.')`

ScrAddInfo

Logs information to the Information / Errors / Warnings window.	
UI Command:	None.
Syntax:	`obj.ScrAddInfo(<information>)`
Parameters:	BSTR information
Return Value:	None.
PY Example:	`oDoc.ScrAddInfo('This is my information.')`

ScrAddLayer

Adds a new layer above/below a given reference layer.	
UI Command:	Click **Home** > **Layer stackup Editor**. Then click either **Add Above Selected Layer** or **Add Below Selected Layer**.
Syntax:	`obj. ScrAddLayer (<newLayerName>, <referenceLayerName>, <aboveBelow>, <layerTypeIndex>, <layerThickness>, <materialName>)`
Parameters:	BSTR newLayerName BSTR referenceLayerName BOOL aboveBelow (True to place new layer above; False to place it below) INT layerTypeIndex (0 for dielectric, 1 for metal, 2 for wirebond) INT layerThickness BSTR materialName
Return Value:	None.
PY Example:	`oDoc.ScrAddLayer('new layer name','reference layer name',True,1,0.1,'copper')`

ScrAddMaterial

Adds a new material to the database.	
UI Command:	**Home** > **Edit Materials** > **[Conductors/Dielectrics]** > **Add**.
Syntax:	`obj.ScrAddMaterial (<materialType>, <materialName>, <materialProperty1>, <materialProperty2>)`
Parameters:	BSTR materialType (conductor or dielectric) BSTR materialName DOUBLE materialProperty1 (conductivity for conductor or permittivity for dielectric) DOUBLE materialProperty2 (permeability for conductor or loss tangent for dielectric)
Return Value:	INT result: • **0** – Function succeeded • **1** – Material type is not "conductor" or "dielectric" • **2** – Material name already exists in library • **3** – Material parameters are not within an acceptable range
PY Example:	`oDoc.ScrAddMaterial('dielectric','Name',5,0.02)`

ScrAddOneLayerPadstack

Adds a new padstack.	
UI Command:	**Home** > **Edit Padstacks** > **Add**.
Syntax:	`obj.ScrAddOneLayerPadstack (<padstackName>, <layerName>, <shapeName>, <width>, <height>)`
Parameters:	BSTR padstackName BSTR layerName BSTR shapeName (None, Circle, Oblong, or Rectangle) BSTR width BSTR height
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrAddOneLayerPadstack('NEW_PADSTACK','METAL-1','Circle','0.5mm','0.5mm')`

ScrAddWarning

Logs a warning to the Information / Errors / Warnings window.	
UI Command:	None.
Syntax:	`obj.ScrAddWarning(<warning>)`
Parameters:	BSTR warning
Return Value:	None.
PY Example:	`oDoc.ScrAddWarning('This is my warning.')`

ScrAppendSteppedSweep

Defines a frequency sweep with the specified step size for the specified simulation type.	
UI Command:	From any simulation sweep setup tab, add a frequency sweep with a **Linear Step** distribution.
Syntax:	`obj.ScrAppendSteppedSweep(<simType>, <minimumFrequency>, <maximumFrequency>, <stepSize>)`
Parameters:	BSTR simType ("ac", "ff", "nf", "syz", "psi_syz", "psi_ac", or "hfss_syz") DOUBLE minimumFrequency DOUBLE maximumFrequency DOUBLE stepSize (in Hz)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrAppendSteppedSweep('syz', 5000000.0, 5005000000.0, 100000000.0)`

ScrAppendSweep

Defines a frequency sweep with the specified number of frequencies for the specified simulation type.	
UI Command:	From any simulation sweep setup tab, add a frequency sweep with a **Linear** or **By Decade** distribution.
Syntax:	`obj.ScrAppendSweep(<simType>, <minimumFrequency>, <maximumFrequency>, <numPts>, <isLog>)`
Parameters:	BSTR simType ("ac", "ff", "nf", "syz", "psi_syz", "psi_ac", or "hfss_syz") DOUBLE minimumFrequency DOUBLE maximumFrequency INT numPts (number of frequencies in the frequency distribution) BOOL isLog (True for **By Decade** distribution, False for **Linear** distribution)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrAppendSweep('syz',5000000.0,5000000000.0,4,True)` This creates a **By Decade** frequency sweep from 5MHz to 5GHz

ScrAssign4PtBondwireProfile

Creates a 4 point bondwire profile for a layer.	
UI Command:	**Home** > **Bondwire Model Editor**. Select **JEDEC 4-Point** from the **Model** drop-down menu.
Syntax:	`obj.ScrAssign4PtBondwireProfile (<layerOrProfileName>, <h1>, <h2>, <radius>, <supportLayerName>, <terminationLayerName>)`
Parameters:	BSTR layerOrProfileName (either the name of a layer containing bondwires or a specific bondwire model name) DOUBLE h1 DOUBLE h2 DOUBLE radius BSTR supportLayerName BSTR terminationLayerName
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrAssign4PtBondwireProfile('die2_ die3',0.3,0.3,0.01,'Signal','Power')`

ScrAssign5PtBondwireProfile

Creates a 5 point bondwire profile for a layer.	
UI Command:	**Home** > **Bondwire Model Editor**. Select **JEDEC 5-Point** from the **Model** drop-down menu.
Syntax:	`obj.ScrAssign5PtBondwireProfile(<layerOrProfileName>, <h1>, <h2>, <radius>, <alpha>, <beta>, <supportLayerName>, <terminationLayerName>)`
Parameters:	BSTR layerOrProfileName (either the name of a layer containing bondwires or a specific bondwire model name) DOUBLE h1 DOUBLE h2 DOUBLE radius DOUBLE alpha (angle in degrees) DOUBLE beta (angle in degrees) BSTR supportLayerName BSTR terminationLayerName
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrAssign5PtBondwireProfile('die1_ die3',0.31,0.32,0.011,85.1,5.1,'Top','Ground')`

ScrAssignBondwireTerminalType

Sets bondwire terminals to either sink or source terminal type.	
UI Command:	**Home** > **Bondwire Model Editor**.
Syntax:	`obj.ScrAssignBondwireTerminalType(<netNameRegExp>, <refDesRegExp>, <pinNameRegExp>, <isSink>)`
Parameters:	BSTR netNameRegExp BSTR refDesRegExp BSTR pinNameRegExp BOOL isSink (True for Sink, False for Source)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrAssignBondwireTerminalType('*Net_2*','RT*','100-*',True)`

ScrAssignComplexSolderballProfile

Creates a complex solderball profile for a layer.	
UI Command:	**Home** > **Solderball Properties**. Select **Complex** from the **Type** drop-down menu.
Syntax:	`obj.ScrAssignComplexSolderballProfile(<padstackName>, <height>, <radius>, <midRadius>, <frustumHeight>, <placement>, <terminalType>)`
Parameters:	BSTR padstackName DOUBLE height DOUBLE radius DOUBLE midRadius DOUBLE frustrumHeight INT placement (0 for Above, 1 for Below) INT terminalType (0 for Sink, 1 for Source)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrAssignComplexSolderballProfile ('BGA',0.5,0.18,0.225,0.1666,0,0)`

ScrAssignLowBondwireProfile

Creates a low bondwire profile for a layer.	
UI Command:	**Home** > **Bondwire Model Editor**. Select **Low** from the **Model** drop-down menu.
Syntax:	`obj.ScrAssignLowBondwireProfile(<layerName>, <h1>, <h2>, <radius>, <alpha>, <beta>, <supportLayerName>, <terminationLayerName>)`
Parameters:	BSTR layerName (name of a layer containing bondwires) DOUBLE h1 DOUBLE h2 DOUBLE radius DOUBLE alpha DOUBLE beta BSTR supportLayerName BSTR terminationLayerName
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrAssignLowBondwireProfile('die2_die3',0.3,0.3,0.01,0.1,0.1,'Signal','Power')`

ScrAssignSimpleSolderballProfile

Creates a simple solderball profile for a layer.	
UI Command:	**Home** > **Solderball Properties**. Select **Simple** from the **Type** drop-down menu.
Syntax:	`obj.ScrAssignSimpleSolderballProfile(<padstackName>, <height>, <radius>, <placement>, <terminalType>)`
Parameters:	BSTR padstackName DOUBLE height DOUBLE radius INT placement (0 for Above, 1 for Below) INT terminalType (0 for Sink, 1 for Source)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrAssignSimpleSolderballProfile('BGA', 0.5, 0.225, 0, 0)`

ScrAssignSketchedBondwireProfile

Creates a sketched bondwire profile for a layer.	
UI Command:	**Home** > **Bondwire Model Editor**. Select **Sketched** from the **Model** drop-down menu.
Syntax:	`obj.ScrAssignSketchedBondwireProfile (<layerOrProfileName>, <filePath>, <radius>, <supportLayerName>, <terminationLayerName>)`
Parameters:	BSTR layerOrProfileName (can be either the name of a layer containing bondwires or a specific bondwire model name) BSTR filePath INT radius BSTR supportLayerName BSTR terminationLayerName
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrAssignSketchedBondwireProfile('die1_die2', 'F:\TestScriptsForDocumentation\bw_pts.bwp', 0.012, 'Top', 'Ground')`

ScrAssignSketchedBondwireProfileFromArray

Creates a sketched bondwire profile for a layer, from an array.	
UI Command:	**Home** > **Bondwire Model Editor**. Select **Sketched** from the **Model** drop-down menu.
Syntax:	`obj.ScrAssignSketchedBondwireProfile(<layerName>, <units>, <bwPoints>, <radius>, <supportLayerName>, <terminationLayerName>)`
Parameters:	BSTR layerName BSTR units ARRAY bwPoints (array of xy coordinates) INT radius BSTR supportLayerName BSTR terminationLayerName
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrAssignSketchedBondwireProfileFromArray('die1_die2', 'mm', xyPoints, 0.012, 'Top', 'Ground')`

ScrAssignSolderballTerminalType

Sets specified Solderball Terminals to either Sink or Source type.	
UI Command:	**Home** > **Solderball Properties**.
Syntax:	`obj.ScrAssignSolderballTerminalType(<netNameRegExp>, <referenceDesigRegExp>, <pinNameRegExp>, <isSink>)`
Parameters:	BSTR netNameRegExp (narrows solderball terminals by net name) BSTR referenceDesigRegExp (narrows solderball terminals by reference designator) BSTR pinNameRegExp (narrows solderball terminals by pin name) BOOL isSink (TRUE sets sinks; FALSE sets sources)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrAssignSolderballTerminalType('*Net_2*', 'RT*', '100-*', True)`

ScrBooleanUnite

Performs a boolean unite on geometry from the specified nets.	
UI Command:	**Tools** > **Unite**.
Syntax:	`obj.ScrBooleanUnite(<netNameList>)`
Parameters:	ARRAY netNameList
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrBooleanUnite(['netName1','netName2','netName3'])`

ScrChangePartType

Changes the part type for a specified part name.	
UI Command:	None.
Syntax:	`obj.ScrChangePartType(<partName>, <newType>)`
Parameters:	BSTR partName BSTR newType • For existing parts with two pins, valid types: capacitor, inductor, resistor, port, voltage probe, current source, voltage source • For other existing parts, newType cannot be any of these
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrChangePartType('288DIMMDDR4_EDGE_CONN-BASE','Discrete Device')`

ScrCleanUpOverlappingtraces

Converts overlapping traces to planes and then merges them.	
UI Command:	None.
Syntax:	`obj.ScrCleanUpOverlappingtraces(<layerNames>)`
Parameters:	ARRAY layerNames
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrCleanUpOverlappingtraces (['layer1','layer2','layer3'])`

ScrClearAllSweeps

Removes all frequency sweeps assigned to a particular simulation type.	
UI Command:	**Simulation** > **SIwave** > **[Simulation Type]**. Select the values in the **Frequency Range Setup** box and click **Delete Selection**.
Syntax:	`obj.ScrClearAllSweeps (<sweepType>)`
Parameters:	BSTR sweepType (must be one of the following: "ac", "ff", "nf", "psi_syz", "syz" or "hfss_syz")
Return Value:	BOOL • **0** – Failure (sweepType is not a valid type) • **1** – Success
PY Example:	`oDoc.ScrClearAllSweeps('ff')`

ScrClipDesign

Clips designated nets using a specified polygon.	
UI Command:	None.
Syntax:	`obj.ScrClipDesign (<netNames>, <points>)`
Parameters:	ARRAY netNames (nets to be clipped) ARRAY points (vertices of clipping polygon)
Return Value:	BOOL • **0** – Failure • **1** – Success

PY Example:	`netNames = ['VCC', 'GND', 'Heg', 'NET-1', 'NET-2', 'PWR']`
	`points = [0.0, 0.0, 10.0, 20.0, 40.0, 40.0, 40.0, 0.0, 16.0, 4.0]`
	`outcome = obj.ScrClipDesign (netNames, points)`

ScrClipDesignAroundNets

Clips the design around nets.	
UI Command:	None.
Syntax:	`obj.ScrClipDesignAroundNets(<netNames>, <clipExtentDistance>, <simplifiedExtent>, <traceCuttingOption>, <ignoreLayerVisibility>, <reverseCutting>)`
Parameters:	ARRAY netNames (array of strings holding the net names of the selected nets) BSTR clipExtentDistance (distance to push from the selected nets; must include units and will not support wavelength based distance) BOOL simplifiedExtent (TRUE to simplify edges or FALSE) INT traceCuttingOption • **0** – Cut traces that cross the boundary. • **1** – Include all traces that overlap the extent. • **2** – Include only traces that are completely inside the extent. BOOL ignoreLayerVisibility (TRUE to ignore or FALSE) BOOL reverseCutting (TRUE to clip outside the polygon or FALSE to keep objects inside the clipping polygon)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrClipDesignAroundNets (netNames, '1mm', True, 0, True, False)`

ScrCloseProject

Closes the current active project and opens a new "Untitled" project.	
UI Command:	Click **File** > **New**.
Syntax:	`obj.ScrCloseProject()`
Parameters:	None.
Return Value:	None.
PY Example:	`oDoc.ScrCloseProject()`

ScrCloseProjectNoSave

Closes the current active project and opens a new "Untitled" project.	
UI Command:	Click **File** > **New**.
Syntax:	`obj.ScrCloseProjectNoSave()`
Parameters:	None.
Return Value:	None.
PY Example:	`oDoc.ScrCloseProjectNoSave()`

ScrComputeFwsSubckt

Computes a full-wave Spice subcircuit representing the specified S-parameter solution. The ScrSetFwsSubcktFormat() function specifies the Spice format to use.	
UI Command:	Click **Results** > **SYZ** > **[simulation name]** > **Compute FWS sub-circuit**.
Syntax:	`obj.ScrComputeFwsSubckt(<syzSimName>, <path>)`
Parameters:	BSTR syzSimName BSTR path (save location)
Return Value:	INT • **0** – Success • **Non-zero value** – Failure
PY Example:	`oDoc.ScrComputeFwsSubckt('SYZ Sweep 1', 'C:/sweep1')`

ScrComputeFwsSubcktForNamedSim

Computes a full-wave Spice subcircuit for a specified simulation. **The ScrSetFwsSubcktFormat() function specifies the Spice format to use.**	
UI Command:	Click **Results** > **[simulation type]** > **[simulation name]** > **Compute FWS sub-circuit**.
Syntax:	`obj.ScrComputeFwsSubcktForNamedSim(<simType>, <simName>, <path>)`
Parameters:	BSTR simType BSTR simName BSTR path
Return Value:	INT • **0** – Success • **Non-zero value** – Failure
PY Example:	`oDoc.ScrComputeFwsSubcktForNamedSim('syz', 'SYZ Sweep 1', 'C:/sweep1')`

ScrConvertPlanesToTraces

Performs plane to trace conversion on specified nets.	
UI Command:	Click **Tools** > **Convert Planes to Traces**.
Syntax:	`obj.ScrConvertPlanesToTraces (<netNameList>)`
Parameters:	ARRAY netNameList
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrConvertPlanesToTraces(['GND','P28VA'])`

ScrConvertTracesToPlanes

Performs trace to plane conversion on a specified trace.	
UI Command:	Click **Tools** > **Convert Traces to Planes**.
Syntax:	`obj.ScrConvertTracesToPlanes (<layerName>, <netName>, <mergeAll>, <minVoidArea>, <unitName>)`
Parameters:	BSTR layerName BSTR netName (If net name is "all", traces of all nets on the layer will be converted) BOOL mergeAll (TRUE merges all planes; FALSE does not) DOUBLE minVoidArea (all voids smaller than this value will be deleted) BSTR unitName ("m", "meters", "mm", "cm", "um", "microns", "inches", "mils", "nanometers", "nm", or "feet")
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrConvertTracesToPlanes ('BOTTOM','GND',True,0.001,'mm')`

ScrConvertTracesToPlanesByNet

Performs trace to plane conversion by a specified net.	
UI Command:	Click **Tools** > **Convert Traces to Planes**.
Syntax:	`obj.ScrConvertTracesToPlanesByNet (<netNameList)`
Parameters:	ARRAY netNameList
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrConvertTracesToPlanes(['GND','P28VA'])`

ScrCopyImageToClipBoard

Copies the Modeling workspace to the clipboard.	
UI Command:	Right-click in the Modeling workspace and select **Copy Image**.
Syntax:	`obj.ScrCopyImageToClipBoard()`
Parameters:	None.

Copies the Modeling workspace to the clipboard.	
Return Value:	None.
PY Example:	`oDoc.ScrCopyImageToClipBoard()`

ScrCorrectValChkErrorsWarnings

Used after "ScrRunValidationCheck " on page 2-146 and "ScrRunValidationCheckWithOptions" on page 2-147 to apply autofixes to errors and warnings found during checks.	
UI Command:	None.
Syntax:	`obj.ScrCorrectValChkErrorsWarnings (<fixOptionArray>)`
Parameters:	ARRAY fixOptionsArray (0 - deselects an option, 1 - selects an option) Autofixes, as follows: • **0** - disjoint errors • **1** - overlapping via errors • **2** - bondwire orientation errors • **3**- misalignment warnings • **4** - bondwire misalignment warnings • **5** - floating node errors
Return Value:	System.Int16 object at 0x000000000000002E [0] (0 indicates successful completion of the command)
PY Example:	`oDoc.ScrCorrectValChkErrorsWarnings (['1','1','1','1','1','1'])`

ScrCreatePinGroups

Creates a pin group containing specified pins.	
UI Command:	**Tools** > **Create/Manage Pin Groups**.
Syntax:	`obj.ScrCreatePinGroups(<partName>, <refDes>, <pinNumbers>, <groupName>, <applyToAllComponents>)`
Parameters:	BSTR partName BSTR refDes ARRAY pinNumbers BSTR groupName BOOL applyToAllComponents (True = pin group should be created for all parts with the given part name. When set to True, refDes is ignored.)
Return Value:	BOOL

Creates a pin group containing specified pins.	
	• **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrCreatePinGroups('CSP_BGA', 'BGA', ['1','2','3','4'], 'new_group_1', False)`

ScrCreatePinGroupByDist

Creates a pin group for pins a given distance from a specified pin.	
UI Command:	**Tools** > **Create/Manage Pin Groups**.
Syntax:	`obj.ScrCreatePinGroupByDist (<partName>, <refDes>, <pinNumber>, <groupName>, <maxDistance>, <selectFromAllNets>)`
Parameters:	BSTR partName BSTR refDes BSTR pinNumber BSTR groupName BSTR maxDistance BOOL selectFromAllNets (True = pins will be selected regardless of their nets. False = only pins from the same net as the specified pin are included.)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrCreatePinGroupByDist('T1_A', 'U1', '14', 'TestPinGroupA', '450um', True)`

ScrCreatePinGroupsByGrid

Creates a pin group by dividing a component into a grid.	
UI Command:	**Tools** > **Create/Manage Pin Groups**.
Syntax:	`obj.ScrCreatePinGroupsByGrid (<partName>, <refDes>, <numRows>, <numCols>, <applyPerNet>, <applyToAllComponents>)`
Parameters:	BSTR partName BSTR refDes LONG numRows LONG numCols BOOL applyPerNet BOOL applyToAllComponents
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrCreatePinGroupsByGrid ('DDR4_X4_FBGA78-10X13,,', 'U1', 3, 2, False, True)`

ScrCreatePinGroupByNet

Creates a pin group consisting of pins from a specified part within a specified net.	
UI Command:	**Tools** > **Create/Manage Pin Groups**.
Syntax:	`obj.ScrCreatePinGroupByNet (<partName>, <refDes>, <netName>, <groupName>, <applyToAllComponents>)`
Parameters:	BSTR partName BSTR refDes BSTR netName BSTR groupName BOOL applyToAllComponents (True= pin groups will be created on all parts of the specified partName regardless of the refDes; the resulting group names will have an index number appended for uniqueness)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrCreatePinGroupByNet ('T1_A', 'U1', 'GND', 'U1_GND', False)`

ScrCreatePortsOnPart

Creates ports between pins on the specified part. **Note:** The positive terminals are either the specified pins, the pins on the specified net, or the intersection of the two sets if both parameters are not empty. The negative terminal is selected as the closest pin on the reference net.	
UI Command:	**Tools** > **Create/Manage Pin Groups**.
Syntax:	`obj.ScrCreatePortsOnPart (<partName>, <refDes>, <posNet>, <posPinList>, <refNet>, <impedance>)`
Parameters:	BSTR partName BSTR refDes BSTR posNet ARRAY posPinList BSTR refNet BSTR impedance
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrCreatePortsOnPart('CP90-P4969-90', 'V1P1', 'VREG_S9A_0P8', ['pin1','pin2','pin3'], 'AGND', '35ohm')`

ScrDeleteAllNets

Deletes all nets in the design.	
UI Command:	Right-click nets, **Edit** > **Delete**.
Syntax:	`obj.ScrDeleteAllNets()`
Parameters:	None.
Return Value:	None.
PY Example:	`oDoc.ScrDeleteAllNets()`

ScrDeleteCktElem

Deletes a specified circuit element.	
UI Command:	Right-click element, **Edit** > **Delete**.
Syntax:	`obj.ScrDeleteCktElem(<refDes>)`
Parameters:	BSTR refDes

Deletes a specified circuit element.	
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDeleteCktElem('C_1')`

ScrDeleteDcSolution

Deletes a DC solution.	
UI Command:	**Results** > **DC IR Drop** > **[Solution Name]** > **Delete Solution**.
Syntax:	`obj.ScrDeleteDcSolution()`
Parameters:	None.
Return Value:	None.
PY Example:	`oDoc.ScrDeleteDcSolution()`

ScrDeleteLayer

Deletes a specified layer.	
UI Command:	**Home** > **Layer Stackup Editor**. Select layer and click **Delete Selected Layers**.
Syntax:	`obj.ScrDeleteLayer(<layerName>)`
Parameters:	None.
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDeleteLayer('BOTTOM')`

ScrDeleteNet

Deletes a specified net.	
UI Command:	None.
Syntax:	`obj.ScrDeleteNet(<netName>)`
Parameters:	BSTR netName
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDeleteNet('net69')`

ScrDeleteNets

Deletes all nets in a given array.	
UI Command:	None.
Syntax:	`obj.ScrDeleteNets(<netNames>)`
Parameters:	ARRAY netNames
Return Value:	None.
PY Example:	`oDoc.ScrDeleteNets(['net5','net6','net7','net8'])`

ScrDeleteNetsGivenInFile

Deletes all nets named in a given file.	
UI Command:	None.
Syntax:	`obj.ScrDeleteNetsGivenInFile(<fileName>)`
Parameters:	BSTR fileName (file path; file must have net names enclosed in double quotes)
Return Value:	None.
PY Example:	`oDoc.ScrDeleteNetsGivenInFile('C:/NetFiles/nets_to_delete.txt')`

ScrDeletePadstack

Deletes a specified padstack.	
UI Command:	None.
Syntax:	`obj.ScrDeletePadstack(<padstackName>)`
Parameters:	BSTR padstackName
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDeletePadstack('Stack')`

ScrDeletePinGroup

Deletes a specified pin group.	
UI Command:	None.
Syntax:	`obj.ScrDeletePinGroup(<pin_group_name>,<deleteRefCktElems>)`
Parameters:	BSTR pin_group_name BOOL deleteRefCktElems (True = deletes references circuit element(s); False = referenced circuit element(s) remove the reference to the pin group and change the reference to the first pin of the pin group.)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDeletePinGroup('U1_GND_Group', True)`

ScrDeleteSimulation

Delete a specified simulation or all simulations within a category (i.e., all DC IR Drop Simulations).	
UI Command:	From the **Simulation** tab, navigate to the **Results** window. Then right-click a solution or solution category and select **Delete Solution/Category**.
Syntax:	`obj.ScrDeleteSimulation(<simType>, <simName>)`
Parameters:	BSTR simType (choose from: "ac", "dc", "eigen", "ff", "nf", "psi_ac", "psi_syz", "syz", "hfss_syz", "pdn", "cpa", "icepak", "iv", "emi_scan", "em_mttf", "z0_scan", "crosstalk_scan", "td_crosstalk_scan") BSTR simName (enter the name of a specific simulation or "all" to delete all simulations in the selected category (i.e., simType)
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrDeleteSimulation('dc', 'DCIR_122cel_uniform')`

ScrDrawCapacitor

Draws a capacitor in the specified location with specified parameters.	
UI Command:	**Home** > **Circuit Elements** > **Add Capacitor**.
Syntax:	`obj.ScrDrawCapacitor(<capName>, <partName>, <px>, <py>, <nx>, <ny>, <posLayerName>, <negLayerName>, <capVal>, <seriesIndVal>, <seriesResVal>)`
Parameters:	BSTR capName BSTR partName DOUBLE px (positive terminal x location) DOUBLE py (positive terminal y location) DOUBLE nx (negative terminal x location) DOUBLE ny (negative terminal y location) BSTR posLayerName BSTR negLayerName DOUBLE capVal (capacitance, in Farads) DOUBLE seriesIndVal (parasitic inductance, in Henries) DOUBLE seriesResVal (parasitic resistance, in Ohms)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDrawCapacitor ('Cappy','CL03A103KP3NNN',8500,4500,6000,-500,'SURFACE','BASE',1E-07,1E-11,0)`

ScrDrawCircle

Draws a circular plane.	
UI Command:	**Home** > **Draw Circle**.
Syntax:	`obj.ScrDrawCircle(<ctrX>, <ctrY>, <radius>, <layerName>, <netName>, <unit>)`
Parameters:	DOUBLE ctrX (x coordinate of the center point) DOUBLE ctrY (y coordinate of the center point) DOUBLE radius BSTR layerName BSTR netName BSTR unit
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDrawCircle(100, 100, 20, 'Top Metal', 'NET-1', 'mm')`

ScrDrawInductor

Draws an inductor in the specified location with specified parameters.	
UI Command:	**Home** > **Circuit Elements** > **Add Inductor**.
Syntax:	`obj.ScrDrawInductor(<indName>, <partName>, <px>, <py>, <nx>, <ny>, <posLayerName>, <negLayerName>, <indVal>)`
Parameters:	BSTR indName BSTR partName DOUBLE px (positive terminal x location) DOUBLE py (positive terminal y location) DOUBLE nx (negative terminal x location) DOUBLE ny (negative terminal y location) BSTR posLayerName BSTR negLayerName DOUBLE indVal (inductance, in Henries)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDrawInductor('Indy','RLC_XYZ_I',8500,4500,6000,1000,'SURFACE','BASE',1E-09)`

ScrDrawPolygon

Draws a polygonal plane.	
UI Command:	**Home** > **Draw Polygon**.
Syntax:	`obj.ScrDrawPolygon(<points>, <layerName>, <netName>, <unit>)`
Parameters:	ARRAY points (x, y, x, y, x, y, ...) BSTR layerName BSTR netName BSTR unit
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDrawPolygon([-10,10,5,-5,-25,-20,20,0], 'Top Metal', 'NET-1', 'mm')`

ScrDrawPort

Draws a port in the specified location with specified parameters.	
UI Command:	**Home** > **Circuit Elements** > **Add Port**.
Syntax:	`obj.ScrDrawPort(<portName>, <px>, <py>, <nx>, <ny>, <posLayerName>, <negLayerName>, <refZe>)`
Parameters:	BSTR portName DOUBLE px (positive terminal x location) DOUBLE py (positive terminal y location) DOUBLE nx (negative terminal x location) DOUBLE ny (negative terminal y location) BSTR posLayerName BSTR negLayerName DOUBLE refZe (reference impedance, in Ohms)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDrawPort ('Porty',8500,4500,6000,1000,'SURFACE','BASE',0.1)`

ScrDrawRectangle

Draws a rectangular plane.	
UI Command:	**Home** > **Draw Rectangle**.
Syntax:	`obj.ScrDrawRectangle(<x1>, <y1>, <x2>, <y2>, <layerName>, <netName>, <unit>)`
Parameters:	DOUBLE x1 DOUBLE y1 DOUBLE x2 DOUBLE y2 BSTR layerName BSTR netName BSTR unit
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDrawRectangle (100, 100, 200, 200, 'Top Metal', 'NET-1', 'mm')`

ScrDrawResistor

Draws a resistor in the specified location with specified parameters.	
UI Command:	**Home** > **Circuit Elements** > **Add Resistor**.
Syntax:	`obj.ScrDrawResistor(<resName>, <partName>, <px>, <py>, <nx>, <ny>, <posLayerName>, <negLayerName>, <resVal>)`
Parameters:	BSTR resName BSTR partName DOUBLE px (positive terminal x location) DOUBLE py (positive terminal y location) DOUBLE nx (negative terminal x location) DOUBLE ny (negative terminal y location) BSTR posLayerName BSTR negLayerName DOUBLE resVal (resistance, in Ohms)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDrawResistor('Resist','BBQ_ 4L1FE',8500,4500,6000,1000,'SURFACE','BASE',50)`

ScrDrawTrace

Draws a trace.	
UI Command:	**Home** > **Draw Trace**.
Syntax:	`obj.ScrDrawTrace(<points>, <width>, <layerName>, <netName>, <unit>)`
Parameters:	ARRAY points (x, y, x, y, x, y, ...) DOUBLE width BSTR layerName BSTR netName BSTR unit
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDrawTrace([-10,10,5,-5,-25,-20,20,0], '0.5', 'Top Metal', 'NET-1', 'mm')`

ScrDrawVia

Draws a via.	
UI Command:	**Home** > **Drop Via**.
Syntax:	`obj.ScrDrawVia(<ctrX>, <ctrY>, <topLayer>, <botLayer>, <padstack>, <netName>, <offsetX>, <offsetY>, <rotAngle>, <unit>)`
Parameters:	DOUBLE ctrX DOUBLE ctrY BSTR topLayer BSTR botLayer BSTR padstack BSTR netName DOUBLE offsetX DOUBLE offsetY DOUBLE rotAngle BSTR unit
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDrawVia(100, 100, 'Top Metal', 'Bottom Metal', 'Thru Via', 'NET-1', 0.0, 0.0, 0.0, 'mm')`

ScrDrawVoltageProbe

Draws a voltage probe in the specified location with specified parameters.	
UI Command:	**Home** > **Circuit Elements** > **Add Voltage Probe**.
Syntax:	`obj.ScrDrawVoltageProbe(<probeName>, <px>, <py>, <nx>, <ny>, <posLayerName>, <negLayerName>)`
Parameters:	BSTR probeName DOUBLE px (positive terminal x location) DOUBLE py (positive terminal y location) DOUBLE nx (negative terminal x location) DOUBLE ny (negative terminal y location) BSTR posLayerName BSTR negLayerName
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDrawVoltageProbe ('ProbeOno',6500,4000,5000,1500,'SURFACE','BASE')`

ScrDrawVoltageSource

Draws a frequency independent voltage source in the specified location with specified parameters.	
UI Command:	**Home** > **Circuit Elements** > **Add Voltage Source**.
Syntax:	`obj.ScrDrawVoltageSource(<sourceName>, <partName>, <px>, <py>, <nx>, <ny>, <posLayerName>, <negLayerName>, <mag>, <phase>, <seriesRes>)`
Parameters:	BSTR sourceName BSTR partName DOUBLE px (positive terminal x location) DOUBLE py (positive terminal y location) DOUBLE nx (negative terminal x location) DOUBLE ny (negative terminal y location) BSTR posLayerName BSTR negLayerName DOUBLE mag (magnitude, in Volts) DOUBLE phase (phase, in degrees) DOUBLE seriesRes (parasitic resistance, in Ohms)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrDrawVoltageSource('Sourcey','PRT1_00543',5000,4500,4500,3000,'SURFACE','BASE',1,0,1E-06)`

ScrEditCktElemName

Edits an existing circuit element's name.	
UI Command:	**Components** window. Right-click **[circuit element]** > **Edit Circuit Element**. Change name.
Syntax:	`obj.ScrEditCktElemName(<name>, <type> <newName>)`
Parameters:	BSTR name BSTR type ("cap", "ind", "res", "port", "vprobe", "csource", or "vsource") BSTR newName
Return Value:	INT: • **0** – Success • **1** – One of the input parameters is an empty string. • **2** – type value is unacceptable. • **3** – Cannot find component to rename. • **4** – newName is already taken.
PY Example:	`oDoc.ScrEditCktElemName('port_old', 'port', 'port_new')`

ScrEditLayerName

Sets a new name for a specified layer.	
UI Command:	Click **Home** > **Layer Stackup Editor**. Enter a value in the **Name** field.
Syntax:	`obj.ScrEditLayerName(<layerName>, <newLayerName>)`
Parameters:	BSTR layerName BSTR newLayerName
Return Value:	None.
PY Example:	`oDoc.ScrEditLayerName('MY LAYER','MY NEW LAYER')`

ScrEditMaterial

Edits an existing material.	
UI Command:	**Home** > **Edit Materials**.
Syntax:	`obj.ScrEditMaterial(<matType>, <matName>, <epsOrSigma>, <ltOrPerm>)`
Parameters:	BSTR matType (conductor or dielectric) BSTR matName DOUBLE epsOrSigma (conductivity for conductor or permittivity for dielectric) DOUBLE ltOrPerm (permeability for conductor or loss tangent for dielectric)
Return Value:	INT result: • **0** – Success • **1** – Material type is not "conductor" or "dielectric" • **2** – Material name does not exist in library • **3** – Material parameters are not within an acceptable range
PY Example:	`oDoc.ScrEditMaterial('conductor', 'unobtanium', 5.7E+07, 0.5)`

ScrEditNetName

Edits an existing net's name.	
UI Command:	Nets window. Right-click net and select **Edit Net Name**.
Syntax:	`obj.ScrEditNetName(<netName>, <newNetName>)`
Parameters:	BSTR netName BSTR newNetName
Return Value:	None.
PY Example:	`oDoc.ScrEditNetName('MY NET', 'MY NEW NET')`

ScrEditPadStackName

Edits an existing padstack's name.	
UI Command:	**Home** > **Edit Padstacks**. Enter a new **Name**.
Syntax:	`obj.ScrEditPadStackName(<oldPadstackName>, <newPadstackName>)`
Parameters:	BSTR oldPadstackName BSTR newPadstackName
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrEditPadStackName('MY PADSTACK', 'MY NEW PADSTACK')`

ScrEnableCavityFieldCoupling

Enables or disables cavity field coupling detection and solution during simulation. **Note:** Does not apply to DC IR simulations.	
UI Command:	**Simulation** > **Options** to open the **SIwave Options** window. On **SI/PI Advanced** tab, select **Cavity field** check box.
Syntax:	`obj.ScrEnableCavityFieldCoupling <flag>`
Parameters:	BOOL flag (TRUE/1 = Enable; FALSE/0 = Disable)
Return Value:	None.
PY Example:	`oDoc.ScrEnableCavityFieldCoupling(1)`

ScrEnableCoPlaneCoupling

Enables or disables coplanar waveguide coupling detection and solution during simulation. **Note:** Does not apply to DC IR simulations.	
UI Command:	**Simulation** > **Options** to open the **SIwave Options** window. On **SI/PI Advanced** tab, select **Coplane** check box.
Syntax:	`obj.ScrEnableCoPlaneCoupling <flag>`
Parameters:	BOOL flag (TRUE/1 = Enable; FALSE/0 = Disable)
Return Value:	None.
PY Example:	`oDoc.ScrEnableCoPlaneCoupling(1)`

ScrEnableErcSimSetup

For PSI simulations, enables or disables option to perform ERC during simulation setup	
UI Command:	**Simulation** > **PSI Options**. Select **Perform ERC during simulation setup**.
Syntax:	`obj.ScrEnableErcSimSetup(<flag>)`
Parameters:	BOOL flag (TRUE/1 = Enable; FALSE/0 = Disable)
Return Value:	None.
PY Example:	`oDoc.ScrEnableErcSimSetup(1)`

ScrEnableFwsRelativeErrorTol

Enables or disables relative error tolerance.	
UI Command:	**Results** > **SYZ** > **[Simulation Name]** > **Compute FWS Sub-circuit**. Select **Advanced** > **Enable Relative Error Tolerance**.
Syntax:	`obj.ScrEnableFwsRelativeErrorTol <flag>`
Parameters:	BOOL flag (True enables; False disables)
Return Value:	None.
PY Example:	`oDoc.ScrEnableFwsRelativeErrorTol(True)`

ScrEnableGUIRefresh

Enables or disables refreshing GUI.	
UI Command:	**None.**
Syntax:	`obj.ScrEnableGUIRefresh <flag>`
Parameters:	BOOL flag (True enables; False disables)
Return Value:	None.
PY Example:	`oDoc.ScrEnableGUIRefresh (True)`

ScrEnableIntraPlaneCoupling

Enables or disables low-frequency intra-plane coupling detection and solution during simulation. **Note:** Does not apply to DC IR simulations.	
UI Command:	**Simulation** > **Options** to open the **SIwave Options** window. On **SI/PI Advanced** tab, select **Intra-plane** check box.
Syntax:	`obj.ScrEnableIntraPlaneCoupling <flag>`
Parameters:	BOOL flag (TRUE/1 = Enable; FALSE/0 = Disable)
Return Value:	None.
PY Example:	`oDoc.ScrEnableIntraPlaneCoupling(1)`

ScrEnableSplitPlaneCoupling

Enables or disables split plane coupling detection and solution during simulation. **Note:** Does not apply to DC IR simulations.	
UI Command:	**Simulation** > **Options** to open the **SIwave Options** window. On **SI/PI Advanced** tab, select **Split-plane** check box.
Syntax:	`obj.ScrEnableSplitPlaneCoupling <flag>`
Parameters:	BOOL flag (TRUE/1 = Enable; FALSE/0 = Disable)
Return Value:	None.
PY Example:	`oDoc.ScrEnableSplitPlaneCoupling(1)`

ScrEnableTraceCoupling

Enables or disables trace coupling detection and solution during simulation. **Note:** Does not apply to DC IR simulations.	
UI Command:	**Simulation** > **Options** to open the **SIwave Options** window. On **SI/PI Advanced** tab, select **Trace** check box.
Syntax:	`obj.ScrEnableTraceCoupling <flag>`
Parameters:	BOOL flag (TRUE/1 = Enable; FALSE/0 = Disable)
Return Value:	None.
PY Example:	`oDoc.ScrEnableTraceCoupling(1)`

ScrExport3DModel

Exports a 3D Model file.	
UI Command:	**Export** > **Export to [HFSS 3D, Q3D Extractor]**.
Syntax:	`obj.ScrExport3DModel <exportTypeName> <outFilePath>`
Parameters:	BSTR exportTypeName (HFSS, MAXWELL, Q3D, or X_B/X_T) BSTR outFilePath (including extension)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrExport3DModel ('Q3D','C:/SampleFiles/test.aedt')`

ScrExportAnf

Exports an Ansys Neutral File (*.anf).	
UI Command:	**Export** > **ANF**.
Syntax:	`obj.ScrExportAnf <filePath>`
Parameters:	BSTR filePath (including extension)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrExportAnf('D:/Tests/testExport.anf')`

ScrExportComponentFile

Exports a component file (*.cmp) to be paired with an exported ANF file.	
UI Command:	**Export** > **Component File**.
Syntax:	`obj.ScrExportComponentFile <filePath>`
Parameters:	BSTR filePath (including extension)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrExportComponentFile ('D:/Tests/testExport.cmp')`

ScrExportCpaSimReport (IronPython)

Exports a CPA simulation report in HTML format.	
UI Command:	**Results** > **RLGC** > **[Simulation Name]** > **Export Simulation Report**.
Syntax:	`obj.ScrExportCpaSimReport(<simName>, <filePath>)`
Parameters:	BSTR simName BSTR filePath
Return Value:	INT: • **0** – Success • **1** – Cannot find CPA simulation by simName provided. • **2** – Export failed.
PY Example:	`oDoc.ScrExportCpaSimReport('CPA Sim 1','C:/Directory/')`

ScrExportDcPowerDataToIcepak

Enables or disables generation of DC power data for use in thermal simulations.	
UI Command:	None.
Syntax:	`obj.ScrExportDcPowerDataToIcepak(<exportPowerData>)`
Parameters:	BOOL exportPowerData (True = enable; False = disable)
Return Value:	None.
PY Example:	`oDoc.ScrExportDcPowerDataToIcepak(True)`

ScrExportDcPowerTree

Note:

Use after ScrActivateDcPowerTreePinAggregation.

Exports a DC power tree of a previously run DC simulation.	
UI Command:	**Results** > **DC IR** > **[Simulation Name]** > **Export Power Tree**.
Syntax:	`obj.ScrExportDcPowerTree(<simName>, <thresholds_csv_file>, <output_image_file>)`
Parameters:	BSTR simName (DC IR simulation must already be completed) BSTR thresholds_csv_file (path to CSV file containing voltage and current threshold values for every node; include file extension) BSTR output_image_file (path to the file the tree will be exported to; include file extension)
Return Value:	INT: • **0** – Success • **1** – Cannot find DC simulation by simName provided. • **2** – Export failed.
PY Example:	`oDoc.ScrExportDcPowerTree('DC Drop 1', 'D:/thresholds.csv', 'D:/pwrtree.png')`

ScrExportDcSimReport

Exports a simulation report for a previously run DC simulation. **To specify additional options, see: ScrExportDcSimReportColorBarProperties, ScrExportDcSimReportOptions, ScrExportDcSimReportScaling, and ScrExportDcSimReportUnits.**	
UI Command:	**Results** > **DC IR** > **[Simulation Name]** > **Export Report**.
Syntax:	`obj.ScrExportDcSimReport(<simName>, <backgroundColor>, <htmReportFilenameWithPath>)`
Parameters:	BSTR simName (DC IR simulation must already be completed) BSTR backgroundColor ('black', 'white', or '', where empty string uses the current SIwave background colors) BSTR htmReportFilenameWithPath
Return Value:	INT: • **0** – Success • **1** – Cannot find DC simulation by simName provided. • **2** – Export failed.
PY Example:	`oDoc.ScrExportDcSimReport('DC IR Sim 1', 'white', 'C:/Project1/report.htm')`

ScrExportDcSimReportColorBarProperties

Used before ScrExportDcSimReport to set color bar properties for DC report generation.	
UI Command:	**Advanced** > **Color Scale**. Select **Color Bar Properties**.
Syntax:	`obj.ScrExportDcSimReportColorBarProperties (<numDiv>, <numDigit>, <bFlipColorScale>, <bWhiteBeyondMinMax>)`
Parameters:	INT numDiv INT numDigit BOOL bFlipColorScale BOOL bWhiteBeyondMinMax
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrExportDcSimReportColorBarProperties (14,3,False,True)`

ScrExportDcSimReportOptions

Used before ScrExportDcSimReport to set options for DC report generation.	
UI Command:	**Results** > **DC IR** > **[Simulation Name]** > **Export Report**. Specify options.
Syntax:	`obj.ScrExportDcSimReportOptions(<showDevices>, <filtersXmlFilenameWithPath>)`
Parameters:	BOOL showDevices (True to show devices and device names for devices with pins on signal nets that are involved in the current simulation) BSTR filtersXmlFilenameWithPath (full path to XML file containing filters for current, voltage or power plots on selected layers and nets)
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrExportDcSimReportOptions(True, 'C:/Projects/filter.xml')`

ScrExportDcSimReportScaling

Used before ScrExportDcSimReport to set scaling options for DC report generation.	
UI Command:	None.
Syntax:	`obj.ScrExportDcSimReportScaling(<layerName>, <plotType>, <minVal>, <maxVal>, <bLogScale>)`
Parameters:	BSTR layerName (specify a layer name, "All", or "All Bondwires/Vias") BSTR plotType ("Current Density", "Voltage", "Power Density", "Via Current", or "All") DOUBLE minVal DOUBLE maxVal BOOL bLogScale (True = Log; False = Linear) **Use -1 for both minVal & maxVal to set the plot range back to original and also to set bLogScale independently without affecting the range.
Return Value:	INT: • **0** – Success • **1** – layerName value is unacceptable. • **2** – plotType value is unacceptable.
PY Example:	`oDoc.ScrExportDcSimReportScaling ('All','Voltage',0.00,50.0,True)`

ScrExportDcSimReportUnits

Used before ScrExportDcSimReport to set units for DC report generation.	
UI Command:	**Results** > **DC IR** > **[Simulation Name]** > **Export Report**.
Syntax:	`obj.ScrExportDcSimReportUnits(<curDenUnits>, <vltUnits>, <pwrDenUnits>)`
Parameters:	BSTR curDenUnits ("A/um^2", "A/mil^2", "A/mm^2", "A/cm^2", "A/in^2", or "A/m^2") BSTR vltUnits ("uV", "mV", or "V") BSTR pwrDenUnits ("W/um^3", "W/mil^3", "W/mm^3", "W/cm^3", "W/in^3", or "W/m^3")
Return Value:	INT: • **0** – Success • **1** – curDenUnits value is unacceptable. • **2** – vltUnits value is unacceptable. • **3** – curDenUnits value is unacceptable.
PY Example:	`oDoc.ScrExportDcSimReportUnits ('A/um^2','V','W/um^3')`

ScrExportElementData

Exports the element data from a DC simulation report.	
UI Command:	**Results** > **DC IR** > **[Simulation Name]** > **Export Element Data**.
Syntax:	`obj.ScrExportElementData(<simName>, <fileName>, <tabTitle>)`
Parameters:	BSTR simName BSTR fileName BSTR tabTitle
Return Value:	INT: • **0** – Success • **3** – Cannot find DC simulation by simName provided. • **Else** – Export failed.
PY Example:	`oDoc.ScrExportElementData('DC Script Sim', 'D:/Tests/viaReportOut.txt', 'Vias')`

ScrExportEmiScanReport

Generates an HTML EMI scanner report, with images of violations.	
UI Command:	**Results** > **EMI Scanner** > **[SimulationName]** > **Export Report with Images**.
Syntax:	`obj.ScrExportEmiScanReport(<simName>, <reportPath>)`
Parameters:	BSTR simName BSTR reportPath (include file extension)
Return Value:	INT: • **0** – Success • **1** – Cannot find simulation by simName provided. • **2** – Export failed.
PY Example:	`oDoc.ScrExportEmiScanReport("EMI Scan Sim 1", "D:/AutomationTest/EMI.htm")`

ScrExportIcepakProject

Exports an Icepak project for standalone use. A DC simulation may be specified to provide power data to the Icepak project.	
UI Command:	**Export** > **Icepak**.
Syntax:	`obj.ScrExportIcepakProject(<projectPath>, <dcSimName>)`
Parameters:	BSTR projectPath BSTR dcSimName (leave string empty to omit)
Return Value:	INT • **0** – Success • **1** – Project directory could not be created. • **2** – An EDB could not be exported for the project. • **3** – Error generating the project import script. • **4** – Specified DC simulation could not be found OR failure generating Icepak launch script.
PY Example:	`oDoc.ScrExportIcepakProject('D:/icepakProj', 'DC Sim 1')`

ScrExportIcepakSimReport

Generates an HTML report file containing Icepak thermal plots taken at various elevations. **To specify additional options, see: ScrExportIcepakSimReportColorBarProperties, ScrExportIcepakSimReportScaling, and ScrExportIcepakSimReportUnits.**	
UI Command:	**Results** > **Temperature** > **Export Report**.
Syntax:	`obj.ScrExportIcepakSimReport(<simName>, <fileNameWithPath>)`
Parameters:	BSTR simName BSTR fileNameWithPath (include file extension)
Return Value:	INT: • **0** – Success • **1** – Cannot find Icepak simulation by simName provided. • **2** – Export failed.
PY Example:	`oDoc.ScrExportIcepakSimReport("Icepak Script Sim", "D:/AutomationTest/ScriptReportTest.htm")`

ScrExportIcepakSimReportColorBarProperties

Used before ScrExportIcepakSimReport to set color bar properties for Icepak report generation.	
UI Command:	**Advanced** > **Color Scale**. Select **Color Bar Properties**.
Syntax:	`obj.ScrExportIcepakSimReportColorBarProperties (<numDiv>, <numDigit>, <bFlipColorScale>, <bWhiteBeyondMinMax>)`
Parameters:	INT numDiv INT numDigit BOOL bFlipColorScale BOOL bWhiteBeyondMinMax
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrExportIcepakSimReportColorBarProperties (14,3,False,True)`

ScrExportIcepakSimReportScaling

Used before ScrExportIcepakSimReport to set scaling options for Icepak report generation.	
UI Command:	None.
Syntax:	`obj.ScrExportIcepakSimReportScaling(<minVal>, <maxVal>, <bLogScale>)`
Parameters:	DOUBLE minVal DOUBLE maxVal BOOL bLogScale (True = Log; False = Linear) **Use -1 for both minVal & maxVal to set the plot range back to original and also to set bLogScale independently without affecting the range.
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrExportIcepakSimReportScaling (0.00,50.0,False)`

ScrExportIcepakSimReportUnits

Used before ScrExportIcepakSimReport to set units for Icepak report generation.	
UI Command:	None.
Syntax:	`obj.ScrExportIcepakSimReportUnits(<tempUnits>)`
Parameters:	BSTR tempUnits ("C", "F", or "K")
Return Value:	INT: • **0** – Success • **1** – tempUnits value is unacceptable.
PY Example:	`oDoc.ScrExportIcepakSimReportUnits('F')`

ScrExportLayerStackup

Exports the current layer stackup to a specified file (*.stk OR *.xml).	
UI Command:	**Export** > **Layer Stackup**, OR **Export** > **Layer Stackup XML**.
Syntax:	`obj.ScrExportLayerStackup(<outputFileName>)`
Parameters:	BSTR outputFileName (include extension)
Return Value:	None.
PY Example:	`oDoc.ScrExportLayerStackup ('C:/Documents/stack.stk')`

ScrExportNamedSimToTouchstone

Exports SYZ simulation results to a specified touchstone file.	
UI Command:	**Results** > **SYZ** > **[Simulation Name]** > **Export Touchstone File**.
Syntax:	`obj.ScrExportNamedSimToTouchstone(<simType>, <simName>, <file>)`
Parameters:	BSTR simType (syz, psi_syz, or hfss_syz) BSTR simName (previously run simulation) BSTR touchstonefilePath (full path for the touchstone file to be generated) **Note:** Adding the file name and extension are not necessary; however, if the file name and extension are included, accurately specify the number of ports in the extension (i.e., *.s*N*p) or two extensions will appear in the exported file (e.g., testExport.s2p.s4p).
Return Value:	Memory address and integer in brackets (e.g., `<System.Int16 object at 0x00000000000000x2E [0]>`): INT: • **0** – Success • **1** – simType value is unacceptable. • **2** – simName does not exist OR path cannot be created.
PY Example:	`oDoc.ScrExportNamedSimToTouchstone('hfss_syz', 'Sim 1', 'D:/results/testExport.s2p')`

ScrExportNetDelayReport

Exports a net delay report in HTML format.	
UI Command:	**Simulation** > **Signal Net Analyzer**. Click **Export Net Delays** and select appropriate options.
Syntax:	`obj.ScrExportNetDelayReport(<reportPath>, <netNameRegExp>, <lengthUnits>, <delayUnits>, <onlyDieToBall>)`
Parameters:	BSTR reportPath (full file path for report to be exported) BSTR netNameRegExp (regular expression; use '.*' to include all nets) BSTR lengthUnits (pass empty string to use default 'microns') BSTR delayUnits (pass empty string to use default 'ps') BOOL onlyDieToBall (True to enforce **Only include paths from Die pin to BGA solderball** option; else False)
Return Value:	INT • **0** – Success • **1** – Licensing Failure
PY Example:	`oDoc.ScrExportNetDelayReport ('C:/MyFiles/netdelay.htm','.*','','',1)`

ScrExportSettingsFile

Exports an SIwave Settings file (*.sef). **Use ScrExportSettingsFileSetOptions to specify additional options.**	
UI Command:	**Export** > **Settings File**.
Syntax:	`obj.ScrExportSettingsFile(<filePath>)`
Parameters:	BSTR filePath (full path)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrExportSettingsFile('C:/Path/my_settings.sef')`

ScrExportSettingsFileSetOptions

Selects Settings File (*.sef) options used with ScrExportSettingsFile.	
UI Command:	**Export** > **Settings File**. Use the check boxes to select export options.

Selects Settings File (*.sef) options used with ScrExportSettingsFile.	
Syntax:	`obj.ScrExportSettingsFileSetOptions(<optionArray>)`
Parameters:	ARRAY optionArray of BOOLs (1 = enable export; 0 = disable export) INDEX: • 0 – Plane Extents • 1 – Solder Balls and Bumps • 2 – Bondwires • 3 – Net Selections • 4 – Differential Nets and Extended Differential Nets • 5 – Extended Nets • 6 – Padstacks (includes Padshapes)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrExportSettingsFileSetOptions([1,0,1,0,0,1,0])`

ScrExportSNAReport

Exports a Signal Net Analyzer output report in either HTML or CSV format.	
UI Command:	**Simulation** > **Signal Net Analyzer**. From the **Signal Net Analyzer** window, click **Export Table**.
Syntax:	`obj.ScrExportSNAReport(<reportPath>, <netNameRegExp>, <lengthUnits>, <delayUnits>, <onlyDieToBall>,<exportToCSV>)`
Parameters:	BSTR reportPath (full file path for report to be exported) BSTR netNameRegExp (regular expression; use '.*' to include all nets) BSTR lengthUnits (pass empty string to use default 'mm') BSTR delayUnits (pass empty string to use default 'ps') BOOL onlyDieToBall (True to enforce **Only include paths from Die pin to BGA solderball** option; else False) BOOL exportToCSV (True to export to CSV file; False to export to HTML file)
Return Value:	INT • **0** – Success • **1** – Licensing Failure
PY Example:	**HTML File:**

Exports a Signal Net Analyzer output report in either HTML or CSV format.	

	`oDoc.ScrExportSNAReport ('C:/MyFiles/snaRpt.htm','.*','','',0,0)`
	CSV File:
	`oDoc.ScrExportSNAReport ('C:/MyFiles/snaRpt.csv','.*','microns','ns',0,1)`

ScrExportSyzSimToTouchstone

Exports SYZ simulation results to a specified touchstone file.	
UI Command:	**Results** > **SYZ** > **[Simulation Name]** > **Export Touchstone File**.
Syntax:	`obj.ScrExportSyzSimToTouchstone(<syzSimName>, <touchstonePath>)`
Parameters:	BSTR syzSimName BSTR touchstonefilePath (full path for the touchstone file to be generated) **Note:** Adding the file name and extension are not necessary; however, if the file name and extension are included, accurately specify the number of ports in the extension (i.e., *.s*N*p) or two extensions will appear in the exported file (e.g., testExport.s2p.s4p).
Return Value:	Memory address and integer in brackets (e.g., `<System.Int16 object at 0x00000000000000x2E [0]>`): INT: • **0** – Success • **1** – simType value is unacceptable.
PY Example:	`oDoc.ScrExportSyzSimToTouchstone('SYZ Sweep 1', 'C:/sweep1/testExport.s2p')`

ScrExportToTouchstone

Exports the active dataset as SYZ data in touchstone format.	
UI Command:	**Results** > **SYZ** > **[Simulation Name]** > **Export Touchstone File**.
Syntax:	`obj.ScrExportToTouchstone(<filePath>)`
Parameters:	BSTR touchstonefilePath (full path for the touchstone file to be generated) **Note:** Adding the file name and extension are not necessary; however, if the file name and extension are included, accurately specify the number of ports in the extension (i.e., *.s*N*p) or two extensions will appear in the exported file (e.g., testExport.s2p.s4p).
Return Value:	Memory address and integer in brackets (e.g., `<System.Int16 object at`

Exports the active dataset as SYZ data in touchstone format.	
	0x00000000000000x2E [0]>): INT: • **0** – Success • **1** – simType value is unacceptable.
PY Example:	`oDoc.ScrExportToTouchstone ('D:/Tests/testExport.s2p')`

ScrExportVprobeData

Exports voltage probe data for a specified AC sweep to a text file.	
UI Command:	None.
Syntax:	`obj.ScrExportVprobeData(<acSimName>, <bstrVprobeFilePath>)`
Parameters:	BSTR acSimName BSTR bstrVprobeFilePath (include file extension *.vpb)
Return Value:	INT • **0** – Success • **1** – AC simulation name does not exist OR file path cannot be created.
PY Example:	`oDoc.ScrExportVprobeData('AC Sweep 1', 'C:/Files/probe_data.vpb')`

ScrExportXfl

Exports an XFL file.	
UI Command:	**Export** > **XFL**.
Syntax:	`obj.ScrExportXfl(<filePath>)`
Parameters:	BSTR filePath (path for export)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrExportXfl('C:/Directory/filename.xfl')`

ScrExportZ0ScanReport

Generates an HTML report file containing impedance plots taken for every layer. **To specify additional report options, use ScrExportZ0ScanReportColorBarProperties and ScrExportZ0ScanReportScaling.**	
UI Command:	**Results > Impedance Scan > Export Report**.
Syntax:	`obj.ScrExportZ0ScanReport(<simName>, <fileNameWithPath>)`
Parameters:	BSTR simName BSTR fileNameWithPath (include file extension)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrExportZ0ScanReport('Z0 Scan 1', 'D:/AutomationTest/ScriptReportTest.htm')`

ScrExportZ0ScanReportColorBarProperties

Used before ScrExportZ0ScanReport to set color bar properties for impedance report generation.	
UI Command:	**Advanced** > **Color Scale**. Select **Color Bar Properties**.
Syntax:	`obj.ScrExportZ0ScanReportColorBarProperties (<numDiv>, <numDigit>, <bFlipColorScale>, <bWhiteBeyondMinMax>)`
Parameters:	INT numDiv INT numDigit BOOL bFlipColorScale BOOL bWhiteBeyondMinMax
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrExportZ0ScanReportColorBarProperties (14,3,False,True)`

ScrExportZ0ScanReportScaling

Used before ScrExportZ0ScanReport to set scaling options for impedance report generation.	
UI Command:	None.
Syntax:	`obj.ScrExportZ0ScanReportScaling(<minVal>, <maxVal>, <bLogScale>)`
Parameters:	DOUBLE minVal DOUBLE maxVal BOOL bLogScale (True = Log; False = Linear) **Use -1 for both minVal & maxVal to set the plot range back to original and also to set bLogScale independently without affecting the range.
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrExportZ0ScanReportScaling(0.00,50.0,True)`

ScrFitAll

Fits the design to the modeling workspace.	
UI Command:	**View > Fit All**.
Syntax:	`obj.ScrFitAll`
Parameters:	None.
Return Value:	None.
PY Example:	`oDoc.ScrFitAll()`

ScrFitSelection

Fits selected object(s) to the modeling workspace.	
UI Command:	**View > Fit Selection**.
Syntax:	`obj.ScrFitSelection`
Parameters:	None.
Return Value:	None.
PY Example:	`oDoc.ScrFitSelection()`

ScrFitToViewingWindow

Fits selected object(s) to the viewing window. See: GetCurrentViewingWindow.	
UI Command:	None.
Syntax:	`obj.ScrFitToViewingWindow(<unit>, <viewBox>)`
Parameters:	BSTR unit (unit of measure) ARRAY viewBox (structured array containing X,Y coordinates)
Return Value:	None.
PY Example:	`oDoc.ScrFitToViewingWindow('um',['-54','-27','54','27'])`

ScrFwsEnforceCausality

Controls option to check whether s-parameter data is passive.	
UI Command:	**Results** > **SYZ** > **[Simulation Name]** > **Compute FWS Sub-circuit**. Select **Enforce Causality** check box.
Syntax:	`obj.ScrFwsEnforceCausality(<flag>)`
Parameters:	BOOL flag (True to enforce)
Return Value:	None.
PY Example:	`oDoc.ScrFwsEnforceCausality(True)`

ScrGenerateConnectionReport

Exports a net connection report to a specified HTML file in the project directory.	
UI Command:	**Advanced** > **Export Connection Report**.
Syntax:	`obj.ScrGenerateConnectionReport(<fileName>)`
Parameters:	BSTR fileName (including file extension)
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrGenerateConnectionReport('connRpt.html')`

ScrGenerateICDieNetwork

Generates an IC die network.	
UI Command:	**Tools** > **Create IC Die Network**. Set options in **IC Die Network Generation** window.
Syntax:	`obj.ScrGenerateICDieNetwork (<icPartName>, <refDes>, <net>, <networkName>, <resVal>, <useStarPattern>, <capVal>, <esr>, <toNet>, <useAutoRadius>, <resRadius>, <capRadius>)`
Parameters:	BSTR icPartName BSTR refDes BSTR net BSTR networkName BSTR resVal BOOL useStarPattern (True = star pattern; False = grid pattern) BSTR capVal BSTR esr BSTR toNet BOOL useAutoRadius (True = auto radius; False = specify radius) BSTR resRadius (leave string blank for auto radius) BSTR capRadius (leave string blank for auto radius)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrGenerateICDieNetwork('CD90-P2913-1', 'U13', 'AGND', 'U13_AGND', '3.0mOhm', True, '', '', '', True, '', '')`

ScrGetActiveComponentList

Returns list of all active components of a specified type.	
UI Command:	None.
Syntax:	`obj.ScrGetActiveComponentList(<compType>)`
Parameters:	BSTR compType (can be "All", "RLC", or any category shown in the Components workspace, e.g. "Discrete Devices", "Pin Groups")
Return Value:	ARRAY nameList
PY Example:	`oDoc.ScrGetActiveComponentList('Current Sources')`

ScrGetBondwiresOfBwModel

Returns list of all bondwires associated with the given bondwire model.	
UI Command:	None.
Syntax:	`obj.ScrGetBondwiresOfBwModel(<modelName>)`
Parameters:	BSTR modelName
Return Value:	ARRAY bwList (list of bondwires)
PY Example:	`oDoc.ScrGetBondwiresOfBwModel('Z1-MT8530-LOOP1')`

ScrGetBwModelNameList

Returns list of all bondwire models.	
UI Command:	None.
Syntax:	`obj.ScrGetBwModelNameList()`
Parameters:	None.
Return Value:	ARRAY bwModelNameList (list of bondwire models)
PY Example:	`oDoc.ScrGetBwModelNameList()`

ScrGetCktElemTerminalNetNames

Returns names of the two nets to which a specified circuit element is connected.	
UI Command:	None.
Syntax:	`obj.ScrGetCktElemTerminalNetNames(<name>, <type>, <pnet>, <nnet>)`
Parameters:	BSTR name (the circuit element Reference Designator) BSTR type ("cap", "ind", "res", "port", "vprobe", "csource" or "vsource") ARRAY pnet ARRAY nnet
Return Value:	INT • **0** – Success • **1** – Either name OR type is not specified. • **2** – Type is unrecognized. • **3** – Name cannot be found. • **4** – Circuit element's positive terminal is floating (has not been connected to a net). • **5** – Circuit element's negative terminal is floating (has not been connected to a net).
PY Example:	`oDoc.ScrGetCktElemTerminalNetNames ('C1','cap',pnet,nnet)`

ScrGetComponentList

Returns an array containing names of all parts of the specified type.	
UI Command:	None.
Syntax:	`obj.ScrGetComponentList(<compType>)`
Parameters:	BSTR compType ("all", "rlc", "capacitors", "inductors", "resistors", "ports", "voltage probes", "current sources", "voltage sources", "integrated circuits", "input/output", or "discrete devices"; separate using a comma to specify more than one type)
Return Value:	ARRAY componentList
PY Example:	`oDoc.ScrGetComponentList('rlc, ports, integrated circuits')`

ScrGetCurrentViewingWindow

Returns the position of the viewing window.	
UI Command:	None.
Syntax:	`obj.ScrGetCurrentViewingWindow(<units>)`
Parameters:	BSTR units
Return Value:	ARRAY containing X,Y coordinates. Results can be used with ScrFitToViewingWindow.
PY Example:	`oDoc.ScrGetCurrentViewingWindow('um')`

ScrGetDcConnectedNets

Returns an array containing all nets and RLCs that form a connection to the specified net.	
UI Command:	None.
Syntax:	`obj.ScrGetDcConnectedNets(<netNameList>, <nets>, <cktElems>)`
Parameters:	ARRAY netNameList (input list of net names that are connected) ARRAY nets (list of net names that are DC-connected to the input list) ARRAY cktElems (names of circuit elements that form connections between the DC-connected nets)
Return Value:	BOOL • **0** – Success • **1** – Failure
PY Example:	`oDoc.ScrGetDcConnectedNets(netNameList, nets, cktElems)`

ScrGetDcThermalDataDir

Sets variable thermalDataDirBstr to the path of the DC Thermal directory.	
UI Command:	None.
Syntax:	`obj.ScrGetDcThermalDataDir(<simName>, <thermalDataDirBstr>)`
Parameters:	BSTR simName (DC simulation name) ARRAY thermalDataDirBstr (empty)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`thermalDataDirBstr = []` `oDoc.ScrGetDcThermalDataDir('DC IR Sim 1',thermalDataDirBstr)`

ScrGetDesignBoundingBox

Assigns the design's bounding box, in specified units, to variable designBBox.	
UI Command:	None.
Syntax:	`obj.ScrGetDesignBoundingBox(<units>, <designBBox>)`
Parameters:	BSTR units ('um', 'in', 'm', 'microns', 'mils', 'mm', 'cm', 'inches', or 'meters') ARRAY designBBox (empty)
Return Value:	ARRAY designBBox populates with 3D bounding box coordinates, represented by corner points (x1,y1,z1) and (x2, y2, z2). BOOL: • **1** – Success • **0** – Failure
PY Example:	`designBBox= []` `oDoc.ScrGetDesignBoundingBox('mm',designBBox)`

ScrGetDieLayerName

Returns the layer on which a specified die exists.	
UI Command:	None.
Syntax:	`obj.ScrGetDieLayerName(<dieName>)`
Parameters:	BSTR dieName
Return Value:	BSTR layer name
PY Example:	`oDoc.ScrGetDieLayerName('DIE')`

ScrGetDieNameList

Returns an array containing all die names.	
UI Command:	None.
Syntax:	`obj.ScrGetDieNameList()`
Parameters:	None.
Return Value:	ARRAY dieNameList
PY Example:	`oDoc.ScrGetDieNameList()`

ScrGetExcitationCoord

Returns excitation coordinates of a specified terminal on a net.	
UI Command:	None.
Syntax:	`obj.ScrGetExcitationCoord(<netName>, <terminalName>)`
Parameters:	STRING netName STRING terminalName (name of a terminal on the specified net)
Return Value:	ARRAY containing X,Y coordinates
PY Example:	`oDoc.ScrGetExcitationCoord(netName, terminalName)`

ScrGetLayerMaterial

Returns the material of a specified layer.	
UI Command:	None.
Syntax:	`obj.ScrGetLayerMaterial(<layerName>)`
Parameters:	BSTR layerName
Return Value:	BSTR materialName
PY Example:	`oDoc.ScrGetLayerMaterial('BOTTOM')`

ScrGetLayerNameList

Returns an array containing names of all layers in the project.	
UI Command:	None.
Syntax:	`obj.ScrGetLayerNameList()`
Parameters:	None.
Return Value:	ARRAY layerNameList
PY Example:	`oDoc.ScrGetLayerNameList()`

ScrGetLayerThickness

Returns the thickness of a specified layer.	
UI Command:	None.
Syntax:	`obj.ScrGetLayerThickness(<layerName>)`
Parameters:	BSTR layerName
Return Value:	DOUBLE layer thickness
PY Example:	`oDoc.ScrGetLayerThickness('TOP_LAYER')`

ScrGetLayerType

Returns a specified layer's type.	
UI Command:	None.
Syntax:	`obj.ScrGetLayerType(<layerName>)`
Parameters:	BSTR layerName
Return Value:	INT • **0** – Dielectric • **1** – Metal • **2** – Wirebond
PY Example:	`oDoc.ScrGetLayerType('SURFACE_LAYER')`

ScrGetLayoutLengthUnit

Returns the current unit of measure.	
UI Command:	None.
Syntax:	`obj.ScrGetLayoutLengthUnit()`
Parameters:	None.
Return Value:	BSTR unit
PY Example:	`oDoc.ScrGetLayoutLengthUnit()`

ScrGetMetalLayerFillerMaterial

Returns a specified metal layer's filler material.	
UI Command:	None.
Syntax:	`obj.ScrGetMetalLayerFillerMaterial(<layerName>)`
Parameters:	BSTR layerName
Return Value:	BSTR materialName
PY Example:	`oDoc.ScrGetMetalLayerFillerMaterial('LAYER3')`

ScrGetNetlistOfBondwireProfile

Returns a list of nets associated with a given bondwire profile	
UI Command:	None.
Syntax:	`obj.ScrGetNetlistOfBondwireProfile(<profileName>)`
Parameters:	BSTR profileName
Return Value:	ARRAY netNameList
PY Example:	`oDoc.ScrGetNetlistOfBondwireProfile('Bw Profile')`

ScrGetNetNameList

Returns a list of nets in the project.	
UI Command:	None.
Syntax:	`obj.ScrGetNetNameList()`
Parameters:	None.
Return Value:	ARRAY netNameList
PY Example:	`oDoc.ScrGetNetNameList()`

ScrGetNetsAndCktElemsBetweenComponents

Returns a list of all power/ground nets and RLCs that form a connection between specified components.	
UI Command:	None.
Syntax:	`obj.ScrGetNetsAndCktElemsBetweenComponents (<partName1>, <refDes1>, <partName2>, <refDes2>, <nets>, <cktElems>)`
Parameters:	BSTR partName1 BSTR refDes1 BSTR partName2 BSTR refDes2 ARRAY nets (empty) ARRAY cktElems (empty)
Return Value:	ARRAY nets (filled) ARRAY cktElems (filled) INT outcome: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrGetNetsAndCktElemsBetweenComponents ('288DIMMDDR4_EDGE_CONN-BASE', 'J1', 'DDR4_X4_ FBGA78-10X13','U1', nets2, elems2)`

ScrGetNetsAndCktElemsBetweenNets

Returns a list of all nets and RLCs that form a connection between specified components.	
UI Command:	None.
Syntax:	`obj.ScrGetNetsAndCktElemsBetweenNets(<net1>, <net2>, <refDes2>, <nets>, <cktElems>)`
Parameters:	BSTR net1 BSTR net2 ARRAY nets (empty) ARRAY cktElems (empty)
Return Value:	ARRAY nets (filled) ARRAY cktElems (filled) INT outcome: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrGetNetsAndCktElemsBetweenNets('VDD', 'GND', nets, elems)`

ScrGetNumSinks

Returns the number of sink terminals on a net.	
UI Command:	None.
Syntax:	`obj.ScrGetNumSinks(<netName>)`
Parameters:	STRING netName
Return Value:	INTEGER (number of sink terminals on the specified net)
PY Example:	`oDoc.ScrGetNumSinks(netName)`

ScrGetNumSources

Returns the number of source terminals on a net.	
UI Command:	None.
Syntax:	`obj.ScrGetNumSources(<netName>)`
Parameters:	STRING netName
Return Value:	INTEGER (number of source terminals on the specified net)
PY Example:	`oDoc.ScrGetNumSources(netName)`

ScrGetPadstackNameList

Returns a list of all padstack names in the project.	
UI Command:	None.
Syntax:	`obj.ScrGetPadstackNameList()`
Parameters:	None.
Return Value:	ARRAY padstackNameList
PY Example:	`oDoc.ScrGetPadstackNameList()`

ScrGetPinGroupNameList

Returns a list of all pin group names on specified part(s) or in the entire project.	
UI Command:	None.
Syntax:	`obj.ScrGetPinGroupNameList(<partName>,<refDes>)`
Parameters:	BSTR partName (leave empty to search entire project) BSTR refDes (leave empty to search entire project)
Return Value:	ARRAY pinGroupNameList
PY Example:	`oDoc.ScrGetPinGroupNameList()`

ScrGetPinPadstackName

Returns the padstack name associated with a specified pin.	
UI Command:	None.
Syntax:	`obj.ScrGetPinPadstackName(<partName>, <refDes>, <pinName>)`
Parameters:	BSTR partName BSTR refDes BSTR pinName
Return Value:	BSTR padstackName
PY Example:	`oDoc.ScrGetPinPadstackName('DIE','U1','394')`

ScrGetPinsOnNet

Returns a list of identifying information for pins on a specified net.	
UI Command:	None.
Syntax:	`obj.ScrGetPinsOnNet(<netName>, <partName>, <refDes>, <pinNames>, <partNames>, <refDesOut>)`
Parameters:	BSTR netName BSTR partName (use empty string or "any" to disable this filter) BSTR refDes (use empty string or "any" to disable this filter) ARRAY pinNames (empty) ARRAY partNames (empty) ARRAY refDesOut (empty)
Return Value:	ARRAY pinNames (filled) ARRAY partNames (filled) ARRAY refDesOut (filled) BOOL outcome: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrGetPinsOnNet ('GND', 'ANY', '', pins, parts, refDesList)`

ScrGetPinsOnPart

Returns a list of identifying information for pins on a specified part.	
UI Command:	None.
Syntax:	`obj.ScrGetPinsOnPart(<partName>, <refDes>, <pinNames>, <netNames>)`
Parameters:	BSTR partName BSTR refDes ARRAY pinNames (empty) ARRAY netNames (empty)
Return Value:	ARRAY pinNames (filled) ARRAY netNames (filled) BOOL outcome: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrGetPinsOnPart('T1_A', 'U1', pins, nets)`

ScrGetPwrGndNetNameList

Returns a list of Power/Ground nets in the project.	
UI Command:	None.
Syntax:	`obj.ScrGetPwrGndNetNameList()`
Parameters:	None.
Return Value:	ARRAY pwrGndNetNameList
PY Example:	`oDoc.ScrGetPwrGndNetNameList()`

ScrGetRLCsBetweenNets

Finds RLCs that directly connect any pair of nets from the specified list.	
UI Command:	None.
Syntax:	`obj.ScrGetRLCsBetweenNets(<netNameList>, <includeR>, <includeL>, <includeC>, <ctkElems>)`
Parameters:	ARRAY netNameList BOOL includeR BOOL includeL BOOL includeC ARRAY cktElems (empty)
Return Value:	ARRAY cktElems (filled) INT outcome: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrGetRLCsBetweenNets(netsIn1, False, False, True, elems1)`

ScrGetSinkNameList

Returns a list of the sink terminals on a net.	
UI Command:	None.
Syntax:	`obj.ScrGetSinkNameList(<netName>)`
Parameters:	STRING netName
Return Value:	ARRAY (list of all sink terminals on the specified net)
PY Example:	`oDoc.ScrGetSinkNameList(netName)`

ScrGetSourceNameList

Returns a list of the source terminals on a net.	
UI Command:	None.
Syntax:	`obj.ScrGetSourceNameList(<netName>)`
Parameters:	STRING netName
Return Value:	ARRAY list of sources (list of all source terminals on the specified net)
PY Example:	`oDoc.ScrGetSourceNameList(netName)`

ScrGetStackupLayerThickness

Returns the thickness of a specified layer.	
UI Command:	None.
Syntax:	`obj.ScrGetStackupLayerThickness(<layerName>)`
Parameters:	BSTR layerName
Return Value:	BSTR layer thickness
PY Example:	`oDoc.ScrGetStackupLayerThickness('Layer 1')`

ScrGetUniqueSimulationName

Generates a unique simulation name based on a given simulation type.	
UI Command:	None.
Syntax:	`obj.ScrGetUniqueSimulatioName(<simType>)`
Parameters:	BSTR simType ("ac", "dc", "eigen", "ff", "nf", "syz", or "hfss_syz")
Return Value:	BSTR uniqueSimName
PY Example:	`oDoc.ScrGetUniqueSimulationName('nf')`

ScrImportAnf

Imports a specified Ansys Neutral File (*.anf)	
UI Command:	**Import** > **ANF**.
Syntax:	`obj.ScrImportAnf(<anfBstr>)`
Parameters:	BSTR anfBstr (file path)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrImportAnf('C:/anfFiles/design1.anf')`

ScrImportCapacitorDeratingTable

Assigns capacitor derating attributes and opens modified SIwave file.	
UI Command:	**Simulation** > **Options**. Under **DC Bias**, click **Open**.
Syntax:	`obj.ScrImportCapacitorDeratingTable (<bDeratingTablePath>, <errors>)`
Parameters:	BSTR bDeratingTablePath ARRAY errors
Return Value:	INT number of capacitors in the derating file that could not be found in the design. • **-1** – Failure
PY Example:	`oDoc.ScrImportCapacitorDeratingTable ('C:/csvfiles/derating_table.csv','errors')`

ScrImportComponentFile

Imports a specified component file (*.cmp)	
UI Command:	**Import** > **Component File**.
Syntax:	`obj.ScrImportComponentFile(<cmpBstr>)`
Parameters:	BSTR cmpBstr (file path)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrImportComponentFile ('C:/ComponentFiles/design1.cmp')`

ScrImportComponentMapFile

Imports a specified component mapping file (*.cmp)	
UI Command:	**Import** > **Component File**.
Syntax:	`obj.ScrImportComponentMapFile(<fileName>)`
Parameters:	BSTR fileName (full path)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrImportComponentMapFile ('C:/ComponentFiles/design1.cmp')`

ScrImportCpaSimulationOptions

Loads an SIwave Simulation Settings file (*.sws).	
UI Command:	Click **Simulation**. From the **CPA** area, select **Options**. From the options window, click **Import Settings**.
Syntax:	`obj.ScrImportCpaSimulationOptions(<filePath>)`
Parameters:	BSTR filePath (full path)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrImportCpaSimulationOptions('C:/Path/simulation_settings.sws')`

ScrImportCpmOrPloc

Imports a CPM or PLOC file.	
UI Command:	**Import** > **Ansys CPM/PLOC File**.
Syntax:	`obj.ScrImportCpmOrPloc(<plocFileName>, <partName>, <refName>, <controlFileName>)`
Parameters:	BSTR plocFileName (can also be CPM file name) BSTR partName BSTR refName (Reference Designator) BSTR controlFileName (containing keywords listed below; for auto connection, use empty string)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrImportCpmOrPloc ('C:/SAMPLEFILES/cpmfile.cpm','CSP_BGA','BGA','')`

Option Keywords and Example Values

DieCenterX -149.997058

DieCenterY 484.129583

FlipDie TRUE

RotationAngle 0

ScalingFactor 0.9

Tolerance 0.0

CreatePorts TRUE

CreateSources FALSE

ScrImportDDXFile

Imports a DDX file; the file's settings are substituted for the active project's settings when the DDR wizard is run and can be saved to the project afterward.	
UI Command:	**Simulation** > **DDRwizard** > **Load Configuration File**.
Syntax:	`obj.ScrImportDDXFile(<filename>)`
Parameters:	BSTR filename (full file path)
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrImportDDXFile('c:/example_file.ddx')`

ScrImportEDB

Imports an EDB folder into a new project.	
UI Command:	**Import** > **Ansys EDB**.
Syntax:	`obj.ScrImportEDB (<folderPath>)`
Parameters:	BSTR filePath
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oApp.ScrImportEDB('C:/Files/Edb')`

ScrImportGDSII

Imports a GDSII file (*.strm, *.gds) into a new project.	
UI Command:	**Import** > **GDSII**.
Syntax:	`obj.ScrImportGDSII(<filePath>, <controlFilePath>)`
Parameters:	BSTR filePath BSTR controlFilePath (pass an empty string to use the default control file)
Return Value:	INT: • **0** – Success • **1** – Failure generating control file • **2** – Error translating the file
PY Example:	`oDoc.ScrImportGDSII('C:/Files/MyProject.gds','')`

ScrImportIPC2581

Imports an IPC2581 file, as well as optional RLC part value and XML control files, into a new project	
UI Command:	**Import** > **IPC2581**.
Syntax:	`obj.ScrImportIPC2581 (<designFile>, <controlFile>, <partFile>)`
Parameters:	BSTR designFile (full path) BSTR controlFile (full path, use empty string for none) BSTR partFile (full path, use empty string for none)
Return Value:	INT: • **0** – Success • **1** – Error translating the file. • **2** – Error reading part mapping file.
PY Example:	`oApp.ScrImportIPC2581('C:/Files/mydesign.cvg', 'C:/Files/controlfile.xml', 'C:/Files/partfile.dat')`

ScrImportLayerStackup

Imports a layer stackup file.	
UI Command:	**Import** > **Layer Stackup**.
Syntax:	`obj.ScrImportLayerStackup(<fileName>)`
Parameters:	BSTR fileName (full path)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrImportLayerStackup('C:/StackupFiles/stack1.stk')`

ScrImportLayerStackupFile

Imports a layer stackup file.	
UI Command:	**Import** > **Layer Stackup**.
Syntax:	`obj.ScrImportLayerStackupFile(<fileName>)`
Parameters:	BSTR fileName (full path)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrImportLayerStackupFile ('C:/StackupFiles/stack1.stk')`

ScrImportLayerStackupXML

Imports a layer stackup XML file.	
UI Command:	**Import** > **Layer Stackup XML**.
Syntax:	`obj.ScrImportLayerStackupXML(<filePath>)`
Parameters:	BSTR filePath (full path)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrImportLayerStackupXML ('C:/StackupFiles/stack1.xml')`

ScrImportPmap

Imports a *.pmap file to map locally defined capacitor and inductor part names to s-parameter models from the component library	
UI Command:	None.
Syntax:	`obj.ScrImportPmap(<fileName>)`
Parameters:	BSTR fileName (full path)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrImportPmap('C:/Files/foo.pmap')`

ScrImportSettingsFile

Loads an SIwave Settings file (*.sef).	
UI Command:	**Import** > **Settings File**.
Syntax:	`obj.ScrImportSettingsFile(<filePath>)`
Parameters:	BSTR filePath (full path)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrImportSettingsFile('C:/Path/my_settings.sef')`

ScrImportSIwaveSimulationOptions

Loads an SIwave Simulation Settings file (*.sws).	
UI Command:	Click **Simulation**. From the **SIwave** area, select **Options**. From the options window, click **Import Settings**.
Syntax:	`obj.ScrImportSIwaveSimulationOptions(<filePath>)`
Parameters:	BSTR filePath (full path)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrImportSIwaveSimulationOptions ('C:/Path/simulation_settings.sws')`

ScrImportXfl

Imports an XFL file.	
UI Command:	**Import** > **XFL File**.
Syntax:	`obj.ScrImportXfl(<filePath>)`
Parameters:	BSTR filePath (full path)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrImportXfl('C:/Directory/filename.xfl')`

ScrInterpolateSpectrum

Specifies interpolation option for Frequency Sweep, Far Field, or Near Field simulations. **Important:** Interpolation is active by default and Ansys recommends not changing this setting.	
UI Command:	From the **Simulation** menu, click either **Compute Frequency Sweep**, **Compute Far Field**, or **Compute Near Field**. Then, select or deselect the **Interpolate spectrum at missing frequency points** check box .
Syntax:	`obj.ScrInterpolateSpectrum(<interpolate>)`
Parameters:	BOOL interpolate
Return Value:	None.
PY Example:	`oDoc.ScrInterpolateSpectrum(True)`

ScrLogMessage

Logs a specified message to the Messages window and to the project *.log file.	
UI Command:	None.
Syntax:	`obj.ScrLogMessage(<message>)`
Parameters:	BSTR message
Return Value:	None.
PY Example:	`oDoc.LogMessage('This is my message.')`

ScrMergeConnectedNets

Merges connected nets in a specified list.	
UI Command:	None.
Syntax:	`obj.ScrMergeConnectedNets(<inNetNameList>)`
Parameters:	ARRAY inNetNameList
Return Value:	ARRAY outNetNameList (if no nets are connected, this will be the same as inNetNameList)

PY Example:	`inNetNameList = ['NET_1','NET_2']`
	
	`outNetNameList = obj.ScrMergeConnectedNets (inNetNameList)`

ScrNetGetLength

Computes the shortest length between a specified source and sink.	
UI Command:	None.
Syntax:	`Dim length = obj.ScrNetGetLength(<netName>, <sourceName>, <sinkName>)`
Parameters:	BSTR netName BSTR sourceName BSTR sinkName
Return Value:	DOUBLE length (returns 0.0 if net, source, or sink does not exist)
PY Example:	`oDoc.ScrNetGetLength('HOT_INS_DIS', 'D1:HOT_INS_DIS:292', 'P1:HOT_INS_DIS:E4')`

ScrNetIsDisjoint

Checks whether a net is disjoint.	
UI Command:	None.
Syntax:	`obj.ScrNetIsDisjoint(<netName>)`
Parameters:	BSTR netName
Return Value:	BOOL • **0** – Not Disjoint • **1** – Disjoint
PY Example:	`oDoc.ScrNetIsDisjoint('MY-NET')`

ScrNetIsSelected

Checks whether a net is selected.	
UI Command:	None.
Syntax:	`obj.ScrNetIsSelected(<netName>)`
Parameters:	BSTR netName
Return Value:	BOOL • **0** – Not Selected • **1** – Selected
PY Example:	`oDoc.ScrNetIsSelected('MY-NET')`

ScrNetSeparate

If a net is disjoint, separates it and sets new net names.	
UI Command:	None.
Syntax:	`obj.ScrNetSeparate(<netName>)`
Parameters:	BSTR netName
Return Value:	None.
PY Example:	`oDoc.ScrNetSeparate('MY-NET')`

ScrNetSetDummy

Sets a specified net to be a dummy net and appends DUMMY_ to the front of the net name.	
UI Command:	None.
Syntax:	`obj.ScrNetSetDummy(<netName>)`
Parameters:	BSTR netName
Return Value:	None.
PY Example:	`oDoc.ScrNetSetDummy('MY-NET')`

ScrNetSetSelected

Selects or deselects a specified net.	
UI Command:	None.
Syntax:	`obj.ScrNetSetSelected(<netName>, <select>)`
Parameters:	BSTR netName BOOL select (1 = select; 0 = deselect)
Return Value:	None.
PY Example:	`oDoc.ScrNetSetSelected('MY-NET', 1)`

ScrPlaceCircuitElement

Attaches a circuit element of the specified type to the design. The element can be connected between any two points, pins or pin groups.	
UI Command:	**Home** > **Circuit Elements** > **Add [Capacitor / Inductor / Resistor / Port / Voltage Probe / Voltage Source / Current Source]**.
Syntax:	`obj.ScrPlaceCircuitElement(<givenElementName>, <givenPartName>, <circuitElementType>, <posTermConnectionType>, <posTermParam1>, <posTermParam2>, <posTermParam3>, <refTermConnectionType>, <refTermParam1>, <refTermParam2>, <refTermParam3>, <capVal>, <indVal>, <resVal>, <refZRe>, <mag>, <phase>)`
Parameters:	BSTR givenElementName (name of circuit element to be created) BSTR givenPartName (part name of circuit element to be created) INT circuitElementType (0 = capacitor; 1 = inductor; 2 = resistor; 3 = port; 4 = current source; 5 = voltage source; 6 = voltage probe) INTposTermConnectionType (0 = attachment to PIN; 1 = attachment to PIN GROUP; 2 = attachment at COORDINATES) BSTR posTermParam1 (partName or x) BSTR posTermParam2 (refDes or y) BSTR posTermParam3 (pinName, groupName, or layerName) INT refTermConnectionType (0 = attachment to PIN; 1 = attachment to PIN GROUP; 2 = attachment at COORDINATES) BSTR refTermParam1 (partName or x) BSTR refTermParam2 (refDes or y) BSTR refTermParam3 (pinName, groupName, or layerName) double capVal (capacitance) double indVal (inductance) double resVal (resistance) double refZRe (impedance) double mag (magnitude) double phase (phase)

Attaches a circuit element of the specified type to the design. The element can be connected between any two points, pins or pin groups.	
	Use an empty string for any parameters that are not applicable.
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrPlaceCircuitElement ('cap_1', 'cap_part', 0, 1, '100354431', 'Q3', 'pinGrp_4', 1, '100349132', 'U26', 'pinGroup_10', 4.7e-9, 2e-11, 3e-3, 0.0, 0.0, 0.0)`

ScrPlaceCircuitElementsToNearestRefPin

Creates ports or sources connecting to the nearest reference pins of the given reference terminal net.	
UI Command:	None.
Syntax:	`obj.ScrPlaceCircuitElementsToNearestRefPin (<circuitElementType <val>, <posPartName>, <posUnitName>, <posNetName>, <refPartName>, <refUnitName>, <refNetName>, <newElemList>)`
Parameters:	INT circuitElementType (3 = port; 4 = current source; 5 = voltage source) DOUBLE val BSTR posPartName BSTR posUnitName BSTR posNetName BSTR refPartName BSTR refUnitName BSTR refNetName ARRAY newElemList
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrPlaceCircuitElementsToNearestRefPin (3, 50.0, 'SQFP28X28_208', 'U1', 'ARBLINK', 'SQFP28X28_208', 'U2', 'GND', newElemList)`

ScrPlaceFreqDependentSrc

Creates a frequency dependent source.	
UI Command:	None.
Syntax:	`obj.ScrPlaceFreqDependentSrc(<givenElementName>, <circuitElementType>, <posTermConnectionType>, <posTermParam1>, <posTermParam2>, <posTermParam3>, <refTermConnectionType>, <refTermParam1>, <refTermParam2>, <refTermParam3>, <filename>)`
Parameters:	BSTR givenElementName INT circuitElementType (4 = current source; 5 = voltage source) INT posTermConnectionType (0 = pin; 1 = pin group; 2 = coordinate) BSTR posTermParam1 (part name for pins or pin groups; x coordinate for coordinate connections) BSTR posTermParam2 (reference designator for pins or pin groups; y coordinate for coordinate connections) BSTR posTermParam3 (pin name or pin group name; ignored for coordinate connections) INT refTermConnectionType (0 = pin; 1 = pin group; 2 = coordinate) BSTR refTermParam1 (part name for pins or pin groups; x coordinate for coordinate connections) BSTR refTermParam2 (reference designator for pins or pin groups; y coordinate for coordinate connections) BSTR refTermParam3 (pin name or pin group name; ignored for coordinate connections) BSTR filename
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrPlaceFreqDependentSrc('I1', 4, 2, '1.0', '1.0', 'METAL-1', 2, '2.0', '1.0', 'METAL-1', 'e:/SrcFreqData.txt')`

ScrPlacePortsAcrossRLCs

Creates ports across specified RLCs.	
UI Command:	None.
Syntax:	`obj.ScrPlacePortsAcrossRLCs(<zref>, <rlcName>, <rlcType>, <portsCreated>)`
Parameters:	DOUBLE zref BSTR rlcName BSTR rlcType ('cap' for capacitor; 'ind' for inductor; 'res' for resistor) ARRAY portsCreated (empty)
Return Value:	ARRAY portsCreated (list of port names) INT outcome: • 0 – Success • 1 – Name or type is an empty string • 2 – rlcType is invalid • 3 – Specified RLC could not be found • 4 – Error filling the array portsCreated
PY Example:	`portsCreated=[]` `oDoc.ScrPlacePortsAcrossRLCs (50,'C3A3','cap',portsCreated)`

ScrPlacePortsAtPinsOnSelectedNets

Creates ports with specified impedance for each of the pins found in a specified reference net.	
UI Command:	None.
Syntax:	`obj.ScrPlacePortsAtPinsOnSelectedNets(<zref>, <refNetName>, <connectToPinGroup>, <portsCreated>)`
Parameters:	DOUBLE zref (impedance) BSTR refNetName (reference net) BOOL connectToPinGroup ARRAY portsCreated (empty)
Return Value:	ARRAY portsCreated (filled) INT: • **0** – Success • **Else** – Failure
PY Example:	`portsCreated = []` `oDoc.ScrPlacePortsAtPinsOnSelectedNets(50.0, 'MY_NET', 1, portsCreated)`

ScrPlacePortsAtPinsOnSelectedNetsExcludePart

Creates ports between pins on the selected nets and the reference net unless the pins belong to the specified part.	
UI Command:	None.
Syntax:	`obj.ScrPlacePortsAtPinsOnSelectedNetsExcludePart (<zref>, <refNetName>, <partName>, <refDes>, <connectToPinGroup>, <portsCreated>)`
Parameters:	DOUBLE zref BSTR refNetName BSTR partName BSTR refDes BOOL connectToPinGroup ARRAY portsCreated (empty)
Return Value:	ARRAY portsCreated (filled) INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrPlacePortsAtPinsOnSelectedNetsExcludePart (50.0, 'GND', 'T1_A', 'U1', false, ports)`

ScrPlacePortsAtPinsOnSelectedNetsPinNamesOut

Creates ports between pins on the selected nets and the reference net while outputting the port names and pin names.	
UI Command:	None.
Syntax:	`obj.ScrPlacePortsAtPinsOnSelectedNetsPinNamesOut (<zref>, <refNetName>, <connectToPinGroup>, <portsCreated>, <posPinNames>, <refPinNames>)`
Parameters:	DOUBLE zref BSTR refNetName BOOL connectToPinGroup (True = connect; False = do not connect) ARRAY portsCreated (empty) ARRAY posPinNames (empty) ARRAY refPinNames (empty)
Return Value:	ARRAY portsCreated (filled) ARRAY posPinNames (filled) ARRAY refPinNames (filled) INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrPlacePortsAtPinsOnSelectedNetsPinNamesOut (50.0, 'GND', false, ports, posPins, refPins)`

ScrPlotResModeVoltageDiff

Generates voltage difference surface plots for the specified resonant mode simulation. **Note:** A layer pair can be specified and, if present, will restrict the voltage difference computation to just these two layers. If the layer pair is omitted, plots will be generated for all possible layer pair combinations.	
UI Command:	None.
Syntax:	`obj.ScrPlotResModeVoltageDiff(<resonantSimName>, <layerA>, <layerB>)`
Parameters:	BSTR resonantSimName BSTR layerA BSTR layerB
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrPlotResModeVoltageDiff('Resonant Sim 1', 'SURFACE', 'INNER1')`

ScrPreserveNetsGivenInFile

Deletes all nets except those specified in a text file. **Note:** The file should contain net names in quotation marks.	
UI Command:	None.
Syntax:	`obj.ScrPreserveNetsGivenInFile(<fileName>)`
Parameters:	BSTR fileName (full path)
Return Value:	None.
PY Example:	`oDoc.ScrPreserveNetsGivenInFile('C:/My Files/nets.txt')`

ScrReadDCLoopResInfo

Given the name of an SIwave DC simulation, exports a list of sources and a corresponding list of loop resistance values.	
UI Command:	**Results** > **DC IR Drop** > **Loop Resistance Info**.
Syntax:	`obj.ScrReadDCLoopResInfo(<simName>, <sourceNames>, <loopResData>)`
Parameters:	BSTR simName ARRAY sourceNames (empty) ARRAY loopResData (empty)
Return Value:	ARRAY sourceNames (filled) ARRAY loopResData (filled) INT: • **0** – Success • **Else** – Failure

PY Example:	`sourceNames = []`
	`loopResData = []`
	`oDoc.ScrReadDCLoopResInfo('DC IR Sim 1', sourceNames, loopResData)`

ScrRestoreResonantModeMinFreq

Restores the minimum suggested resonant mode frequency.	
UI Command:	**Simulation** > **Compute Resonant Modes**. Click **Restore Recommended Minimum Frequency**.
Syntax:	`obj.ScrRestoreResonantModeMinFreq()`
Parameters:	None.
Return Value:	None.
PY Example:	`oDoc.ScrRestoreResonantModeMinFreq()`

ScrRestoreSIwaveDCGeometryProcessingDefaultValues

Restores the default DC geometry processing values.	
UI Command:	From the **Simulation** tab > **SIwave** area, select **Options** to open the **SIwave Options** window. Navigate to the **DC Advanced** tab, then click **Restore Defaults** adjacent to any/all of the three parameters at the top of the window (i.e., **Ignore**

Restores the default DC geometry processing values.	
	geometry smaller than, **Ignore voids smaller than**, and/or **Snap vertices separated by less than**).
Syntax:	`obj.ScrRestoreSIwaveDCGeometryProcessingDefaultValues()`
Parameters:	None.
Return Value:	None.
PY Example:	`oDoc.ScrRestoreSIwaveDCGeometryProcessingDefaultValues()`

ScrRestoreSIwaveSIPIGeometryProcessingDefaultValues

Restores the default SI/PI geometry processing values.	
UI Command:	From the **Simulation** tab > **SIwave** area, select **Options** to open the **SIwave Options** window. Navigate to the **SI/PI Advanced** tab, then click **Restore Defaults** adjacent to any/all of the four parameters in the **Geometry Processing** area (i.e., **Do not mesh voids smaller than**, **Explicitly mesh pads larger than**, **Ignore planes smaller than**, and/or **Snap vertices separated by less than**).
Syntax:	`obj.ScrRestoreSIwaveSIPIGeometryProcessingDefaultValues()`
Parameters:	None.
Return Value:	None.
PY Example:	`oDoc.ScrRestoreSIwaveSIPIGeometryProcessingDefaultValues()`

ScrRunDcSimulation

Runs a DC IR simulation.	
UI Command:	**Simulation** > **Compute DC IR**.
Syntax:	`obj.ScrRunDcSimulation(<reprocessGeom>)`
Parameters:	INT reprocessGeom (1 = runs the simulation; 0 = sets up the simulation but does not run it)
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrRunDcSimulation(1)`

ScrRunDDRWizard

Runs the DDR wizard using the active project's current settings.	
UI Command:	**Simulation** > **DDRwizard**.
Syntax:	`obj.ScrRunDDRWizard()`
Parameters:	None.
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrRunDDRWizard()`

ScrRunFarFieldSimulation

Runs a Far Field simulation.	
UI Command:	**Simulation** > **Compute Far Field**.
Syntax:	`obj.ScrRunFarFieldSimulation()`
Parameters:	None.
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrRunFarFieldSimulation()`

ScrRunFrequencySweepSimulation

Runs a Frequency Sweep simulation.	
UI Command:	**Simulation** > **Compute Frequency Sweeps**.
Syntax:	`obj.ScrRunFrequencySweepSimulation()`
Parameters:	None.
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrRunFrequencySweepSimulation()`

ScrRunIcepakSimulation

Runs an Icepak simulation.	
UI Command:	**Simulation** > **Icepak**.

Runs an Icepak simulation.	
Syntax:	`obj.ScrRunIcepakSimulation(<icepakSimName>, <dcSimName>)`
Parameters:	BSTR icepakSimName BSTR dcSimName
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrRunIcepakSimulation('Icepak 4', 'DC IR Sim 1')`

ScrRunInducedVoltageSimulation

Runs a Plane Wave Induced Voltage simulation for one frequency with a single incident wave.	
UI Command:	**Simulation > Compute Induced Voltage**.
Syntax:	`obj.ScrRunInducedVoltageSimulation(<freq>, <phi>, <theta>, <e0_phi>, <e0_theta>, <magnitude>)`
Parameters:	DOUBLE freq DOUBLE phi (for incident vector in spherical system) DOUBLE theta (for incident vector in spherical system) DOUBLE e0_phi (for polarization vector in XY cartesian system on the orthogonal plane of the incident vector) DOUBLE e0_theta (for polarization vector in XY cartesian system on the orthogonal plane of the incident vector) DOUBLE magnitude
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrRunInducedVoltageSimulation(1500000, 10, 45, 1, 3, 1)`

ScrRunNearFieldSimulation

Note:

Use after ScrSetNearFieldExportDataPath.

Runs a Near Field simulation.	
UI Command:	**Simulation** > **Compute Near Field**.
Syntax:	`obj.ScrRunNearFieldSimulation(<freq>, <computeH>)`
Parameters:	DOUBLE freq(uency) INT computeH (obsolete variable; use either 0 or 1)
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrRunNearFieldSimulation(5.0, 0)`

ScrRunResonantModeSimulation

Runs a Resonant Modes simulation.	
UI Command:	**Simulation** > **Compute Resonant Modes**.
Syntax:	`obj.ScrRunResonantModeSimulation()`
Parameters:	None.
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrRunResonantModeSimulation()`

ScrRunSimulation

Runs the specified simulation.	
UI Command:	**Simulation** > **[Simulation Type]**.
Syntax:	`obj.ScrRunSimulation(<simType>, <simName>)`
Parameters:	BSTR simType (choose from: "ac", "dc", "ddrwizard", "eigen", "ff", "nf", "psi_ac", "psi_syz", "syz", "hfss_syz", "pdn", "cpa", "icepak", "iv", "emi_scan", "em_mttf", "z0_scan", "crosstalk_scan", "td_crosstalk_scan") BSTR simName
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrRunSimulation('syz', 'SYZ Sweep 1')`

ScrRunSpiceSubcktSimulation

Computes Spice Subcircuit based on a previously run SYZ sweep.	
UI Command:	**Results** > **SYZ** > **[Simulation Name]** > **Compute FWS Sub-circuit**.
Syntax:	`obj.ScrRunSpiceSubcktSimulation()`
Parameters:	None.
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrRunSpiceSubcktSimulation()`

ScrRunSyzParameterSimulation

Computes an SYZ sweep.	
UI Command:	**Simulation** > **Compute SYZ Parameters**.
Syntax:	`obj.ScrRunSyzParameterSimulation()`
Parameters:	None.
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrRunSyzParameterSimulation()`

ScrRunValidationCheck

Runs a Validation Check on the current project.	
UI Command:	**Tools** > **Validation Check**.
Syntax:	`obj.ScrRunValidationCheck`
Parameters:	None.
Return Value:	ARRAY results (number of errors, number of warnings)
PY Example:	`oDoc.ScrRunValidationCheck()`

ScrRunValidationCheckWithOptions

Runs a Validation Check using specified parameters.	
UI Command:	**Tools** > **Validation Check**.
Syntax:	`obj.ScrRunValidationCheckWithOption (<optionArray>, <simType>)`
Parameters:	ARRAY optionArray (0 - deselects an option, 1 - selects an option) • Self-Intersecting Polygons • Disjoint Nets (Floating Nodes) • DC-Short Errors • Identical/Overlapping Vias • Bondwire Collisions • Illegal Bondwire Connections • Misalignments • Less Than Two Terminals INT simType • **0** – No Associated Simulation • **1** – Resonant Modes • **2** – Frequency Sweep • **3** – SYZ Parameters • **4** – Far Field • **5** – Near Field • **6** – DC Current/Voltage • **7** – PSI AC or SYZ • **8** – 3D Export • **9** – CPA Solution • **10** – Impedance/Crosstalk Scan
Return Value:	None.
PY Example:	`oDoc.ScrRunValidationCheckWithOptions (['1','1','1','1','1','0','1','0'],'3')`

ScrSanitizeLayout

Runs the Sanitize Layout operation on all Power/Ground nets in the project.	
UI Command:	**Tools** > **Sanitize Layout**.
Syntax:	`obj.ScrSanitizeLayout()`
Parameters:	None.
Return Value:	None.
PY Example:	`oDoc.ScrSanitizeLayout()`

ScrSanitizeNets

Runs the Sanitize Layout operation on specified nets.	
UI Command:	**Tools** > **Sanitize Layout**.
Syntax:	`obj.ScrSanitizeNets(<netNameList>)`
Parameters:	ARRAY netNameList (containing strings)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSanitizeNets(['NET-1','NET-2','NET-3'])`

ScrSaveProjectAs

Saves the current project under a different file name.	
UI Command:	**File** > **Save As**.
Syntax:	`obj.ScrSaveProjectAs(<projName>)`
Parameters:	BSTR projName (without file extension)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSaveProjectAs ('C:/Users/Ansys/Documents/Ansys/pcb1')`

ScrSaveSimulationMessages

Saves messages for a specified simulation in a specified folder.	
UI Command:	None.
Syntax:	`obj.ScrSaveSimulationMessages(<simName>,<outFilePath>)`
Parameters:	BSTR simName BSTR outFilePath
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSaveSimulationMessages('Sweep1','C:/FilePath/')`

ScrSaveToPngFile

Saves the current modeling workspace as an image file (*.png).	
UI Command:	None.
Syntax:	`obj.ScrSaveToPngFile(<fileName>)`
Parameters:	BSTR fileName (full path with extension)
Return Value:	None.
PY Example:	`oDoc.ScrSaveToPngFile('D:/capture.png')`

ScrSelectDcConnectedNets

Selects all nets and RLCs which form a connection to the specified net.	
UI Command:	None.
Syntax:	`obj.ScrSelectDcConnectedNets(<netNameList>)`
Parameters:	ARRAY netNameList
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSelectDcConnectedNets (['VCC','GND','Heq','NET-1','NET-2','PWR'])`

ScrSelectNet

Selects or deselects a specified net.	
UI Command:	None.
Syntax:	`obj.ScrSelectNet(<netName>,<select>)`
Parameters:	BSTR netName INT select (1 selects the net; 0 deselects it)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSelectNet('GND', 1)`

ScrSelectNetsBetweenComponents

Selects all Power/Ground nets and RLCs that form a connection between the specified components.	
UI Command:	None.
Syntax:	`obj.ScrSelectNetsBetweenComponents(<partname1>, <refDes1>, <partname2>, <refDes2>)`
Parameters:	BSTR partname1 BSTR refDes1 BSTR partname2 BSTR refDes2
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSelectNetsBetweenComponents('288DIMMDDR4_EDGE_CONN-BASE', 'J1', 'DDR4_X4_FBGA78-10X13,,', 'U1')`

ScrSelectNetsBetweenNets

Selects all nets and RLCs that form a connection between the specified nets.	
UI Command:	None.
Syntax:	`obj.ScrSelectNetsBetweenNets(<net1>, <net2>)`
Parameters:	BSTR net1 BSTR net2
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSelectNetsBetweenNets('VDD', 'GND')`

ScrSeparateDisjointNets

Separates all electrically disjoint nets into independent nets.	
UI Command:	None.
Syntax:	`obj.ScrSeparateDisjointNets()`
Parameters:	None.
Return Value:	INT numSeparatedNets
PY Example:	`oDoc.ScrSeparateDisjointNets()`

ScrSet4PtBwProfile

Assigns a 4 point bondwire profile to all bondwires of a given model.	
UI Command:	None.
Syntax:	`obj.ScrSet4PtBwProfile(<modelName>, <h1>, <h2>, <radius>)`
Parameters:	BSTR modelName DOUBLE h1 DOUBLE h2 DOUBLE radius
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSet4PtBwProfile('WB_PROFILE_1', 100, 200, 20)`

ScrSet5PtBwProfile

Assigns a 5 point bondwire profile to all bondwires of a given model.	
UI Command:	None.
Syntax:	`obj.ScrSet5PtBwProfile(<modelName>, <h1>, <h2>, <radius>, <alpha>, <beta>)`
Parameters:	BSTR modelName DOUBLE h1 DOUBLE h2 DOUBLE radius DOUBLE alpha DOUBLE beta
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSet5PtBwProfile('WB_PROFILE_1', 100, 200, 20, 85, 5)`

ScrSetAntiPadOnLayer

Adds or changes a given padstack's antipads. Can also be used to delete antipads. **Note:** If an antipad already exists, the script alters it. If one does not exist, the script creates one.	
UI Command:	None.
Syntax:	`obj.ScrSetAntiPadOnLayer(<padstackName>, <layerName>, <shapeName>, <widthString>, <heightString>)`
Parameters:	BSTR padstackName layerName shapeName ("None" to delete an antipad; otherwise, "Circle", "Oblong", or "Rectangle") widthString (including unit of measure) heightString (including unit of measure)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetAntiPadOnLayer('VIA_M1_M2', 'METAL-1', 'Rectangle', '0.1cm', '0.1cm')`

ScrSetBwModel

Sets the given model to bondwires	
UI Command:	None.
Syntax:	`obj.ScrSetBwModel(<bwIndexArray>, <bwModelName>)`
Parameters:	ARRAY bwIndexArray BSTR bwModelName
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetBwModel(bwList, 'WB_profile_1')`

ScrSetBwSuppLayer

Sets the support layer of given bondwires.	
UI Command:	None.
Syntax:	`obj.ScrSetBwSuppLayer(<bwIndexArray>, <suppLayerName>)`
Parameters:	ARRAY bwIndexArray BSTR suppLayerName
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetBwSuppLayer(bwList, 'CU-1')`

ScrSetBwTermLayer

Sets the termination layer of given bondwires.	
UI Command:	None.
Syntax:	`obj.ScrSetBwTermLayer(<bwIndexArray>, <termLayerName>)`
Parameters:	ARRAY bwIndexArray BSTR termLayerName
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetBwTermLayer(bwList, 'WB_loop2')`

ScrSetCapacitorDcBiasDeratingSim

Opens Set Capacitor Temperature and DC Bias Voltage window and select simulation for DC bias derating.	
UI Command:	Click **Simulation** > **Options** > **Use bias voltage computed by DC IR simulation**. Select simulation.
Syntax:	`obj.ScrSetCapacitorDcBiasDeratingSim (<simulationName>)`
Parameters:	BSTR simulationName
Return Value:	INT • **1** – Failure • **0** – Success
PY Example:	`oDoc.ScrSetCapacitorDcBiasDeratingSim('Simulation Name')`

ScrSetCapacitorTemperatureDeratingSim

Opens Set Capacitor Temperature and DC Bias Voltage window and select simulation for temperature derating.	
UI Command:	Click **Simulation** > **Options** > **Use temperature computed by Icepak simulation**. Select simulation.
Syntax:	`obj.ScrSetCapacitorTemperatureDeratingSim (<simulationName>)`
Parameters:	BSTR simulationName
Return Value:	INT • **1** – Failure • **0** – Success
PY Example:	`oDoc.ScrSetCapacitorTemperatureDeratingSim ('Simulation Name')`

ScrSetConformalCoatLayers

Introduce or remove conformal coating (a set of dielectric layers on the top and bottom of every package and PCB in the design). **These layers have a default material of "SolderMask" and a default thickness of 15 microns.**	
UI Command:	None.
Syntax:	`obj.ScrSetConformalCoatLayers(<setConformalCoat>)`
Parameters:	INT setConformalCoat (1 = add conformal coat layers, 0 = remove all conformal coat layers)
Return Value:	INT number of layers changed, added, or removed.
PY Example:	`oDoc.ScrSetConformalCoatLayers(1)`

ScrSetCrosstalkScanParameters

Specifies the parameters for running a Crosstalk Scan via ScrRunSimulation.	
UI Command:	**Simulation** > **Crosstalk Scan** > **Frequency Domain**. Set values for the solver options.
Syntax:	`obj.ScrSetCrosstalkScanParameters (<FEXTWarningLevel>, <FEXTViolationThreshold>, <NEXTWarningLevel>, <NEXTViolationThreshold>, <freq>, <minTraceLengthInMM>)`
Parameters:	DOUBLE FEXTWarningLevel DOUBLE FEXTViolationThreshold

Specifies the parameters for running a Crosstalk Scan via ScrRunSimulation.	
	DOUBLE NEXTWarningLevel DOUBLE NEXTViolationThreshold DOUBLE freq DOUBLE minTraceLengthInMM
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetCrosstalkScanParameters(15, 30, 12, 24, 1000000000, 1.2)`

ScrSetCrossTalkThreshold

Specifies the cross-talk threshold to use when determining which structures are coupled, in dB.	
UI Command:	Click **Simulation** > **Options** to open the **SIwave Options** window. Click **SI/PI Advanced** tab and enter a value in the **Cross-talk threshold** box.
Syntax:	`obj.ScrSetCrossTalkThreshold(<xtalkInDb>)`
Parameters:	DOUBLE xtalkInDb (specified value MUST be negative)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetCrossTalkThreshold(-60.0)`

ScrSetDcMinPlaneAreaToMesh

For DC IR simulations, sets the minimum plane area to be meshed.	
UI Command:	**Simulation** > **Options** > **SI/PI Advanced**. Enter a value in the **Ignore planes smaller than** field.
Syntax:	`obj.ScrSetDcMinPlaneAreaToMesh (<minPlaneAreaToMesh>)`
Parameters:	BSTR minPlaneAreaToMesh (including unit of measure)
Return Value:	None.
PY Example:	`oDoc.ScrSetDcMinPlaneAreaToMesh('5669.2mil2')`

ScrSetDcMinVoidAreaToMesh

For DC IR simulations, sets the minimum void area to be meshed.	
UI Command:	**Simulation** > **Options** > **DC Advanced**. Enter a value in the **Ignore voids smaller than** field.
Syntax:	`obj.ScrSetDcMinVoidAreaToMesh (<dcMinVoidAreaToMesh>)`
Parameters:	BSTR dcMinVoidAreaToMesh (including unit of measure)
Return Value:	None.
PY Example:	`oDoc.ScrSetDcMinVoidAreaToMesh('3199.01mil2')`

ScrSetDcPowerDataThresholds

For DC IR simulations, sets the minimum thermal cell size and minimum power per cell. Note: These settings are no longer visible in SIwave, and are only applicable for exporting data for Icepak in an old format.	
UI Command:	None.
Syntax:	`obj.ScrSetDcPowerDataThresholds (<minThermCellSizeInUm>,<minPwrLossPerCellInMilliwatts)`
Parameters:	DOUBLE minThermCellSizeInUm DOUBLE minPwrLossPerCellInMilliwatts
Return Value:	None.
PY Example:	`oDoc.ScrSetDcPowerDataThresholds(12.0, 1.75)`

ScrSetDieElevation

Sets a specified die's elevation.	
UI Command:	**Advanced** > **Die Stackup**.
Syntax:	`obj.ScrSetDieElevation(<dieName>,<elevation>)`
Parameters:	BSTR dieName DOUBLE elevation
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetDieElevation('DIE_1', 100.0)`

ScrSetDieThickness

Sets a specified die's thickness.	
UI Command:	**Advanced** > **Die Stackup**.
Syntax:	`obj.ScrSetDieThickness(<dieName>,<thickness>)`
Parameters:	BSTR dieName DOUBLE thickness
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetDieThickness('DIE_1', 100.0)`

ScrSetEmiScannerParameters

Sets the parameters for running an EMI scan via ScrRunSimulation. **If this function is not called, the scan runs with the EMI parameters already set in the file.** **If none are set, the scan runs using the default "EM Rules" with auto-tagging.**	
UI Command:	**Simulation** > **EMI Scanner**.
Syntax:	`obj.ScrSetEmiScannerParameters (<rulesXmlFilenameWithPath>, <rulesProfileIndex>, <tagsXmlFilenameWithPath>)`
Parameters:	BSTR rulesXmlFilenameWithPath (If rulesXmlFilenameWithPath is left an empty string, rulesProfileIndex is used) INT rulesProfileIndex, where: • **0** – Rules file specified by `<rulesXmlFilenameWithPath>` • **1** – EM Rules – [install_dir]/config/EMIScanner/Defaults/EM_emsat.xml • **2** – SI Rules – [install_dir]/config/EMIScanner/Defaults/SI_emsat.xml • **3** – EM+SI Rules – [install_dir]/config/EMIScanner/Defaults/EM_SI_emsat.xml • **4** – Rules (0-100MHz) – [install_dir]/config/EMIScanner/Defaults/EMSAT-STGprofile-000-100Mb.cfg • **5** – Rules (100MHz-500MHz) – [install_dir]/config/EMIScanner/Defaults/EMSAT-STGprofile-100-500Mb.cfg • **6** – Rules (500MHz-1000MHz) – [install_dir]/config/EMIScanner/Defaults/EMSAT-STGprofile-500-1000Mb.cfg • **7** – Rules (1GHz+) – [install_dir]/config/EMIScanner/Defaults/EMSAT-STGprofile-1Gb-and-higher.cfg BSTR tagsXmlFilenameWithPath
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetEmiScannerParameters ('C:/Projects/rules.xml', 0, 'C:/Projects/tags.tgs')`

ScrSetEnergyErrorPercentInDcSimulation

For DC IR simulations, sets the minimum void area to be meshed.	
UI Command:	**Simulation** > **Options** > **DC Advanced**. Enter a value in the **Energy Error** field.
Syntax:	`obj.ScrSetEnergyErrorPercentInDcSimulation (<energyErrorPercent>)`
Parameters:	DOUBLE energyErrorPercent
Return Value:	None.
PY Example:	`oDoc.ScrSetEnergyErrorPercentInDcSimulation('5.1')`

ScrSetExternalExcitations

Directs SIwave to use external (non-linear) excitation files containing current or voltage source frequency response data.	
UI Command:	From the **Simulation** menu, click either **Compute Frequency Sweep**, **Compute Far Field**, or **Compute Near Field**. Select the **Use sources defined in an external file** check box and specify the source of the excitations.
Syntax:	`obj.ScrSetExternalExcitations(<filePath>)`
Parameters:	BSTR filePath
Return Value:	None.
PY Example:	`oDoc.ScrSetExternalExcitations('C:/sources.txt')`

ScrSetFarFieldSimOptions

Sets options for Far Fields simulations.	
UI Command:	**Simulation** > **Compute Far Field**. Set **Phi** and **Theta** options.
Syntax:	`obj.ScrSetFarFieldSimOptions(<phiStart>, <phiStop>, <phiStepSize>, <thetaStart>, <thetaStop>, <thetaStepSize>)`
Parameters:	DOUBLE phiStart DOUBLE phiStop INT phiStepSize DOUBLE thetaStart DOUBLE thetaStop INT thetaStepSize
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetFarFieldSimOptions(0, 360, 10, 0, 180, 10)`

ScrSetFwsColFitOptions

Controls FWS Sub-circuit column fitting options.	
UI Command:	Click **Results** > **SYZ** > **[Simulation Name]** > **Compute FWS Sub-circuit** to open the **Compute Full Wave SPICE Subcircuit** window. Specify **Column Fitting** options.
Syntax:	`obj.ScrSetFwsColFitOptions(<option>)`
Parameters:	INT option, where: • **0** – One matrix entry at a time • **1** – One matrix column at a time
Return Value:	None.
PY Example:	`oDoc.ScrSetFwsColFitOptions(0)`

ScrSetFwsLaunchDesignerNexxim

After computing a Full Wave SPICE Subcircuit, opens the results in Electronics Desktop.	
UI Command:	None.
Syntax:	`obj.ScrSetFwsLaunchDesignerNexxim(<launch>)`
Parameters:	INT launch (1 = launch; 0 = do not launch)
Return Value:	None.
PY Example:	`oDoc.ScrSetFwsLaunchDesignerNexxim(1)`

ScrSetFwsPassivityAlg

Controls FWS Sub-circuit Full Wave SPICE export passivity options.	
UI Command:	Click **Results** > **SYZ** > **[Simulation Name]** > **Compute FWS Sub-circuit** to open the **Compute Full Wave SPICE Subcircuit** window. Select passivity enforcement options.
Syntax:	`obj.ScrSetFwsPassivityAlg(<option>)`
Parameters:	INT option, where: • **0** – Do not enforce passivity • **1** – Passivity enforcement through convex optimization • **2** – Passivity enforcement by perturbation • **3** – Passivity enforcement by IFPV (iterative fitting of passivity violations)
Return Value:	None.
PY Example:	`oDoc.ScrSetFwsPassivityAlg(0)`

ScrSetFwsPortRefZ

For Full Wave SPICE, sets whether port reference impedances are to be renormalized and, if so, specifies reference impedance.	
UI Command:	Click **Results** > **SYZ** > **[Simulation Name]** > **Compute FWS Sub-circuit** to open the **Compute Full Wave SPICE Subcircuit** window. Enter a value in the **Renormalize all S-parameters to __ ohms before generating model** option.
Syntax:	`obj.ScrSetFwsPortRefZ(renormalize, refZ)`
Parameters:	BOOL renormalize, where: • **TRUE** – Renormalize • **FALSE** – Do not renormalize DOUBLE refZ (reference impedence, value ignored if renormalize = FALSE)
Return Value:	None.
PY Example:	`oDoc.ScrSetFwsPortRefZ(True, 75.0)`

ScrSetFwsPzOptions

For Full Wave SPICE, sets pole/zero fitting options.	
UI Command:	Click **Results** > **SYZ** > **[Simulation Name]** > **Compute FWS Sub-circuit** to open the **Compute Full Wave SPICE Subcircuit** window. Select the options in the **HSPICE/Spectre Pole/Zero Fitting Options** box for the fitting error tolerance, and maximum pole/zero order.
Syntax:	`obj.ScrSetFwsPzOptions(<fitError>, <maxOrder>)`
Parameters:	DOUBLE fitError (fitting error tolerance) INT maxOrder (maximum pole/zero order)
Return Value:	None.
PY Example:	`oDoc.ScrSetFwsPzOptions(0.001, 200)`

ScrSetFwsSsfAlg

For Full Wave SPICE, specifies State-Space Fitting Algorithm options.	
UI Command:	Click **Results** > **SYZ** > **[Simulation Name]** > **Compute FWS Sub-circuit** to open the **Compute Full Wave SPICE Subcircuit** window. Specify **State-Space Fitting Algorithm** options.
Syntax:	`obj.ScrSetFwsSsfAlg(<algorithm>)`
Parameters:	INT algorithm, where: • **0** – TWS • **1** – Iterative Rational Function
Return Value:	None.
PY Example:	`oDoc.ScrSetFwsSsfAlg(0)`

ScrSetFwsSubcktFormat

Specifies the full-wave Spice subcircuit format for export.	
UI Command:	Click **Results** > **SYZ** > **[Simulation Name]** > **Compute FWS Sub-circuit** to open the **Compute Full Wave SPICE Subcircuit** window. Select the Spice subcircuit format from the **Full Wave Spice Subcircuit Format** box.
Syntax:	`obj.ScrSetFwsSubcktFormat(<format>)`
Parameters:	INT format, where: • **0** – HSPICE-compatible format • **1** – Maxwell Spice compatible format • **2** – PSPICE compatible format • **3** – Cadence Spectre compatible format • **4** – Nexxim S-element format • **5** – State space model • **6** – Simplorer model
Return Value:	None.
PY Example:	`oDoc.ScrSetFwsSubcktFormat(0)`

ScrSetFwsUseCommonGround

For full-wave Spice subcircuit generation, specifies whether to use a common ground for all ports.	
UI Command:	Click **Results** > **[Simulation Name]** > **Compute FWS Sub-circuit** to open the **Compute Full Wave SPICE Subcircuit** window. Select the **Use common ground for Spice output** check box.
Syntax:	`obj.ScrSetFwsUseCommonGround(<useCommonGround>)`
Parameters:	BOOL, where: • **FALSE** – Do not use common ground. • **TRUE** – Use common ground.
Return Value:	None.
PY Example:	`oDoc.ScrSetFwsUseCommonGround(True)`

ScrSetHFSS3DLayoutSimOptions

Imports simulation settings for an HFSS 3D Layout Simulation.	
UI Command:	Click **Simulation** > **HFSS 3D Layout**. Click **Import Settings** and select a file.
Syntax:	`obj.ScrSetHFSS3DLayoutSimOptions(<filename>)`
Parameters:	BSTR filename (full file path)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetHFSS3DLayoutSimOptions ('c:/simsettings.dss')`

ScrSetHpcLicenseType

Sets the HPC license type. **Important: Use ScrSetHpcLicenseVendor to choose license vendor.**	
UI Command:	**Simulation** > **Options**. On the **Multiprocessing** tab, select **Use HPC licensing** and either **Workgroup** (formerly 'Pool') or **Pack**.
Syntax:	`obj.ScrSetHpcLicenseType(<licenseType>)`
Parameters:	BSTR licenseType ('workgroup' or 'pack'; case insensitive; use 'mp' to deselect **Use HPC licensing**)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetHpcLicenseType('pack')`

ScrSetHpcLicenseVendor

Sets the HPC license vendor. **Important: Use ScrSetHpcLicenseType to choose license type.**	
UI Command:	**Simulation** > **Options**. On the **Multiprocessing** tab, select **Use HPC licensing** and either **Use Ansys HPC licenses** or **Use legacy Electronics HPC licenses**.
Syntax:	`obj.ScrSetHpcLicenseVendor(<vendor>)`
Parameters:	BSTR vendor ('ansys' or 'electronics', case insensitive)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetHpcLicenseVendor('Electronics')`

ScrSetIcepakBoardOutlineFidelity

Specifies the minimum edge length when modifying the board outline for export to Icepak. This minimum edge length is used when discretizing arcs into a series of straight lines and when simplifying the outline to remove very small edges.	
UI Command:	None.
Syntax:	`obj.ScrSetIcepakBoardOutlineFidelity(<distInMM>)`
Parameters:	DOUBLE distInMM
Return Value:	INT • **0** – Success • **1** – Specified distance is too small
PY Example:	`oDoc.ScrSetIcepakBoardOutlineFidelity(1.5)`

ScrSetIcepakCabinetDimensions

Configures the cabinet settings for Icepak convection simulations.	
UI Command:	None.
Syntax:	`obj.ScrSetIcepakCabinetDimensions (<horizPadPercent>, <vertAbovePadPercent>, <vertBelowPadPercent>)`
Parameters:	DOUBLE horizPadPercent DOUBLE vertAbovePadPercent DOUBLE vertBelowPadPercent
Return Value:	INT: • **0** – Success • **1** – Specified percentages are invalid.
PY Example:	`oDoc.ScrSetIcepakCabinetDimensions(35.0, 125.0, 55.0)`

ScrSetIcepakComponentConfig

Selects a component settings file to use for Icepak convection simulations.	
UI Command:	None.
Syntax:	`obj.ScrSetIcepakComponentConfig(<fileName>)`
Parameters:	BSTR fileName (full file path)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetIcepakComponentConfig ('D:/Tests/IcepakScriptTest.pwrd')`

ScrSetIcepakMeshingDetail

Sets the meshing detail level for Icepak simulations.	
UI Command:	None.
Syntax:	`obj.ScrSetIcepakMeshingDetail(<meshLevel>)`
Parameters:	BSTR meshLevel
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrSetIcepakMeshingDetail('basic')`

ScrSetIcepakSimReportImageHeight

When generating Icepak reports or Icepak report data in a DC report, specifies the resolution (in pixels) of the smaller dimension of the images. For designs where the board is wider than it is tall, this corresponds to the y-resolution of the image.	
UI Command:	None.
Syntax:	`obj.ScrSetIcepakSimReportImageHeight(<imgHeight>)`
Parameters:	LONG imgHeight
Return Value:	BOOL • **0** – Failure (invalid height) • **1** – Success
PY Example:	`oDoc.ScrSetIcepakSimReportImageHeight(1024)`

ScrSetIcepakTemperatureFile

Specifies an external Icepak solution file (*.sitemp) for use in specifying temperature for a DC simulation.	
UI Command:	**Simulation** > **Compute DC IR**. Select **Import temperature map from Icepak**. Select **External .sitemp file**. Click **Browse** and select file.
Syntax:	`obj.ScrSetIcepakTemperatureFile(<sitempFilename>)`
Parameters:	BSTR sitempFilename (full file path)
Return Value:	BOOL • **0** – Failure (file does not exist) • **1** – Success
PY Example:	`oDoc.ScrSetIcepakTemperatureFile('d:/abcd.sitemp')`

ScrSetIcepakThermalEnv

Sets the thermal environment settings to use for Icepak simulations.	
UI Command:	**Simulation** > **Icepak**. Select an appropriate settings.
Syntax:	`obj.ScrSetIcepakThermalEnv(<convection>, <forcedAir>, <topOrAmbientTempC>, <topOrOverallFlowDir>, <topOrOverallFlowSpeed>, <bottomTempC>, <bottomFlowDir>, <bottomFlowSpeed>, <gravVecX>, <gravVecY>, <gravVecZ>)`
Parameters:	BOOL convection (TRUE = convection; FALSE = conduction) BOOL forcedAir (TRUE = forced convection; FALSE = natural convection) DOUBLE topOrAmbientTempC (temperature above PCB, in Celsius) BSTR topOrOverallFlowDir (flow direction above PCB) DOUBLE topOrOverallFlowSpeed (flow speed above PCB) DOUBLE bottomTempC (temperature below PCB, in Celsius) BSTR bottomFlowDir (flow direction below PCB) DOUBLE bottomFlowSpeed (flow speed below PCB) DOUBLE gravVecX (gravity vector x for natural convection) DOUBLE gravVecY (gravity vector y for natural convection) DOUBLE gravVecZ (gravity vector z for natural convection)
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrSetIcepakThermalEnv(True, True, 22.3, '+Y', 2.5, 0.0, '', 0.0, 0.0, 0.0, 0.0)`

ScrSetIdealGroundNodeInDcSimulation

For a DC IR simulation, sets the Ideal Ground Node (the precise 0V). **IMPORTANT: This script should be called before running a DC solve using ScrRunDcSimulation or ScrRunSimulation with tag dc.**	
UI Command:	**Simulation > Compute DC IR**. Select an ideal ground node.
Syntax:	`obj.ScrSetIdealGroundNodeInDcSimulation(<circuit_element_name>, <node_type_id>)`
Parameters:	BSTR circuit_element_name (name of the circuit element in the design on which the ideal ground is) INT node_type_id (which terminal of the circuit element is ideal ground), where: • **0** – Neither Terminal • **1** – Negative Terminal • **2** – Positive Terminal
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetIdealGroundNodeInDcSimulation('VU6', 1)`

ScrSetInducedVoltageMultipleIncidenceSpherical

For a Plane Wave Induced Voltage simulation with multiple incident waves specified in spherical system having a sweep of phi & theta angles and the polarization, specified as either having 1 on X or 1 on Y or both, on the orthogonal plane of every incidence vector. **IMPORTANT: This script and ScrAppendSweep should be called before running a Plane Wave Induced Voltage solve using ScrRunSimulation with tag iv.**	
UI Command:	**Simulation > Compute Induced Voltage**. Specify settings.
Syntax:	`obj.ScrSetInducedVoltageMultipleIncidenceSpherical (<phi_start>, <phi_stop>, <phi_step>, <theta_start>, <theta_stop>, <theta_step>, <phi_checked>, <theta_checked>, <save_for_all_angles>, <Magnitude>)`
Parameters:	DOUBLE phi_start (for sweep in phi) DOUBLE phi_stop (for sweep in phi) DOUBLE phi_step (for sweep in phi) DOUBLE theta_start (for sweep in theta) DOUBLE theta_stop (for sweep in theta) DOUBLE theta_step (for sweep in theta) DOUBLE e0_phi (polarization for phi sweep) DOUBLE e0_theta (polarization for theta sweep) INT save_for_all_angles (1 = save; 0 = do not save) DOUBLE magnitude
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetInducedVoltageMultipleIncidenceSpherical (0, 20, 5, 90, 105, 5, 0, 0, 0, 1)`

ScrSetInducedVoltageSingleIncidenceCartesian

For a Plane Wave Induced Voltage simulation with a single incident wave and polarization both specified in cartesian system on the XYZ plane. The incident wave vector and the polarization vector should be orthogonal. This is tested by verifying if the dot product of the vectors leads to zero. **IMPORTANT: This script and ScrAppendSweep should be called before running a Plane Wave Induced Voltage solve using ScrRunSimulation with tag iv.**	
UI Command:	**Simulation** > **Compute Induced Voltage**. Specify settings.
Syntax:	`obj.ScrSetInducedVoltageSingleIncidenceCartesian (<incidence_x>, <incidence_y>, <incidence_z>, <e0_x>, <e0_y>, <e0_z>, <e0_magnitude>)`
Parameters:	DOUBLE incidence_x (for incident vector) DOUBLE incidence_y (for incident vector) DOUBLE incidence_z (for incident vector) DOUBLE e0_x (for polarization vector) DOUBLE e0_y (for polarization vector) DOUBLE e0_z (for polarization vector) DOUBLE e0_magnitude
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetInducedVoltageSingleIncidenceCartesian (1, 0, 0, 0, 1, 1, 1)`

ScrSetInducedVoltageSingleIncidenceSpherical

For a Plane Wave Induced Voltage simulation with a single incident wave specified in spherical system (degrees) and polarization specified as a XY vector on the orthogonal plane of incidence vector. **IMPORTANT: This script and ScrAppendSweep should be called before running a Plane Wave Induced Voltage solve using ScrRunSimulation with tag iv.**	
UI Command:	**Simulation > Compute Induced Voltage**. Specify settings.
Syntax:	`obj.ScrSetInducedVoltageSingleIncidenceSpherical (<phi>, <theta>, <e0_phi>, <e0_theta>, <e0_magnitude>)`
Parameters:	DOUBLE phi (for incident vector) DOUBLE theta (for incident vector) DOUBLE e0_phi (for polarization vector) DOUBLE e0_theta (for polarization vector) DOUBLE e0_magnitude
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetInducedVoltageSingleIncidenceSpherical (10, 45, 1, 3, 1)`

ScrSetInfiniteGroundPlaneLocation

Introduces an infinite ground plane the specified distance below the bottom layer.	
UI Command:	**Simulation** > **Options** > **SI/PI Advanced**. Select **Introduce infinite ground plane** and enter a value in mils.
Syntax:	`obj.ScrSetInfiniteGroundPlaneLocation(<elev>)`
Parameters:	DOUBLE elev
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetInfiniteGroundPlaneLocation('3.1')`

ScrSetLayerMaterial

Assigns a specified material to a specified layer.	
UI Command:	**Home** > **Layer stackup Editor**. Click **Edit Layer Properties**. Select a material from the **Material** drop-down menu.
Syntax:	`obj.ScrSetLayerMaterial(<layerNameBstr>, <layerMaterialBstr>)`
Parameters:	BSTR layerNameBstr BSTR layerMaterialBstr
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetLayerMaterial('SURFACE', 'copper')`

ScrSetLayerThickness

Changes the thickness of a specified layer. The thickness value must be in the project's underlying length units.	
UI Command:	**Home** > **Layer stackup Editor**. Click **Edit Layer Properties**. Enter the thickness in the **Thickness** field.
Syntax:	`obj.ScrSetLayerThickness(<layerNameBstr>, <thickness>, <redraw>)`
Parameters:	BSTR layerNameBstr DOUBLE thickness BOOL redraw (TRUE = redraw; FALSE = do not redraw)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetLayerThickness('SURFACE', 0.035, True)`

ScrSetLayerType

Sets a specified layer's type.	
UI Command:	**Home** > **Layer stackup Editor**. Select the layer you want to update. Then select a material type from the **Type** drop-down menu.
Syntax:	`obj.ScrSetLayerType(<layerName>, <layerTypeIndex>)`
Parameters:	BSTR layerName INT layerTypeIndex, where: • **0** – Dielectric • **1** – Metal • **2** – Wirebond
Return Value:	None.
PY Example:	`oDoc.ScrSetLayerType('layer name', 1)`

ScrSetLayerVisibility

Sets the visibility of the specified layer, or of specific object types on that layer.	
UI Command:	Select a layer in the **Layers Workspace**. Turn on visibility for the layer or for specific object types using the check boxes.
Syntax:	`obj.ScrSetLayerVisibility(<layerNameBstr>, <planeVis>, <traceVis>, <padVis>, <viaVis>,`

Sets the visibility of the specified layer, or of specific object types on that layer.	
	`<cktElemVis>)`
Parameters:	BSTR layerNameBstr BOOL planeVis (TRUE = planes visible; FALSE = planes not visible) BOOL traceVis (TRUE = traces visible; FALSE = traces not visible) BOOL padVis (TRUE = pads visible; FALSE = pads not visible) BOOL viaVis (TRUE = vias visible; FALSE = vias not visible) BOOL cktElemVis (TRUE = circuit elements visible; FALSE = circuit elements not visible)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetLayerVisibility('L1', True, True, True, True, False)`

ScrSetLayoutLengthUnit

Sets the layout length unit.	
UI Command:	None.
Syntax:	`obj.ScrSetLayoutLengthUnit <unitName>`
Parameters:	BSTR unitName ("microns", "um", "mils", "mm", "cm", "inches", or "meters")
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetLayoutLengthUnit('um')`

ScrSetLocalRefinementPercentInDcSimulation

For a DC IR simulation, sets the local refinement percentage.	
UI Command:	**Simulation** > **Options** > **DC Advanced**. Enter a value in the **Local Refinement** field.
Syntax:	`obj.ScrSetLocalRefinementPercentInDcSimulation (<localRefinePercent>)`
Parameters:	DOUBLE localRefinePercent
Return Value:	None.
PY Example:	`oDoc.ScrSetLocalRefinementPercentInDcSimulation(20)`

ScrSetLogFreqPointDist

Sets the distribution type for frequency sweeps.	
UI Command:	None.
Syntax:	`obj.ScrSetLogFreqPointDist(<flag>)`
Parameters:	INT flag (1 = log-based frequency distribution; 0 = linear distribution)
Return Value:	None.
PY Example:	`oDoc.ScrSetLogFreqPointDist(1)`

ScrSetLowBwProfile

Sets low bondwire profile to all bondwires of a specified model.	
UI Command:	None.
Syntax:	`obj.ScrSetLowBwProfile(<bwModelName>, <h1>, <h2>, <radius>, <alpha>, <beta>, <units>)`
Parameters:	BSTR bwModelName DOUBLE h1 DOUBLE h2 DOUBLE radius DOUBLE alpha DOUBLE beta BSTR units
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetLowBwProfile('WB_PROFILE_1', 100, 200, 20, 85, 5, 'mm')`

ScrSetMaxRefinePassesInDcSimulation

Sets the maximum number of mesh refinement passes for DC IR drop simulations.	
UI Command:	**Simulation** > **Compute DC IR**. Click **Other solver options** button and choose the **DC Advanced** tab. From the **Adaptive Mesh Refinement Parameters** group, type a value in the **Maximum Number of Passes** box.
Syntax:	`obj.ScrSetMaxRefinePassesInDcSimulation (<maxPasses>)`
Parameters:	INT maxPasses
Return Value:	None.
PY Example:	`oDoc.ScrSetMaxRefinePassesInDcSimulation(5)`

ScrSetMeshBondwiresInDcSimulation

Sets the Mesh Bondwires setting.	
UI Command:	**Simulation** > **Options**. Click **DC Advanced** tab and select **Mesh Bondwires** check box.
Syntax:	`obj.ScrSetMeshBondwiresInDcSimulation(<meshBws>)`
Parameters:	BOOL meshBws (TRUE = mesh bondwires; FALSE = do not mesh bondwires)
Return Value:	None.
PY Example:	`oDoc.ScrSetMeshBondwiresInDcSimulation(1)`

ScrSetMeshViasInDcSimulation

Specifies whether to mesh vias during DC IR drop simulations.	
UI Command:	**Simulation** > **Compute DC IR**. Click **Other solver options** button and choose the **DC Advanced** tab. Select **Mesh Vias**.
Syntax:	`obj.ScrSetMeshViasInDcSimulation(<meshVias>)`
Parameters:	BOOL meshVias (TRUE = mesh vias; FALSE = do not mesh vias)
Return Value:	None.
PY Example:	`oDoc.ScrSetMeshViasInDcSimulation(True)`

ScrSetMetalLayerFillerMaterial

Assigns a specified filler material to a specified metal layer.	
UI Command:	**Home** > **Layer Stackup Editor**. Select metal layer and change **Dielectric Fill**.
Syntax:	`obj.ScrSetMetalLayerFillerMaterial(<layerNameBstr>, <layerFillerMaterialBstr>)`
Parameters:	BSTR layerNameBstr BSTR layerFillerMaterialBstr
Return Value:	BOOL **0** – Failure **1** – Success
PY Example:	`oDoc.ScrSetMetalLayerFillerMaterial('SURFACE', 'FR-4')`

ScrSetMinCutoutArea

Controls the cutout defeaturing area threshold; all cutouts below this value are ignored during simulations. **This function is not applicable to DC IR drop simulations, during which all salient geometry is meshed and simulated (no cutouts are defeatured).**	
UI Command:	**Simulation** > **Options**. Enter the area threshold in the **Do not explicitly mesh any voids than** field.
Syntax:	`obj.ScrSetMinCutoutArea(<minVoidArea>, <unitsBstr>)`
Parameters:	DOUBLE minVoidArea BSTR unitsBstr
Return Value:	None.
PY Example:	`oDoc.ScrSetMinCutoutArea(10, 'mm')`

ScrSetMinPadAreaToMesh

Sets the minimum pad area for meshing.	
UI Command:	**Simulation** > **Options** > **SI/PI Advanced**. Enter a value in the **Explicitly mesh pads larger than** field.
Syntax:	`obj.ScrSetMinPadAreaToMesh(<minPadAreaToMesh>)`
Parameters:	BSTR minPadAreaToMesh (including unit of measure)
Return Value:	None.
PY Example:	`oDoc.ScrSetMinPadAreaToMesh('112000mil2')`

ScrSetMinPlaneAreaToMesh

Sets the minimum plane area for meshing.	
UI Command:	**Simulation** > **Options** > **SI/PI Advanced**. Enter a value in the **Ignore planes smaller than** field.
Syntax:	`obj.ScrSetMinPlaneAreaToMesh(<minPlaneAreaToMesh>)`
Parameters:	BSTR minPlaneAreaToMesh (including unit of measure)
Return Value:	None.
PY Example:	`oDoc.ScrSetMinPlaneAreaToMesh('5769.2mil2')`

ScrSetMinRefinePassesInDcSimulation

Sets the minimum number of mesh refinement passes for DC IR drop simulations.	
UI Command:	**Simulation** > **Compute DC Current/Voltage**. From the **Adaptive Mesh Refinement Parameters** group, type a value in the **Minimum Number of Passes** field.
Syntax:	`obj.ScrSetMinRefinePassesInDcSimulation (<minPasses>)`
Parameters:	INT minPasses
Return Value:	None.
PY Example:	`oDoc.ScrSetMinRefinePassesInDcSimulation(1)`

ScrSetNearFieldExportDataPath

For Near Field simulations, sets an export directory for Near Field data in *.and or *.nfd format.	
UI Command:	**Simulation** > **Compute Near Field**. Beneath the **Near Field Solver Options**, area, check the box and navigate to an appropriate directory to save the exported data.
Syntax:	`obj.ScrSetNearFieldExportDataPath('`[User-selected directory path]`')`
Parameters:	BSTR export path (output file name with complete path)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetNearFieldExportDataPath('D:/NF_export.and')`

Note:

Use before ScrRunNearFieldSimulation.

ScrSetNearFieldMeshingFrequencyDefault

For Near Field simulations, selects the Default meshing frequency.	
UI Command:	**Simulation** > **Compute Near Field**. For **Meshing Frequencies for the Observation Mesh**, select **Default**.
Syntax:	`obj.ScrSetNearFieldMeshingFrequencyDefault()`
Parameters:	None.
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetNearFieldMeshingFrequencyDefault()`

ScrSetNearFieldMeshingFrequencyPoints

For Near Field simulations, selects the Points meshing frequency.	
UI Command:	**Simulation** > **Compute Near Field**. For **Meshing Frequencies for the Observation Mesh**, select **Points** and enter values.
Syntax:	`obj.ScrSetNearFieldMeshingFrequencyPoints (<freqPoints>)`
Parameters:	ARRAY freqPoints (contains strings *in ascending order*; uses Hz)
Return Value:	INT • **1** – Success • **2** – Array values aren't strings • **3** – One or more strings wasn't fully numeric • **4** – Duplicate value or bad order
PY Example:	`oDoc.ScrSetNearFieldMeshingFrequencyPoints (['5e+10','1e+11','1.2e+11'])`

ScrSetNearFieldMeshingFrequencyRange

For Near Field simulations, selects the Range meshing frequency.	
UI Command:	**Simulation** > **Compute Near Field**. For **Meshing Frequencies for the Observation Mesh**, select **Points** and enter values.
Syntax:	`obj.ScrSetNearFieldMeshingFrequencyRange (<startFreq>,<stopFreq>)`
Parameters:	DOUBLE startFreq (in Hz) DOUBLE stopFreq (in Hz)
Return Value:	INT • **1** – Success • **Else** – Error
PY Example:	`oDoc.ScrSetNearFieldMeshingFrequencyRange (5e+10,1e+11)`

ScrSetNearFieldSamplePointSpacing

Modifies the "Maximum Edge Length" option for Near Field simulations.	
UI Command:	**Simulation** > **Compute Near Field**. Set **Maximum Edge Length**.
Syntax:	`obj.ScrSetNearFieldSamplePointSpacing(<spacing>)`
Parameters:	DOUBLE spacing (in the project's native units)
Return Value:	BOOL: • **0** – Failure (spacing too small) • **1** – Success
PY Example:	`oDoc.ScrSetNearFieldSamplePointSpacing(132.034)`

ScrSetNearFieldSolverOptions

For Near Field simulations, sets options for number of passes and error tolerance.	
UI Command:	**Simulation** > **Compute Near Field**. Under **Near Field Solver Options**, enter values for **Min. Adapt Passes**, **Max. Adapt Passes**, and **Global Error Tolerance**.
Syntax:	`obj.ScrSetNearFieldSolverOptions(<minAdaptPasses>, <maxAdaptPasses>, <gErrorTol>)`
Parameters:	INT minAdaptPasses INT maxAdaptPasses DOUBLE gErrorTol
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetNearFieldSolverOptions(1, 10, 0.5)`

ScrSetNearFieldSurfaceOffset

Controls the position of the surface over which near fields are computed. The positions are offset values in the design's length units with respect to the design's bounding cuboid.	
UI Command:	**Simulation** > **Compute Near Field**. Enter offset values in the **Cuboid Surface Positions** box.
Syntax:	`obj.ScrSetNearFieldSurfaceOffset(<px>, <nx>, <py>, <ny>, <pz>, <nz>)`
Parameters:	DOUBLE px (positive x) DOUBLE nx (negative x) DOUBLE py (positive y) DOUBLE ny (negative y) DOUBLE pz (positive z) DOUBLE nz (negative z)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetNearFieldSurfaceOffset(1.0, 1.0, 1.0, 1.0, 1.0, 1.0)`

ScrSetNumBondwireSidesInDcSimulation

For DC IR simulations, sets the number of Bondwire sides.	
UI Command:	**Simulation** > **Options**. On **DC Advanced** tab, set number for **Bondwire Discretization**.
Syntax:	`obj.ScrSetNumBondwireSidesInDcSimulation (<numBwSides>)`
Parameters:	INT numBwSides
Return Value:	None.
PY Example:	`oDoc.ScrSetNumBondwireSidesInDcSimulation(12)`

ScrSetNumCpusToUse

Sets the number of CPUs (cores) to use during simulation.	
UI Command:	**Simulation** > **Options**. Click **Multiprocessing**. Select the **Number of CPUs to use when computing solution**.
Syntax:	`obj.ScrSetNumCpusToUse(<numCpus>)`
Parameters:	INT numCpus
Return Value:	None.
PY Example:	`oDoc.ScrSetNumCpusToUse(4)`

ScrSetNumModesToCompute

Sets the number of modes to solve for during resonant simulations.	
UI Command:	**Simulation** > **Compute Resonant Modes**. Enter a value in the **# of Modes to Compute** field.
Syntax:	`obj.ScrSetNumModesToCompute(<numModes>)`
Parameters:	INT numModes
Return Value:	None.
PY Example:	`oDoc.ScrSetNumModesToCompute(10)`

ScrSetNumViaSidesInDcSimulation

Sets the number of sides to use when generating polyhedral mesh approximations to cylindrical vias during DC IR drop simulations.	
UI Command:	**Simulation** > **Compute DC IR**. Click **Other solver options** button and choose the **DC Advanced** tab. Select the number of sides in the **Via Discretization** field.
Syntax:	`obj.ScrSetNumViaSidesInDcSimulation(<numViaSides>)`
Parameters:	INT numViaSides
Return Value:	None.
PY Example:	`oDoc.ScrSetNumViaSidesInDcSimulation(8)`

ScrSetOptionsFor3DModelExport

Selects an options file for exporting a 3D model.	
UI Command:	**Export** > **3D Export Options**.
Syntax:	`obj.ScrSetOptionsFor3DModelExport(<filePath>)`
Parameters:	BSTR filePath
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetOptionsFor3DModelExport ('C:/Files/options.config')`

List of options and example values:
`NUM_PADS_FACET_COUNT 8`
`NUM_ANTIPAD_FACET_COUNT 8`
`DEFAULT_SOLDERBALL_FACET_COUNT 8`
`VIA_SEGMENTS 8`
`DEFAULT_BONDWIRE_FACET_COUNT 6`
`UNITE_NETS 0`
`EXCLUDE_TERMINALS_FROM_UNITE 1`
`TOTAL_VIA_FILL 0`
`IGNORE_DIELECTRICS 0`

List of options and example values:

```
SEPARATE_DIELECTRICS 1

UNITE_LAYERS_WITH_SAME_MATERIALS 1

IGNORE_UNCONNECTED_PADS 1

CLIP_TRACES 0

CUT_DIELECTRICS 0

CREATE_SHEET_BODIES 0

GENERATE_TERMINALS 0

IGNORE_PLANES_WITH_AREA_LESS_THAN_THRESOLD 1

IGNORE_FLOAT_BODIES 0

MIN_PLANE_AREA 0.358979

MIN_EDGE_LENGTH_PADS 1um

MIN_EDGE_LENGTH_PLANES 1um

MIN_EDGE_LENGTH_TRACES 1um

MIN_DIELECTRIC_EDGE_LENGTH 10um

DIELECTRIC_EXPANSION_FACTOR 0.100000

IGNORE_HOLES 1

MIN_HOLE_AREA 0.358979

REMOVE-PLATING_TAILS 0

SUBTRACT_METAL_FROM_SUBSTRATE 0

DISCRETIZE_ARCS 0

CHOP_TRACE_ENDS 0

AIRBOX_THICKNESS_FACTOR 1.100000

AIRBOX_PAD_AMOUNT_PLUS_Z 0.500000

AIRBOX_PAD_AMOUNT_MINUS_Z 0.500000

PORT_PAD_AMOUNT 0.500000

CREATE_PORTS_FOR_PWR_GND_NETS 0

PORTS_FOR_PWR_GND_NETS 0
```

List of options and example values:

```
LAUNCH_HFSS 1

USE_CAUSAL_MATERIALS 1

AUTO_DC_THICKNESS 1

HFSS_VERSION 2014

SOLVE_CAPACITANCE 1

SOLVE_DC_RESISTANCE 0

SOLVE_DC_INDUCTANCE_RESISTANCE 0

SOLVE_AC_INDUCTANCE_RESISTANCE 0

SOLVE_PROJECT 0

LAUNCH_Q3D 1

ASSIGN_SOLDER_BALLS_AS_SOURCES 0

Q3D_MERGE_SOURCES 0

Q3D_MERGE_SINKS 0

Q3D_VERSION 2014

ACIS_VERSION 0
```

ScrSetPadOnLayer

Changes an existing pad's shape or dimension; deletes an existing pad (by passing a shape of "None"); or adds a pad to the specified layer.	
UI Command:	**Home** > **Edit Padstacks**.
Syntax:	`obj.ScrSetPadOnLayer(<padstackName>, <layerName>, <shape>, <width>, <height>)`
Parameters:	BSTR padstackName BSTR layerName BSTR shape ("None", "Circle", "Oblong", or "Rectangle") BSTR width (including unit of measure) BSTR height (including unit of measure)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetPadOnLayer('VIA_M1_M2', 'METAL-1', 'Circle', '0.6mm', '0.6mm')`

ScrSetPadstackMaterial

Changes a padstack's material.	
UI Command:	**Home** > **Edit Padstacks**.
Syntax:	`obj.ScrSetPadstackMaterial(<padstackName>, <materialName>)`
Parameters:	BSTR padstackName BSTR materialName
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetPadstackMaterial('VIA_M1_M2', 'magnesium')`

ScrSetPadstackViaPlatingAbsolute

Changes a padstack's via plating absolute value.	
UI Command:	**Home** > **Edit Padstacks**. Select **Absolute** and set value.

Changes a padstack's via plating absolute value.	
Syntax:	`obj.ScrSetPadstackViaPlatingAbsolute (<padstackName>, <viaPlatingAbsolute>)`
Parameters:	BSTR padstackName BSTR viaPlatingAbsolute (including unit of measure; assumed to be meters if no unit specified)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetPadstackViaPlatingAbsolute('VIA_M1_M2', '0.1mm')`

ScrSetPadstackViaPlatingRatio

Changes a padstack's via plating ratio.	
UI Command:	**Home** > **Edit Padstacks**. Select **Ratio** and select value.
Syntax:	`obj.ScrSetPadstackViaPlatingRatio(<padstackName>, <value>)`
Parameters:	BSTR padstackName DOUBLE value (percentage between 0 and 1; e.g., 0.6 = 60%)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetPadstackViaPlatingRatio('VIA_M1_M2', 0.6)`

ScrSetPlotAfterDcSimulation

Controls whether current/power/voltage plots are generated after DC IR drop simulations conclude.	
UI Command:	**Simulation** > **Compute DC IR**. Click **Other Solver Options** > **DC**. Select **Plot Current Density and Voltage Distribution**.
Syntax:	`obj.ScrSetPlotAfterDcSimulation(<plot>)`
Parameters:	BOOL plot (TRUE = plot; FALSE = do not plot)
Return Value:	None.
PY Example:	`oDoc.ScrSetPlotAfterDcSimulation(True)`

ScrSetPlotLayers

Sets the layers specified for a Frequency Sweep.	
UI Command:	**Simulation** > **Compute Frequency Sweeps**. From the **Voltage Surface Plot Options** area, select layers.
Syntax:	`obj.ScrSetPlotLayers(<plotLayer>,<refLayer>)`
Parameters:	BSTR plotLayer BSTR refLayer (ground)
Return Value:	INT: • **0** – Success • **Else** – Failure
PY Example:	`oDoc.ScrSetPlotLayers('L2','GND')`

ScrSetPlotSyzMag

Selects "Plot Magnitude" for various simulations.	
UI Command:	**Results** > **[Simulation Type]** > **[Simulation Name]** > **Plot Magnitude**.
Syntax:	`obj.ScrSetPlotSyzMag(<flag>)`
Parameters:	BOOL flag (TRUE = plot magnitude; FALSE = do not plot magnitude)
Return Value:	None.
PY Example:	`oDoc.ScrSetPlotSyzMag(1)`

ScrSetPlotSyzPhase

Selects "Plot Phase Animation" for various simulations.	
UI Command:	**Results** > **[Simulation Type]** > **[Simulation Name]** > **View Results** >

Selects "Plot Phase Animation" for various simulations.	
	Phase Animation.
Syntax:	`obj.ScrSetPlotSyzPhase(<flag>)`
Parameters:	BOOL flag (TRUE = plot phase animation; FALSE = do not plot phase animation)
Return Value:	None.
PY Example:	`oDoc.ScrSetPlotSyzPhase(1)`

ScrSetPortNamingConvention

Sets the port naming convention used in the following port generation commands: **ScrPlacePortsAtPinsOnSelectedNets, ScrPlacePortsAtPinsOnSelectedNetsPinNamesOut, ScrPlacePortsAtPinsOnSelectedNetsExcludePart**	
UI Command:	None.
Syntax:	`obj.ScrSetPortNamingConvention (<namingConvention>)`
Parameters:	BSTR namingConvention
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetPortNamingConvention('TestPort_ $POSTERMINAL_$NETNAME_Test')`

ScrSetPowerGroundNets

Selects nets to be designated power and ground nets.	
UI Command:	**Power/Ground Identification** in **Nets** window.
Syntax:	`obj.ScrSetPowerGroundNets(<netNames>, <appendToCurrentNetsSelected>)`
Parameters:	ARRAY netNames BOOL appendToCurrentNetsSelected (TRUE = nets already set to power/ground remain power/ground; FALSE = all nets not in the array are set to non-power/ground.)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetPowerGroundNets (['Net1','Net2','Net3'],1)`

ScrSetPowerGroundNetsFromFile

Selects nets to be designated power and ground nets.	
UI Command:	**Power/Ground Identification** in **Nets** window.
Syntax:	`obj.ScrSetPowerGroundNetsFromFile(<filePath>, <appendToCurrentNetsSelected>)`
Parameters:	BSTR filePath BOOL appendToCurrentNetsSelected (TRUE = nets already set to power/ground remain power/ground; FALSE = all nets not in the file are set to non-power/ground.)
Return Value:	None.
PY Example:	`oDoc.ScrSetPowerGroundNetsFromFile('C:/Files/power_ground_nets.txt',1)`

ScrSetProjectModified

Determines whether you will be prompted to save before closing or loading a different project.	
UI Command:	None.
Syntax:	`obj.ScrSetProjectModified(<p>)`
Parameters:	BOOL p (TRUE = sets project as modified, will be prompted to save; FALSE = no save prompt)

Determines whether you will be prompted to save before closing or loading a different project.	
Return Value:	None.
PY Example:	`oDoc.ScrSetProjectModified(1)`

ScrSetPsiOptionsFromFile

Sets general PSI simulation options from an XML configuration file.	
UI Command:	**Simulation** > **PSI Options** > **Import Settings**. Select file.
Syntax:	`obj.ScrSetPsiOptionsFromFile(<filename>)`
Parameters:	BSTR filename (full path)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetPsiOptionsFromFile('D:/Tests/Test.sps')`

ScrSetPsiPortType

Sets the PSI port type for a specified port.	
UI Command:	None.
Syntax:	`obj.ScrSetPsiPortType(<portName>, <portType>)`
Parameters:	BSTR portName BSTR portType (See: SIwave-PSI Best Practices - Port Setup)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetPsiPortType('Port1','Lumped')`

ScrSetPsiSyzInterpOptions

Sets PSI SYZ Simulation options.	
UI Command:	**Simulation** > **PSI** > **Compute SYZ Parameters**.
Syntax:	`obj.ScrSetPsiSyzInterpOptions(<interp>, <fastsweep>, <adaptiveSamp>, <enforceDC>)`
Parameters:	INT interp (0 = Discrete Sweep; 1 = Interpolating Sweep) INT fastsweep (0 = Disable Fast Sweep; 1 = Enable Fast Sweep) INT adaptiveSamp (0 = Disable Adaptive Sampling; 1 = Enable

Sets PSI SYZ Simulation options.	
	Adaptive Sampling) INT enforceDC (for Adaptive Sampling, 0 = do not enforce DC point and causality; 1 = enforce DC point and causality)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetPsiSyzInterpOptions(1, 0, 1, 1)`

ScrSetRefineBondwiresInDcSimulation

For DC simulations, selects or deselects option to refine mesh along bondwires.	
UI Command:	**Simulation** > **Options**. On **DC Advanced** tab, select or deselect **Refine Mesh Along Bondwires**.
Syntax:	`obj.ScrSetRefineBondwiresInDcSimulation (<refineBws>)`
Parameters:	BOOL refineBws (TRUE = select; FALSE = deselect)
Return Value:	None.
PY Example:	`oDoc.ScrSetRefineBondwiresInDcSimulation(1)`

ScrSetRefineDcSimulation

Activates or deactivates adaptive mesh refinement during DC IR drop simulations.	
UI Command:	**Simulation** > **Compute DC IR**. Click **Other Solver Options** > **DC Advanced**. Select or deselect **Perform Adaptive Mesh Refinement**.
Syntax:	`obj.ScrSetRefineDcSimulation(<refine>)`
Parameters:	INT refine (0 = deselect refinement; 1 = select refinement)
Return Value:	None.
PY Example:	`oDoc.ScrSetRefineDcSimulation(1)`

ScrSetRefineViasInDcSimulation

For DC simulations, selects or deselects option to refine mesh along vias.	
UI Command:	**Simulation** > **Options**. On **DC Advanced** tab, select or deselect **Refine Mesh Along Vias**.
Syntax:	`obj.ScrSetRefineViasInDcSimulation(<refineVias>)`
Parameters:	BOOL refineBws (TRUE = select; FALSE = deselect)
Return Value:	None.
PY Example:	`oDoc.ScrSetRefineViasInDcSimulation(1)`

ScrSetRemoveCutoutsByArea

Selects whether SIwave will always preserve cutouts whose area is greater than the minimum void area (controlled by the ScrSetMinCutoutArea function). By default, SIwave automatically decides which cutouts are to be defeatured (i.e., not meshed) during simulation.	
UI Command:	**Simulation** > **Options**. Click **SI/PI Advanced**. Select or deselect **Automatic** Mesh Refinement.
Syntax:	`obj.ScrSetRemoveCutoutsByArea <p>`
Parameters:	INT p (0 = automatic mesh refinement; 1 = no automatic mesh refinement)
Return Value:	None.
PY Example:	`oDoc.ScrSetRemoveCutoutsByArea(1)`

ScrSetResonantModeMaxFreq

For Resonant Modes simulations, sets the maximum frequency for analysis.	
UI Command:	**Simulation** > **Compute Resonant Modes**. Enter a **Maximum Frequency** value, in Hz.
Syntax:	`obj.ScrSetResonantModeMaxFreq(<freq>)`
Parameters:	DOUBLE freq (in Hz)
Return Value:	None.
PY Example:	`oDoc.ScrSetResonantModeMaxFreq(2E+06)`

ScrSetResonantModeMinFreq

For Resonant Modes simulations, sets the minimum frequency for analysis.	
UI Command:	**Simulation** > **Compute Resonant Modes**. Enter a **Minimum Frequency** value, in Hz.
Syntax:	`obj.ScrSetResonantModeMinFreq(<freq>)`
Parameters:	DOUBLE freq (in Hz)
Return Value:	None.
PY Example:	`oDoc.ScrSetResonantModeMinFreq(2E+06)`

ScrSetRLCValues

Changes RLC values for a specified RLC.	
UI Command:	None.
Syntax:	`obj.ScrSetRLCValues(<partName>, <r>, <l>, <c>)`
Parameters:	BSTR partName BSTR r (including unit of measure) BSTR l (including unit of measure) BSTR c (including unit of measure)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetRLCValues('RLC_XYZ_R', '1.5kohm', '1e-12h', '1uf')`

ScrSetSignalNets

Selects nets to be designated signal nets.	
UI Command:	**Simulation** > **Signal Net Analyzer**. Select nets.
Syntax:	`obj.ScrSetSignalNets(<netNames>, <appendToCurrentNetsSelected>)`
Parameters:	ARRAY netNames BOOL appendToCurrentNetsSelected (TRUE = nets already set as signal nets remain so; FALSE = all nets not in the array are set to non-signal nets.)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetSignalNets(['Net1','Net2','Net3'],1)`

ScrSetSignalNetsFromFile

Selects nets to be designated signal nets.	
UI Command:	**Simulation** > **Signal Net Analyzer**. Select nets.
Syntax:	`obj.ScrSetSignalNetsFromFile(<filePath>, <appendToCurrentNetsSelected>)`
Parameters:	BSTR filePath BOOL appendToCurrentNetsSelected (TRUE = nets already set as signal nets remain so; FALSE = all nets not in the file are set to non-signal nets.)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetSignalNetsFromFile('C:/Files/signal_nets.txt',1)`

ScrSetSimulationName

Sets the simulation name for a specified simulation type.	
UI Command:	From the **Simulation** menu, click any option to compute a simulation and open the corresponding simulation window. Specify the simulation name.
Syntax:	`obj.ScrSetSimulationName(<simType>, <simName>)`
Parameters:	BSTR simType ("ac", "dc", "eigen", "ff", "nf", "syz" or "hfss_syz") BSTR simName
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetSimulationName('syz', 'S-param no caps')`

ScrSetSIwaveSolverMemLimit

Sets the solver memory limit to an absolute value or percent of available system memory.	
UI Command:	From the **Simulation** tab, click **Options** or navigate to **CPA Options**.
Syntax:	`obj.ScrSetSIwaveSolverMemLimit(<Number>, <MemLimit>)`
Parameters:	DOUBLE Number (any integer representing available memory units or percentage (e.g., "50000", "50", "0.05", "50")) BSTR MemLimit (unit of measurement or % to set the memory limit to a percentage of available memory (i.e., "MB", "GB", "TB", "%"))
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetSIwaveSolverMemLimit('50', '%')`

ScrSetSketchedBwProfile

Sets a specified sketched profile to all bondwires of a specified model.	
UI Command:	From the **Simulation** menu, click any option to compute a simulation and open the corresponding simulation window. Specify the simulation name.
Syntax:	`obj.ScrSetSketchedBwProfile(<bwModelName>, <filePath>, <radius>)`
Parameters:	BSTR bwModelName BSTR filePath DOUBLE radius
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetSketchedBwProfile('WB_PROFILE_1', 'SketchedProfile.bwp', 20)`

Format of *.bwp:

UNITS microns

0.000000 400.000000

300.000000 700.000000

900.000000 700.000000

1200.000000 300.000000

ScrSetSketchedBwProfileFromArray

Sets a sketched profile (array of points) to all bondwires of a specified model.	
UI Command:	None.
Syntax:	`obj.ScrSetSketchedBwProfileFromArray(<modelName>, <unitName>, <bwPointArray>, <radius>)`
Parameters:	BSTR modelName BSTR unitName ARRAY bwPointArray (requires 8 doubles for 4 points) DOUBLE (radius)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetSketchedBwProfileFromArray('BW_PROFILE_1', 'micron', [0.0,400.0,300.0,700.0,900.0,700.0,1200.0,300.0], 20)`

ScrSetSnapLengthThreshold

For DC simulations, sets the maximum length value for snapping vertices.	
UI Command:	**Simulation** > **Options**. On **DC Advanced** tab, enter a value in the **Snap vertices separated by less than** field.
Syntax:	`obj.ScrSetSnapLengthThreshold (<snapLengthThreshold>)`
Parameters:	BSTR snapLengthThreshold
Return Value:	None.
PY Example:	`oDoc.ScrSetSnapLengthThreshold('0.0734235mil')`

ScrSetSolderballMaterial

Assigns a material to a specified solderball. NOTE: You *must* assign a solderball profile before assigning a material.	
UI Command:	**Home** > **Solderball Properties**. Assign a material.
Syntax:	`obj.ScrSetSolderballMaterial(<padstackName>, <material>)`
Parameters:	BSTR padstackName BSTR material
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetSolderballMaterial('BP_BOT_500X600', 'silver')`

ScrSetSolderballParameters

Assigns solderballs/bumps of the specified dimensions (in the design's geometry units) to the specified padstack.	
UI Command:	**Home** > **Solderball Properties**. Select a padstack and assign solderballs/bumps.
Syntax:	`obj.ScrSetSolderballParameters(<padstackName>, <aboveStackup>, <height>, <radius>)`
Parameters:	BSTR padstackName BOOL/INT aboveStackup (TRUE/1 = above stackup; FALSE/0 = below stackup) DOUBLE height DOUBLE radius
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetSolderballParameters('BUMPPAD', 1, 100, 30)`

ScrSetSourceMagnitude

Sets the current or voltage magnitude of a specified source.	
UI Command:	None.
Syntax:	`obj.ScrSetSourceMagnitude(<refDes>, <magnitude>)`
Parameters:	BSTR refDes BSTR magnitude (including unit)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetSourceMagnitude('I_1', '2.5A')`

ScrSetSparamModelSetup

Configures an N-Port S-parameter model for specified part(s).	
UI Command:	None.
Syntax:	`obj.ScrSetSparamModelSetup(<partName>, <activeRefDesList>, <fileName>, <modelName>, <refNet>, <pinOrder>)`
Parameters:	BSTR partName ARRAY activeRefDesList BSTR fileName (including path) BSTR modelName BSTR refNet ARRAY pinOrder
Return Value:	BOOL • **0** – Failure • **1** – Success

PY Example:	`refdes1 = ['A1']`
	`pinorder1 = []`
	`doc.ScrSetSparamModelSetup('TESTPART', refdes1, 'D:/Tests/US142197/DLP11TB800UL2.s4p', 'Model1', 'NET_9', pinorder1)`

ScrSetSpiceModelSetup

Configures an N-Port Spice model for specified part(s).	
UI Command:	None.
Syntax:	`obj.ScrSetSpiceModelSetup(<partName>, <activeRefDesList>, <fileName>, <modelName>, <pinOrder>)`
Parameters:	BSTR partName ARRAY activeRefDesList BSTR fileName (including path) BSTR modelName ARRAY pinOrder
Return Value:	BOOL • **0** – Failure • **1** – Success

PY Example:	`refdes2 = ['A2']`
	`pinorder2 = ['4', '3', '2', '1']`
	`oDoc.ScrSetSpiceModelSetup('TESTPART', refdes2, 'D:/Tests/US142197/testmod.sp', 'Model2', pinorder2)`

ScrSetSpiceSubcktFormat

Sets an appropriate output format for Full Wave Spice simulations.	
UI Command:	None.
Syntax:	`obj.ScrSetSpiceSubcktFormat(<format>)`
Parameters:	BSTR format (case-sensitive choices are: HSPICE, MSPICE, PSPICE, or Spectre)
Return Value:	None.
PY Example:	`oDoc.ScrSetSpiceSubcktFormat('PSPICE')`

ScrSetStackupLayerThickness

Sets the thickness of a specified layer.	
UI Command:	**Home** > **Layer Stackup Editor**. Edit a layer's **Thickness** value.
Syntax:	`obj.ScrSetStackupLayerThickness(<layerName>, <thickness>, <redraw>)`
Parameters:	BSTR layerName BSTR thickness (including unit) BOOL redraw (TRUE/1 = redraw; FALSE/0 = do not redraw)
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetStackupLayerThickness('LAYER-1', '0.79mils', 1)`

ScrSetStackupLayerThicknessUnit

Sets the layer thickness unit.	
UI Command:	None.
Syntax:	`obj.ScrSetStackupLayerThicknessUnit(<unit>)`
Parameters:	BSTR unit ("microns", "um", "mils", "mm", "cm", "inches", or "meters")
Return Value:	BOOL: • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetStackupLayerThicknessUnit('um')`

ScrSetSweepFreqRange

Sets the minimum and maximum frequencies for a frequency sweep.	
UI Command:	None.
Syntax:	`obj.ScrSetSweepFreqRange(<minFreq>, <maxFreq>)`
Parameters:	DOUBLE minFreq (in Hz; 1.0 = 1Hz, 1000.0 = 1kHz, 1e-6 = 1MHz; 1e-9 = 1GHz) DOUBLE maxFreq (in Hz; 1.0 = 1Hz, 1000.0 = 1kHz, 1e-6 = 1MHz; 1e-9 = 1GHz)
Return Value:	None.
PY Example:	`oDoc.ScrSetSweepFreqRange(5.0,5.0)`

ScrSetSweepMaxFreq

Sets the maximum frequency for a frequency sweep.	
UI Command:	None.
Syntax:	`obj.ScrSetSweepMaxFreq(<maxFreq>)`
Parameters:	DOUBLE maxFreq (in Hz; 1.0 = 1Hz, 1000.0 = 1kHz, 1e-6 = 1MHz; 1e-9 = 1GHz)
Return Value:	None.
PY Example:	`oDoc.ScrSetSweepMaxFreq(5.0)`

ScrSetSweepMinFreq

Sets the minimum frequency for a frequency sweep.	
UI Command:	None.
Syntax:	`obj.ScrSetSweepMinFreq(<minFreq>)`
Parameters:	DOUBLE minFreq (in Hz; 1.0 = 1Hz, 1000.0 = 1kHz, 1e-6 = 1MHz; 1e-9 = 1GHz)
Return Value:	None.
PY Example:	`oDoc.ScrSetSweepMinFreq(5.0)`

ScrSetSweepNumFreqPoints

Sets the number of frequency points for a frequency sweep.	
UI Command:	None.
Syntax:	`obj.ScrSetNumSweepFreqPoints(<numPoints>)`
Parameters:	INT numPoints
Return Value:	None.
PY Example:	`oDoc.ScrSetSweepNumFreqPoints(200)`

ScrSetSyzInterpSweep

Sets the SYZ-parameter sweep type to interpolating.	
UI Command:	**Simulation** > **Compute SYZ Parameters**. Select **Interpolating Sweep**.
Syntax:	`obj.ScrSetSyzInterpSweep(<p>)`
Parameters:	BOOL p (TRUE = Interpolating; FALSE = Discrete)
Return Value:	None.
PY Example:	`oDoc.ScrSetSyzInterpSweep(True)`

ScrSetSyzInterpSweepParams

Sets the convergence criterion (error tolerance) and maximum number of points to use during SYZ interpolating sweeps.	
UI Command:	**Simulation** > **Compute SYZ Parameters**. Select **Interpolating Sweep** and enter a value for **Error Tolerance**.
Syntax:	`obj.ScrSetSyzInterpSweepParams(<convergence>, <maxInterpPts>)`
Parameters:	DOUBLE convergence INT maxInterpPts
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetSyzInterpSweepParams(0.005, 150)`

ScrSetTDCrosstalkScanParameters

Specifies the parameters for running a time domain Crosstalk Scan via ScrRunSimulation.	
UI Command:	**Simulation** > **Crosstalk Scan** > **Time Domain**. Set values for solver options.
Syntax:	`obj.ScrSetTDCrosstalkScanParameters(<partNameList>, <refDesNameList>, <pinNameList>, <impedanceList>, <typeList>, <riseTimeList>, <voltageList>)`
Parameters:	ARRAY partNameList ARRAY refDesNameList ARRAY pinNameList ARRAY impedanceList ARRAY typeList ("1" represents Driver; "0" represents Receiver) ARRAY riseTimeList ARRAY voltageList **Each input parameter is an array of strings, and the number of elements in the array should be the same for all parameters. The first 3 are used to identify the pin and the rest are parameters to apply for the pin.
Return Value:	BOOL • **0** – Failure • **1** – Success

PY Example:	`parts = ["G83568-001", "IPD031-201"]`
	`refdes = ["U1A1", "U2A5"]`
	`pins = ["K7", "9"]`
	`impedances = ["55ohms", "60"]`
	`types = ["0", "1"]`
	`risetimes = ["0", "6ns"]`
	`voltages = ["0", "1.2V"]`
	`oDoc.ScrSetTDCrosstalkScanParameters(parts, refdes, pins, impedances, types, risetimes, voltages)`

ScrSetThermalPadOnLayer

Changes, adds, or deletes thermal pads of a specified padstack. **If no thermal pad exists, script adds thermal pads to the specified padstack.** **If thermal pad exists, script modifies pad shape and/or dimensions.** **To delete a pad, choose "None" as the `shapeName`.**	
UI Command:	**Home** > **Edit Padstack**. Select **Thermal Relief Pag Properties**.
Syntax:	`obj.ScrSetThermalPadOnLayer(<padstackName>, <layerName>, <shapeName>, <widthString>, <heightString>)`
Parameters:	BSTR padstackName BSTR layerName BSTR shapeName ("None", "Circle", "Oblong", or "Rectangle") BSTR widthString (in mils if no unit specified; for circle pads, this is the radius) BSTR heightString (in mils if no unit specified)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetThermalPadOnLayer('VIA_M1_M2', 'METAL-1', 'Rectangle', '1.2mm', '1.2mm')`

ScrSetTouchstoneExportFormatToDb

Sets the magnitude format in exported touchstone files.	
UI Command:	None.
Syntax:	`obj.ScrSetTouchstoneExportFormatToDb(<exportInDb>)`
Parameters:	BOOL exportInDb (TRUE = magnitude is specified in decibels [log of the magnitude]; FALSE = default settings)
Return Value:	None.
PY Example:	`oDoc.ScrSetTouchstoneExportFormatToDb(1)`

ScrSetTouchstonePortOrder

Specifies port order in exported touchstone files. **NOTE: If any ports are not specified in the input, they will be sorted in alphabetical order and added to the end of the list.**	
UI Command:	None.
Syntax:	`obj.ScrSetTouchstonePortOrder(<portNamesList>)`
Parameters:	ARRAY portNamesList
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetTouchstonePortOrder(['port1','port2'])`

ScrSetTouchstonePortRemapping

Sets the alternate port naming convention when name remapping is enabled in touchstone file exports.	
UI Command:	None.
Syntax:	`obj.ScrSetTouchstonePortRemapping(<portName>, <namingConv>)`
Parameters:	BSTR portName BSTR namingConv
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetTouchstonePortRemapping('left', 'foo')`

ScrSetTraceCouplingDistance

Sets the XY coupling distance.	
UI Command:	**Simulation** > **Options**. On **CPA** tab, enter a value for **XY coupling distance**.
Syntax:	`obj.ScrSetTraceCouplingDistance (<traceCouplingDist>, <units>)`
Parameters:	DOUBLE traceCouplingDist BSTR units
Return Value:	None.
PY Example:	`oDoc.ScrSetTraceCouplingDistance('7.79', 'mils')`

ScrSetUniformTemperature

Sets the uniform design temperature.	
UI Command:	**Simulation** > **Options**. On the **SI/PI** tab, enter a value in the **Set uniform design temperature to** field.
Syntax:	`obj.ScrSetUniformTemperature(<temp>)`
Parameters:	BSTR temp (temperature, including units)
Return Value:	None.
PY Example:	`oDoc.ScrSetUniformTemperature('100cel')`

ScrSetZ0ScanParameters

Specifies the parameters for running an Impedance Scan via ScrRunSimulation.	
UI Command:	**Simulation** > **Impedance Scan**. Set **Nominal Z0**, **Issue warning...** and **Issue violation...** values.
Syntax:	`obj.ScrSetZ0ScanParameters(<impedance>, <warningThreshold>, <violationThreshold>)`
Parameters:	DOUBLE impedance DOUBLE warningThreshold DOUBLE violationThreshold
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrSetZ0ScanParameters(50,15,30)`

ScrSetZ0ScanReportImageHeight

When generating Impedance Scan reports, specifies the resolution (in pixels) of the smaller dimension of the images. For designs where the board is wider than it is tall, this corresponds to the y-resolution of the image.	
UI Command:	None.
Syntax:	`obj.ScrSetZ0ScanReportImageHeight(<imgHeight>)`
Parameters:	LONG imgHeight
Return Value:	BOOL • **0** – Failure (invalid height) • **1** – Success
PY Example:	`oDoc.ScrSetZ0ScanReportImageHeight(3000)`

ScrShowDcPowerTreePowerLossOfNets

Adds a list of every net and its corresponding power loss, beneath the power tree.	
UI Command:	**Results** Tab > **DC IR Drop** > **[Simulation Name]** > **Export Power Tree** > **Output Power Loss of every net**.
Syntax:	`obj.ScrShowDcPowerTreePowerLossOfNets(<showList>)`
Parameters:	BOOL showList (True to activate or False to deactivate)
Return Value:	INT: • **0** – if False;does not display the **Power Loss On Every Net** list beneath the power tree. • **1** – if True; displays the **Power Loss On Every Net** list beneath the power tree
PY Example:	`oDoc.ScrShowDcPowerTreePowerLossOfNets('1')`

Note:

Use before ScrExportDcPowerTree.

ScrShowSelectedNetsOnly

Determines whether SIwave displays all nets or selected nets only.	
UI Command:	None.
Syntax:	`obj.ScrShowSelectedNetsOnly(<selOnly>)`
Parameters:	BOOL selOnly (TRUE/1 = display only selected nets; FALSE/0 = display all nets)
Return Value:	None.
PY Example:	`oDoc.ScrShowSelectedNetsOnly(1)`

ScrSIwaveEnable_3D_DDM

Enables or disables 3D DDM.	
UI Command:	None.
Syntax:	`obj.ScrSIwaveEnable_3D_DDM(<flag>)`
Parameters:	BOOL flag
Return Value:	None.
PY Example:	`oDoc.ScrSIwaveEnable_3D_DDM(True)`

ScrSIwaveEnableHFSSRegions

Enables or disables HFSS Regions **Note: Region extents must exist in the layout for this setting to be meaningful.**	
UI Command:	None.
Syntax:	`obj.ScrSIwaveEnableHFSSRegions(<flag>)`
Parameters:	BOOL flag
Return Value:	None.
PY Example:	`oDoc.ScrSIwaveEnableHFSSRegions(True)`

ScrSIwaveEnableReturnCurrentDistribution

Enables or disables tracing of return current distribution.	
UI Command:	**Simulation** > **Options**. On **SI/PI Advanced** tab, select **Trace return current distribution**.
Syntax:	`obj.ScrSIwaveEnableReturnCurrentDistribution (<flag>)`
Parameters:	BOOL flag (TRUE/1 = select; FALSE/0 = deselect)
Return Value:	None.
PY Example:	`oDoc.ScrSIwaveEnableReturnCurrentDistribution(1)`

ScrSIwaveIncludeSourceParasitics

For Resonance Sweep/SYZ simulations, enables or disables option to include source parasitics.	
UI Command:	**Simulation** > **Options**. On **SI/PI Advanced** tab, select **Include Voltage/Current Source Connections/Parasitics in Resonance/SYZ Simulations**.
Syntax:	`obj.ScrSIwaveIncludeSourceParasitics(<flag>)`
Parameters:	BOOL flag (TRUE/1 = include; FALSE/0 = do not include)
Return Value:	None.
PY Example:	`oDoc.ScrSIwaveIncludeSourceParasitics(1)`

ScrSIwaveSyzComputeExactDcPoint

For SYZ simulations, selects or deselects the Compute Exact DC Point option.	
UI Command:	**Simulation** > **Compute SYZ Parameters**. Select **Compute Exact DC Point**.
Syntax:	`obj.ScrSIwaveSyzComputeExactDcPoint(<flag>)`
Parameters:	BOOL flag (TRUE = Compute exact DC point; FALSE = Do not compute exact DC point)
Return Value:	None.
PY Example:	`oDoc.ScrSIwaveSyzComputeExactDcPoint(True)`

Important:

The **Compute Exact DC Point** and **Enforce Causality** options are mutually exclusive. Selecting both generates an error.

ScrSIwaveSyzEnforceCausality

For SYZ simulations, selects or deselects the Enforce Causality option.	
UI Command:	**Simulation** > **Compute SYZ Parameters**. Select **Enforce Causality**.
Syntax:	`obj.ScrSIwaveSyzEnforceCausality(<flag>)`
Parameters:	BOOL flag (TRUE = Enforce; FALSE = Do not enforce)
Return Value:	None.
PY Example:	`oDoc.ScrSIwaveSyzEnforceCausality(True)`

Important:

The **Enforce Causality** and **Compute Exact DC Point** options are mutually exclusive. Selecting both generates an error.

ScrSIwaveSyzEnforcePassivity

For SYZ simulations, selects or deselects the Enforce Passivity option.	
UI Command:	**Simulation** > **Compute SYZ Parameters**. Select **Enforce Passivity**.
Syntax:	`obj.ScrSIwaveSyzEnforcePassivity(<flag>)`
Parameters:	BOOL flag (TRUE = Enforce; FALSE = Do not enforce)
Return Value:	None.
PY Example:	`oDoc.ScrSIwaveSyzEnforcePassivity(True)`

ScrUnselectAll

Deselects all selected objects.	
UI Command:	Right-click in the Modeling workspace. Click **Unselect All**.
Syntax:	`obj.ScrUnselectAll()`
Parameters:	None.
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrUnselectAll()`

ScrUpdateComponentTree

For scripts run in graphical mode, updates the component tree. Scripted modifications will not display in the tree until this function is called. NOTE: This script is inappropriate for scripts run in non-graphical mode.	
UI Command:	None.
Syntax:	`obj.ScrUpdateComponentTree`
Parameters:	None.
Return Value:	None.
PY Example:	`oDoc.ScrUpdateComponentTree()`

ScrUseIcepakTemperatureDataInDc

Enables or disables the use of Icepak thermal data in DC simulations.	
UI Command:	**Simulation** > **Compute DC IR**. Select Icepak data.
Syntax:	`obj.ScrUseIcepakTemperatureDataInDc(<use>)`
Parameters:	BOOL use (TRUE = Use thermal data; FALSE = Do not use thermal data)
Return Value:	None.
PY Example:	`oDoc.ScrUseIcepakTemperatureDataInDc(True)`

ScrUseTouchstonePortRemapping

Enables or disables the use of port name remapping for touchstone file exports.	
UI Command:	None.
Syntax:	`obj.ScrUseTouchstonePortRemapping(remapNames)`
Parameters:	BOOL/INT remapNames (TRUE/1 = Enable; FALSE/0 = Disable)
Return Value:	BOOL • **0** – Failure • **1** – Success
PY Example:	`oDoc.ScrUseTouchstonePortRemapping(1)`

Solve

Solves a specified simulation.	
UI Command:	**Launch** button in simulation settings window.
Syntax:	`obj.Solve(solutionName)`
Parameters:	BSTR solutionName
Return Value:	Simulation results in text format.
PY Example:	`oDoc.Solve('Near Field Sim 1')`

StopSimLink

Aborts a specified simulation.	
UI Command:	**Process Monitor** > **Abort Simulation**.
Syntax:	`obj.StopSimLink(<simID>, <abort>)`
Parameters:	INT simID BOOL abort (TRUE/1 = abort; FALSE/0 = do not abort)
Return Value:	None.
PY Example:	`oDoc.StopSimLink(121, 1)`

SupportSParamLink

Returns whether design supports S-parameter links.	
UI Command:	None.
Syntax:	`obj.SupportSParamLink()`
Parameters:	None.
Return Value:	BOOL
PY Example:	`oDoc.SupportSParamLink()`

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