



Rapise User Manual

Version 3.0

Inflectra Corporation

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1 Company & Copyright

The logo for Rapise, featuring the word "Rapise" in a large, black, sans-serif font. A pink, triangular shape is positioned above the letter "a". A registered trademark symbol (®) is located to the right of the word.The logo for inflectra, featuring the word "inflectra" in a lowercase, black, sans-serif font. A yellow horizontal line is positioned below the word, and a registered trademark symbol (®) is located to the right of the word.

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2 Rapise User's Guide

2.1 About this Guide

The Rapise User's Guide is divided into four sections: Getting Started; Features; Dialogs, Views, and Menus; HowTos.

Getting Started

The **Getting Started** section is for new Rapise users. It has the following subsections:

1. An [Overview](#) of Rapise: what it's for and how to use it.
2. [Samples Index](#), where the sample projects included with Rapise are described.
3. [Tutorial: Windows Testing](#), a step-by-step tutorial for creating your first test with Rapise using a Windows desktop application.
4. [Tutorial: Web Testing](#), a slightly more advanced tutorial in using Rapise to test a web page.
5. [Tutorial: REST Web Services](#), a tutorial in using Rapise to test a RESTful web service API.
6. [Tutorial: SOAP Web Services](#) - a tutorial in using Rapise to test a SOAP web service API.
7. [Tutorial: Mobile Testing](#) - a tutorial explaining how to use Rapise to test a mobile application (in this case using Android)
8. [Tutorial: Manual Testing](#) - a tutorial explaining how to use Rapise to do exploratory / [manual testing](#).
9. [Tutorial: Java Testing](#) - a step-by-step tutorial for creating a Rapise test for Java AWT, Swing and SWT applications
10. [Tutorial: Qt Framework](#) - a step-by-step tutorial for creating a Rapise test for Qt Framework desktop applications.

Features

The features of Rapise are many. The features have been designed to make all aspects of test automation as easy as possible.

Most of the features of Rapise fall into one of five categories:

1. Building test scripts with little or no manual scripting.
2. Reading and interpreting results and reports.
3. Additional features and capabilities for sophisticated testing.
4. Writing more involved or complicated tests using scripting.
5. Extending Rapise to learn new or extended libraries of capabilities.

Depending on the application set being tested, not all of these features are necessarily needed for every situation.

For each feature, this document attempts to present:

1. The reason you might use a given feature.
2. A summary of the basic value of the feature.

3. An overview of how the feature works from the perspective of using it.
4. At least one useful sample that demonstrates how to use the feature.

Dialogs, Views, and Menus

This section details the Rapise GUI. Each subsection describes the function of a particular Dialog, View, or Menu. The purpose and consequences of all buttons, options, lists, and check boxes are listed.

How-Tos

This section focuses on specific tasks that a Rapise user might want to accomplish.

2.2 Getting Started

The **Getting Started** section is for new Rapise users. It has the following subsections:

1. An [Overview](#) of Rapise: what it's for and how to use it.
2. [Samples Index](#), where the sample projects included with Rapise are described.
3. [Tutorial: Windows Testing](#), a step-by-step tutorial for creating your first test with Rapise using a Windows desktop application.
4. [Tutorial: Web Testing](#), a slightly more advanced tutorial in using Rapise to test a web page.
5. [Tutorial: Testing REST Web Services](#), a tutorial in using Rapise to test a RESTful web service API.
6. [Tutorial: Testing SOAP Web Services](#), a tutorial in using Rapise to test a SOAP web service API.
7. [Tutorial: Mobile Testing](#) - a tutorial explaining how to use Rapise to test a mobile application (in this case using Android)
8. [Tutorial: Manual Testing](#) - a tutorial explaining how to use Rapise to create and execute [manual tests](#).
9. [Tutorial: Java Testing](#) - a tutorial explaining how to use Raise to test some simple AWT, Swing and SWT applications
10. [Tutorial: Qt Framework](#) - a tutorial explaining how to use Rapise to test a simple Qt Framework application

2.2.1 Overview

Why Use Rapise?

Rapise was created to make software testing easy and manageable without being prohibitively expensive.

Rapise was made easy for software test professionals, developers and professionals concerned with quality assurance to simply and quickly write a test to cover an application, a web page, or a single bug to prevent regression.

Make Testing Fast and Repeatable

Consider for a moment what it is you do to test your software today. Most likely it has some form of **user interface (UI)**, probably a **graphic user interface (GUI)**. So you will run the application, click

around, perhaps in some way that gives you complete coverage of all the features (but probably not if it's a large application or web). Then you will login, if appropriate, and you will fetch some data and modify some data, test some more controls - edit boxes, buttons, drop-down lists, links, etc. If you have just fixed a bug then you will focus on the area of the application where the bug occurred. You will enter data that causes the bug, or go through the control sequence that causes the bug.

Next time you come to fix a bug in this application, you will **do the same thing again..** Once again, you will focus on the area where the bug was.

Rapise presents you with **two methods for capturing specific tests**, and it will keep the test as a solo test or as part of a suite of tests that help you to qualify the application for release or a more formal QA process. Rapise is designed to allow the developer or the test professional to add new tests quickly and so to build up a library of tests.

There are two methods for capturing tests:

1. [Record](#) and [playback](#). In this type of test creation, you turn on the recorder and perform the actions needed to execute the test. Each test is saved to its own directory. A test consists of a javascript [test script](#) (.js), a meta-data file (*.sstest), and any number of additional supplementary scripts and data files. The test script is automatically generated after recording; simple modifications are required to make the test [data driven](#). [Checkpoints](#) can be added during recording, or manually into the script.
2. [Object-driven learning](#). Rapise considers each item on the page or within the application window to be an object. Examples are buttons, edit boxes, links, etc. To create a test using this technique, you have Rapise "[learn](#)" each control, and it will keep a miniature [database](#) of all the controls you "teach" it. To create a test, you write a script to instruct Rapise to perform a particular action on each object in the prescribed order. As any point along the way, the script you write can instruct Rapise to look inside an object and read its data and compare that value or content with what you expect it to be.

There are many methodologies with their own recommended approaches for designing testing strategies to ensure that application coverage is complete and meets the business requirements specification of the work being accomplished. Inflectra in general, recommends that you [create a new test](#) for each software requirement (to track progress) and for each issue in your issue tracking system (to test for regressions).

Choice of Scripting or Scriptless Rapise Visual Language (RVL)

Rapise gives you the choice of recording/writing your tests in a full [scripting language](#) - [JavaScript](#), or the [Rapise Visual Language \(RVL\)](#) which provides a completely scriptless approach to writing tests (based on a simple table-based format). The RVL option is simpler for users that are not programmers but it has less flexibility than using JavaScript.

You can have the best of both worlds, putting the more sophisticated steps into JavaScript [scenarios](#) and then including in the main RVL file.

Integration with Test Management

To help you manage the requirements and issue tracking processes and to ensure that you have adequate **test coverage**, Inflectra recommend that you use Rapise with a **test management system** such as [SpiraTest](#). That way you can maintain all your requirements, test cases and defects in a single place.

Once you have created the test, you can [playback](#) your test from within Rapise, run it from the

[command-line](#) or execute it remotely using RapiseLauncher in conjunction with [SpiraTest](#). A [report](#) detailing the outcome of each step of the test will be automatically generated.

[Recording](#), [playback](#), the [report](#), and the Rapise [engine](#) are all customizable.

2.2.2 Samples Index

Rapise includes several sample tests that you are free to read, modify, copy and use. They are located in: *RapiseDataDirectory\Samples*. Unless you specified otherwise, the *RapiseDataDirectory* will be:

C:\Users\Public\Documents\Rapise.

The sample tests are described below.

ActiveX

These samples demonstrate the testing of Microsoft ActiveX / COM controls used in Visual Basic applications including the MSComCtl library. The samples include the Microsoft FlexGrid Control, MS Common Toolbar Control, Microsoft Tabbed Dialog Control, TabStrip, and Microsoft Windows Common Controls 6.0 [MSCOMCTL.OCX].

AnalogRecorder

This sample demonstrates [Analog Recording](#).

Dynamics AX

This sample demonstrates using Rapise to test an installation of [Microsoft Dynamics AX](#) 2013 to perform some basic ERP functions.

Dynamics CRM

This sample demonstrates using Rapise to test an installation of [Microsoft Dynamics CRM](#) to perform some basic contact management functions.

FarPoint

This sample script demonstrates using the FarPoint library to test the FarPoint SpreadSheet Control.

HTML5

This sample tests a HTML5 application. This sample demonstrates the capabilities of the **HTML5** DOM browser library. The application under test contains various HTML5 specific controls, such as: color, date, datetime, email, range, progress, etc.

The sample is also available online at <http://www.libraryinformationsystem.org/Html5/AUTHHTML5.htm>

Java

This sample tests a Java AWT/SWING application. This sample demonstrates the capabilities of the **Java** library. The application under test contains various standard GUI controls, such as: button, edit,

tree, combo box, menu, etc.

Java SWT

This sample tests a Java SWT/RCP application. This sample demonstrates the capabilities of the **SWT** and **UIAutomation** libraries. The application under test contains various standard GUI controls, such as: button, edit, tree, combo box, menu, etc.

jQuery-UI

This sample illustrates using the jQuery HTML DOM extension library that allows you to record/playback test scripts against web applications using widgets from the jQuery Javascript library framework.

Library Information System

These tests can be used to test the sample library information system web application hosted at <http://www.libraryinformationsystem.net>. This is the same sample application used by [SpiraTest](#) and illustrates how you can use [SpiraTest](#) to manage and execute automated Rapise tests. A copy of these tests is also available in new installations of [SpiraTest](#) v3.2+.

Managed

This sample tests a .NET 2.0 application. This sample demonstrates the capabilities of the **Managed** library. The application under test contains various standard GUI controls, such as: button, edit, tree, combo box, grid, listbox, listview, menu, etc.

QtFramework

This sample tests a sample [QT Framework](#) cross-platform application. This sample demonstrates the capabilities of the QtFramework library. The application under test contains various standard Qt widgets, such as: button, edit, tree, combo box, etc.

Silverlight

This sample tests a Silverlight web application. This sample demonstrates the capabilities of the **UIAutomation** library. The application under test contains various standard GUI controls, such as: button, edit, tree, combo box, menu, etc.

SimulatedObject

This sample opens **MS Paint** and draws on its canvas. It uses [Simulated Objects](#) and several related methods: `DoMouseMove(X,Y)`, `DoLButtonDown()`, `DoLButtonUp()`, and `DoSendKeys(text)`.

SampleATM

This sample tests an **MFC** application. You will also learn how to organize your test script in modular form, how to launch the AUT from your test script and how to execute various actions on GUI controls.

UsingCustomStrings

This sample demonstrates how to integrate Rapise tests with other tools using [Custom Strings](#). `TestFinish()` is used to analyze and save test results. For more details, see: [Custom Strings](#).

UsingDatabase

This example shows how you can use a relational (SQL) **database** to create [Data-Driven](#) tests. This script reads test case data from a spreadsheet ADO datasource to test **Calculator**.

UsingDLLHandlerManaged

This sample shows how to [unit test managed DLLs](#). You'll see how to use methods **CreateClassInstance()** and **InvokeMember()**.

UsingDLLHandlerUnManaged

This sample shows how to [unit test unmanaged DLL code](#). You'll learn how to register (**UserWrap.Register**) and execute (**UserWrap.ShellExecute**) a function.

UsingImageCheckPoint

This example shows how to create image [checkpoints](#).

UsingInclude

This sample demonstrates two ways to include external files/functions:

1. **eval(g_helper.Include(...))**: include a file with utility functions.
2. **SeSRunJSScript(...)**: include and execute external function with its own object map.

UsingMSAccess, UsingMSExcel, UsingMSWord

These samples demonstrate how you can work with **Microsoft Word**, **Excel**, and **Access** from scripts. You'll learn how to test applications that expose a [COM interface](#).

UsingMobile

These samples demonstrate how to do the [testing of mobile devices](#) running either [Apple iOS](#) or [Android](#).

UsingOCR

This sample demonstrates usage of the Optical Character Recognition (OCR) functionality.

UsingRegistry

This sample demonstrates usage of the windows registry. The registry is queried to determine the OS (XP/2003/Vista, etc) and owner.

UsingReporting

This sample illustrates various [reporting](#) features:

1. Regular reporting (**Tester.Assert**, **Tester.Message**)
2. Custom attributes (**Tester.SetReportAttribute**, **Tester.ResetReportAttribute**)
3. Stacked attributes (**Tester.PushReportAttribute**, **Tester.PopReportAttribute**)
4. Nested Tests (**Tester.BeginTest**, **Tester.EndTest**)
5. Inserting Links, Text and Images into the report (tags parameter, **SeSReportText**, **SeSReportLink**, **SeSReportImage**)

UsingSelenium

This sample how you can use Rapise to write [Selenium WebDriver](#) based web application tests using the raw Selenium WebDriver API.

UsingSpreadSheet

This example shows how you can use **Excel** spreadsheets to create [Data-Driven](#) tests. This script reads test case data from an XLS spreadsheet to test **Calculator**.

UsingXML

This sample demonstrates how to read, modify and write XML files.

WebServicesREST

This sample demonstrates how you can use the Rapise [Web-Services](#) module to write and execute automated web service tests against an HTTP [RESTful web service](#).

WebServicesSOAP

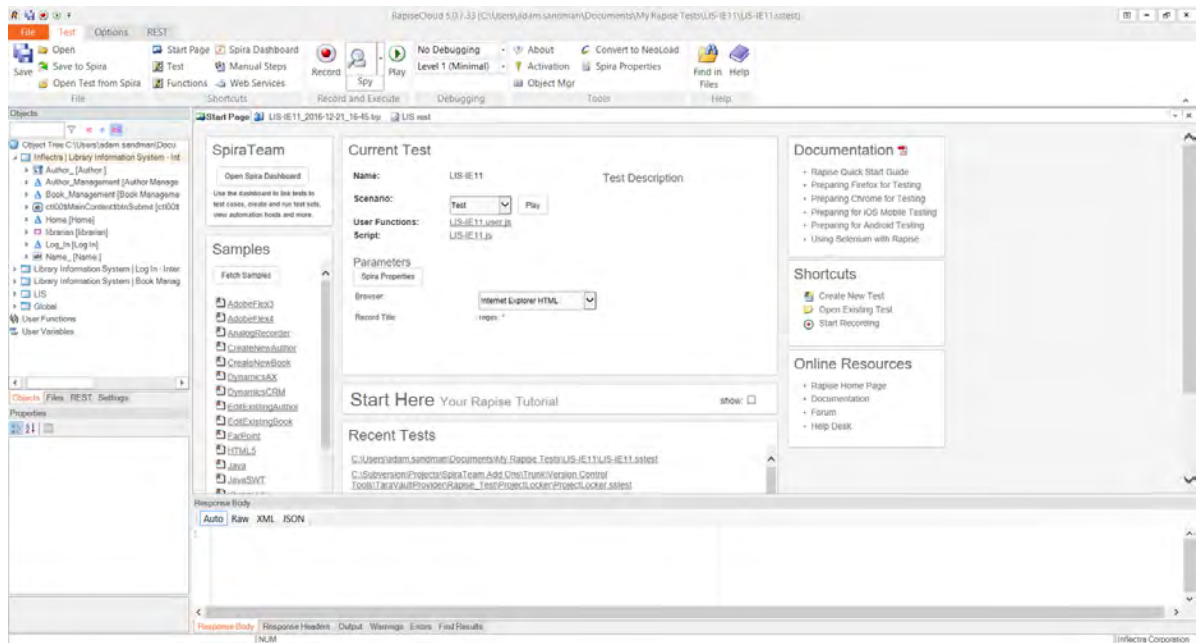
This sample demonstrates how you can use the Rapise [Web-Services](#) module to write and execute automated web service tests against an [SOAP web service](#).

2.2.3 Tutorial: Web Testing

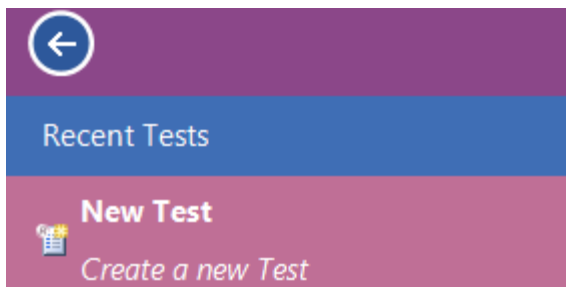
In this section, you will learn how to record and execute a Rapise script against a web application. We will be using a demo application called **Library Information System**. Our test will be simple. It will log on to the library catalog, navigate to the main menu, and click on all of the menu options to make sure the links are working.

1. Open Rapise and Create New Test

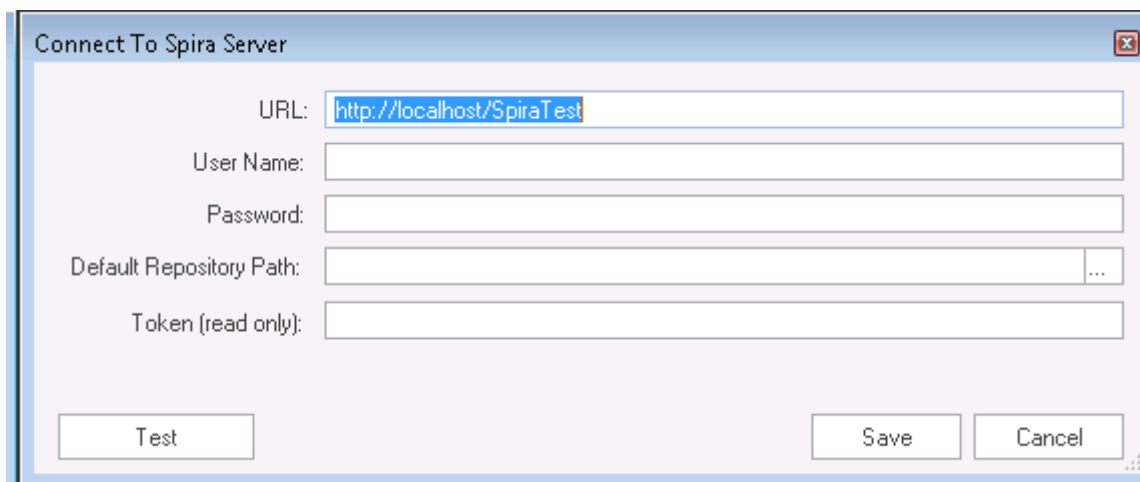
Go to **Start > All Programs > Inflectra > Rapise**. The following window should appear.



Click on the **File** tab in main menu and then click on the option to 'Create New Test':

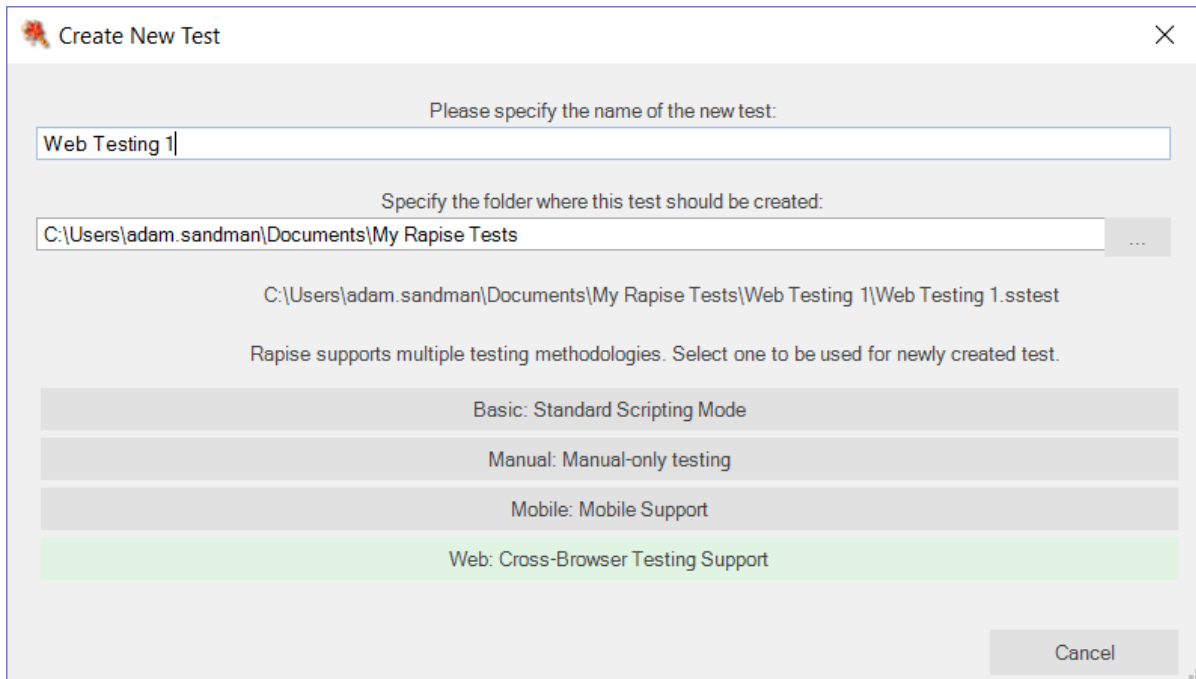


If this is your first time using Rapise on this computer, you may see the following dialog box:

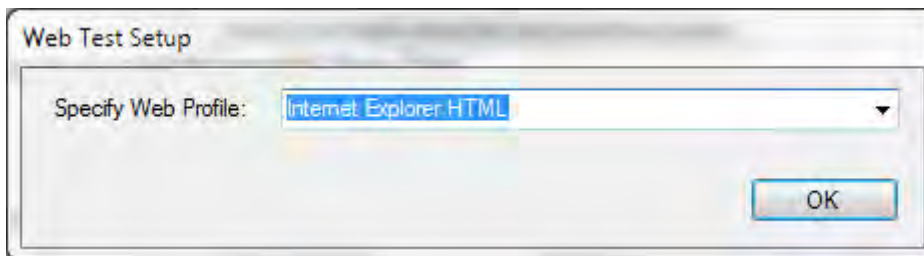


If you see this, it means that Rapise is trying to [connect to a SpiraTest server](#). **SpiraTest** is our web based [test management system](#). It is a powerful tool that can store your Rapise tests and deploy them onto remote machines for automated regression testing. However, for now just click on the **[Cancel]**

button and you will see the ['new test dialog'](#):

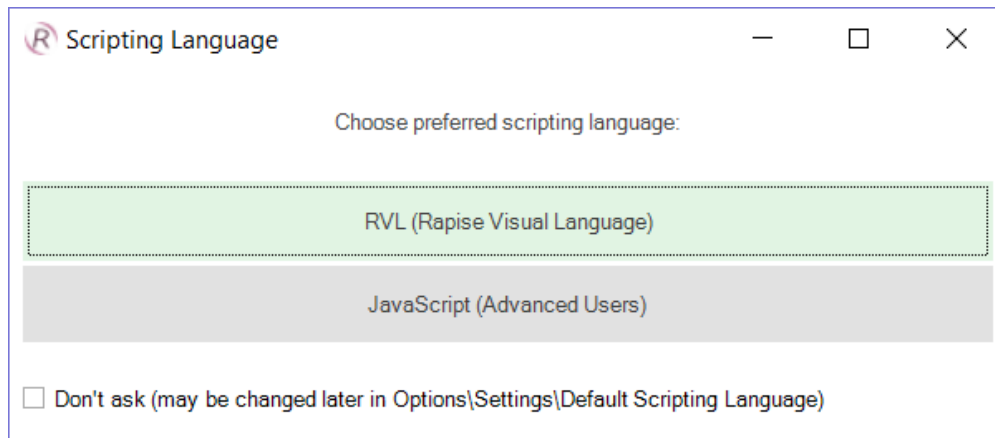


Now enter the name of your new test **'Web Testing 1'**, make sure the Methodology is set to **'Web: Cross-Browser Testing Support'** and click **[Create]**. Since you chose a web test, you will now need to choose the initial [web browser profile](#) (don't worry you can easily change it later):



Choose **'Internet Explorer HTML'** from the list of options.

Next you will be asked if you want to create your tests using the scriptless **Rapise Visual Language (RVL)** technology or using JavaScript. For this example we will use the RVL scriptless approach. If you're interested in creating the test using JavaScript instead, please refer to the section - [Using JavaScript Scripting](#).



Rapise will create the new test and you will see the empty recording grid:

	Flow	Type	Object	Action	ParamName	ParamType	ParamValue	H
1	Flow	Type	Object	Action	Param Name	Param Type	Param Value	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
*								

You are now ready to record your first test.

2. Open the AUT (Application Under Test)

Open up Internet Explorer. You will find it in **Start > All Programs > Internet Explorer**. In Internet Explorer, navigate to: <http://www.libraryinformationsystem.org>:

You should now be on the main menu of the Library Information System with the user's name listed in the top-right:

LIBRARY INFORMATION SYSTEM Welcome **librarian!** [[Log Out](#)]

Home Book Management Author Management

WELCOME TO THE LIBRARY INFORMATION SYSTEM

This sample application lets you view, create and edit [books](#) in the library catalog as well as view, create and edit [authors](#).

To view the library catalog or the authors list you will need to login as a borrower and to make changes to the list of books or authors you will need to login as a librarian.

Note: This is not a real application, but is just a sample application used in the popular [SpiraTest test management system](#) and [Rapise test automation system](#). Both of these products are marketed by [Inflectra Corporation](#).

spiraTest Test Management **Rapise** Test Automation **inflectra** Inflectra Corporation

This sample application has [SOAP](#) and [REST](#) web service APIs that can be tested by Rapise.

Hover the mouse over the “Welcome **librarian**” username label on the top-right and click CTRL+1 to bring up the Verify dialog box:

#	Name	Value
<input type="checkbox"/>	Bitmap	librarian
<input type="checkbox"/>	BWBitmap	librarian
<input type="checkbox"/>	Class	
<input type="checkbox"/>	Enabled	true
<input type="checkbox"/>	Height	19
<input type="checkbox"/>	Id	HeadLoginView_HeadLoginName
<input checked="" type="checkbox"/>	InnerText	librarian
<input type="checkbox"/>	NodeText	librarian
<input type="checkbox"/>	ObjectType	HTMLObject
<input type="checkbox"/>	PageTitle	Inflectra Library Information...
<input type="checkbox"/>	PageURL	http://www.libraryinformationsyste...
<input type="checkbox"/>	State	1048580
<input type="checkbox"/>	Style	

OK Cancel

This box lets you add a checkpoint to verify the properties of an object on the screen.

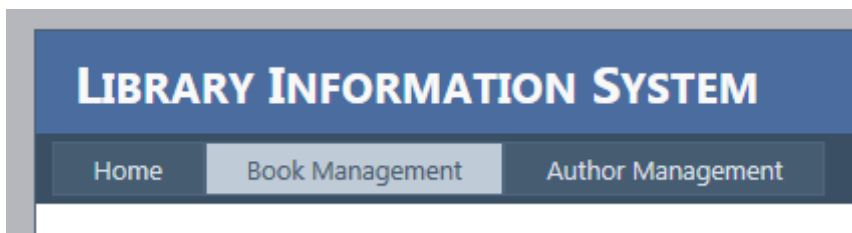
Select the “Inner Text” option and click the checkbox. That will add the verification check to your list of recorded actions:

Recording Activity for "Internet Explorer HTML."				
#	Object	Action	Data	Comment
1	Log In	Click		Click on Log In
2	Username:	SetText	librarian	Set Text librarian in Username:
3	Password:	SetText	librarian	Set Text librarian in Password:
4	ctrl+Mai...	Click		Click on ctrl+MainContent\$loginUser\$loginbutton
5	librarian	Verify	librarian	Verify that InnerText=librarian

Verify (Ctrl+1)	Learn (Ctrl+2)	SPY (Ctrl+5)	Resume	Finish (Ctrl+3)	Cancel
-----------------	----------------	--------------	--------	-----------------	--------

Paused Advanced>> Transparent

Click the **Book Management** button. It is highlighted in the next screenshot:



You should now be on the Book Management page (see the below image). Click the **Home** button to go back to the main menu.

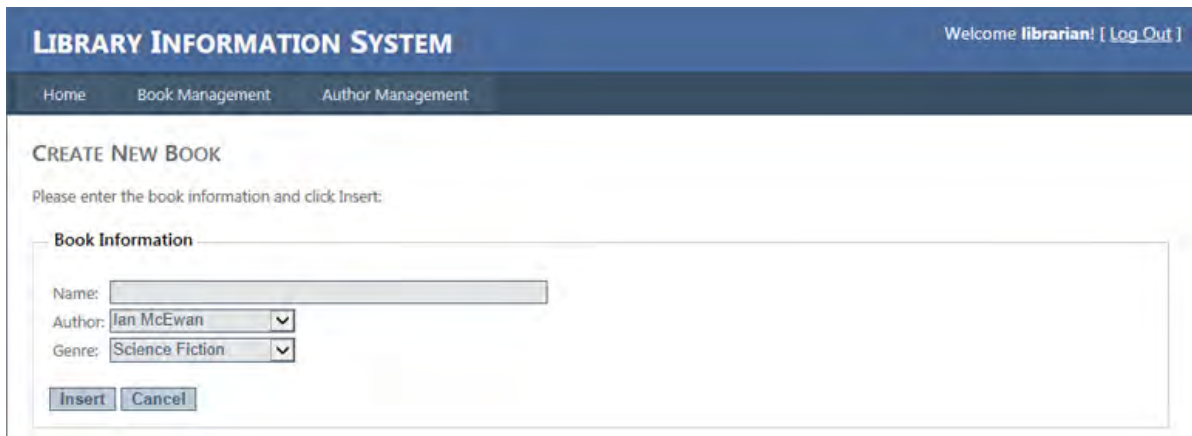
LIBRARY INFORMATION SYSTEM				Welcome librarian! [Log Out]
Home	Book Management	Author Management		
BOOK MANAGEMENT				
The following books exist in the system: (Create new book)				
ID	Name	Author	Genre	Edit
1	Hound of the Baskervilles	Arthur Conan Doyle	Murder & Mystery	Edit
2	The Scowrers	Arthur Conan Doyle	Murder & Mystery	Edit
3	Amsterdam	Ian McEwan	Contemporary Fiction	Edit
4	Saturday	Ian McEwan	Contemporary Fiction	Edit
5	The Comfort of Strangers	Ian McEwan	Contemporary Fiction	Edit
6	Chesil Beach	Ian McEwan	Contemporary Fiction	Edit
7	Atonement	Ian McEwan	Historical Fiction	Edit
8	Bleak House	Charles Dickens	Historical Fiction	Edit
9	Oliver Twist	Charles Dickens	Historical Fiction	Edit
10	Nicholas Nickleby	Charles Dickens	Historical Fiction	Edit
11	David Copperfield	Charles Dickens	Historical Fiction	Edit
12	The Pickwick Papers	Charles Dickens	Historical Fiction	Edit
13	Death on the Nile	Agatha Christie	Murder & Mystery	Edit
14	Betrams Hotel	Agatha Christie	Murder & Mystery	Edit

Click the **Create new book** link:

BOOK MANAGEMENT

The following books exist in the system [\(Create new book\)](#)

You should now be on the Create New Book page (see image below). Click the **HOME** button to go back to the main menu.



LIBRARY INFORMATION SYSTEM Welcome **librarian!** [[Log Out](#)]

Home Book Management Author Management

CREATE NEW BOOK

Please enter the book information and click Insert:

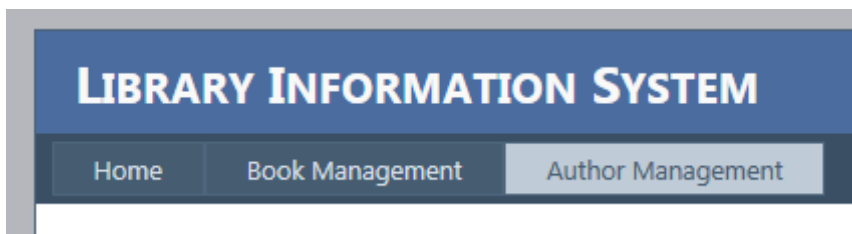
Book Information

Name:

Author:

Genre:

Now, click the **Author Management** button:



You should now be on the Author Management page (see image below):

LIBRARY INFORMATION SYSTEM Welcome **librarian!** [[Log Out](#)]

Home Book Management Author Management

AUTHOR MANAGEMENT

The following authors exist in the system: ([Create new author](#))

ID	Name	Age	Edit
1	Ian McEwan	42	Edit
2	Charles Dickens	105	Edit
3	Arthur Conan Doyle	125	Edit
4	Agatha Christie	98	Edit

Click the **Create New Author** link:

AUTHOR MANAGEMENT

The following authors exist in the system ([Create new author](#))

ID	Name	Age	Edit
1	Ian McEwan	42	Edit
2	Charles Dickens	105	Edit
3	Arthur Conan Doyle	125	Edit
4	Agatha Christie	98	Edit

You should now be on the Create New Author page (see below). Click the **Home** button to go back to the main menu.

LIBRARY INFORMATION SYSTEM Welcome **librarian!** [[Log Out](#)]

Home Book Management Author Management

CREATE NEW AUTHOR

Please enter the author information and click Insert:

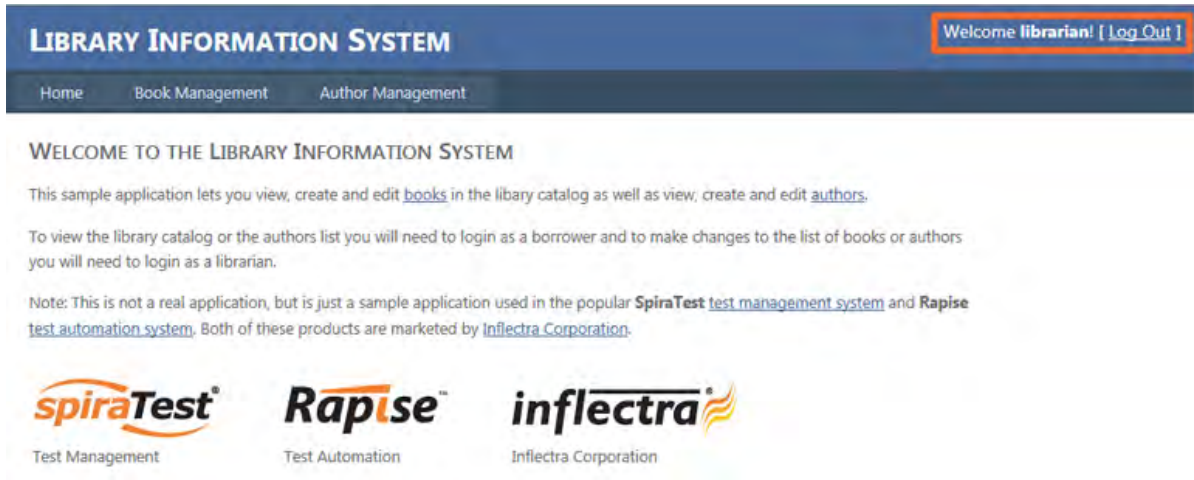
Author Information

Name:

Age:

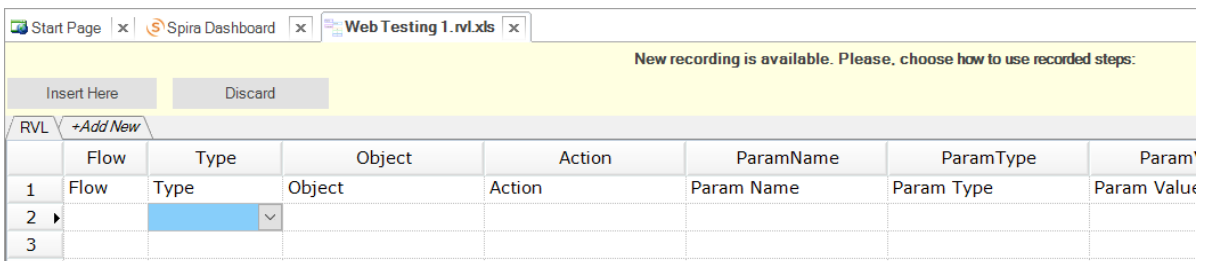
At this point, there should be 11 rows in the **RA dialog** grid.

You are now back on the Main Menu. Click **Log Out** (top-right).



To end the recording session, you can either press **CTRL+3** or press the **Stop** button on the Record dialog. End the recording session now.

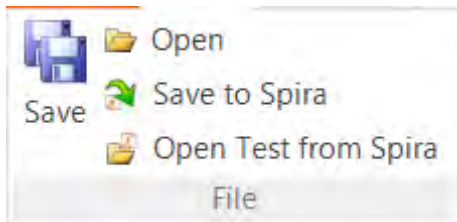
Rapise will ask you whether you want to use this recording or discard it:



Click on the **Insert Here** button and Rapise will insert the recorded steps into the test grid:

Flow	Type	Object	Action	ParamName	ParamType	ParamValue	H
1	Flow	Type	Action	Param Name	Param Type	Param Value	
2	#	Click on Log In					
3		Action	▲ Log_In	DoClick			
4	#	Set Text librarian in Username:					
5		Action	☒ Username_	DoSetText	txt	string	librarian
6	#	Set Text librarian in Password:					
7		Action	☒ Password_	DoSetText	txt	string	librarian
8	#	Click on ctl00\$MainContent\$LoginUser\$LoginButton					
9		Action	☒ ctl00\$MainConten...	DoClick			
10	#	Verify that: InnerText=librarian					
11		Assert			message	string	Verify that: InnerText=librarian
12		Action	☐ librarian	GetInnerText			
13		Condition		output1 == param2			
14		Param		param2	string	librarian	
15	#	Click on Book Management					
16		Action	▲ Book_Management	DoClick			
17	#	Click on (Create new book)					
18		Action	▲ _Create_new_boo...	DoClick			
19	#	Click on Author Management					
20		Action	▲ Author_Managem...	DoClick			
21	#	Click on (Create new author)					
22		Action	▲ _Create_new_aut...	DoClick			
23	#	Click on Ho...					
24		Action	▲ Home	DoClick			

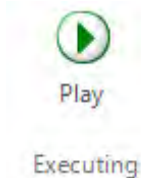
Let's save our test. Press the **Save** button at the top left of the Rapise window.



5. Playback

Let's execute the test we just created. First, close Internet explorer. Rapise will open a new instance of Internet Explorer to the correct url (www.libraryinformationsystem.org) when the test begins.

To execute the script, press the Play button at the top middle of the Rapise window.



After execution, a screen like the one below will appear. Each row represents a step in the test. The rows with green text are steps which passed, whereas the rows with red text are the steps which failed.

#	Type	Start	Name	Status	Comment
	Message	22:49:48.222	Starting scenario: Test	Info	
	Assert	22:49:49.994	Log In.DoClick([{}])	Pass	Returned Value: true
	Assert	22:49:51.188	Username:.DoSetText(["librarian"])	Pass	Returned Value: true
	Assert	22:49:52.263	Password:.DoSetText(["librarian"])	Pass	Returned Value: true
	Assert	22:49:53.329	<tbody>MainContent\$LoginUser\$LoginButton.DoClick([{}])	Pass	Returned Value: true
	Assert	22:49:53.468	Verify that: InnerText=librarian	Pass	
	Assert	22:49:54.567	Book Management.DoClick([{}])	Pass	Returned Value: true
	Assert	22:49:55.768	{Create new book}.DoClick([{}])	Pass	Returned Value: true
	Assert	22:49:57.000	Author Management.DoClick([{}])	Pass	Returned Value: true
	Assert	22:49:58.218	{Create new author}.DoClick([{}])	Pass	Returned Value: true
	Assert	22:49:59.472	Home.DoClick([{}])	Pass	Returned Value: true
	Assert	22:50:00.673	Log Out.DoClick([{}])	Pass	Returned Value: true
	Test	22:50:00.673	Web Testing 1	Pass	Passed:11 Failed:0 Time:12.567s

Test Pass
Total: 13 Pass: 12 Fail: 0 Info: 1

For more information on the report, see [Automated Reporting](#).

Playback in Other Browsers

Now that we have recorded our test in Internet Explorer, we want to play the same script back in other browsers. That is very easy to do. Simply click on the shortcut for the Rapise [Start Page](#), and then change the **web browser dropdown** to a different browser (e.g. Firefox, Chrome, Selenium, etc.) and click the **Play** button.

Current Test

Name: Scenarios Test **Test Description**

Scenario: Test

User Functions: [Scenarios Test.user.js](#)

Script: [Scenarios Test.js](#)

Parameters

Browser: Selenium - Chrome

Record Title:

- Chrome HTML
- Firefox HTML
- Internet Explorer HTML
- Selenium - Chrome
- Selenium - Firefox
- Selenium - Internet Explorer
- Selenium - Opera
- Selenium - Safari

Before the playback in other browsers will work correctly, you will need to make sure you have [configured the web browsers](#) appropriately. In the case of the Selenium options, you will need to make sure you have installed the [Selenium WebDriver libraries](#) correctly.

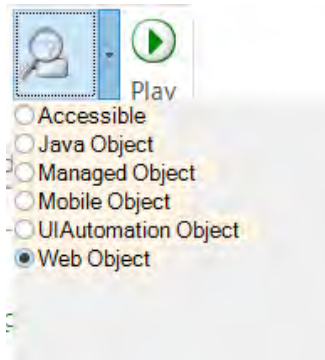
The next section will demonstrate how you can use Rapise to inspect the objects in a web page and

Learn them for testing. This is useful in cases where you have more complex applications to test and you need to pick specific objects. For example you may want to select one of the books in the grid based on its name rather than its row number (which may change if you add books).

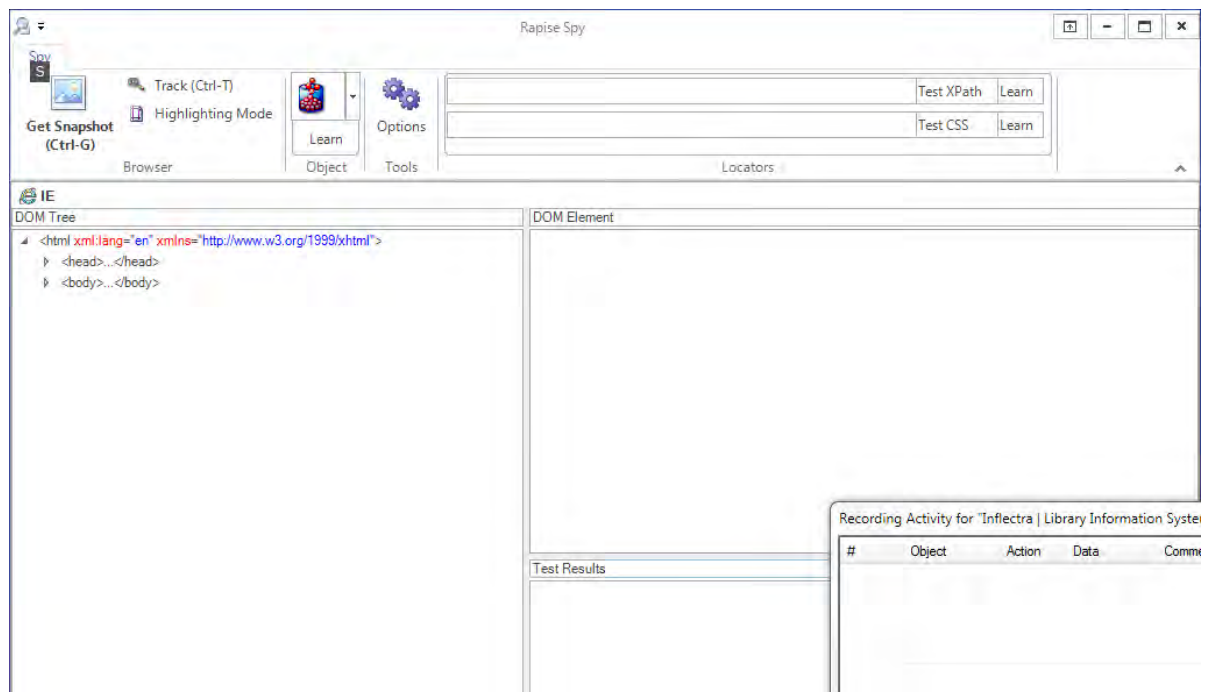
Using the Spy Tools in Rapise

Learning an Object Using the Web Spy

In the main Test ribbon of Rapise, expand the dropdown list for the 'Spy' tool and make sure that 'Web Object' is selected:



Now, click on the main 'Spy' tool icon and Rapise will start the [Web Spy](#):



Go back to the web page and login to the **library information system** with the same **login/password (librarian/librarian)** and click on the 'Book Management' menu item so that the list of books is displayed:

LIBRARY INFORMATION SYSTEM
Welcome **librarian!** [[Log Out](#)]

Home
Book Management
Author Management

BOOK MANAGEMENT

The following books exist in the system: [Create new book](#)

ID	Name	Author	Genre	Edit
1	Hound of the Baskervilles	Arthur Conan Doyle	Murder & Mystery	Edit
2	The Scowrers	Arthur Conan Doyle	Murder & Mystery	Edit
3	Amsterdam	Ian McEwan	Contemporary Fiction	Edit
4	Saturday	Ian McEwan	Contemporary Fiction	Edit
5	The Comfort of Strangers	Ian McEwan	Contemporary Fiction	Edit
6	Chesil Beach	Ian McEwan	Contemporary Fiction	Edit
7	Atonement	Ian McEwan	Historical Fiction	Edit
8	Bleak House	Charles Dickens	Historical Fiction	Edit
9	Oliver Twist	Charles Dickens	Historical Fiction	Edit
10	Nicholas Nickleby	Charles Dickens	Historical Fiction	Edit
11	David Copperfield	Charles Dickens	Historical Fiction	Edit
12	The Pickwick Papers	Charles Dickens	Historical Fiction	Edit
13	Death on the Nile	Agatha Christie	Murder & Mystery	Edit
14	Betrans Hotel	Agatha Christie	Murder & Mystery	Edit

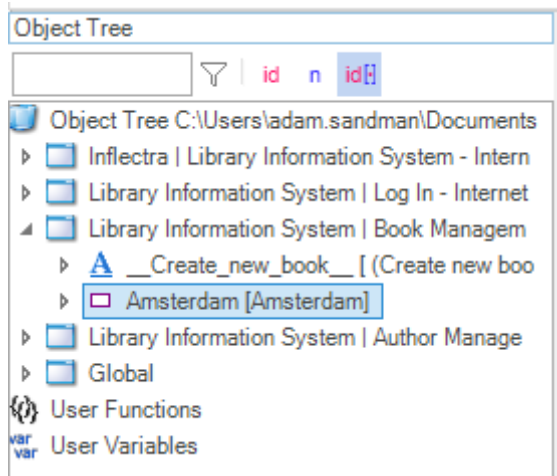
Now back in the [Web Spy](#), click on the 'Get Snapshot' option to refresh the Web Spy and display the HTML elements (called the DOM tree) that make up this page:

The screenshot shows the Rapise Web Spy interface. The top toolbar includes 'Get Snapshot (Ctrl-G)', 'Track (Ctrl-T)', 'Highlighting Mode', 'Object', 'Tools', and 'Locators'. The main area is divided into three panes:

- DOM Tree:** Shows the HTML structure. The table element is expanded, showing its attributes and content.
- DOM Element:** Provides details for the selected table element, including its tagName (TABLE), attributes (border, cellspacing, class, id, rules, style), properties (height, width, x, y), and selectors (css, xpath).
- Recording Activity:** A table with columns for #, Object, Action, Data, and Comment, used for tracking user interactions.

Once it has loaded the DOM tree, you can expand/collapse the elements to see how the web page is constructed. This is useful when testing an application since many of the HTML elements on a page may be used for layout purposes and will not be visible in the browser. In the example page, we have expanded some of the nodes to display the main section of the page and the table that contains the list of books.

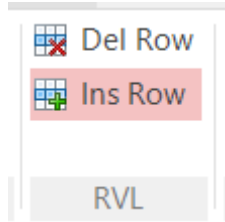
In addition, you can use the **Track (Ctrl+T)** tool to select an item in the web page and then have it highlighted in the DOM tree. For example if we want to find the cell that contains the book title



To use this new object in our test script, we can simply use the test editor to add the appropriate command. For example, if you wanted to get the textual value of the cell in your test, you should click on the row in the grid after the **Book Management – DoClick**:

Flow	Type	Object	Action	ParamName	ParamType	ParamValue	H
1	Flow	Type	Object	Action	Param Name	Param Type	Param Value
2	#	Click on Log In					
3	⌘	Action	▲ Log_In	DoClick			
4	⌘	#	Set Text librarian in Username:				
5	⌘	Action	⌨ Username_	DoSetText	txt	string	librarian
6	⌘	#	Set Text librarian in Password:				
7	⌘	Action	⌨ Password_	DoSetText	txt	string	librarian
8	⌘	#	Click on ctl00\$MainContent\$LoginUser\$LoginButton				
9	⌘	Action	⌨ ctl00\$MainConten...	DoClick			
10	⌘	#	Verify that: InnerText=librarian				
11	⌘	Assert			message	string	Verify that: InnerText=librarian
12	⌘	Action	□ librarian	GetInnerText			
13	⌘	Condition		output1 == param2			
14	⌘	Param			param2	string	librarian
15	⌘	#	Click on Book Management				
16	⌘	Action	▲ Book_Management	DoClick			
17	⌘	#	Click on (Create new book)				
18	⌘	Action	▲ _Create_new_boo...	DoClick			
19	⌘	#	Click on Author Management				

Now click on the **Ins Row** button in the main Test ribbon to add a new row:



This will insert a new row into the test. In this new row, right-click on each of the cells (as illustrated below) and pick the following values from the dropdown lists:

14		Param		
15	#		<i>Click on Book Management</i>	
16		Action	Book_Management	DoClick
17				
18	#		<i>(Create new book)</i>	
19		Action	_Create_new_boo...	DoClick
20	#		<i>Book Management</i>	
21		Output	Author_Managem...	DoClick
22	#		<i>(Create new author)</i>	
23		Assert	_Create_new_aut...	DoClick
24	#		<i>Condition</i>	

Then choose the following:

- **Type** = Action
- **Object** = Amsterdam
- **Action** = GetInnerText

You should now have the following:

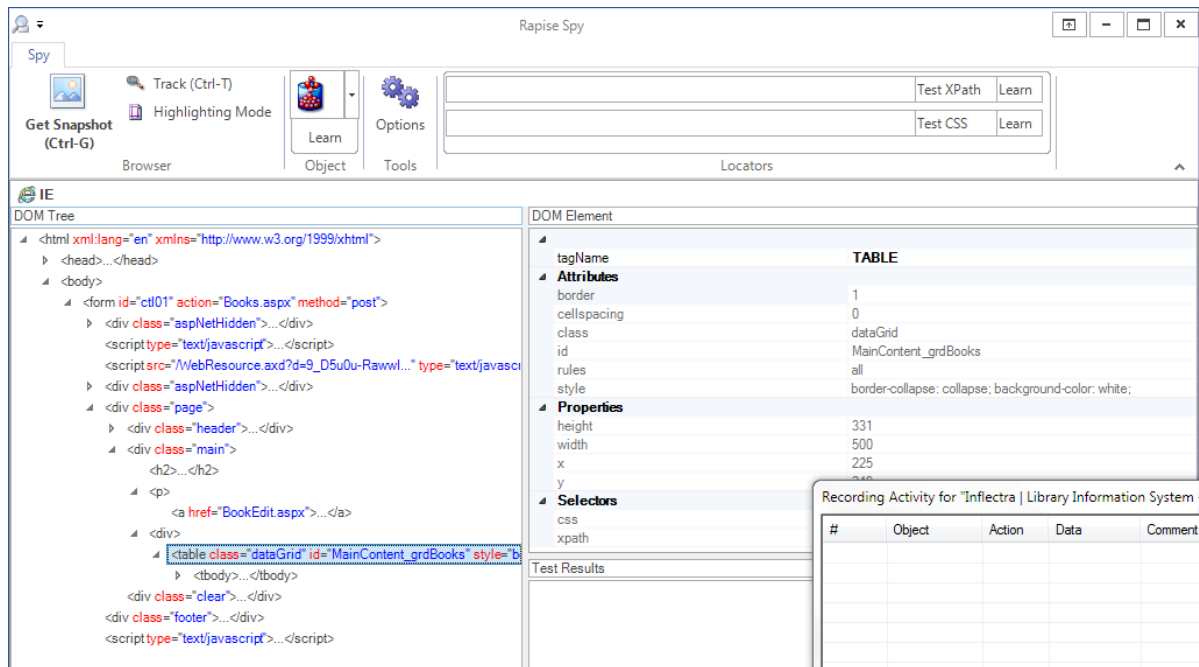
14		Param		
15	#		<i>Click on Book Management</i>	
16		Action	Book_Management	DoClick
17		Action	<input type="checkbox"/> Amsterdam	GetInnerText
18	#		<i>Click on (Create new book)</i>	
19		Action	_Create_new_boo...	DoClick

2.2. Learning an Object from XPATH

In addition to letting Rapise automatically learn the object from the Web Spy, you can manually enter in XPATH or CSS queries to find matching elements on the page and then learn those for use in your test.

For example, suppose we want to dynamically find the row that has the cell containing Amsterdam and then click on its Edit hyperlink.

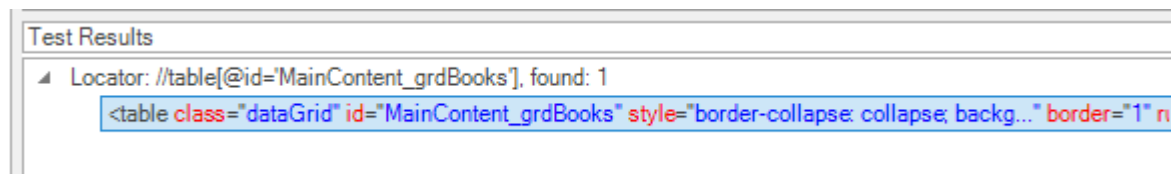
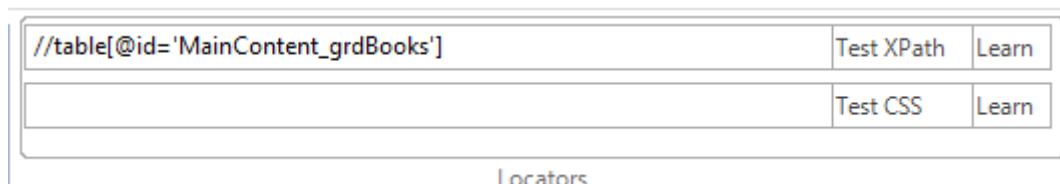
Open up the Web Spy as before:



In the **Locators** section of the Web Spy, enter in the following to locate the table:

```
//table[@id='MainContent_grdBooks']
```

Now click on the **Test XPath** button to display the matching results:



Now that we have matched the table, we need to add dynamic XPath to find any row that has the cell containing 'Amsterdam' and find the edit link. You can expand the table and see the rows and cells visually and that will help us create the XPath:

```
//table[@id='MainContent_grdBooks']//tr/td[text()='Amsterdam']/../td[5]/a
```

This XPath consists of the following elements:

1. Finds the table with the specified ID

2. Find any row inside that table that contains a cell with the text 'Amsterdam'
3. For any matching cell, get its parent row and inside the fifth cell, get any hyperlink

In this case that will correctly locate the Edit link for the book 'Amsterdam'. Now that we have the correct item identified, click on the **Learn** button to the right of the **Test XPath** button. That will now learn a new object that corresponds to the 'Edit Amsterdam' object:

Recording Activity for "Internet Explorer HTML"				
#	Object	Action	Data	Comment
1	Edit	Learn	Edit	Learned Edit

Verify (Ctrl+1) Learn (Ctrl+2) SPY (Ctrl+5) Resume Finish (Ctrl+3) Cancel

Learning object: http://www.libraryinformationsystem.org/Boo... Advanced>> Transparent

Click Finish and the object will have been added to the Object Tree of the current test:

Object Tree

Object Tree C:\Users\adam.sandman\Docum

- ▶ Inflectra | Library Information System - Int
- ▶ Library Information System | Log In - Inter
- ▲ Library Information System | Book Manag
 - ▶ [__Create_new_book__ \[\(Create new](#)
 - ▶ Amsterdam [Amsterdam]
 - ▲ [Edit \[Edit\]](#)
 - DoAction
 - DoAddSelection
 - DoAnalogPlay
 - DoClick**

To click on this object, simply click on the row in the grid where you want this action to occur and choose **Ins Row** from the test ribbon:

5	#	<i>Click on Book Management</i>		
6		Action	Book Management	DoClick
7		Action	<input type="checkbox"/> Amsterdam	GetInnerText
8				
9	#	<i>Click on (Create new book)</i>		
10		Action	Create new boo...	DoClick

In this new row, right-click on each of the cells, and pick the following values from the dropdown lists:

- **Type** = Action
- **Object** = Edit
- **Action** = DoClick

So your test will now look like:

15	#	<i>Click on Book Management</i>		
16		Action	▲ Book_Management	DoClick
17		Action	□ Amsterdam	GetInnerText
18		Action	▲ Edit	DoClick
19	#	<i>Click on (Create new book)</i>		
20		Action	▲ _Create_new_boo...	DoClick
21	#	<i>Click on Author Management</i>		
22		Action	▲ Author_Managem...	DoClick

Since clicking on the Edit link will take you to a different page than where the 'Create New Book' link is available, we need to add another row and add:

- **Type** = Action
- **Object** = Book_Management
- **Action** = DoClick

so that Rapise goes back to the main book list page before executing the Create New Book step. If we did not do this, the test would have failed.

This means the test will now look like:

15	#	<i>Click on Book Management</i>		
16		Action	▲ Book_Management	DoClick
17		Action	□ Amsterdam	GetInnerText
18		Action	▲ Edit	DoClick
19		Action	▲ Book_Management	DoClick
20	#	<i>Click on (Create new book)</i>		
21		Action	▲ _Create_new_boo...	DoClick

Now the line:

Action	□ Amsterdam	GetInnerText
--------	-------------	--------------

by itself does not do anything, it just gets the text.

So, to make the test more useful, we can use the **Assert** command to turn this into a test for the correct value. To make the change, simply delete this entire row using the **Del Row** option on the ribbon and add a new blank row in its place.

Now choose the Type as **Assert** and press **ENTER** on the keyboard. You will now have the following:

Assert			message	string	TBD
Param			param1	string	TBD
Condition		param1 == param2			
Param			param2	string	TBD

This is a generic placeholder for any type of conditional test. We need to first change the value of the message “TBD” to something meaningful (e.g. “Check that the name matches”):

Assert			message	string	Check that the name matches
Param			param1	string	TBD
Condition		param1 == param2			
Param			param2	string	TBD

This is the message that will be displayed if the test passes correctly.

Now we need to replace the first parameter with the output from the result of the Amsterdam test. To do this, change the **Condition** on the second row from: **param1 == param2** to **output1 == param2**:

Assert			message	string	Check that the name matches
Action	TBD	TBD			
Condition		output1 == param2			
Param			param2	string	TBD

Notice how Rapise automatically changed the second row from **Param** to **Action**.

Now in the TBD cell next to the Action type, choose the **Amsterdam** object name and the **GetInnerText** action from the dropdown lists. Finally change the **param2** string from TBD to the expected value “Amsterdam”.

You will now have:

Assert			message	string	Check that the name matches
Action	Amsterdam	GetInnerText			
Condition		output1 == param2			
Param			param2	string	Amsterdam

Now click **Play** to playback the new test:

The screenshot shows the Rapise test execution results window. The test is titled "Web Testing 1" and has a status of "Test Pass". The results table shows the following details:

#	Type	Start	Name	Status	Comment
1	Message	00:04:58.315	Starting scenario: Test	Info	
2	Assert	00:04:59.815	Log In.DoClick({})	Pass	Returned Value: true
3	Assert	00:05:00.972	Username:.DoSetText(["librarian"])	Pass	Returned Value: true
4	Assert	00:05:02.019	Password:.DoSetText(["librarian"])	Pass	Returned Value: true
5	Assert	00:05:03.082	ctl00\$MainContent\$LoginUser\$LoginButton.DoClick({})	Pass	Returned Value: true
6	Assert	00:05:03.222	Verify that: InnerText = librarian	Pass	
7	Assert	00:05:04.316	Book Management.DoClick({})	Pass	Returned Value: true
8	Assert	00:05:04.472	Check that the name matches	Pass	
9	Assert	00:05:05.801	Edit.DoClick({})	Pass	Returned Value: true
10	Assert	00:05:07.223	Book Management.DoClick({})	Pass	Returned Value: true
11	Assert	00:05:08.441	(Create new book).DoClick({})	Pass	Returned Value: true
12	Assert	00:05:09.786	Author Management.DoClick({})	Pass	Returned Value: true
13	Assert	00:05:10.989	(Create new author).DoClick({})	Pass	Returned Value: true
14	Assert	00:05:12.301	Home.DoClick({})	Pass	Returned Value: true
15	Assert	00:05:13.645	Log Out.DoClick({})	Pass	Returned Value: true
16	Test	00:05:13.645	Web Testing 1	Pass	Passed:14 Failed:0 Time:15.423s

Summary: **Test Pass**
Total: 16 Pass: 15 Fail: 0 Info: 1

The test should now pass successfully.

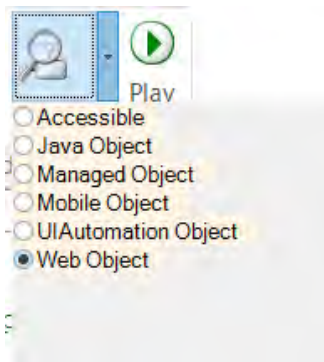
2.2.3.1 Using JavaScript

This section will demonstrate how you can use Rapise to inspect the objects in a web page and Learn them for testing using the **JavaScript test script language** instead of the **Rapise Visual Language (RVL)** that was illustrated in the main [Web Testing Tutorial](#).

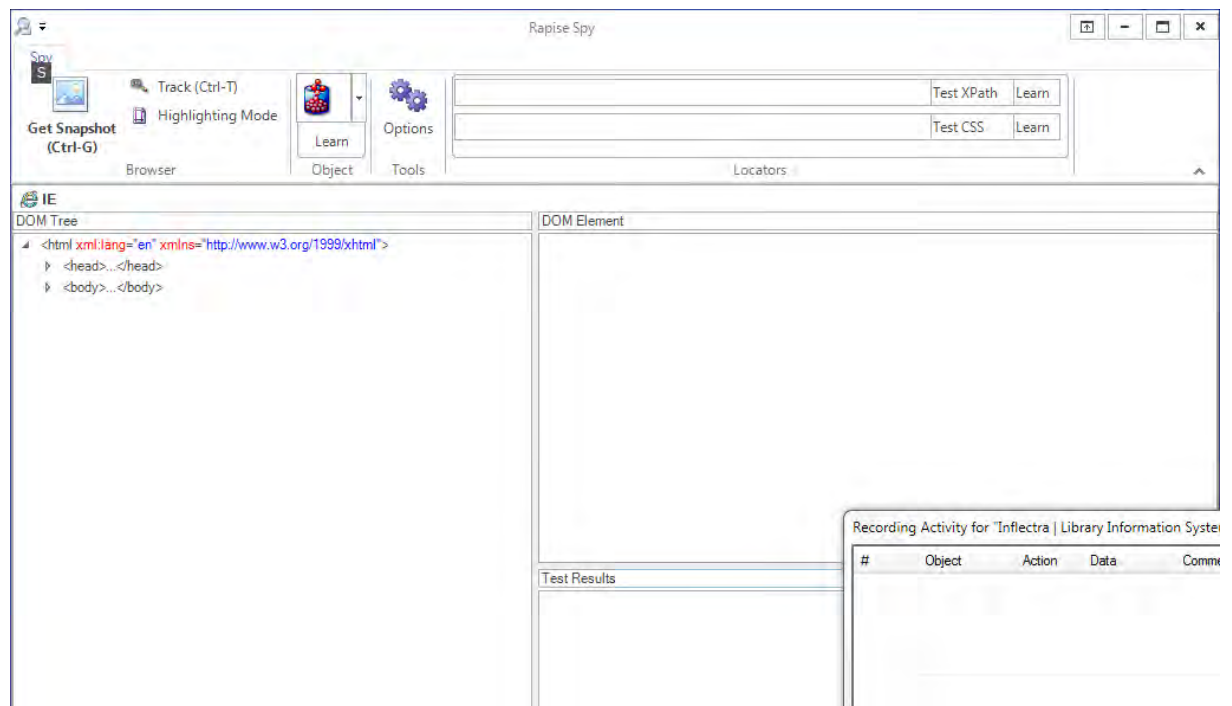
This is useful in cases where you have more complex applications to test and you want to be able to use the power of a full programming language such as JavaScript to iterate over data, perform calculations and use if...then...else branches to follow different steps during the test.

Learning an Object Using the Web Spy

In the main Test ribbon of Rapise, expand the dropdown list for the **'Spy'** tool and make sure that **'Web Object'** is selected:

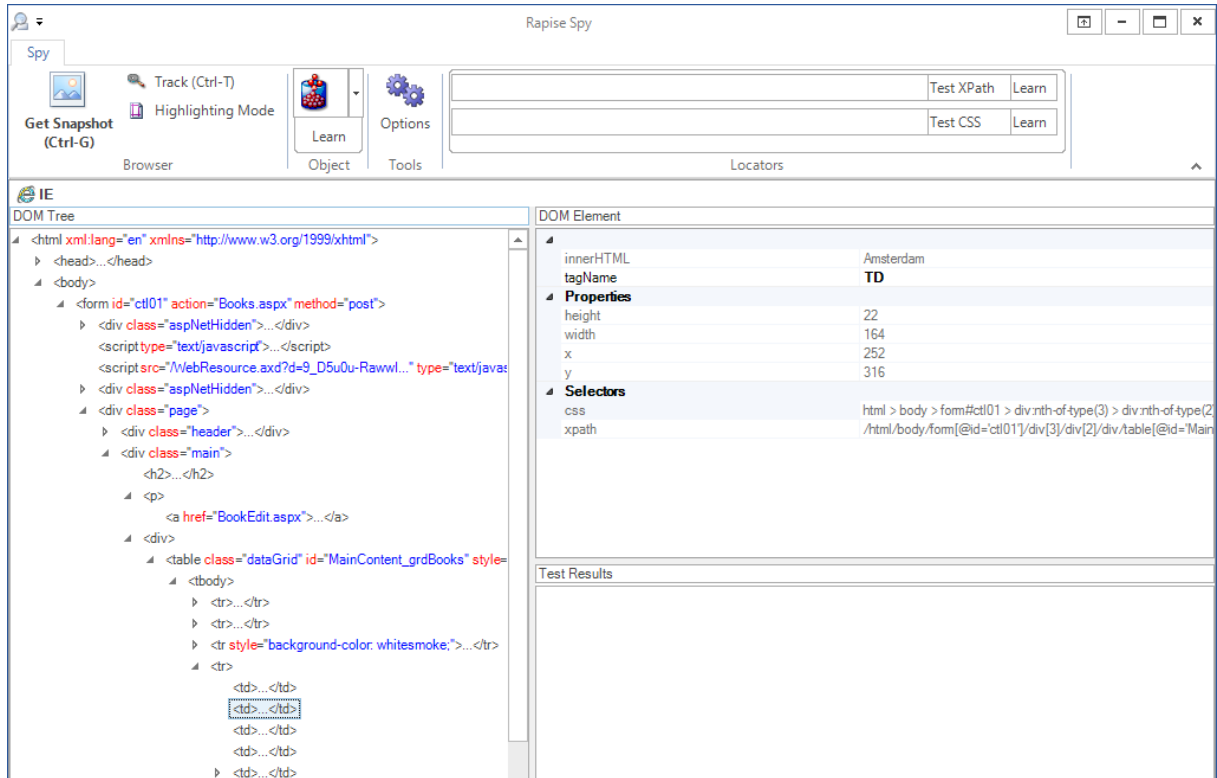


Now, click on the main **'Spy'** tool icon and Rapise will start the [Web Spy](#):



Go back to the web page and login to the **library information system** with the same **login/password (librarian/librarian)** and click on the **'Book Management'** menu item so that the list of books is displayed:

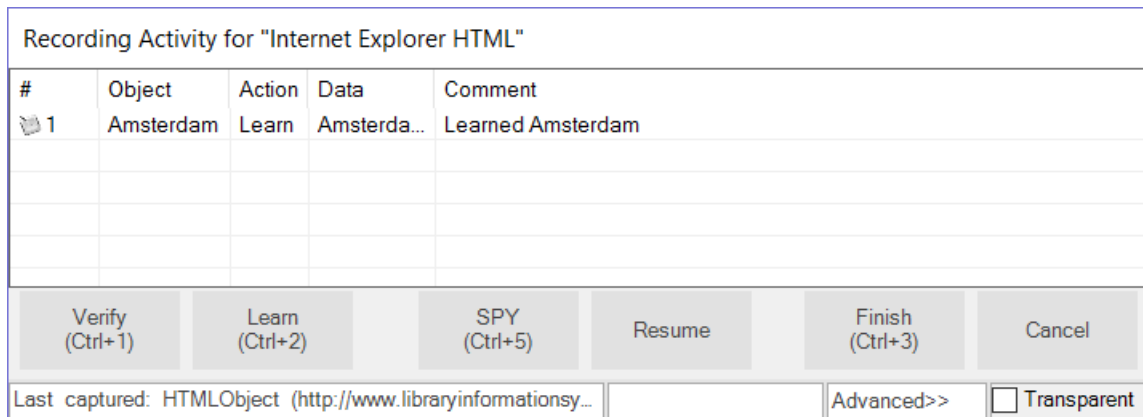
highlighted in the DOM tree. For example if we want to find the cell that contains the book title “Amsterdam”, simply click CTRL+T on the keyboard, move the mouse over the cell in the webpage, **wait until the red highlighting rectangle appears** and then click CTRL+T again. Rapise will now highlight that item in the DOM Tree automatically:



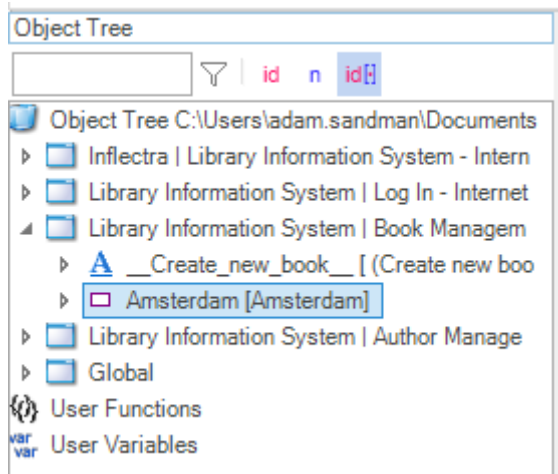
You can see all of the properties of this HTML element displayed on the right, specifically:

- The tagName is displayed as ‘TD’ (always upper case)
- The innerHTML of the element is displayed (Amsterdam)
- The CSS and XPath for locating this element is displayed

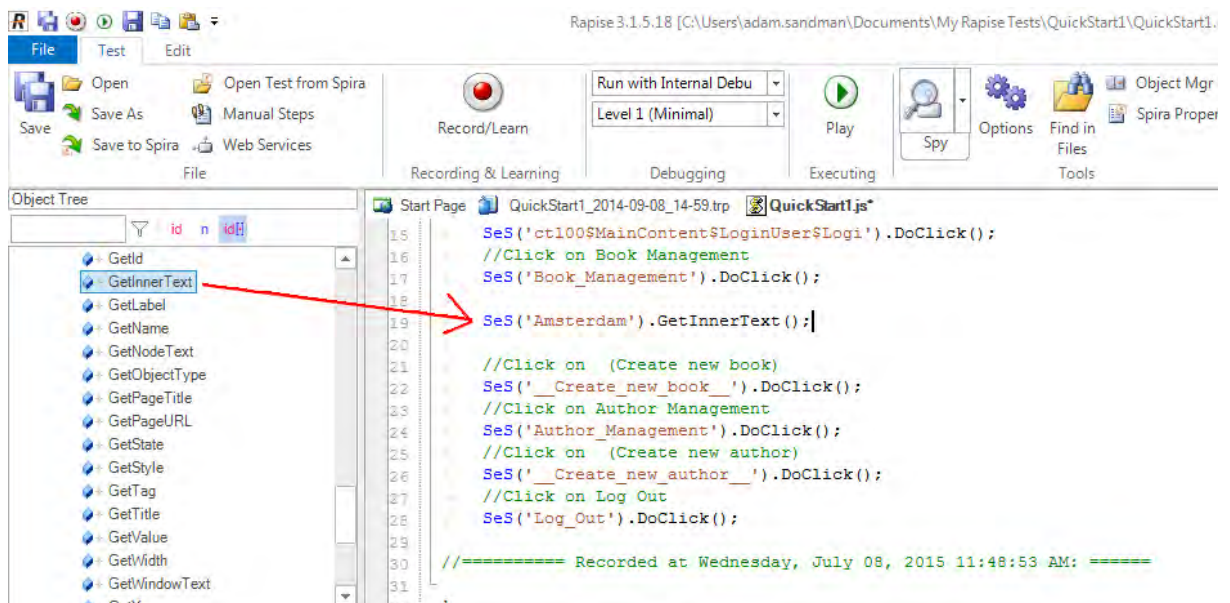
If you want to use this object in a Rapise test script, you can simply click the **Learn** button and the HTML element will be added to the Recording Activity Dialog:



Click **Finish** and the object will have been added to your test’s Object Tree:



You can now expand this object and drag a test function to your test script. For example if you wanted to get the textual value of the cell in your test, drag the “GetInnerText” function into your test script:

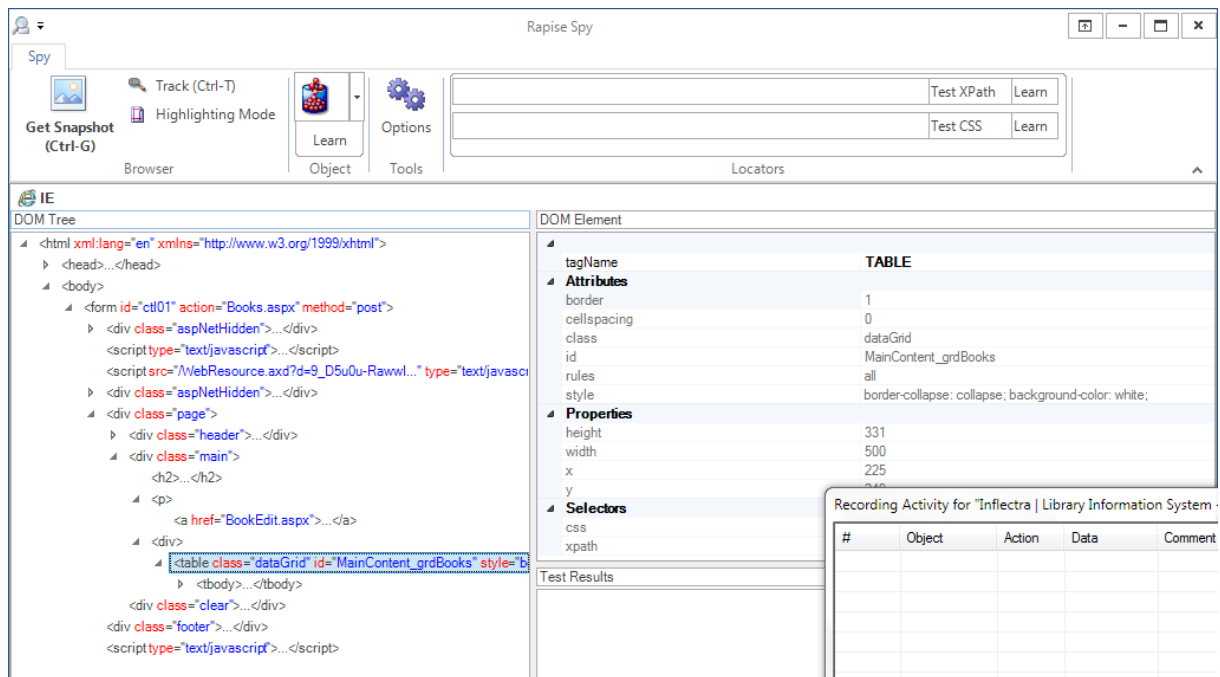


Learning an Object from XPATH

In addition to letting Rapise automatically learn the object from the Web Spy, you can manually enter in XPATH or CSS queries to find matching elements on the page and then learn those for use in your test.

For example, suppose we want to dynamically find the row that has the cell containing Amsterdam and then click on its Edit hyperlink.

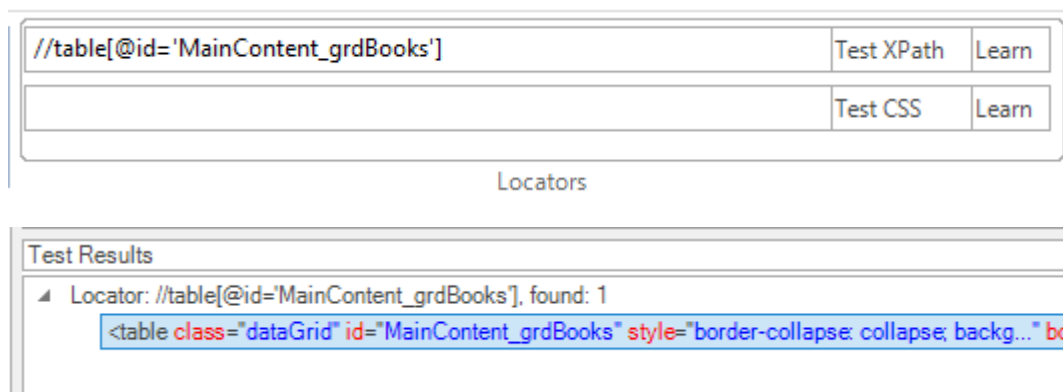
Open up the Web Spy as before:



In the **Locators** section of the Web Spy, enter in the following to locate the table:

```
//table[@id='MainContent_grdBooks']
```

Now click on the **Test XPath** button to display the matching results:

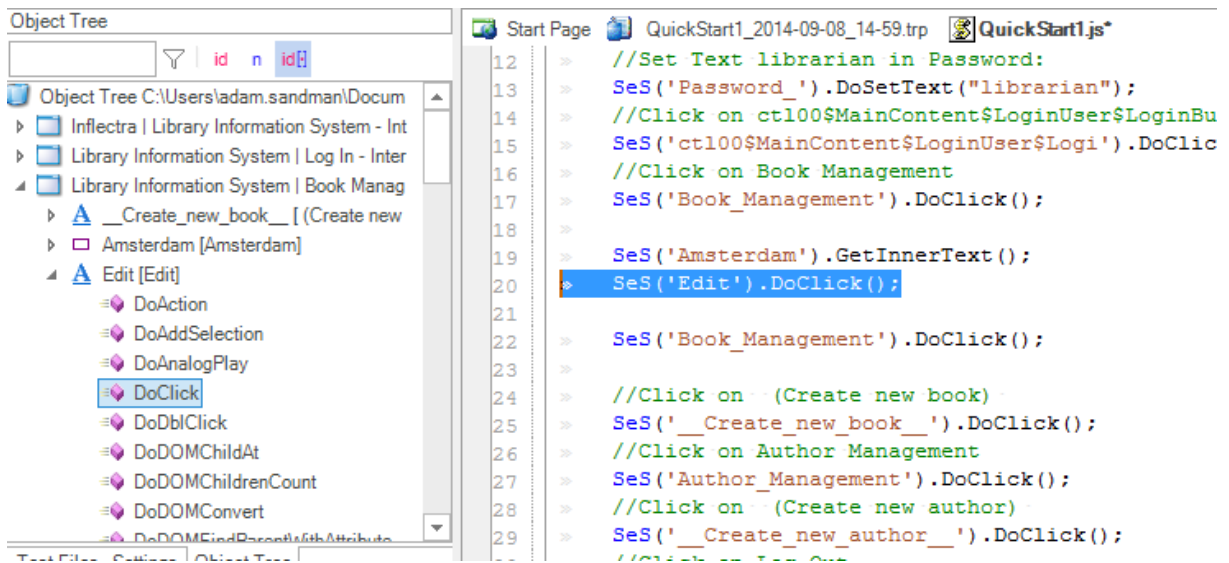


Now that we have matched the table, we need to add dynamic XPath to find any row that has the cell containing 'Amsterdam' and find the edit link. You can expand the table and see the rows and cells visually and that will help us create the XPATH:

```
//table[@id='MainContent_grdBooks']//tr/td[text()='Amsterdam']//td[5]/a
```

This XPath consists of the following elements:

1. Finds the table with the specified ID



Since clicking on the Edit link will take you to a different page than where the 'Create New Book' link is available, in the example we have added a second instance of the:

```
SeS('Book_Management').DoClick();
```

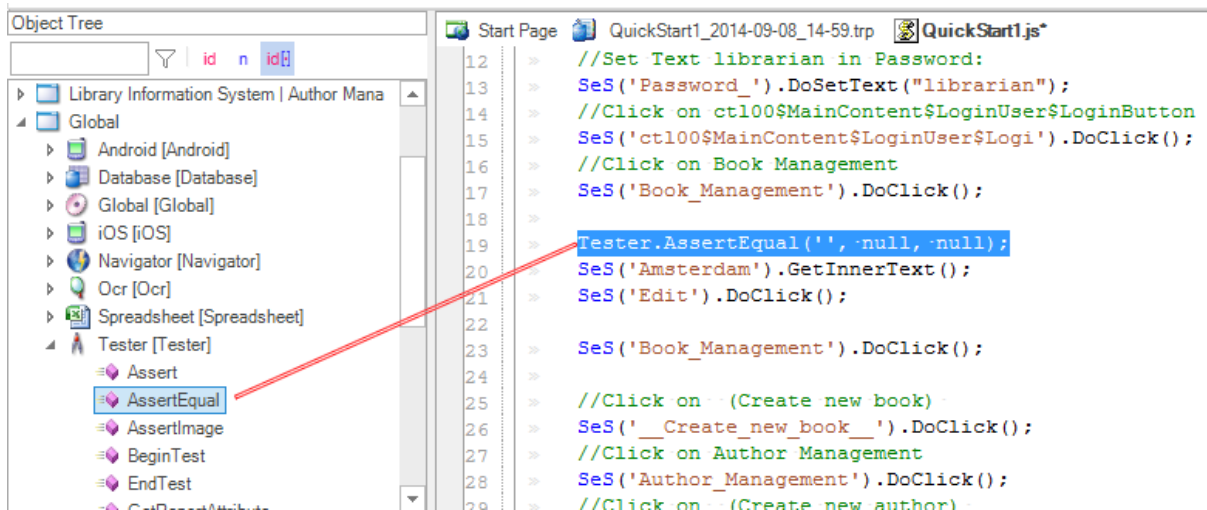
Command, so that Rapise goes back to the main book list page before executing the Create New Book step. If we did not do this, the test would have failed.

Now the line:

```
SeS('Amsterdam').GetInnerText();
```

by itself does not do anything, it just gets the text.

So to make the test more useful, we can use the global **Tester** object to add a step to verify this value. Drag the "AssertEqual" function from the Tester object to your test script just above the SeS("Amsterdam") line:



Now we need to just consolidate these two lines into the actual test. Using the script editor, change the two lines from:

```
Tester.AssertEqual('', null, null);
```

```
SeS('Amsterdam').GetInnerText();
```

To

```
Tester.AssertEqual('The values match', 'Amsterdam',
SeS('Amsterdam').GetInnerText());
```

Now click **Play** to playback the new test:

#	Type	Start	Name	Status	Comment	Iteration
	Assert	12:27:06.551	ctl00\$MainContent\$LoginUser\$LoginButton.DoClick([])	Pass	Returned Value: true	0
	Assert	12:27:07.924	Book Management.DoClick([])	Pass	Returned Value: true	0
	Assert	12:27:08.283	The values match	Pass		0
	Assert	12:27:09.921	Edit.DoClick([])	Pass	Returned Value: true	0
	Assert	12:27:11.294	Book Management.DoClick([])	Pass	Returned Value: true	0
	Assert	12:27:12.635	(Create new book) .DoClick([])	Pass	Returned Value: true	0
	Assert	12:27:14.008	Author Management.DoClick([])	Pass	Returned Value: true	0
	Assert	12:27:15.334	(Create new author) .DoClick([])	Pass	Returned Value: true	0
	Assert	12:27:16.629	Log Out.DoClick([])	Pass	Returned Value: true	0
	Test	12:27:16.629	QuickStart1	Pass	Passed:12 Failed:0	

Test Pass

The test should now pass successfully.

2.2.4 Tutorial: Windows Testing

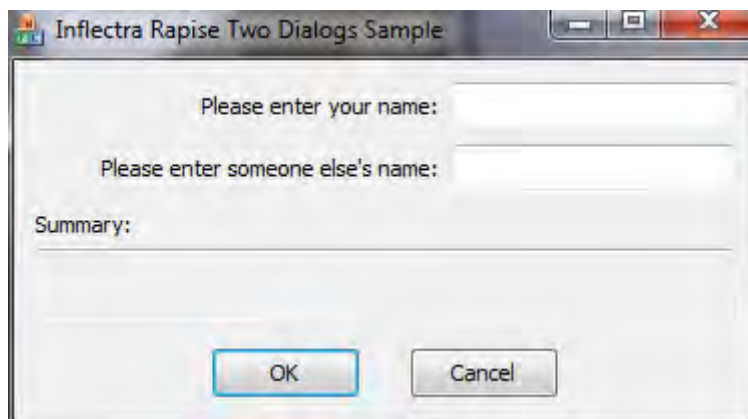
This section outlines the usage of Rapise for testing a simple Windows Desktop [Application Under Test \(AUT\)](#).

This version of the tutorial uses the **Rapise Visual Language (RVL) scriptless** mode. If you're interested in the [JavaScript version](#), we have a separate tutorial.

Please run the application now. You will find it in the samples directory where you installed Rapise.

By default, that will be `C:\Users\Public\Documents\Rapise\Samples\TwoDialogs\TwoDialogs.exe`.

You will see the following:



Please run the application a few times and observe its behaviour. If you press the OK button with the first edit box empty, the application will complain and return you to the dialog box.

If you put text in the first edit box but not the second, you will be shown a single line of text in a read-only edit box.

If you enter text in the second edit box as well as the first, pressing OK will put two lines of summary information in the read-only edit box.

An adequate testing strategy for this over-simple application might be to:

1. Put data in the first text box but not the second, and verify that the summary information is correct.
2. Press the OK button with no data in either text box, and verify that a message box is displayed.
3. Verify that if the success "Thank You" message is displayed the edit box input fields are cleared (but not the summary information).

If at this point you do not understand what the application is supposed to do, or the application is not behaving as described here, please contact [support](#) and clarify the details before proceeding.

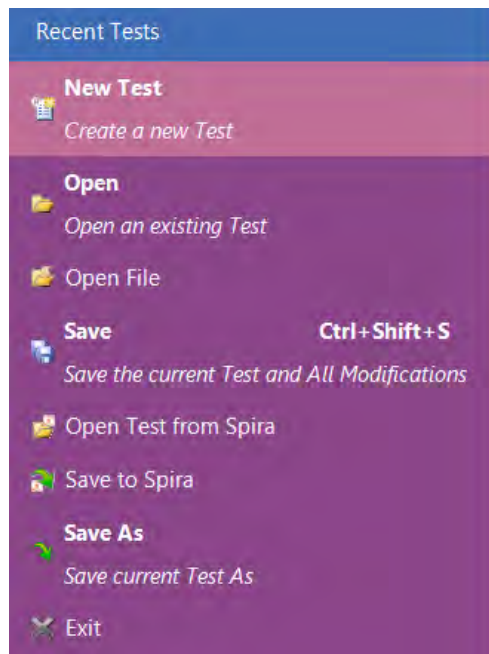
Now, let's use Rapise to implement the first of these tests.

Step 1. Run the TwoDialogs application and leave it in its default start state.

Once you execute the TwoDialogs.exe application it will be displayed on the screen:



Step 2. Start Rapise and make the window a conveniently large size. Click on the **File button (top left). Choose the first option there, "New Test."**

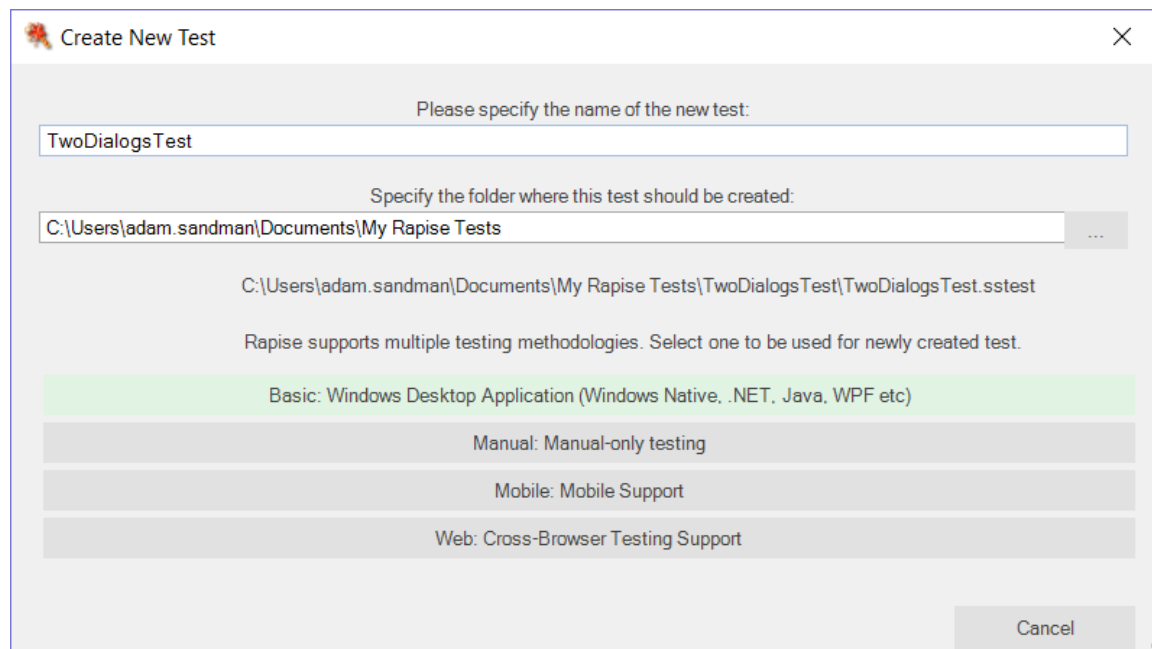


Step 3. Navigate to the desired path using the "... " button on the "Create New Test" dialog.

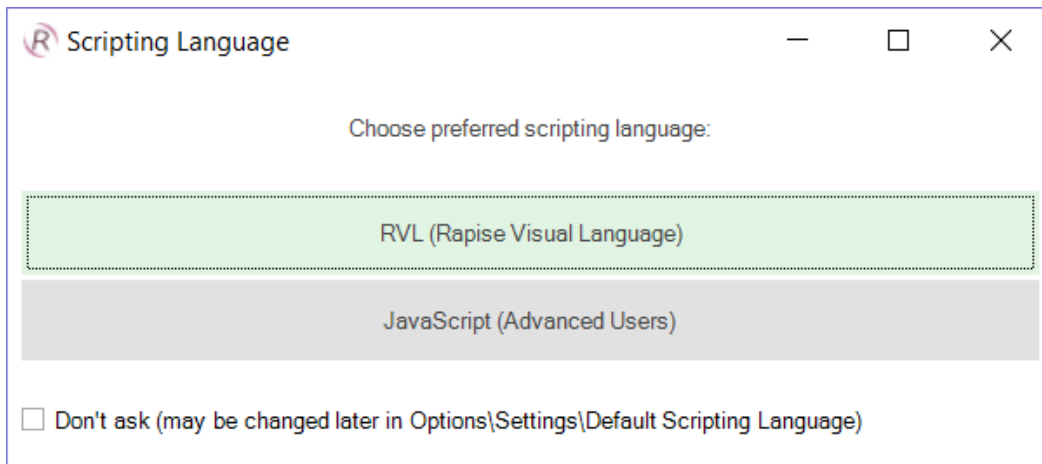
Enter the name of the new test script we're going to write (e.g. "TwoDialogsTest").

Click on the **"Basic: Windows Desktop Application"** methodology. This should always be used for testing Windows desktop applications:

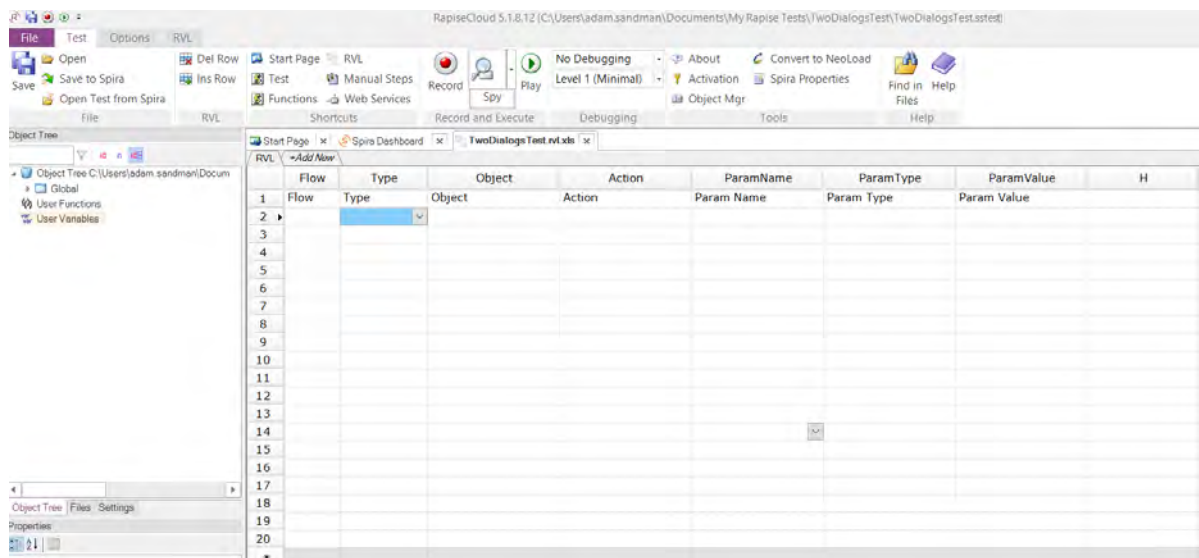
Press the "Create" button.



The following dialog will be displayed:



- Click on the **RVL (Rapise Visual Language)** button.
- You will now see the following:

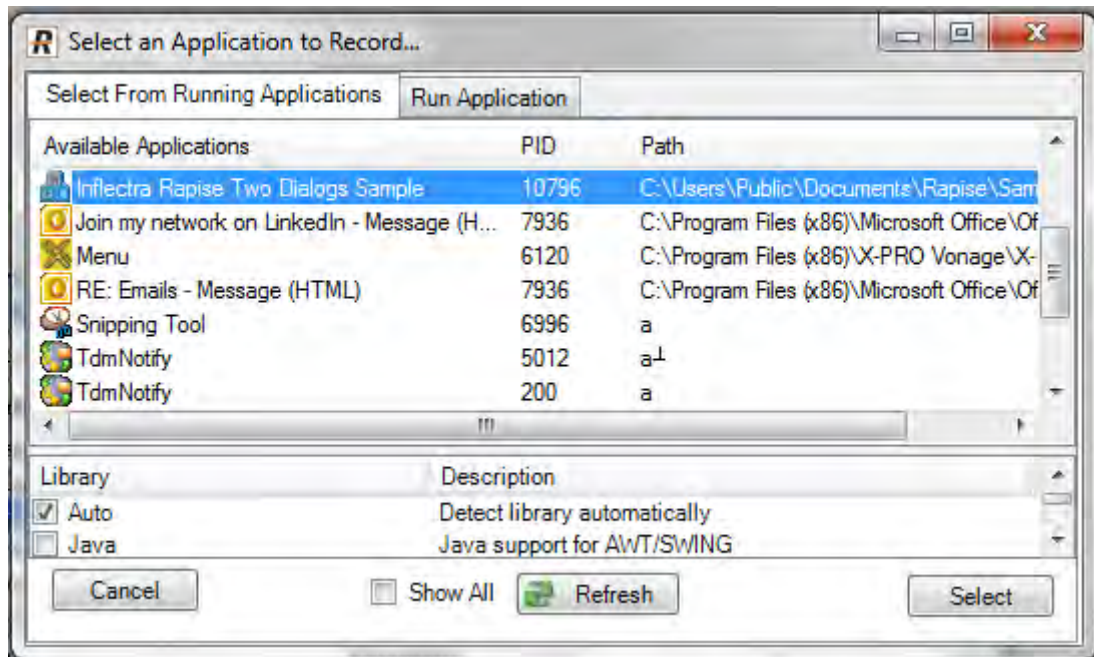


Step 4. Recording the test sequence.

Press the "**Record**" button in either the ribbon or on the toolbar. It has an icon like this:



You will see an application selection dialog like the following.



- Select the "Inflectra Rapise Two Dialogs Sample" entry.
- Leave the library selection as "Auto."
- Press the "Select" button at the bottom right.

Step 5. Record the activity in the application.

Rapise will pause while it starts the necessary background processes and hooks into the running AUT.

Once those tasks are complete, you will see the following "Recording Activity" for "Inflectra Rapise Two Dialogs Sample" dialog:

Recording Activity for "Inflectra Rapise Two Dialogs Sample"				
#	Object	Action	Data	Comment
Verify (Ctrl+1)		Learn (Ctrl+2)		SPY (Ctrl+5)
		Pause		Finish (Ctrl+3)
				Cancel
Ready			Advanced>>	<input type="checkbox"/> Transparent

The AUT will be brought to the foreground and Rapise will be minimized.

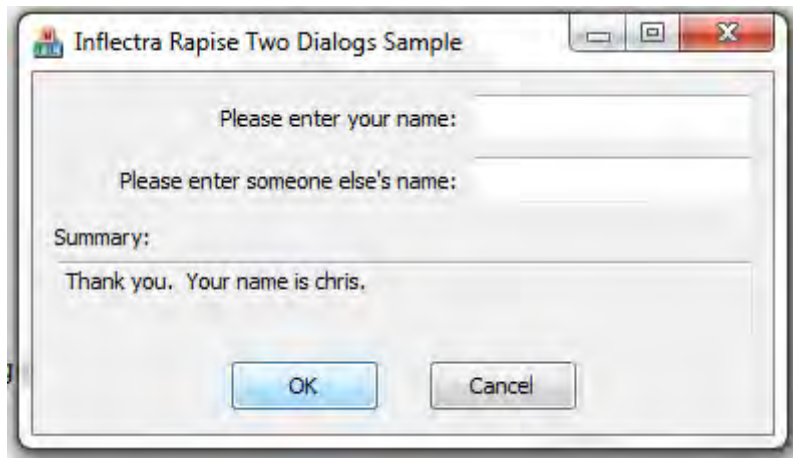
You will achieve best results in recording if you observe the following guidelines:

- (1) Work slowly while recording. Perform one action and wait for the results to be recorded in the Recording Activity dialog as a new grid line-item before going to the next item.
- (2) Use the mouse to select controls and operate them. Avoid using keyboard shortcuts and keyboard commands.

Step 6. Perform the Test Activities.

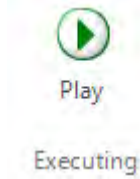
- Click in the first edit box in the TwoDialogs application.
- Type a name in this first edit box.

Watch the Recording activity dialog as you operate the AUT interface. As you press a button or fill a field, notice that the grid in the Recording activity has entries added to it.

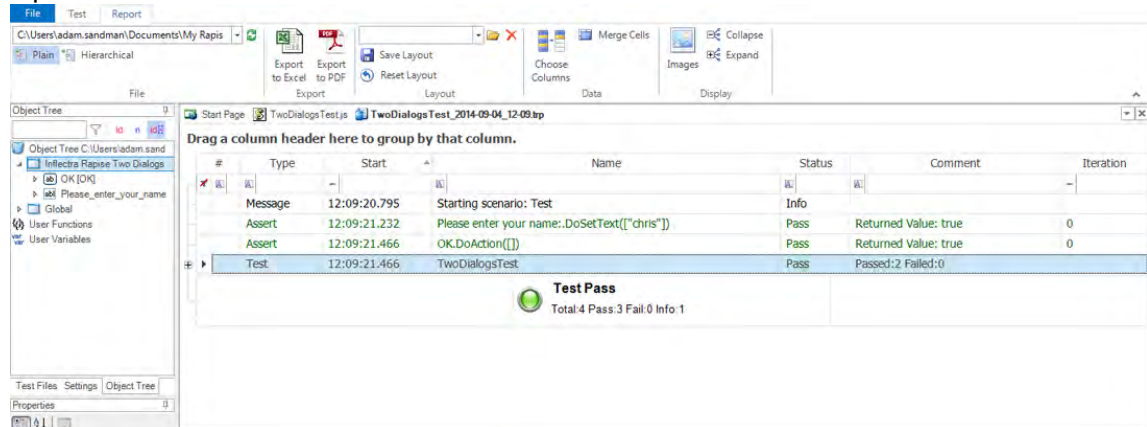


As you take these actions, you will see the Recording Activity grid update accordingly:

Press the "Play" button on the ribbon or the toolbar.



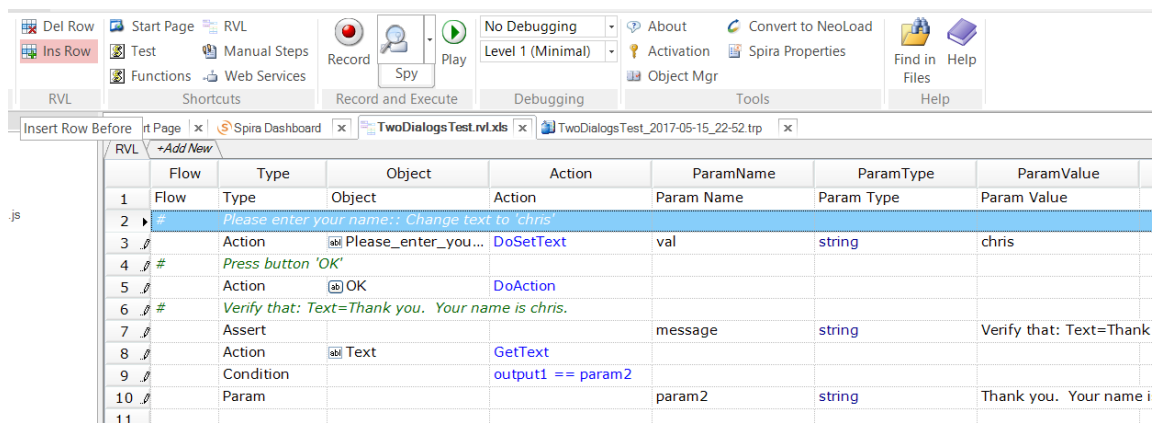
As the script runs, the Rapise window will be minimized to the taskbar and you will see the results of the script's activities on the TwoDialogs application window. At the end of the script execution, the Rapise window will be restored and the view will be of the report for the test:



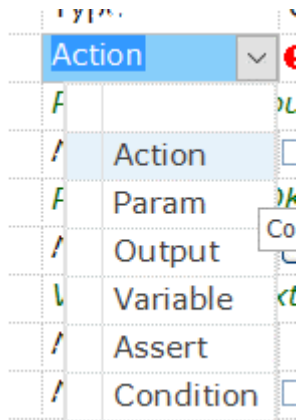
Step 8: A refinement on the launching of TwoDialogs.exe.

To date, we have operated on the assumption that the `TwoDialogs` sample program (application) is running. If this situation remained, the test script would require that the AUT be running before the script started. That would require that the person running the test remembered where it resided. To overcome this, Rapise provides a way to have the script run the program (AUT) before beginning the test.

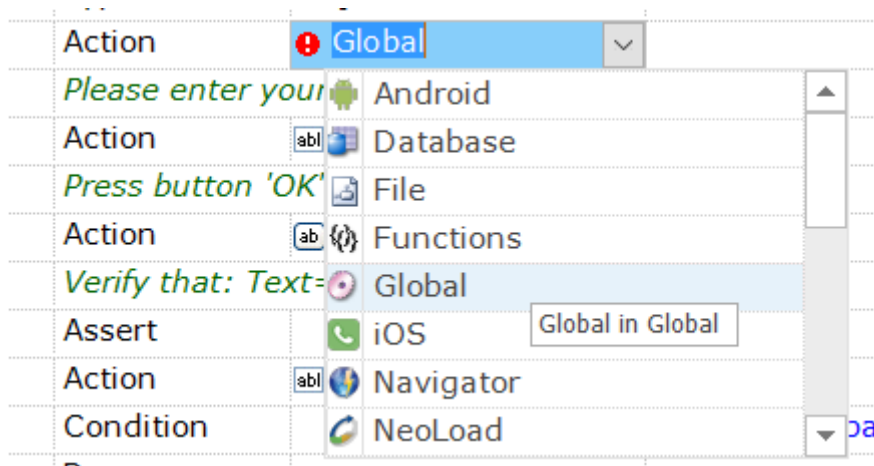
Rapise comes with a series of useful Global utility objects that can do things such as start applications, kill processes, access the file system, etc. To launch the `TwoDialogs` application at the start of the test, go to the first row in the test grid and click **"Ins Row"** in the RVL ribbon:



Now in the new row that was created, choose **Action** as the type of row:



Then in the next cell, choose "Global" as the object:



Then in the next cell, choose **DoLaunch** and press ENTER on the keyboard:

Type	Object	Action	ParamName	ParamType	ParamValue
Type	Object	Action	Param Name	Param Type	Param Value
Action	Global	DoLaunch	cmdLine	string	

Now you just need to enter in the location of the TwoDialogs application in the final cell (ParamValue) - C:\Users\Public\Documents\Rapise\Samples\TwoDialogs\TwoDialogs.exe :

Flow	Type	Object	Action	ParamName	ParamType	ParamValue	H
Flow	Type	Object	Action	Param Name	Param Type	Param Value	
	Action	Global	DoLaunch	cmdLine	string	C:\Users\Public\Documents\Rapise\Sampl	

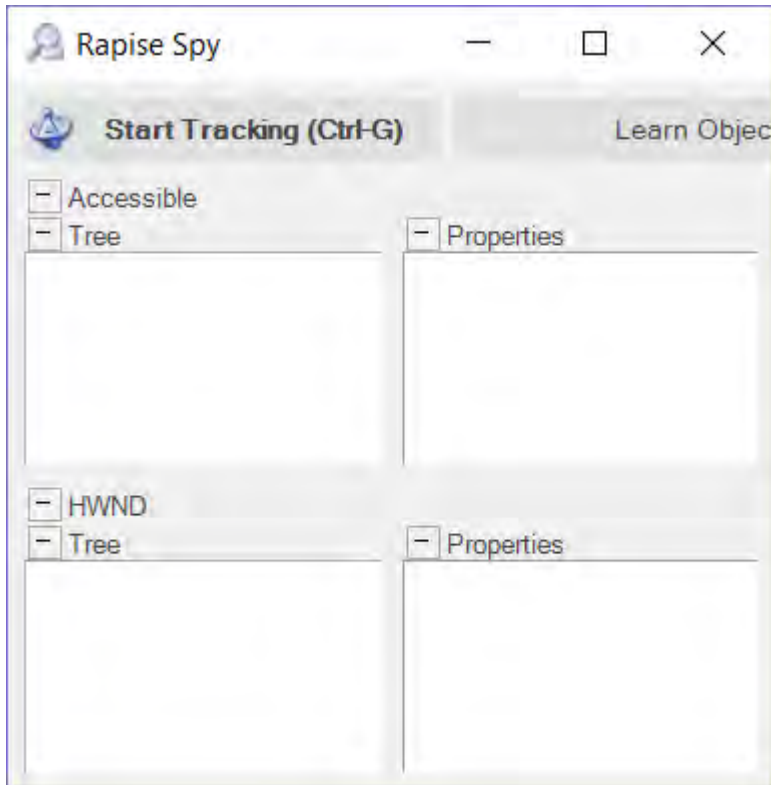
Now if you click **Play**, Rapise will launch the application and then complete the recorded test steps.

Advanced Testing using the Object Spy

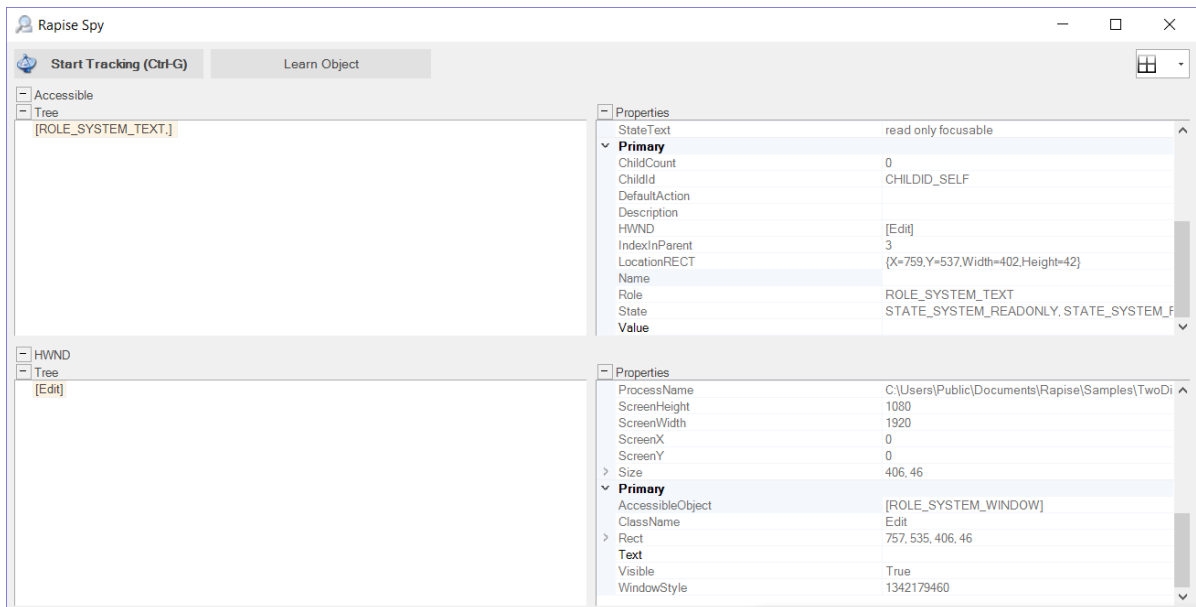
Sometimes you need to learn objects that are not visible or are obscured by other objects. To help with this, Rapise has the Object Spy tool.

The Spy tool lets you see the objects in the application in a hierarchy that you can learn.

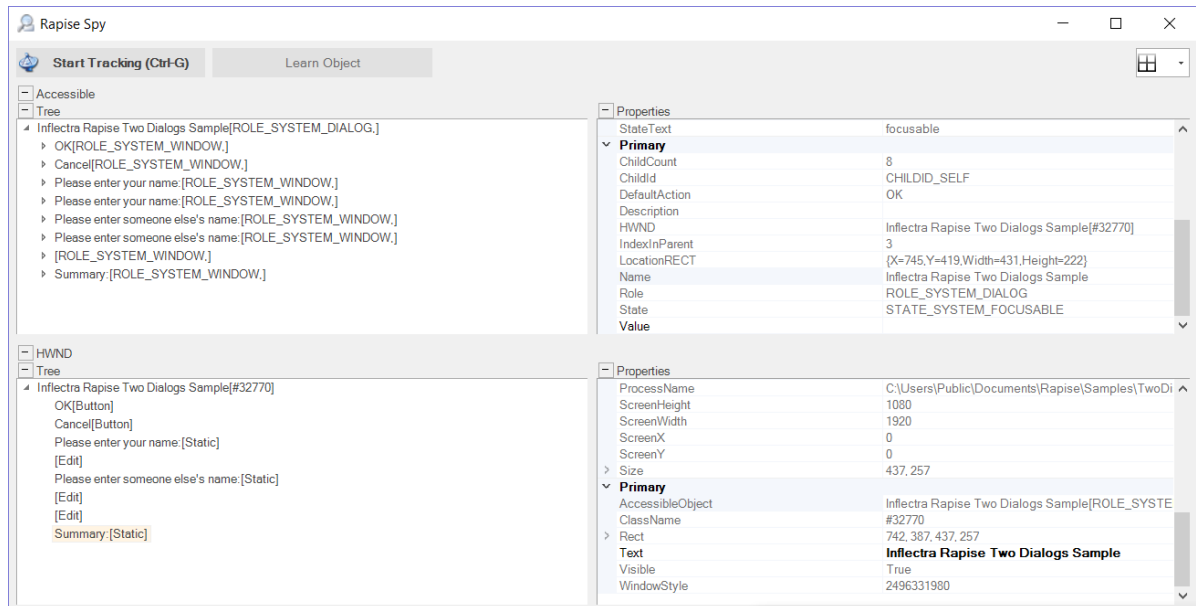
When you are in the middle of recording, click on the **Spy** button and Rapise will display the [Accessible Spy](#):



Press **CTRL+G** on the keyboard to start tracking. Hover the mouse over one of the text boxes in the TwoDialogs application and press **CTRL+G** again to stop tracking:



This shows you the object you selected, together with its various Windows attributes. If you want to see its place in the hierarchy of the application, right click on [ROLE_SYSTEM_TEXT] in the top-left pane and choose **Parent**. That will display its parent objects:



For example in this view you can see all three text boxes, the labels and some of the Windows standard objects (the Window title bar, close icons, etc.). Each of these can be expanded to show their children, and any of the objects can be Learned by clicking the **Learn Object** button in the top of the Spy. Once learned, you can use one of the options described above to write a test using it.

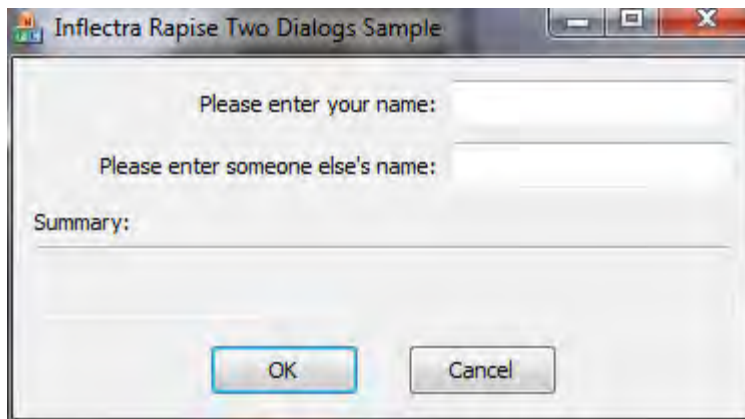
2.2.4.1 Using JavaScript

This section outlines the usage of Rapise for testing a simple Windows Desktop [Application Under Test \(AUT\)](#). This version of the tutorial uses the JavaScript test editor option in Rapise. If you'd prefer to use the [Rapise Visual Language \(RVL\)](#), please go to the main [Tutorial](#) instead.

Please run the application now. You will find it in the samples directory where you installed Rapise.

By default, that will be `C:\Users\Public\Documents\Rapise\Samples\TwoDialogs\TwoDialogs.exe`.

You will see the following:



Please run the application a few times and observe its behaviour. If you press the OK button with the first edit box empty, the application will complain and return you to the dialog box.

If you put text in the first edit box but not the second, you will be shown a single line of text in a read-only edit box.

If you enter text in the second edit box as well as the first, pressing OK will put two lines of summary information in the read-only edit box.

An adequate testing strategy for this over-simple application might be to:

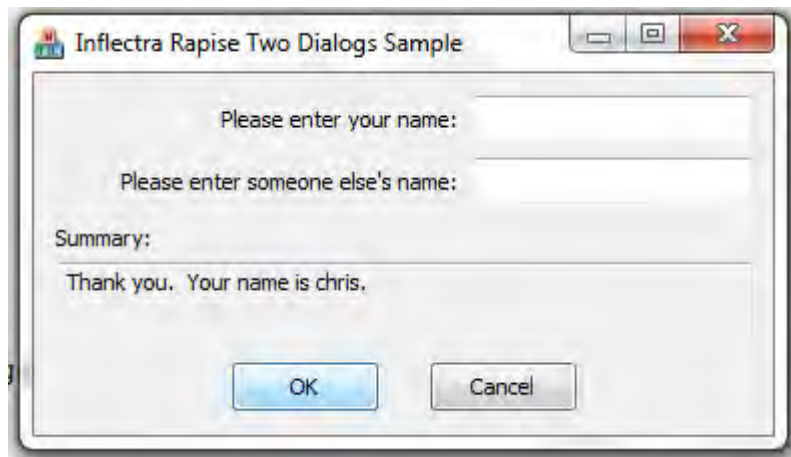
1. Put data in the first text box but not the second, and verify that the summary information is correct.
2. Press the OK button with no data in either text box, and verify that a message box is displayed.
3. Verify that if the success "Thank You" message is displayed the edit box input fields are cleared (but not the summary information).

If at this point you do not understand what the application is supposed to do, or the application is not behaving as described here, please contact [support](#) and clarify the details before proceeding.

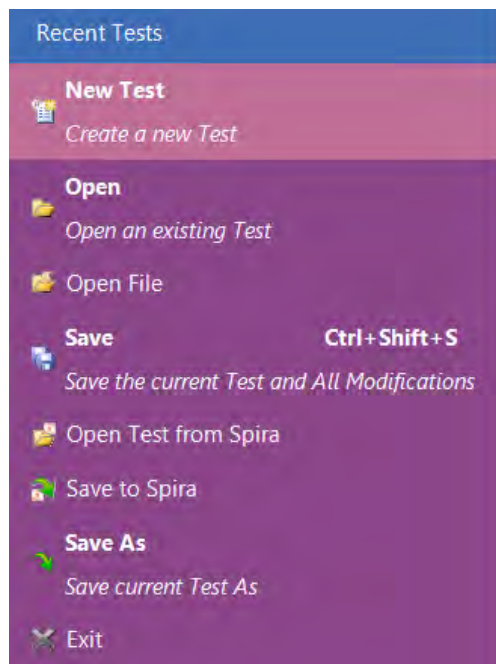
Now, let's use Rapise to implement the first of these tests.

Step 1. Run the TwoDialogs application and leave it in its default start state.

Once you execute the TwoDialogs.exe application it will be displayed on the screen:



Step 2. Start Rapise and make the window a conveniently large size. Click on the **File** button (top left). Choose the first option there, "New Test."



Recent Tests

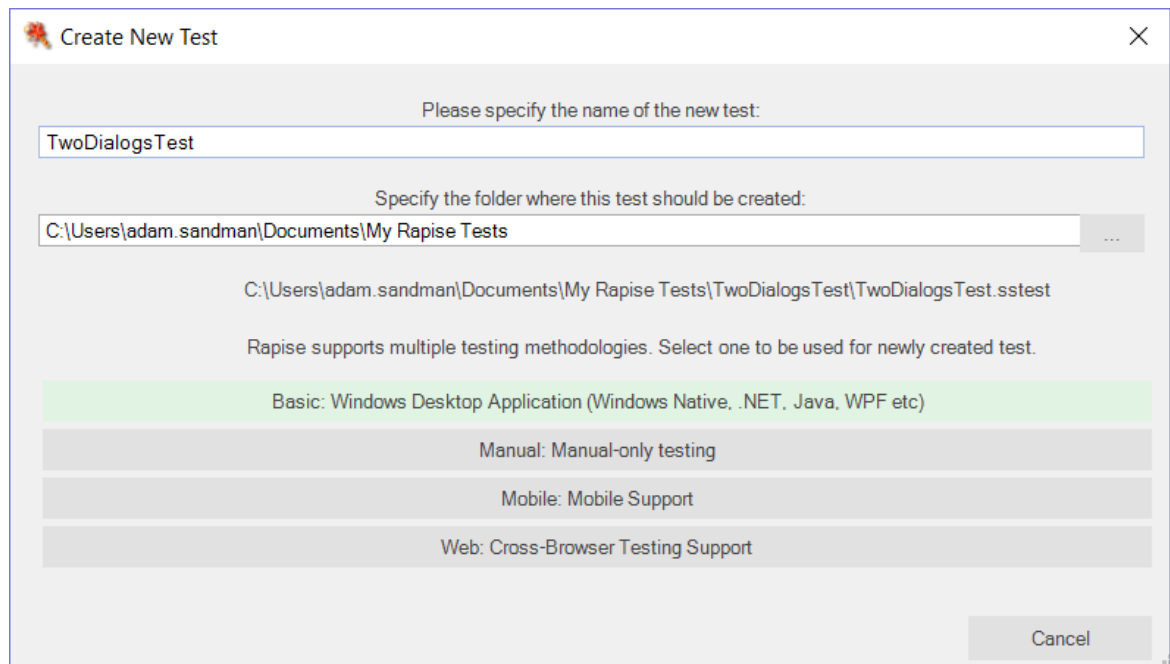
C:\Subversion\Projects\SpiraTeam Add Ons\Trunk\Ver
 C:\Users\james.sanderson\Documents\My Rapise Tests\
 C:\Users\james.sanderson\Documents\My Rapise Tests\
 C:\SpiraRepository\Manual Test Case TC36\Manual Te
 C:\SpiraRepository\Boston Test TC35\Boston Test TC35
 C:\Users\Public\Documents\Rapise\Samples\UsingSpr
 C:\Temp\Web Testing 1\Web Testing 1.sstest
 C:\Temp\Web Testing 6\Web Testing 6\Web Testing 6
 C:\Users\james.sanderson\Documents\My Rapise Tests\
 ...

Step 3. Navigate to the desired path using the "..." button on the "Create New Test" dialog.

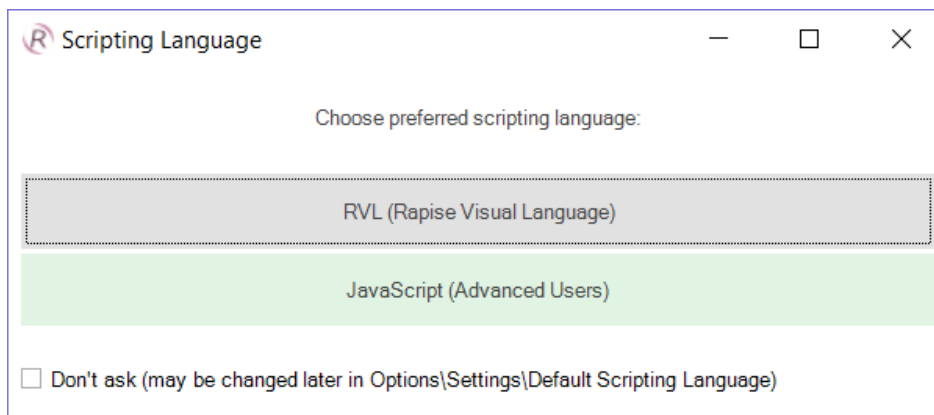
Enter the name of the new test script we're going to write (e.g. "TwoDialogsTest").

Click on the **"Basic: Windows Desktop Application"** methodology. This should always be used for testing Windows desktop applications:

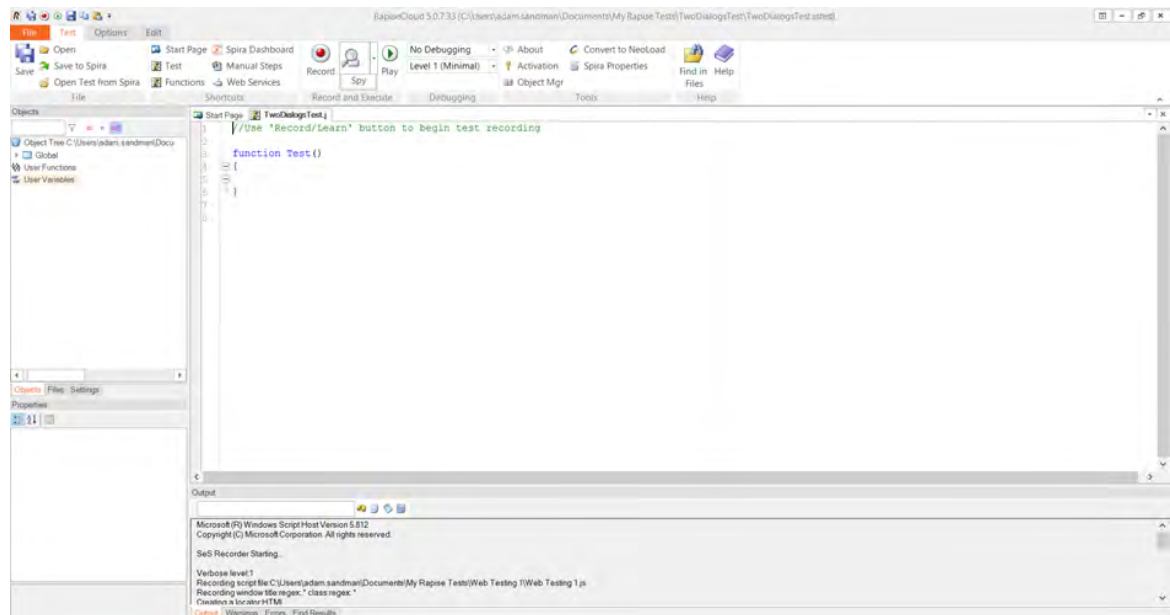
Press the "Create" button.



The following dialog will be displayed:



- Click on the **JavaScript (Advanced Users)** button.
- You will now see the following:



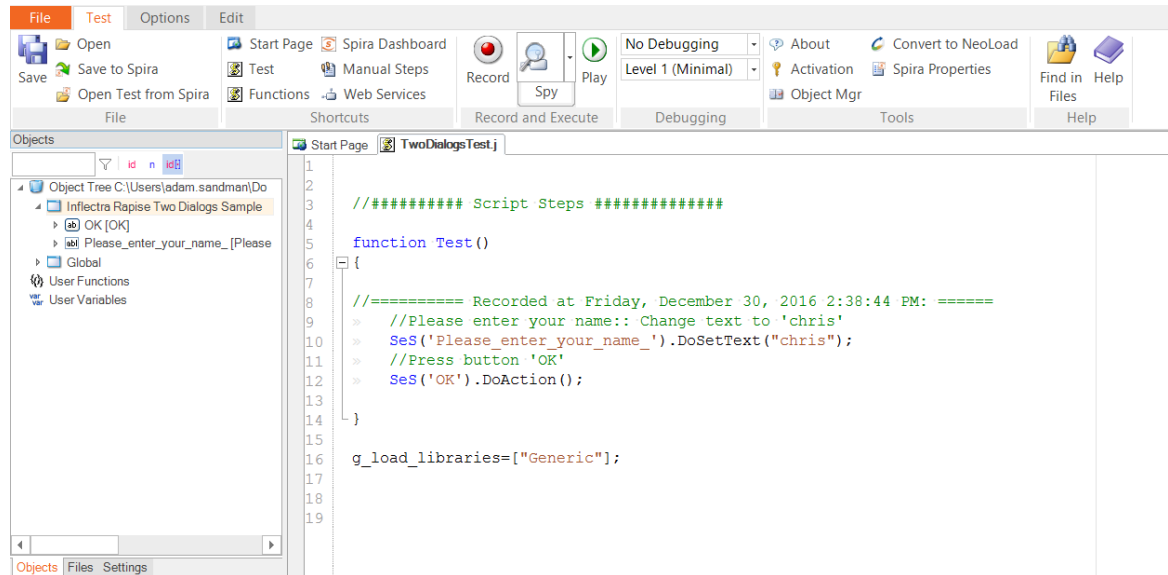
Step 4. Recording the test sequence.

Press the "**Record**" button in either the ribbon or on the toolbar. It has an icon like this:



You will see an application selection dialog like the following.

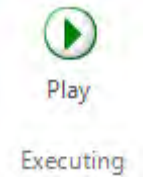
will change the view to display the newly recorded script. It will look something like the following:



Notice that the two steps of the script are automatically documented and that they correspond precisely and in the same order as the way they appeared in the Recording Activity dialog during recording.

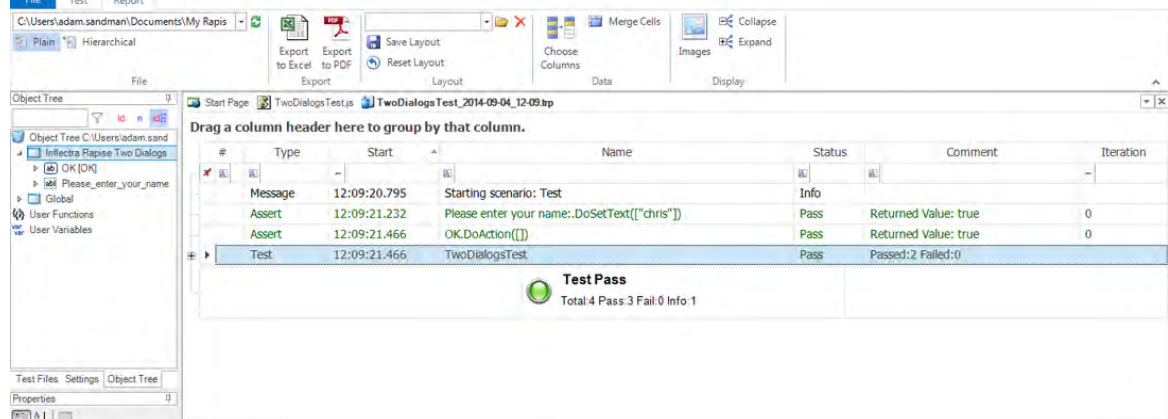
Step 7: Run ("Play") the recorded test script.

Press the "Play" button on the ribbon or the toolbar.



As the script runs, the Rapise window will be minimized to the taskbar and you will see the results of the script's activities on the TwoDialogs application window.

At the end of the script execution, the Rapise window will be restored and the view will be of the report for the test:



Step 8: A refinement on the launching of TwoDialogs.exe.

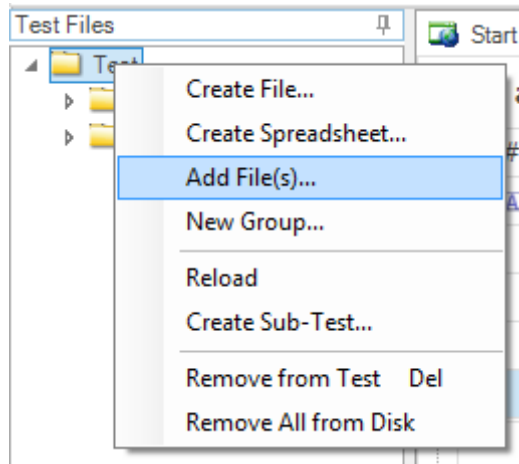
To date, we have operated on the assumption that the `TwoDialogs` sample program (application) is running. If this situation remained, the test script would require that the AUT be running before the script started. That would require that the person running the test remembered where it resided. To overcome this, Rapise provides a way to have the script run the program (AUT) before beginning the test.

Rapise has an underlying scripting language based on JavaScript (see [Scripting](#)). This help system covers available scripting objects in detail from a practical perspective. For the moment, we want to simply take the shortest path to starting the application before attempting to run the test.

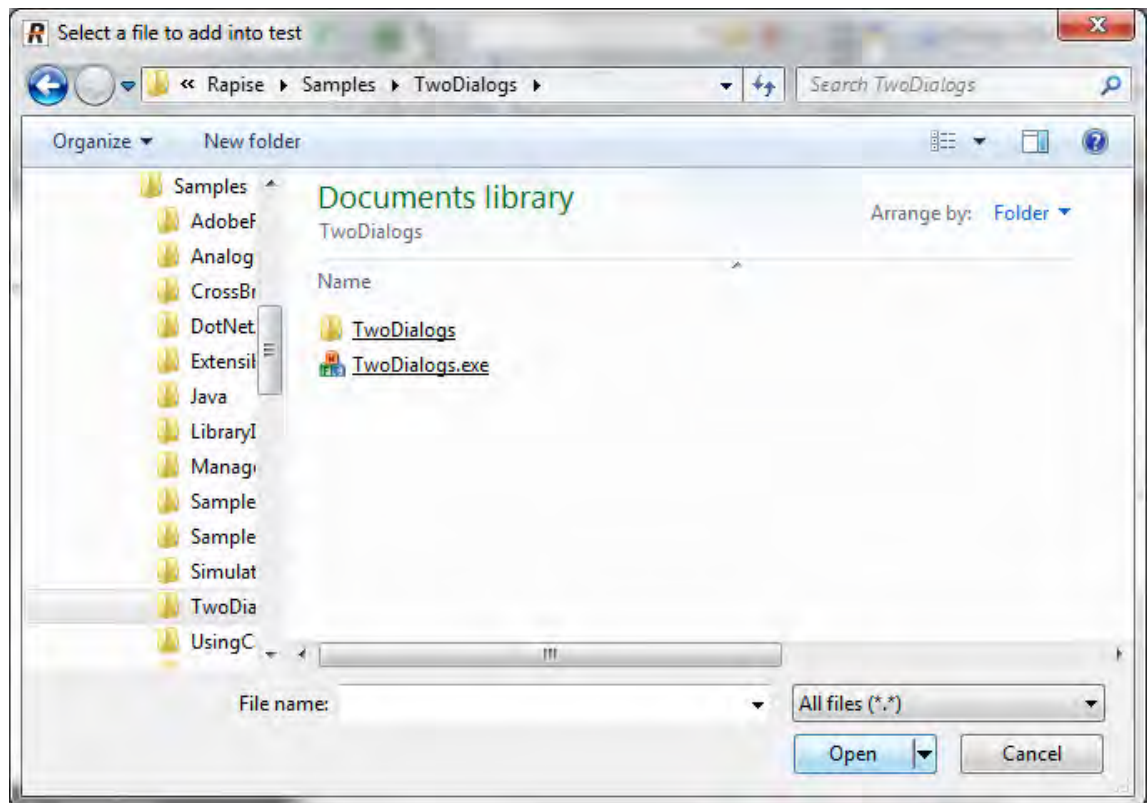
There are at least 3 ways of adding application launch code to your test.

Way 1: Drag The File from the Test Files view

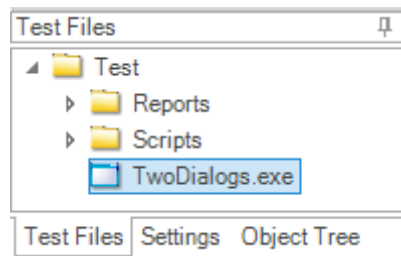
First, switch to [Test Files](#) view. Right-click on "Test" folder and choose "Add File(s)..." menu item:



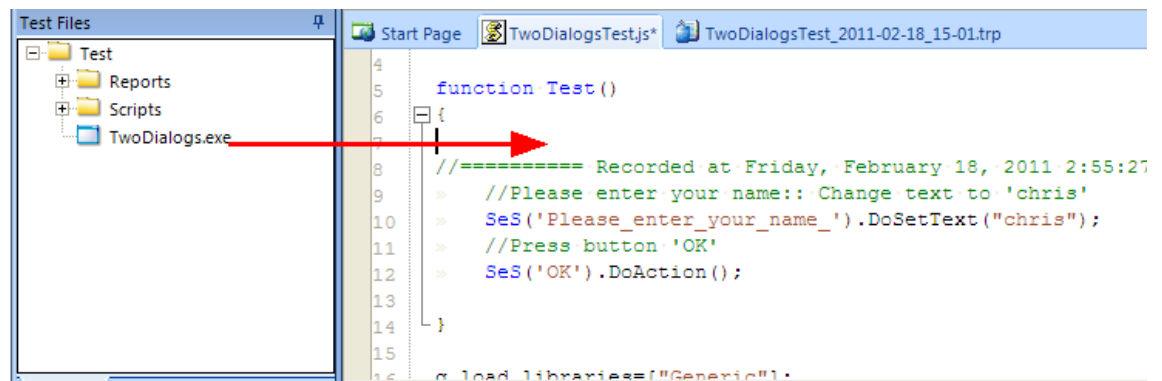
And select the location of the `TwoDialogs.exe` (normally, it is `C:\Program Files\Inflectra\Rapise\Samples\TwoDialogs\TwoDialogs.exe`),



Now you have the executable as a part of your test files set:



If you wish to launch `TwoDialogs.exe` once then just double-click on it in the tree. If you wish it to be launched every time the test starts then simply drag it from the tree into the source code:



The proper launch statement will be inserted:

```
function Test()
{
  > Global.DoLaunch('../..../Rapise/Samples/TwoDialogs/TwoDialogs.exe');
  > //===== Recorded at Tuesday, September 27, 2011 4:06:19 PM: =====
  > //Please enter your name:: Change text to 'chris'
  > SeS('Please_enter_your_name_').DoSetText("chris");
  > //Press button 'OK'
  > SeS('OK').DoAction();
}

```

Way 2: Type the Code

The `Global` object contains methods that are available to all scripts.

Select the `TwoDialogs.js` file in the [Test Files](#) view of the Rapise main page.

Double-click the file name to open it in the main (editing) window of Rapise. You will see the generated script from the recording session from earlier steps in this sample.

Place the cursor in the main editing window and click on the first line after

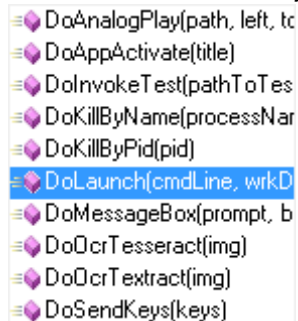
```
function Test()
{

```

Now type

`Global.`

As soon as you type the ".", Rapise will give you a drop down list of all the available methods available in the `Global` object:



Select the `DoLaunch(cmdLine, wrkD)` member and hit the Enter key.

Now your script contains the line:

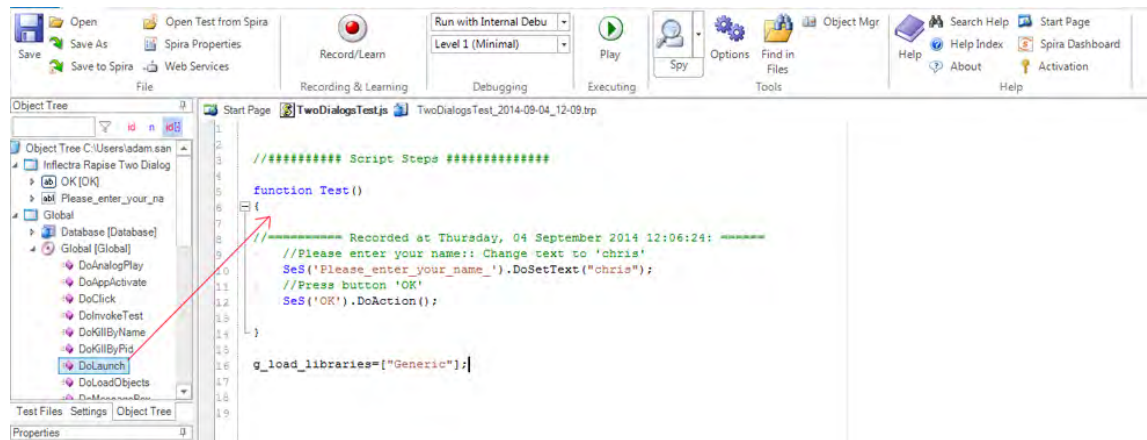
```
Global.DoLaunch('')
```

You need to correct the references to the command line:

```
Global.DoLaunch('"C:\\Program Files\\Inflectra\\Rapise\\Samples\\TwoDialogs\\TwoDialogs.exe"');
```

Way 3: Drag the Action from the Objects Tree

You may drag the method template from the [Object Tree](#) view. Expand the "Global" node and select the "DoLaunch" action in it. Drag the node into the proper position inside the script source:



Template call is inserted:

```

4
5 function Test()
6 {
7 Global.DoLaunch('');
8 //===== Recorded at Friday, Feb
9 >> //Please enter your name:: Chang
10 >> SeS('Please_enter_your_name_').D
11 >> //Press button 'OK'

```

Now you need to correct the references to the command line:

```

Global.DoLaunch('C:\\Program Files\\Inflectra\\Rapise\\Samples\\TwoDialogs\\
\\TwoDialogs.exe');

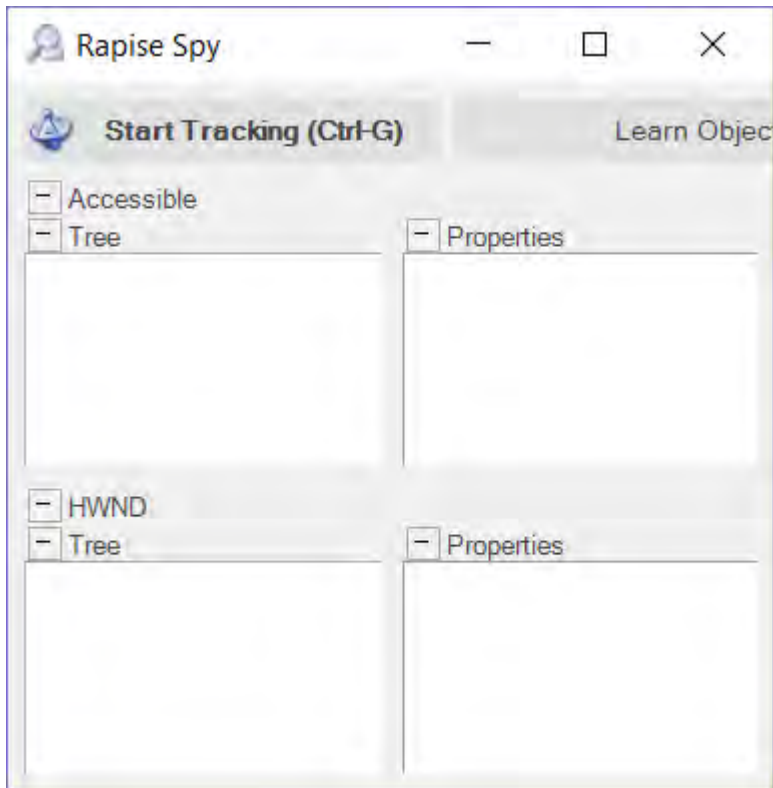
```

Advanced Testing using the Object Spy

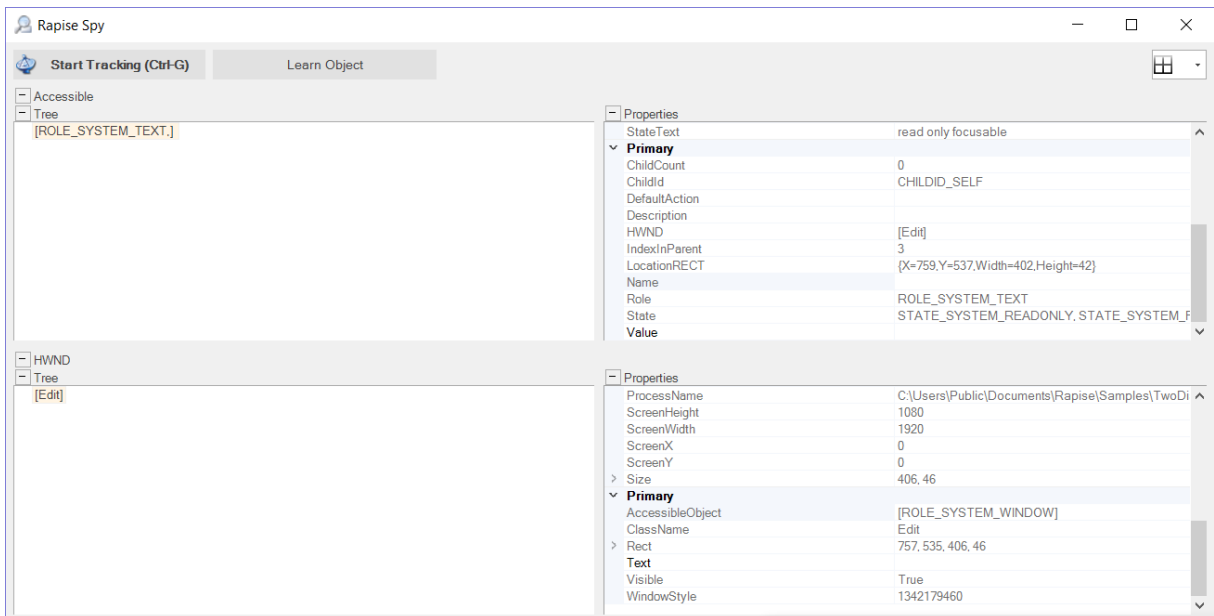
Sometimes you need to learn objects that are not visible or are obscured by other objects. To help with this, Rapise has the Object Spy tool.

The Spy tool lets you see the objects in the application in a hierarchy that you can learn.

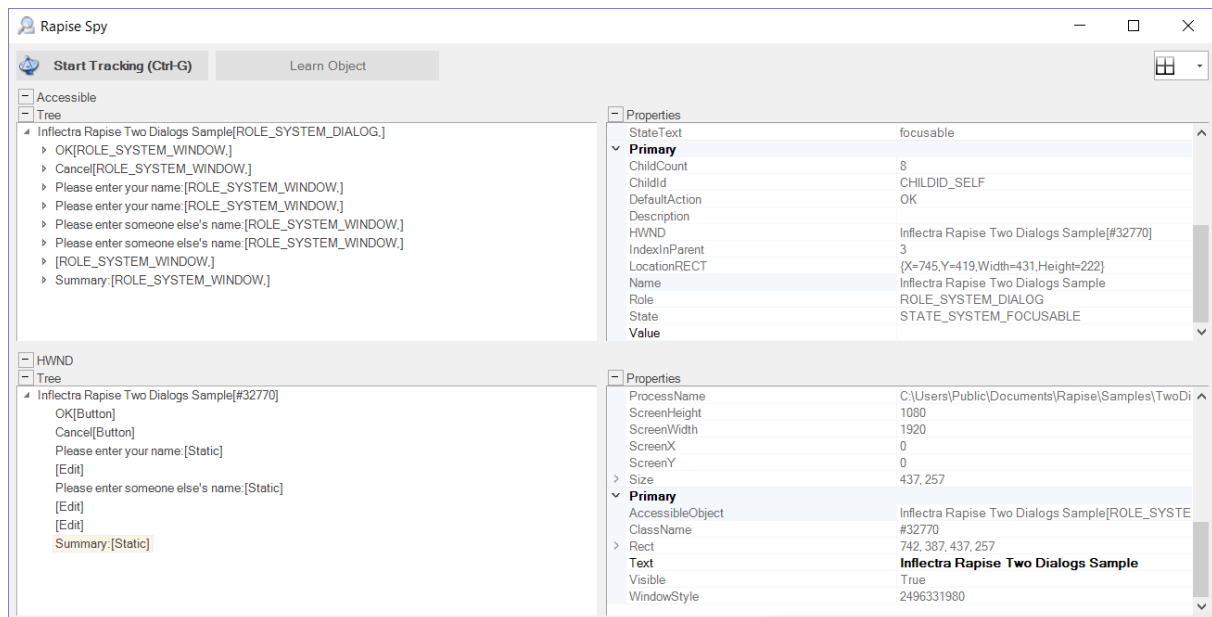
When you are in the middle of recording, click on the **Spy** button and Rapise will display the [Accessible Spy](#):



Press **CTRL+G** on the keyboard to start tracking. Hover the mouse over one of the text boxes in the TwoDialogs application and press **CTRL+G** again to stop tracking:



This shows you the object you selected, together with its various Windows attributes. If you want to see its place in the hierarchy of the application, right click on [ROLE_SYSTEM_TEXT] in the top-left pane and choose **Parent**. That will display its parent objects:



For example in this view you can see all three text boxes, the labels and some of the Windows standard objects (the Window title bar, close icons, etc.). Each of these can be expanded to show their children, and any of the objects can be Learned by clicking the **Learn Object** button in the top of the Spy. Once learned, you can use one of the options described above to write a test using it.

2.2.5 Tutorial: REST Web Services

In this section you shall learn how to test a RESTful web services API using Rapise. We shall be using a demo application called **Library Information System** that has a dummy RESTful web service API available for learning purposes. You can access this sample application at <http://www.libraryinformationsystem.org>, and its RESTful web service API can be found at: www.libraryinformationsystem.org/Services/RestService.aspx.

What is REST and what is a RESTful web service?

REpresentational State Transfer (REST) is a style of software architecture for distributed systems such as the World Wide Web. REST has emerged as a web API design model that offers greater simplicity over other web service protocols such as SOAP and XML-RPC.

A RESTful web API (also called a RESTful web service) is a web API implemented using HTTP and REST principles. Unlike SOAP-based web services, there is no "official" standard for RESTful web APIs. This is because REST is an architectural style, unlike SOAP, which is a protocol.

Overview

Creating a REST web service test in Rapise consists of the following steps:

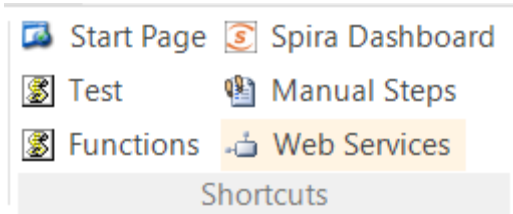
1. Using the REST query builder to create the various REST web service requests and verify that they return the expected data in the expected format.
2. Parameterizing these REST web service requests into reusable templates and saving as Rapise learned objects.
3. Generating the test script in Javascript that uses the learned Rapise web service objects.

We shall discuss each of these steps in turn.

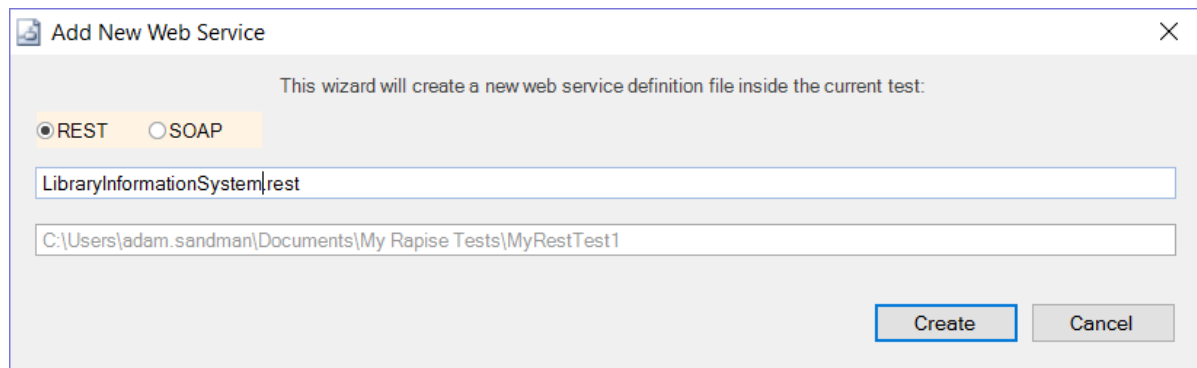
1. Using the REST Query Builder

Create a new test in Rapise called MyRestTest1.sstest. For methodology, choose **Basic: Standard Scripting Mode** and Rapise will create a new blank test project.

Once you have created it, click on the "Web Services" icon in the Test ribbon to add a new web service definition to your test project:



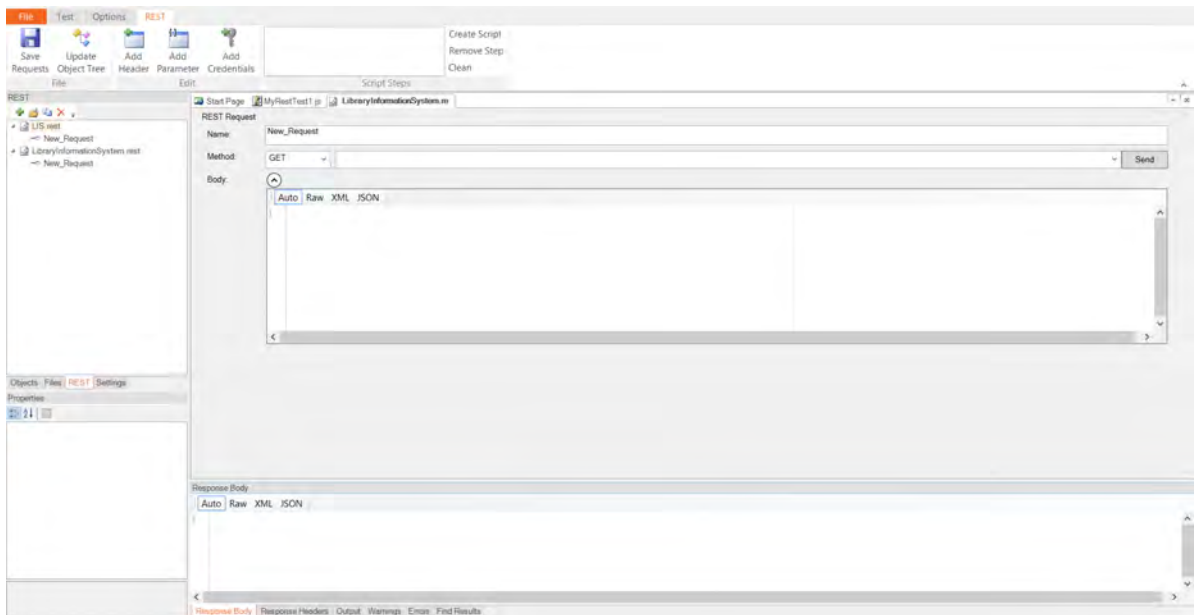
This will display the Add New Web Service dialog box:



Choose **REST** as the type of web service you want to create.

Then, enter the name of the web service that you're going to add, in this case enter "**LibraryInformationSystem.rest**" and click "Create".

This will add the REST web services definition file to your test project:



You will see on the right hand side, there is a new document editor for the .rest file. This is the REST web services query form. It lets you send test HTTP requests to the web service under test and inspect the output being returned.

If you open up API documentation for our sample application (www.libraryinformationsystem.org/Services/RestService.aspx) you will see that it exposes several operations for retrieving, adding, updating and deleting books and authors in the system. For this tutorial we shall perform the following operations:

1. Get the special SessionID to identify our test session
2. Get a list of books in the system
3. Add a new book to the system and verify that it was added

According to the documentation that means we will need to send the following requests:

(i) Get a Unique Session

URL:	http://www.libraryinformationsystem.org/Services/RestService.svc/session
Method:	GET
Returns:	Unique session ID that is passed to other requests to keep data separate for different demo users

(ii) Get this list of books

URL:	http://www.libraryinformationsystem.org/Services/RestService.svc/book?session_id={session_id}
Method:	GET
Returns:	Array of book objects

(iii) Add a new book to the list

URL:	http://www.libraryinformationsystem.org/Services/RestService.svc/book?session_id={session_id}
Method:	POST
Body:	Pass a populated book object:

```

    {
        "Name": "Book Name",
        "AuthorId": 1,
        "GenreId": 1,
    }

```

Returns: Single book object that has its BookId populated

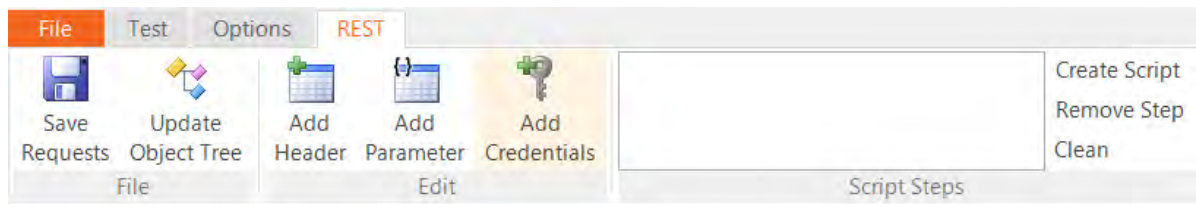
The first request will be to get the unique session ID that we will need to pass to the other requests. This is needed by our sample application to prevent testing by different users interfering with each other. To create this request, simply enter the following information on the REST Request form:

- **Name:** Get_Session
- **Method:** GET
- **URL:** <http://www.libraryinformationsystem.org/Services/RestService.svc/session>

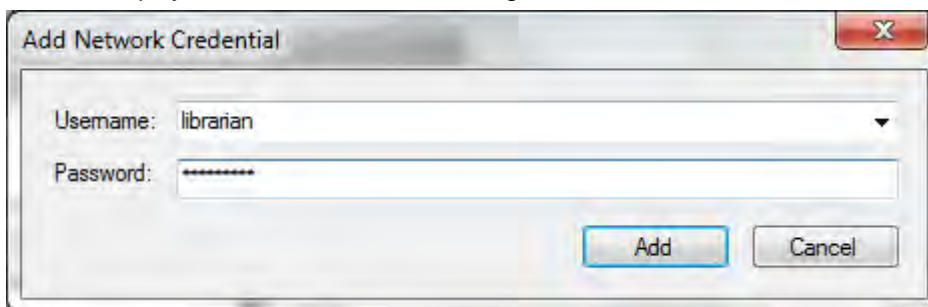
You should now have it populated as illustrated below:



This web service request requires that we pass credentials by means of HTTP Basic authentication. So click on the "REST" tab in the Rapise ribbon and click on the "Add Credentials" button.

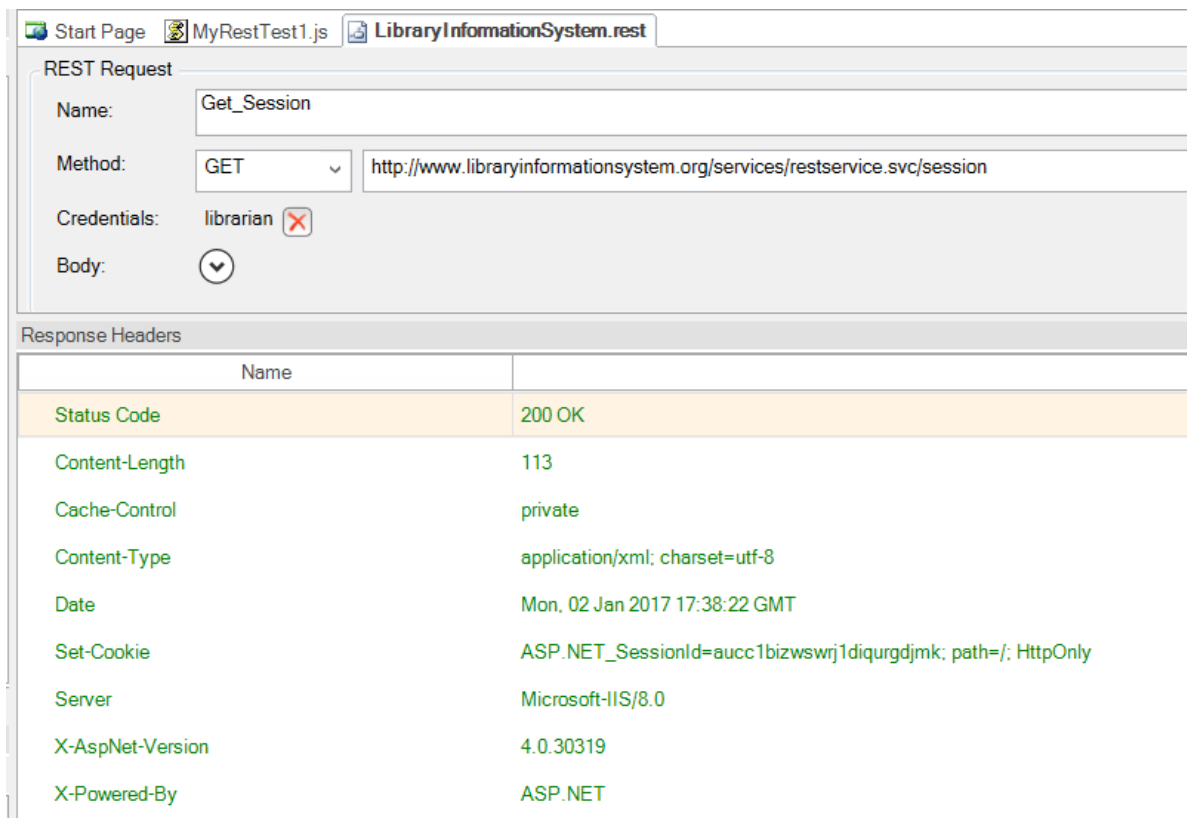


This will display the "Add Credentials" dialog box:



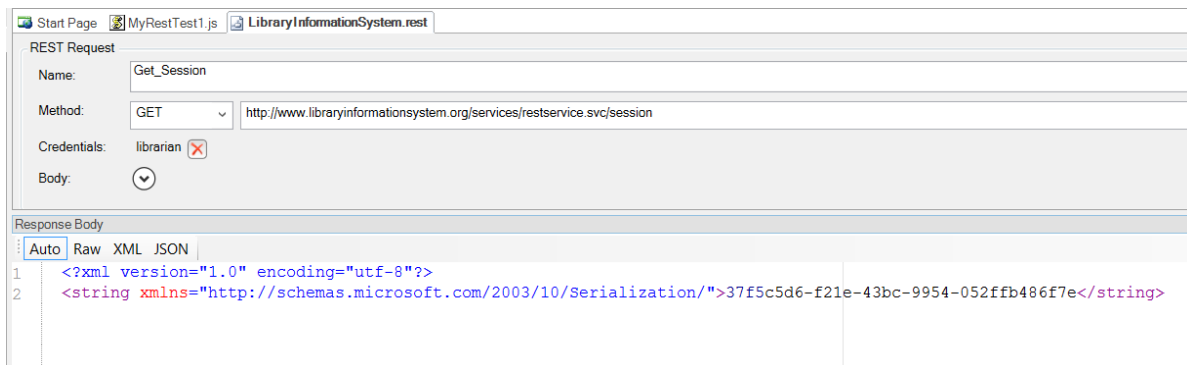
Enter **librarian** as both the username and password and click "Add".

Now click the "Send" button and the request will get sent to the web service:



Name	
Status Code	200 OK
Content-Length	113
Cache-Control	private
Content-Type	application/xml; charset=utf-8
Date	Mon, 02 Jan 2017 17:38:22 GMT
Set-Cookie	ASP.NET_SessionId=aucc1bizswrj1diqurgdjmk; path=/; HttpOnly
Server	Microsoft-IIS/8.0
X-AspNet-Version	4.0.30319
X-Powered-By	ASP.NET

The Response Header tab will display the headers coming back from the web service. The Status Code **200 OK** means that the request succeeded and that data was returned. If you click on the "**Response Body - XML**" tab, you will see the XML serialized data returned from the web service:

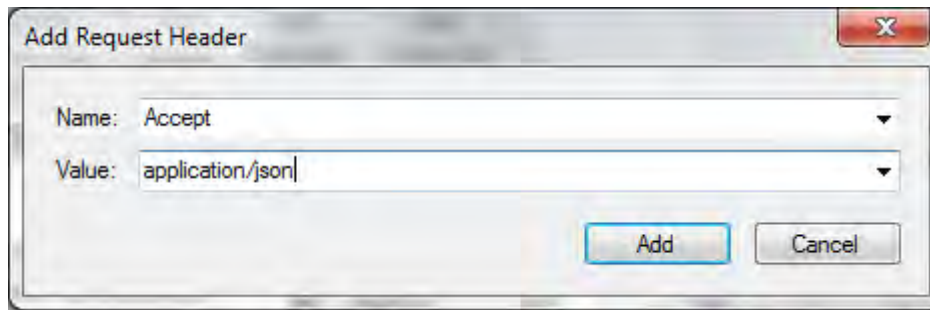


```
<?xml version="1.0" encoding="utf-8"?>
<string xmlns="http://schemas.microsoft.com/2003/10/Serialization/">37f5c5d6-f21e-43bc-9954-052ffb486f7e</string>
```

Since Rapise uses JavaScript as its scripting language, it is usually easier to work with JSON (JavaScript Object Notation) serialized data rather than XML. In the case of the sample Library Information System web service, you can change the format that it accepts and retrieves by sending two special HTTP headers:

- **Content-Type:** application/json
- **Accept:** application/json

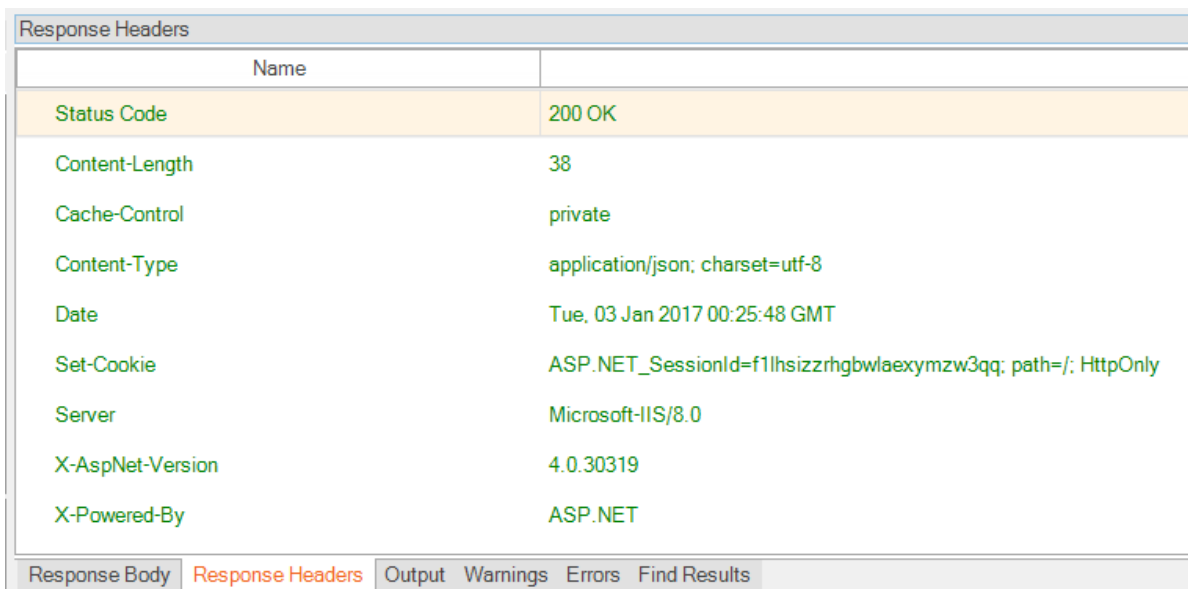
To add these headers to the request, simply click on the "Add Header" button in the REST ribbon tab. This will display the following dialog box:



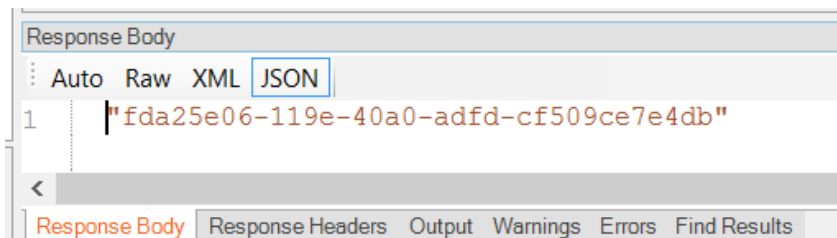
Choose the HTTP Header "**Accept**" from the list and enter "**application/json**" as the value. Repeat for the "**Content-Type**" header. You should now have the following populated request:



Now click the "Send" button and the request will get sent to the web service:

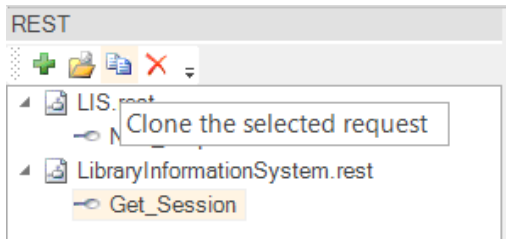


The Response Header tab will display the headers coming back from the web service. Note that the returned Content-Type is listed as "application/json" as requested. If you click on the "Response Body - JSON" tab, you will see the JSON serialized data returned from the web service:

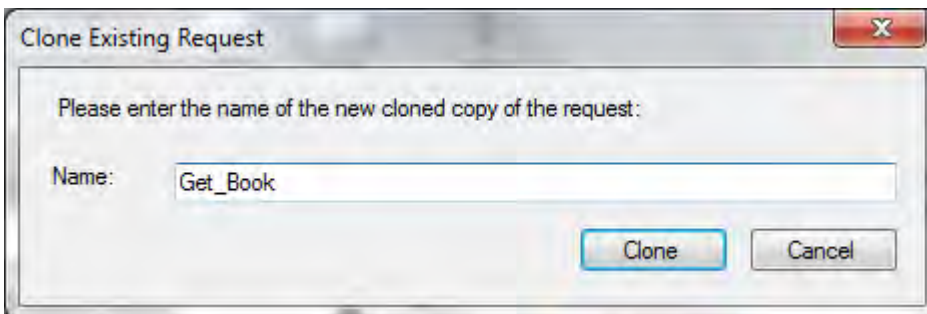


We have now completed the creation of our first test operation. Click on the "Save Requests" button in the Rapise REST Ribbon to make sure our changes have been saved.

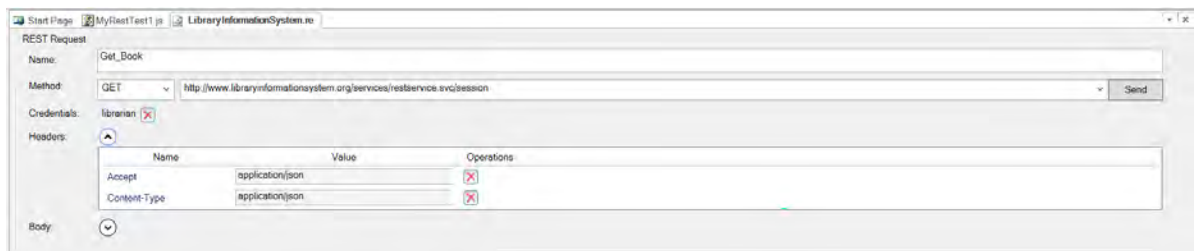
Now click on the "Clone request" icon in the REST request explorer in the left-hand side of the screen:



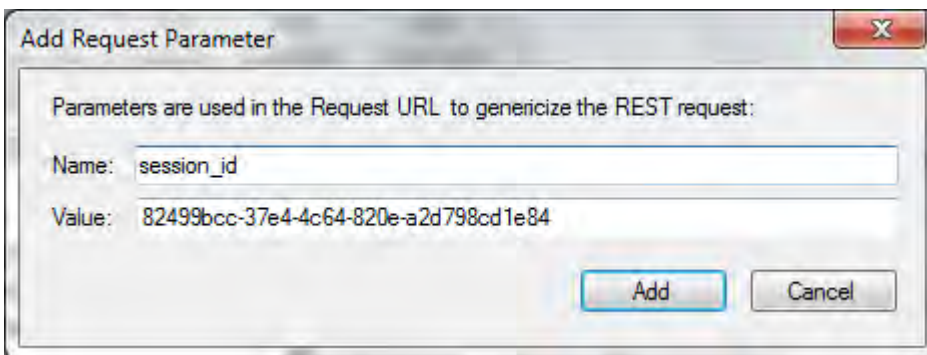
This will display the Clone Request dialog box. This lets us create a new REST request that contains the headers and authentication already defined on our existing request. This will save time over creating a new REST request from scratch:



Enter the name "**Get_Books**" in the dialog box and click the "Clone" button. This will create a new REST request with this name:



For this request we need to pass through the SessionID in the querystring. Rather than hardcoding it in the URL, we can make use of the parameterization feature of Rapise. Click on the "**Add Parameter**" button in the Rapise REST Ribbon. This will display the "Add Request Parameter" dialog box:



Enter in the following:

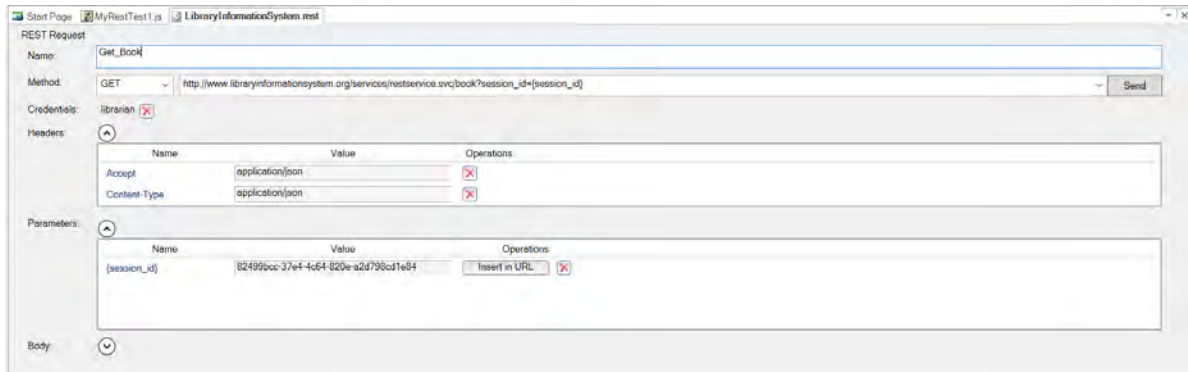
- o **Name: session_id**

- **Value: 82499bcc-37e4-4c64-820e-a2d798cd1e84**
(you can also copy and paste the value returned by the Get_Session command)

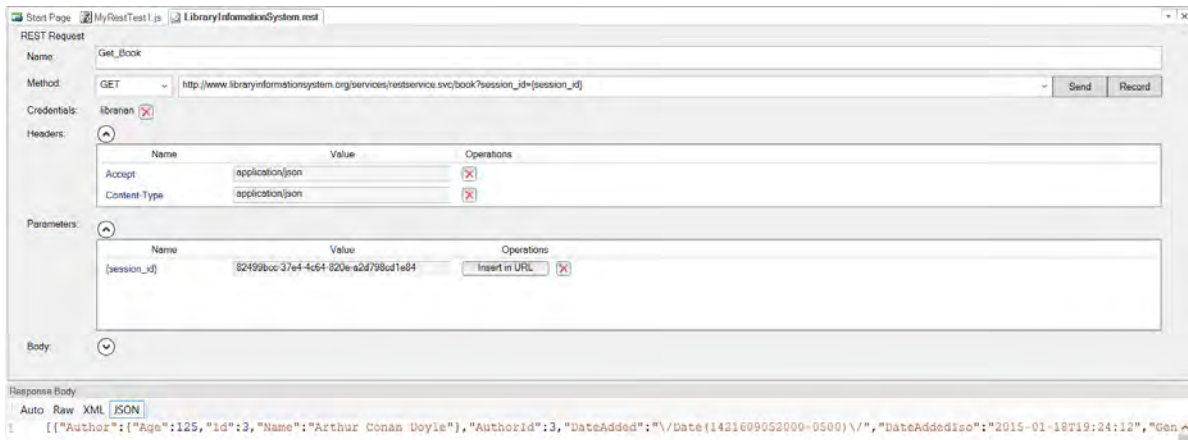
Click the "Add" button and the parameter will be added to the request. Now change the URL to:

URL: `http://www.libraryinformationssystem.org/Services/R`

Then position the caret at the end of this URL and click the "Insert in URL" button. This will insert the parameter token in the URL at the specified point:

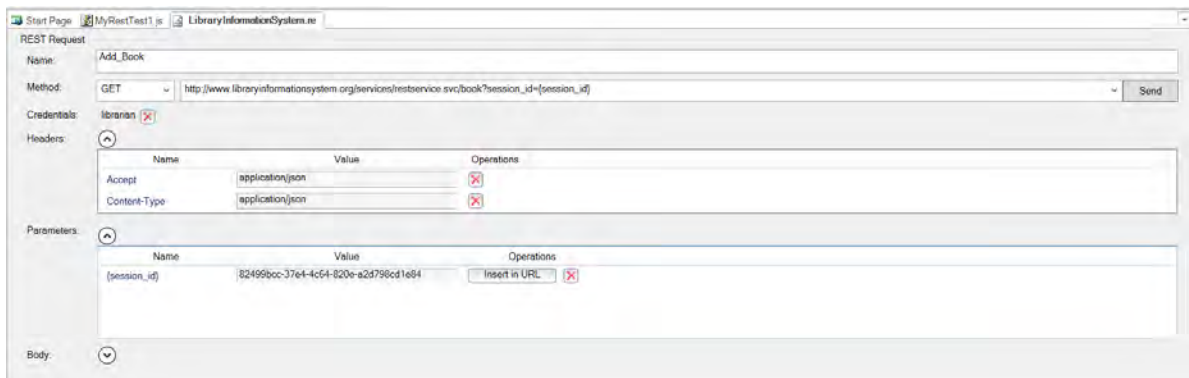


Now click the "Send" button and the request will get sent to the web service. This will return the list of books serialized as a JSON array of objects:



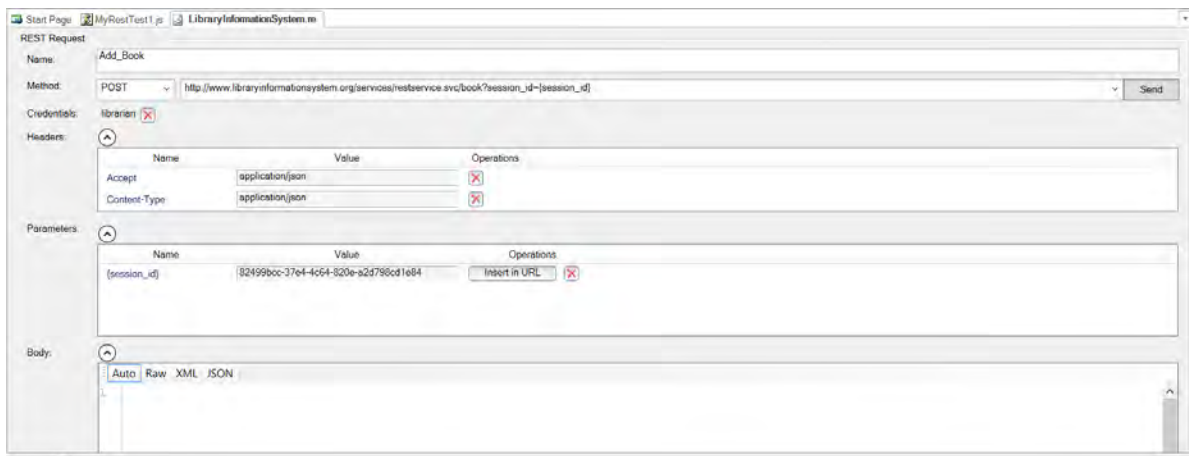
We have now completed the creation of our second test operation. Click on the "Save Requests" button in the Rapise REST Ribbon to make sure our changes have been saved.

Now click on the "Clone request" icon in the REST request explorer in the right-hand side of the screen. Enter the name "**Add_Book**" in the dialog box and click the "Clone" button. This will create a new REST request with this name:



This operation will add a new book to the system, so it's a POST request. Change the Method type in the dropdown list from "GET" to "**POST**".

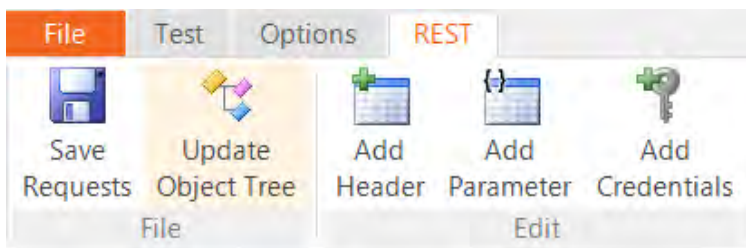
Expand the "Body" field on the form. This is where you can enter in an XML or JSON serialized Book record that will get added to the system. For now we'll leave this blank and let Rapise serialize the body for us later on when we actually write our test script. So we should now have:



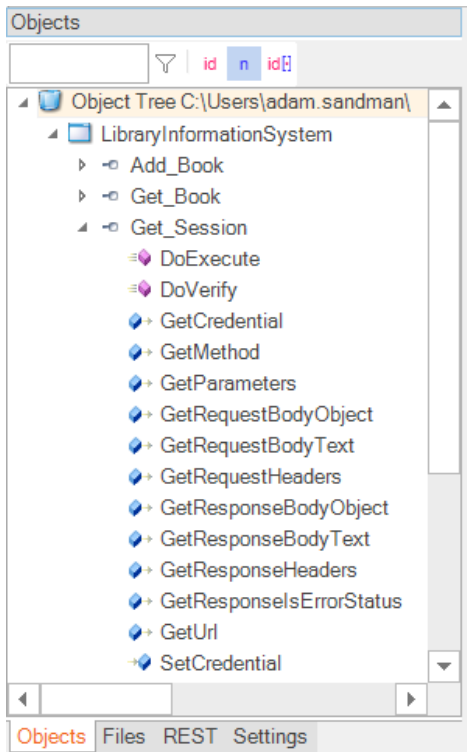
We have now completed the creation of our third test operation. Click on the "Save Requests" button in the Rapise REST Ribbon to make sure our changes have been saved.

2. Saving the REST Requests as Objects

Now that we have created our three REST requests, the next step is to actually create the Rapise objects that we can use in our JavaScript test scripts. Click on the "Update Object Tree" button in the Rapise REST Ribbon to tell Rapise to update the Object Tree with our new requests:



Rapise will now take your REST requests and use that to update the main [Object tree](#). Click on the "Object" tab of the main Rapise explorer, click the Refresh icon and you will see the "LibraryInformationSystem" heading displayed, with the three saved REST request listed underneath:



If you expand one of the REST requests (e.g. Add_Book), you'll see that it has a single operation "**DoExecute**" that executes the web services and a series of properties available for inspecting or updating any part of the REST request prior to it being sent to the server.

In the next section we shall illustrate how you can write a test script using these learned objects.

- You can either have Rapise **generate test scripts** and verification points automatically (described in section 3a), or
- You can manually **write the test scripts** using the objects and the Rapise code editor (described in section 3b)

3a. Generating REST Test Scripts

Inside the REST request explorer, double-click on the **Get_Session** function to open up the request:

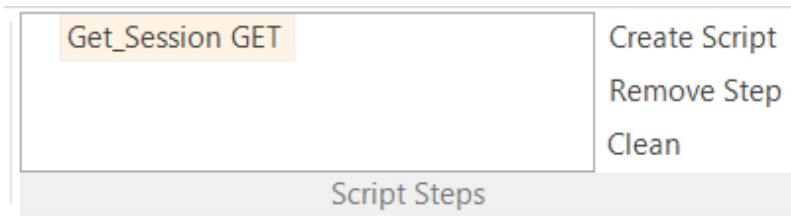


Click on the **Send** button to send the sample request. Once that has succeeded, you will see the **Record** button appear to the right:



Name	Value	Operations
Accept	application/json	X
Content-Type	application/json	X

Click that button and the request will get added to the list of recorded steps:



Get_Session GET

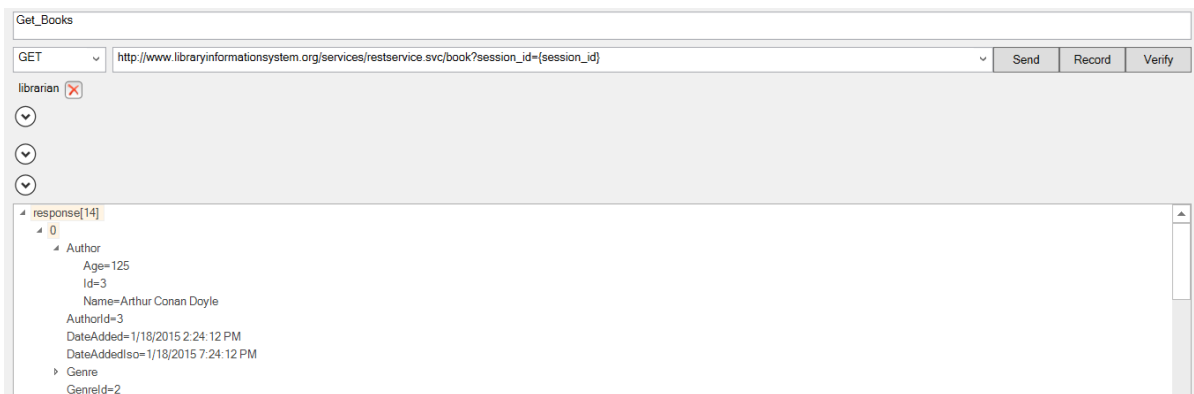
Create Script
Remove Step
Clean

Script Steps

Now open up the **Get_Book** request and follow the same procedure:

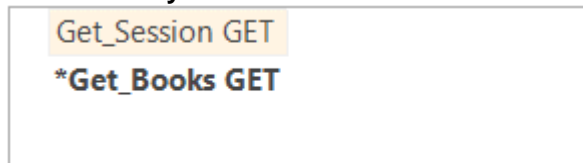
1. Click on the 'Send' button to execute the request
2. Click on the 'Record' button to record the action as a script step

This time we also want to verify the result. You will see a list of books returned in the **Verify** box underneath the Body section:



```
response[14]
  0
    Author
      Age=125
      Id=3
      Name=Arthur Conan Doyle
      AuthorId=3
      DateAdded=1/18/2015 2:24:12 PM
      DateAddedIso=1/18/2015 7:24:12 PM
    Genre
      GenreId=2
```

If you select the overall array **response[14]** and click the main **'Verify'** button next to the Record button, the system will automatically add a verification step that verifies all of the values. To try this, click the **Verify** button. This will add a bold verification step to the recorded script:



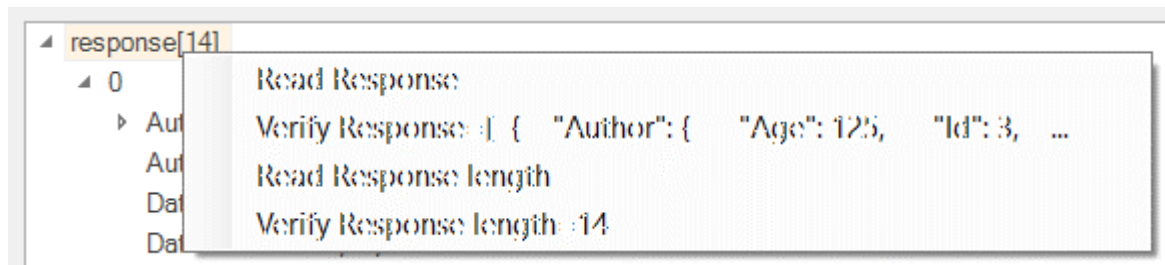
Get_Session GET

***Get_Books GET**

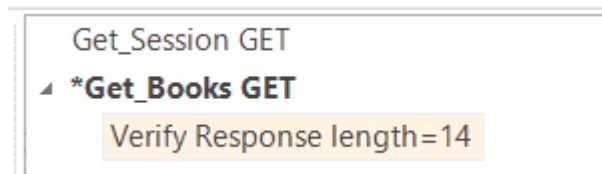
You will see a script step recorded with a verification test added (it's shown in bold with an asterisk*):

However, in many cases you only want to verify certain properties. For example, we might want to just verify that 14 books are returned, and that the first book has the right name.

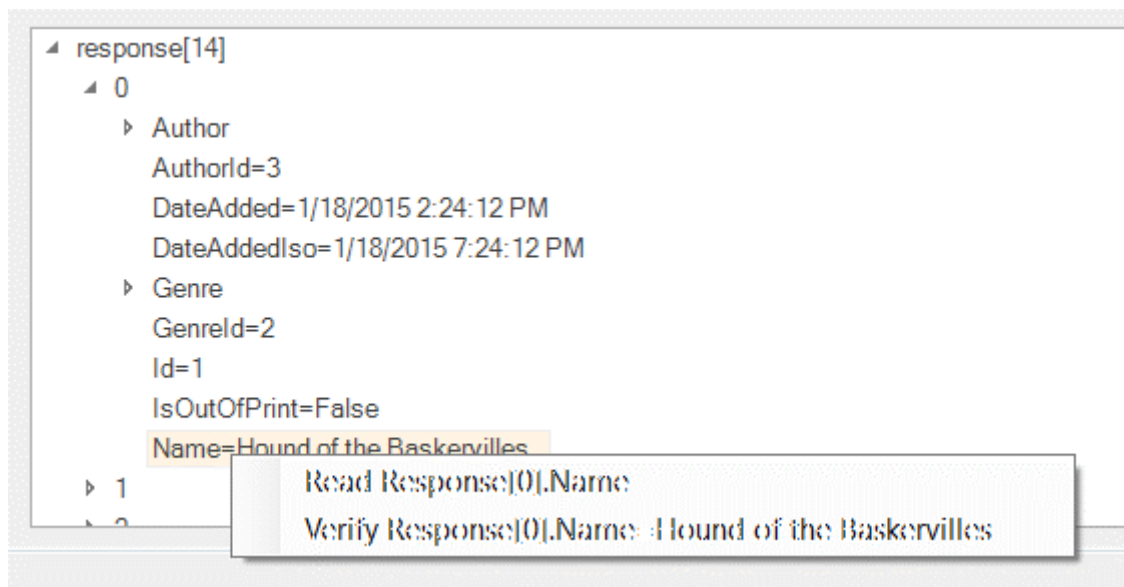
To do this, right-click on the **response[14]** entry to display the verification content menu:



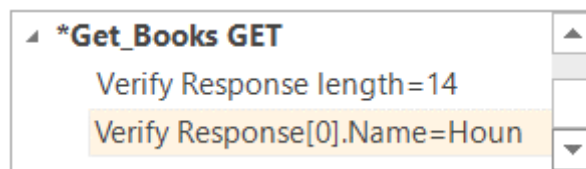
Choose the option '**Verify Response length=14**'. This adds the following step to the recorded script:



Now we want to verify the name of the first book returned. To do that, expand the "0" index entry and then right-click on the "Name" property returned:



Choose the option to **Verify Response[0].Name = Hound of the Baskervilles**. This will add a verification step for this specific property:

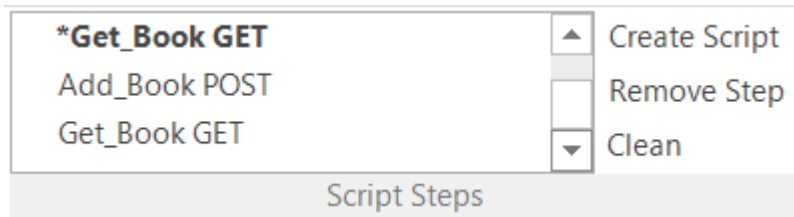


Now we add the last two requests - adding a book and verifying that it was added. To do that open up the two requests and click **Send** then **Record**:

- o Add_Book (POST)
- o Get_Book (GET)

The **Add_Book** won't actually work at this point because we've not populated the body, but it will be good enough to create the test script. For the second instance of **Get_Book** don't use the **Verify** option since we will want to code that by hand to match the book we actually added.

Once you are done, you should have:



Now click on the **Create Script** option and Rapise will generate the following code for you:

```
function Test()
{
    var
    LibraryInformationSystem_Get_Session=SeS
    ('LibraryInformationSystem_Get_Session');

    LibraryInformationSystem_Get_Session.SetRequestHeaders([{"Name":
    "Accept", "Value": "application/json"}, {"Name": "Content-
    Type", "Value": "application/json"}]);
    LibraryInformationSystem_Get_Session.DoExecute();

    var
    LibraryInformationSystem_Get_Books=SeS
    ('LibraryInformationSystem_Get_Books');

    LibraryInformationSystem_Get_Books.SetRequestHeaders([{"Name":
    "Accept", "Value": "application/json"}, {"Name": "Content-
    Type", "Value": "application/json"}]);
    LibraryInformationSystem_Get_Books.DoExecute();

    Tester.Assert('Compare call result for http://
    www.libraryinformationsystem.org/services/restservice.svc/book?
    session_id={session_id}',
    LibraryInformationSystem_Get_Books.GetResponseBodyText(), "...");

    LibraryInformationSystem_Get_Books.DoVerify('LibraryInformationSystem_Get_
    Books Response', "length", 14);

    LibraryInformationSystem_Get_Books.DoVerify('LibraryInformationSystem_Get_
    Books Response', "[0].Name", "Hound of the Baskervilles");
    var
    LibraryInformationSystem_Add_Book=SeS
    ('LibraryInformationSystem_Add_Book');

    LibraryInformationSystem_Add_Book.SetRequestHeaders([{"Name":
```

```

: "Accept", "Value": "application/json"}, {"Name": "Content-
Type", "Value": "application/json"}]);
    LibraryInformationSystem_Add_Book.DoExecute();

    var
LibraryInformationSystem_Add_Book=SeS
('LibraryInformationSystem_Add_Book');

LibraryInformationSystem_Add_Book.SetRequestHeaders([{"Name"
: "Accept", "Value": "application/json"}, {"Name": "Content-
Type", "Value": "application/json"}]);
    LibraryInformationSystem_Add_Book.DoExecute();

LibraryInformationSystem_Get_Books.SetRequestHeaders([{"Name"
: "Accept", "Value": "application/json"}, {"Name": "Content-
Type", "Value": "application/json"}]);
    LibraryInformationSystem_Get_Books.DoExecute();
}

```

If you click **Play** on this script as written, you will see that the tests to retrieve the books work correctly, but the test of adding a new book fails:

#	Type	Start	Name	Status	Comment	Iteration
	Message	17:52:55.623	Starting scenario: Test	Info		
	Assert	17:52:56.511	Get_Session.DoExecute([])	Pass	Returned Value: true	0
	Assert	17:52:56.978	Get_Book.DoExecute([])	Pass	Returned Value: true	0
	Assert	17:52:56.985	Compare call result for http://www.libraryinformationssystem.org/servi	Pass	[{"Author": {"Age": 125, "Id": 3, "Name": "Arthur Conan	0
	Assert	17:52:57.210	Add_Book.DoExecute([])	Fail	Returned Value: false	0
	Assert	17:52:57.793	Get_Book.DoExecute([])	Pass	Returned Value: true	0
	Test	17:52:57.798	MyRestTest1	Fail	Passed:4 Failed:1	

This is as we'd expect since we've not populated the new book yet!

To make the template test script more useful, we should make the following changes:

- o Add comments to each of the sections to describe the purpose
- o Add code to get the **session ID** from the first call and pass to the subsequent calls
- o Create a JavaScript object to contain the new book information, and pass that to the **Add Book** function
- o Get the new book ID from the result of the **Add Book** function and use it later on.
- o Change the **Tester.Assert** code to check just specific properties rather than the entire object list.

The complete updated test script looks like the following. We have highlighted the new/changed lines in yellow:

```

//First get the session
var
LibraryInformationSystem_Get_Session=SeS
('LibraryInformationSystem_Get_Session');

LibraryInformationSystem_Get_Session.SetRequestHeaders([{"Name"
: "Accept", "Value": "application/json"}, {"Name": "Content-

```

```
Type", "Value": "application/json"}]);
    LibraryInformationSystem_Get_Session.DoExecute();
    var sessionId =
LibraryInformationSystem_Get_Session.GetResponseBodyObject();
    Tester.Message("Session ID: " + sessionId);

    //Get the list of books
    var
LibraryInformationSystem_Get_Book=SeS
('LibraryInformationSystem_Get_Book');

LibraryInformationSystem_Get_Book.SetRequestHeaders([{"Name"
:"Accept", "Value": "application/json"}, {"Name": "Content-
Type", "Value": "application/json"}]);
    LibraryInformationSystem_Get_Book.DoExecute({"session_id":
sessionId });

    //Verify the data

LibraryInformationSystem_Get_Books.DoVerify('LibraryInformationSystem_Get_
Books Response', "length", 14);

LibraryInformationSystem_Get_Books.DoVerify('LibraryInformationSystem_Get_
Books Response', "[0].Name", "Hound of the Baskervilles");

    //Add a book
    var newBook = {
        Name: "A Christmas Carol",
        AuthorId: 2,
        GenreId: 3
    };

    var
LibraryInformationSystem_Add_Book=SeS
('LibraryInformationSystem_Add_Book');

LibraryInformationSystem_Add_Book.SetRequestHeaders([{"Name"
:"Accept", "Value": "application/json"}, {"Name": "Content-
Type", "Value": "application/json"}]);
    LibraryInformationSystem_Add_Book.SetRequestBodyObject(newBook)
    LibraryInformationSystem_Add_Book.DoExecute({"session_id":
sessionId });

    //Get the ID of the new book
    newBook = LibraryInformationSystem_Add_Book.GetResponseBodyObject();
    Tester.Message("New Book ID: " + newBook.Id);

    //Verify the data

LibraryInformationSystem_Get_Book.SetRequestHeaders([{"Name"
:"Accept", "Value": "application/json"}, {"Name": "Content-
Type", "Value": "application/json"}]);
    LibraryInformationSystem_Get_Book.DoExecute({"session_id":
```

```

sessionId });
    Tester.AssertEqual("Book Count", 15,
LibraryInformationSystem_Get_Book.GetResponseBodyObject().length);

```

3b. Writing REST Test Scripts

Open up the main **MyRestTest1.js** file in the Rapise editor. It will initially consist of a single empty function Test():

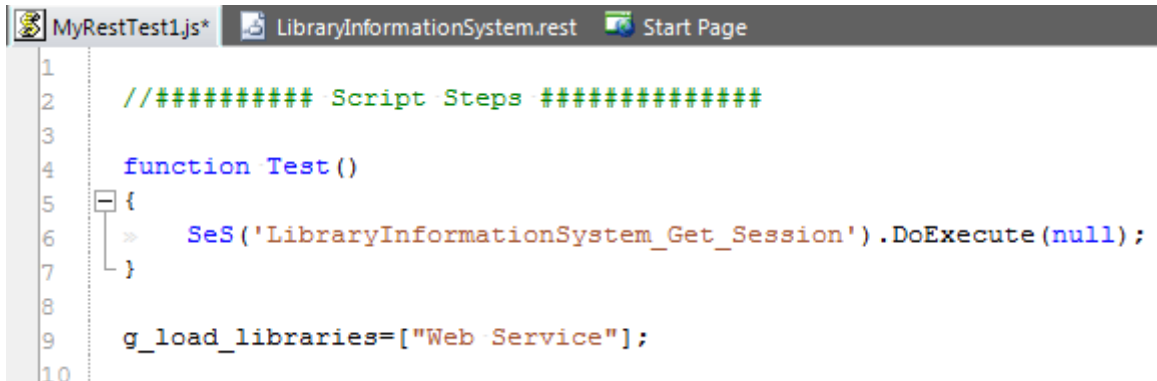


```

1
2 //***** Script Steps *****/
3
4 function Test()
5 {
6
7 }
8
9 g_load_libraries=["Web Service"];
10

```

The first task is to get a new SessionId from the server using the **Get_Session** operation. To do this, drag the **DoExecute** operation from under the **Get_Session** object into the script editor, in between the opening and closing braces of the Test() function:



```

1
2 //***** Script Steps *****/
3
4 function Test()
5 {
6   > SeS('LibraryInformationSystem_Get_Session').DoExecute(null);
7 }
8
9 g_load_libraries=["Web Service"];
10

```

This will execute the web serviced and return the SessionId. To actually access the retrieved value, you need to drag the **GetResponseBodyObject** property to the script editor, under the previous line. Then add the JavaScript code `var sessionId =` to actually store the value. We will also add a `Tester.Message(sessionId);` line afterwards to write out the value of the sessionId to the test report. This will help us make sure we are getting back a valid response from the web service. You should now have the following code:

```

function Test()
{
  > SeS('LibraryInformationSystem_Get_Session').DoExecute(null);
  > var sessionId = SeS('LibraryInformationSystem_Get_Session').GetResponseBodyObject();
  > Tester.Message(sessionId);
}

g_load_libraries=["Web Service"];

```

Save this test and click "Play" to execute the test. You should now see a report similar to the following:

#	Name	Start	Type	Status	Comment	Iteration
	Starting scenario: Test	13:37:16.020	Message	Info		
	Get_Session.DoExecute([null])	13:37:17.486	Assert	Pass	Returned Value: true	0
	d51f97ea-d879-4eb1-b585-55469b88cef7	13:37:17.486	Message	Info		0
	MyRestTest1	13:37:17.486	Test	Pass	Passed:1 Failed:0	
<p>Test Pass</p> <p>Total:4 Pass:2 Fail:0 Info:2</p>						

Now we need to add the code to get the list of books. To do that, simply drag the **"DoExecute"** operation from under the **"Get_Books"** object into the script editor. Then change the `(null)` argument to instead provide the session id as a Javascript dictionary:

```
SeS('LibraryInformationSystem_Get_Books').DoExecute({
```

To get the list of books as a JavaScript array, drag the **"GetResponseBodyObject"** property to the script editor, under the previous line. Then assign the value of this property to a variable such as "books":

```
var books = SeS('LibraryInformationSystem_Get_Books')
```

Now we can add code to test that the number of books returned matches the expected value. Type in the following code:

```
Tester.AssertEqual('Book count matches', 14, books.length);
```

You should now have the following code:

```
function Test()
{
  >> SeS('LibraryInformationSystem_Get_Session').DoExecute(null);
  >> var sessionId = SeS('LibraryInformationSystem_Get_Session').GetResponseBodyObject();
  >> Tester.Message(sessionId);
  >>
  >> SeS('LibraryInformationSystem_Get_Books').DoExecute({"session_id":sessionId});
  >> var books = SeS('LibraryInformationSystem_Get_Books').GetResponseBodyObject();
  >> Tester.AssertEqual('Book count matches', 14, books.length);
}

g_load_libraries=["Web Service"];
```

Finally we need to add the code to add a new book to the system. To do that, simply drag the **"DoExecute"** operation from under the **"Add_Book"** object into the script editor. Then change the `(null)` argument to instead provide the session id as a Javascript dictionary:

```
SeS('LibraryInformationSystem_Add_Book').DoExecute({"
```

To provide the data for a new book, we will need to drag the **"SetRequestBodyObject"** property of the **"Add_Book"** object to the line **above** the DoExecute and pass in a populated JavaScript object:

```
var newBook = {};
newBook.Name = 'A Christmas Carol';
newBook.AuthorId = 2;
newBook.GenreId = 3;
SeS('LibraryInformationSystem_Add_Book').SetRequestBo
```

Finally Add code to test that our new book was added correctly and the count has increased by one:

```
SeS('LibraryInformationSystem_Get_Books').DoExecute({"se
books = SeS('LibraryInformationSystem_Get_Books').GetRes
Tester.AssertEqual('Book count matches', 15, books.length);
```

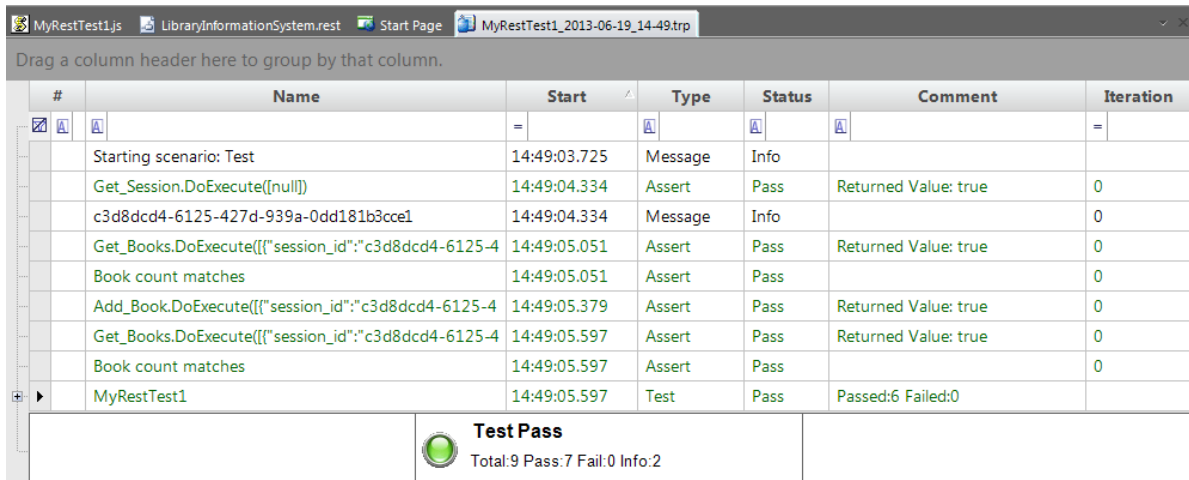
You should now have the following code:

```

function Test ()
{
  >> SeS('LibraryInformationSystem_Get_Session').DoExecute(null);
  >> var sessionId = SeS('LibraryInformationSystem_Get_Session').GetResponseBodyObject();
  >> Tester.Message(sessionId);
  >>
  >> SeS('LibraryInformationSystem_Get_Books').DoExecute({"session_id":sessionId});
  >> var books = SeS('LibraryInformationSystem_Get_Books').GetResponseBodyObject();
  >> Tester.AssertEqual('Book count matches', 14, books.length);
  >>
  >> var newBook = {};
  >> newBook.Name = 'A Christmas Carol';
  >> newBook.AuthorId = 2;
  >> newBook.GenreId = 3;
  >> SeS('LibraryInformationSystem_Add_Book').SetRequestBodyObject(newBook);
  >> SeS('LibraryInformationSystem_Add_Book').DoExecute({"session_id":sessionId});
  >>
  >> SeS('LibraryInformationSystem_Get_Books').DoExecute({"session_id":sessionId});
  >> books = SeS('LibraryInformationSystem_Get_Books').GetResponseBodyObject();
  >> Tester.AssertEqual('Book count matches', 15, books.length);
}

```

Save this test and click "Play" to execute the test. You should now see a report similar to the following:



#	Name	Start	Type	Status	Comment	Iteration
	Starting scenario: Test	14:49:03.725	Message	Info		
	Get_Session.DoExecute([null])	14:49:04.334	Assert	Pass	Returned Value: true	0
	c3d8dcd4-6125-427d-939a-0dd181b3cce1	14:49:04.334	Message	Info		0
	Get_Books.DoExecute({"session_id":"c3d8dcd4-6125-4	14:49:05.051	Assert	Pass	Returned Value: true	0
	Book count matches	14:49:05.051	Assert	Pass		0
	Add_Book.DoExecute({"session_id":"c3d8dcd4-6125-4	14:49:05.379	Assert	Pass	Returned Value: true	0
	Get_Books.DoExecute({"session_id":"c3d8dcd4-6125-4	14:49:05.597	Assert	Pass	Returned Value: true	0
	Book count matches	14:49:05.597	Assert	Pass		0
	MyRestTest1	14:49:05.597	Test	Pass	Passed:6 Failed:0	

Test Pass
Total:9 Pass:7 Fail:0 Info:2

Congratulations! You have just created your first test script that tests a RESTful web service.

2.2.6 Tutorial: SOAP Web Services

In this section you shall learn how to test a SOAP web services API using Rapise. We shall be using a demo application called **Library Information System** that has a dummy SOAP web service API available for learning purposes. You can access this sample application at <http://www.libraryinformationsystem.org>, and its SOAP web service API can be found at: www.libraryinformationsystem.org/Services/SoapService.aspx.

What is SOAP and what is a SOAP web service?

SOAP is the Simple Object Access Protocol, and allows you to make API calls over HTTP/HTTPS using specially formatted XML. SOAP web services make use of the Web Service Definition Language (WSDL) and communicate using HTTP POST requests. They are essentially a serialization of RPC object calls into XML that can then be passed to the web service. The XML passed to the SOAP web

services needs to match the format specified in the WSDL.

SOAP web services are fully self-describing, so most clients do not directly work with the SOAP XML language, but instead use a client-side proxy generator that creates client object representations of the web service (e.g. Java, .NET objects). The web service consumers interact with these language-specific representations of the SOAP web service. However when these SOAP calls fail you need a way of testing them that includes being able to inspect the raw SOAP XML that is actually being sent.

Overview

Creating a SOAP web service test in Rapise consists of the following steps:

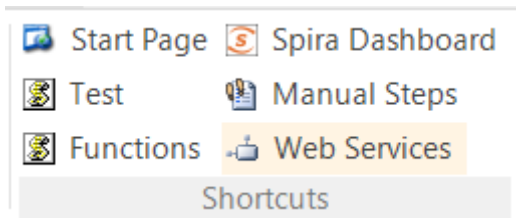
1. Using the SOAP web services studio to inspect the SOAP WSDL
2. Invoke the various SOAP operations and verify that they return the expected data in the expected format.
3. Generating the test script in JavaScript that uses the learned Rapise web service objects based on the WSDL.

We shall discuss each of these steps in turn.

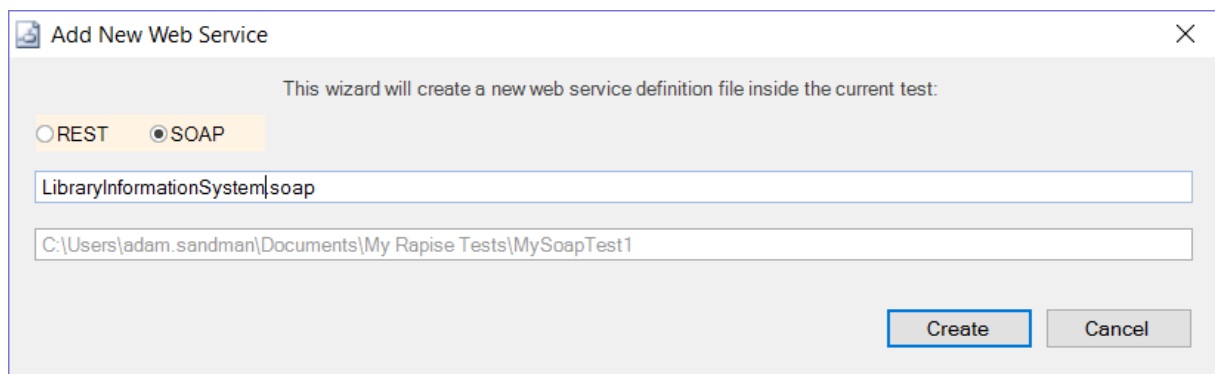
1. Inspecting the SOAP WSDL Endpoint

Create a new test in Rapise called MySoapTest1.sstest. For methodology, choose **Basic: Standard Scripting Mode** and Rapise will create a new blank test project.

Once you have created it, click on the "Web Services" icon in the Test ribbon to add a new web service definition to your test project:



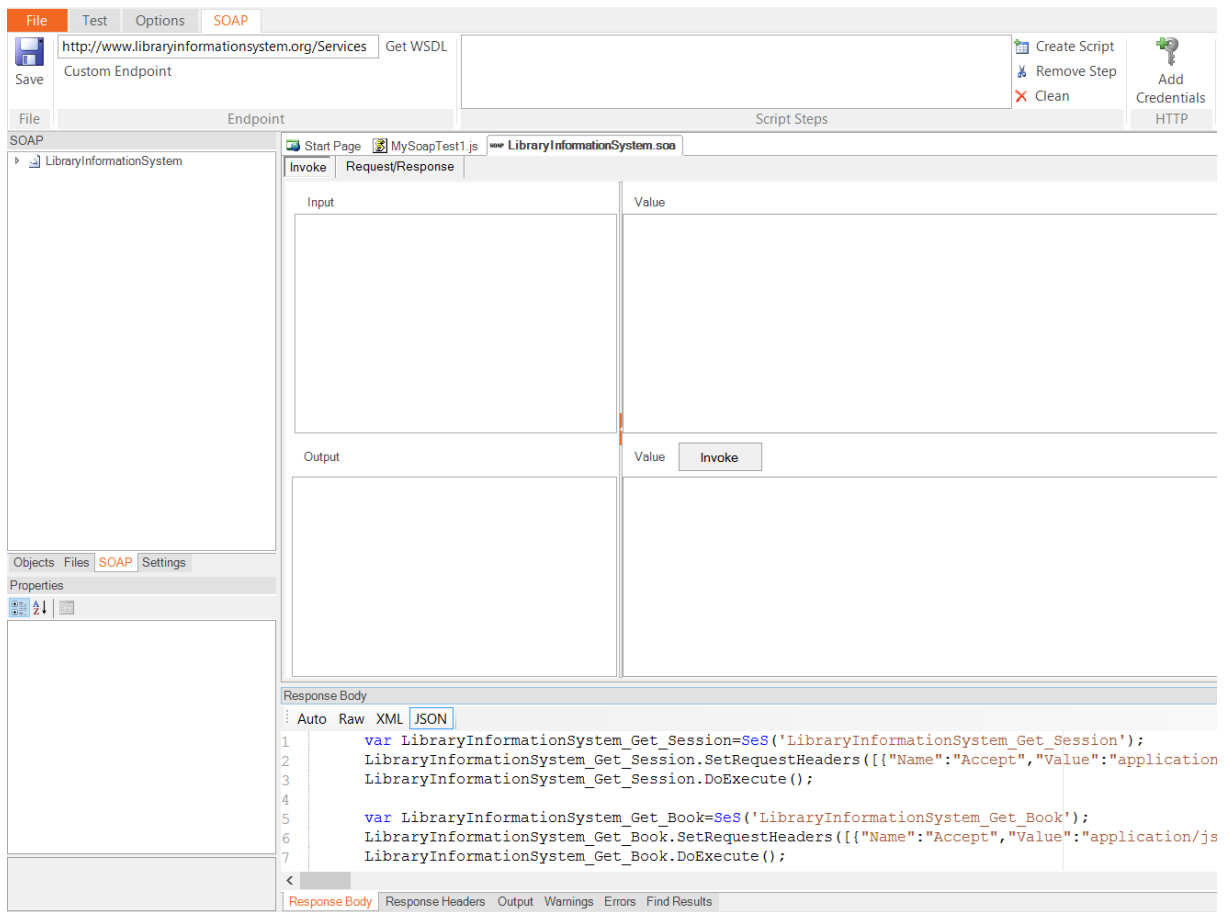
This will display the Add New Web Service dialog box:



Choose **SOAP** as the type of web service you want to create.

Then, enter the name of the web service that you're going to add, in this case enter "**LibraryInformationSystem.soap**" and click "Create".

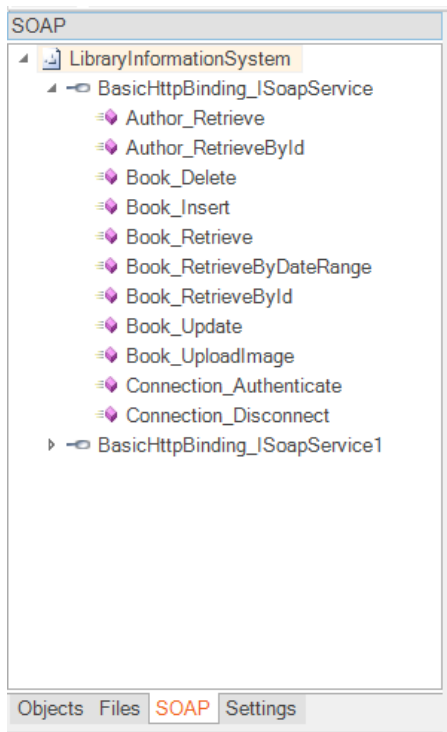
This will add the SOAP web services definition file to your test project:



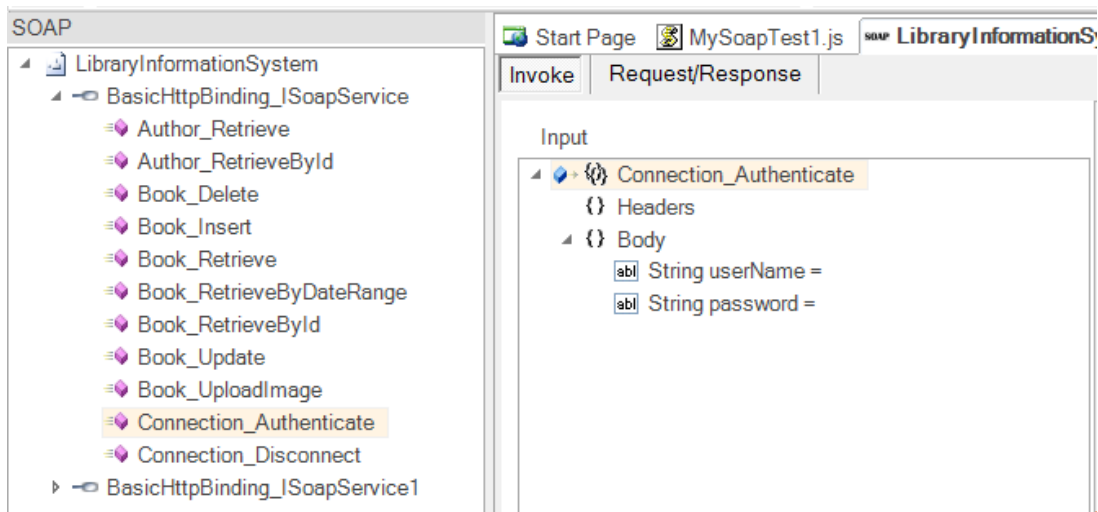
In the **Endpoint** section of the [SOAP ribbon](#), enter the following URL to the sample application's WSDL file:

- <http://www.libraryinformationsystem.org/Services/SoapService.svc?wsdl>

then click the **Get WSDL** to load the list of SOAP operations:



Now click on the **Connection_Authenticate** operation in the SOAP explorer:



This is the first operation we will need to invoke since it is used to authenticate with the online library system before calling the other functions.

You can click on each of the different SOAP operations (e.g. for inserting, retrieving, deleting or updating a book) and the SOAP studio will display the expected input and output parameters as well as any headers.

In the next section we shall be performing the following actions:

- Authenticating as a specific user
- Viewing the list of books

- Inserting a new book
- Viewing the updated list of books
- Disconnecting

Each one will involve calling a specific SOAP operation with some input parameters, viewing the data returned and adding a verification step if appropriate.

2. Invoking the SOAP Actions

Starting with the **Connection_Authenticate** operation that we had selected, click on the two Input parameters in turn and enter values:

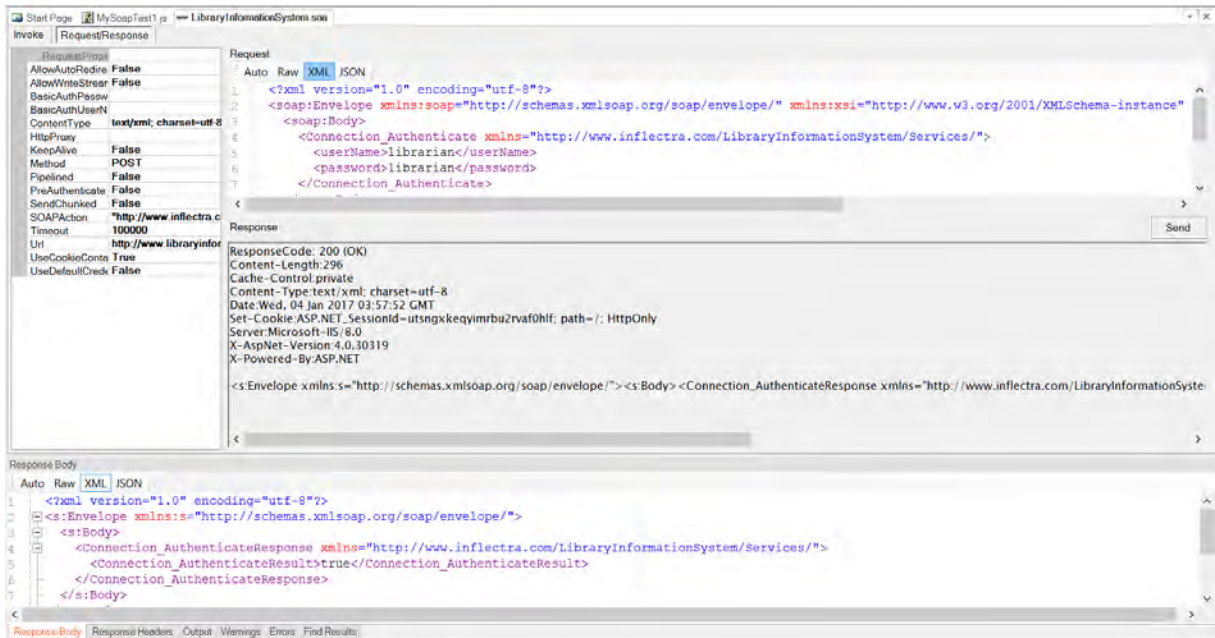
- userName = librarian
- password = librarian

Then click the **Invoke** button underneath:

The screenshot displays the Rapise SOAP Studio interface. At the top, there are tabs for 'Start Page', 'MySoapTest1.js', and 'LibraryInformationSystem.soa'. Below these are 'Invoke' and 'Request/Response' tabs. The main area is divided into 'Input' and 'Output' sections. In the 'Input' section, a tree view shows the 'Connection_Authenticate' operation with its parameters: 'String userName = librarian' and 'String password = librarian'. The 'Value' field for the 'String userName' parameter is set to 'librarian'. Below the tree view are 'Invoke' and 'Record' buttons. In the 'Output' section, a tree view shows the result of the operation: 'Boolean Connection_AuthenticateResult = True' and 'Boolean Connection_AuthenticateResultSpecifi'. The 'Value' field for the 'Boolean Connection_AuthenticateResult' parameter is set to 'True'.

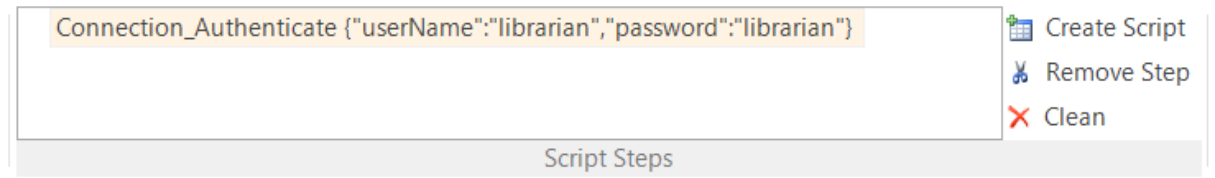
You can see that the response to our Invoked operation as a simple boolean value of **True** returned. That indicated that we authenticated correctly. If you try putting in an incorrect login/password, you'll get back **False** instead.

If you have a SOAP web service that doesn't behave as expected, you may want to view the raw SOAP XML that is being sent to/from the web service. To view this, click on the **Request/Response** tab of the SOAP studio editor and the following will be displayed:

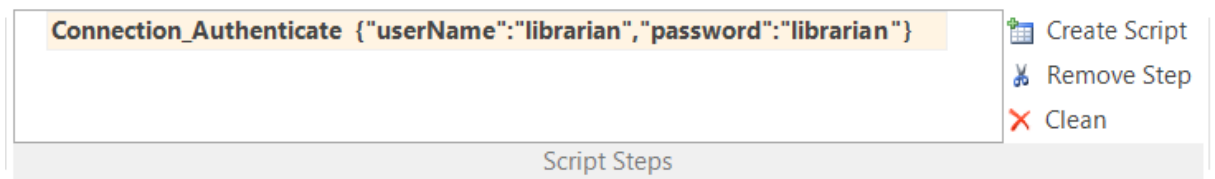


This view lets you see the Request and Response HTTP headers body, with the body displayed in a friendly, easy to read color-coded XML format. That way you can easily invoke the SOAP operations using the Rapise SOAP studio GUI and view the raw SOAP XML being sent to/from the server. This is invaluable when debugging a failing SOAP web service.

In the case of our test of **Connection_Authenticate**, we can now click the **Record** button (next to Send) to add this operation to our list of recorded test steps:



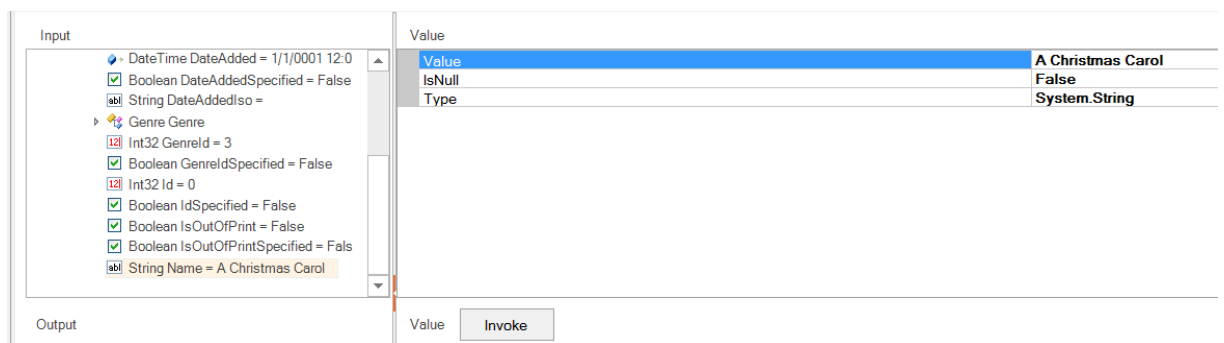
Once you have added the operation to the list of recorded steps, you can go one step further and ask Rapise to verify the data returned. To do that, click on the **Verify** button that is displayed next to the **Record** button. The step will now switch to **bold** to indicate that a verification step is also included.



Now we need to repeat this process for the following additional operations:

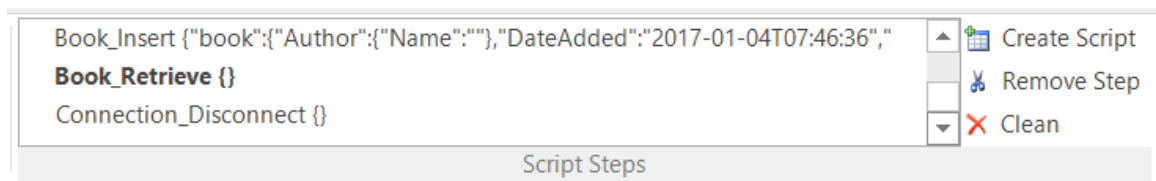
- **Book_Retrieve**
 - No Input Parameters
 - Press **Invoke** to test the retrieve
 - Press **Record** to record the test script

- Click **Verify** to add a verification step
- **Book_Insert**
 - Populate the **Book** input object with these values:
 - AuthorId = 2
 - GenreId = 3
 - Name = 'A Christmas Carol'
 - DateAdded = (pick a date using the date picker)
 - DateAddedIso = 2017-01-04T07:46:36
 - Press **Invoke** to test the insert
 - Press **Record** to record the test script



- **Book_Retrieve**
 - No Input Parameters
 - Press **Invoke** to test the retrieve
 - Press **Record** to record the test script
 - Click **Verify** to add a verification step
- **Connection_Disconnect**
 - No Input Parameters
 - Press **Invoke** to test the retrieve
 - Press **Record** to record the test script

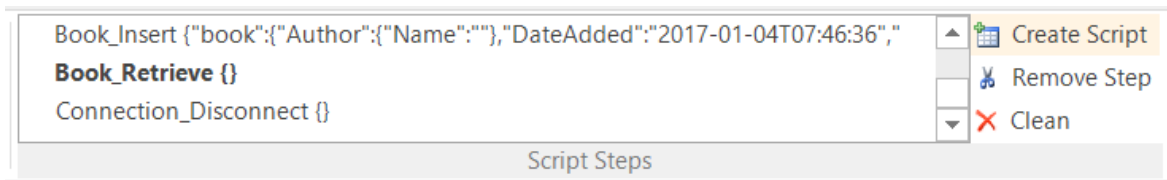
Once you have completed all these steps, you will see the following recorded in the **Script Steps** box:



Now that we have recorded the operations and verifications, we can proceed to generate the test script in Rapise that will regression test the web service.

3. Generating the Rapise Test Script

In the SOAP ribbon, click on the **Create Script** button to generate the initial test script:



Click on the **Test** shortcut in the main test ribbon, and Rapise will display the **MySoapTest.js** file.

In the main Rapise test script file, you will see the following generated:

```
function Test()
{
    var LibraryInformationSystem=SeS('LibraryInformationSystem');
    LibraryInformationSystem.DoExecute('Connection_Authenticate',
{"userName":"librarian","password":"librarian"});
    Tester.Assert('Connection_Authenticate Response',
LibraryInformationSystem.GetResponseObject(), {"Body":
{"Connection_AuthenticateResult"
:true,"Connection_AuthenticateResultSpecified":true},"Headers":{}});
    LibraryInformationSystem.DoExecute('Book_Retrieve', {});
    Tester.Assert('Book_Retrieve Response',
LibraryInformationSystem.GetResponseObject(), {...}],"Headers":{}});
    LibraryInformationSystem.DoExecute('Book_Insert', {"book":{"Author":
{"Name":""},"DateAdded":"2017-01-
04T07:46:36","DateAddedSpecified":true,"DateAddedIso":"2017-01-
04T07:46:36","Genre":{"Name":""},"Name":"A Christmas Carol"}});
    LibraryInformationSystem.DoExecute('Book_Retrieve', {});
    Tester.Assert('Book_Retrieve Response',
LibraryInformationSystem.GetResponseObject(), {...},"Headers":{}});
    LibraryInformationSystem.DoExecute('Connection_Disconnect', {});
}
```

You will see each of the SOAP functions called in turn, with verification code automatically added.

We can add some comments to make it easier to read:

```
//Authenticate
var LibraryInformationSystem=SeS('LibraryInformationSystem');
LibraryInformationSystem.DoExecute('Connection_Authenticate',
{"userName":"librarian","password":"librarian"});
Tester.Assert('Connection_Authenticate Response',
LibraryInformationSystem.GetResponseObject(), {"Body":
{"Connection_AuthenticateResult"
:true,"Connection_AuthenticateResultSpecified":true},"Headers":{}});

//Verify the initial list of books
LibraryInformationSystem.DoExecute('Book_Retrieve', {});
Tester.Assert('Book_Retrieve Response',
LibraryInformationSystem.GetResponseObject(), {...}],"Headers":{}});
LibraryInformationSystem.DoExecute('Book_Insert', {"book":{"Author":
{"Name":""},"DateAdded":"2017-01-
```

```

04T07:46:36", "DateAddedSpecified":true, "DateAddedIso": "2017-01-
04T07:46:36", "Genre": { "Name": "" }, "Name": "A Christmas Carol" });

//Verify the updated list of books and disconnect
LibraryInformationSystem.DoExecute('Book_Retrieve', {});
Tester.Assert('Book_Retrieve Response',
LibraryInformationSystem.GetResponseObject(), {...}, "Headers":{}});
LibraryInformationSystem.DoExecute('Connection_Disconnect', {});

```

When you click the **Play** button in the main test ribbon, you will see the following result:

#	Type	Start	Name	Status	Comment
1	Message	08:46:21.701	Starting scenario: Test	Info	
2	Assert	08:46:22.539	LibraryInformationSystem.DoExecute(["Connection_Authenticate"], {"us	Pass	Returned Value: true
3	Assert	08:46:22.546	Connection_Authenticate Response	Pass	
4	Assert	08:46:22.918	LibraryInformationSystem.DoExecute(["Book_Retrieve", {}])	Pass	Returned Value: true
5	Assert	08:46:22.926	Book_Retrieve Response	Pass	
6	Assert	08:46:23.135	LibraryInformationSystem.DoExecute(["Book_Insert", {"book":{"Author	Pass	Returned Value: true
7	Assert	08:46:23.353	LibraryInformationSystem.DoExecute(["Book_Retrieve", {}])	Pass	Returned Value: true
8	Assert	08:46:23.358	Book_Retrieve Response	Pass	
9	Assert	08:46:23.556	LibraryInformationSystem.DoExecute(["Connection_Disconnect", {}])	Pass	Returned Value: true
10	Test	08:46:23.561	MySoapTest1	Pass	Passed:8 Failed:0

Test Pass
Total: 10 Pass: 9 Fail: 0 Info: 1

Congratulations! You have recorded and executed a [SOAP web service test](#).

2.2.7 Tutorial: Mobile Testing

Purpose

Rapise lets you record and play automated tests against native applications on a variety of mobile devices using either [Apple iOS](#) or [Android](#). Rapise gives you the flexibility to test your applications on either real or simulated devices.

This tutorial is a **simple example** of using Rapise to record and playback a simple test against a sample **Android application** running on the **Android Simulator** on your local PC. It does not require any physical mobile devices and only uses the PC that you have already installed Rapise on. (*There is [other documentation](#) that describes the full range of mobile testing options*)

1) Setting up Appium and the Android SDK

The first thing you need to do is go to the **Appium** website (<http://appium.io>) and install the latest version of Appium. Once it is installed, you can start it up and click the Play button to start the Appium server:

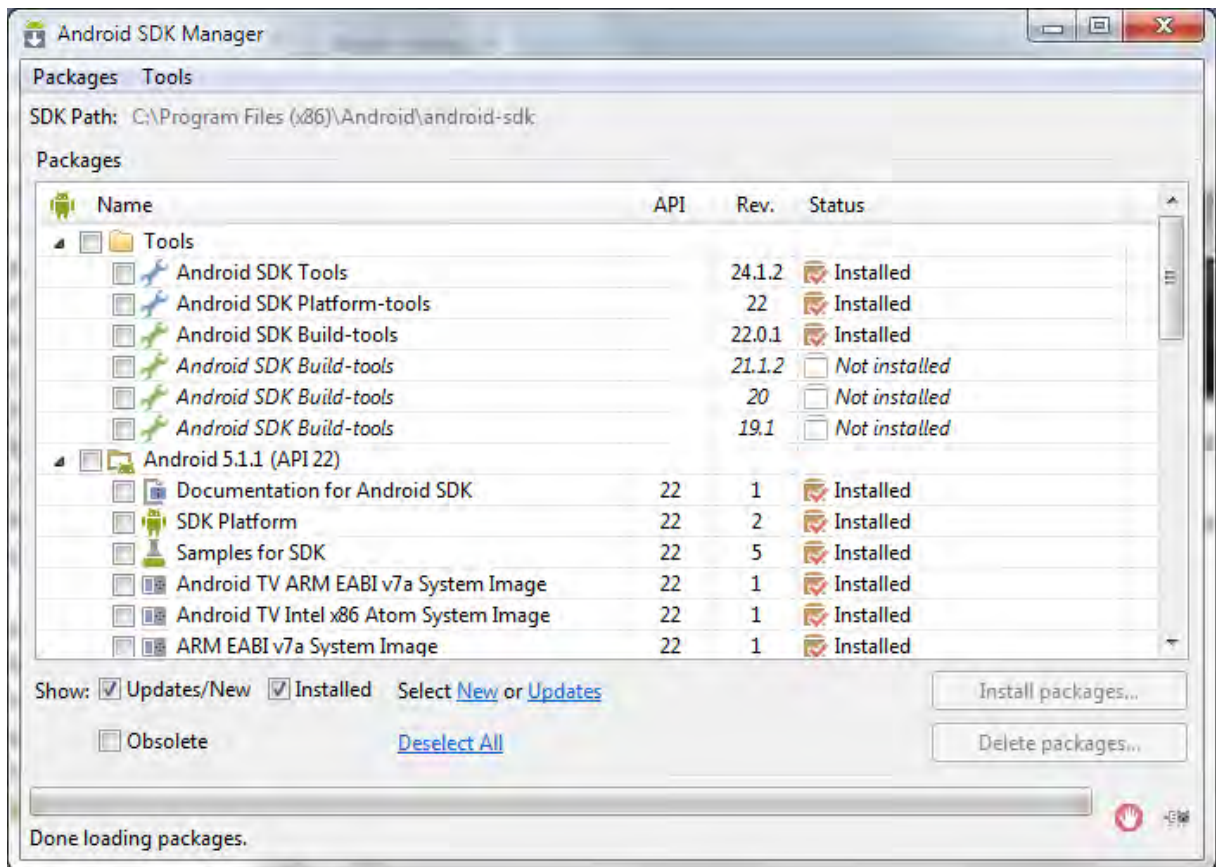


```
> Starting Node Server
> info: Welcome to Appium v1.3.4 (REV c8c79a85fbd6870cd6fc3d66d038a115ebe22efe)
> info: Appium REST http interface listener started on 127.0.0.1:4723
> info: [debug] Non-default server args:
{"address":"127.0.0.1","logNoColors":true,"platformName":"Android","platformVersion":"18","automationName":"Appium"}
> info: Console LogLevel: debug
```

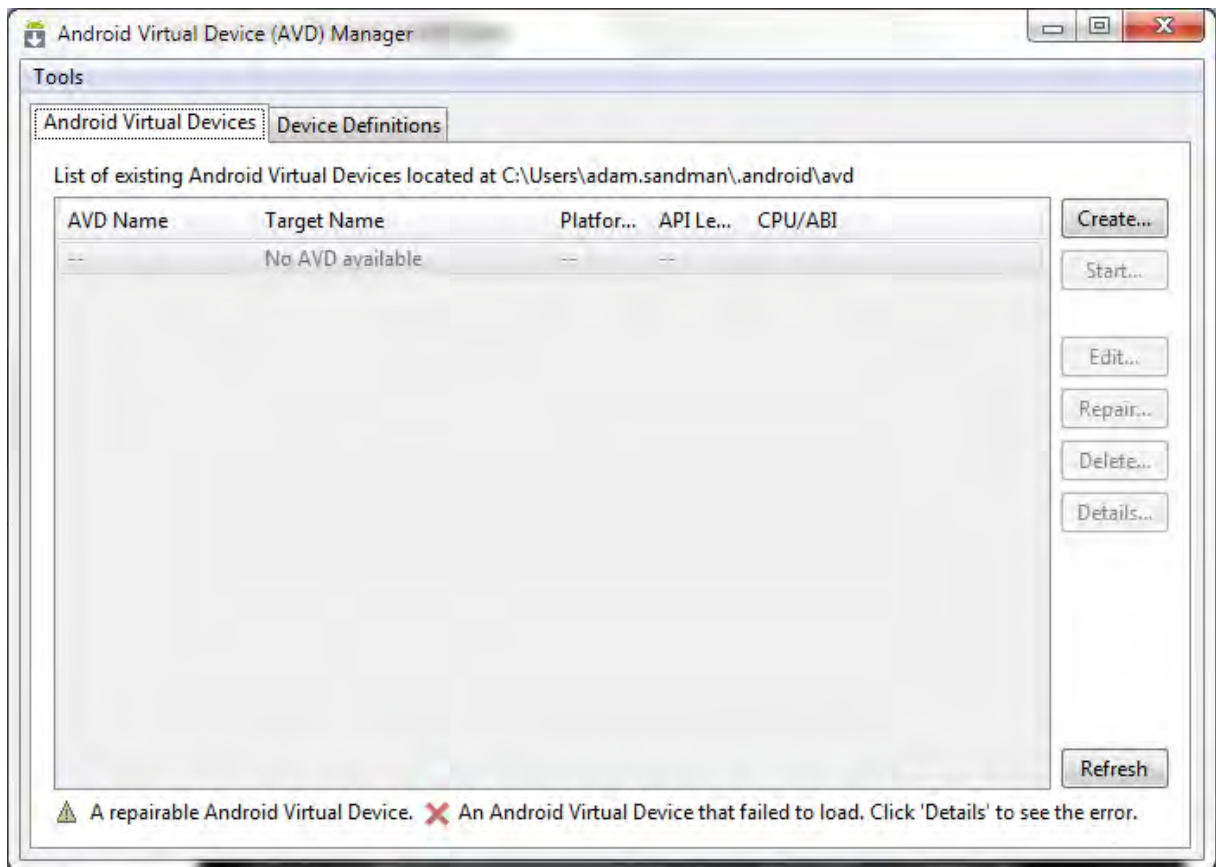
The screenshot shows the Appium application window. The title bar reads "Appium". Below the title bar is a toolbar with icons for Android, settings, user profile, and help. The main content area is a dark terminal window displaying the following text:

Once that is installed, you will then need to install the Android SDK (you may already have it installed if you are doing Android development). You can download it from: <https://developer.android.com/sdk>.

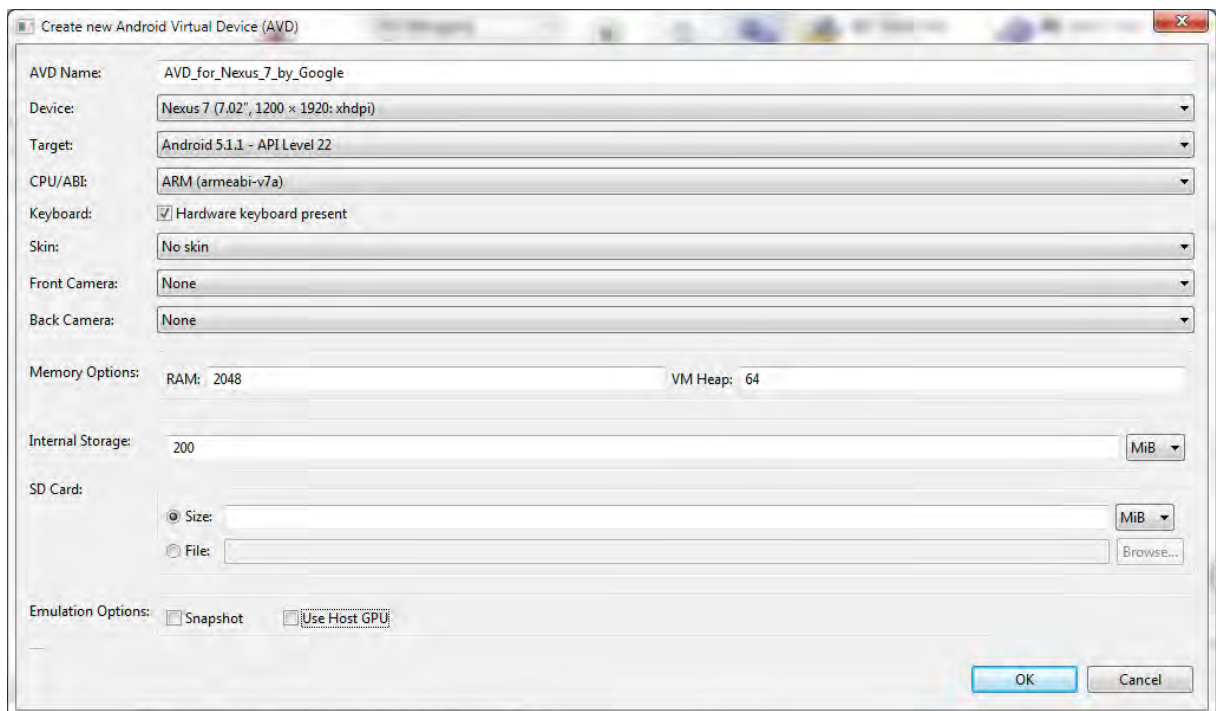
Once it has installed, you will use the **Android SDK Manager** to download and install the necessary packages:



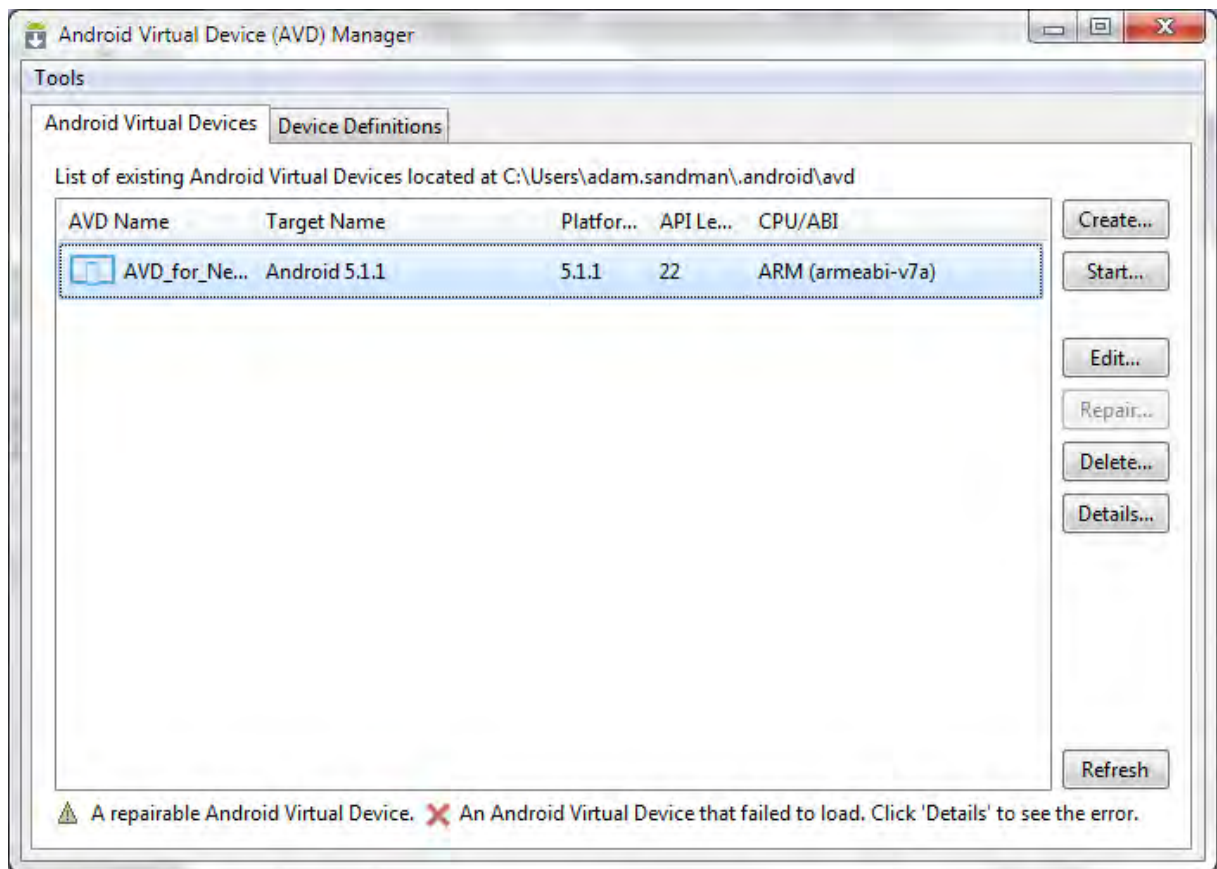
Make sure you have installed the **Android ARM images** using the SDK manager. Then you can launch (from the Windows Start Menu) the **Android Virtual Device (AVD) Manager**:



Use the **Create** button to create the following Virtual Device:



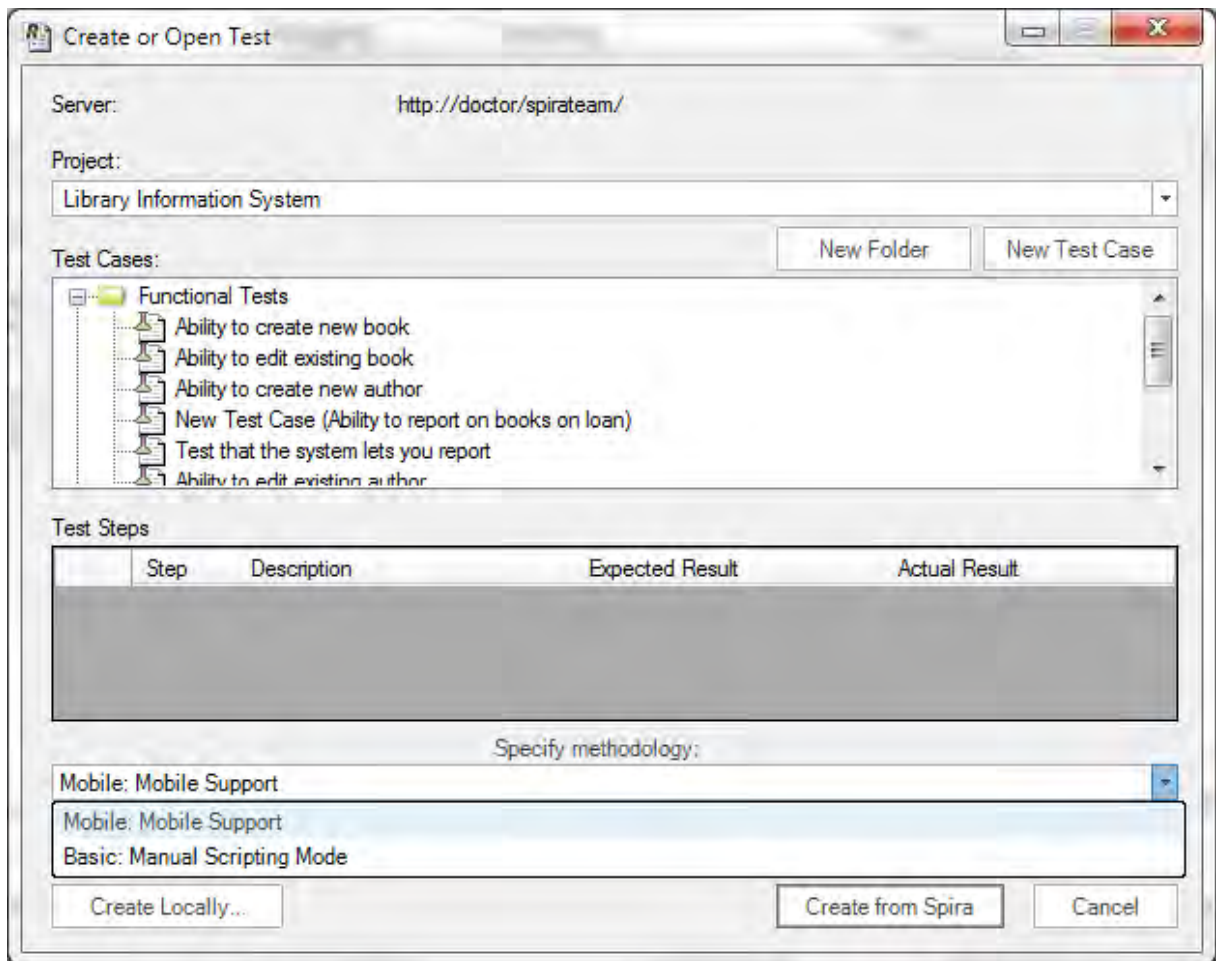
You may need to modify the RAM / Heap parameters to match that which is supported by the physical PC that you are using. Once the device has been created:



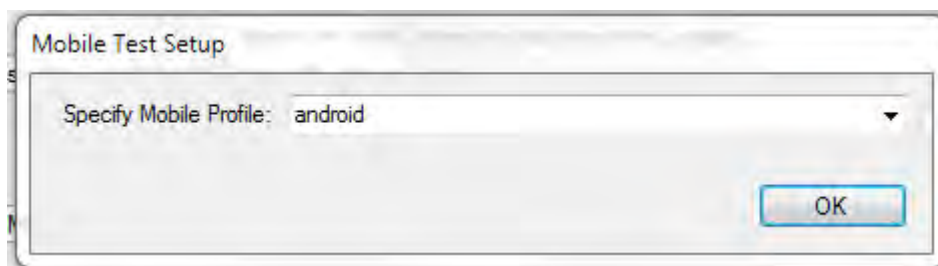
you can then click **Start** to start the device and then connect to it using Rapise.

2) Configure the Mobile Profile

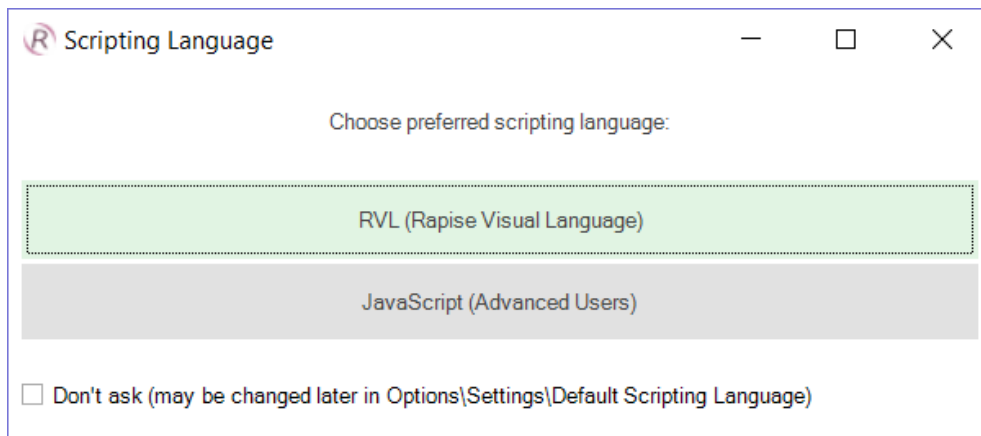
To begin the actual mobile testing, [create a new test](#), using the **File > New Test** option in Rapise. Make sure you choose the mobile methodology option "Mobile: Mobile Support":



Once you have entered the name for the new test (with the mobile methodology selected) you will be asked to choose the mobile profile. Rapise ships with several default profiles, for now select the one that is closed to the device you want to test (we recommend the **android** generic profile):



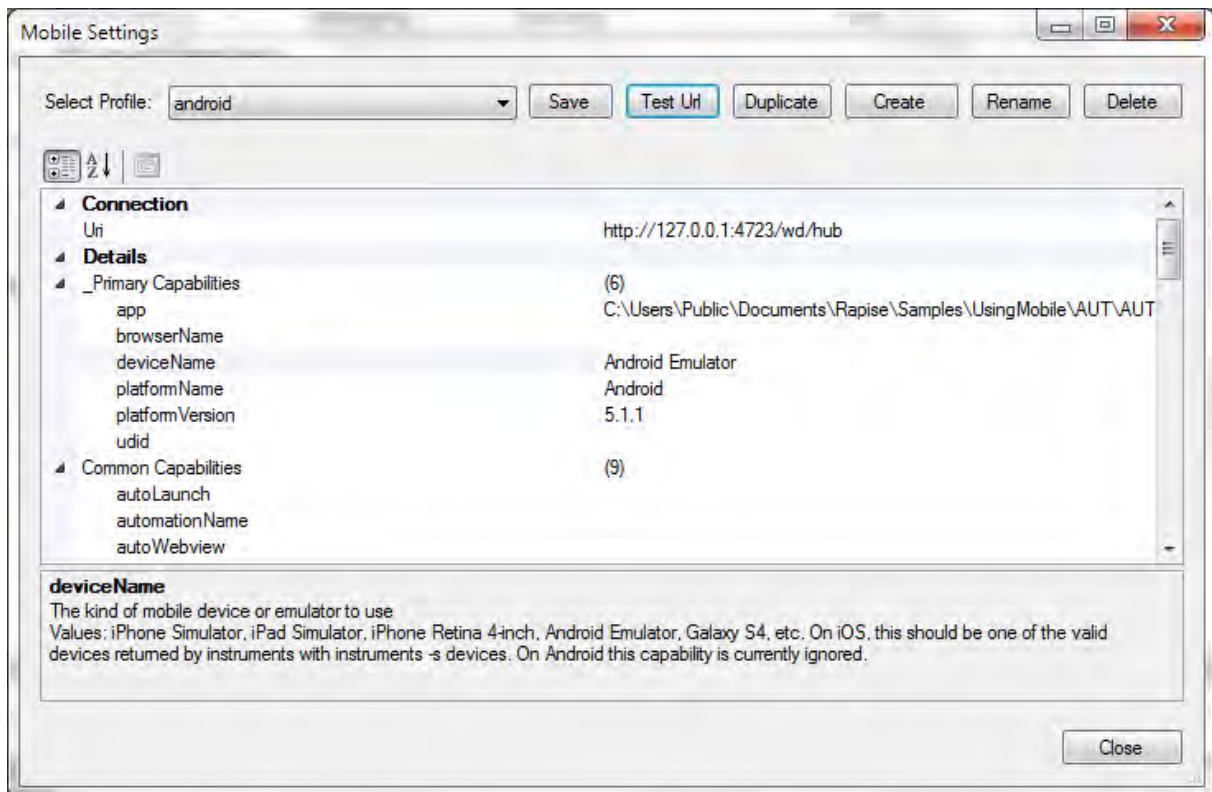
When you click the **[OK]** button, Rapise will ask you to choose the Scripting Language:



Please choose the **Rapise Visual Language (RVL)**. Rapise will then create a new mobile test with the Android Simulator profile selected.

	Flow	Type	Object	Action	ParamName	ParamType	ParamValue
1	Flow	Type	Object	Action	Param Name	Param Type	Param Value
2							
3							
4							
5							
6							
7							
8							
9							
10							

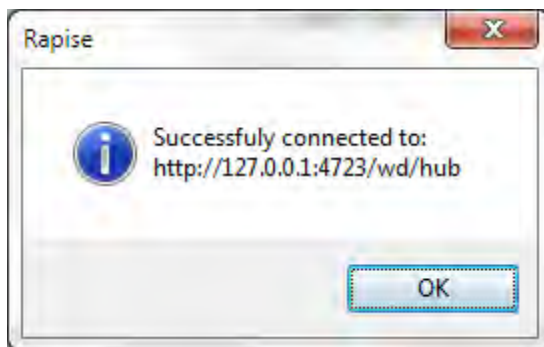
Now you need to modify the profile so that it correctly matches the type of device you are testing and also so that it correctly points to the [Appium](#) server that you are using to host the mobile devices. Click on Options > Tools > Mobile Settings to bring up the [Mobile Settings](#) dialog box:



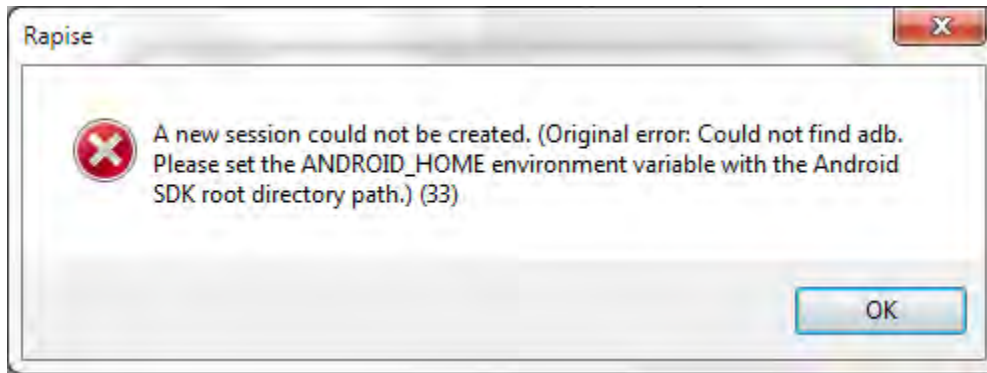
In the mobile profile screen, make sure you change the following:

- **app** - this needs to be the path to the Application being tested on the device (e.g. `C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AUT\AUTAndroid\bin\AUTAndroid.apk`). This path should be already correct, but it is worth double-checking
- **deviceName** - this needs to match the name of the device being connected
- **platformName** - this needs to be set to 'Android'
- **platformVersion** - this needs to be set to the same version of Android that the virtual device is running (the one specified in the Android Virtual Device screen earlier)

Once you have entered in the information and saved the profile, make sure that Appium is running on the PC and then click the **[Test URL]** button to verify the connection with Appium:



Now when you try and [connect to the device](#) using the [Rapise mobile spy](#), you may get the following message:



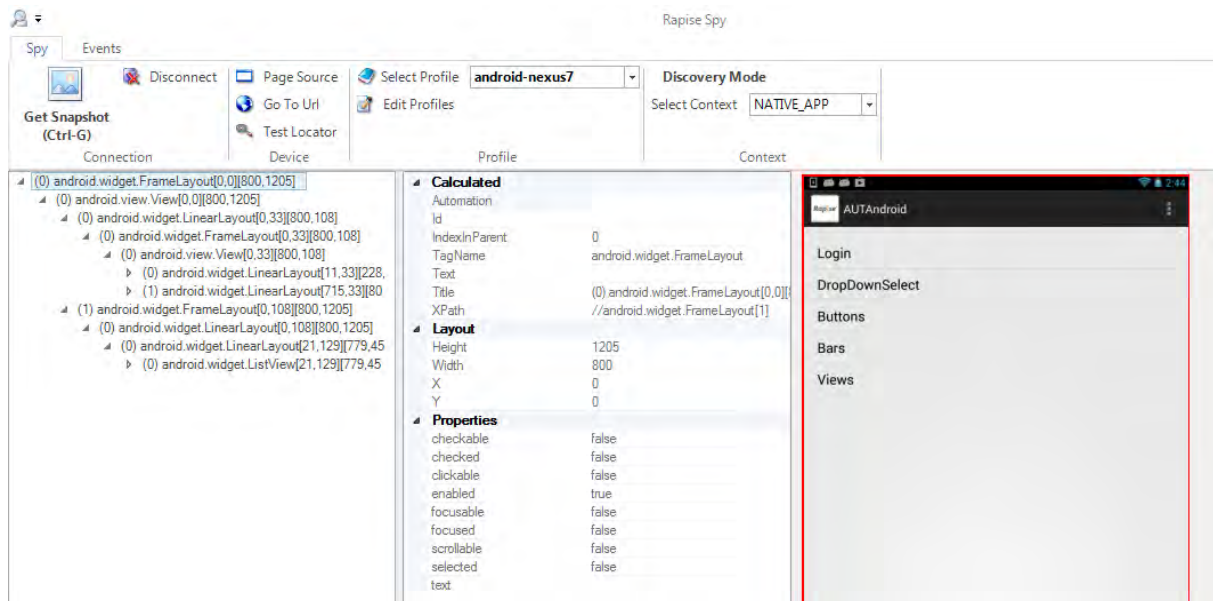
This means you need to use the Windows control panel to add a **System environment variable** called **ANDROID_HOME** and set it to the path of the installed Android SDK (typically `C:\Program Files (x86)\Android\android-sdk`).

Once you have configured the ANDROID_HOME and it connects, you can start testing your mobile Android application.

3) Using the Mobile Spy

The Mobile Spy will let you view an application running on the mobile device, take a snapshot of its screen and then interactively inspect the objects in the application being tested. This is a useful first step to make sure that Rapise recognizes the application and has access to the objects in the user interface.

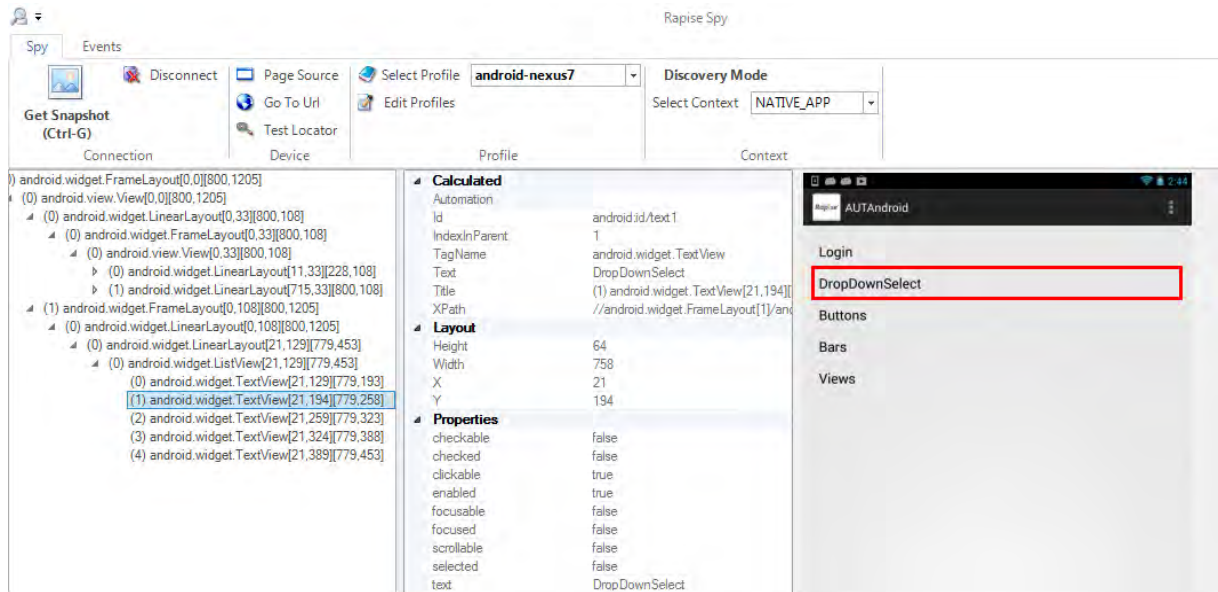
To start the Mobile Spy, open the Spy icon on the main [Test ribbon](#) and select the Mobile option and the Mobile Spy will be displayed in **Discovery Mode**. Now click the **[Get Snapshot]** button to display the application specified in the [mobile profile](#) on the screen:



In the example above, we are displaying the sample Android application that comes with Rapise (AUTAndroid).

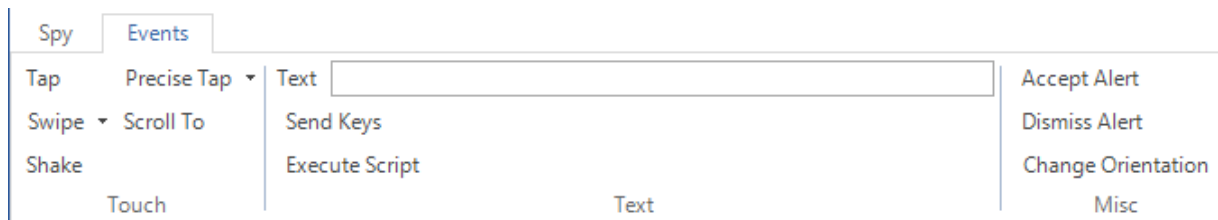
If you click on one objects in the user interface, it will be highlighted in Red and the tree hierarchy on

the left will expand to show the properties of that object:

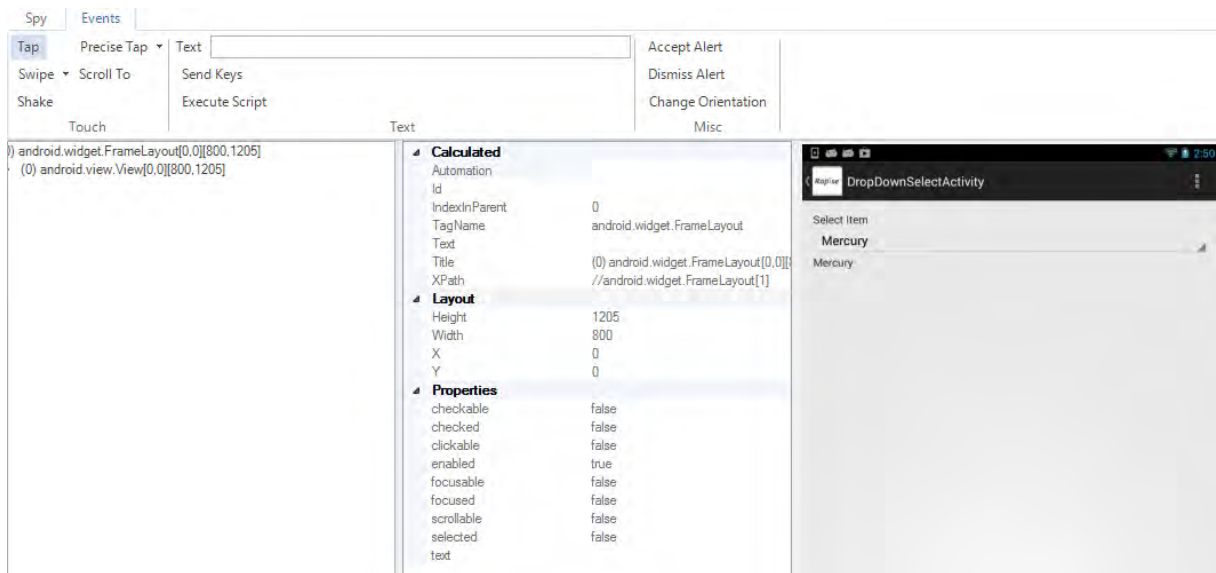


If you want to view the contents of the Spy as a text file, just click the **'Page Source'** button and you will see the contents of the Spy properties window as a text file.

If you want to perform an action on the application (e.g. click on the selected item), switch the ribbon to the 'Events' view:



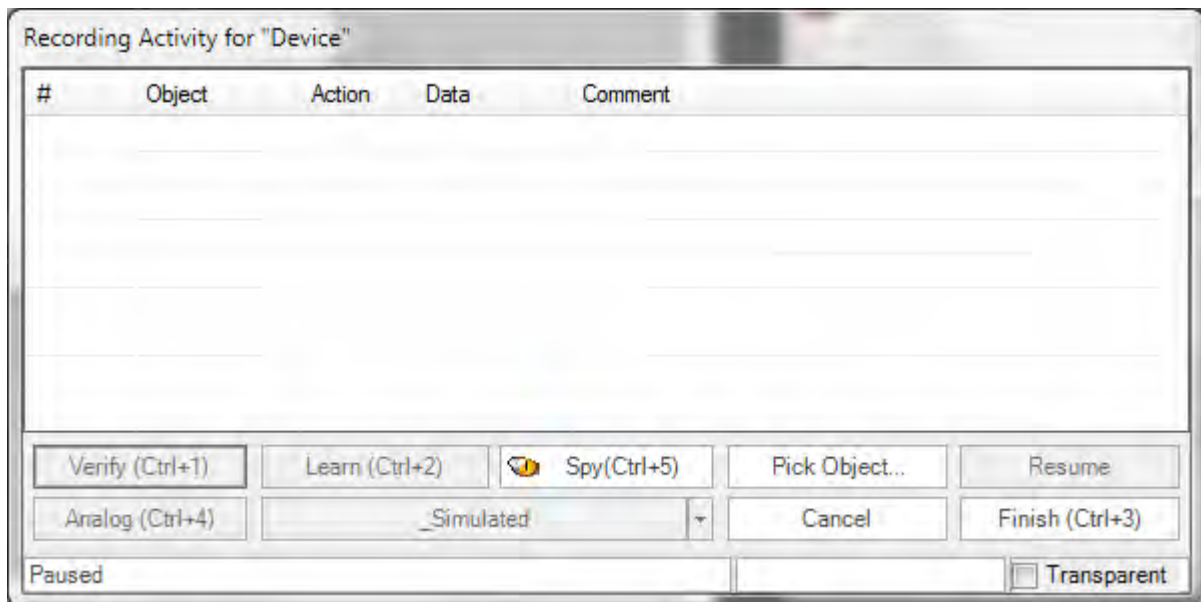
Now click on **'Tap'** and Rapise will send a tap event to the application, switching the application to the next page:



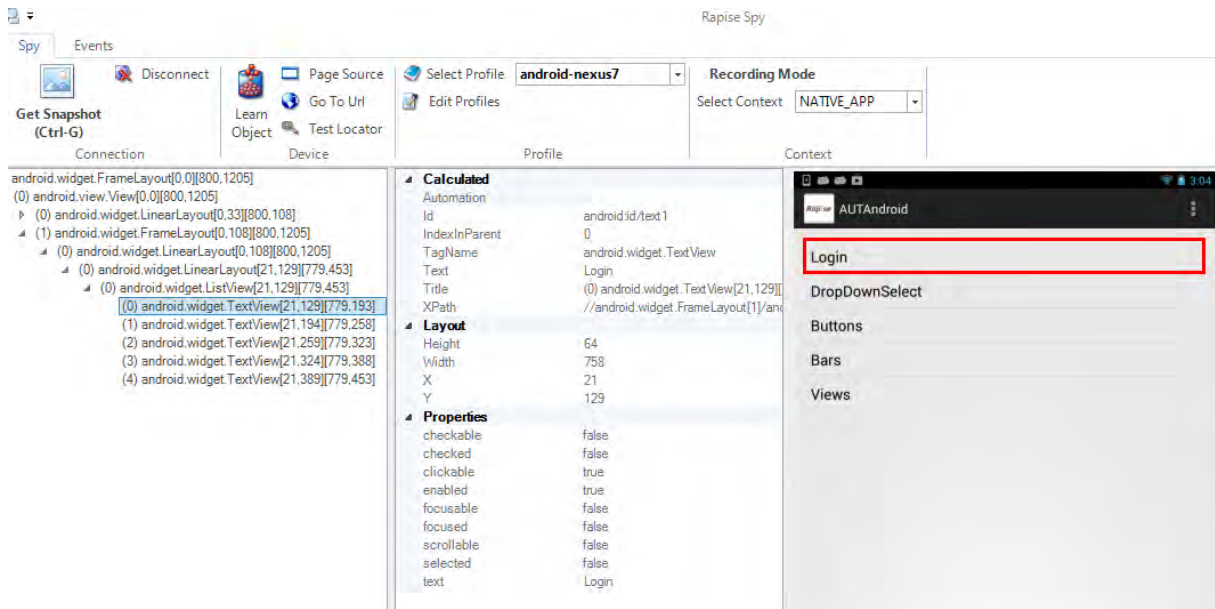
Assuming that you can see your application in the Spy and that the objects can be inspected (similar to that shown above) you can now begin the process of testing your mobile application. Click on **Disconnect** to end your Spy session and close the Rapise Spy dialog. You will now be returned back to your test script.

4) Recording and Playing a Test

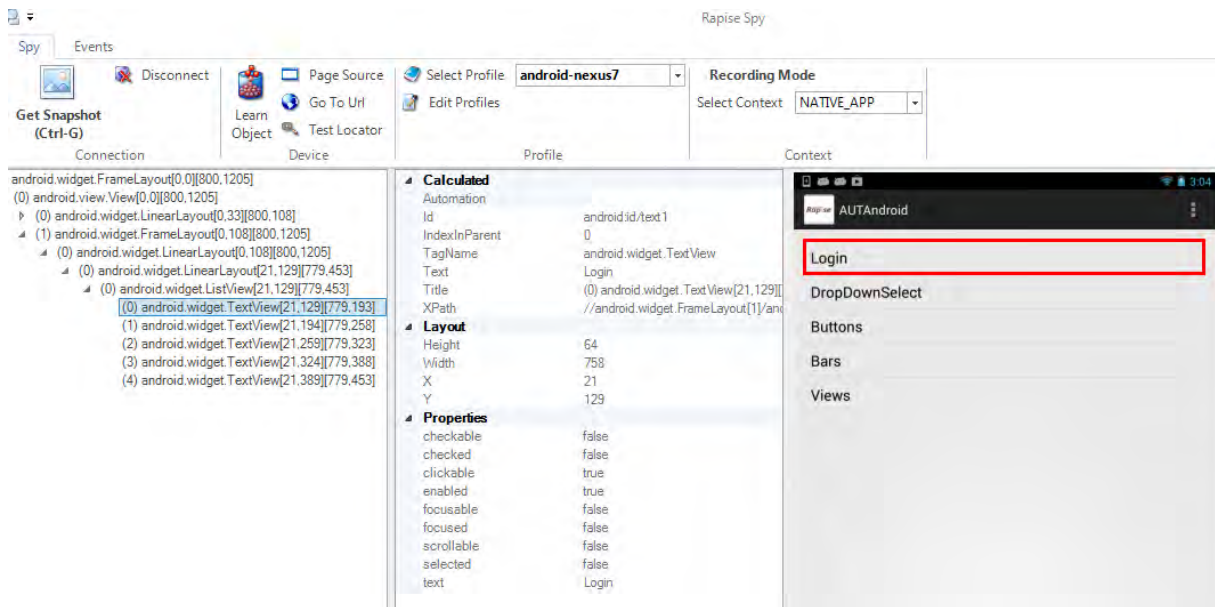
With the new Rapise mobile test script open, click on the **Record/Learn** button in Rapise and that will display the [recording activity dialog](#):



Now click on the **[Spy]** or **[Pick Object]** button (they both do the same thing for mobile testing) and the Rapise Spy will be displayed in **Recording Mode**:

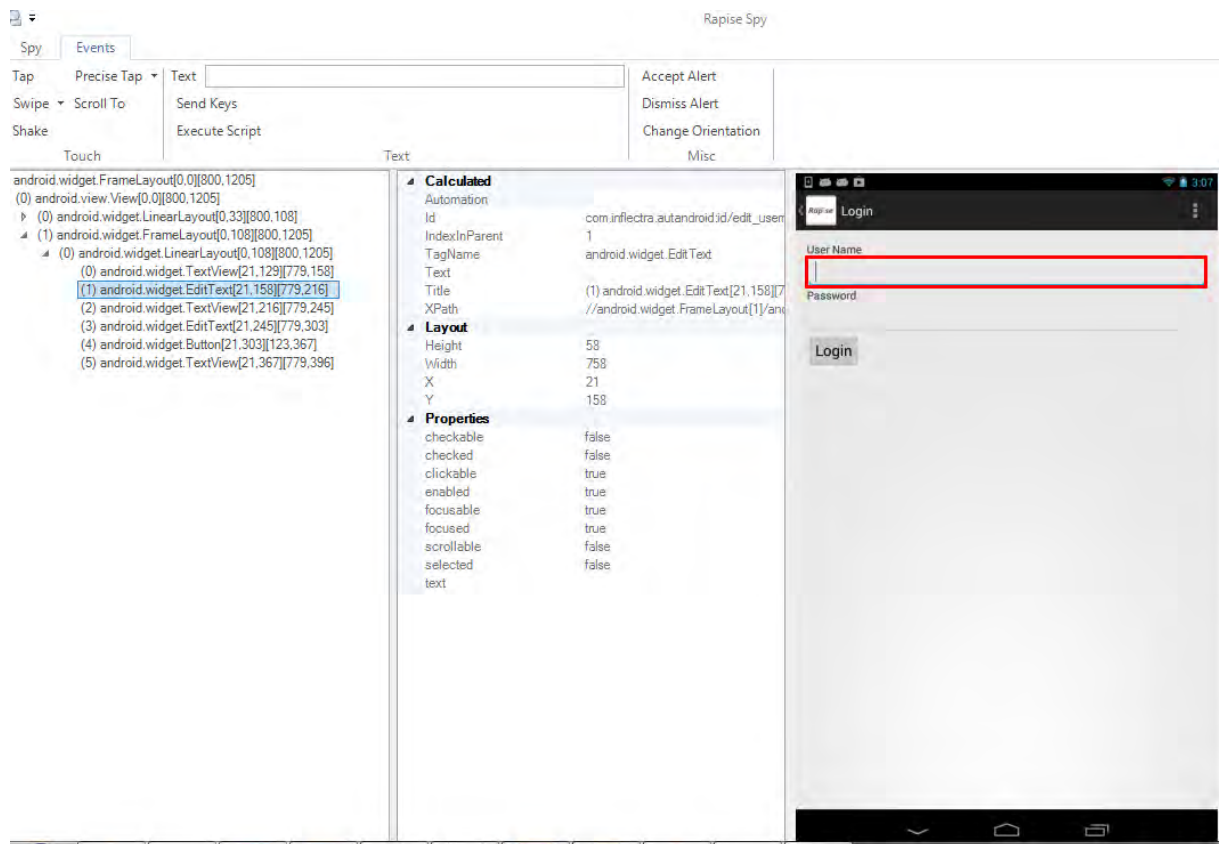


We now want to record a click on one of the menu options, simply highlight one of the menu entries (e.g. "Login"):

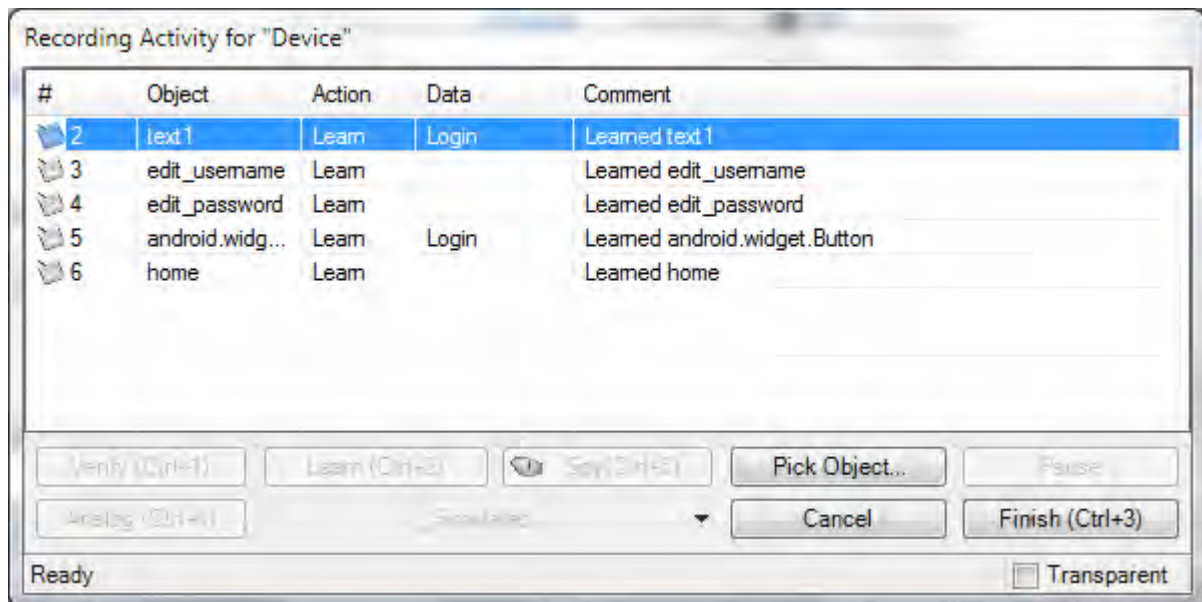


Now click the **[Learn Object]** button and the object will be added to the Rapise [object tree](#).

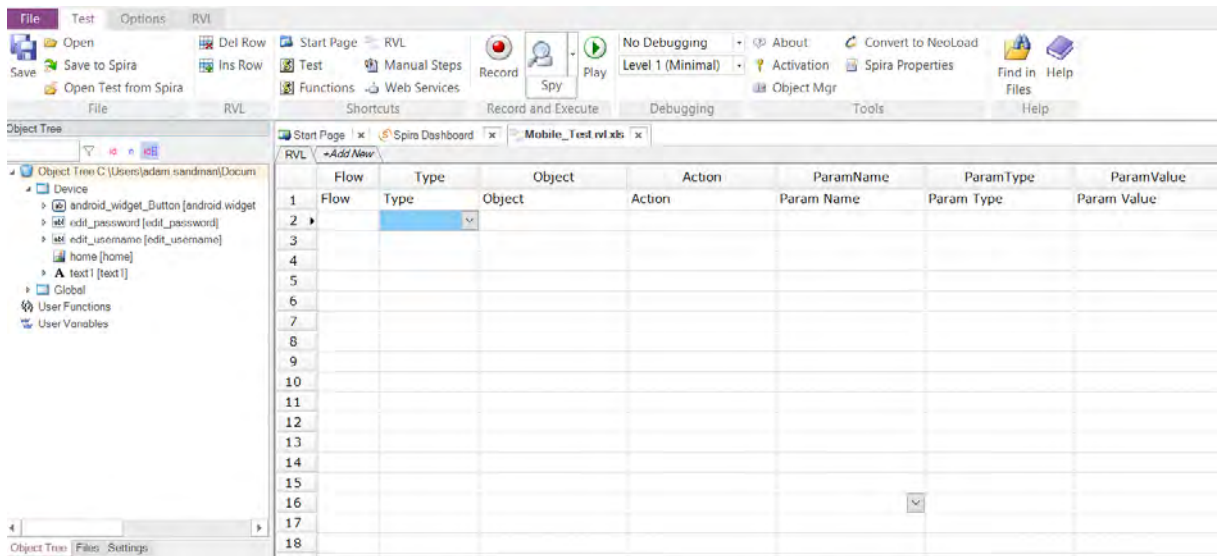
Now select the **Events** ribbon and click the **[Tap]** menu entry to move the sample app to the next screen; Rapise will automatically reload the page in the Mobile Spy to get the updated screen:



Now click on some of the objects and choose **Learn** to add them to the [object tree](#). Once you are finished, click on the **Disconnect** button. You will see the events in the recording activity dialog:



Now click on the **Finish** button and you will be taken back to the test script with the Android objects listed:



Now that we have the objects, we can simply use the Rapise Visual Language (RVL) test editor to choose:

- Type = Action
- Object = **<Name of Object>**
- Action = DoClick, DoSetText, DoAction

Each of the different types of object recorded will have their own list of available actions:

Flow	Type	Object	Action	ParamName	ParamType	ParamValue
1	Flow	Type	Object	Action	Param Name	Param Value
2		Action	A text1	DoClick		
3		Action	edit_username	DoSetText	value	string test user
4		Action	edit_password	DoSetText	value	string test pwd
5		Action	android_widget_B...	DoClick		
6		Action	home	DoAction		
7						

This will click on the first menu entry, then enter a username and password and then finally return back to the main menu.

Now to playback the test simply click **Play** in the Rapise test ribbon and the test will play back in the mobile device:

#	Type	Start	Name	Status	Comment	Iteration
	Message	23:50:41.088	Starting scenario: Test	Info		
	Assert	23:50:56.250	text1.DoClick([])	Pass	Returned Value: true	0
	Assert	23:51:05.477	edit_username.DoSetText(["test user"])	Pass	Returned Value: true	0
	Assert	23:51:14.211	edit_password.DoSetText(["test pwd"])	Pass	Returned Value: true	0
	Assert	23:51:18.253	android.widget.Button.DoClick([])	Pass	Returned Value: true	0
	Assert	23:51:19.129	home.DoAction([])	Pass	Returned Value: true	0
	Test	23:51:19.131	Android Test 3	Pass	Passed:5 Failed:0	

Test Pass
Total: 7 Pass: 6 Fail: 0 Info: 1

This is the report of the test being executed.

Example

You can find the Android sample tests and sample Application (called AUTAndroid) in your Rapise installation at the following locations:

Sample Android Tests:

- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AppAndroid (testing a native App)
- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\WebAndroid (testing a web app)

Sample Application (AUTAndroid)

- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AUT\AUTAndroid

(we supply the sample application as both a compiled .apk binary and an Android Studio Java project with source code)

See Also

- [Mobile Testing](#), for an overview of mobile testing with sub-sections on testing:
 - using [iOS](#)
 - using [Android](#).
- [Mobile Settings Dialog](#) - for information on setting up the different **mobile profiles** for the mobile devices you will be testing
- [Mobile Object Spy](#) - for information on how Rapise connects to the device and lets you view the objects in the application being tested
- [Technologies - Mobile Testing](#), for instructions on preparing your environment for mobile testing, including instructions for installing the necessary prerequisites and configuring the various third-party components that Rapise uses to connect to the device.
 - [Mobile Testing: iOS Setup](#) - the steps for setting up Xcode and the iOS SDK for testing iOS devices

2.2.8 Tutorial: Manual Testing

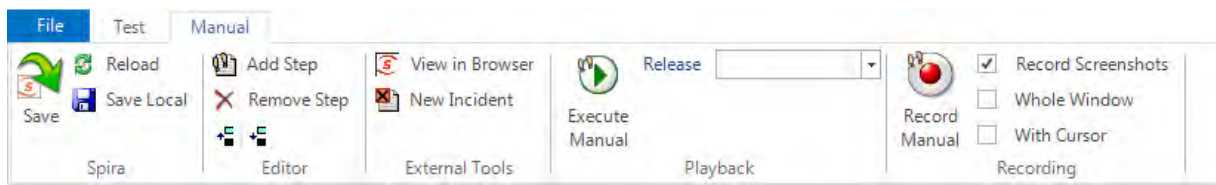
Purpose

Exploratory manual testing is used for situations where you have a **new or changing application** and the user interface is still evolving. Traditional manual testing, where you create a test case ahead of time, define the prescriptive test steps and then assign it to the tester does not make sense in such cases. The solution is to perform **exploratory testing**, where you explore using the application at the same time as creating the test script. The created test script can then be published to your test management system (i.e. [SpiraTest](#)) for future regression testing.

Rapise can help **accelerate and optimize** exploratory manual testing. Rapise lets you walk through the application, capturing your interactions as you use it, recording screenshots of the objects and screens you interact with. From this, Rapise will create a fully formed test script ready to use.

Step 1 - Creating a New Test

To start manual testing, simply create your test as normal using the [New Test](#) dialog box. Then once the test has been created, click on the "Manual Steps" icon in the Test ribbon and then you will be taken to the [Manual Editor](#) with the [Manual Test Ribbon](#) Visible:



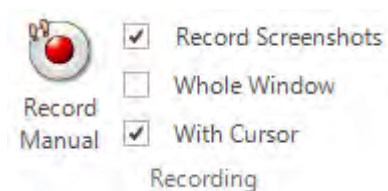
The test step list will initially be empty:



Step 2 - Recording Some Steps

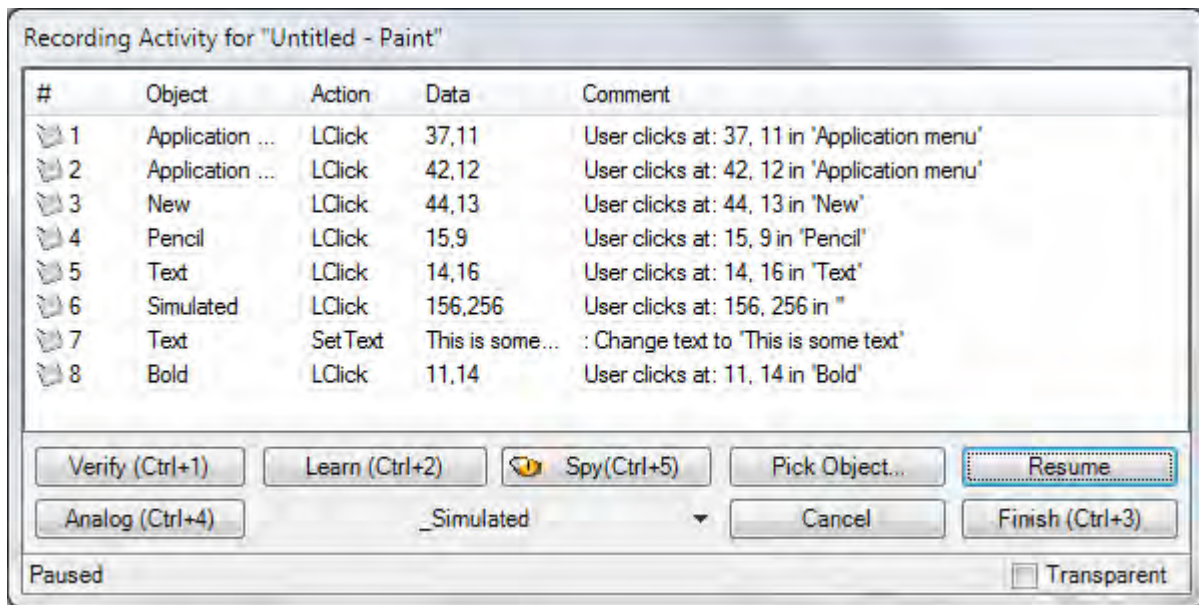
Now you should open up the application you want to record from. In this example we shall be testing the built-in **Microsoft Paint** application. This is a good candidate for manual testing as a lot of the functionality is hard to test automatically since there is a simple drawing canvas rather than discrete buttons and data elements to test.

To make sure that we have screenshots recorded, whilst keeping the size of the screenshots reasonable, use the following recording options:

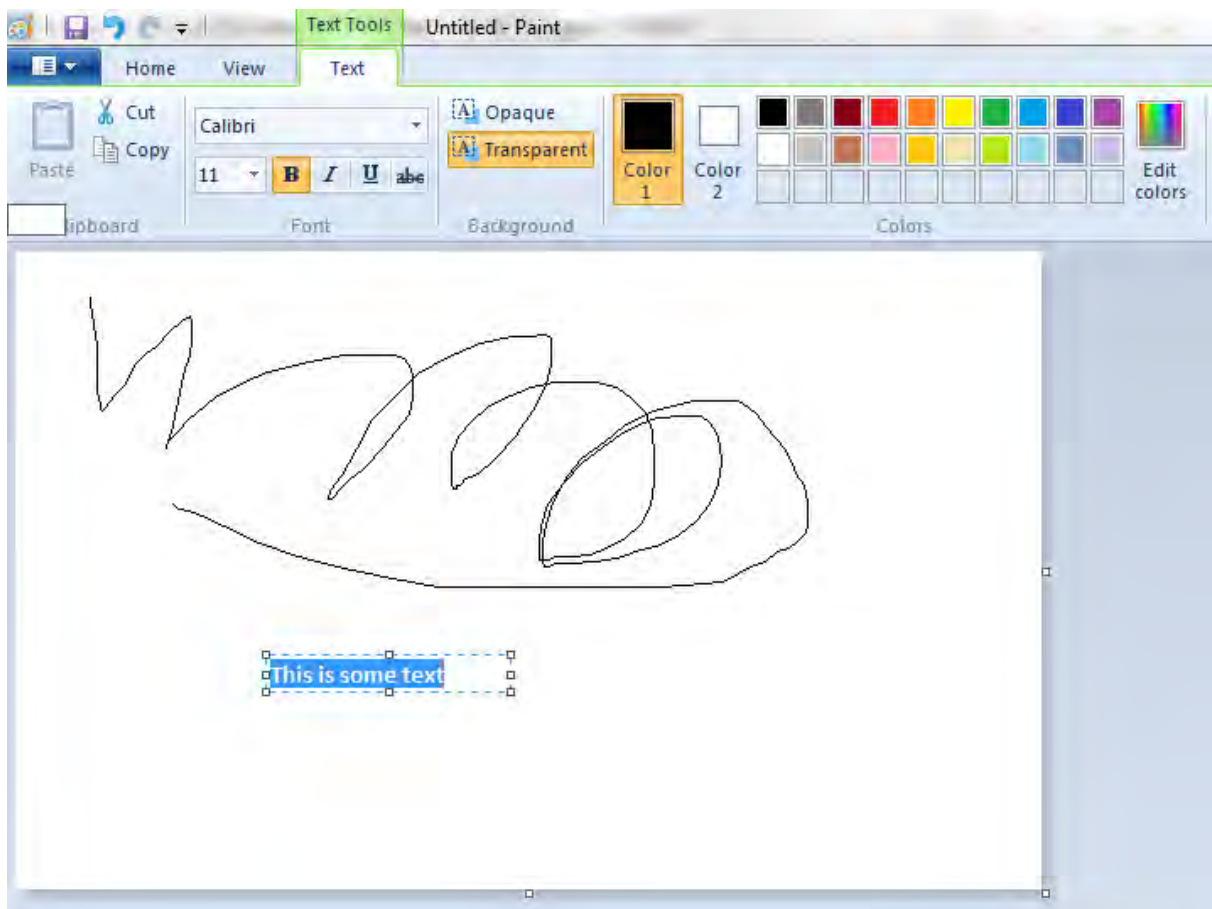


Now click the **'Record Manual'** button and choose MS-Paint from the list of running applications in [Select Application to Record](#) dialog and then click **'Select'** to start recording.

As you click through the application, the recording will display the list of steps and actions being captured:



In this example, we created a new canvas, chose the Pencil tool, created a drawing using the pencil, entered some text and then made it bold:



When you click **Finish** to complete the recording, Rapise will now display the list of populated manual

test steps with the embedded screen captures:

StepId	Description	Expected Result	Sample Data
Step 1	User clicks at: 37, 11 in 'Application menu'		SeS('Application_menu').DoLClick(37, 11);
Step 2	User clicks at: 42, 12 in 'Application menu'		SeS('Application_menu').DoLClick(42, 12);
Step 3	User clicks at: 44, 13 in 'New'		SeS('New').DoLClick(44, 13);
Step 4	User clicks at: 15, 9 in 'Pencil'		SeS('Pencil').DoLClick(15, 9);
Step 5	User clicks at: 14, 16 in 'Text'		SeS('Text').DoLClick(14, 16);
Step 6	User clicks at: 156, 256 in "		SeS('Simulated').DoLClick(156, 256);

You will notice that the description of each test step will use the form "User [action] at [coordinates] in '[object name]'" and the expected result will include the screenshot of what the user was doing. In addition, the sample data will contains the equivalent Rapise automation code for reference. This can be useful later if you decide to automate this test.

Step 3 - Editing the Steps

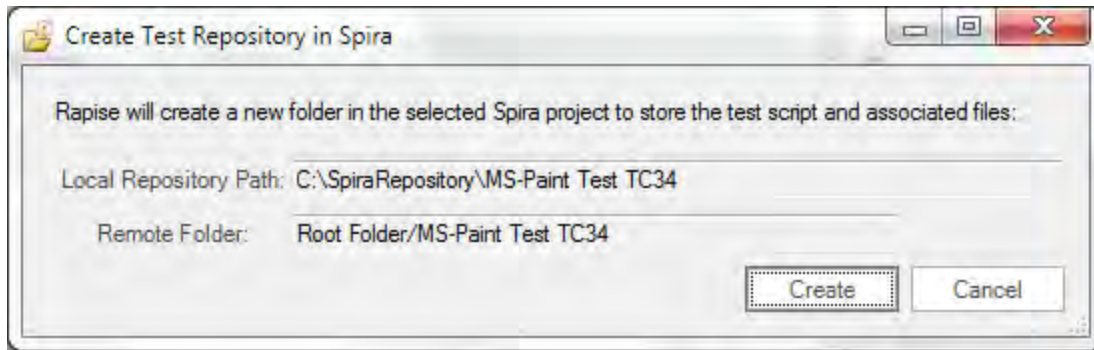
Typically you may want to **add some additional steps** (e.g. we added a line to describe the process of starting up MS Paint), **delete any duplicate/unnecessary steps** and **reword them** so that they make the most sense to the tester. In our example we used the [manual editing](#) screen to update the steps as follows:

StepId	Description	Expected Result	Sample Data
Step 1	User starts up the MS-Paint Application	The application loads with a blank canvas	
Step 2	User clicks the main 'Application menu'		SeS('Application_menu').DoLClick(42, 12);
Step 3	User clicks the 'New' entry		SeS('New').DoLClick(44, 13);
Step 4	User clicks on 'Pencil'		SeS('Pencil').DoLClick(15, 9);
Step 5	User clicks the 'Text' tool		SeS('Text').DoLClick(14, 16);
Step 6	User clicks at: 156, 256 in the canvas		SeS('Simulated').DoLClick(156, 256);

Click **Save** to make sure the updates are all saved locally. Now before you can [execute these tests](#), you will need to Save them to [Spira](#) (our web-based test management system).

Step 4 - Saving to Spira

Click on the option to **Save to Spira**, you will be asked to confirm the creation of the document folder in Spira that will hold the test files:



Click on **'Create'** and then the manual test will be saved to Spira. You will see that this process adds the unique Spira test step IDs to each step. They are displayed using the format `[TS:xxx]`. This special token `[TS:xxx]` can be used in `Tester.Assert` commands to relate specific [verification points](#) with test steps during automated testing.

StepId	Description	Expected Result	Sample Data
[TS:47]			
Step 4 [TS:48]	User clicks on 'Pencil'		SeS('Pencil').DoLClick(15, 9);
Step 5 [TS:49]	User clicks the 'Text' tool		SeS('Text').DoLClick(14, 16);
Step 6 [TS:50]	User clicks at: 156, 256 in the canvas		SeS('Simulated').DoLClick(156, 256);
Step 7 [TS:51]	Enters text 'This is some text'	This is some text	SeS('Text1').DoSetText('This is some text');
Step 8	User clicks on the 'Bold' button		SeS('Bold').DoLClick(11, 14);

Now that the test has been saved in Spira, you can click on the **'View in Browser'** option to see how the test steps look inside Spira.

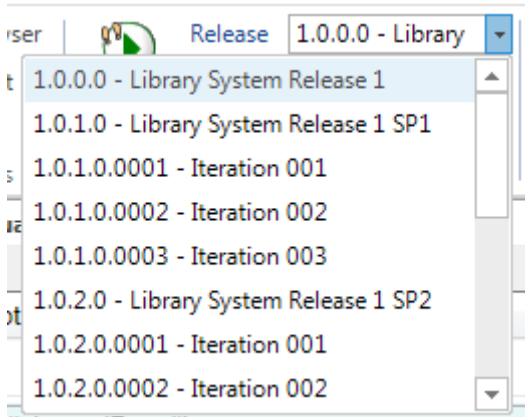
▼ Test Steps							
> Insert Step Insert Link Delete Copy Refresh -- Show/hide columns -- Edit Parameters							
<input type="checkbox"/>	Step #	Description	Expected Result	Sample Data	Execution Status	ID	Edit
<input type="checkbox"/>	Step 1	User starts up the MS-Paint Application	The application loads with a blank canvas		Not Run	TS000045	Edit
<input type="checkbox"/>	Step 2	User clicks the main 'Application menu'		SeS('Application_menu').DoLClick(42, 12);	Not Run	TS000046	Edit
<input type="checkbox"/>	Step 3	User clicks the 'New' entry		SeS('New').DoLClick(44, 13);	Not Run	TS000047	Edit
<input type="checkbox"/>	Step 4	User clicks on 'Pencil'		SeS('Pencil').DoLClick(15, 9);	Not Run	TS000048	Edit
<input type="checkbox"/>	Step 5	User clicks the 'Text' tool		SeS('Text').DoLClick(14, 16);	Not Run	TS000049	Edit
<input type="checkbox"/>	Step 6	User clicks at: 156, 256 in the canvas		SeS('Simulated').DoLClick(156, 256);	Not Run	TS000050	Edit
<input type="checkbox"/>	Step 7	Enters text 'This is some text'	This is some text	SeS('Text1').DoSetText('This is some text');	Not Run	TS000051	Edit
<input type="checkbox"/>	Step 8	User clicks on the 'Bold' button		SeS('Bold').DoLClick(11, 14);	Not Run	TS000052	Edit

Show 15 rows per page Displaying page 1 of 1

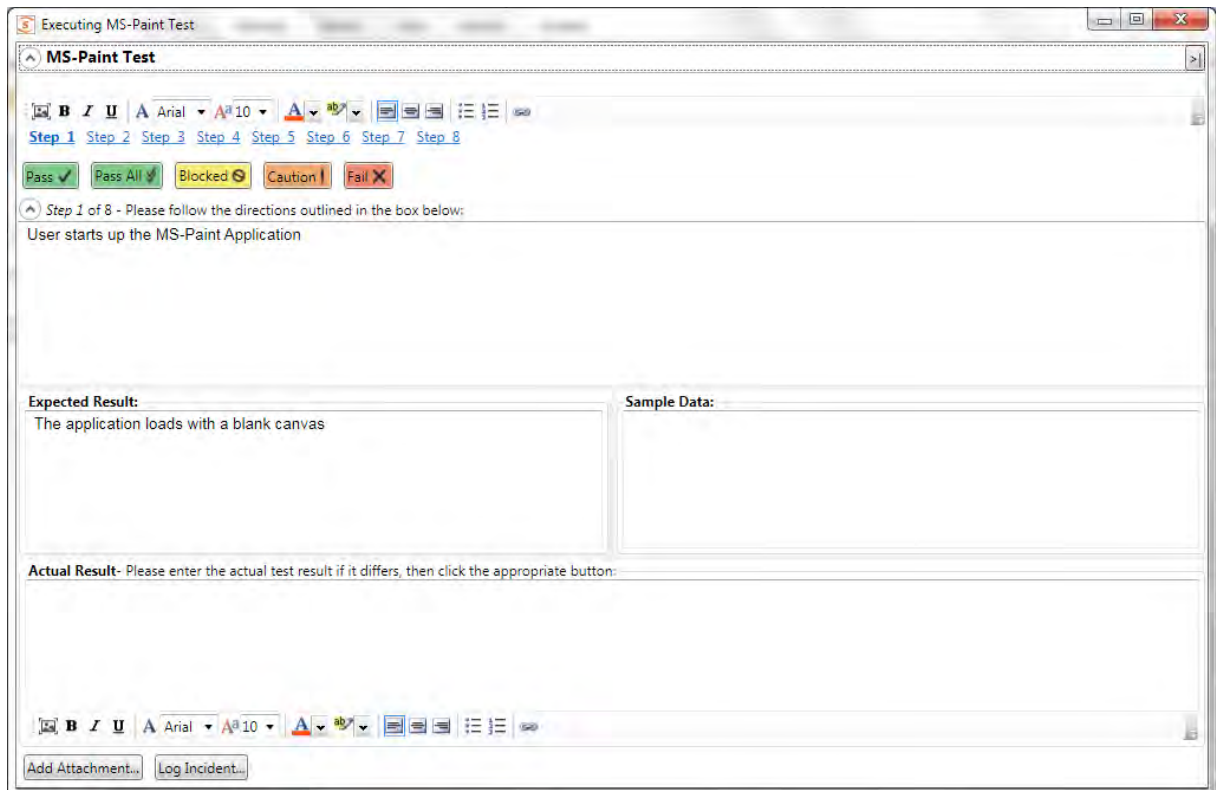
Now that we have finished the recording, we can now play back this manual test.

Step 5 - Executing the Manual Test

Choose the Release from the list of those available in the project:



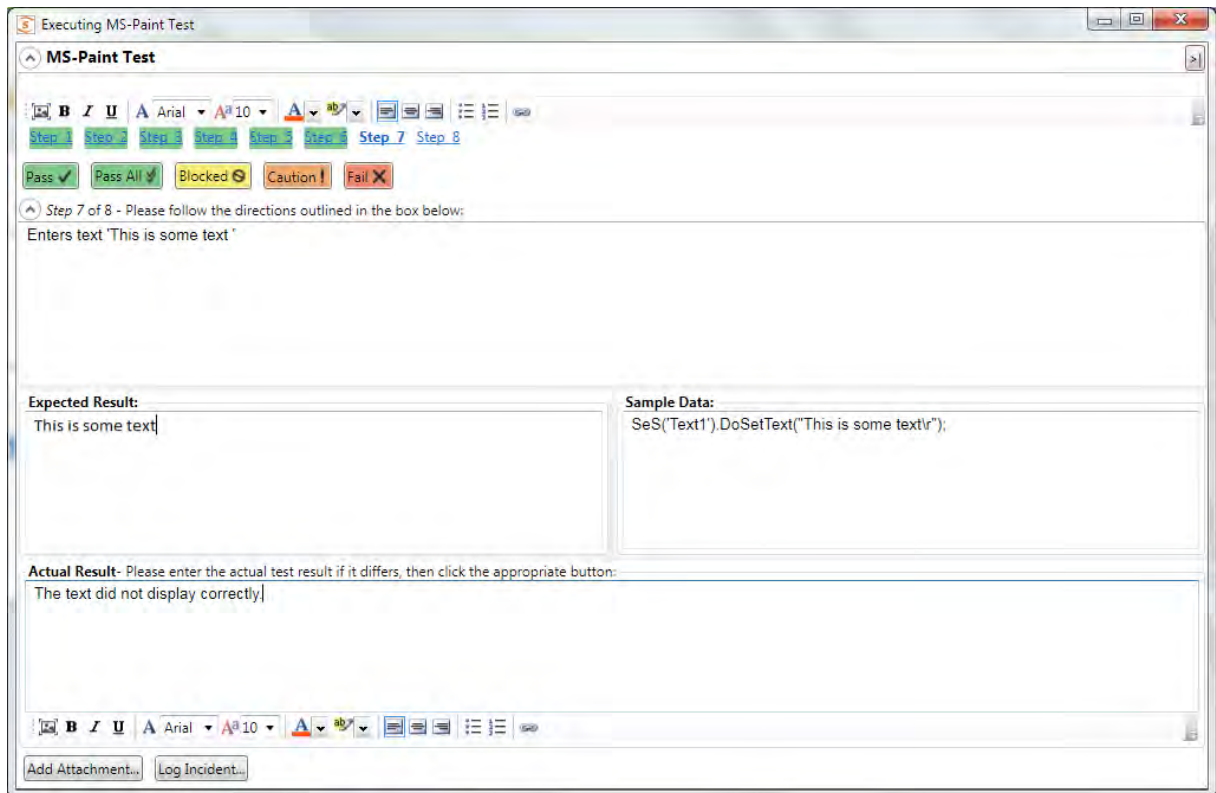
Then click on the 'Execute' icon to start manual test execution. That will bring up the [manual playback](#) screen:



On this screen, we shall follow through the steps listed in the test case. This involves opening up MS Paint, creating a new canvas, adding some lines using the pencil and then adding some text using the text tool. As you perform these steps, click on the **Pass** button to indicate that each step has passed. You can also minimize the manual playback screen by clicking the > | button.

Once you get to Step 7, we shall pretend that MS Paint failed to display the text correctly. Enter in the

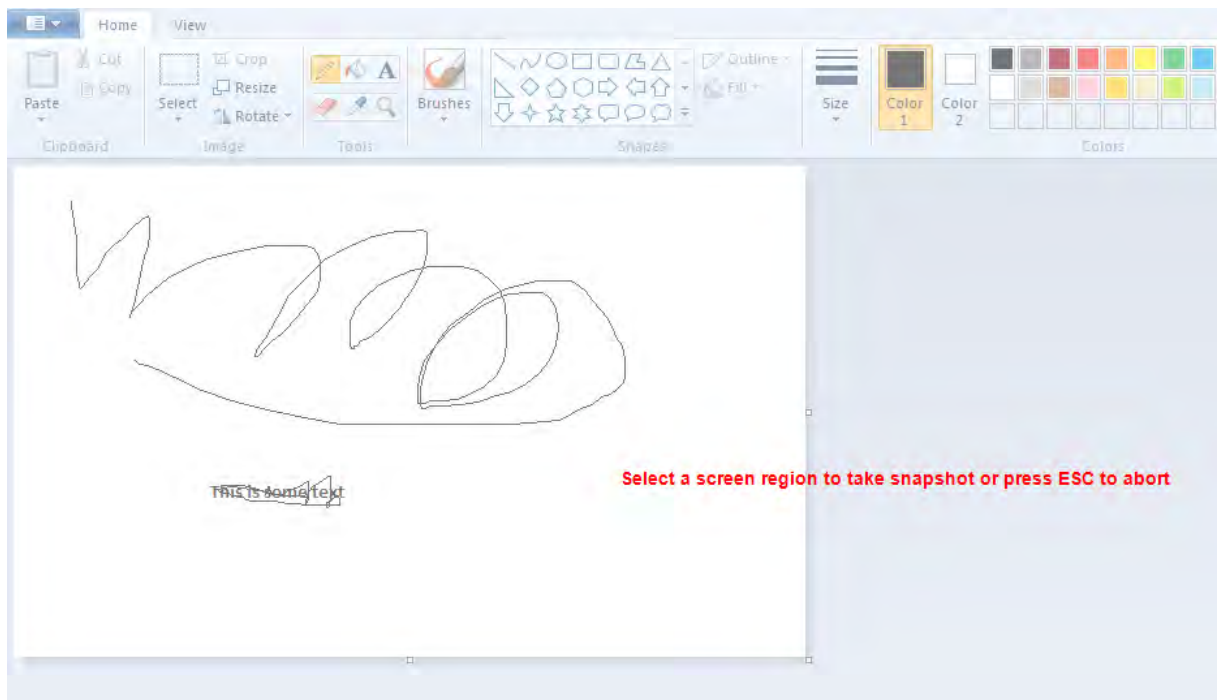
Actual Result a message to that effect:



Next we shall attach a screenshot of what actually happened and log a test failure and associated incident / defect.

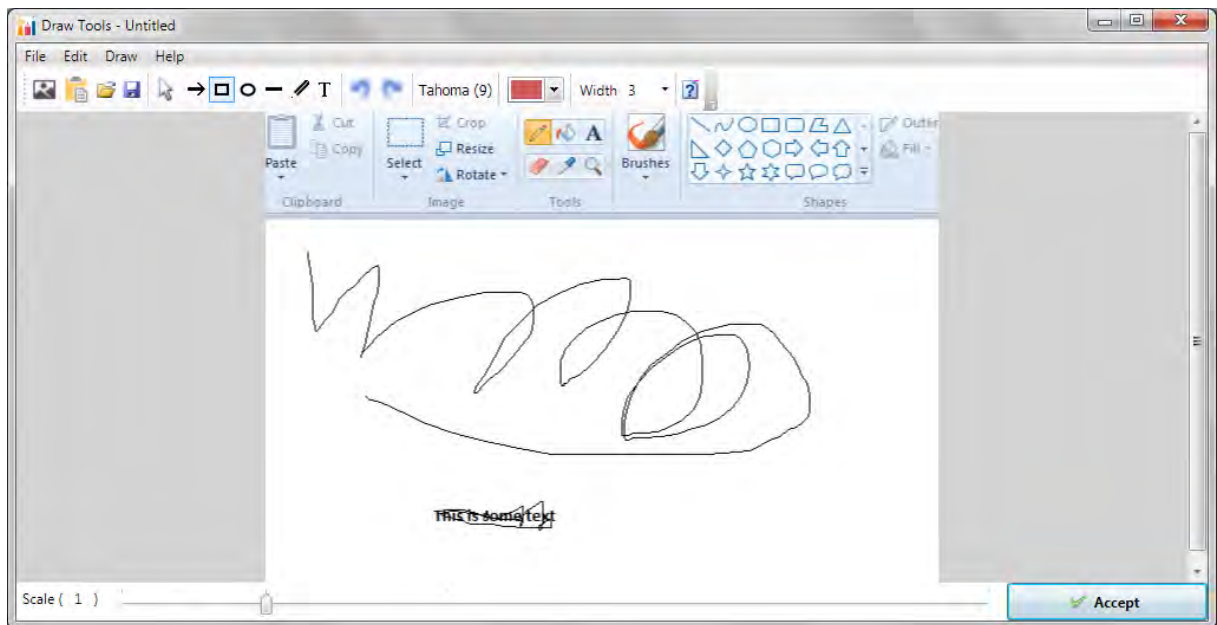
Step 6 - Capturing and Annotating a Screenshot

Click on the **Image icon** in the rich text editor associated with the **Actual Result** text box. That will bring up the [Drawing Tools](#) screen that asks you to draw a rectangle to select a portion of the current screen to capture:

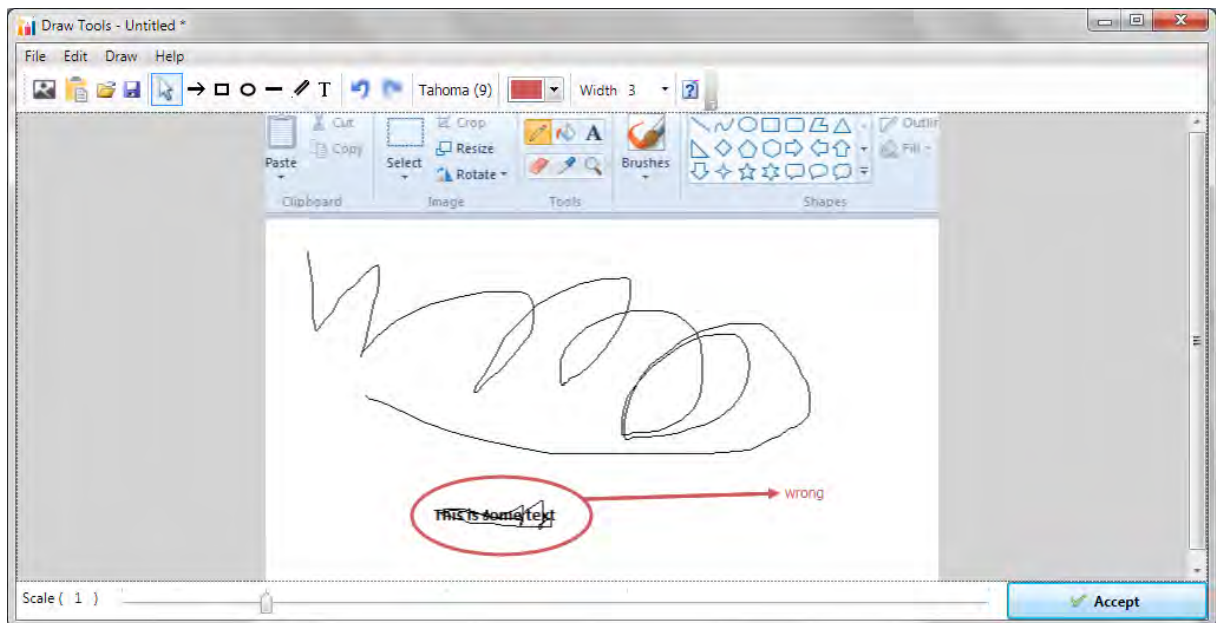


If the MS Paint application is not in the foreground, just click ESC on your keyboard to abort, rearrange your windows and then try again.

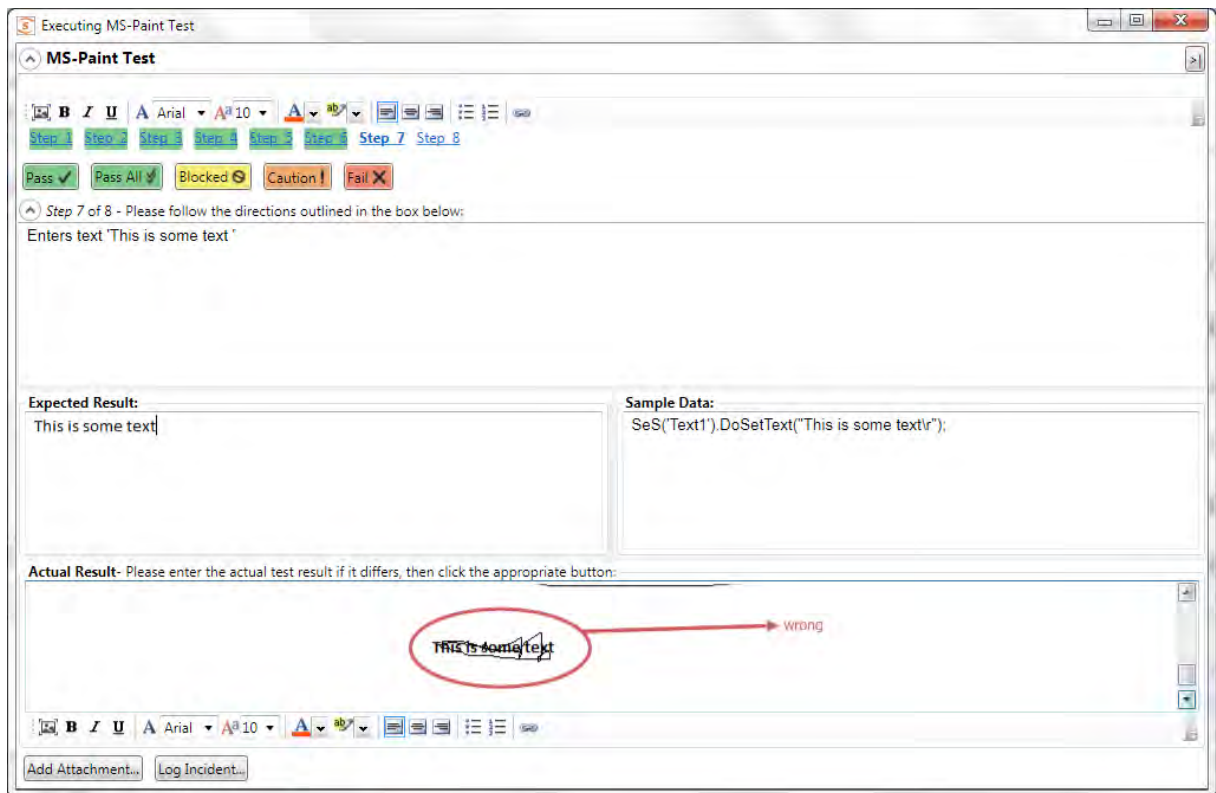
Once you have selected the rectangle, the drawing tools will display your selected image in the image editor:



You can now use the annotation tools to add labels, text and other items to explain the issue that you found:



In the example above, we added a red ellipse, arrow and text to mark the issue that was seen in MS-Paint. Once you are happy with your image, click **Accept** and the image will be included in the test Actual Result:



Now we can [log an incident](#) that is associated with this test failure.

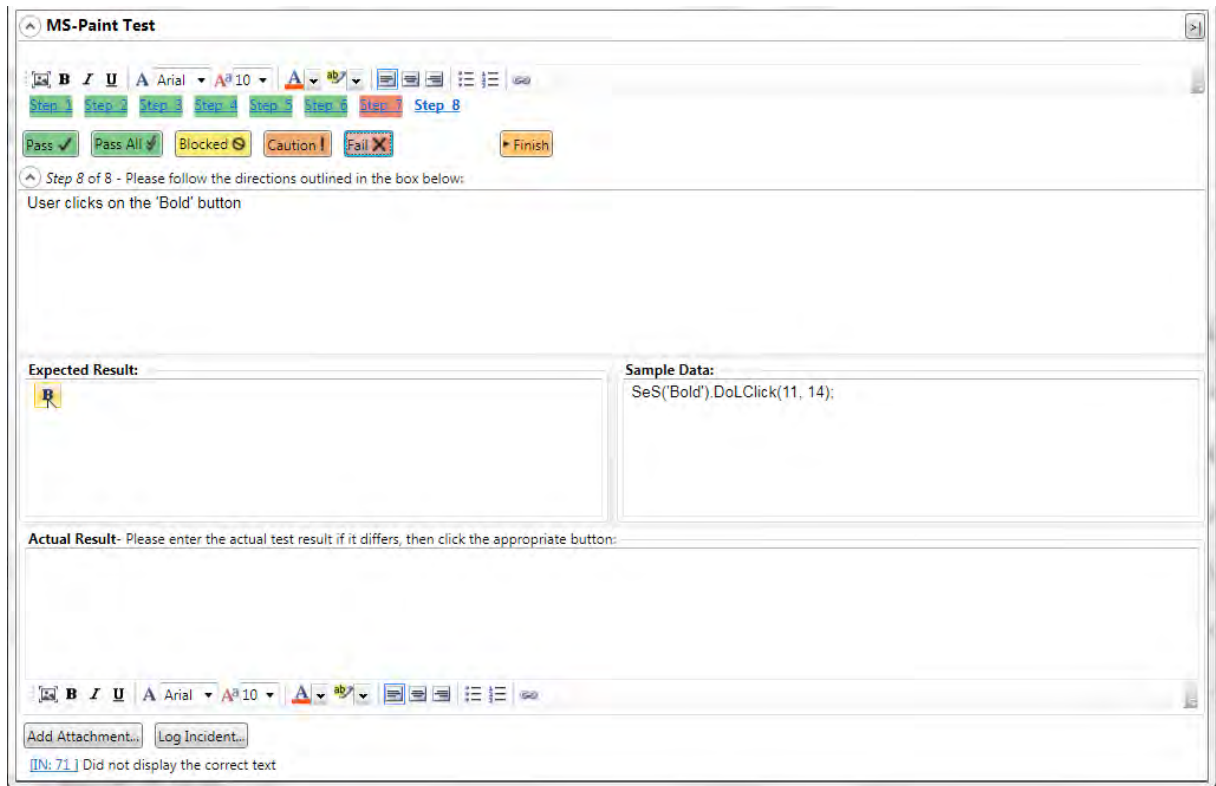
Step 7 - Logging the Incident / Defect

Click on the **Log Incident** button to display the new incident entry screen:

The screenshot shows a web browser window titled "New Incident *". The interface includes a "Save" button in the top left corner. The main content area is titled "Details / Description". The "Name" field contains the text "The text did not display correctly in MS Paint". The "Description" field is a rich text editor containing the text "When I entered some text it did not display correctly in MS-Paint." Below the description field are several dropdown menus: "Type" (Bug), "Detected By" (Fred Bloggs), "Priority" (2 - High), "Detected Release" (1.0.0.0 - Library System Release 1), "Status" (New), and "Severity" (-- None --). At the bottom of the form is a "Notes" field with another rich text editor.

Choose the **type** of incident, enter the **name**, **description**, **priority**, **detected release** and any other required fields as defined by the workflow in the project that you are connected to. Once you have entered in the various fields, click the **'Save'** icon in the top left.

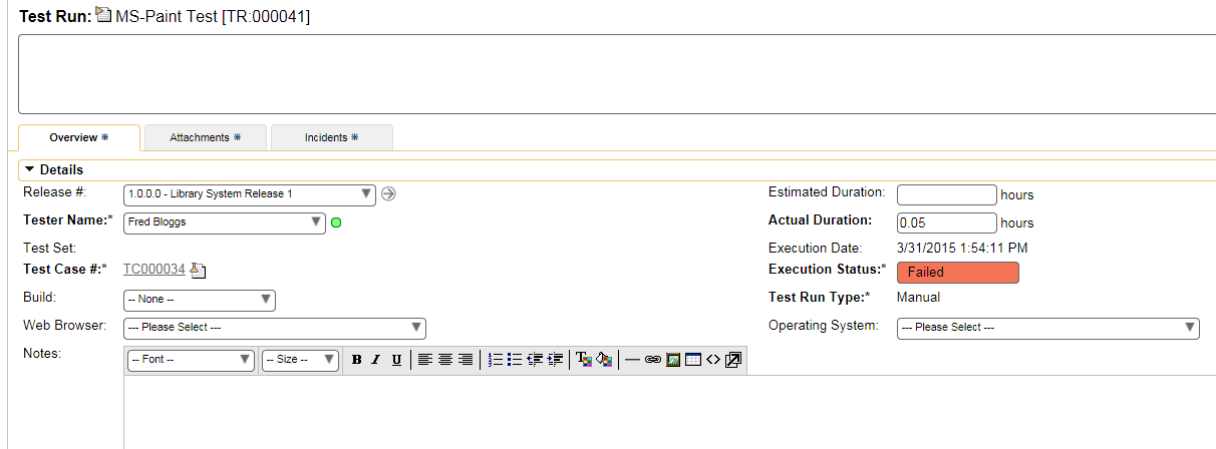
This will return you to the [manual execution](#) screen with the **Incident ID** [IN: xxx] and **name** displayed at the bottom. Now click on the **'Fail'** button and the test case will be marked as failed:



Finally, click on the **Finish** button and the results will be posted to [Spira](#).

Step 8 - Viewing the Results

Now to view the results in Spira, click on the [Spira Dashboard](#) item in the main Rapise [Test ribbon](#). Then under the 'My Created' test cases, click on the link for the test case you execute. That will bring up the test case in Spira. Now click on the 'Failed' hyperlink in Spira and the new test run will be displayed:



If you scroll down, you can see the individual test steps that were executed, with the associated actual result (including the captured screenshot):

ID	Test Step Description	Expected Result	Sample Data	Test # / Step #	Actual Result	Execution Status
RS000084	User starts up the MS-Paint Application	The application loads with a blank canvas		TC000034 / TS000045		Passed
RS000085	User clicks the main 'Application menu'		SeS('Application_menu').DoClick(42, 12);	TC000034 / TS000046		Passed
RS000086	User clicks the 'New' entry		SeS('New').DoClick(44, 13);	TC000034 / TS000047		Passed
RS000087	User clicks on 'Pencil'		SeS('Pencil').DoClick(15, 9);	TC000034 / TS000048		Passed
RS000088	User clicks the 'Text' tool		SeS('Text').DoClick(14, 16);	TC000034 / TS000049		Passed
RS000089	User clicks at: 158, 256 in the canvas		SeS('Simulated').DoClick(158, 256);	TC000034 / TS000050		Passed
RS000090	Enters text: 'This is some text'	This is some text	SeS('Text1').DoSetText('This is some text');	TC000034 / TS000051	Failed with the text being illegible. 	Failed
RS000091	User clicks on the 'Bold' button		SeS('Bold').DoClick(11, 14);	TC000034 / TS000052	> View Incidents	Not Run

If you click on the **Incidents** tab, you can also see the new incident that was logged, linked to this test run:

Overview #		Attachments #		Incidents #						
Display List of Incidents: > Refresh Apply Filter Clear Filter -- Show/Hide columns --										
Displaying 1 - 1 out of 1 incident(s) linked to this test run. Filtering results by Test Run #. (Clear Filters)										
✓	Name ▲▼	Type ▲▼	Status ▲▼	Priority ▲▼	Detected By ▲▼	Creation Date ▲▼	Owner ▲▼	Progress	ID ▲▼	Edit
<input type="checkbox"/>	Did not display the correct text	Incident	New	2 - High	Fred Bloggs	31-Mar-2015			IN-000071	Edit
Show 15 rows per page						Displaying page 1 of 1				

Congratulations! You have now successfully executed a manual test using Rapise.

See Also

- [Manual Testing](#)
- [Manual Recording](#)
- [Manual Playback](#)

2.2.9 Tutorial: Java Testing

In this section, you will learn how to record and execute a Rapise script against a Java applications. We will show you have to test the following three different types of Java application:

- Java AWT Apps
- Java Swing Apps
- Java SWT Apps

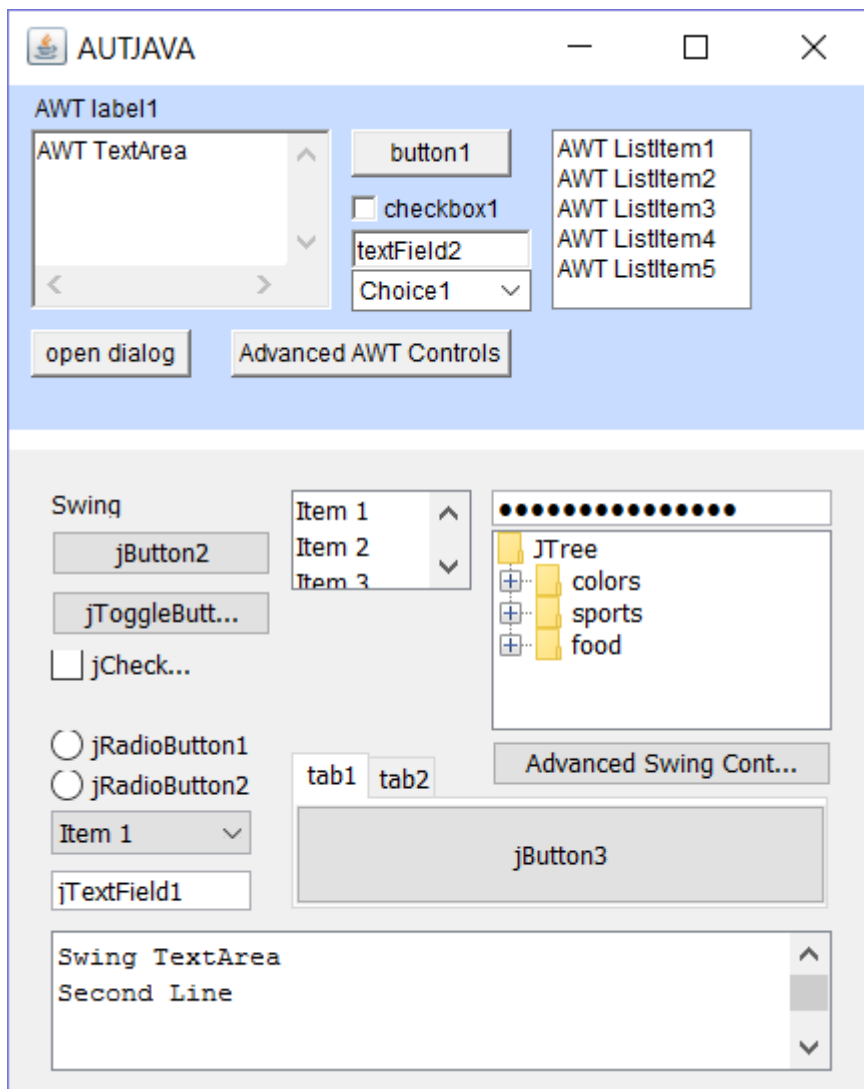
This version of the tutorial uses the **Rapise Visual Language (RVL) scriptless** mode. If you're interested in the [JavaScript version](#), we have a separate tutorial.

Example 1 - Launching the Sample AWT/Swing Application

On the [Start Page](#) of Rapise, click on the **Fetch Samples** button to make sure you have all of the latest samples available.

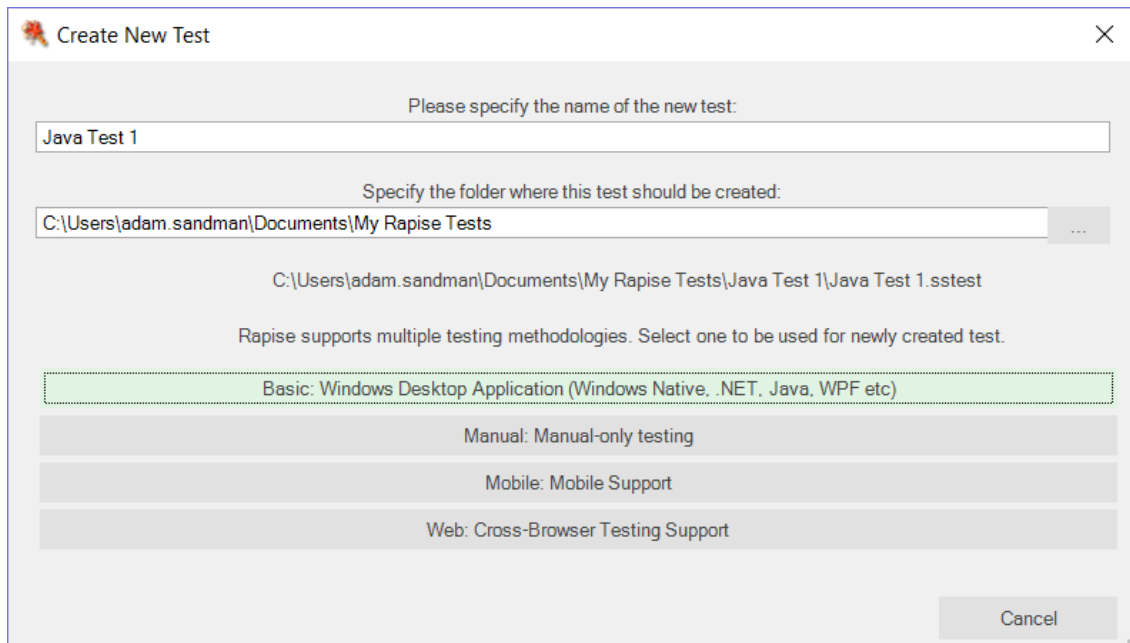
Then go to `C:\Users\Public\Documents\Rapise\Samples\Java\AUTJAVA` and right-click on the `x86run.cmd` file and choose **Run as Administrator**.

If you have Java configured correctly, you will see:



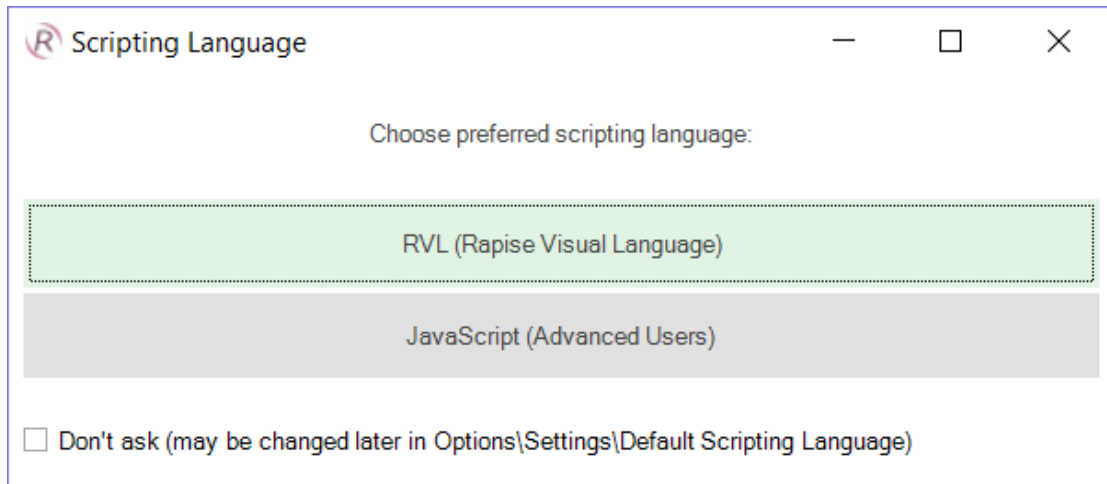
If the application doesn't start correctly, make sure you have Java SE and the [Rapise Java Bridge](#) installed and the `JAVA_HOME` environment variable correctly set to your Java Runtime (JRE). For more details on this, please refer to: [Java AWT/Swing Testing](#).

Once the application is started, open up Rapise and click on **FILE** > Create New Test:



Enter the name "Java Test 1" as the name and choose **Basic: Windows Desktop Application** as the methodology.

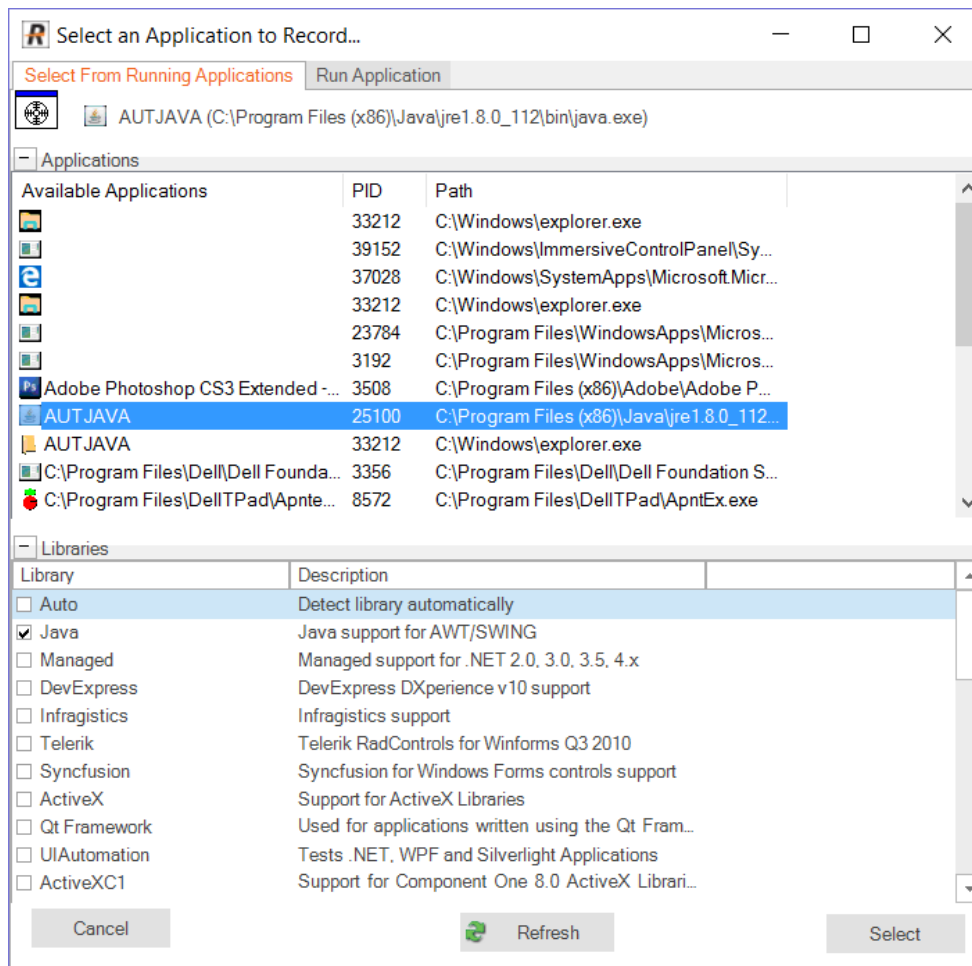
On the next page, choose **Rapise Visual Language (RVL)** as the choice of Scripting language:



Once the test is created, you will see:

	Flow	Type	Object	Action	ParamName	ParamType	ParamValue	H
1	Flow	Type	Object	Action	Param Name	Param Type	Param Value	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
*								

Click on the **Record** button to display the ["Select an Application to Record"](#) dialog:



Choose the **AUT JAVA** process from the list of running applications, change the library selection from Auto to **"Java"** and click **Select**.

Now in the sample application click on some of the AWT and/or Swing controls. Rapise will record the actions:

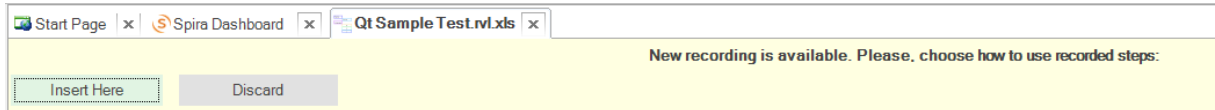
Recording Activity for "AUTJAVA"				
#	Object	Action	Data	Comment
1	button1	Action		Press button 'button1'
2	advAwtCo...	Action		Press button 'advAwtControls'
4	list0	Sele...	false	Do SelectItem(false) on list0
4	jButton2	Action		Press button 'jButton2'
5	jTabbedP...	LClick	52,10	User clicks at 52, 10 in 'jTabbedPane1'

Verify (Ctrl+1)
Learn (Ctrl+2)
SPY (Ctrl+5)
Pause
Finish (Ctrl+3)
Cancel

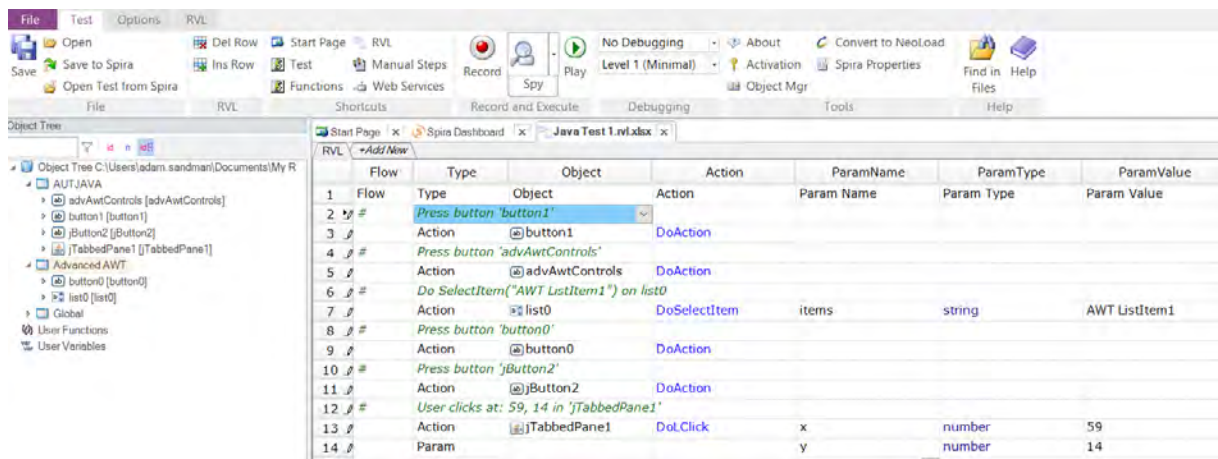
Last captured: JavaObject (jTabbedPane1)
Advanced>> Transparent

When you click **Finish**, you will see the recorded test script and learned objects:

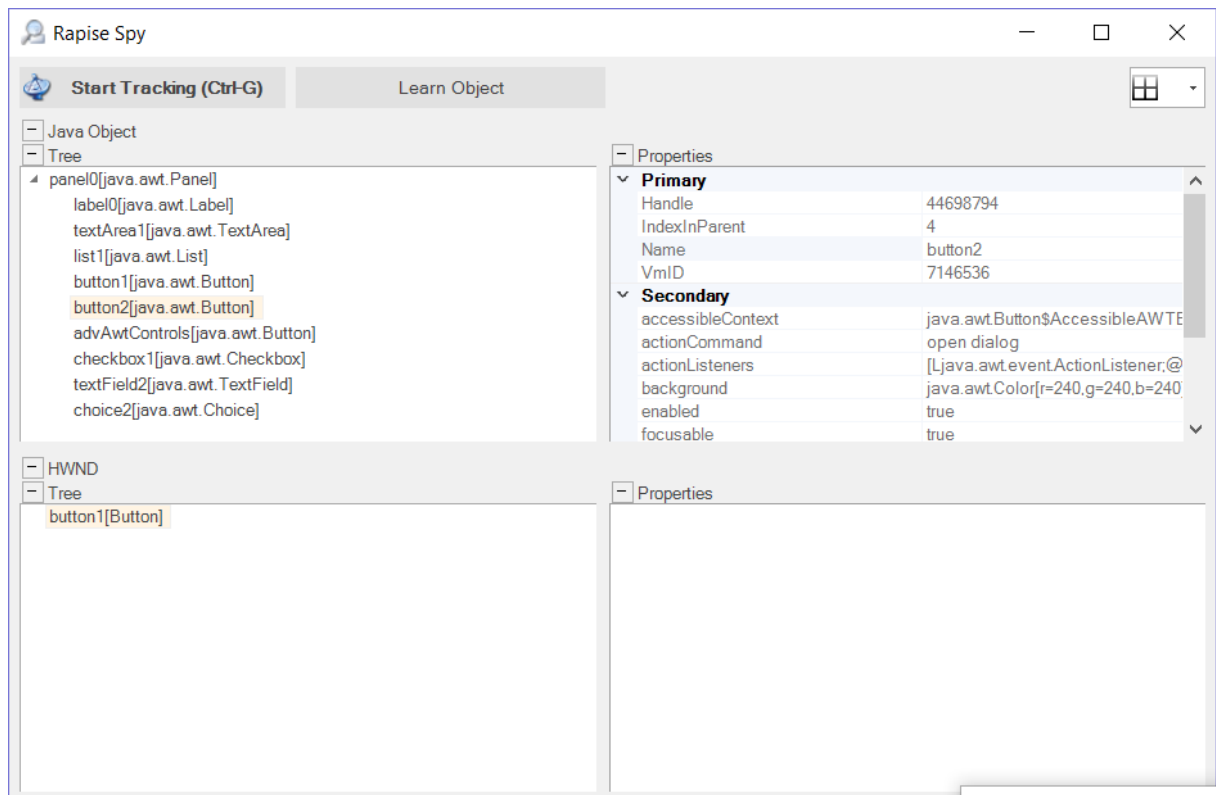
When you click **Finish**, Rapise will prompt you to confirm where you want the recorded test steps to be placed:



Select the first row in the test grid and click **Insert Here**. You will see the recorded test script and learned objects in Rapise:



When you click **Play**, Rapise will play back your test script against the application:



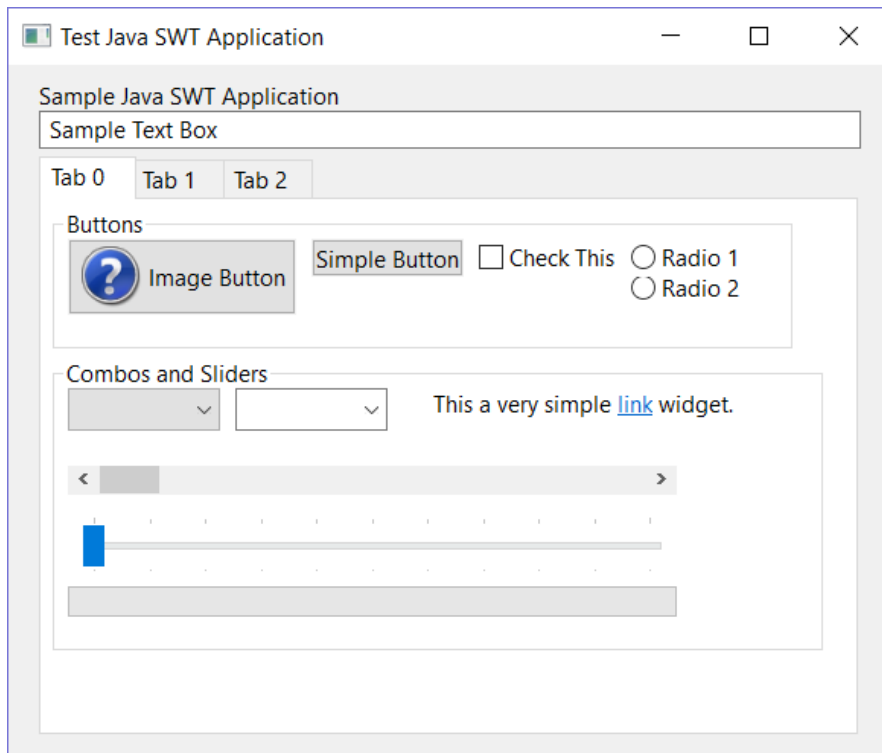
You can then use the [Java Spy](#) to track and find objects in the application hierarchy. You can navigate to parent objects by right-clicking on them and choosing **Parent**. Once you have found the desired object, click on the **Learn Object** in the Spy toolbar and Rapise will add the object in the Spy to the list of learned objects that you can test against.

Example 2 - Launching the Sample SWT Application

On the [Start Page](#) of Rapise, click on the **Fetch Samples** button to make sure you have all of the latest samples available.

Then go to `C:\Users\Public\Documents\Rapise\Samples\JavaSWT\AUTJavaSWT` and double-click on the `JavaSWTAUT.bat` file to start the sample application:

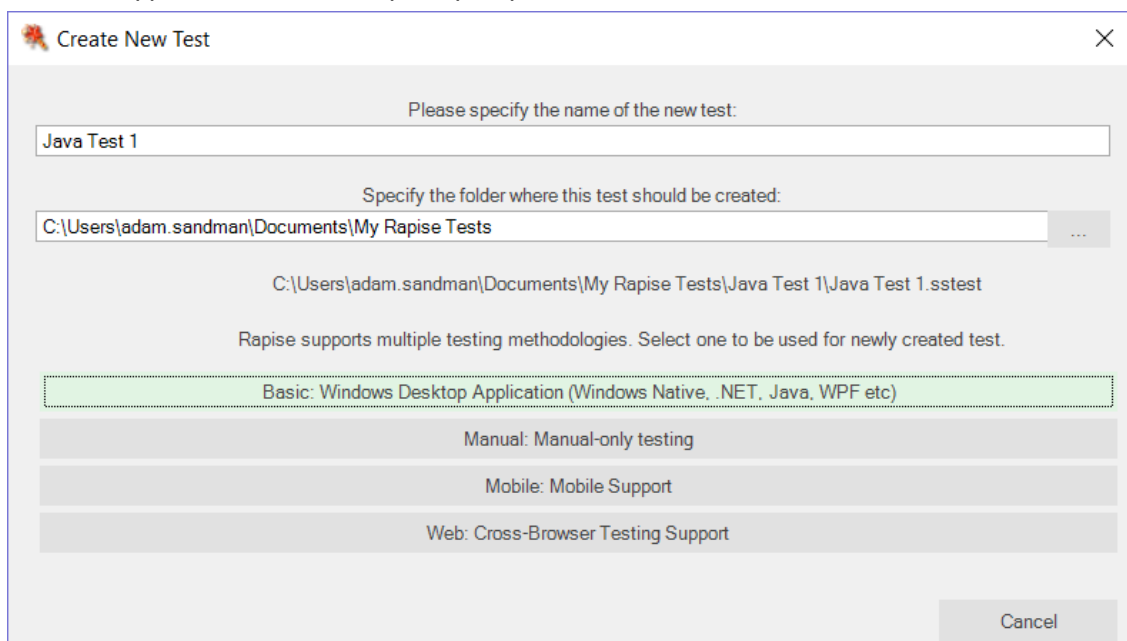
If you have Java configured correctly, you will see:



If the application doesn't start correctly, make sure you have Java SE installed and the JAVA_HOME environment variable correctly set to your Java Runtime (JRE). For more details on this, please refer to: [Java SWT Testing](#).

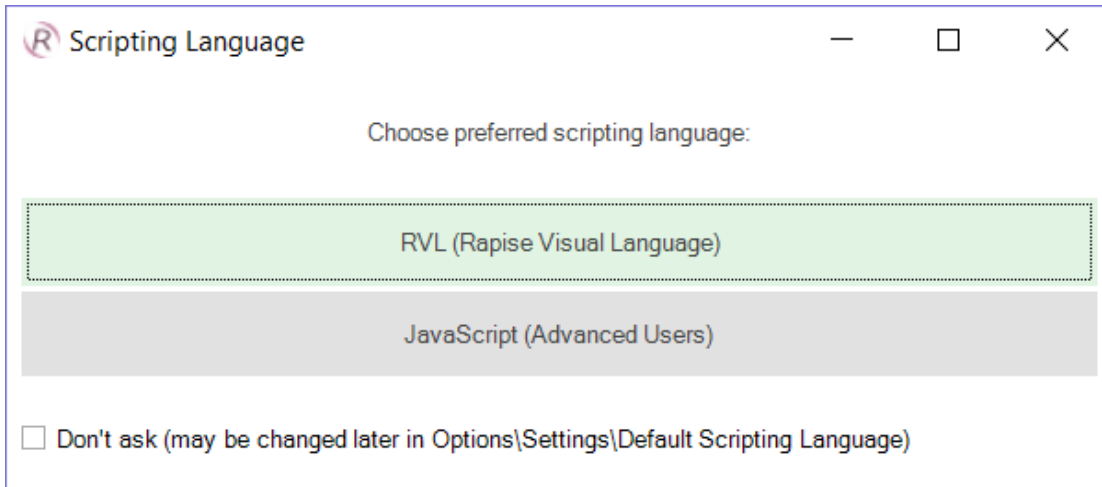
Once the application is started, open up Rapise and click on **FILE** > Create New Test:

Once the application is started, open up Rapise and click on **FILE** > Create New Test:



Enter the name "Java Test 2" as the name and choose **Basic: Windows Desktop Application** as the methodology.

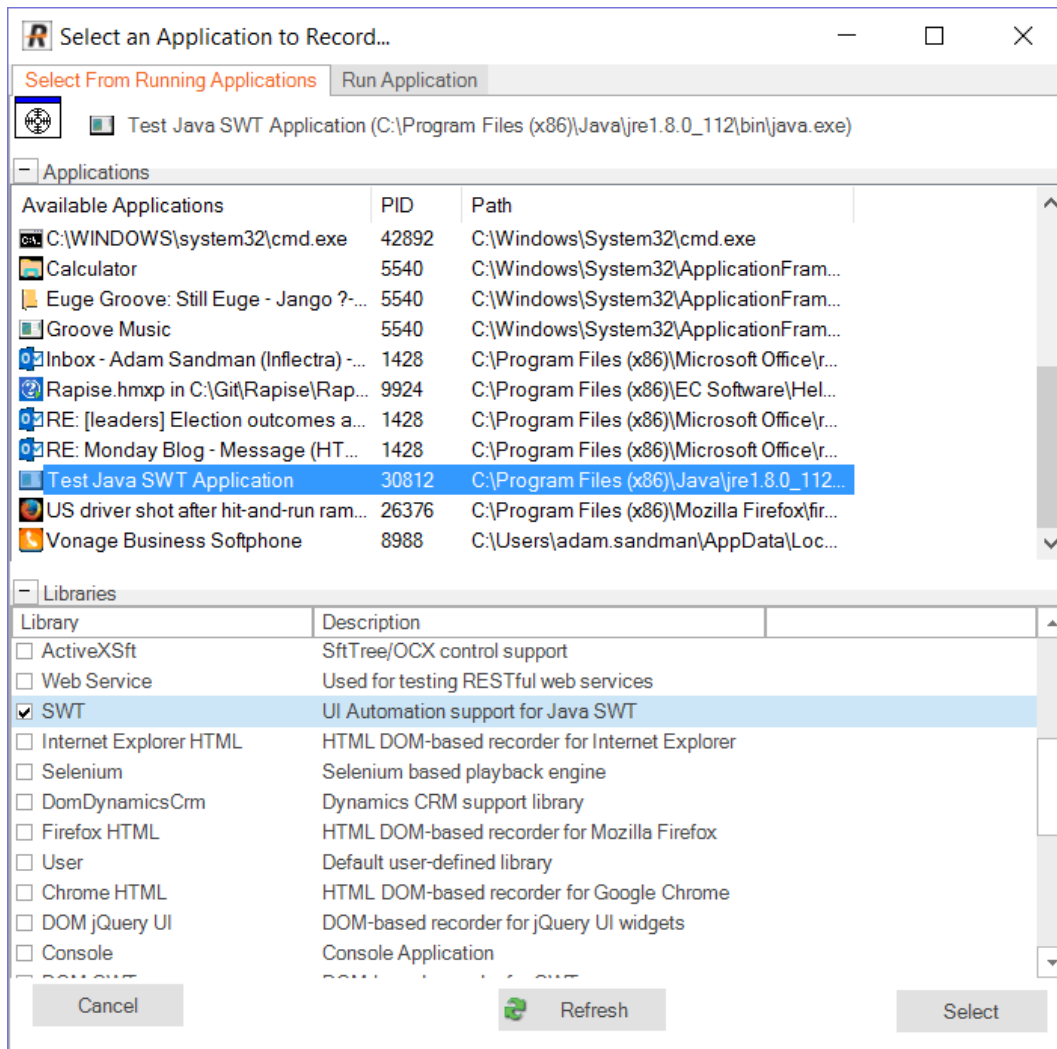
On the next page, choose **Rapise Visual Language (RVL)** as the choice of Scripting language:



Once the test is created, you will see:

	Flow	Type	Object	Action	ParamName	ParamType	ParamValue	H
1	Flow	Type	Object	Action	Param Name	Param Type	Param Value	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
*								

Click on the **Record** button to display the ["Select an Application to Record"](#) dialog:



Choose the **Test Java SWT Application** from the list of running applications, change the library selection from Auto to **"SWT"** and click **Select**.

Now in the sample application click on some of the SWT controls. Rapise will record the actions:

Recording Activity for "Test Java SWT Application"

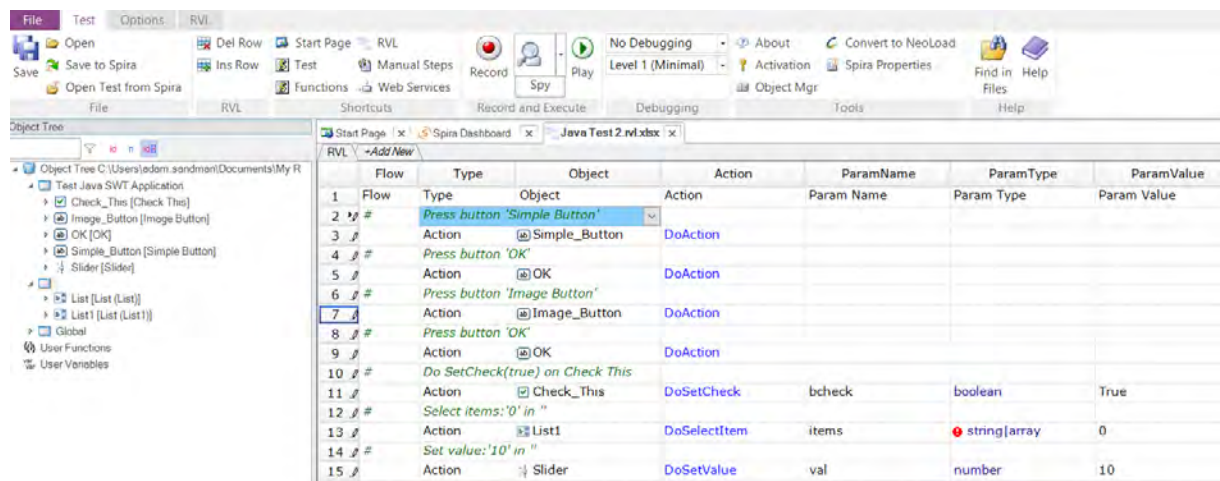
#	Object	Action	Data	Comment
2	OK	Action		Press button 'OK'
3	Simple Bu...	Action		Press button 'Simple Button'
4	OK	Action		Press button 'OK'
5	List	SelectItem	0	Select items:'0' in "
6	Slider	SetValue	10	Set value:'10' in "

Last captured: UIASlider () Transparent

When you click **Finish**, Rapise will prompt you to confirm where you want the recorded test steps to be placed:



Select the first row in the test grid and click **Insert Here**. You will see the recorded test script and learned objects in Rapise:



When you click **Play**, Rapise will play back your test script against the application:

Start Page Java Test 2.js Java Test 2_2016-12-30_15-51.tr

Drag a column header here C:\Users\adam.sandman\Documents\My Rapise Tests\Java Test 2\Reports\Java Test 2_2016-12-30_15-51.trp

#	Type	Start	Name	Status	Comment
	Message	15:51:20.765	Starting scenario: Test	Info	
	Assert	15:51:21.294	Image Button.DoAction([])	Pass	Returned Value: true
	Assert	15:51:21.762	OK.DoAction([])	Pass	Returned Value: true
	Assert	15:51:22.265	Simple Button.DoAction([])	Pass	Returned Value: true
	Assert	15:51:22.716	OK.DoAction([])	Pass	Returned Value: true
	Assert	15:51:23.310	ComboBox.DoSelectedItem(["Alpha"])	Pass	Returned Value: true
	Assert	15:51:24.030	Slider.DoSetValue([10])	Pass	Returned Value: true
#	Test	15:51:24.036	Java Test 2	Pass	Passed:6 Failed:0

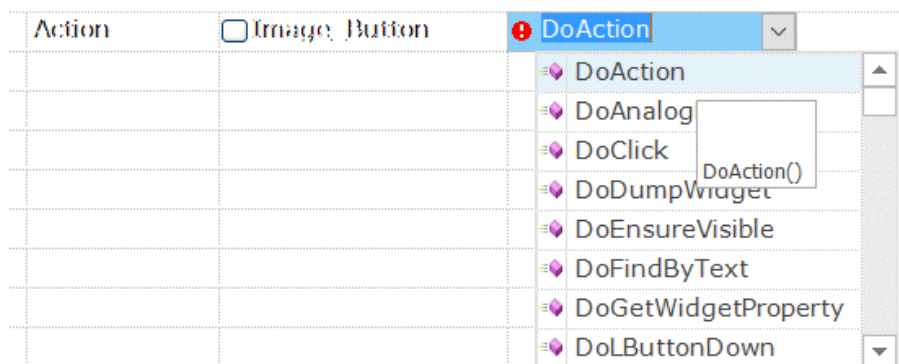
Test Pass
Total: 8 Pass: 7 Fail: 0 Info: 1

You can add steps to your script using any of the learned objects from the left-hand page (or any of the standard Global utility objects).

To do this, click on the blank row at the end of the recording and choose the following options from the dropdown lists in that row, for example:

- Type = Action
- Object = Image_Button
- Action = DoAction

This process is illustrated below:



You can drag and drop any of the learned objects from the left-hand pane into the main test script. You can also just type **SeS("OK")** (for example) and Rapise will display the list of available functions.

When you click **Play**, Rapise will play back your test script against the application:

Start Page Java Test 2.js Java Test 2_2016-12-30_15-51.tr

Drag a column header here C:\Users\adam.sandman\Documents\My Rapise Tests\Java Test 2\Reports\Java Test 2_2016-12-30_15-51.trp

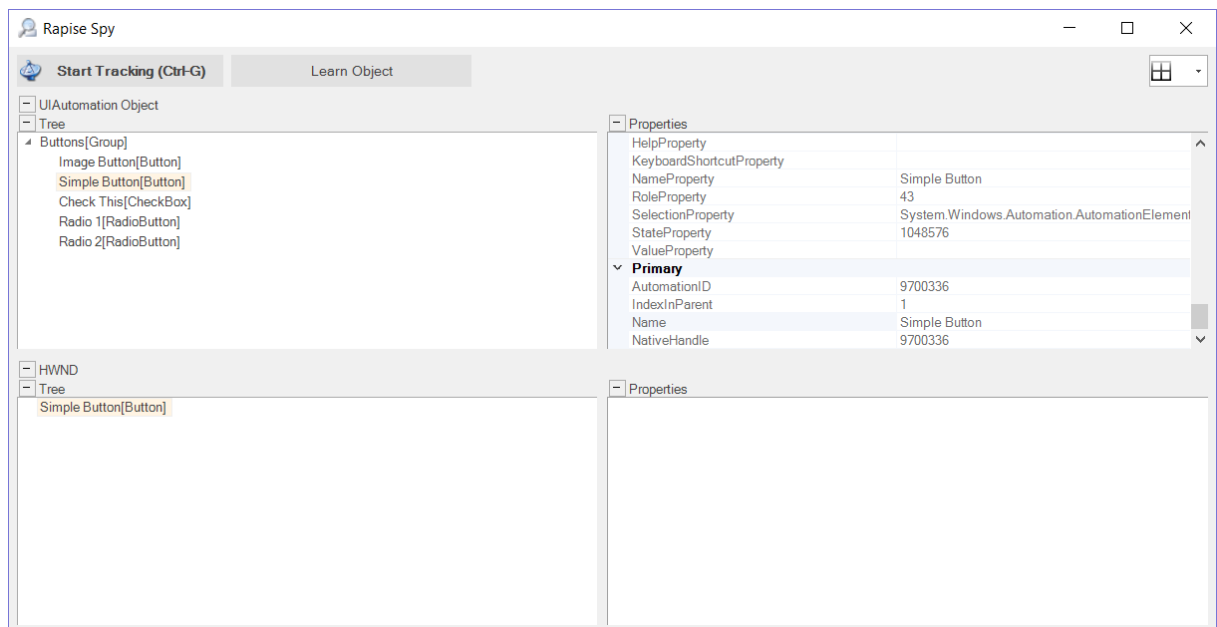
#	Type	Start	Name	Status	Comment
	Message	15:51:20.765	Starting scenario: Test	Info	
	Assert	15:51:21.294	Image Button.DoAction([])	Pass	Returned Value: true
	Assert	15:51:21.762	OK.DoAction([])	Pass	Returned Value: true
	Assert	15:51:22.265	Simple Button.DoAction([])	Pass	Returned Value: true
	Assert	15:51:22.716	OK.DoAction([])	Pass	Returned Value: true
	Assert	15:51:23.310	ComboBox.DoSelectedItem(["Alpha"])	Pass	Returned Value: true
	Assert	15:51:24.030	Slider.DoSetValue([10])	Pass	Returned Value: true
	Test	15:51:24.036	Java Test 2	Pass	Passed:6 Failed:0

Test Pass
Total: 8 Pass: 7 Fail: 0 Info: 1

Sometimes you need to learn objects that are not visible or are obscured by other objects. To help with this, Rapise has the Object Spy tool.

The Spy tool lets you see the objects in the application in a hierarchy that you can learn.

When you are in the middle of recording, click on the **Spy** button and Rapise will display the [UIAutomation Spy](#):



You can then use the [UIAutomation Spy](#) to track and find objects in the application hierarchy. You can navigate to parent objects by right-clicking on them and choosing **Parent**. Once you have found the desired object, click on the **Learn Object** in the Spy toolbar and Rapise will add the object in the Spy to the list of learned objects that you can test against.

References

- [Java AWT/Swing Testing](#)
- [Java SWT Testing](#)

2.2.9.1 Using JavaScript

In this section, you will learn how to record and execute a Rapise script against a Java application. We will show you how to test the following three different types of Java application:

- Java AWT Apps
- Java Swing Apps
- Java SWT Apps

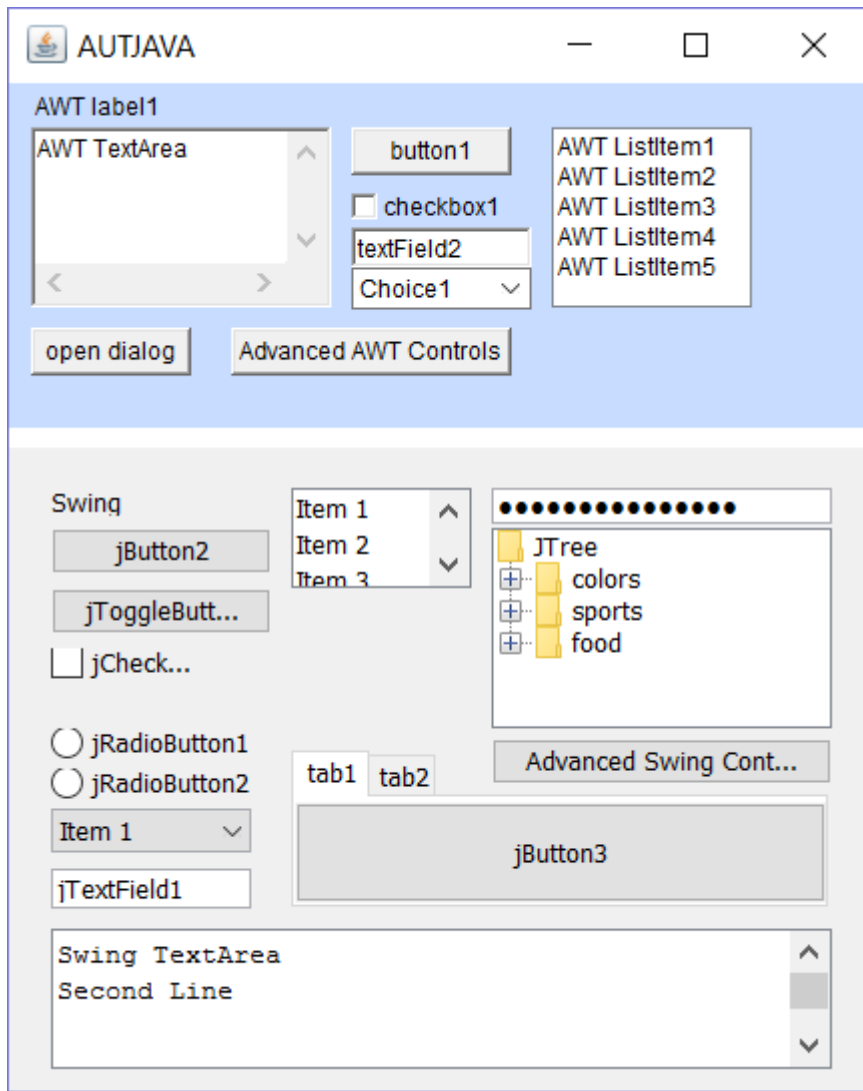
This version of the tutorial uses the JavaScript test editor option in Rapise. If you'd prefer to use the [Rapise Visual Language \(RVL\)](#), please go to the main [Tutorial](#) instead.

Example 1 - Launching the Sample AWT/Swing Application

On the [Start Page](#) of Rapise, click on the **Fetch Samples** button to make sure you have all of the latest samples available.

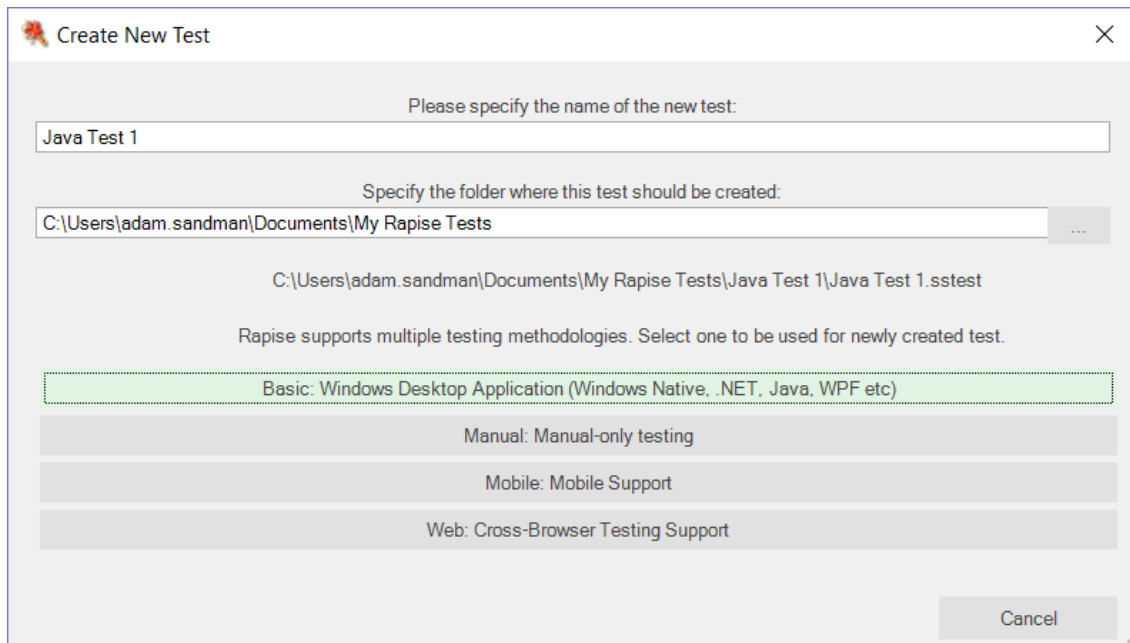
Then go to `C:\Users\Public\Documents\Rapise\Samples\Java\AUTJAVA` and right-click on the `x86run.cmd` file and choose **Run as Administrator**.

If you have Java configured correctly, you will see:



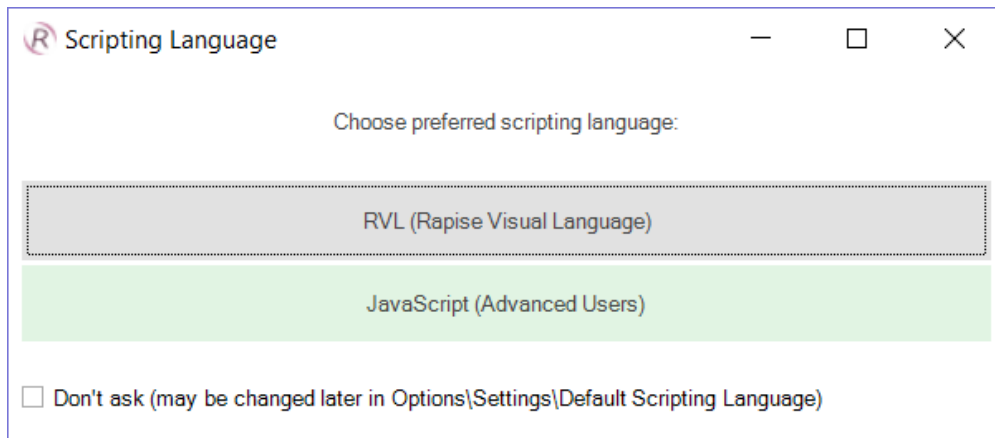
If the application doesn't start correctly, make sure you have Java SE and the [Rapise Java Bridge](#) installed and the JAVA_HOME environment variable correctly set to your Java Runtime (JRE). For more details on this, please refer to: [Java AWT/Swing Testing](#).

Once the application is started, open up Rapise and click on **FILE** > Create New Test:

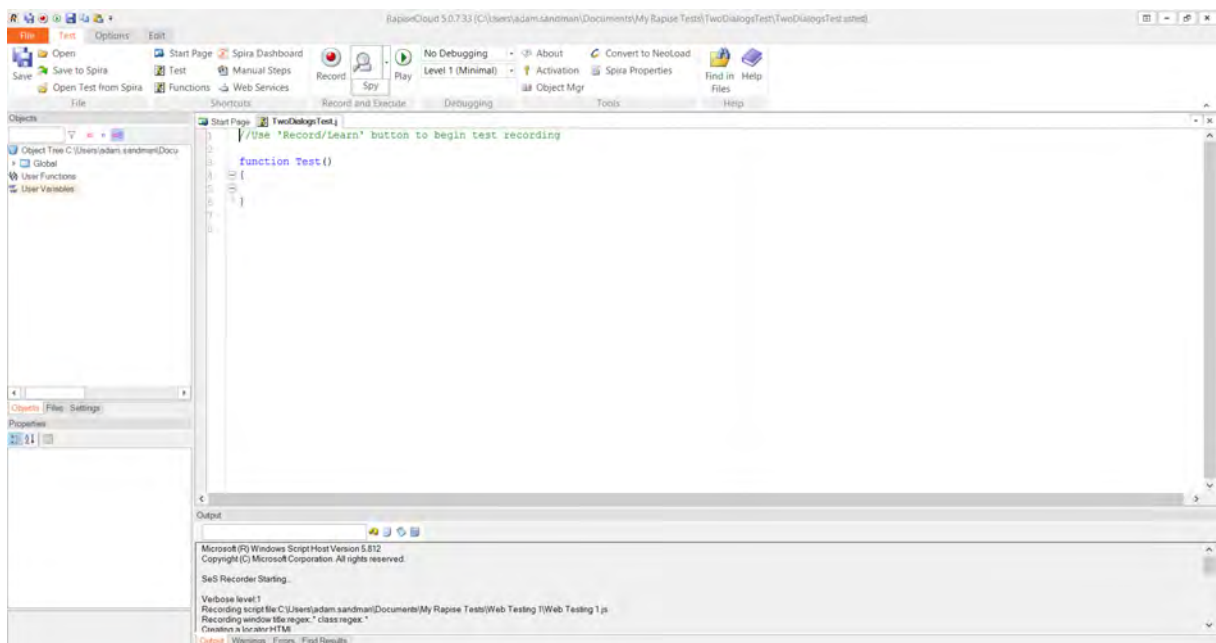


Enter the name "Java Test 1" as the name and choose **Basic: Standard Scripting Mode** as the methodology.

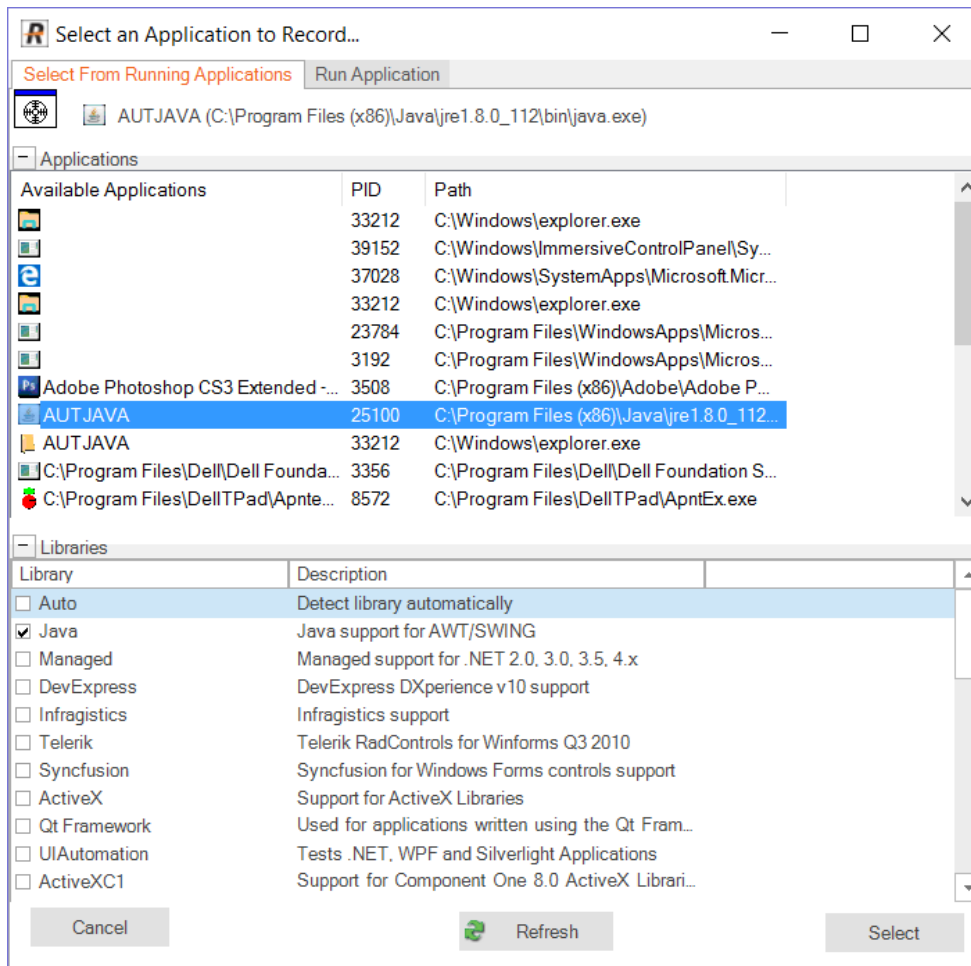
Choose the **JavaScript** option during test creation instead of RVL.



Once the test is created, you will set:



Click on the **Record** button to display the ["Select an Application to Record"](#) dialog:



Choose the **AUT JAVA** process from the list of running applications, change the library selection from Auto to **"Java"** and click **Select**.

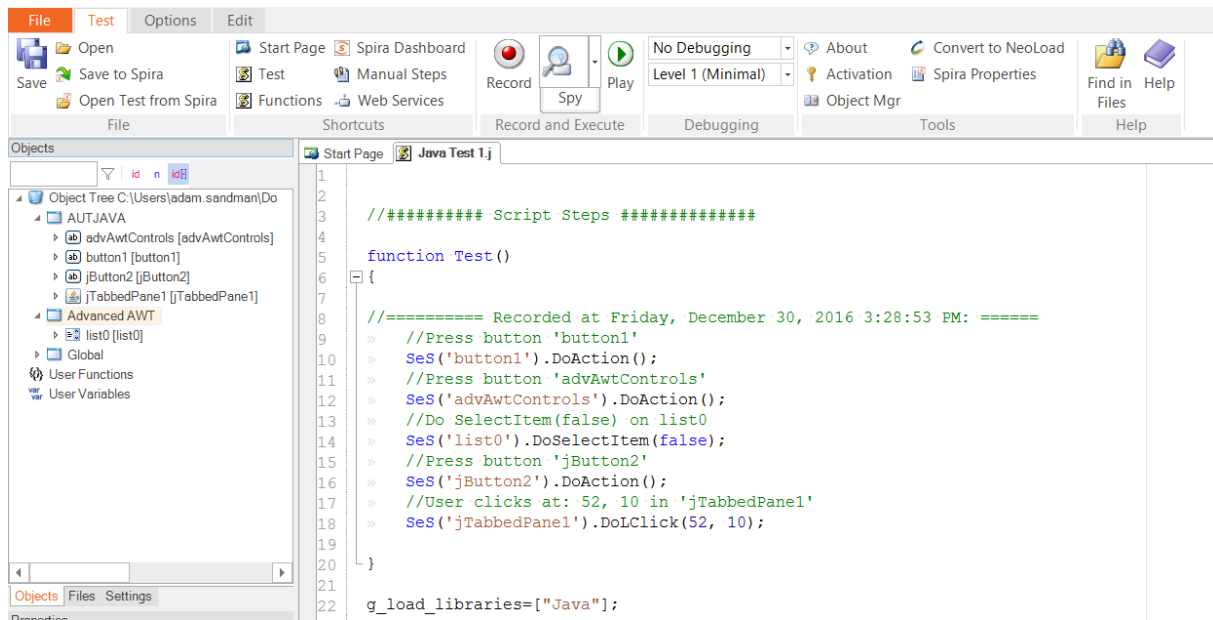
Now in the sample application click on some of the AWT and/or Swing controls. Rapise will record the actions:

Recording Activity for "AUTJAVA"				
#	Object	Action	Data	Comment
1	button1	Action		Press button 'button1'
2	advAwtCo...	Action		Press button 'advAwtControls'
4	list0	Sele...	false	Do SelectItem(false) on list0
4	jButton2	Action		Press button 'jButton2'
5	jTabbedP...	LClick	52,10	User clicks at 52, 10 in 'jTabbedPane1'

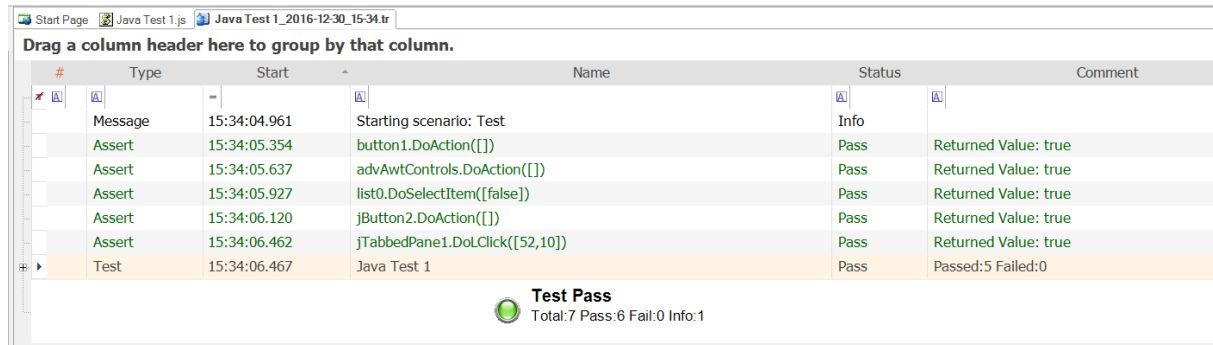
Verify (Ctrl+1)	Learn (Ctrl+2)	SPY (Ctrl+5)	Pause	Finish (Ctrl+3)	Cancel
-----------------	----------------	--------------	-------	-----------------	--------

Last captured: JavaObject (jTabbedPane1) Advanced>> Transparent

When you click **Finish**, you will see the recorded test script and learned objects:



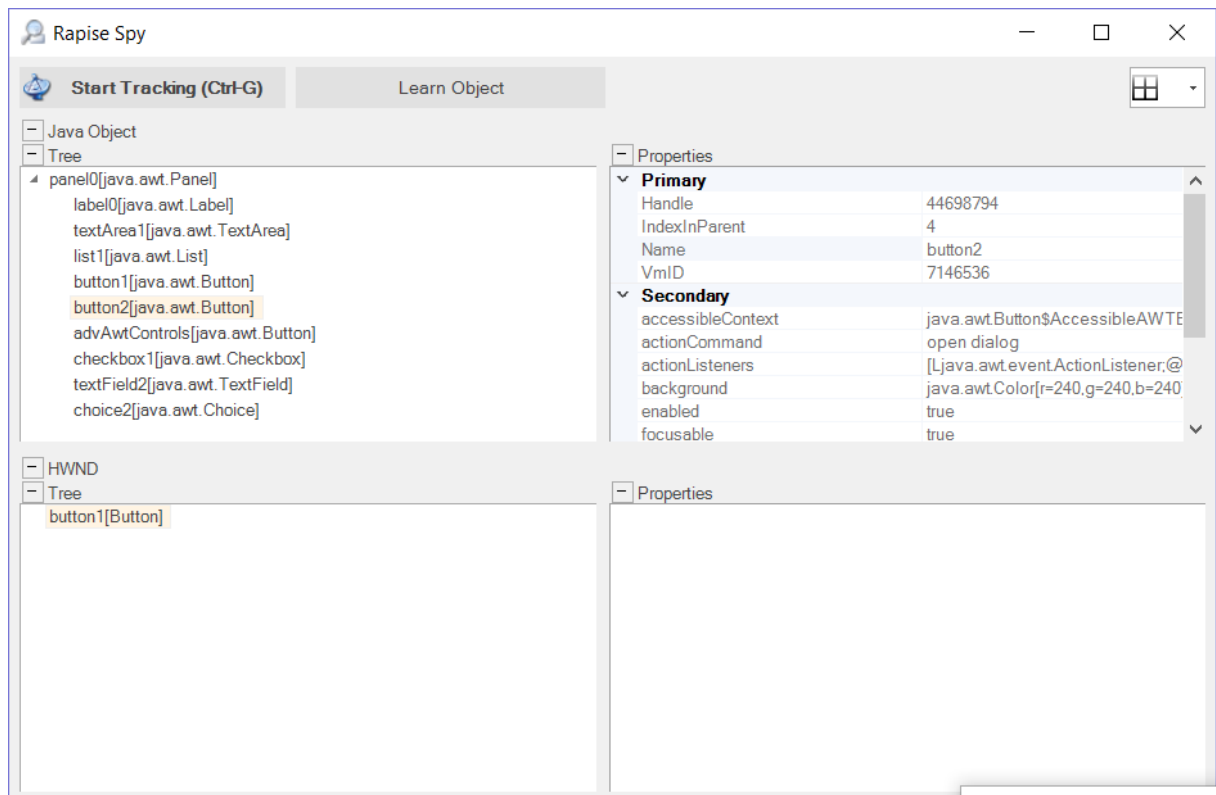
You can drag and drop any of the learned objects from the left-hand pane into the main test script. You can also just type **SeS("button1")** (for example) and Rapise will display the list of available functions. When you click **Play**, Rapise will play back your test script against the application:



Sometimes you need to learn objects that are not visible or are obscured by other objects. To help with this, Rapise has the Object Spy tool.

The Spy tool lets you see the objects in the application in a hierarchy that you can learn.

When you are in the middle of recording, click on the **Spy** button and Rapise will display the [Java Spy](#):



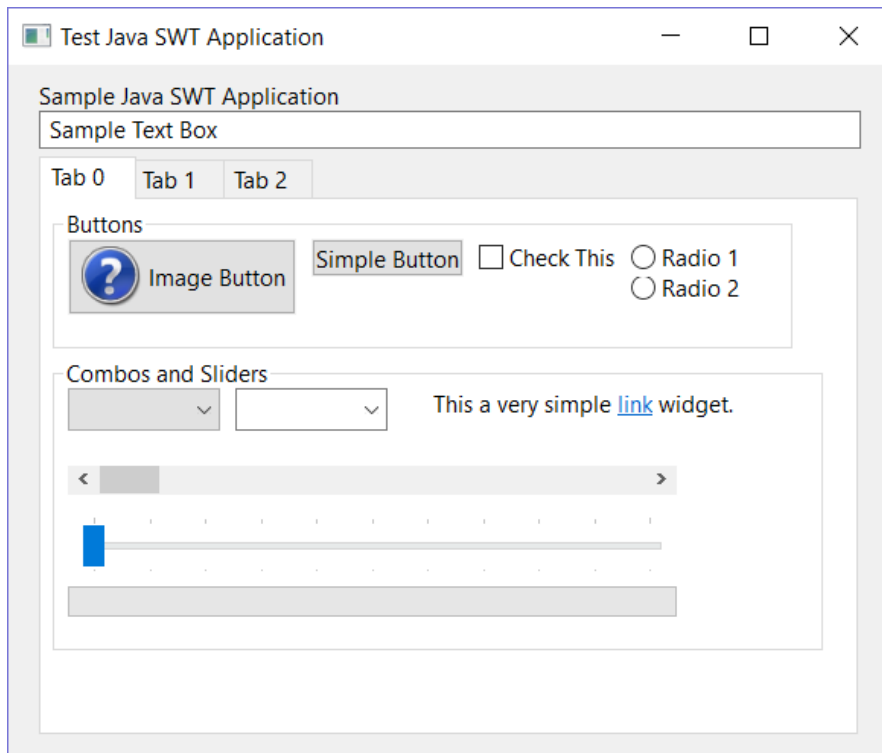
You can then use the [Java Spy](#) to track and find objects in the application hierarchy. You can navigate to parent objects by right-clicking on them and choosing **Parent**. Once you have found the desired object, click on the **Learn Object** in the Spy toolbar and Rapise will add the object in the Spy to the list of learned objects that you can test against.

Example 2 - Launching the Sample SWT Application

On the [Start Page](#) of Rapise, click on the **Fetch Samples** button to make sure you have all of the latest samples available.

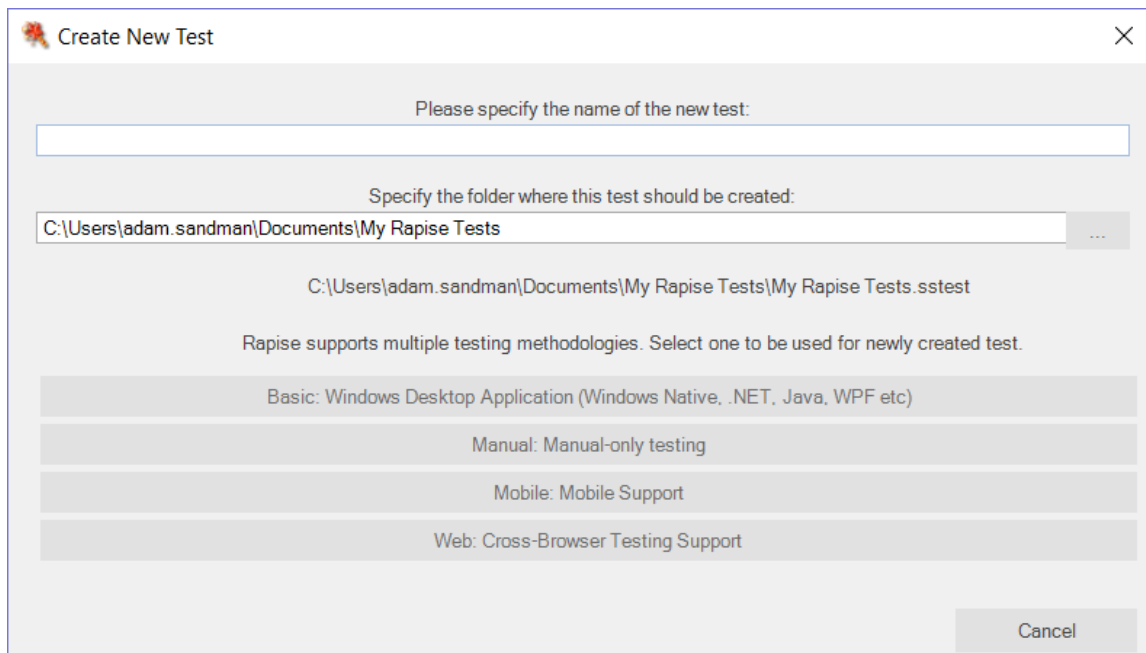
Then go to `C:\Users\Public\Documents\Rapise\Samples\JavaSWT\AUTJavaSWT` and double-click on the `JavaSWTAUT.bat` file to start the sample application:

If you have Java configured correctly, you will see:



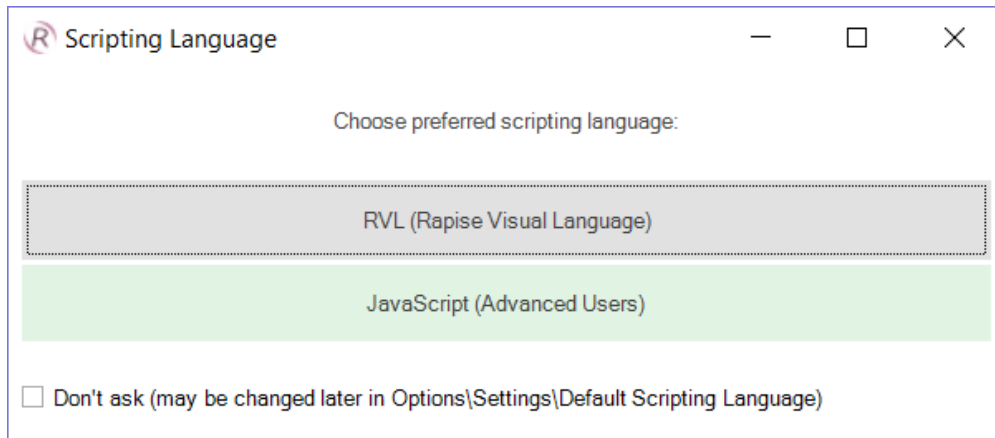
If the application doesn't start correctly, make sure you have Java SE installed and the JAVA_HOME environment variable correctly set to your Java Runtime (JRE). For more details on this, please refer to: [Java SWT Testing](#).

Once the application is started, open up Rapise and click on **FILE** > Create New Test:

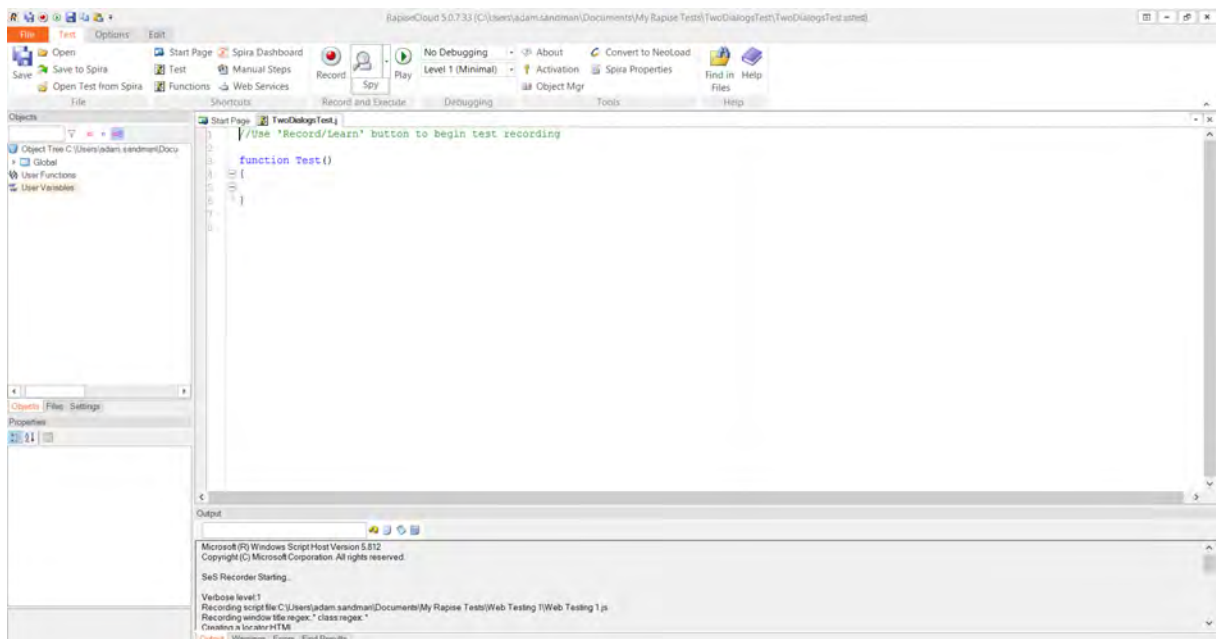


Enter the name "Java Test 2" as the name and choose **Basic: Windows Desktop Application** as the methodology.

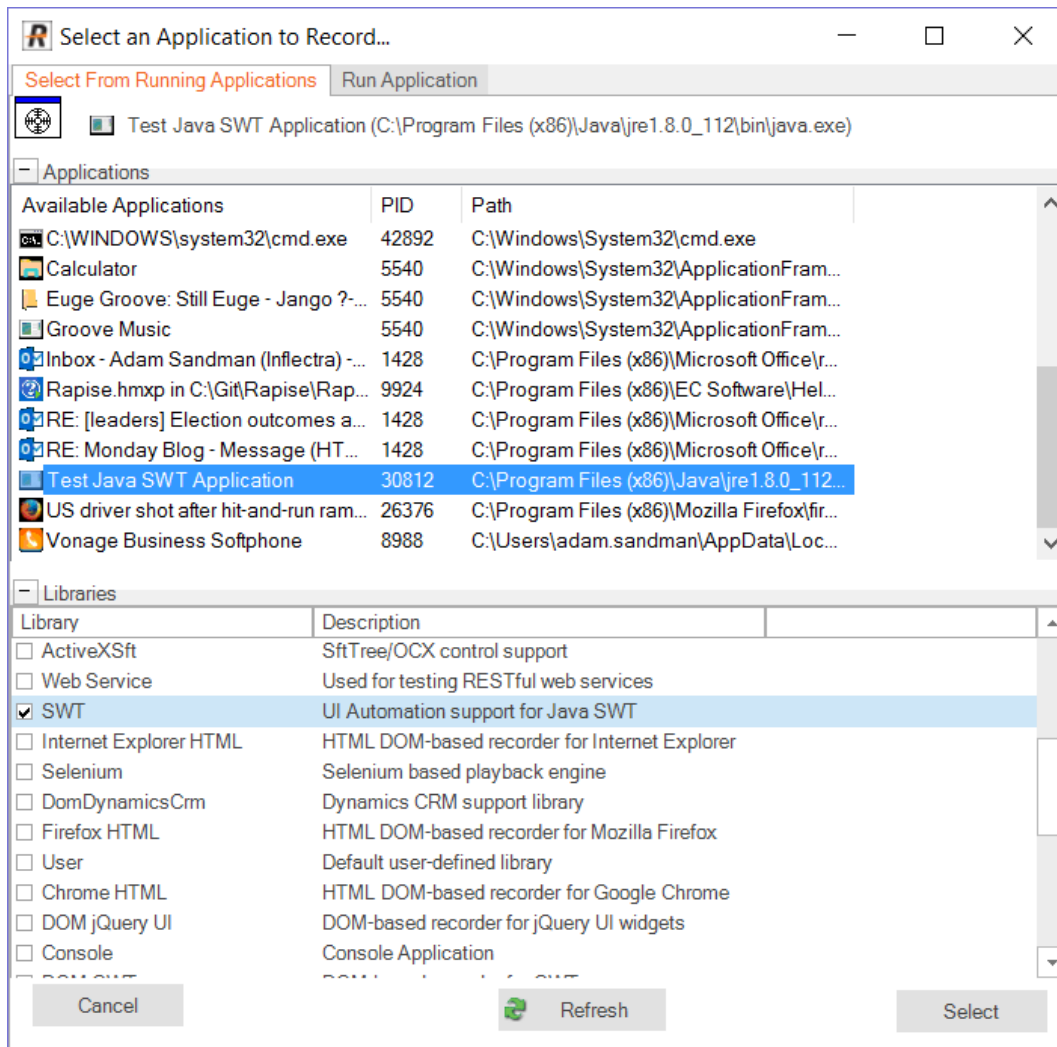
Choose the **JavaScript** option during test creation instead of RVL.



Once the test is created, you will see:



Click on the **Record** button to display the ["Select an Application to Record"](#) dialog:



Choose the **Test Java SWT Application** from the list of running applications, change the library selection from Auto to **"SWT"** and click **Select**.

Now in the sample application click on some of the SWT controls. Rapise will record the actions:

Recording Activity for "Test Java SWT Application"				
#	Object	Action	Data	Comment
2	OK	Action		Press button 'OK'
3	Simple Bu...	Action		Press button 'Simple Button'
4	OK	Action		Press button 'OK'
5	List	SelectItem	0	Select items:'0' in "
6	Slider	SetValue	10	Set value:'10' in "

Verify (Ctrl+1) Learn (Ctrl+2) SPY (Ctrl+5) Pause Finish (Ctrl+3) Cancel

Last captured: UIASlider () Advanced>> Transparent

When you click **Finish**, you will see the recorded test script and learned objects:

The screenshot shows the Rapise interface with the recorded test script and learned objects. The interface includes a menu bar with options like Open, Save, Open Test from Spira, Test, Manual Steps, Functions, Web Services, Record, Spy, Play, No Debugging, Level 1 (Minimal), About, Convert to NeoLoad, Activation, Spira Properties, Object Mgr, Find in Files, and Help. The main window displays the recorded test script for "Test Java SWT Application". The script is as follows:

```

2
3 //##### Script Steps #####
4
5 function Test()
6 {
7 //===== Recorded at Friday, December 30, 2016 3:47:17 PM: =====
8 > //Press button 'Image Button'
9 > Ses('Image_Button').DoAction();
10 > //Press button 'OK'
11 > Ses('OK').DoAction();
12 > //Press button 'Simple Button'
13 > Ses('Simple_Button').DoAction();
14 > //Press button 'OK'
15 > Ses('OK').DoAction();
16 > //Select items:'Alpha' in ''
17 > Ses('ComboBox').DoSelectItem("Alpha");
18 > //Set value:'10' in ''
19 > Ses('Slider').DoSetValue(10);
20 }
21
22 g_load_libraries=["SWT"];
23
  
```

The left-hand pane shows the Object Tree with the following structure:

- Object Tree C:\Users\adam.sandman\Do
 - Test Java SWT Application
 - ComboBox [ComboBox]
 - Image_Button [Image Button]
 - OK [OK]
 - Simple_Button [Simple Button]
 - Slider [Slider]
 - List [List]
 - Global
 - User Functions
 - User Variables

You can drag and drop any of the learned objects from the left-hand pane into the main test script. You can also just type **Ses("OK")** (for example) and Rapise will display the list of available functions.

When you click **Play**, Rapise will play back your test script against the application:

Start Page Java Test 2.js Java Test 2_2016-12-30_15-51.tr

Drag a column header here C:\Users\adam.sandman\Documents\My Rapise Tests\Java Test 2\Reports\Java Test 2_2016-12-30_15-51.trp

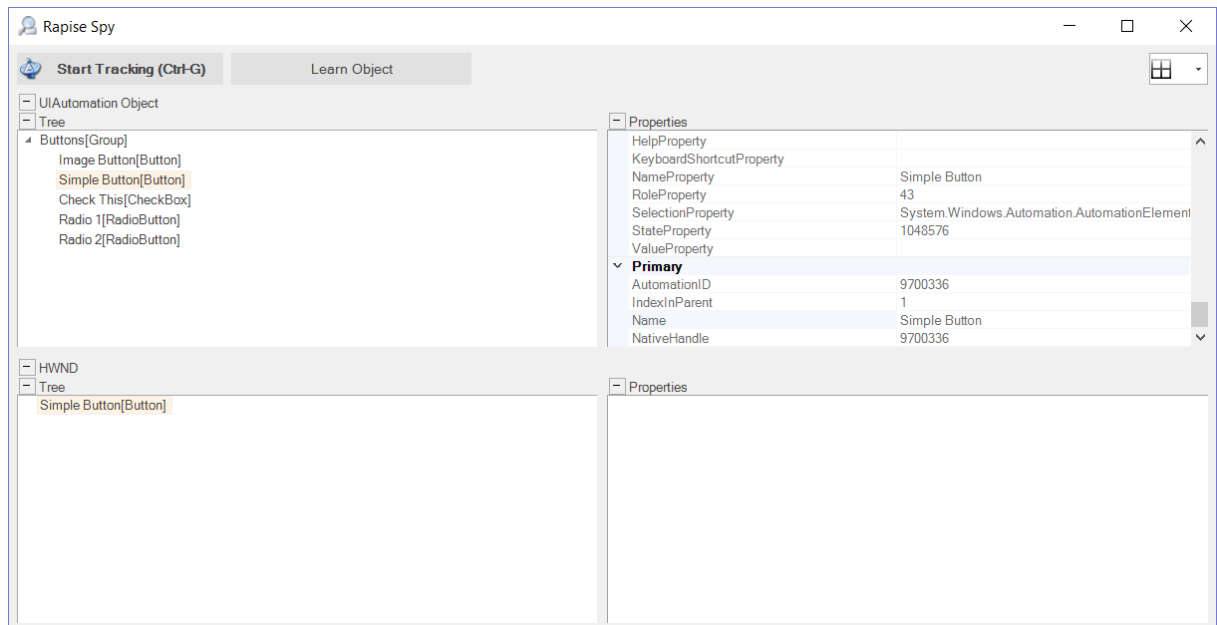
#	Type	Start	Name	Status	Comment
	Message	15:51:20.765	Starting scenario: Test	Info	
	Assert	15:51:21.294	Image Button.DoAction([])	Pass	Returned Value: true
	Assert	15:51:21.762	OK.DoAction([])	Pass	Returned Value: true
	Assert	15:51:22.265	Simple Button.DoAction([])	Pass	Returned Value: true
	Assert	15:51:22.716	OK.DoAction([])	Pass	Returned Value: true
	Assert	15:51:23.310	ComboBox.DoSelectItem(["Alpha"])	Pass	Returned Value: true
	Assert	15:51:24.030	Slider.DoSetValue([10])	Pass	Returned Value: true
	Test	15:51:24.036	Java Test 2	Pass	Passed:6 Failed:0

Test Pass
Total: 8 Pass: 7 Fail: 0 Info: 1

Sometimes you need to learn objects that are not visible or are obscured by other objects. To help with this, Rapise has the Object Spy tool.

The Spy tool lets you see the objects in the application in a hierarchy that you can learn.

When you are in the middle of recording, click on the **Spy** button and Rapise will display the [UIAutomation Spy](#):



You can then use the [UIAutomation Spy](#) to track and find objects in the application hierarchy. You can navigate to parent objects by right-clicking on them and choosing **Parent**. Once you have found the desired object, click on the **Learn Object** in the Spy toolbar and Rapise will add the object in the Spy tool to the list of learned objects that you can test against.

References

- [Java AWT/Swing Testing](#)
- [Java SWT Testing](#)

2.2.10 Tutorial: Qt Framework

Rapise includes support for testing applications written using the Qt Framework written using QWidget controls.

To ensure that Rapise can access the UI elements and properties in the Qt application being tested, [MSAA \(Microsoft Active Accessibility\) support for your Qt application must be enabled](#). This provides additional information on Qt UI elements to automation software like Rapise and can be accomplished by shipping and loading the "Accessible Plug-in" included in the Qt SDK (Software Development Kit) with the Qt application under test (see below).

This tutorial illustrates the ability of Rapise to test such Qt applications using a sample application that already has the MSAA support added.

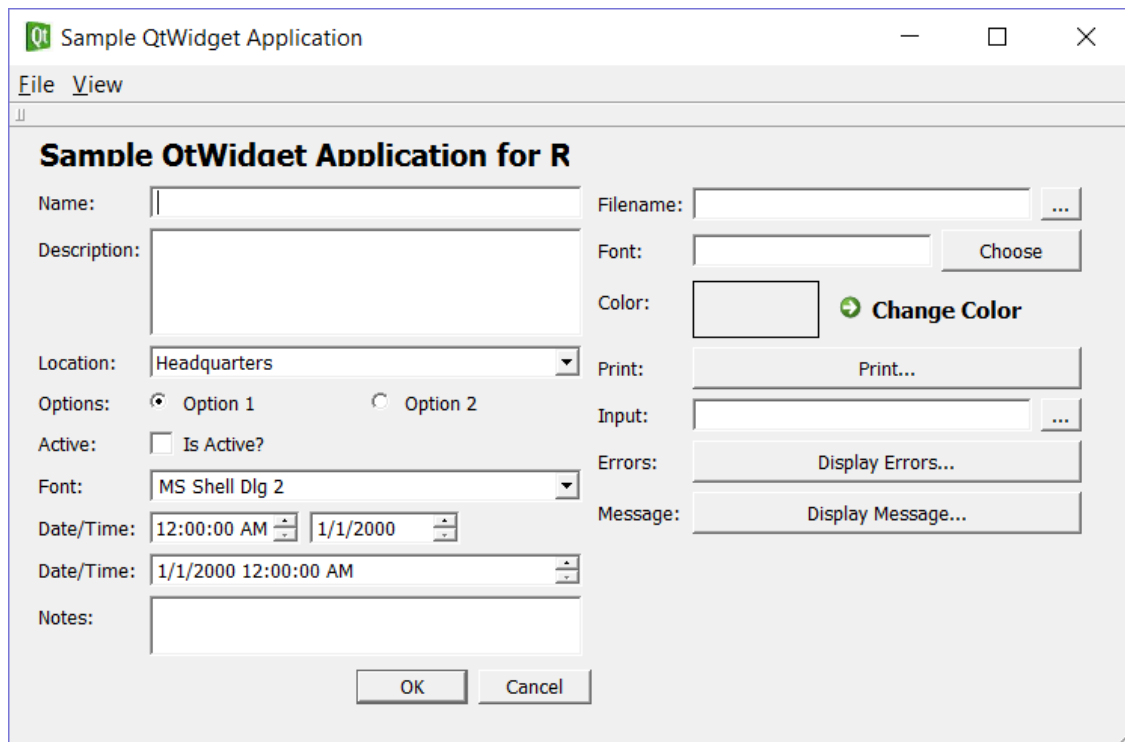
This version of the tutorial uses the **Rapise Visual Language (RVL) scriptless** mode. If you're interested in the [JavaScript version](#), we have a separate tutorial.

Testing the Sample Qt Application

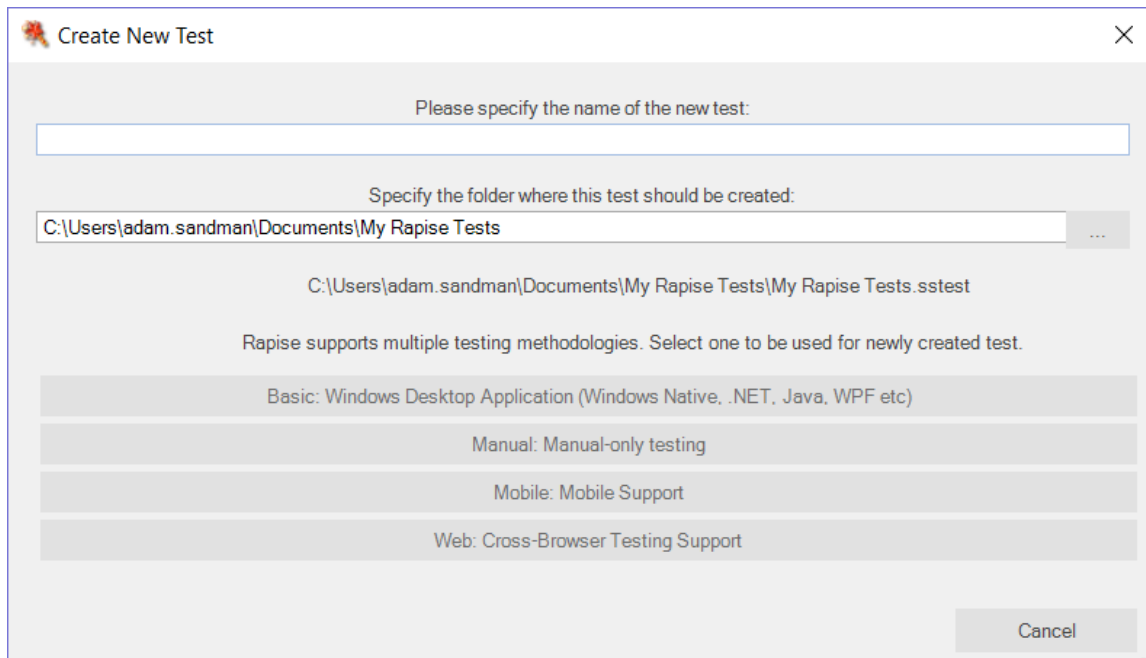
On the [Start Page](#) of Rapise, click on the **Fetch Samples** button to make sure you have all of the latest samples available.

Then go to `C:\Users\Public\Documents\Rapise\Samples\QtFramework` and double-click on the `QtWidgetApp.exe` file to start the sample application:

If you have everything configured correctly, you will see:

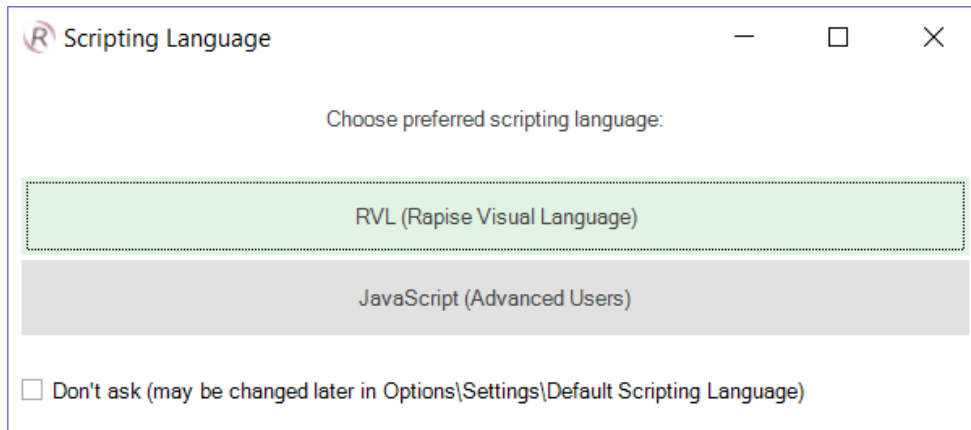


Once the application is started, open up Rapise and click on **FILE > Create New Test**:

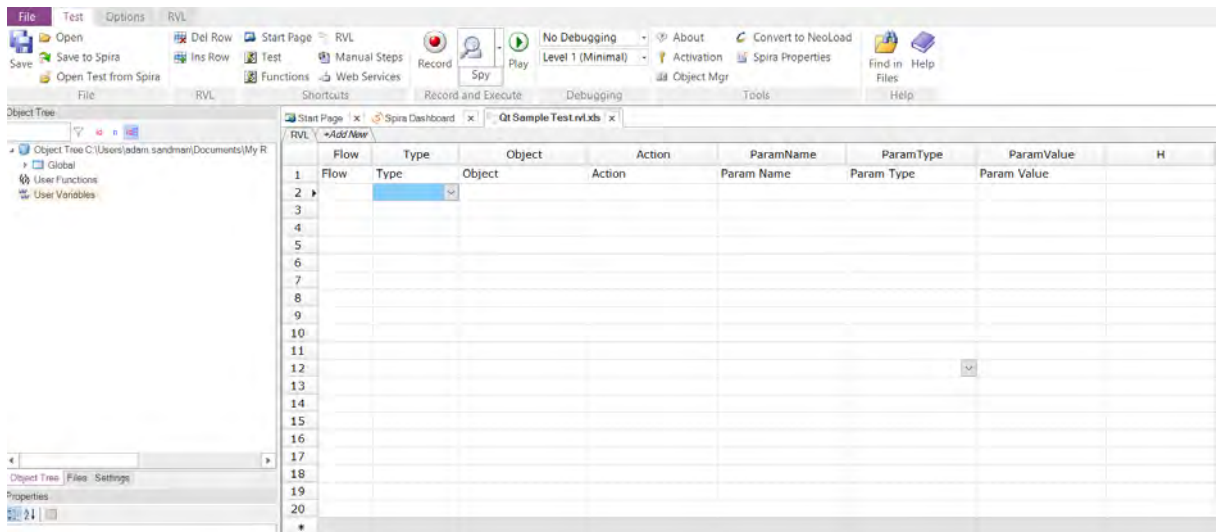


Enter the name "**Qt Sample Test**" as the name and choose **Basic: Windows Desktop Application** as the methodology.

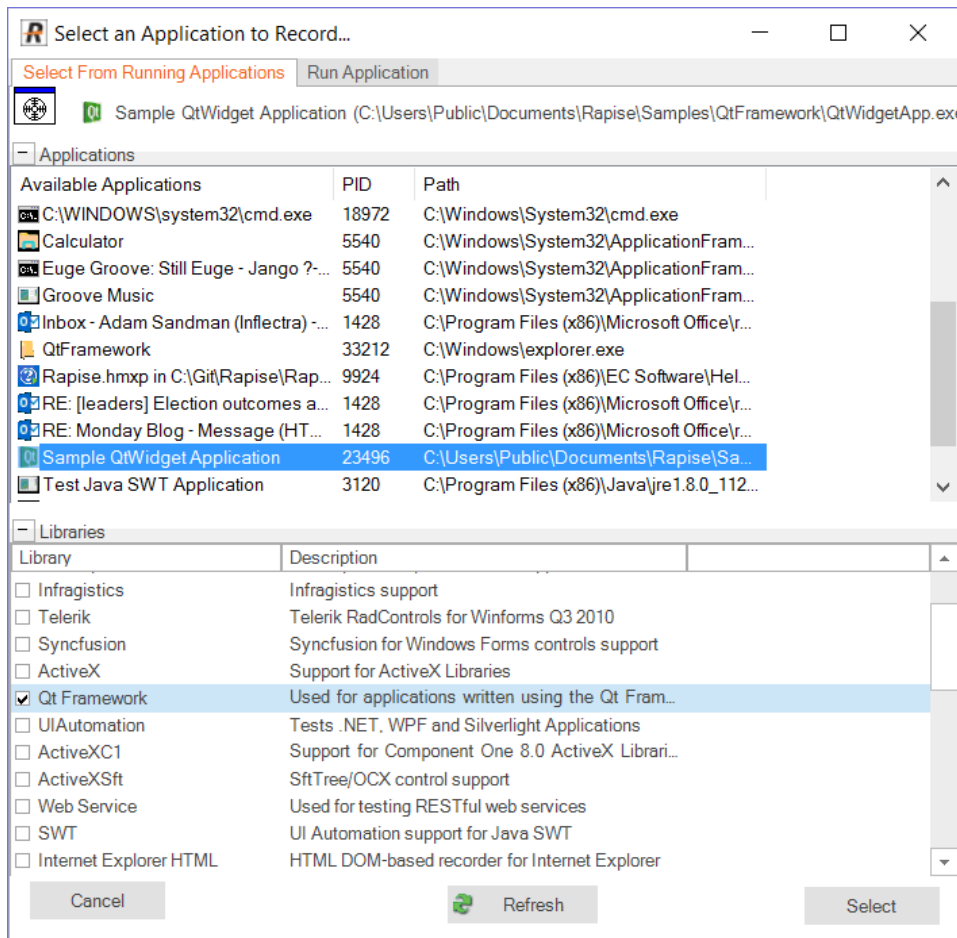
On the next page, choose **Rapise Visual Language (RVL)** as the choice of Scripting language:



Once the test is created, you will see:



Click on the **Record** button to display the ["Select an Application to Record"](#) dialog:



Choose the **Sample QtWidget Application** from the list of running applications, change the library

selection from Auto to "Qt Framework" and click **Select**.

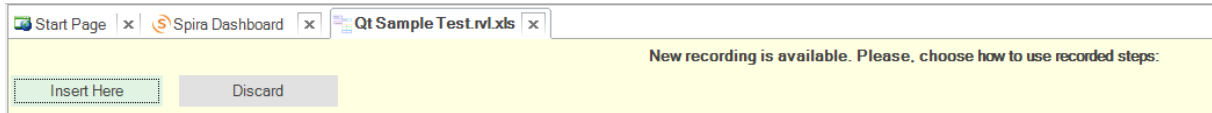
Now in the sample application click on some of the Qt controls. Rapise will record the actions:

Recording Activity for "Sample QWidget Application"				
#	Object	Action	Data	Comment
1	txtName_	SetText	Adam	Do SetText("Adam") on txtName_
2	radOption...	SetCheck	True	Do SetCheck(true) on radOption2_
3	chkActive_	SetCheck	True	Do SetCheck(true) on chkActive_
5	OK_	Action		Press button 'OK_'

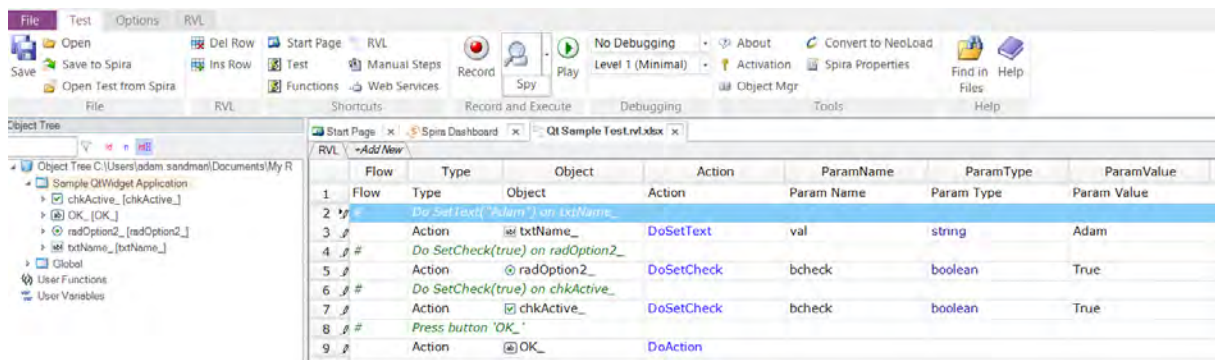
Verify (Ctrl+1)	Learn (Ctrl+2)	SPY (Ctrl+5)	Resume	Finish (Ctrl+3)	Cancel
--------------------	-------------------	-----------------	--------	--------------------	--------

Paused Advanced>> Transparent

When you click **Finish**, Rapise will prompt you to confirm where you want the recorded test steps to be placed:



Select the first row in the test grid and click **Insert Here**. You will see the recorded test script and learned objects in Rapise:



When you click **Play**, Rapise will play back your test script against the application:

Start Page Qt Sample Test.js Qt Sample Test_2016-12-30_16-04.tr

Drag a column header here to group by that column.

#	Type	Start	Name	Status	Comment
	Message	16:04:25.733	Starting scenario: Test	Info	
	Assert	16:04:28.764	txtName_DoSetText(["Adam"])	Pass	Returned Value: true
	Assert	16:04:30.682	radOption2_DoSetCheck([true])	Pass	Returned Value: true
	Assert	16:04:32.308	chkActive_DoSetCheck([true])	Pass	Returned Value: true
	Assert	16:04:34.105	OK_DoAction([])	Pass	Returned Value: true
	Test	16:04:34.112	Qt Sample Test	Pass	Passed:4 Failed:0

Test Pass
Total:6 Pass:5 Fail:0 Info:1

Sometimes you need to learn objects that are not visible or are obscured by other objects. To help with this, Rapise has the Object Spy tool.

The Spy tool lets you see the objects in the application in a hierarchy that you can learn.

When you are in the middle of recording, click on the **Spy** button and Rapise will display the [Accessible Spy](#):

Rapise Spy

Start Tracking (Ctrl-G) Learn Object

Accessible

Tree

- [ROLE_SYSTEM_CLIENT.]
 - Name: [ROLE_SYSTEM_STATICTEXT.]
 - txtName[ROLE_SYSTEM_TEXT.]
 - txtDescription[ROLE_SYSTEM_TEXT.]
 - Description: [ROLE_SYSTEM_STATICTEXT.]
 - cboLocation[ROLE_SYSTEM_COMBOBOX,Headquarters]
 - Location: [ROLE_SYSTEM_STATICTEXT.]
 - Options: [ROLE_SYSTEM_STATICTEXT.]
 - radOption1 [ROLE_SYSTEM_RADIOBUTTON,]
 - radOption2[ROLE_SYSTEM_RADIOBUTTON,]
 - Active: [ROLE_SYSTEM_STATICTEXT.]
 - chkActive[ROLE_SYSTEM_CHECKBUTTON,]

Properties

StateText alert high

Primary

ChildCount 4

ChildId CHILDID_SELF

DefaultAction SetFocus

Description

HWND txtDescription[QWidget]

IndexInParent 2

LocationRECT {X=198,Y=242,Width=287,Height=72}

Name txtDescription

Role ROLE_SYSTEM_TEXT

State STATE_SYSTEM_ALERT_HIGH

Value

HWND

Tree

- formLayoutWidget[QWidget]
 - txtNotes[QWidget]
 - Notes:[QWidget]
 - txtDateTime[QWidget]
 - Date/Ti[QWidget]
 - txtDate[QWidget]
 - txtTime[QWidget]
 - Date/Ti[QWidget]
 - cboFont[QWidget]
 - Font:[QWidget]
 - chkActive[QWidget]
 - Active:[QWidget]

Properties

ProcessName C:\Users\Public\Documents\Rapise\S...

ScreenHeight 1080

ScreenWidth 1920

ScreenX 0

ScreenY 0

Size 287, 72

Primary

AccessibleObject txtDescription [ROLE_SYSTEM_WINC

ClassName QWidget

Rect 198, 242, 287, 72

Text **txtDescription**

Visible True

WindowStyle WS_CLIPCHILDREN, WS_CLIPSIBLIN

You can then use the [Accessible Spy](#) to track and find objects in the application hierarchy. You can navigate to parent objects by right-clicking on them and choosing **Parent**. Once you have found the desired object, click on the **Learn Object** in the Spy toolbar and Rapise will add the object in the Spy to the list of learned objects that you can test against.

References

- [Testing Qt Framework Applications](#)

2.2.10.1 Using JavaScript

Rapise includes support for testing applications written using the Qt Framework written using QWidget controls.

To ensure that Rapise can access the UI elements and properties in the Qt application being tested, [MSAA \(Microsoft Active Accessibility\) support for your Qt application must be enabled](#). This provides additional information on Qt UI elements to automation software like Rapise and can be accomplished by shipping and loading the "Accessible Plug-in" included in the Qt SDK (Software Development Kit) with the Qt application under test (see below).

This tutorial illustrates the ability of Rapise to test such Qt applications using a sample application that already has the MSAA support added.

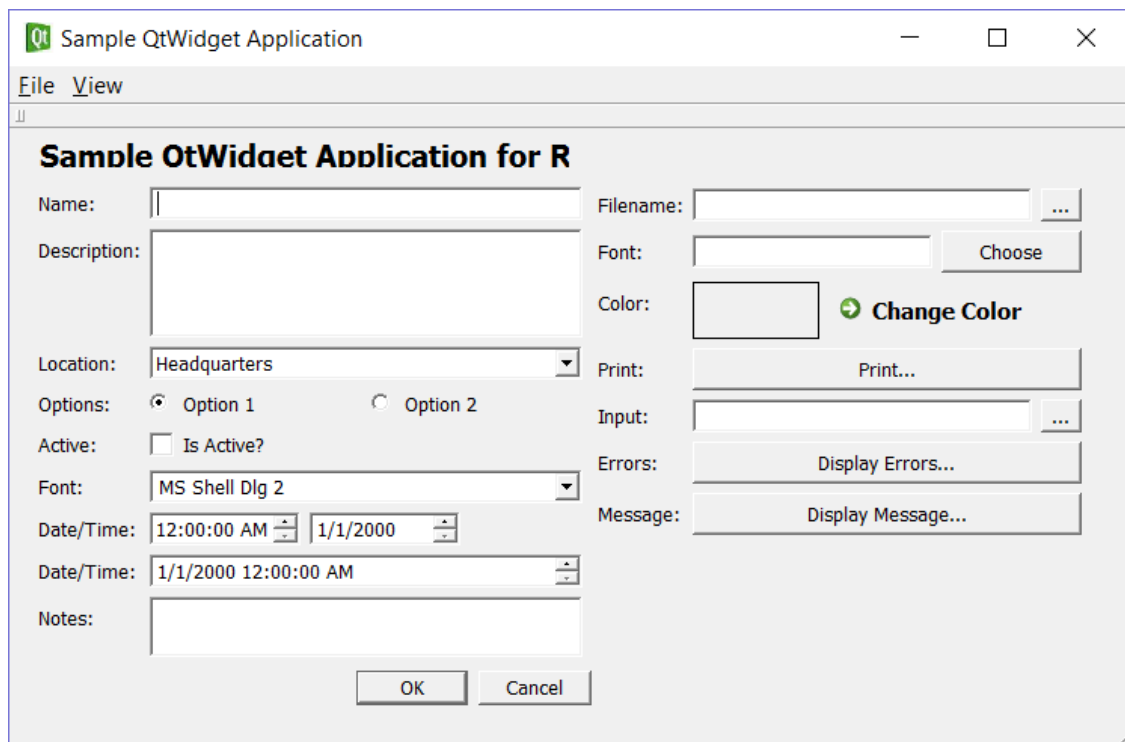
This version of the tutorial uses the JavaScript test editor option in Rapise. If you'd prefer to use the [Rapise Visual Language \(RVL\)](#), please go to the main [Tutorial](#) instead.

Testing the Sample Qt Application

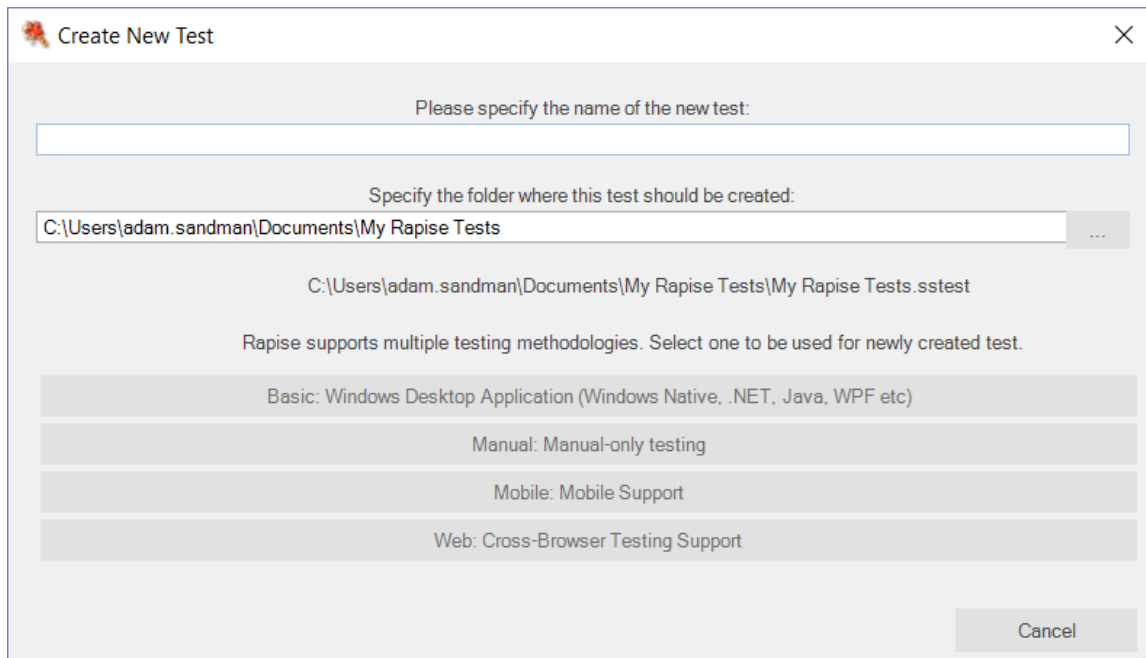
On the [Start Page](#) of Rapise, click on the **Fetch Samples** button to make sure you have all of the latest samples available.

Then go to `C:\Users\Public\Documents\Rapise\Samples\QtFramework` and double-click on the `QtWidgetApp.exe` file to start the sample application:

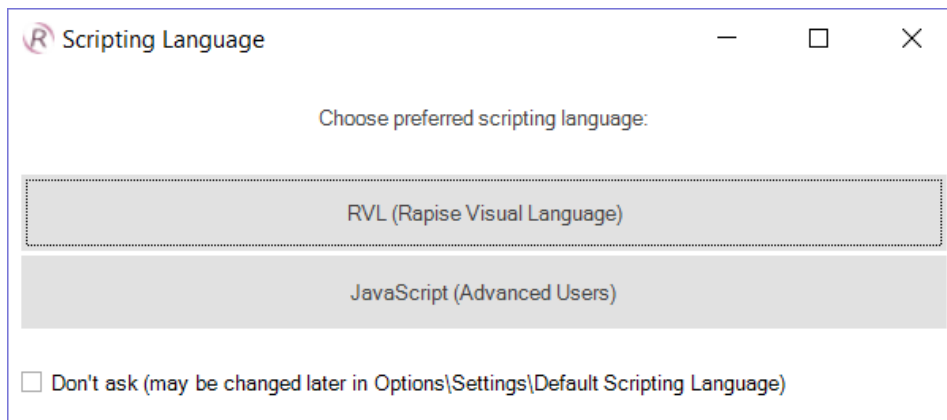
If you have everything configured correctly, you will see:



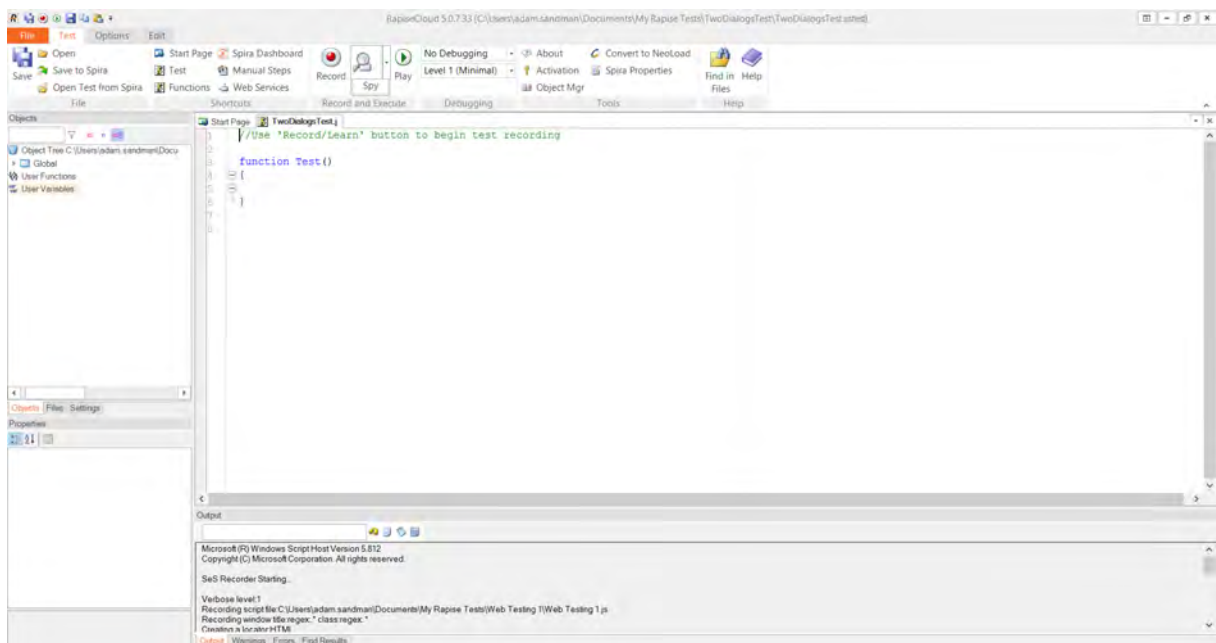
Once the application is started, open up Rapise and click on **FILE > Create New Test**:



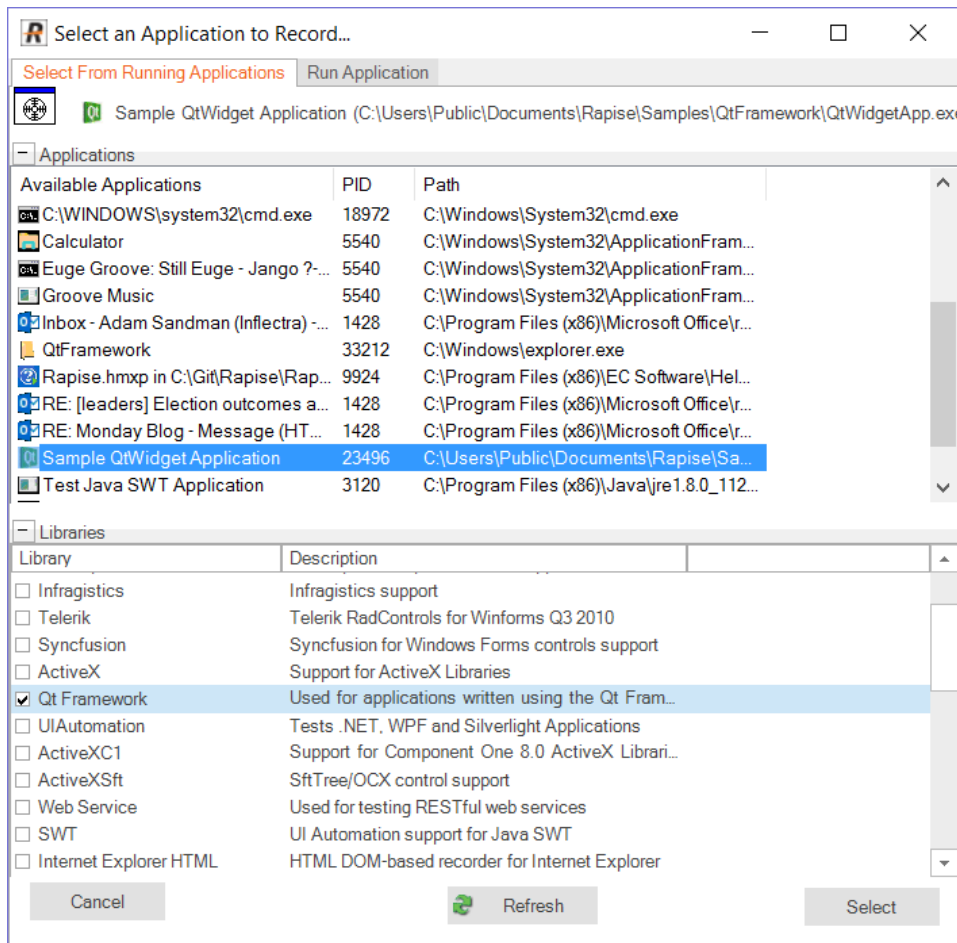
Enter the name "Qt Sample Test" as the name and choose **Basic: Windows Desktop Application** as the methodology. Then choose JavaScript as the scripting choice:



Once the test is created, you will see:



Click on the **Record** button to display the ["Select an Application to Record"](#) dialog:



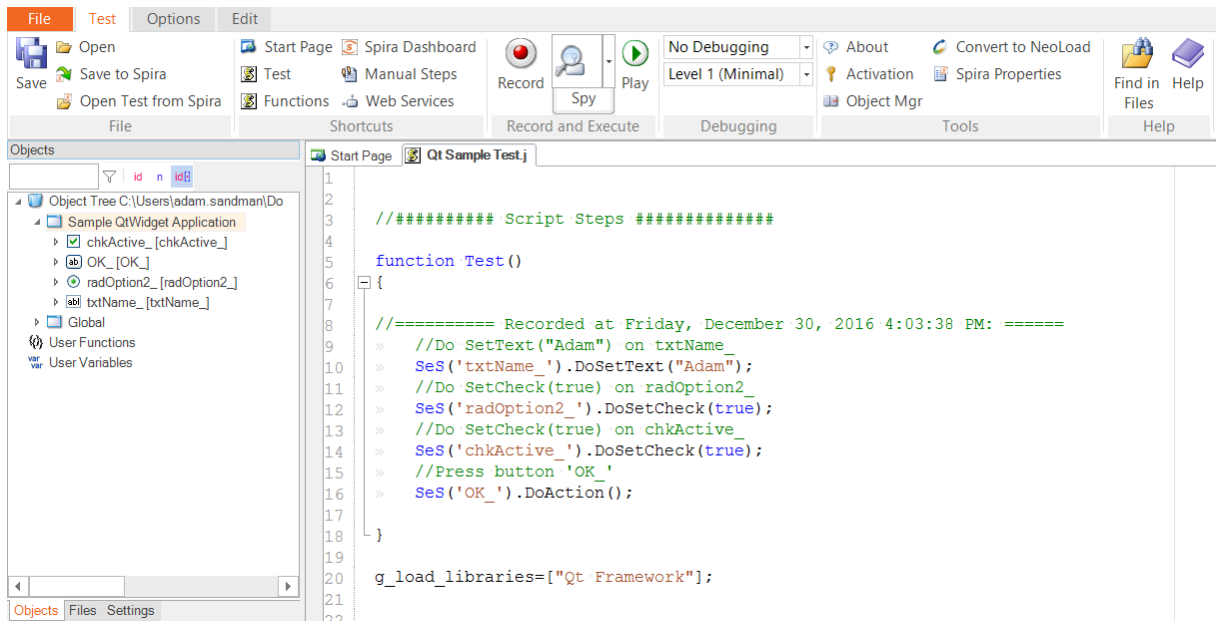
Choose the **Sample QtWidget Application** from the list of running applications, change the library selection from Auto to "Qt Framework" and click **Select**.

Now in the sample application click on some of the Qt controls. Rapise will record the actions:

Recording Activity for "Sample QtWidget Application"				
#	Object	Action	Data	Comment
1	txtName_	SetText	Adam	Do SetText("Adam") on txtName_
2	radOption...	SetCheck	True	Do SetCheck(true) on radOption2_
3	chkActive_	SetCheck	True	Do SetCheck(true) on chkActive_
5	OK_	Action		Press button 'OK_'

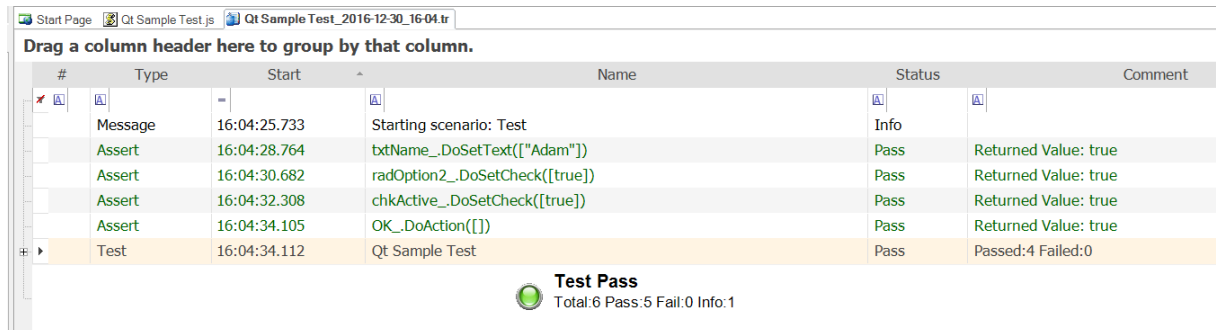
Verify (Ctrl+1)	Learn (Ctrl+2)	SPY (Ctrl+5)	Resume	Finish (Ctrl+3)	Cancel
Paused			Advanced>>	<input type="checkbox"/> Transparent	

When you click **Finish**, you will see the recorded test script and learned objects:



You can drag and drop any of the learned objects from the left-hand pane into the main test script. You can also just type **SeS("OK_")** (for example) and Rapise will display the list of available functions.

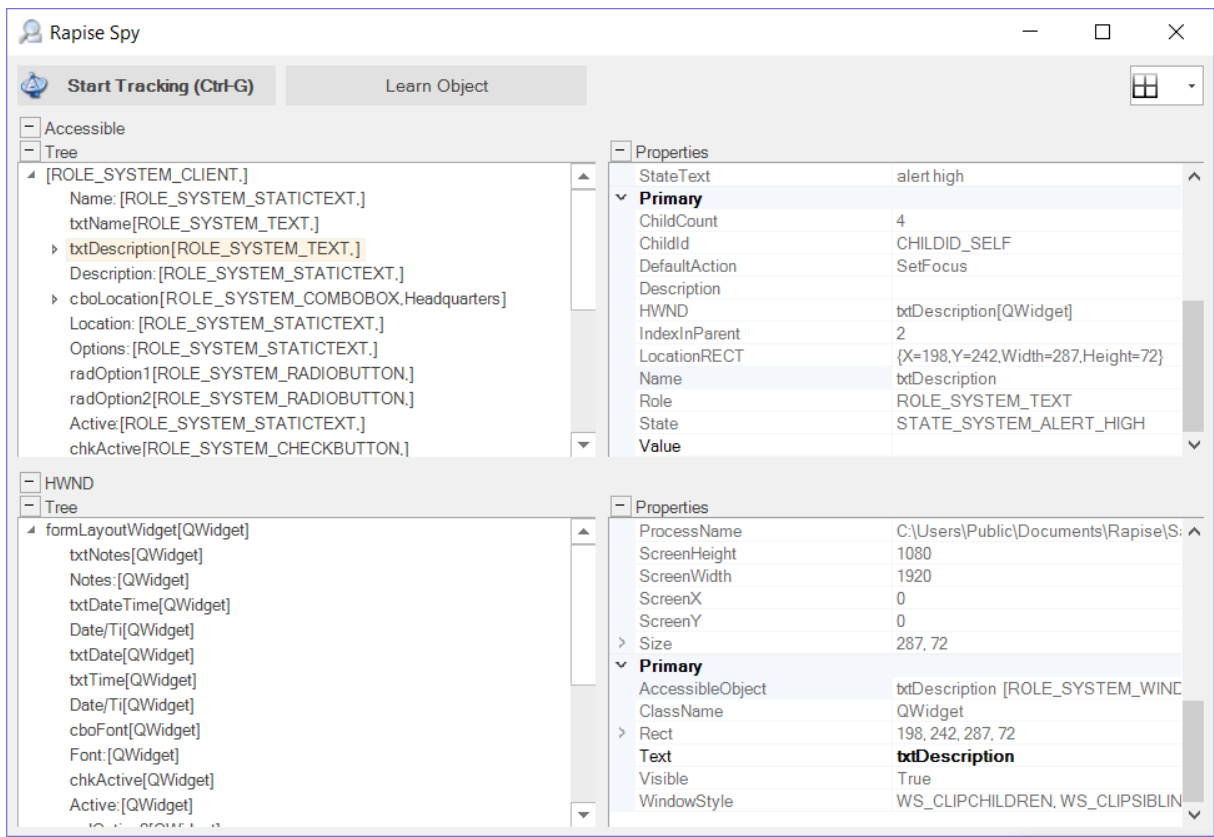
When you click **Play**, Rapise will play back your test script against the application:



Sometimes you need to learn objects that are not visible or are obscured by other objects. To help with this, Rapise has the Object Spy tool.

The Spy tool lets you see the objects in the application in a hierarchy that you can learn.

When you are in the middle of recording, click on the **Spy** button and Rapise will display the [Accessible Spy](#):



You can then use the [Accessible Spy](#) to track and find objects in the application hierarchy. You can navigate to parent objects by right-clicking on them and choosing **Parent**. Once you have found the desired object, click on the **Learn Object** in the Spy toolbar and Rapise will add the object in the Spy to the list of learned objects that you can test against.

References

- [Testing Qt Framework Applications](#)

2.3 Features

Rapise is a feature-rich test automation system, however all the features have been designed to make test automation as easy as possible.

Most of the features of Rapise fall into one of five categories:

1. Building test scripts with little or no manual scripting.
2. Reading and interpreting results and reports.
3. Additional features and capabilities for sophisticated testing.
4. Writing more involved or complicated tests using scripting.
5. Extending Rapise to learn new or extended libraries of capabilities.

Depending on the application set being tested, not all of these features are necessarily needed for every situation.

For each feature, this document describes:

1. The reason you might use a given feature.
2. A summary of the basic value of the feature.
3. An overview of how the feature works from the perspective of using it.
4. At least one useful sample that demonstrates how to use the feature.

2.3.1 Recording and Learning

Purpose

To understand what different objects might be found on a UI screen, and how to recognize them, record their characteristics and interact with them using Rapise.

Value

A UI screen entity (object) may consist of many different parts and components. Actions on these objects, and usage of these controls, must be captured in different ways, depending on the properties of the object. Rapise provides five fundamental methods for capturing objects and corresponding user actions:

1. **Recording** - Rapise is able to track user interactions with AUT and automatically capture affected objects and corresponding user actions. See [Recording](#) for more information.
2. **Learning** - there are cases when it is not necessary or is not possible to track user interactions with AUT. In this case user can manually point to an object that should be captured by Rapise. See [Learning](#) for more information.
3. **Analog Recording (Absolute/Relative)** - this is for objects that are not standard in some important way, and so activity on them cannot be captured using recording or cannot be specified after learning. [Absolute Analog Recording](#) is used to track mouse usage (movement and clicks) and keyboard events. For absolute analog recording, the positions these events are recorded relative to the top-left corner of the system screen. (In contrast, in [Relative Analog Recording](#), the events are recorded relative to the upper-left corner of the selected objects.) The events are recorded in a file of type arf (Analog Recording File).
4. **Simulated Object Recording** - a Rapise user can use simulated objects when some objects are not natively supported by Rapise (e.g. their internal structure, properties and actions are unknown). In this case, what is recorded are mouse clicks and keyboard activity. Compare to Analog Recording when all mouse and keyboard actions are recorded, including mouse up/down, mouse move events. See [Simulated Objects](#) for more information.
5. **Manual Recording** - In addition to providing automated testing functionality, Rapise enables you to [create manual tests](#) (ones that will be [carried out by a human tester](#)) rapidly without having to laboriously enter in test steps and screenshots by hand. It does this by using the same recording mechanism used for automated testing to [create a manual test case](#) that contains a list of the tester's interactions and screenshots of what was performed. This is useful for exploratory testing and is a huge time saver.

Usage

Before an operation (press, enter text, select, click, etc.) can be performed on an object automatically, Rapise must be able to identify the object. That identification must be able to locate the object definitively, and it must be able to duplicate the action or operation precisely. This carries several implications. Firstly, if the AUT is in a different position on the screen when it is started, Rapise must still be able to find the objects in the AUT window. Secondly, if the positioning of objects on the AUT

window is proportional or relative to the screen size of shape, Rapise must still be able to locate the object.

A secondary set of considerations relates to the fact that the AUT UI layout maybe sensitive to the context of the state of the application. For example, consider the case of a word processor. Pressing the "bold" button doesn't predict what the result will be unless it is known whether the text highlighted is currently bold or not. A far more illustrative example is that of the Microsoft Paint utility. The Microsoft Paint utility is the subject of a Inflectra sample, [Simulated Object](#).

The most instructive way to identify the objects to Rapise is to practice with the tool and different types of objects. The best methodology to use is as follows:

1. First, try to use Record/Learn to learn the object and record actions in a single step.
2. If learning.recording fails to record actions in the grid, use the [Object Spy](#) to observe the object carefully and discover what libraries and classes are being used by the AUT.
3. Use Verify (Ctrl+1) from the Recording Activity dialog to get summary information about the object.
4. Use a more appropriate set of libraries when selecting the AUT prior to recording.
5. Use Analog Recording with absolute positioning to identify and locate the object.
6. Use Analog Recording with relative positioning to identify and locate the object.
7. Use Simulated Object Recording to track the actions required and at the positions required.
8. Look for [custom libraries](#) that support the technology being used by the AUT.
9. Build your own custom library to support the technology in use by the AUT.
10. Finally if it will not be worth developing automated tests for this AUT, use the [manual recording feature](#) to speed up your manual test writing.

2.3.1.1 Recording

Purpose

Recording is the name given to having Rapise track your interactions with an application.

Value

The actions you take in using the [AUT](#) are observed by Rapise and are transformed into a script (javascript), which you can execute using the Play button. The script can be extended and modified to suit special purposes.

Usage

The **Recording Activity (RA) Dialog** is opened when you start recording using the Record/Learn button. When the Recording Activity dialog appears, Rapise has connected to your AUT and is ready to monitor and record your interactions. You'll find instructions [here](#) or look at one of the examples - [TwoDialogs](#), [Sample Record and Playback](#), or [Mobile Sample](#)

Recording Activity for "Internet Explorer HTML"					
#	Object	Action	Data	Comment	
Verify (Ctrl+1)	Learn (Ctrl+2)	SPY (Ctrl+5)	Pause	Finish (Ctrl+3)	Cancel
Ready		Advanced>>	<input type="checkbox"/> Transparent		

You'll notice that the RA dialog has a grid. As you interact with the AUT, your actions will be listed in the grid.

If you record an incorrect action, you can right-click on the action and delete it.

To ensure you successfully record your interaction with the AUT, navigate slowly through the AUT. Wait a second or two between each action to make sure Rapise has time to interpret and record your action. Once your interaction is updated in the RA dialog grid, you are free to continue with the next action.

When you are done recording, press the **[Finish]** button on the RA dialog or type **Ctrl+3**. The RA dialog will disappear, and you will see an automatically generated script opened in Rapise.

For **Mobile Testing**, you will need to use the **[Spy]** button which then allows you to pick a specific object from the [Mobile Spy](#):

Recording Activity for "Device"					
#	Object	Action	Data	Comment	
Verify (Ctrl+1)	Learn (Ctrl+2)	SPY (Ctrl+5)	Resume	Finish (Ctrl+3)	Cancel
Paused		Advanced>>	<input type="checkbox"/> Transparent		

See also

- If you have already recorded a script and want to record additional interactions in the same test, be sure to read [Making Multiple Recordings](#).
- The RA dialog is described more thoroughly in [Recording Activity Dialog](#).
- To learn how to run the script, see [Playback](#). To learn how to modify the script, see [Scripting](#).

- For a detailed tutorial, see [Tutorial: Record and Playback](#) in the Getting Started section.
- For more information on the Spy (ObjectSpy) capability, see [Object Spy](#).

2.3.1.2 Learning

Purpose

Objects are the controls and items on the screen of the AUT. "Learning" an object refers to the process of Rapise collecting enough information about the on-screen item to be able to reference the item when the test script is run without ambiguity and regardless of its location on the UI.

Value

When Rapise "learns" an object, it records the object's type, its name and how to find the object again (locator). It saves everything it learns to the script so that the object can be identified when the test is run. Rapise gives the object a simple name so that you can easily refer to it later if you decide to modify the script.

Usage

Objects are learned in three ways: (1) during recording, (2) explicitly using Learn, (3) using the [Spy](#) tool.

Recording

During a Recording session, Rapise learns about each object with which you interact. For details, see [Recording](#).

Explicitly

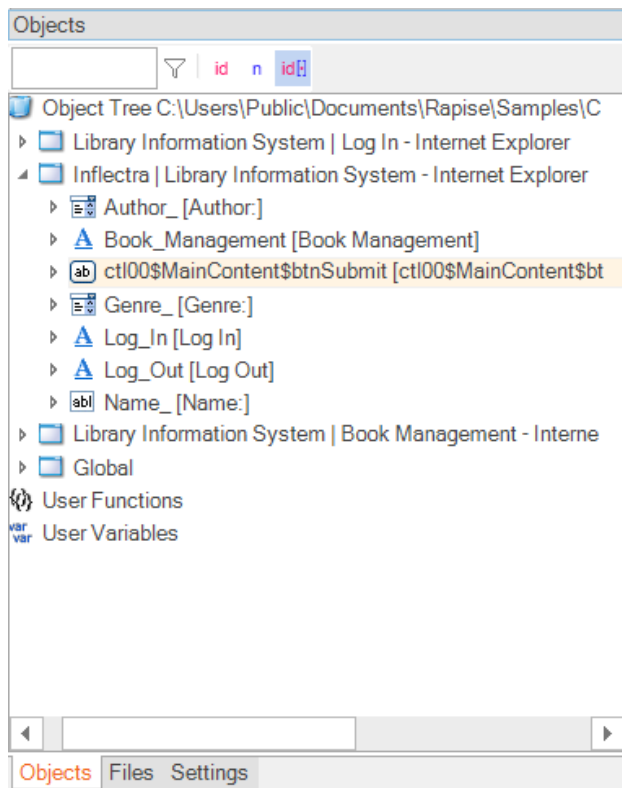
1. Open the **Recording Activity Dialog**. Instructions are [HERE](#).
2. Place your mouse over the object you wish to learn. It should become surrounded by a purple box.
3. Press **CTRL+2**.
4. You will see a new entry in the Recording Activity Dialog, signifying that the object was learned.

Spy Tool

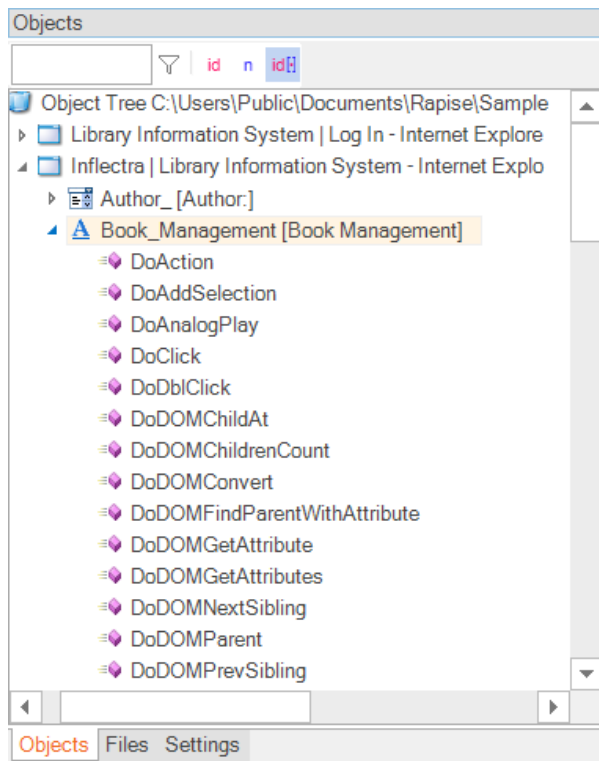
During a Recording session, you can also click on the **Spy** button inspect the object hierarchy of the application you are testing. The Spy lets you pick specific objects that might not be visible on the screen, or may be parent/child objects of the one highlighted. When you have found the correct object in the Spy, you can use the **Learn button** inside the Spy to add it to Rapise's learned object list.

The Object Tree

Regardless of how you learn the object, it will be displayed in the Object tree:



Each object has various properties and methods / actions that can be performed on it. Expanding the object name lets you see the available functions and properties:



Everything Rapise learns about an object is saved in **saved_script_objects**. You can see this variable defined in the <project-name> objects.js file that will be listed in the Test Files tab of the Rapise. The following shows what Rapise saved about the "Please enter your name" text box in the [TwoDialogs](#) example:

```
Please_enter_your_name_: {
  "locations": [
    {
      "locator_name": "Location",
      "location": {
        "location": "4.4",
        "window_name": "param:window_text",
        "window_class": "param:window_class"
      }
    },
    {
      "locator_name": "LocationPath",
      "location": {
        "window_name": "param:window_text",
        "window_class": "param:window_class",
        "path": [
          {
            "object_name": "param:object_name",
```

```
        "object_class": "param:object_class",
        "object_role": "param:object_role"
    },
    {
        "object_name": "param>window_text",
        "object_class": "param>window_class",
        "object_role": "ROLE_SYSTEM_DIALOG"
    }
]
}
},
{
    "locator_name": "LocationRect",
    "location": {
        "window_name": "param>window_text",
        "window_class": "param>window_class",
        "rect": {
            "object_name": "param:object_name",
            "object_class": "param:object_class",
            "object_role": "param:object_role",
            "x": 222,
            "y": 40,
            "w": 140,
            "h": 23
        }
    }
}
},
"window_text": "Inflectra Rapise Two Dialogs Sample",
"window_class": "#32770",
"object_text": "Chris",
"object_role": "ROLE_SYSTEM_WINDOW",
"object_class": "Edit",
"object_name": "Please enter your name:",
"version": 0,
"object_type": "Win32Text",
"object_flavor": "Text",
"object_library": "Generic"
},
...
```

See Also

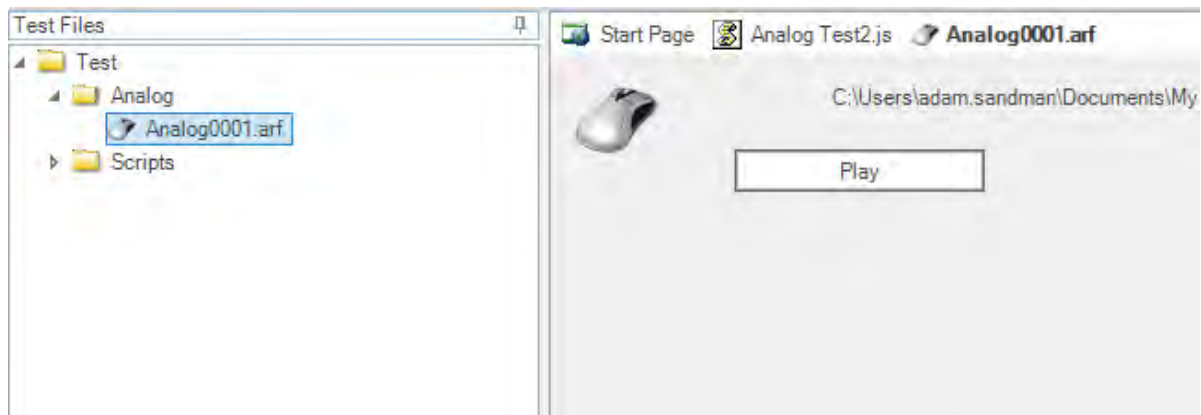
- [Recording](#)
- Learning invisible and [Simulated Objects](#) is slightly more complicated. You can find information on both in the [Recording Activity Dialog](#) section. Look for descriptions of the **Pick Object** button and the **_Simulated** drop-down menu.
- [Learn Object](#)

2.3.1.3 Analog Recording

Concept

Sometimes you have to automate the testing of an application that contains some controls or elements that are not standard objects that can be recognized by Rapise. For example you may have a drawing canvas inside an application that allows you to annotate a diagram. You can use the standard Rapise libraries for the rest of the controls but the actual drawing events cannot be captured that way. Analog recording is available to 'fill in the gaps' in such scenarios.

During **Analog Recording**, Rapise records mouse movements, keyboard inputs, and clicks and stores them in a special .ARF (Analog Recording File) format file:

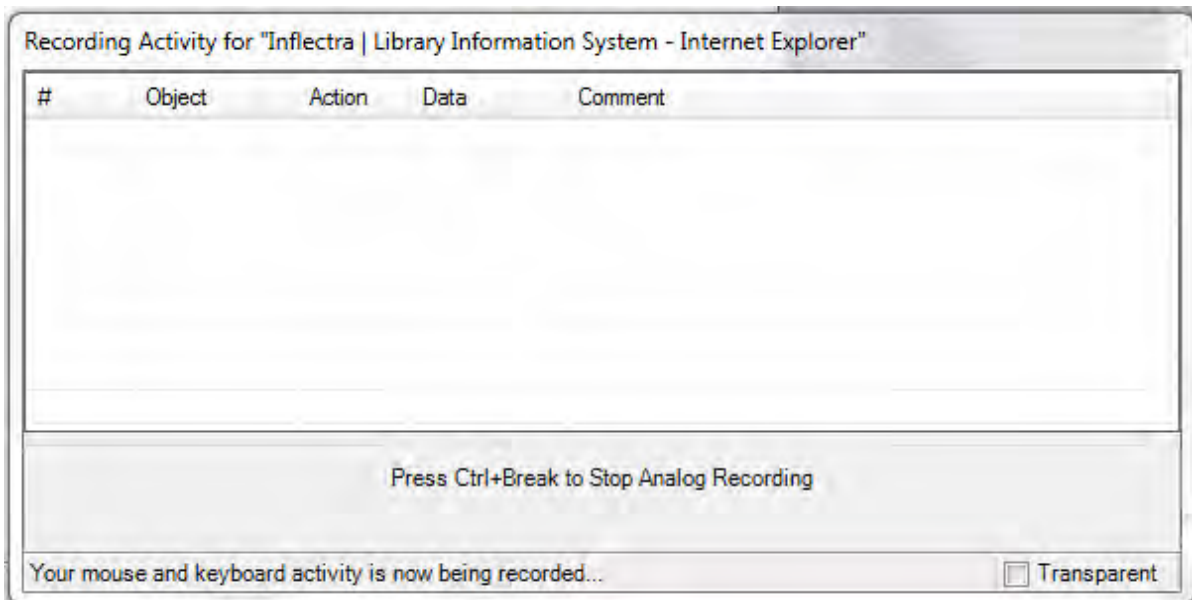


There are two types of Analog Recording: **Absolute** and **Relative**.

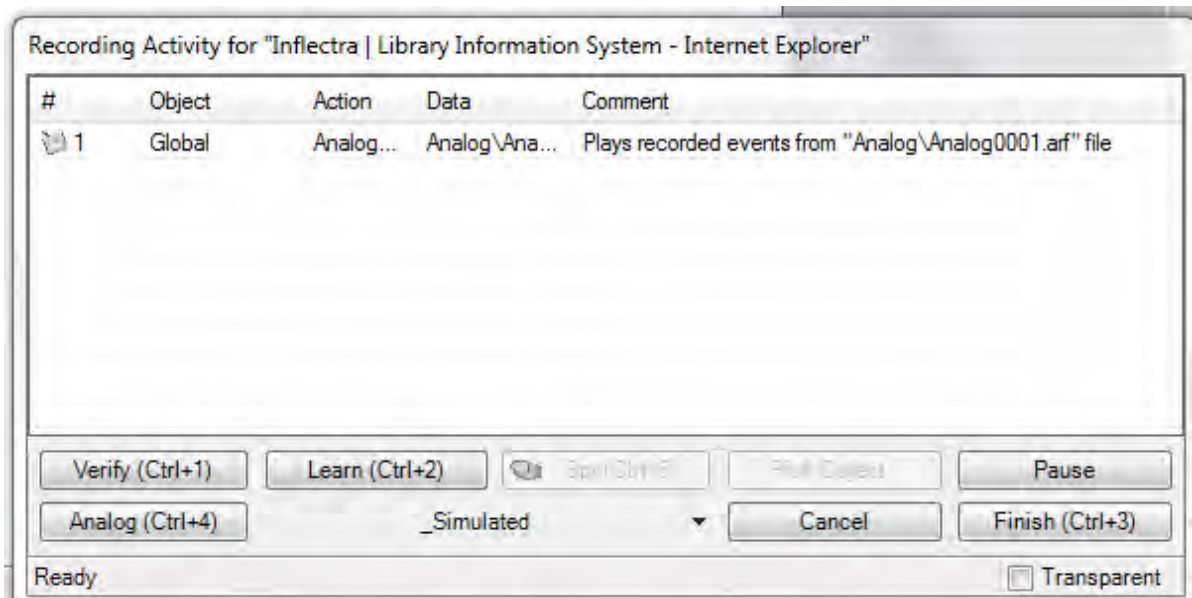
- **Absolute**: Mouse coordinates are recorded relative to the top left corner of the screen.
- **Relative**: Mouse coordinates are recorded relative to the top left corner of the object beneath the mouse cursor.

Usage

When you are [recording your test](#) using the application you may come to a point where there are user actions that you need to record that don't have any identifiable objects (for example drawing a signature). You can click on the 'Analog' button on the recorder to engage Analog mode:



Now when you use the mouse and keyboard to test the application, Rapise is storing the coordinates of your mouse clicks and keyboard events and storing them in a separate .ARF file that is part of your test project.



Once completed, the entire analog section is included as one step within the complete test script so you can include an analog sequence within a test script that contains other non-analog events. This lets you have the robustness of true object-based recording for 95% of your test and analog when you need it for the remaining 5%. This is the best of both worlds.

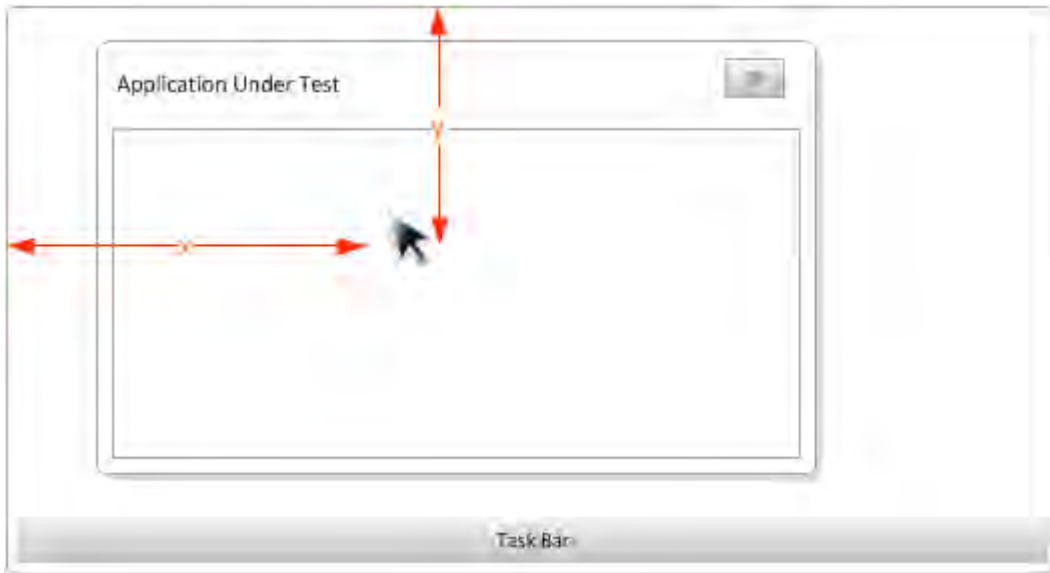
See Also

- [Recording Activity Dialog](#)

2.3.1.3.1 Absolute Analog Recording

Purpose

Absolute analog recording is used to track mouse usage (movement and clicks) and keyboard events. For absolute analog recording, the positions these events are recorded relative to the top-left corner of the system screen. (In contrast, in relative analog, the events are recorded relative to the upper-left corner of the selected objects.) The events are recorded in a file of type arf (Analog Recording File).



Value

Not all applications can be recorded by locating and learning objects being used. A very good example of this is free-hand drawing in an application such as Microsoft Paint (Start Menu -> Accessories -> Paint). There are several reasons why this application cannot be recorded using object tracking, learning and recording. The most important is that when the mouse is moved free-hand, it is operating on the same object the whole time - the blank "canvas." Another reason is that the application changes behaviour and the positions of the canvas change depending on the size of the canvas and the positions of floating toolbars.

Absolute analog recording is provided by Rapise to make it possible to make it possible to design and implement tests for these types of applications.

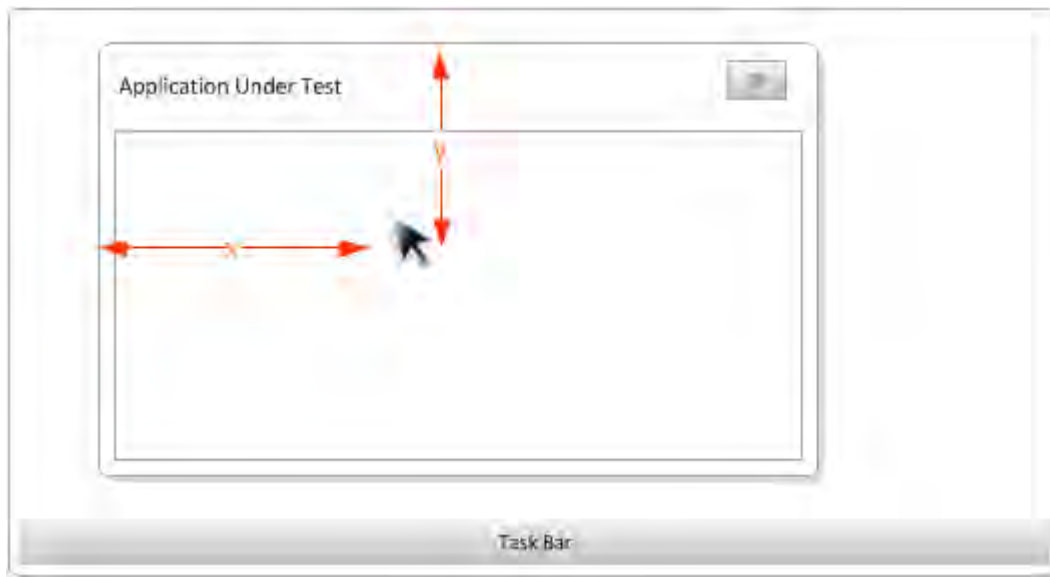
See Also

- [Do Absolute Analog Recording](#)
- [Relative Analog Recording](#)

2.3.1.3.2 Relative Analog Recording

Purpose

Relative analog recording is used to track mouse usage (movement and clicks) and keyboard events. For relative analog recording, events are recorded in relation to the top-left corner of the application's window. The events are recorded in a file of type arf (Analog Recording File).



Value

Not all applications can be recorded by locating and learning objects being used. A very good example of this is free-hand drawing in an application such as Microsoft Paint (Start Menu -> Accessories -> Paint). There are several reasons why this application cannot be recorded using object tracking, learning and recording. The most important is that when the mouse is moved free-hand, it is operating on the same object the whole time - the blank "canvas." Another reason is that the application changes behaviour and the positions of the canvas change depending on the size of the canvas and the positions of floating toolbars.

Relative analog recording is provided by Rapise to make it possible to make it possible to design and implement tests for these types of applications.

See Also

- [Do Relative Analog Recording](#)
- [Absolute Analog Recording](#)

2.3.1.4 Simulated Objects

Purpose

During normal recording, Rapise [Learns about the Objects](#) you interact with. If, for some reason, Rapise cannot learn an object, you can create a **Simulated Object**. Rapise identifies a simulated object by its location in the Window or Dialog and can perform certain generic actions on it, such as Click and Fill In. This works in the reverse sense also. That is, if Rapise cannot identify an object, or, for example, you click outside any defined object in the AUT's UI, Rapise will create a simulated object to represent the action.

Value

Not all objects on a screen are "standard" or can be recognized by the libraries loaded. Some are compound objects, consisting of two or more individual objects that work together to deliver a UI effect or behaviour. Simulated objects "fill in the blanks" to allow Rapise to cause an event outside the

normal set of objects.

See Also

- [Recording Activity Dialog](#)
- [Sample Tests](#): The `SimulatedObject` sample.
- [Deal with a Simulated Object](#)

2.3.1.5 Object Libraries

Purpose

Object libraries define what objects and interactions Rapise understands during [Recording](#) and [Learning](#). Most Object Libraries are specific to an application or a set of applications.

Usage

Rapise comes with several different object libraries:

1. **Auto**
2. **Core Technologies**
 - **Generic**
 - **Internet Explorer HTML**
 - **Firefox HTML**
 - **Java**
 - **Java SWT**
 - **Managed**
 - **UI Automation**
 - **Qt Framework**
 - **ActiveX**
 - **Web Services**
 - **User**
 - **Advanced Accessibility**
 - **Console**
3. **Mobile Libraries**
 - **Android (via. Appium)**
 - **iOS (via. Applium)**
4. **Widget Toolkits**
 - **DOM Dynamics CRM**
 - **DOM GWT**
 - **DOM GWT-Ext**
 - **DOM SmartGWT**
 - **DOM YUI**
 - **DOM jQuery UI**
 - **HTML 5**
 - **DevExpress**
 - **Infragistics**
 - **Telerik**
 - **ActiveX ComponentOne**
 - **SyncFusion**

- o **FarPoint**
- o **Dynamics AX**

You can [add your own](#) Recording library--one that understands the objects in your application.

- Selecting **Auto** as the application recording library will cause Rapise to select the one that it deems is most appropriate.
- **UIAutomation**: Use this library with .NET, WPF, and Silverlight applications. When used with .NET 2.0+ applications you should also include the **Managed** library as well. When used with older .NET applications, you should use the Generic library instead.
- **Internet Explorer HTML**, **Chrome HTML** and **Firefox HTML** are used with Internet Explorer, Google Chrome and Firefox respectively. They understand only the **DOM** (document object model) and therefore capture interactions with the web application, not the browser. They also have access to passwords. Tests recorded with either of the libraries can be run in any of the three browsers. See [Cross Browser Testing](#) for more details.
- **User** refers to [Custom Libraries](#).
- The **DOM GWT** library uses the Document Object Model to learn or record objects found in the Google Web Toolkit.
- The **DOM GWT-Ext** library uses the Document Object Model to learn or record objects found in the Google GWT-Ext library.
- The **DOM SmartGWT** library uses the Document Object Model to learn or record objects found in the Google SmartGWT library.
- The **DOM jQuery UI** library uses the Document Object Model to learn or record objects found in the jQuery UI widget library.
- The **HTML5** library uses the Document Object Model to learn or record objects found in the HTML 5 extensions library.
- The **DOM YUI** library uses the Document Object Model to learn or record objects found in the Yahoo! User Interface library.
- The **Generic** library uses Microsoft's **MSAA** event model to capture user actions. The Generic library should be used if there is no library more specific to the AUT available. The Generic library will record a large set of applications, but it has drawbacks; it may skip some actions and/or record unintended actions. Passwords are not visible to the Generic library, and must be manually entered into the test after recording.
- The **Advanced Accessibility** library is for recording with Internet Explorer. In general, you will want to use the Internet Explorer HTML library. However, there is some information available through Advanced Accessibility that is unavailable when looking solely at the DOM. For example: the absolute screen position of an object. Advanced Accessibility is not precise, as Internet Explorer HTML is, and may miss actions or record unintended actions.
- The **Java SWT** library is for use with the Eclipse Java Standard Widget Toolkit (SWT) applications.
- The **Console** library is for use with Windows Console Applications that run in the command-line.
- The **Java** library is for use with Java GUI applications that are written using either AWT or SWING. Use the **SWT** library instead if your application was written using SWT.
- The **Managed** library is for use with Microsoft .NET 2.0 + applications. It adds some additional .NET 2.0+ specific-controls to the list supported in the Generic and UIAutomation libraries.
- The **DevExpress** library allows you to record and learn using the various controls provided in the DevExpress DXperience v1.0 component library. This allows you to save time by having the system recognize the various controls directly.
- The **Infragistics** library allows you to record and learn using the various controls provided in the Infragistics component library. This allows you to save time by having the system recognize the various controls directly.
- The **Telerik** library allows you to record and learn using the various controls provided in the Telerik RadControls for Winforms component library. This allows you to save time by having the system recognize the various controls directly.
- The **Qt Framework** library is for use with applications that are written using the cross-platform Qt Framework.

- The **Web Services** library is for use with API tests that connect to either REST or SOAP web services. See the [web service testing](#) topic for more information.
- The **Dynamics AX** library is for use with the Microsoft Dynamics AX ERP package. See the [Dynamics AX](#) topic for more information
- The **DOM Dynamics CRM** library is for use with the Microsoft Dynamics CRM package. See the [Dynamics CRM](#) topic for more information

See Also

- [Recording](#)
- To write an Object library specific to your application, see [Custom Libraries](#).
- [Cross Browser Testing](#)
- If you interact with an object that is not defined in your chosen recording library, it will be treated as a [Simulated Object](#).

2.3.1.5.1 Custom Libraries

Purpose

If your application doesn't work with the predefined [Recording Libraries](#), you can create your own.

Usage

Your library can provide **Basic** or **Full** support for your application. Basic support allows you to manually [Learn](#) objects, [write test scripts](#), and [Playback](#) your scripts. Full support allows you to [Record](#) as well. Create your library in the `LibUser` directory. Unless you specified otherwise, you will find it at:

`C:\Program Files\Inflectra\Rapise\Engine\Lib\LibUser.`

Basic Support

Add a Matcher Rule to the library for every window type in your application. The `SeSMatcherRule` includes information to identify your application, and a set of behaviors.

```
var yourApplicationRule = new SeSMatcherRule(
{
  object_type: "yourAppObject",
  classname: "yourAppFrame", //You can use a regular expression here
  behavior: [yourAppBehavior]
})
```

Override Actions: Override actions in `yourAppBehavior` (above). The action definitions you provides will be used during [Playback](#). Overriding actions does not affect recording.

```
var HTMLFirefoxBehavior =
{
  actions: [{
    actionName: "Click",
    DoAction: function(){}
  },
  {
    actionName: "SetText",
    DoAction: function(**String*/txt){}
  }
  ]
}
```

Full Support

Enable Recording: You can enable recording in two ways. If your application notifies the Accessibility Events interface about application events, you can override events in the **behavior** section of **SeSMatcherRules**:

```
var newBehavior={
  actions: [{/*section deleted for brevity*/}],
  events:
  {
    OnSelect: function(**SeSObject*/ param, /**Boolean*/ badd)
    { /*...*/
    },
    OnSelectAdd: function(**SeSObject*/ param, /**Boolean*/ badd)
    { /*...*/
    }
  }
}

var newRule = new SeSMatcherRule({
  object_type: "someType",
  role: "someRole",
  behavior: [newBehavior],
})
```

Otherwise, you will have to implement **Custom Recording**.

Custom Recording: With custom recording, it is the library's responsibility to:

- detect user actions in the application, and
- call **RegisterAction()** (which writes the action to the script).

See Also

- To see what actions and events can be overridden, see **SeSBehavior.js** (in the Rapise [Engine](#)).
- Check the **Engine/Lib** directory for examples.
- You can alter the behavior of an action without creating an entire library. See the [Actions](#) section for more details.

2.3.1.5.1.1 Actions

Purpose

Actions are anything the user can do to a GUI control, such as click, select, fill with text, etc. You can override the behavior of an action, without creating or altering a [Recording Library](#), using **SeSExtendAction()**. Overriding an action affects [Playback](#), but not [Recording](#).

Usage

SeSExtendAction() is used to override an action handler or add a new **DoAction** handler:

```
function SeSExtendAction(objectType, doActionName, replacementFunction)
```

where:

- **objectType** is the name or [regular expression](#) specifying the object type(s) for which this extension should apply.
- **doActionName** is the name or [regular expression](#) specifying the **DoAction** handler that should be overridden.
- **replacementFunction** is the function containing overriding behavior.

In most cases **SeSExtendAction()** should be called from within [TestInit\(\)](#).

Calling Base Actions

The function you are overriding is called the **BaseAction**. You can call it like this:

```
this.BaseAction(arguments);
```

You may override actions several times. For example:

```
function DoActionB()
{
    this.BaseAction();
}

function DoActionC()
{
    this.BaseAction();
}

SeSExtendAction("Win32Button", "DoAction", DoActionB);
SeSExtendAction("Win32Button", "DoAction", DoActionC);
```

When **DoAction** is called for the **Win32Button**, the following sequence is executed:

```
DoActionC->DoActionB->DoAction
```

See Also

- To see what actions can be extended, look in **SeSBehavior.js** (in the Rapise [Engine](#)).

2.3.1.6 Multiple Recordings

Purpose

Every time you record, the script recorder updates your test script. Be cautious about what changes you make to the test script; some changes could be lost if the recorder is re-run (see **Usage**).

Usage

The test script path can be found in the [Settings Dialog](#) under **Settings > ScriptPath**. Unless you specify otherwise, the test script is named *testname.js* (where *testname* is whatever you named your test).

Note that the Script Recorder only has knowledge of four functions and two data structures:

1. function Test()
2. function TestInit()
3. function TestFinish()
4. function TestPrepare()
5. array "g_load_libraries"
6. map "saved_script_objects"

You can make changes to the body of any of the above functions, and you can alter the initialization of `g_load_libraries` and `saved_script_objects`. All other changes are unsafe.

During Recording, the Script Recorder:

1. Appends newly recorded actions to the `Test()` function
2. Appends newly encountered objects to the `saved_script_objects` array
3. Updates `g_load_libraries` to reflect the library selections you made in the [Select an Application to Record... Dialog](#)
4. Ignores (and leaves intact) the definitions of `TestInit()`, `TestFinish()`, and `TestPrepare()`

For example, suppose that you have the following code inside your script file:

```
//External comment // UNSAFE: will be removed by recorder
/*Another comment*/ // UNSAFE
var external_var; // UNSAFE

function Test()
{
    //comment --SAFE
    var external_var; //SAFE: defines a local variable for function "Test"
    global_var=value; //SAFE: updates (or defines) a global variable
    //SAFE everything inside this function will be kept intact after recording
}
```

The parts of code marked **UNSAFE** will be deleted by the script recorder.

See Also

- [Settings Dialog](#)
- [Select an Application to Record... Dialog](#)
- [Recording](#)

2.3.1.7 Object Spy

Purpose

The **Object Spy** allows you to inspect an object's properties and state.

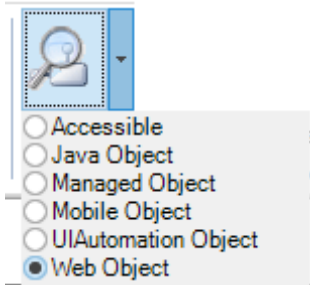
Value

Many controls on [User Interfaces](#) are compound objects or there may be many instances of a similar object. To be sure to select precisely the correct object, or to select the correct object from a collection of similar objects, the object's properties can be used to further identify the correct instance.

Usage

To spy on an Object:

1. Choose the type of **Object Spy** that you want to use. This can be done by clicking the down-arrow next to the Spy icon in the [Test ribbon](#) (Record and Execute tab):



There are **five** types of Spy available:

1. [Accessible](#) - This is used to inspect applications that expose their properties using the Microsoft Active Accessibility (MSAA) technology. This is typically used by applications written in MFC, ATL, Qt, C++ and Visual Basic.
2. [Java Object](#) - This is used to inspect applications written using the Java AWT and Swing UI frameworks.
3. [Managed Object](#) - This is used to inspect applications written in .NET 1.1, .NET 2.0, .NET 4.0 using Microsoft Windows Forms.
4. [Mobile Object](#) - This is used to inspect mobile applications running on iOS or Android devices as well as the iOS or Android simulator
5. [UIAutomation Object](#) - This is used to inspect applications that expose their properties using the Microsoft's newer UIAutomation technology. This is typically used by applications written in WPF, Silverlight and Java SWT.

For more details on each Spy type, refer to specific topic above or view the [Spy Dialog](#) help topic.

2. Open the **Object Spy Dialog**. This can be done directly using the **Spy** button in the main Rapise [test ribbon](#), or by pressing the **Spy** button in the [Recording Activity](#) dialog during recording or learning.
3. Press the **Start Tracking** button (or type CTRL+G).
4. As you mouse over different objects, you will see the contents of the Object Spy dialog change as it collects information about the object.
5. Mouse over the object you wish to spy on and press **CTRL+G**. The reduced-size tracking dialog will be expanded into the the larger [Object Spy Diaog](#) dialog, presenting all the available information for the object.

See Also

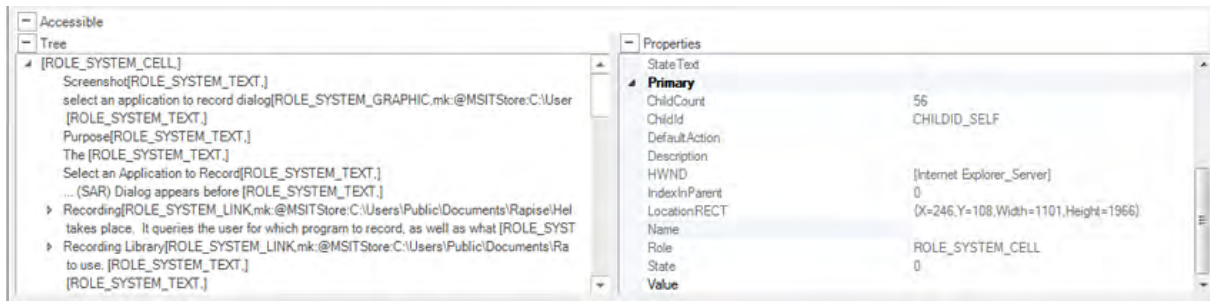
- See the [Object Spy Dialog](#) for more details.

2.3.1.7.1 Accessible (MSAA) Spy

Purpose

The **Accessible Spy** is used to inspect applications that contain Microsoft Active Accessible (MSAA) objects.

Screenshot



Features

The Accessible Spy has the following features:

- The **Tree** pane lets you view the hierarchy of MSAA objects available in the application
- The **Properties** pane lets you view the exposed properties of the highlighted MSAA object
- The **Learn Object** option is displayed when you use the Spy during recording and lets you pick specific [objects to learn](#).

Commands

In addition to viewing the object hierarchy and object properties, you can perform the following tasks:

- **Parent** - This selects the parent object of the one displayed
- **Highlight** - This will attempt to Flash (highlight with a red rectangle) the object selected in the Spy.
- **Refresh** - this simply refreshes the Spy view to reflect any changes that might have occurred in the application.

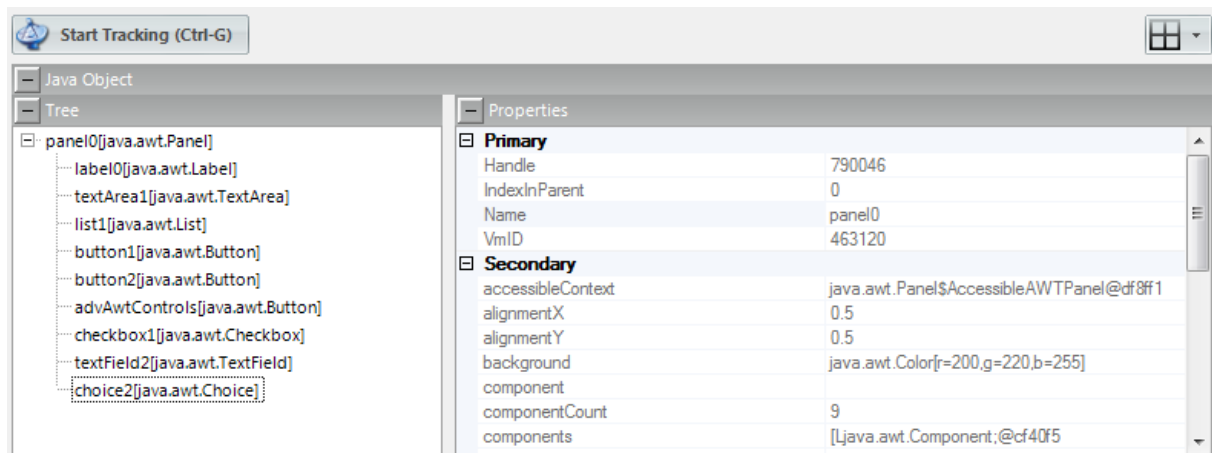
- **Default Action** - this will perform the default action on the selected object in the Spy
- **Mouse Click** - this will perform a simple mouse click on the selected object in the Spy
- **Save to File** - this will save the properties of the currently selected object to a text file.

2.3.1.7.2 Java Spy

Purpose

The **Java Spy** is used to inspect applications that contain **Java (Swing / AWT)** objects.

Screenshot



Features

The Java Spy has the following features:

- The **Tree** pane lets you view the hierarchy of Java objects available in the application
- The **Properties** pane lets you view the exposed properties of the highlighted Java object
- The **Learn Object** option is displayed when you use the Spy during recording and lets you pick specific [objects to learn](#).

Commands

In addition to viewing the object hierarchy and object properties, you can perform the following tasks:

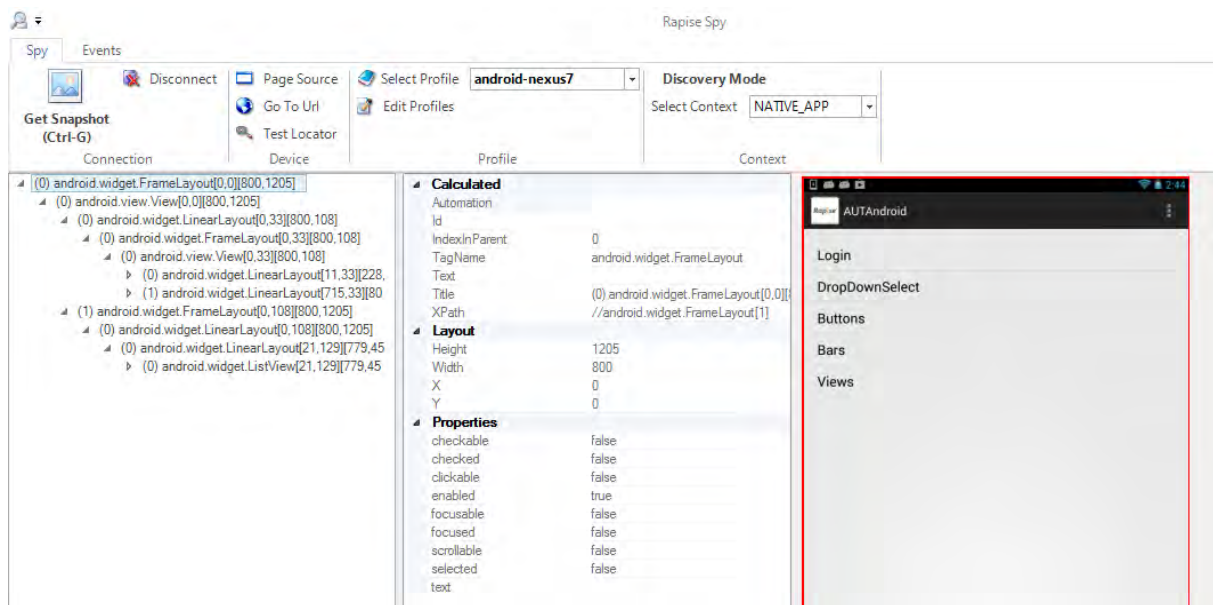
- **Parent** - This selects the parent object of the one displayed
- **Highlight** - This will attempt to Flash (highlight with a red rectangle) the object selected in the Spy.
- **Refresh** - this simply refreshes the Spy view to reflect any changes that might have occurred in the application.
- **Save to File** - this will save the properties of the currently selected object to a text file.

2.3.1.7.3 Mobile Spy

Purpose

The **Mobile Spy** is used to inspect applications running on connected Mobile Devices (e.g. Apple iOS and Android devices).

Screenshot



The **Mobile Spy** dialog shows a snapshot of the screen displayed on the connected Mobile device as well as the properties of the currently selected object. You can select the object either by clicking on the screen snapshot or the control hierarchy displayed to the left. The properties displayed will depend on the type of mobile device being tested (iOS vs. Android).

Tree

The spied upon object and its children are displayed here. When you click on an object it will also be highlighted in the **snapshot** view to the right.

Properties

Object fields and field values are displayed here.

Snapshot

This displays a snapshot of what is displayed on the mobile device being tested. The objects in the snapshot are clickable, which allows you to visually select objects from the hierarchy.

Tools

- **Get Snapshot (CTRL + G)** - This will connect to the mobile device and get the latest snapshot from the mobile device and display in the right-hand window.
- **Disconnect** - This option disconnects the Spy from the mobile device and ends the connection.
- **Learn Object** - This option is only displayed in Recording mode and lets you take the currently selected object and add it to the [Object Tree](#) for the current test. It can then be used as a scriptable object in the test script.
- **Page Source** - This lets you view the source of the mobile device in a text editor such as Notepad. It will show the objects in the treeview represented as an XML document.
- **Go to URL** - This will instruct the mobile device to navigate its built in web browser to a specific URL.
- **Test Locator** - This will display the [Mobile Test Locator](#) dialog box that lets you try different locators to resolve specific objects in the object hierarchy. It will include options such as using XPath and IDs.
- **Select Profile** - This lets you change the profile of the mobile device you are testing while the Spy dialog is open.

- **Edit Profiles** - This will open up the [Mobile Settings](#) dialog box. You cannot be connected to do this.
- **Context** - This will display either 'Discovery Mode' or 'Recording Mode'.

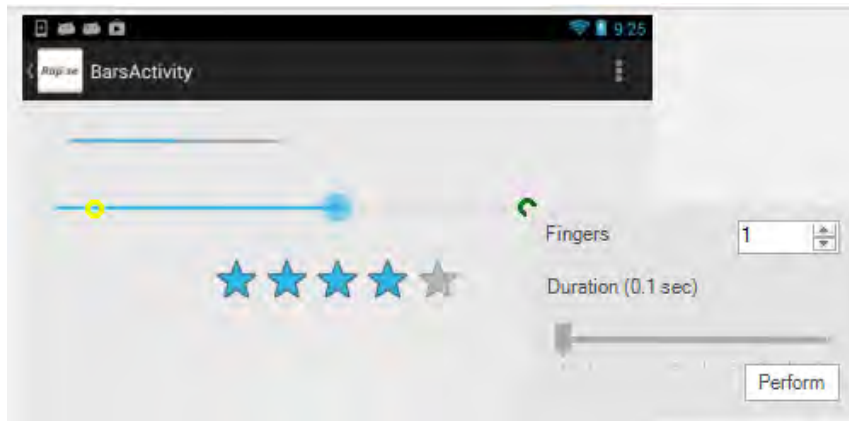
Events Tab

The **Mobile Spy** also includes an **Events** ribbon tab that lets you send events to mobile device from Rapise, as if you were actually performing them on the device:

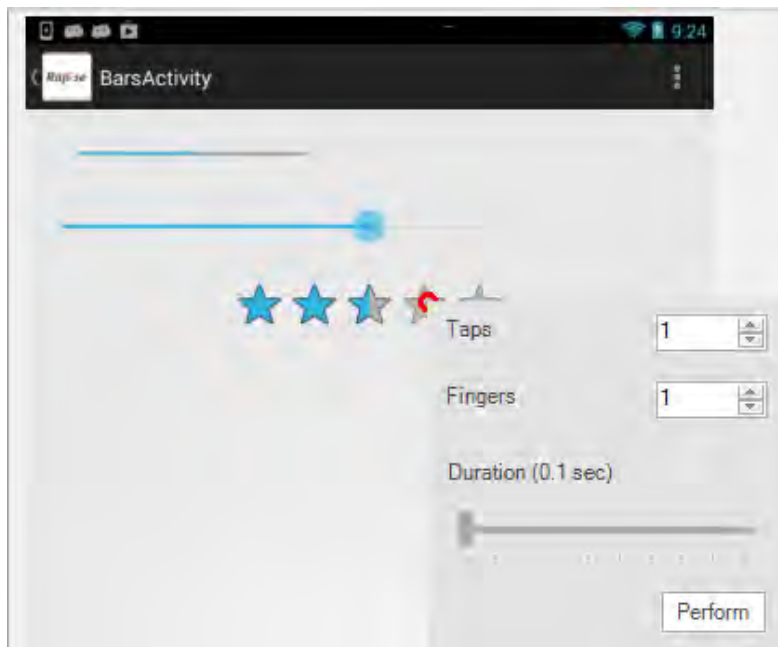
Spy		Events	
Tap	Precise Tap ▾	Text <input type="text"/>	Accept Alert
Swipe ▾	Scroll To	Send Keys	Dismiss Alert
Shake		Execute Script	Change Orientation
	Touch	Text	Misc

This dialog lets you perform the following events on the device:

- **Tap** - this will simulate tapping the currently selected object on the device
- **Swipe** - you specify the start and end points of the swipe operation. This is useful for simulating a real swipe on the device in a specific direction at a specific location (e.g. on a progress selector)



- **Shake** - for devices that support it (e.g. iOS) this simulates shaking the device physically
- **Precise Tap** - you specify the specific location on the screen within the bounds of the current object that you will be simulating a tap.



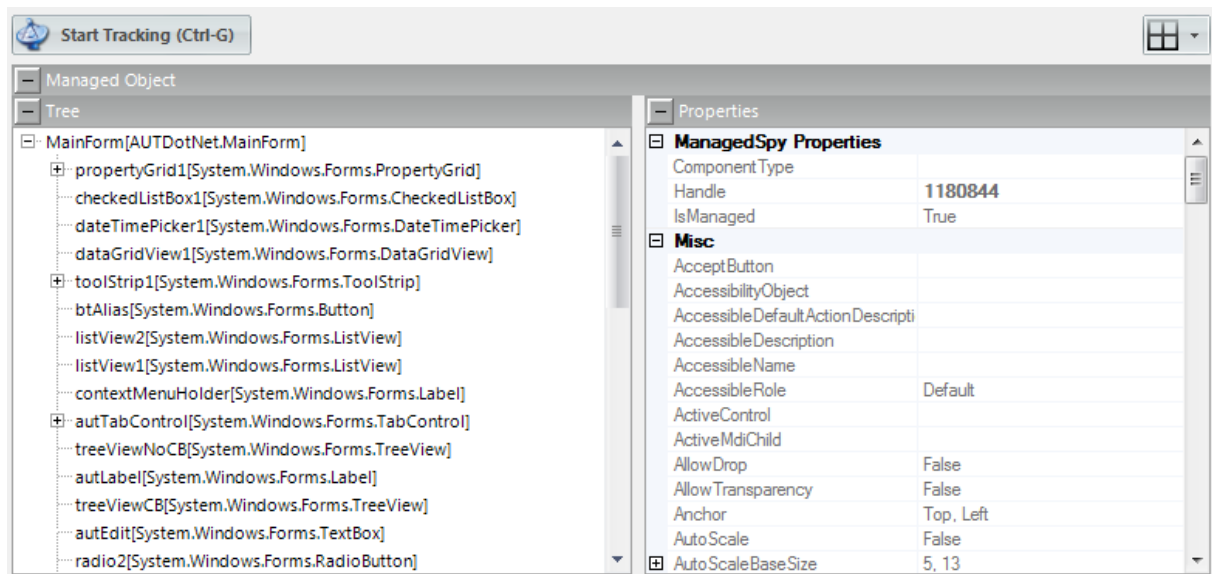
- **Scroll To** - simulates scrolling to the selected object in the device object tree (which may not be visible).
- **Text / Send Keys** - to use this, enter in text in the text box and click 'Send Keys', this sends text to the currently selected object as if you were using the virtual keyboard on the device.
- **Accept Alert** - if you have a popup alert on the device, this simulates accepting it
- **Dismiss Alert** - if you have a popup alert on the device, this simulates dismissing it
- **Change Orientation** - for devices that support it, this simulates changing the orientation of the device from landscape to portrait (or vice-versa)
- *Execute Script - this is not currently supported and is for future functionality*

2.3.1.7.4 Managed (.NET) Spy

Purpose

The **Managed Spy** is used to inspect Microsoft .NET applications that contain .NET framework objects (e.g. using Windows Forms).

Screenshot



Features

The Managed Spy has the following features:

- The **Tree** pane lets you view the hierarchy of .NET objects available in the application
- The **Properties** pane lets you view the exposed properties of the highlighted .NET object
- The **Learn Object** option is displayed when you use the Spy during recording and lets you pick specific [objects to learn](#).

Commands

In addition to viewing the object hierarchy and object properties, you can perform the following tasks:

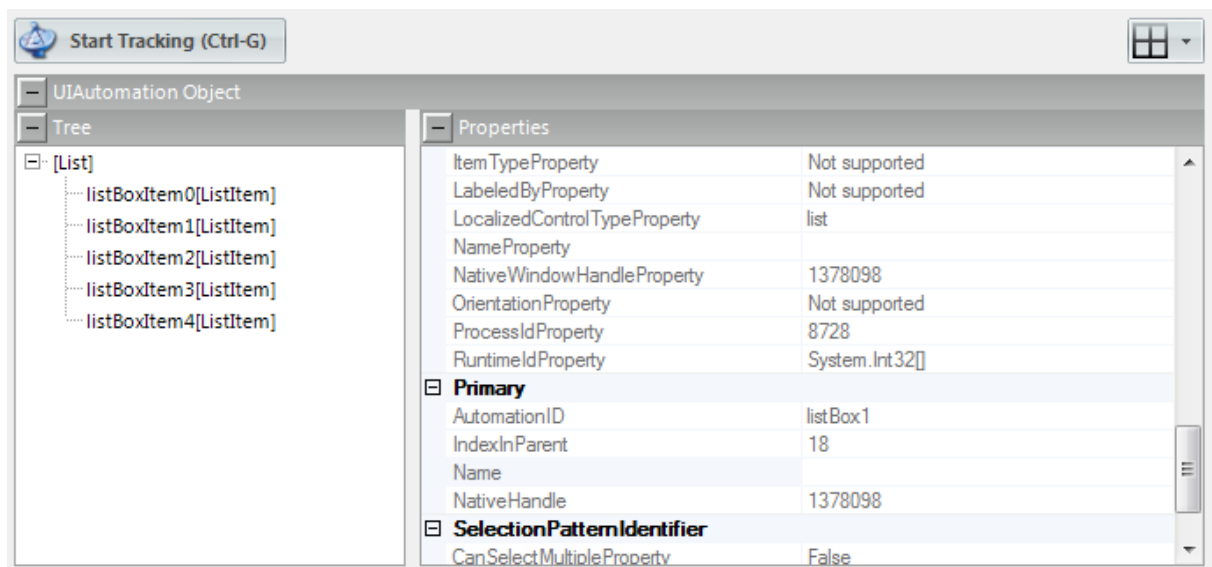
- **Parent** - This selects the parent object of the one displayed
- **Highlight** - This will attempt to Flash (highlight with a red rectangle) the object selected in the Spy.
- **Refresh** - this simply refreshes the Spy view to reflect any changes that might have occurred in the application.
- **Save to File** - this will save the properties of the currently selected object to a text file.

2.3.1.7.5 UI Automation Spy

Purpose

The **UIAutomation Spy** is used to inspect applications that contain Microsoft UIAutomation objects (e.g. Windows Presentation Framework, Silverlight or Java's Standard Widget Toolkit running on Windows).

Screenshot



Features

The UIAutomation Spy has the following features:

- The **Tree** pane lets you view the hierarchy of UIAutomation objects available in the application
- The **Properties** pane lets you view the exposed properties of the highlighted UIAutomation object
- The **Learn Object** option is displayed when you use the Spy during recording and lets you pick specific [objects to learn](#).

Commands

In addition to viewing the object hierarchy and object properties, you can perform the following tasks:

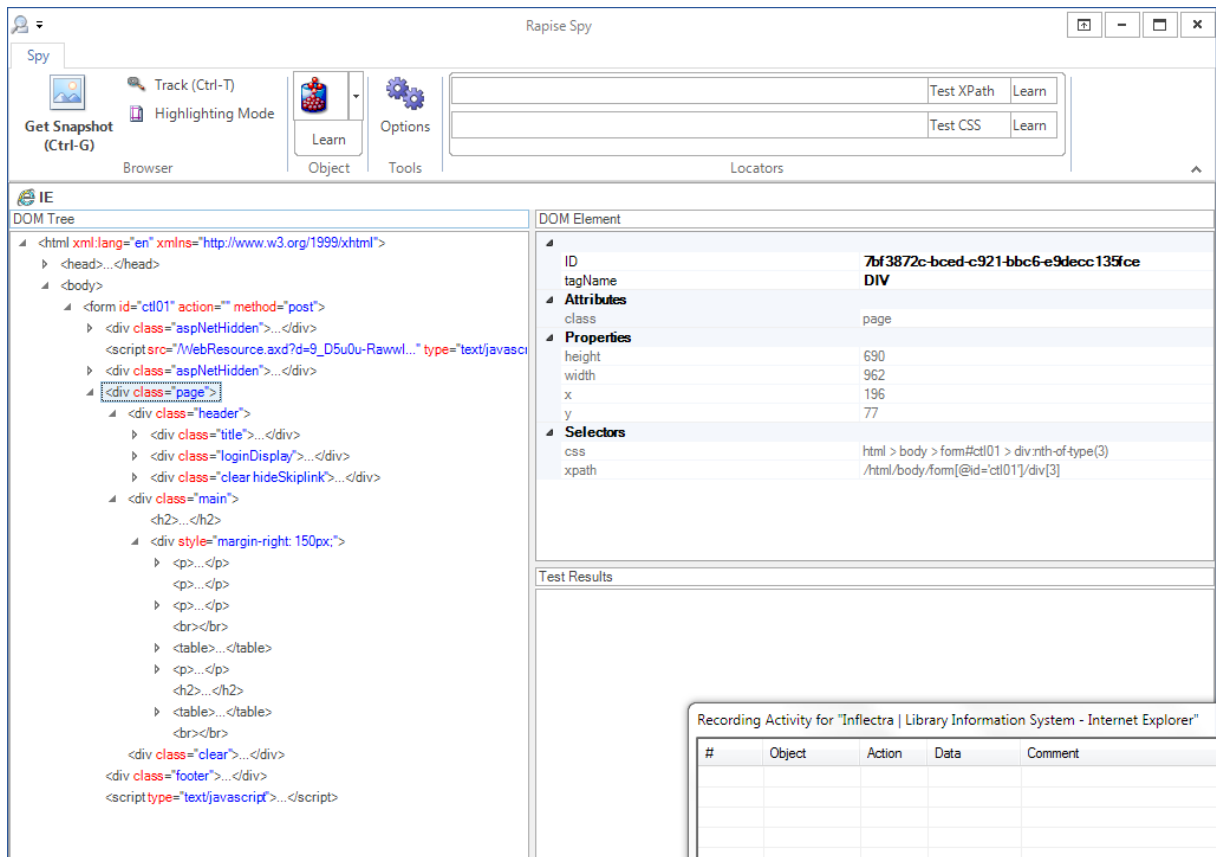
- **Parent** - This selects the parent object of the one displayed
- **Highlight** - This will attempt to Flash (highlight with a red rectangle) the object selected in the Spy.
- **Refresh** - this simply refreshes the Spy view to reflect any changes that might have occurred in the application.
- **Save to File** - this will save the properties of the currently selected object to a text file.

2.3.1.7.6 Web Spy

Purpose

The **Web Spy** is used to inspect web applications running on any of the supported web browsers (currently Internet Explorer, Firefox and Chrome). It allows you to view the hierarchy of objects in the web browser **Document Object Model (DOM)**. In addition it makes the testing of dynamic data-driven web applications easier because it lets you test out dynamic [XPath](#) or [CSS](#) queries against the web page and verify that the objects return match your expectations.

Screenshot

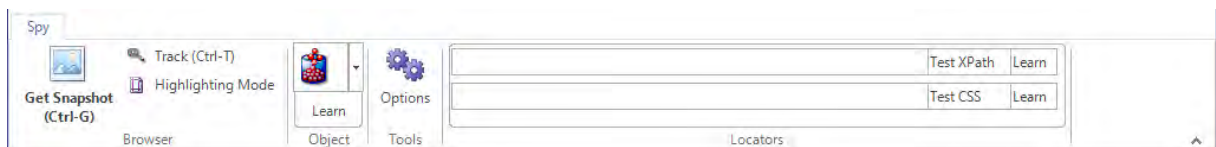


The **Web Spy** dialog shows a hierarchical representation of the HTML DOM elements that make up the web application being tested as well as the properties of the currently selected object. You can select the object by clicking on the object hierarchy displayed to the left. The properties displayed are categorized into different types that are described below.

The **Web Spy** also lets you visually highlight an item in the web browser from the object hierarchy and also the reverse - selecting an object in the hierarchy by clicking on its representation in the web browser.

Spy Toolbar

The Web Spy toolbar provides the following tools:

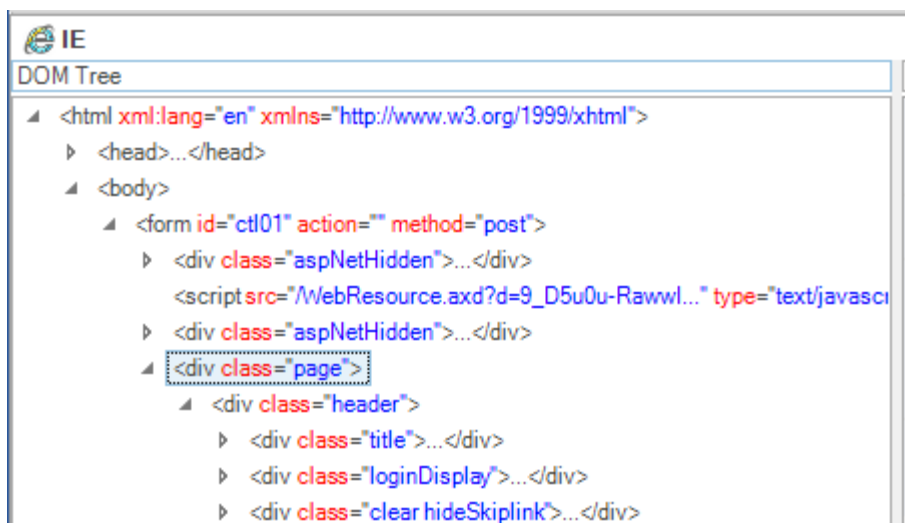


- **Get Snapshot (Ctrl-G):** Clicking on this command will refresh the contents of the DOM Tree. This should be done whenever a change is made to the state of the web page in the web browser and you want to view how the DOM objects have been changed after the change.
- **Track (Ctrl+T):** This tool lets you select items in the web application as rendered by the web browser and have the corresponding object be selected in the DOM tree window. This is useful if you are not sure where an item is located in the DOM tree but you can see it in the browser.

- **Highlighting Mode:** When this is selected, whenever you select an object in DOM Tree, it will highlight the item in the rendered web page with a red square. This allows you to visually see an item in the DOM tree and how it appears to the user.
- **Learn:** Clicking on this tool lets you take the currently selected object and add it to the [Object Tree](#) for the current test. It can then be used as a scriptable object in the test script. When you click on the Learn button, you have the choice (in the dropdown list) of learning the object in terms of either its **XPath** or **CSS** properties.
- **Options:** Clicking on this brings up the [Web Settings](#) dialog box.
- **Locators:** This section is described separately below in the 'Test Results' section. These tools allow you to try out different XPATH and CSS queries to see which objects match. You can then Learn the results of these queries as new Rapise objects.

DOM Tree

The DOM tree lets you view all of the HTML elements (also known as DOM objects) that make up the web application / web page being tested. The elements are showing in a hierarchical tree representation that mirrors how they are nested on the page. Each element is displayed along with the various attributes (class, id, style, etc.) that are associated with the element:



The DOM elements are shown in gray, with the attribute names being displayed in red and the attribute values in blue.

Sometimes you have more attributes displayed than can be easily read. To make viewing the DOM tree easier, you can use the [Web Settings](#) dialog to set a list of attributes that should be excluded from the DOM tree pane.

- When you click on an element in the DOM tree its properties are displayed in the **DOM Element** pane and it's highlighted in the web browser.
- When you right-click on an element it opens a popup menu with the following options:
 - Copy - copies node text to clipboard (no attribute truncation)
 - Highlight - highlights the element in the browser
- Double clicking on an element copies its [XPath](#) and [CSS](#) to the ribbon

DOM Element

This pane displays the properties of the currently selected object:

DOM Element	
ID	ff4ae447-3791-07c5-a044-6027910dc22e
tagName	TR
Accessibility	
role	rowheader
Properties	
height	24
width	641
x	694
y	177
Selectors	
css	
xpath	/html/body/form[@id='ctl01' and @name='ctl01']/table[@id='tbl01']

The properties that are displayed are grouped into the following categories:

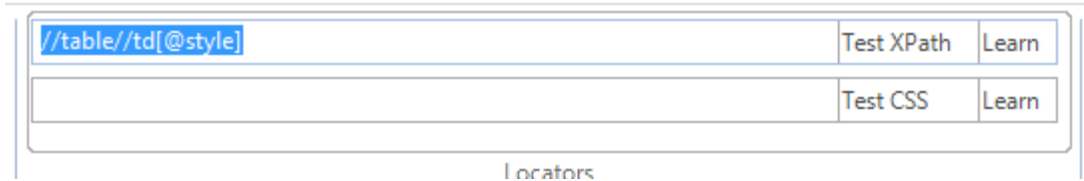
- **Primary**
 - innerHTML - this contains a textual representation of all the HTML content inside this element (if any)
 - tagName - this contains the name of the HTML element in upper case (e.g. TD, TABLE, DIV)
- **Attributes** - all attributes that are not in the Primary or Accessibility section appear here
 - id - this contains the ID of the DOM element, if specified in the page
 - style - this contains the inline styles defined for the element
 - class - this contains the list of CSS classes applied to the element (separated by spaces if more than one)
- **Accessibility** - this contains all of the role or aria-* attributes that are defined in the W3C ARIA accessibility standard
 - role
 - aria-*
- **Properties** - this contains the computed positional information about the element
 - height
 - width
 - x
 - y
- **Selectors**
 - css - this is the [CSS](#) selector that can be used to uniquely locate this element. If you click LEARN using [CSS](#), this is what will be recorded with the object.
 - xpath - this is the [XPath](#) selector that can be used to uniquely locate this element. If you click LEARN using [XPath](#), this is what will be recorded with the object.

Test Results

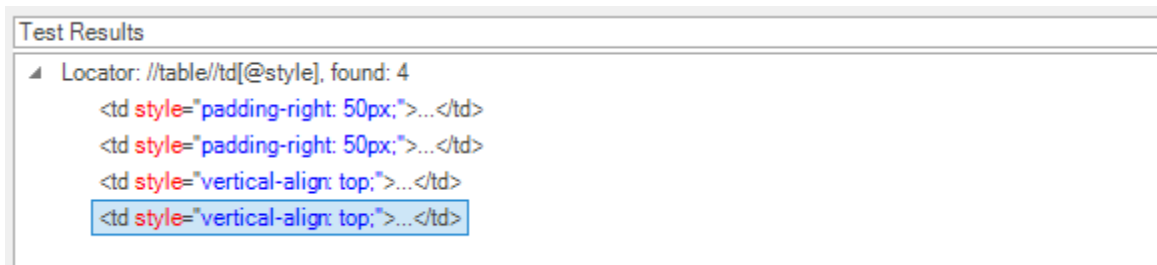
In addition to navigating the DOM tree and Learning specific objects, the other main capability of the DOM Spy is the ability to create queries using either [XPath](#) or [CSS](#) to see which objects match the query and then learn the specific result. For example we want to find all the table cells that have at least some style information specified.

a) Using XPath

If you enter in the [XPath](#) query to locate the table cells in the **Locators** box at the top.



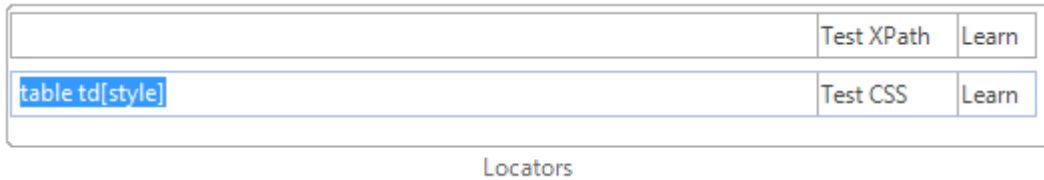
When you click **Test XPath** it will display all of the DOM elements that match the query:



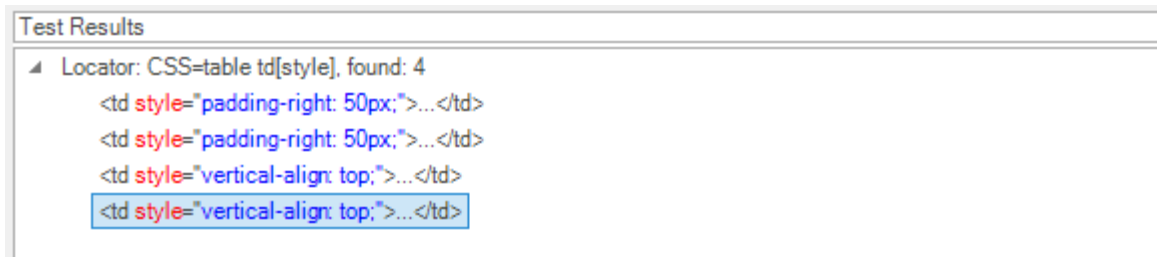
You can now refine the query to only find the items you want to test.

b) Using CSS

If you enter in the [CSS](#) selector to locate the table cells in the **Locators** box at the top.



When you click **Test CSS** it will display all of the DOM elements that match the query:



You can now refine the query to only find the items you want to test.

In either case, if you can adjust the query to only match a single element, you can then click the appropriate **Learn** button next to the **Test XPath** or **Test CSS** buttons. That will learn the specified query as a new object that can be scripted against in Rapise. This is very useful if you want to dynamically select an object based on its content rather than a hard-coded ID or position.

In addition, in the test results view, when you click on a result:

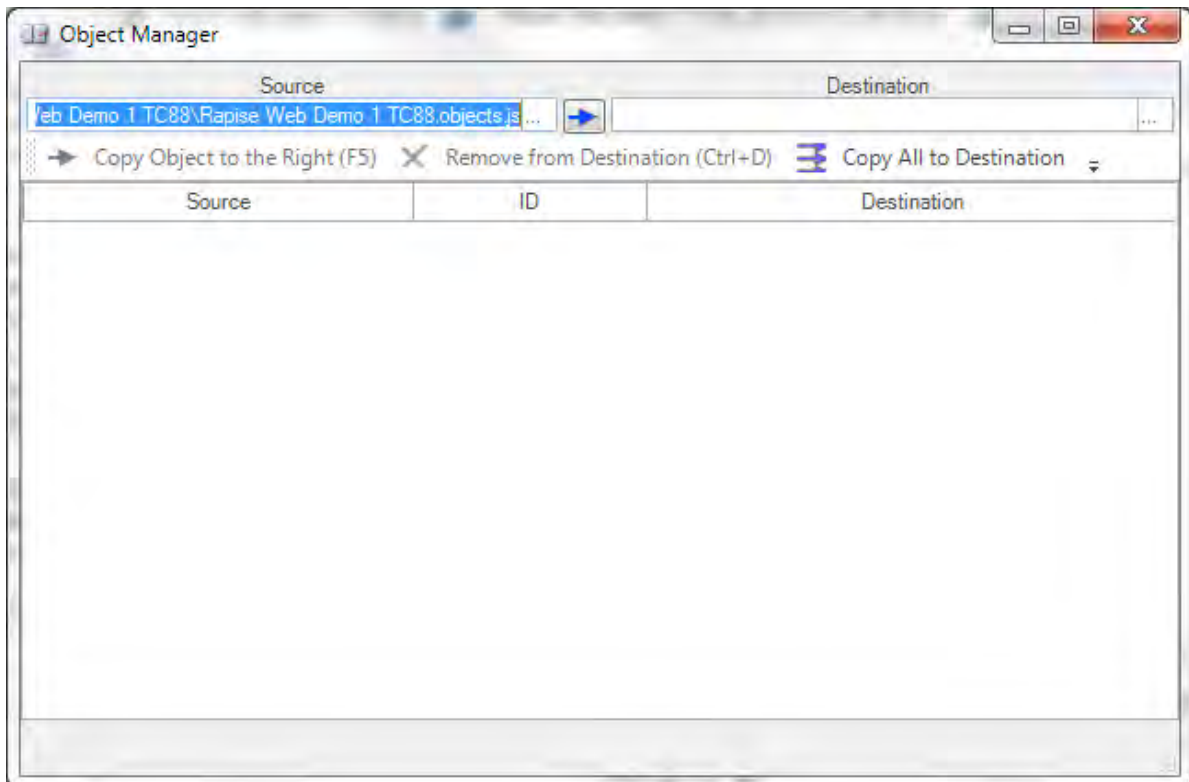
- The right-click popup menu is the same as for DOM Tree if type of the result is a DOM Element
- If the result is simple text then only Copy is available, which copies the text
- Clicking on a DOM element in the results list opens it in DOM Element pane and also selects it in the DOM Tree pane

2.3.1.8 Object Manager

Purpose

The **Object Manager** allows you to merge the **object trees** of two different Rapise tests. This can be useful when you have a new test that needs some of the objects from a test that you have already written.

Screenshot

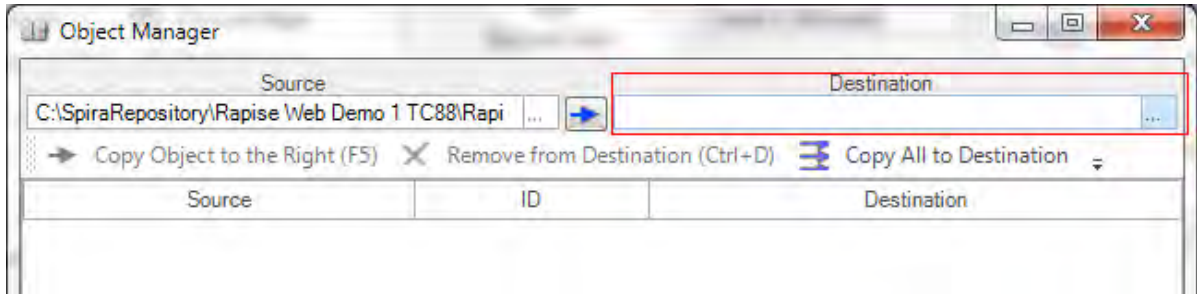


How to Open

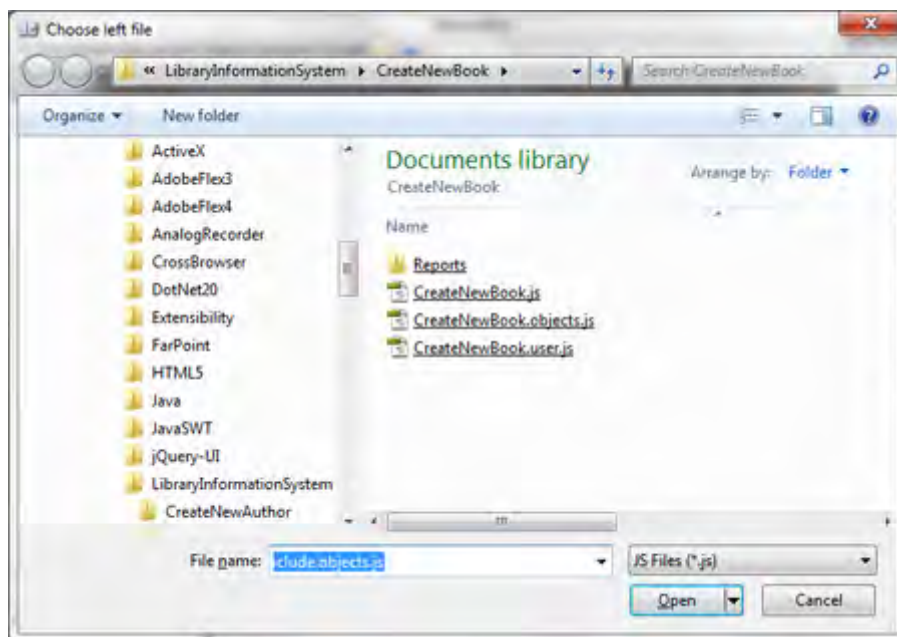
Click on the **Object Mgr** icon in the main Rapise **Test Ribbon**. This will display the object manager screen for the current test as illustrated in the screenshot above.

Choosing Files to Merge

In the example above we have opened up a test case that has some objects. Now we need to open up another test that also has some objects. To do this, click on the [...] button to the right of the **Destination** text box to open up a Rapise test object file (*.objects.js):



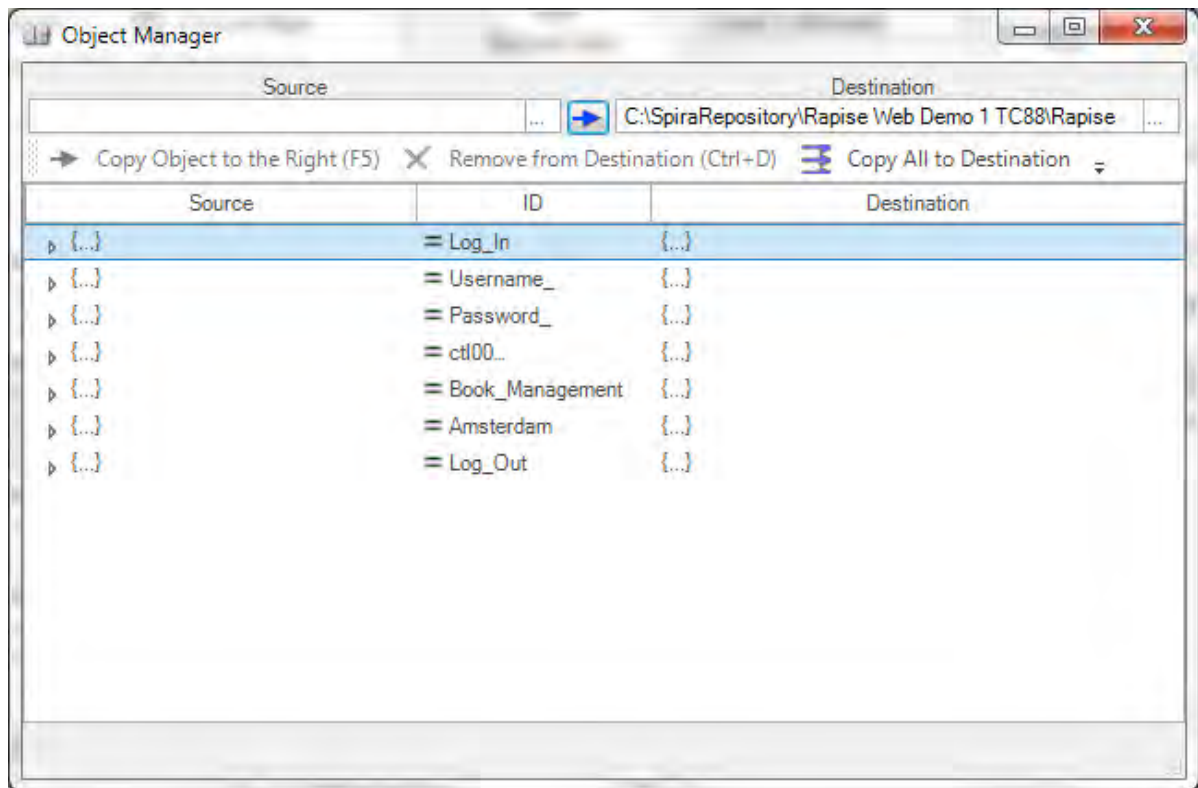
This will then bring up the File selection dialog box, where you can choose which other object file to open:



Once you have selected the file, the **Object Manager** dialog will display the list of objects to be merged (see next section).

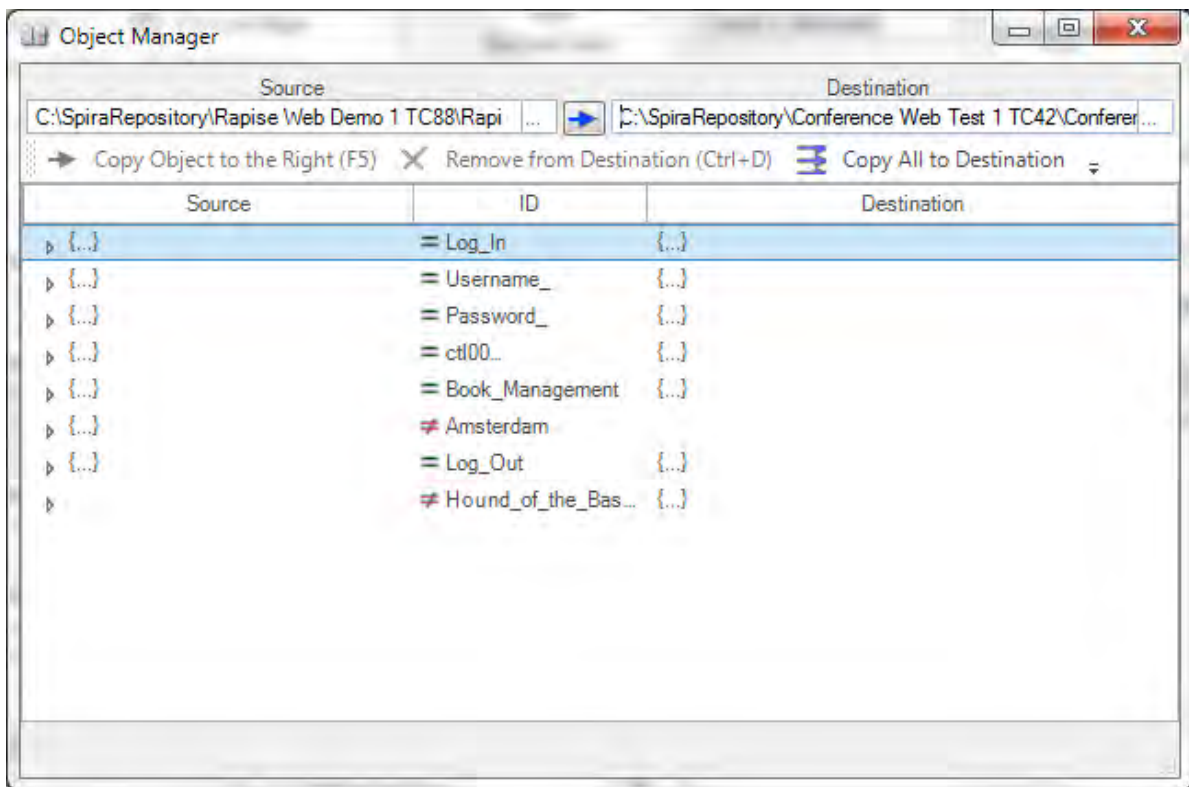
If you click on the [...] button in left hand side of the dialog box, marked **Source**, you will be able to select a different Rapise test object file (***.objects.js**) that you want to copy the objects **from**.

If you want to make the current test the **Destination** rather than the **Source** (i.e. you want to add objects to the current test rather than exporting from the current test), simply click the blue **Arrow** icon and the current test will be moved to the destination:

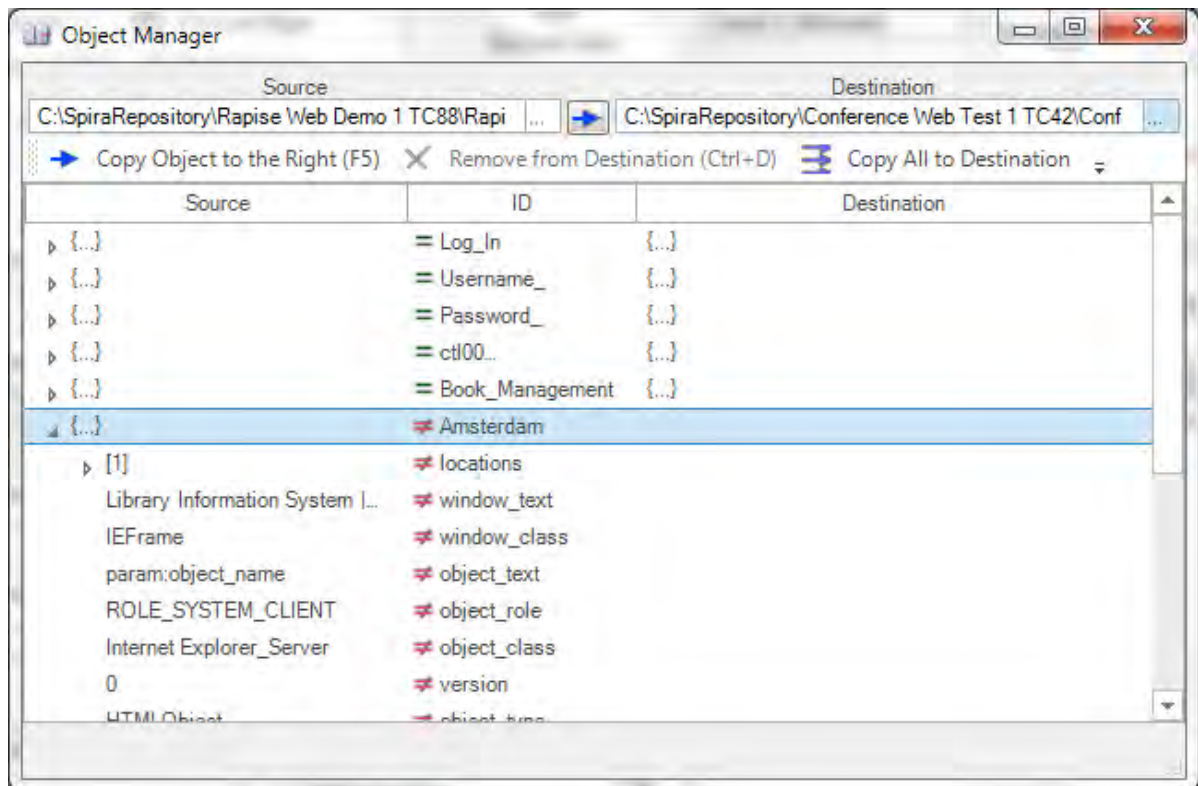


Viewing the Objects to Merge

Once you have selected both the source and destination object files, the system will display the dialog that lets you see all the objects defined the source and destination tests. You can now choose which objects to add/delete to/from the destination test:



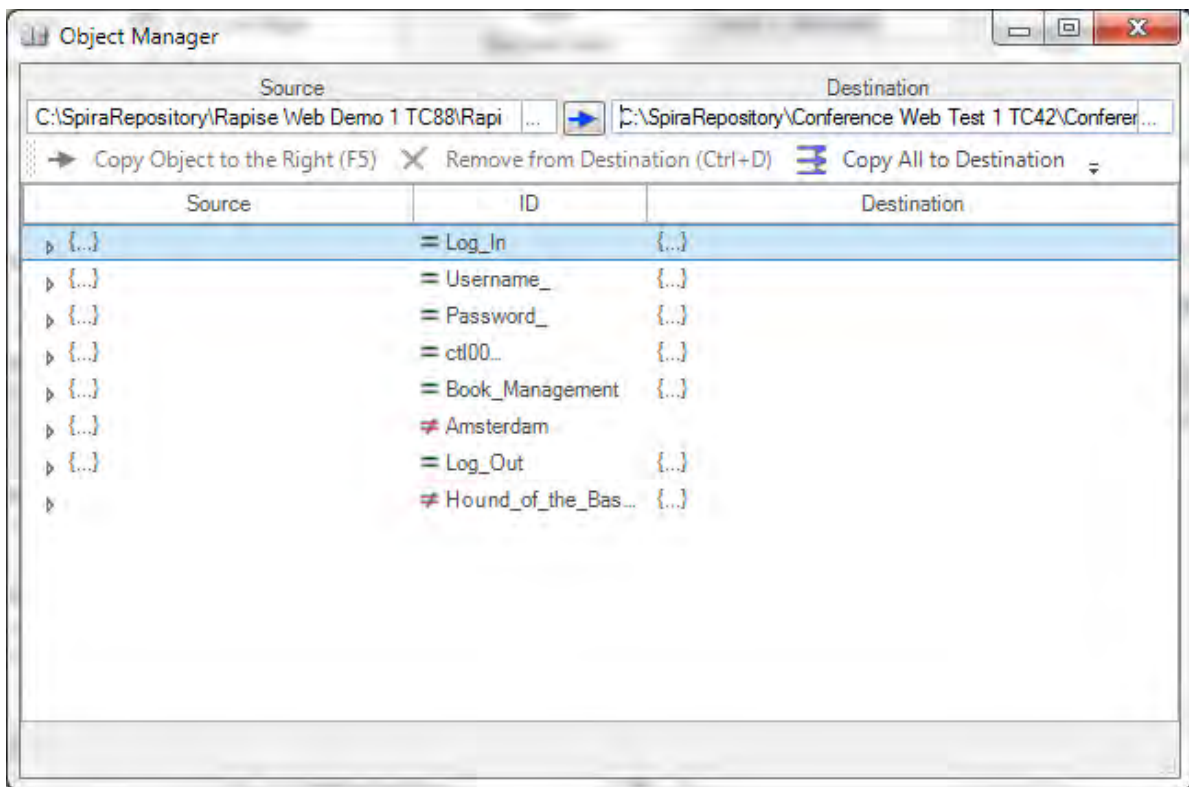
For each object in the **object manager** you will see an [**>**] expand icon in the **left-hand** side. When you click on this icon it will expand the object to display its properties. If the same object is in both the source and destination, you will see the properties of both versions on the left and right hand sides respectively. If it only exists in the source or destination, then it will only show the properties on the appropriate side:



Each object in the source object list will be displayed with one of two icons:

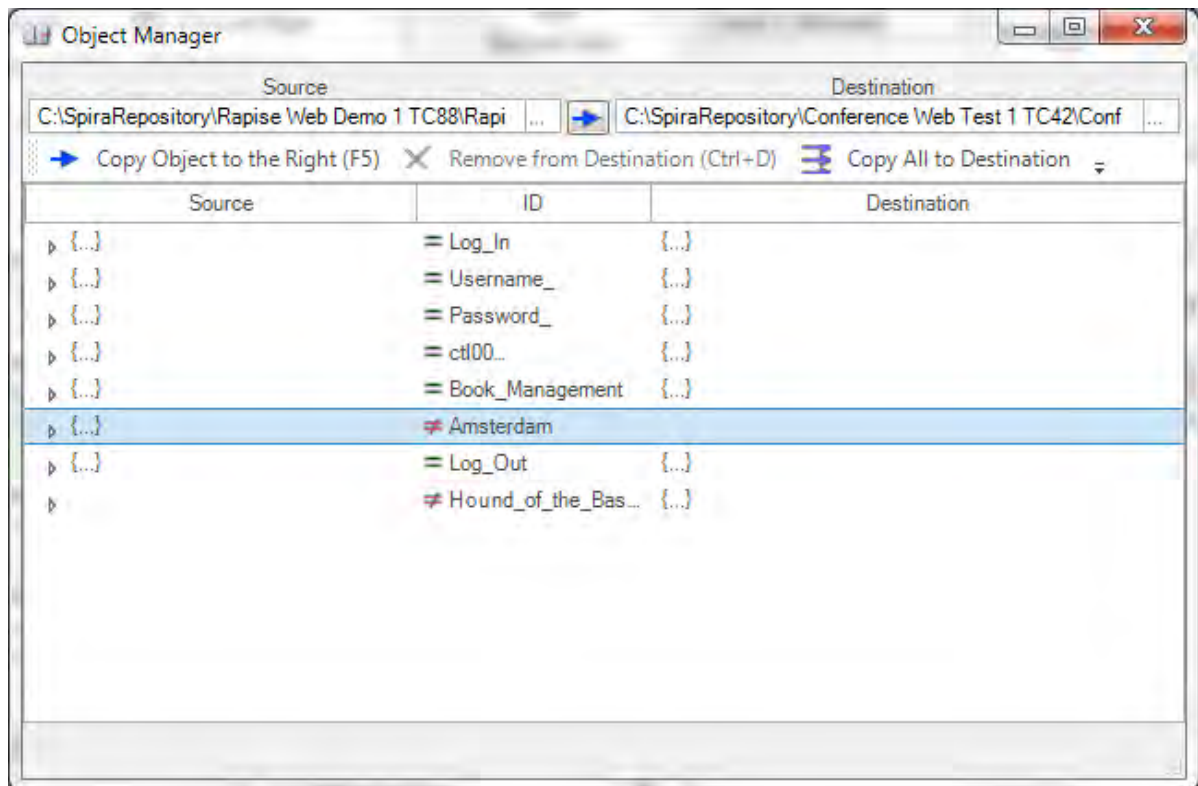
- **equals (=)** - this means that the same object exists in both the **source** and **destination** test object files.
- **not-equals (≠)** - this means that the object only exists in the **source** file and not in the **destination** or vice-versa

You can see which file(s) an objects is defined in (source, destination or both) by looking for the {...} icon. If you see this on the left hand side only, this object only exists in the source file, if you see it in the right-hand side, it only exists in the destination. If you see it on both sides then it exists in both the source and destination:

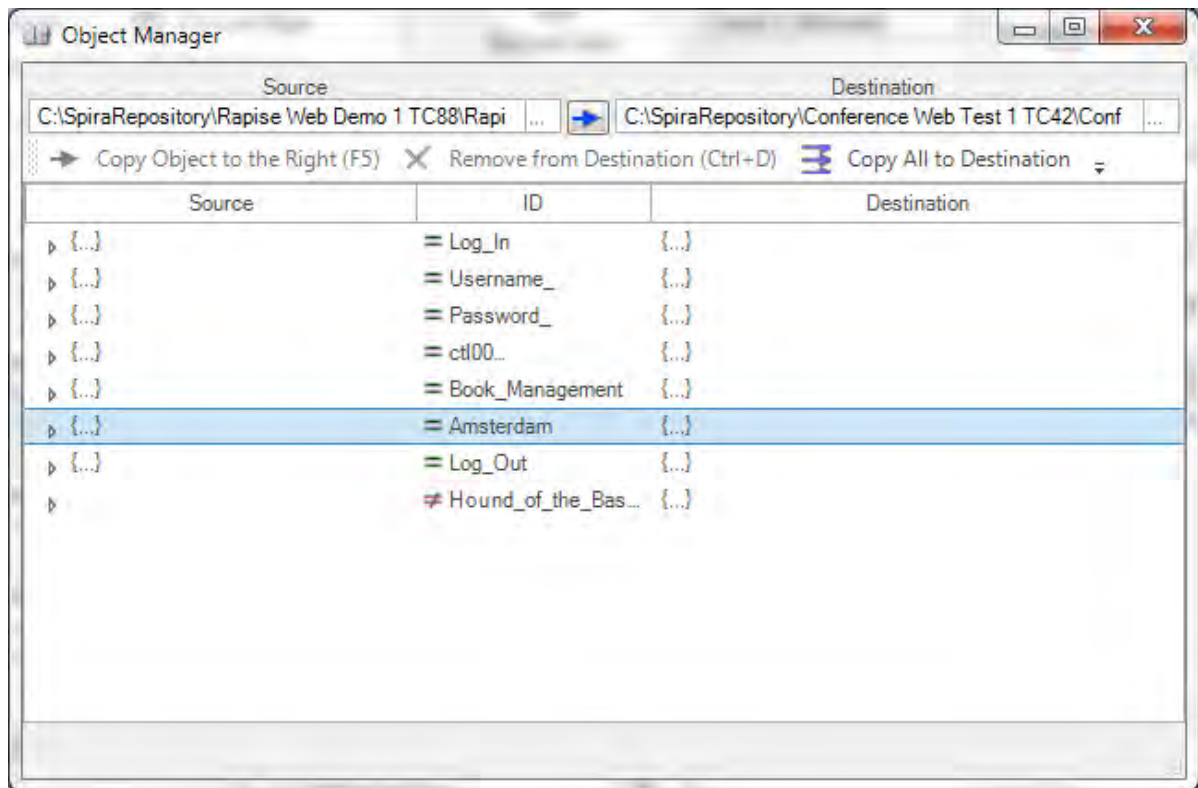


Merging the Objects

To add an object from the **source** > **destination** test (for example the 'Amsterdam' object in this example), select the row in question:

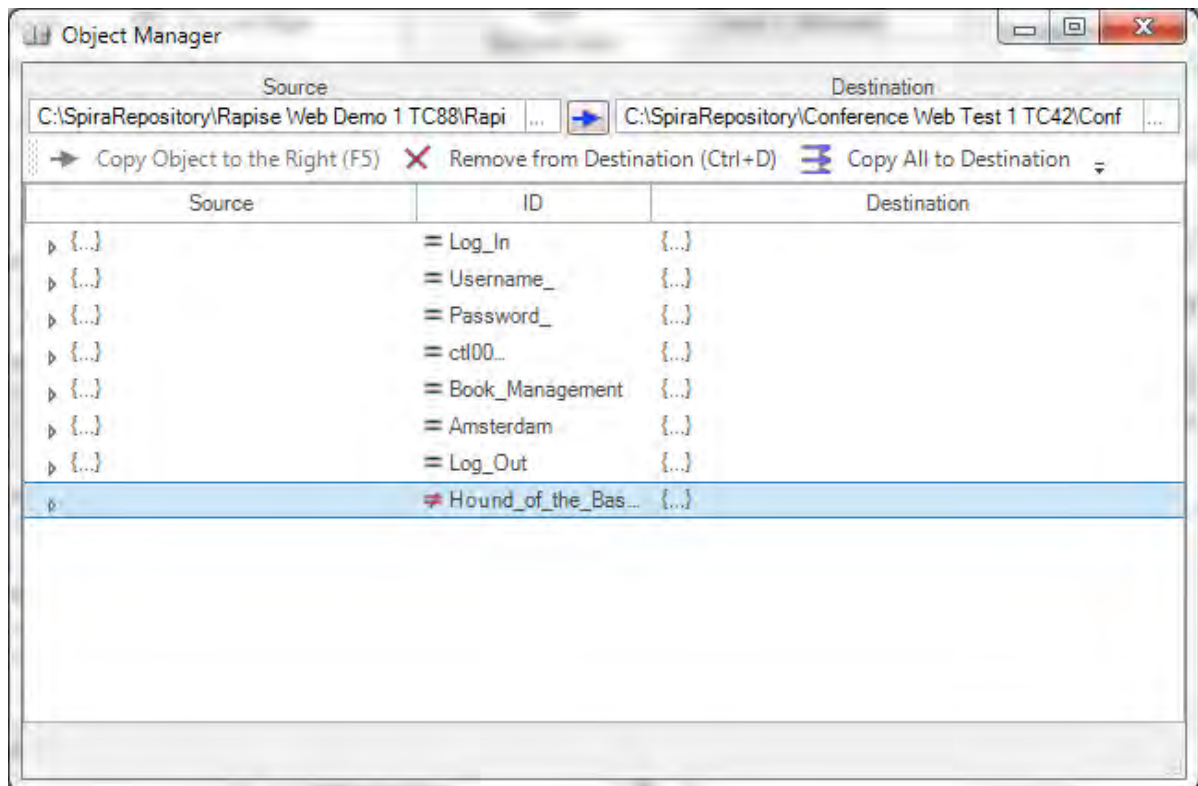


Then click on the **'Copy Object to the Right (F5)'** icon in the toolbar. This will copy the object from the source to the destination:

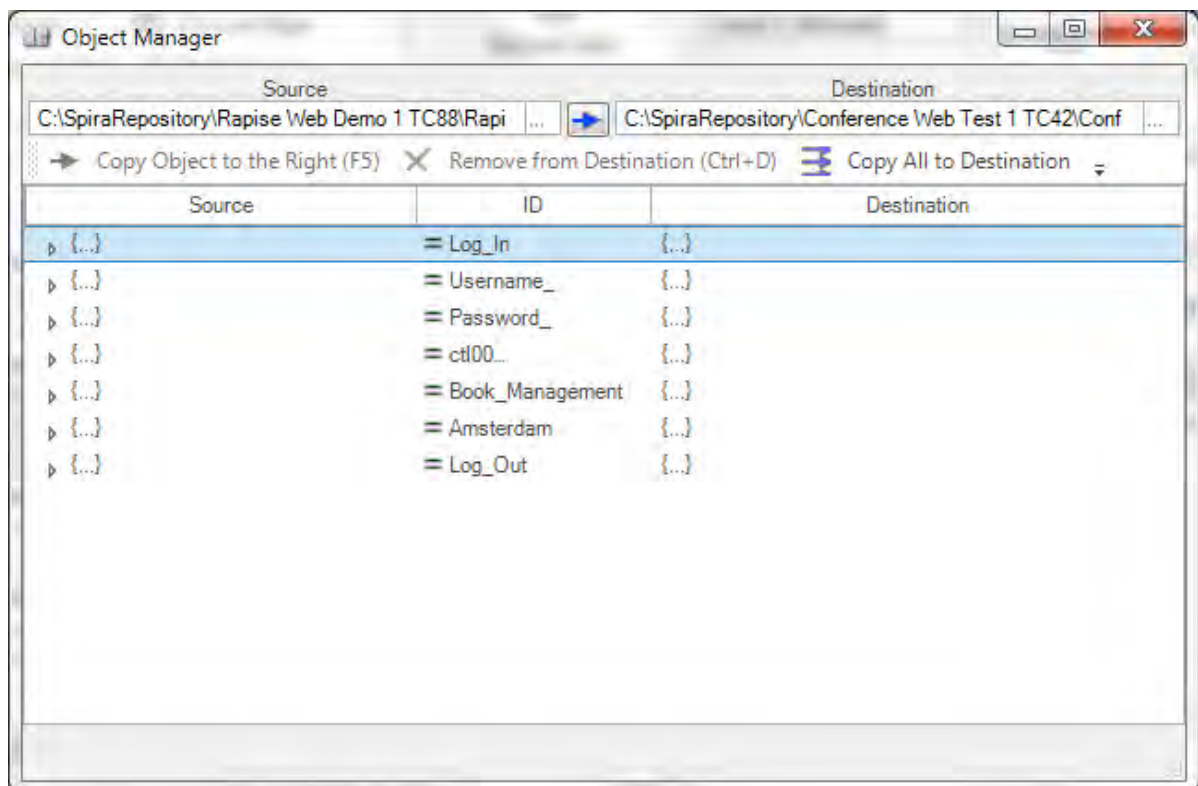


You can tell that the object has been copied because the **not-equals (≠)** sign changes to the **equals option (=)**.

Conversely, to remove an object (e.g. 'Hound of the Baskervilles') from the destination, simply select the row:



Then click on the 'Remove from Destination (Ctrl+D)':



The object will now have been removed from the **destination** object tree.

Warning: All of the changes you make to the objects file are committed immediately, so only delete objects in the destination test that you no longer want to be part of the test.

2.3.2 Playback

Purpose

When you record a test, Rapise translates your actions into a script. When you **playback** the test, the script is executed.

Usage

You can either run your script from the [Command Line](#), or you can play it back while Rapise is open (described below):

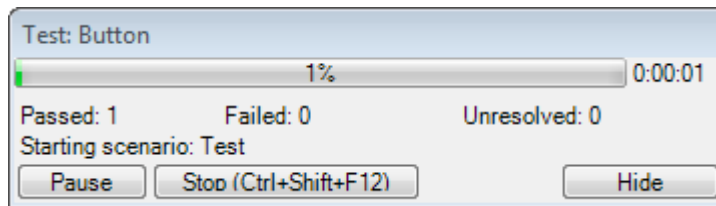
1. You will first need to [open your test](#). There is no need to have the AUT (Application Under Test) open. Rapise will open the AUT before it begins execution of the test.
2. Now, press the play button at the top of the Rapise test ribbon.



Play

Executing

3. During test execution, Rapise displays an execution monitor dialog box that lets the user see the progress of testing playback. The dialog is only shown during test execution and can be turned off in the [Options](#) dialog. The following is a screenshot of the test execution monitor.



The user can pause or stop the test execution by clicking either the **Pause** or **Stop** button.

4. When Rapise is done executing the test, results will be displayed in a table. The rows with green text are steps that passed; the rows with red text are steps that failed. The following is a screenshot of test results where every step passed:

#	Type	Start	Name	Status	Browser	Comment	Iteration
	Assert	11:47:13.659	Username:.DoSetText(["librarian"])	Pass	Internet Explorer HTML	Returned Value: true	0
	Assert	11:47:13.862	Password:.DoSetText(["librarian"])	Pass	Internet Explorer HTML	Returned Value: true	0
	Assert	11:47:14.096	ct00\$MainContent\$LoginUser\$LoginButton.DoClick()	Pass	Internet Explorer HTML	Returned Value: true	0
	Assert	11:47:14.517	Book Management.DoClick()	Pass	Internet Explorer HTML	Returned Value: true	0
	Assert	11:47:15.063	(Create new book) .DoClick()	Pass	Internet Explorer HTML	Returned Value: true	0
	Assert	11:47:15.609	Name:.DoSetText(["The Restaurant at the end of th	Pass	Internet Explorer HTML	Returned Value: true	0
	Assert	11:47:15.812	Author:.DoSelect(["Agatha Christie"])	Pass	Internet Explorer HTML	Returned Value: true	0
	Assert	11:47:16.015	Genre:.DoSelect(["Science Fiction"])	Pass	Internet Explorer HTML	Returned Value: true	0
	Assert	11:47:16.186	ct00\$MainContent\$btnSubmit.DoClick()	Pass	Internet Explorer HTML	Returned Value: true	0
#	Assert	11:47:16.654	Failure in Test	Fail	Internet Explorer HTML		0

Test Fail
Total 15 Pass; 11 Fail; 2 Info; 2

See Also

- For more information about the report, see [Automated Reporting..](#)
- For information about recording a test, see [Recording.](#)
- For instructions on using the **Command Line**, look [HERE.](#)

2.3.2.1 Command Line

Purpose

Rapise test scripts can be run from the **command line**.

Usage

The form of the command is:

```
cscript SeSExecutor.js path_to_sstest_file [evals]
```

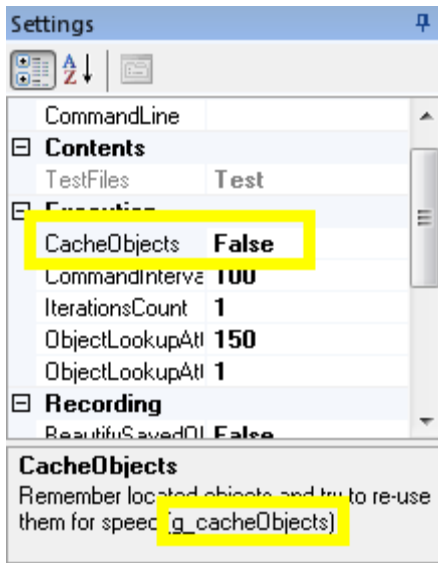
where

path_to_sstest_file is a path to sstest file, e.g. "C:\Program Files\Inflectra\Rapise\Samples\SmarteATM\SmarteATM.sstest"

evals (optional) is a statement like this:

-eval: *varname1=value1;varname2=value2;...*

varname is a global variable associated with an option in the [Settings Dialog](#). Global variables are prefixed with a **g_**. The global variables under the **Execution** and **Recording** headings can be found by clicking on the corresponding option in the Settings Dialog (see below):



Other variables include:

- g_scriptPath
- g_reportPath
- g_objectsPath
- g_configPath

Exit Code

- 0 indicates a pass
- 1 indicates failure

See Also

- [Settings Dialog](#)

2.3.2.2 Object Locator

Purpose

Object locators are created during [Recording/Learning](#) and used during [Playback](#) to identify [learned objects](#) and [simulated objects](#). There are four types of locators:

- **Location:** This locator uses the object's index relative to encapsulating objects for identification. The location is stored as a period separated list of indexes. For instance, 1.2.3 would be "the third object in the second object in the first object." The name, class, and role of the object are also stored.
- **LocationPath:** This locator remembers name, class, and role property information for the object and all of its encapsulating objects.
- **LocationRect:** This locator stores screen coordinates.
- **Ordinal:** This locator creates an array of object name/object class combinations. Each object is assigned an index in the array.

Usage

The locator for each object is specified in `saved_script_objects` in `<scriptname>.objects.js` your test script. Locator information is highlighted in the simulated object example below:

```
Obj10:{"version":0,"object_type":"SeSSimulated","object_name":"regex:.* - Paint",
"object_class":"MSPaintApp","object_role":"ROLE_SYSTEM_WINDOW",
"object_text":"regex:.* - Paint",
"locations":[{"locator_name":"Location","location":{"location":"","
>window_name":"regex:.* - Paint","window_class":"MSPaintApp"}]}
```

Locator Parameters

If a piece of information in the locator matches a piece of object info (object_name, object_class, object_role, object_text) then it is stored in the locator as "param:<object_info>". For example:

```
"object_name": "param:object_name",
"object_class": "param:object_class",
"object_role": "param:object_role",
```

Over-riding Locator Parameters

You can over-ride the information used to locate your object at runtime. Normally, to refer to an object, you use the SeS function:

```
SeS('Obj9')
```

To override locator parameters, specify the new value in the function call. In the following example, we over-ride the **object_name** parameter for object 9:

```
SeS('Obj9', {object_name:"regex:.*"})
```

You may want to change a parameter value for every locator/object in the program. For instance, perhaps the url of the webpage has changed. Use the global variable **g_locatorparams** as in the following example:

```
function Test()
{
// Here we use direct parameter overriding
SeS('Obj1', {url:"http://newaddr/"}).DoAction();
SeS('Obj2', {url:"http://newaddr/"}).DoAction();

// And this is equivalent to above
g_locatorparams["url"]="http://newaddr/";
SeS("Obj1").DoAction();
SeS("Obj2").DoAction();
...
}
```

See Also

- [Object Learning](#)
- [Playback](#)

2.3.3 Automated Reporting

Purpose

Each time you playback a test, Rapise **automatically generates a report** detailing the steps of the test, the data values used, and the outcome of each step.

Usage

Execute your test using the instructions [here](#). When the test is complete, the [Report Tab](#) will appear in the Ribbon, and a report file (ending in `.trp`) will open in the [Content View](#). It will look like this:

Drag a column header here to group by that column.

#	Name	Start	Type	Comment	Status	Iteration
		=				=
	Character read successfu	15:32:28.89	Assert	T	Pass	0
	Letter size is 44	15:32:28.89	Assert		Fail	0
	Character read successfu	15:32:28.90	Assert	e	Pass	0
	Letter size is 24	15:32:28.92	Assert	Text = 'e' Font = {Name='Calibri'; Size=2	Pass	0
	Character read successfu	15:32:28.93	Assert	s	Pass	0
	Letter size is 12	15:32:28.93	Assert	Text = 's' Font = {Name='Calibri'; Size=1	Pass	0
	Character read successfu	15:32:28.95	Assert	t	Pass	0
	Letter size is 72	15:32:28.96	Assert	Text = 't' Font = {Name='Calibri'; Size=7	Pass	0
	C:\Program Files	15:32:28.96	Test	Passed:7 Failed:1	Fail	

Test Fail
Total:9 Pass:7 Fail:2 Info:0

The first row (with a white background) is used for [Report Filtering](#). The rows below that each represent a step in the test. The rows with green text represent success; the rows with red text represent failure. You can reposition the columns by dragging and dropping the column names.

The Columns

- **#:** For displaying icons.
- **Name:** The test name.
- **Start:** The time the test step began executing.
- **Type:** Can be one of the following values: Test; Assert; Message.
- **Comment:** Assertions and messages have associated comments. They are displayed here.
- **Status:** Whether the step passed, failed, or was merely informational.

Drag a column header here...

Drag a column header here to group by that column.

Use to order by the values in the chosen column. The result of dragging the **Status** column over looks like this:

Status

#	Name	Start	Type	Comment	Iteration
		=			=
Status : Fail (2 items)					
+ Status : Pass (7 items)					

You can expand each item to see the corresponding report rows:

The screenshot shows a table with columns: #, Name, Start, Type, Comment, and Iteration. A blue header bar indicates 'Status : Fail (2 items)'. Below it, a row shows a failed test: 'Letter size is 44' with start time '15:32:28.89', type 'Assert', and iteration '0'. A summary row below that shows 'C:\Program Files\' with 'Passed:7 Failed:1'. A yellow footer bar indicates '+ Status : Pass (7 items)'.

#	Name	Start	Type	Comment	Iteration
Status : Fail (2 items)					
	Letter size is 44	15:32:28.89	Assert		0
	C:\Program Files\	15:32:28.96	Test	Passed:7 Failed:1	
+ Status : Pass (7 items)					

Drag the **Status** icon back to undo the sort:

This screenshot is identical to the one above, but with two red arrows pointing to the 'Status' column header in the table's column list. One arrow points down to the header, and the other points up to the header from below.

#	Name	Start	Status	Type	Comment	Iteration
Status : Fail (2 items)						
	Letter size is 44	15:32:28.89	Assert			0
	C:\Program Files\	15:32:28.96	Test	Passed:7 Failed:1		
+ Status : Pass (7 items)						

See Also

- [Report Filtering](#)
- The report output file is specified in the [Settings Dialog \(Settings > ReportPath\)](#).
- The [Report tab](#) of the Ribbon is used to alter the report layout.

2.3.3.1 Writing to the Report

Purpose

You can write to individual columns, create columns, and add data to the [report](#).

Usage

Writing to and Creating a Column

Use `Tester.PushReportAttribute` or `Tester.SetReportAttribute` to set values in specific rows. `Tester.PopReportAttribute` reverses the effect of `Tester.PushReportAttribute`:

PushReportAttribute

```
Tester.PushReportAttribute(columnName, value);
...some test steps... //the rows corresponding to these steps will have
                       //value in their columnName column
Tester.PushReportAttribute(columnName, value2);
...some test steps... //the rows corresponding to these steps will have
                       //value2 in their columnName column
Tester.PopReportAttribute(columnName); //test steps proceeding this will be back to
value
```

If `columnName` does not exist, it will be added to the report.

SetReportAttribute

```
Tester.SetReportAttribute(columnName, value);
```

If *columnName* does not exist, it will be added to the report. Column *columnName* will be populated with *value* for rows created after this function call (unless specified otherwise).

Adding Data

Data must be associated with an **Assert** row or a **Message** row.

```
Tester.Assert(description, expression, data, columnValuePairs)
```

```
Tester.Message(description, data, columnValuePairs)
```

- **description** is a string.
- **expression** is the Boolean expression that the assertion tests.
- **data** is an array of data objects. Each data element is written to its own row below the assert/message row with which it is associated. Data can be text, a link, or an image. The following is an array with text, link, and image data.

```
[  
    new SeSReportText(text),  
    new SeSReportLink(urlString, linkText),  
    new SeSReportImage(ImageWrapperObject, imageDescription)  
]
```

- **columnValuePairs** is an object with key/value pairs. Column names are the keys. If the specified column does not exist, it will be created. Ex:

```
{requirement: "Req1.2.3", paragraph: "12.5"}
```

See Also



- [Automated Reporting](#)
- The [test samples](#) include a sample about reporting (Reporting.sstest)

2.3.3.2 Report Filtering

Purpose

Report Filtering lets you specify criteria to filter your view of the [test execution report](#). Rows that do not match your criteria are hidden.

Usage

You can filter the report view while the file is open. Directly above the first row of the report, there is a row of filter cells. Each one has a **matching criteria** button , a text-box to specify a filter value, a drop-down menu with **predefined filter values**, and a **clear** button :

Drag a column header here to group by that column.

#	Name	Start	Type	Comment	Status	Iteration
<input checked="" type="checkbox"/>	Submit Transaction.DoAction()	14:09:32.17	Assert	Returned Value: true	Pass	0
<input checked="" type="checkbox"/>	Verify that: WindowText=Transaction	14:09:32.48	Assert		Pass	0
<input checked="" type="checkbox"/>	OK.DoClick()	14:09:32.87	Assert	Returned Value: true	Pass	0
<input type="checkbox"/>	Transfer	14:09:32.87	Test	Passed:7 Failed:0	Pass	0
<input checked="" type="checkbox"/>	Balance.DoAction()	14:09:33.14	Assert	Returned Value: true	Pass	0
<input checked="" type="checkbox"/>	OK.DoClick()	14:09:33.40	Assert	Returned Value: true	Pass	0
<input type="checkbox"/>	Balance	14:09:33.40	Test	Passed:2 Failed:0	Pass	0
<input checked="" type="checkbox"/>	Application.DoMenu(["Account:Exit "])	14:09:35.06	Assert	Returned Value: true	Pass	0
<input type="checkbox"/>	Exit	14:09:35.06	Test	Passed:1 Failed:0	Pass	0
<input type="checkbox"/>	C:\Program Files	14:09:35.06	Test	Passed:7 Failed:0	Pass	

Test Pass
Total:33 Pass:33 Fail:0 Info:0

Matching Criteria

Matching criteria determine how to compare the filter string value you input with the values in the report. You can select from 16 matching criteria. Press the button marked **A** above the column you are filtering to see the possible criteria:

Start	Type
=	<input checked="" type="checkbox"/>

- Starts with
- Contains
- Ends with
- Does not start with
- Does not contain
- Does not end with
- Does not match
- Not Like

Predefined Filter Values

If we expand the filter cell's drop-down menu, we will see a list of predefined filtering options:

Status	Iter
=	
(Custom)	0
(Blanks)	0
(NonBlanks)	0
Fail	0
Pass	0

- **(Custom)**: This option has to do with the next section *Custom Filter Options*.
- **(Blanks)**: Matches all rows where the value for this column is blank.
- **(NonBlanks)**: Matches all rows where the value for this column is not blank.
- All other predefined values are copied from cells in the column you are filtering.

Custom Filter Option

To create a filter with multiple matching criteria and filter values, select **(Custom)** from the filter cell's drop-down menu. The **Enter filter criteria for... Dialog** will open. Instructions for how to use it are [here](#).

ment	Status	It
	<input type="checkbox"/> <input type="checkbox"/>	=
	(Custom)	0
	(Blanks)	0
	(NonBlanks)	0
ont	Fail	0
	Pass	0

Undo Filtering

To undo filtering for a particular column, press the clear button for that column:

Status
= Pass <input type="checkbox"/>
Pass 0

See Also

- [Automated Reporting](#)
- [Enter filter criteria for... Dialog](#)

2.3.4 Visual Language (RVL)

Rapise includes a scriptless approach to writing automated tests as well as the option to use the built-in [JavaScript IDE](#).

This section gives an overview of the **Rapise Visual Language (RVL)** option and why you would use it.

For more information on RVL's syntax and constructs, please refer to the separate RVL section of this user manual.

What is Scriptless Testing

Let's imagine we're recording a simple automated web test against the sample <http://www.libraryinformationsystem.org> website that comes with Rapise:

LIBRARY INFORMATION SYSTEM Welcome **librarian!** [Log Out]

Home Book Management Author Management

WELCOME TO THE LIBRARY INFORMATION SYSTEM

This sample application lets you view, create and edit [books](#) in the library catalog as well as view, create and edit [authors](#).

To view the library catalog or the authors list you will need to login as a borrower and to make changes to the list of books or authors you will need to login as a librarian.

Note: This is not a real application, but is just a sample application used in the popular [SpiraTest test management system](#) and [Rapise test automation system](#). Both of these products are marketed by [Inflectra Corporation](#).

spiraTest **Rapise**™ **inflectra**™

Test Management Test Automation Inflectra Corporation

This sample application has [SOAP](#) and [REST](#) web service APIs that can be tested by Rapise.

Now in this script, we'll perform the following actions to verify that you can login correctly (the happy path):

1. Click on the login button
2. Enter your username and password
3. Click on the submit button
4. Once the home page loads, verify the name of the logged in user at the top-right

If you use the JavaScript [scripting option](#), what will be recorded is a JavaScript test script that looks something like the following:

```

1
2
3 //===== Script Steps =====
4
5 function Test()
6 {
7 //===== Recorded at Wednesday, March 22, 2017 12:05:23 PM: =====
8 //Click on Log In
9 SeS('Log_In').DoClick();
10 //Click on Username:
11 SeS('Username ').DoClick();
12 //Set Text librarian in Username:
13 SeS('Username ').DoSetText("librarian");
14 //Set Text librarian in Password:
15 SeS('Password ').DoSetText("librarian");
16 //Click on ctl00$MainContent$LoginUser$LoginButton
17 SeS('ctl00$MainContent$LoginUser$Logi').DoClick();
18 //Verify that: InnerText=librarian
19 Tester.AssertEqual("Verify that: InnerText=librarian", SeS('librarian').GetInnerText(), "librarian");
20
21 }
22
23
24 g_load_libraries=["%q_browserLibrary:Chrome HTML5"];
25
26
27

```

Now you know that you can drag and drop objects and actions from the object tree on the left-hand side into the test script, but for automation engineers that are not programmers, we found that in many cases the resulting scripts are not easy to understand and the syntax can be fiddly to get right. All you Java, JavaScript, C#, C++, C programmers out there know that you need curly braces, semi-colons at the end of each line, etc. but for others, it's not so obvious.

So to make automated testing and the power of Rapise's object based testing **easier and more accessible**, you can use the alternative RVL methodology.

How Does RVL Compare?

Let's imagine that we perform the exact same set of steps, recording the test script using the Rapise Visual Language approach:

Flow	Type	Object	Action	ParamName	ParamType	ParamValue	H
1	Flow			FlowName	ParamType	ParamValue	
2	#	Learned Log In					
3		▲ Log_In	DoClick				
4	#	Click on Username:					
5		▲ Username_	DoClick				
6	#	Set Text librarian in Username:					
7		▲ Username_	DoSetText	txt	string	librarian	
8	#	Set Text librarian in Password:					
9		▲ Password_	DoSetText	txt	string	librarian	
10	#	Click on ct100\$MainContent\$LoginUser\$LoginButton					
11		▲ ct100\$MainConte...	DoClick				
12	#	Click on Book Management					
13		▲ Book_Management	DoClick				
14	#	Click on (Create new book)					
15		▲ _Create_new_bo...	DoClick				
16	#	Click on Name:					
17		▲ Name_	DoClick				
18	#	Set Text Adams Book in Name:					
19		▲ Name_	DoSetText	txt	string	Adams Book	
20	#	Click on ct100\$MainContent\$btnSubmit					
21		▲ ct100\$MainConte...	DoClick				
22	#	Click on Log Out					
23		▲ Log_In	DoClick				
24							

What you'll notice is that each of the recorded actions has now become a series of rows in the grid, with the first column being the type (perform an action, comment, make an assertion that a value matches what was expected, set a variable, be a parameter or output to the current test report):

	Action	▲ Log_In
#	Action	
	Param	
#	Output	
	Variable	
#	Assert	
	Condition	
#	Assert	
	Scenario	

The second column is then used to select the object from the object tree:

	▲ Log_In	Do
	▲ Log_In	
	abl Name_	
	Navigator	
	NeoLoad	
	Ocr	
	abl Password_	
	Session	
	Spreadsheet	

Note that you can call custom functions (written in JavaScript), global utility objects as well as any of the recorded objects from the application being tested.

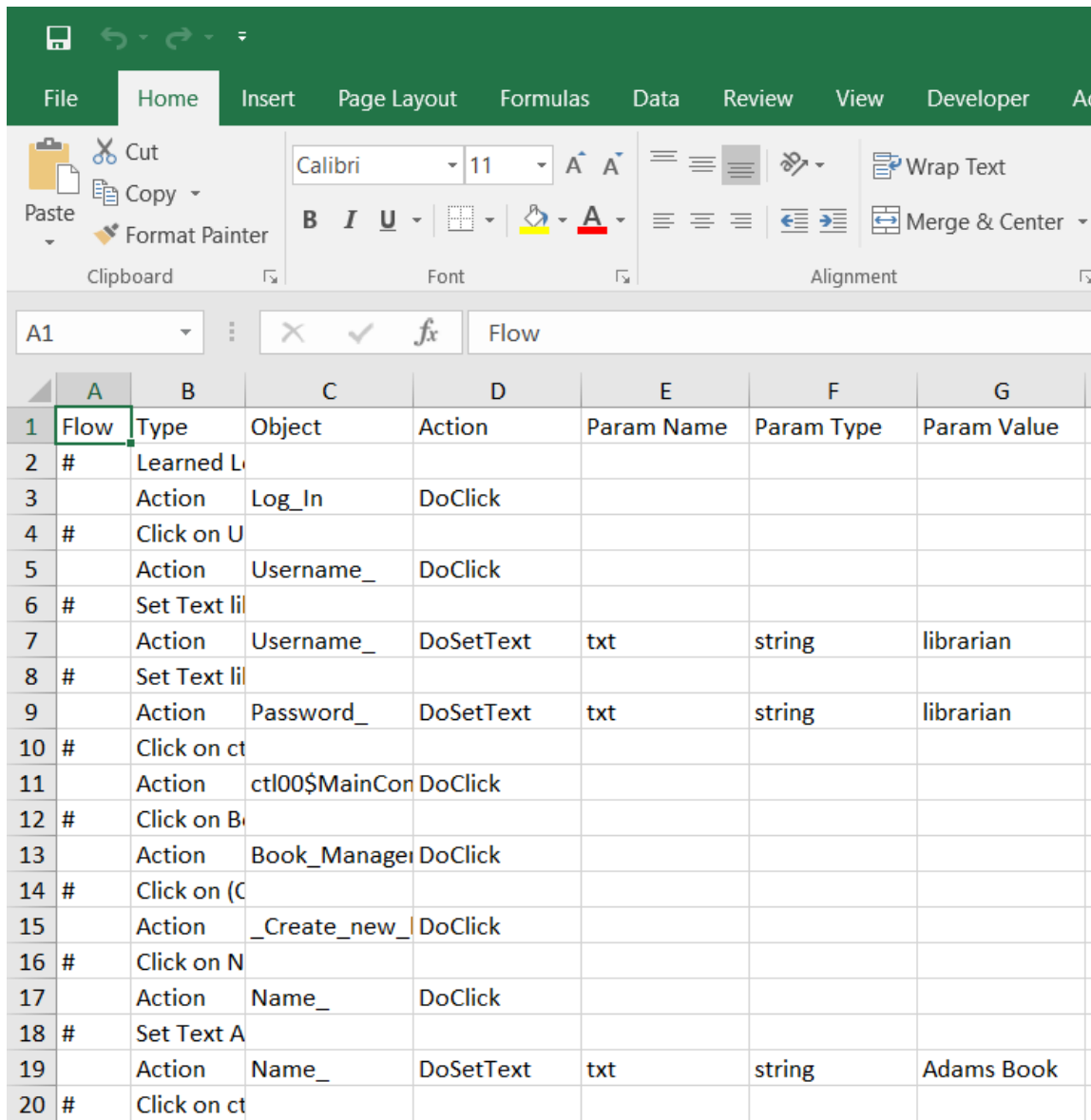
Finally, the remaining columns contain any parameter values, with subsequent rows being used if necessary:

DoSetText	txt	string	Adams Book
-----------	-----	--------	------------

This means that once you have learned the objects during testing, anyone can compose the test just by adding rows to the grid and then just picking the appropriate objects and actions.

Unleash the Power of Excel

Now one of the really exciting things about RVL is that it's ultimately stored as an actual Microsoft Excel file (XLSX) file inside the Rapise project. So in addition to doing simple editing within the Rapise visual editor, you also have the option to open the file in Excel natively:



This opens up many exciting possibilities of being able to use Excel formulas to auto-generate test data from another worksheet, perform validation tests by doing calculations in Excel and comparing them with the results returned from the application. You can now use Excel and Rapise to have a powerful, easy to use, yet incredibly extensive test automation framework.

2.3.5 Scripting

Purpose

There are three reasons to script with Rapise:

1. To modify a [recorded](#) test to increase coverage, add [assert statements](#), or make the test [data-driven](#).
2. To extend recording functionality by defining your own objects, actions, and libraries.
3. To [customize the Rapise Engine](#).

Usage

Rapise scripts are written in JavaScript (Microsoft JScript). You can run and debug your script using the full featured [Internal Debugger](#). Rapise includes a testing API, with methods for manipulating images, spreadsheets, common GUI widgets, and more. Rapise also uses NodeJS to aid in providing hyperlinks to errors in your test.

See Also

- Learn about MS JScript [HERE](#).

2.3.5.1 Understanding the Script

Purpose

When you [create a new test](#) in Rapise, four files are created:

- **<TestName>.sstest** ? the test project file (e.g. MyTest.sstest)
- **<TestName>.js** ? the test script file (e.g. MyTest.js)
- **<TestName>.objects.js** ? the file that contains recorded objects. (e.g. MyTest.objects.js)
- **<TestName>.user.js** ? the file that contains user defined functions. (e.g. MyTest.objects.user.js)

where **<TestName>** is the name of your Test.

You can have as many javascript files in your test directory as you like, but **<TestName>.js** is the test script (unless you specify otherwise in the [Settings Dialog](#)). When you record, your interactions are written to **<TestName>.js** and objects are written to **<TestName>.objects.js**; when you Playback the test, **<TestName>.js** is the script that will run. All Rapise test scripts must have the same basic structure.

Usage

If you are going to modify the script, or create a test script from scratch, you will need to know the test script structure:

Basic Script

The Recording tool creates a Rapise Script with three sections:

1. **<TestName>.js**: A **Test()** function

```

##### Script Steps #####
function Test()
{
    //script logic
}

```

2. **<TestName>.js**: A list of required libraries: **g_load_libraries**

```
g_load_libraries=["Generic"]; // This script will load the Generic library
```

3. **<TestName>.objects.js** A list of learned objects in **saved_script_objects**.

```
var saved_script_objects={
```

```
//list of objects used in this script ?
};
```

All Scripts must have the above three sections.

Full script

The following functions are also recognized by Rapise and may be present in the test script. Put these functions either in `<TestName>.js` or `<TestName>.user.js`.

- **TestInit()** : This function is called once before script playback. It should be used to initialize script-wide data (counters, open datasets, etc).
- **TestFinish()** : This function is called once after test execution. It should be used to release resources (data sets, spreadsheets). TestFinish() is a good place to post-process Reports. It may also be used as an integration point with external test management or bug tracking systems.
- **TestPrepare()** : For advanced users; TestPrepare() is called before recording and before playback. It may be used to properly initialize libraries.

See Also

To specify a different test script, see the [Settings Dialog](#). The test script is specified by **Settings > ScriptPath**.

2.3.5.2 Naming Conventions

Purpose

The Rapise engine and API follow some simple naming conventions.

Usage

You will find descriptions of the naming conventions below. Note: italicized text represents placeholders.

- **SeS<xxx>** ? public functions for user
- **Do<Action>** ? action implementations
- **_<somevar>** and **<someName>** ? private functions and objects
- **g_<varname>** ? system global data.

Examples

Here are some examples to clarify the above conventions:

- **SeS("object")** - gets the object named "object"
- **DoClick** - public action function to click on something
- **_mydata** - private variable called mydata
- **g_publicdata** - global variable called publicdata

2.3.5.3 Defining Functions

Purpose

The Rapise test script is in Javascript. You may define as many Javascript functions as you would

like to call from your test script.

Usage

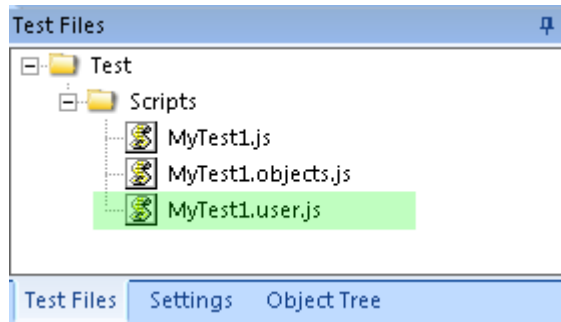
There are two ways to maintain additional functions: (1) Inside your test script and (2) in an external file.

Inside your Test Script

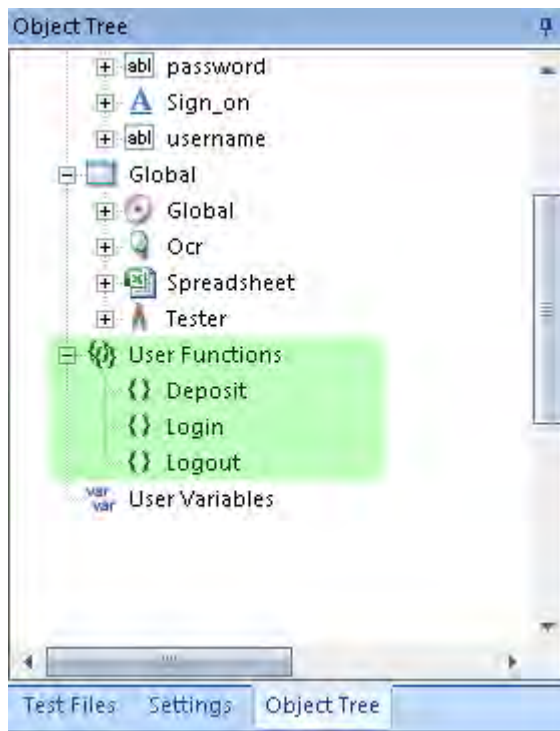
Define the function inside of one of the following functions: **Test()**, **TestInit()**, **TestFinish()**, or **TestPrepare()**. The Script Recorder will erase code placed outside of these functions.

Inside *.user.js File

It is recommended to put all user functions into `<testname>.user.js` file available in any test from its creation.



This file is automatically attached into every script. All variables and functions defined in it may be used in the test. User-defined functions are also available under the "User Functions" node in the Object Tree:



In an External File

You can define your function in another file and include it.

For example:

```
function Test()  
{  
    // Withdraw is defined inside the "Test" function  
    function Withdraw(amount)  
    {  
        Log("Start Withdraw of:"+amount);  
        // Withdraw logic is here  
    }  
  
    Withdraw(12.34);  
  
    // Include "UtilityFunctions.js" to get at function Deposit()  
    eval(g_helper.Include(Global.GetFullPath("UtilityFunctions.js")));  
    // Deposit is defined in "UtilityFunctions.js"  
    Deposit(56.78);  
}
```

See Also

- To learn more about what the Script Recorder will change in your test script, see [Multiple Recordings](#).

2.3.5.4 Global Variables

Purpose

Global variables are variables that can be accessed anywhere in the script. There are restrictions (specific to Rapise) as to where they may be placed in the test script. These restrictions do not apply to any additional script files you write and then call from your test script.

Usage

Define your global variables in **TestInit()**. Because Rapise uses javascript, you can initialize global variables inside of functions. See the sample TestInit() below.

```
function TestInit()  
{  
    number_of_visited_links = 0; //This variable becomes global  
    var local_var = 5; //This variable is local for TestInit function  
}
```

The keyword **var** gives variables local scope. A variable initialized without the keyword **var** will have global scope.

The **Script Recorder** knows about the following functions: **Test()**, **TestInit()**, **TestPrepare()**, and **TestFinish()**. Do not declare global variables outside of one of the preceding four functions. The Script Recorder alters the script each time it is run, and may erase your changes.

See Also

- See [Making Multiple Recordings](#) for details on what effect the script recorder will have on your test script.
- For details on the structure of the test script, see [Understanding the Script](#).

2.3.5.5 Including other Files

Purpose

The **eval** keyword lets you use external functions and data structures in your test script; **eval** is a javascript reserved word.

Usage

See the example below:

```
function Test()  
{  
    eval(g_helper.Include(Global.GetFullPath("myfunctions.js")));  
}
```

See Also

- [Understanding the Script](#)

2.3.5.6 Regular Expressions

Purpose

A **regular expression** is a sequence of characters that describes how to construct a set of strings. It is

composed of character literals and special characters. Each character literal represents one single character (such as "a", "b", "C", "1"). The special characters can represent a character, many characters, or a choice about how to select characters.

Special Characters:

Char	Description	Examples
?	Combines with whatever character/sub-expression precedes it to represent 0 or 1 occurrences of that character/sub-expression.	a? describes the set: { "", "a" }
*	Combines with whatever character/sub-expression precedes it to represent 0 or more occurrences of that character/sub-expression.	a* describes the set: { "", "a", "aa", "aaa", "aaaa", "aaaaa", "aaaaa", ... }
+	Combines with whatever character/sub-expression precedes it to represent 1 or more occurrences of that character/sub-expression.	a+ describes the set: { "a", "aa", "aaa", "aaaa", "aaaaa", "aaaaa", ... }
.	Any arbitrary character.	.* describes the set of all possible strings.
	Denotes a choice between two strings	ab ba describes the set: { "ab", "ba" }
()	Denotes a sub-expression.	(abc)?d describes the set: { "abcd" , "d" }
[]	Denotes one character chosen from all the characters with the brackets. You can use a hyphen to denote a range.	[abcde] describes the set: { "a", "b", "c", "d", "e" } [A-Z] describes the set of all one-character, alphabetic, capitalized, strings. { "A", "B", "C", ... , "Z" }
{n,m}	Quantifier expression. Meaning: "Between n and m occurrences of whatever sub-expression or character precedes."	(abc){1,2} describes the set: { "abc", "abcabc" }
^	The beginning of a string.	^a.* matches all strings that begin with an a.
\$	The end of a string.	.*\$ matches all strings that end with an a.
\	Precedes a special character to take away any special meaning.	[\\\$!-+*] represents the set: { "\", "\$", "-", "+", "*" }

A string and regular expression **match** if the string is an element of the set described by the regular expression.

Usage

In Rapise, you must prepend regular expressions with the string "**regex:**". So the regular expression describing

all strings would be: **regex: .***

There are three uses for regular expressions in Rapise: (1) in [Object Locators](#), (2) in [action overriding code](#), (3) in [Custom Libraries](#).

2.3.5.7 Assert Statements

Purpose

An **assert statement** is a special Boolean condition that represents an assumption about program state at a particular point in test execution. When an assert is encountered, the condition is evaluated. A value of **False** indicates a program error. In some languages, execution will halt if an assertion evaluates to **False**. In Rapise, the result is logged to the report with failed status, and execution continues.

Create a Checkpoint

To create a [checkpoint](#) using an assertion, you will have to manually alter the test script (another way is to use the [Verify Object Properties](#) dialog during [Recording](#)):

1. **Select a location** in your script and a subset of application state to check.
2. **Query for the application state**. For images, use the **ImageWrapper** class provided with Rapise. For object properties, Get<..> methods. For example:

```
var xx = SeS(?OkButton?).GetX(); // X position of the object
```
3. **Save the state**. If you are creating an image checkpoint, you will want to save the image to a file. If you are looking at text data, you could use a database, spreadsheet or text file. The **SeSSpreadSheet** class gives you access to excel spreadsheets.
4. **Compare**. Use the **ImageWrapper** class to compare images; use Spreadsheet to read and compare spreadsheet data.
5. **Write an Assert Statement**. Make an appropriate call to **Tester.Assert** method. Besides a Boolean condition, pass additional data to be placed in the [Report](#).

Read about `Tester.Assert` syntax in the Rapise Objects documentation part.

See Also

- The [test samples](#) include a **UsingImageCheckpoint.sstest**
- [Verifying Object Properties](#)
- [Writing to the Report](#)

2.3.5.8 Data Driven Testing

Purpose

Data Driven Testing is an automated testing technique in which test case data is separated from test case logic. Each set of test case data consists of input values and a set of expected output values. The actual output values are compared to the expected output values to determine whether the test

passed.

You can perform data-driven testing either using an MS-Excel spreadsheet as the datasource or a relational database.

Using an MS-Excel Spreadsheet

The `spreadsheet` object is useful for implementing data-driven tests. It allows you to connect to, query, and read an excel spreadsheet from your test script. To create a data-driven test, you will:

1. **Record a test.** The exact inputs you use for the recording will not matter as much as your interactions with the objects. The following excerpt was recorded using www.google.com:

```
function Test()
{
  //Set Text Inflectra in q
  SeS('Obj1').DoSetText("Inflectra");
  //Click on btnG
  SeS('Obj2').DoClick();
}
```

The actions recorded were: (1) Type **Inflectra** into the search box. (2) Press the **Google Search** button.

2. **Parameterize the Test() function.** The `Test()` function has all of the procedural logic for the test. Replace input values with variables. Encapsulate the logic in a nested function with one parameter for each variable you created. As an example, we will parameterize the `Test()` function we created in step one:

```
function Test()
{
  function Logic(searchterm){ //our new function encapsulates the test logic
    //Set Text using searchterm
    SeS('Obj1').DoSetText(searchterm) //here we changed a hard-coded value into a
    variable
    //Click on btnG
    SeS('Obj2').DoClick()
  }
  Logic("Inflectra") //don't forget to call your new function
}
```

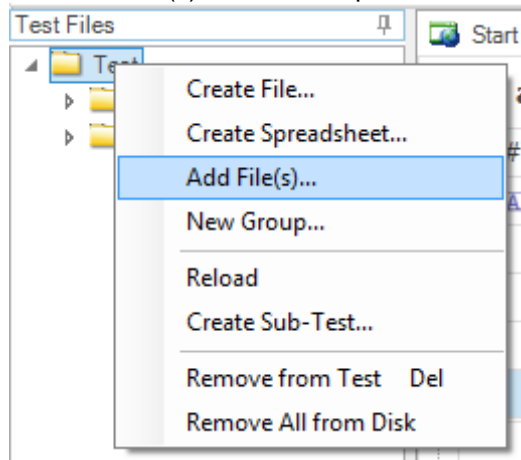
3. **Create the test case data.** In an excel spreadsheet, create a column for every variable in step two. Add columns for any expected output values you wish to verify. Each row is a test case.

In our google example, we only have one input value (`searchterm`) and we're not comparing any expected output values, so we will only need one column in our spreadsheet. Save the spreadsheet in the test folder as `searchterms.xls`:

	A
1	SpiraTest
2	SpiraPlan
3	SpiraTeam
4	Rapise
5	RemoteLaunch

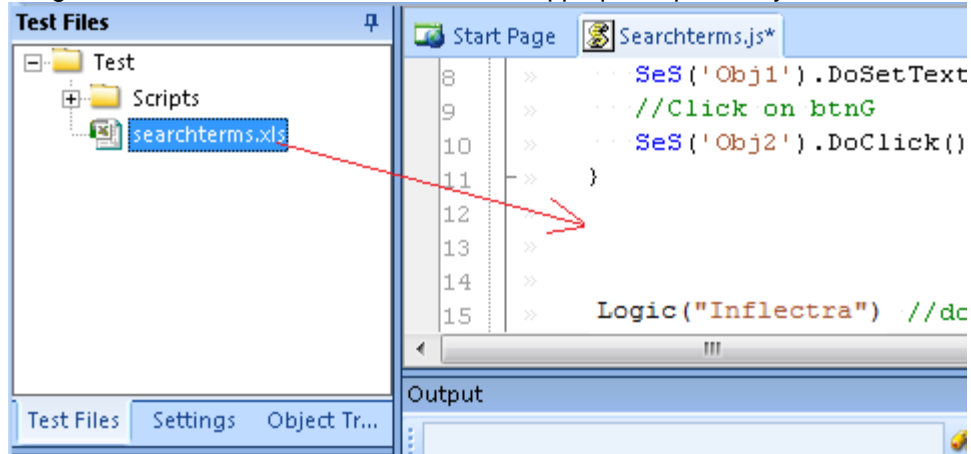
4. **Add spreadsheet to the test**

Use "Add File(s)..." to add a spreadsheet to the test files:



5. Attach Spreadsheet object to searchterms.xls

Drag the 'searchterms.xls' from files tree into appropriate place in your test source:



6. Use Spreadsheet to access the test case data.

In our example, we use a `spreadsheet` object and run the test logic once for every row.

```
function Test()
{
  function Logic(searchterm){
    //Set Text searchterm in q
    SeS('Obj1').DoSetText(searchterm)
    //Click on btnG
    SeS('Obj2').DoClick()
  }

  Spreadsheet.DoAttach('searchterms.xls', 'Sheet1');

  // Go through all rows
  while(Spreadsheet.DoSequential())
  {
    // Read cell value from column 0
    var term = Spreadsheet.GetCell(0);
    // Pass it into Logic function
  }
}
```

```

        Logic(term);
    }
}

```

Using a Relational Database

Rapise comes with the Database query global object that allows you to send SQL queries to a database and then iterate through the results. The process for creating such a data-driven test is as follows:

1. **Record a test.** The exact inputs you use for the recording will not matter as much as your interactions with the objects. The following excerpt was recorded using www.google.com:

```

function Test()
{
    //Set Text Inflectra in q
    SeS('Obj1').DoSetText("Inflectra");
    //Click on btnG
    SeS('Obj2').DoClick();
}

```

The actions recorded were: (1) Type **Inflectra** into the search box. (2) Press the **Google Search** button.

2. **Parameterize the Test() function.** The **Test()** function has all of the procedural logic for the test. Replace input values with variables. Encapsulate the logic in a nested function with one parameter for each variable you created. As an example, we will parameterize the **Test()** function we created in step one:

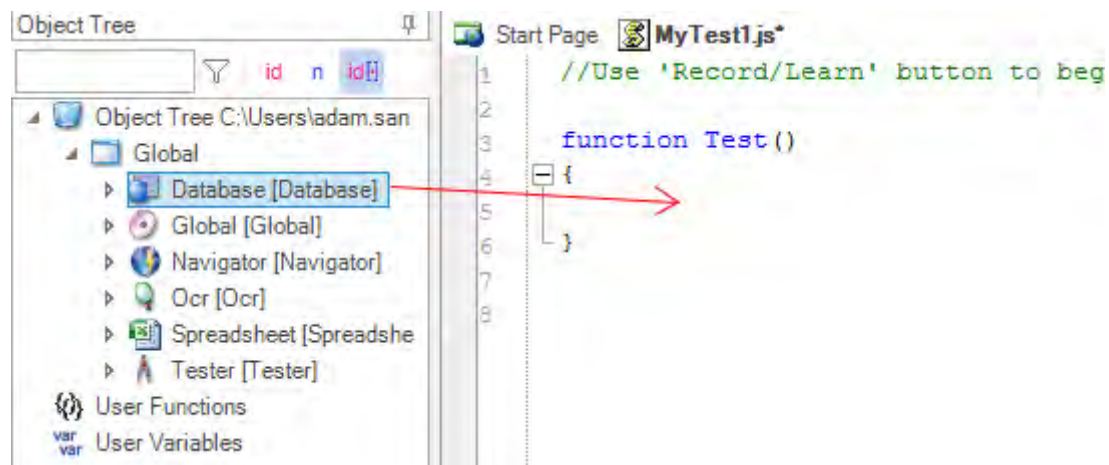
```

function Test()
{
    function Logic(searchterm){ //our new function encapsulates the test logic
        //Set Text using searchterm
        SeS('Obj1').DoSetText(searchterm) //here we changed a hard-coded value into a
        variable
        //Click on btnG
        SeS('Obj2').DoClick()
    }
    Logic("Inflectra") //don't forget to call your new function
}

```

3. **Use Database to connect the test case data.** This assumes that you already have an **ODBC** or **OLE DB** compatible relational database that contains the necessary test data.

You drag the 'Database' global object into the script editor:



and then use:

- **Database.DoAttach()** - to make the database connection and specify the SQL query
- **Database.GetRowCount()** - to verify that there is data
- **Database.DoSequential()** - to loop through the dataset row by row
- **Database.GetValue()** - to get that row's data

Here is an example of the code needed to loop through a list of records (taken from the SpiraTest database as an example) and call our **Logic()** parameterized function with the appropriate test data:

```
var success = Database.DoAttach('Provider=SQLOLEDB.1;Integrated
Security=SSPI;Persist Security Info=False;Initial
Catalog=SpiraTest;Data Source=.', 'SELECT * FROM TST_PROJECT' );
Tester.Assert('Successfully Connected', success);
var count = Database.GetRowCount();
Tester.Message(count);
//Loop through the rows
while( Database.DoSequential()
{
    var projectId = Database.GetValue("PROJECT_ID" );
    var name = Database.GetValue("NAME" );
    var description = Database.GetValue("DESCRIPTION" );
    Logic(name);
}
```

2.3.5.9 Customizable Engine

Purpose

The source for most of the Rapise implementation is available for you to read and modify. You may find it useful to look at if you decide to create a [library](#) customized for your application.

Usage

Unless you specified otherwise, Rapise will be installed at

C:\Program Files\Inflectra\Rapise

The source code is in the **Engine** directory. You'll find the [recording/learning](#) libraries in **Engine\Lib**. The core logic is in four files: **SeSAction.js**; **SeSBehavior.js**; **SeSCommon.js**; **SeSConfig.js**.

If you plan to make changes to the Rapise Engine, we recommend you use a version control system capable of reconciling code conflicts, as we do not support user customizations. However, let us know if you feel that your customizations are generally useful; if we decide to integrate them into Rapise, we will support them.

See Also

- [Custom Libraries](#)
- [Scripting](#)

2.3.5.10 Scenarios

Purpose

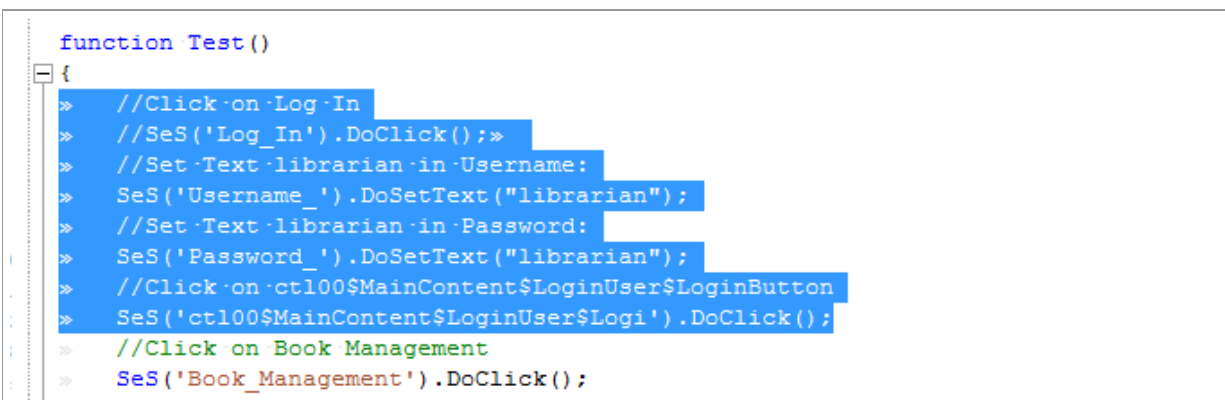
Scenarios are a way to create reusable building blocks that can be incorporated into your test scripts. These scenarios can be either included as part of a purely automated test script, or they can be included into a predominantly [manual test script](#).

Creating Scenarios

Let's say for example that you have the following Rapise test that was recorded from our sample library information web application:

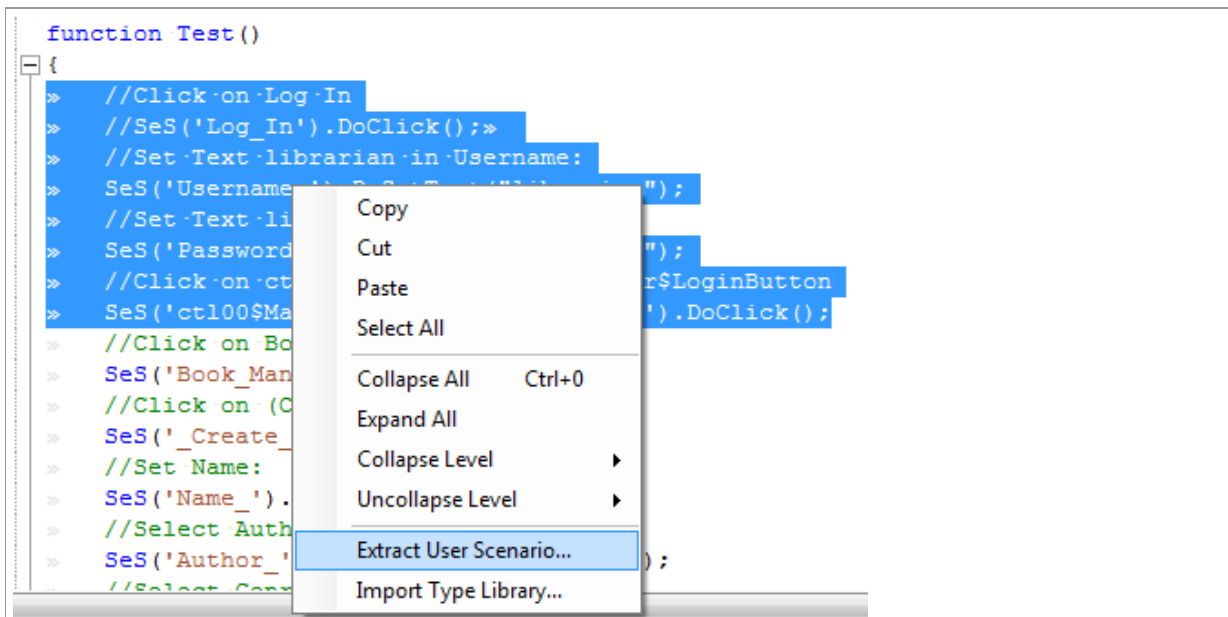
```
function Test()
{
    //Click on Log In
    //SeS('Log_In').DoClick();
    //Set Text librarian in Username:
    SeS('Username_').DoSetText("librarian");
    //Set Text librarian in Password:
    SeS('Password_').DoSetText("librarian");
    //Click on ct100$MainContent$LoginUser$LoginButton
    SeS('ct100$MainContent$LoginUser$Logi').DoClick();
    //Click on Book Management
    SeS('Book_Management').DoClick();
    //Click on (Create new book)
    SeS('_Create_new_book_').DoClick();
    //Set Name:
    SeS('Name_').DoSetText(g_book_name);
    //Select Author:
    SeS('Author_').DoSelect(g_book_author);
    //Select Genre:
    SeS('Genre_').DoSelect(g_book_genre);
    //Click on ct100$MainContent$btnSubmit
    SeS('ct100$MainContent$btnSubmit').DoClick();
    //Click on Log Out
    SeS('Log_Out').DoClick();
}
```

If we want to break up this monolithic test into individual functions (called scenarios), simply highlight the test you want to extract (for example the Login steps):

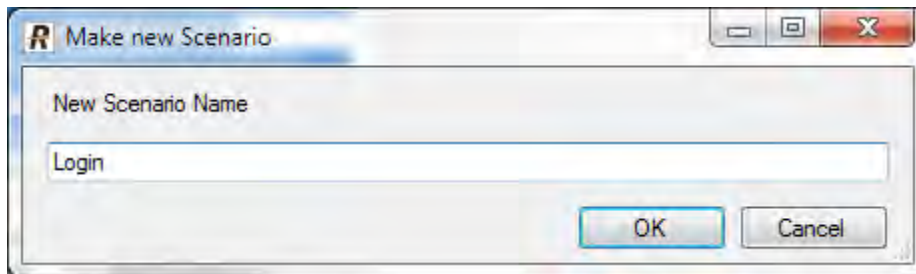


```
function Test()
{
    //Click on Log In
    //SeS('Log_In').DoClick();
    //Set Text librarian in Username:
    SeS('Username_').DoSetText("librarian");
    //Set Text librarian in Password:
    SeS('Password_').DoSetText("librarian");
    //Click on ct100$MainContent$LoginUser$LoginButton
    SeS('ct100$MainContent$LoginUser$Logi').DoClick();
    //Click on Book Management
    SeS('Book_Management').DoClick();
}
```

Then right-click on the section and choose the option to **Extract User Scenario**:



Now in the dialog box that appears, give the scenario a name (e.g. Login):



This will extract the highlighted section into its own scenario:

```
function Test()
{
  //Call scenario Login
  Login();
}

/** @scenario Login*/
function Login()
{
  //Click on Log In
  //SeS('Log_In').DoClick();
  //Set Text librarian in Username:
  SeS('Username_').DoSetText("librarian");
  //Set Text librarian in Password:
  SeS('Password_').DoSetText("librarian");
  //Click on ct100$MainContent$LoginUser$LoginButton
  SeS('ct100$MainContent$LoginUser$Logi').DoClick();
}
```

```
}
```

Usage in Automated Tests

When you create a new test in Rapise it will contain a MyTest.js file that contains the main test code and a MyTest.user.js file that contains any user-defined functions (called Scenarios). For example in the following test:

```
function Test()  
{  
    Login();  
    CreateBook(g_book_name, g_book_author, g_book_genre);  
    Logout();  
}
```

The test function calls three **scenarios** that comprise the main test.

The scenarios themselves are JavaScript functions:

```
/** @scenario Login*/  
function Login()  
{  
    //Click on Log In  
    //SeS('Log_In').DoClick();  
    //Set Text librarian in Username:  
    SeS('Username_').DoSetText("librarian");  
    //Set Text librarian in Password:  
    SeS('Password_').DoSetText("librarian");  
    //Click on ct100$MainContent$LoginUser$LoginButton  
    SeS('ct100$MainContent$LoginUser$Logi').DoClick();  
}  
  
/** @scenario Logout*/  
function Logout()  
{  
    //Click on Log Out  
    SeS('Log_Out').DoClick();  
}  
  
/** @scenario CreateBook*/  
function CreateBook(name, author, genre)  
{  
    //Click on Book Management  
    SeS('Book_Management').DoClick();  
    //Click on (Create new book)  
    SeS('_create_new_book_').DoClick();  
    //Set Name:  
    SeS('Name_').DoSetText(name);  
    //Select Author:  
    SeS('Author_').DoSelect(author);  
    //Select Genre:  
    SeS('Genre_').DoSelect(genre);  
    //Click on ct100$MainContent$btnSubmit
```

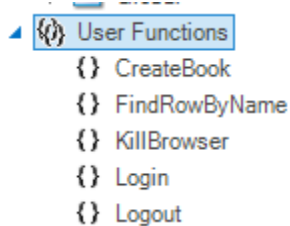
```

    SeS('ctl00$MainContent$btnSubmit').DoClick();

    //Verify that the Book is added to the grid
    //We need to xpath query the grid to see if any
    //added rows match the item added
    var tr = FindRowByName(name);
    Tester.Assert('Book was added successfully [TS:5]', tr.length != 0);
}

```

If you go to the [Object Tree](#) you will see these user functions / scenarios displayed:



You can then drag and drop those into the test script editor to include in the main test script.

Usage in Manual Tests

When you create a new test in Rapise it will contain a MyTest.js file that contains the main test code and a MyTest.user.js file that contains any user-defined functions (called Scenarios). For example you may have the following scenario defined in the MyTest.user.js file:

```

/** @scenario Login*/
function Login()
{
    //Click on Log In
    //SeS('Log_In').DoClick();
    //Set Text librarian in Username:
    SeS('Username_').DoSetText("librarian");
    //Set Text librarian in Password:
    SeS('Password_').DoSetText("librarian");
    //Click on ctl00$MainContent$LoginUser$LoginButton
    SeS('ctl00$MainContent$LoginUser$Logi').DoClick();
}

```

You can now include that in a [manual test step](#), by simply making the test step description start with an "@" symbol to denote that it is a scenario:

```
@Login();
```

Then when the manual test is executed, that one step will be passed to the scripting engine for automated execution.

Example

If you open the **CreateNewBook** sample (located in C:\Users\Public\Documents\Rapise\Samples\CreateNewBook) you will see a test that has multiple scenarios.

See Also

- [Semi-Manual Testing](#)
- [Object Tree](#)

2.3.6 Javascript IDE

Purpose

The Javascript IDE includes an [editor](#) and a [debugger](#).

Usage

Simply [open a script](#) to view the editing features; create a [breakpoint](#) and [play](#) the script to view the [debugging features](#).

See Also

- Learn about MS Jscript [HERE](#).

2.3.6.1 Internal Debugger

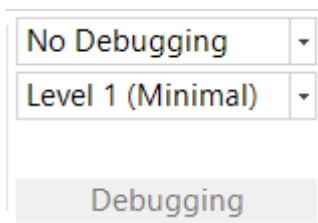
Purpose

The Internal Debugger provides [Persistent Breakpoints](#), [Control Execution](#), a [Watch View](#), a [Variable/Call Stack View](#), and [Tooltips](#).

Usage

To use the internal debugger, you must first install [Microsoft Script Debugger](#) .

You can choose the Internal Debugger on the Rapise Ribbon (**Test** tab > **Debugging** menu).

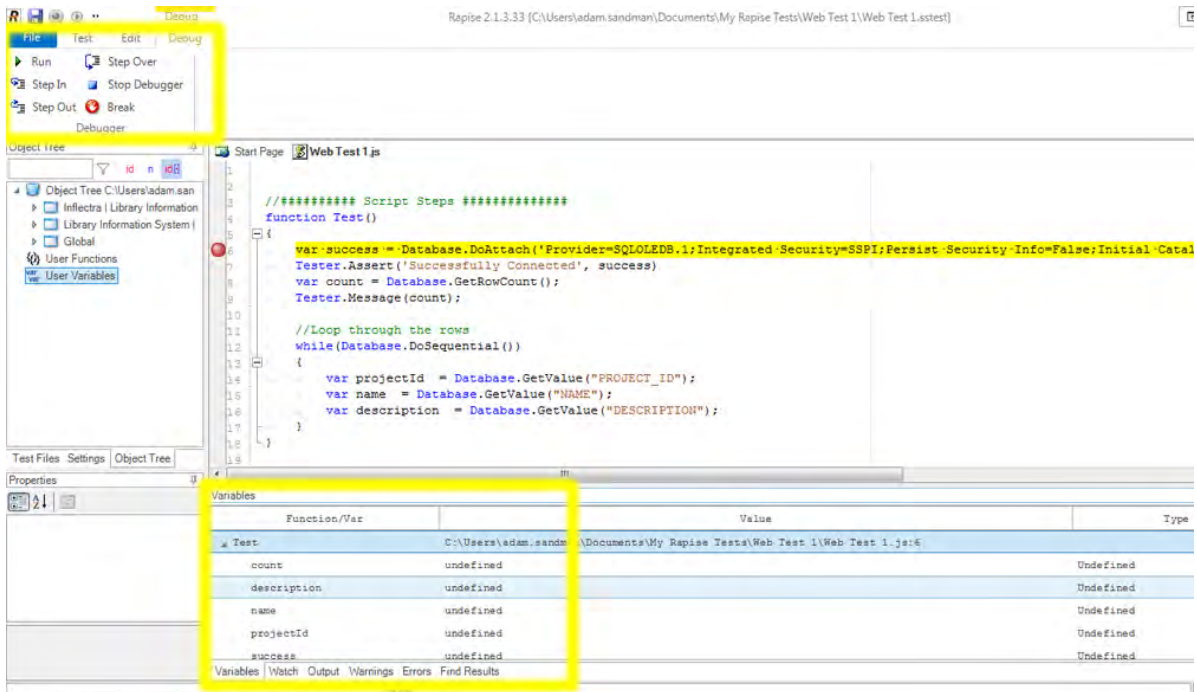


The top drop-down menu has four options. Choose the **Run with Internal Debugger** option.

When you [Playback](#) your test script with a breakpoint, the debugging related menus and views will appear:

- The [Debugging](#) tab of the Ribbon
- The [Watch View](#) and [Variable/Call Stack View](#)

The following screenshot shows the placement of Debugging related functionality in Rapise:



In the screenshot above, you can see the [Debugger](#) buttons available in the ribbon at the top of the screen as well as the [Variables](#) and [Watch](#) sections in the lower pane.

See Also

- You can use the [External Debugger](#) to debug your scripts as well.

2.3.6.1.1 Tooltips

Purpose

Tooltips let you view a variable's value during debugging.

Usage

1. Put a breakpoint in the script at or near where you wish to investigate
2. Mouse over variables as you advance through the script. A small box will popup, displaying the variables' values:

```
var y=x;
```

```
x = 13
```

See Also

- [Breakpoints](#)
- [Internal Debugger](#)

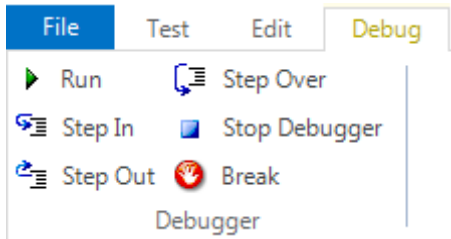
2.3.6.1.2 Control Execution

Purpose

Control Execution allows you to manually direct the execution of the script.

Usage

1. Set a [Breakpoint](#) where you want to take control of the execution
2. Use the buttons on the **Debugger** tab of the Ribbon to step through the script.



See Also

- [Ribbon: Debugger](#)

2.3.6.1.3 Breakpoints

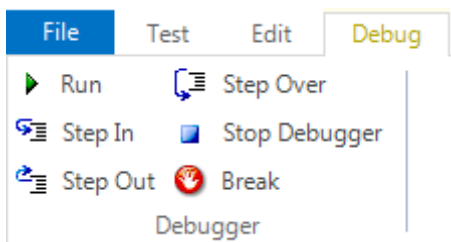
Purpose

Breakpoints stop execution of the test at a specific line in the script. They allow you to investigate program state, and trace execution flow.

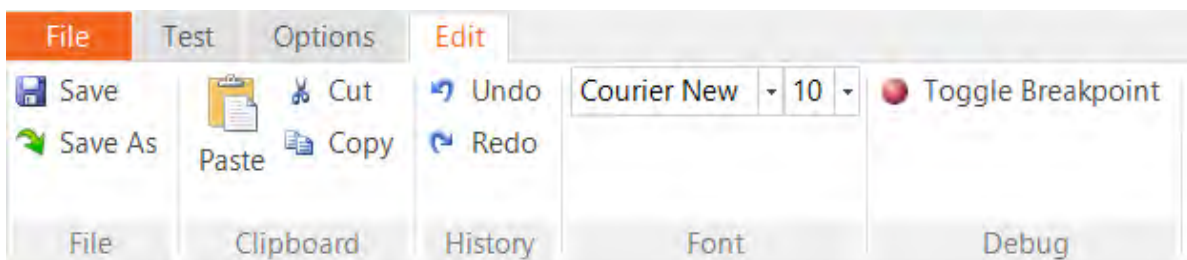
Usage

To set a **Breakpoint**:

1. Open the script you would like to debug in the [Source Editor](#).
2. Place the cursor at the line where you want a breakpoint.
3. Press **F9** or the **Break** button on the Ribbon (**Debugger** tab).



4. If the Debugger tab is not visible, you can also use the **Toggle Breakpoint** option in the **Edit** tab:



See Also

- [Ribbon: Debugger](#)
- [Control Execution](#)

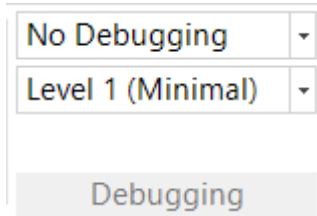
2.3.6.2 External Debugger

Purpose

When you enable the **External Debugger**, the **Microsoft Script Debugger** is used to debug your script. Rapise provides an [Internal Debugger](#) as well.

Usage

You can enable the External Debugger on the Rapise Ribbon (**Test** tab > **Debugging** menu).



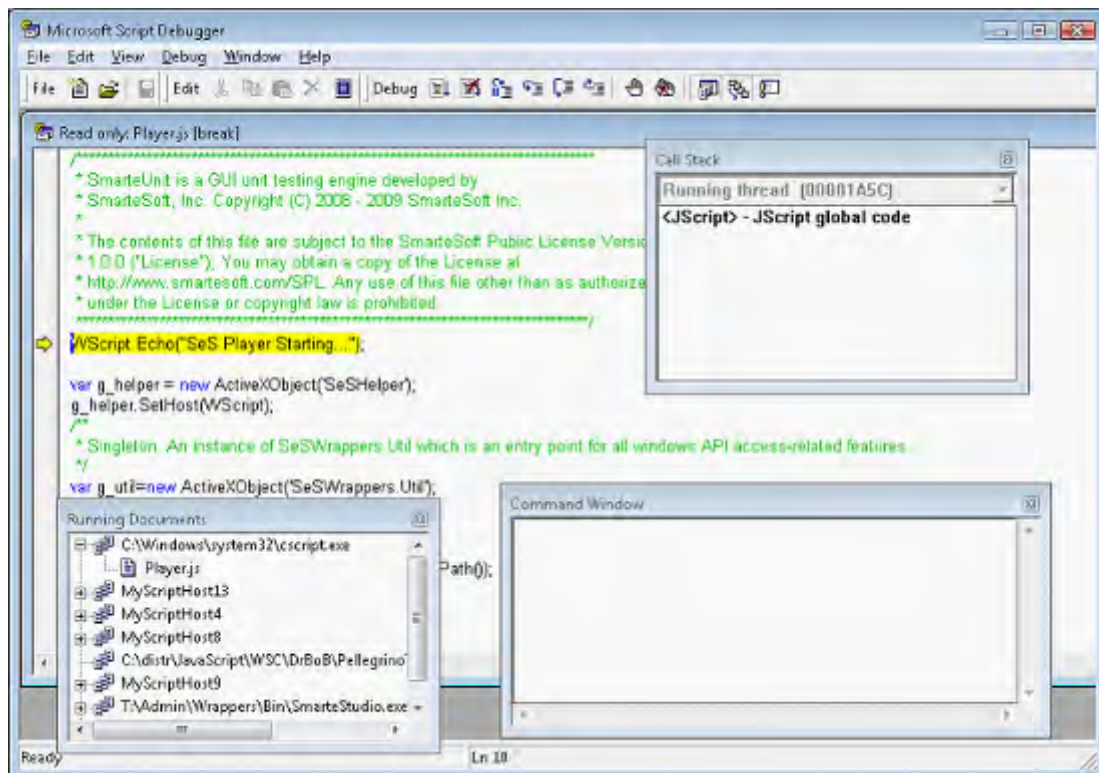
The top drop-down menu has four options:

- **No Debugging**
- **Run with Internal Debugger:** See [Internal Debugger](#) for more info.
- **Run with External Debugger:** Open the Microsoft Debugger to run the script.
- **Run External Debugger on Error:** Open the Microsoft Debugger only if an error occurs.

When you choose the **Run with External Debugger** option, Microsoft Script Debugger will open as soon as you begin [Playback](#) of your script. The debugger will pause on the line

```
WScript.Echo("SeS Player Starting...")
```

and display an error message. There is no actual error; you can begin debugging. Note, however, that Rapise is mostly written in javascript, and the Debugger will step through Rapise implementation as well as your test script.



See Also

- [Internal Debugger](#)
- For instructions on using the Microsoft Script Debugger, try this link: <http://msdn.microsoft.com/en-us/library/ms532989.aspx>

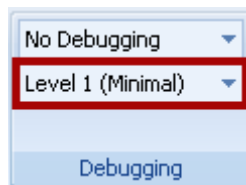
2.3.6.3 Verbosity Levels

Purpose

The **Verbosity Level** affects the amount of information written to the [Output View](#).

Usage

The Verbosity Level is set on the Ribbon (**Test** tab > **Debugging** menu). See below:



See Also

- [Ribbon: Test Tab](#)

2.3.6.4 Syntax Highlighting

Purpose

With **Syntax Highlighting**, words in a program are displayed so as to immediately indicate their function. Reserved words, variables, literals, and comments may be differentiated by color, boldness, underline etc. Syntax Highlighting makes programs easier to read and modify.

Usage

Every javascript file opened in Rapise will display with **Syntax Highlighting**:

```
##### Script Steps #####
function Test()
{
  > var success = Database.DoAttach('Provider=SQLOLEDB.1;Integrated Security=SS
  > Tester.Assert('Successfully Connected', success)
  > var count = Database.GetRowCount();
  > Tester.Message(count);

  > //Loop through the rows>
  > while(Database.DoSequential())
  {
    > > var projectId = Database.GetValue("PROJECT_ID");
    > > var name = Database.GetValue("NAME");
    > > var description = Database.GetValue("DESCRIPTION");
  }
}
```

See Also

- [Source Editor](#)

2.3.6.5 Code Folding

Purpose

Code Folding allows you to hide or show blocks of code. These blocks have syntactic meaning, such as a function body, a class declaration, a loop, or a comment.

Usage

Every javascript file opened in Rapise will display with **hide** and **show** buttons to the top left of their corresponding block. In the following screenshot, hide buttons are highlighted with green boxes; show buttons are highlighted with purple boxes:

```
function EnterNumber (num) :
{
  for (var i = 0; i < num.length; i++)
  {
    digit = num.charAt(i);
    SeS('Button' + digit).DoAction();
  }
}

function Operation(op)
{ ... }

function trim(str, charlist)
{ ... }
```

See Also

- [Source Editor](#)

2.3.6.6 Syntax Checking

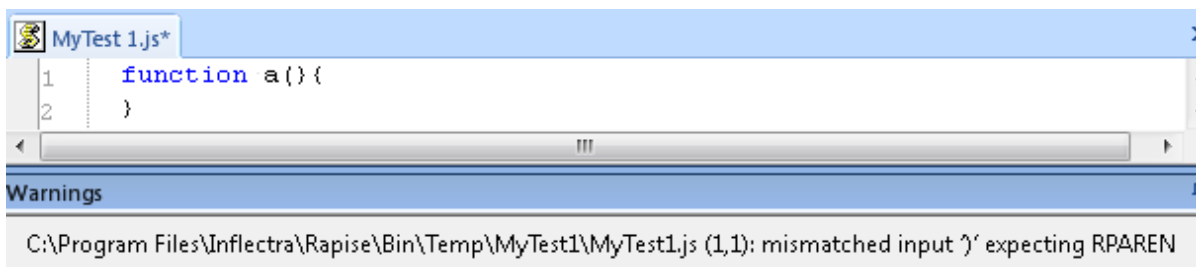
Purpose

An editor performs **Syntax Checking** if it notifies the user of syntax errors in their program/script.

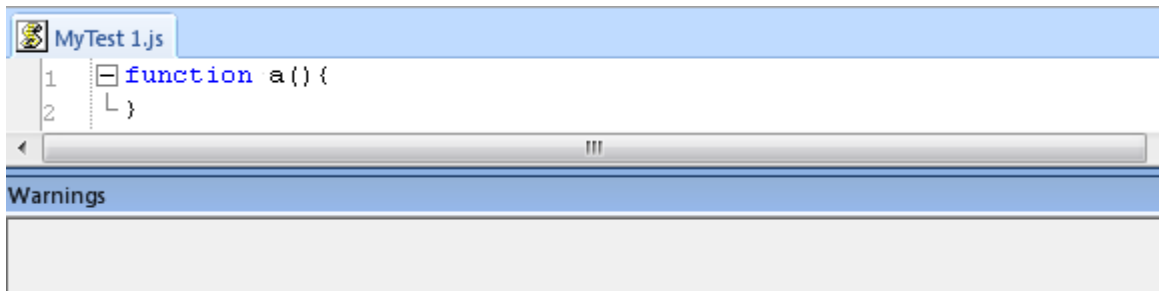
Usage

Rapise performs **Syntax Checking** as you type into the [Source Editor](#). Messages regarding syntax errors can be found in the [Warning View](#).

For example, you begin writing a function:



We have a typo here. We used }? instead of {)?. Once the error is corrected, the warning view clears automatically:



See Also

- [Source Editor](#)

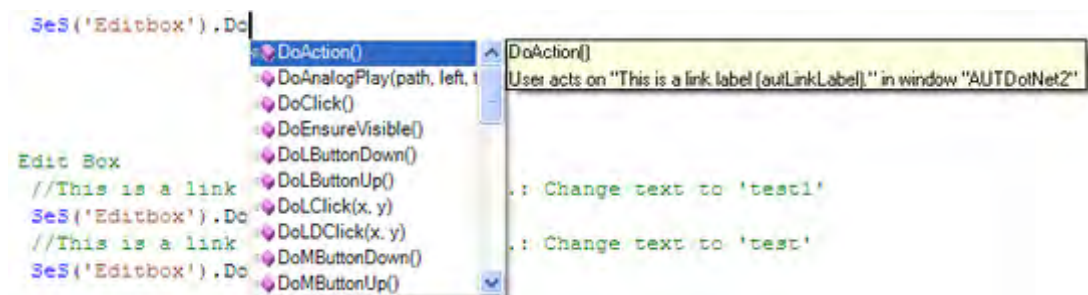
2.3.6.7 Code Completion

Purpose

Rapise provides **Code Completion** for class, method and field names.

Usage

Begin typing a class, method, or field name. Press **CTRL+space** to open a list of possible completions.



Advanced

Rapise has built-in code completion logic that lets it suggest the available list of functions for a specific object. However since JavaScript is fundamentally an un-typed language, for the code completion to work, there are some tips and tricks that you can use.

One may define a variable as simple as:

```
var p;
```

In this example `p` is just a variable with undefined type. It may be used as number, string or object. So Rapise has no idea of how to deal with it. So if you type a dot after “`p.`” no code-completion window appears.

Rapise scans for variable definitions when one saves the `.js` source file. So if anything goes wrong then first thing is to save the file.

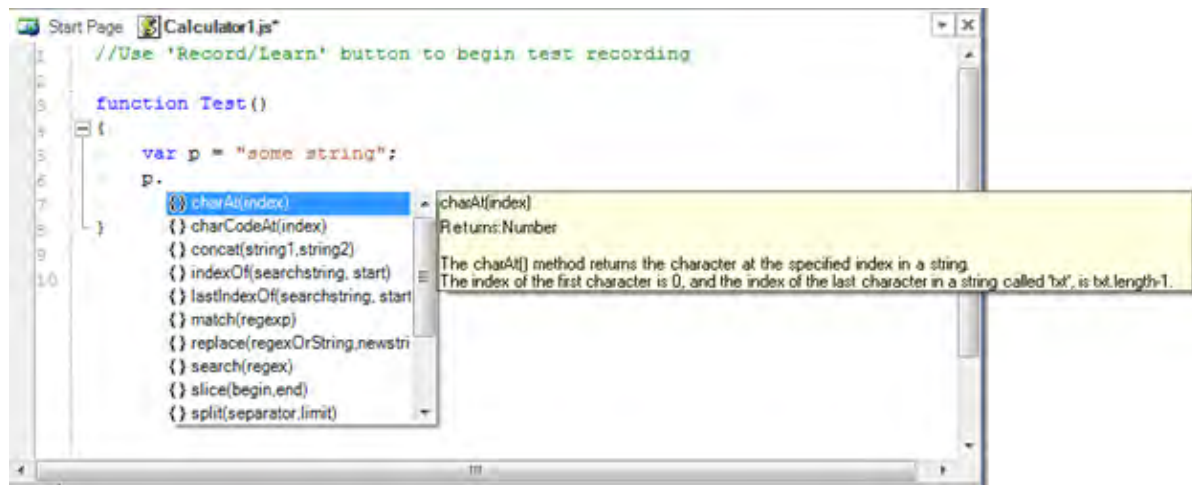
There are several ways of giving Rapise a "hint" about the variable type:

Static Assignment

First, is static assignment. Suppose you specify some constant value when defining a variable:

```
var p="some string";
```

In this case Rapise knows the type of p. So it would assist you when you type a dot "." after p:



Using Comments to Suggest the Type

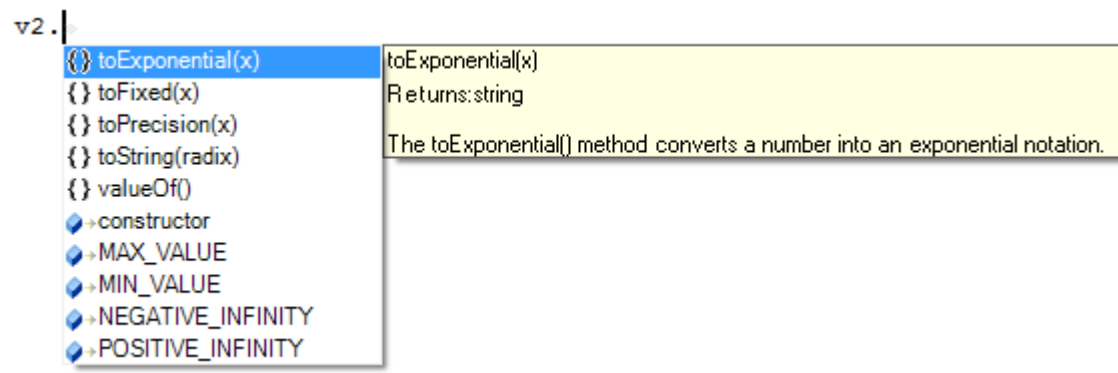
In some cases variable type is not clear from its definition or assignments is not static:

```
var v1 = input;  
var v2;
```

To deal with such cases the code should be instrumented. For example, if we know that input is string and v2 will be used as number then we may explain it to Rapise by placing variable type using special comment: `/**<var_type*/` right together with var definition. It should be placed right either between var keyword and variable name or right after an assignment operation (=), if any. I.e.:

```
var v1 = /**string*/input;  
var /**number*/v2;
```

So now Rapise will be able to display the list of available methods and properties:



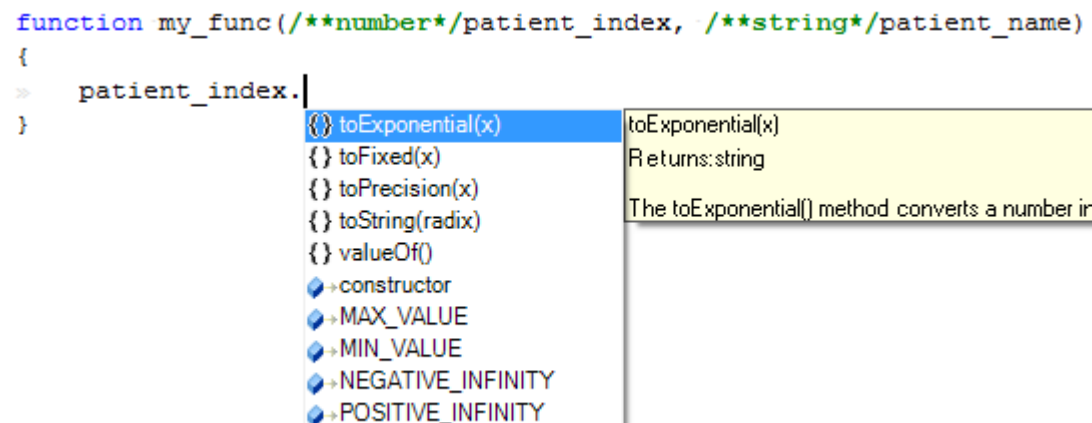
Another common case is a function parameter. If you have function that is defined:

```
function my_func(patient_index, patient_name)
{
}
```

The type of parameters `patient_index` and `patient_name` are not known, but may be explained in a similar way:

```
function my_func(/**number*/patient_index, /**string*/patient_name)
```

So it becomes known to Rapise:



Code completion for variable names is useful when you have multiple variables or function parameters and need to type them quickly. In this case Alt+Space keyword combination will bring up a list of variables and functions starting with just typed keyword.

See Also

- [Source Editor](#)

2.3.7 Unit Testing

Purpose

Unit Testing involves testing individual units of a piece of software to make sure they act as intended. The units tested are usually functions or class methods.

Usage

There are five ways that Rapise can help you Unit Test:

1. Rapise methods support testing objects and methods in [DLLs](#).
2. Rapise can test **ActiveX** objects and their methods through their [COM Interface](#).
3. If you choose to write your Unit tests in a third-party tool, Rapise has a [Command Line](#) interface where you can access its functionality.
4. Test results are written to a [TAP](#) file, which allows integration with Unit Testing frameworks.
5. Rapise tests can be invoked from [Visual Studio MS-Test](#) and [NUnit](#) tests.

2.3.7.1 Visual Studio

This section describes how to execute Rapise tests from within the Visual Studio Unit MS-Test unit testing framework. It also includes information on using with Visual Studio Test Explorer and Visual Studio Team Services (formerly known as Microsoft Team Foundation Server (TFS)).

Unit Test Mapping

Rapise integrates with Visual Studio at [Unit Test](#) level.

Create a Unit Test project in Visual Studio, add a unit test and a test method. In the References section add the DLL:

```
c:\Program Files (x86)\Inflectra\Rapise\Extensions\UnitTesting\VSUnit\SeSVSUnit\Bin\Release\SeSVSUnit.dll
```

In a test method specify absolute path to a Rapise test and pass `TextContext` parameter to `Rapise.TestExecute` function:

```
```C# namespace UnitTestProject1 { [TestClass] public class UnitTest1 { public TestContext TestContext { get; set; }

 [TestMethod, TestCategory("browser")]
 public void CreateNewBook()
 {
 Rapise.TestExecute(@"c:\Demo\Framework\CreateNewBook\CreateNewBook.sstest", TestContext);
 }
}
}```
```

## Parameters

To pass parameters to Rapise test create [.runsettings](#) file.

Each parameter with name starting with `g_` will be passed to Rapise via command line.

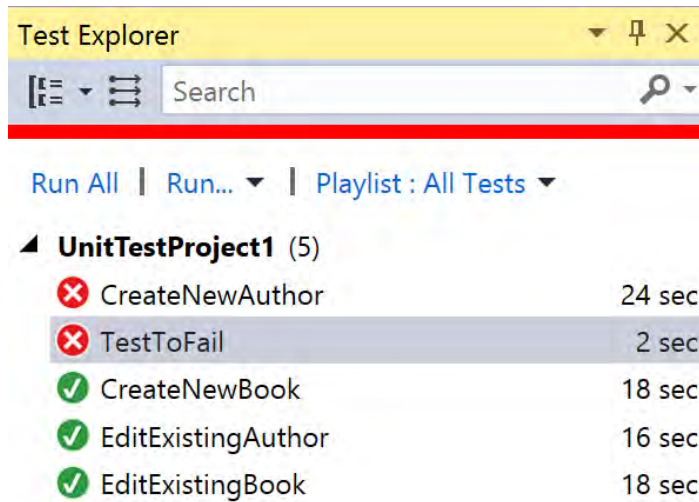
Here is an example of selecting a browser to use for execution of cross-browser tests:

```
```xml <?xml version="1.0" encoding="utf-8"?>
```

```
```
```

## Visual Studio Test Explorer

Once Rapise tests are mapped to unit tests one can use Visual Studio Test Explorer to run tests and analyze results.



## TestToFail

Source: [UnitTest1.cs line 38](#)

✖ Test Failed - TestToFail

**Message: Assert.AreEqual failed.**

**Expected:<0>. Actual:<1>. Test passed: c:  
\\Demo\Framework\NewTest\NewTest.sstest**

Elapsed time: 2 sec

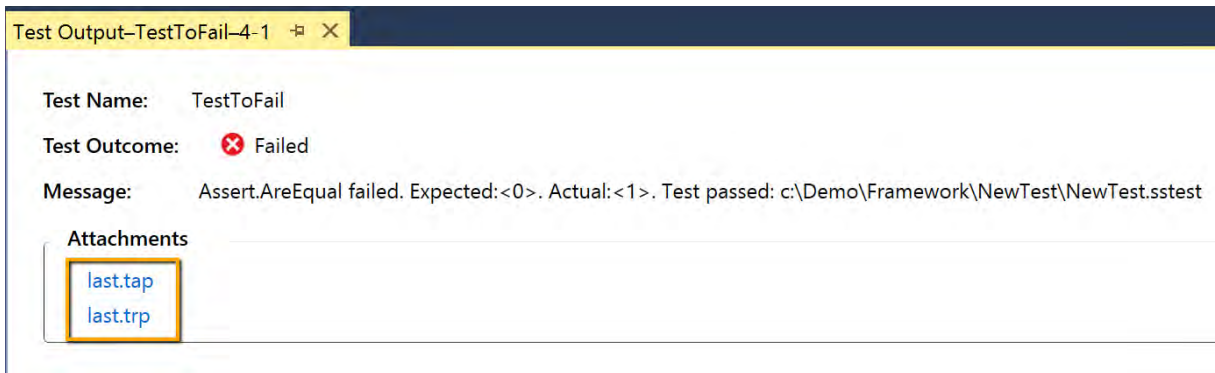
[Output](#)

▲ StackTrace:

Rapise.TestExecute(String path, TestContext  
[UnitTest1.TestToFail\(\)](#))

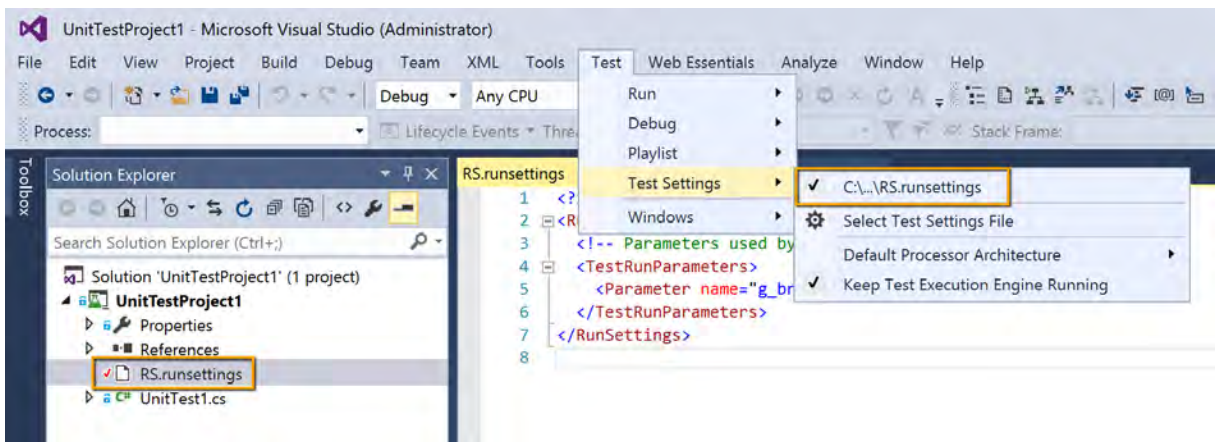
Solution Explorer Team Explorer **Test Explorer**

Press Output link (highlighted) to view test run results.



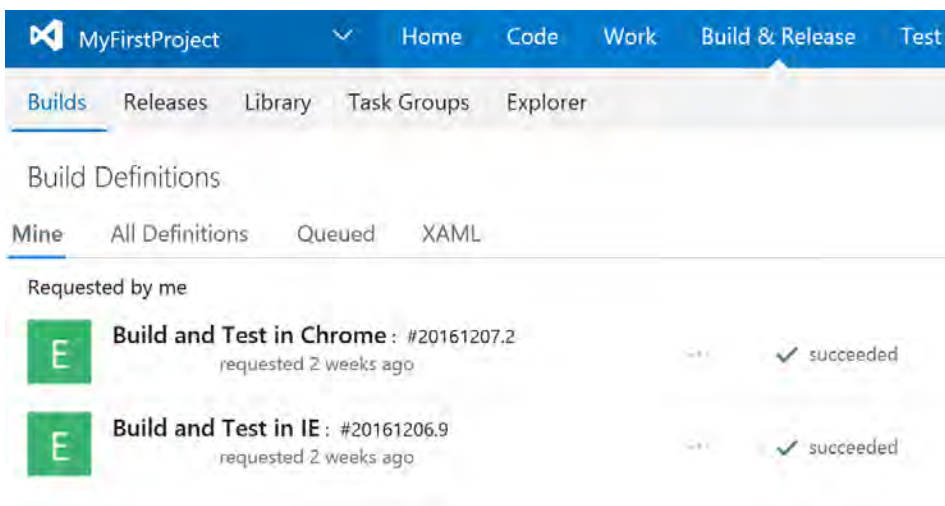
- last.tap - is a test report in [Test Anything Protocol](#) format (human readable). Click to open in any Text Viewer/Editor.
- last.trp - is a test report in Rapise format. Click to open in Rapise.

One can apply .runsettings file to use for execution:

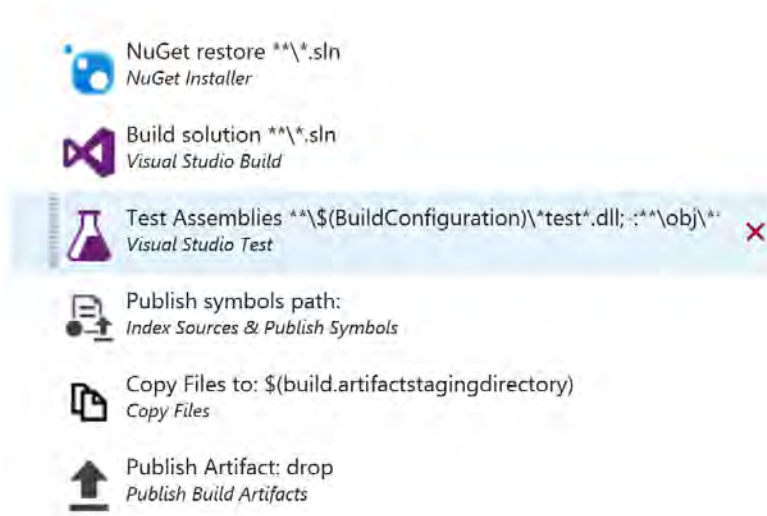


## Visual Studio Team Services

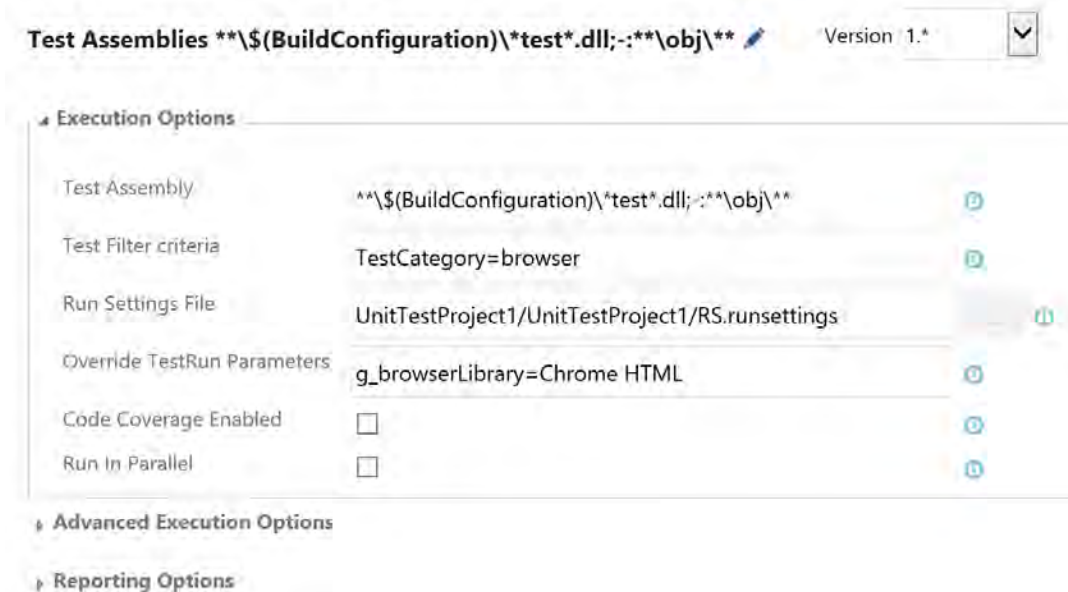
In Visual Studio Team Services one can [run unit tests after making a build](#).



Build definition contains predefined steps:



Here is an example configuration of the Test Assemblies step:



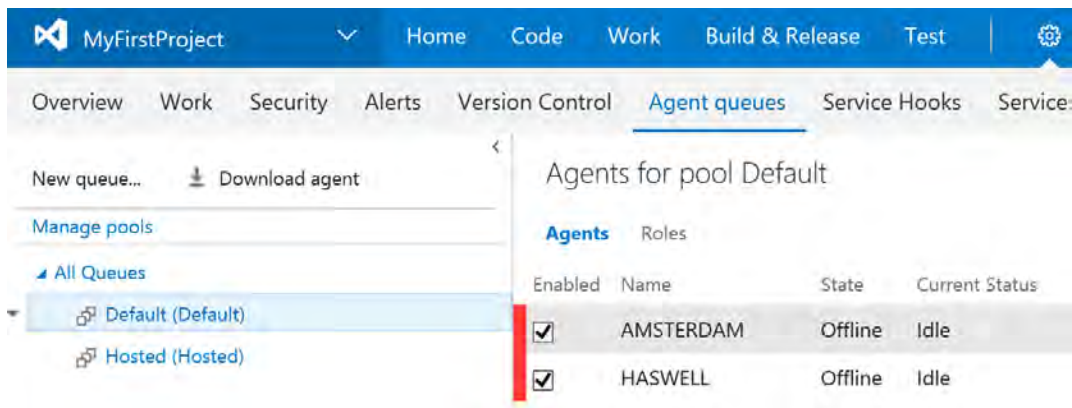
- **Test Assembly** field contains a wildcard mask that selects unit tests from matching DLLs only
- In **Test Filter criteria** one can select tests by `TestCategory` which is an attribute of a `TestMethod`:
 

```
C# [TestMethod, TestCategory("browser")] public void CreateNewBook() { Rapise.TestExecute(@"c:\Demo\Framework\CreateNewBook\CreateNewBook.sstest", TestContext); }
```
- **Run Settings File** is a link to [.runsettings](#) file.
- In **Override TestRun Parameters** one can override values of the parameters in `.runsettings` file.

## Windows Agent for Test Execution

VSTS can run tests in a hosted environment, but it does not contain Rapise. So most likely you will need to run tests inside your computer network. Download and connect [Windows Agent](#).

One can configure several agent pools to run tests in different environments:



## References

1. [Rapise](#)
2. [Visual Studio Test Explorer](#)
3. [Visual Studio Team Services](#)

### 2.3.7.2 NUnit

#### About NUnit Integration

SeSNUit is a sample of using NUnit. We provide special attribute to help executing Rapise GUI tests from within NUnit tests.

Standard NUnit test looks like this:

```
using System;
using NUnit.Framework;

[TestFixture]
public class MyTests
{
 [Test] - THIS IS AN ATTRIBUTE FOR STANDARD NUnit Test
 public void MyTest1()
 {
 Assert.AreEqual(1, 2, "Check equality");
 }
}
```

Each test case is a function with a special attribute `[Test]`. NUnit uses it to find test cases, then collects cases in sets and so on.

Rapise integration makes execution of Rapise tests as simple as execution of normal NUnit tests:

```
using System;

using NUnit.Framework;
using SeSNUit; - We include Rapise helper class

[TestFixture]
```



```
public class PlayerTesting
{
 - Next line means:
 "this is an NUnit test that executes Cross Browser.sstest from Rapise"
 [SeS NUnitTest(@"T:\Samples\Cross Browser\CrossBrowser.sstest")]
 public void TestIEandFirefox()
 {
 int exitCode = SeS NUnitHelper.TestExecute();
 Assert.AreEqual(0, exitCode);
 }
}
```

Now we use another attribute to mark the test:

```
[SeS NUnitTest(@"<path to .sstest>")]
```

We just mark this test as a wrapper for concrete Rapise test instance.

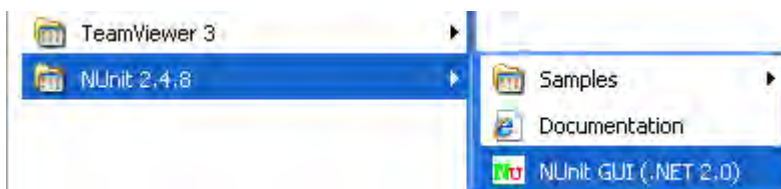
## Installing NUnit

To run this sample you need NUnit. You can download NUnit from this site <http://www.nunit.org/index.php?p=download>.

Download and install NUnit package (for example, NUnit-2.4.8-net-2.0.msi).

It is installation package file, so only thing that you need to do after download is to double click on that file.

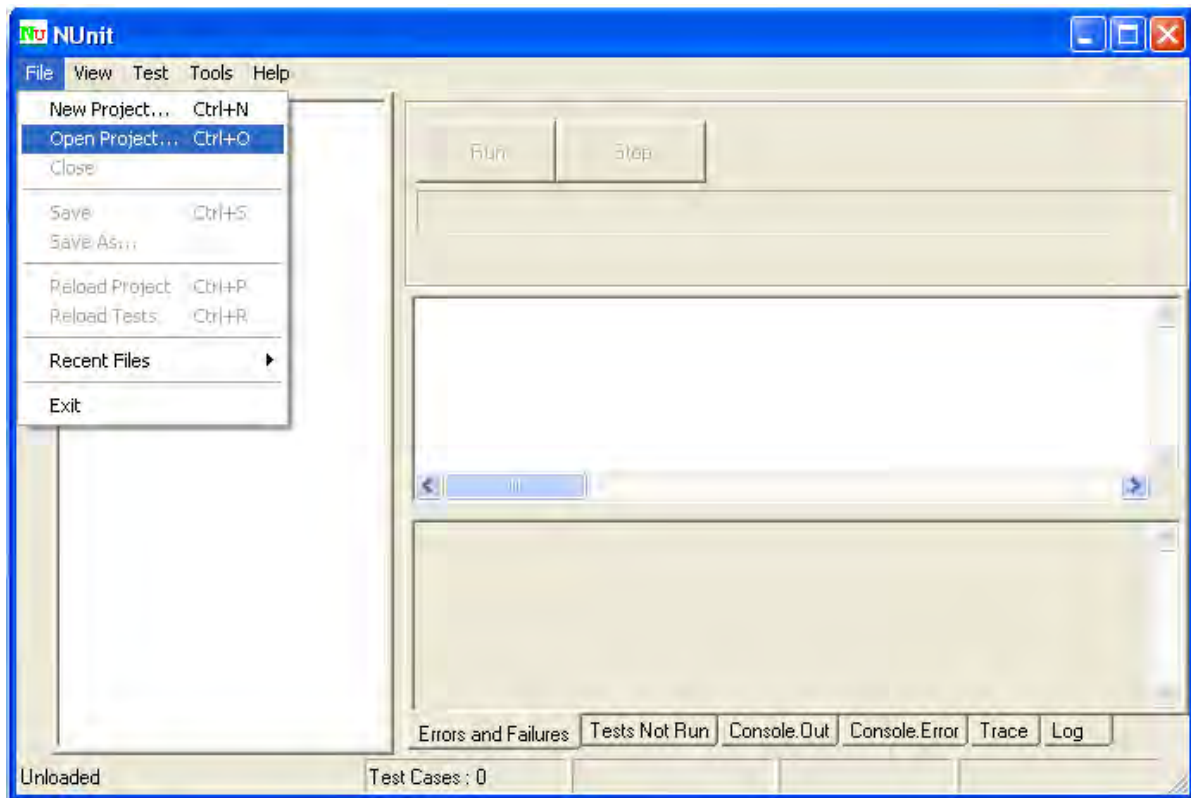
Run NUnit from the start menu:



Figure

Select "OpenProject..." from "File" menu:



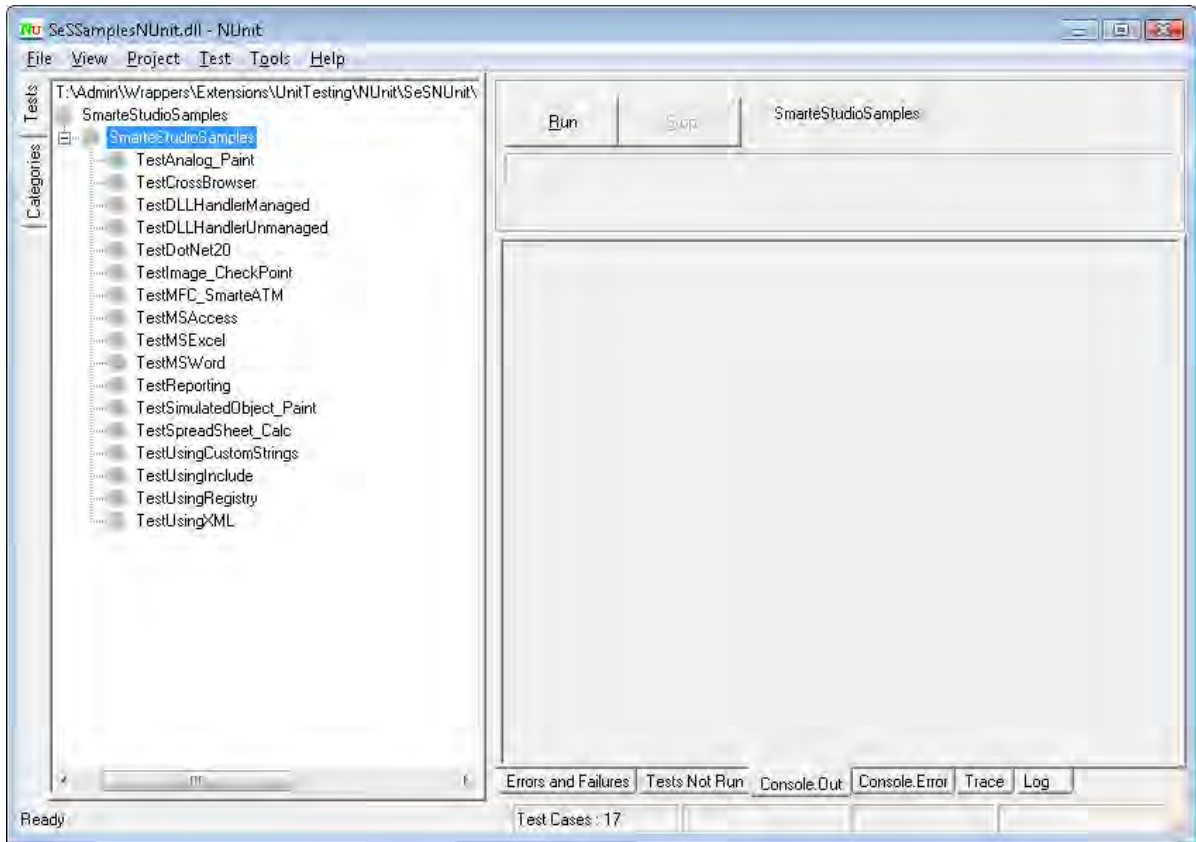


Figure

In opened window find and select “<Rapise Folder>\Extensions\UnitTesting\NUnit\SeSNUnit\SeSSamplesNUnit\bin\Debug\SeSSamplesNUnit.dll”.

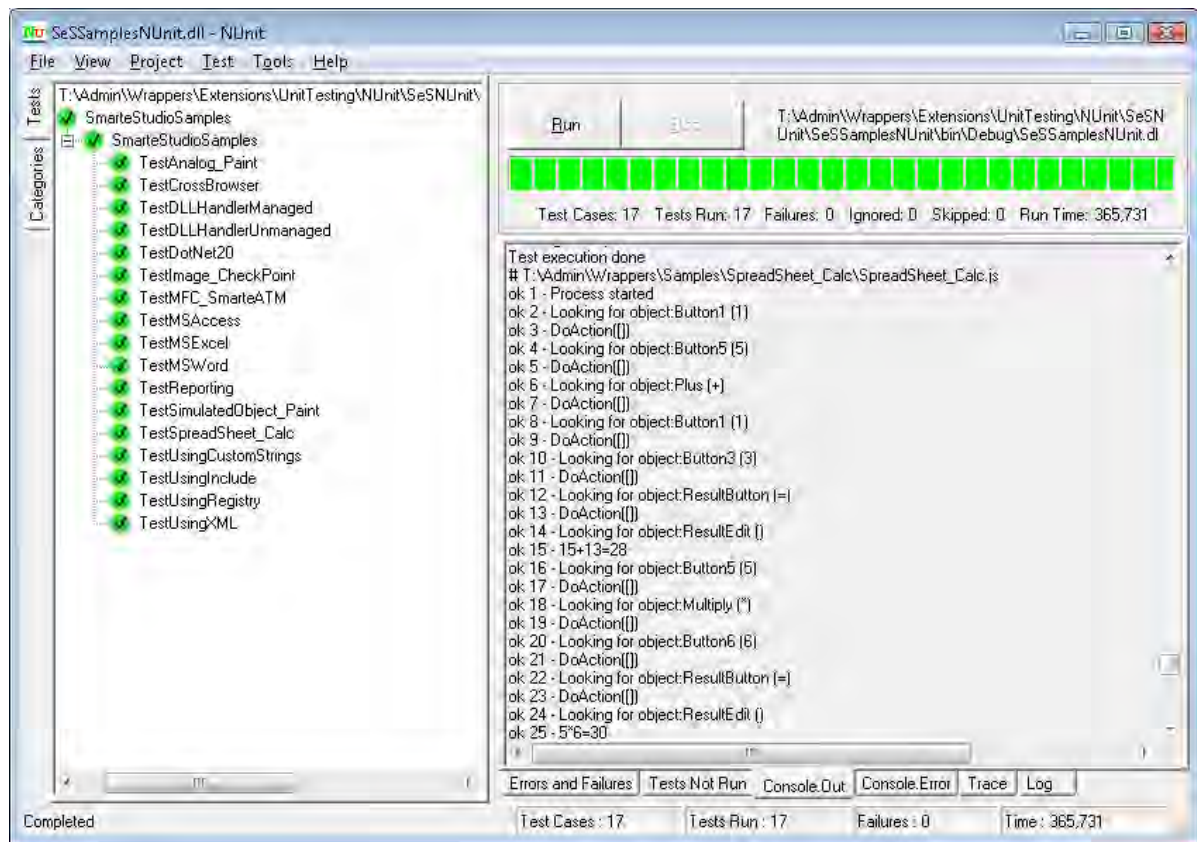
Figure

Press “Run” to start the test



Figure

After the test ended NUnit GUI must look like:



Figure

### Tree Display

There is a test tree in the left part of a window, it contains tests of current NUnit project. From this tree you can easily determine the test status. Successful tests are colored green, with a check mark. If any tests had failed, they would be marked red, with an X symbol.

### Progress Bar

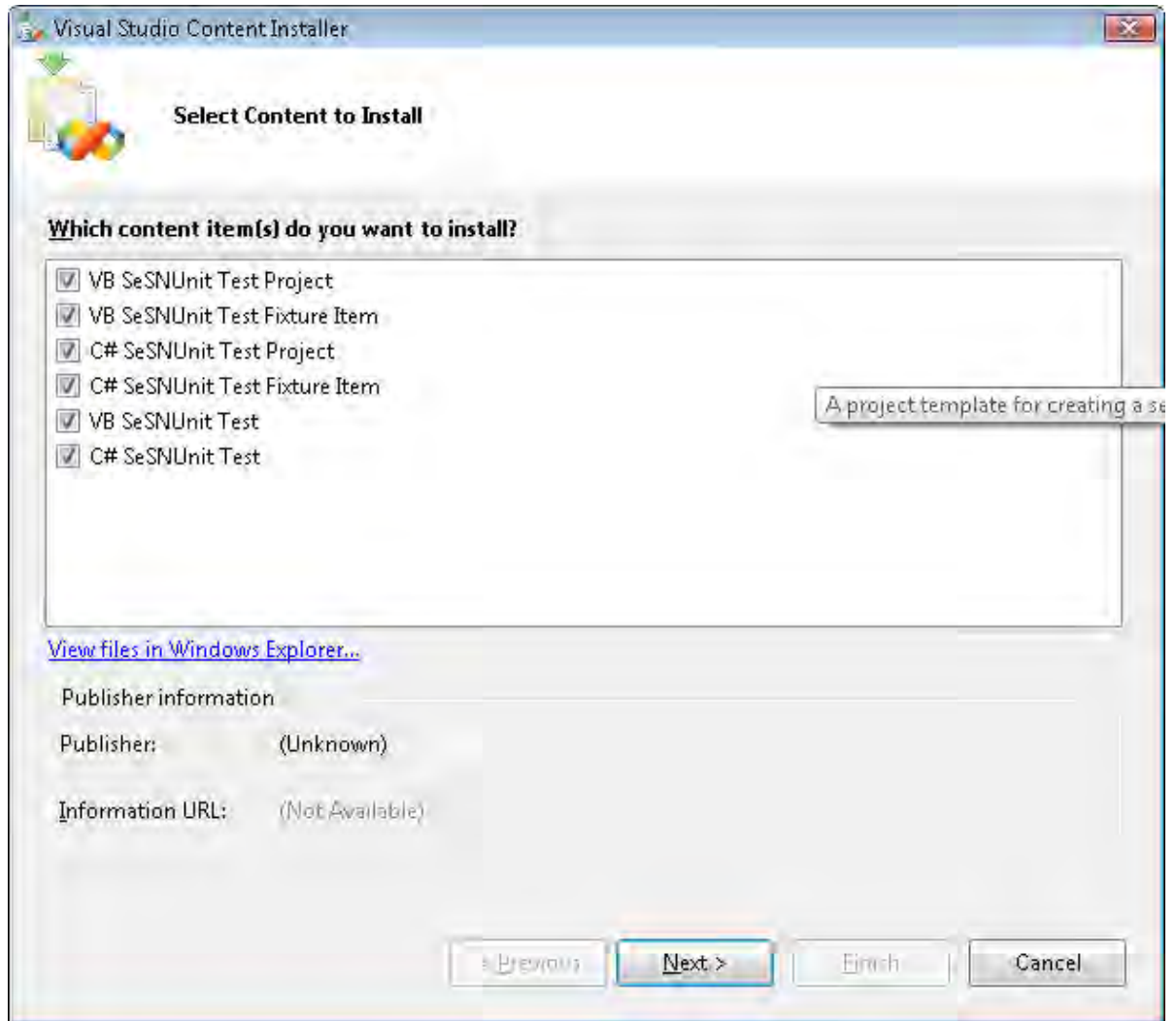
The progress bar shows the progress of the test. It is colored according to the "worst" result obtained: red if there were any failures, yellow if some tests were ignored and green for success.

### Result Tabs

The tabs in the right-hand part of the display show the results of running a test. The **Errors and Failures** tab displays the error message and stack trace for both unexpected exceptions and assertion failures. The **Tests Not Run** tab provides a list of all tests that were selected for running but were not run, together with the reason. The **Console.Out**, **Console.Error** and **Trace Output** tabs display text output from the tests.

## Visual Studio Templates

Templates are available to help you creating tests in Visual Studio. To install them use run installer file: “<Rapise Folder>\Extensions\UnitTesting\NUnit\SeSNUit.vsi” and follow the installation process

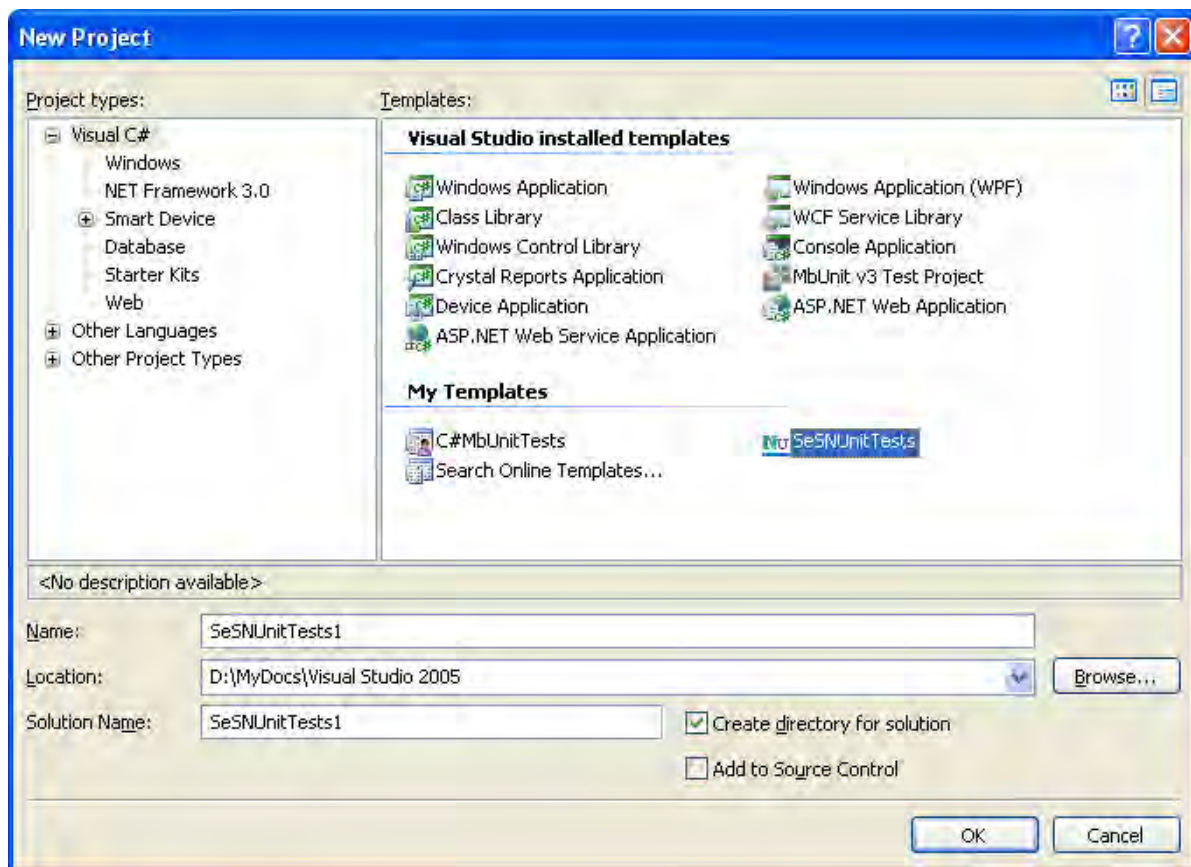


This will add code snippets and project templates described below.

## Creating SeSNUit test

Maybe you will want to write your own SeSNUit test. We have special template which will help you to do that. In this part we'll explain how to use it.

The only thing you need to do is just to create “SeSNUitTests” type project. For that open VS2005, on “Start Page” click on “Project...” (in the right side of “Create:”) and in opened window from “My Templates” part select “SeSNUitTests”. If you want you can change name of dll. By default it is “SeSNUitTests1”:



Figure

In the created project Open “Fixture1.cs” file. All necessary references are already added:

```
using System;
using System.Collections.Generic;
using System.Text;
using System.Diagnostics;
using NUnit.Framework;
using SeSNUITests;
```

File also contains `Fixture1` class with `[TestFixture]` attribute:

```
[TestFixture]
public class Fixture1
{
 ...
}
```

This is the attribute that marks a class that contains tests and, optionally, setup or teardown methods.

There are a few restrictions on a class that is used as a test fixture.

- It must be a publicly exported type.

- It must not be abstract.
- It must have a default constructor
- It must have no more than one of each of the following method types: `SetUp`, `TearDown`, `TestFixtureSetUp` and `TestFixtureTearDown`.

If any of these restrictions are violated the class will be shown as a non-runnable test fixture and will turn yellow in the NUnit GUI if you attempt to run it.

In addition it is advisable that the constructor not have any side effects since NUnit may construct the object multiple times in the course of a session.

In class we have `SetUp()` and `TearDown()` methods , and one more test method:

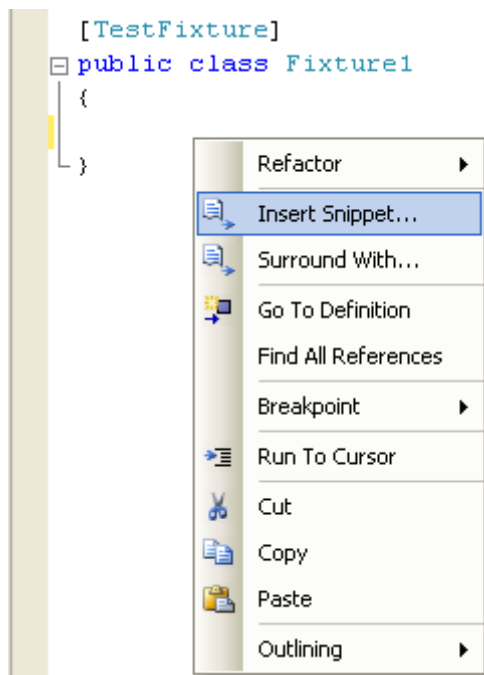
```
[SetUp()]
public void SetUp()
{
 //TODO - Setup your test objects here
}

[TearDown()]
public void TearDown()
{
 //TODO - Tidy up your test objects here
}

[SeS NUnitTest(/*Insert path to .sstest file which must be run.*/)]
public void TestSeS()
{
 int exitCode = SeS NUnitHelper.TestExecute();
 Assert.AreEqual(0, exitCode);
}
```

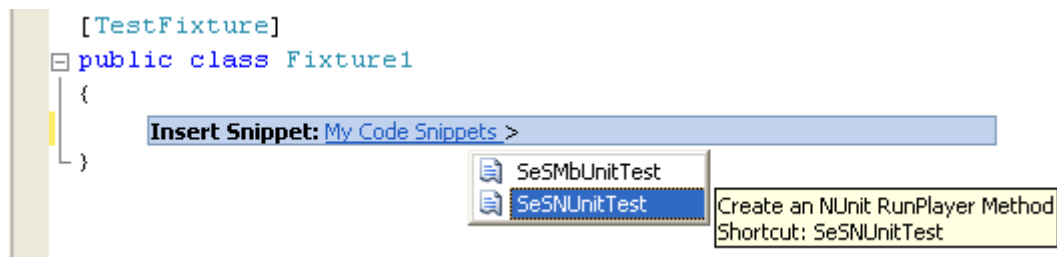
Now you also have a snippet, by which you can easily add “TestSeS” method with

`[SeS NUnitTest(@"<path to .sstest>")]` attribute. Right click in class body and from opened context menu select “Insert Snippet...”:



Figure

From it select “My Code Snippets”(if your snippets are in “My Code Snippets” folder , otherwise select proper folder), and then “SeSNUnitTest”:



Figure

This code will be added:

```

[SeSNUnitTest(/*Insert path to .sstest file which must be run.*/)
public void TestSeS()
{
 int exitCode = SeSNUnitHelper.TestExecute();
 Assert.AreEqual(0, exitCode);
}

```

You just need to add path of **.sstest** file to **SeSNUnitTest** attribute. If you add code via snippet in standard SeSNUnit Test project you will have two “TestSeS” methods, so don’t forget to change the name of one of them.



### 2.3.7.3 DLL Testing

#### Purpose

You can create objects and invoke methods from both managed and unmanaged dlls.

#### Usage

Rapise provides API calls to work with managed DLLs. The Windows object **WScript** can be used with unmanaged DLLs.

#### Managed DLLs

- **Util.InvokeMember**: Invoke a class method in a managed DLL.
- **Util.CreateClassInstance**: Creates an instance of a class in a managed DLL.
- **Util.SetFieldValue**: Sets a field value in an object created with CreateClassInstance.

#### Unmanaged DLLs

- **WScript.CreateObject("DynamicWrapper")**: Create a DynamicWrapper object. The **Register** and **ShellExecute** methods of the DynamicWrapper object can be used to invoke DLL methods as in the following example:

```
var UserWrap = WScript.CreateObject("DynamicWrapper");
UserWrap.Register("shell32.dll", "ShellExecute", "I=hssssl", "f=s", "r=l");
UserWrap.Register("USER32.DLL", "MessageBoxA", "I=HsSu", "f=s", "R=l");
UserWrap.MessageBoxA(null, "" + elapsed, "Time Elapsed:", 0x30);
```

#### Test Samples

There is a **Samples** folder in your Rapise directory. There are two [test samples](#) that illustrate working with DLLs:

- UsingDLLHandlerManaged
- UsingDLLHandlerUnManaged

#### See Also

- For more information on the WScript object, see: [http://msdn.microsoft.com/en-us/library/at5dy31\(VS.85\).aspx](http://msdn.microsoft.com/en-us/library/at5dy31(VS.85).aspx)

### 2.3.7.4 COM Testing Support

#### Purpose

Microsoft's **Component Object Model** (COM) is a standard for communication between separately engineered software components ([source](#)). Any object with a COM interface can be created and used remotely.

#### Usage

#### Creating a COM Object

You can create a COM object using Windows' **ActiveXObject** class. Once the object is created, method invocation is the same as with any other object in your program. The methods available will depend on the object's COM interface. The following example shows how to create an instance of the Word application and open a file.



```
var doc = new ActiveXObject("Word.Application");
doc.Documents.Open(wordFileName);
```

### Test Samples

There are several [test samples](#) that show how to Unit Test application modules via COM interface:

- UsingMSWord
- UsingMSExcel
- UsingMSAccess

### See Also

- Learn more about COM [HERE](#).
- Learn more about ActiveXObject [HERE](#).

## 2.3.7.5 Custom Strings

### Purpose

**Custom Strings** allow you to associate meta data with your test. Each custom string has a **name** and a **value**. The value can be retrieved using the name.

### Usage

#### Adding a Custom String

1. Open the **NameValue Collection Editor** dialog. Instructions are [HERE](#).
2. Press the **Add** button.
3. Fill in a **name** and **value** for the custom string.
4. Press **OK**. The dialog will close.

#### Retrieving a Custom String value

Use the **GetCustomString()** method to retrieve a custom string's value. See the example below:

```
var factory = new ActiveXObject("Rapise.Test.Test");
var test = factory.LoadFromFile(Global.GetFullPath("UsingCustomStrings.sstest"));
var BugID = test.GetCustomString("BugID");
var TestID = test.GetCustomString("TestID");
```

### See Also

- [NameValue Collection Editor Dialog](#)
- There is a [sample test](#) called **UsingCustomStrings**.

## 2.3.7.6 TAP Results

### Purpose

Rapise supports the **Test Anything Protocol** (TAP). TAP specifies communication between unit tests and testing frameworks, such as [Visual Studio MS-Test](#) or [NUnit](#).

### Usage

The results of a Rapise test are saved to a TAP file in the same directory as the test. Tap files have a **.tap** extension.

TAP's general format is:

```
1..N
ok 1 Description # Directive
Diagnostic
....
ok 47 Description
ok 48 Description
more tests....
```

For example, a test file's output might look like:

```
1..4
ok 1 - Input file opened
not ok 2 - First line of the input valid
ok 3 - Read the rest of the file
not ok 4 - Summarized correctly # TODO Not written yet
```

## Example

An example Rapise .TAP file looks like the following:

```
Simple IE Popup Example
Starting scenario: Test
ok 1 - Open popup.DoClick([])
ok 2 - Click me.DoClick([])
ok 3 - Close me.DoClick([])
ok 4 - Simple IE Popup Example
```

## See Also

- More information about tap is available at the TAP wiki: [www.testanything.org](http://www.testanything.org)
- [Visual Studio Unit Testing \(MS-Test\)](#)
- [NUnit](#)

## 2.3.8 Web Service Testing

### What is a Web Service?

A Web service is a unit of managed code that can be remotely invoked using HTTP, that is, it can be activated using HTTP requests. So, Web Services allows you to expose the functionality of your existing code over the network. Once it is exposed on the network, other application can use the functionality of your program.

Web Services allows different applications to talk to each other and share data and services among themselves. Other applications can also use the services of the web services. For example VB or .NET application can talk to java web services and vice versa. So, Web services is used to make the application platform and technology independent.

### What types of Web Service are There?

There are two broad classes of web service:

1. [SOAP](#) - These web services make use of the Web Service Definition Language (WSDL) and communicate using HTTP POST requests. They are essentially a serialization of RPC object calls into XML that can then be passed to the web service. The XML passed to the SOAP web services needs to match the format specified in the WSDL. SOAP web services are fully self-describing, so most clients do not directly work with the SOAP XML language, but instead use a client-side proxy generator that creates client object representations of the web service (e.g. Java, .NET objects). The web service consumers interact with these language-specific representations of the SOAP web service.
2. [REST](#) - A RESTful web API (also called a RESTful web service) is a web API implemented using HTTP and REST principles. Unlike SOAP-based web services, there is no "official" standard for RESTful web APIs. This is because REST is an architectural style, unlike SOAP, which is a protocol. Typically REST web services expose their operations as a series of unique "resources" which correspond to a specific URL. Each of the standard HTTP methods (POST, GET, PUT and DELETE) then maps into the four basic CRUD (Create, Read, Update and Delete) operations on each resource. REST web services can use different data serialization methods (XML, JSON, RSS, etc.).

### Why do we Test Web Services?

The purpose of **Web Service Testing** is to verify that all of the Application Programming Interfaces (APIs) exposed by your application operate as expected. In some ways they are similar to [unit tests](#) in that they test specific pieces of code rather than user interface objects.

Unlike simple unit tests however, web services tests will normally need to be developed for each of the supported versions of the API so that when a new version of a product comes out, you can regression test the latest version of the API and all previous versions. This ensures that legacy clients using the older version of the API don't need to make any changes.

Also, unlike unit tests, web services are being called across a network using the HTTP/HTTPS protocol rather than simply calling code that is resident on the same system as the test script. In that sense, they are similar to testing web sites.

Finally, in situations where you have an AJAX web application, as well as testing the front-end user interface using the appropriate UI library, you may need to test the web service that is providing the data to the user interface at the same time. In these situations you have a hybrid, web user interface and web service test.

### Testing Web Services with Rapise

Rapise contains a built-in web service module that can currently test the following types of web service:

1. [REST Web Services](#) - Rapise contains a built-in [REST definition builder](#) and object library that allows you to prototype out your REST web service requests, inspect the returned HTTP headers and HTTP response body and then convert into a parameterized set of Rapise objects that can be scripted against in the main Rapise [JavaScript editor](#). It also includes built-in support for verifying the data returned as Rapise checkpoints.
2. [SOAP Web Services](#) - Rapise contains a built-in [SOAP request tester](#) and object library that allows you to prototype out your SOAP web service requests, inspect the returned HTTP headers and SOAP response body and then convert into a parameterized set of Rapise objects that can be scripted against in the main Rapise [JavaScript editor](#). It also includes built-in support for verifying the data returned as Rapise checkpoints.

### 2.3.8.1 Testing REST Web Services

#### What is REST and what is a RESTful web service?

REpresentational State Transfer (REST) is a style of software architecture for distributed systems such as the World Wide Web. REST has emerged as a web API design model that offers greater simplicity over other web service protocols such as SOAP and XML-RPC.

A RESTful web API (also called a RESTful web service) is a web API implemented using HTTP and REST principles. Unlike SOAP-based web services, there is no "official" standard for RESTful web APIs. This is because REST is an architectural style, unlike SOAP, which is a protocol.

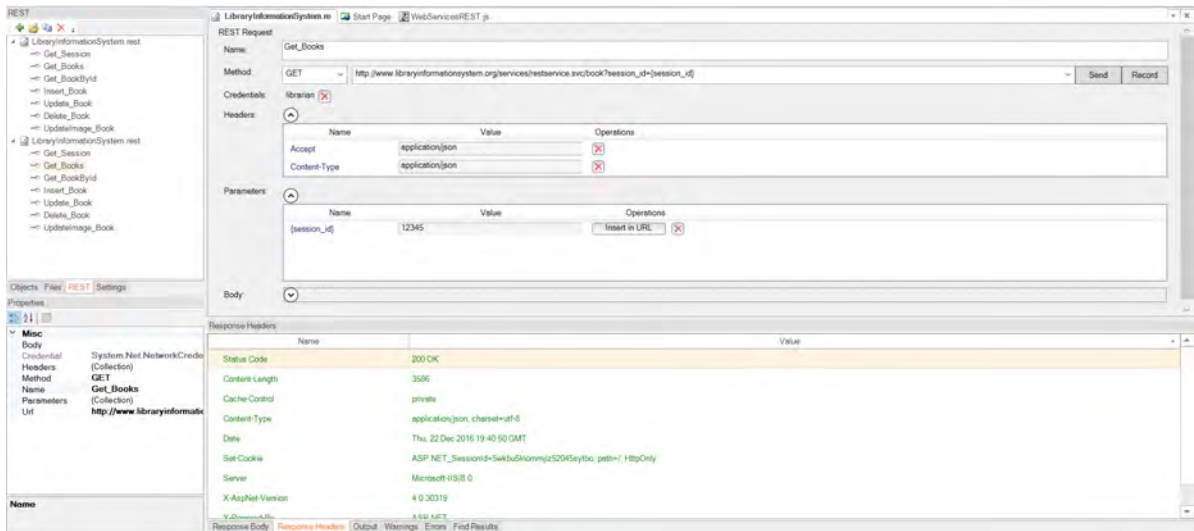
#### How does Rapise test REST web services?

Creating a REST web service test in Rapise consists of the following steps:

1. Using the [REST definition builder](#) to create the various REST web service requests and verify that they return the expected data in the expected format.
2. Parameterizing these REST web service requests into reusable templates and saving as Rapise learned objects.
3. Generating the [test script](#) in Javascript that uses the learned Rapise web service objects.

#### Rapise REST Definition Builder

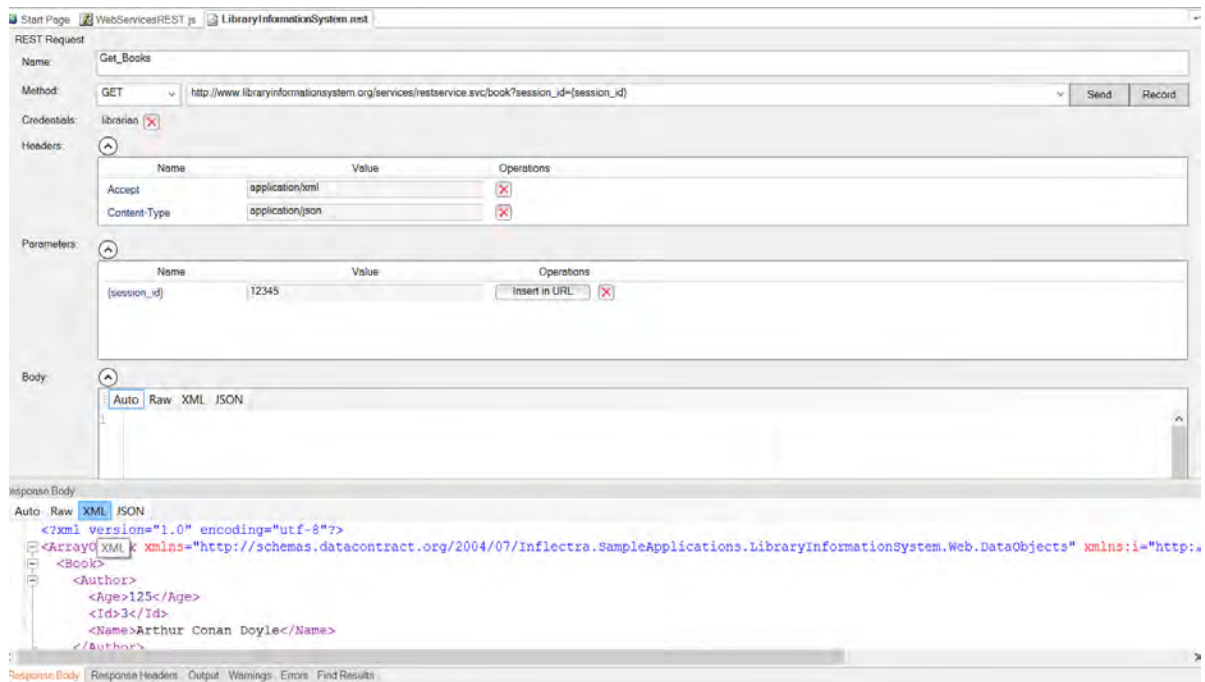
When you add a web service to your Rapise test project, you get a new REST definition file (.rest) that will store all of your prototyped requests against a specific REST web service. The various REST requests are then created in the REST definition builder:



Each REST request can then include the following items:

- **Method** - the type of HTTP request being made (GET, POST, PUT, DELETE, etc.)
- **URL** - the URL of the web service request with any parameter tokens included (e.g. {session\_id} in our example above)
- **Credentials** - Any HTTP Basic Authentication Headers
- **Headers** - Any other HTTP headers (both standard and custom)
- **Parameters** - Any parameters that have been defined in the URL that will be called from the Rapise test script.
- **Body** - The body of the request (for POST and PUT requests). This can be in any text-serialized format such as XML or JSON.

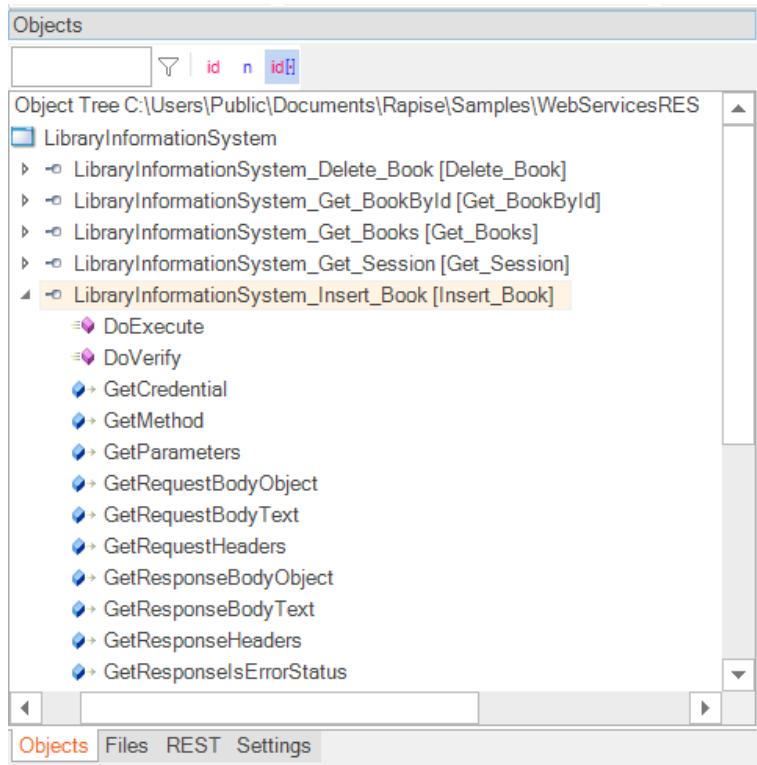
When you execute the request, it will return back the HTTP response headers and if it recognizes the MIME content-type as either XML or JSON, it will format it to make it more readable by the tester:



Once you have finished with your prototyping of the web service test operations, you can then save the request definitions and use the 'Update Object Tree' option to populate the main Rapise [Object Tree](#).

## Web Service Object Recognition

Each of the REST web service requests that has been prototyped in the REST definition editor is converted by Rapise into a scriptable object:



Each of the REST service objects in the tree has operations designed to let you call the method and access the returned body either in its raw text format, or if it's a web service that returns data in JSON format, it will be able to send/receive data as native JavaScript objects.

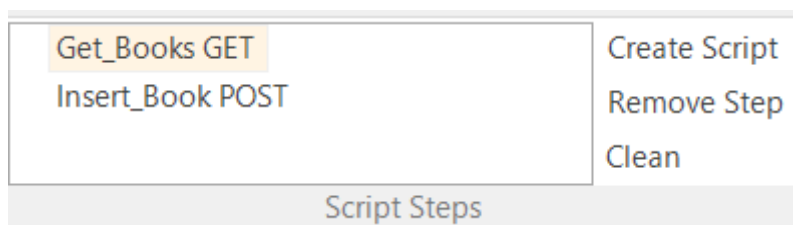
Rapise provides you with access to the following attributes of the HTTP request before/after the request has been executed:

- **Request:**
  - Method
  - Url
  - Headers (inc. authentication)
  - Body
- **Response:**
  - Headers
  - Body

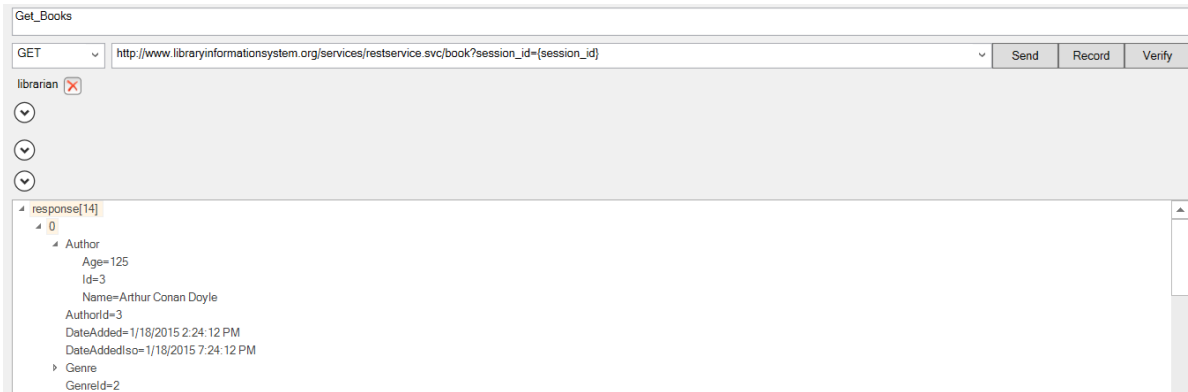
### Generating Rapise REST Test Scripts

Once all the REST operations have been defined and saved as Rapise learned objects, you can call the REST operations from within your Rapise test scripts.

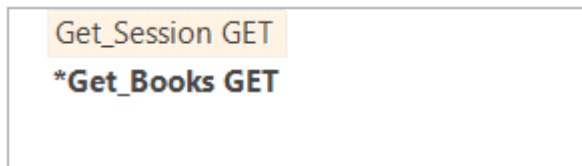
The easiest way to do this is to click on the **Record** button in the REST definition editor (next to the **Send** button) which will add the request to list of recorded steps:



Usually you need to verify the data returned as well as call the REST method. To do this, go to the **Verify** text box underneath the Body section:



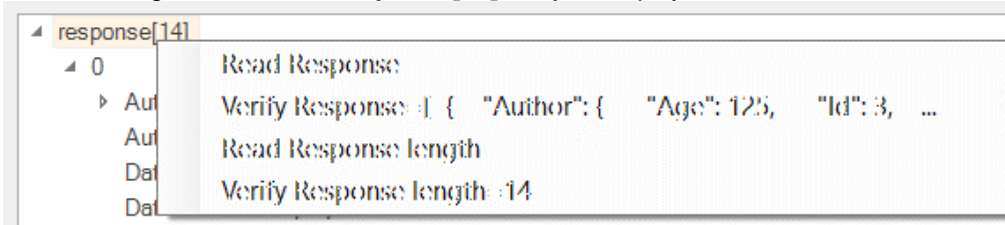
If you select the overall array **response[14]** and click the main **Verify** button next to the Record button, the system will automatically add a verification step that verifies all of the values. To try this, click the **Verify** button. This will add a bold verification step to the recorded script:



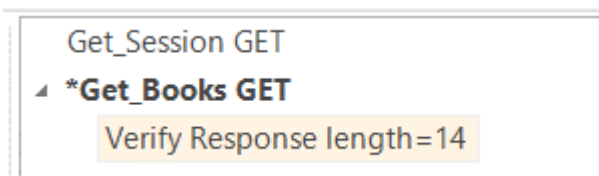
You will see a script step recorded with a verification test added (it's shown in bold with an asterisk\*):

However, in many cases you only want to verify certain properties. For example, we might want to just verify that 14 books are returned, and that the first book has the right name.

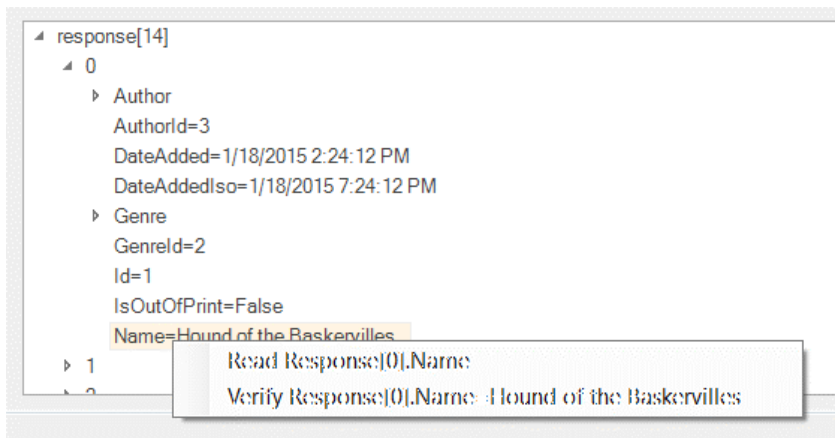
To do this, right-click on the **response[14]** entry to display the verification content menu:



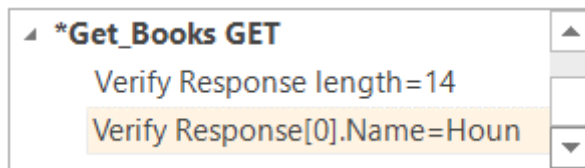
Choose the option **Verify Response length=14**. This adds the following step to the recorded script:



Now we want to verify the name of the first book returned. To do that, expand the "0" index entry and then right-click on the "Name" property returned:



Choose the option to **Verify Response[0].Name = Hound of the Baskervilles**. This will add a verification step for this specific property:



Once you are ready, click the 'Create Script' and the test script will be created for you:

```
//First get the session id so that the site can track our changes
var LibraryInformationSystem_Get_Session = SeS('LibraryInformationSystem_Get_Session');
LibraryInformationSystem_Get_Session.DoExecute();
Tester.AssertEqual('Error Executing Web Service', LibraryInformationSystem_Get_Session.GetResponseIsErrorStatus(), false)
var sessionId = LibraryInformationSystem_Get_Session.GetResponseBodyObject();
Tester.Message('Unique session ID: ' + sessionId);

// Specify 'session_id' as a session-level parameter - so it will be added to every ongoing call
Session.SetParameter('session_id', sessionId);

//Get the list of books
LibraryInformationSystem_Get_Books = SeS('LibraryInformationSystem_Get_Books');
LibraryInformationSystem_Get_Books.DoExecute();
LibraryInformationSystem_Get_Books.DoVerify('Tests that we have 14 books', "length", 14);

//Create a new book and get its new ID
var book = {};
book.Name = 'A Christmas Carol';
book.AuthorId = 2;
book.GenreId = 3;
var LibraryInformationSystem_Insert_Book = SeS('LibraryInformationSystem_Insert_Book');
LibraryInformationSystem_Insert_Book.SetRequestBodyObject(book);
LibraryInformationSystem_Insert_Book.DoExecute();
var bookId = LibraryInformationSystem_Insert_Book.GetResponseBodyObject("Id");
Tester.Message('New Book ID: ' + bookId);
```

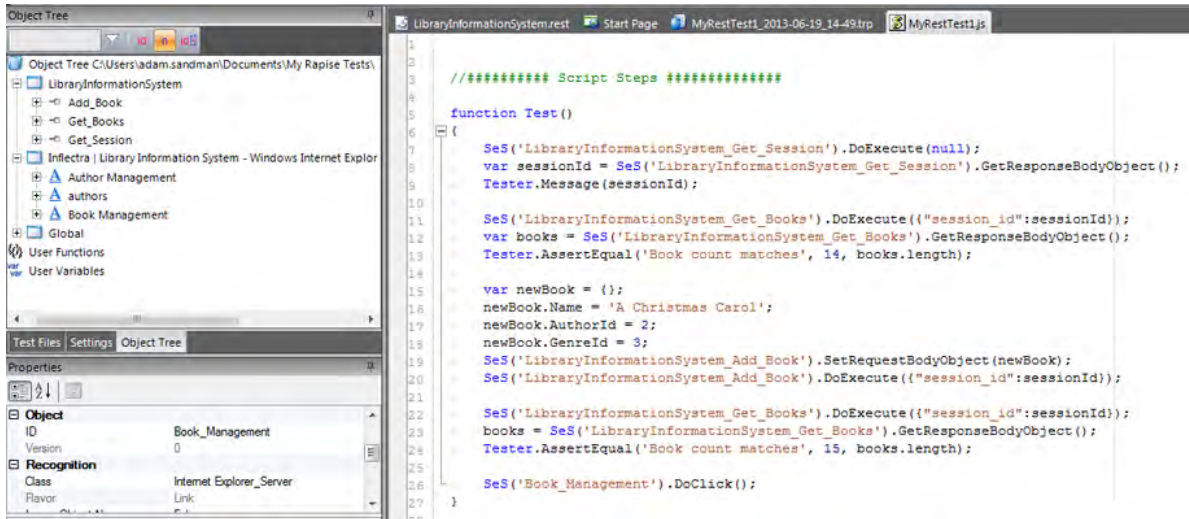
As well as simply calling the **DoExecute()** method of each REST web service object to call the previously defined operation, you can use the various properties on the REST service object to send through specific parameter values, add/remove headers, change the authenticated user, change the request body as well as inspect all of the attributes in the request and response.

This allows you unparalleled control over the web service request, with the ability to debug and diagnose web service issues in addition to being able to quickly call the learned operations.

Since the REST objects are just like any other Rapise object, you can have hybrid test scripts that call web service methods and also test GUI objects. This is very useful when you want to test how the user



interface changes in response to specific web service API interactions, or when you have a user interface that connects to the sever using a web service (for example with a JSON-based AJAX web user interface).



Once you have created your REST web service test, you can use the standard [Playback](#) functionality in Rapise to execute your test and display the report:

| # | Name                                                 | Start        | Type    | Status | Comment              | Iteration |
|---|------------------------------------------------------|--------------|---------|--------|----------------------|-----------|
|   | Starting scenario: Test                              | 14:49:03.725 | Message | Info   |                      |           |
|   | Get_Session.DoExecute([null])                        | 14:49:04.334 | Assert  | Pass   | Returned Value: true | 0         |
|   | c3d8dcd4-6125-427d-939a-0dd181b3cce1                 | 14:49:04.334 | Message | Info   |                      | 0         |
|   | Get_Books.DoExecute(["session_id":"c3d8dcd4-6125-4"] | 14:49:05.051 | Assert  | Pass   | Returned Value: true | 0         |
|   | Book count matches                                   | 14:49:05.051 | Assert  | Pass   |                      | 0         |
|   | Add_Book.DoExecute(["session_id":"c3d8dcd4-6125-4"]  | 14:49:05.379 | Assert  | Pass   | Returned Value: true | 0         |
|   | Get_Books.DoExecute(["session_id":"c3d8dcd4-6125-4"] | 14:49:05.597 | Assert  | Pass   | Returned Value: true | 0         |
|   | Book count matches                                   | 14:49:05.597 | Assert  | Pass   |                      | 0         |
|   | MyRestTest1                                          | 14:49:05.597 | Test    | Pass   | Passed:6 Failed:0    |           |

**Test Pass**  
Total:9 Pass:7 Fail:0 Info:2

### 2.3.8.2 Testing SOAP Web Services

#### What is SOAP and what is a SOAP web service?

SOAP is the Simple Object Access Protocol, and allows you to make API calls over HTTP/HTTPS using specially formatted XML. SOAP web services make use of the Web Service Definition Language (WSDL) and communicate using HTTP POST requests. They are essentially a serialization of RPC object calls into XML that can then be passed to the web service. The XML passed to the SOAP web services needs to match the format specified in the WSDL.

SOAP web services are fully self-describing, so most clients do not directly work with the SOAP XML

language, but instead use a client-side proxy generator that creates client object representations of the web service (e.g. Java, .NET objects). The web service consumers interact with these language-specific representations of the SOAP web service. However when these SOAP calls fail you need a way of testing them that includes being able to inspect the raw SOAP XML that is actually being sent.

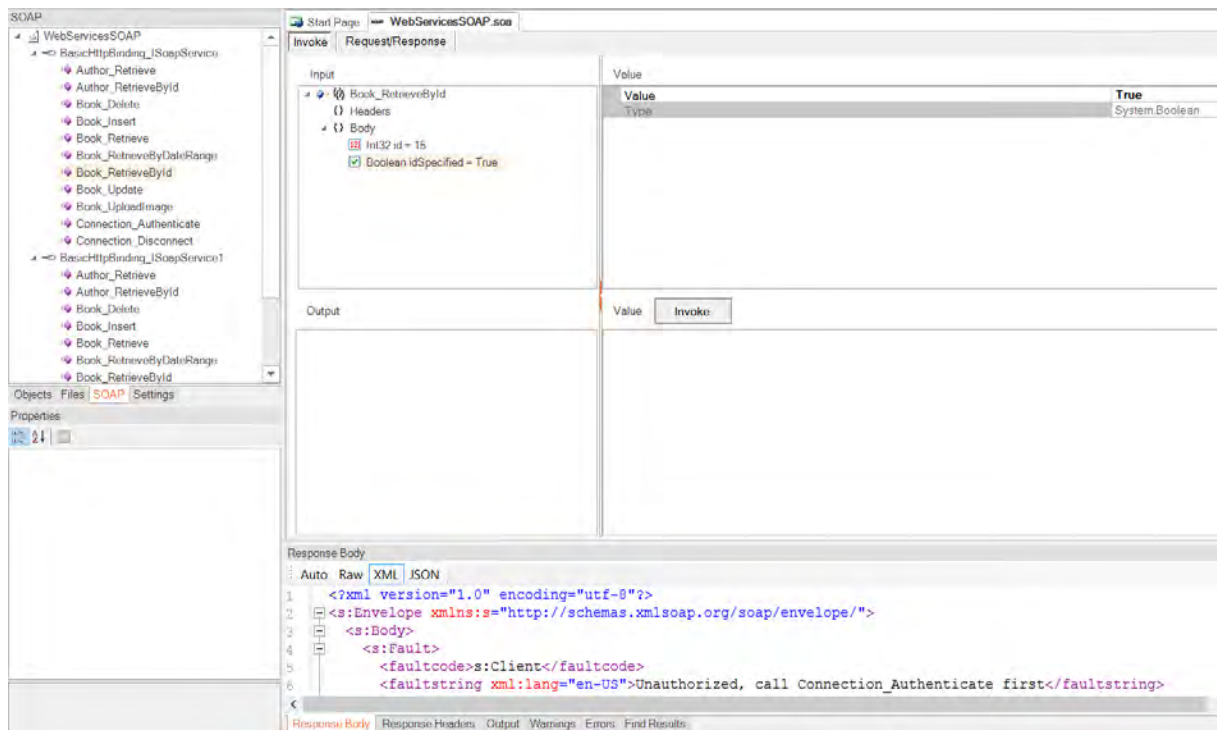
### How does Rapise test SOAP web services?

Creating a SOAP web service test in Rapise consists of the following steps:

1. Using the [SOAP test studio](#) to create the various SOAP web service test actions and verify that they return the expected data in the expected format.
2. Saving each of these SOAP API functions as Rapise learned objects.
3. Generating the [test script](#) in Javascript that uses the learned Rapise web service objects.

### Rapise SOAP Testing Studio

When you add a SOAP web service to your Rapise test project, you get a new SOAP definition file (.soap) that will store all of the test invocations against a specific SOAP web service:

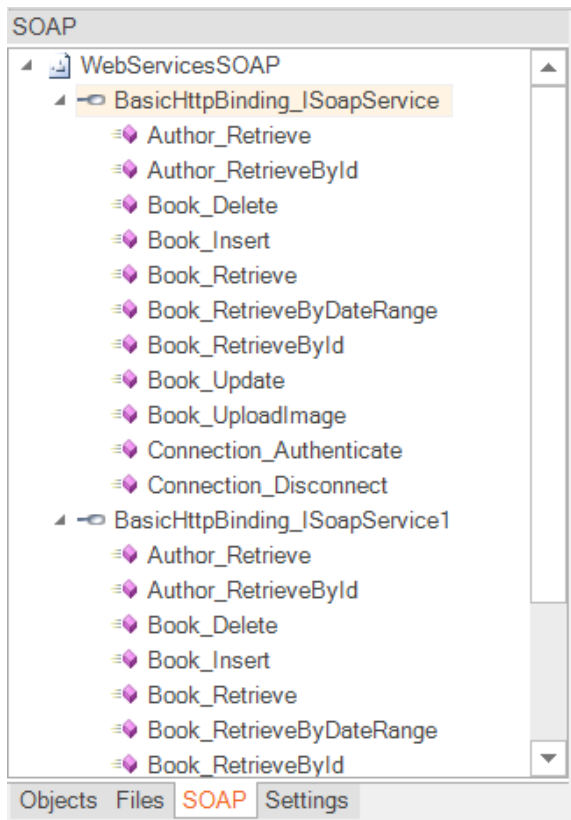


The SOAP test studio (illustrated above) works by connecting to the WSDL location that you specify in the **Endpoint** tab of the [SOAP Ribbon](#):

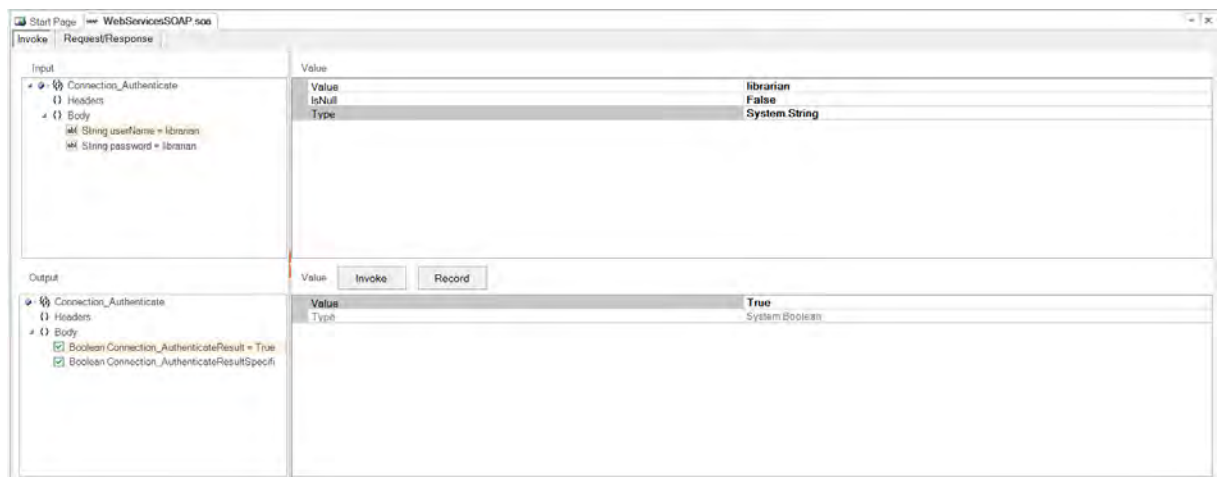
Custom Endpoint

Endpoint

When you enter in the URL to your SOAP Web Service WSDL file and click **Get WSDL**, Rapise will download the WSDL file and display the list of available methods in the SOAP explorer:



Clicking on one of the available methods (e.g. Connection\_Authenticate) will display that method in the main SOAP editor. Normally you will start using the **Invoke** tab of the SOAP editor:



This is where you can tell Rapise to invoke the method, pass any expected parameters and view the response from the service.

If the SOAP method expects input parameters, they will be displayed in the "Body" section of the Input in a treeview. You can expand the tree and fill in the various values. In the example above, we have passed the login and password as parameters.

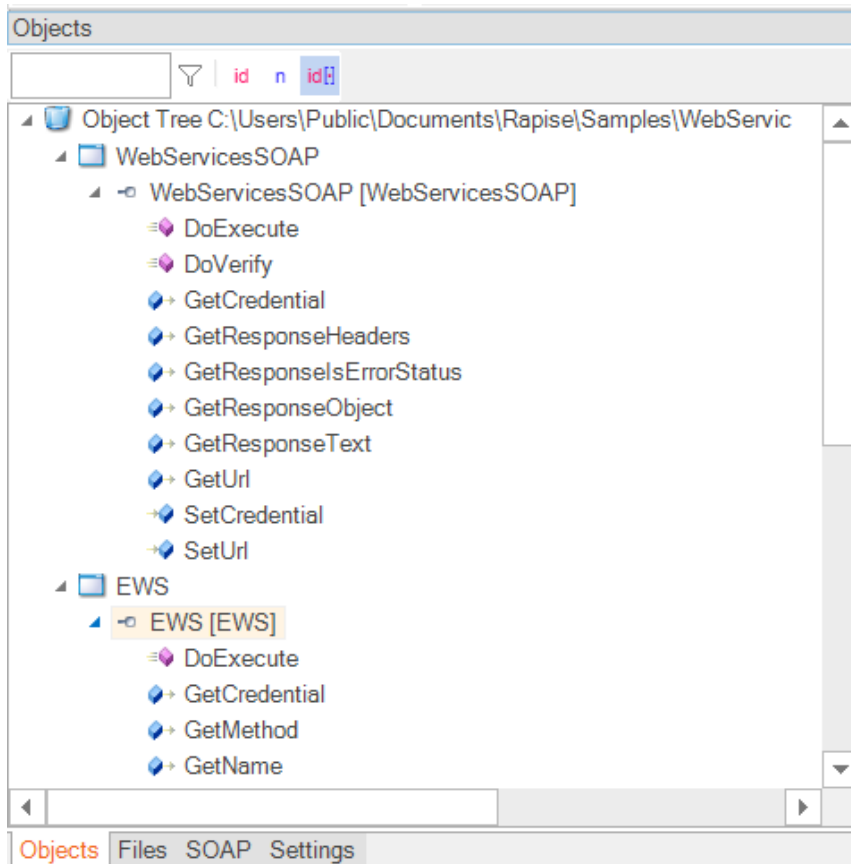
When you click the **Invoke** button, Rapise will send the SOAP request to the API and display the returned output in the Output section. In this case we get the value "True" back, indicating that our authentication request was successful.

You can also click on the **Request/Response** tab to view the raw SOAP XML that was sent to and from the server. This is very useful when debugging a service that does not work as expected.



## Web Service Object Recognition

Unlike the REST web service testing editor, each SOAP endpoint will generate a single Rapise SOAP object in the object tree:



These two objects (EWS and WebServicesSOAP) map to the two .SOAP files in the Rapise project. Each of these objects can be used for all of the web service requests in that file:

```
var WebServicesSOAP=SeS('WebServicesSOAP');
WebServicesSOAP.DoExecute('Connection_Authenticate', { "userName":
"librarian", "password": "librarian"}, {});
WebServicesSOAP.DoExecute('Book_Retrieve');
WebServicesSOAP.DoVerify('"Body.result.length" Response',
"Body.result.length", 14);
WebServicesSOAP.DoExecute('Book_Insert', { "book": { "Author":
{"Name": ""}, "AuthorId": 2, "AuthorIdSpecified": true, "DateAddedIso":
"2016-10-02T20:00:00", "Genre": {"Name": "" }, "GenreId": 3,
"GenreIdSpecified": true, "Id": 0, "IdSpecified": false,
"IsOutOfPrint": false, "IsOutOfPrintSpecified": false, "Name": "A
Christmas Carol" }});
Log("Resp: "+WebServicesSOAP.RequestProperties.requestPayload);
```

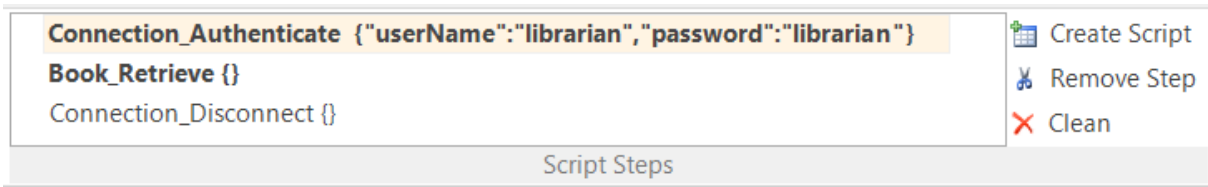
In the example above, the same object "WebServicesSOAP" is being used with DoExecute with different SOAP methods passed as the first parameter (Connection\_Authenticate, Book\_Retrieve, Book\_Insert).

### Generating Rapise SOAP Test Scripts

To save time, Rapise can generate the test script code automatically for you (instead of having to write it by hand).

To do that, after you have verified that a particular method works as expected, when you click the **Invoke** command, then click the **Record** button to record the step, and if you want to verify the data

returned, also click on the **Verify** button. That will generate the following:



The steps recorded will be in **bold** type if they include a verification step, and will be in normal type if they are simply invoked with no verification.

When you click the 'Create Script' button, the following will be generated:

```
WebServicesSOAP.DoExecute('Connection_Authenticate',
{"userName": "librarian", "password": "librarian"});
Tester.Assert('Connection_Authenticate Response',
WebServicesSOAP.GetResponseObject(), {"Body":
{"Connection_AuthenticateResult"
:true, "Connection_AuthenticateResultSpecified": true}, "Headers": {}});
WebServicesSOAP.DoExecute('Book_Retrieve', {});
Tester.Assert('Book_Retrieve Response',
WebServicesSOAP.GetResponseObject(), { ... });
WebServicesSOAP.DoExecute('Connection_Disconnect', {});
```

## Playback of SOAP Tests

Once you have created your SOAP web service tests, you can use the standard [Playback](#) functionality in Rapise to execute your test and display the report:

| #  | Type   | Start        | Name                                                     | Status | Comment              | Iteration |
|----|--------|--------------|----------------------------------------------------------|--------|----------------------|-----------|
| 1  | Assert | 13:36:57.357 | WebServicesSOAP.DoVerify(["Body.result.Author.Name"] R   | Pass   | Returned Value: true | 0         |
| 2  | Assert | 13:36:57.368 | "Body.result.Genre.Name" Response                        | Pass   |                      | 0         |
| 3  | Assert | 13:36:57.480 | WebServicesSOAP.DoVerify(["Body.result.Genre.Name"] Re   | Pass   | Returned Value: true | 0         |
| 4  | Assert | 13:36:57.486 | "Body.result.Name" Response                              | Pass   |                      | 0         |
| 5  | Assert | 13:36:57.589 | WebServicesSOAP.DoVerify(["Body.result.Name"] Respons    | Pass   | Returned Value: true | 0         |
| 6  | Assert | 13:36:57.789 | WebServicesSOAP.DoExecute(["Book_Delete",{"id":15,"ldSpe | Pass   | Returned Value: true | 0         |
| 7  | Assert | 13:36:58.009 | WebServicesSOAP.DoExecute(["Book_Retrieve"])             | Pass   | Returned Value: true | 0         |
| 8  | Assert | 13:36:58.011 | "Body.result.length" Response                            | Pass   |                      | 0         |
| 9  | Assert | 13:36:58.121 | WebServicesSOAP.DoVerify(["Body.result.length"] Respons  | Pass   | Returned Value: true | 0         |
| 10 | Assert | 13:36:58.840 | WebServicesSOAP.DoExecute(["Book_UploadImage",{"id":1,   | Pass   | Returned Value: true | 0         |
| 11 | Assert | 13:36:58.846 | "Body.Book_UploadImageResult" Response                   | Pass   |                      | 0         |
| 12 | Assert | 13:36:58.967 | WebServicesSOAP.DoVerify(["Body.Book_UploadImageRes      | Pass   | Returned Value: true | 0         |
| 13 | Assert | 13:36:59.196 | WebServicesSOAP.DoExecute(["Connection_Authenticate",{"  | Pass   | Returned Value: true | 0         |
| 14 | Assert | 13:36:59.203 | "Body.Connection_AuthenticateResult" Response            | Pass   |                      | 0         |
| 15 | Assert | 13:36:59.309 | WebServicesSOAP.DoVerify(["Body.Connection_Authenticat   | Pass   | Returned Value: true | 0         |
| 16 | Test   | 13:36:59.314 | WebServicesSOAP                                          | Pass   | Passed:32 Failed:0   |           |

**Test Pass**  
Total:34 Pass:33 Fail:0 Info:1

## 2.3.9 Mobile Testing

### Purpose

Rapise lets you record and play automated tests against native applications on a variety of mobile devices using either [Apple iOS](#) or [Android](#). Rapise gives you the flexibility to test your applications on



either real or simulated devices.

## Usage

Since the process for testing mobile devices depends heavily on the platform being used, we have split the guide into two separate sections:

- [Mobile Testing using Apple iOS](#)
- [Mobile Testing using Android](#)

## Examples

You can find the mobile sample tests and sample Applications (called AUTAndroid for Android and AUTiOS for Apple iOS) in your Rapise installation at the following locations:

### Sample Mobile Tests:

- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AppAndroid (testing a native Android App)
- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\WebAndroid (testing a Chrome web app)
- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AppiOS (testing a native iOS App)
- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\WebiOS (testing a Safari web app)

### Sample Applications

- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AUT\AUTAndroid (for iOS)
- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AUT\AUTiOS (for Android)

(we supply the sample applications as both a compiled binaries and an projects with appropriate source code)

## See Also

- [Technologies - Mobile Testing](#), for instructions on preparing your environment for mobile testing, including instructions for installing the necessary prerequisites and configuring the various third-party components that Rapise uses to connect to the device.
- [Mobile Testing Tutorial](#) - for a simple introduction to mobile device testing.
- [Mobile Settings Dialog](#) - for information on setting up the different **mobile profiles** for the mobile devices you will be testing
- [Mobile Object Spy](#) - for information on how Rapise connects to the device and lets you view the objects in the application being tested

### 2.3.9.1 Apple iOS

## Purpose

Rapise lets you record and play automated tests on real iOS devices (iPad and iPhone) as well as test applications using the iOS simulator that ships with XCode. No jailbreaking needed! With Rapise you can record on one device and playback on multiple.

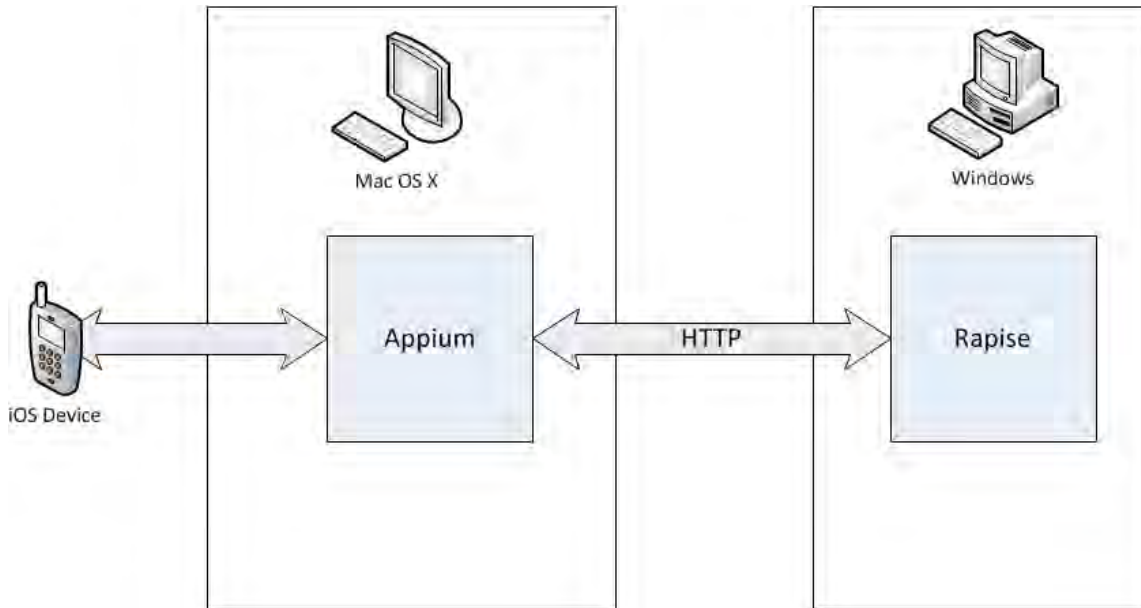
## Prerequisites

This section assumes that you have already installed and configured all of the necessary components.

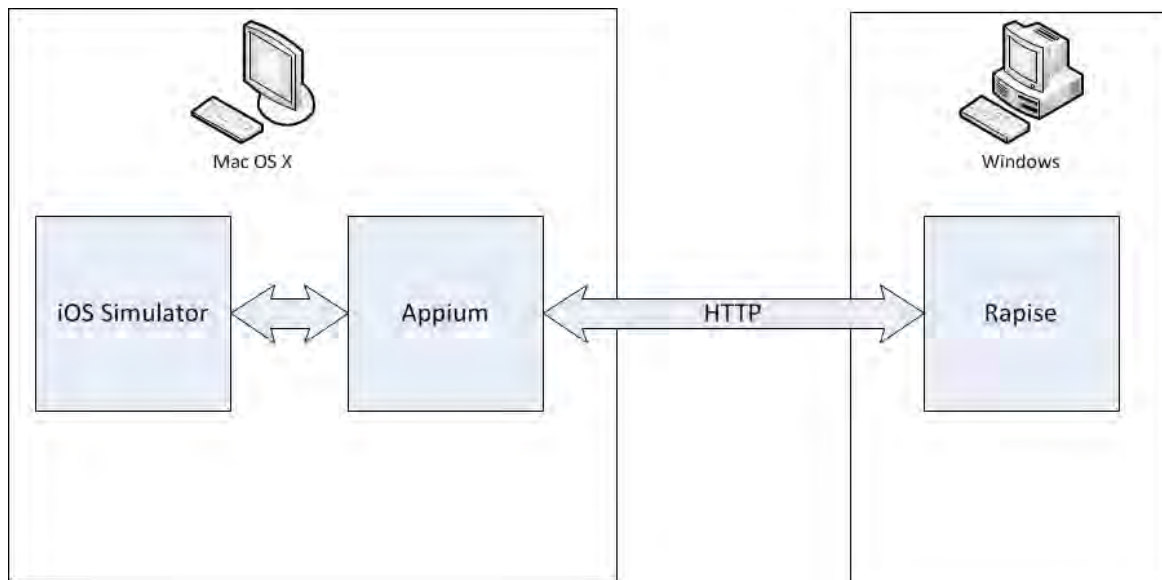
For details on this, please refer to the [Technologies - Mobile Testing](#) and [Mobile Testing - iOS Setup](#) sections that describes the necessary steps for both physical and simulated devices.

Since Rapise runs on Windows computers (PC) and iOS devices (both real and simulated) can only be tested on an Apple Macintosh (Mac) computer, it is necessary that you install **Appium** and **Apple Xcode** onto the Mac and connect to Appium over the network from Rapise running on your PC.

For Physical iOS devices the architecture looks like:



For simulated iOS devices (using the Xcode iOS Simulator) the architecture looks like:

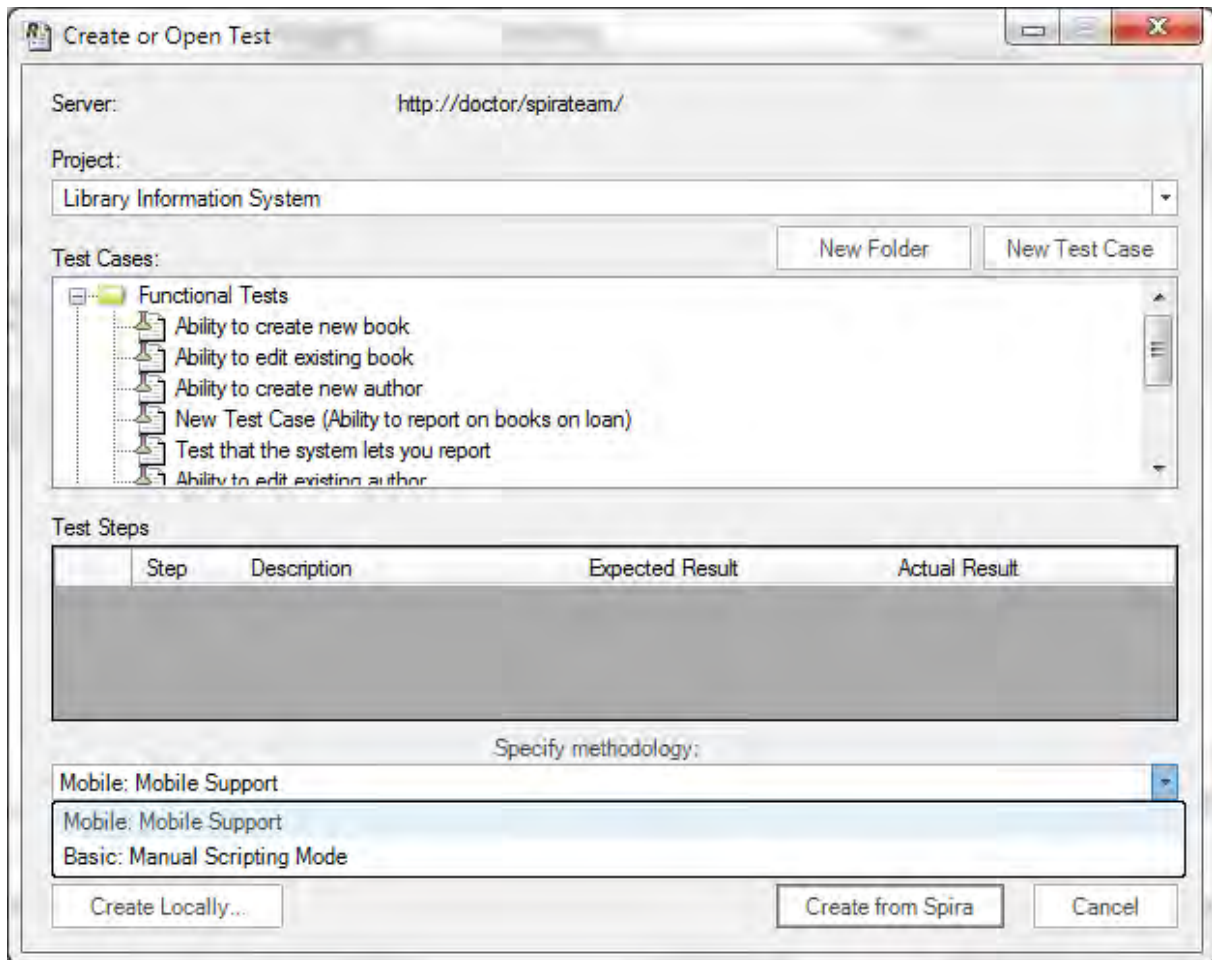


## 1) Configure the Mobile Profile

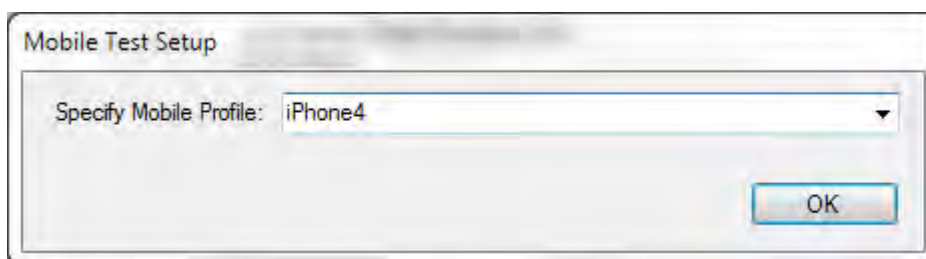
To begin mobile testing, when you [create the new test](#), make sure you choose the mobile methodology



option "Mobile: Mobile Support":

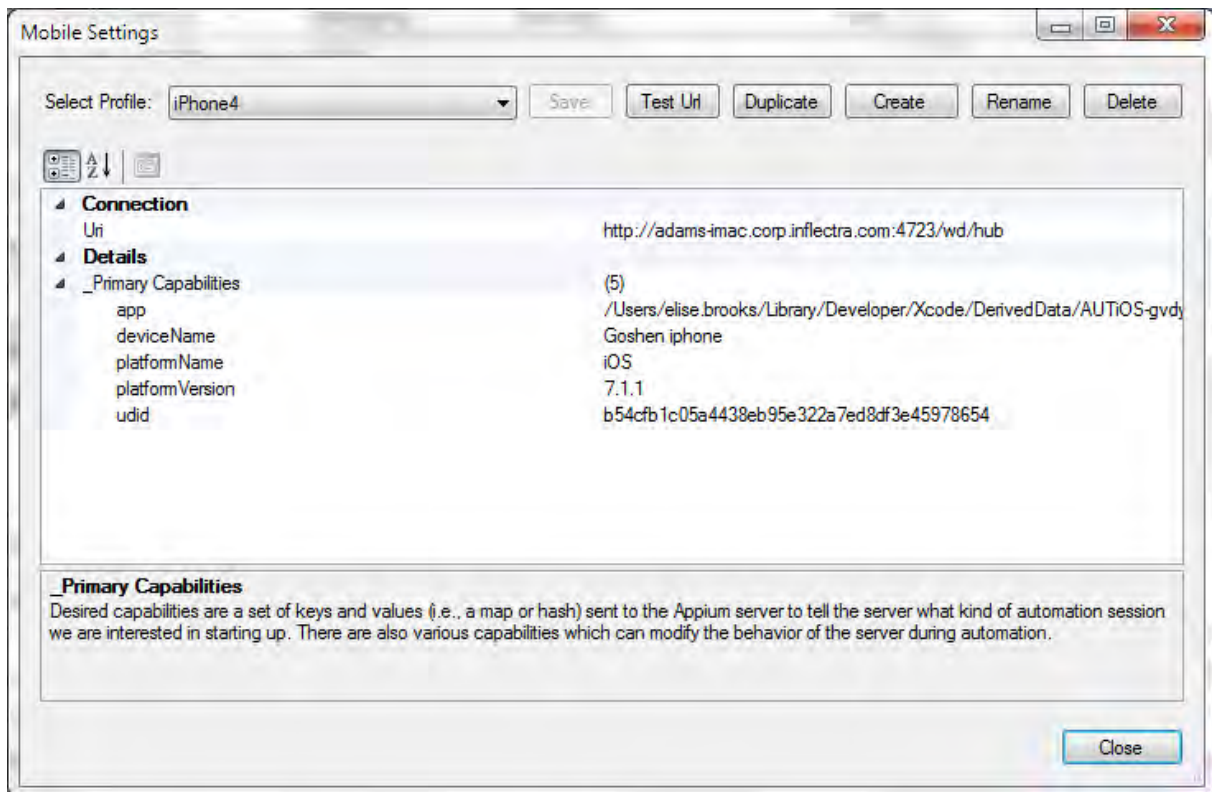


Once you have entered the name for the new test (with the mobile methodology selected) you will be asked to choose the mobile profile. Rapise ships with several default profiles, for now select the one that is closed to the device you want to test (you can always change it later):



When you click the **[OK]** button, Rapise will create a new mobile test with this profile selected.

Now you need to modify the profile so that it correctly matches the type of device you are testing and also so that it correctly points to the [Appium](#) server that you are using to host the mobile devices. Click on Options > Tools > Mobile Settings to bring up the [Mobile Settings](#) dialog box:



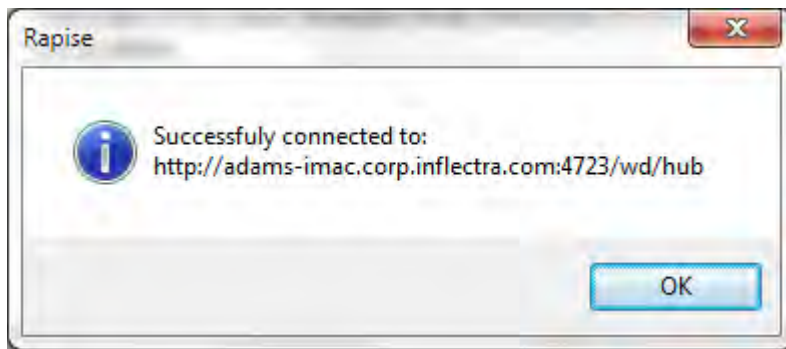
The example screenshot above is for an iPhone 4 physical device running iOS 7.1.1. For any iOS device (real or simulated) you will need to provide the following:

- **Uri** - this is the URL to your Appium server. We shall discuss this shortly
- **app** - this needs to be the path (on the Mac running Appium) to the Application being tested on the device (e.g. /Users/user.name/Library/Developer/Xcode/DerivedData/AUTiOS-gvdyymxyzrfqgdfvfy lapawjoyd/Build/Products/Debug-iphonesimulator/AUTiOS.app)
- **deviceName** - this needs to match the name of the device being connected
- **platformName** - this needs to be set to 'iOS'
- **platformVersion** - this needs to be set to the correct version of iOS that the device is running

In addition, for physical devices only, you need to specify:

- **udid** - The unique device identifier of the connected physical device (leave blank for simulated devices)

Once you have entered in the information and saved the profile, make sure that Appium is running on the Mac (see the [Technologies - Mobile Testing topic](#) for details) and then click the **[Test URL]** button to verify the connection with Appium:

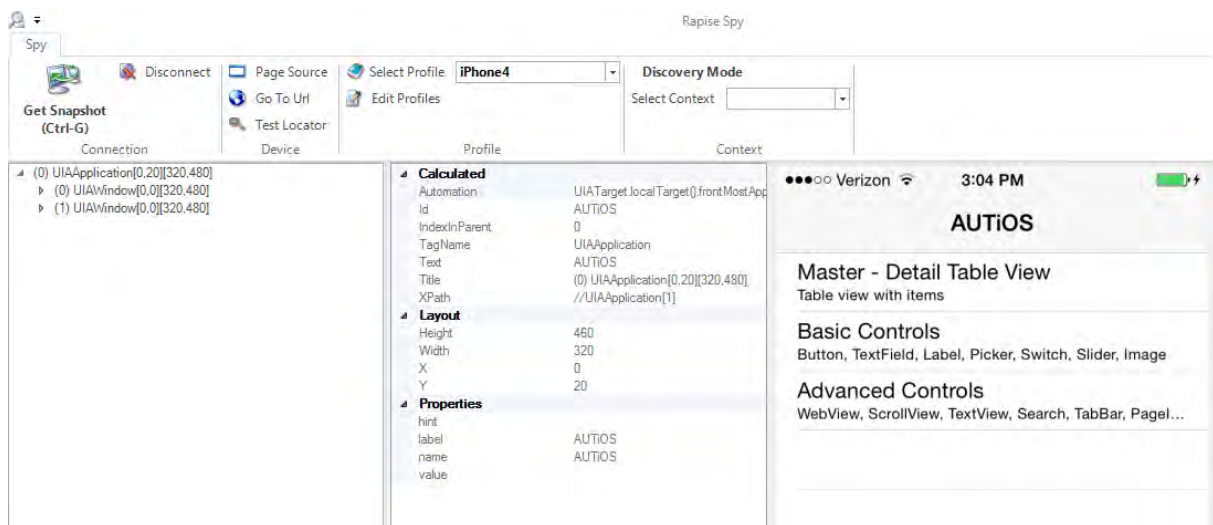


Now you can start testing your mobile iOS application.

## 2) Using the Mobile Spy

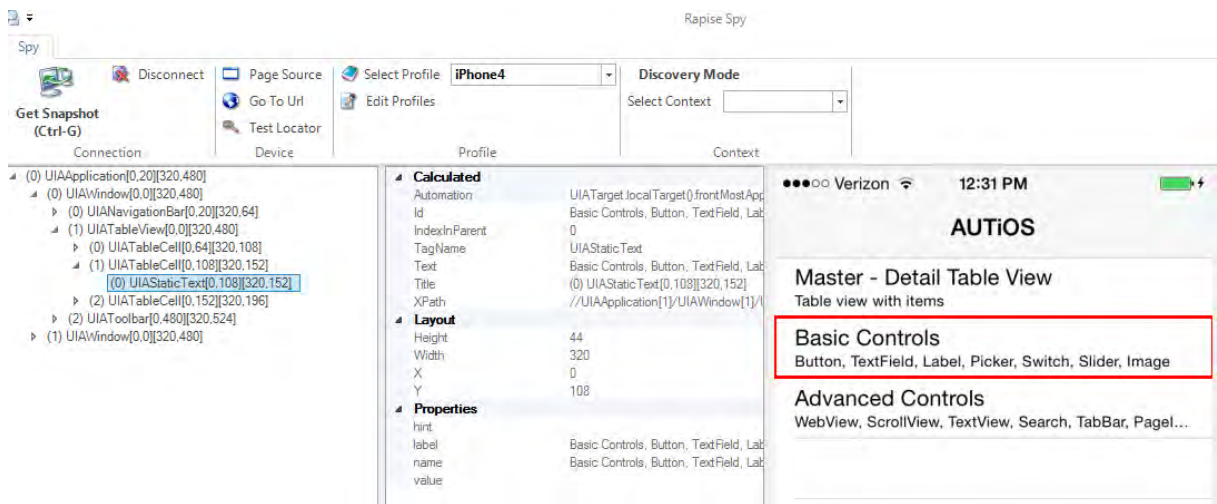
The Mobile Spy will let you view an application running on the mobile device, take a snapshot of its screen and then interactively inspect the objects in the application being tested. This is a useful first step to make sure that Rapise recognizes the application and has access to the objects in the user interface.

To start the Mobile Spy, open the Spy icon on the main [Test ribbon](#) and select the Mobile option and the Mobile Spy will be displayed in **Discovery Mode**. Now click the **[Get Snapshot]** button to display the application specified in the [mobile profile](#) on the screen:

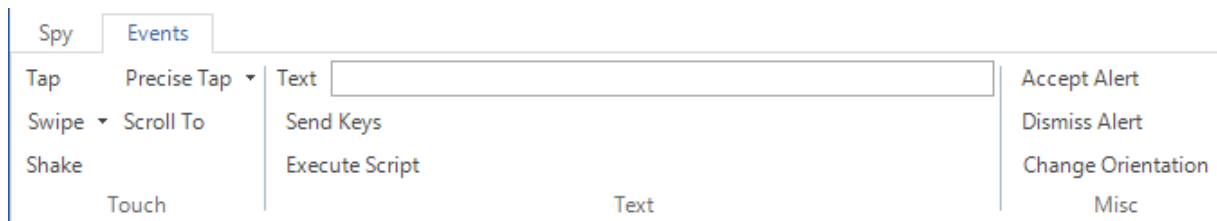


In the example above, we are displaying the sample iOS application that comes with Rapise (AUTIOS).

If you click on one objects in the user interface, it will be highlighted in Red and the tree hierarchy on the left will expand to show the properties of that object:



If you want to view the contents of the Spy as a text file, just click the **'Page Source'** button and you will see the contents of the Spy properties window as a text file. If you want to perform an action on the application (e.g. click on the selected item), switch the ribbon to the 'Events' view:



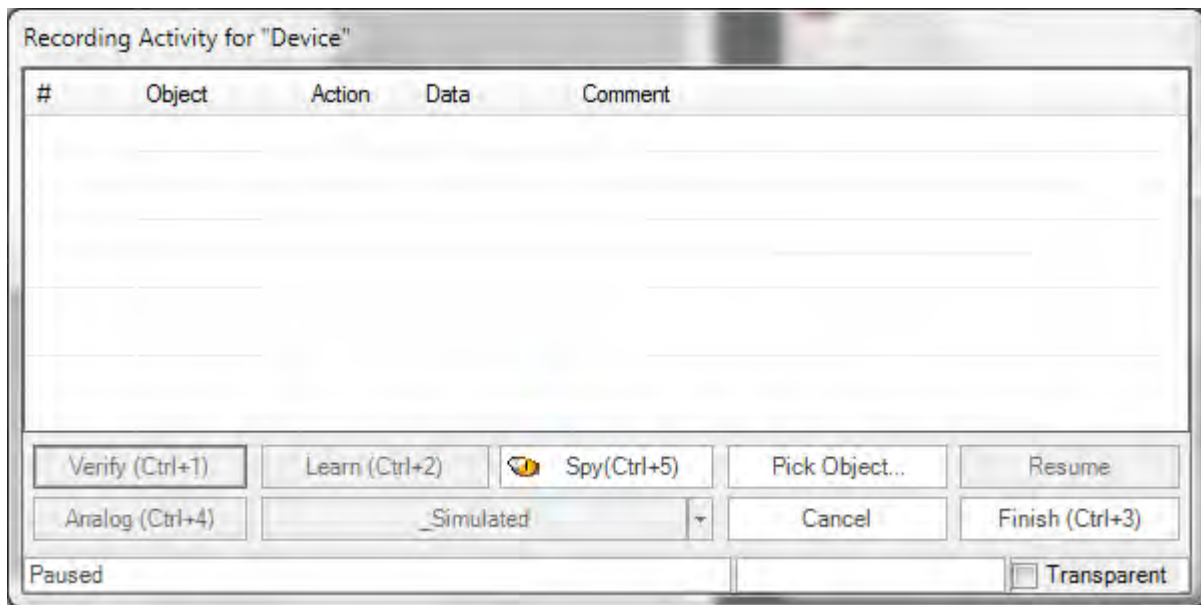
For a full list of the available events and what they mean, please refer to the main [Mobile Spy](#) Topic.

*Assuming that you can see your application in the Spy and that the objects can be inspected (similar to that shown above) you can now begin the process of testing your mobile application.*

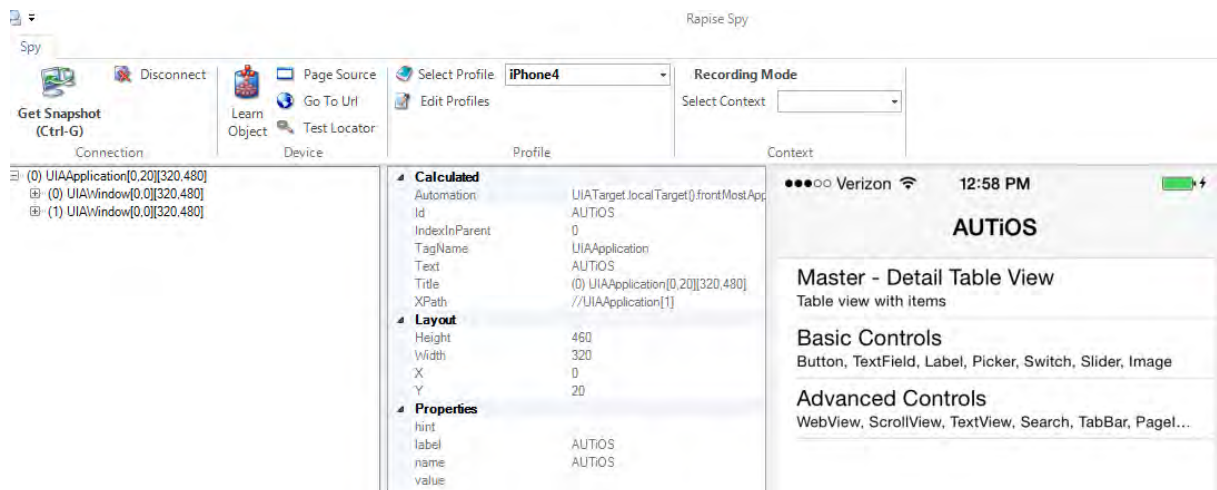
Click on **Disconnect** to end your Spy session and close the Rapise Spy dialog. You will now be returned back to your test script.

### 3) Recording and Playing a Test

With the new Rapise mobile test script open, click on the **Record/Learn** button in Rapise and that will display the [recording activity dialog](#):

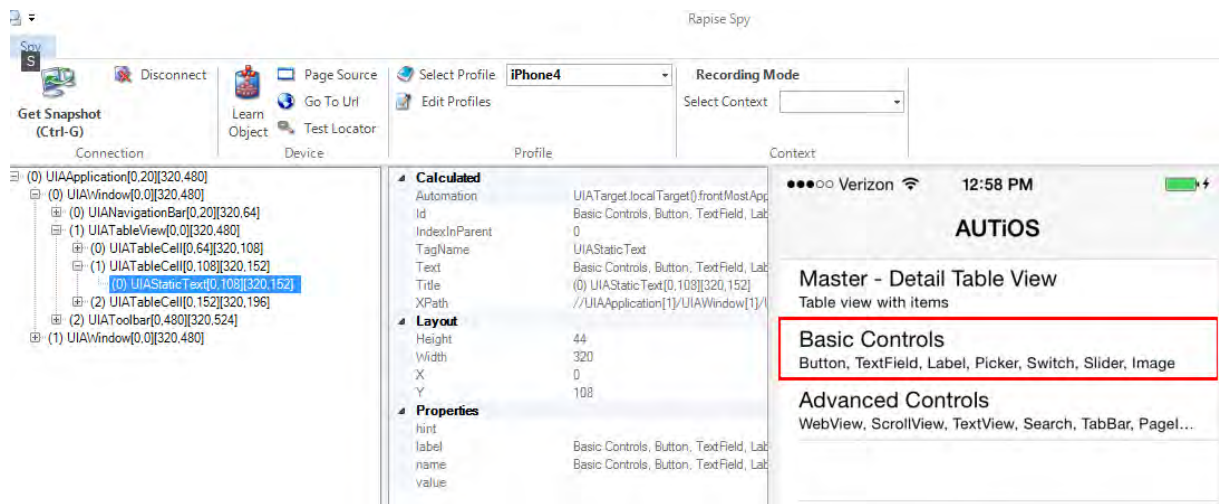


Now click on the [Pick Object] button and the Rapise Spy will be displayed in Recording Mode:

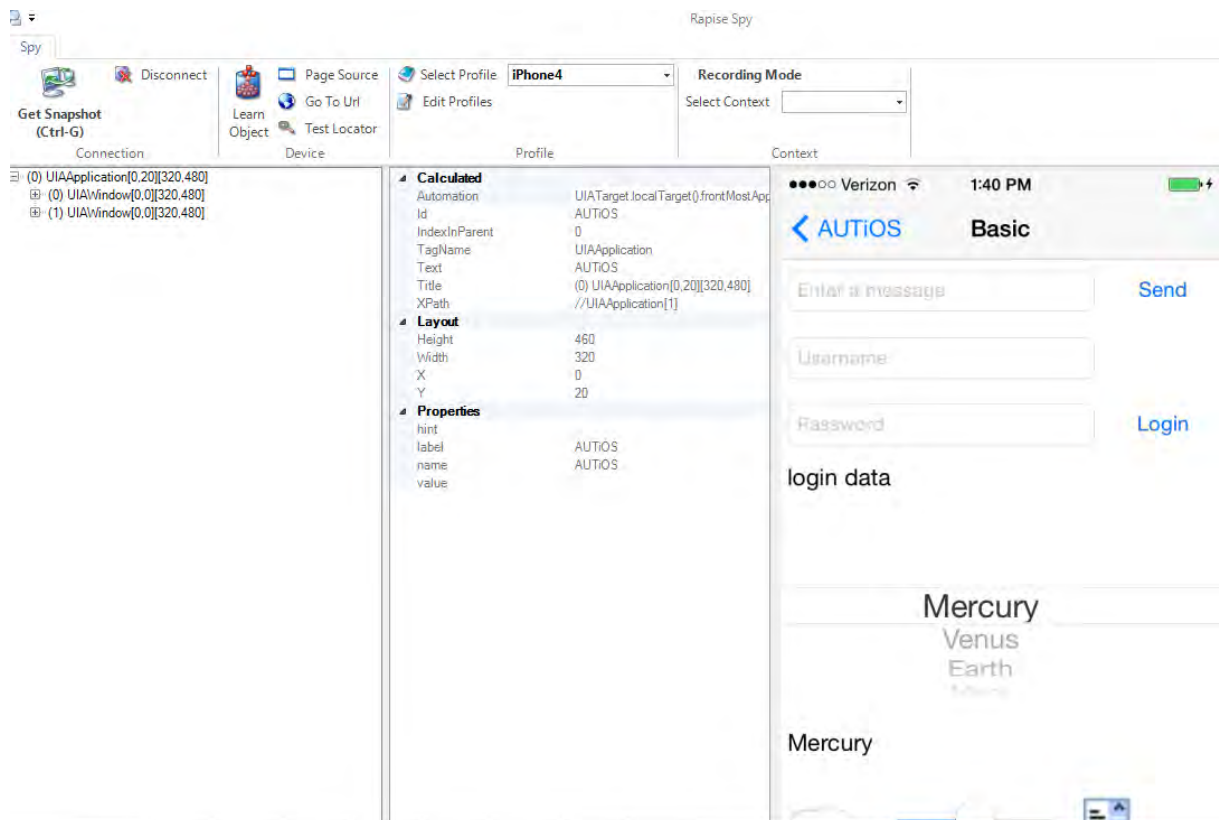


We now want to record a click on one of the menu options, simply highlight one of the menu entries:

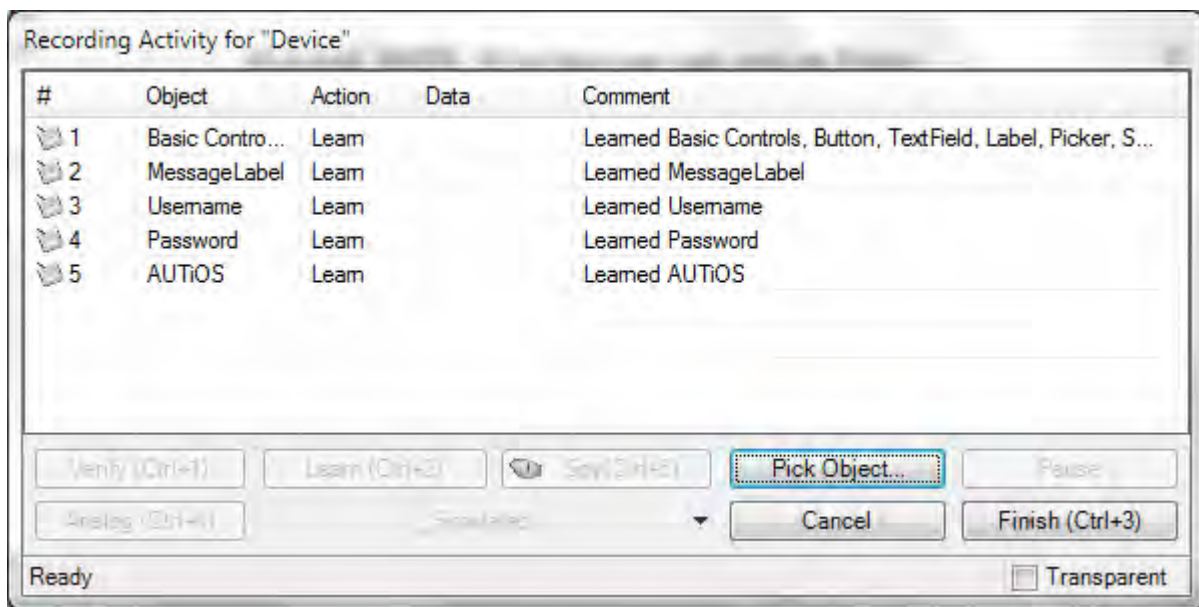




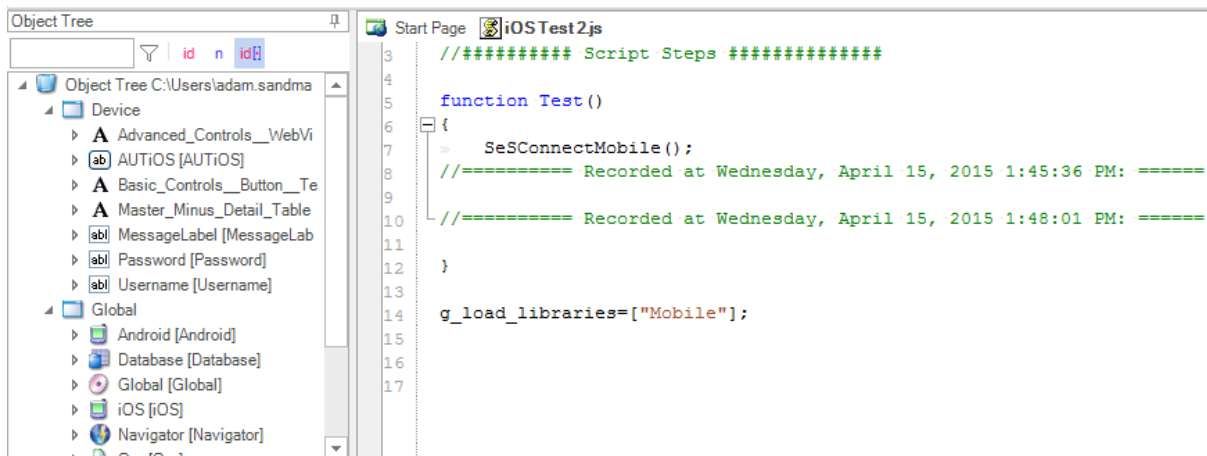
Now click the **[Learn Object]** button and the object will be added to the Rapise [object tree](#). Now **on the device itself** click on the menu entry to go to the next screen, then in Rapise click **Get Snapshot** to get the updated screen:



Now click on some of the objects and choose **Learn** to add them to the [object tree](#). Once you are finished, click on the **Disconnect** button. You will see the events in the recording activity dialog:



Now click on the **Finish** button and you will be taken back to the test script with the iOS objects listed:



Now that we have the objects, we can drag them into the test script editor and write the following script:

```

//##### Script Steps #####

function Test()
{
 SeSConnectMobile();

 SeS('Basic_Controls_Button_TextFiel').DoClick();
 SeS('Username').DoSetText('test user');
 SeS('Password').DoSetText('test pwd');
 SeS('AUTiOS').DoClick();
}

g_load_libraries=["Mobile"];

```

This will click on the first menu entry, then enter a username and password and then finally return back

to the main menu.

Now to playback the test simply click **Play** in the Rapise test ribbon and the test will play back in the mobile device:

Start Page iOS Test 2.js iOS Test 2\_2015-04-15\_13-55.trp

Drag a column header here to group by that column.

| # | Type    | Start        | Name                                                              | Status | Comment               | Iteration |
|---|---------|--------------|-------------------------------------------------------------------|--------|-----------------------|-----------|
|   | Message | 13:54:06.008 | Starting scenario: Test                                           | Info   |                       |           |
|   | Assert  | 13:54:51.382 | Basic Controls, Button, TextField, Label, Picker, Switch, Slider, | Pass   | Returned Value: true  | 0         |
|   | Assert  | 13:55:06.386 | Username.DoSetText(["test user"])                                 | Pass   | Returned Value: false | 0         |
|   | Assert  | 13:55:21.415 | Password.DoSetText(["test pwd"])                                  | Pass   | Returned Value: false | 0         |
|   | Assert  | 13:55:36.582 | AUTiOS.DoClick([])                                                | Pass   | Returned Value: true  | 0         |
|   | Test    | 13:55:36.587 | iOS Test 2                                                        | Pass   | Passed:4 Failed:0     |           |

**Test Pass**  
Total:6 Pass:5 Fail:0 Info:1

This is the report of the test being executed.

## Example

You can find the iOS sample tests and sample Application (called AUTiOS) in your Rapise installation at the following locations:

### Sample iOS Tests:

- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AppiOS (testing a native App)
- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\WebiOS (testing a web app)

### Sample Application (AUTiOS)

- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AUT\AUTiOS

(we supply the sample application as both a compiled binary and an Xcode project with Objective C source code)

## See Also

- [Technologies - Mobile Testing](#), for instructions on preparing your environment for mobile testing, including instructions for installing the necessary prerequisites and configuring the various third-party components that Rapise uses to connect to the device.
- [Mobile Testing - iOS Setup](#) - the steps for setting up XCode for developing and deploying iOS applications

### 2.3.9.2 Android

## Purpose

Rapise lets you record and play automated tests on real Android devices (e.g. Nexus, Galaxy) as well as test applications using the Android simulator. With Rapise you have the powerful interactive Object Spy that makes it easy to record on one device and playback on multiple.

## Prerequisites

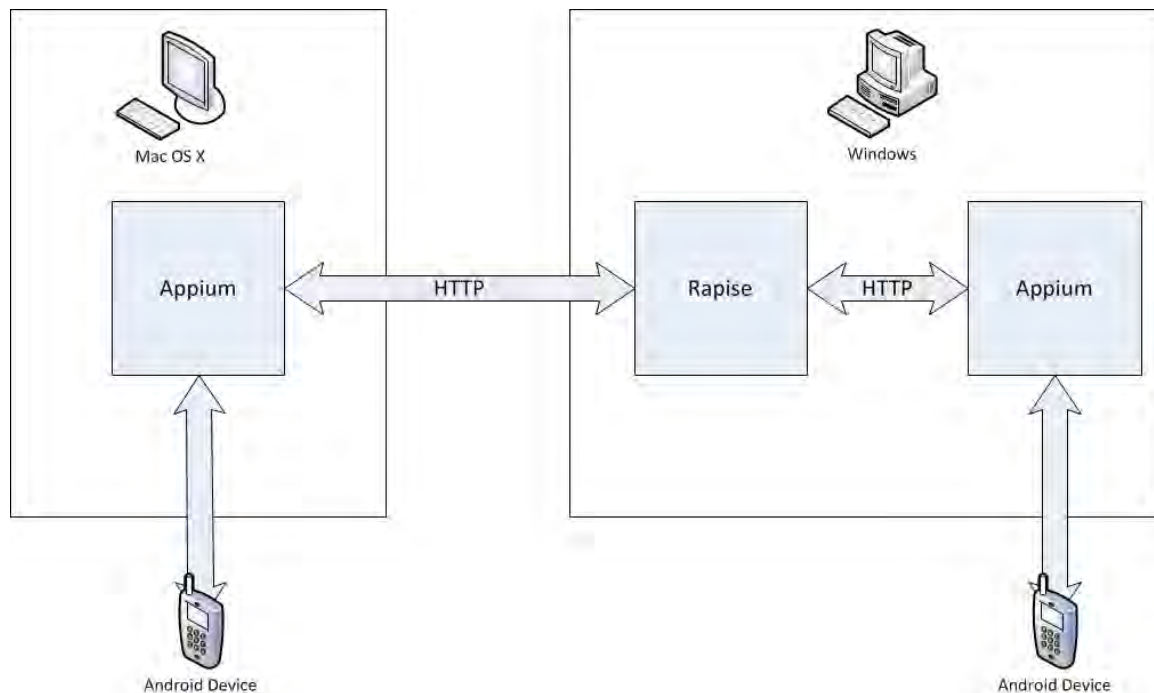


This section assumes that you have already installed and configured all of the necessary components. For details on this, please refer to the [Technologies - Mobile Testing](#) section that describes the necessary steps for both physical and simulated devices.

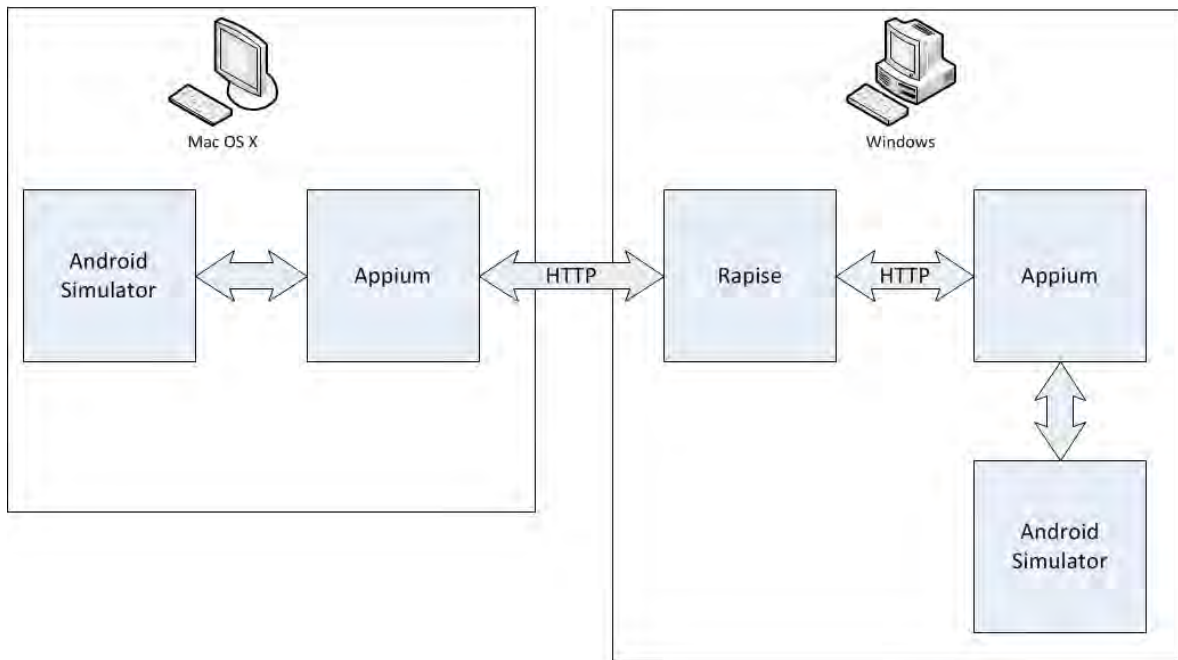
Rapise runs on Windows computers (PC) and Android devices (both real and simulated) can be tested on either an Apple Macintosh (Mac) computer or a PC:

- **If using a Mac**, it is necessary that you install **Appium** and **Android Studio** onto the Mac and connect to Appium over the network from Rapise running on your PC.
- **If using a PC**, you can either install Appium and Android Studio onto a separate PC or you can simply use the same PC that is running Rapise. The only difference will be whether the URL used to connect to Appium is a localhost URL or one pointing to the other PC.

For Physical Android devices the architecture looks like:

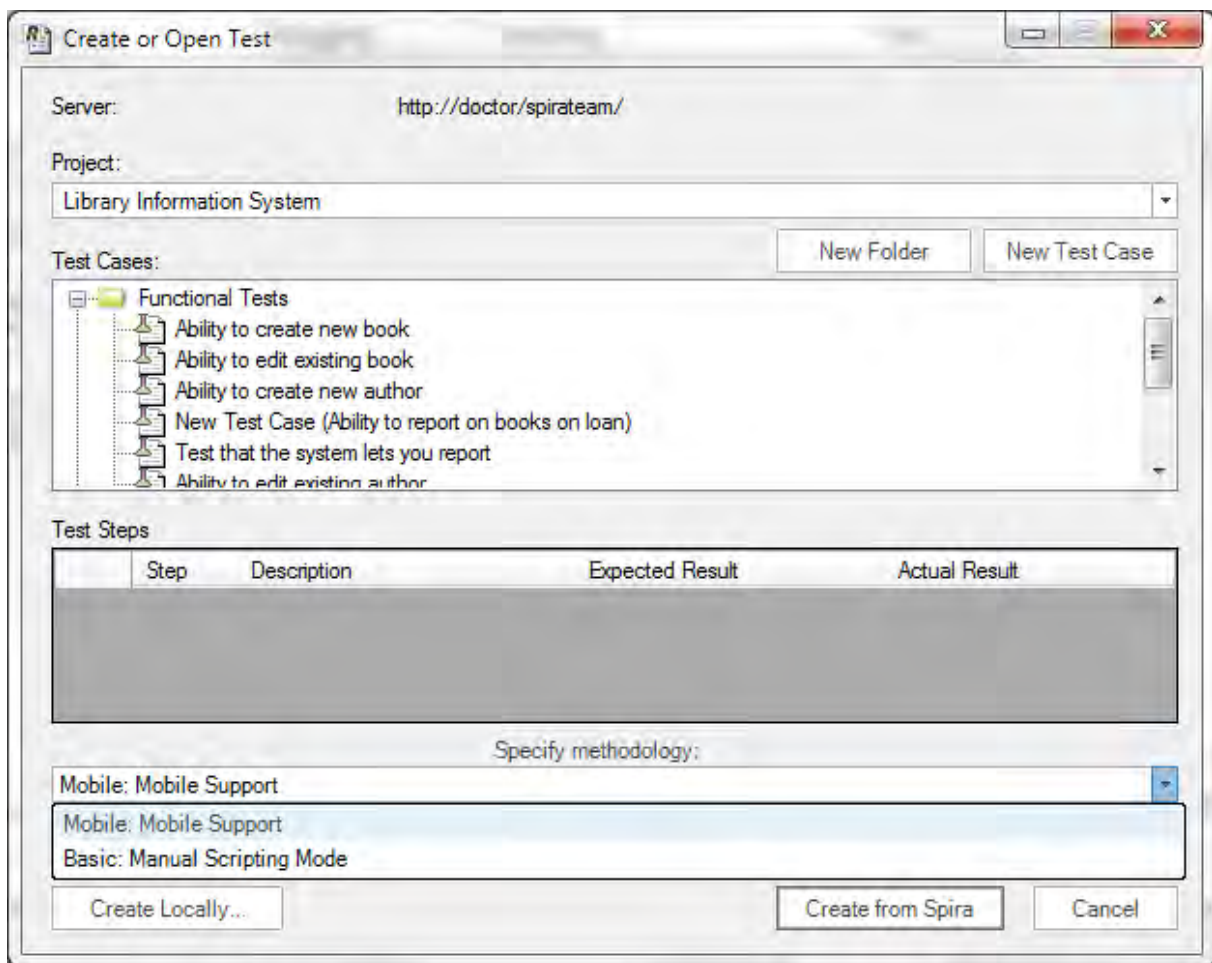


For simulated Android devices (using the Android Virtual Device Manager) the architecture looks like:

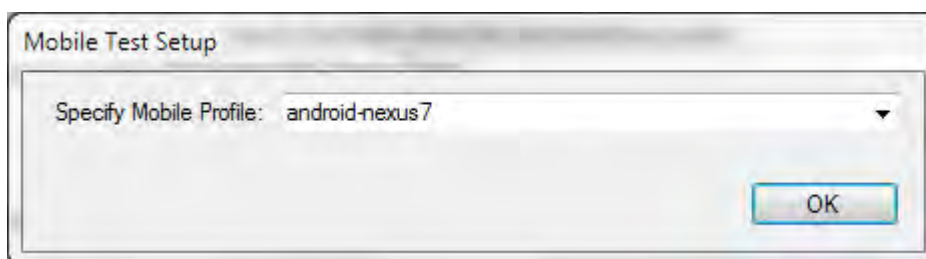


## 1) Configure the Mobile Profile

To begin mobile testing, when you [create the new test](#), make sure you choose the mobile methodology option "Mobile: Mobile Support":

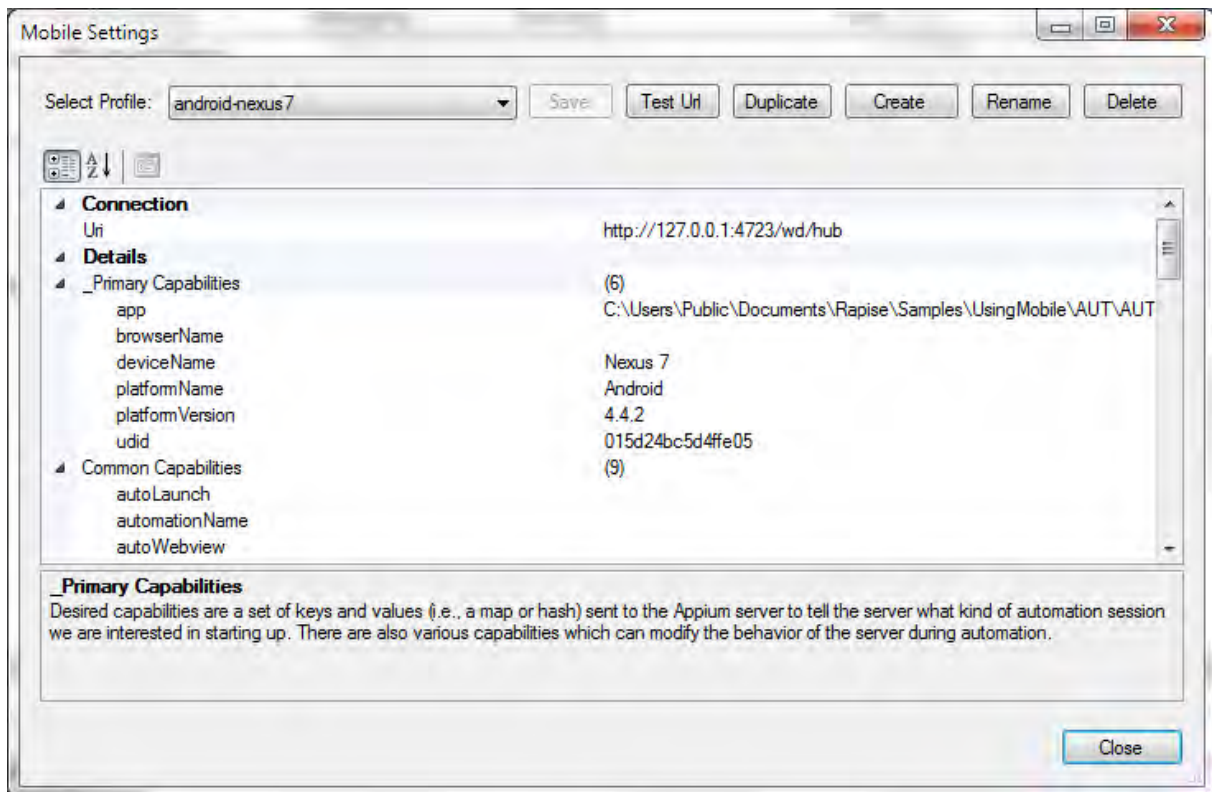


Once you have entered the name for the new test (with the mobile methodology selected) you will be asked to choose the mobile profile. Rapise ships with several default profiles, for now select the one that is closed to the device you want to test (you can always change it later):



When you click the **[OK]** button, Rapise will create a new mobile test with this profile selected.

Now you need to modify the profile so that it correctly matches the type of device you are testing and also so that it correctly points to the [Appium](#) server that you are using to host the mobile devices. Click on Options > Tools > Mobile Settings to bring up the [Mobile Settings](#) dialog box:



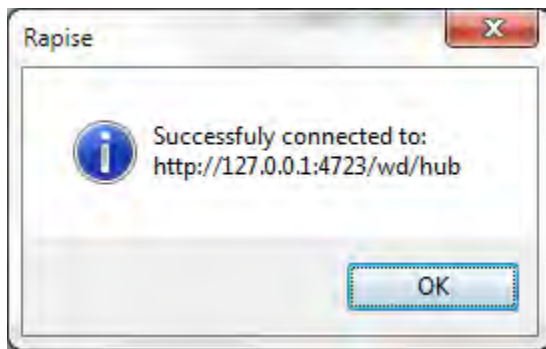
The example screenshot above is for an Android Nexus7 physical device running Android 4.4.2. For any Android device (real or simulated) you will need to provide the following:

- **Uri** - this is the URL to your Appium server. We shall discuss this shortly
- **app** - this needs to be the path (on the Mac/PC running Appium) to the Application being tested on the device (e.g. C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AUT\AUTAndroid\bin\AUTAndroid.apk). If running on the same PC as Rapise, then this path should be already correct.
- **deviceName** - this needs to match the name of the device being connected
- **platformName** - this needs to be set to 'Android'
- **platformVersion** - this needs to be set to the correct version of Android that the device is running

In addition, for physical devices only, you need to specify:

- **udid** - The unique device identifier of the connected physical device (leave blank for simulated devices)

Once you have entered in the information and saved the profile, make sure that Appium is running on the Mac/PC (see the [Technologies - Mobile Testing topic](#) for details) and then click the **[Test URL]** button to verify the connection with Appium:

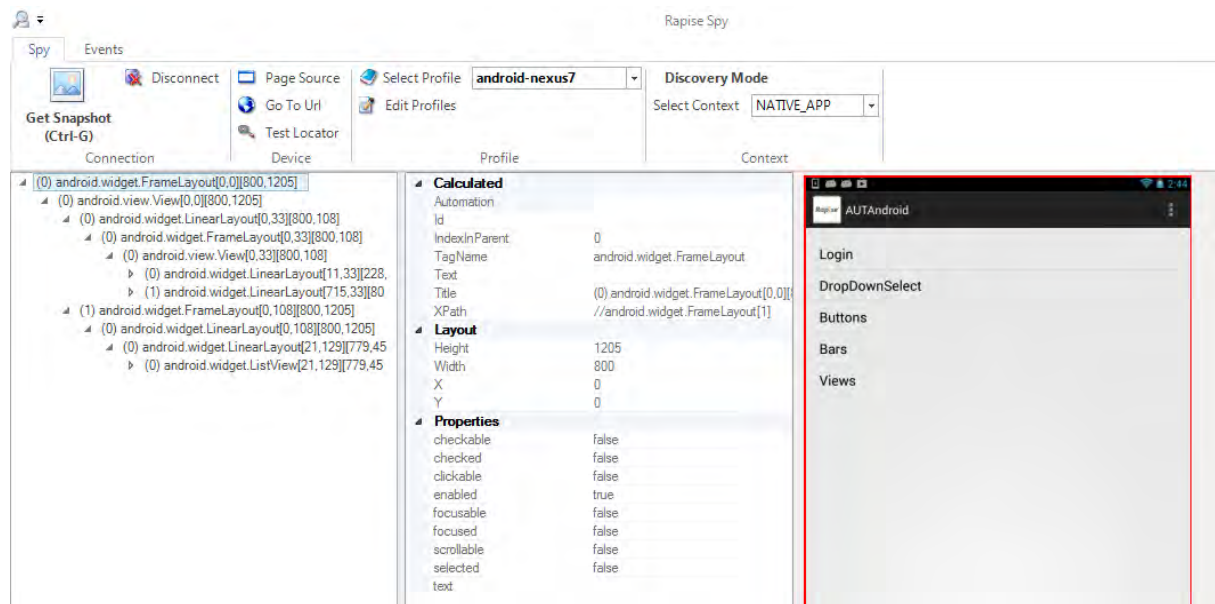


Now you can start testing your mobile Android application.

## 2) Using the Mobile Spy

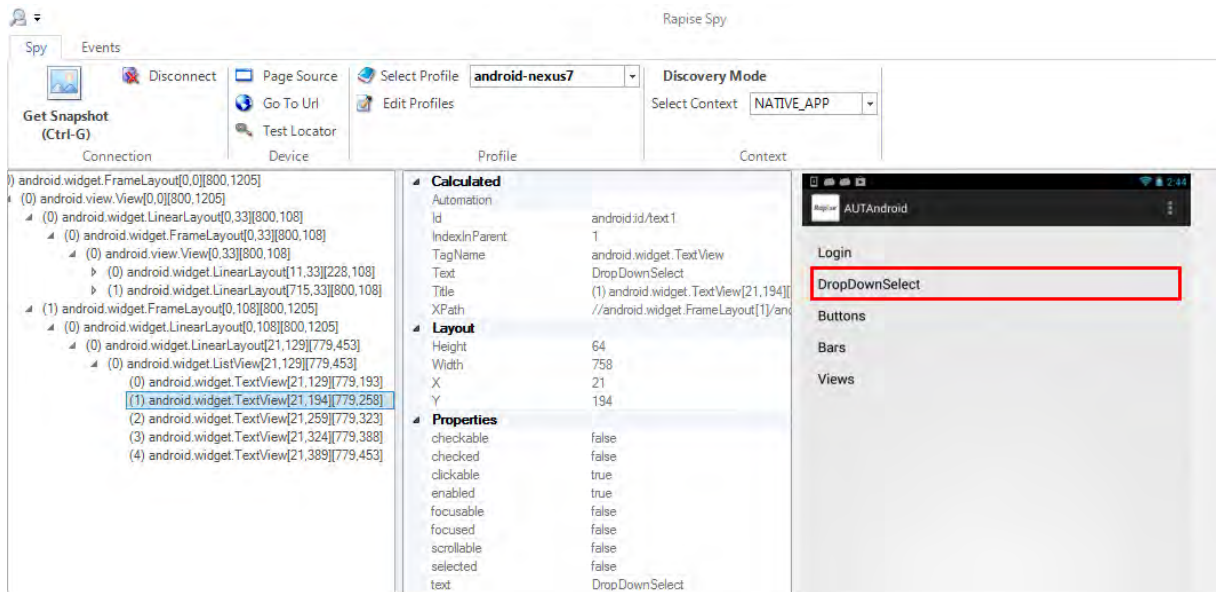
The Mobile Spy will let you view an application running on the mobile device, take a snapshot of its screen and then interactively inspect the objects in the application being tested. This is a useful first step to make sure that Rapise recognizes the application and has access to the objects in the user interface.

To start the Mobile Spy, open the Spy icon on the main [Test ribbon](#) and select the Mobile option and the Mobile Spy will be displayed in **Discovery Mode**. Now click the **[Get Snapshot]** button to display the application specified in the [mobile profile](#) on the screen:



In the example above, we are displaying the sample Android application that comes with Rapise (AUTAndroid).

If you click on one objects in the user interface, it will be highlighted in Red and the tree hierarchy on the left will expand to show the properties of that object:



If you want to view the contents of the Spy as a text file, just click the **'Page Source'** button and you will see the contents of the Spy properties window as a text file. If you want to perform an action on the application (e.g. click on the selected item), switch the ribbon to the 'Events' view:



For a full list of the available events and what they mean, please refer to the main [Mobile Spy](#) Topic.

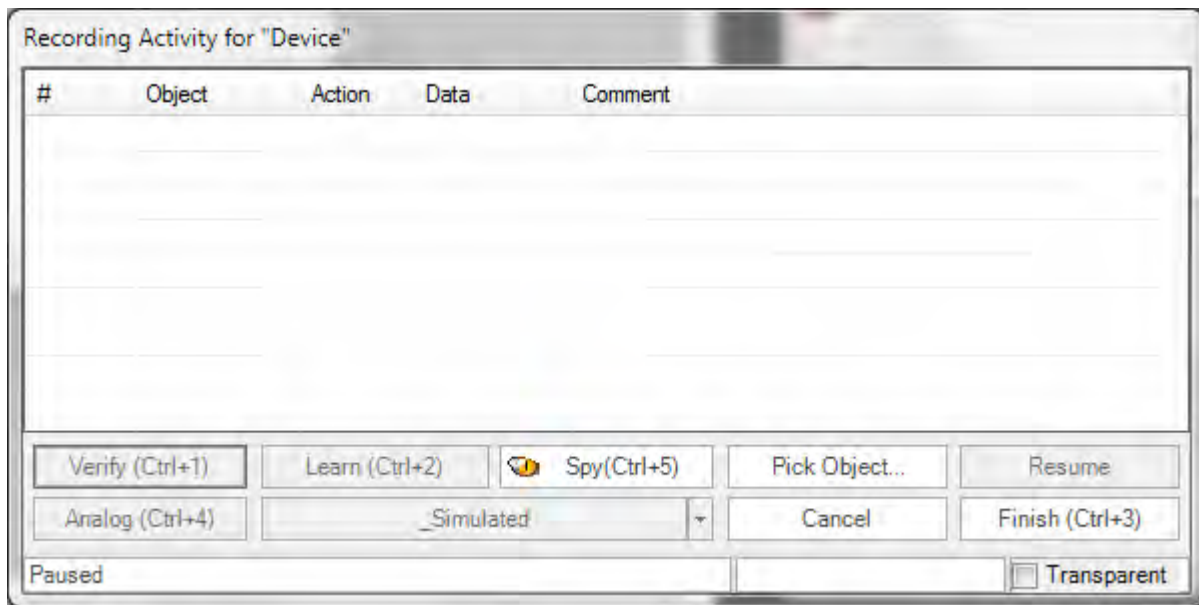
*Assuming that you can see your application in the Spy and that the objects can be inspected (similar to that shown above) you can now begin the process of testing your mobile application.*

Click on **Disconnect** to end your Spy session and close the Rapise Spy dialog. You will now will be returned back to your test script.

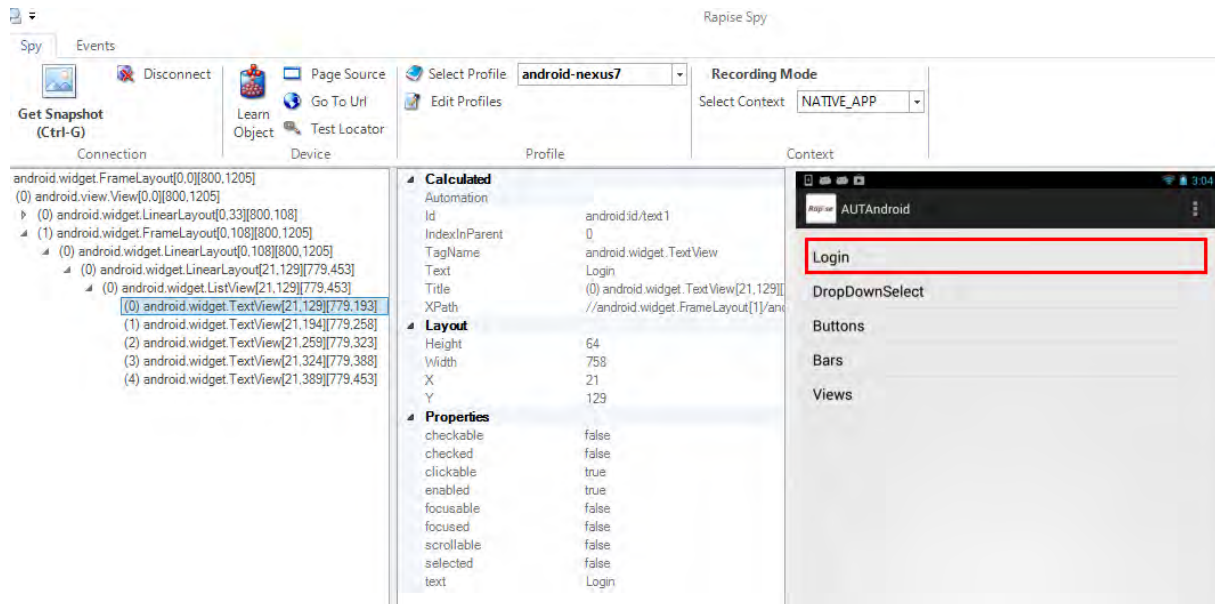
### 3) Recording and Playing a Test

With the new Rapise mobile test script open, click on the **Record/Learn** button in Rapise and that will display the [recording activity dialog](#):

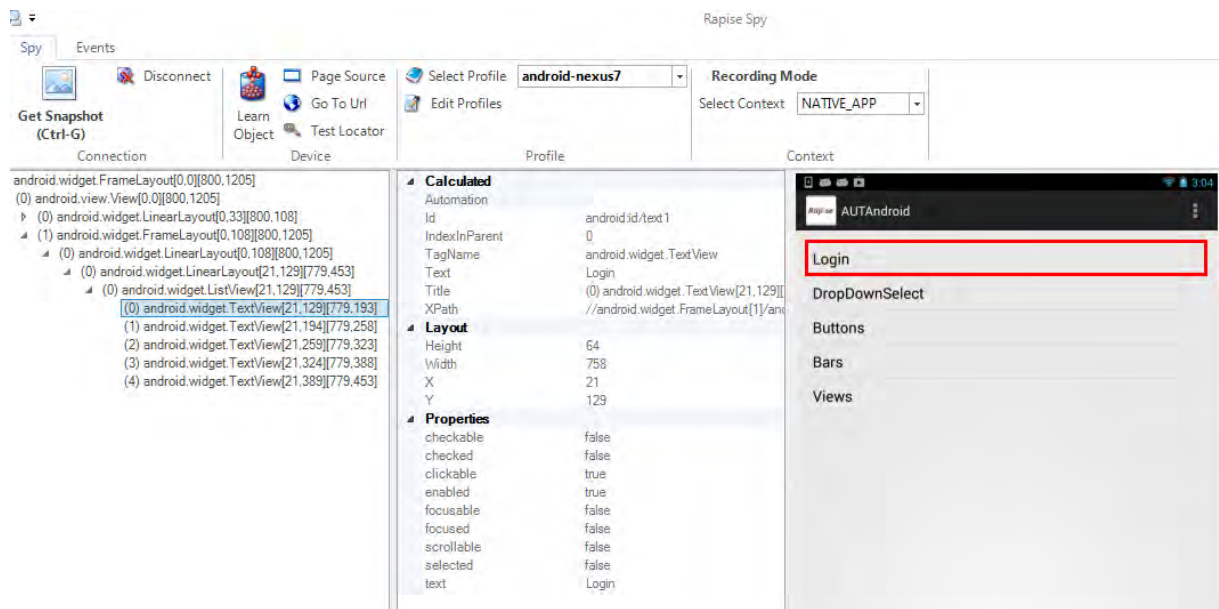




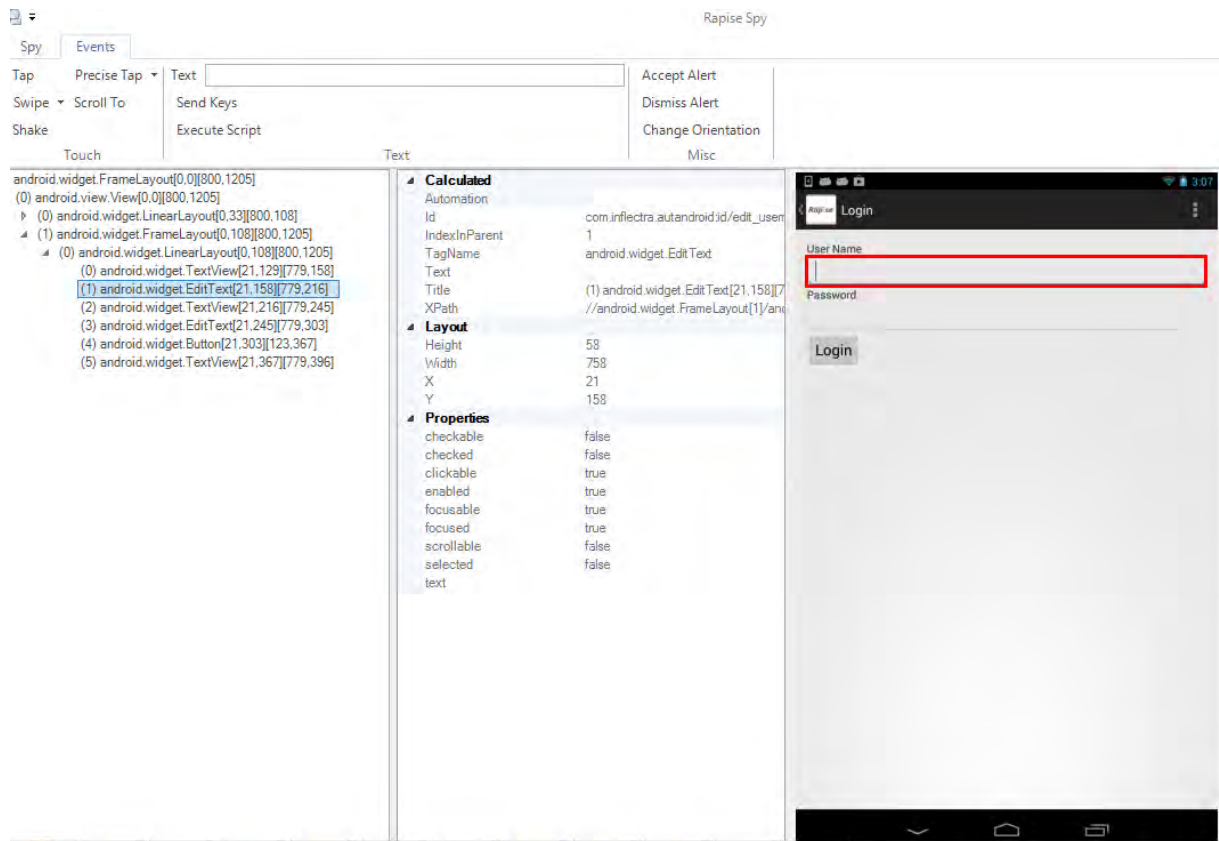
Now click on the **[Pick Object]** button and the Rapise Spy will be displayed in **Recording Mode**:



We now want to record a click on one of the menu options, simply highlight one of the menu entries (e.g. "Login"):

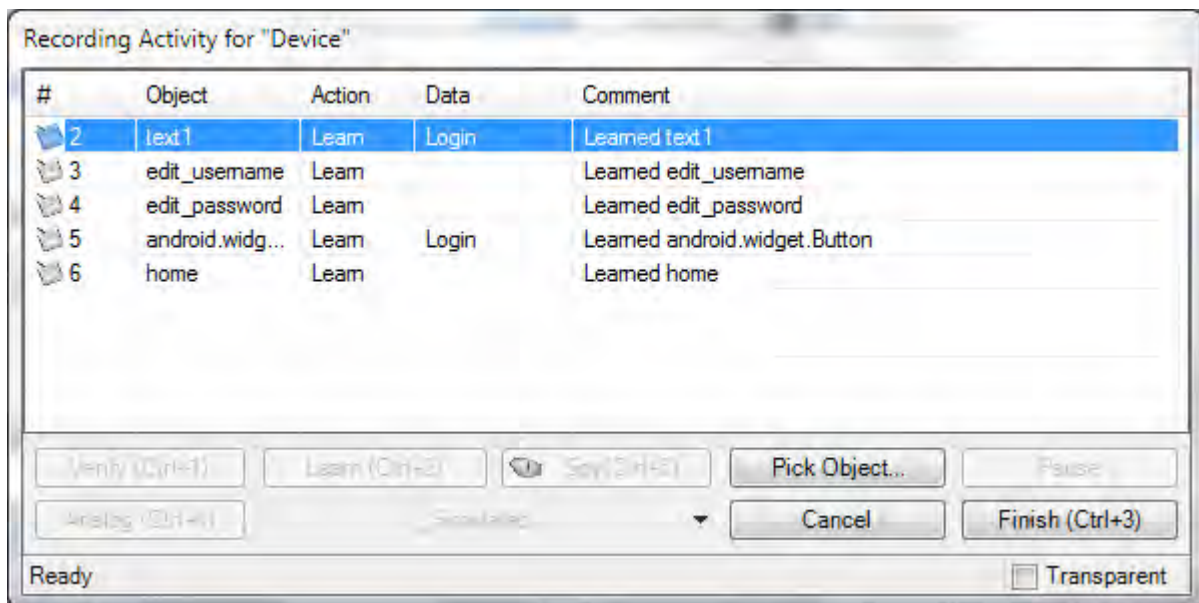


Now click the **[Learn Object]** button and the object will be added to the Rapise [object tree](#). Now **on the device itself** click on the menu entry to go to the next screen, then in Rapise click **Get Snapshot** to get the updated screen:

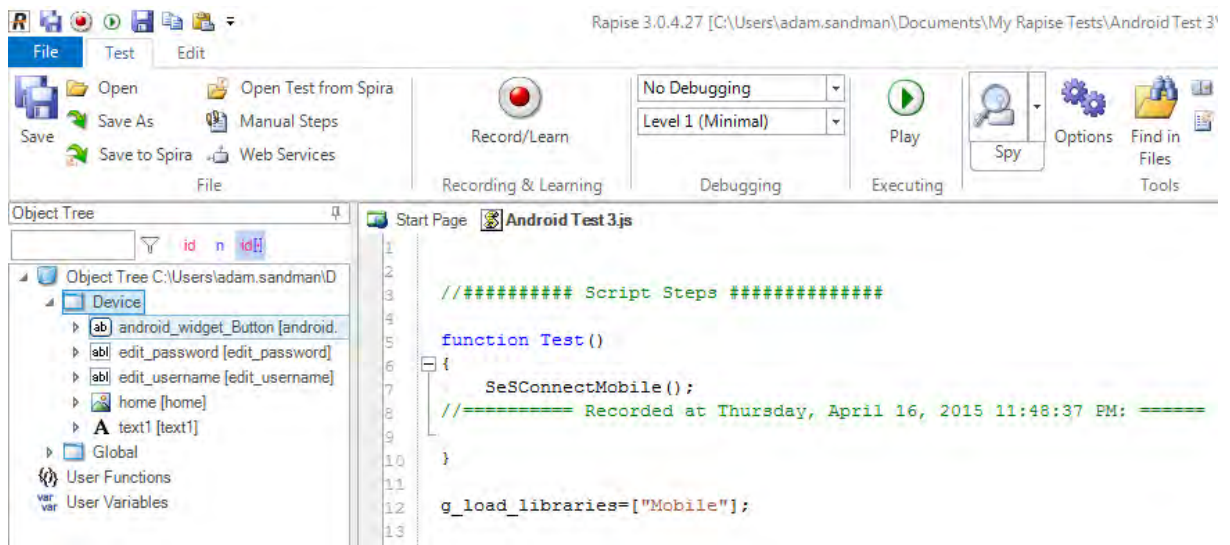


Now click on some of the objects and choose **Learn** to add them to the [object tree](#). Once you are finished, click on the **Disconnect** button. You will see the events in the recording activity dialog:





Now click on the **Finish** button and you will be taken back to the test script with the Android objects listed:



Now that we have the objects, we can drag them into the test script editor and write the following script:

```

//##### Script Steps #####

function Test()
{
 SeSConnectMobile();

 SeS('text1').DoClick();
 SeS('edit_username').DoSetText('test user');
 SeS('edit_password').DoSetText('test pwd');
 SeS('android_widget_Button').DoClick();
}

```

```

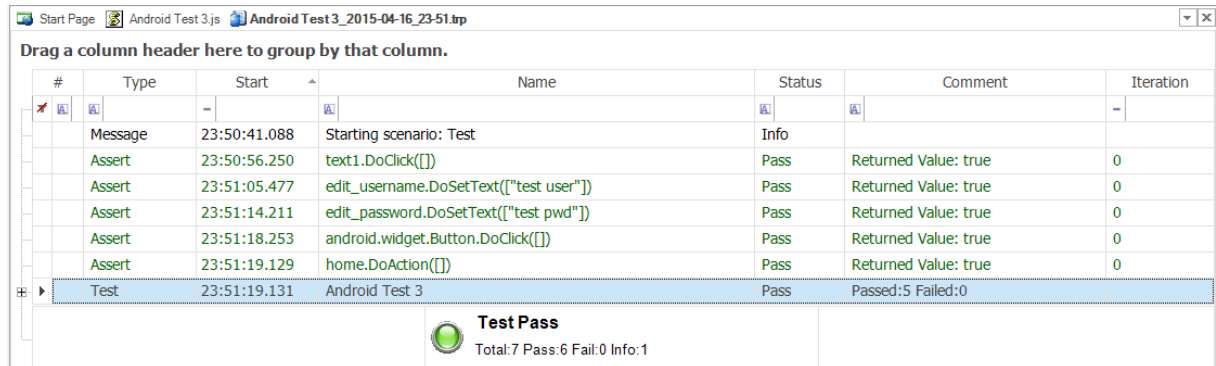
 SeS('home').DoAction();
 }

 g_load_libraries=["Mobile"];

```

This will click on the first menu entry, then enter a username and password and then finally return back to the main menu.

Now to playback the test simply click **Play** in the Rapise test ribbon and the test will play back in the mobile device:



| # | Type    | Start        | Name                                   | Status | Comment              | Iteration |
|---|---------|--------------|----------------------------------------|--------|----------------------|-----------|
|   | Message | 23:50:41.088 | Starting scenario: Test                | Info   |                      |           |
|   | Assert  | 23:50:56.250 | text1.Click([])                        | Pass   | Returned Value: true | 0         |
|   | Assert  | 23:51:05.477 | edit_username.DoSetText(["test user"]) | Pass   | Returned Value: true | 0         |
|   | Assert  | 23:51:14.211 | edit_password.DoSetText(["test pwd"])  | Pass   | Returned Value: true | 0         |
|   | Assert  | 23:51:18.253 | android.widget.Button.Click([])        | Pass   | Returned Value: true | 0         |
|   | Assert  | 23:51:19.129 | home.DoAction([])                      | Pass   | Returned Value: true | 0         |
|   | Test    | 23:51:19.131 | Android Test 3                         | Pass   | Passed:5 Failed:0    |           |

**Test Pass**  
Total: 7 Pass: 6 Fail: 0 Info: 1

This is the report of the test being executed.

## Example

You can find the Android sample tests and sample Application (called AUTAndroid) in your Rapise installation at the following locations:

### Sample Android Tests:

- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AppAndroid (testing a native App)
- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\WebAndroid (testing a web app)

### Sample Application (AUTAndroid)

- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AUT\AUTAndroid

(we supply the sample application as both a compiled .apk binary and an Android Studio Java project with source code)

## See Also

- [Technologies - Mobile Testing](#), for instructions on preparing your environment for mobile testing, including instructions for installing the necessary prerequisites and configuring the various third-party components that Rapise uses to connect to the device.

## 2.3.10 Manual Testing

### Purpose

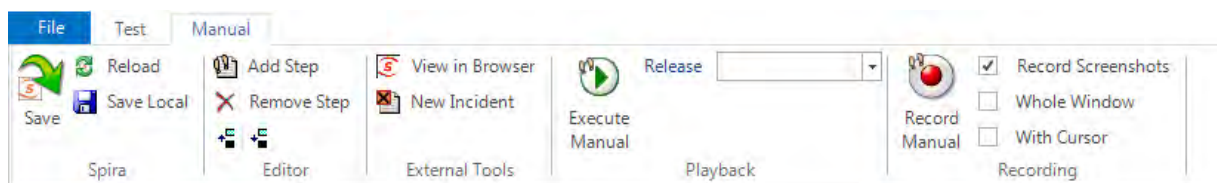
Manual testing is used for situations where automated testing does not make sense. This may be due to

technical reasons (the application being tested does not have an API that lets tools such as Rapise interact with them) or economic (this part of the application is rarely used and the user interface is changing in each release).

However Rapise can help **accelerate and optimize** your manual testing as well. Rapise lets you rapidly create manual tests 5x faster than creating them by hand. It integrates with Spira for test management, so you still have a central repository of version-controlled test cases, but Rapise allows you to [edit them offline](#) when you have no connection to Spira and also to [execute them from within Rapise](#).

## Usage

To start manual testing, simply create your test as normal using the [New Test](#) dialog box. Then once the test has been created, click on the "Manual Steps" icon in the Test ribbon and then you will be taken to the [Manual Editor](#) with the [Manual Test Ribbon](#) Visible:



From here you can start creating your new manual test using the [Manual Recorder](#), then edit the created test steps in the [Manual Editor](#). Finally you can [save the test to Spira](#) and then play it back using the [Manual Playback](#) and [Incident Logging](#) screens.

In addition to being used for manual testing, the test step editor lets you view the test steps that define the test scenario so that when you automate the test case, you can easily tie back specific [verification points](#) with test steps in [Spira](#).

Finally you can also have the best of manual and automated testing in the same test script, using [semi-manual](#) testing. That allows you to automate some of the repetitive tasks in a primarily manual test case.

## Example

For a full tutorial using the manual playback, refer to the [Exploratory Testing](#) tutorial.

In addition, a working sample of manual testing is available from [Spira](#), simply connect to the sample **"Library Information System"** project and open the **'Ability to Create New Book (TC2)'** test case in the **"Functional Tests"** folder of the project. That will then display the sample manual test within Rapise:

| StepId           | Description                                         | Expected Result                                     | Sample Data                  |
|------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------|
| Step 1<br>[TS:1] | Call                                                |                                                     |                              |
| Step 2<br>[TS:2] | User clicks link to create book                     | User taken to first screen in wizard                |                              |
| Step 3<br>[TS:3] | User enters books name and author, then clicks Next | User taken to next screen in wizard                 | Macbeth, William Shakespeare |
| Step 4<br>[TS:4] | User chooses book's genre and sub-genre from list   | User sees screen displaying all entered information | Play, Tragedy                |
| Step 5<br>[TS:5] | User clicks submit button                           | Confirmation screen is displayed                    |                              |

## See Also

- [Manual Recording](#)
- [Manual Playback](#)
- [Exploratory Testing Tutorial](#)
  
- Dialogs, Views and Menus
  - [Manual Ribbon](#)
  - [Manual Test Editor](#)
  - [Manual Playback](#)
  - [Incident Logging](#)

### 2.3.10.1 Manual Recording

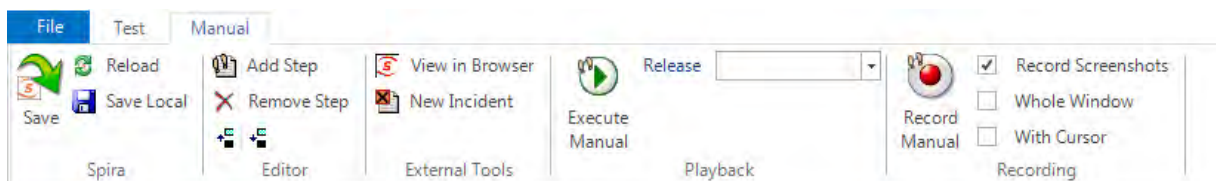
## Purpose

As described in the main [Manual Testing](#) topic, sometimes it is not possible to automate the testing of a specific application, however Rapise is also a powerful manual test generation system that can help you **create test cases 5x faster** than simply creating test cases by hand step by step.

This section describes how you can record a set of steps automatically by **simply using the application being tested**. Unlike an automated test however, Rapise will store a human-readable description of what was performed along with a [screenshot](#), rather than actual computer code that can be played back by a computer.

## Step 1 - Creating a New Test

To start manual testing, simply create your test as normal using the [New Test](#) dialog box. Then once the test has been created, click on the "Manual Steps" icon in the Test ribbon and then you will be taken to the [Manual Editor](#) with the [Manual Test Ribbon](#) Visible:



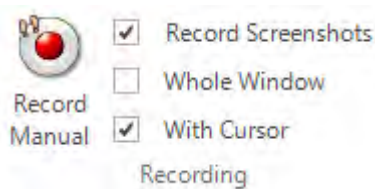
The test step list will initially be empty:

| StepId | Description | Expected Result | Sample Data |
|--------|-------------|-----------------|-------------|
|        |             |                 |             |

## Step 2 - Recording Some Steps

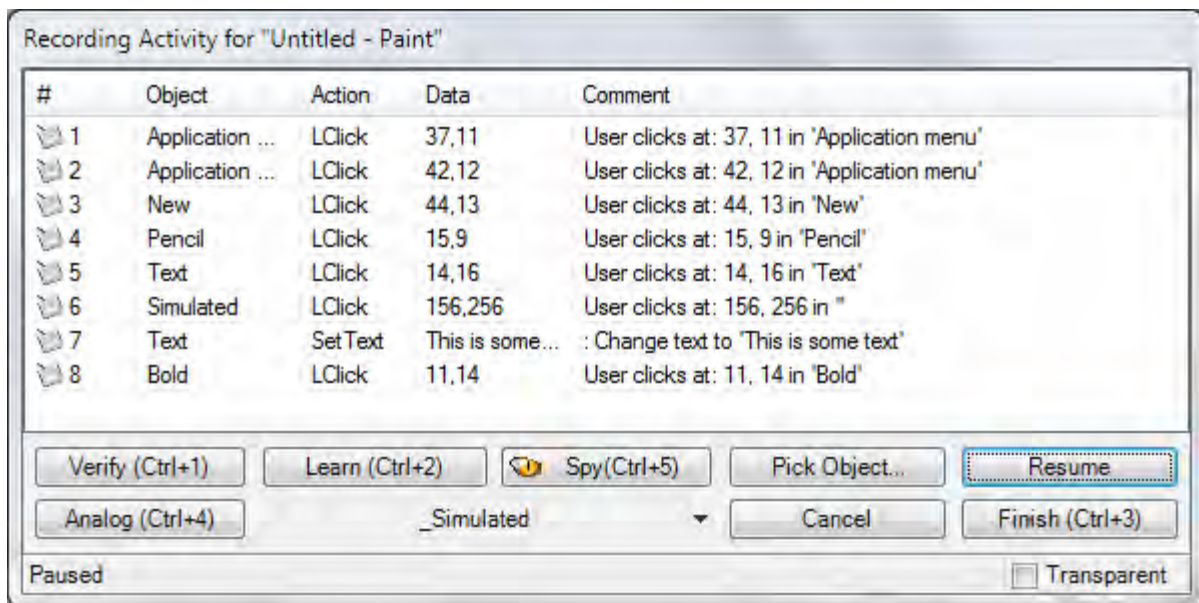
Now you should open up the application you want to record from. In this example we shall be testing the built-in **Microsoft Paint** application. This is a good candidate for manual testing as a lot of the functionality is hard to test automatically since there is a simple drawing canvas rather than discrete buttons and data elements to test.

To make sure that we have screenshots recorded, whilst keeping the size of the screenshots reasonable, use the following recording options:



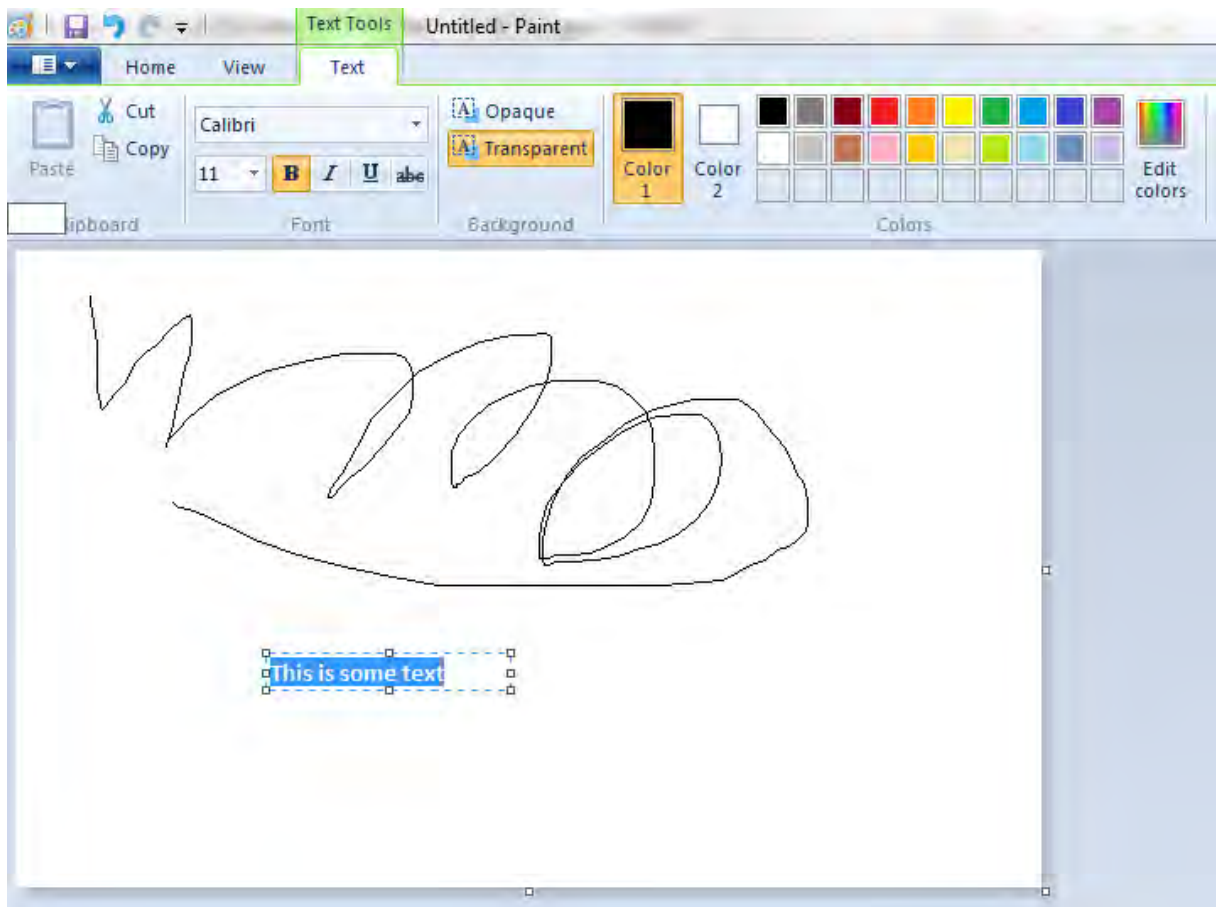
Now click the **Record Manual** button and choose MS-Paint from the list of running applications in [Select Application to Record](#) dialog and then click **Select** to start recording.

As you click through the application, the recording will display the list of steps and actions being captured:



In this example, we created a new canvas, chose the Pencil tool, created a drawing using the pencil, entered some text and then made it bold:





When you click **Finish** to complete the recording, Rapise will now display the list of populated manual test steps with the embedded screen captures:

| StepId | Description                                  | Expected Result | Sample Data                               |
|--------|----------------------------------------------|-----------------|-------------------------------------------|
| Step 1 | User clicks at: 37, 11 in 'Application menu' |                 | SeS('Application_menu').DoLClick(37, 11); |
| Step 2 | User clicks at: 42, 12 in 'Application menu' |                 | SeS('Application_menu').DoLClick(42, 12); |
| Step 3 | User clicks at: 44, 13 in 'New'              |                 | SeS('New').DoLClick(44, 13);              |
| Step 4 | User clicks at: 15, 9 in 'Pencil'            |                 | SeS('Pencil').DoLClick(15, 9);            |
| Step 5 | User clicks at: 14, 16 in 'Text'             |                 | SeS('Text').DoLClick(14, 16);             |
| Step 6 | User clicks at: 156, 256 in "                |                 | SeS('Simulated').DoLClick(156, 256);      |

You will notice that the description of each test step will use the form "User [action] at [coordinates] in '[object name]'" and the expected result will include the screenshot of what the user was doing. In addition, the sample data will contain the equivalent Rapise automation code for reference. This can be useful later if you decide to automate this test.

### Step 3 - Editing the Steps

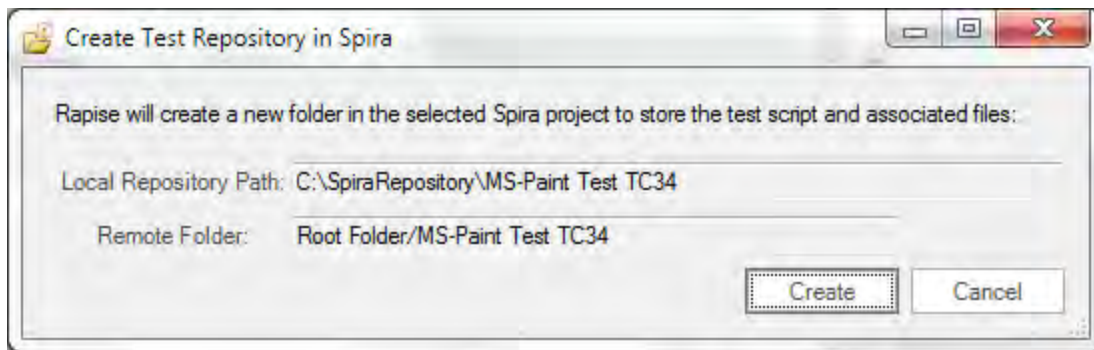
Typically you may want to **add some additional steps** (e.g. we added a line to describe the process of starting up MS Paint), **delete any duplicate/unnecessary steps** and **reword them** so that they make the most sense to the tester. In our example we used the [manual editing](#) screen to update the steps as follows:

| StepId | Description                             | Expected Result                           | Sample Data                               |
|--------|-----------------------------------------|-------------------------------------------|-------------------------------------------|
| Step 1 | User starts up the MS-Paint Application | The application loads with a blank canvas |                                           |
| Step 2 | User clicks the main 'Application menu' |                                           | SeS('Application_menu').DoLClick(42, 12); |
| Step 3 | User clicks the 'New' entry             |                                           | SeS('New').DoLClick(44, 13);              |
| Step 4 | User clicks on 'Pencil'                 |                                           | SeS('Pencil').DoLClick(15, 9);            |
| Step 5 | User clicks the 'Text' tool             |                                           | SeS('Text').DoLClick(14, 16);             |
| Step 6 | User clicks at: 156, 256 in the canvas  |                                           | SeS('Simulated').DoLClick(156, 256);      |

Click **Save** to make sure the updates are all saved locally. Now before you can [execute these tests](#), you will need to Save them to [Spira](#) (our web-based test management system).

### Step 4 - Saving to Spira

Click on the option to **Save to Spira**, you will be asked to confirm the creation of the document folder in Spira that will hold the test files:



Click on **'Create'** and then the manual test will be saved to Spira. You will see that this process adds the unique Spira test step IDs to each step. They are displayed using the format `[TS:xxx]`. This special token `[TS:xxx]` can be used in `Tester.Assert` commands to relate specific [verification points](#) with test steps during automated testing.



| StepId            | Description                            | Expected Result   | Sample Data                                  |
|-------------------|----------------------------------------|-------------------|----------------------------------------------|
| [TS:47]           |                                        |                   |                                              |
| Step 4<br>[TS:48] | User clicks on 'Pencil'                |                   | SeS('Pencil').DoLClick(15, 9);               |
| Step 5<br>[TS:49] | User clicks the 'Text' tool            |                   | SeS('Text').DoLClick(14, 16);                |
| Step 6<br>[TS:50] | User clicks at: 156, 256 in the canvas |                   | SeS('Simulated').DoLClick(156, 256);         |
| Step 7<br>[TS:51] | Enters text 'This is some text'        | This is some text | SeS('Text1').DoSetText('This is some text'); |
| Step 8            | User clicks on the 'Bold' button       |                   | SeS('Bold').DoLClick(11, 14);                |

Now that the test has been saved in Spira, you can click on the **'View in Browser'** option to see how the test steps look inside Spira.

| Test Steps                                                                                                                                                                                      |        |                                         |                                           |                                              |                  |          |                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------|-------------------------------------------|----------------------------------------------|------------------|----------|----------------------|
| <a href="#">Insert Step</a>   <a href="#">Insert Link</a>   <a href="#">Delete</a>   <a href="#">Copy</a>   <a href="#">Refresh</a>   -- Show/hide columns --   <a href="#">Edit Parameters</a> |        |                                         |                                           |                                              |                  |          |                      |
| <input type="checkbox"/>                                                                                                                                                                        | Step # | Description                             | Expected Result                           | Sample Data                                  | Execution Status | ID       | <a href="#">Edit</a> |
| <input type="checkbox"/>                                                                                                                                                                        | Step 1 | User starts up the MS-Paint Application | The application loads with a blank canvas |                                              | Not Run          | TS000045 | <a href="#">Edit</a> |
| <input type="checkbox"/>                                                                                                                                                                        | Step 2 | User clicks the main 'Application menu' |                                           | SeS('Application_menu').DoLClick(42, 12);    | Not Run          | TS000046 | <a href="#">Edit</a> |
| <input type="checkbox"/>                                                                                                                                                                        | Step 3 | User clicks the 'New' entry             |                                           | SeS('New').DoLClick(44, 13);                 | Not Run          | TS000047 | <a href="#">Edit</a> |
| <input type="checkbox"/>                                                                                                                                                                        | Step 4 | User clicks on 'Pencil'                 |                                           | SeS('Pencil').DoLClick(15, 9);               | Not Run          | TS000048 | <a href="#">Edit</a> |
| <input type="checkbox"/>                                                                                                                                                                        | Step 5 | User clicks the 'Text' tool             |                                           | SeS('Text').DoLClick(14, 16);                | Not Run          | TS000049 | <a href="#">Edit</a> |
| <input type="checkbox"/>                                                                                                                                                                        | Step 6 | User clicks at: 156, 256 in the canvas  |                                           | SeS('Simulated').DoLClick(156, 256);         | Not Run          | TS000050 | <a href="#">Edit</a> |
| <input type="checkbox"/>                                                                                                                                                                        | Step 7 | Enters text 'This is some text'         | This is some text                         | SeS('Text1').DoSetText('This is some text'); | Not Run          | TS000051 | <a href="#">Edit</a> |
| <input type="checkbox"/>                                                                                                                                                                        | Step 8 | User clicks on the 'Bold' button        |                                           | SeS('Bold').DoLClick(11, 14);                | Not Run          | TS000052 | <a href="#">Edit</a> |

Show 15 rows per page      Displaying page 1 of 1

Now this test case is ready for [manual playback](#).

## See Also

- [Manual Testing](#)
- [Manual Playback](#)

### 2.3.10.2 Manual Playback

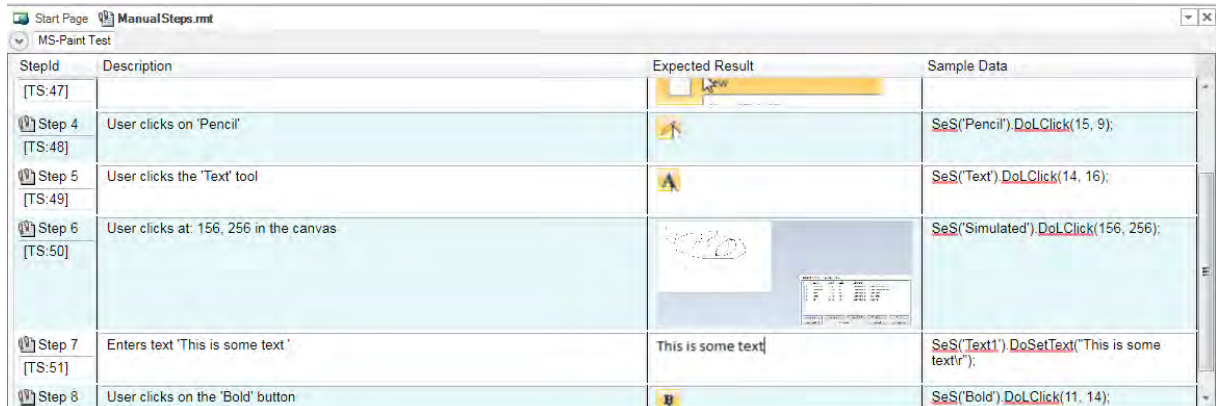
#### Purpose


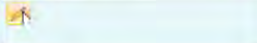
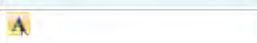

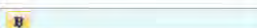
As described in the main [Manual Testing](#) topic, sometimes it is not possible to automate the testing of a specific application, however Rapise is also a powerful manual testing tool that lets you execute manual test cases stored in [SpiraTest](#).

The advantage of using Rapise to execute the manual tests (instead of just using SpiraTest itself) is that Rapise can display the [execution window](#) as a small minimizable dialog box that gets rid of the need to have two screens (one to display the test and one to test the application). Also Rapise provides superior [image manipulation tools](#) over those available in a web application.

## Step 1 - Open the Manual Test

Using the MS-Paint example manual test that [we created previously](#), open up the test in Rapise. Click on the 'Manual Steps' icon in the [Test ribbon](#) and you should see the list of test steps:

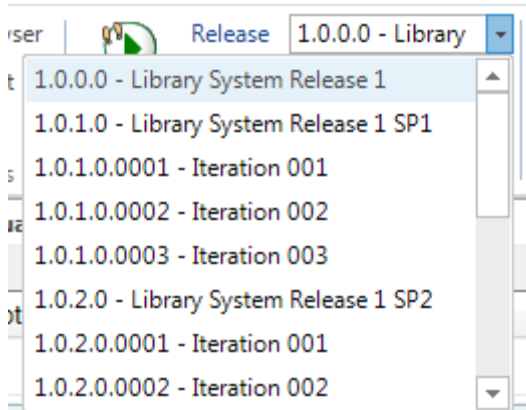


| StepId            | Description                            | Expected Result                                                                    | Sample Data                                    |
|-------------------|----------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------|
| [TS:47]           |                                        |  |                                                |
| Step 4<br>[TS:48] | User clicks on 'Pencil'                |  | SeS('Pencil').DoLClick(15, 9);                 |
| Step 5<br>[TS:49] | User clicks the 'Text' tool            |  | SeS('Text').DoLClick(14, 16);                  |
| Step 6<br>[TS:50] | User clicks at: 156, 256 in the canvas |  | SeS('Simulated').DoLClick(156, 256);           |
| Step 7<br>[TS:51] | Enters text 'This is some text'        | This is some text                                                                  | SeS('Text1').DoSetText('This is some text\r'); |
| Step 8            | User clicks on the 'Bold' button       |  | SeS('Bold').DoLClick(11, 14);                  |

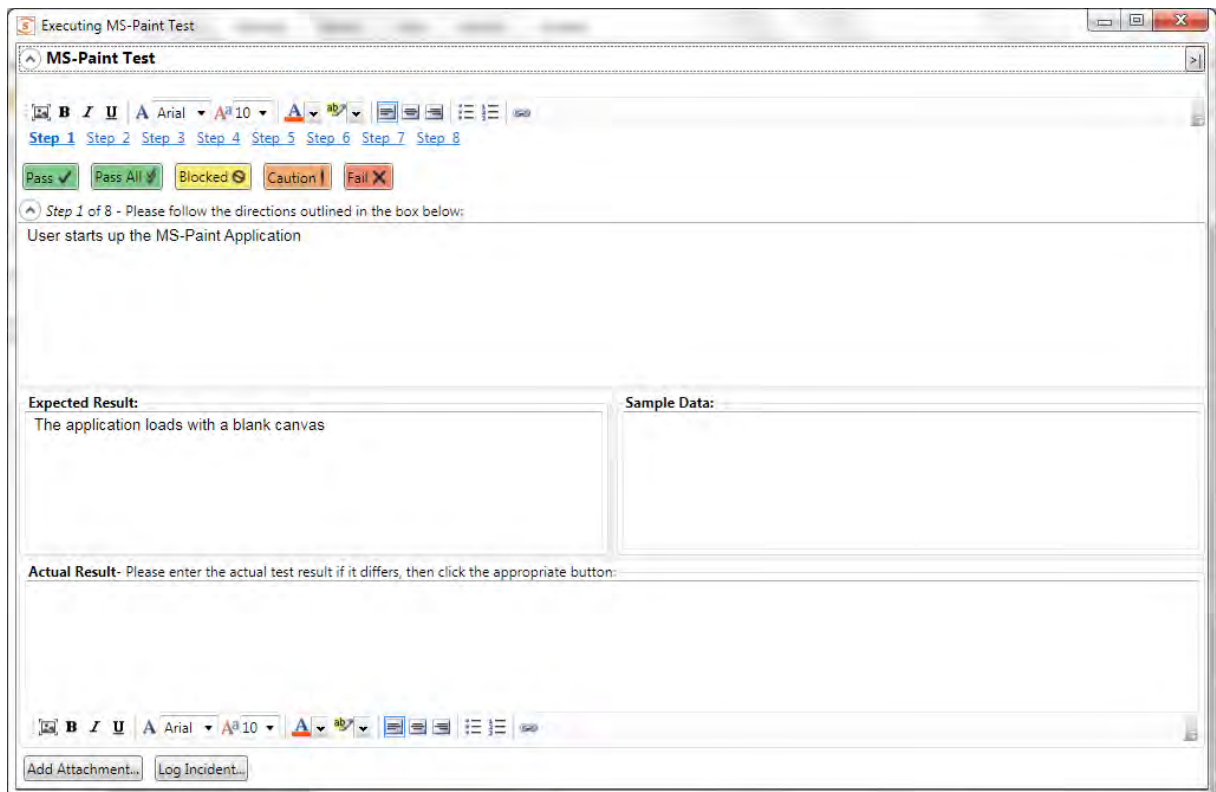
Now that we have the test opened, we can start the playback

## Step 2 - Executing the Manual Test

Choose the Release from the list of those available in the project:

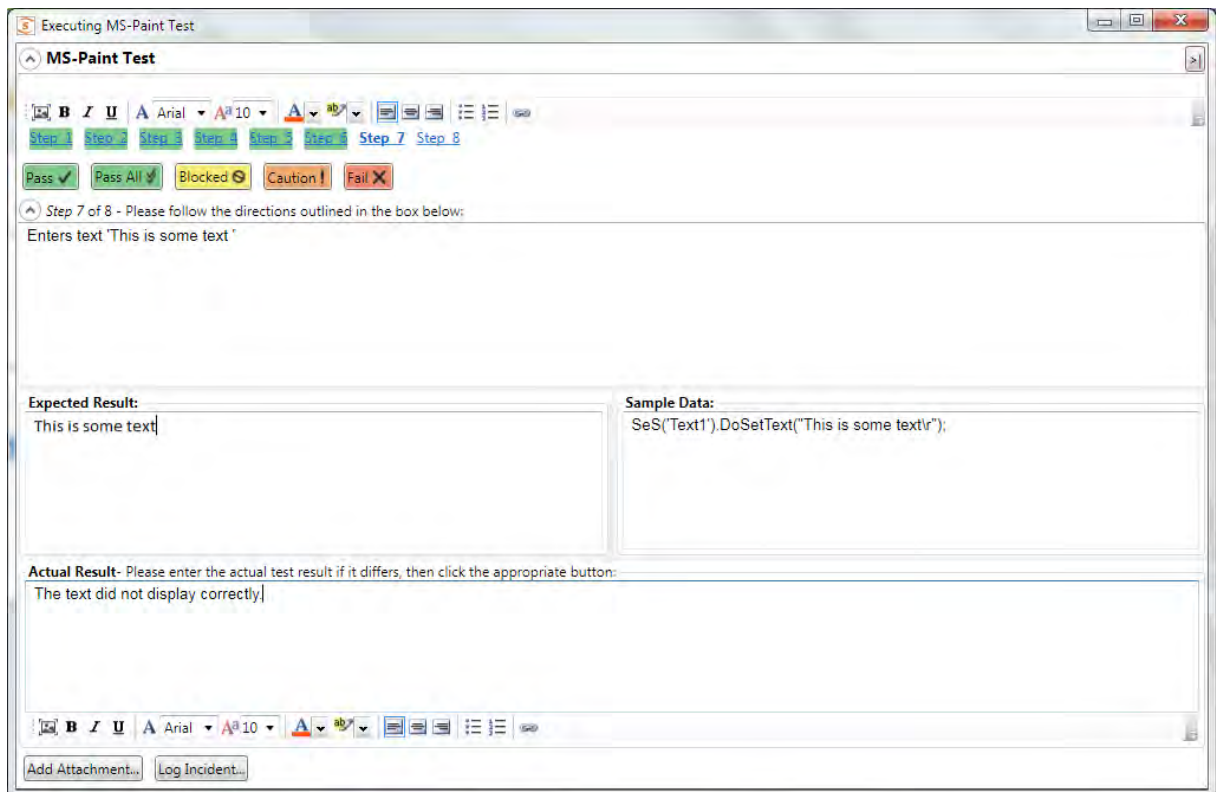


Then click on the '**Execute**' icon to start manual test execution. That will bring up the [manual playback](#) screen:



On this screen, we shall follow through the steps listed in the test case. This involves opening up MS Paint, creating a new canvas, adding some lines using the pencil and then adding some text using the text tool. As you perform these steps, click on the **Pass** button to indicate that each step has passed. You can also minimize the manual playback screen by clicking the > | button.

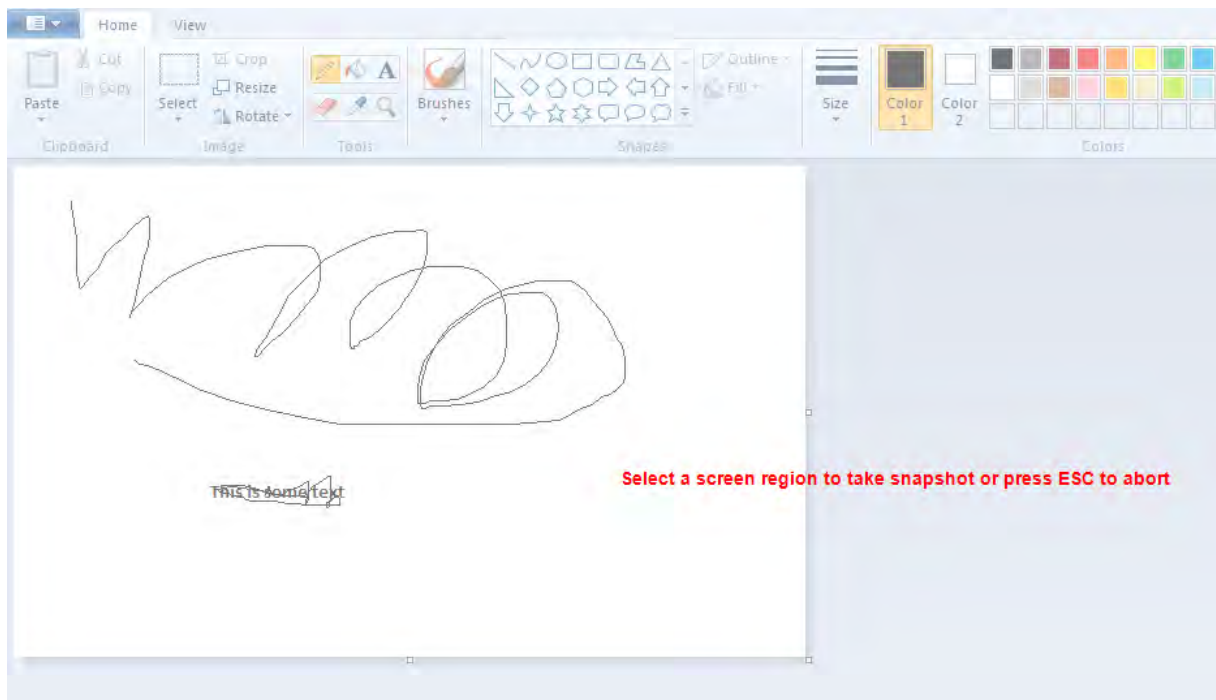
Once you get to Step 7, we shall pretend that MS Paint failed to display the text correctly. Enter in the Actual Result a message to that effect:



Next we shall attach a screenshot of what actually happened and log a test failure and associated incident / defect.

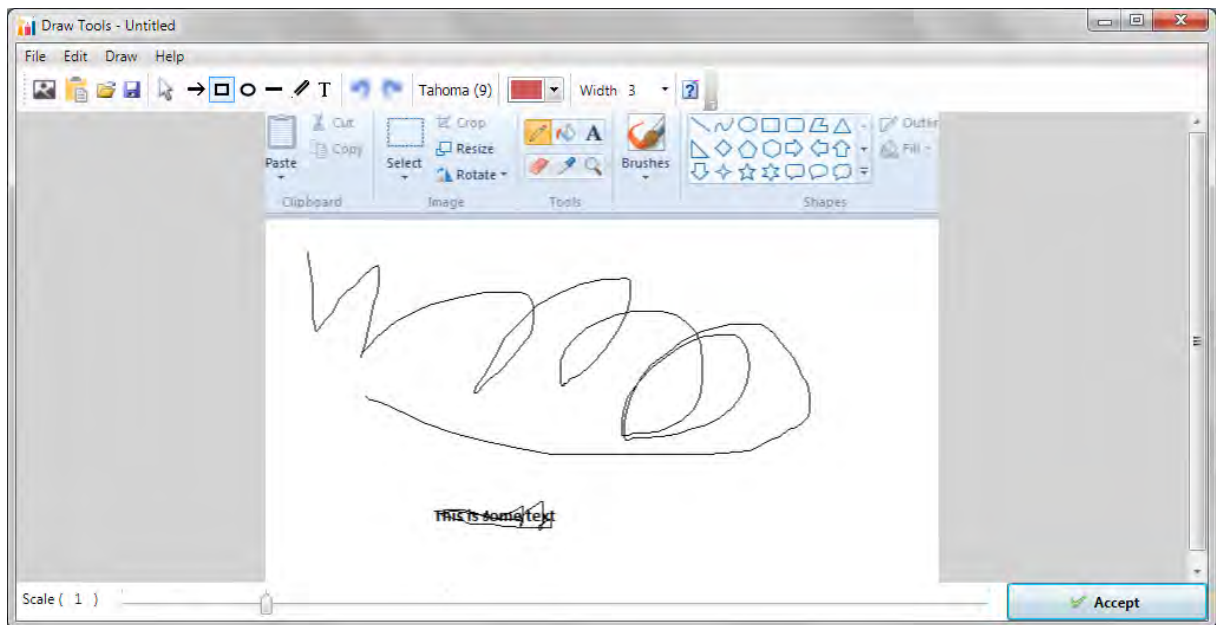
### Step 3 - Capturing and Annotating a Screenshot

Click on the **Image icon** in the rich text editor associated with the **Actual Result** text box. That will bring up the [Drawing Tools](#) screen that asks you to draw a rectangle to select a portion of the current screen to capture:

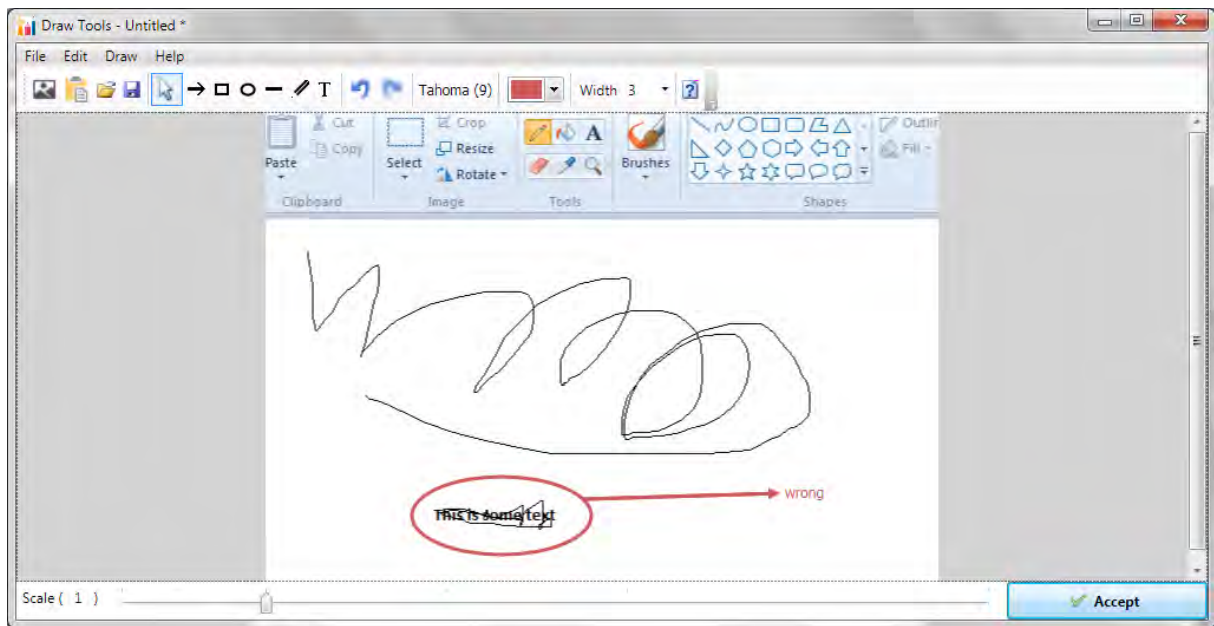


If the MS Paint application is not in the foreground, just click ESC on your keyboard to abort, rearrange your windows and then try again.

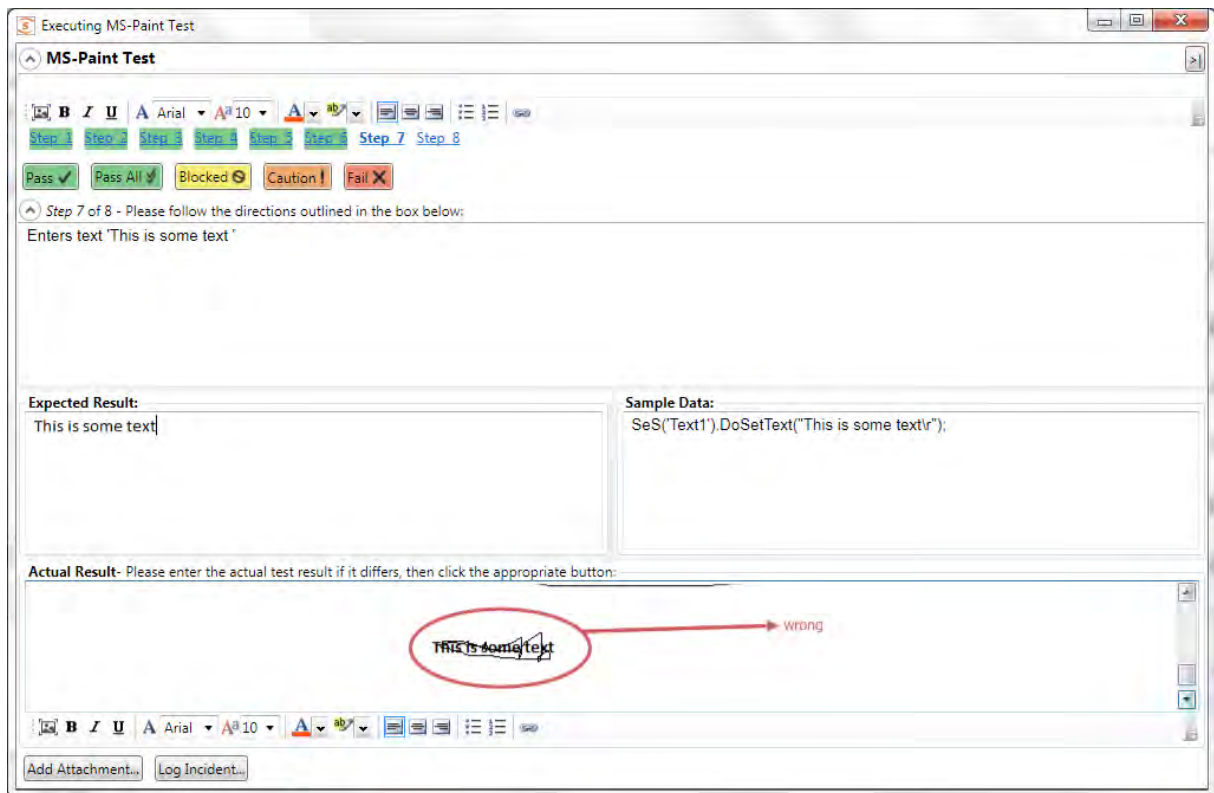
Once you have selected the rectangle, the drawing tools will display your selected image in the image editor:



You can now use the annotation tools to add labels, text and other items to explain the issue that you found:



In the example above, we added a red ellipse, arrow and text to mark the issue that was seen in MS-Paint. Once you are happy with your image, click **Accept** and the image will be included in the test Actual Result:



Now we can [log an incident](#) that is associated with this test failure.

## Step 4 - Logging the Incident / Defect



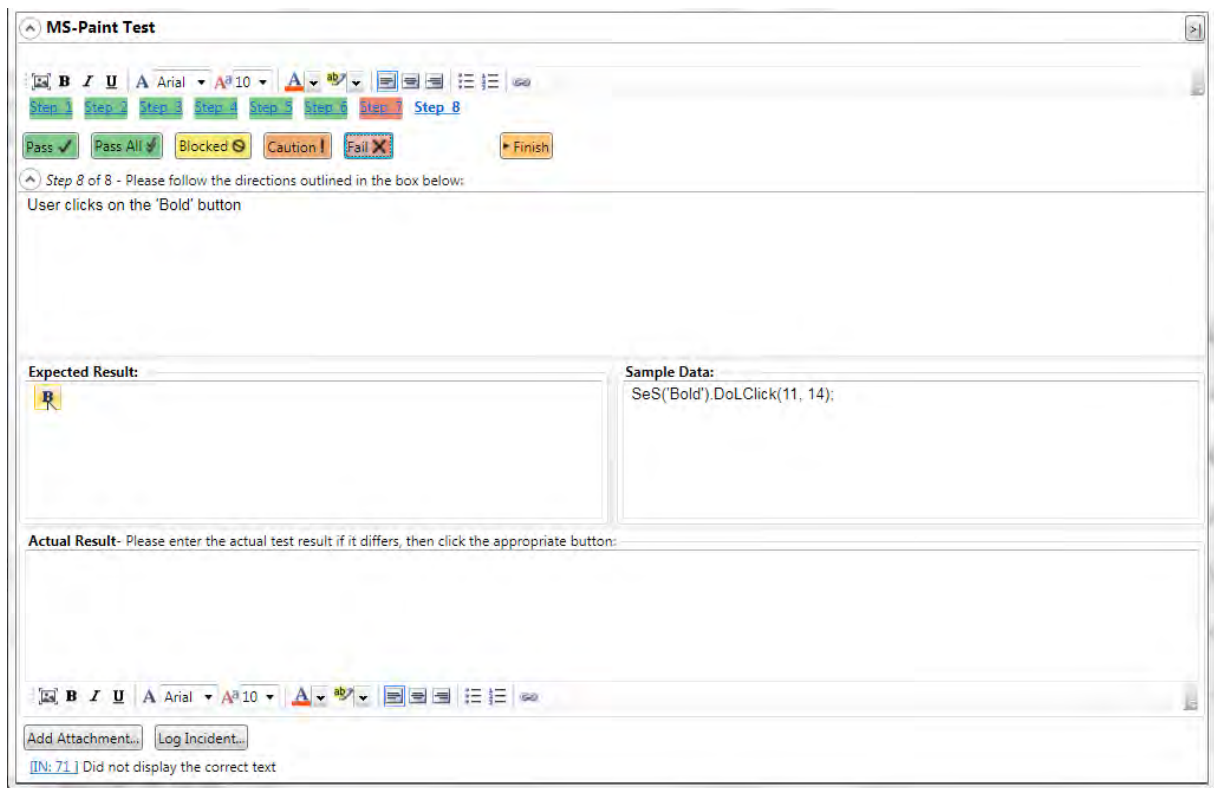
Click on the **Log Incident** button to display the new incident entry screen:

The screenshot shows a web browser window titled "New Incident \*". The interface includes a "Save" button in the top left corner. The main content area is titled "Details / Description". The "Name" field contains the text "The text did not display correctly in MS Paint". The "Description" field is a rich text editor containing the text "When I entered some text it did not display correctly in MS-Paint." Below the description field are several dropdown menus: "Type" (Bug), "Detected By" (Fred Bloggs), "Priority" (2 - High), "Detected Release" (1.0.0.0 - Library System Release 1), "Status" (New), and "Severity" (-- None --). At the bottom of the form is a "Notes" field with another rich text editor.

Choose the **type** of incident, enter the **name**, **description**, **priority**, **detected release** and any other required fields as defined by the workflow in the project that you are connected to. Once you have entered in the various fields, click the **'Save'** icon in the top left.

This will return you to the [manual execution](#) screen with the **Incident ID** [ IN: xxx ] and **name** displayed at the bottom. Now click on the **'Fail'** button and the test case will be marked as failed:

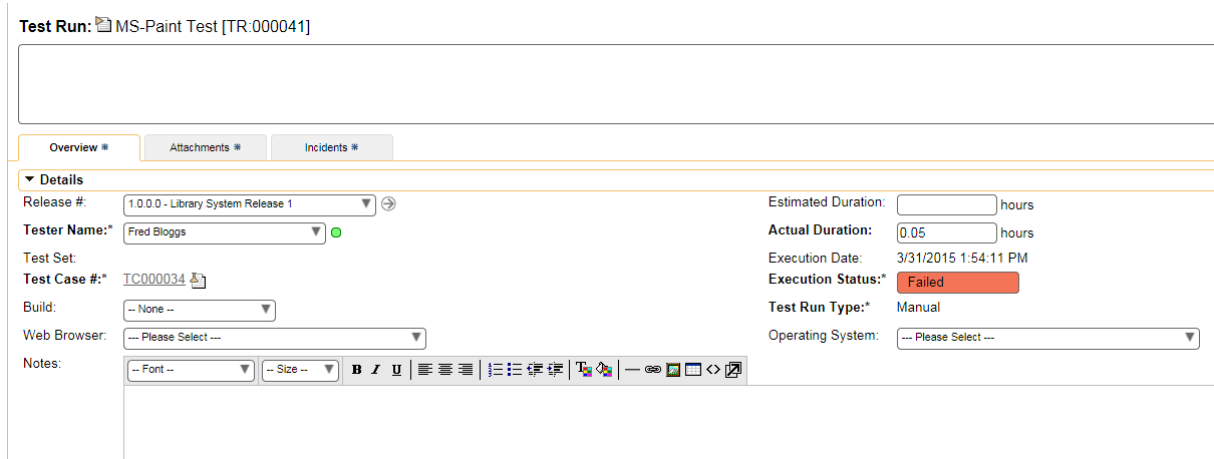




Finally, click on the **Finish** button and the results will be posted to [Spira](#).

## Step 5 - Viewing the Results

Now to view the results in Spira, click on the [Spira Dashboard](#) item in the main Rapise [Test ribbon](#). Then under the 'My Created' test cases, click on the link for the test case you execute. That will bring up the test case in Spira. Now click on the 'Failed' hyperlink in Spira and the new test run will be displayed:



If you scroll down, you can see the individual test steps that were executed, with the associated actual result (including the captured screenshot):

| ID       | Test Step Description                   | Expected Result                           | Sample Data                                  | Test # / Step #     | Actual Result                             | Execution Status |
|----------|-----------------------------------------|-------------------------------------------|----------------------------------------------|---------------------|-------------------------------------------|------------------|
| RS000084 | User starts up the MS-Paint Application | The application loads with a blank canvas |                                              | TC000034 / TS000045 |                                           | Passed           |
| RS000085 | User clicks the main 'Application menu' |                                           | SeS('Application_menu').DoClick(42, 12);     | TC000034 / TS000046 |                                           | Passed           |
| RS000086 | User clicks the 'New' entry             |                                           | SeS('New').DoClick(44, 13);                  | TC000034 / TS000047 |                                           | Passed           |
| RS000087 | User clicks on 'Pencil'                 |                                           | SeS('Pencil').DoClick(16, 9);                | TC000034 / TS000048 |                                           | Passed           |
| RS000088 | User clicks the 'Text' tool             |                                           | SeS('Text').DoClick(14, 16);                 | TC000034 / TS000049 |                                           | Passed           |
| RS000089 | User clicks at: 158, 256 in the canvas  |                                           | SeS('Simulated').DoClick(158, 256);          | TC000034 / TS000050 |                                           | Passed           |
| RS000090 | Enters text: 'This is some text'        | This is some text                         | SeS('Text1').DoSetText('This is some text'); | TC000034 / TS000051 | Failed with the text being illegible.<br> | Failed           |
| RS000091 | User clicks on the 'Bold' button        |                                           | SeS('Bold').DoClick(11, 14);                 | TC000034 / TS000052 | > View Incidents                          | Not Run          |

If you click on the **Incidents** tab, you can also see the new incident that was logged, linked to this test run:

| Overview #                                                                                                      | Attachments #                    | Incidents # |           |             |                |                  |          |          |           |      |
|-----------------------------------------------------------------------------------------------------------------|----------------------------------|-------------|-----------|-------------|----------------|------------------|----------|----------|-----------|------|
| Display List of Incidents: > Refresh   Apply Filter   Clear Filter   -- Show/Hide columns --                    |                                  |             |           |             |                |                  |          |          |           |      |
| Displaying 1 - 1 out of 1 incident(s) linked to this test run. Filtering results by Test Run #. (Clear Filters) |                                  |             |           |             |                |                  |          |          |           |      |
| ✓                                                                                                               | Name ▲▼                          | Type ▲▼     | Status ▲▼ | Priority ▲▼ | Detected By ▲▼ | Creation Date ▲▼ | Owner ▲▼ | Progress | ID ▲▼     | Edit |
| <input type="checkbox"/>                                                                                        | Did not display the correct text | Incident    | New       | 2 - High    | Fred Bloggs    | 31-Mar-2015      |          |          | IN-000071 | Edit |
| Show 15 rows per page                                                                                           |                                  |             |           |             |                |                  |          |          |           |      |
| Displaying page 1 of 1                                                                                          |                                  |             |           |             |                |                  |          |          |           |      |

Congratulations! You have now successfully executed a manual test using Rapise.

## See Also

- [Manual Testing](#)
- [Manual Recording](#)

### 2.3.10.3 Semi-Manual Testing

## Purpose

This is a useful technique when you want to have a predominantly manual test (executed by a tester) that has some steps that are automated by Rapise. These could be some of the initial setup tasks (e.g. logging in, starting the application) or just tasks that are well suited to automation.

## Usage

Create your manual test either using the [recorder](#) or the [manual test editor](#). You can also just open up a test already created in [Spira](#).

Next, inside Rapise, create a [test scenario](#) (function) that contains the necessary login. In this example we shall simply automate the launching of MS-Paint.

Create a function in the `MyTest.user.js` file with the following code:


```
function LaunchMsPaint()
{
 Global.DoLaunch('C:\\Windows\\system32\\mspaint.exe');
}
```

Now go to the **Manual Steps** section of Rapise by clicking on the **Manual Steps** icon in the test ribbon:

Inside the first test step (for example), change the **Description** to the following:

```
@LaunchMsPaint();
//User starts up the MS-Paint Application
```

This will be contained within the actual test step itself:

| StepId            | Description                                                    | Expected Result                                                                     |
|-------------------|----------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Step 1<br>[TS:45] | @LaunchMsPaint();<br>//User starts up the MS-Paint Application | The application loads with a blank canvas                                           |
| Step 2<br>[TS:46] | User clicks the main 'Application menu'                        |  |

Now, when you execute the test (using the normal **Execute** button on the main [Test ribbon](#) (**not** the Execute Manual icon on the [Manual Steps ribbon](#)) what happens is that Rapise will execute the main `Test()` function that contains:

```
//##### Script Steps #####

function Test()
{
 Global.DoPlayManual();
}

g_load_libraries=["Generic"];
```

this instructs Rapise to use the [manual playback](#) system. However when it gets to the first step, it will see the ampersand symbol (@) that denotes that this is actually an automated scenario and then call the following code:

```
//User starts up the MS-Paint Application
LaunchMsPaint();
```

Once the scenario has completed, Rapise will then return back to the manual test playback.

## See Also

- [Manual Playback](#)
- [Test Scenarios](#)

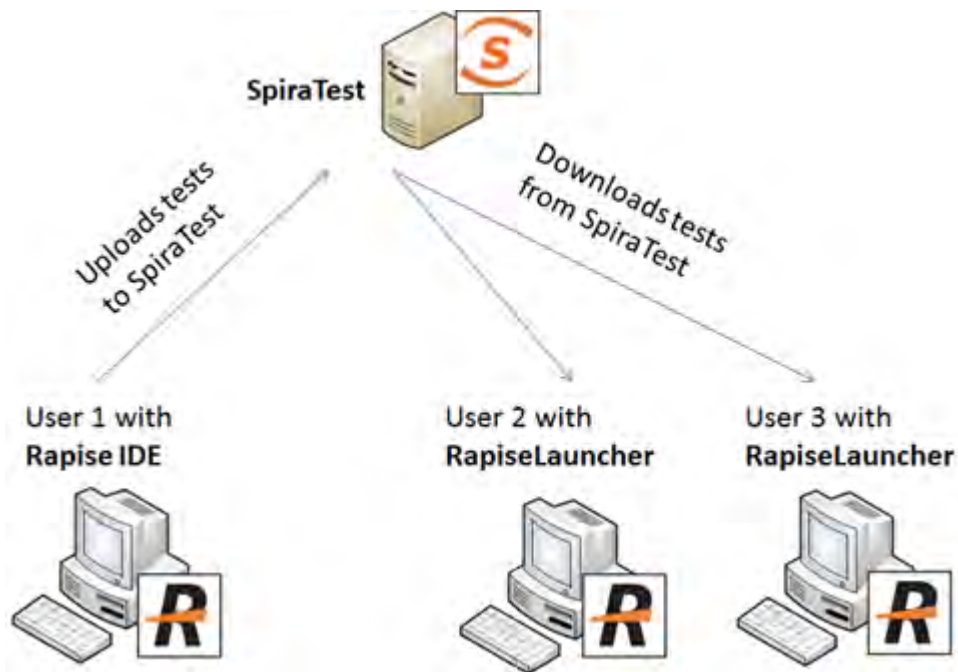
### 2.3.11 SpiraTest Integration

For more details on using SpiraTest with Rapise, please refer to the separate "[Using SpiraTest with Rapise](#)" guide.

## Overview

**SpiraTest** is a web-based quality assurance and **test management system** with integrated release scheduling and defect tracking. SpiraTest includes the ability to execute manual tests, record the results and log any associated defects. *Note: **SpiraTeam** is an integrated **ALM Suite** that includes SpiraTest as part of its functionality, so wherever you see references to SpiraTest in this section, it applies equally to SpiraTeam.*

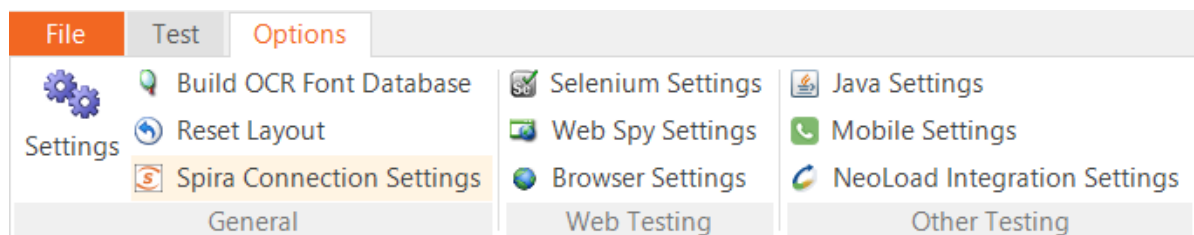
When you use SpiraTest with Rapise you get the ability to store your Rapise automated tests inside the central SpiraTest repository with full version control and test scheduling capabilities:



You can record and create your test cases using Rapise, upload them to SpiraTest and then schedule the tests to be executed on multiple remote computers to execute the tests immediately or according to a predefined schedule. The results are then reported back to SpiraTest where they are archived as part of the project. Also the test results can be used to update requirements' **test coverage** and other key metrics in real-time.

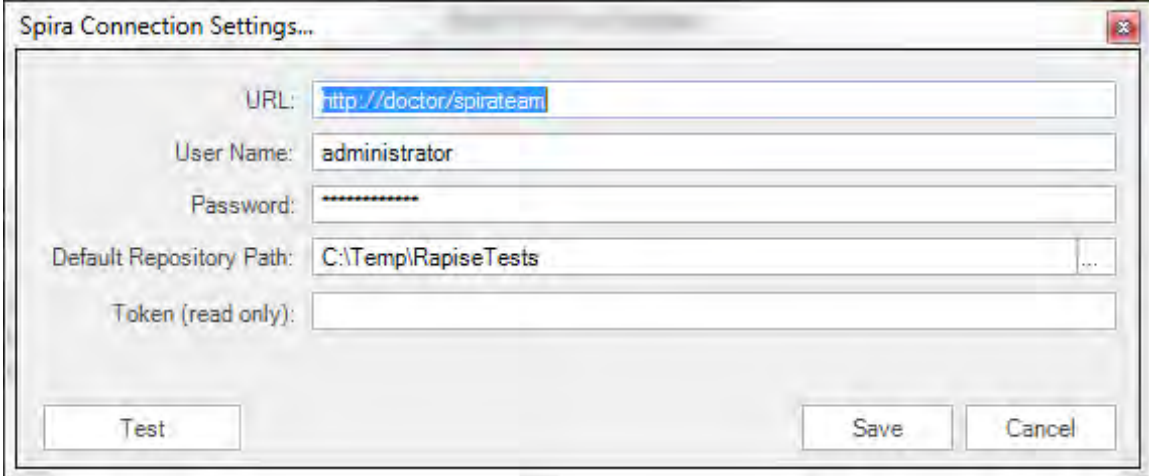
## Connecting to SpiraTest

The first thing you need to do is to configure the connection to SpiraTest. To do this, click on the [Options ribbon](#) in Rapise:



Click on the "**Spira Connection Settings**" button in the **General** tab to bring up the dialog box that lets

you configure the connection to SpiraTest:



The image shows a dialog box titled "Spira Connection Settings...". It contains the following fields and buttons:

- URL:
- User Name:
- Password:
- Default Repository Path:  ...
- Token (read only):
- Buttons: Test, Save, Cancel

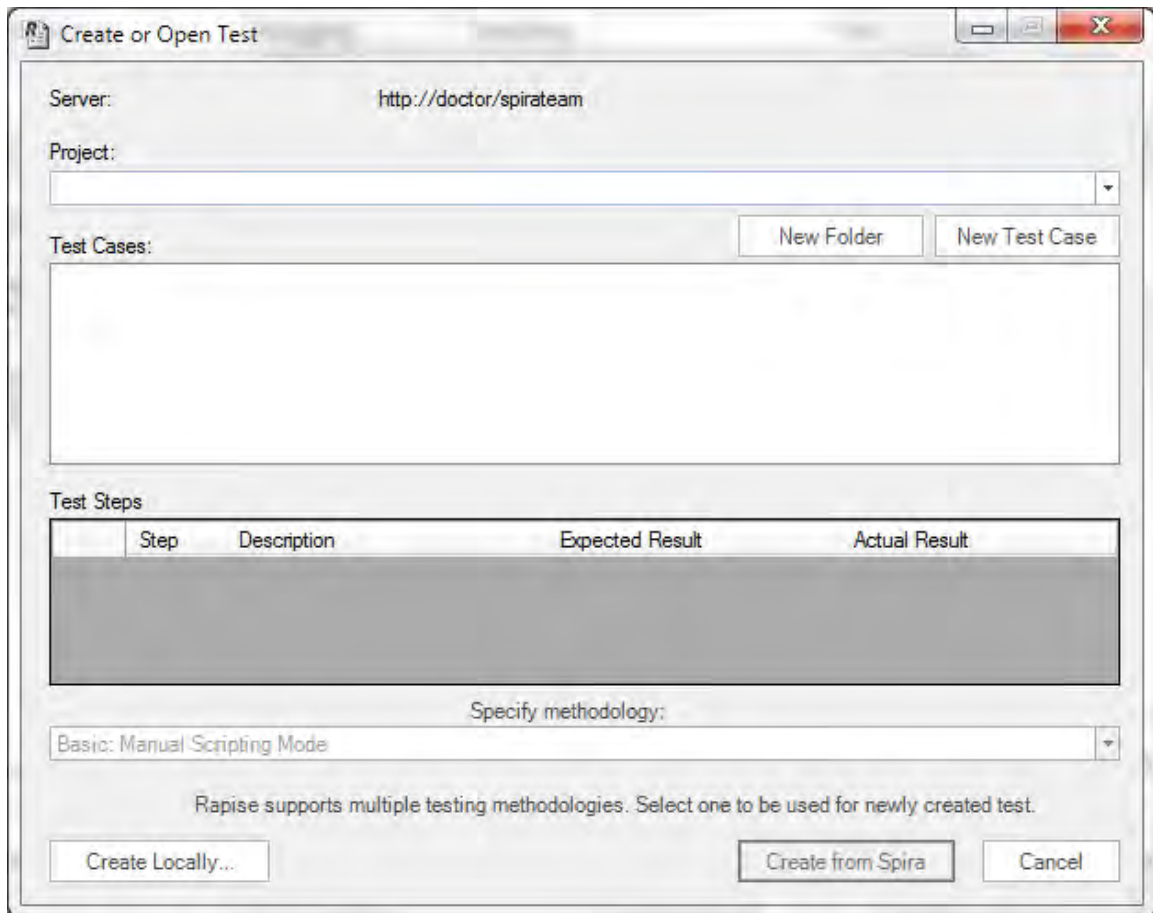
Enter the URL, login and password that you use to connect to SpiraTest and then click the "Test" button to verify that the connection information is correct.

- The "**Default Repository Path**" is a folder that used to store local copies of the non-absolute repositories.
- The **Token** is the identifier of the current machine that Rapise is installed on. It needs to match the 'Token' name of the corresponding 'Automation Host' in SpiraTest.

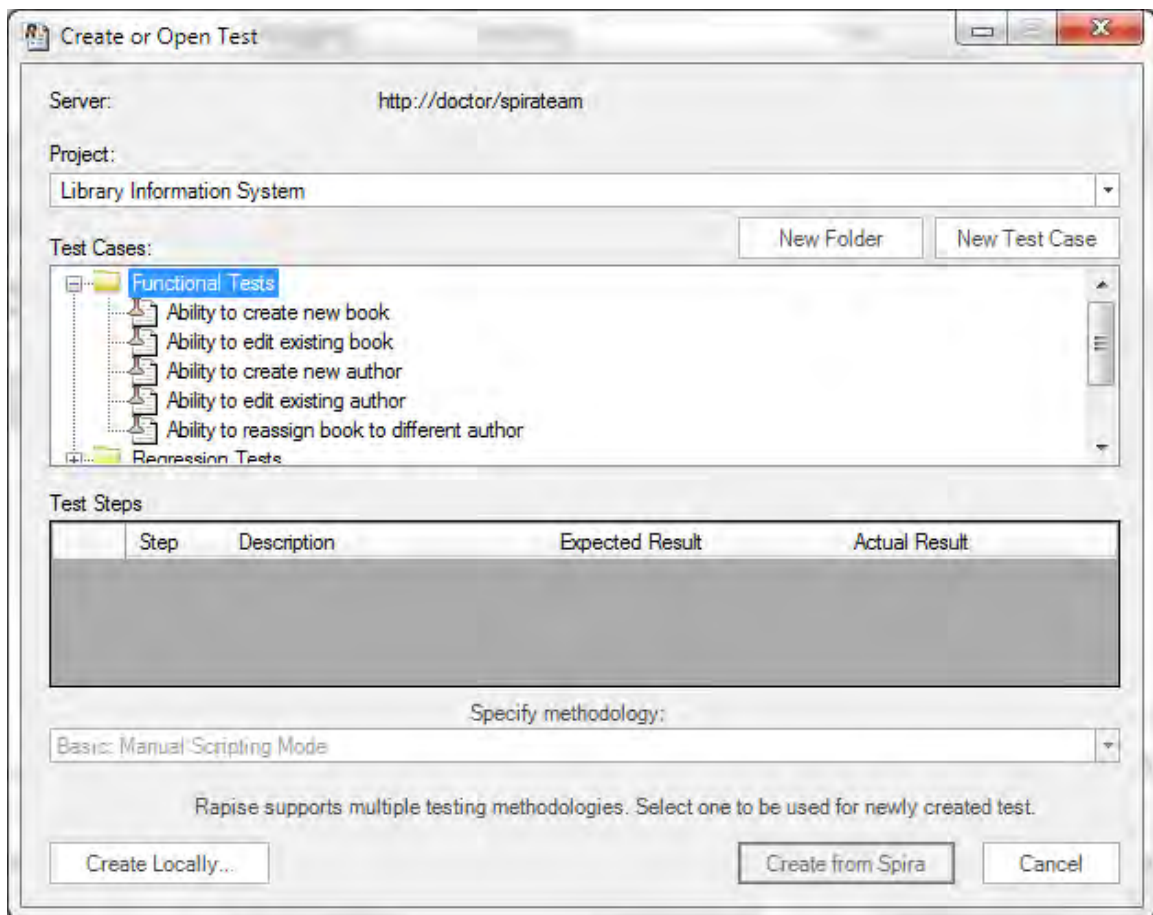
*You need to be running SpiraTest / SpiraTeam v4.0 or later to use the integration with Rapise.*

### Creating a Rapise test from a SpiraTest test case

To create a new Rapise test based on the manual test steps already defined in a SpiraTest test case, click on the **File** tab in the top left of the application and from the File menu, choose the option **New Test - Create a New Test**. This will bring up the following dialog box:

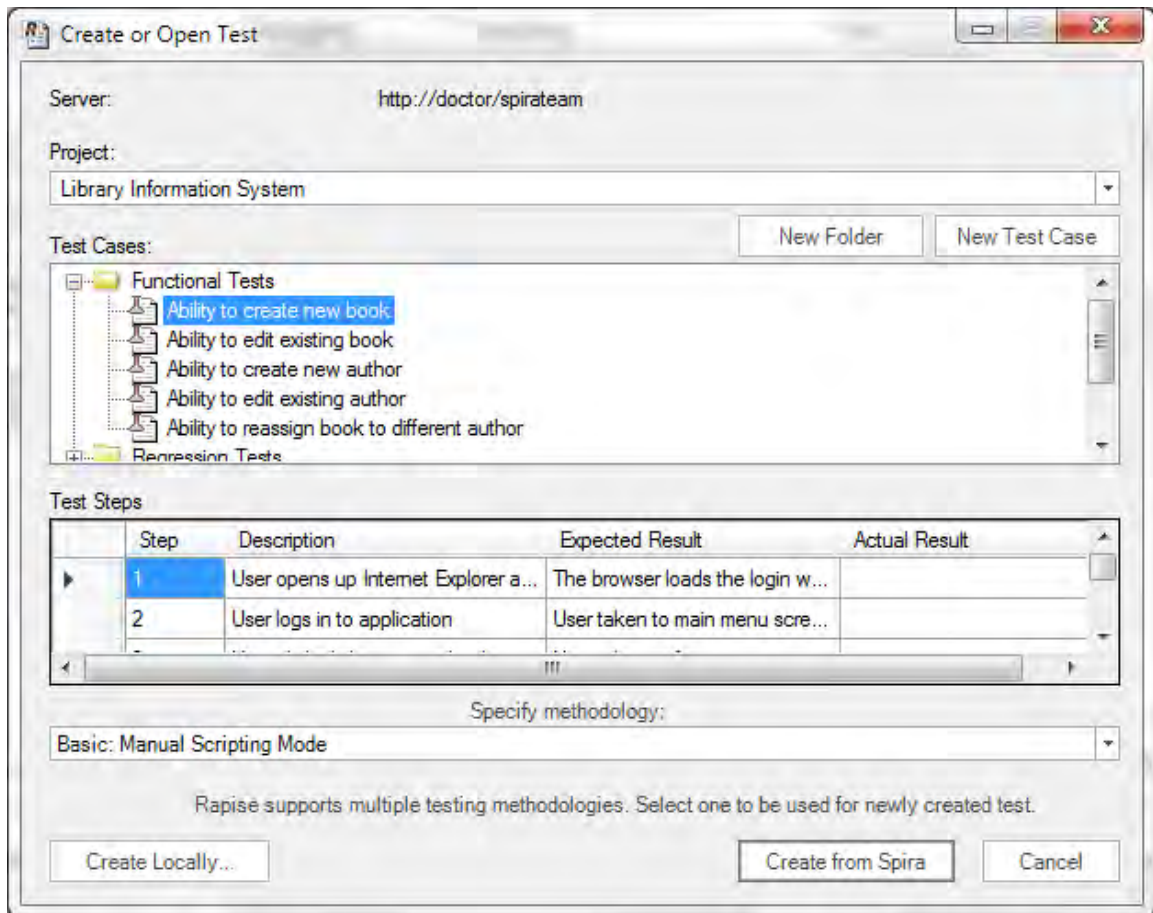


1. Select the project that has our new test case. The list of test case folders will be displayed.
2. You can create a new folder by clicking the **New Folder** button
3. Expand the folders until you can see the desired test case:



Now either create a new test case by using the **New Test Case** button or simply click on a test case that you previously created in Spira. In either case you will see its test steps displayed underneath (if there are any):





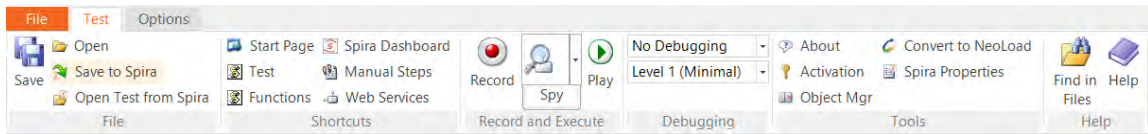
Once you are satisfied that this is the correct test case, choose the desired **methodology (Web, Mobile or Basic)** and then click the **Create from Spira** button. Rapise will now create a local test folder and files based on this Spira test case.

### Saving a Test to SpiraTest

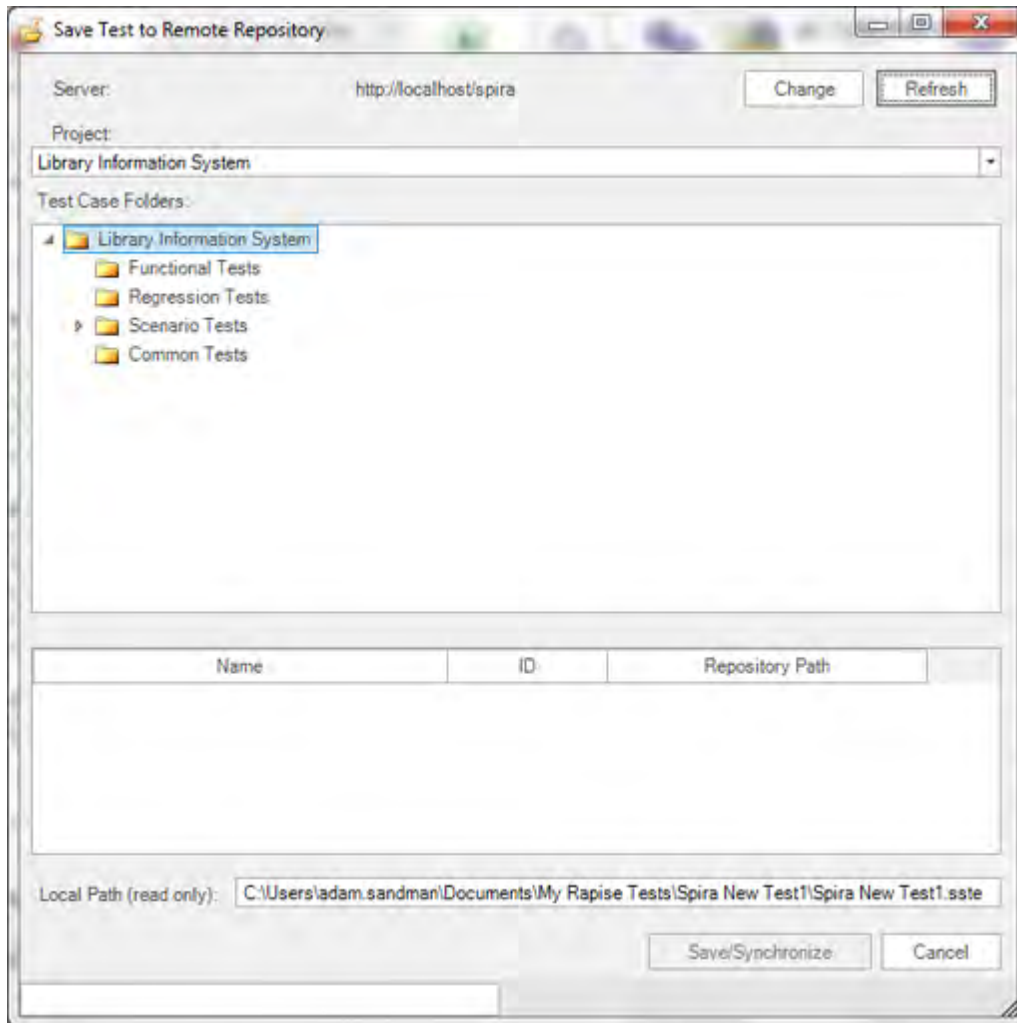
To save the a Rapise test into SpiraTest you need to make sure that the following has been setup first:

1. You have a project created in SpiraTest to store the Rapise tests in. The Rapise tests will be stored in a repository located inside the **Planning > Documents** section of the project.
2. The user you will be connecting to SpiraTest with has the permissions to **create new document folders**.
3. You have created the Test Case in SpiraTest that the Rapise test will be associated with. This is important because without being associated to a SpiraTest Test Case, you will not be able to schedule and execute the tests using SpiraTest and RapiseLauncher.
4. You have created an AutomationEngine in SpiraTest that has the token name "Rapise". This will be used to identify Rapise automation scripts inside SpiraTest.

Once you have setup SpiraTest accordingly, click on the **Save to Spira** icon in the File section of the Rapise Test ribbon:

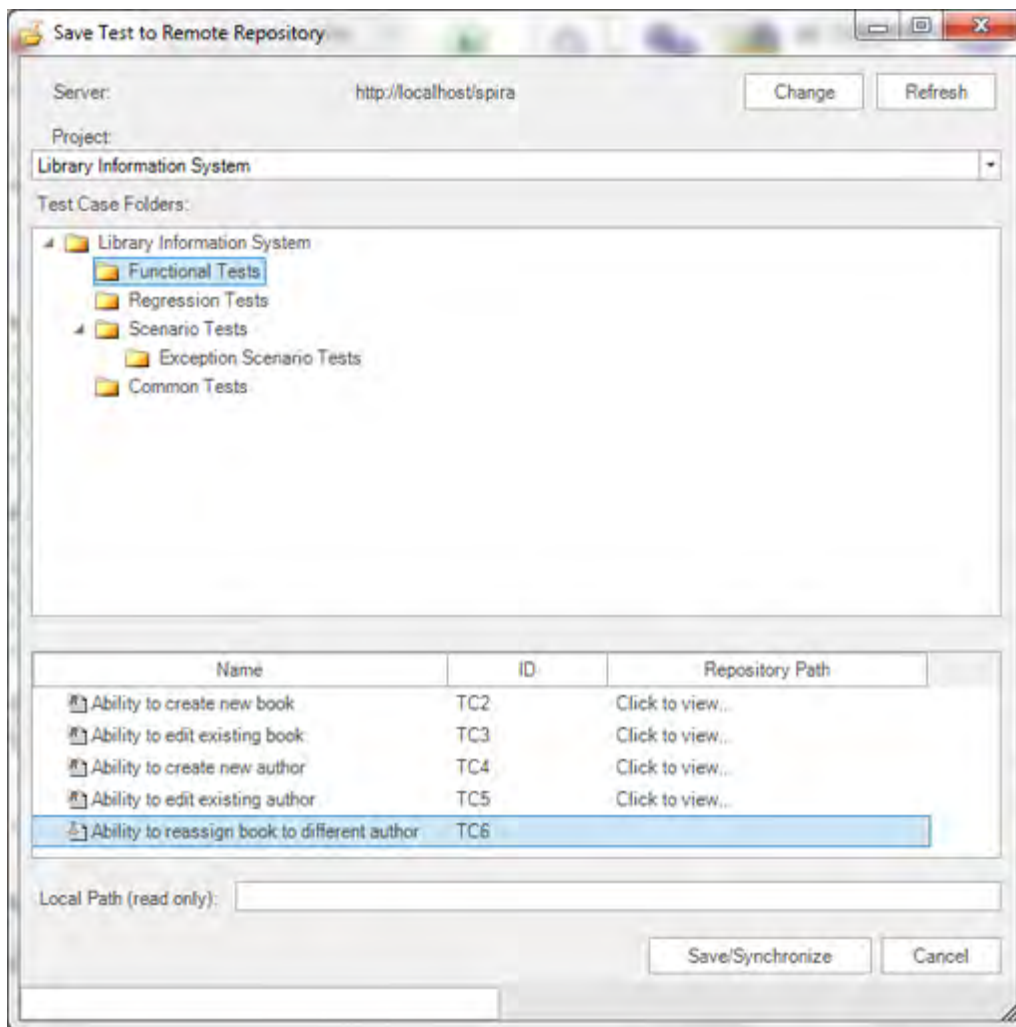


That will bring up the Save to SpiraTest dialog box:






The first thing you will need to do is choose the SpiraTest project from the dropdown list. This will then update the list of test case folders displayed in the top pane of the dialog box.

Once you have chosen the desired project, you need to expand the test case folders in SpiraTest and choose the existing Test Case that you want to attach the Rapise test to:



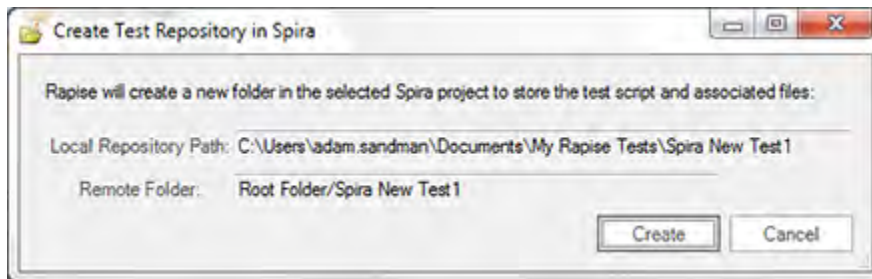
When you expand the folders to display the list of contained test cases, it will display the name and ID of the test case together with an icon that indicates the type of test case:

1.  - Manual test case that has no automation script attached. (Repository Path will also be blank)
2.  - Test case that has an existing Rapise test attached.
3.  - Test case that has a non-Rapise automation script attached.

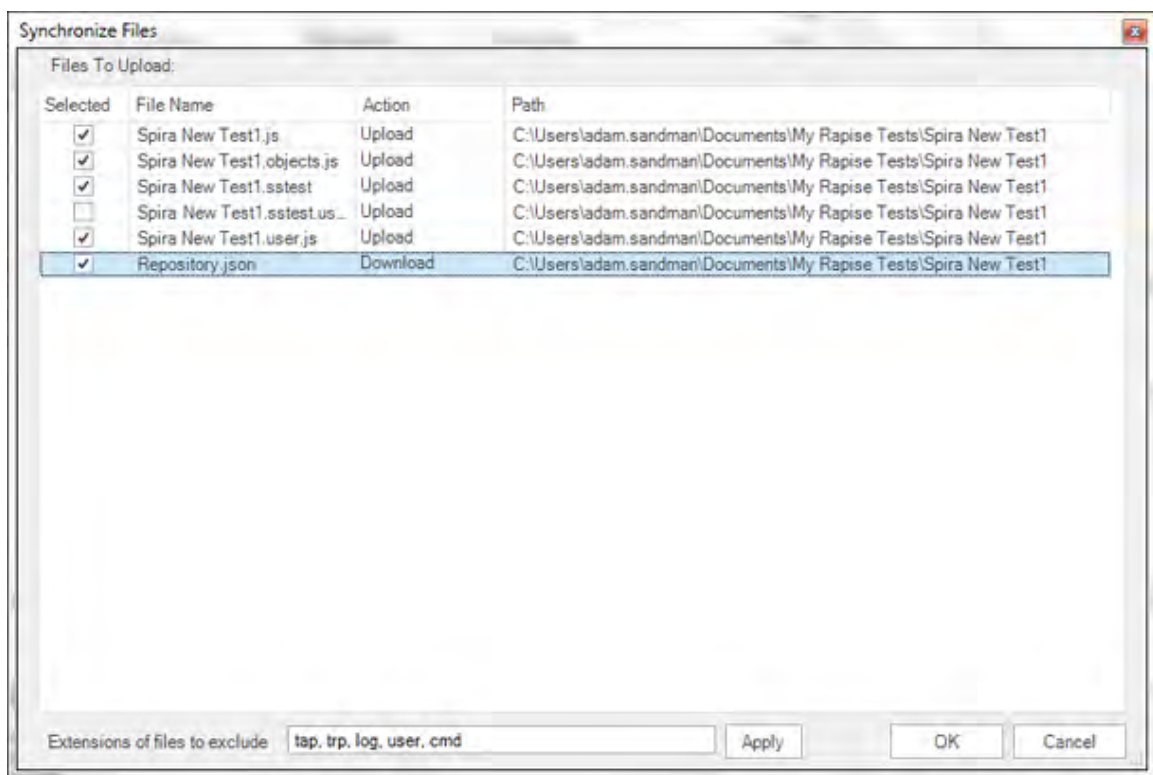
If you are adding a new Rapise test, choose a test case that has icon (1) and doesn't have an associated Repository path. If you are updating an existing test, choose a test case that has icon (2) and the matching Repository path.

*Note: test cases with icon type (3) cannot be used with Rapise for adding or updating scripts.*

Once you have chosen the appropriate test case, click the [Save/Synchronize] button. That will bring up the **Create New Repository** dialog box:

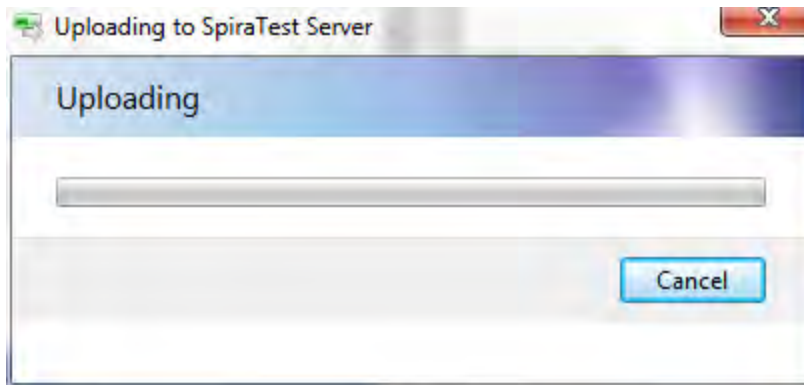


This dialog box will let you know where the Rapise script will be stored in SpiraTest and also the location of the repository local directory used to store the 'working copy' of the Rapise test. Click [Create] to confirm.



A dialog box will be displayed that lists all the files in the local working directory and shows which ones will be checked-in to SpiraTest. The system will filter out result and report files that shouldn't be uploaded. You can change which files are filtered out and also selectively include/exclude files. Once you are happy with the list of files being checked-in, click the [OK] button:

The system will display the message that it's saving the files to the server:



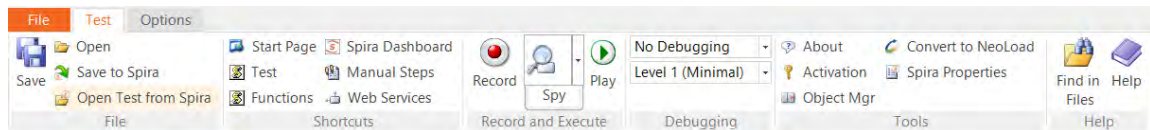
If an error occurs during the save, a message box will be displayed, otherwise the dialog box will simply close.

### Opening a Test from SpiraTest

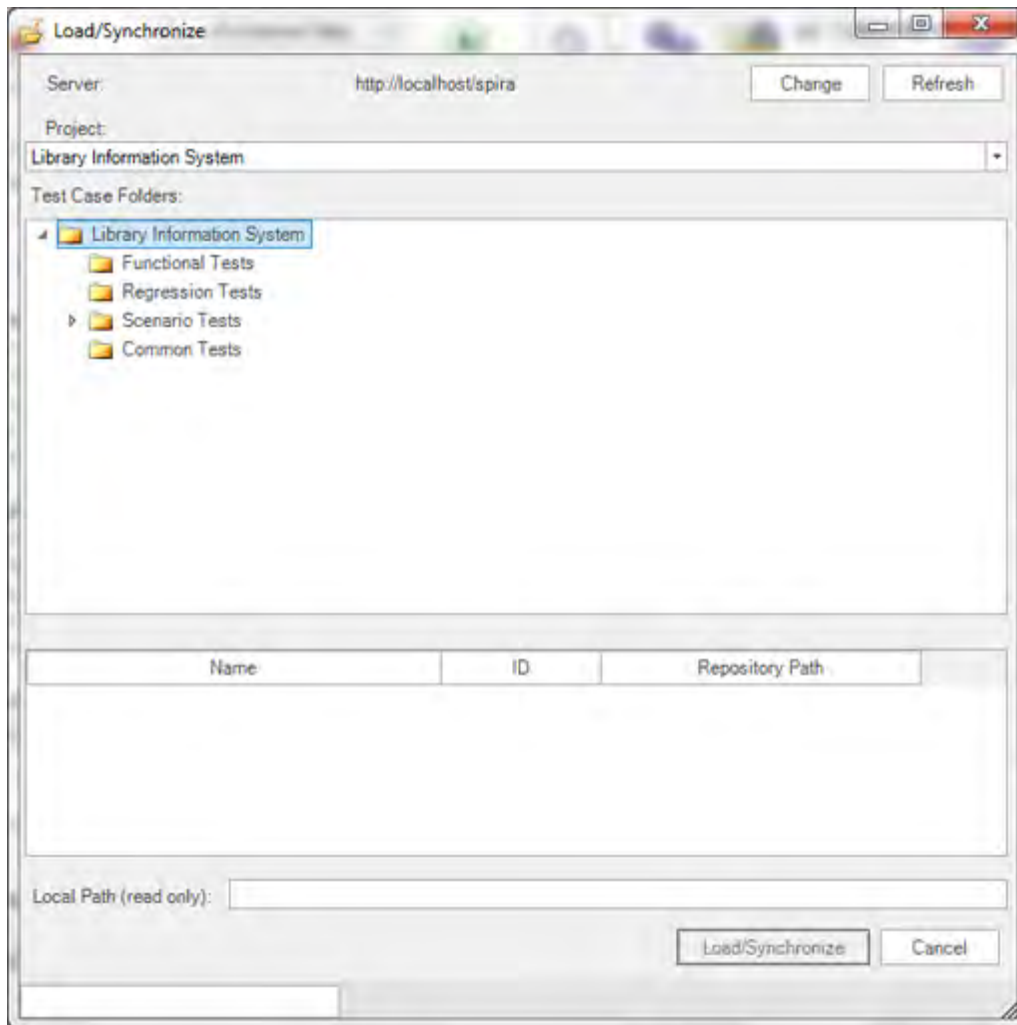
To open a Rapise test from SpiraTest you need to make sure that the following has been setup first:

1. You have already configured the connection to the SpiraTest service (see the instructions at the top of this page).
2. The user you will be connecting to SpiraTest with has the permission to view the project that the tests are being stored in.

Once you have setup SpiraTest accordingly, click on the **Open Test from Spira** icon in the File section of the Rapise Test ribbon:



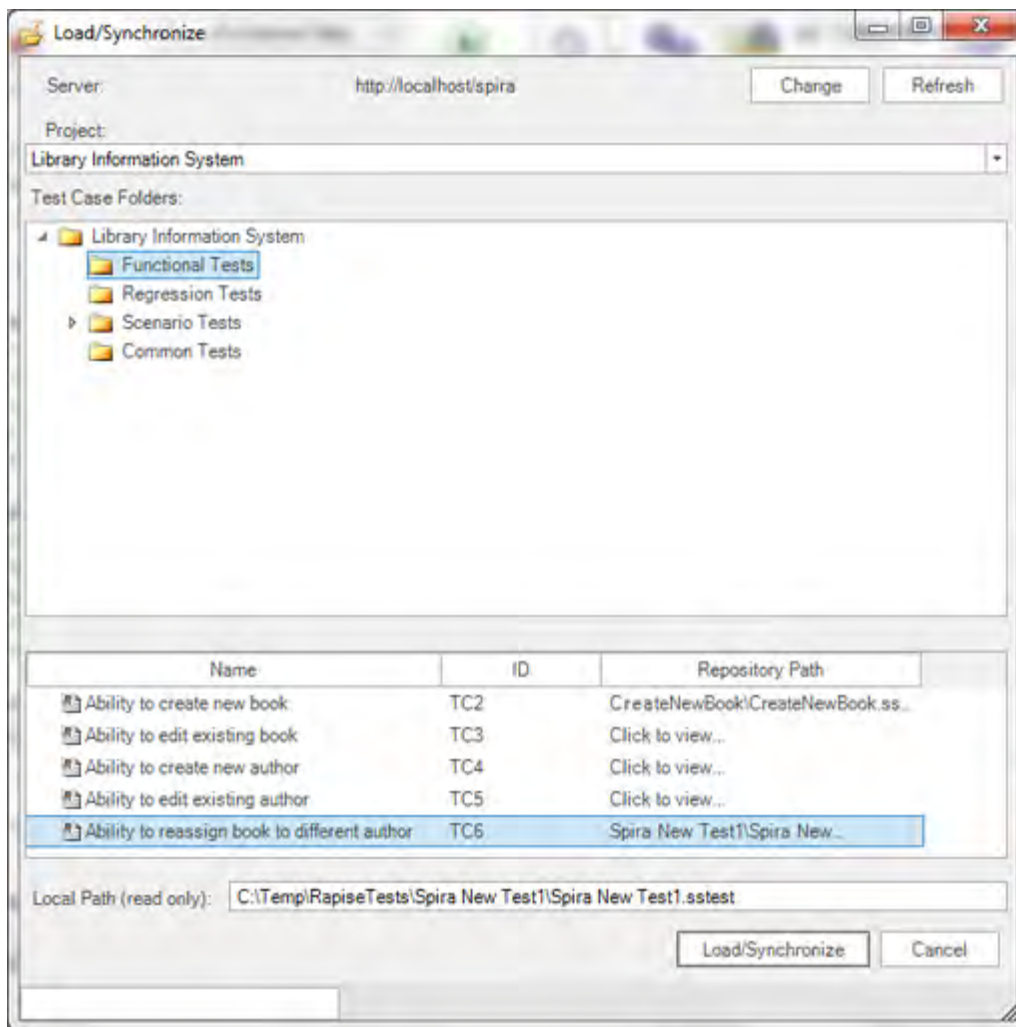
That will bring up the Open Test from SpiraTest dialog box:



The first thing you will need to do is choose the SpiraTest project from the dropdown list. Once you have done that, the system will display the list of test case folders in this project.

Once you have chosen the project, you need to expand the test case folders in SpiraTest and choose the existing Test Case that you want to open:



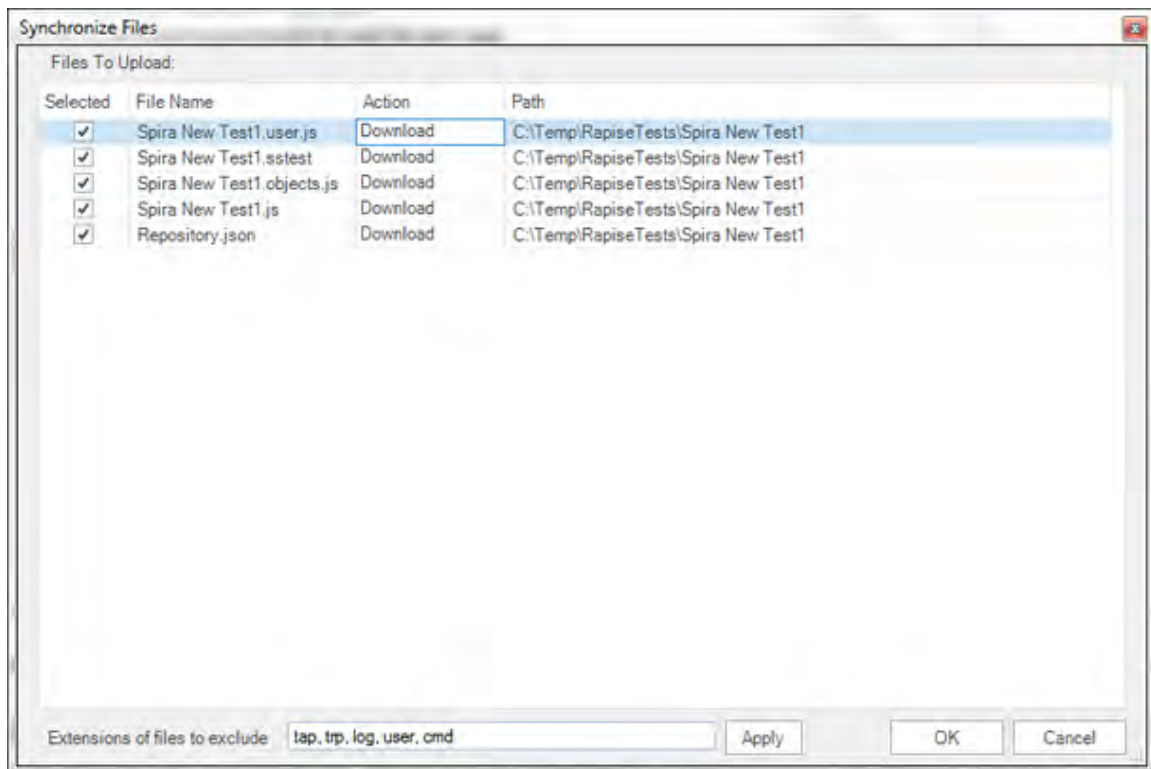


When you expand the folders to display the list of contained test cases, it will display the name of the associated Rapise test script associated with it (to the right). Choose a test case that has the matching Rapise test case listed to the right of it (in the Repository Path column).

*Note: Only test cases that have an attached Rapise test script will be displayed in this view.*

Once you have chosen the appropriate test case, click the [Load/Synchronize] button to load the test case:



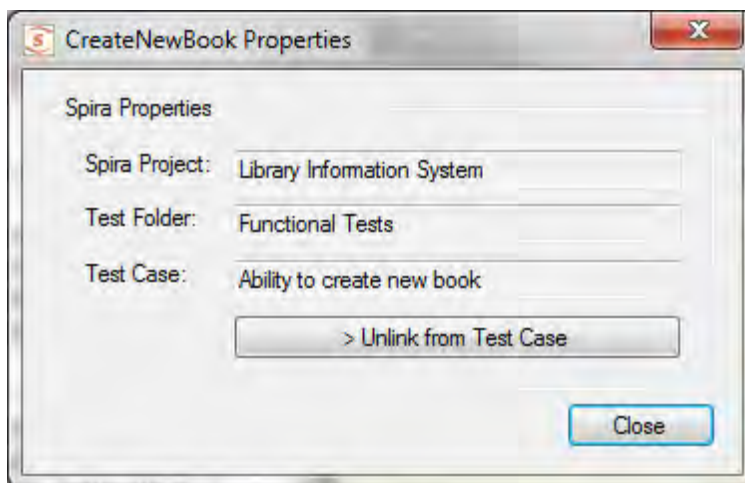


A dialog box will be displayed that lists all the files on the server which will be downloaded from SpiraTest. You can change which files are to be downloaded. Once you are happy with the list of files being checked-out, click the [OK] button:

The system will display the message that it's downloading the files from the server. If an error occurs during the download, a message box will be displayed, otherwise the dialog box will simply close.

### Viewing the SpiraTest Properties of a Test

To see which SpiraTest **project** and **test case** the current Rapise test is associated with, click on the **Spira Properties** icon in the Tools section of the Rapise Test ribbon. This will bring up the Spira Properties dialog box:



This will display the name of the current Rapise test together with the name of the SpiraTest project, test folder and test case that this test is associated with.

If you would to save the current Rapise test into a new SpiraTest project or if you want to save it against a new test case in the same project, you must first unlink the test. To do this click on the **Unlink from Test Case** button. This will tell Rapise to remove the stored SpiraTest information from the .sstest file so that it can be associated with a new project and/or test case in SpiraTest.

*Warning: This operation cannot be undone so please make sure you really want to unlink the current test.*

### Using the Spira Dashboard

In addition to using the ribbon options described in this page, you can interact with SpiraTest using the [Spira Dashboard](#) that is available from the [Start Page](#). This provides a convenient way of interacting with SpiraTest, allowing you to quickly create, save and open test cases from SpiraTest.

### Using RapiseLauncher

**RapiseLauncher** is a separate application that installs with Rapise. It allows you to remotely schedule the automated tests in SpiraTest and have RapiseLauncher automatically invoke the tests according to the schedule. Details on using SpiraTest with RapiseLauncher to remotely schedule and execute tests is described in the separate "**Using SpiraTest with Rapise**" guide. This guide can be found in the Rapise program files folder. Click on Start > Programs > Inflectra > Rapise in Windows and you will see the shortcut for the guide.

## 2.3.12 Checkpoints

### Purpose

A **Checkpoint** is defined by two things: (1) a location in the test execution path and (2) a subset of AUT state. Each time the checkpoint executes, the AUT state is compared to a predefined value. Discrepancies are noted, and may show a regression in program behavior.

### Usage

A checkpoint can be added in two ways:

- (1) during recording, with the [Verify Object Properties dialog](#), or
- (2) by manually adding an [Assertion](#) to the test script.

### See Also

- [Recording](#)

## 2.3.13 Tests and Sub-Tests

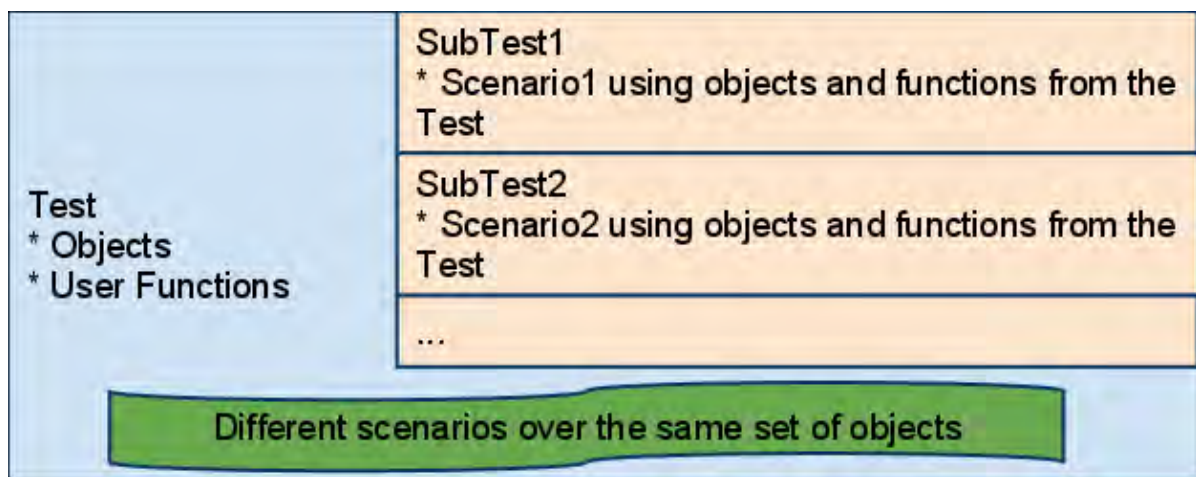
The concept of Sub-Test is an organic way to organize the whole work with Tests in organic way. By having sub-tests one may meet one of the following goals:

1. Create multiple test scenarios working with same set of Objects and Functions.
2. Organize different test scenarios into a single workspace.
3. Use Sub-test to make cross-browser tests

We will consider each of described goals separately. The test containing the sub-test(s) we will call **base** or **parent** test.

### Make Multiple Test Scenarios with the Same Set of Objects

In this case 'parent' test contains all learned objects and user-defined functions.



For example, the parent test may have objects "User Name", "Password", "Sign On". And function

```
function Login(username, password)
{
 ...
}
```

SubTest1 may be used to check login with valid Credentials, **SubTest1.js** looks like:

```
function Test()
{
 Login("validuser", "validpassword");
 // Now check that login is successfull
 Tester.Assert("Login leads to welcome message: ", Global.DoWaitFor('Welcome_User'));
}
```

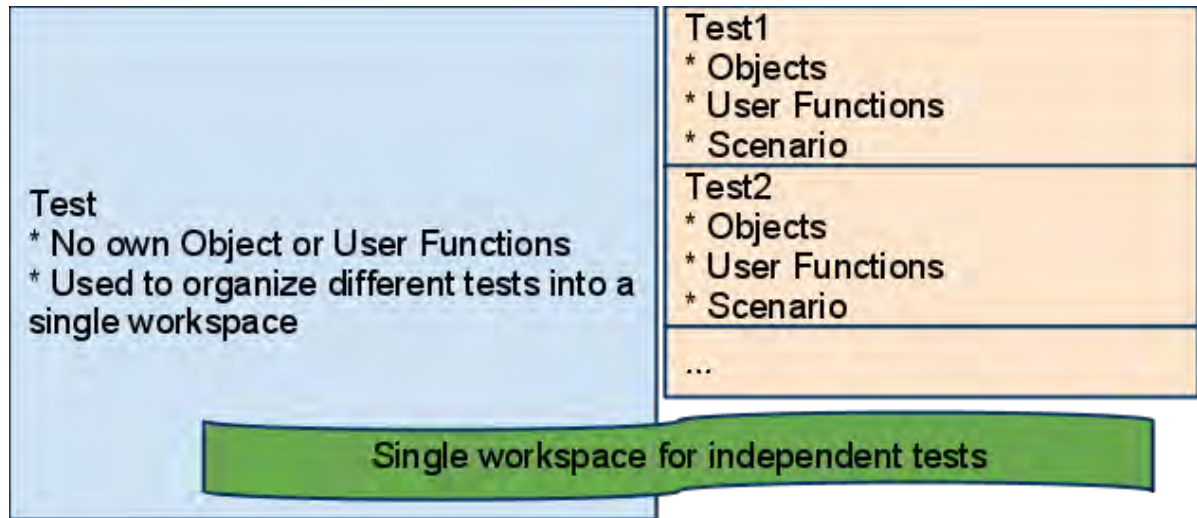
SubTest2 may be used to check login with invalid Credentials (i.e. it is a fail-test). **SubTest2.js** looks like:

```
function Test()
{
 Login("invaliduser", "invvalidpassword");
 // Now check that login is successfull
 Tester.Assert("Login leads to invalid user object: ",
Global.DoWaitFor('Invalid_User'));
}
```

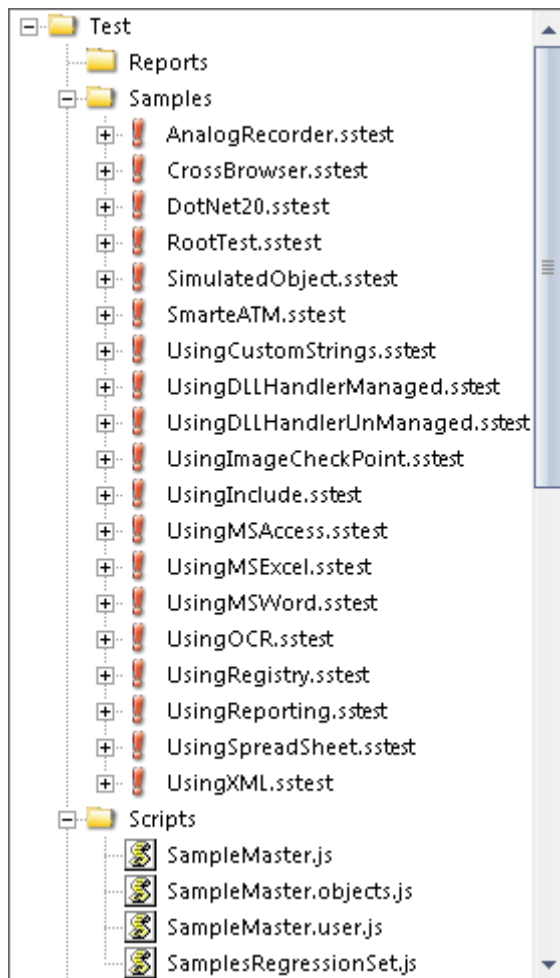
Function `Login` and objects `Welcome_User` and `Invalid_User` are defined in `Test`. The subtests are just implementing various scenarios for the same set of objects.

### Organize different tests into a single workspace.

Each test has its own objects, functions and scenarios.



The usage of such an approach is well demonstrated by example. We created a test called 'SampleMaster' and put all Rapise samples into it by using **Add File** context menu in the the [Test Tree](#) dialog. Finally the Files tree looks like:



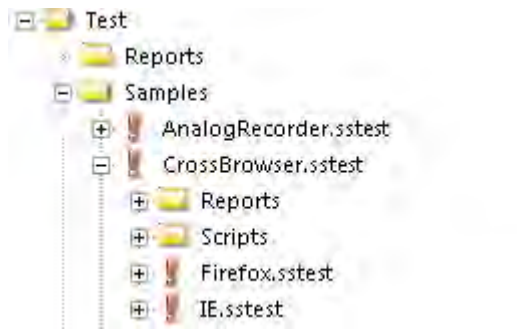
All tests in this tree are independent. We use the Sample Master to manage all the tests from a single environment.

### Using Sub-Tests for a Cross-browser testing

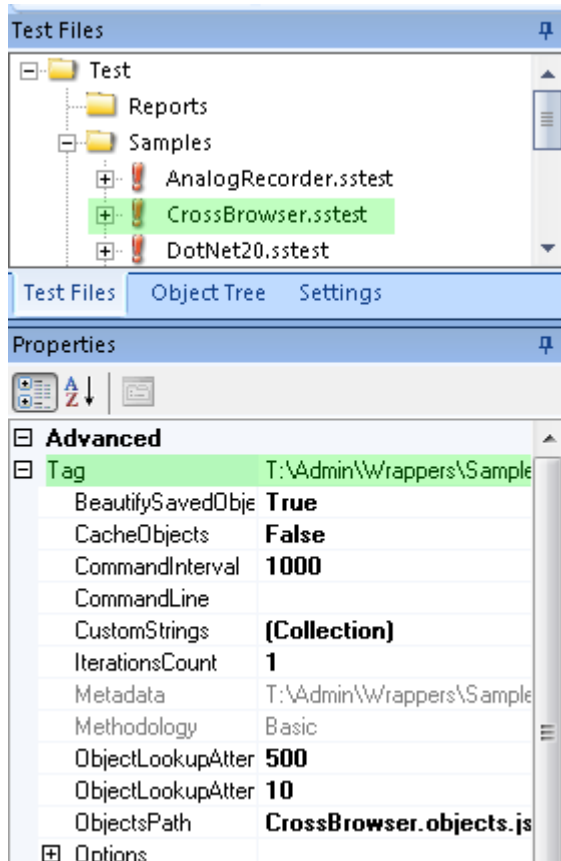
See '[Cross Browser](#)'.

### Sub-Test Features

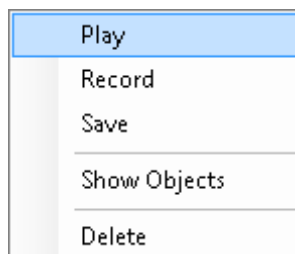
- Sub-test may have its own nested sub-tests. For example, in the parent test contains reference to 'CrossBrowser' subtest having 'IE' and 'Firefox' subtests inside:



- Sub-test options are available from the 'Tag' property in the 'Properties window:



- The following options are available in the context menu fore each of the sub-tests:



- **Play:** Execute selected sub-test
- **Record:** Start recording into selected sub-test
- **Save:** Save options of a sub-test
- **Show Objects:** Show objects form a sub-test in the Object Tree
- **Delete:** Remove reference to a sub-test from its parent test

### 2.3.14 NeoLoad Integration

This section describes the integration between Inflectra's Rapise functional testing tool and Neotys' NeoLoad performance testing tool.

The purpose of this integration is to satisfy the following two use cases:

1. The tester has written a test script in Rapise that tests the user interface of the application (by clicking on buttons and performing other UI tasks) but now wants to load test the server behind the user interface to make sure it can withstand the load of 10,000+ similar users making requests.
  - The existing Rapise test is not suitable because it would mean launching 10,000+ instances of the application or web browser on a single client machine, or having 10,000 instances of the application run on different machines at the same time.
  - The solution is to use a **protocol-based load testing tool** such as NeoLoad that sends the HTTP/HTTPS requests directly to the server
  - However it is laborious and time consuming to manually record the entire script in NeoLoad from scratch.
  - The solution is to [automatically convert the Rapise script to NeoLoad](#) by playing the Rapise script at the same time as NeoLoad records the generated HTTP/HTTPS traffic.
2. The tester wants to measure the [speed of the user interface](#) that a user would experience whilst performing a protocol-level level load test
  - How long does each transaction take whilst 1000 VUs are hitting the same system
  - The user interface could be web, mobile or thick client (e.g. ERP system)

#### 2.3.14.1 Convert Functional to Load Test

This aspect of the Rapise-NeoLoad integration describes the process for taking an existing test script written in Rapise and converting it seamlessly into a performance scenario in the NeoLoad load testing system. This feature allows you to convert Rapise tests for HTTP/HTTPS based applications into protocol-based NeoLoad scripts that can be executed by a large number of **virtual users (VUs)** that simulate a load on the application being tested.

#### Prerequisites

In order to use the integration with NeoLoad, you need to have the following:

- Rapise 5.0 or above
- NeoLoad 5.1 or above



Both tools must be installed on the same Windows host.

NeoLoad must have a license with Recording API enabled. The default trial version does not have this capability.

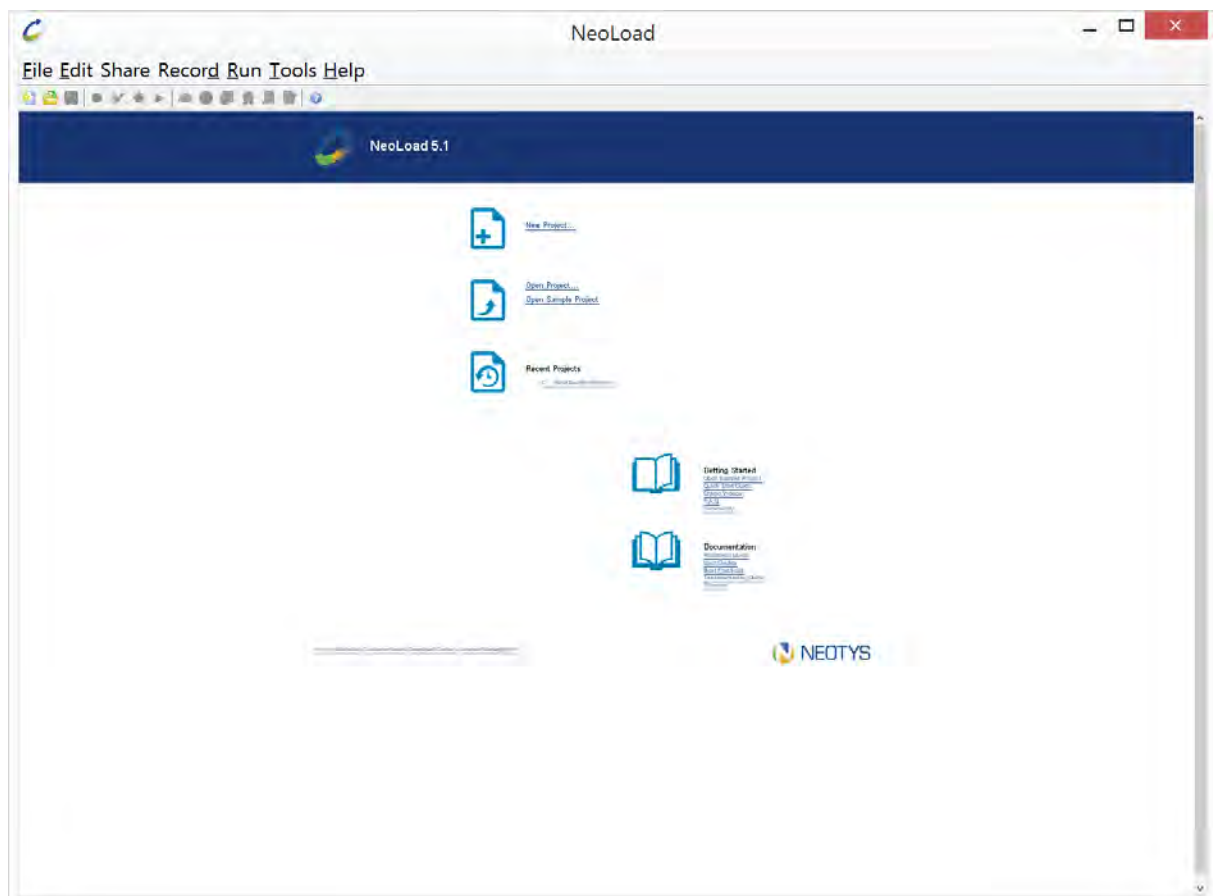
The Rapise test needs to be testing an application that uses HTTP/HTTPS or other NeoLoad supported protocols.

## The Steps for Converting a Rapise Test

### Launch NeoLoad

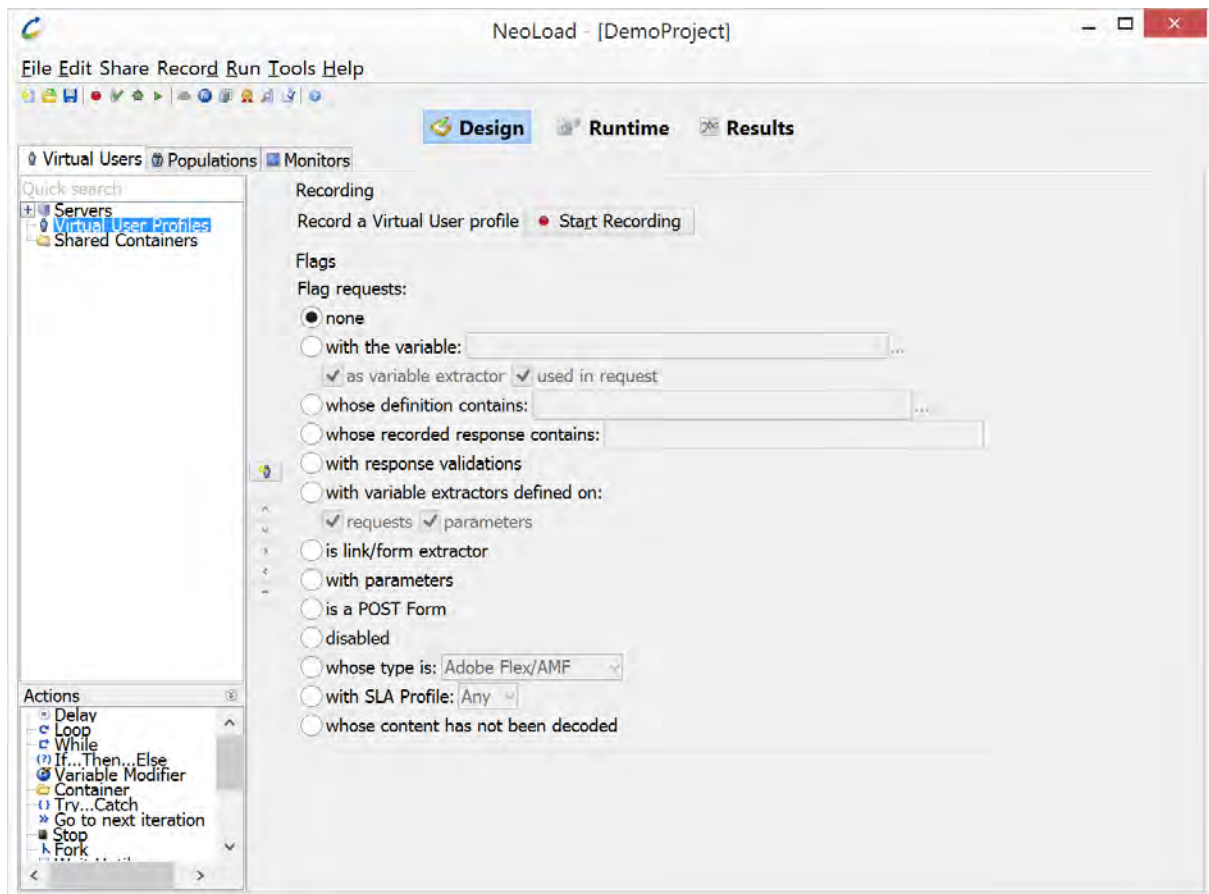
Open NeoLoad via the Start menu or using a command line:

```
"c:\Program Files (x86)\NeoLoad 5.1\bin\NeoLoadGUI.exe"
```



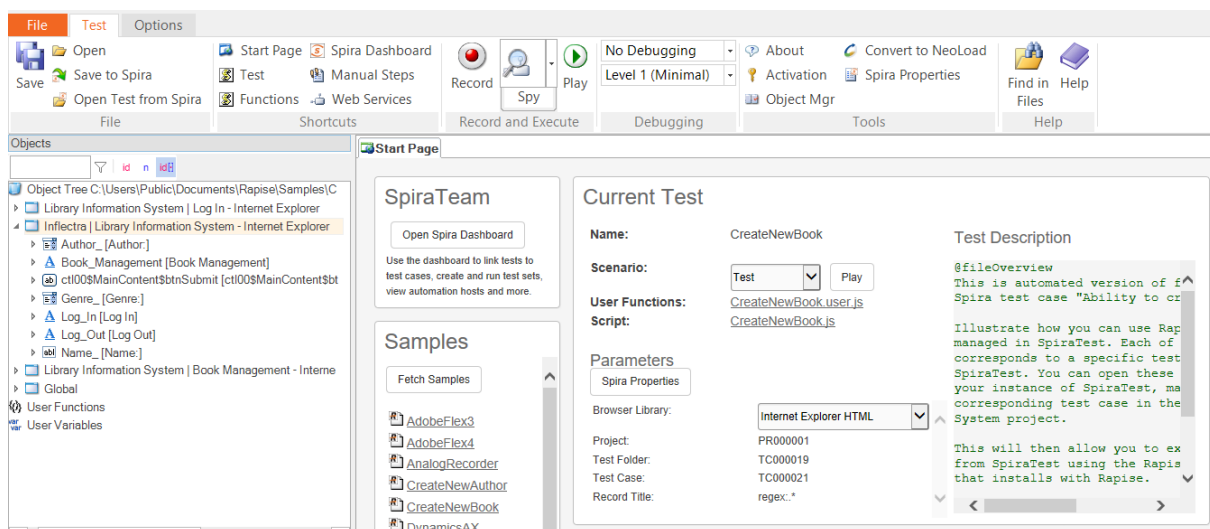
### Create or Open Existing Load Project

Use menu File > New or File > Open.

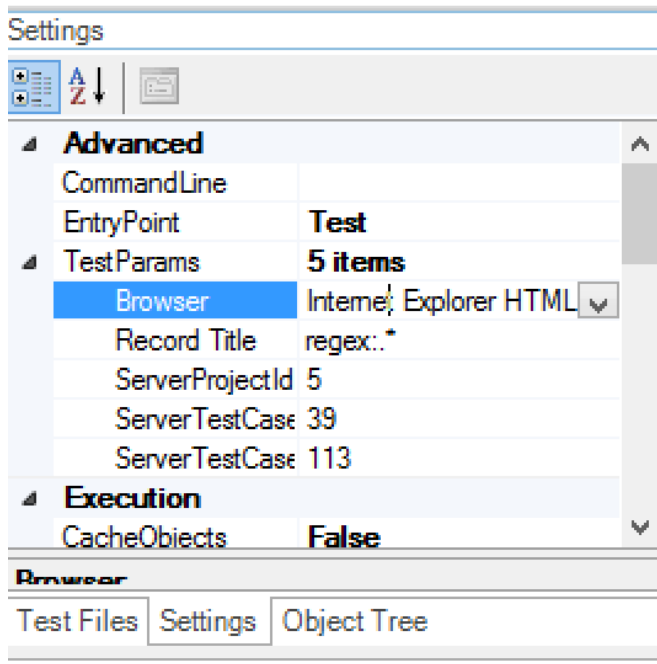


### Open a Test Script in Rapise to be Converted

Inside Rapise, open the script you want to convert. Make sure the application it is testing is a web-based application using the HTTP/HTTPS protocols:

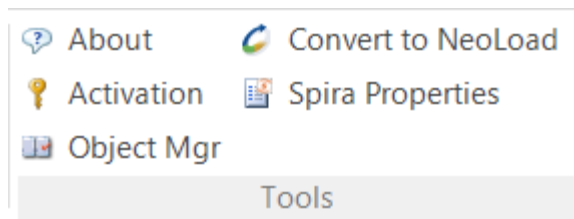


Ensure that the Internet Explorer HTML library is set in the test parameters.

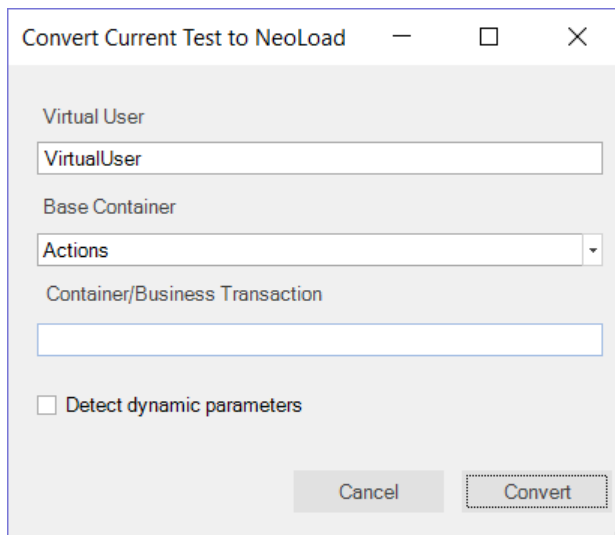


Open Conversion Dialog

On the Rapise [Test Ribbon](#) > Tools tab, press the **'Convert to NeoLoad'** button:



This will display the [NeoLoad convertor dialog](#). On this dialog box, set the following parameters:



In this field, you need to enter the name of the virtual user to create in NeoLoad:

- The default value is "VirtualUser"
- If the name is already used, then it is automatically renamed using "\_X" suffix, with X an integer incremented.
- If the name has invalid characters then they will be escaped as an underscore (\_).

### Base Container

This specifies the base container where we want to start the recording (Init / Actions / End)

- The default value is Actions.

### Container/Business Transaction

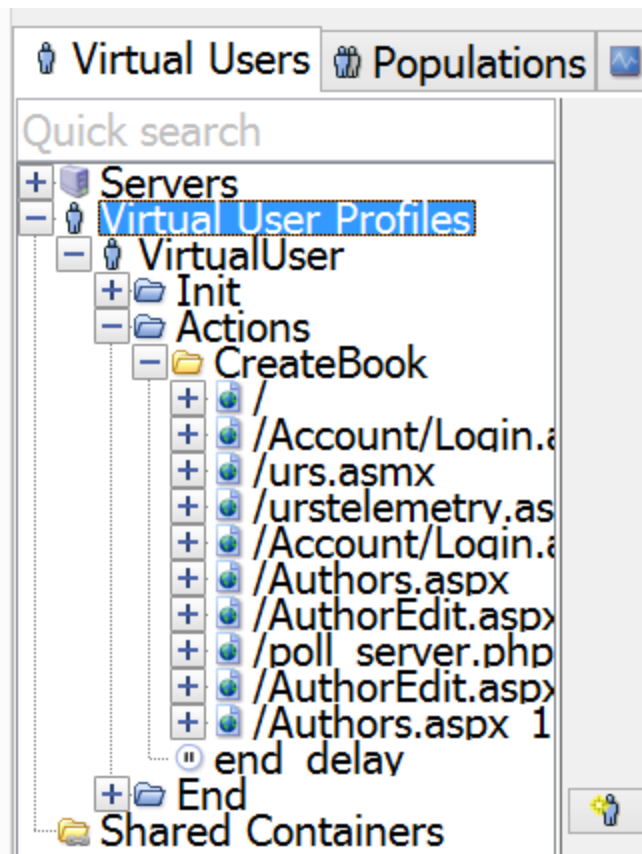
This is used to specify the current recording container in NeoLoad. It is just based on a single level. There is no way to specify a tree of containers.

- The default is no container.
- If the name is already used then it will be made unique by adding \_1, \_2, etc.
- If the name is empty then no container will be used.

### Detect Dynamic Parameters

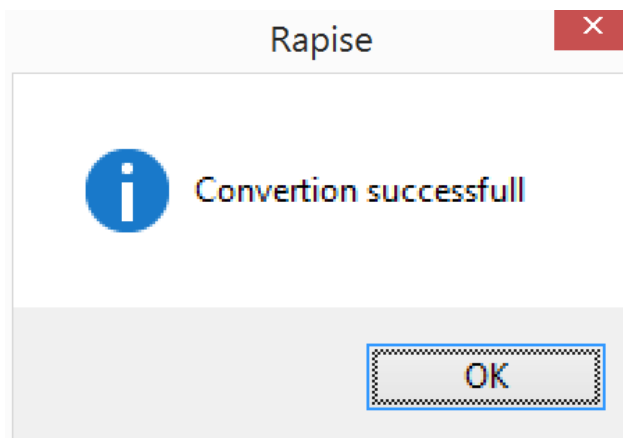
When you check this box, Rapise tells NeoLoad to scan the protocol traffic to look for known dynamic parameters (e.g. Session IDs, ASP.NET ViewState) that change on each HTTP request and need to be parameterized by NeoLoad to ensure the performance scripts are robust and well-defined (v.s. having a hardcoded Session ID).

In the NeoLoad tree it looks this way:



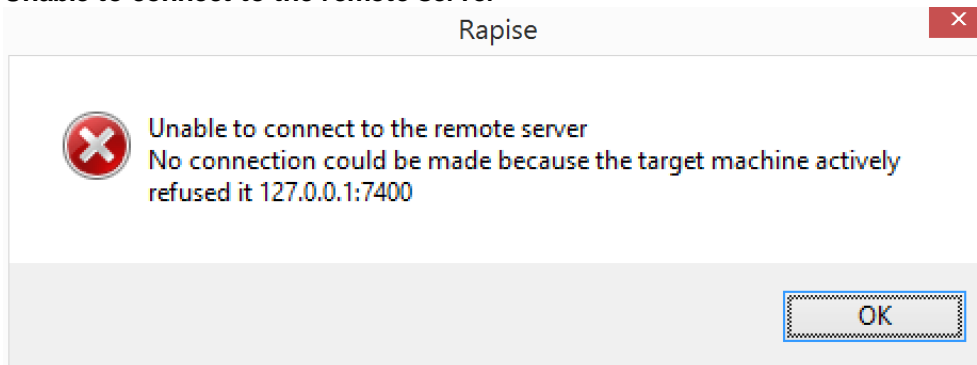
### Press Convert Button

After pressing Convert button Rapise will launch the test and NeoLoad will start capturing network traffic. When test playback is finished you'll see the dialog:

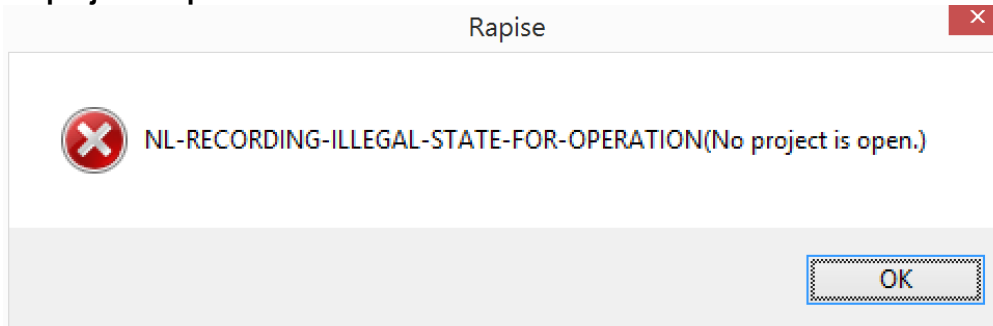


## Troubleshooting

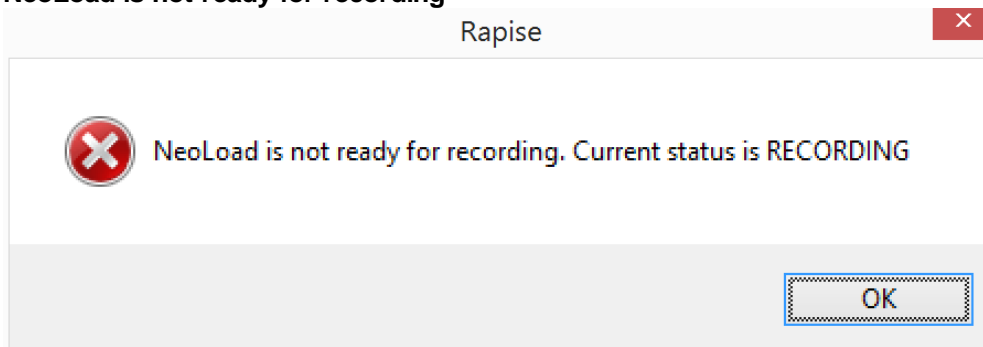
During conversion you may get a few error messages. This section provides a list of common messages and their solution.

**Unable to connect to the remote server**

If you get this message, check that NeoLoad is running. Usually this message means that NeoLoad is not started or another application is using port 7400, preventing NeoLoad binding to it.

**No project is open**

If you get this message, check that a project is opened in NeoLoad.

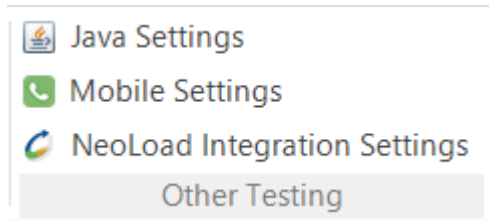
**NeoLoad is not ready for recording**

If you get this message, it means that NeoLoad is in the recording state. To fix the issue, you need to stop the existing recording in NeoLoad.

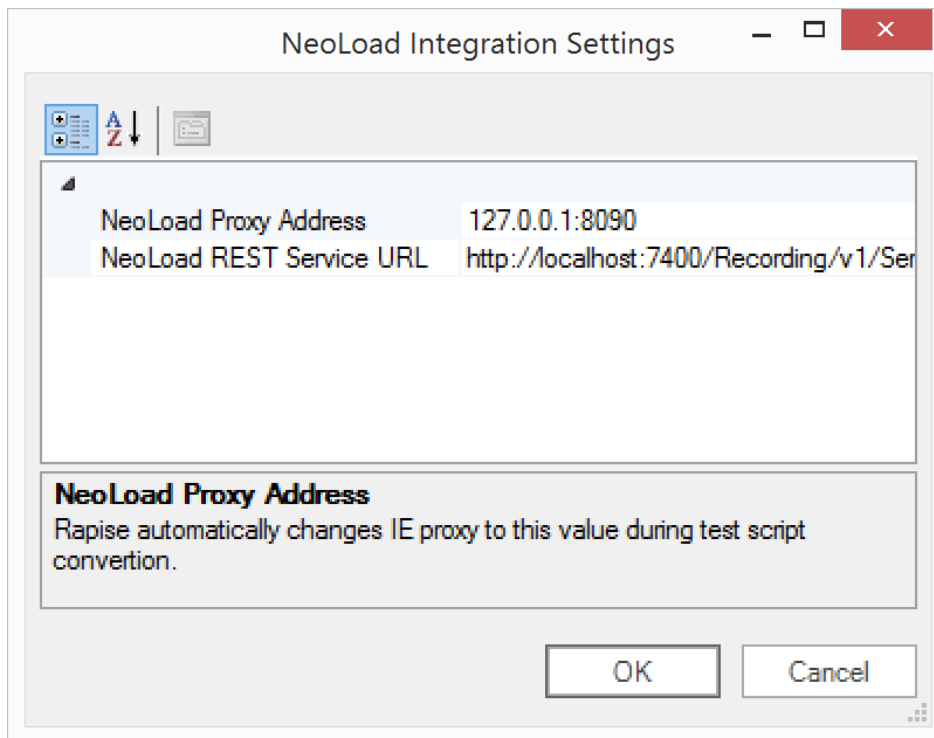
## NeoLoad Integration Settings

There are a few global options for the Rapise – NeoLoad integration. To reach them open up the

Rapise [Options ribbon](#):



In the 'Other Testing' tab, press the “NeoLoad Integration Settings...” button:



This is the [NeoLoad Settings](#) dialog.

Normally there is no any reason to change these settings, but for completeness they are described below:

- **NeoLoad Data Exchange URL** - this is the URL to the NeoLoad data exchange API
- **NeoLoad Proxy Address** - this is the IP address and prt of the NeoLoad HTTP proxy
- **NeoLoad REST Service URL** - this is the URL to the NeoLoad recording service REST API



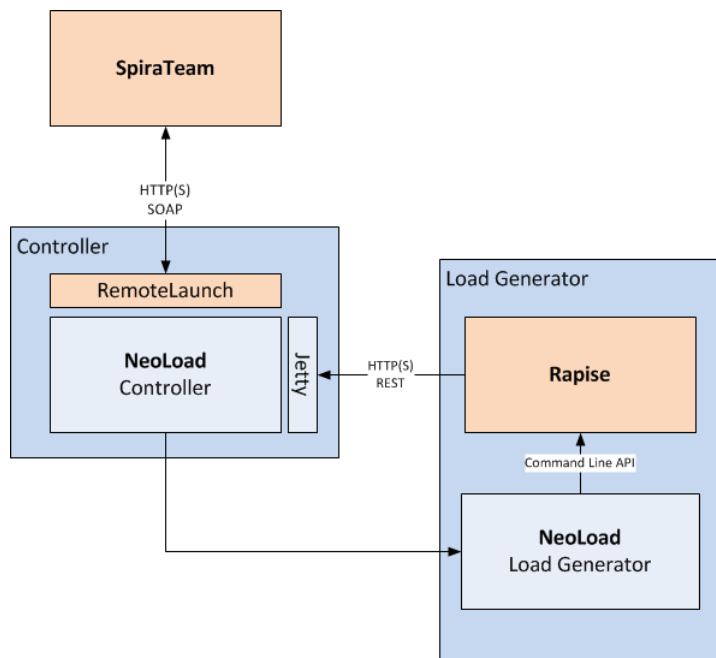
### 2.3.14.2 Client Performance Monitoring

#### Concept and Architecture

The purpose of this integration is to satisfy the following use case:

- The tester wants to measure the speed of the user interface that a user would experience whilst performing a protocol-level level load test
  - How long does each transaction take whilst 1000 VUs are hitting the same system
  - The user interface could be web, mobile or thick client (e.g. ERP system)

The following describes the technical architecture that would need to be in place:

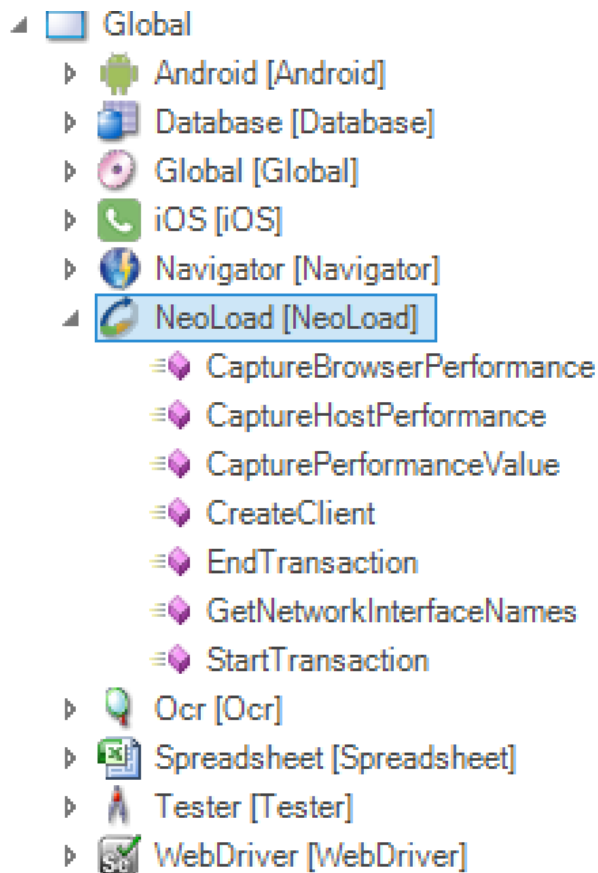


The process flow for the above architecture would be as follows:

1. User schedules the performance test in SpiraTest
2. RemoteLaunch connected to the NeoLoad controller and SpiraTest initiates the start of the testing
3. The NeoLoad controller sends commands to the NeoLoad load generators to start the performance scenario
4. During the performance scenario, NeoLoad calls Rapise through its command-line to start a specific test
5. At specific points in the Rapise function test (which is grouped into transactions), timing code in the Rapise script (see next section) will call the NeoLoad REST API to report back the timing for the transaction block.
  - The NeoLoad controller will need to correlate each of the blocks with the appropriate transaction in the performance scenario
6. At the end of the performance test, RemoteLaunch will read the entire performance test and send back the results to SpiraTest.

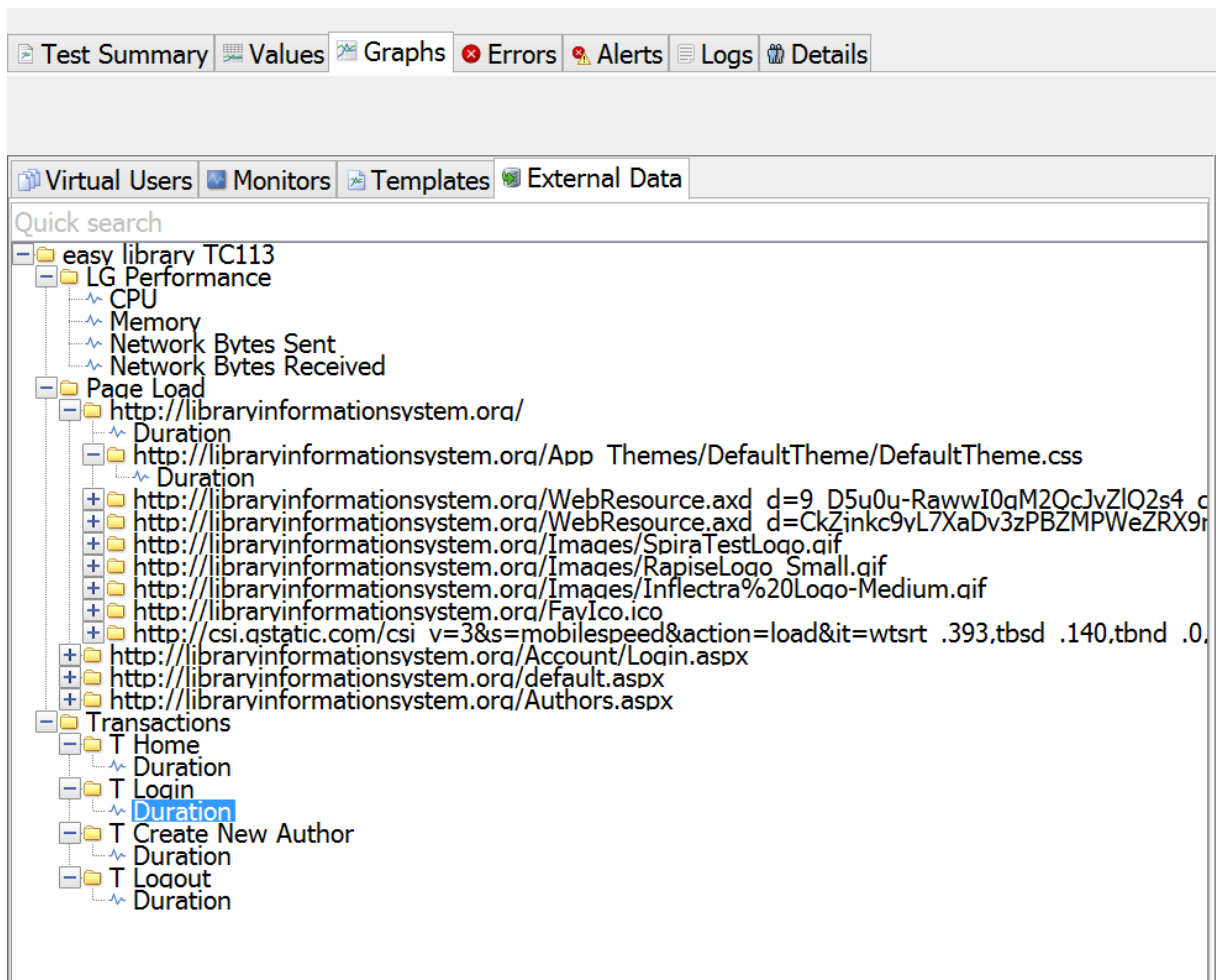
#### NeoLoad Global Object

Rapise has a global object named NeoLoad which is capable of sending client performance metrics to the NeoLoad controller.



NeoLoad will display the received data in a both tree and graph views.

## NeoLoad Tree View



The root of the tree is the name of a script that was executed by Rapise.

On the first level we have three groups:

- LG Performance – this is a folder of a load generator essential metrics captured by Rapise: CPU, Memory, Network Sent/Received bytes.
- Page Load – this folder contains nodes for each page and nested resource. Duration values are obtained using Window.performance structure. See also <http://www.w3.org/TR/navigation-timing/#processing-model>
- Transactions – this folder contains counters for transactions defined by a script.

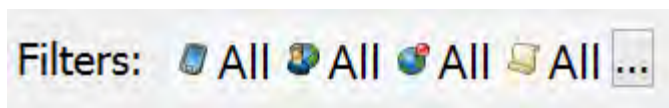
## Graph View

Each leaf node can be dragged to the graph view for visualization:



## Performance Filters

Performance results obtained from different runs can be filtered using result filter on the toolbar.



You can open the Results Filter dialogs by pressing ‘...’ button.

**Result Filter**
✕

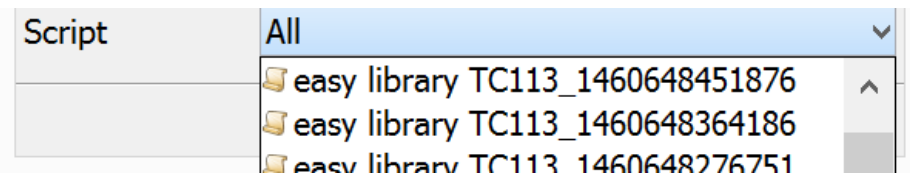
**Result Filter**

④ Select the test result filters to apply.

|                 |                                          |
|-----------------|------------------------------------------|
| Platform        | All <span style="float: right;">▼</span> |
| Client Software | All <span style="float: right;">▼</span> |
| Location        | All <span style="float: right;">▼</span> |
| Script          | All <span style="float: right;">▼</span> |

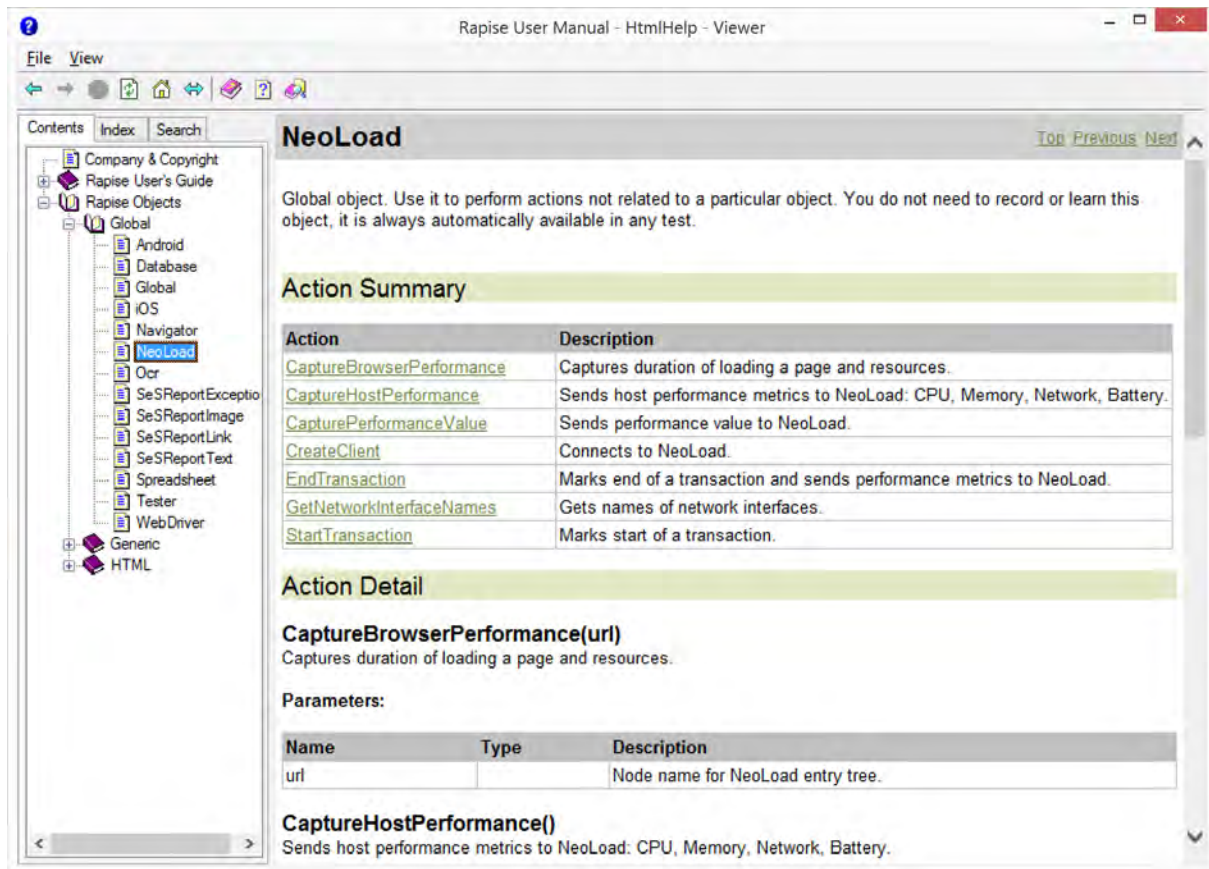
Close

- Platform is a combination of hardware – OS. Hardware is passed by a user script, OS is determined by Rapise automatically. E.g. hardware1 – Microsoft Windows 8.1 Pro.
- Client Software is Rapise.
- Location is supplied by a script. E.g. location1.
- Script is a combination of script name and time stamp. E.g.



## NeoLoad Object API Reference

The methods of the global NeoLoad object are described in **object reference section** of this help file.



## How to Use

In order to send performance metrics to NeoLoad you need to add a sequence of calls to your script.

First, connect to the NeoLoad. When this call is executed NeoLoad must be running a script, otherwise an error will be returned.

```
NeoLoad.CreateClient("hardware1", "location1", "Broadcom 802.11ac Network
```

```
Adapter _2");
```

Let's look at the following block:

```
NeoLoad.CaptureHostPerformance();
NeoLoad.StartTransaction('T Home');
NeoLoad.CaptureBrowserPerformance(SeS('Log_In').GetPageURL());
//Click on Log In
SeS('Log_In').DoClick();
NeoLoad.CaptureBrowserPerformance(SeS('Username_').GetPageURL());
NeoLoad.EndTransaction('T Home');
```

- CaptureHostPerformance call sends immediate values of CPU, Memory and Network load to the NeoLoad controller.
- StartTransaction/EndTransaction calls define a transaction with name 'T Home'. Upon EndTransaction call the duration of it is sent to the NeoLoad controller.
- CalculateBrowserPerformance call sends page load performance metrics to the NeoLoad controller.

There is also a general call that can send any user-defined metric to the NeoLoad controller:

```
NeoLoad.CapturePerformanceValue("First Level Folder", "Transaction1|
Duration", "milliseconds", 120);
```

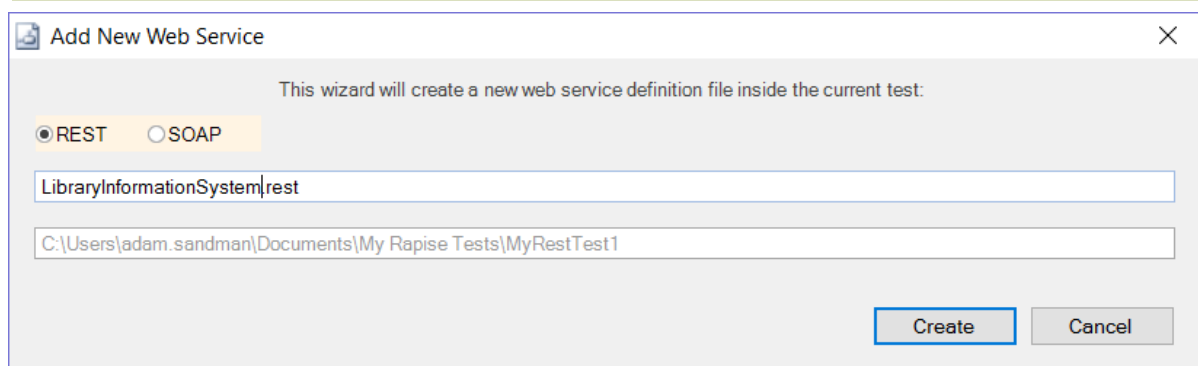
Components of the second parameters can be separated by |. It allows to add more levels to the tree.

## 2.4 Dialogs, Views, and Menus

This section details the Rapise GUI. Each subsection describes the function of a particular Dialog, View, or Menu. The purpose and consequences of all buttons, options, lists, and check boxes are listed.

### 2.4.1 Add Web Service Dialog

#### Screenshot



### Purpose

Adds a new REST or SOAP web service to your Rapise test. It adds the web service as a .rest or .soap file that is added to the "Services" folder of the "Test Files" section:

### How to Open

Click on the "Web Services" icon in the Rapise [Test](#) ribbon tab.

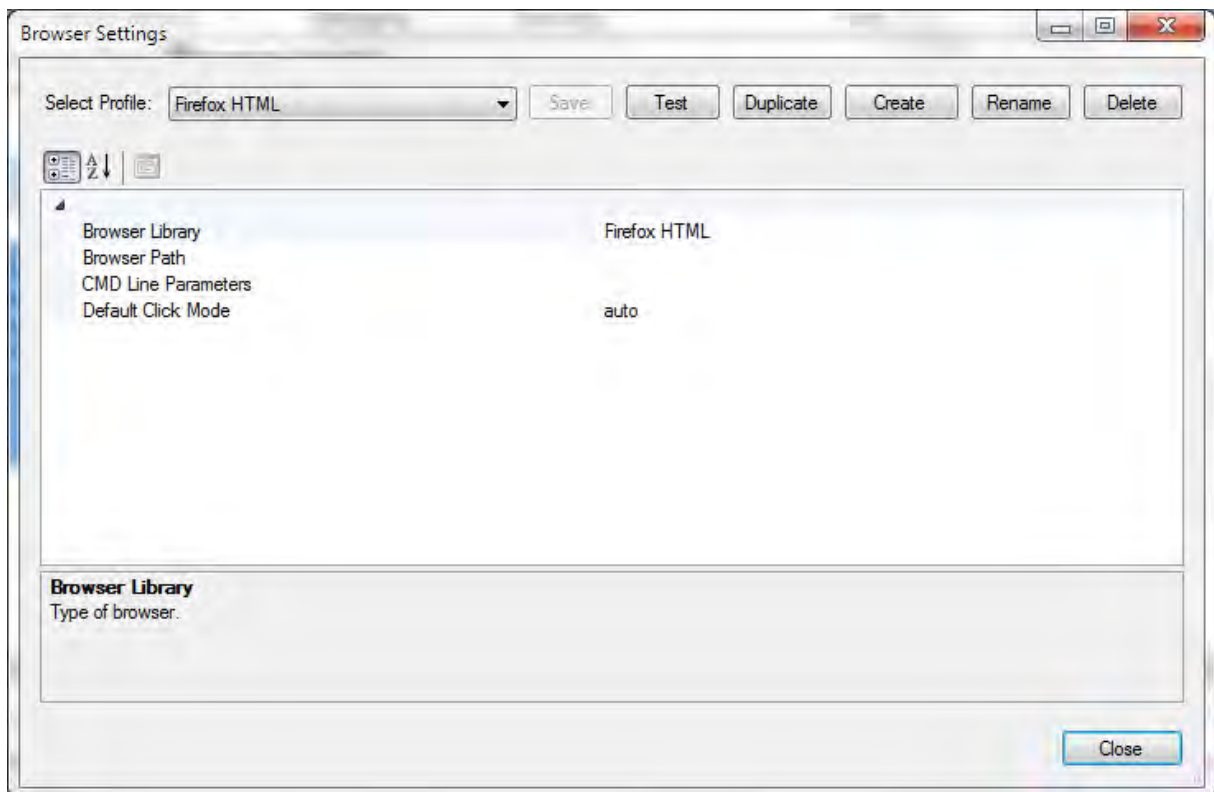
## 2.4.2 Browser Settings Dialog

### Purpose

This dialog box displays the list of native (not using [Selenium](#)) web browsers that have been configured for use by Rapise and lets you create a new profile, modify a profile or make a new profile based on an existing one.

This feature is useful if you have several different versions of a web browser on the same machine (e.g. Firefox Latest vs. Firefox ESR, or different versions of Chrome portable) or if you want to be able to run a browser with different command-line options (e.g. IE normal, IE safe mode, IE emulating a specific version)

### Screenshot





## How to Open

You can open this dialog box from the main Rapise [Options ribbon](#).

## Menu Options

This dialog box has the following menu options:

- **Select Profile** - This dropdown list lets you select a different web browser profile to be displayed in the dialog.
- **Test** - This button will test the connection from Rapise to the specified browser
- **Duplicate** - This button will create a new browser profile based on the currently viewed one.
- **Create** - This button will create a new empty browser profile that you can edit.
- **Rename** - This button will change the name of the current browser profile being edited.
- **Delete** - This button will delete the currently displayed browser profile. There is no undo, so be careful!

## Profile Options

This section has various settings, each of which are described below:

- **Browser Library** - The type of browser being used, currently can be:
  - Internet Explorer HTML
  - Chrome HTML
  - Firefox HTML
- **Browser Path** - The path to the location of the web browser executable (e.g. chrome.exe, iexplore.exe, firefox.exe) on the computer
- **CMD Line Parameters** - Any command-line parameters to pass to the web browser (e.g. -extoff for IE safe mode)
- **Default Click Mode** - Species the default 'click mode' for tests using this web browser profile
  - auto - This tries to locate an element on the screen, moves the mouse over it and then sends the appropriate DOM 'click' event (the default)
  - event - Just sends the DOM click event to the element with no prior mouse-move
  - click - Simulates an actual click on the element rather than sending a DOM click event

### 2.4.3 Create New Test Dialog

#### Purpose

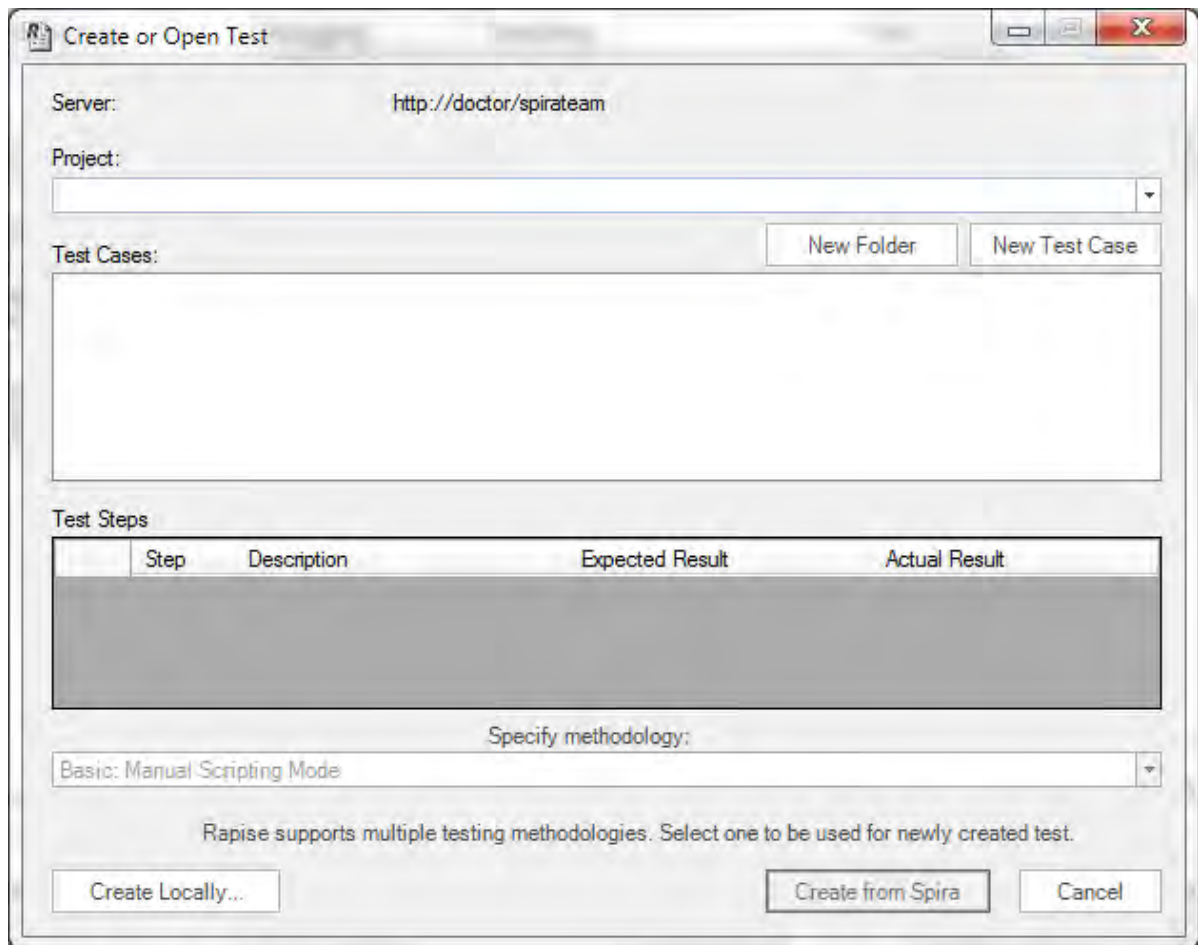
Create a new Rapise test. You have the option of either connecting to [Spira](#) and storing the new test in our central test management system or simply saving the new test locally.

#### How to Open

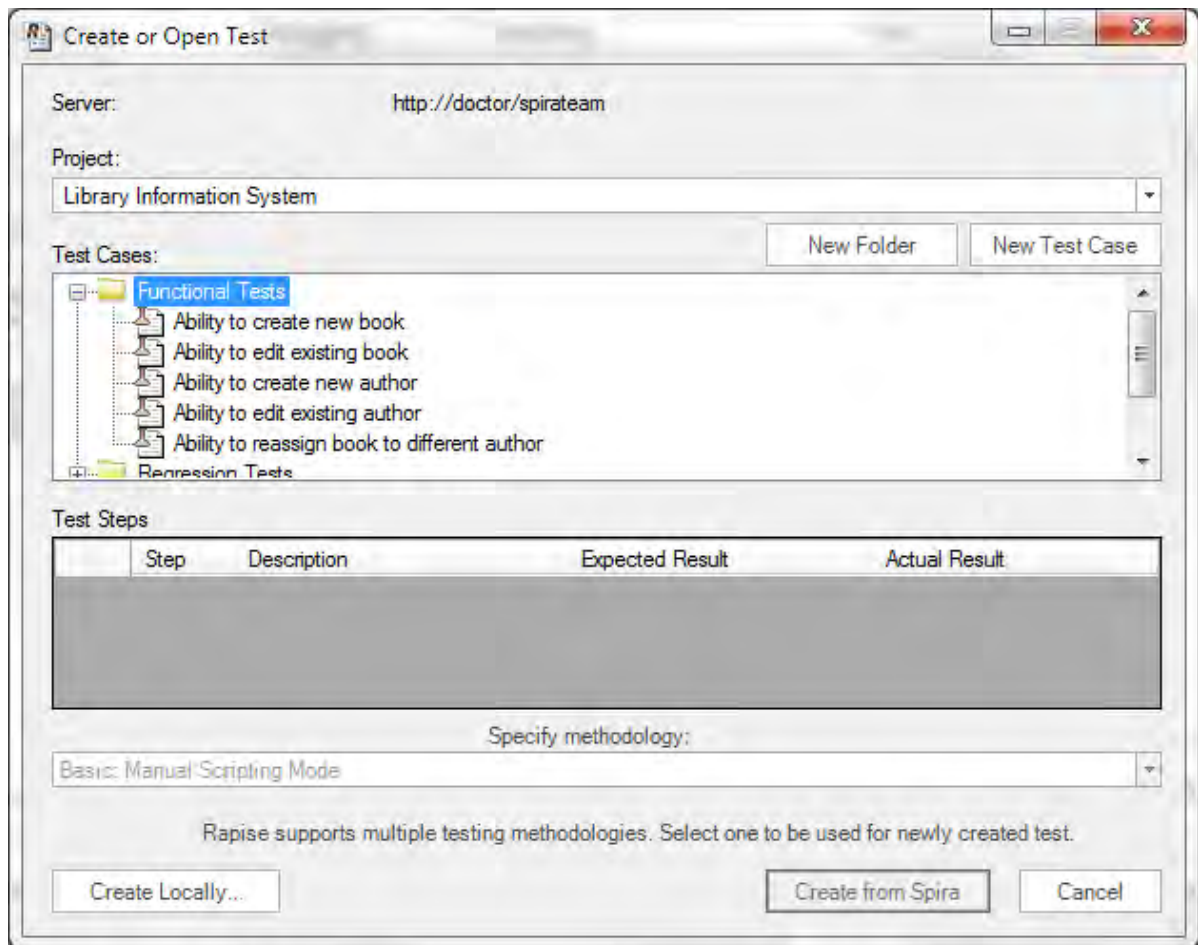
Simply click on the File tab of Rapise and click New Test (Create New Test) on the [File menu](#).

#### (a) Creating in Spira

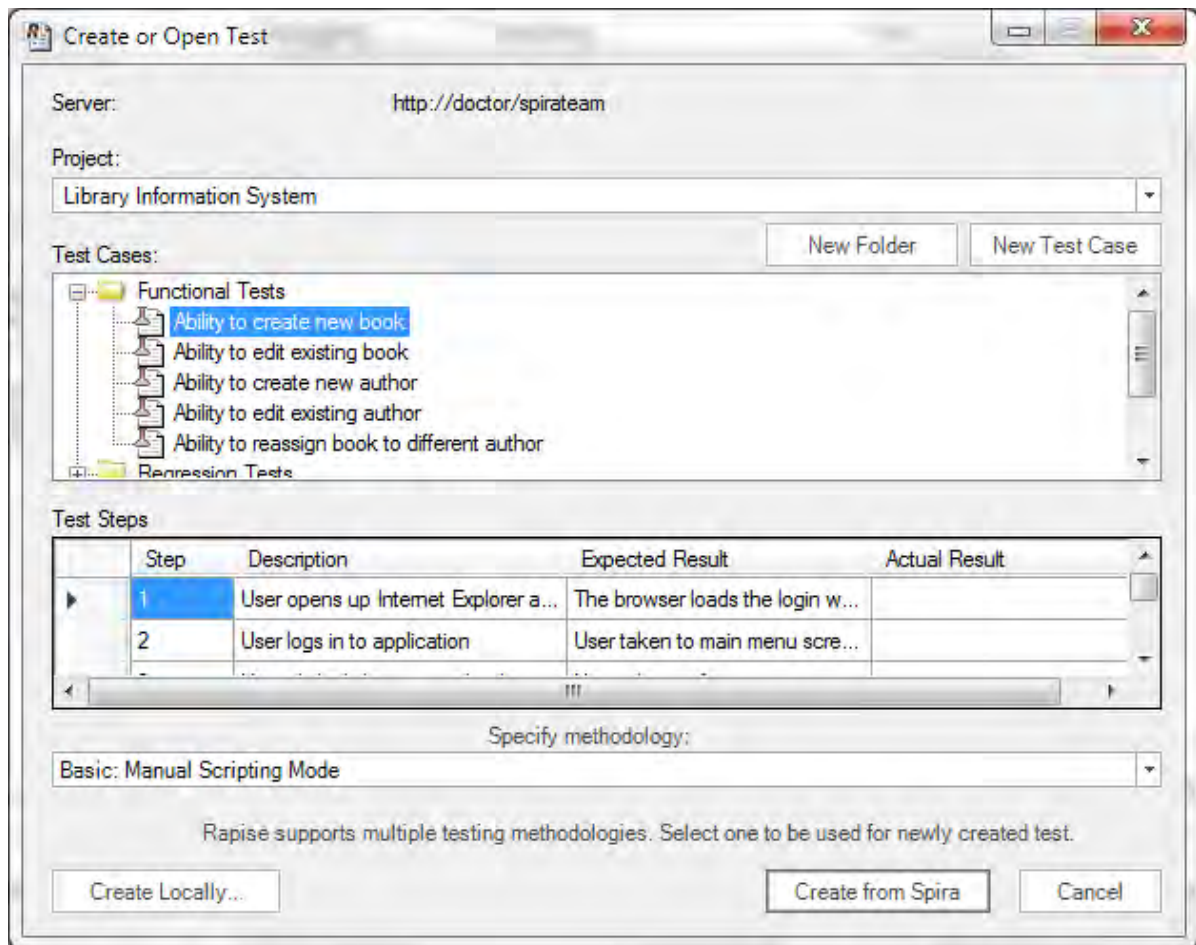
By default Rapise will ask you to save the new test into the Spira test management system:



Assuming that you have already [configured the connection to Spira](#), first you need to select the project in Spira. That will then display the test case folders and test cases in Spira:

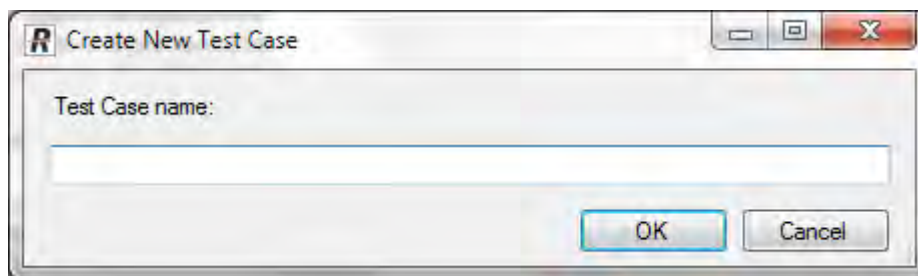


If there is already a test case in Spira that has not already been linked to Rapise then you can simply select that test case, which will display any existing manual test steps that exist:



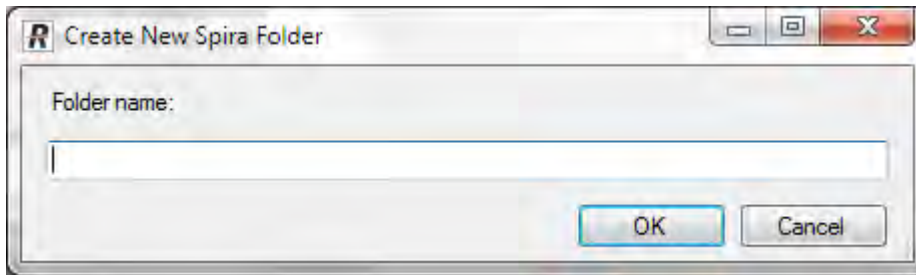
If this is the test case you want to associate the new Rapise test with, then simply click **Create from Spira**.

If you want to create a new test case in Spira to use, simply click **New Test Case**:



Then enter the name of the new test case and click **OK**. Once it has been created you can then select it in the test case list and click **Create from Spira**.

Sometimes there is no existing folder inside Spira that makes sense to use. In which case you can first use the **New Folder** button to create an empty folder that new test cases can be created in:



Regardless of which option you choose, before you click **Create from Spira**, you have the choice of test methodology to use.

Currently there are four methodologies available in Rapise:

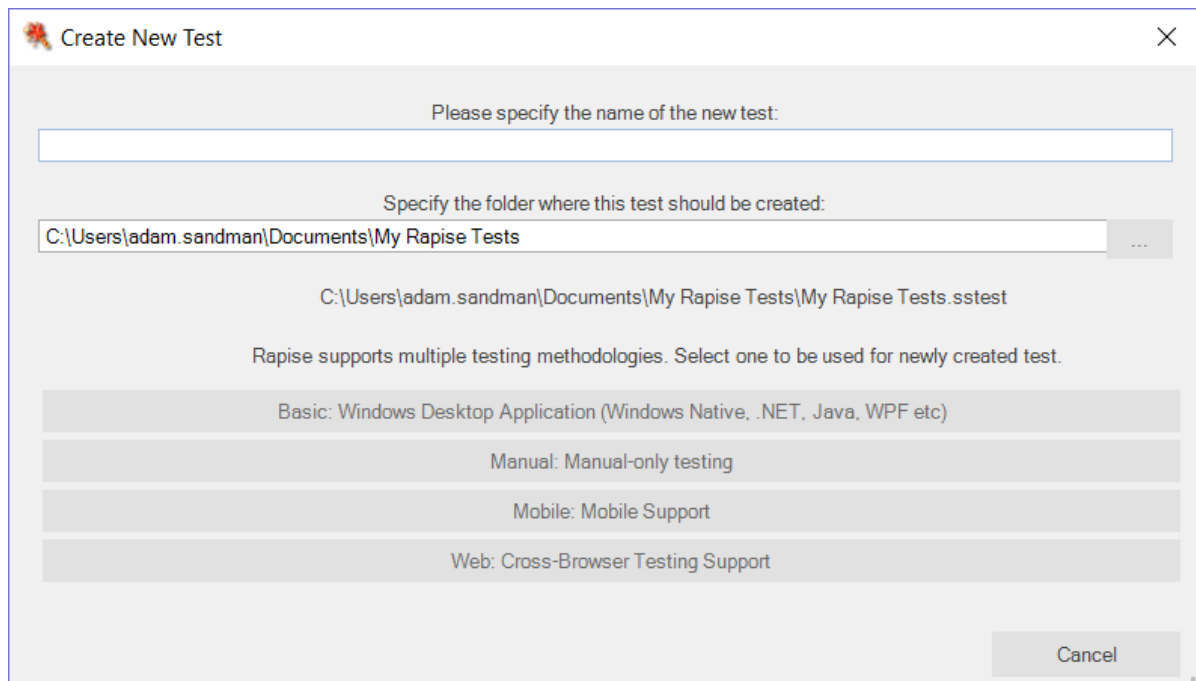
- **Basic: Standard Scripting Mode** - this should be used for testing desktop applications or any testing not involving web browsers or mobile devices.
- **Manual: Manual-only Testing** - this should be selected if you are only going to be creating or executing manual tests
- **Mobile: Mobile Support** - this should be selected if you are going to be testing apps running on mobile devices
- **Web: Cross Browser Testing Support** - this should be selected if you are going to be testing web applications running in a web browser.

If you do not plan on using Spira for managing your test scripts (or you are not able to connect when you want to create the test), you can click on the **Create Locally...** to just create the test case locally (see next section). You can always save to Spira later on.

Once you have created the test, Rapise will ask you to [choose the Scripting language \(RVL or JavaScript\)](#).

## (b) Creating Locally

If you choose the option to **Create Locally** the following dialog box is displayed:



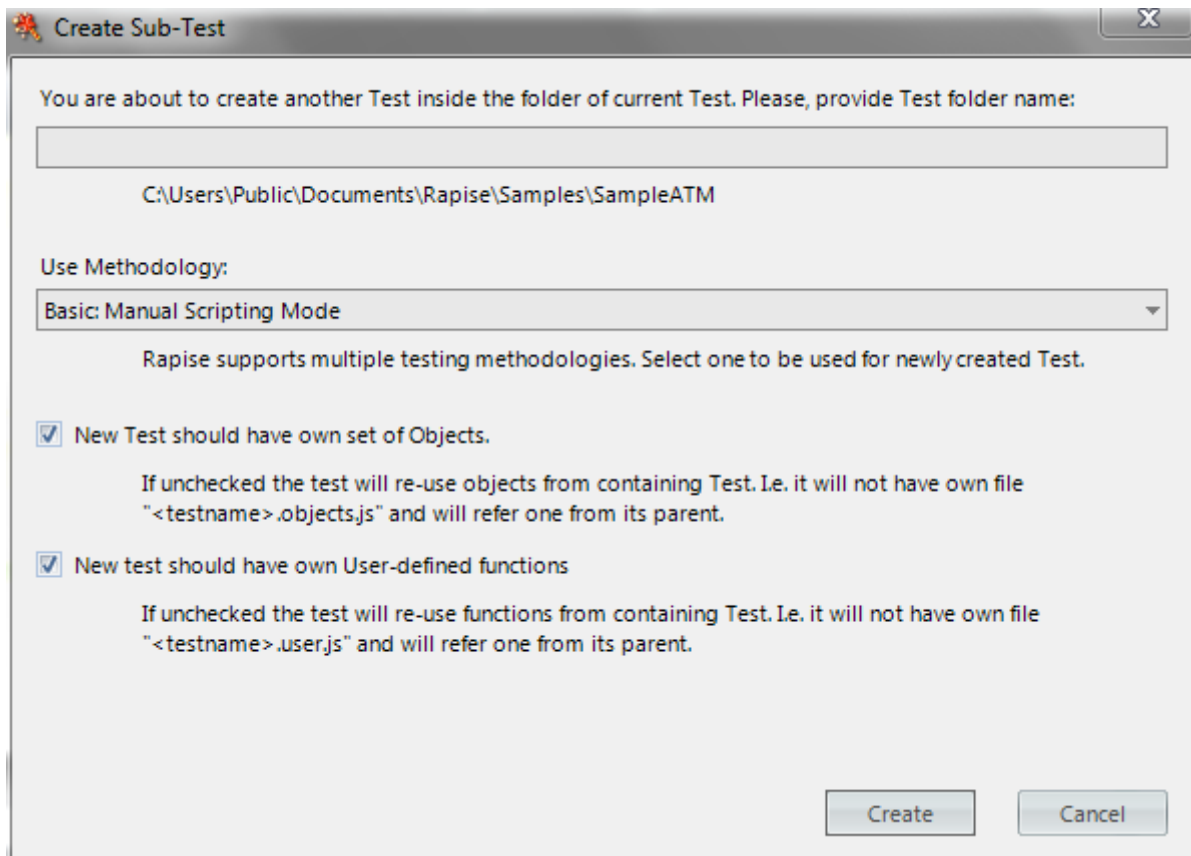
You need to enter the following information and click **Create**:

- **The name of the new test** - please enter the name of the new test that you wish to create.
- **Folder** - please choose the folder on your local computer that you wish to store the Rapise test in.
- **Specify methodology** - there are currently four methodologies available in Rapise:
  - **Basic: Standard Scripting Mode** - this should be used for testing desktop applications or any testing not involving web browsers or mobile devices.
  - **Manual: Manual-only Testing** - this should be selected if you are only going to be creating or executing manual tests
  - **Mobile: Mobile Support** - this should be selected if you are going to be testing apps running on mobile devices
  - **Web: Cross Browser Testing Support** - this should be selected if you are going to be testing web applications running in a web browser.

Once you click **Create**, Rapise will ask you to [choose the Scripting language \(RVL or JavaScript\)](#). Once you have chosen the scripting language, the new test will be created and saved locally.

#### 2.4.4 Create Sub-Test Dialog

Screenshot



### Purpose

Create a [sub-test](#).

- **New test should have own set of Objects:** Uncheck it if you want to create a scenario re-using objects from parent test.
- **New test should have own User-defined functions:** Uncheck it if you want to create a scenario re-using utility functions from its parent test.

The Sub-Test is always created inside the folder of its parent test. If parent test is saved to a new location then sub-test is also saved as a sub-folder of a new location.

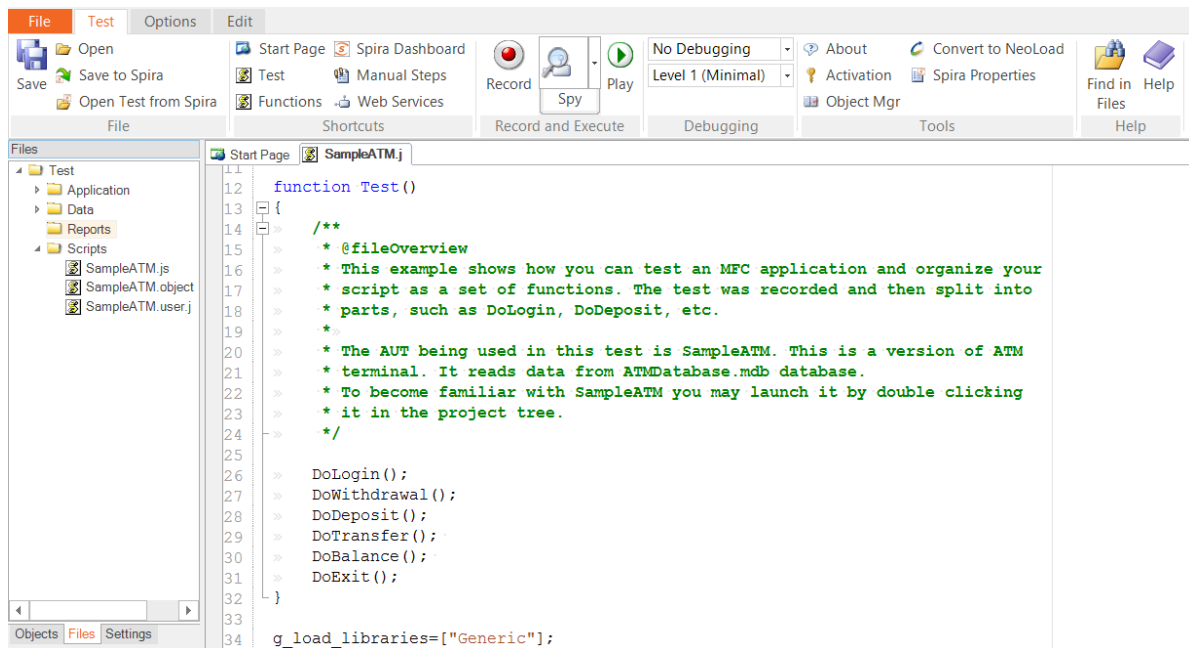
### How to Open

Choose **Create Sub-Test...** in the context menu of a folder in [Test Files](#) dialog.

## 2.4.5 Content View

### Screenshot





## Purpose

To view and edit files. This includes the following file types:

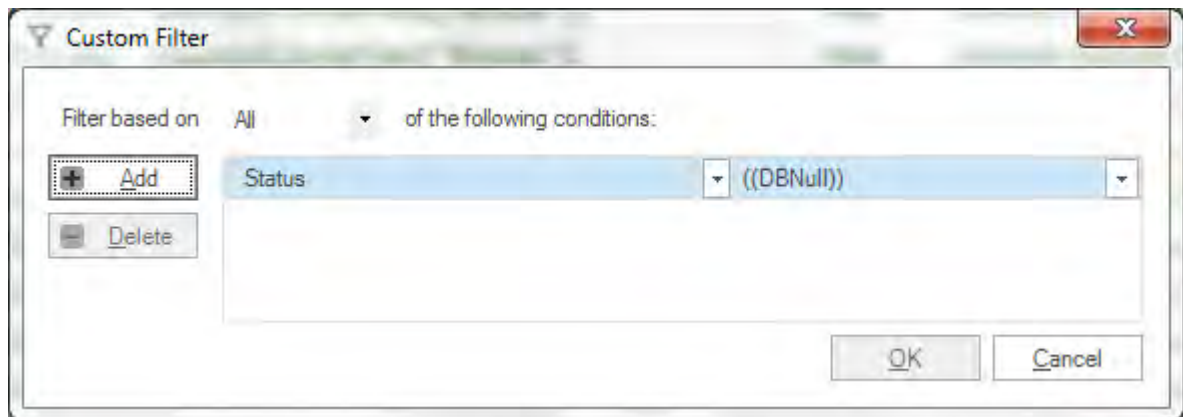
- JavaScript (.js) automated [test script files](#)
- Report (.trp) files that open in the [Report Viewer](#).
- Excel (.xls) files that can be displayed in the [Spreadsheet Editor](#)
- REST (.rest) web service definition files that open in the [REST Editor](#).
- SOAP (.soap) web service definition files that open in the [SOAP Editor](#)
- Analog Recording Files (.arf) that contain [analog testing](#) mouse clicks and coordinates.
- Manual test steps (.rmt) that open in the [Manual Test Editor](#).

## How to Open

Open a file using the [Test Files Dialog](#). The file will open inside of the **Content View**.

### 2.4.6 Enter filter criteria for... Dialog

## Screenshot






### Purpose

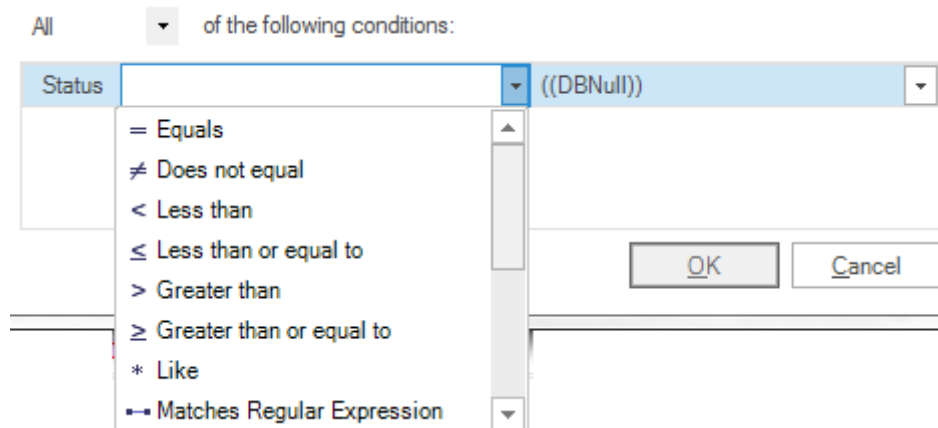
Allow more than one [filter criteria](#) for the same column.

### How to Open

In the [Report Viewer](#), open the drop-down menu for one of the [filter cells](#); select the **Custom** option (see below):

| ment | Status                                                                                                                                                                                                                                                        | It |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
|      |    = |    |
|      | (Custom)                                                                                                                                                                                                                                                      | 0  |
|      | (Blanks)                                                                                                                                                                                                                                                      | 0  |
|      | (NonBlanks)                                                                                                                                                                                                                                                   | 0  |
| ont  | Fail                                                                                                                                                                                                                                                          | 0  |
|      | Pass                                                                                                                                                                                                                                                          | 0  |

### Conditions

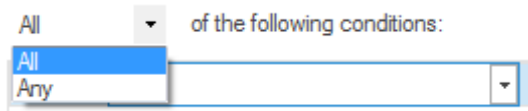


You may specify as many conditions as you like. Each condition has two properties, a **Matching**

Criteria on the left and a **filter value** on the right. The **filter value** is a string, and the **matching criteria** specifies what constitutes a match. For more details, look [HERE](#).

### Filter Aggregation

There are two ways you can aggregate / combine filter conditions:



- **All**: All conditions must be true to constitute a match.
- **Any**: At least one condition must be true to constitute a match.

### Buttons



- **Add**: Add a extra condition row.
- **Delete**: Delete the selected condition.

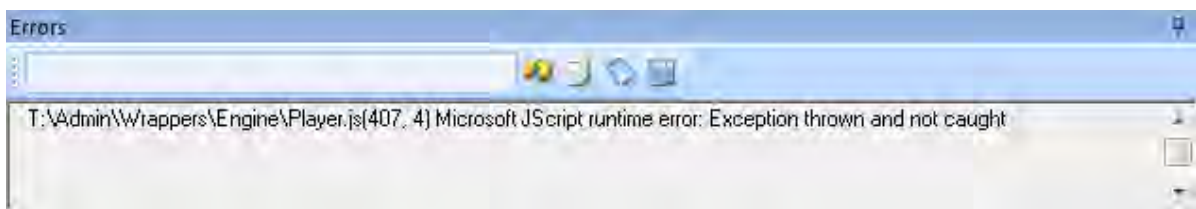
You can select a condition by clicking on the field name to the left of the matching criteria:



- **OK**: Close the dialog and apply the filter.
- **Cancel**: Close the dialog. Do not apply the filter.

## 2.4.7 Errors View

### Screenshot



### Purpose

The **Errors View** displays execution error details. Execution errors are those that cause [Recording](#) or [Playback](#) to stop.

### How to Open

The **Errors View** is part of the [Default Layout](#).





## Error Message

T:\Admin\Wrappers\Engine\Player.js(407, 4) Microsoft JScript runtime error: Exception thrown and not caught

Double click on an error message to go to the corresponding source line.

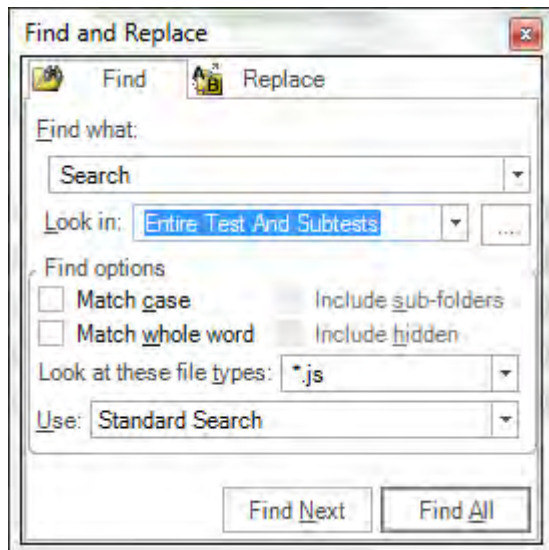
## Widgets



- The text box is a search box.
- The icons from left to right are **Find Next Entry** , **Copy Selected** , **Clear All Text** , and **Select All Text** .

## 2.4.8 Find and Replace Dialog

### Screenshot



### Purpose

To find and replace text in files displayed in the Rapise [Content View](#).

### How to Open

Select the **Find in Files** button on the Ribbon (**Test** tab > **Tools** menu).

### Find in Files Tab

- **Find what:** Place the string you would like to search for in the **Find what** text box.
- **Look In:** this option specifies where the search will take place. You can limit the search to: current document, current selection, current test, the entire test and subtests, or a specific folder.
- **Directory path:** Use the Directory Path text-box to specify the directory in which to search. The Directory path text-box cannot be accessed (and is ignored) if the **Test files** checkbox is checked.

- Check the **Include sub-folders** option to search recursively from the directory specified in the **Directory Path** text-box. The Include sub-folders option cannot be accessed if the **Test files** checkbox is checked.
- **Match case option**: If unselected, case is ignored in the search.
- **Match whole word option**: If set to true, parts of words will not count as matches.
- **Look at these file types**: Search only files with the specified file type(s).

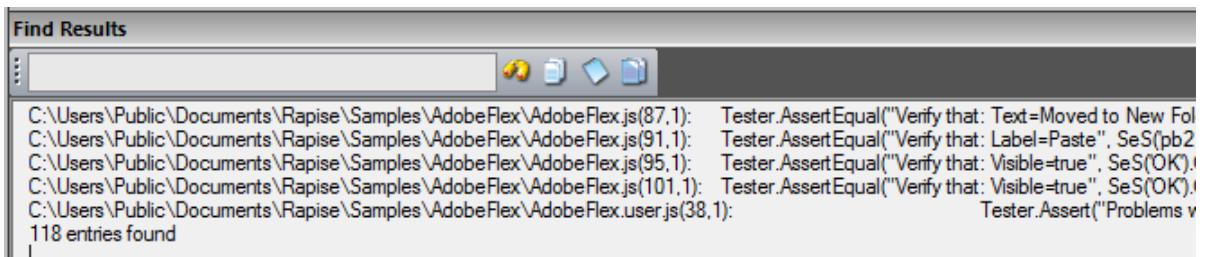
### Find and Replace Tab

There is only one significant difference between the **Find in Files** Tab and **Find and Replace** Tab: the **Replace with** text-box.

- **Replace with text-box**: All occurrences of the string in the **Find what** text-box will be replaced with the string in the **Replace with** text-box when you press the **Replace** button.

## 2.4.9 Find Results View

### Screenshot



### Purpose

Displays results for the [Find and Replace Dialog](#).

### How to Open

The **Find Results** view is part of the [Default Layout](#).

### Messages

C:\Users\Public\Documents\Rapise\Samples\AdobeFlex\AdobeFlex.js(101,1): Tester.AssertEqual("Verify that: Visible=true

Double click on a message to go to the corresponding source line.

### Widgets

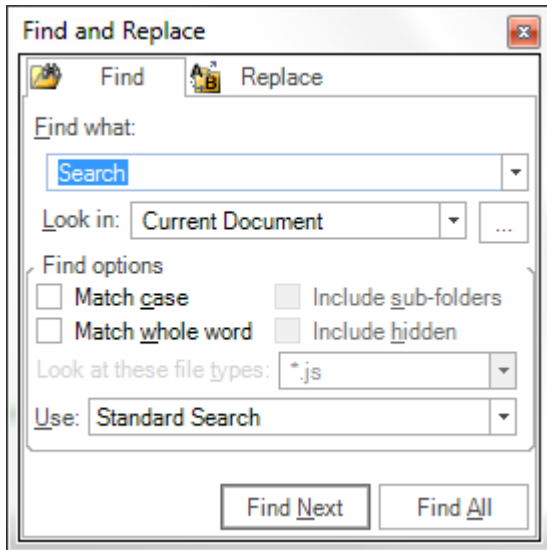


- The text box is a search box.
- The icons from left to right are **Find Next Entry** , **Copy Selected** , **Clear All Text** , and

Select All Text .

## 2.4.10 Find Text dialog


### Screenshot



### Purpose

Find occurrences of the **Search Term** text in the currently visible [Source Editor](#).

### How to Open

Ribbon > [Edit Tab](#) > **Search** menu > **Find** button 

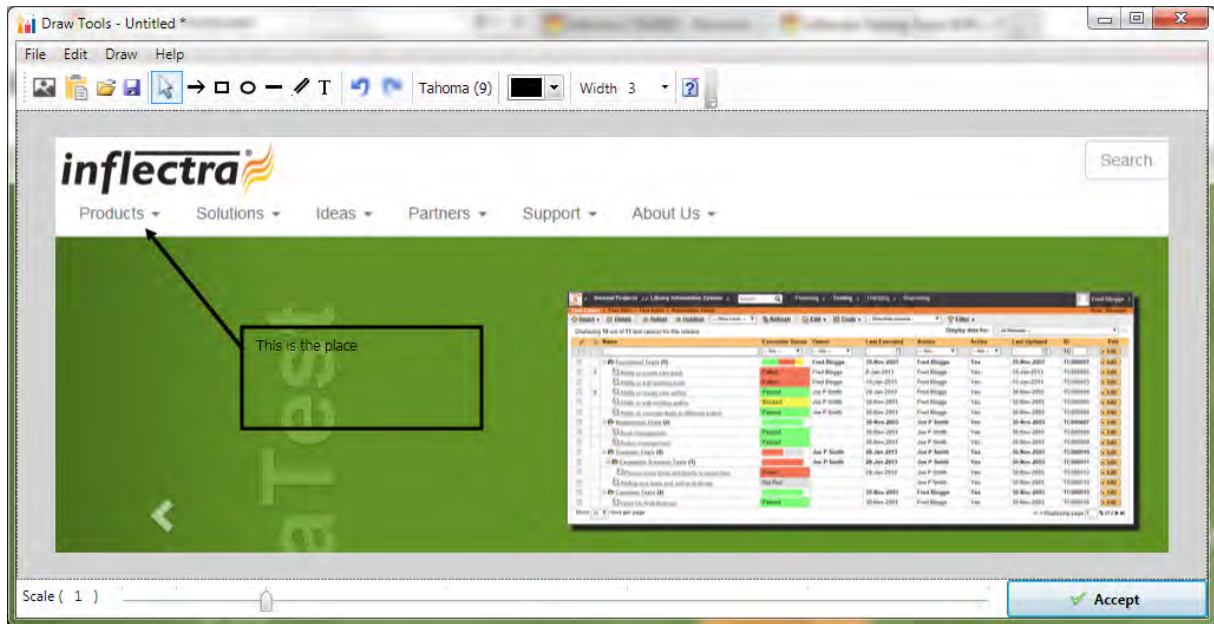
Or type **CTRL+F** on the keyboard when the source editor is open.

### Find Tab

- **Find what:** Place the string you would like to search for in the **Find what** text box.
- **Look In:** this option specifies where the search will take place. You can limit the search to: current document, current selection, current test, the entire test and subtests, or a specific folder.
- **Match case option:** If unselected, case is ignored in the search.
- **Match whole word option:** If set to true, parts of words will not count as matches.

## 2.4.11 Image Capture

### Screenshot

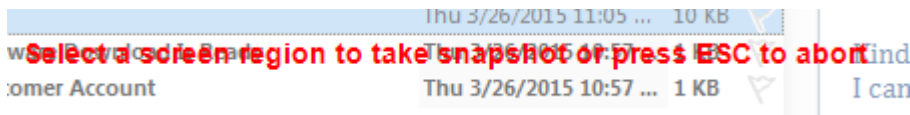


## Purpose

The **Drawing Tools** image editor lets you capture a section of the current screen or application under test, add annotations to help document the image and then attach the final result to the [current test case](#), test step, or [manual test result](#).

## How to Open

You can open the Drawing Tools dialog box by clicking on the **Image icon** on the various rich text editors in Rapise. When you do that, Rapise will minimize itself and display the following screen:



You now need to draw a rectangle on your screen that tells Rapise which part of the screen you want to capture. Once that is done, the image editor will open with that part of the screen selected. If you click ESC on the keyboard, it will just open the editor with no initial image.

## Image Editor Toolbar

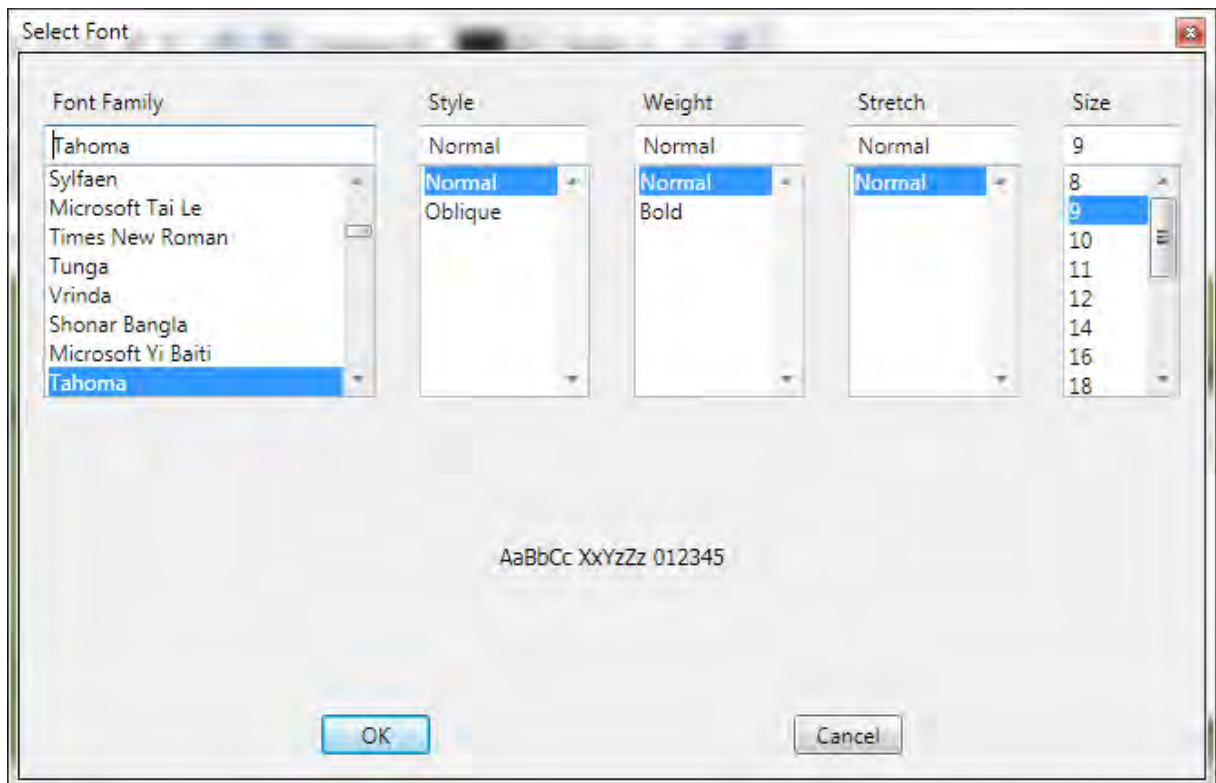
The image editor provides the following tools:



- **Image Capture** - this lets you discard the current image and capture a new screenshot instead
- **Paste From Clipboard** - this lets you paste in an image from the Windows clipboard
- **Open** - this lets you open an existing image saved on your local computer



- **Save** - this lets you save the current image to your local computer
- **Pointer** - this lets you select an annotation to edit (arrow, rectangle, ellipse, line, text, etc.)
- **Arrow** - this lets you draw an arrow in the current color on top of the current image
- **Rectangle** - this lets you draw square / rectangle in the current color on top of the current image
- **Ellipse** - this lets you draw a circle / ellipse in the current color on top of the current image
- **Line** - this lets you draw a straight line in the current color on top of the current image
- **Pencil** - this lets you draw freehand in the current color on top of the current image
- **Text** - this lets you add text in the current color and current font on top of the current image. You will need to draw a rectangle to mark the size of the text box before entering in the text.
- **Undo** - this will undo the last operation
- **Redo** - this will redo the last operation
- **Font Name** - this will let you change the font family and size:



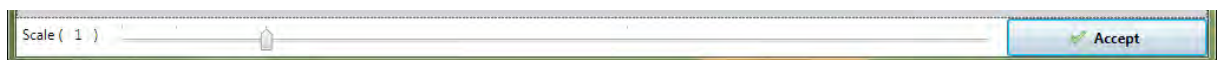
- **Color** - This lets you change the current color (used in the various annotations):



- **Line Width** - This lets you change the current line width (used in the various annotations)

## Image Editor Footer

The footer of the Drawing Tools provides the following options:



- **Scale** - this changes the zoom of the current window, allowing you to more easily view small/large images
- **Accept** - this accepts the current image and inserts it into the **test case**, **test step** or **test run** that was being edited.

## 2.4.12 Incident Logging

### Screenshot

## Purpose

The **New Incident** logging dialog box lets you log a new incident (also known as a bug or defect) into a connected [SpiraTest](#) instance. If you logged the new incident during a [manual test execution](#), it will be linked to the current test run.

## How to Open

You can open the **New Incident** dialog box by either clicking 'New Incident' in the [Manual Ribbon](#), or by clicking the 'Log Incident' button on the [Manual Playback](#) dialog box.

## Details / Description

The **Details/Description** section lets you enter the short name and long description of the new incident as well as the following fields:

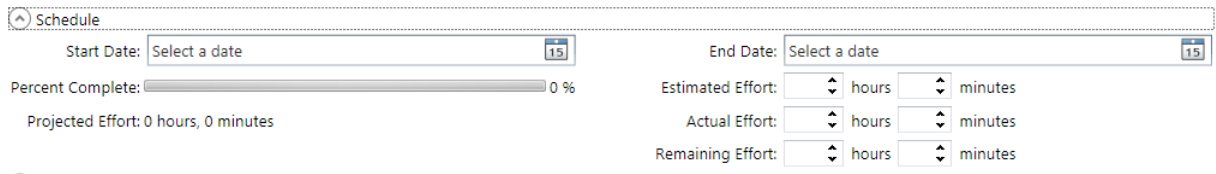
- **Type** - the type of the incident (e.g. bug)
- **Detected By** - who found the bug (typically your user)
- **Priority** - how important the bug is
- **Severity** - how critical the bug is
- **Owned By** - who the bug should be assigned to (or left unassigned)
- **Detected Release** - which version of the system was the bug found in
- **Resolved Release** - which version of the system should the bug be fixed in
- **Verified Release** - which version of the system was the bug retested in
- **Custom Fields** - in addition any custom fields created in your Spira instance will be displayed

## Comments



The **Comments** section lets you enter a comment that will be logged with the new incident. The field is a rich text field that can contain formatted text.

## Schedule



The Schedule section lets you enter in schedule/effort related information for the new incident:

- **Start Date** - This is the planned start date of the new incident
- **End Date** - This is the planned completion date of the new incident
- **Estimated Effort** - This is the number of hours the incident is expected to take
- **Actual Effort** - This is the number of hours that were actually expended
- **Remaining Effort** - This is the number of hours remaining to fix the incident

In addition, the following calculated fields will be displayed:

- **Percent Complete** - This is the measure of much of the incident has been completed. It is calculated from  $100\% - (\text{Remaining Effort} / \text{Estimated Effort})$
- **Projected Effort** - This the current measure of how long the incident is expected to take based on current information. It is calculated from  $(\text{Actual Effort} + \text{Remaining Effort})$

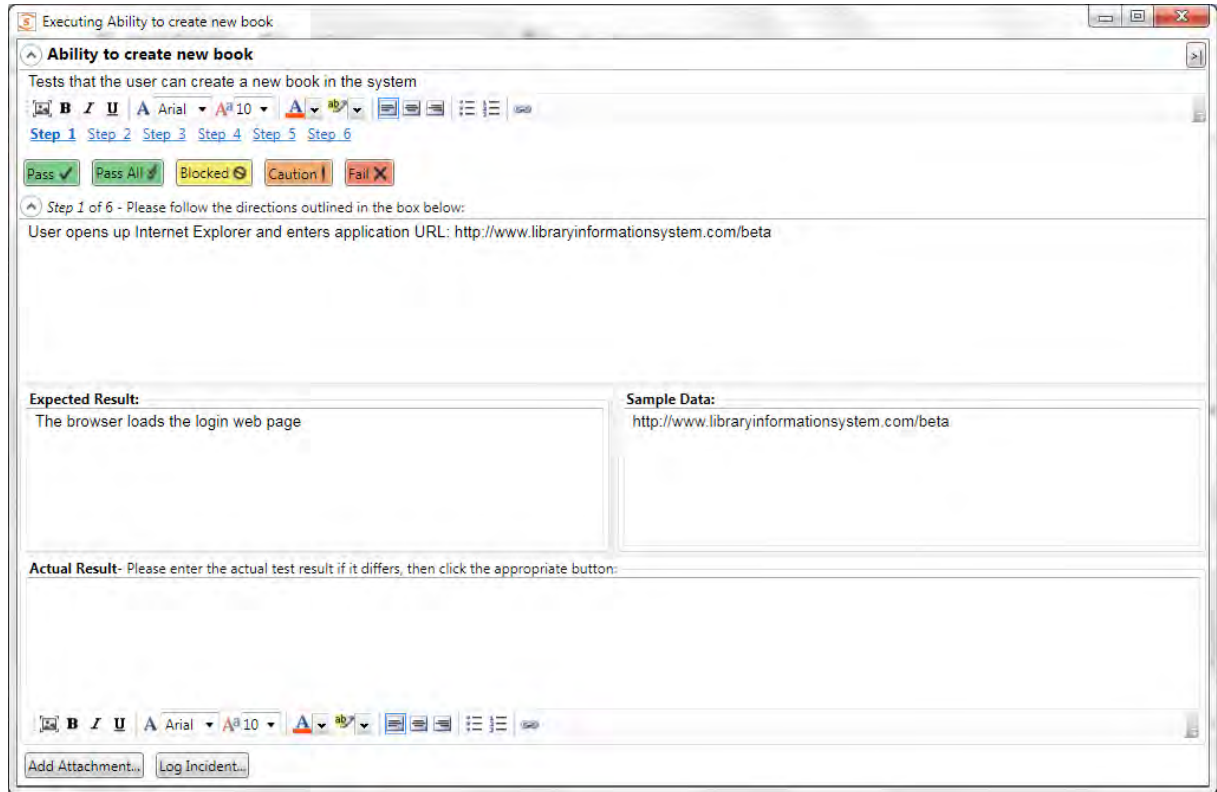
## Attachments

| Filename | Version | Author | Date Created | Size |
|----------|---------|--------|--------------|------|
|----------|---------|--------|--------------|------|

This section displays the list of attachments associated with the new incident. Since Rapise already has a [screenshot capture](#) utility built-in, this section is typically not used.

## 2.4.13 Manual Playback

### Screenshot



### Purpose

The **Manual Playback** dialog box lets you execute a series of manual test cases (including those part of a test set) from within Rapise. The results from the manual test result will be reported back into your connected [Spira](#) instance. During the executing of the manual test, you can attach screenshots, files and log incidents related to the test result

### How to Open

You can open the **Manual Playback** dialog box by either clicking 'Execute Manual' icon in the [Manual Ribbon](#).

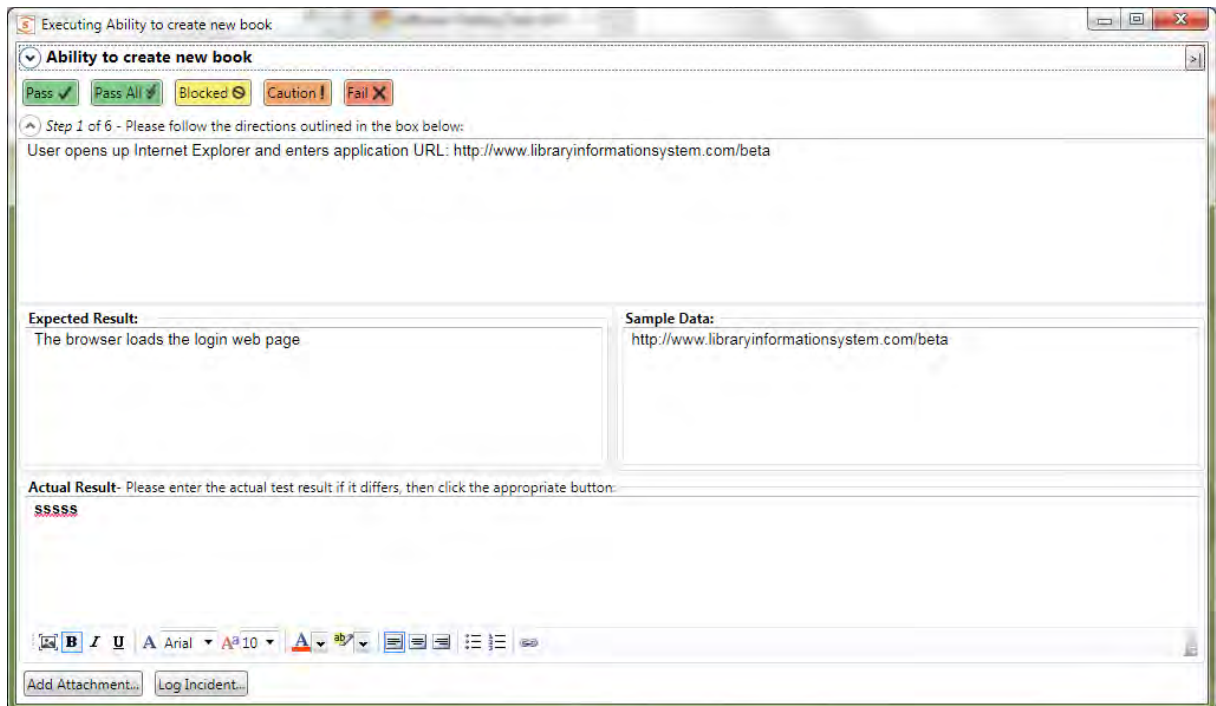
### Test Case Details & Test Step Selector



The top part of the manual playback screen lets you view the name and description of the test case, **navigate between the test steps** and click one of the result buttons to indicate how the application being tested behaved:

- **Pass** - The current test step was completed successfully and the expected result was observed
- **Pass All** - All of the steps in the test case could be completed successfully and the expected results were observed in all steps
- **Blocked** - The current test step could not be performed because something else prevented its completion
- **Caution** - The current test step could be performed but the actual result only partially matched the expected result (there were minor differences)
- **Fail** - Either the current test step could not be performed successfully or the observed actual result did not match the expected result

## Test Step Expected & Actual Result



This section displays the details of the current test step and lets you enter in the observed actual result:

- **Description** - This displays the description of the action that the tester should carry out on the application being tested.
- **Expected Result** - This contains a description of the expected result if the application performs as expected
- **Sample Data** - This (optional) field contains any sample data that should be used during testing

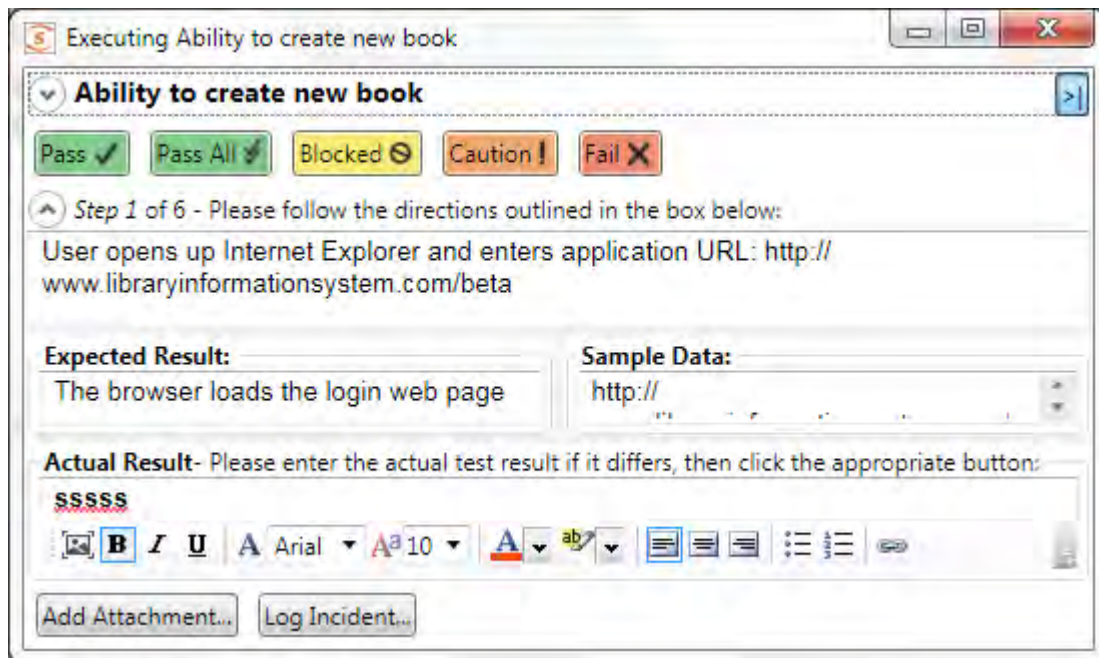


- **Actual Result** - This is a formatted text box where the tester should enter in what actually happened during testing. It is required if you Fail, Block or Caution the test step, but is optional for steps that Pass.

In addition, you can click on the picture icon to [add a screenshot](#), or use one of the two buttons underneath:

- **Add Attachment** - this lets you choose a file from your local system and attach to the test result.
- **Log Incident** - this lets you log a bug/incident that is connected to the test step (e.g. if it failed) and will display the [New Incident](#) dialog box.

## Minimized Playback Dialog



Sometimes you want to be able to reduce the amount of space taken up by the testing dialog box so that you can view the application and the test steps on the same screen at the same time. To make this easier, if you click on the Minimize ( >| ) icon in the top-right of the dialog box it will change the manual playback dialog to the mini version show above. You can click on the icon again to switch back to the standard player.

### 2.4.14 Manual Test Editor

#### Screenshot



| StepId           | Description                                         | Expected Result                                     | Sample Data                  |
|------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------|
| Step 1<br>[TS:1] | Call                                                |                                                     |                              |
| Step 2<br>[TS:2] | User clicks link to create book                     | User taken to first screen in wizard                |                              |
| Step 3<br>[TS:3] | User enters books name and author, then clicks Next | User taken to next screen in wizard                 | Macbeth, William Shakespeare |
| Step 4<br>[TS:4] | User chooses book's genre and sub-genre from list   | User sees screen displaying all entered information | Play, Tragedy                |
| Step 5<br>[TS:5] | User clicks submit button                           | Confirmation screen is displayed                    |                              |
| Step 4           | @MyFunction();                                      |                                                     |                              |

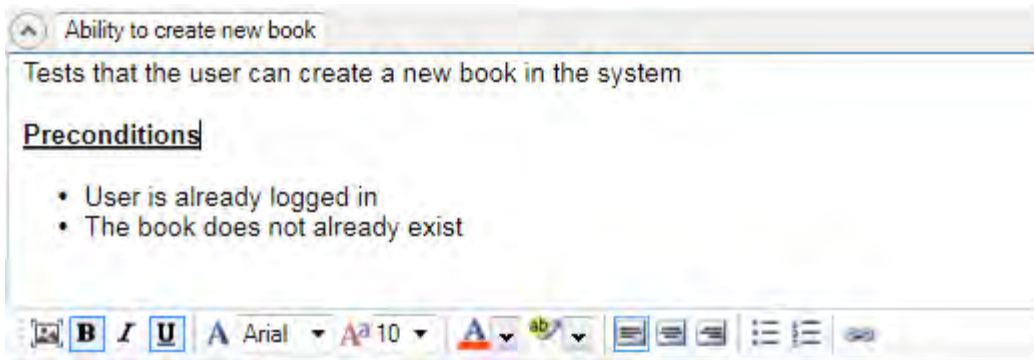
## Purpose

The **Manual Test Editor** lets you create and edit manual test cases that are stored in [Spira](#). These manual test cases contain a high level description of the test case as well a detailed set of steps and associated expected results that make up the manual test script. These manual tests can be [executed manually](#) in Rapise (or in Spira) as well as used as the basis for creating a related automated test script. Such automated test scripts may be linked to individual test steps by means of the [test scenario](#) approach.

## How to Open

You can open the **Manual** ribbon by either clicking on the **Manual Steps** icon on the main [Test ribbon](#) or clicking on the **ManualSteps.rmt** file in the [Test Files](#) tab. The [Manual Ribbon](#) will be displayed whenever you have the Manual Test Editor open.

## Test Case Name/Description



This section lets you edit the name and long formatted description of the test case. The rich text editor lets you choose the font name, font size, text color, highlight color, style (bold, underline, italic) as well as provides easy ability to add links, bullets and numbered lists.

In addition there is a button that lets you [add screenshots](#).

## Test Step Editor

| StepId           | Description                                         | Expected Result                         | Sample Data                  |
|------------------|-----------------------------------------------------|-----------------------------------------|------------------------------|
| Step 1<br>[TS:1] | Call                                                |                                         |                              |
| Step 2<br>[TS:2] | User clicks link to create book                     | User taken to first screen in wizard    |                              |
| Step 3<br>[TS:3] | User enters books name and author, then clicks Next | User taken to next screen in wizard     | Macbeth, William Shakespeare |
| Step 4           | User chooses book's genre and sub-genre from list   | User sees screen displaying all entered | Plav, Traoedv                |

This section lets you add, edit and delete test steps from the manual test case. Each of the test steps contains four fields:

- **Step ID** - this contains the position number of the test step (e.g. step 1) as well as the ID of the test step as it exists in Spira. If you click on the [TS:xxx] label it will automatically copy this into the Windows clipboard. This allows you to easily paste the ID of the test step into your automated test scripts which allows Rapise to [report back test results to Spira](#) against specific test steps.
- **Description** - this is a description of the test procedure that the tester should perform
- **Expected Result** - This is a description of the expected result that should be observed if the system being tested performs correctly
- **Sample Data** - This is an optional field that contains any sample data that should be used in the test

Each of the fields provides a rich text editor lets you choose the font name, font size, text color, highlight color, style (bold, underline, italic) as well as provides easy ability to add links, bullets and numbered lists. In addition there is a button that lets you [add screenshots](#) to the test step.

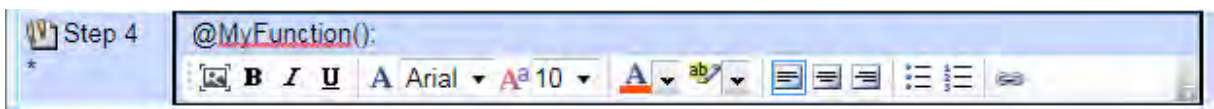
For ease of editing, you can navigate between the rows and columns using the **ALT + Arrow keys** on the keyboard.

## Automating Test Steps

Sometimes you have a primarily manual test case that you want to automate certain steps of. For example you may want to automate the setup of the test data or login to the application before carrying out manual testing. Such a test is called a [semi-manual test](#).

To do this, you enter the syntax `@FunctionName();` in the Description box of the test step. Then when you run the test, that step will be executed automatically. The `@FunctionName();` refers to a JavaScript [user function](#) called `function FunctionName()` in the `Test.user.js` file.

For example:

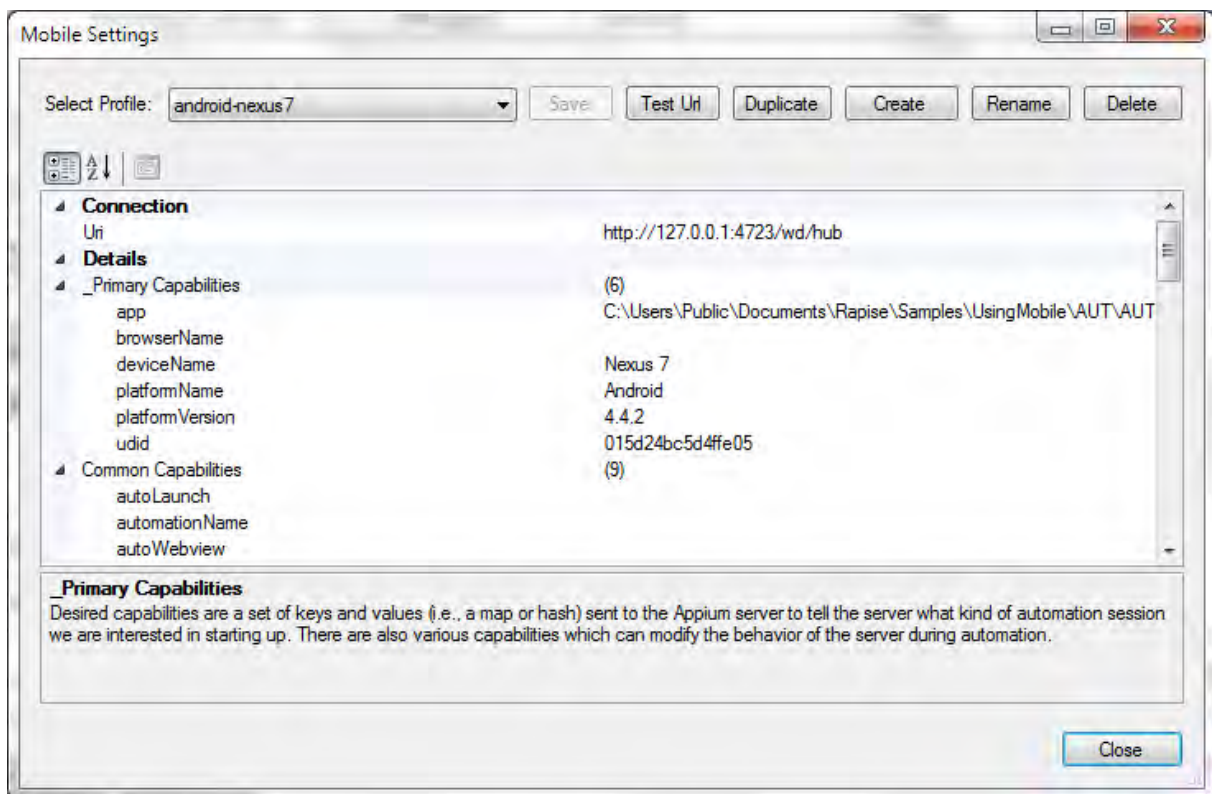


### 2.4.15 Mobile Settings Dialog

#### Purpose

This dialog box displays the list of mobile devices that have been configured for use by Rapise and lets you create a new profile, modify a profile or make a new profile based on an existing one.

#### Screenshot



## How to Open

You can open this dialog box from two places:

- From the main Rapise [Options ribbon](#).
- From the [Mobile Spy](#) tool when you click on the 'Mobile Profiles' ribbon menu entry.

## Menu Options

This dialog box has the following menu options:

- **Select Profile** - This dropdown list lets you select a different mobile profile to be displayed in the dialog.
- **Save** - This button will save the changes to the current mobile profile.
- **Test URL** - This button will test the Connection (URL) from Rapise to [Appium](#) (which is used to manage the devices) and the connection from Appium to the physical (or simulated) device.
- **Duplicate** - This button will create a new mobile profile based on the currently viewed one.
- **Create** - This button will create a new empty mobile profile that you can edit.
- **Rename** - This button will change the name of the current mobile profile being edited.
- **Delete** - This button will delete the currently displayed mobile profile. There is no undo, so be careful!

## Connection

This section lets you enter the URL used to connect to the [Appium](#) server which hosts the mobile devices being tested. It is typically of the form:

- <http://server:4723/wd/hub>

Where the port number used by Appium is 4723 by default and the `/ed/hub` suffix is added.

## Details

This section has various settings, some of which are used by all mobile devices, some only by simulated devices, some only by physical devices and some are specific to the type of device (iOS vs. Android):

- **Primary Capabilities**

- **app** - The absolute local path or remote http URL to an .ipa or .apk file, or a .zip containing one of these. Appium will attempt to install this app binary on the appropriate device first. Note that this capability is not required for Android if you specify `appPackage` and `appActivity` capabilities (see below). Incompatible with `browserName`. - Values: `/abs/path/to/my.apk` or `http://myapp.com/app.ipa`
- **browserName** - Name of mobile web browser to automate. Should be an empty string if automating an app instead. - Values: Safari for iOS and Chrome, Chromium, or Browser for Android
- **platformName** - Which mobile OS platform to use - Values: iOS, Android, or FirefoxOS
- **platformVersion** - Mobile OS version - Values: e.g., 7.1, 4.4
- **deviceName** - The kind of mobile device or emulator to use - Values: iPhone Simulator, iPad Simulator, iPhone Retina 4-inch, Android Emulator, Galaxy S4, etc. On iOS, this should be one of the valid devices returned by `instruments -s devices`. On Android this capability is currently ignored.
- **udid** - Unique device identifier of the connected physical device - Values: e.g. 1ae203187fc012g

- **Common Capabilities**

- **automationName** - Which automation engine to use - Values: Appium (default) or Selendroid
- **newCommandTimeout** - How long (in seconds) Appium will wait for a new command from the client before assuming the client quit and ending the session - Values: e.g. 60
- **autoLaunch** - Whether to have Appium install and launch the app automatically. Default true - Values: true, false
- **language** - (Sim/Emu-only) Language to set for the simulator / emulator - Values: e.g. fr
- **locale** - (Sim/Emu-only) Locale to set for the simulator / emulator - Values: e.g. fr\_CA
- **orientation** - (Sim/Emu-only) start in a certain orientation - Values: LANDSCAPE or PORTRAIT
- **autoWebview** - Move directly into Webview context. Default false - Values: true, false
- **noReset** - Don't reset app state before this session. Default false - Values: true, false
- **fullReset** - (iOS) Delete the entire simulator folder. (Android) Reset app state by uninstalling app instead of clearing app data. On Android, this will also remove the app after the session is complete. Default false - Values: true, false

- **For Android Only**

- **appActivity** - Activity name for the Android activity you want to launch from your package. This often needs to be preceded by a `.` (e.g., `.MainActivity` instead of `MainActivity`) - Values: `MainActivity`, `.Settings`
- **appPackage** - Java package of the Android app you want to run - Values: `com.example.android.myApp`, `com.android.settings`
- **appWaitActivity** - Activity name for the Android activity you want to wait for - Values: `SplashActivity`
- **appWaitPackage** - Java package of the Android app you want to wait for - Values: `com.example.android.myApp`, `com.android.settings`
- **deviceReadyTimeout** - Timeout in seconds while waiting for device to become ready - Values: 5
- **androidCoverage** - Fully qualified instrumentation class. Passed to `-w` in `adb shell am instrument -e coverage true -w` - Values: `com.my.Pkg/com.my.Pkg.instrumentation.MyInstrumentation`
- **enablePerformanceLogging** - (Chrome and webview only) Enable Chromedriver's performance logging (default false) - Values: true, false
- **androidDeviceReadyTimeout** - Timeout in seconds used to wait for a device to become ready after booting - Values: e.g., 30

- **androidDeviceSocket** - Devtools socket name. Needed only when tested app is a Chromium embedding browser. The socket is open by the browser and Chromedriver connects to it as a devtools client. - Values: e.g., chrome\_devtools\_remote
  - **avd** - Name of avd to launch - Values: e.g., api19
  - **avdLaunchTimeout** - How long to wait in milliseconds for an avd to launch and connect to ADB (default 120000) - Values: 300000
  - **avdReadyTimeout** - How long to wait in milliseconds for an avd to finish its boot animations (default 120000) - Values: 300000
  - **avdArgs** - Additional emulator arguments used when launching an avd - Values: e.g., -netfast
  - **useKeystore** - Use a custom keystore to sign apks, default false - Values: true or false
  - **keystorePath** - Path to custom keystore, default ~/.android/debug.keystore - Values: e.g., /path/to.keystore
  - **keystorePassword** - Password for custom keystore - Values: e.g., foo
  - **keyAlias** - Alias for key - Values: e.g., androiddebugkey
  - **keyPassword** - Password for key - Values: e.g., foo
  - **chromedriverExecutable** - The absolute local path to webdriver executable (if Chromium embedder provides its own webdriver, it should be used instead of original chromedriver bundled with Appium) - Values: /abs/path/to/webdriver
  - **autoWebviewTimeout** - Amount of time to wait for Webview context to become active, in ms. Defaults to 2000 - Values: e.g. 4
  - **intentAction** - Intent action which will be used to start activity (default android.intent.action.MAIN) - Values: e.g. android.intent.action.MAIN, android.intent.action.VIEW
  - **intentCategory** - Intent category which will be used to start activity (default android.intent.category.LAUNCHER) - Values: e.g. android.intent.category.LAUNCHER, android.intent.category.APP\_CONTACTS
  - **intentFlags** - Flags that will be used to start activity (default 0x10200000) - Values: e.g. 0x10200000
  - **optionalIntentArguments** - Additional intent arguments that will be used to start activity. See Intent arguments - Values: e.g. --esn <EXTRA\_KEY>, --ez <EXTRA\_KEY> <EXTRA\_BOOLEAN\_VALUE>, etc.
  - **unicodeKeyboard** - Enable Unicode input, default false - Values: true or false
  - **resetKeyboard** - Reset keyboard to its original state, after running Unicode tests with unicodeKeyboard capability. Ignored if used alone. Default false - Values: true or false
  - **noSign** - Skip checking and signing of app with debug keys, will work only with UiAutomator and not with selendroid, default false - Values: true or false
  - **ignoreUnimportantViews** - Calls the setCompressedLayoutHierarchy() uiautomator function. This capability can speed up test execution, since Accessibility commands will run faster ignoring some elements. The ignored elements will not be findable, which is why this capability has also been implemented as a toggle-able setting as well as a capability. Defaults to false - Values: true or false
- **For iOS Only**
    - **calendarFormat** - (Sim-only) Calendar format to set for the iOS Simulator - Values: e.g. gregorian
    - **bundleId** - Bundle ID of the app under test. Useful for starting an app on a real device or for using other caps which require the bundle ID during test startup. To run a test on a real device using the bundle ID, you may omit the "app" capability, but you must provide "udid". - Values: e.g. io.appium.TestApp
    - **udid** - Unique device identifier of the connected physical device - Values: e.g. 1ae203187fc012g
    - **launchTimeout** - Amount of time in ms to wait for instruments before assuming it hung and failing the session - Values: e.g. 20000
    - **locationServicesEnabled** - (Sim-only) Force location services to be either on or off. Default is to keep current sim setting. - Values: true or false
    - **locationServicesAuthorized** - (Sim-only) Set location services to be authorized or not authorized for app via plist, so that location services alert doesn't pop up. Default is to keep current sim setting. Note that if you use this setting you MUST also use the bundleId capability to send in your app's

- bundle ID. - Values: true or false
- **autoAcceptAlerts** - Accept iOS privacy access permission alerts (e.g., location, contacts, photos) automatically if they pop up. Default is false. - Values: true or false
  - **nativeInstrumentsLib** - Use native instruments lib (ie disable instruments-without-delay). - Values: true or false
  - **nativeWebTap** - (Sim-only) Enable "real", non-javascript-based web taps in Safari. Default: false. Warning: depending on viewport size/ratio this might not accurately tap an element - Values: true or false
  - **safariAllowPopups** - (Sim-only) Allow javascript to open new windows in Safari. Default keeps current sim setting - Values: true or false
  - **safariIgnoreFraudWarning** - (Sim-only) Prevent Safari from showing a fraudulent website warning. Default keeps current sim setting. - Values: true or false
  - **safariOpenLinksInBackground** - (Sim-only) Whether Safari should allow links to open in new windows. Default keeps current sim setting. - Values: true or false
  - **keepKeyChains** - (Sim-only) Whether to keep keychains (Library/Keychains) when appium session is started/finished - Values: true or false
  - **localizableStringsDir** - Where to look for localizable strings. Default en.lproj - Values: en.lproj
  - **processArguments** - Arguments to pass to the AUT using instruments - Values: e.g., -myflag
  - **interKeyDelay** - The delay, in ms, between keystrokes sent to an element when typing. - Values: e.g., 100
  - **showIOSLog** - Whether to show any logs captured from a device in the appium logs. Default false - Values: true or false
  - **sendKeysStrategy** - strategy to use to type test into a test field. Simulator default: oneByOne. Real device default: "grouped" - Values: oneByOne, grouped or setValue
  - **screenshotWaitTimeout** - Max timeout in sec to wait for a screenshot to be generated. default: 10 - Values: e.g., 5
  - **waitForAppScript** - The ios automation script used to determined if the app has been launched, by default the system wait for the page source not to be empty. The result must be a boolean - Values: e.g. true;, target.elements().length > 0;, "\$.delay(5000); true;

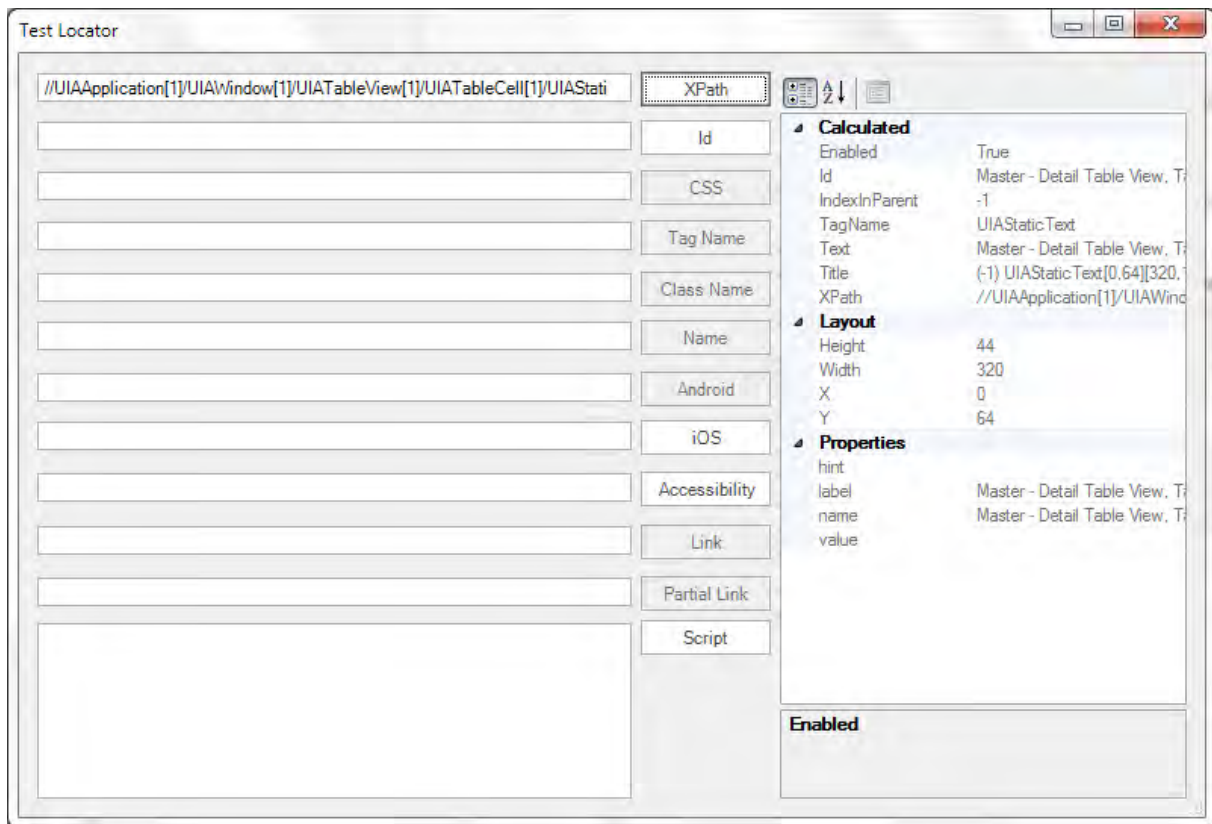
## 2.4.16 Mobile Test Locator Dialog

### Purpose

This dialog box lets you create a test locator for mobile applications using one of the supported methods (XPath, ID, etc.) and display the results of using that locator interactively.

### Screenshot





## How to Open

You open this dialog from the [Mobile Spy](#) by clicking the **Test Locator** button on that dialog.

## How to Use

To use this dialog, you simply choose which type of locator you wish to test (in the example above we are using XPath on an iOS device) and click the button. The properties discovered from using this locator on the device in question will be displayed in the right panel.

The following locator types are available:

- **XPath** - This allows you to enter an XPath selector that uniquely locates a specific element in the mobile object hierarchy
- **Id** - This allows you to enter the ID of a specific object and test to see if it can be found.
- **CSS** - For mobile website testing only, this lets you enter a CSS selector that can uniquely locate an object
- **Tag Name** - This lets you find elements by their Tag Name field. For web testing this is the name of the DOM element.
- **Class Name** - This lets you find elements by their UI Component Type
- **Name** - This lets you find elements by their Name field
- **Android** - This lets you enter a string corresponding to a recursive element search using the UiAutomator Api (Android-only)
- **iOS** - This allows you to enter a string corresponding to a recursive element search using the UIAutomation library (iOS-only)
- **Accessibility** - This lets you enter a string corresponding to a recursive element search using the Id/

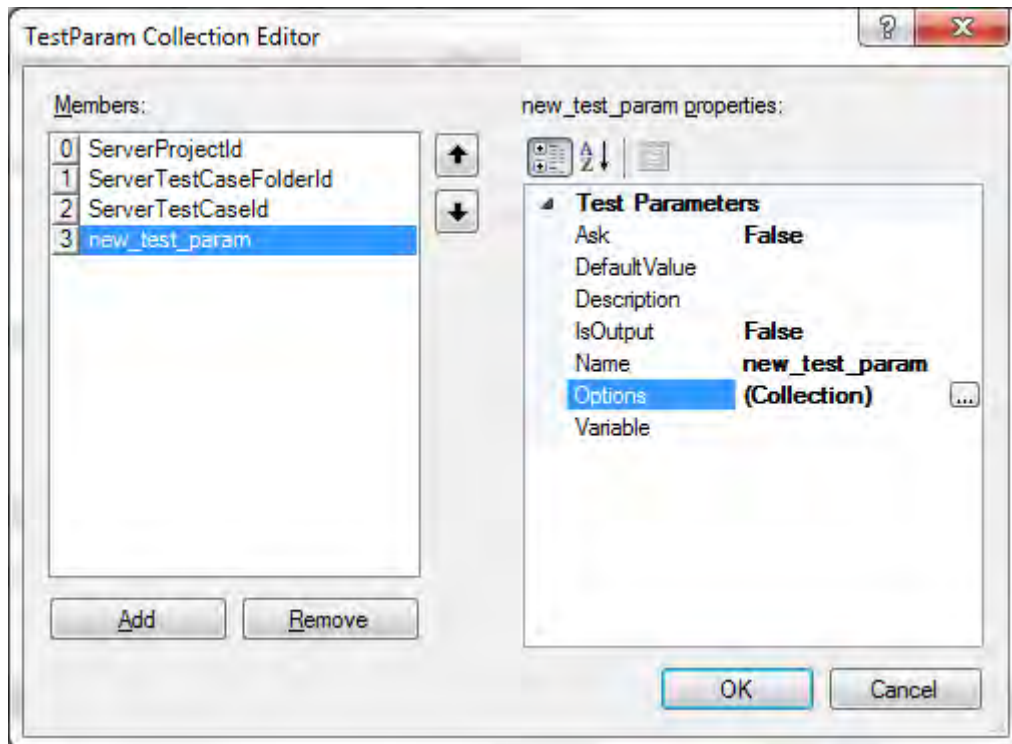


Name that the native Accessibility options utilize.

- **Link** - Based on the WebDriver standard, it lets you find hyperlinks using an *exact match* of the link anchor text
- **Partial Link** - Based on the WebDriver standard, it lets you find hyperlinks using a *partial match* of the link anchor text
- **Script** - For iOS testing, this lets you enter raw script that will be sent to the iOS device to find the element

## 2.4.17 NameValue Collection Editor Dialog

### Screenshot

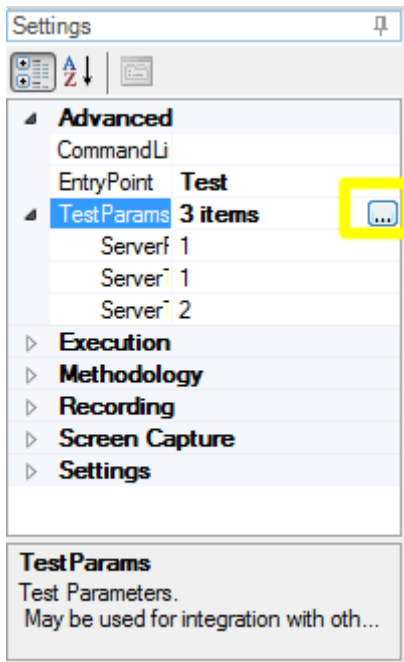


### Purpose

To specify [Custom Strings](#) and their values.

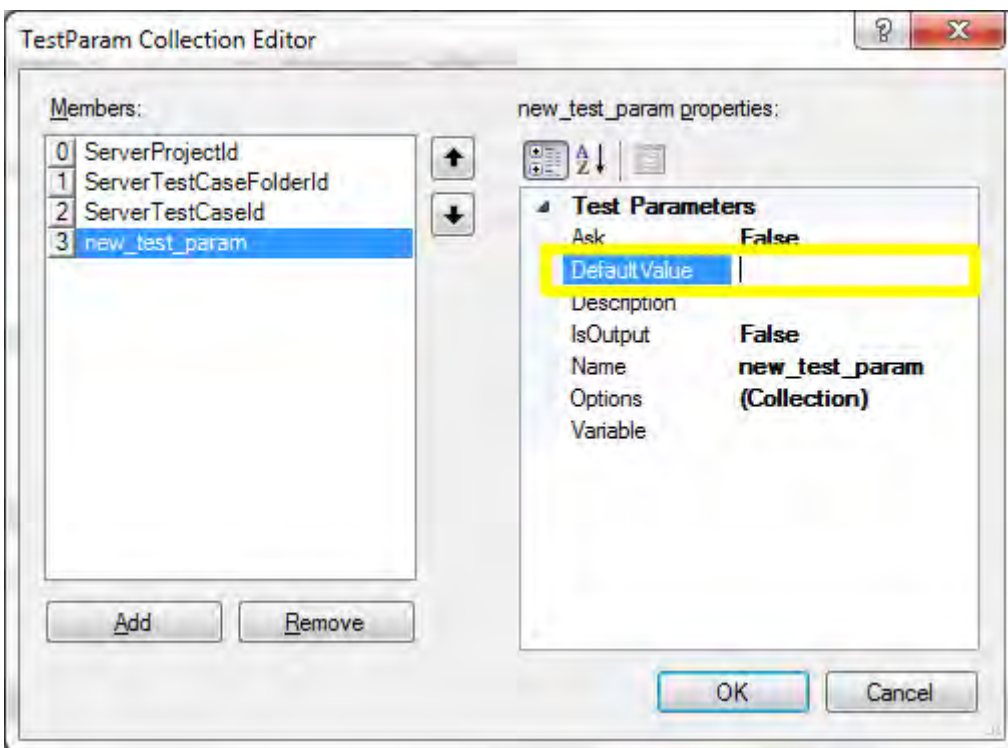
### How to Open

Open from the [Settings Dialog](#), **TestParams** option:



### Widgets

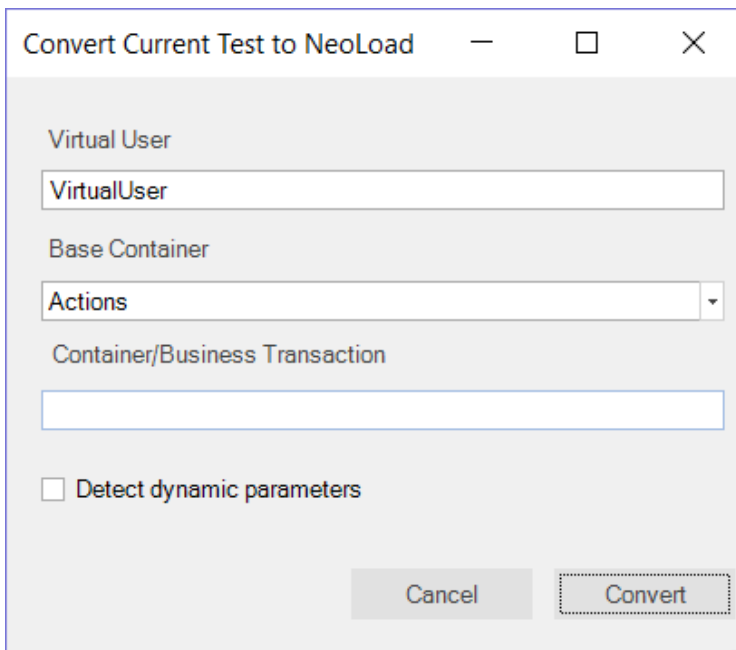
- **Add** a custom string. If you press **Add**, you'll see this:



- **Remove**: removes selected custom string.
- **OK**: Save changes and close dialog.
- **Cancel**: Close dialog without saving changes.

## 2.4.18 NeoLoad Convertor Dialog

### Screenshot



### Purpose

The purpose of this dialog is to allow you to convert a functional test script from Rapise into a protocol-based performance script that can be executed using the [NeoLoad](#) performance testing tool from Neotys.

### How to Open

Go to the [Test ribbon](#) and click the **Convert to NeoLoad** button:

### Virtual User

In this field, you need to enter the name of the virtual user to create in NeoLoad:

- The default value is "VirtualUser"
- If the name is already used, then it is automatically renamed using “\_X” suffix, with X an integer incremented.
- If the name has invalid characters then they will be escaped as an underscore (\_).

### Base Container

This specifies the base container where we want to start the recording (Init / Actions / End)

- The default value is Actions.

## Container/Business Transaction

This is used to specify the current recording container in NeoLoad. It is just based on a single level. There is no way to specify a tree of containers.

- The default is no container.
- If the name is already used then it will be made unique by adding `_1`, `_2`, etc.
- If the name is empty then no container will be used.

## Detect Dynamic Parameters

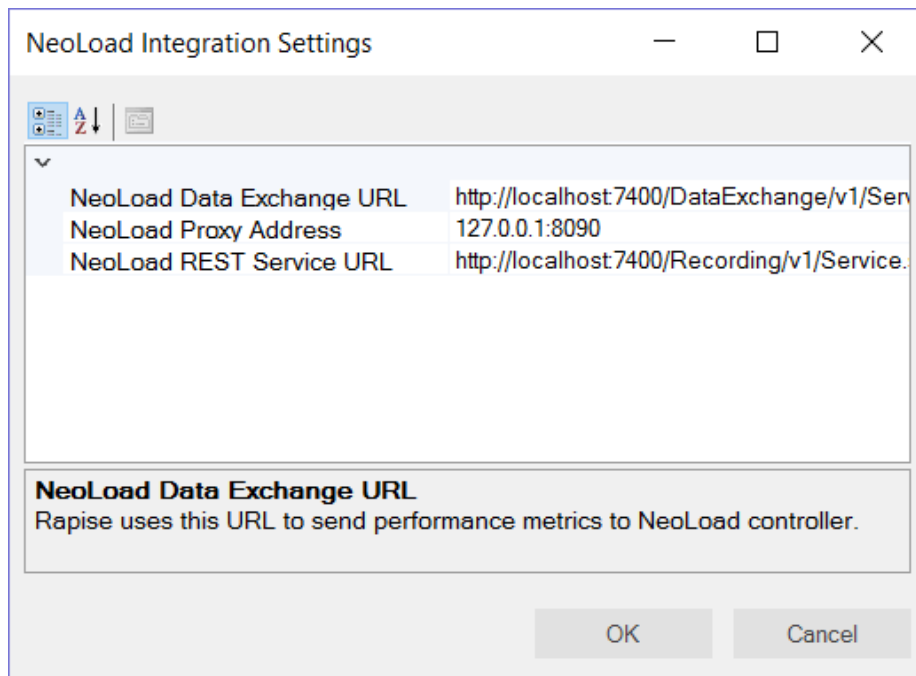
When you check this box, Rapise tells NeoLoad to scan the protocol traffic to look for known dynamic parameters (e.g. Session IDs, ASP.NET ViewState) that change on each HTTP request and need to be parameterized by NeoLoad to ensure the performance scripts are robust and well-defined (v.s. having a hardcoded Session ID).

## Actions

- **Convert** will start the Rapise > NeoLoad test conversion process
- **Cancel** will abort the conversion and return you to Rapise

### 2.4.19 NeoLoad Settings Dialog

#### Screenshot



#### Purpose

The purpose of this dialog is to allow you to specify the global options for integrating Rapise with [NeoLoad](#), the performance testing tool from Neotys.

## How to Open

Go to the [Options ribbon](#) and click the **NeoLoad Integration Settings** button:

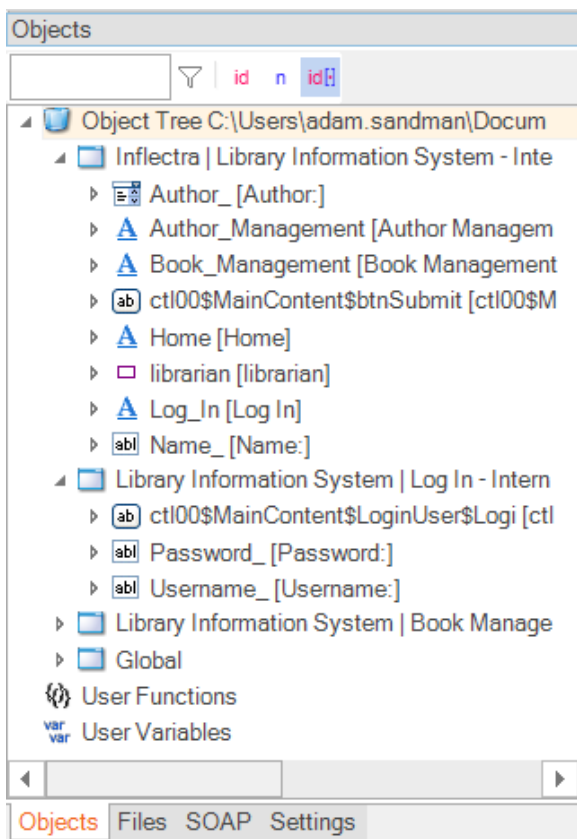
## Settings

Normally there is no any reason to change these settings, but for completeness they are described below:

- **NeoLoad Data Exchange URL** - this is the URL to the NeoLoad data exchange API
- **NeoLoad Proxy Address** - this is the IP address and prt of the NeoLoad HTTP proxy
- **NeoLoad REST Service URL** - this is the URL to the NeoLoad recording service REST API

### 2.4.20 Object Tree Dialog

#### Screenshot



#### Purpose

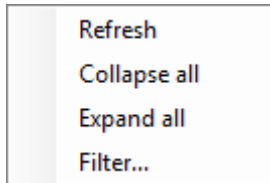
Display learned objects.

## How to Open

The **Objects** dialog is part of the [Default Layout](#).

## Context Menu (root node)

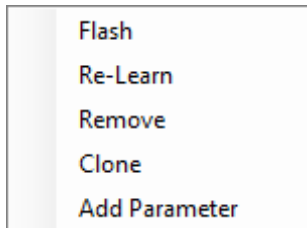
Right click the **Object Tree** node to see:



- **Refresh** checks for new objects to display.
- **Collapse all** collapses the entire object tree.
- **Expand all** expands the entire object tree.
- **Filter...** filters the object tree.

## Context Menu (object)

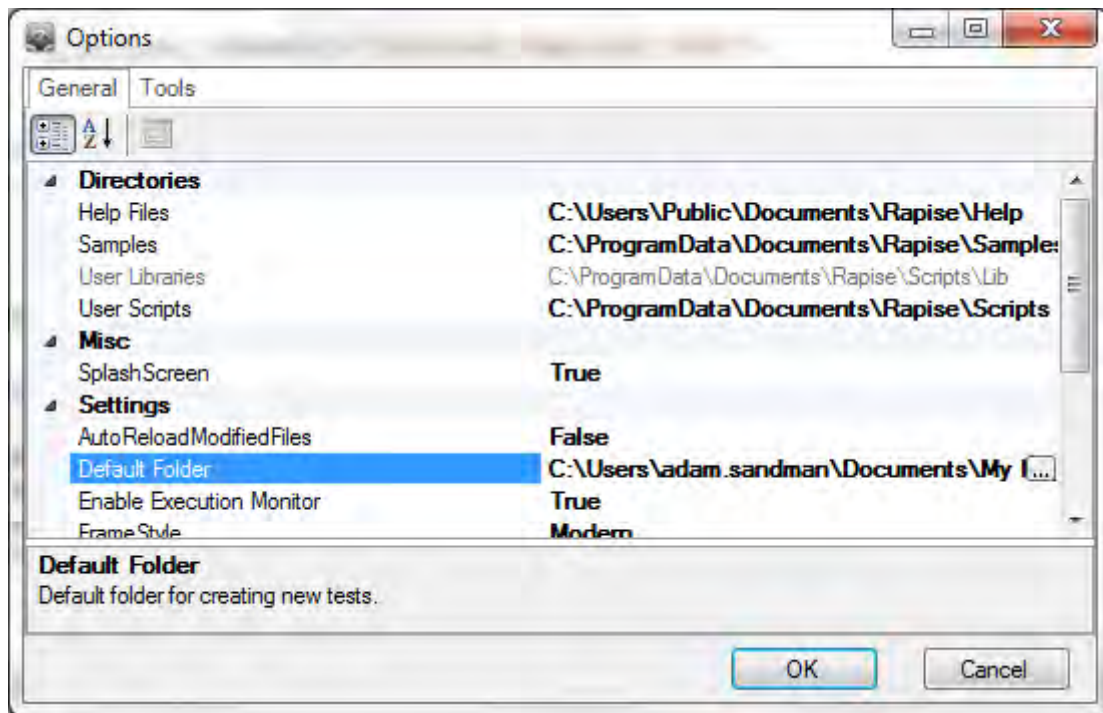
Right click on an object in the **Object Tree** dialog to see:



- **Flash** opens the application/url where the object is located. A frame will blink around the object to show you where it is on the page.
- **Re-Learn** will open up the [Recorder](#), allowing you to re-learn the object. This is useful if the AUT has changed and the object definition will no longer correctly locate the object.
- **Remove** simply removes the selected object from the tree.
- **Clone** makes a copy of the object definition and adds the cloned version into the tree. You can then make changes to the cloned copy.
- **Add Parameter** opens up a dialog box that lets you add a custom parameter to the learned object definition (stored in the **Test.objects.js** file).

## 2.4.21 Options Dialog

### Screenshot

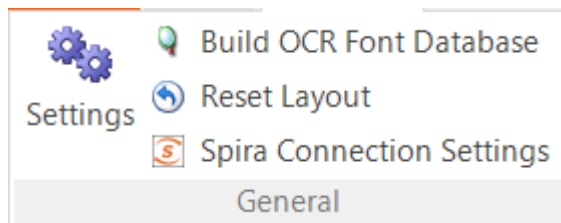


### Purpose

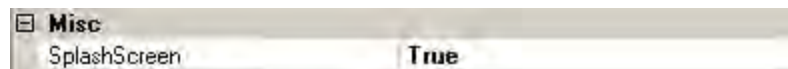
Use the **Options** dialog to change the global Rapise settings. Your changes will apply to all tests.

### How to Open

Go to the [Options ribbon](#) and click the **Settings** button:



### Misc



- **SplashScreen:** A splash screen is the image that appears while a program initializes. The Rapise splash screen looks like this:



# Rapise®

Loading module Accessibility



2 seconds remaining

## 1.1.24

Set **SplashScreen** to **False** to prevent the splash screen from appearing.

## Settings

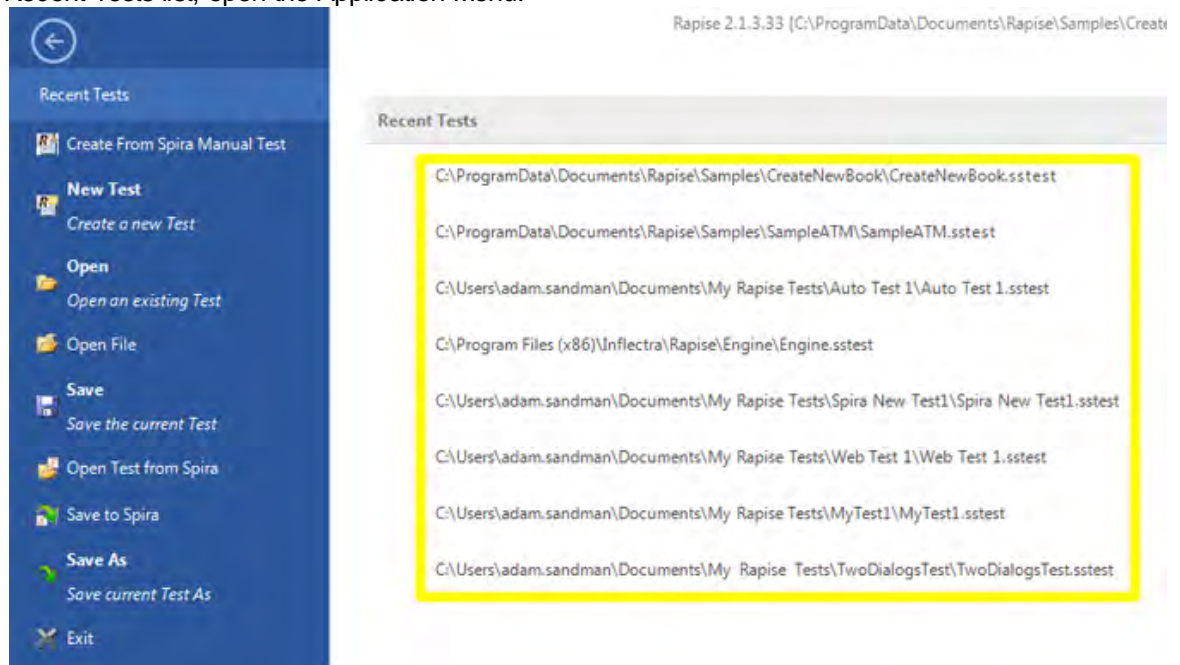
| Settings                |        |
|-------------------------|--------|
| AutoReloadModifiedFiles | True   |
| DefaultFolder           | Temp   |
| FrameStyle              | Modern |
| LoadLastTestOnStartup   | True   |
| NormalizeFileNames      | True   |
| RecentTests             | 10     |
| ShowStartPageOnStartup  | True   |
| StyleLibrary            |        |

- **AutoReloadModifiedFiles**: If set to **True**, any files you modify outside of Rapise are automatically reloaded in Rapise.
- **DefaultFolder** specifies where new tests are kept before you explicitly save them. The location is relative to the Rapise executable.
- **DefaultSpy** specifies which of the various types of [Object Spy](#) will be displayed by default.
- **Enable Execution Monitor** - specifies whether the execution monitor dialog box will be displayed during [playback](#).
- **FrameStyle**: Specifies which frame to draw around objects when you [Record](#), [Learn](#), and [Spy](#). The **Basic** frame is on the left and the **Modern** frame is on the right:
 

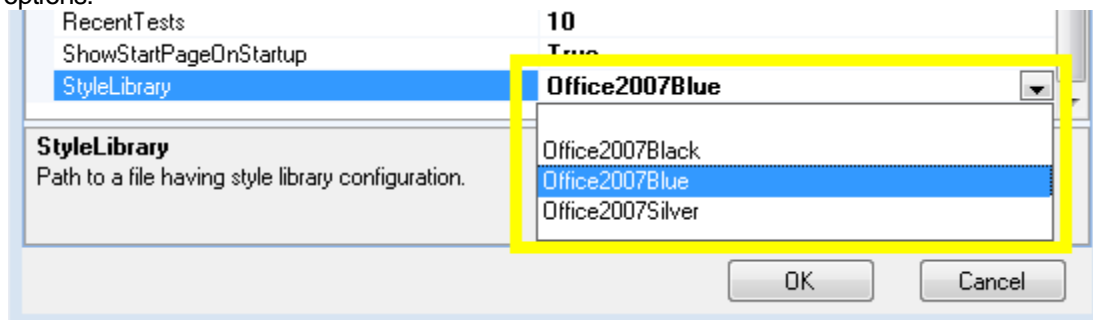
Google Search

Google Search
- **LoadLastTestOnStartup**: If set to **True**, Rapise will open the last test you worked on and saved. If set to **False**, Rapise will create a new test named MyTest<#> where <#> is an integer. A folder for MyTest<#> is created in the folder specified by the **DefaultFolder** option.
- **NormalizeFileName**: If set to **True**, files are referred to (in the \*.sstest file) using a path relative to the \*.sstest file. Otherwise, their absolute path is used.

- **RecentTests:** The maximum number of recent files displayed in the **Recent Tests** list. To see the Recent Tests list, open the Application Menu:

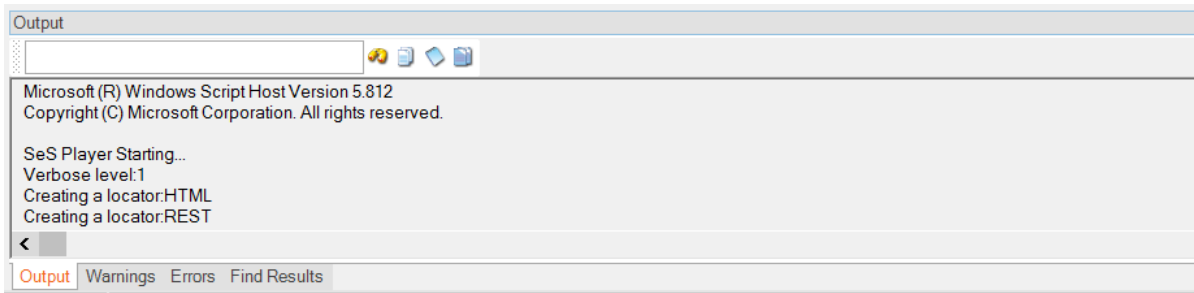


- **Remember Debugger Layout:** If **True**, Rapise will remember the window layout for debug mode separately. For example, this may be useful if you want to work full screen while authoring the Test and half-screen to debug. This way the AUT and the Rapise debugger fit on the screen.
- **ShowDashboardOnStartup:** If **True**, the [Spira Dashboard](#) will open automatically when Rapise is opened.
- **ShowStartPageOnStartup:** If **True**, the [Start Page](#) will open automatically when Rapise is opened.
- **StyleLibrary:** determines the color scheme of the Rapise window. If you click on StyleLibrary, you'll notice that a drop down arrow appears to the right. Press the arrow to see all of the Style options:



## 2.4.22 Output View

### Screenshot



## Purpose

The **Output** View displays Rapise output. The amount of output depends on the [Verbosity Level](#).

## How to Open





The **Output** view is part of the [Default Layout](#).

## Writing to the Output View

Use the global **Log()** function to write to the **Output View**.

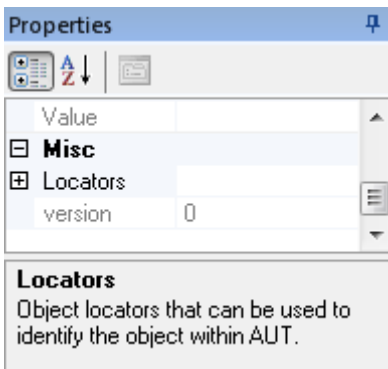
## Widgets



- The text box is a search box.
- The icons from left to right are **Find Next Entry** , **Copy Selected** , **Clear All Text** , and **Select All Text** .

## 2.4.23 Properties Dialog

### Screenshot



## Purpose

To display the properties of the object, file, or folder you last clicked on. Objects are in the [Object Tree Dialog](#) and files/folders are in the [Test Files Dialog](#).



| Recording Activity for "Internet Explorer HTML" |                   |                 |                                      |                    |        |
|-------------------------------------------------|-------------------|-----------------|--------------------------------------|--------------------|--------|
| #                                               | Object            | Action          | Data                                 | Comment            |        |
|                                                 |                   |                 |                                      |                    |        |
|                                                 |                   |                 |                                      |                    |        |
|                                                 |                   |                 |                                      |                    |        |
|                                                 |                   |                 |                                      |                    |        |
| Verify<br>(Ctrl+1)                              | Learn<br>(Ctrl+2) | SPY<br>(Ctrl+5) | Pause                                | Finish<br>(Ctrl+3) | Cancel |
| Ready                                           |                   | Advanced>>      | <input type="checkbox"/> Transparent |                    |        |

This mode shows the most widely used options and is normally sufficient for most recording needs.

However if you need to do analog recording or you want more control over the type of object being recorded, you can click on the **Advanced** link to switch to Advanced mode:

| Recording Activity for "Internet Explorer HTML" |                   |                 |                                      |                    |        |
|-------------------------------------------------|-------------------|-----------------|--------------------------------------|--------------------|--------|
| #                                               | Object            | Action          | Data                                 | Comment            |        |
|                                                 |                   |                 |                                      |                    |        |
|                                                 |                   |                 |                                      |                    |        |
|                                                 |                   |                 |                                      |                    |        |
|                                                 |                   |                 |                                      |                    |        |
| Verify<br>(Ctrl+1)                              | Learn<br>(Ctrl+2) | SPY<br>(Ctrl+5) | Pause                                | Finish<br>(Ctrl+3) | Cancel |
| Analog (Ctrl+4)                                 |                   |                 | _Simulated                           |                    |        |
| Ready                                           |                   | Advanced>>      | <input type="checkbox"/> Transparent |                    |        |

Clicking on the Advanced link will switch it back to Standard mode.

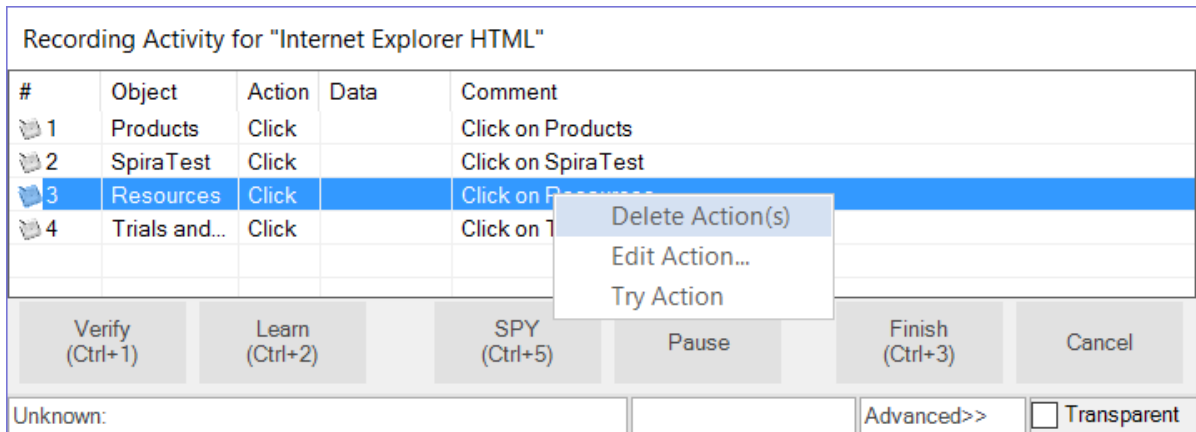
### The Grid

As you interact with the AUT (Application Under Test), your actions are recorded in the grid of the **Recording Activity dialog**. The following screenshot shows the Recording Activity dialog after two interactions with [www.google.com](http://www.google.com): (1) first, **Inflectra** was entered into the query text box and (2) the **Google Search** button was then pressed.

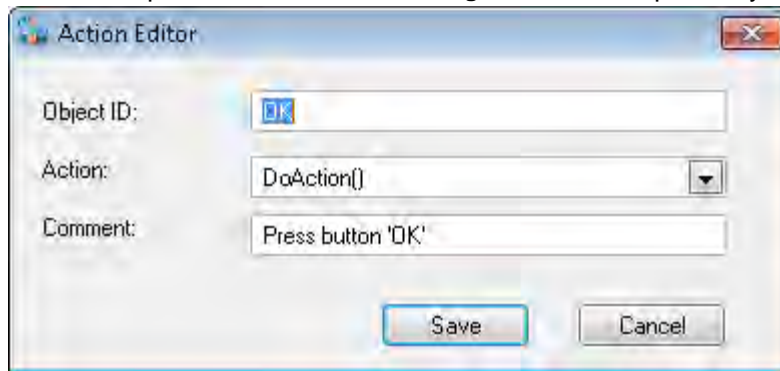
| # | Object | Action | Data      | Comment                 |
|---|--------|--------|-----------|-------------------------|
| 1 | q      | Set..  | Inflectra | Set Text Inflectra in q |
| 2 | btnG   | Click  |           | Click on btnG           |
|   |        |        |           |                         |
|   |        |        |           |                         |
|   |        |        |           |                         |

### Context Menu

If you right click in the grid, you'll see a context menu with three options:

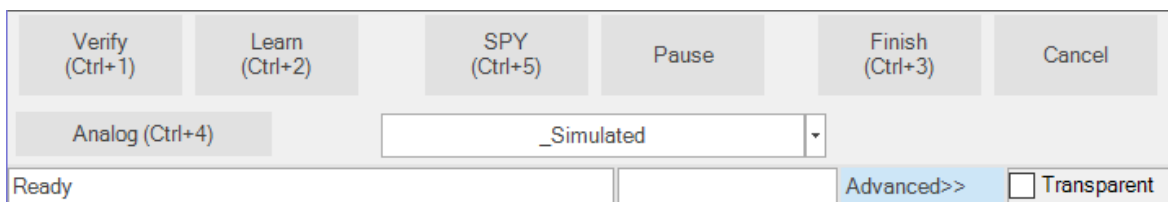


- **Delete Action** removes the selected row.
- **Edit Action** opens the **Action Editor Dialog**. This is also opened by double-clicking a grid entry.



- Press **Try Action** and Rapise will execute the action.

### Standard Mode Features



The following options are available in the dialog in both modes:

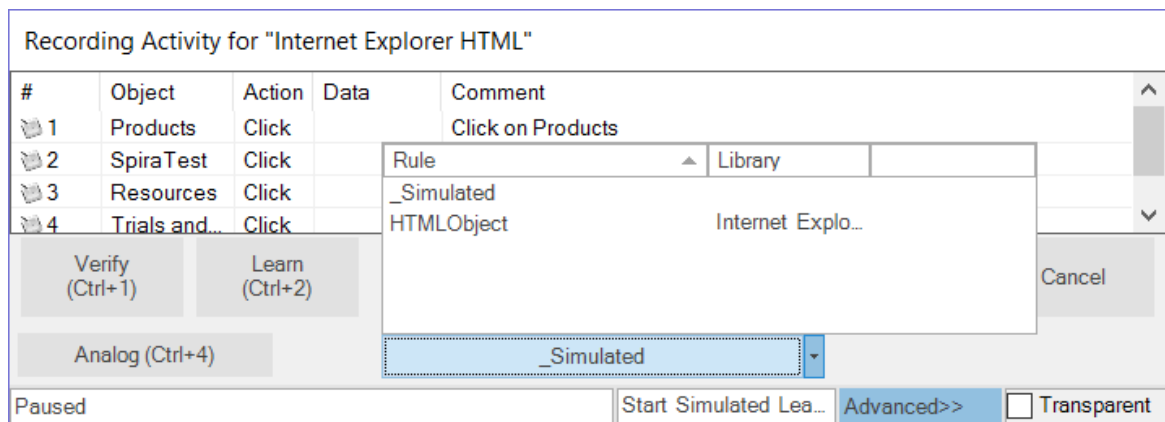
- **Verify** (Ctrl+1) - Press to open the [Verify Object Properties](#) dialog.
- **Learn** (Ctrl+2) - Use to [learn](#) an object. Place the mouse cursor over the object you wish to learn. It should become highlighted with a purple box. Press Ctrl+2 while the object is highlighted. You will see a line added to the Recording Activity dialog, signifying that the object was learned.
- **SPY** (Ctrl+5) - The Spy Button opens the **Object Spy dialog**. The Object Spy dialog allows you to view the state of the objects in your program. Viewing object state is called [Object Spying](#). The Object Spy dialog is described [here](#). You can also use the SPY button to **learn an object** that is not visible or covered by another object.

- **Pause** - The Pause Button temporarily stops Recording. Any interacting you do with the AUT is ignored. When you press the Pause Button, the title of the button changes to **Resume**. Press the **Resume** button to continue recording.
- **Finish** (Ctrl+3) - The Finish button ends the Recording session. The dialog is closed, and the information collected during Recording is used to create a script. The script is displayed.
- **Cancel** - The Cancel button stops Recording, closes the dialog, and discards any actions recorded or objects learned during the Recording session.

## Advanced Mode Features

The following additional features are available in Advanced mode:

- **Analog** (Ctrl+4) - The Analog button begins [Analog Recording](#). Analog Recording tracks mouse movements, keyboard inputs, and clicks. To end Analog Recording, press **CTRL+Break**
- **Simulated Drop-Down Menu** - An object can be learned if it matches a rule specified in the [Recording/Learning libraries](#) available. The drop-down menu lists the possible rules for learning objects in the current application:



If you cannot learn an object with one library rule, try another in the list. Create a **Simulated Object** only if the other, more flexible alternatives have been exhausted.

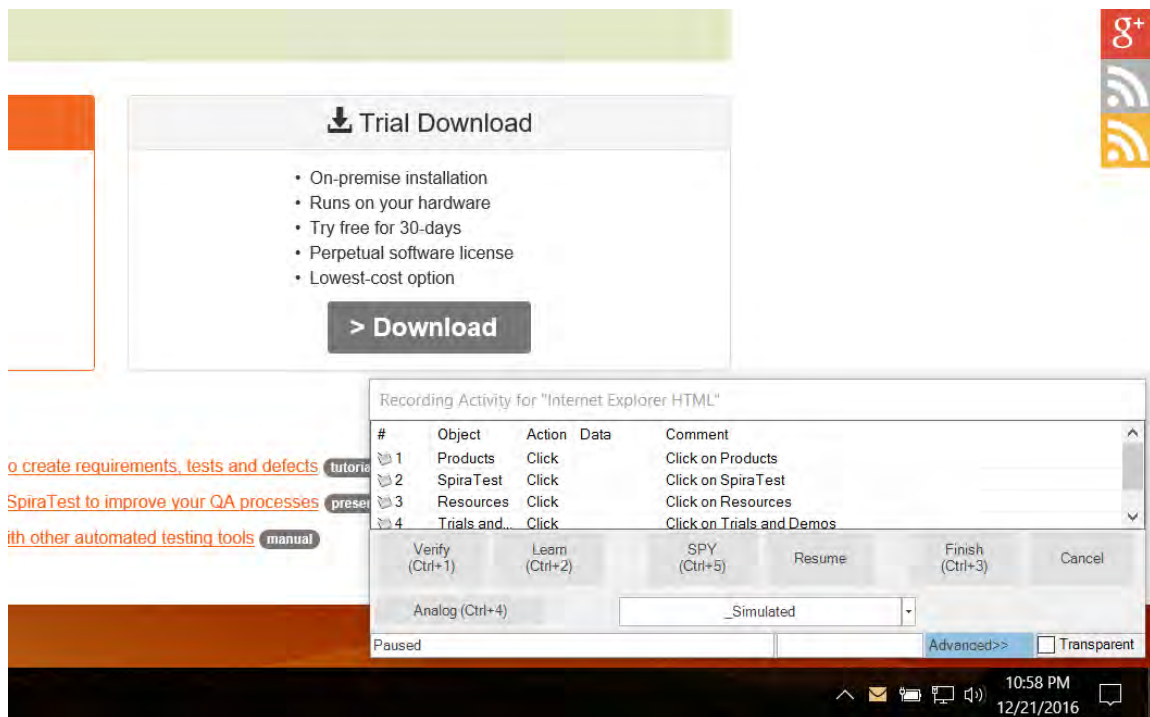
To learning and object using a specific library:

1. Double click on a rule in the drop down list. The button text should change to the text that you selected
2. Press the button
3. Select an object on the screen and make sure it is highlighted with a rectangle
4. Press **Ctrl+2** to learn the object

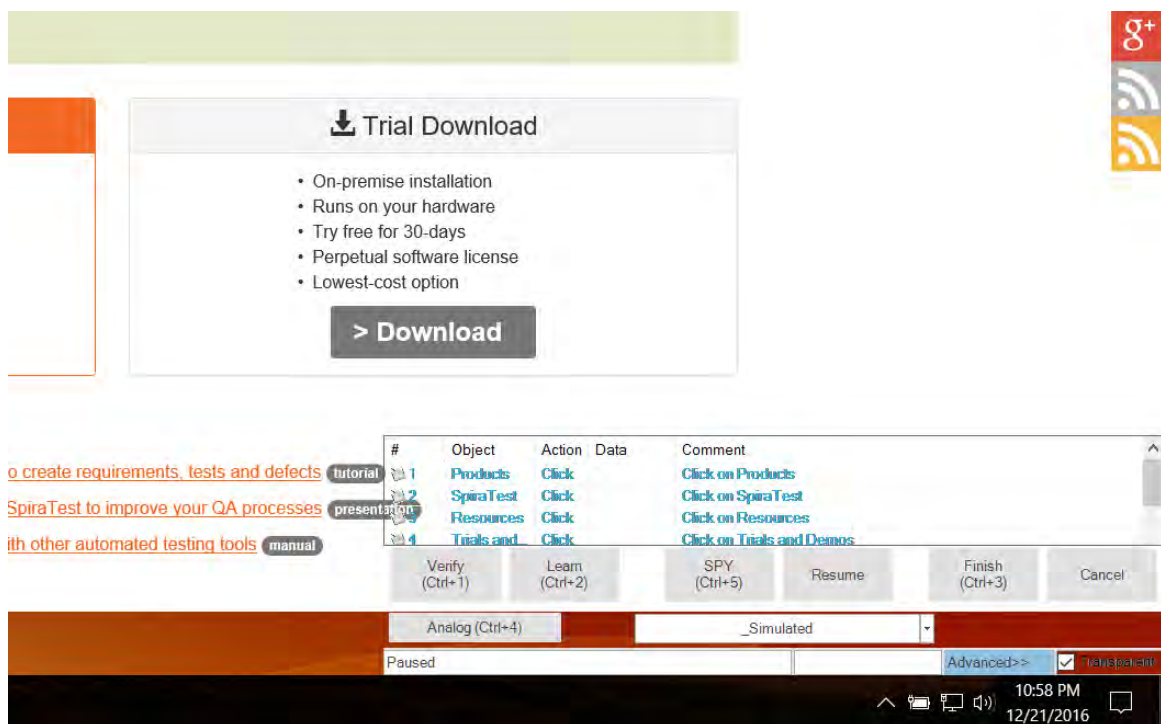
## Transparent Option

While the Recording Activity (RA) dialog is open, it is always on top. The Transparent checkbox makes the RA Dialog transparent so that you can interact with objects behind it. The image below illustrates the difference:





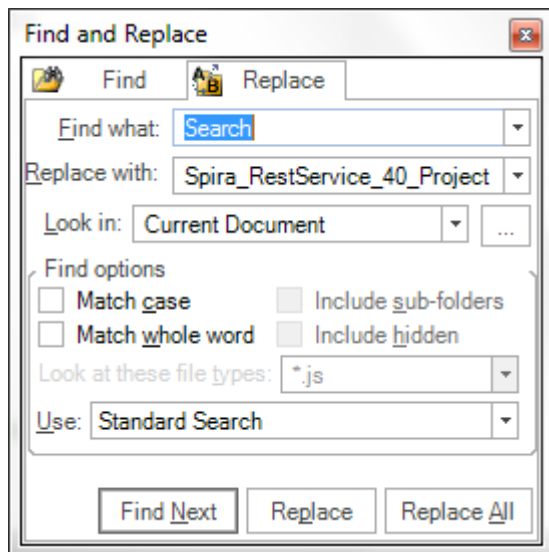
When you click the **Transparent** option, it will look like the following:



The main advantage of this mode is that you can click in the area where the RA dialog is displayed and the clicks will be sent through to the AUT.

## 2.4.25 Replace Text Dialog

### Screenshot



### Purpose

Replace occurrences of the **Search Term** text with the **Replacement Text** in the currently visible [Source Editor](#).

### How to Open

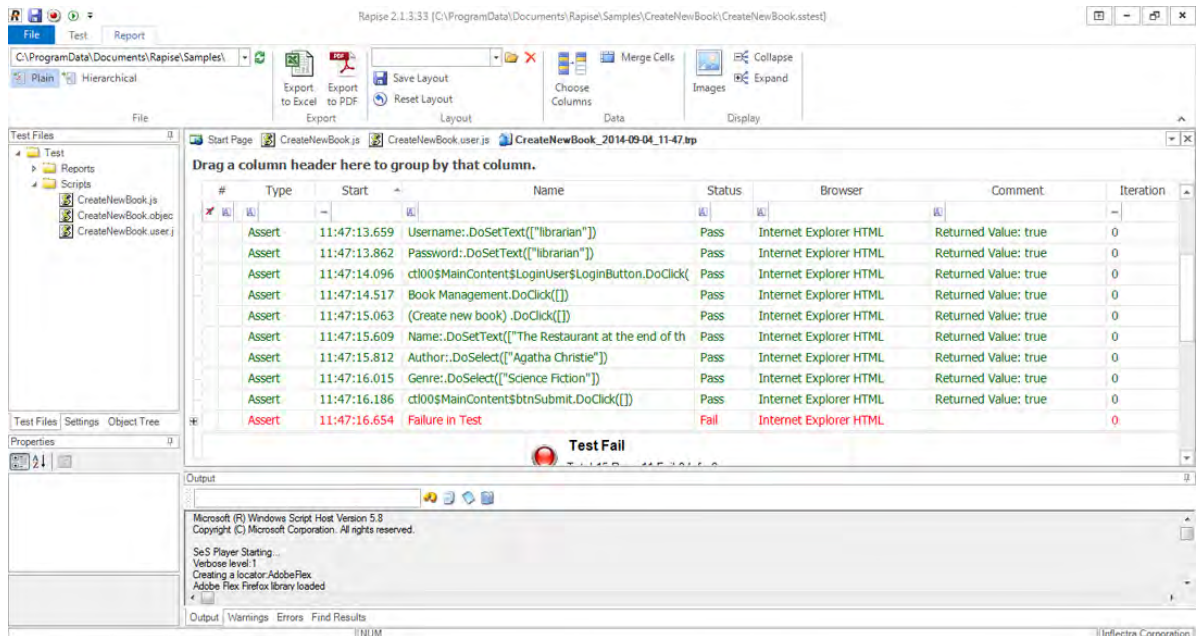
Ribbon > [Edit Tab](#) > **Search** menu > **Replace** button.

### Replace Tab

- **Find what:** Place the string you would like to search for in the **Find what** text box.
- **Look In:** this option specifies where the search will take place. You can limit the search to: current document, current selection, current test, the entire test and subtests, or a specific folder.
- **Match case option:** If unselected, case is ignored in the search.
- **Match whole word option:** If set to true, parts of words will not count as matches.
- **Replace with text-box:** All occurrences of the string in the **Find what** text-box will be replaced with the string in the **Replace with** text-box when you press the **Replace** button.

## 2.4.26 Report Viewer

### Screenshot



## Purpose

The **Report Viewer** displays test result (trp) files.

## How to Open

Use the [Test Files Dialog](#) to open a report (trp) file. The report file will be opened in a **Report Viewer** in the [Content View](#). The [Report Tab](#) of the Ribbon will also open.

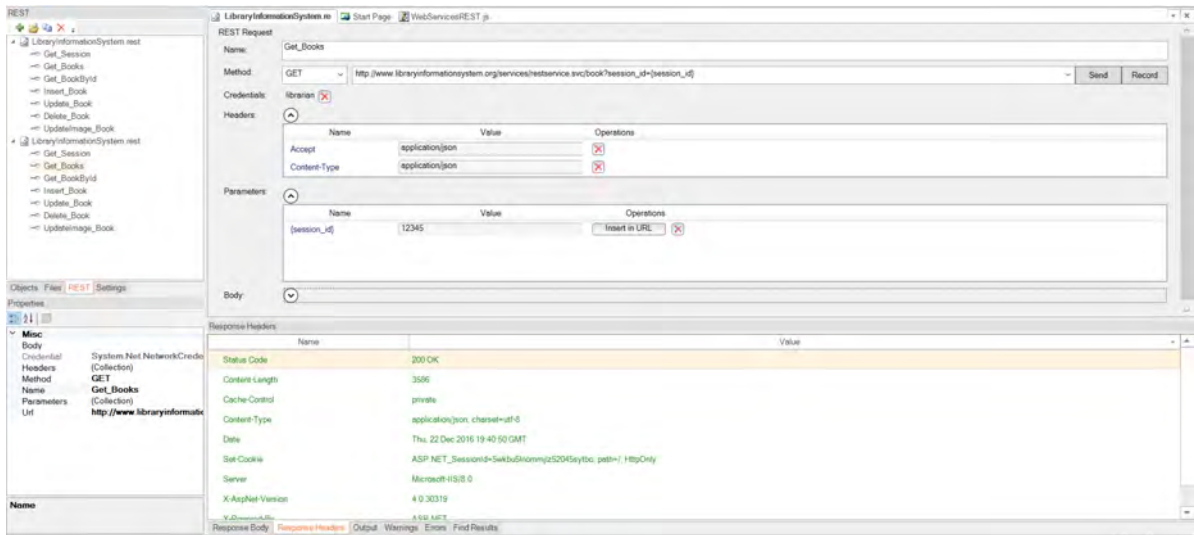
Or, you can [Playback](#) the test script. The report file will display in a **Report Viewer** after the test completes.

## See Also

- For more info on Reports, see [Automated Reporting](#).
- For information on manipulating reports, see [Ribbon: Report](#).

## 2.4.27 REST Definition Editor

### Screenshot

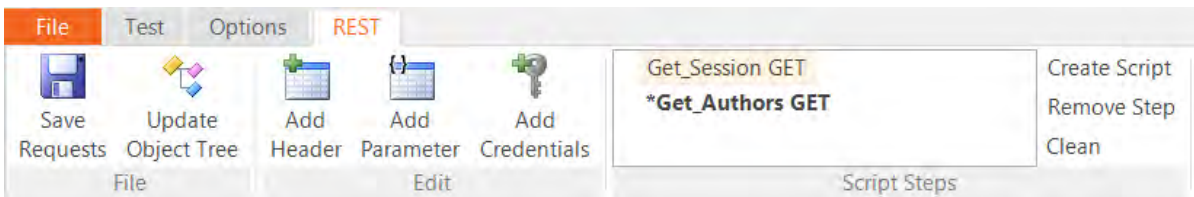


### Purpose

The **REST Definition Editor** allows you to edit [REST web service](#) definition files (.rest).

### How to Open

Use the [Add Web Service Dialog](#) to create a new REST definition (.rest) file. The definition file will be opened in a **REST Editor** in the [Content View](#). The [REST Tab](#) of the Ribbon will also open.



Or, you can double-click on an existing .rest file in the [Test Files View](#) explorer window. The definition file will be opened in a **REST Editor** in the [Content View](#). The [REST Tab](#) of the Ribbon will also open.

### Request

REST Request

Name: Get\_Books

Method: GET  Send Record

Credentials: librarian

Headers:

| Name         | Value            | Operations                                                   |
|--------------|------------------|--------------------------------------------------------------|
| Accept       | application/json | <input type="checkbox"/> <input checked="" type="checkbox"/> |
| Content-Type | application/json | <input type="checkbox"/> <input checked="" type="checkbox"/> |

Parameters:

| Name         | Value | Operations                                                   |
|--------------|-------|--------------------------------------------------------------|
| {session_id} | 12345 | <input type="checkbox"/> <input checked="" type="checkbox"/> |

Body:

Auto Raw XML JSON

The request form has several sections that you need to populate:

- **Method** - the type of HTTP request being made (GET, POST, PUT, DELETE, etc.)
- **URL** - the URL of the web service request with any parameter tokens included (e.g. {session\_id} in our example above)
- **Credentials** - Any HTTP Basic Authentication Headers
- **Headers** - Any other HTTP headers (both standard and custom)
- **Parameters** - Any parameters that have been defined in the URL that will be called from the Rapise test script.
- **Body** - The body of the request (for POST and PUT requests). This can be in any text-serialized format such as XML or JSON.

## Response

The HTTP Response Headers are displayed:

| Response Headers |                                                             |
|------------------|-------------------------------------------------------------|
| Name             |                                                             |
| Status Code      | 200 OK                                                      |
| Content-Length   | 3586                                                        |
| Cache-Control    | private                                                     |
| Content-Type     | application/json; charset=utf-8                             |
| Date             | Thu, 22 Dec 2016 19:40:50 GMT                               |
| Set-Cookie       | ASP.NET_SessionId=5wkbu5lnommjlz52045syto; path=/; HttpOnly |
| Server           | Microsoft-IIS/8.0                                           |
| X-AspNet-Version | 4.0.30319                                                   |
| X-Powered-By     | ASP.NET                                                     |

Response Body **Response Headers** Output Warnings Errors Find Results

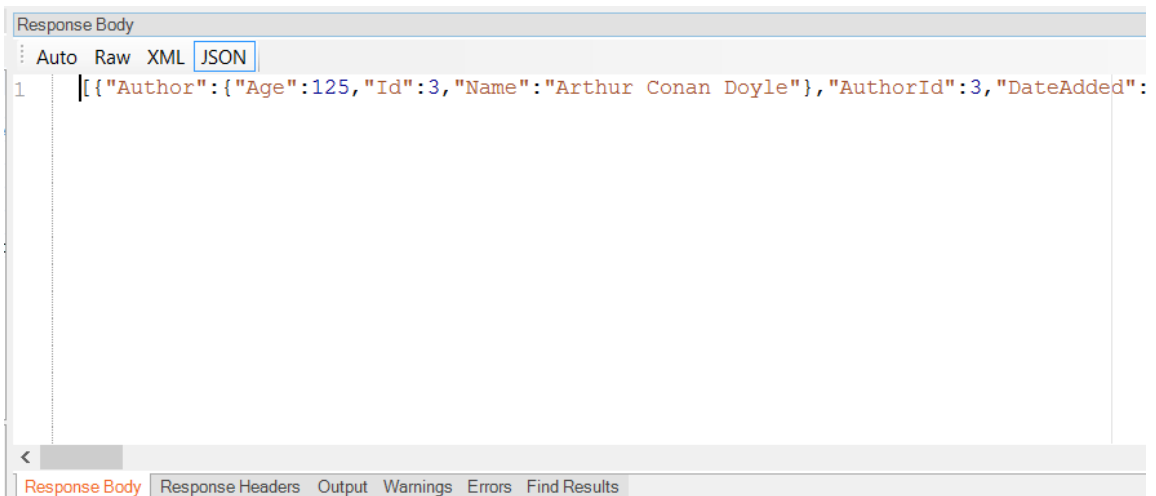
The HTTP Response in XML format is formatted and displayed:



The screenshot shows the 'Response Body' tab in an IDE. The 'XML' tab is selected, displaying the following XML content:

```
<?xml version="1.0" encoding="utf-8"?>
<ArrayOfBook xmlns="http://schemas.datacontract.org/2004/07/Inflectra.SampleApplica
 <Book>
 <Author>
 <Age>125</Age>
 <Id>3</Id>
 <Name>Arthur Conan Doyle</Name>
 </Author>
 <AuthorId>3</AuthorId>
 <DateAdded>2015-01-18T14:24:12</DateAdded>
 <DateAddedIso>2015-01-18T19:24:12</DateAddedIso>
 <Genre>
 <Id>2</Id>
 <Name>Murder & Mystery</Name>
```

The HTTP Response in JSON format is formatted and displayed:



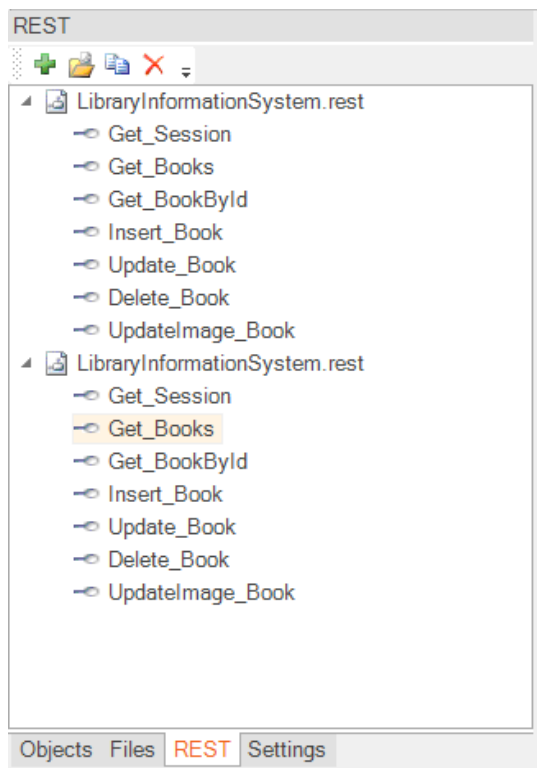
The screenshot shows the 'Response Body' tab in an IDE. The 'JSON' tab is selected, displaying the following JSON content:

```
[{"Author":{"Age":125,"Id":3,"Name":"Arthur Conan Doyle"},"AuthorId":3,"DateAdded":
```

This displays the output from the last web service request. It has several tabs:

- **Response Header** - Displays a list of the HTTP response headers (name and value). If the request received a 200 OK code back, it's displayed in **green**, if it receives an error code back, it's displayed in **red**.
- **Response Body**
  - **Raw** - Displays the raw text of the HTTP response body received from the server.
  - **XML** - If the received body content is identified as XML, this tab displays nicely formatted XML that is easier to read than the raw response body.
  - **JSON** - If the received body content is identified as JSON, this tab displays nicely formatted, indented JSON that is easier to read than the raw response body.

## Operation Explorer



This section lets you add, open, delete and clone REST requests in the definition file.

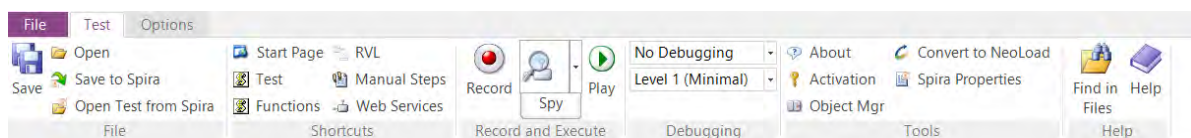
- **Add request** - Adds a new REST operation to the current .REST definition file
- **Open request** - Opens the currently selected REST operation in the current .REST definition file. This is the same as double-clicking on the item name.
- **Clone request** - Makes a copy of the currently selected REST operation and allows you to give the copy a new name.
- **Delete request** - Deletes the currently selected REST operation from the current REST definition file.

### See Also

- For more info on REST Web Services, see [REST Web Services](#).
- For a tutorial on creating a REST web service test, see the [Web Services REST Tutorial](#).

## 2.4.28 Ribbon: Test

### Screenshot



### Purpose

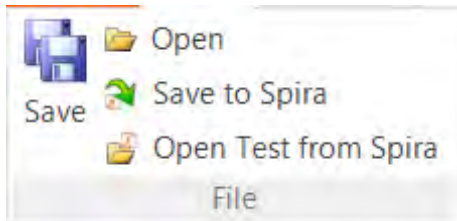
The **Test** tab is the primary tab in the Rapise ribbon and provides tools to help with creating and executing tests. It also provides the options to add web services and/or manual test steps to the current test.



## How to Open

The **Test** tab is always available in the ribbon.

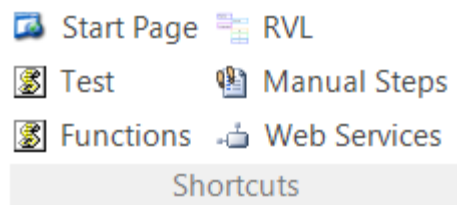
## File



The File section provides the following options:

- **Save** - saves the current test locally. To save to a different location, use the **Save As** option in the [File menu](#).
- **Save to Spira** - allows you to save the Rapise test so that it updates the version in your [Spira](#) test management repository
- **Open Test from Spira** - allows you to open a Rapise test that is stored in a [SpiraTest](#) test management repository

## Shortcuts



The Shortcuts section provides links to the most commonly used functionality in Rapise:

- **Start Page** - this button opens the Rapise [Start Page](#).
- **RVL** - this button opens the [Rapise Visual Language \(RVL\)](#) editor and displays the [RVL Ribbon](#).
- **Test** - This opens the primary [test script file](#) (normally MyTest.js where MyTest is the name of your test)
- **Functions** - This opens the user functions [script file](#) containing any user-defined testing functions (called MyTest.user.js where MyTest is the name of your test)
- **Manual Steps** - displays the [Manual Test Steps Ribbon](#) that lets you view and edit the [manual tests](#) associated with this test.
- **Web Services** - allows you to add a new [web service](#) definition to your Rapise test. Clicking on this displays the [Add Web Service](#) dialog box.

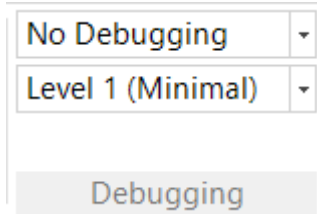
## Record and Execute



The Record and Execute section provides tools relating to recording tests, learning objects, spying objects in the running application and executing the test.

- **Record** - this button is used for **recording and learning**, clicking it will open the [Recording Activity Dialog](#).
- **Spy** - this button opens the [Spy Dialog](#). You use the Spy to look at the running application and find specific objects that you want to perform an [operation](#) or [verification](#) on.
- **Play** - this button executes the current test. You can change which test script to open in the [Settings Dialog](#). The test script is specified by **Settings > ScriptPath**.

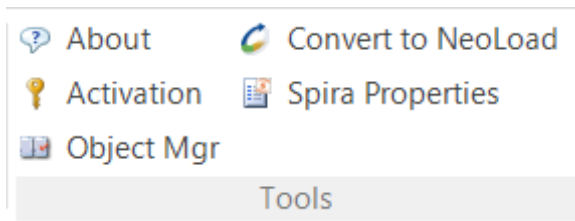
## Debugging



The Debugging section provides tools for debugging the code in the test during playback.

- **Debugging Level** - The top drop-down list specifies if you would like to use an [External Debugger](#). If so, you can either connect on execution (the **Run with External Debugger** option) or only connect if an error occurs (the **Run External Debugger on Error** option).
- **Logging Level** - The lower drop-down list controls the [Verbosity Level](#).

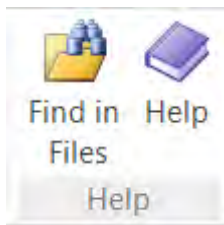
## Tools



The Tools section provides the following options:

- **About** - this displays information about the running instance of Rapise, including the version number.
- **Convert to NeoLoad** - this button opens the [NeoLoad conversion dialog](#). This lets you convert a Rapise test script into a [NeoLoad performance test](#).
- **Activation** - this button opens the Rapise license activation screen. This can be used to deactivate the current license so that it can be used on a different machine.
- **Spira Properties** - this button opens the [Spira Properties dialog](#) that allows you to see the name of the SpiraTest project and test case that the current Rapise test is linked to.
- **Object Manager** - this button opens the [Object Manager](#) add-in; this add-in is used to copy recorded objects between test scripts.

## Help

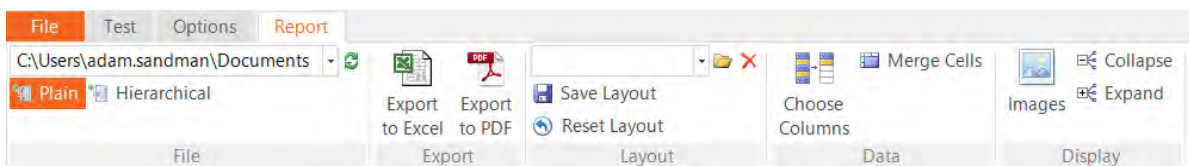


The Help section provides access to the interactive help system as well as the **search and replace** tools.

- **Find in Files** - clicking on this button opens the [Find and Replace Dialog](#).
- **Help** - this button provides access to the interactive help system. You can also bring up the help system by pressing **F1** on the keyboard

## 2.4.29 Ribbon: Report

### Screenshot



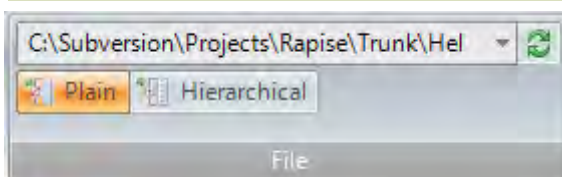
### Purpose

The **Report** tab is for use with report (trp) files.

### How to Open

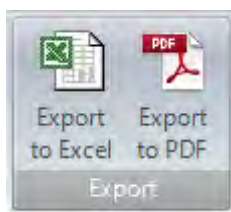
The **Report** tab is available anytime you have a report (trp) file visible in the [Content View](#).

### File



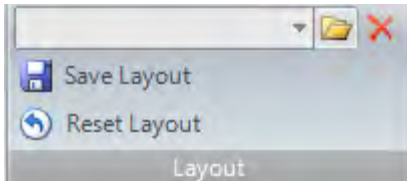
- The drop-down menu contains a history of previously opened reports.
- Press **Plain** to view test steps, assertions, and messages aligned in a table.
- Press **Hierarchical** to more clearly see what assertions, messages, and data are associated with which test steps.

### Export



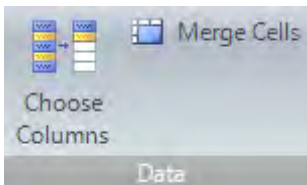
- Press **Export to Excel** to save the report as an excel file.
- Press **Export to PDF** to save the report as an Acrobat PDF file.

## Layout



- The drop-down menu lets you choose between previously saved layouts.
- You must press **Save Layout** to keep your layout changes after closing Rapise.
- Press **Reset Layout** to undo any changes you've made.

## Data



- Press **Choose Columns** to hide or reveal report columns.
- **Merge Cells**: Merge identical consecutive cells.

## Display



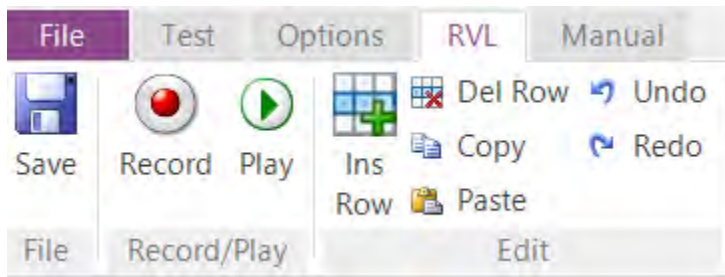
- **Images**: Toggle between hiding and revealing images.
- **Collapse**: Collapse the report to show only the top level. What is visible will depend on how the report is sorted.
- **Expand**: Expand all report rows.

## See Also

- [Automated Reporting](#)

### 2.4.30 Ribbon: RVL

## Screenshot



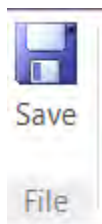
## Purpose

The Rapise Visual Language (RVL) ribbon lets you edit the steps in a test script written using the [Rapise Visual Language](#). Some of these operations are also repeated in the main [Test ribbon](#) when editing a test script that uses RVL.

## How to Open

You can open the **RVL** ribbon by either clicking on the **RVL** icon on the main [Test ribbon](#) or clicking on the **Test.rvl.xlsx** file in the [Test Files](#) tab.

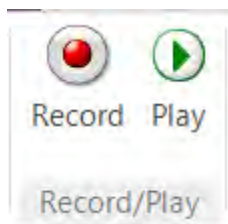
## File



The File section provides the following options:

- **Save** - saves the current test locally. To save to a different location, use the **Save As** option in the [File menu](#).

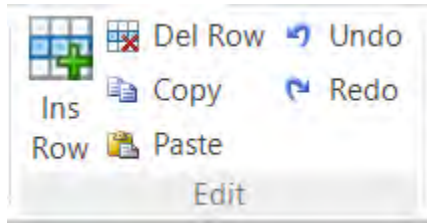
## Record/Play



The Record and Plan section provides tools relating to recording tests, learning objects, spying objects in the running application and executing the test.

- **Record** - this button is used for **recording and learning**, clicking it will open the [Recording Activity Dialog](#).
- **Play** - this button executes the current test. You can change which test script to open in the [Settings Dialog](#).

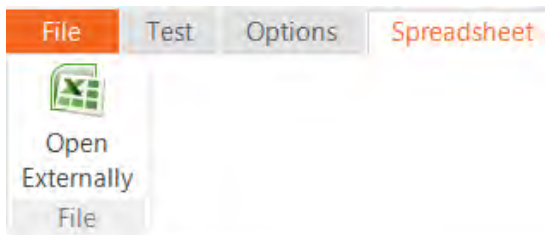
## Edit



- **Ins Row** - This inserts a new, blank RVL row
- **Del Row** - this deletes the currently selected RVL rows
- **Copy** - this copies the selected RVL rows to the clipboard
- **Paste** - this pastes the RVL rows copied to the clipboard
- **Undo** - this undoes the last operation performed
- **Redo** - this performs the last operation that was undone, using Undo

### 2.4.31 Ribbon: Spreadsheet

#### Screenshot



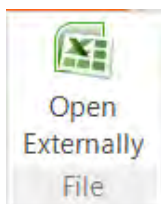
#### Purpose

The **Spreadsheet** tab is for use with excel (xls) files.

#### How to Open

The **Spreadsheet** tab is available anytime you have an excel (xls) file visible in the [Content View](#).

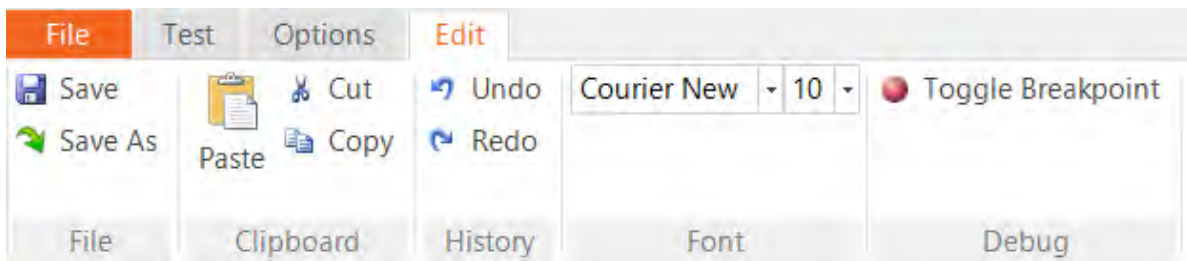
#### File



- **Open Externally** - this option lets you open the Excel spreadsheet inside the full Excel application instead of the embedded Rapise spreadsheet editor.

## 2.4.32 Ribbon: Edit

### Screenshot



### Purpose

The **Edit** tab of the Ribbon provides tools for editing script files.

### How to Open

The **Edit** tab is available anytime you have a javascript file visible in the [Content View](#).

### File



- The **Save** button (Shortcut: CTRL+S) saves the script file you are editing.
- The **Save As** button allows you to create a new, differently named copy of the script file you are editing.

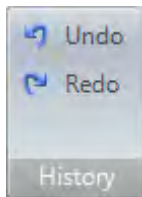
### Clipboard



- The **Paste** button (Shortcut: CTRL+V) pastes from the clipboard.
- The **Cut** button (Shortcut: CTRL+X) erases whatever text you have highlighted, and copies it to the clipboard.
- The **Copy** button (Shortcut: CTRL+C) copies whatever text you have highlighted to the clipboard.

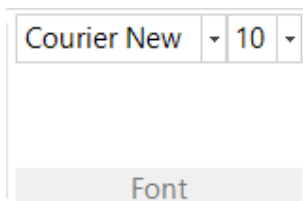
### History





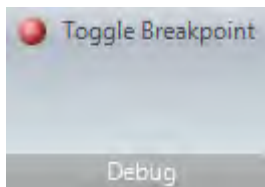
- The **Undo** button (CTRL+Z) reverses the last deletion or insertion made in the [Source Editor](#).
- The **Redo** button (CTRL+Y) reverses the last undo action.

## Font



- Use the above font and size drop-down menus to change the text appearance. The entire file will be affected.

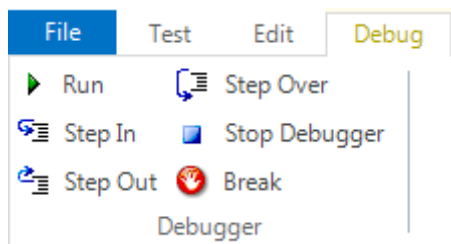
## Debug



- Press the **Toggle Breakpoint** button (Shortcut: F9) to insert or remove a breakpoint at the current cursor position.

### 2.4.33 Ribbon: Debugger

#### Screenshot



#### Purpose

The **Debugger Tab** provides tools for use with the [Internal Debugger](#).

#### How to Open

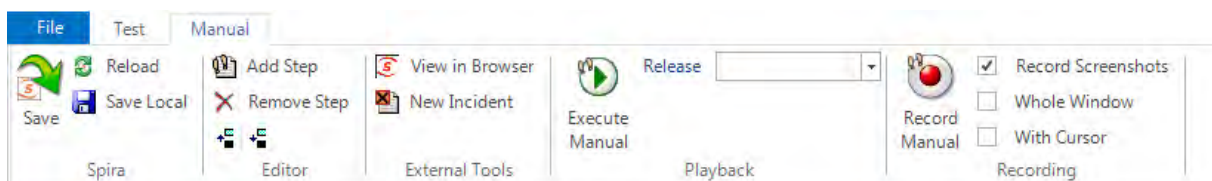
The **Debugger Tab** is available while the **Internal Debugger** is being used. To use the Internal Debugger, first enable it, then [Playback](#) your script. Instructions for enabling the Internal Debugger are [HERE](#).

## Debugger

- **Run** (F5): Continue executing the script.
- **Step In** (F11): Step into a function/procedure.
- **Step Out** (Shift+F11): Continue until the current procedure is exited.
- **Step Over** (F10): Go to the next line in the current procedure/function.
- **Stop Debugger** (Shift+F5): Stop executing the script and exit the debugger.
- **Break** (F9): Create a breakpoint in the script at the cursor.

## 2.4.34 Ribbon: Manual

### Screenshot



### Purpose

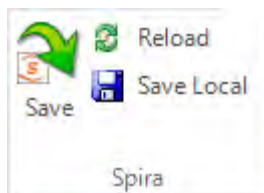
The **Manual** ribbon lets you record, edit and play [manual tests](#) that have either been created in Rapise or have been downloaded from [Spira](#). Rapise provides powerful **exploratory testing functionality** that lets you rapidly create manual tests by simply clicking through the application rather than having to laboriously create test steps one at a time by hand.

These [manual tests](#) can then be either [executed from within Rapise](#) or saved to Spira so that they can be executed by any tester that has access to the Spira web interface. In addition, these manual steps can be used as the basis for test automation by linking specific [test scenarios](#) to manual test steps.

### How to Open

You can open the **Manual** ribbon by either clicking on the **Manual Steps** icon on the main [Test ribbon](#) or clicking on the **ManualSteps.rmt** file in the [Test Files](#) tab.

### Spira



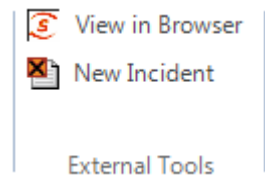
- The main **Save** icon will save the current test to Spira, both the manual test steps and any automated testing files.
- The **Reload** icon will refresh the current test from the copy held in Spira.
- The **Save Local** will save the manual test steps and any open automation files locally. You can use this to save files before doing a batch upload to Spira.

## Editor



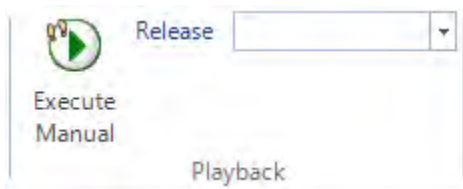
- The **Add Step** icon will add a new test step to the current manual test case displayed in the [manual test editor](#).
- The **Remove Step** icon will remove the highlighted test step from the current manual test
- The ↑ icon will move the highlighted test step **one position higher** in the current manual test
- The ↓ icon will move the highlighted test step **one position lower** in the current manual test

## External Tools

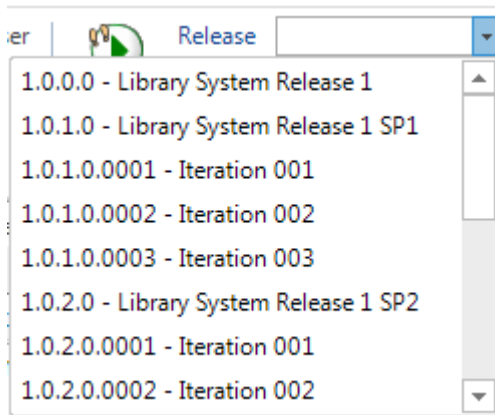


- The **View in Browser** icon will display the current manual test inside the [Spira](#) web interface
- The **New Incident** icon will open the [Incident Logging](#) dialog box so that you can log a new incident in Spira.

## Playback

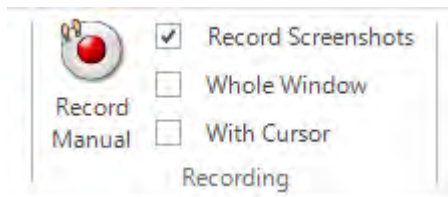


- The **Execute Manual** icon will execute the current manual test. When you click the Execute Manual icon, you will be asked to save the test case to Spira, then the latest version from Spira will be downloaded into the Rapise [manual test execution wizard](#) so that you can start manual testing.
- The **Release** dropdown list displays the list of releases in the current Spira project:



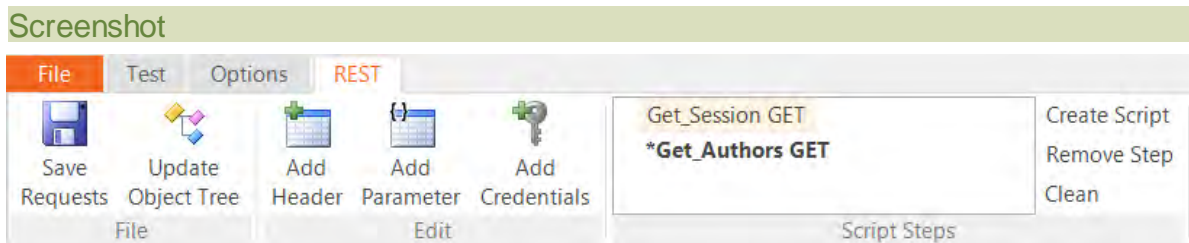
You can then choose the appropriate release that the current test is being executed against.

## Recording



- The **Record Manual** icon will start the [Select Application to Record](#) dialog box. This dialog box is the same one that you'll use for automated testing, however when you click through the application under test it will record [manual test steps](#) instead of automated script code.
- The **Record Screenshots** option will tell Rapise to capture the current screenshot when performing manual recording and include the screenshot with the recorded test step. These are two sub-options:
  - **Record Whole Window** - When checked, this will record the entire window. Warning, this may take up large amounts of disk space. Otherwise it will record just the object underneath the current cursor.
  - **Record Cursor** - This will record the location of the mouse pointer/cursor inside the image.

### 2.4.35 Ribbon: REST



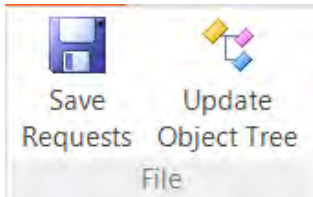
#### Purpose

The **REST** tab is for use with editing [REST web service](#) definition files.

## How to Open

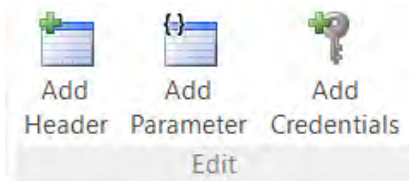
The **REST** tab is available anytime you have a REST definition file (.rest) file visible in the [Content View](#).

## File



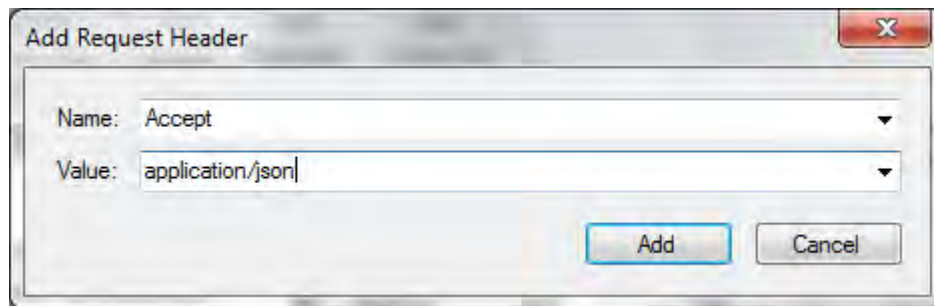
- **Save Requests** - Saves the current REST request definitions to the .rest file.
- **Update Object Tree** - Updates the main Rapise [Object Tree](#) with the current REST definitions. This turns each of your REST requests into Rapise learned objects that can be scripted against.

## Edit

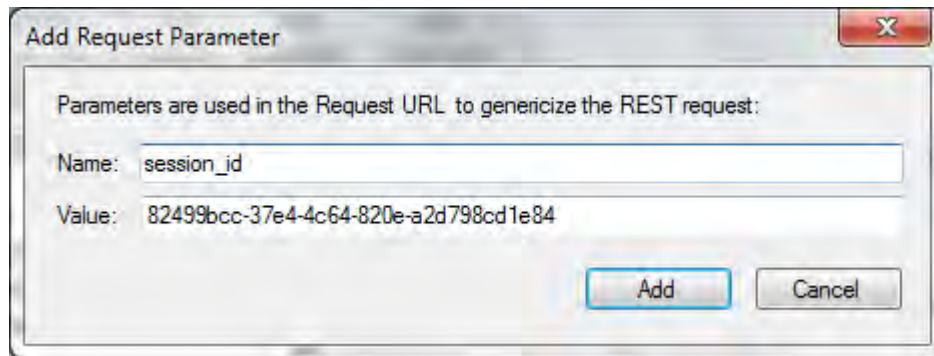


The Edit section of the REST ribbon lets you edit the HTTP headers, parameters and credentials associated with the current request.

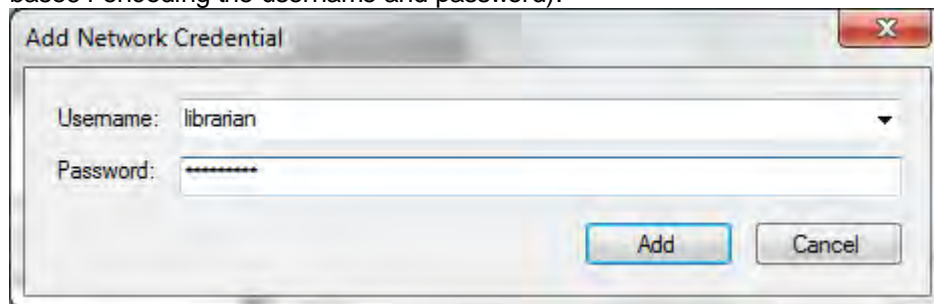
- **Add Header** - Allows you to add a standard or custom HTTP header to the current REST request:



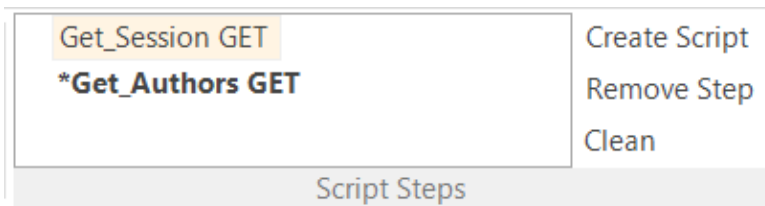
- **Add Parameter** - Allows you to add a parameter name/value to the current REST request. This is useful when you want your test script to be able to pass through different values (e.g. get book #1 vs. book #2):



- **Add Credentials** - Allows you to add an HTTP basic authentication credential (username and password) to the request. Saves you having to add the header manually (which would require base64 encoding the username and password):



## Script Steps



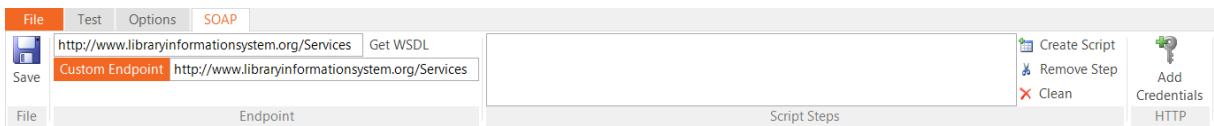
The Script Steps section of the REST ribbon lets you see the list of recorded REST operations and use them to create your [test script](#) in the main test file.

- **Create Script** - This takes all of the recorded steps and automatically creates the matching JavaScript code in your test script.
- **Remove Step** - This removes the recorded step from the script box
- **Clean** - This removes all of the recorded steps from the script box.

Each of the steps displayed in the script box will contain the name of the REST operation along with its HTTP method (GET, POST, PUT, DELETE, etc.). Steps displayed in **bold\*** with an asterisk also have a [verification point recorded](#). That means when the script is generated, it will include a **Tester.Assert** function to verify the results.

## 2.4.36 Ribbon: SOAP

### Screenshot



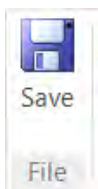
### Purpose

The **SOAP** tab is for use with editing [SOAP web service](#) definition files (also known as Web Service Definition Language (WSDL) files).

### How to Open

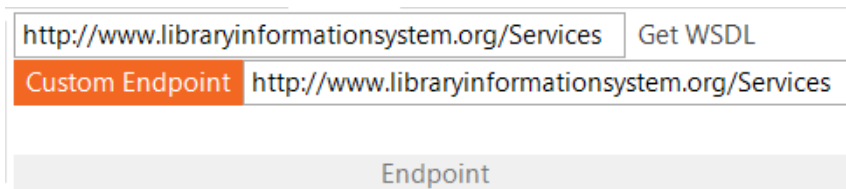
The **SOAP** tab is available anytime you have a SOAP definition file (.soap) file visible in the [Content View](#).

### File



- **Save** - Saves the current set of SOAP operations to the .soap file being edited.

### Endpoint

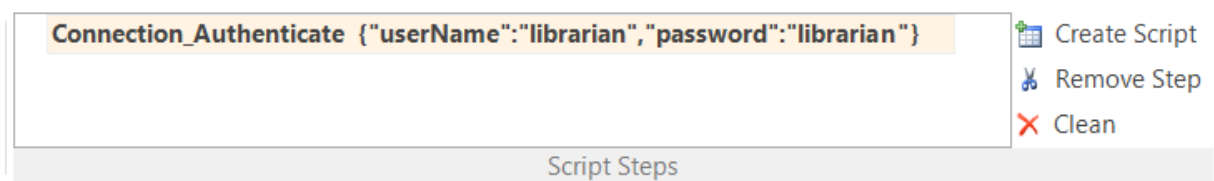


The Endpoint section lets you enter in the URL to the SOAP Web Service Definition Language (WSDL) file that contains a definition of all the SOAP operations exposed by the web service.

You enter in the URL in the top box and then click the **Get WSDL** button.

You can click on the **Custom Endpoint** button to toggle the display of the custom endpoint text box. This lets you override the default URL returned by the WSDL file and can be useful if you want to use the WSDL from one instance and invoke the operations against a different instance.

### Script Steps



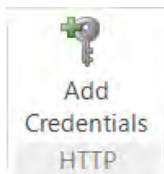


The Script Steps section of the SOAP ribbon lets you see the list of recorded SOAP operations and use them to create your [test script](#) in the main test file.

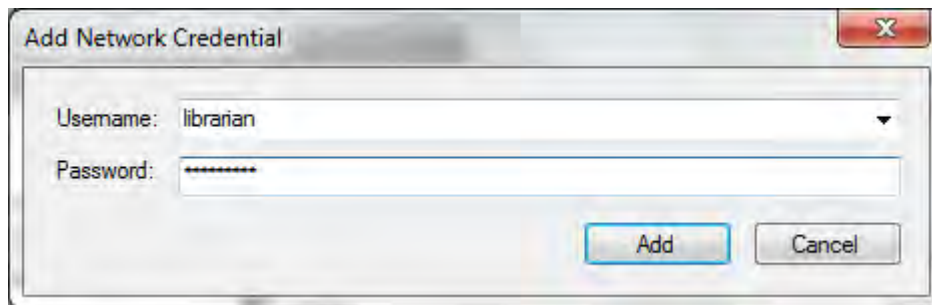
- **Create Script** - This takes all of the recorded steps and automatically creates the matching JavaScript code in your test script.
- **Remote Step** - This removes the recorded step from the script box
- **Clean** - This removes all of the recorded steps from the script box.

Each of the steps displayed in the script box will contain the name of the SOAP operation along with the specified parameters in JSON format. Steps displayed in **bold** with an asterisk also have a [verification point recorded](#). That means when the script is generated, it will include **Tester.Assert** functions to verify the results.

## HTTP

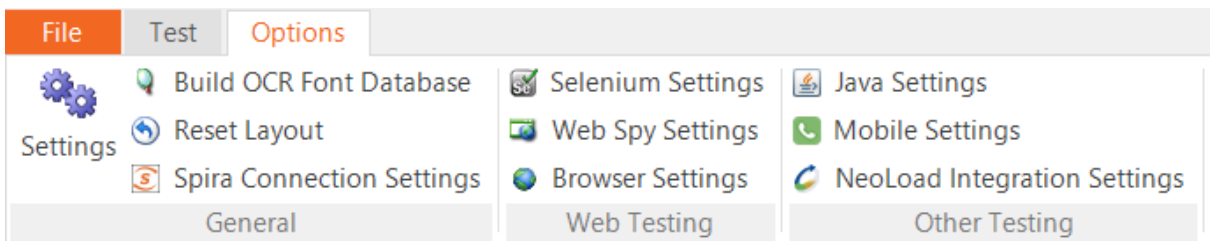


- **Add Credentials** - Allows you to add an HTTP basic authentication credential (username and password) to the SOAP operation. This is useful for SOAP operations that use HTTP basic authentication.



### 2.4.37 Ribbon: Options

## Screenshot



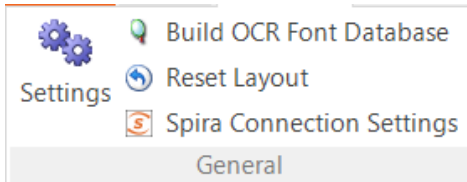
## Purpose

The **Options** tab provides access to all the global settings and options in Rapise. Settings relevant to just the current test are available in the [Settings](#) pane.

## How to Open

The **Options** tab is always available in the ribbon.

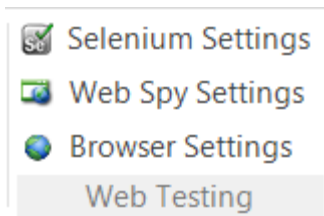
## General



The General section provides the following options:

- **Settings** - This brings up the [Global Settings dialog](#) that lets you change any of the system-wide settings for Rapise.
- **Build OCR Font Database** - Pressing the **Build OCR Font Database** button updates the list of screen fonts that Rapise recognizes when using an OCR object. Whenever you install new Fonts onto the computer you should click this button to have them added to the Rapise font database.
- **Reset Layout** - Pressing the **Reset Layout** button restores the [default layout](#). Rapise will restart.
- **Spira Connection Settings** - Pressing the **Spira Connection Settings** button takes you to a dialog box that lets you change how Rapise is integrated with the [SpiraTest](#) test management system. It will let you change the URL, username and password used to connect.

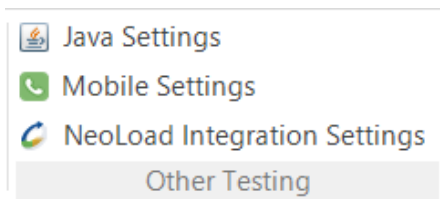
## Web Testing



The Web Testing section provides links to the different settings that can be changed for web testing:

- **Selenium Settings** - This button displays the [Selenium settings](#) dialog box. This is used to edit the different Selenium web browser profiles that can be used by Rapise.
- **Web Spy Settings** - This button displays the [Web Spy Settings](#) dialog box. This lets you change the settings related to using the Web Spy to inspect the DOM objects in web pages.
- **Browser Settings** - This button displays the [Browser Settings](#) dialog box. This lets you edit and select the web browser profile being used for web testing (for non-Selenium browser profiles)

## Other Testing



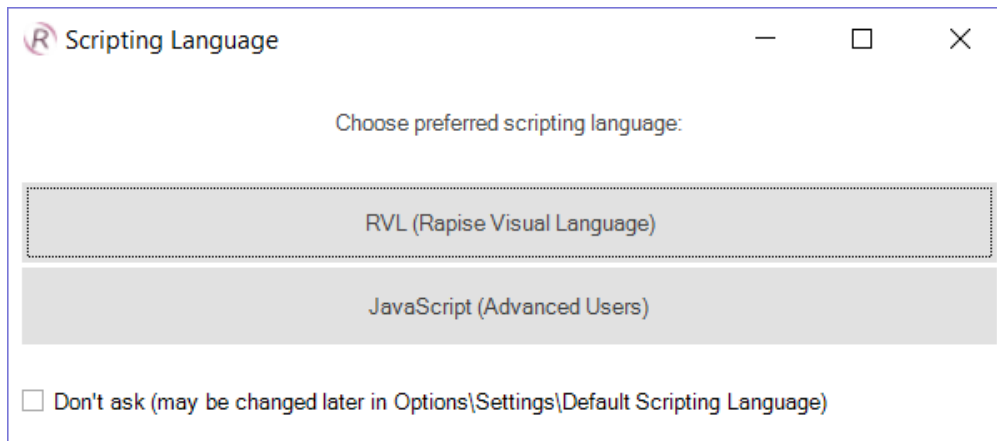
The Other Testing section provides tools relating to testing non-web applications, including [Java applications](#), [mobile device apps](#) and [load-testing with NeoLoad](#).

- **Java Settings** - this button displays the [Install Java Access Bridge](#) dialog box. Installing the Java Access Bridge lets Rapise connect to Java AWT/Swing applications so that they can be tested.
- **Mobile Settings** - this button displays the [Mobile Settings](#) dialog box. This lets you configure the different mobile devices that are available for testing by Rapise.

- **NeoLoad Integration Settings** - this button displays the [NeoLoad Integration Settings](#) dialog. These settings may need to be changed when using Rapise with NeoLoad.

## 2.4.38 Scripting Choice Dialog

### Screenshot



### Purpose

You use the **Choose Scripting Language** dialog to choose between writing your tests in the [Rapise Visual Language \(RVL\)](#) scriptless table language, or in the [JavaScript script editor](#).

### How to Open

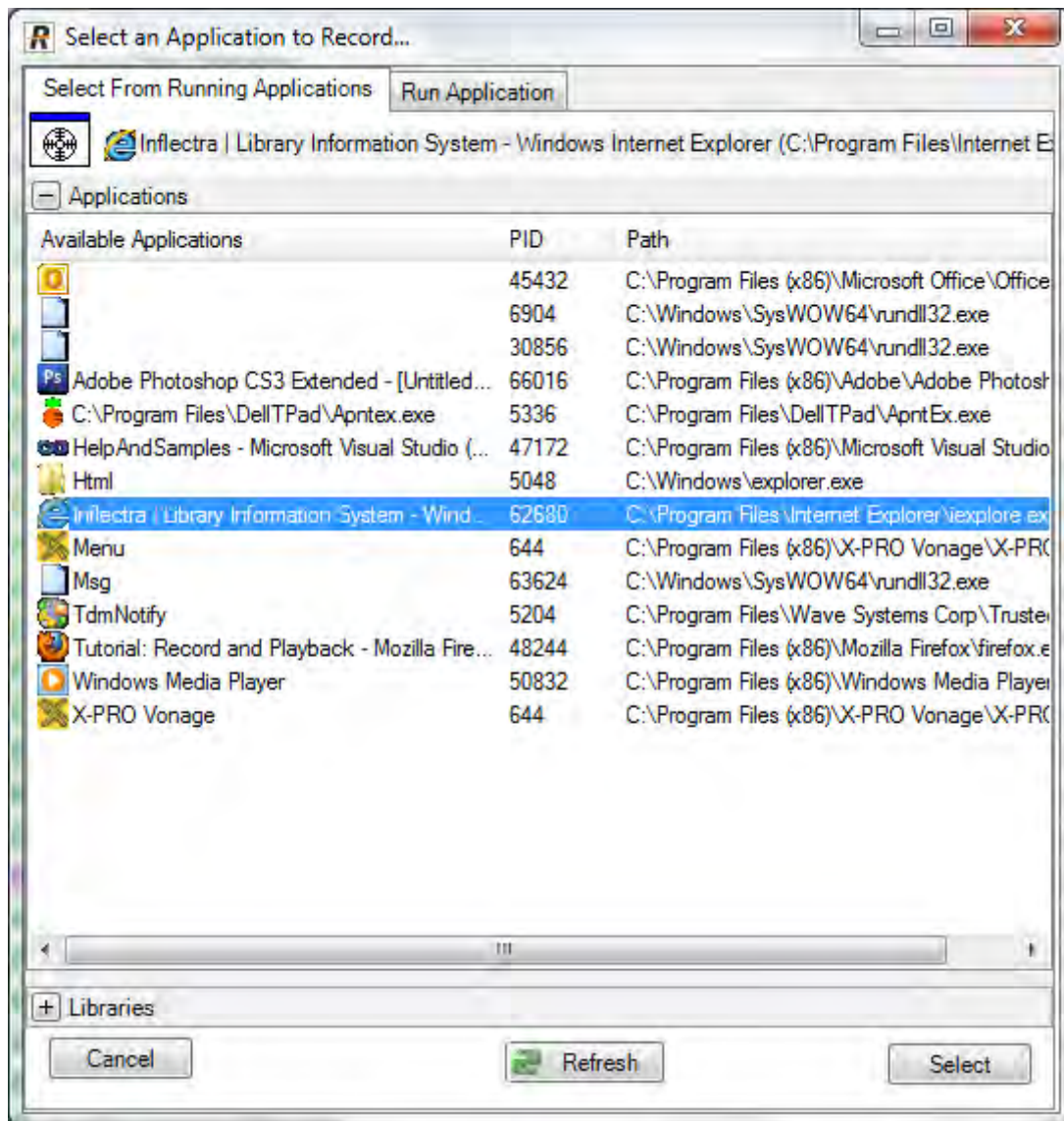
This dialog is automatically opened after you click **Create** in the [Create New Test](#) dialog.

### Misc

If you click the "Don't Ask" checkbox, Rapise will default to your last selection automatically when you create a test. You can change this options in the main [Settings dialog](#).

## 2.4.39 Select an Application to Record... Dialog

### Screenshot



### Purpose

The **Select an Application to Record...** (SAR) Dialog appears before [Recording](#) takes place when testing **desktop applications**.

It queries the user for which program to record, as well as what [Recording Library](#) to use.

If you are recording the same application for the second time then SAR is not shown. The recording proceeds to last used application if it is still available on the screen.

### How To Open

To open the SAR Dialog, press the **Record/Learn** button on the Ribbon (**Test** tab > **Recording & Learning** menu):



### Libraries

| Library                                                    | Description                                                  |
|------------------------------------------------------------|--------------------------------------------------------------|
| <input type="checkbox"/> Auto                              | Detect library automatically                                 |
| <input type="checkbox"/> .NET                              | .NET 1.1, 2.0, 3.0, 3.5 with Accessibility                   |
| <input checked="" type="checkbox"/> Internet Explorer HTML | HTML DOM-based recorder for Internet Explorer                |
| <input type="checkbox"/> Firefox HTML                      | HTML DOM-based recorder for Mozilla Firefox                  |
| <input type="checkbox"/> Generic                           | Generic library contains basic definitions for most commo... |

The **Library** table lists the available Recording Libraries. Select the one appropriate to the process/program you will record. If you select **Auto**, Rapise will attempt to choose the correct recording library for you. See the [Recording Library](#) section for more information.

### Available Applications

| Available Applications                    | PID  | Path                                         |
|-------------------------------------------|------|----------------------------------------------|
|                                           | 7032 | C:\Windows\explorer.exe                      |
|                                           | 3744 | C:\Program Files\Google\GoogleToolbar\...    |
| C:\Windows\system32\cmd.exe               | 4796 | C:\Windows\system32\cmd.exe                  |
| Help & Manual                             | 7024 | C:\Program Files\EC Software\HelpAndM...     |
| Program Manager                           | 7032 | C:\Windows\explorer.exe                      |
| Sample ATM Login - Windows Internet Ex... | 7000 | C:\Program Files\Internet Explorer\explor... |

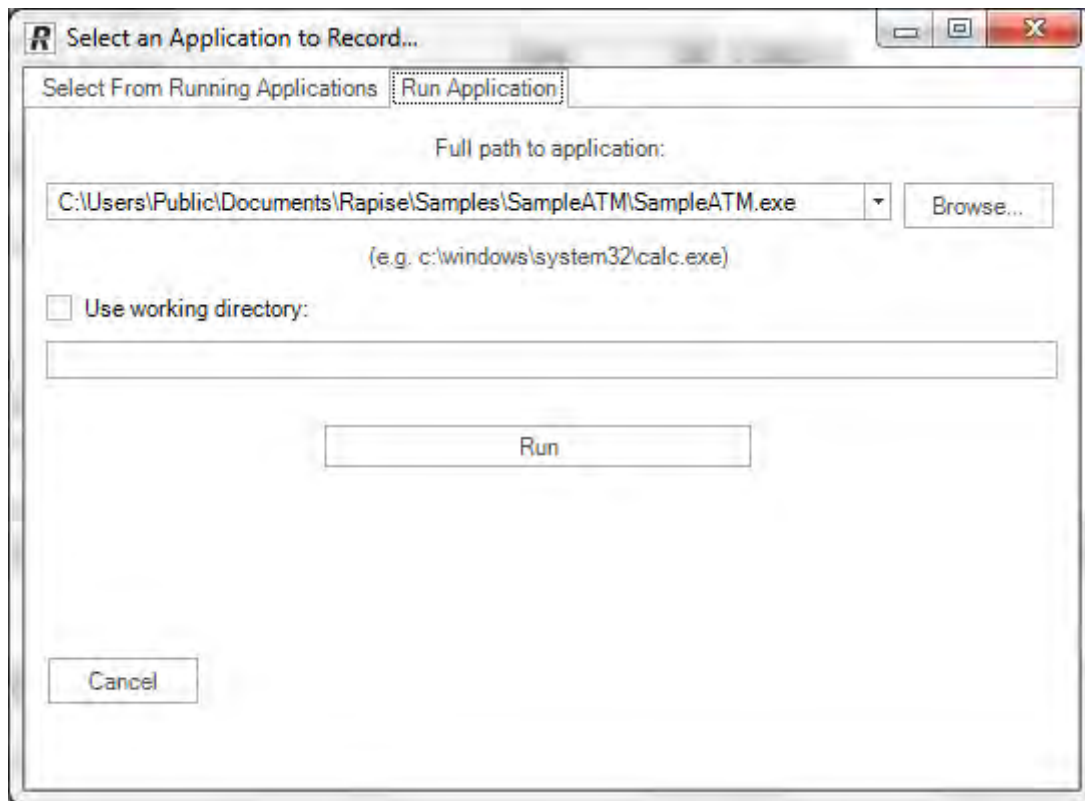
The **Available Applications** table lists all of the processes running at the time you open the **SAR dialog**. If the process you would like to record is already open, you can select it from the table. Pick the appropriate recording library (above) first before you pick an application to record; your application choice will become unselected if you do not do it last.

### Widgets



- The **Cancel button** closes the dialog.
- **Show All:** While unchecked only top level application windows reflected in the Windows Task Bar are shown in the 'Available Applications' list. Check this and press Refresh to see all top level windows available on the screen.
- **Refresh List:** Press to refresh the **Available Applications** table. After refreshing, you will see processes that began after the **SAR dialog** was opened.
- **Select button:** To record a process from the **Available Applications** table, select the process and then press the *Select* button.

### Run Application Tab



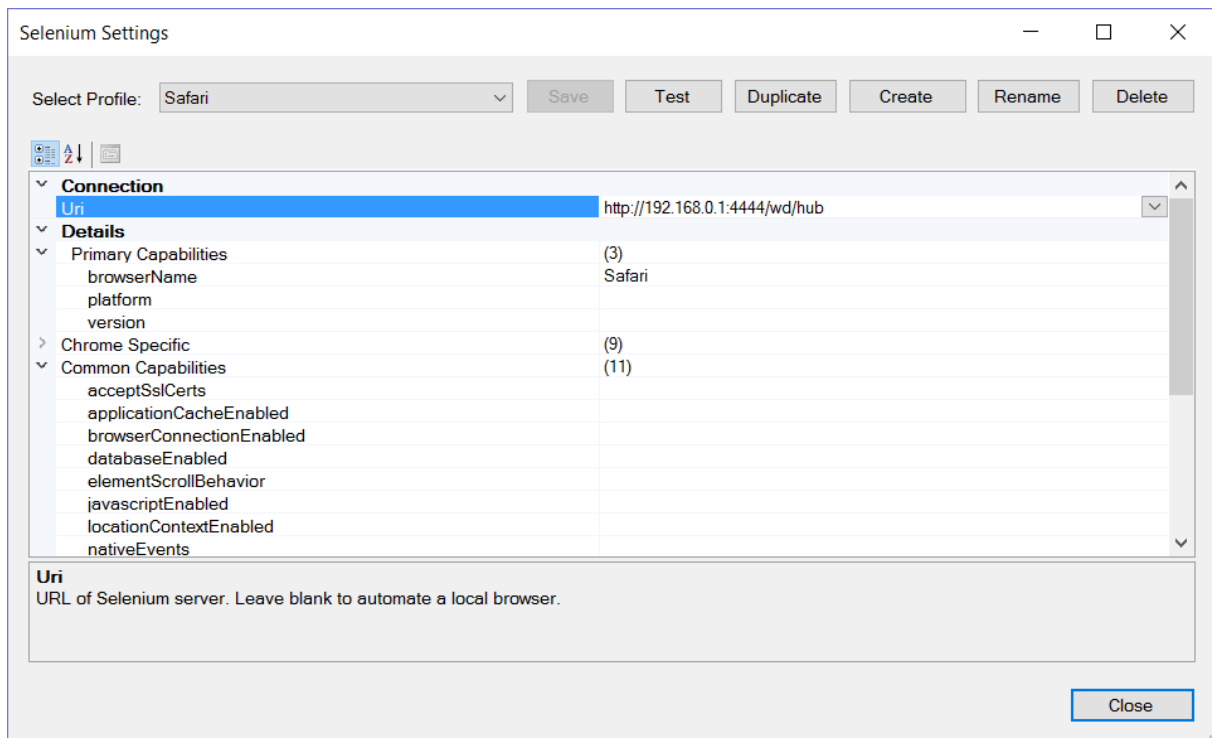
- **Path drop down list:** If the program you would like to record is not already open, you can specify its path here. If the program is already running, you can select it from the **Available Applications** table.
- **Browse button:** Browse for an application to open and record.
- **Use working directory:** To set a specific working directory when launching the application, check the box and enter in a value for the **working directory**.
- **Run button:** To record a program that is not currently open, fill in the **Path** text-box and press the **Run** button.
- The **Cancel button** closes the dialog.

#### 2.4.40 Selenium Settings Dialog

##### Purpose

This dialog box displays the list of mobile devices that have been configured for use by Rapise and lets you create a new profile, modify a profile or make a new profile based on an existing one.

##### Screenshot



## How to Open

You can open this dialog box from the Rapise [Options ribbon](#), it is the **Selenium Settings** button in the **Web Testing** tab.

## Menu Options

This dialog box has the following menu options:

- **Select Profile** - This dropdown list lets you select a different Selenium profile to be displayed in the dialog.
- **Save** - This button will save the changes to the current Selenium profile.
- **Test** - This button will test the Connection (URL) from Rapise to [Selenium WebDriver](#) (which is used to connect to the web browsers) and the connection from Selenium to the web browser.
- **Duplicate** - This button will create a new Selenium profile based on the currently viewed one.
- **Create** - This button will create a new empty Selenium profile that you can edit.
- **Rename** - This button will change the name of the current Selenium profile being edited.
- **Delete** - This button will delete the currently displayed Selenium profile. There is no undo, so be careful!

## Connection

This section lets you enter the URI used to connect to the [Selenium WebDriver](#) server which hosts the web browsers being tested. It is typically of the form:

- <http://server:4444/wd/hub>

Where the port number used by Selenium is 4444 by default and the `/wd/hub` suffix is added.



If you are using web browsers on the local machine (that is running Rapise) you don't need to enter in a URI and can leave the entire field blank.

## Details

This section has various settings, some of which are used by all web browsers, some are browser specific:

- **Primary Capabilities**

- **browserName** - The name of the browser being automated. The current allowed values are:
  - Internet Explorer
  - Firefox
  - Chrome
  - Safari
  - Opera
  - MicrosoftEdge
- **platform** - A key specifying which platform the browser should be running on. This is used by Selenium Grid and/or cloud platforms such as SauceLabs to dynamically select the appropriate Selenium server. For other cases you can leave blank. The allowed values for Selenium Grid include:
  - WINDOWS
  - XP
  - VISTA
  - MAC
  - LINUX
  - UNIX
  - ANDROID
- **version** - The browser version to use. This is used by Selenium Grid and/or cloud platforms such as SauceLabs to dynamically select the appropriate Selenium server. For other cases you can leave blank.

- **Common Capabilities**

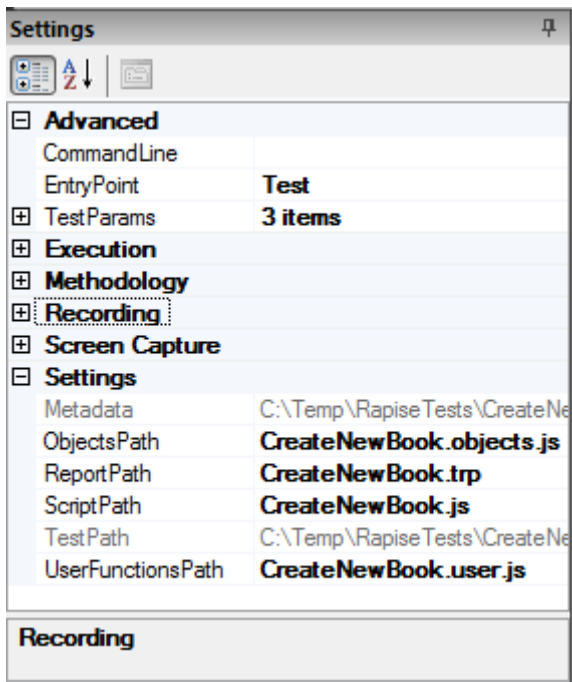
- **javascriptEnabled** - Whether the Selenium session supports executing user-supplied JavaScript in the context of the current page
- **databaseEnabled** - Whether the session can interact with database storage.
- **locationContextEnabled** - Whether the session can set and query the browser's location context.
- **applicationCacheEnabled** - Whether the session can interact with the application cache.
- **browserConnectionEnabled** - Whether the session can query for the browser's connectivity and disable it if desired.
- **webStorageEnabled** - Whether the session supports interactions with storage objects.
- **acceptSslCerts** - Whether the session should accept all SSL certs by default.
- **rotatable** - Whether the session can rotate the current page's current layout between portrait and landscape orientations (only applies to mobile platforms).
- **nativeEvents** - Whether the session is capable of generating native events when simulating user input.
- **unexpectedAlertBehaviour** - What the browser should do with an unhandled alert before throwing out the UnhandledAlertException. Possible values are 'accept', 'dismiss' and 'ignore'.
- **elementScrollBehavior** - Allows the user to specify whether elements are scrolled into the viewport for interaction to align with the top (0) or bottom (1) of the viewport. The default value is to align with the top of the viewport. Supported in IE and Firefox (since 2.36).

- **Chrome Specific** - this contains various settings specific to the Chrome web browser
- **Firefox Specific** - this contains various settings specific to the Firefox web browser
- **IE Specific** - this contains various settings specific to the IE web browser
- **Safari Specific** - this contains various settings specific to the Safari web browser

- **Proxy** - this contains various settings for using HTTP proxy servers when connecting from Rapise to Selenium WebDriver
- **Remote WebDriver Specific**
  - **webdriver.remote.quietExceptions** - Disable automatic screenshot capture on exceptions. This is False by default.

## 2.4.41 Settings Dialog

### Screenshot



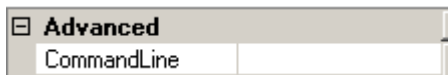
### Purpose

Use the Settings Dialog to change test specific settings.

### How to Open

The Settings dialog is part of the [Default Layout](#).

### Advanced



- **CommandLine** is a freeform text box. Use it to specify values for global variables (beginning in **g\_**) to pass the [recorder](#) and [player](#). You can view which global variables are available in the source files (such as **Player.js**, **SeSCommon.js**, etc).

### Execution

| Execution                   |       |
|-----------------------------|-------|
| CacheObjects                | False |
| CommandInterval             | 100   |
| IterationsCount             | 1     |
| ObjectLookupAttemptInterval | 150   |
| ObjectLookupAttempts        | 1     |

- **CacheObjects**: Remember object locations and try to reuse them for speed. This is helpful with dialog based applications.
- **CommandInterval**: Time interval (in milliseconds) between script commands during script execution.
- **IterationsCount**: Your test script will be executed this many times consecutively during [Playback](#).
- **ObjectLookupAttemptInterval**: This is the time Rapise will wait between attempts to locate an object.
- **ObjectLookupAttempts**: This is the number of times Rapise will attempt to locate an object.

## Recording

| Recording            |       |
|----------------------|-------|
| BeautifySavedObjects | False |

- **BeautifySavedObjects** affects how the [Script Recorder](#) writes object information to your test script. If **False**, the object definition will be written as a single line:

```
var saved_script_objects={
 Balance:{ "version":0,"object_type":"SeSSimulated","object_name":"Transaction
Completed Successfully\n\nAccount 00000005
Balance:1046.00","object_class":"Static","object_role":"ROLE_SYSTEM_STATICTEXT","object_
text":"Transaction Completed Successfully\n\nAccount 00000005
Balance:1046.00","locations":[{"locator_name":"Location","location":
{"location":"4.4.4","window_name":"SmarteATM","window_class":"#32770"}},
{"locator_name":"LocationPath","location":
{"window_name":"SmarteATM","window_class":"#32770","path":[{"object_name":"Transaction
Completed Successfully\n\nAccount 00000005
Balance:1046.00","object_class":"Static","object_role":"ROLE_SYSTEM_STATICTEXT"},
{"object_name":"Transaction Completed Successfully\n\nAccount 00000005
Balance:1046.00","object_class":"Static","object_role":"ROLE_SYSTEM_WINDOW"},
{"object_name":"SmarteATM","object_class":"#32770","object_role":"ROLE_SYSTEM_DIALOG"}}]}
};
```

If **True**, the object definition will be written in a manner that takes more space, but is easier to read and change:

```
var saved_script_objects={
 Balance:{
 "version": 0,
 "object_type": "SeSSimulated",
 "object_name": "Transaction Completed Successfully\n\nAccount
00000005 Balance:1046.00",
 "object_class": "Static",
 "object_role": "ROLE_SYSTEM_STATICTEXT",
 "object_text": "Transaction Completed Successfully\n\nAccount
00000005 Balance:1046.00",
 "locations": [
 {
 "locator_name": "Location",
 "location": {
 "location": "4.4.4",
 "window_name": "SmarteATM",
```

```

 "window_class": "#32770"
 }
},
{
 //section omitted for brevity
}
]
}
};

```

Objects that were learned in previous recordings are affected by the value of **BeautifulSavedObjects**.

## Screen Capture

| Screen Capture    |       |
|-------------------|-------|
| Capture Execution | False |
| Capture Recording | False |
| Include in Report | False |
| Widget Only       | False |

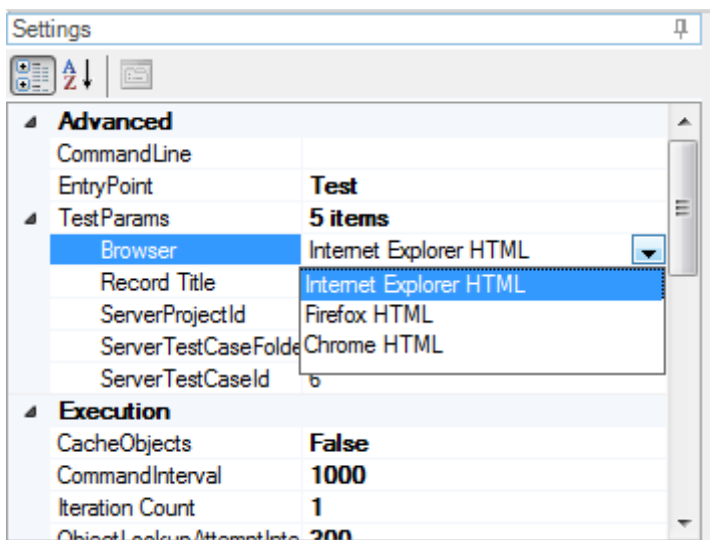
- **Capture Execution**: Set this to **True** if you want to save screen images for each recognized object during playback.
- **Capture Recording**: Set this to **True** if you want to save screen images for each action during recording.
- **Include in Report**: Set this to **True** to include the saved images in the execution report during playback.
- **Widget Only**: Set this to **True** to only save the widget area in the screenshot, as opposed to the whole window.

## TestParams

The TestParams section includes various custom test parameters:

Click to open the [TestParams Collection Editor Dialog](#).

There is a build-in set of test parameters for [cross-browser testing](#). When you open up a test that uses one of the HTML libraries it will display the following built-in test parameter that you can use to change the **playback browser**:



## Settings

| Settings          |                                  |
|-------------------|----------------------------------|
| Metadata          | C:\Users\Public\Documents\Shared |
| ObjectsPath       | <b>TwoDialogsTest.objects.js</b> |
| ReportPath        | <b>TwoDialogsTest.trp</b>        |
| ScriptPath        | <b>TwoDialogsTest.js</b>         |
| TestPath          | C:\Users\Public\Documents\Shared |
| UserFunctionsPath | <b>TwoDialogsTest.user.js</b>    |

- **UserFunctionsPath**: Path (relative to the test directory) to the file with user-defined functions utilized in this test. Normally this file has name in form \*.user.js.
- **ObjectsPath**: Path (relative to the test directory) to file containing object tree information. This file contains **saved\_script\_objects** structure with all object locators gathered during recording and learning. Normally this file has name in form \*.objects.js.
- **ReportPath**: Path (relative to the test directory) to the test's report file. Normally this file has extension form .trp which stands for **Test Report**.
- **ScriptPath**: Path (relative to the test directory) to the test script.
- **TestPath**: Path to the test definition file (\*.sstest).

## 2.4.42 SOAP Definition Editor

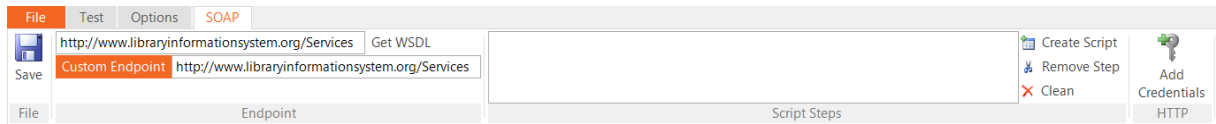
### Screenshot

### Purpose

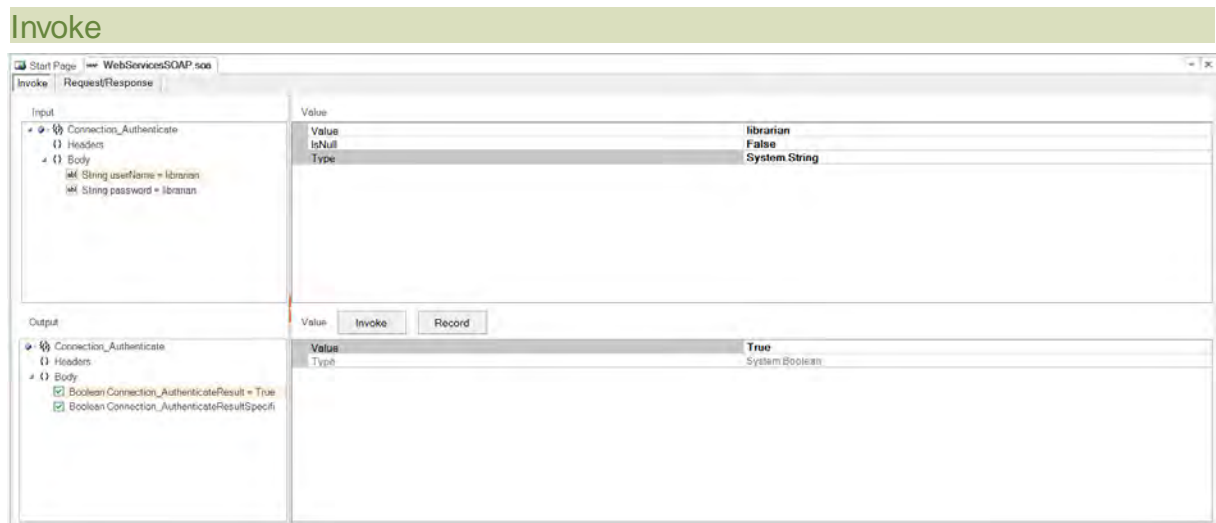
The **SOAP Definition Editor** allows you to edit [SOAP web service](#) definition files (.soap) that contain data downloaded from SOAP Web Service Definition Language (WSDL) URLs.

### How to Open

Use the [Add Web Service Dialog](#) to create a new SOAP definition (.soap) file. The definition file will be opened in a **SOAP Editor** in the [Content View](#). The [SOAP Tab](#) of the Ribbon will also open.



Or, you can double-click on an existing .soap file in the [Test Files View](#) explorer window. The definition file will be opened in a **SOAP Editor** in the [Content View](#). The [SOAP Tab](#) of the Ribbon will also open.



The invoke tab lets you visually choose a specific SOAP operation and execute it. It has the following sections:

- **Input** - You can expand the various SOAP operations and see the input headers and body parameters that need to be sent to the function. You can click on each parameter and supply a value on the right-hand pane.
- **Output** - You can expand the various SOAP operations and see the output headers and result that should be returned from the operation (if successful). You can click on each header or the body and see the type of data returned.
- **Invoke** - Once you have supplied the appropriate values, click the Invoke button send the SOAP request and get the data back from the request.
- **Record** - Clicking this button after a successful invoke of the operation will add it to the list of recorded test scripts shown in the [SOAP ribbon](#).
- **Verify** - Clicking this button after the Record will add a `Tester.Assert(...)` [verification checkpoint](#) to the recorded test script. This will make Rapise automatically verify all of the returned values.

## Request / Response

This tab displays the raw SOAP XML request and response. When a SOAP operation fails, this is useful when debugging since it lets you see the raw data being sent to the web service:



Typically you will want to view this information in either **Raw** or **XML** modes since SOAP doesn't support JSON as a serialization format.



## Response Body



| Response Headers |                               |
|------------------|-------------------------------|
| Name             |                               |
| ResponseCode     | OK (OK)                       |
| Content-Length   | 296                           |
| Cache-Control    | private                       |
| Content-Type     | text/xml; charset=utf-8       |
| Date             | Thu, 22 Dec 2016 20:59:14 GMT |
| Server           | Microsoft-IIS/8.0             |
| X-AspNet-Version | 4.0.30319                     |

Response Body   **Response Headers**   Output   Warnings   Errors   Find Results

The HTTP Response in SOAP XML format is formatted and displayed:

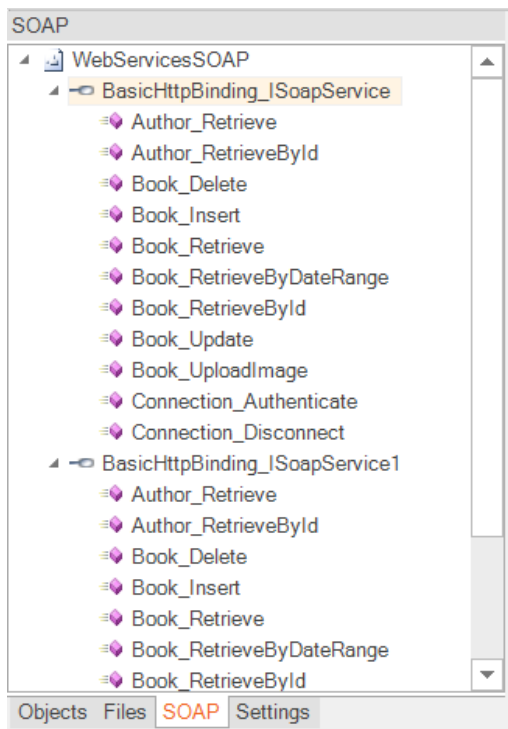
```
Response Body
┆ Auto Raw XML JSON
1 <?xml version="1.0" encoding="utf-8"?>
2 <s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
3 <s:Body>
4 <Connection_AuthenticateResponse xmlns="http://www.inflectra.com/LibraryInformationSystem/Services/">
5 <Connection_AuthenticateResult>true</Connection_AuthenticateResult>
6 </Connection_AuthenticateResponse>
7 </s:Body>
8 </s:Envelope>
```

< Response Body   Response Headers   Output   Warnings   Errors   Find Results

This displays the output from the last web service request. It has several tabs:

- **Response Header** - Displays a list of the HTTP response headers (name and value). If the request received a 200 OK code back, it's displayed in **green**, if it receives an error code back, it's displayed in **red**.
- **Response Body**
  - **Raw** - Displays the raw text of the HTTP response body received from the server.
  - **XML** - If the received body content is identified as XML, this tab displays nicely formatted XML that is easier to read than the raw response body.

## Operation Explorer



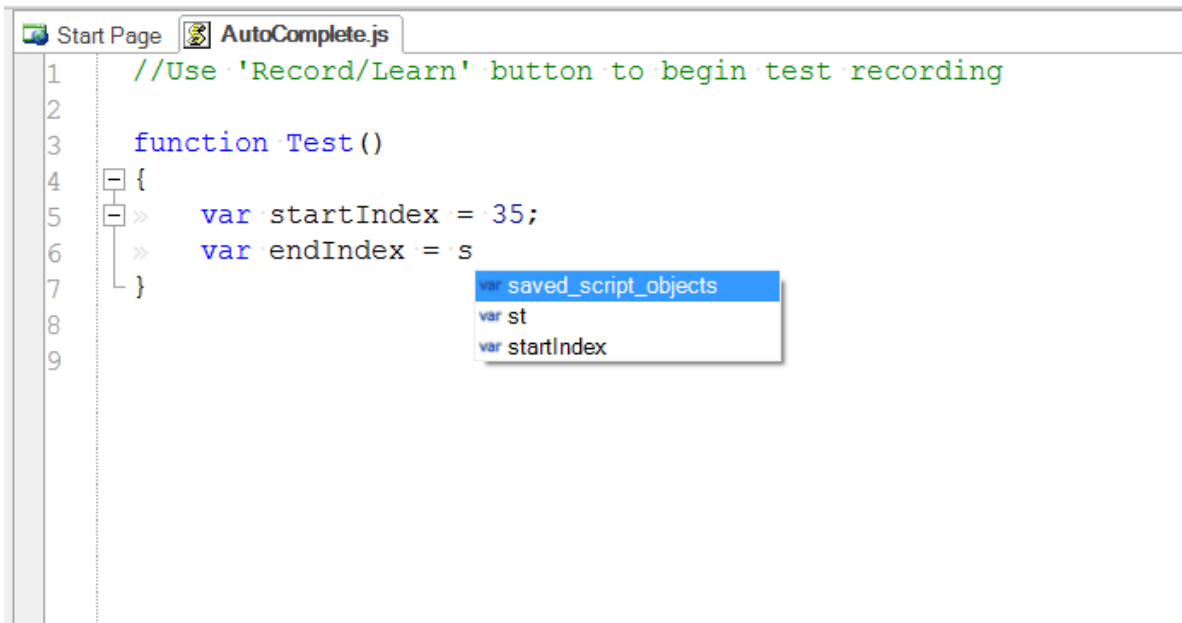
This section lets you see all of the SOAP web service endpoints in the current WSDL file and view the individual operations.

### See Also

- For more info on SOAP Web Services, see [SOAP Web Services](#).
- For a tutorial on creating a SOAP web service test, see the [Web Services SOAP Tutorial](#).

## 2.4.43 Source Editor

### Screenshot



### Purpose

To display and edit javascript files. The editor supports [Syntax Highlighting](#), [Syntax Checking](#), [Code Folding](#) and [Code Completion](#).

### How to Open

Use the [Test Files Dialog](#) to open a javascript file. The javascript file will be opened in a **Source Editor**, in the [Content View](#). The [Edit Tab](#) of the Ribbon will also open.

## 2.4.44 Spreadsheet Viewer

### Screenshot

The screenshot shows a spreadsheet viewer window with a tab labeled 'Calc.xls'. The spreadsheet is titled 'Calc Data' and has a '+Add New' button. The data is as follows:

|   | A     | B         | C     | D      |
|---|-------|-----------|-------|--------|
| 1 | Item1 | Operation | Item2 | Result |
| 2 | 15    | +         | 13    | 28     |
| 3 | 5     | *         | 6     | 30     |
| 4 | 19    | -         | 3     | 16     |
| 5 | 8     | /         | 4     | 2      |
| * |       |           |       |        |

### Purpose

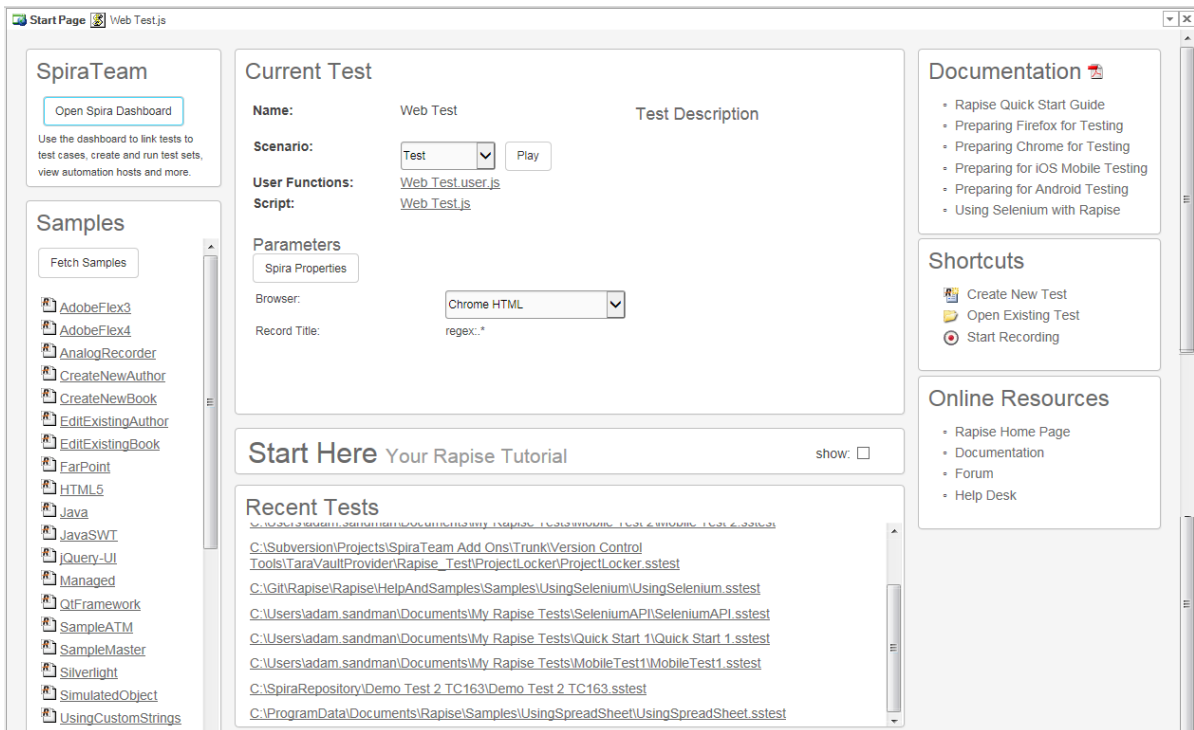
To display excel (xls) files.

## How to Open

Use the [Test Files Dialog](#) to open an excel file. The excel file will be opened in a **Spreadsheet Viewer**, in the [Content View](#). The [Spreadsheet](#) tab of the Ribbon will also open.

## 2.4.45 Start Page

### Screenshot



### Purpose

To display the latest news and information regarding Rapise and the currently open test.

The Start Page is intended to be a convenient entry point for most common tasks related to test design and execution. The Start Page provides:

- 1. A link to the **Spira Dashboard**: This will open the [Spira Dashboard](#) that provides a convenient way to interact with Inflectra's **SpiraTest** test management system or Inflectra's **SpiraTeam** application lifecycle management system.
- 2. **Current Test** information block, including:
  - 3. **Test Name** and available scenarios
  - 4. **Test Parameters** including the **Spira Properties** for the test. These include the IDs of the **project** and **test case** in SpiraTest. In addition, for web-based tests there will be the special **Browser** selection property. All tests will include any custom properties set by user.
  - 5. **Test Description**. This information is taken from a **Readme.htm** file (if it exists in the test folder of the current test). If this file does not exist then the first `/** ... */` comment inside the `Test` function is displayed instead.
- 6. **Quick Start Guide** This is an interactive tutorial for beginners who are using the system for the first time. It may be hidden by unchecking the **Show** checkbox.
- 7. **Recent Tests**. This displays a clickable list of recently used tests
- 8. **Browser Samples**. This displays a list of available Rapise samples. Some samples are

shipped with Rapise while others are provided from the online public repository.

- 9. The **Fetch Samples** button is used to download/update additional samples from online public repository.

## How to Open

The **Start Page** opens automatically with Rapise. This behavior can be modified in the [Options](#) dialog using the **ShowStartPageOnStartup** setting.

## 2.4.46 Spira Dashboard

### Purpose

This page displays information from the SpiraTest or SpiraTeam server that this instance of Rapise is connected to. More details on using Rapise with either SpiraTest or SpiraTeam can be found in the separate **Using Rapise with SpiraTest Guide**. A copy of this guide should be in the Start > Programs menu created by the Rapise installer.

The dashboard displays information about the current Spira project, including the associated test cases, test sets and automation hosts:

### Screenshot

A typical Spira dashboard will look like the following:

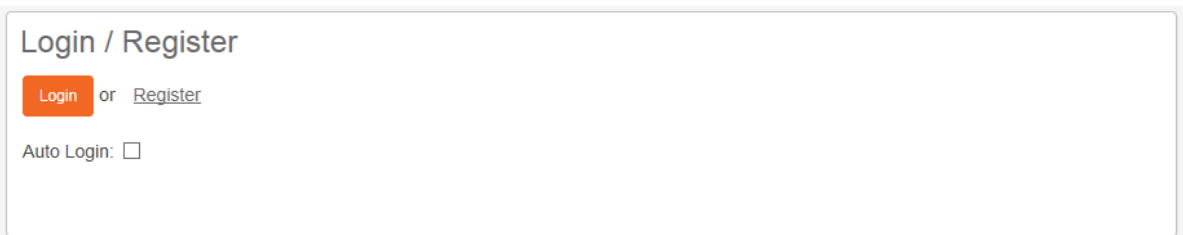
The screenshot displays the SpiraTeam Dashboard for Test Management. At the top, there's a navigation bar with 'Start Page', 'Web Test.js', and 'Spira Dashboard' tabs, along with an 'Options' button. The main content area is divided into several sections:

- Project:** A dropdown menu showing 'Rapise Demo Project'.
- Test Cases:** A table with columns 'Id', 'Name', 'Description', and 'Action'. It lists several test cases, including 'Flex 4 Test', 'Desktop Demo Test', and 'Library Web Test'. There are 'Save As...' buttons for some and an 'Open' button for others. A '+ Create Test Set' and 'Add to Test Set' button is at the bottom.
- Test Sets:** A table with columns 'Id', 'Name', 'Description', and 'Action'. It lists 'Rapise Demo Set', 'DH Automated Testing', and 'Rapise Demo 2', each with an 'Execute' button.
- Right Sidebar:**
  - Login / Register:** Shows 'Welcome, administrator!' and a 'Logout' button. An 'Auto Login:' checkbox is checked.
  - Spira Connection:** Displays 'Spira URL: http://doctor/SpiraTeam', 'User Name: administrator', and 'Local Folder: C:\SpiraRepository'. There is an 'Edit Connection Settings' button.
  - Automation Hosts:** Shows 'VM-Win7' in a dropdown, 'Token: WIN7', and 'Description: null'. There is a '+ Create Host for this Machine' button.

Each of the sections is explained separately below:

### Spira Login/Sign-Up

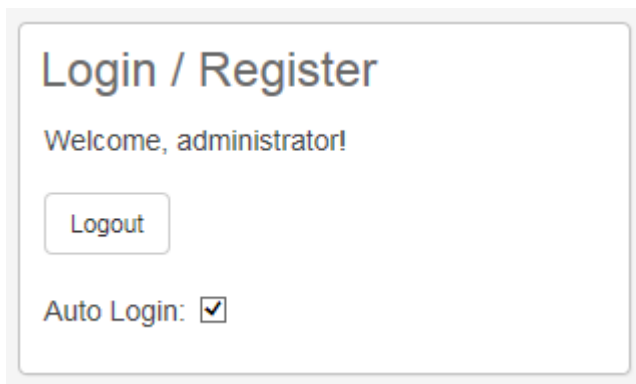
This section will display the name of the currently configured Spira user (if there is one) together with the option to either login to an existing Spira instance or to sign-up for a new one:



The screenshot shows a widget titled "Login / Register". It contains three elements: a red "Login" button, a text "or", and a blue "Register" link. Below these is a checkbox labeled "Auto Login:" which is currently unchecked.

- **Login:** this will log you into the instance of Spira listed in the **Connection Info** section
- **Sign Up:** this link will take you to the Inflectra website where you can sign up for a Spira account.
- **Auto Login:** if you select this option, Rapise will automatically login to Spira when it first starts up.

Once you login to the instance of Spira, the widget will change to the following:

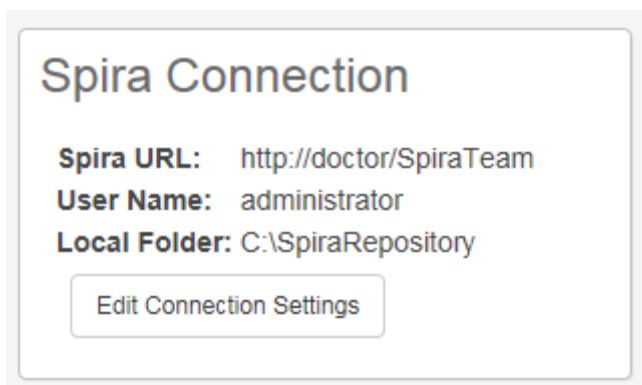


The screenshot shows the same widget after a successful login. The title "Login / Register" remains. Below it, the text "Welcome, administrator!" is displayed. A "Logout" button is now visible. The "Auto Login:" checkbox is now checked.

- **Logout:** this will log you out of the instance of Spira listed in the **Connection Info** section

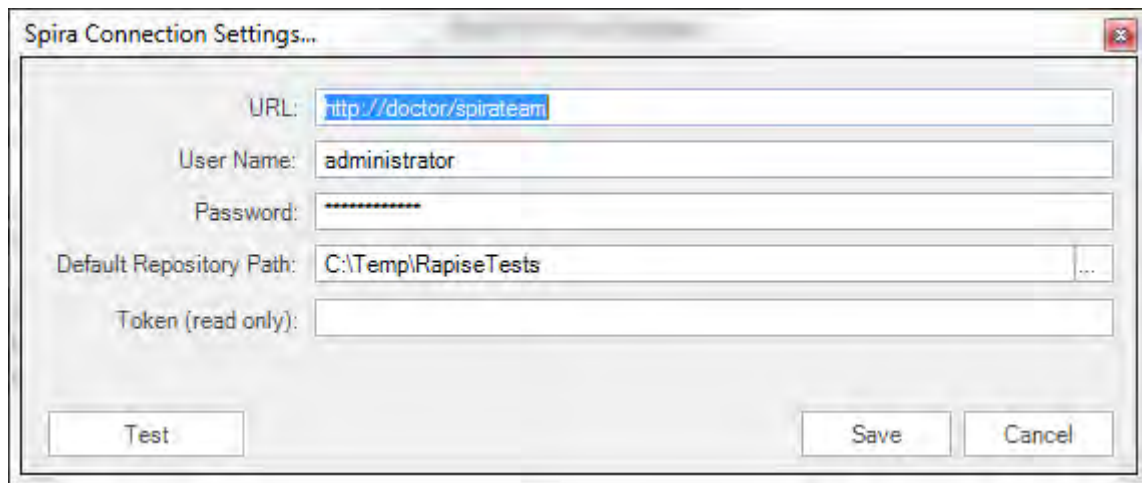
### Connection Info

This section will display the URL, login and corresponding local repository folder for the current Spira instance (if one has been set).



The screenshot shows a widget titled "Spira Connection". It displays three lines of information: "Spira URL: http://doctor/SpiraTeam", "User Name: administrator", and "Local Folder: C:\SpiraRepository". Below this information is a button labeled "Edit Connection Settings".

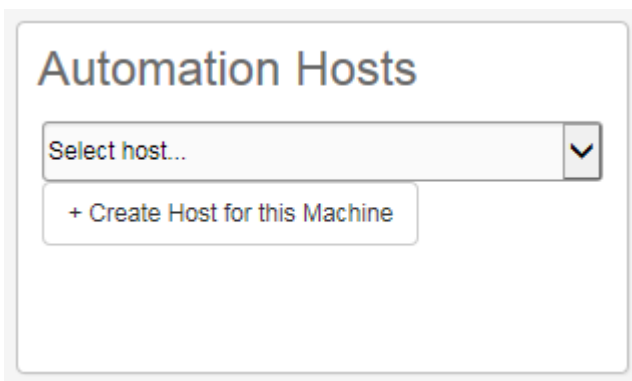
To change the current connection (or to set one up if this is a new installation of Rapise), click on the **[Edit Connection Settings]** button. That will display the [Connection Settings](#) dialog box:



You can then change the current Spira connection using this dialog box. See the topic on [Spira Integration](#) for more details.

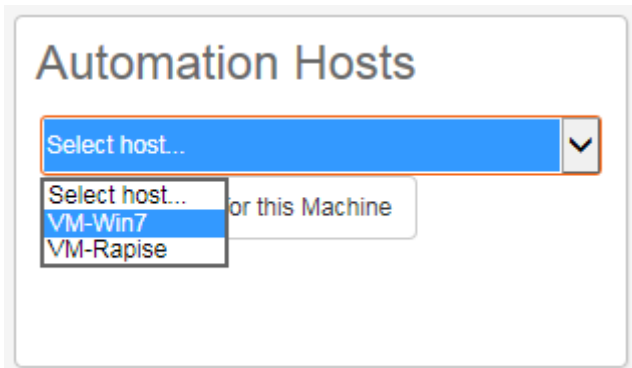
### Automation Hosts

This section will display a list of the **automation hosts** available in the currently selected Spira project:



An **automation host** is a notional computer that Spira uses to assign specific **test sets** to specific computers running Rapise. This allows you to schedule tests to run on different computers remotely. When you first connect to Spira, it will not know which automation host the current machine matches.

Using the dropdown list you can select one of the displayed automation hosts:



That will tell Rapise that this local computer is in fact this Spira automation host. Any test sets scheduled in Spira for this automation host will now be executed on this computer running Rapise.



If you don't see the current automation host listed, you can click on the **[Create Host for this Machine]** button to create a new automation host entry for the current computer:

This screen lets you enter a display name (Name), system name (Token) and long description for a new automation host that Rapise will create in the current Spira project. Click **[OK]** to confirm the new automation host.

## Test Cases

This section displays a list of **test cases** that are either created by the current Spira user or are assigned to the current Spira user:

**Test Cases** My Assigned ▼

| ✓ Id                                              | Name                | Description | Action     |
|---------------------------------------------------|---------------------|-------------|------------|
| <a href="#">TC000035</a>                          | 📁 Functional Tests  |             |            |
| <input type="checkbox"/> <a href="#">TC000164</a> | 📄 Flex 4 Test       |             | Save As... |
| <input type="checkbox"/> <a href="#">TC000165</a> | 📄 Desktop Demo Test |             | Save As... |
| <a href="#">TC000036</a>                          | 📁 Regression Tests  |             |            |
| <input type="checkbox"/> <a href="#">TC000037</a> | 📄 Library Web Test  |             | Open       |

+ Create Test Set    Add to Test Set

Each test cases will be displayed with the ID, name and long description of the test case together with an icon that indicates the type of test case:

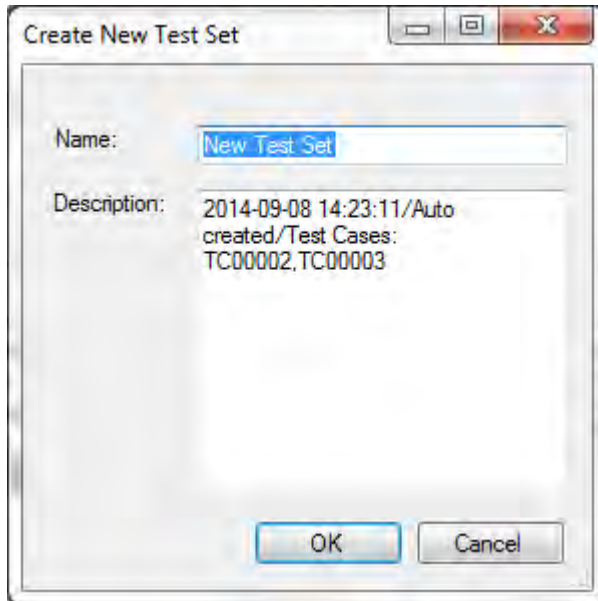
1. 📄 - Manual test case that has no automation script attached.
2. 📄 - Test case that has an existing Rapise test attached.
3. 📄 - Test case that has a non-Rapise automation script attached.

Clicking on the hyperlink ID will open up the test case inside Spira in your web browser. For test cases that have a linked Rapise test, there will be an **[Open]** button available. Clicking on this button will open the test in Rapise. For test cases that do not have a linked Rapise test, there is the **[Save As...]** option that lets you save the current Rapise script against the test case.

In addition there are two other options available:

- **Create Test Set:** Clicking on this button will allow you to create a new **test set** inside Spira. It

will display the following dialog box when you select at least one test case and click the button:



Enter in the name of the test set you want to create and click [OK].

- **Add to Test Set:** When you select *at least one test case* and *one test set*, then click this button it will add the selected test cases to a specific test set.

### Test Sets

This section displays a list of **test set** that are either created by the current Spira user, are assigned to the current Spira user, or are assigned to the automation host that this instance of Rapise is installed on:

**Test Sets** My Created ▾

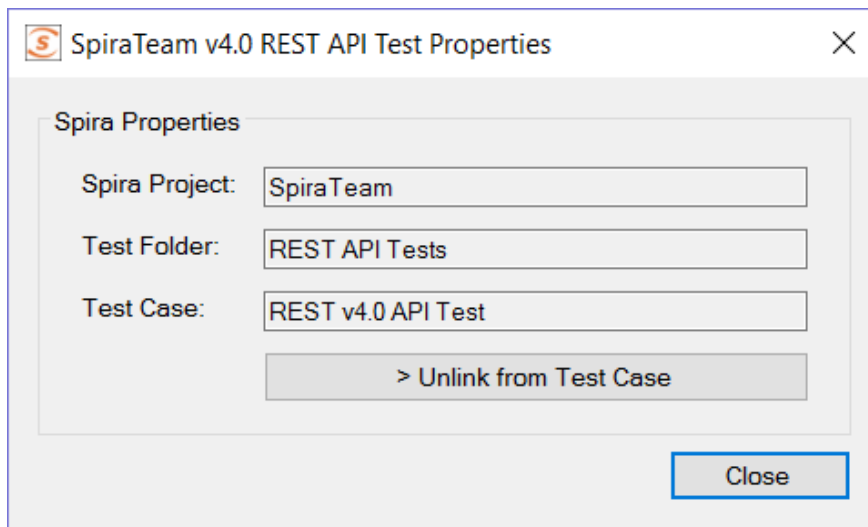
| ✓ Id                                              | Name                     | Description | Action                  |
|---------------------------------------------------|--------------------------|-------------|-------------------------|
| <input type="checkbox"/> <a href="#">TX000019</a> | Rapise Demo Set          |             | <a href="#">Execute</a> |
| <input type="checkbox"/> <a href="#">TX000022</a> | DH Automated Testing     |             | <a href="#">Execute</a> |
| <input type="checkbox"/> <a href="#">TX000037</a> | Rapise Demo 2            |             | <a href="#">Execute</a> |
| <input type="checkbox"/> <a href="#">TX000038</a> | Rapise Test Set Multiple |             | <a href="#">Execute</a> |
| <input type="checkbox"/> <a href="#">TX000050</a> | Merz Demo Test Set       |             | <a href="#">Execute</a> |
| <input type="checkbox"/> <a href="#">TX000051</a> | Mission Manager 1.0 Test |             | <a href="#">Execute</a> |

Each test set will be displayed with the ID, name and long description of the test set.

Clicking on the hyperlink ID will open up the test set inside Spira in your web browser. For test sets that are marked as **automated**, there will be an **[Execute]** button available. Clicking on this button will execute the test in **RapiseLauncher**. This is described in more detail in the [SpiraTest Integration](#) topic.

## 2.4.47 Spira Properties Dialog

### Screenshot



### Purpose

The purpose of this dialog is to allow you to show you the [SpiraTest / SpiraTeam test case](#) that the current Rapise test script is associated with.

### How to Open

Go to the [Test ribbon](#) and click the **Spira Properties** button in the Tools tab:

### Settings

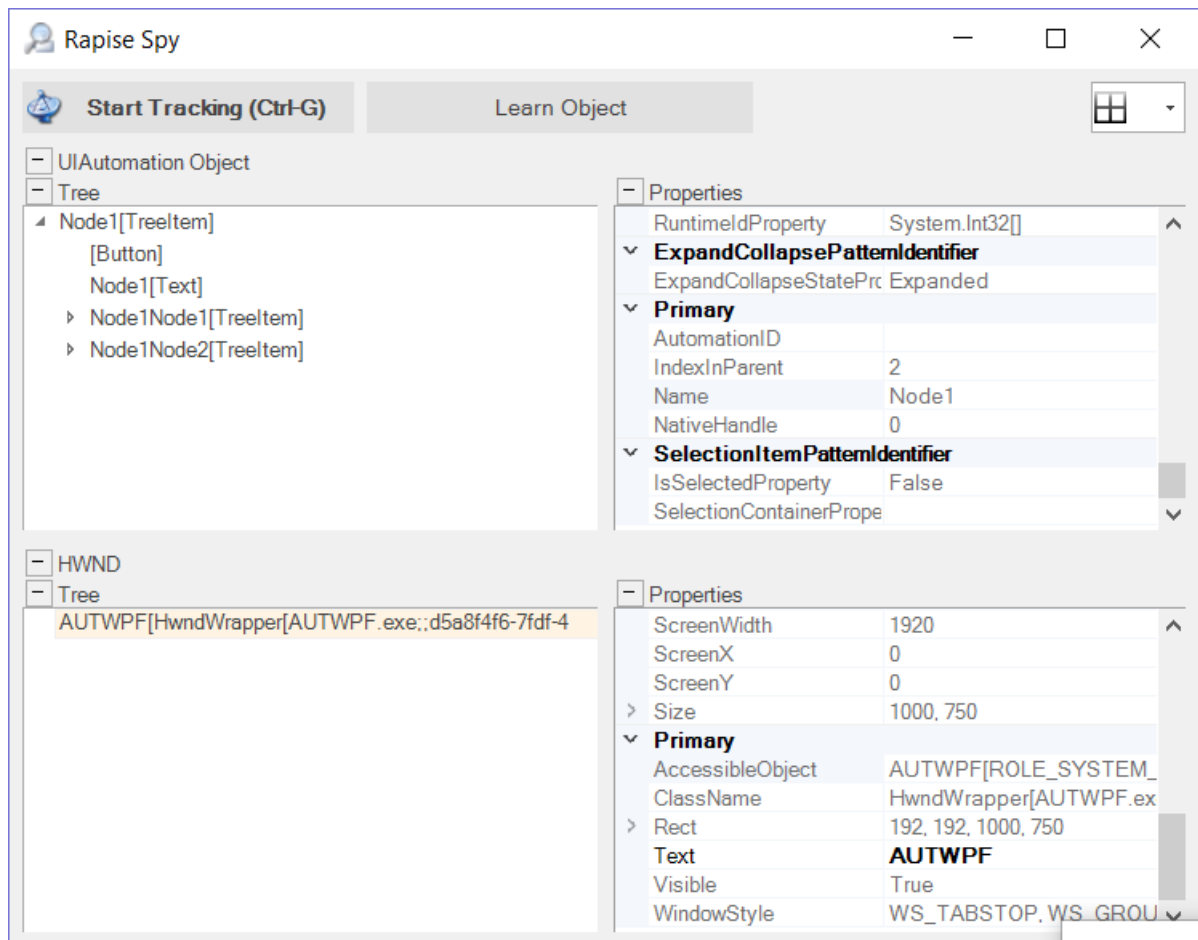
The dialog box will list the following:

- **Spira Project** - this displays the name of the project in SpiraTest that the test script is saved in
- **Test Folder** - this displays the name of the folder that the linked SpiraTest test case is contained in
- **Test Case** - this displays the name of the test case in SpiraTest that the test script is linked to

If you want to unlink the current test script from SpiraTest (for example to save to a different SpiraTest project), click on the '**Unlink from Test Case**' button.

## 2.4.48 Spy Dialog

### Screenshot



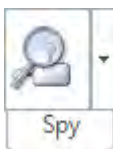
## Purpose

The **Spy** dialog is used to [Object Spy](#).

## How to Open

There are three ways to open the Spy dialog:

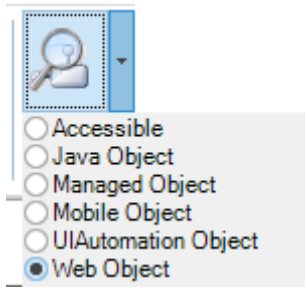
1. Press the **Spy** Button on the Ribbon (**Test** tab > **Tools** menu)



2. Press the **Spy** Button on the [Recording Activity Dialog](#) Note: If you use this method, the dialog has an extra **Learn Selected** button.

## Choosing the type of Spy

You can change the type of Spy that will be launched by clicking on the down arrow to the right of the Spy icon in the main application Ribbon:



There are **six** types of Spy available:

1. **Accessible** - This is used to inspect applications that expose their properties using the Microsoft Active Accessibility (MSAA) technology. This is typically used by applications written in MFC, ATL, Qt, C++ and Visual Basic.
2. **Java Object** - This is used to inspect applications written using the Java AWT and Swing UI frameworks.
3. **Managed Object** - This is used to inspect applications written in .NET 1.1, .NET 2.0, .NET 4.0 using Microsoft Windows Forms.
4. **Mobile Object** - This is used to inspect mobile applications running on iOS or Android devices as well as the iOS or Android simulator
5. **UIAutomation Object** - This is used to inspect applications that expose their properties using the Microsoft's newer UIAutomation technology. This is typically used by applications written in WPF, Silverlight and Java SWT.
6. **Web Object** - This is used to inspect web applications using any of the supported web browsers. It also allows you to dynamically query web pages using [CSS](#) or [XPath](#) and learn the results as objects.

### Start Tracking

The **Start Tracking** button (or CTRL+G) causes Rapise to enter **Tracking Mode**. In **Tracking Mode**, Rapise investigates the object under your mouse. It identifies the object's type and learns the object's properties. As you move your mouse, the objects you point to are highlighted (a box is drawn around them).



### Stop Tracking

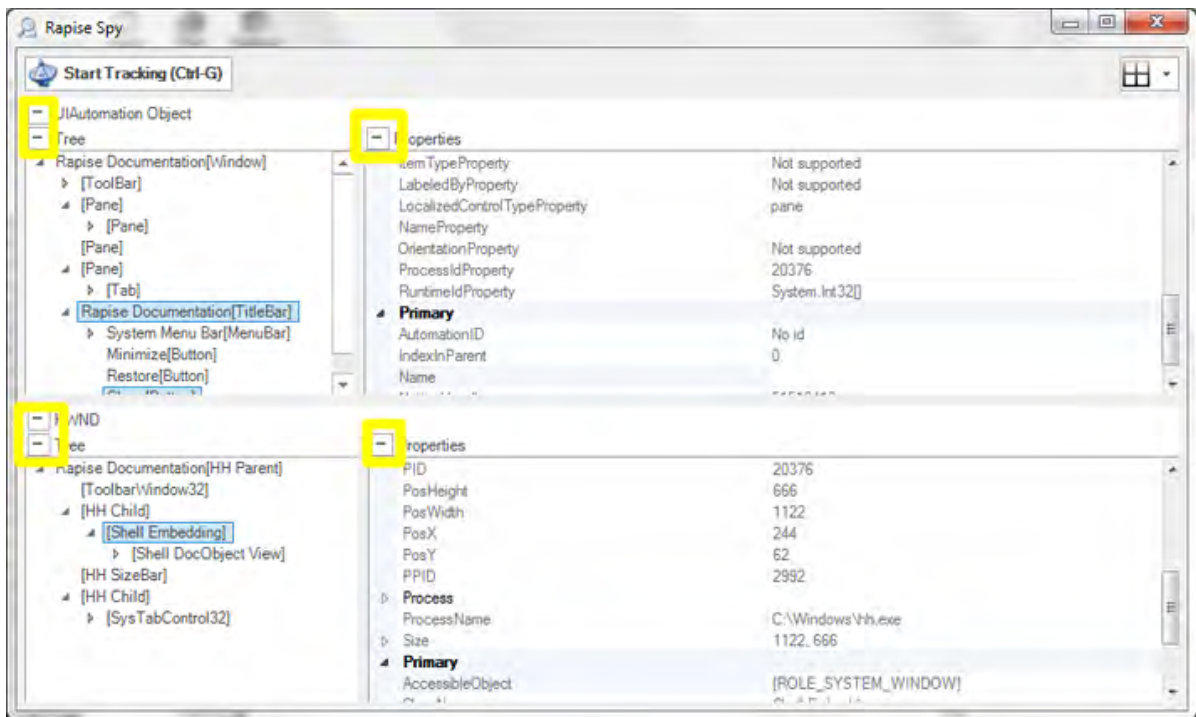
The **Stop Tracking** button is only visible in **Tracking Mode**. Press Stop Tracking (or CTRL+G) to exit Tracking Mode. The Spy dialog will display information for the last object highlighted.

### Learn Object

The **Learn Object** button will be visible if you clicked the Spy during recording (vs. just clicking the Spy icon in the Test ribbon). This lets you add a specific object in the Spy treeview to the currently recorded test.

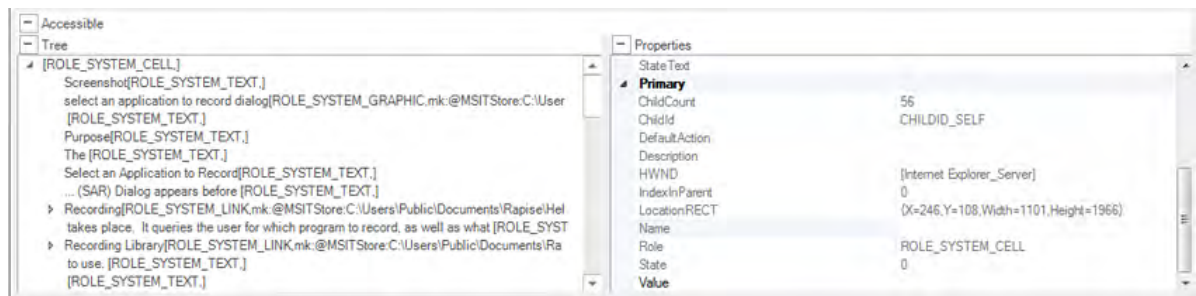
### Maximize/Minimize buttons

The maximize  and minimize  buttons control the appearance of the dialog. They either hide or make visible the sections to their right or below. See the example below. The button highlighted in yellow in the left image is pressed to show/hide the appropriate pane.



### Accessible Object

This is the Spy dialog that is used for Accessible (MSAA) objects. It is described in more detail in the [Accessible Spy](#) topic.



The **Accessible Object** section of the Spy dialog shows properties of the object that are visible through the Microsoft Active Accessibility interface.

### Tree

The spied upon object and its children are displayed here.

### Properties

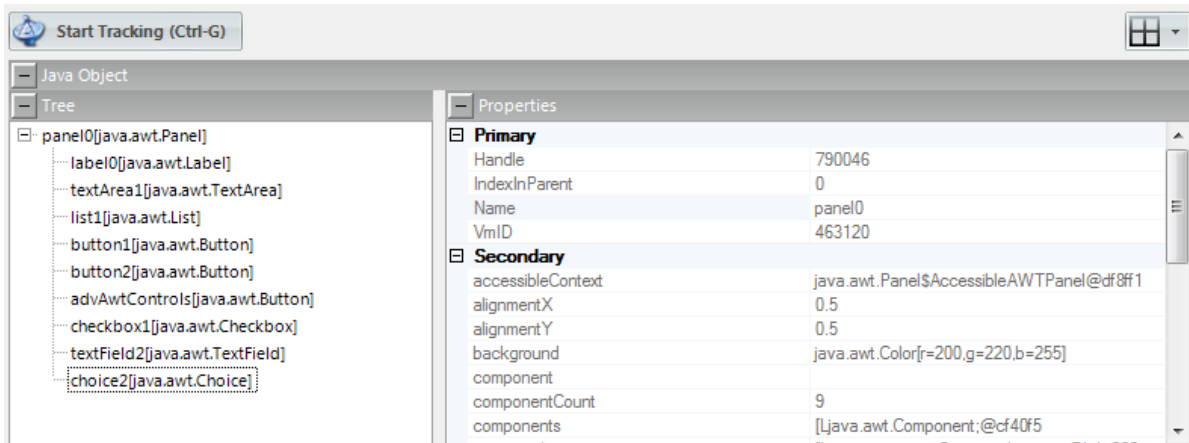
Object fields and field values are displayed here.

### Tools

- **Mouse Button Click:** Emulate Left mouse click for the item selected in Spy tree.
- **Default Action:** Execute `DoDefaultAction` for given accessible object.
- **Set Selection:** Perform `accSelect` using the option flags set in the corresponding checklist (above).

## Java Object

This is the Spy dialog that is used for Java (Swing / AWT) objects. It is described in more detail in the [Java Spy](#) topic.



The **Java Object** section of the Spy dialog shows properties of the object that are visible through the [Java Access Bridge](#) interface.

## Tree

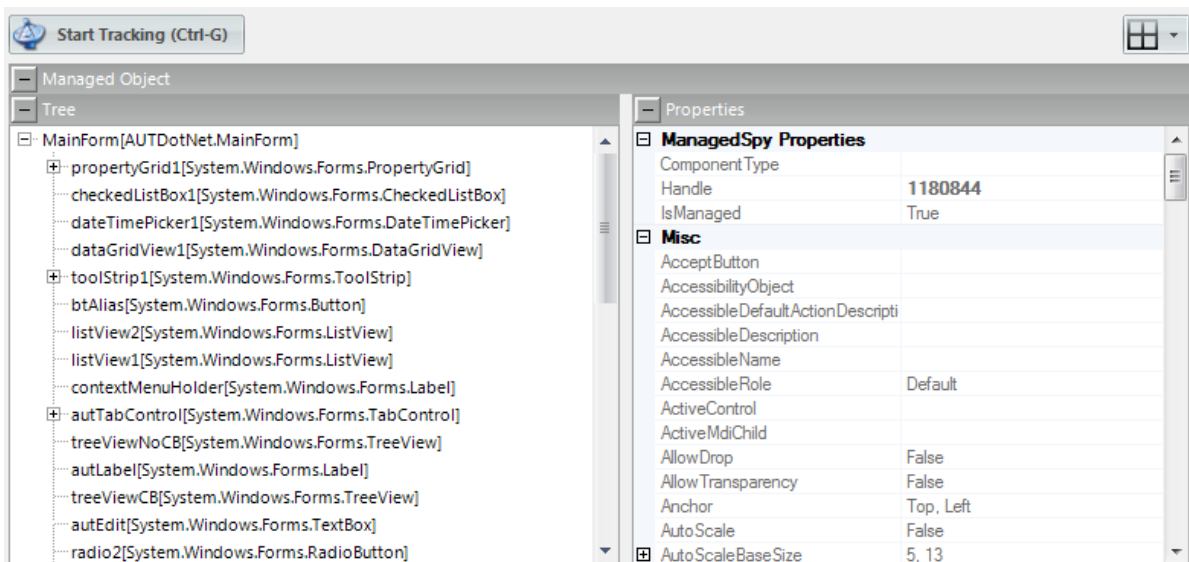
The spied upon object and its children are displayed here.

## Properties

Object fields and field values are displayed here.

## Managed Object

This is the Spy dialog that is used for Managed (.NET) objects. It is described in more detail in the [Managed Spy](#) topic.



The **Managed Object** section of the Spy dialog shows properties of the object that are visible through .NET Framework reflection interface.



## Tree

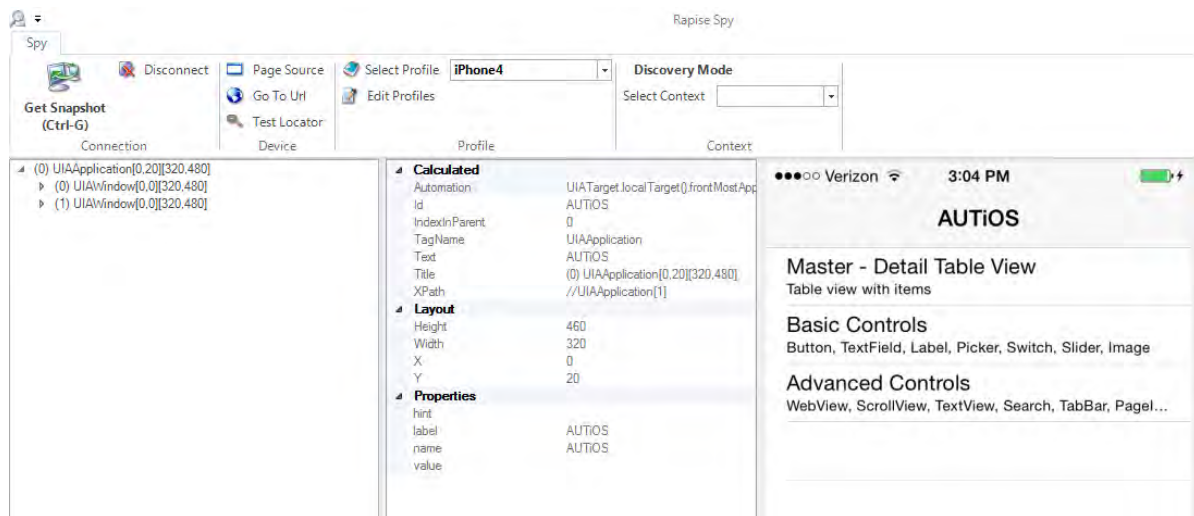
The spied upon object and its children are displayed here.

## Properties

Object fields and field values are displayed here.

## Mobile Object

This is the Spy dialog that is used for Mobile objects. It is described in more detail in the [Mobile Spy](#) topic.



The **Mobile Object** section of the Spy dialog shows a snapshot of the screen displayed on the connected Mobile device as well as the properties of the currently selected object. You can select the object either by clicking on the screen snapshot or the control hierarchy displayed to the left. The properties displayed will depend on the type of mobile device being tested (iOS vs. Android).

## Tree

The spied upon object and its children are displayed here. When you click on an object it will also be highlighted in the **snapshot** view to the right.

## Properties

Object fields and field values are displayed here.

## Snapshot

This displays a snapshot of what is displayed on the mobile device being tested. The objects in the snapshot are clickable, which allows you to visually select objects from the hierarchy.

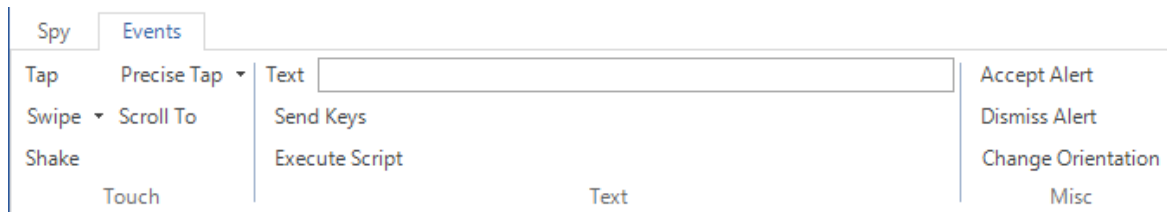
## Tools

- **Get Snapshot (CTRL + G)** - This will connect to the mobile device and get the latest snapshot from the mobile device and display in the right-hand window.
- **Disconnect** - This option disconnects the Spy from the mobile device and ends the connection.
- **Learn Object** - This option is only displayed in Recording mode and lets you take the currently selected object and add it to the [Object Tree](#) for the current test. It can then be used as a scriptable object in the test script.

- **Page Source** - This lets you view the source of the mobile device in a text editor such as Notepad. It will show the objects in the treeview represented as an XML document.
- **Go to URL** - This will instruct the mobile device to navigate its built in web browser to a specific URL.
- **Test Locator** - This will display the [Mobile Test Locator](#) dialog box that lets you try different locators to resolve specific objects in the object hierarchy. It will include options such as using XPath and IDs.
- **Select Profile** - This lets you change the profile of the mobile device you are testing while the Spy dialog is open.
- **Edit Profiles** - This will open up the [Mobile Settings](#) dialog box. You cannot be connected to do this.
- **Context** - This will display either 'Discovery Mode' or 'Recording Mode'.

## Events

The [Mobile Spy](#) also includes an **Events** ribbon tab that lets you send events to mobile device from Rapise, as if you were actually performing them on the device:

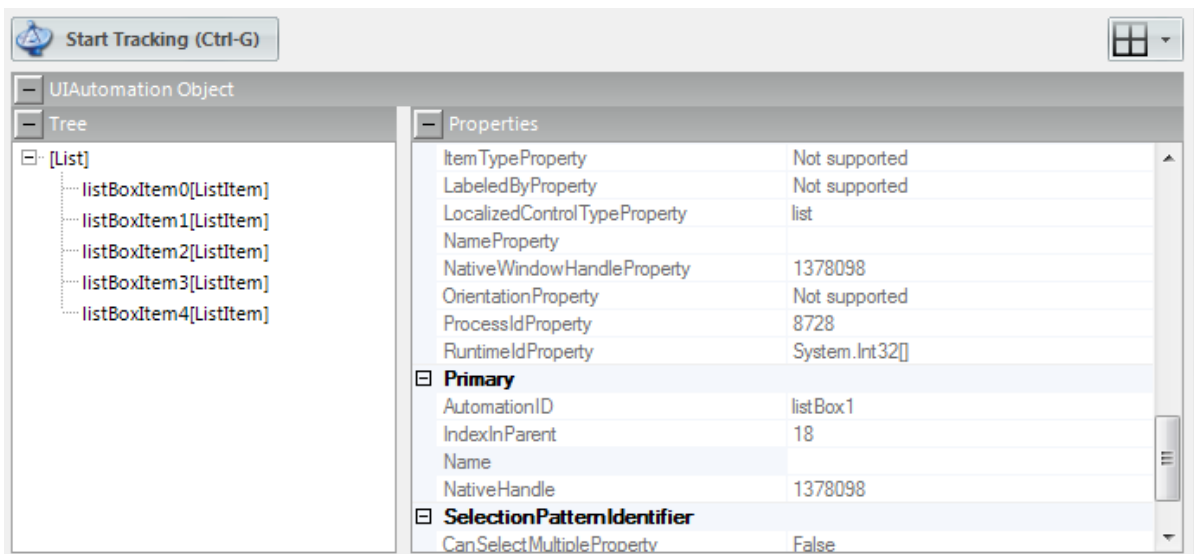


This dialog lets you perform the following events on the device:

- **Tap** - this will simulate tapping the currently selected object on the device
- **Swipe** - you specify the start and end points of the swipe operation. This is useful for simulating a real swipe on the device in a specific direction at a specific location (e.g. on a progress selector)
- **Shake** - for devices that support it (e.g. iOS) this simulates shaking the device physically
- **Precise Tap** - you specify the specific location on the screen within the bounds of the current object that you will be simulating a tap.
- **Scroll To** - simulates scrolling to the selected object in the device object tree (which may not be visible).
- **Text / Send Keys** - to use this, enter in text in the text box and click 'Send Keys', this sends text to the currently selected object as if you were using the virtual keyboard on the device.
- **Accept Alert** - if you have a popup alert on the device, this simulates accepting it
- **Dismiss Alert** - if you have a popup alert on the device, this simulates dismissing it
- **Change Orientation** - for devices that support it, this simulates changing the orientation of the device from landscape to portrait (or vice-versa)
- *Execute Script - this is not currently supported and is for future functionality*

## UIAutomation Object

This is the Spy dialog that is used for UI Automation (WPF, Silverlight) objects. It is described in more detail in the [UIAutomation Spy](#) topic.



The **UIAutomation Object** section of the Spy dialog shows properties of the object that are visible through the UIAutomation interface.

### Tree

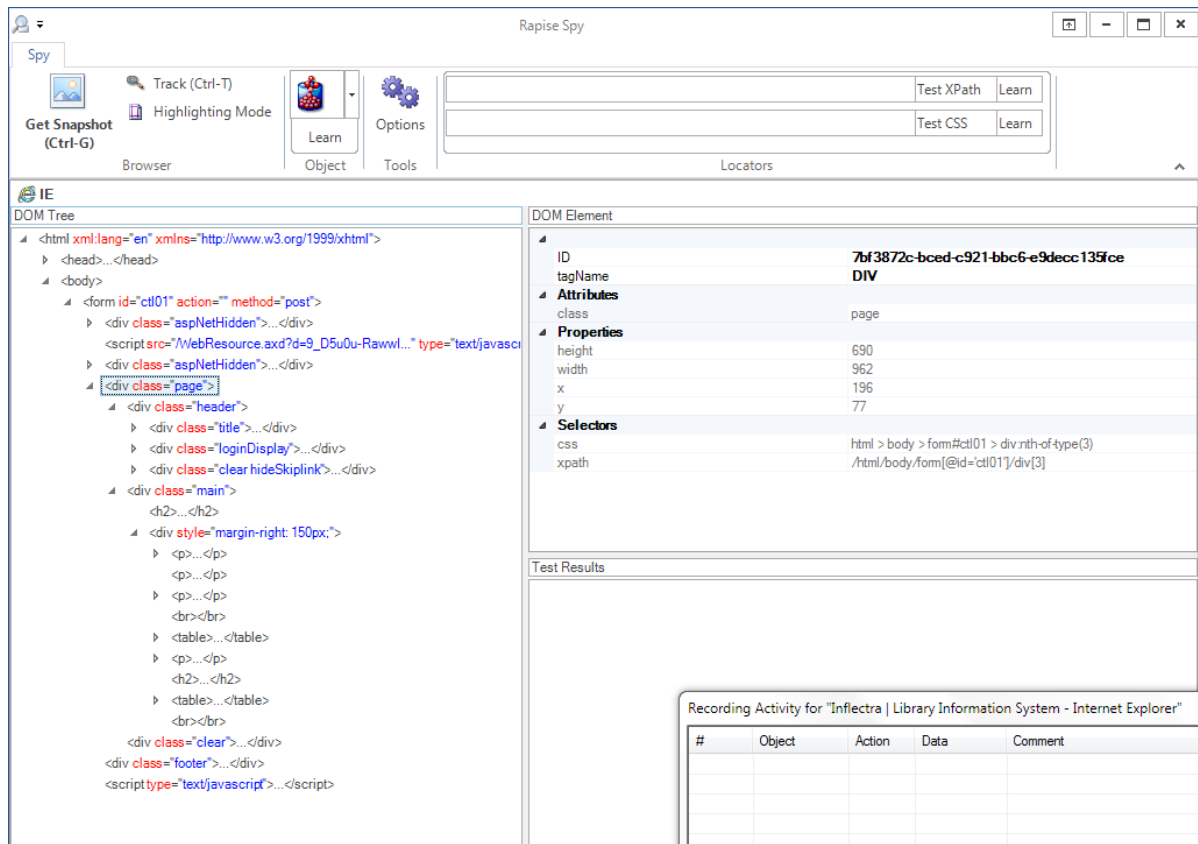
The spied upon object and its children are displayed here.

### Properties

Object fields and field values are displayed here.

## Web Object

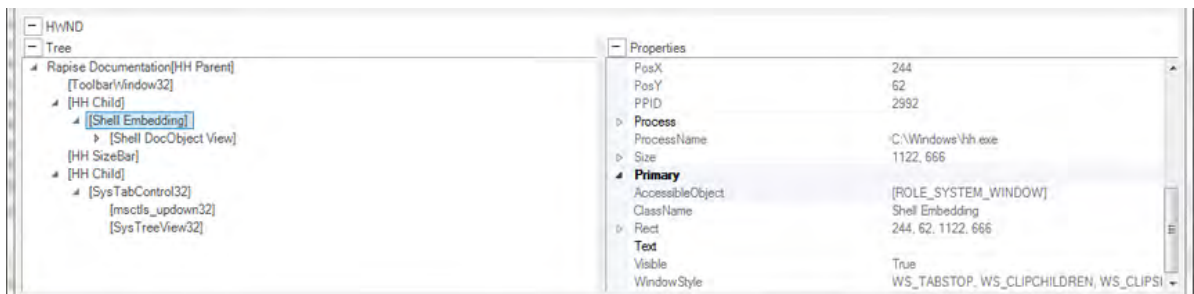
This is the Spy dialog that is used for Web objects. It is described in more detail in the [Web Spy](#) topic.



The **Web Spy** is used to inspect web applications running on any of the supported web browsers (currently Internet Explorer, Firefox and Chrome). It allows you to view the hierarchy of objects in the web browser **Document Object Model (DOM)**. In addition it makes the testing of dynamic data-driven web applications easier because it lets you test out dynamic [XPath](#) or [CSS](#) queries against the web page and verify that the objects return match your expectations.

For more information on the [Web Spy](#), please refer to the [Web Spy](#) topic.

## HWND Object



The **HWND Object** section of the Spy dialog shows properties of the object that are visible with its HWND handle.

## Tree

The spied upon object and its children are displayed here.

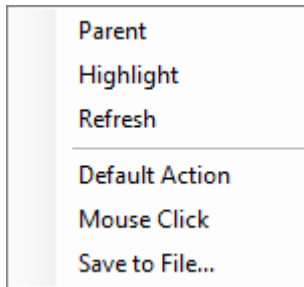
## Properties

Object fields and field values are displayed here.

## Tools

- **Mouse Button Click:** Emulate Left mouse click for the item selected in Spy tree.
- **Highlight:** Draw rectangle surrounding selected object (HWND or Accessible).

These tools can be accessed from the **right-click** Spy context menu:

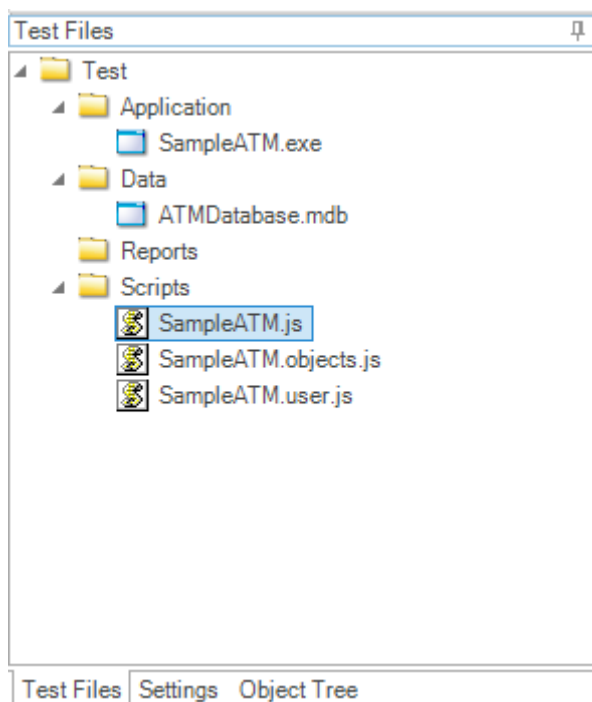


## See Also

- Microsoft Active Accessibility is described here <http://msdn.microsoft.com/en-us/magazine/cc301312.aspx>
- HWND is described [HERE](#).
- Microsoft UIAutomation is described here <http://support.microsoft.com/kb/971513/>

## 2.4.49 Test Files Dialog

### Screenshot



## Purpose

The **Test Files** dialog allows you to navigate and alter the Test hierarchy, including the following:

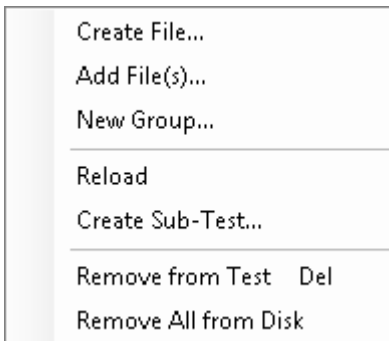
- The main JavaScript script files (\*.js)
- The report files (\*.trp)
- Images captured during execution using [Checkpoints](#)
- REST web services (\*.rest)
- SOAP web services (\*.soap)
- Analog recording files (\*.arf)
- Excel spreadsheets (\*.xls and \*.xlsx)
- Applications to launch (\*.exe or \*.bat)
- Other data files (\*.txt)

## How to Open

The **Test Files** dialog is part of the [Default Layout](#).

## Context Menu (Folder)

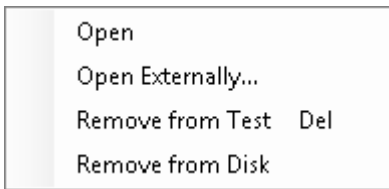
Right click on a folder to see:



- **Create File:** Create and add a new file to the test.
- **Add File:** Add an existing file to the test.
- **New Group:** Create a logical grouping of files in the test. This will **not** add a folder to the file system.
- **Reload:** Refresh group contents. Use it for [filter groups](#) ('IsFilterGroup' is set to 'True' in group properties), e.g. for Report group.
- **Create Sub-Test...:** Launch Create Sub-Test dialog.
- **Remove from Test:** Remove the selected grouping from the test. This does **not** delete included files from your hard disk.
- **Remove All from Disk:** Remove all files included into the selected grouping from your hard disk.

## Context Menu (File)

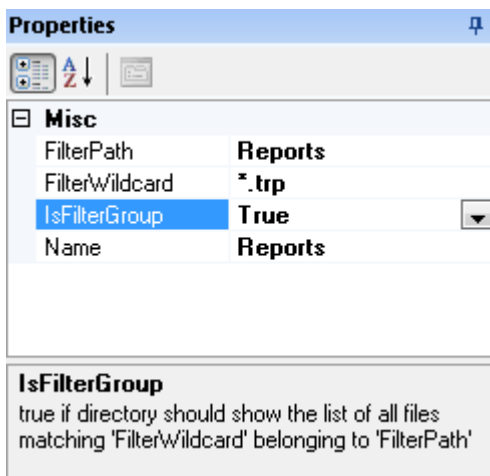
Right click on a file to see:



- **Open:** Open the file in Rapise.
- **Open Externally...:** Open the file using associated program. E.g. if a Notepad is registered in Windows to open TXT files, then TXT file will be opened by Notepad.
- **Remove from Test:** Remove the file from your test. This does **not** delete the file from your hard disk.
- **Remove from Disk:** Remove the file from your test and hard drive.

### Filter Groups

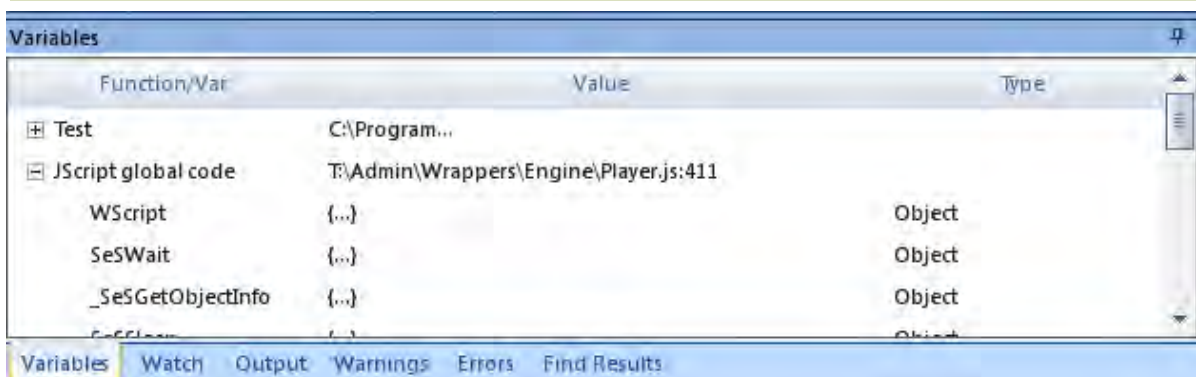
Filter groups read its contents from disk according to specified path and wildcard. You may setup a filter group by editing group properties:



- **FilterPath:** Root path to find files via wildcard (valid only if 'IsFilterGorup' is 'True').
- **FilterWildcard:** Filter wildcard (valid only if 'IsFilterGorup' is 'True').
- **IsFilterGroup:** 'True' if directory should show the list of all files matching 'FilterWildcard' belonging to 'FilterPath'.
- **Name:** Group name.

## 2.4.50 Variable/Call Stack View

### Screenshot





### Purpose

Lists the functions in the current call stack. Beneath each function, variables/objects local to that function are listed with their value and type.

### How to Open

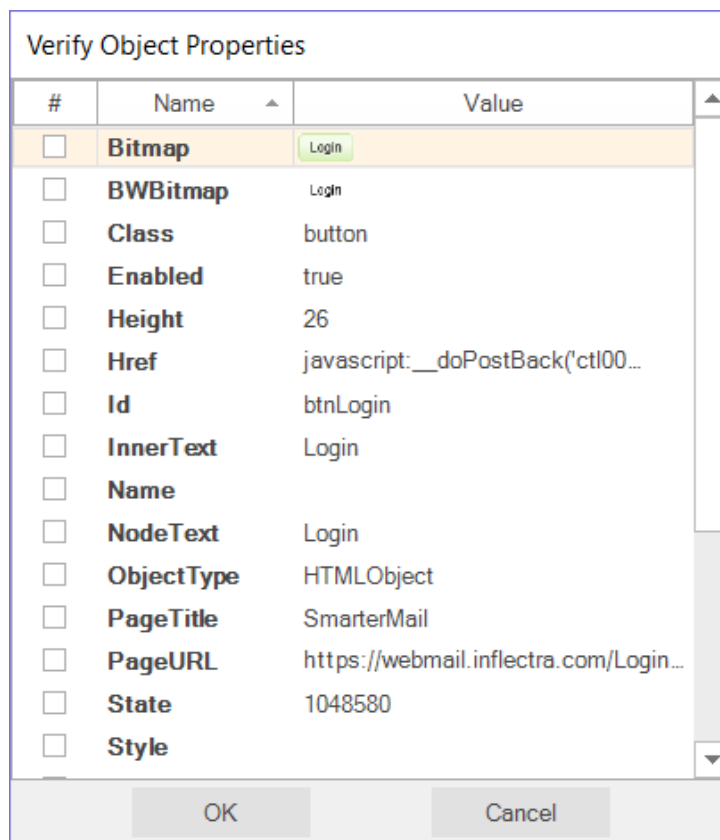
Begin [debugging](#) a script. The **Variable/Call Stack View** will open automatically.

### Go to a function definition

Double click on a function to go to its definition.

## 2.4.51 Verify Object Properties Dialog

### Screenshot



### Purpose

Use the **Verify Object Properties** dialog during [recording](#) to add [checkpoints](#).

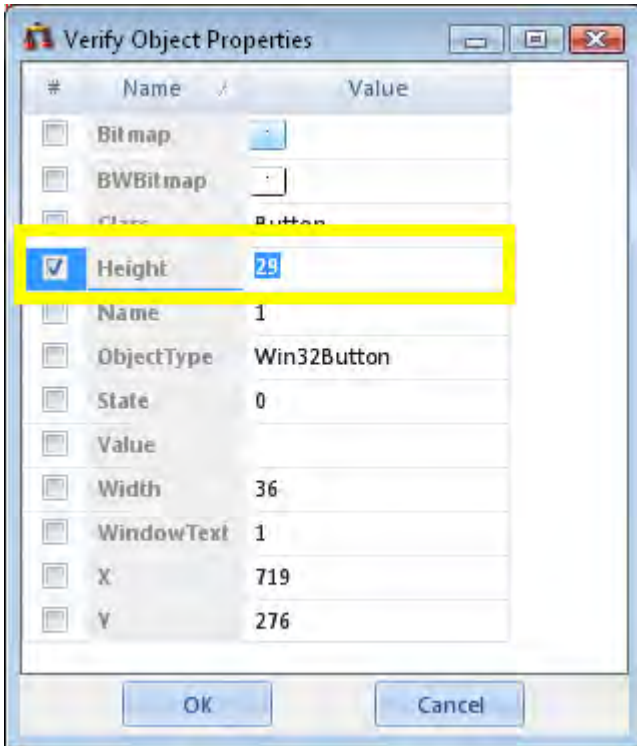
### How to Open

1. First, open the [Recording Activity Dialog](#).
2. Position the mouse over an object and press **Ctrl+1**, or

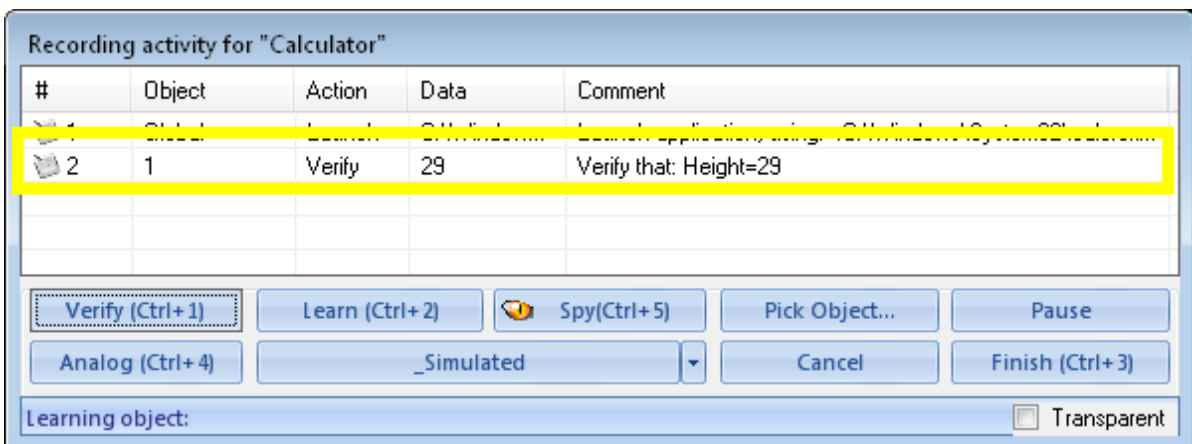
3. Press the **Verify** button and then click the target object with the mouse cursor.

### Create a Checkpoint

Your checkpoint will be associated with a particular object. That object's properties will be listed in the **Verify Object Properties** dialog. Check those properties that you wish to verify during [playback](#). Enter expected values for the selected properties in the **Value** column. **Note:** The **Bitmap** and **BWBitmap** properties are images of the object.



Press the **OK** button. The **Verify Object Properties** dialog will close, and the [Recording Activity](#) dialog will contain a new **Verify** action:



The generated script will have a corresponding [assert statement](#):

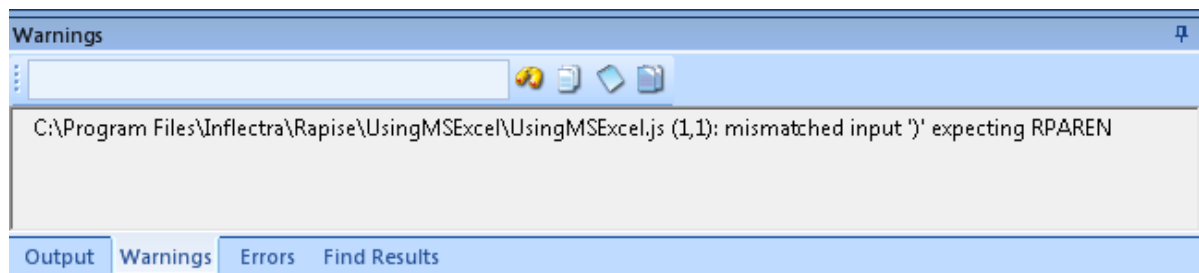
```
//Verify that: Height=29
Tester.AssertEqual("Verify that: Height=29", SeS('Obj1').GetHeight(), "29");
```

### See Also

- [Recording](#)
- [Assert Statements](#)

## 2.4.52 Warning View

### Screenshot



### Purpose

To display syntax error messages as you edit javascript files.

### How to Open

The **Warning** view is part of the [Default Layout](#).





### Error Message

C:\Program Files\Inflectra\Rapise\UsingMSExc\UsingMSExc.js (1,1): mismatched input ')' expecting RPAREN

Double click on an error message to go to the corresponding source line.

### Widgets



- The text box is a search box.
- The icons from left to right are **Find Next Entry** , **Copy Selected** , **Clear All Text** , and **Select All Text** .

### See Also

- [Syntax Checking](#)

## 2.4.53 Watch View

### Screenshot



### Purpose

To input expressions and view their values as the script executes.

### How to Open

Begin [debugging](#) a script. The **Watch View** will open automatically.

### Inputting an Expression

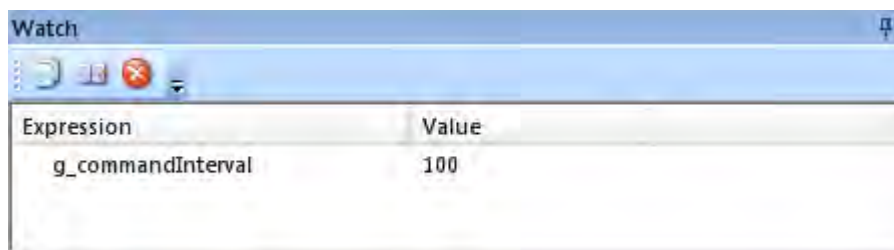
1. Click the first blank line:



2. Double click on the highlighted line, under the **Expression** column. A text box will appear.



3. Input the expression you wish to investigate. Press **Enter**.



## Widgets



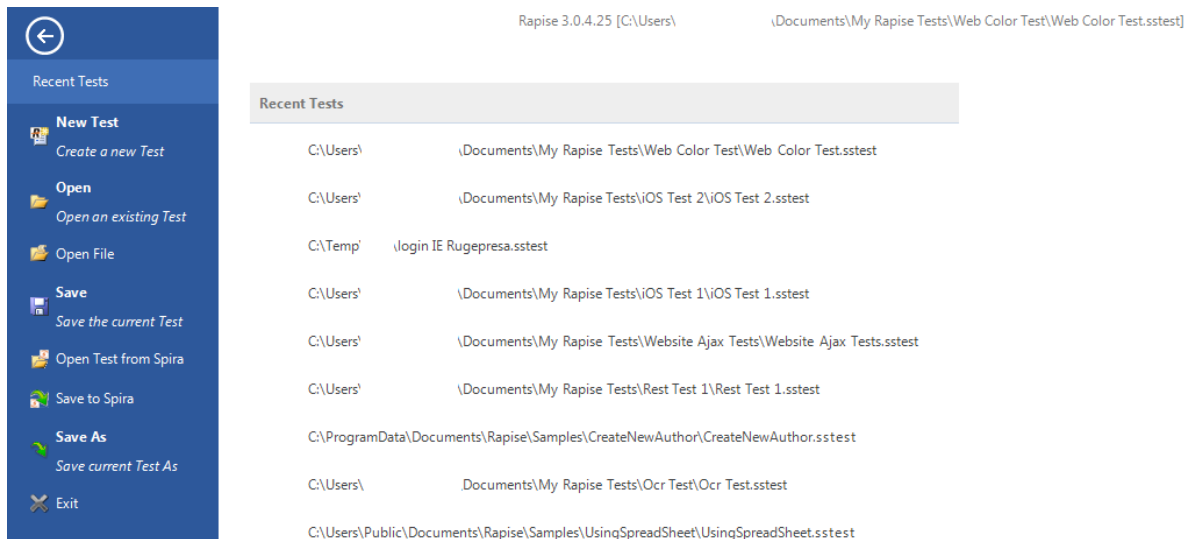
From left to right: **Copy** (an entire row) , **Copy Watch Value** , **Delete** .

### 2.4.54 File Menu

#### Purpose

The File menu provides quick access to all the File management functions in Rapise. Many of these are also available on the main [Test ribbon](#).

#### Screenshot



#### Options

The **File** menu has the following options:

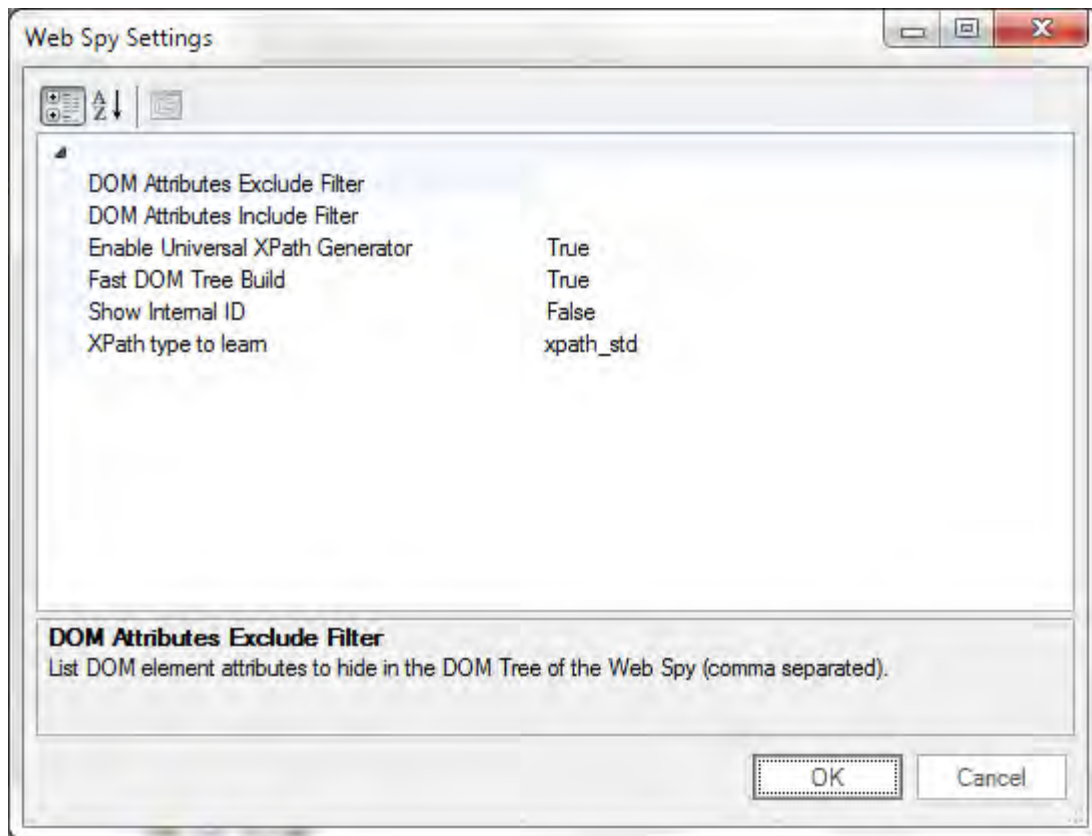
- **Create a new Test** - creates a new Rapise test, it can be saved either to Spira or locally.
- **Open an existing Test** - opens an existing test that is already available locally.
- **Open File** - opens a single file and adds to the current test project
- **Save the current Test** - saves the current test locally
- **Open Test from Spira** - opens a test from Spira and downloads to the local repository
- **Save to Spira** - saves the current test to the Spira test management system
- **Save As** - saves the current test locally with a different file name
- **Exit** - exits Rapise.

### 2.4.55 Web Spy Settings

#### Purpose

This dialog box displays the list of **Web Spy settings** and lets you change the behavior of the [Web Spy](#) tool.

## Screenshot



## How to Open

You can open this dialog box from two places:

- From the main Rapise [Options ribbon](#) (in the Web Testing tab).
- From the [Web Spy](#) tool when you click on the '**Options**' ribbon menu entry.

## General Settings

This dialog box has the following settings:

- **DOM Attributes Exclude Filter** - List the DOM element attributes to hide in the DOM Tree of the Web Spy (comma separated).
- **DOM Attributes Include Filter** - List the DOM element attributes to show in the DOM Tree of the Web Spy (comma separated). If both Include and Exclude filters are set then Include filter prevails.
- **Enable Universal XPath Generator** - If set to 'True' it creates the XPath and CSS selectors inside the Web Spy itself rather than relying on the web browser to do the generation. This is usually much faster (especially when using Internet Explorer)
- **Fast DOM Tree Build** - If set to 'True' then Rapise uses embedded code to get the DOM Tree when using either the Internet Explorer HTML library or any of the [Selenium libraries](#).
- **Show Internal ID** - If 'True' then DOM Element pane shows internal ID of an element. This ID is

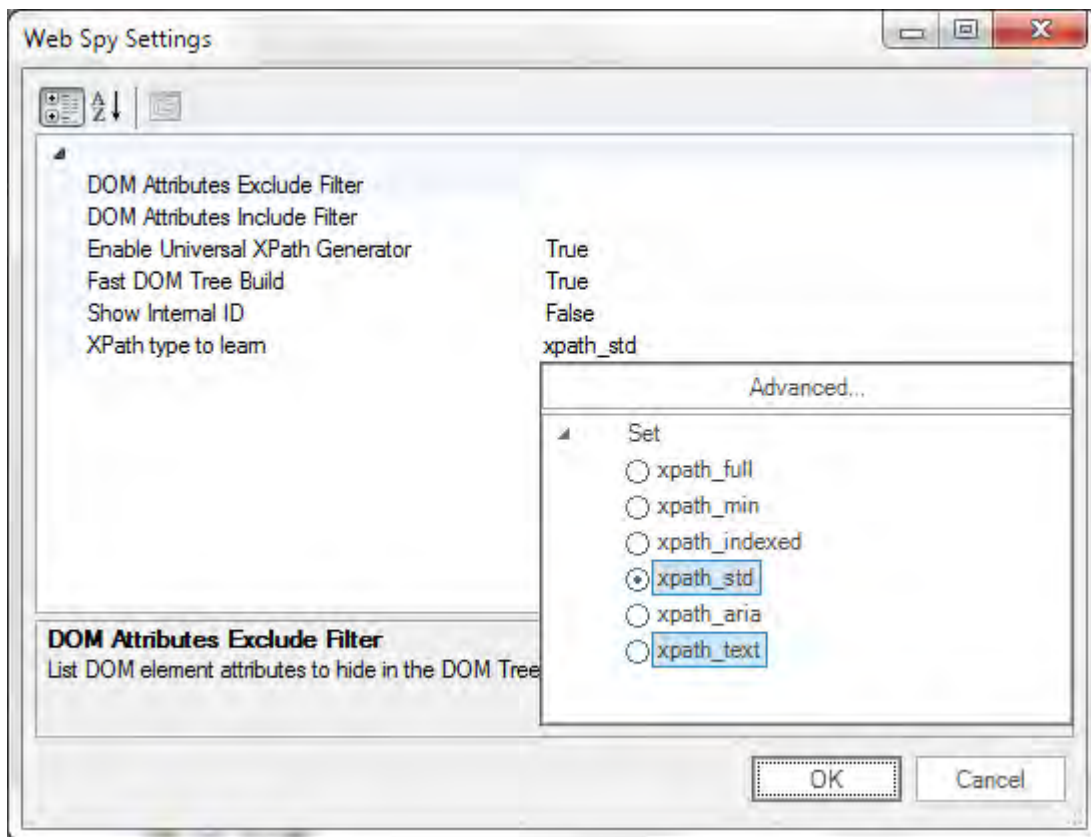
purely internal to Rapise and is not part of the HTML web page or web application

- **XPath Type to Learn** - This is described in the section below:

## Different Types of XPath

The WebSpy has variety of options for XPath generation. Having a number of **different approaches for generating XPath** has its benefits. It gives Rapise incredible flexibility in getting the best results for different situations:

1. Sometimes we can recognize an element by its text. In such cases the simplest and most efficient XPath will use the node text.
2. Sometimes we have a regular structure (tables and grids) and it is better to have row and column indices inside the XPath.
3. Sometimes we deal with an application framework that uses custom attributes (e.g. aria, angular, bootstrap). So if we use them in our XPath then it will be cleaner and more robust.



The Web Spy currently supports the following different types of XPath:

- **xpath\_full** - generates a fully featured XPath path using elements without attributes. This XPath starts with /html and goes through body and other elements towards the required node.
- **xpath\_min** - generated with the attributes defined in the “**DOM Attributes Include Filter**”. If the include filter is empty, then it is produced with all attributes except those defined in the “**DOM Attributes Exclude Filter**”. For example, if the include filter contains the “widgetid” custom attribute then the generated XPath would be: `//div[@widgetid="dojox_grid__View_1"]`



- **xpath\_indexed** - considers the node as nth of the same kind. For example, the page may contain 250 `<a href=...>` links across the page, and we want to learn the link somewhere in the middle. In this case indexed XPath will be of the form `(//a)[123]`
- **xpath\_std** - generated and minimized with use of pre-selected set of attributes:
  - align
  - class
  - style
  - size
  - tabindex
  - value
  - width
  - height
  - colspan
  - rowspan
  - cellspacing
  - cellpadding
  - border
  - on\* (i.e. onclick, onblur and so on)
  - Usually *it contains most common attributes: id, name, for, role.*
- **xpath\_aria** - generated with the use of just the core id/name attributes plus the special aria attributes:
  - id
  - name
  - for
  - role
  - aria-\*
- **xpath\_text** - if possible, generated to match an HTML node simply by its text. For example, `<button ...>Refresh</button>` is found by: `//button[normalize-space(text())="Refresh"]`. *In many cases this value is empty. This means that there are more than one node with such text.*

## 2.5 HowTos

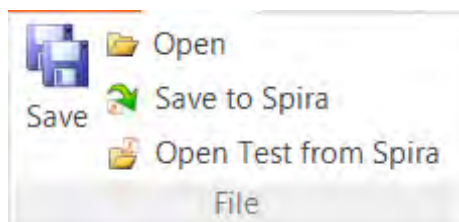
This section focuses on specific tasks that a Rapise user might want to accomplish.

### 2.5.1 Open a Test

You can open a test in two ways: (1) From the Ribbon, and (2) From the Application menu.

#### Ribbon

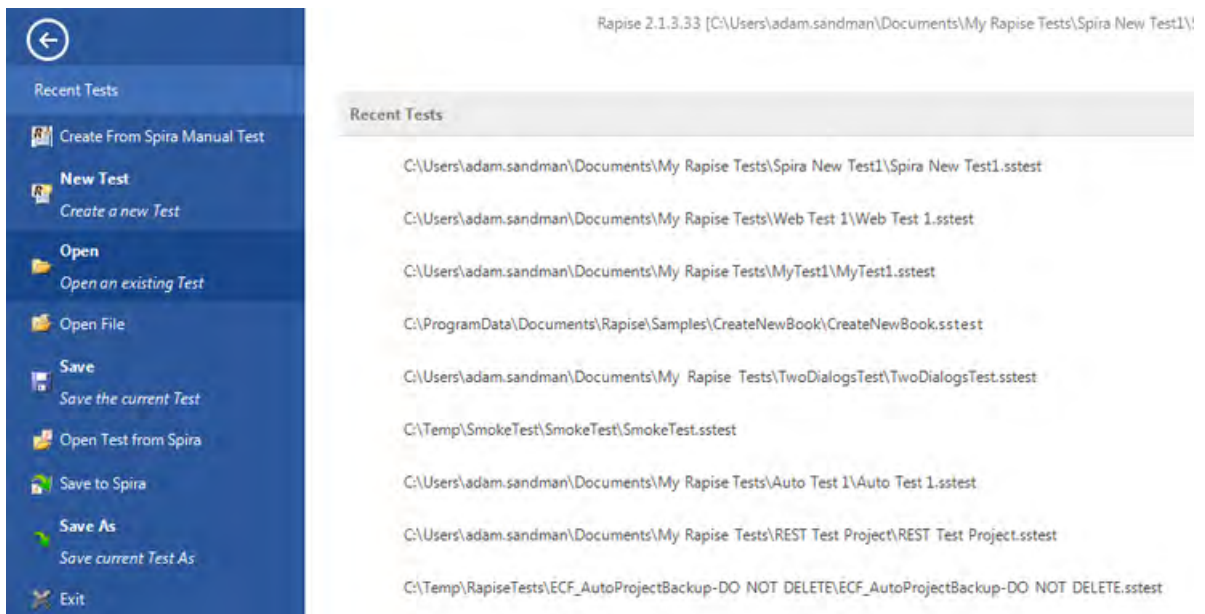
Select the **Open** option from the **File** menu on the **Test** Tab of the Ribbon:



You can also open a test that is stored in **SpiraTest** (our web-based test management system) instead of the local filesystem. This is done by clicking on the **Open Test from Spira** option instead. More details on using Rapise with SpiraTest can be found in the [SpiraTest Integration](#) section.

## Application Menu

Open the Application Menu by clicking on the **File** Tab at the top left of the Rapise window. The Application menu has an **Open Test** option, and a list of **Recent Test** from which you may choose:



You can also open a test that is stored in **SpiraTest** (our web-based test management system) instead of the local filesystem. This is done by clicking on the **Open Test from Spira** option instead. More details on using Rapise with SpiraTest can be found in the [SpiraTest Integration](#) section.

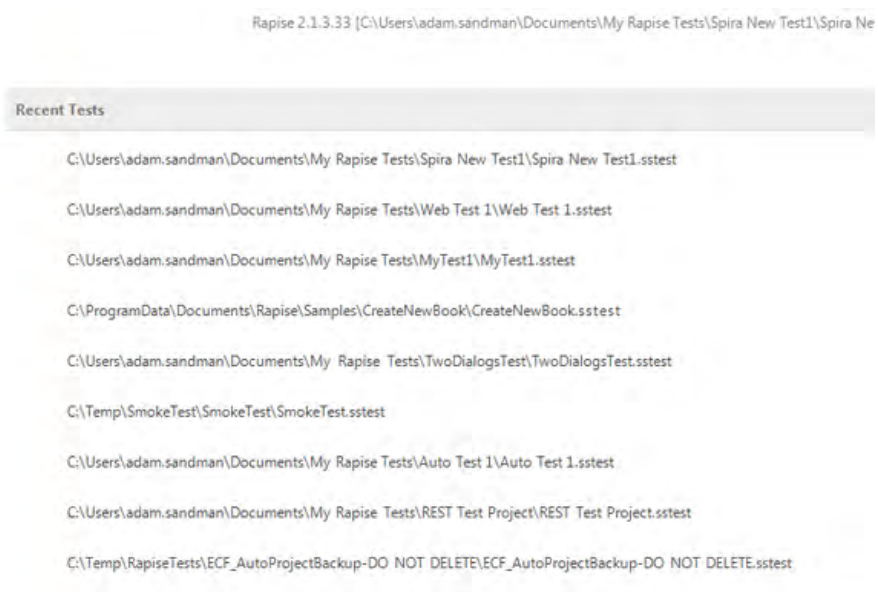
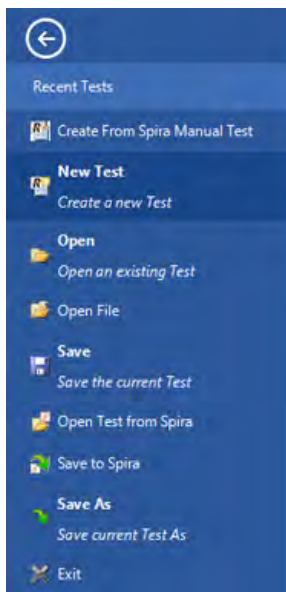
## 2.5.2 Create a New Test

There are two ways to Create a New Test in Rapise:

1. From the main Application menu
2. From the [Start Page](#)

### From the Application Menu

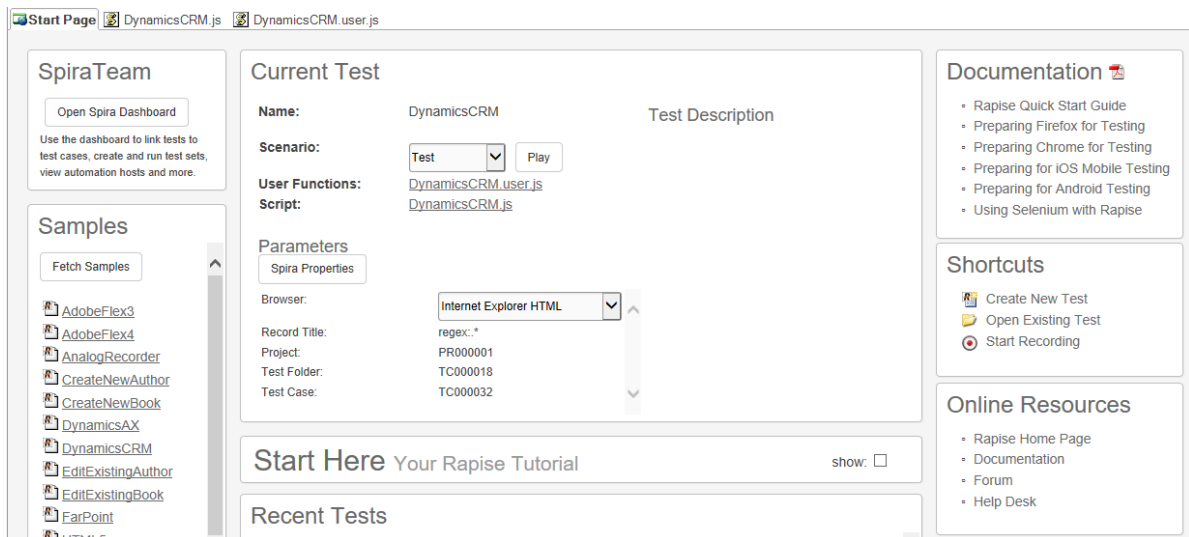
Open the Application Menu by clicking on the **File** Tab at the top left of the Rapise window.



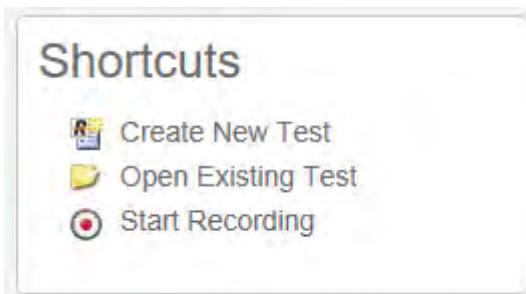
Select the **New Test** option. The [Create New Test](#) dialog will appear. Follow the instructions on this dialog.

## From the Start Page

Open up the Rapise [Start Page](#):

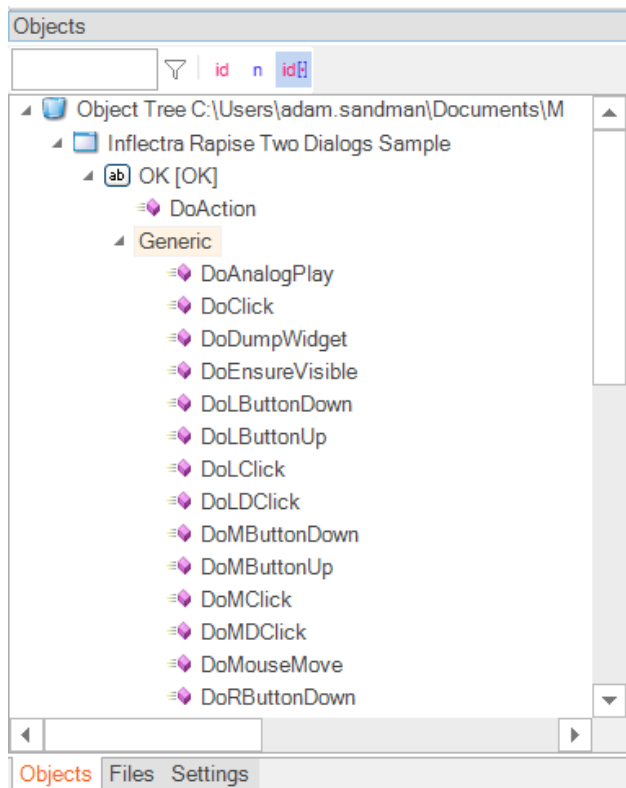


In the Shortcuts section, click on the 'Create New Test' option:

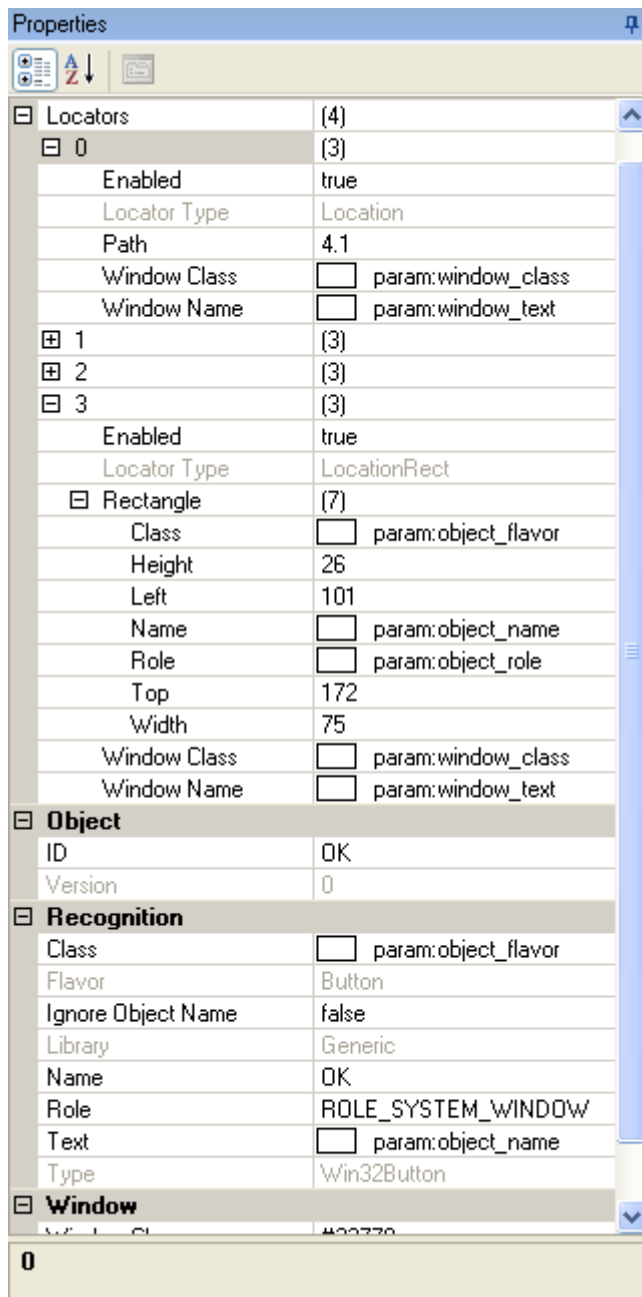








8. While we are looking at this OK object, let's make a few observations about it. These observations will be useful for your later dealings with Rapise and will make the script more informational and relevant as you delve into Rapise. First, look down at the Properties box that appears under the Object Tree in the bottom left corner of the Rapise screen. The screenshot below has some of the tree nodes expanded.



First, notice that the OK button has four (4) "locators" defined. When you have Rapise "learn" an object, it must collect data about that object so that it can relocate it even if the application has moved on the screen, and even if the application is in a different state of execution. In order to accomplish this, Rapise looks for all useful ways to uniquely identify the object. As bad, or perhaps worse, than not being able to find an object would be to find the wrong object on the AUT. Every time Rapise is required to locate this object, it will first try to use the first locator. If it fails to positively and uniquely match with that locator, it will try the second, and so on. Rapise will not give up and declare failure until it has failed to identify with all available locators.

Second, notice the ID entry in the Object section of the pane. This is the name of the object from Rapise's perspective. All Rapise names are available through the SeS() function call. Therefore, if we



want to refer to the "OK" object, we will use `SeS("OK")` to refer to it. Once we have correctly identified the object, all valid methods and properties can be accessed by using that object as the basis.

Thirdly, notice in the main editor window of the Rapise, that no code has been added. When you identified the OK button, all Rapise did was add the new object to the Object Tree. It did not write any code in the javascript file.

9. In the automated (recorded) section above, you saw that when you pressed the OK button on the dialog, Rapise recorded a function like this:

```
SeS("OK").DoAction();
```

This time, you will use the established name of the OK button object, but do something a little more interesting than its default action to demonstrate how to use Rapise.

10. Move the cursor into the editor part of the Rapise and make sure you are editing the file called `TwoDialogsLearn.js`. At the moment, this file still looks something like this:

```
//##### Script Steps #####

function Test()
{

}

g_load_libraries=["Generic"];
```

Between the open and close brace, add the following command:

```
SeS("OK").DoClick();
```

Hit the Play button and watch what happens.

The click will register as a command to the object and it will perform the action on the object.

While we have the context of this situation, let's complicate it just a little more to illustrate the intricacy as well as the flexibility of Rapise and SeS.

There is a method whose names looks interesting: `DoLButtonDown()`.

If we were to invoke `DoLButtonDown()` on the "OK" object, we would expect this would be the same as `DoClick()`.

However, go back to the AUT for a moment. Using the mouse, press the left mouse button over the OK button but don't take your finger off the left mouse button.

What happens is that the button takes its pressed state in appearance, but the button is not clicked.

The reason for this is that the `DoClick()` (or `DoAction()`) events cause the mouse button top be clicked as well as released.

Therefore, we would need to have a pair of events:

```
SeS("OK").DoLButtonDown();
SeS("OK").DoLButtonUp();
```

in order to make the "click" happen.

Try this in the test script you have created by adding those two lines of code in place of the `DoClick()` line.

It doesn't work!

Let's play a little with this problem.

When you press the Play button, leave the mouse alone. Just press the left mouse button on the Rapise Play button and take your hand away from the mouse.

The script does not press the OK button in the `TwoDialogs` AUT.

Now, press the Play button on the Rapise and **quickly** move the mouse to hover over the OK button in

the TwoDialogs AUT.

Now it works!

What's going on here is that the DoLButtonDown() and DoLButtonUp() methods are pressing the mouse irrespective of where the mouse cursor is positioned.

The other functions, DoClick and DoAction are methods that are applied to the button and so they are applied to the button.

Before we can expect DoLButtonDown() and DoLButtonUp() methods to work, we have to first the mouse cursor to the button.

```
function Test()
{
 SeS("OK").DoMouseMove(25, 15);
 SeS("OK").DoLButtonDown();
 SeS("OK").DoLButtonUp();
}
```

will accomplish that.

Notice that Rapise will actually move the mouse to the coordinates (25, 15) within the OK button. Also notice that if you move the mouse while the test is playing, you will make the test fail.

As a last experiment in this arena, try moving the mouse outside the boundaries of the OK button object before calling the DoLButtonDown() function.

```
function Test()
{
 SeS("OK").DoMouseMove(250, 150);
 SeS("OK").DoLButtonDown();
 SeS("OK").DoLButtonUp();
}
```

Once again, the script will fail.

## 2.5.4 Restoring the Default Layout

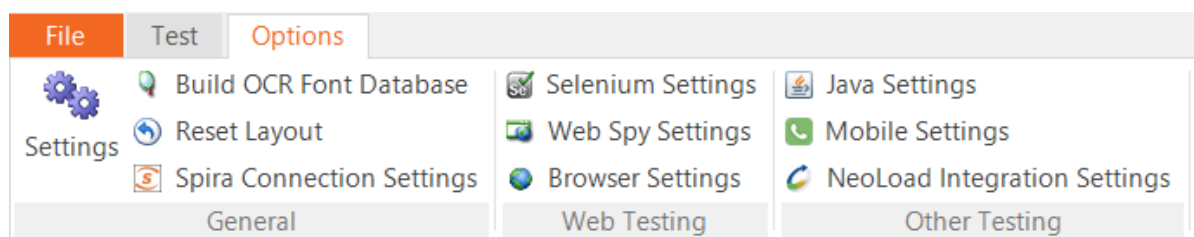
There are two ways to the restore the default layout: (1) On Startup, and (2) In the Options Menu.

### On Startup

Press the **Shift** key while you open Rapise. Keep the Shift key down until Rapise is done initializing.

### Options Menu

In Rapise, select the [Options Ribbon](#):



The **Options Ribbon** will appear. Click on the **Reset Layout** button under the General tab.

Rapise will restart and the layout will be returned to the default.

## 2.5.5 Change Test Entry Point

Rapise assumes that the entry point of a test - [Test\(\)](#) function is defined in a file specified in [ScriptPath](#) property of the [Settings](#) dialog. If you want to place [Test\(\)](#) function in another file then do not forget to update [ScriptPath](#) property of the test.

## 2.5.6 Deal with a Simulated Object

Example: The toolbox of Microsoft's Paint utility (c:\windows\system32\mspaint.exe) is a compound object that contains custom buttons and is surrounded by a containing box. To understand this completely, start mspaint.exe from the Rapise.

Steps:

- (1) Open a new test under Rapise.
- (2) Press the Record/Learn button on the application bar.
- (3) When the "Select an Application to Record" dialog appears, select the Run Application tab. Enter mspaint in the "Full path to application" edit box. Press the Run button.

If you are unfamiliar with MS Paint, take a few minutes to play with it.

In particular, notice the toolbox that appears in the upper-left margin of the utility and the color selection box that appears on the bottom-left of the application window.

- (4) Press Ctrl+5 to spy on the UI. Press Ctrl+G to spy on the Paint application. Notice several things about the behavior of the MS Paint application under the Object Spy.

- (i) As you move the mouse inside the tools box, the entire surrounding box will show a red highlight but the individual tool buttons will not.
- (ii) The same is true of the color palette and the bottom-left of the screen.
- (iii) As you move the mouse over the apparent buttons and controls, the information in the spy dialog is more sparse than for other applications. The tool buttons do not have default actions, and they are not identified as buttons. Rather they are identified only as "child" objects.

This combination makes it impossible for Rapise to identify and learn the objects as integral objects.

Furthermore, notice that as you change the size of the Paint window, the relative positions of the color palette and the tool box change.

The only way in which Rapise can be 'taught' these controls (and others we will discover later) is by "simulating" them as though they were buttons that can accept commands such as the press event.

In fact, Rapise will recognize these non-objects without you having to take particular action. Let's discover this and what it means:

- (1) Open a new test under Rapise; call it MSPaint.
- (2) Press the Record/Learn button on the application bar.
- (3) When the "Select an Application to Record" dialog appears, clear all selection boxes in the library list box. You will have to scroll that section of the dialog box to make sure all selections are clear. We are choosing no loaded libraries so that Rapise will not be able to "cheat" and know about any objects on the screen.
- (4) select the Run Application tab. Enter mspaint in the "Full path to application" edit box. Press the

Run button.

(Applications that reside in C:\windows\system32 can be started by their names because C:\windows\system32 must be in the system path.)

(5) When the Recording Activity dialog is displayed, press Learn (Ctrl+2)

(6) Do a small amount of things in Paint. For example:

- (i) Click on the light-grey color in the palette.
- (ii) Click on the tipping paint-can (Fill with color).
- (iii) Click on the empty canvas.
- (iv) Click on the red color in the palette.
- (v) Click on the "A" tool (Text).
- (vi) Click in the canvas and type a few characters, such as "Hello."
- (vii) Click in a blank place under the tool button.

(7) Look at the Recording Activity dialog grid. It will be something like this:

| #  | Object           | Action   | Data    | Comment                                    |
|----|------------------|----------|---------|--------------------------------------------|
| 1  | Colors           | LClick   | 172,84  | User clicks at: 172, 84 in 'Colors'        |
| 3  | Fill with color  | LClick   | 5,10    | User clicks at: 5, 10 in 'Fill with color' |
| 3  | Simulated        | LClick   | 422,111 | User clicks at: 422, 111 in "              |
| 4  | Colors           | LClick   | 158,84  | User clicks at: 158, 84 in 'Colors'        |
| 5  | Tools            | LClick   | 45,82   | User clicks at: 45, 82 in 'Tools'          |
| 6  | Simulated        | LClick   | 336,89  | User clicks at: 336, 89 in "               |
| 7  | Tools            | LClick   | 37,83   | User clicks at: 37, 83 in 'Tools'          |
| 8  | Text             | LClick   | 373,169 | User clicks at: 373, 169 in 'Text'         |
| 9  | Simulated        | LClick   | 267,165 | User clicks at: 267, 165 in "              |
| 10 | Untitled - Paint | SendK... | Hello   | Type                                       |
| 11 | Global           | SendK... | {ENTER} | Type                                       |

Verify (Ctrl+1)    Learn (Ctrl+2)    Spy (Ctrl+5)    Pick Object...    Pause

Analog (Ctrl+4)    \_Simulated    Cancel    Finish (Ctrl+3)

Last captured: SeSSimulated (1)     Transparent

Notice that the two clicks in the canvas were recorded as "simulated" objects.

Notice also that the two pairs of clicks in the tools and colors sections were recorded as LClick (left click) in "Tools" and "Colors". However, there are no objects by these names. To find out where these pseudo objects came from, we need to look in the file MSPaint.objects.js (the name will be the name you gave the test project). The following excerpt from the MSPaint.object.js shows the start of the definition of the "Colors" object:

```

1 var saved_script_objects={
2 >> "Colors":{
3 >> "locations": [
4 >>> {
5 >>>> "locator_name": "Location",
6 >>>> "location": {
7 >>>>> "location": "4.4.4.1.4",
8 >>>>> "window_name": "param:window_text",
9 >>>>> "window_class": "param:window_class"
10 >>>> }
11 >>> },
12 >>> {
13 >>>> "locator_name": "LocationPath",
14 >>>> "location": {
15 >>>>> "window_name": "param:window_text",
16 >>>>> "window_class": "param:window_class",
17 >>>>> "path": [
18 >>>>>> {
19 >>>>>>> "object_name": "param:object_name",
20 >>>>>>> "object_class": "param:object_class",
21 >>>>>>> "object_role": "param:object_role"
22 >>>>>>> },
23 >>>>>>> {
24 >>>>>>>> "object_name": "param:object_name",
25 >>>>>>>> "object_class": "param:object_class",
26 >>>>>>>> "object_role": "ROLE_SYSTEM_WINDOW"
27 >>>>>>>> },
28 >>>>>>>> {
29 >>>>>>>>> "object_name": "param:object_name",
30 >>>>>>>>> "object_class": "AfxControlBar42u",
31 >>>>>>>>> "object_role": "param:object_role"
32 >>>>>>>>> },

```

(8) Press Ctrl+3 to end the recording.

## 2.5.7 Do Absolute Analog Recording

Let's once again use our trusty over-simplified TwoDialogs sample application to learn how to use absolute analog recording and use it to discover the value as well as the dangers associated with absolute analog recording.

Steps:

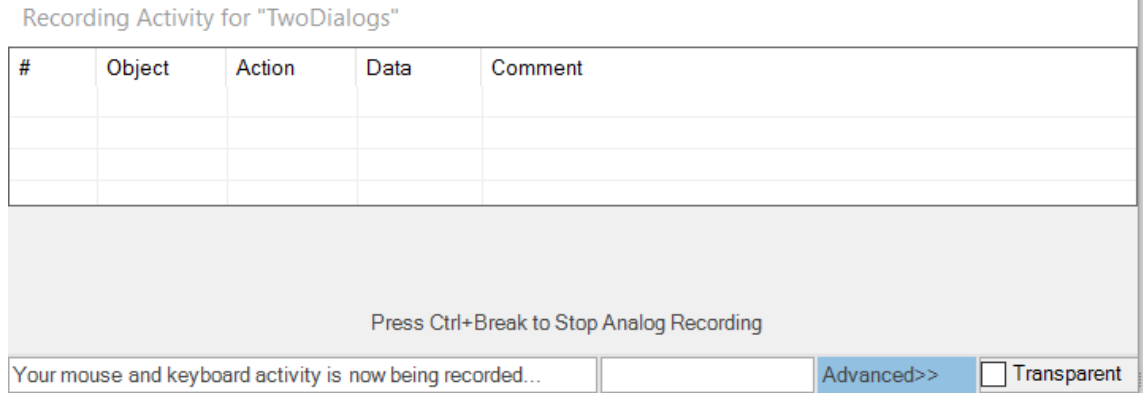
- (1) Run the TwoDialogs sample AUT. By default this will be located in the C:\Users\Public\Documents\Rapise\Samples\TwoDialogs\TwoDialogs.exe location
- (2) Start Rapise and create a new test and call it TwoDialogsAnalogAbsolute.
- (3) Press the Record/Learn button in the toolbar of Rapise.
- (4) When the "Select an Application to Record" dialog is displayed, choose the TwoDialogs.exe application and ignore the library list - we will not be using any library for analog recording. Press the Select button.
- (5) The Recording Activity dialog will be displayed with an empty grid.

NOTE: this recording session is going to be a little different from previous sessions. Previously we could interrupt our object-related recording/learning with other activities and because Rapise was recording activity related only to the target application, our recording or object learning would be

unaffected. However, in analog recording, Rapise is monitoring the mouse and keyboard for the entire system - for all applications. This means that if you answer an email in the middle of analog recording, or log in to a secure system, all the steps including mouse movement, keystrokes, etc., will all be recorded. However, note also that screen contents are not recorded by Rapise.

(6) If the TwoDialogs UI has been occluded, bring it back to the front so you don't have to hunt for it when you start recording.

(7) When you're ready to record the session, hit Ctrl+4 on the Recording Activity dialog. You will need to click on the 'Advanced' button to display the Analog button.

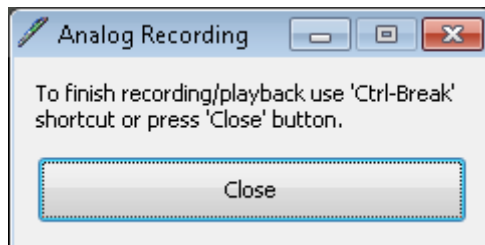


NOTE: Pressing the Analog button on the Recording Activity dialog starts a relative analog recording session. Use the Ctrl+4 key sequence to start the absolute analog recording session.

Rapise will begin recording all mouse and keyboard activity until you stop the recording.

Note also that the prompt in the notification/status area of the Recording Activity dialog is different from that for relative analog. It tells you that "Your mouse and keyboard activity is now being recorded."

A minimized window will be created that indicates that analog recording is in progress and allowing you to stop the recording.



(7) Go to the TwoDialogs AUT and click anywhere in the application's window to start the analog recording.

Click the mouse on the empty "Please enter your name" text box.

Type a name in the text box.

Hit the <tab> key or click the left mouse button to advance the input position to the second text box.

Type another name.

Move the mouse to the OK button and press the mouse left button.

(8) When you have recorded enough, switch to the Analog Recording dialog box and press the close button or hit the keys Ctrl+Break.

NOTE: If you use the "close" button on the Analog Recording dialog, the movement of the mouse to the Analog Recording dialog, and the mouse-click on the Close button will be recorded as part of the

analog recording output. This might not be a desirable outcome at playback time because the Analog Recording dialog will not be present and the mouse click will be played in a potentially random place on the screen. For this reason, Ctrl+Break is probably a better option to terminate analog recording.

NOTE: The grid will have no entry added until you end the analog recording with the Close button in the Analog Recording dialog. When you do, it will add an entry to the grid.

| Recording Activity for "TwoDialogs" |        |         |             |                                                         |
|-------------------------------------|--------|---------|-------------|---------------------------------------------------------|
| #                                   | Object | Action  | Data        | Comment                                                 |
| 1                                   | Global | Anal... | Analog\A... | Plays recorded events from "Analog\Analog0001.arf" file |
|                                     |        |         |             |                                                         |
|                                     |        |         |             |                                                         |

Verify (Ctrl+1)    Learn (Ctrl+2)    SPY (Ctrl+5)    Resume    Finish (Ctrl+3)    Cancel

Analog (Ctrl+4)   

Unknown:             Transparent

(9) You can now record additional analog sessions, if you wish.

(10) You can record normal object activity before and/or after the analog recording. When you have finished all recording press the Finish button or hit Ctrl+3. Notice that the Analog entry is added to the grid.

(11) The Rapise screen will now be restored and will have placed focus in the editor pane of the Rapise with TwoDialogsAnalogAbsolute.js script displayed. You should see code something like the following:

```
//Plays recorded events from "Analog\Analog0003.arf" file
SeS('Simulated').DoAnalogPlay("Analog\Analog0003.arf");
```

(12) Press the Play button on the Rapise toolbar to playback the recording you made. Be sure not to interfere with the mouse or keyboard whilst the recording is playing back.

NOTE: You will see all mouse and keyboard activity reproduced as the analog recording plays. The recording will start from the point where you left-clicked the mouse to begin the recording (step 7 above) and will end with clicking the close button in the Analog Recording dialog or at the last action before you pressed Ctrl+Break.

(13) When the analog playback is complete, use the mouse to move the Two Dialogs AUT to a different location on the screen. Play the recording again, and watch the operation unfold. The most important thing to realize is that the absolute analog recording will playback the recording wherever the application is positioned on the screen wherever the AUT was positioned when you made the recording. Absolute analog recording records relative to the top-left corner of the system screen. Try this for yourself, but be sure to minimize all applications before starting.

## 2.5.8 Do Relative Analog Recording

Let's once again use our trusty over-simplified TwoDialogs sample application to learn how to use relative analog recording.

Steps:

- (1) Run the TwoDialogs sample AUT. By default this will be located in C:\Users\Public\Documents\Rapise\Samples\TwoDialogs\TwoDialogs.exe
- (2) Start Rapise and create a new test and call it TwoDialogsAnalogRelative.



(3) Press the Record/Learn button in the toolbar of Rapise.

(4) When the "Select an Application to Record" dialog is displayed, choose the TwoDialogs.exe application. Since we will not be using a library for this recording, the library selection is irrelevant. Press the Select button.

(5) The Recording Activity dialog will again be displayed with an empty grid.

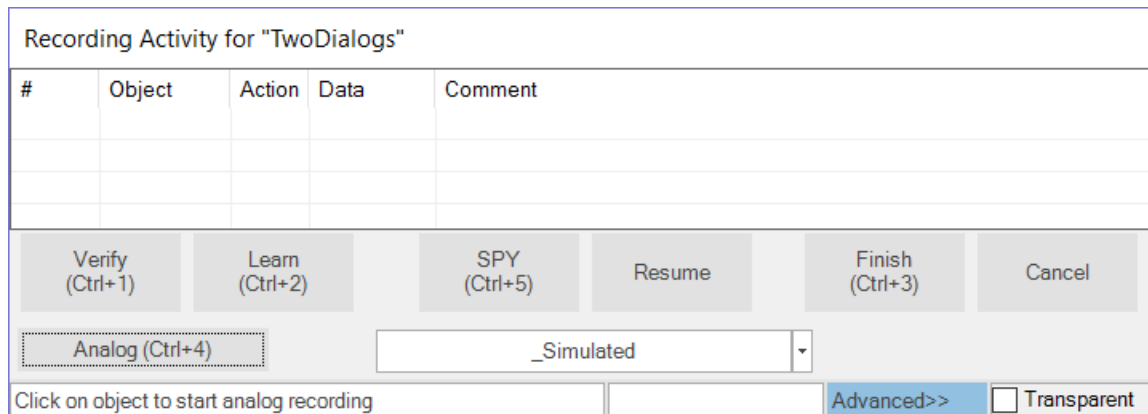
NOTE: this recording session is going to be a little different from previous sessions. Previously we could interrupt our object-related recording/learning with other activities and because Rapise was recording activity only related to the target application, our recording or object learning would be unaffected. However, in analog recording, Rapise is monitoring the mouse and keyboard for the entire system - for all applications. This means that if you answer an email in the middle of analog recording, or log in to a secure system, all the steps including mouse movement, keystrokes, etc., will all be recorded. However, note also that screen contents are not recorded by Rapise.

(6) If the TwoDialogs UI has been occluded, bring it back to the front so you don't have to hunt for it during recording.

(7) When you're ready to record the session, hit the Analog button on the Recording Activity dialog.

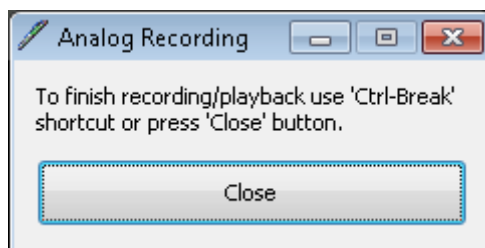
NOTE: The key sequence Ctrl+4 starts an absolute analog recording session. Press the Analog button to start the relative analog recording session.

When you press the Analog button, two things will happen. Firstly, the status bar of the Recording Activity dialog will change to read, "Click on object to start analog recording."



After the next mouse click, Rapise is recording all mouse and keyboard activity until you stop the recording.

Secondly, a minimized window will be created that indicates that analog recording is in progress and allowing you to stop the recording.



(7) Go to the TwoDialogs AUT and click anywhere in the application's window to start the analog recording.

Click the mouse on the empty "Please enter your name" text box.

Type a name in the text box.

Hit the <tab> key or click the left mouse button to advance the input position to the second text box.

Type another name.

Move the mouse to the OK button and press the mouse left button.

(8) When you have recorded enough, switch to the Analog Recording dialog box and press the close button or press the key sequence Ctrl+Break. If you use the "close" button on the Analog Recording dialog, the movement of the mouse to the Analog Recording dialog, and the mouse-click on the Close button will be recorded as part of the analog recording output. This might not be a desirable outcome at playback time because the Analog Recording dialog will not be present and the mouse click will be played in a potentially random place on the screen. For this reason, Ctrl+Break is probably a better option to terminate analog recording.

NOTE: The grid will have no entry added until you end the analog recording with the Close button in the Analog Recording dialog. When you do, it will add an entry to the grid.

| Recording Activity for "TwoDialogs" |        |         |             |                                                         |
|-------------------------------------|--------|---------|-------------|---------------------------------------------------------|
| #                                   | Object | Action  | Data        | Comment                                                 |
| 1                                   | Global | Anal... | Analog\A... | Plays recorded events from "Analog\Analog0001.arf" file |
|                                     |        |         |             |                                                         |
|                                     |        |         |             |                                                         |

Verify (Ctrl+1)    Learn (Ctrl+2)    SPY (Ctrl+5)    Resume    Finish (Ctrl+3)    Cancel

Analog (Ctrl+4)             Transparent

(9) You can now record additional analog sessions if you wish.

(10) You can record normal object activity before and/or after the analog recording. When you have finished all recording press the Finish button or hit Ctrl+3.

(11) The Rapise screen will now be restored and will have placed focus in the editor pane of the Rapise with TwoDialogsAnalogAbsolute.js scrip displayed. You should see code something like the following:

```
//Plays recorded events from "Analog\Analog0003.arf" file
SeS('Simulated').DoAnalogPlay("Analog\Analog0003.arf");
```

(12) Press the Play button on the Rapise toolbar to playback the recording you made. Be sure not to interfere with the mouse or keyboard whilst the recording is playing back.

NOTE: You will see all mouse and keyboard activity reproduced as the analog recording plays. The recording will start from the point where you left-clicked the mouse to begin the recording (step 7 above) and will end with clicking the close button in the Analog Recording dialog. If you used Ctrl+Break to end the recording then the last recorded activity will be the one that keystroke.

(13) When the analog playback is complete, use the mouse to move the Two Dialogs AUT to a different location on the screen. Play the recording again, and watch the operation unfold. The most important thing to realize is that the relative analog recording will playback the recording wherever the application is positioned on the screen. This is because you used relative analog recording. However, once the recording within the AUT is complete, all mouse motion and keyboard strokes are relative to the current position of the AUT. Suppose that during analog recording, you click the OK button in TwoDialogs.exe, then move the mouse to terminate the recording using the analog recording Close button. Now, prior to playback, you move the AUT to a different location on the screen and hit playback. All the activity within the AUT will be faithfully reproduced. However, the mouse motion outside the AUT will be relative to the position, so the following activities will not be accurately reproduced. Try this for yourself, but be sure to minimize all applications before starting so you don't cause mouse events where they will do harm to other applications on the screen.

## 2.5.9 Changing the URL of Website being Tested

### Overview

We are in the process of adding a new testing server that we would like to be able to run automation scripts against.

I just wanted to see if there is a process documented for converting scripts and objects to point to a different web address?

### Recommended Solution

There are several ways of doing this, but the way that makes your scripts easier to modify in the future is simply to add a global variable to your test script:

```
g_base_url = 'http://www.libraryinformationsystem.org';
```

and then open up the MyTest.objects.js file and change all references of:

```
"url": "http://www.libraryinformationsystem.org/Books.aspx"
```

to

```
"url": g_base_url + "/Books.aspx"
```

(and similarly for other URLs).

Then you can just change the base URL in either the script or pass through a value through the Rapise command-line or from SpiraTest (as a parameter).

Alternatively you can keep the script the same and just add the following code at the start of the test:

```
Navigator.Open('http://www.website.com');
```

or using a variable:

```
Navigator.Open(g_webSiteBaseUrl);
```

## 2.5.10 Extracting test data from an Excel spread sheet

### Overview

Often you want to be able to parameterize your Rapise tests to have a common set of test functions that can use different combinations of test data. You can use a MS-Excel spreadsheet to store the test data and use Rapise to read out the matching values. This articles provides a sample for doing this.

### Recommended Solution

In this example we have a spreadsheet that contains some lookup data:

**Test    Test Data**

```
Test1 valuetest1
Test2 valuetest2
Test3 valuetest3
Test4 valuetest4
Test5 valuetest5
```

We want to dynamically query this Excel sheet and find the test data associated with a specific case. For example if we query for "Test2" we want to return back the test data "valuetest2".

The function that will do this uses the built-in [Spreadsheet](#) object:

```
function FindValueFromFile(filename, valueToFind)
{
 //Open the spreadsheet
 var success = Spreadsheet.DoAttach(filename, 'Sheet1');
 Tester.Assert('Open Spreadsheet', success);

 //Now loop through and see if we can find that value
 var rowCount = Spreadsheet.GetRowCount();
 Spreadsheet.SetRange(2, rowCount + 1, 1, 2);

 //Loop through all the rows and find the match
 var data = '';
 while(Spreadsheet.DoSequential())
 {
 if (Spreadsheet.GetCell(0) == valueToFind)
 {
 data = Spreadsheet.GetCell(1);
 }
 }
 return data;
}
```

## 2.5.11 Accessing Files and I/O Functions

### Overview

Sometimes using Rapise you need to access files on the Windows filesystem, either for testing purposes, or to object test data stored in a flat CSV, TSV or text file. This sample illustrates how you can access the File System using Rapise and the Windows FileSystemObject ([http://msdn.microsoft.com/en-us/library/aa242706\(v=vs.60\).aspx](http://msdn.microsoft.com/en-us/library/aa242706(v=vs.60).aspx)).

### Code Sample

The following sample code illustrates how to access files using Rapise:

```
function Test()
{
 //IOMode constants
 var IOMode_ForReading = 1;
 var IOMode_ForWriting = 2;
```

```
var IOMode_ForAppending = 8;

//var Format constants
var IOFormat_ASCII = 0;
var IOFormat_Unicode = -1;

//This sample demonstrates how to manipulate the Windows
file system using Rapise
//We shall open a text file for writing in this simple
example

var fso = new ActiveXObject('Scripting.FileSystemObject');
var ts = fso.CreateTextFile('C:\\Temp\\MyTestFile.txt');
ts.Close();

var file = fso.GetFile('C:\\Temp\\MyTestFile.txt');
ts = file.OpenAsTextStream(IOMode_ForWriting,
IOFormat_Unicode);
ts.WriteLine('Hello World!');
ts.Close();
Tester.Message('Wrote File');

//Now read this file back
file = fso.GetFile('C:\\Temp\\MyTestFile.txt');
ts = file.OpenAsTextStream(IOMode_ForReading,
IOFormat_Unicode);
var text = ts.ReadLine();
Tester.Message(text);
ts.Close();
}
```

## 2.5.12 Sending Special Keys to the Current Application

### Overview

You can use the `Global.DoSendKeys('...');` command in Rapise to send keypresses to the current application. Sometimes you will want to send special control keys to the application (e.g. Page Down, or CTRL + Key). This article explains the way to do this.

### Information and Examples

To send special characters, you just use the list available in the Windows API `SendKeys.Send` function:

[http://msdn.microsoft.com/en-us/library/system.windows.forms.sendkeys.send\(v=vs.110\).aspx](http://msdn.microsoft.com/en-us/library/system.windows.forms.sendkeys.send(v=vs.110).aspx)

To specify characters that aren't displayed when you press a key, such as ENTER or TAB, and keys that represent actions rather than characters, use the codes in the following table:

| Key       | Code                         |
|-----------|------------------------------|
| BACKSPACE | {BACKSPACE}, {BS}, or {BKSP} |
| BREAK     | {BREAK}                      |

|                 |                                   |
|-----------------|-----------------------------------|
| CAPS LOCK       | {CAPSLOCK}                        |
| DEL or DELETE   | {DELETE} or {DEL}                 |
| DOWN ARROW      | {DOWN}                            |
| END             | {END}                             |
| ENTER           | {ENTER} or ~                      |
| ESC             | {ESC}                             |
| HELP            | {HELP}                            |
| HOME            | {HOME}                            |
| INS or INSERT   | {INSERT} or {INS}                 |
| LEFT ARROW      | {LEFT}                            |
| NUM LOCK        | {NUMLOCK}                         |
| PAGE DOWN       | {PGDN}                            |
| PAGE UP         | {PGUP}                            |
| PRINT SCREEN    | {PRTSC} (reserved for future use) |
| RIGHT ARROW     | {RIGHT}                           |
| SCROLL LOCK     | {SCROLLLOCK}                      |
| TAB             | {TAB}                             |
| UP ARROW        | {UP}                              |
| F1              | {F1}                              |
| F2              | {F2}                              |
| F3              | {F3}                              |
| F4              | {F4}                              |
| F5              | {F5}                              |
| F6              | {F6}                              |
| F7              | {F7}                              |
| F8              | {F8}                              |
| F9              | {F9}                              |
| F10             | {F10}                             |
| F11             | {F11}                             |
| F12             | {F12}                             |
| F13             | {F13}                             |
| F14             | {F14}                             |
| F15             | {F15}                             |
| F16             | {F16}                             |
| Keypad add      | {ADD}                             |
| Keypad subtract | {SUBTRACT}                        |
| Keypad multiply | {MULTIPLY}                        |
| Keypad divide   | {DIVIDE}                          |

For example, to send the ENTER keypress, just use:

```
Global.DoSendKeys('{ENTER}');
```

To specify keys combined with any combination of the SHIFT, CTRL, and ALT keys, precede the key

code with one or more of the following codes:

|       | Key |   | Code |
|-------|-----|---|------|
| SHIFT |     | + |      |
| CTRL  |     | ^ |      |
| ALT   |     | % |      |

### 2.5.13 Detecting the presence of an object

Often you need to be able to check for the presence of an object and then depending on whether the object is visible perform one of two possible sets of operations. This article explains the recommended way of doing this

#### Recommended Solution

You can use the special `SeSFindObj('object name')` command to perform the check:

```
if(SeSFindObj('Object Name'))
{
 // Object is available
}
else
{
 // Object is not available
}
```

## 2.6 Technologies

This section focuses on specific technologies supported by Rapise.

### 2.6.1 Web Testing

#### Purpose

Rapise lets you record and play automated tests against web applications on a variety of web browsers including **Firefox**, **Internet Explorer** and **Google Chrome**. Rapise lets you record or create your tests against one browser and then play the same test back against all of the other browsers. Some of the web browsers will require the [installation of a special Rapise plugin](#) to allow automated testing.

Rapise provides comprehensive support for testing Web applications. Rapise supports cross-browser testing. It uses the web browser Document Object Model (DOM) to interact with the current web page. The various web browsers on the market have various differences in DOM implementation. In many cases these differences are not significant. But sometimes they require special handling. Rapise tries to overcome the differences and make the recorded scripts as universal as possible:

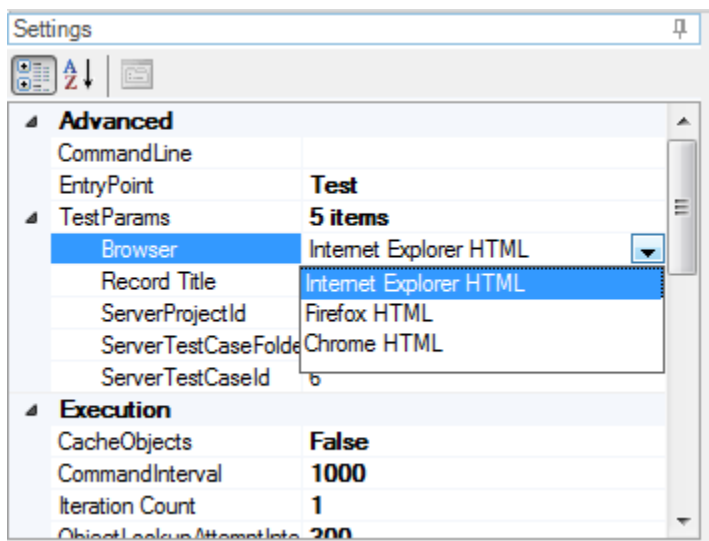
#### Cross Browser Testing

When developing and testing a web application you naturally need to test it with different web browsers and of course (based on bitter experience) multiple version of each web browser. With Rapise you can

record a test script using one browser and then play it back using Mozilla Firefox, Google Chrome or Microsoft Internet Explorer:



With Rapise, you can run your recording in a different browser than the one in which it was recorded simply by changing the specified browser in the playback settings:



In addition, it is possible to have more control over the cross browser execution using the available APIs and configuration variables. You can also run the recording in multiple browsers in succession using either a Rapise [sub-test](#) or simply executing the test from our [SpiraTest test management](#) system and passing through different parameter values.

## DOM API

In addition to the usual [recording](#), [learning](#) and [playback](#) that is similar to testing other technologies (desktop, mobile, etc.) there are some unique functions that are available on all recorded web objects:

Upon learning a web element in Rapise, you get an object of type **HTMLObject**. Each **HTMLObject** provides set of functions to facilitate the cross-browser access to web element parents and children.



| DOM Function                 | Description                                                                           |
|------------------------------|---------------------------------------------------------------------------------------|
| DoDOMChildAt                 | Returns n-th child (zero-based).                                                      |
| DoDOMChildrenCount           | Returns number of children elements for this one.                                     |
| DoDOMFindParentWithAttribute | Returns parent element (if any) with given attribute matching given string or 'regex' |
| DoDOMGetAttribute            | Returns specified attribute.                                                          |
| DoDOMNextSibling             | Returns next sibling element for this one.                                            |
| DoDOMParent                  | Returns parent element having this element.                                           |
| DoDOMPrevSibling             | Return previous sibling element for this one.                                         |
| DoDOMRoot                    | Returns Root element having this element.                                             |

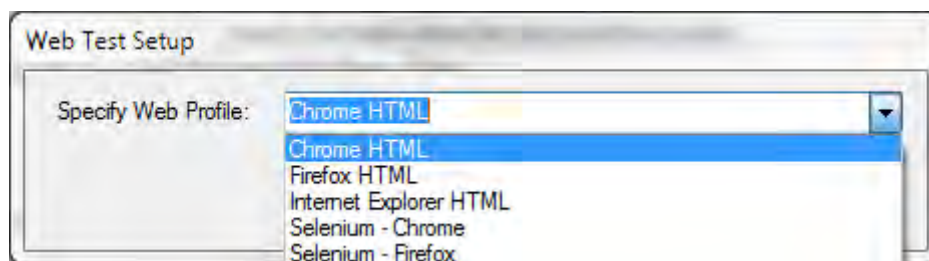
## See Also

- [Web Spy](#) - How to use the Web Spy to inspect web pages and dynamically query for HTML elements
- [XPath](#) - An explanation of the XPath language, how it can be used to dynamically query objects in web application and some examples
- [CSS](#) - An explanation of how to use CSS selectors (common in frameworks such as jQuery) to dynamically query objects in web applications
- [Web Testing Tutorial](#) - a basic example of how to record, learn and playback tests using a our sample web application
- [Setting up Web Browsers](#) - describes the steps needed to configure each of the web browsers to work with Rapise.

### 2.6.1.1 Cross Browser Testing

## Choosing the Browser When Creating a Test

When you first create a Rapise test with the **Methodology** set to **Web** you will be asked to choose the initial [web browser profile](#):



You can run your recording in a different browser than the one in which it was recorded.

### Selecting a new Playback Browser

First, open the script for your test using the [Test Files Dialog](#). Locate the line where `g_load_libraries` is initialized.

### Under the Hood

It is possible to have more control about cross browser execution using available APIs and configuration variables. You can also run the recording in multiple browsers in succession. Both options require modification of the script. The necessary modifications are described below. First, open the script for your test using the [Test Files Dialog](#). Locate the line where `g_load_libraries` is initialized.

If you recorded your script in IE you will see:

```
g_load_libraries=["%g_browserLibrary:Internet Explorer HTML%"];
```

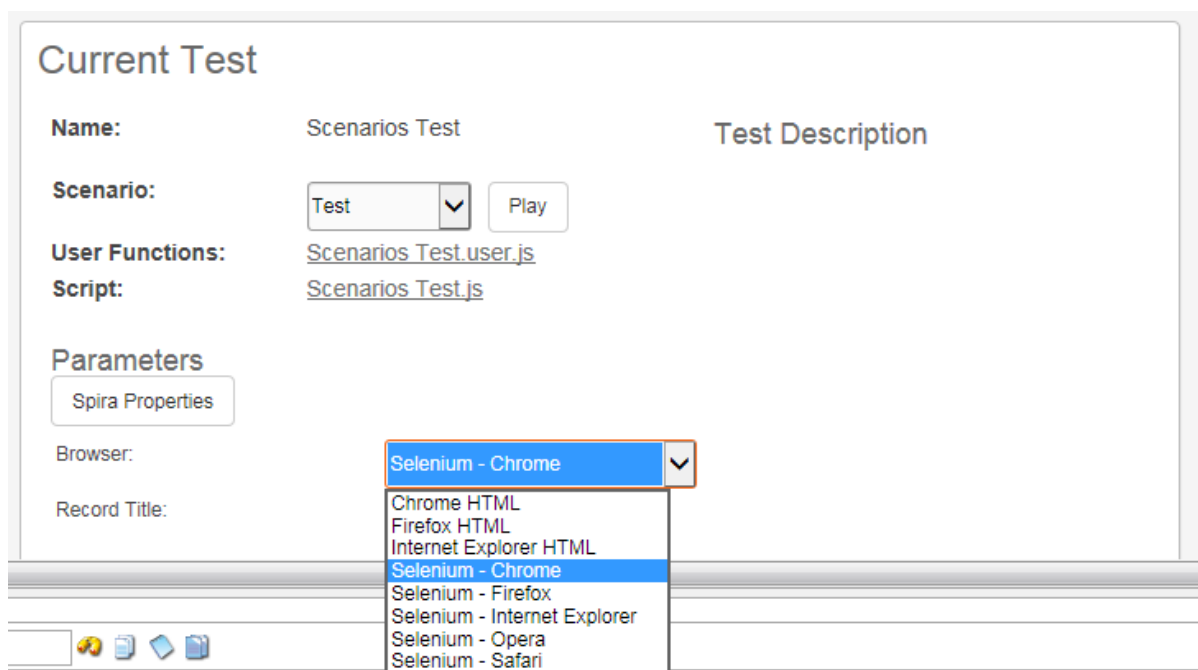
If you recorded it in Firefox, you will see:

```
g_load_libraries=["%g_browserLibrary:Firefox HTML"];
```

This line tells Rapise to use the browser library specified in the special `g_browserLibrary` variable setting, and if no value is set, default to the named browser (Internet Explorer or Firefox in this example).

### Changing the Playback Browser

Go to the Main [Start Page](#) of Rapise. Under the 'Current Test' section you will see the list of available web browsers:



Change the browser to either one of the [native browsers](#) such as **Firefox**, **Internet Explorer** or **Chrome**, or one of the [Selenium WebDriver](#) based browser profiles.

Once you have changed this setting, [Playback](#) the script normally and it will playback in the selected browser.

Changing this setting will effectively set the value of the **g\_browserLibrary** global variable.

### Playback in Multiple Browsers - SpiraTest

Executing a test in multiple browsers is slightly more complicated. We recommend that you use **SpiraTest 'Test Sets'** where you may define multiple test cases pointing to the same Test with a different **g\_browserLibrary** parameter value.

The separate help document "**Using SpiraTest with Rapise**" provides specific instructions on using Rapise with SpiraTest to handle the specific case of cross-browser testing as well as more general support for parameterized testing.

See the [SpiraTest Integration](#) topic for more general information on using Rapise with SpiraTest.

### Playback in Multiple Browsers - SubTests

As another option, it is also possible to use [sub-tests](#) to organize multi-browser testing where a single test executes itself in different browsers one after another.

1. Record [base](#) test. Put all the recorded actions into a User-defined function and place it into **<testname>user.js** file. For example, function `Login()` inside file **MyTest.user.js**.
2. [Create Sub-Test](#) for **IE** re-using objects and functions from the base test
3. Modify script file in sub-test as follows:

```
function Test()
{
 // Re-use 'Login()' scenario from parent test
 Login();
}

g_load_libraries=["Internet Explorer HTML"];
```

4. Create Sub-Test for **Firefox** re-using objects and functions from parent test
5. Modify script file in subtest as follows:

```
function Test()
{
 // Re-use 'Login()' scenario from parent test
 Login();
}

g_load_libraries=["Firefox HTML"];
```

As a result you have a test for 2 browsers: **IE** and **Firefox**. Each browser is defined by a library in a corresponding sub-test. Rapise contains the [Cross Browser](#) sample using this approach.

### 2.6.1.2 Setting Up Web Browsers

Before you can use Rapise with certain web browsers to do web testing, you will need to install plugins so that Rapise can communicate with them.

#### Preparing Internet Explorer (IE)

Unlike the other web browsers, there are actually no steps needed to configure IE. Once Rapise is installed, it is ready to connect to IE for recording, playback and learning without any configuration steps.



#### Preparing Firefox

In order to test web applications using the Firefox web browser, you will need to install an extension for Firefox that allows Rapise to interact with it:

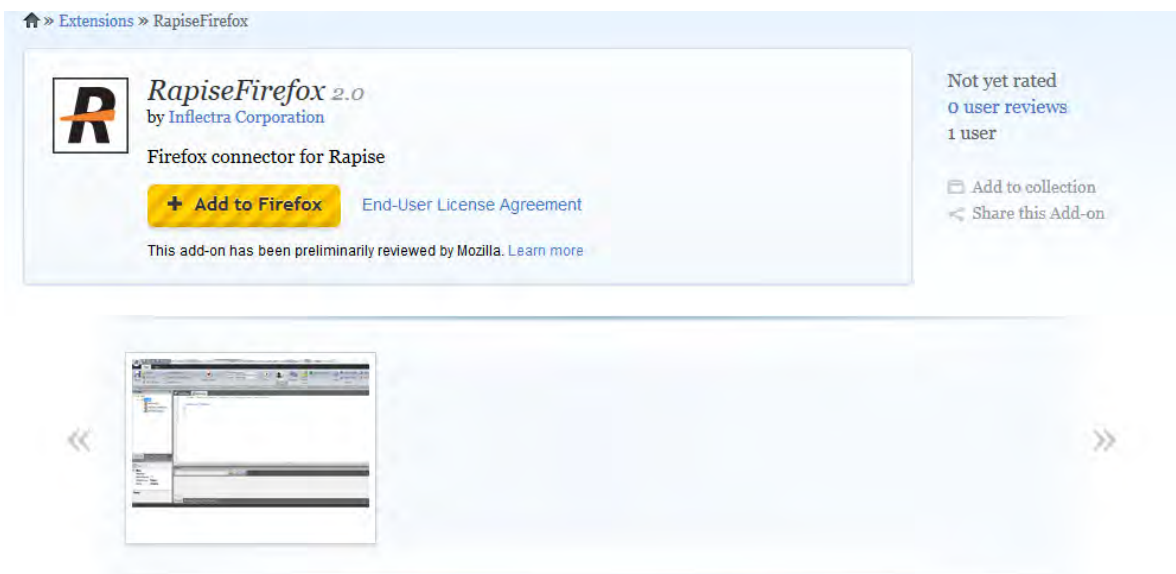
1. Launch Firefox. Navigate to the following URL: <http://www.inflectra.com/Rapise/Downloads.aspx> :

#### Available Downloads

The following downloads are currently available for Rapise:

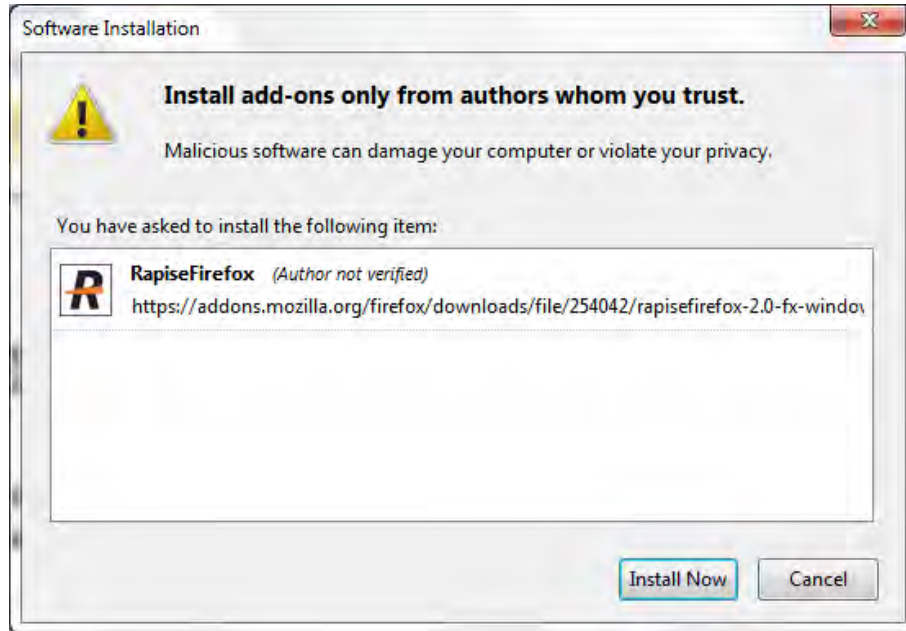
| Web-Browser Extensions                                                                     |                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  v2.0.0   | <b>Rapise Add-On For Firefox</b><br>Allows Rapise to record, learn and playback automated tests using the Mozilla Firefox web browser.<br><i>Compatible with Mozilla Firefox 20+ and Rapise v2.0+</i>     |
|  v2.0.3 | <b>Rapise Extension for Google Chrome.</b><br>Allows Rapise to record, learn and playback automated tests using the Google Chrome browser.<br><i>Compatible with Google Chrome 32.0+ and Rapise v2.0+</i> |

2. Click on the 'Rapise Add-In For Firefox' hyperlink and it will take you to the Firefox Add-Ons page:

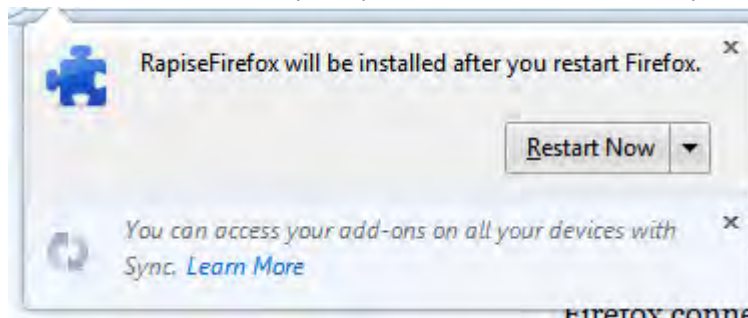


3. Click on the 'Add to Firefox' button to install the Add-On into your instance of Firefox.

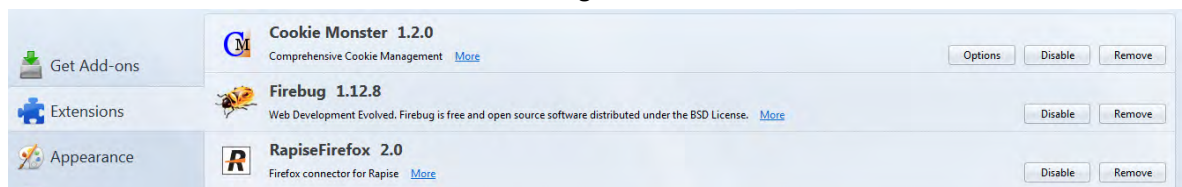
4. Click “Install Now” in the software installation dialog that appears:



5. When installation is complete press “Restart Now” to complete the installation:



6. Once Firefox is started again, you should now see the RapiseFirefox Add-On listed in the ‘Extensions’ section of the Firefox Add-ons Manager:



7. Firefox is ready to be used with Rapise for automated testing.

**Note:** Rapise requires localhost port 4247 to be accessible for correct operation. Please, make sure that this port is unblocked in your Firewall.



## Preparing Google Chrome for Rapise®

In order to test web applications using the Google Chrome browser, you will need to install an extension for Chrome that allows Rapise to interact with it:

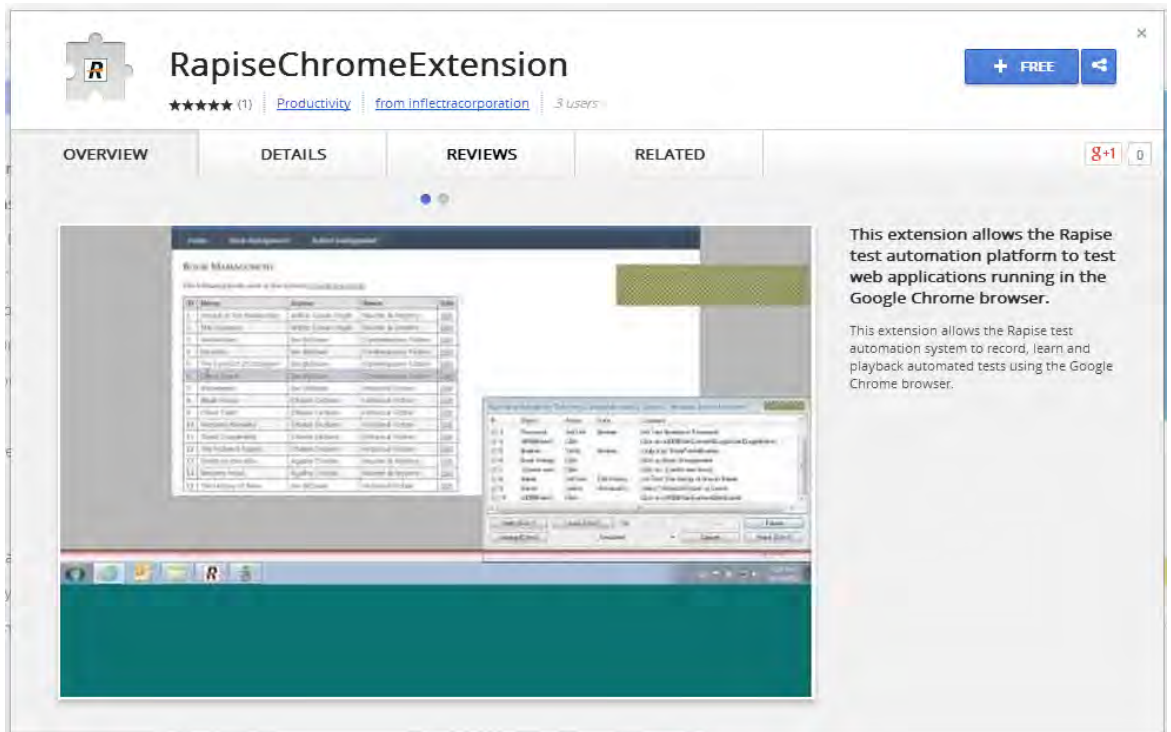
1. Launch Chrome. Navigate to the following URL: <http://www.inflectra.com/Rapise/Downloads.aspx> :

### Available Downloads

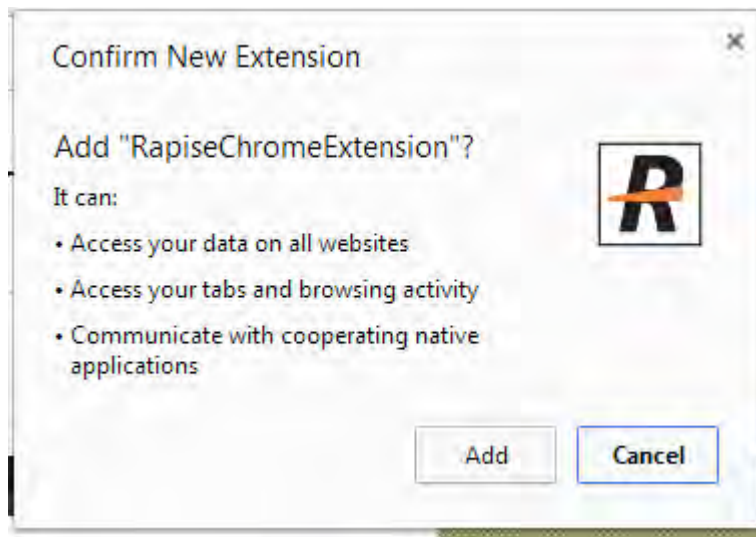
The following downloads are currently available for Rapise:

| Web-Browser Extensions                                                                   |                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  v2.0.0 | <b>Rapise Add-On For Firefox</b><br>Allows Rapise to record, learn and playback automated tests using the Mozilla Firefox web browser.<br><i>Compatible with Mozilla Firefox 20+ and Rapise v2.0+</i>     |
|  v2.0.3 | <b>Rapise Extension for Google Chrome.</b><br>Allows Rapise to record, learn and playback automated tests using the Google Chrome browser.<br><i>Compatible with Google Chrome 32.0+ and Rapise v2.0+</i> |

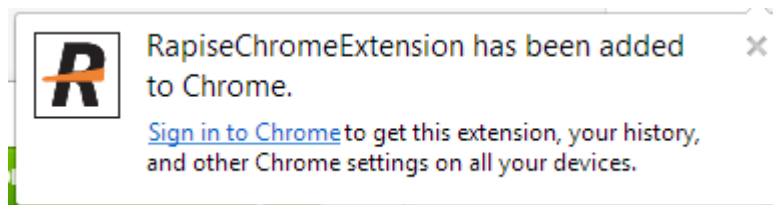
2. Click on the 'Rapise Extension for Google Chrome' hyperlink and it will take you to the Chrome store:



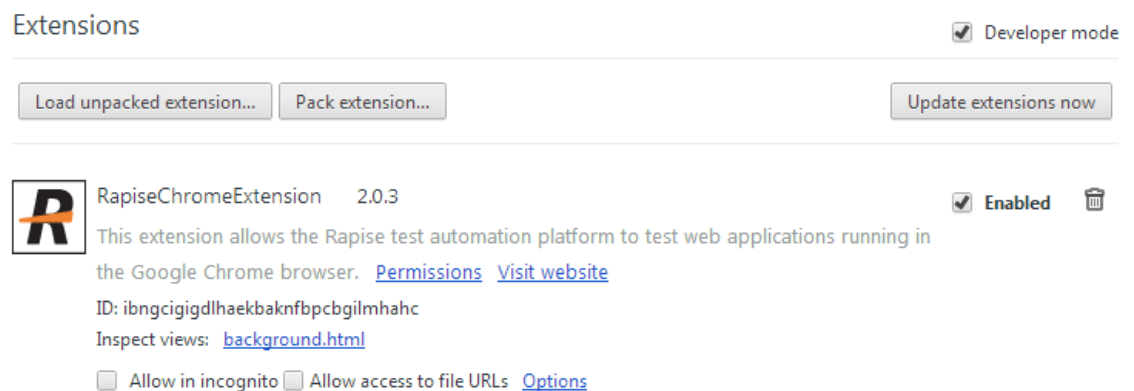
3. Click on the 'Free' button to install the Rapise extension into your instance of Chrome. You will be asked to confirm that you want to Add the extension:



4. Once the extension has been installed, you will see the following confirmation dialog box:



5. To view the extension, click on the "wrench" icon next to the omnibox and choose Tools > extensions. You should now see the chrome extension manager with the Rapise extension listed:



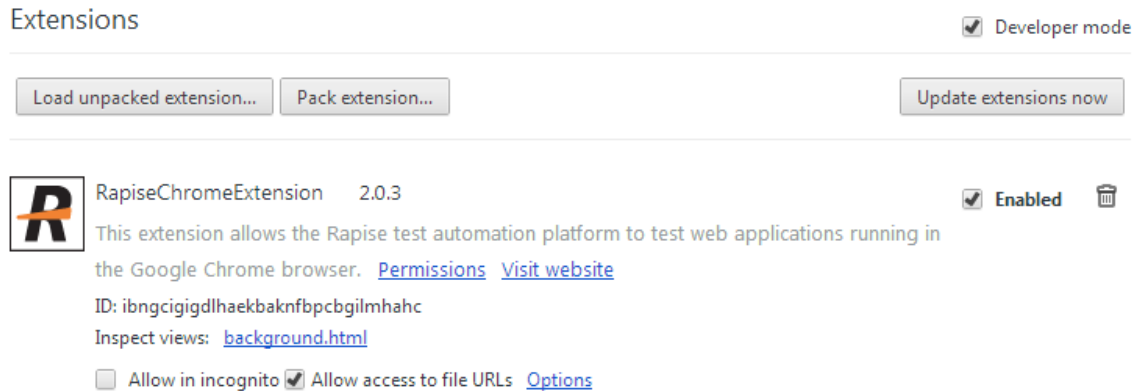
6. It is recommended to set the "Allow access to file URLs" checkbox so that web pages opened from the local folder (using the file:// protocol) can be also accessed by Rapise when running automated browser tests.



## Testing Local Applications

The Rapise Chrome extension is not loaded by Chrome if a web page is opened from the local folder (file://). To overcome this restriction make sure that "Allow access to local URLs" checkbox is set.

1. In Chrome type following URL: `chrome://extensions` If you don't see the omnibox (the field where to type URL) please press Ctrl+T to show new chrome window.
2. Set "Allow access to local URLs" checkbox:



## Testing Chromium Applications

The Rapise extension installation procedure differs in the case of testing Chromium applications. Below are the recommended steps to enable automation for such applications:

1. Refer this <http://www.chromium.org/administrators/pre-installed-extensions> to install an extension for a Chromium application. Getting the ID of current version of the Chrome Extension is easy. Install it into a regular Chrome browser following the instructions above, and then check the information in chrome by following this URL: `chrome://settings/extensionSettings`
2. Choose the "Chrome HTML" library in the "Select an Application for Record" dialog in Rapise when recording tests rather than "Auto". The Rapise library auto-detection logic may fail because the executable name is not "chrome.exe".
3. After following the steps below to modify the Windows registry, Rapise should be able to record and learn the application correctly.

```
HKEY_LOCAL_MACHINE\SOFTWARE\Google\Chrome\Extensions
\malnpehoofemabajdignefgdoppndaeb\path
TYPE: REG_SZ
VALUE: "C:\path\to\your\RapiseChrome.crx"
```

```
HKEY_LOCAL_MACHINE\SOFTWARE\Google\Chrome\Extensions
\malnpehoofemabajdignefgdoppndaeb\version
```



```
TYPE: REG_SZ
VALUE: "1.6.0"
```

4. For the playback to execute correctly you need to set the following line in the beginning of your <testname>.user.js file:

```
g_browserExecutablePath='C:\\the\\path\\to\\chromium-based
\\app.exe';
```

With that change in place, the recorded test should be able to play.

## Testing Chrome Frame Applications

The following configuration enables testing of Chrome Frame applications by Rapise:

1. A 'packed' copy of the RapiseChrome.crx extension is provided with the Rapise installation. It can be located in the "C:\Program Files (x86)\Inflectra\Rapise\Extensions\Chrome" folder of your installation.

2. Enter the following data to the Windows registry:

```
[HKEY_CURRENT_USER\Software\Google\ChromeFrame]
"EnableGCFProtocol"=dword:00000001
"IsDefaultRenderer"=dword:00000001
"AllowUnsafeURLs"=dword:00000001
```

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Google\Chrome\Extensions
\malnpehoofemabajdignefgdoppndaeb]
"path"="c:\\path\\to\\RapiseChrome.crx"
"version"="1.6.0"
```

3. In the Rapise "Select Application to Record" dialog box, explicitly choose the "Chrome HTML" library (and some or all of DOM libraries: YUI DOM, GWT DOM, etc) rather than using "Auto".
4. Record the test script as you would normally. Note that there should be no Chrome browser or any Chrome applications running when IE with Chrome Frame is started and recording is being performed.

You will need to make some changes to the recorded test to ensure that it plays correctly. Insert this line in the beginning of the <test>.user.js file:

```
g_browserExecutablePath="iexplore.exe";
```

Check to make sure you have Internet Explorer browser executable available at the specified path on your PC and correct it if necessary.

## Using Other Browsers with Rapise

If you would like to test your applications using **other web browsers (Safari, Edge or Opera)** you can use the [Selenium WebDriver](#) libraries that are provided with Rapise. To [setup the Selenium web browser libraries](#), please refer to [this topic](#).

### 2.6.1.3 XPath

#### Purpose

When testing web applications you will often need to use XPath to query the browser DOM for elements based on the scenario under test. This section explains how you can use XPath queries with Rapise to make your browser testing more flexible and adaptive to changes on the screen.

#### XPath Fundamentals

XPath uses path expressions to select nodes in an XML document such as HTML. The node is selected by following a path or steps. The most useful path expressions are listed below:

| Expression      | Description                                                                                           |
|-----------------|-------------------------------------------------------------------------------------------------------|
| <i>nodename</i> | Selects all child nodes of the named node                                                             |
| /               | Selects from the root node                                                                            |
| //              | Selects nodes in the document from the current node that match the selection no matter where they are |
| .               | Selects the current node                                                                              |
| ..              | Selects the parent of the current node                                                                |
| @               | Selects attributes                                                                                    |

In the table below we have listed some path expressions and the result of the expressions:

| Path Expression | Result                                                                                                                                        |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| bookstore       | Selects all the child nodes of the bookstore element                                                                                          |
| /bookstore      | Selects the root element bookstore<br><b>Note:</b> If the path starts with a slash ( / ) it always represents an absolute path to an element! |
| bookstore/book  | Selects all book elements that are children of bookstore                                                                                      |

| Path Expression               | Result                                                                                                                       |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| //book                        | Selects all book elements no matter where they are in the document                                                           |
| bookstore//book               | Selects all book elements that are descendant of the bookstore element, no matter where they are under the bookstore element |
| //@lang                       | Selects all attributes that are named lang                                                                                   |
| //book[@lang='English']       | Selects all book elements that have a lang attribute equal to 'English'                                                      |
| //book[text()='Oliver Twist'] | Selects all book elements that have the text 'Oliver Twist' as their inner content (i.e. <book>Oliver Twist</book>)          |

## Rapise XPath Extensions

Web pages sometimes use HTML frames. The XPath works inside the frame contents. Rapise has a special syntax (that is not part of standard XPath) to combine multiple XPath statements into a single line:

```
//frame[@name='main']@@@//a[3]
```

The special statement:

```
@@@
```

Is used as a separator for XPath statements pointing to constituent frames. The top-level frame is found by name 'main'

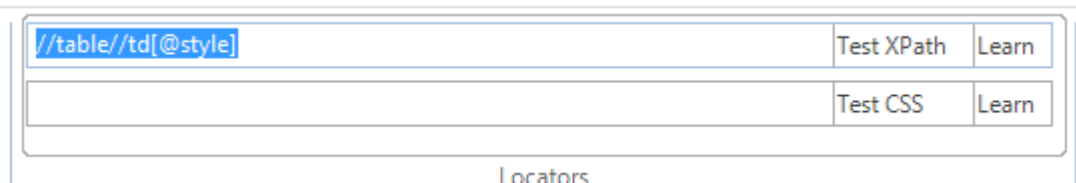
```
//frame[@name='main']
```

Then the frame's contents are searched for the third <a> element (i.e. 3rd link on a page).

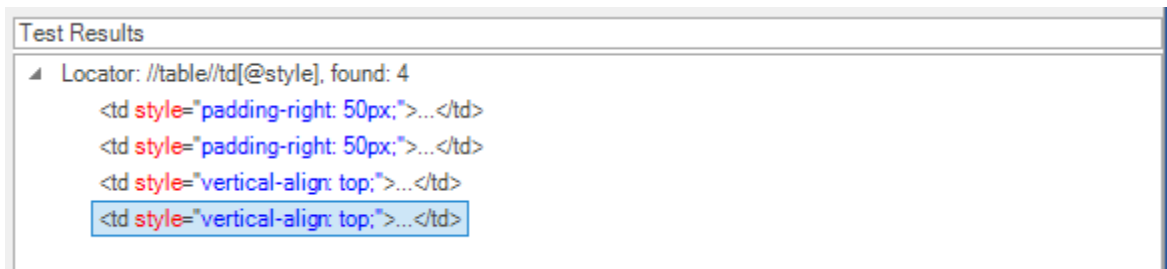
There are several different ways to use XPath queries in Rapise

## Using Web Spy

To most easily use XPath queries in Rapise, we recommend using the Web Spy tool:



If you enter in the XPath query at the top, when you click **Test XPath** it will display all of the DOM elements that match the query:



You can now refine the query to only find the items you want to test.

## Learning Objects

When you have created the query in the Web Spy that returns the HTML elements that you were expecting, you can click on the **Learn** button to learn that object. What this will do is create a new Rapise object in the [Object Tree](#) that maps to this specific XPath. That means that the "object" in Rapise is effectively a pointer to this specific XPath query.

For example, if you want to find a specific book in a grid of books, you can search by its name using XPath and the `text()` XPath expression described above, then learn this object as "Oliver\_Twist" so that you can access it in your code as `SeS("Oliver_Twist")`. Every time you call a function on "Oliver\_Twist", Rapise will use the learned XPath expression and use that to evaluate which HTML element in the web page to access.

## Dynamic Queries

In addition to learning objects based on specific XPath, there are a set of general functions that can be used to query for objects in the web page:

```
SeS('Book_Management').DoDOMQueryXPath('tr/td[text()="Oliver Twist"]');
```

Will dynamically query for any HTML element that is a child of the learned "Book Management" object that matches the XPath. In this example it will look for any table cell in a table row that has the content of the book name.

### 2.6.1.4 CSS

## Purpose

When testing web applications you will often want to use Cascading Style Sheets (CSS) selectors to query the browser DOM for elements based on the scenario under test. This section explains how you can use CSS selectors with Rapise to make your browser testing more flexible and adaptive to changes on the screen.

CSS is an alternative to [XPath](#) that is often better at selecting multiple elements from across different parts of the DOM Tree, unlike XPath which is strictly hierarchical. However since CSS is not always able to uniquely locate an object, when Rapise is used in recording mode, it will learn objects automatically using XPath.

## CSS Fundamentals

In CSS, selectors are patterns used to select the element(s) you want to style. Here are the different operators that you can use in CSS selectors:

| Selector                               | Example              | Example description                                                                     | CSS |
|----------------------------------------|----------------------|-----------------------------------------------------------------------------------------|-----|
| <a href="#">.class</a>                 | .intro               | Selects all elements with class="intro"                                                 | 1   |
| <a href="#">#id</a>                    | #firstname           | Selects the element with id="firstname"                                                 | 1   |
| <a href="#">*</a>                      | *                    | Selects all elements                                                                    | 2   |
| <a href="#">element</a>                | p                    | Selects all <p> elements                                                                | 1   |
| <a href="#">element,element</a>        | div, p               | Selects all <div> elements and all <p> elements                                         | 1   |
| <a href="#">element element</a>        | div p                | Selects all <p> elements inside <div> elements                                          | 1   |
| <a href="#">element&gt;element</a>     | div > p              | Selects all <p> elements where the parent is a <div> element                            | 2   |
| <a href="#">element+element</a>        | div + p              | Selects all <p> elements that are placed immediately after <div> elements               | 2   |
| <a href="#">element1<br/>~element2</a> | p ~ ul               | Selects every <ul> element that are preceded by a <p> element                           | 3   |
| <a href="#">[attribute]</a>            | [target]             | Selects all elements with a target attribute                                            | 2   |
| <a href="#">[attribute=value]</a>      | [target=_blank]      | Selects all elements with target="_blank"                                               | 2   |
| <a href="#">[attribute~=value]</a>     | [title~=flower]      | Selects all elements with a title attribute containing the word "flower"                | 2   |
| <a href="#">[attribute =value]</a>     | [lang =en]           | Selects all elements with a lang attribute value starting with "en"                     | 2   |
| <a href="#">[attribute^=value]</a>     | a[href^="https"]     | Selects every <a> element whose href attribute value begins with "https"                | 3   |
| <a href="#">[attribute\$=value]</a>    | a[href\$=".pdf"]     | Selects every <a> element whose href attribute value ends with ".pdf"                   | 3   |
| <a href="#">[attribute*=value]</a>     | a[href*="w3schools"] | Selects every <a> element whose href attribute value contains the substring "w3schools" | 3   |
| <a href="#">:active</a>                | a:active             | Selects the active link                                                                 | 1   |
| <a href="#">::after</a>                | p::after             | Insert content after every <p> element                                                  | 2   |
| <a href="#">::before</a>               | p::before            | Insert content before the content of every <p> element                                  | 2   |
| <a href="#">:checked</a>               | input:checked        | Selects every checked <input> element                                                   | 3   |
| <a href="#">:disabled</a>              | input:disabled       | Selects every disabled <input> element                                                  | 3   |
| <a href="#">:empty</a>                 | p:empty              | Selects every <p> element that has no children (including text nodes)                   | 3   |
| <a href="#">:enabled</a>               | input:enabled        | Selects every enabled <input> element                                                   | 3   |
| <a href="#">:first-child</a>           | p:first-child        | Selects every <p> element that is the first child of its parent                         | 2   |
| <a href="#">::first-letter</a>         | p::first-letter      | Selects the first letter of every <p> element                                           | 1   |
| <a href="#">::first-line</a>           | p::first-line        | Selects the first line of every <p> element                                             | 1   |
| <a href="#">:first-of-type</a>         | p:first-of-type      | Selects every <p> element that is the first <p> element of its parent                   | 3   |

| Selector                                    | Example               | Example description                                                                                  | CSS |
|---------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------|-----|
| <a href="#">:focus</a>                      | input:focus           | Selects the input element which has focus                                                            | 2   |
| <a href="#">:hover</a>                      | a:hover               | Selects links on mouse over                                                                          | 1   |
| <a href="#">:in-range</a>                   | input:in-range        | Selects input elements with a value within a specified range                                         | 3   |
| <a href="#">:invalid</a>                    | input:invalid         | Selects all input elements with an invalid value                                                     | 3   |
| <a href="#">:lang(<i>language</i>)</a>      | p:lang(it)            | Selects every <p> element with a lang attribute equal to "it" (Italian)                              | 2   |
| <a href="#">:last-child</a>                 | p:last-child          | Selects every <p> element that is the last child of its parent                                       | 3   |
| <a href="#">:last-of-type</a>               | p:last-of-type        | Selects every <p> element that is the last <p> element of its parent                                 | 3   |
| <a href="#">:link</a>                       | a:link                | Selects all unvisited links                                                                          | 1   |
| <a href="#">:not(<i>selector</i>)</a>       | :not(p)               | Selects every element that is not a <p> element                                                      | 3   |
| <a href="#">:nth-child(<i>n</i>)</a>        | p:nth-child(2)        | Selects every <p> element that is the second child of its parent                                     | 3   |
| <a href="#">:nth-last-child(<i>n</i>)</a>   | p:nth-last-child(2)   | Selects every <p> element that is the second child of its parent, counting from the last child       | 3   |
| <a href="#">:nth-last-of-type(<i>n</i>)</a> | p:nth-last-of-type(2) | Selects every <p> element that is the second <p> element of its parent, counting from the last child | 3   |
| <a href="#">:nth-of-type(<i>n</i>)</a>      | p:nth-of-type(2)      | Selects every <p> element that is the second <p> element of its parent                               | 3   |
| <a href="#">:only-of-type</a>               | p:only-of-type        | Selects every <p> element that is the only <p> element of its parent                                 | 3   |
| <a href="#">:only-child</a>                 | p:only-child          | Selects every <p> element that is the only child of its parent                                       | 3   |
| <a href="#">:optional</a>                   | input:optional        | Selects input elements with no "required" attribute                                                  | 3   |
| <a href="#">:out-of-range</a>               | input:out-of-range    | Selects input elements with a value outside a specified range                                        | 3   |
| <a href="#">:read-only</a>                  | input:read-only       | Selects input elements with the "readonly" attribute specified                                       | 3   |
| <a href="#">:read-write</a>                 | input:read-write      | Selects input elements with the "readonly" attribute NOT specified                                   | 3   |
| <a href="#">:required</a>                   | input:required        | Selects input elements with the "required" attribute specified                                       | 3   |
| <a href="#">:root</a>                       | :root                 | Selects the document's root element                                                                  | 3   |
| <a href="#">::selection</a>                 | ::selection           | Selects the portion of an element that is selected by a user                                         |     |
| <a href="#">:target</a>                     | #news:target          | Selects the current active #news element (clicked on a URL containing that anchor name)              | 3   |
| <a href="#">:valid</a>                      | input:valid           | Selects all input elements with a valid value                                                        | 3   |
| <a href="#">:visited</a>                    | a:visited             | Selects all visited links                                                                            | 1   |

One limitation (as compared to XPath) is that there is not a way to select an element based on its contents. So it would not be possible to locate a cell in a grid (for example) based on the contents of the

cell. For that you would need to use XPath.

## Rapise CSS Extensions

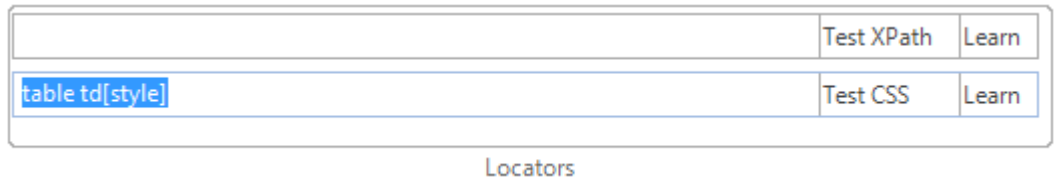
Since Rapise uses XPath as its primary means of locating an HTML element, when you **Learn** an object using CSS, Rapise will prefix the Locator (listed under the XPath property for that object in the [Object Tree](#)) with **css=** to let Rapise know that the locator is actually using a CSS selector.

```
css=html > body > form#ctl01 > div:nth-of-type(3) > div:first-of-type > div:first-of-
```

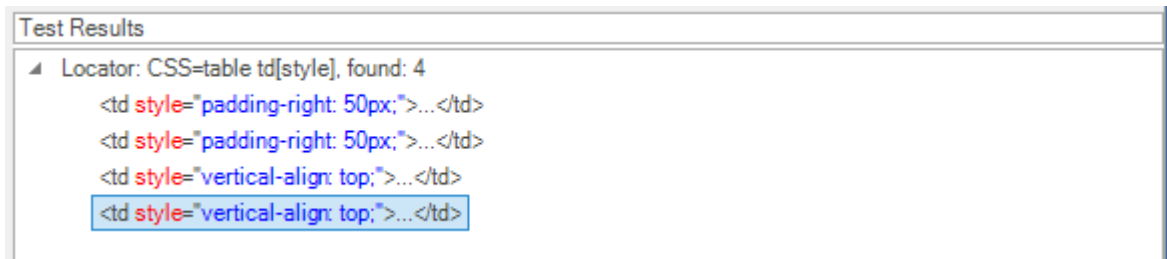
There are several different ways to use CSS selectors in Rapise

## Using Web Spy

To most easily use CSS selectors in Rapise, we recommend using the Web Spy tool:



If you enter in the CSS selector at the top, when you click **Test CSS** it will display all of the DOM elements that match the selector:



You can now refine the query to only find the items you want to test.

## Learning Objects

When you have created the query in the Web Spy that returns the HTML elements that you were expecting, you can click on the **Learn** button to learn that object. What this will do is create a new Rapise object in the [Object Tree](#) that maps to this specific CSS. That means that the "object" in Rapise is effectively a pointer to this specific CSS selector.

For example, if you want to find a specific book in a grid of books by its CSS class, style, ID or other attribute, you can search using the appropriate CSS selector, then learn this object as "Book\_1" so that you can access it in your code as `SeS( "Book_1" )`. Every time you call a function on "Book\_1", Rapise will use the learned CSS selector and use that to evaluate which HTML element in the web page to access.

## Dynamic Queries

In addition to learning objects based on specific CSS selector, there are a set of general functions that can be used to query for objects in the web page:

```
SeS('Book_Management').DoDOMQueryCss('tr td[data=book1]');
```

Will dynamically query for any HTML element that is a child of the learned "Book Management" object that matches the CSS selector. In this example it will look for any table cell in a table row that has the attribute data="book1".

## 2.6.2 Selenium WebDriver

When developing and testing a web application you naturally need to test it with [different web browsers](#) and multiple version of each web browser. With Rapise [natively](#) you can record a test script using one browser and then play it back using **Mozilla Firefox, Google Chrome or Microsoft Internet Explorer**.

In addition, you can use Rapise with the open-source **Selenium WebDriver framework** to play back the same tests against other browsers such as **Apple Safari and Opera** (as well as IE, Firefox and Chrome). You can also use Rapise to write [native Selenium code](#) for cases where you want to use existing Selenium WebDriver logic.

### Playing & Recording Tests

Once you have [installed and configured the integration between Rapise and Selenium](#), we shall discuss how to use Selenium with Rapise to record and play tests.

Now one of the important points is that there are some limitations as to the operations that can be performed using Selenium-based web browsers as opposed to the native browsers supported by Rapise:

| Feature                    | Rapise Native Browser | Selenium Browser         |
|----------------------------|-----------------------|--------------------------|
| Learn HTML Objects         | Yes                   | <b>(Only in Web Spy)</b> |
| Record HTML Events         | Yes                   | <b>No</b>                |
| Playback HTML Events       | Yes                   | Yes                      |
| Web Spy                    | Yes                   | Yes                      |
| Learn Java Applets         | Yes                   | <b>No</b>                |
| Learn Flex Controls        | Yes                   | <b>No</b>                |
| Learn Silverlight Controls | Yes                   | <b>No</b>                |
| Manual Testing             | Yes                   | <b>No</b>                |

So if you are planning on using Rapise to record a test script by clicking HTML objects and having Rapise create the script using the learned objects and adding the events (DoClick, SetText, etc.) then you will need to use one of the native browsers (Chrome, IE, Firefox) to create the test script. You can then playback the same test in either the native or Selenium browsers.

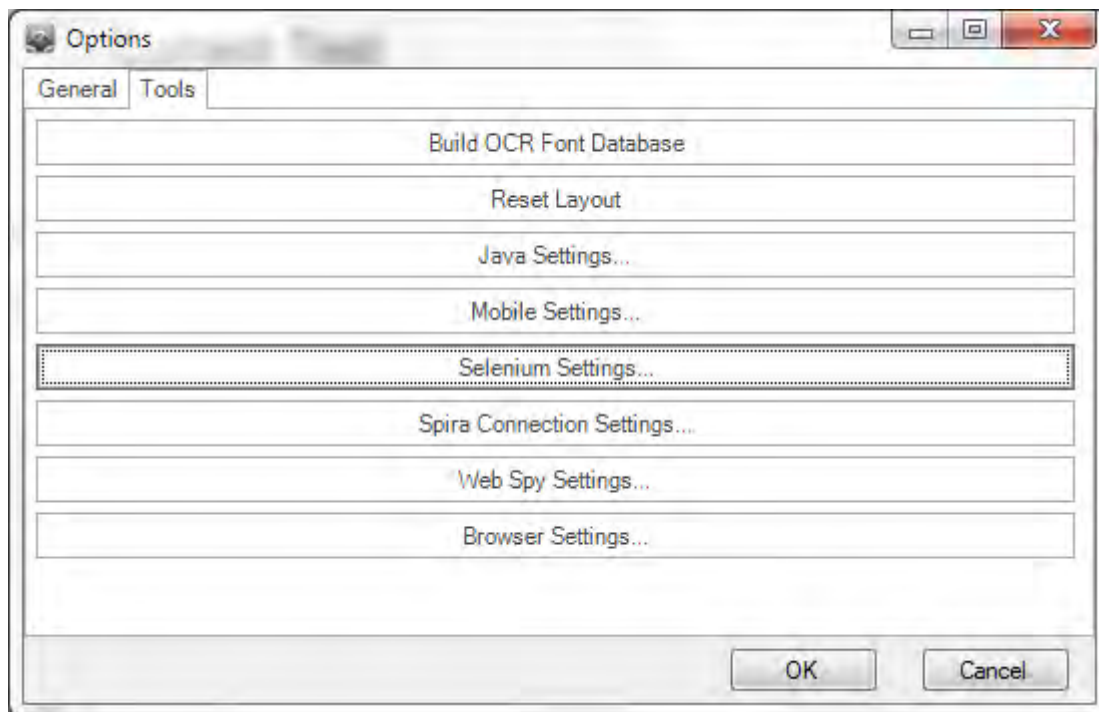


If you are planning on using Rapise to learn objects using the Web Spy, and then create the test script from those objects by either dragging the object methods and properties from the Object Tree into the test script or just using Intellisense to type the methods (DoClick, SetText, etc.) then you can use either a native or Selenium web browser just as easily.

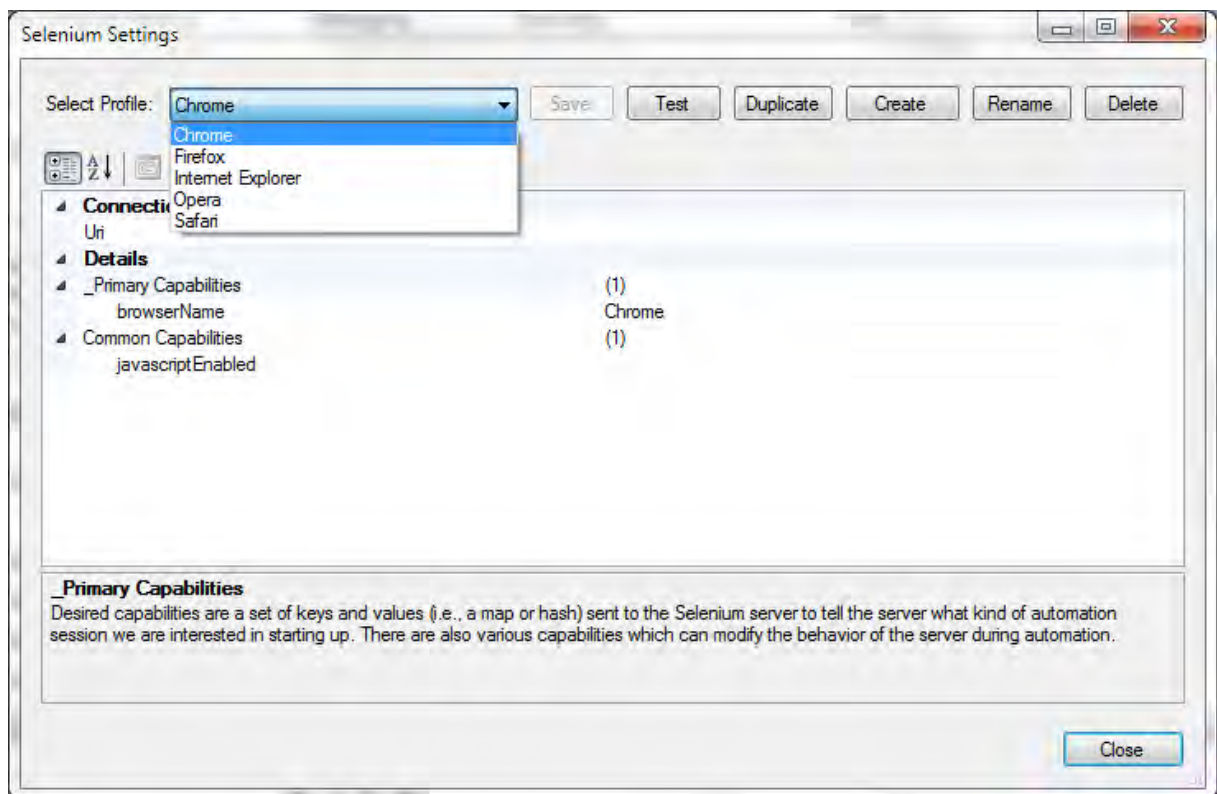
For most users, the primary reason for using the Selenium web browsers will be to playback their tests on a greater number of browsers or to leverage existing Selenium WebDriver scripts created outside of Rapise (see section 3).

## Managing the Selenium Profiles

Rapise allows you to maintain different profiles for your different installed Selenium web browsers (both on the same machine as Rapise and also those running on a remote Selenium WebDriver server), To see the different [Selenium profiles](#), click on **Options > Tools**:



When you click on the [Selenium Settings...] button, it will bring up the [Selenium profile manager](#):

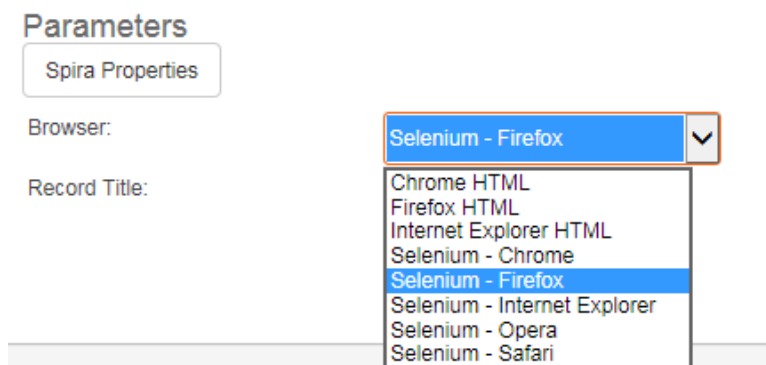


By default there is one profile for each of the Selenium WebDriver supported web browsers (Chrome, Firefox, Internet Explorer, Opera, Safari). However you can clone and change the profiles if you want to have different versions of the browsers (e.g. a local instance of Firefox and one running on a remote Selenium server).

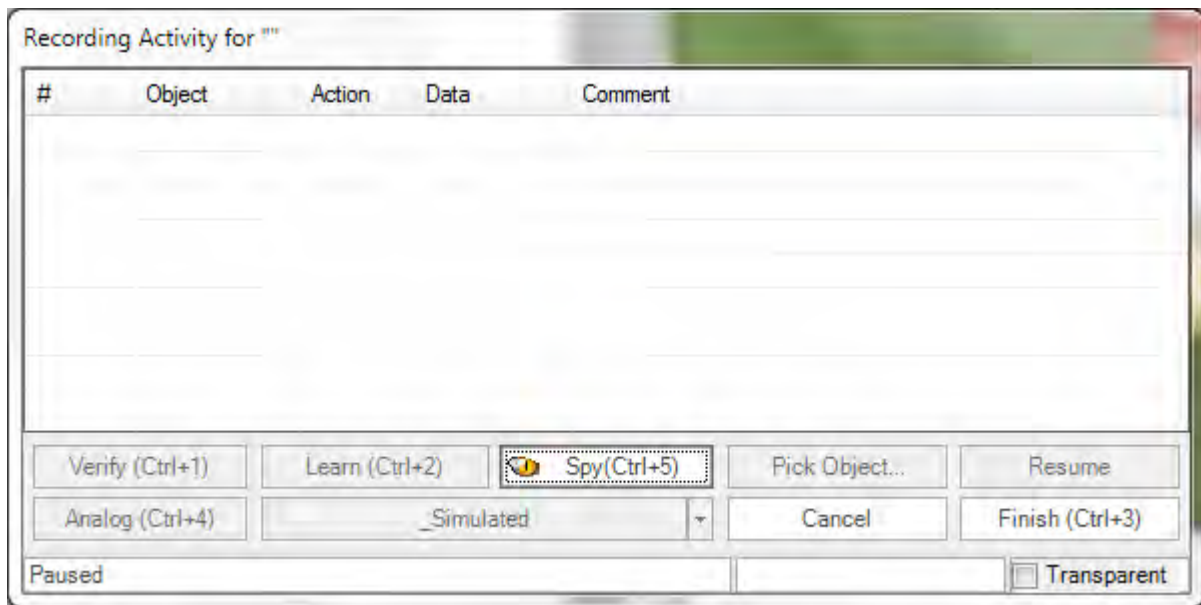
Most users will only need to change the **Uri** field of the Safari web browser since the defaults are typically sufficient for most testing needs.

## Recording using Selenium

To start [recording](#) a web testing using a Selenium WebDriver based browser, make sure you change the test's web browser parameter to one of the Selenium profiles:

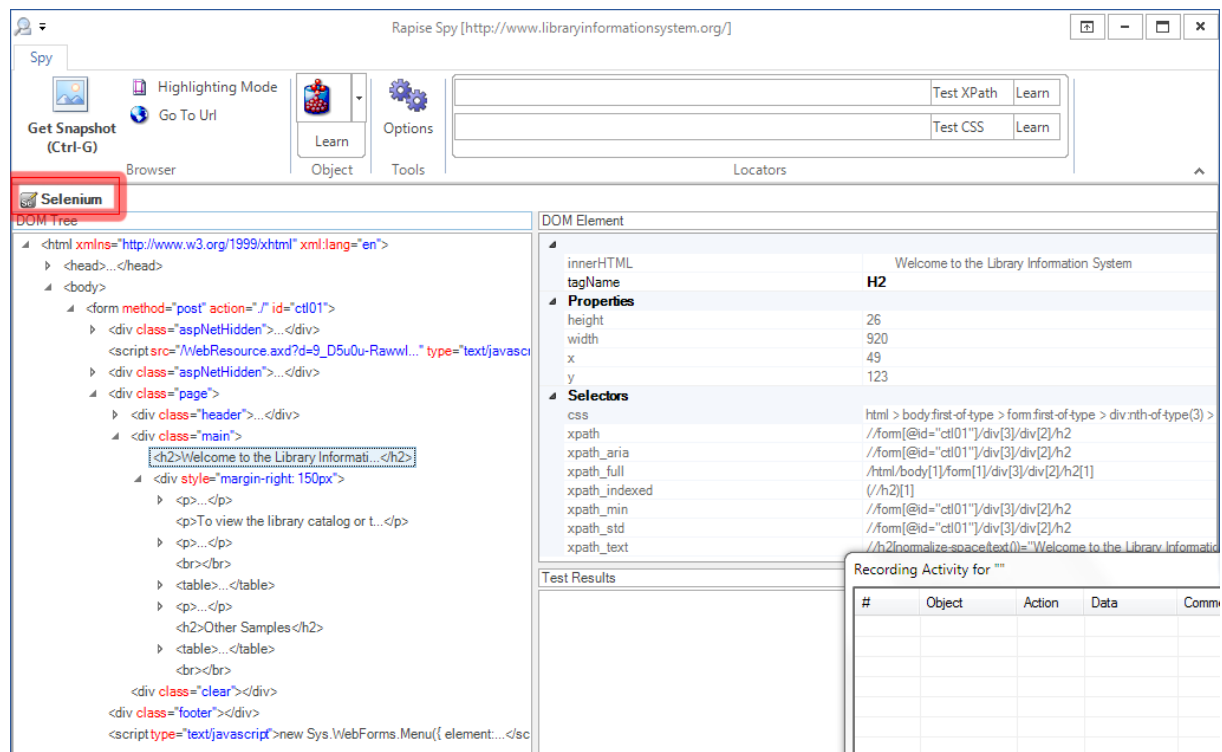


When you click the **Record/Learn** button in the main Test ribbon you will see the following [Recording Activity Dialog](#):



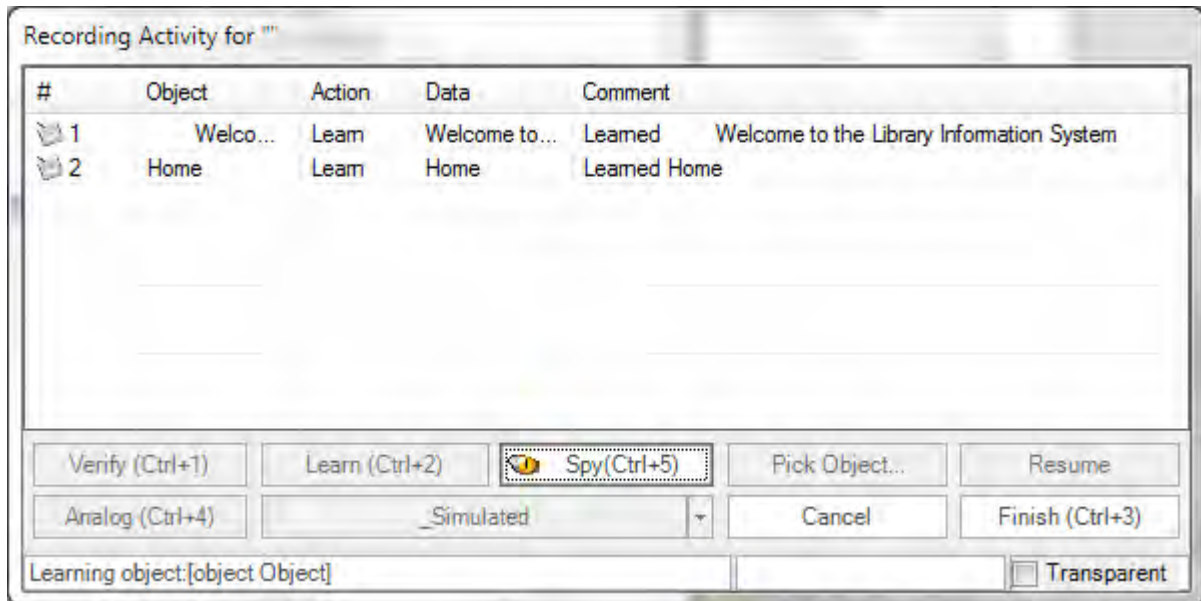
You will notice that the **Verify**, **Learn** and **Pick Object** options are not available. If you want to use these tools you will need to use a [native browser](#) (non-Selenium) instead.

When using a Selenium profile for recording, you will need to use the [Spy \(Ctrl+5\)](#) tool to do the learning of objects on the web page. This brings up the [Web Spy](#):



When using the [Web Spy](#) with a Selenium profile you will notice that the web browser icon / name shows "Selenium" rather than the browser name and the option to Track an item (CTRL+T) is not present. That means you need to **select the HTML DOM object in the DOM Tree and learn it from there** (rather than clicking on the web page itself which is possible when using a native browser profile).

When you choose to Learn an object in the DOM tree it will be displayed in the [Recording Activity Dialog](#) as a new Learned Object:



Objects Learned using a Selenium profile will be added to the Rapise [Object Tree](#) in the usual way and as is typical with [Learning](#), you have the option to specify an Action in the Recording Activity Grid (e.g. change Learn to Click) in which case test script code is also generated.

**Tip:** Due to the inherent limitations in recording using a Selenium browser profile (vs. a native browser profile) most users will record their scripts using a native browser and then use Selenium primarily for debugging using the Web Spy and playback.

## Playback using Selenium

To playback a web test using a Selenium web browser profile, simply choose the appropriate profile in the test Start Page:

### Parameters

Spira Properties

Browser:

Selenium - Firefox

- Chrome HTML
- Firefox HTML
- Internet Explorer HTML
- Selenium - Chrome
- Selenium - Firefox
- Selenium - Internet Explorer
- Selenium - Opera
- Selenium - Safari

Record Title:

Then click the **Play** button on the main Test ribbon. The test will now start [execution](#). Unlike recording there is nothing different in the way Rapise handles the [playback](#) of a Selenium test. The only difference will be that if the test uses non-HTML technologies such as Flex, Java, etc. those parts of the test will fail.

Start Page ManualSteps.rmt DemoTC163.rest Demo Test 2 TC163.js Demo Test 2 TC163.user.js Demo Test 2 TC163\_2016-02-08\_12-32.trp

Drag a column header here to group by that column.

| # | Type    | Start        | Name                                                   | Status | Comment              | Iteration |
|---|---------|--------------|--------------------------------------------------------|--------|----------------------|-----------|
|   | Message | 12:32:24.739 | Starting scenario: Test                                | Info   |                      |           |
|   | Assert  | 12:32:35.183 | Log In.DoClick({})                                     | Pass   | Returned Value: true | 0         |
|   | Assert  | 12:32:36.432 | Username:.DoSetText(["librarian"])                     | Pass   | Returned Value: true | 0         |
|   | Assert  | 12:32:37.587 | Password:.DoSetText(["librarian"])                     | Pass   | Returned Value: true | 0         |
|   | Assert  | 12:32:38.976 | ctl00\$MainContent\$LoginUser\$LoginButton.DoClick({}) | Pass   | Returned Value: true | 0         |
|   | Assert  | 12:32:40.595 | Book Management.DoClick({})                            | Pass   | Returned Value: true | 0         |
|   | Assert  | 12:32:42.003 | Log Out.DoClick({})                                    | Pass   | Returned Value: true | 0         |
|   | Test    | 12:32:42.008 | Demo Test 2 TC163                                      | Pass   | Passed:6 Failed:0    |           |

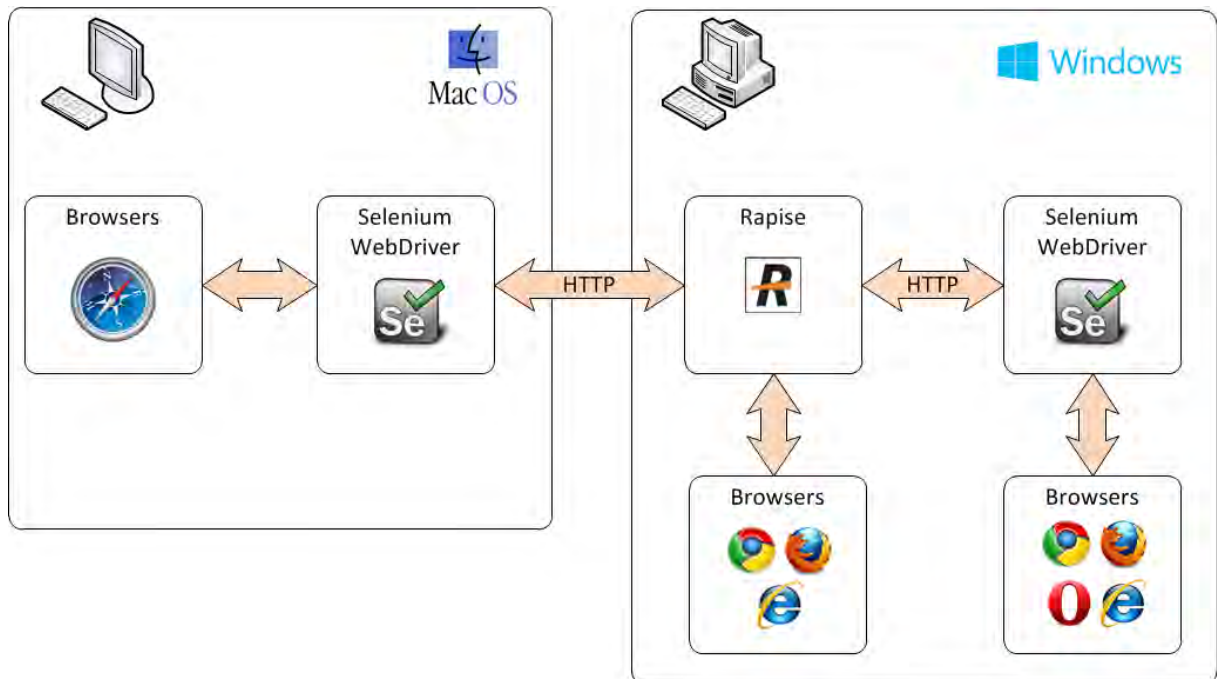
**Test Pass**  
Total:8 Pass:7 Fail:0 Info:1

### 2.6.2.1 Setting Up Selenium

This section describes the process for setting up Rapise to work with [Selenium](#). Since Rapise is a Windows® application, you can use a single computer running Rapise to use the following web browsers:

- Internet Explorer
- Google Chrome
- Mozilla Firefox
- Opera
- Microsoft Edge

However because Safari only runs on Apple Mac computers, you will need to use two computers (a Mac running Safari) and a PC running Rapise to test using the Apple Safari web browser:

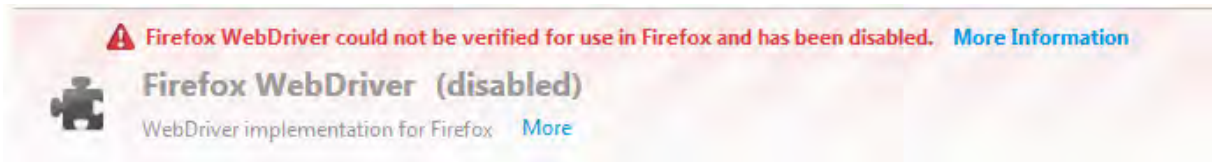


## Configuring Selenium on a PC

Once you have installed Rapise on your local computer, you need to perform the following steps to configure each of the web browsers to use Selenium and Rapise:

### Firefox

Unlike the other web browsers, Firefox does not require anything special to be done, it already includes a built-in plugin for use by Selenium WebDriver. However if you start using Rapise with Firefox and you see the following issue inside of Firefox:



Then it means that the version of Selenium WebDriver that shipped with Rapise is no longer compatible with the installed version for Firefox. The solution is straightforward, just go to the main Selenium website: <http://www.seleniumhq.org/download/> and then download the **C# WebDriver Bindings**:

| Language          | Client Version | Release Date |                          |                            |                          |
|-------------------|----------------|--------------|--------------------------|----------------------------|--------------------------|
| Java              | 2.50.1         | 2016-01-29   | <a href="#">Download</a> | <a href="#">Change log</a> | <a href="#">Javadoc</a>  |
| C#                | 2.50.1         | 2016-01-28   | <a href="#">Download</a> | <a href="#">Change log</a> | <a href="#">API docs</a> |
| Ruby              | 2.50.0         | 2016-01-27   | <a href="#">Download</a> | <a href="#">Change log</a> | <a href="#">API docs</a> |
| Python            | 2.50.0         | 2016-01-27   | <a href="#">Download</a> | <a href="#">Change log</a> | <a href="#">API docs</a> |
| Javascript (Node) | 2.48.2         | 2015-10-15   | <a href="#">Download</a> | <a href="#">Change log</a> | <a href="#">API docs</a> |

Download the **Selenium-dotnet-x.x.x.zip** file from the website. Proceed to unzip the archive and then look in the **net40** subfolder and extract the following two files and copy into the **C:\Program Files (x86)\Inflectra\Rapise\Bin** folder (or wherever you installed Rapise):

- WebDriver.dll
- WebDriver.Support.dll

*Note: You will need to close Rapise before copying these files into the Bin folder.*

## Microsoft Edge

To use Selenium with Microsoft Edge, you will need to download the latest version of the Edge Driver from the Microsoft website:

<https://developer.microsoft.com/en-us/microsoft-edge/tools/webdriver/#downloads>

### ↓ Downloads

By downloading and using this software, you agree to the license terms below

#### Release 14393

Version: 3.14393 | Edge version supported: 14.14393 | [License terms](#)

#### Insiders

Version and Edge Version Supported: Current Insiders Fast Ring Build [License terms](#) | [Privacy Statement](#)

#### Release 10586

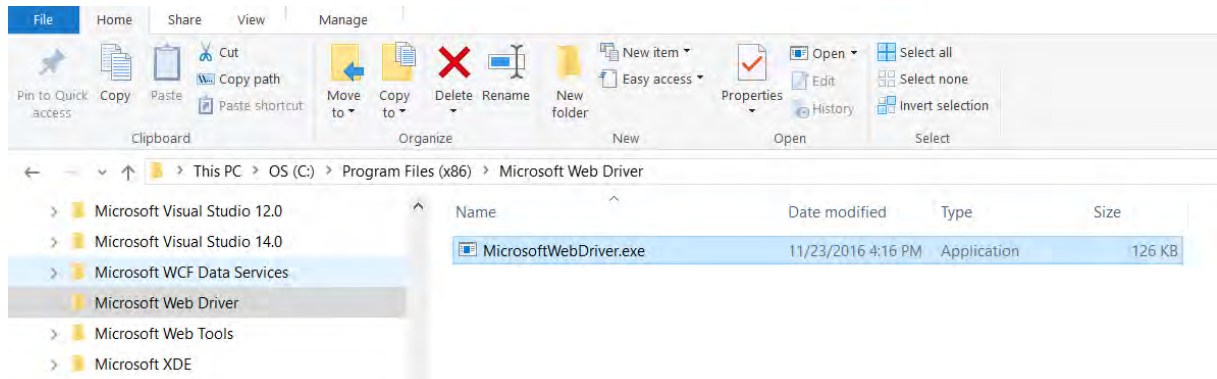
Version: 2.10586 | Edge version supported: 13.10586 | [License terms](#)

Create a new folder on your local PC called:

**C:\Program Files (x86)\Microsoft Web Driver**



Download the **MicrosoftWebDriver.exe** to this local folder you just created:








## Internet Explorer

To use Selenium with Internet Explorer, you will need to download the latest version of the Internet Explorer IE Driver:














<http://selenium-release.storage.googleapis.com/index.html>

The list of versions at time of writing was:

|                                                                                     | <u>Name</u>                | Last modified       | Size   | ETag                             |
|-------------------------------------------------------------------------------------|----------------------------|---------------------|--------|----------------------------------|
|  | <a href="#">2.48</a>       | -                   | -      | -                                |
|  | <a href="#">2.49</a>       | -                   | -      | -                                |
|  | <a href="#">2.50</a>       | -                   | -      | -                                |
|  | <a href="#">icons</a>      | -                   | -      | -                                |
|  | <a href="#">index.html</a> | 2014-01-13 22:12:39 | 0.01MB | 704b0f841aad1b1428481b7ff3c759c0 |

When you click on the folder for the latest version you will see the various files that can be downloaded:



|                                                                                   | <u>Name</u>                                            | Last modified       | Size    | ETag                              |
|-----------------------------------------------------------------------------------|--------------------------------------------------------|---------------------|---------|-----------------------------------|
|  | <a href="#">Parent Directory</a>                       |                     | -       |                                   |
|  | <a href="#">IEDriverServer_Win32_2.50.0.zip</a>        | 2016-01-27 23:51:11 | 0.95MB  | cf6850b0ceae8498e1952f6dead9d80b  |
|  | <a href="#">IEDriverServer_x64_2.50.0.zip</a>          | 2016-01-27 23:51:12 | 1.11MB  | 7229088ae632893579004388bb20c5d3  |
|  | <a href="#">selenium-dotnet-2.50.0.zip</a>             | 2016-01-27 23:51:17 | 6.52MB  | 53c2bfb0545beceba48e7d2dd847f2a2  |
|  | <a href="#">selenium-dotnet-2.50.1.zip</a>             | 2016-01-28 18:06:48 | 6.13MB  | cbc94b85ee75686ce6c3cf103670150d  |
|  | <a href="#">selenium-dotnet-strongnamed-2.50.0.zip</a> | 2016-01-27 23:51:15 | 3.83MB  | 55712f98477707fbeb41e84a325b40a0  |
|  | <a href="#">selenium-dotnet-strongnamed-2.50.1.zip</a> | 2016-01-28 18:06:50 | 3.85MB  | ca7bf7ebd7873ff80b48f3d74b569b3f  |
|  | <a href="#">selenium-java-2.50.0.zip</a>               | 2016-01-27 18:46:51 | 21.45MB | f1243239575d8a32e96decba4ccba6847 |
|  | <a href="#">selenium-java-2.50.1.zip</a>               | 2016-01-29 19:12:11 | 21.45MB | 7648ad9f89428a443c8aff5bb5cc6885  |
|  | <a href="#">selenium-server-2.50.0.zip</a>             | 2016-01-27 18:46:33 | 26.79MB | dee71d9814589c2cf3bd2e31c6710359  |
|  | <a href="#">selenium-server-2.50.1.zip</a>             | 2016-01-29 19:11:54 | 26.79MB | 2f9ffd31e3b824e95395cba80dab9d02  |
|  | <a href="#">selenium-server-standalone-2.50.0.jar</a>  | 2016-01-27 18:46:10 | 29.52MB | 65d4c900eef25184215326fd58c36f30  |
|  | <a href="#">selenium-server-standalone-2.50.1.jar</a>  | 2016-01-29 19:11:30 | 29.52MB | bd291ba0e26f486ff12b45a627ecdc80  |

Download the **IEDriverServer\_XXXX\_X.X.X.zip** to your local PC:

- IEDriverServer\_Win32\_X.X.X.zip (for 32-bit Internet Explorer)
- IEDriverServer\_x64\_X.X.X.zip (for 64-bit Internet Explorer)





The file inside the zip archive is called **IEDriverServer.exe** and you need to copy it into the **C:\Program Files (x86)\Inflectra\Rapise\Bin** folder (or wherever you installed Rapise).

## Chrome







To use Selenium with Google Chrome, you will need to download the latest version of the Chrome Driver:

<http://chromedriver.storage.googleapis.com/index.html>

The list of versions at time of writing was:

|                                                                                     | <u>Name</u>         | Last modified | Size | ETag |
|-------------------------------------------------------------------------------------|---------------------|---------------|------|------|
|  | <a href="#">2.6</a> | -             | -    | -    |
|  | <a href="#">2.7</a> | -             | -    | -    |
|  | <a href="#">2.8</a> | -             | -    | -    |
|  | <a href="#">2.9</a> | -             | -    | -    |

When you click on the folder for the latest version you will see the various files that can be downloaded:

|                                                                                   | <u>Name</u>                              | Last modified       | Size   | ETag                             |
|-----------------------------------------------------------------------------------|------------------------------------------|---------------------|--------|----------------------------------|
|  | <a href="#">Parent Directory</a>         |                     | -      |                                  |
|  | <a href="#">chromedriver_linux32.zip</a> | 2016-01-26 06:47:39 | 2.64MB | d0a589f70e53774db95bf6f46972837c |
|  | <a href="#">chromedriver_linux64.zip</a> | 2016-01-26 15:51:03 | 2.57MB | 06e57f4c411e1135c6277d17ea8390fd |
|  | <a href="#">chromedriver_mac32.zip</a>   | 2016-01-26 07:59:08 | 3.55MB | 452d8c9cba353ba366d15fbeba013943 |
|  | <a href="#">chromedriver_win32.zip</a>   | 2016-01-26 06:47:03 | 2.48MB | 8a93dc3ff02ef9bc3161dd4b20f87215 |
|  | <a href="#">notes.txt</a>                | 2016-01-28 23:25:03 | 0.00MB | d8d67de107327522f0728fb389fee377 |

Download the **chromedriver\_win32.zip** to your local PC.

The file inside the zip archive is called **chromedriver.exe** and you need to copy it into the **C:\Program Files (x86)\Inflectra\Rapise\Bin** folder (or wherever you installed Rapise).


## Opera


To use Selenium with Opera, you will need to download the latest version of the Opera Driver:

<https://github.com/operasoftware/operachromiumdriver/releases>


This page will list the latest version of the driver at the top of the page:

Latest release

 v0.2.2






 26ae344

## 0.2.2

 **paymand** released this on Mar 24, 2015

Fix for #10.

### Downloads

|                                                                                                                             |         |
|-----------------------------------------------------------------------------------------------------------------------------|---------|
|  <a href="#">operadriver_linux32.zip</a> | 3.1 MB  |
|  <a href="#">operadriver_linux64.zip</a> | 2.85 MB |
|  <a href="#">operadriver_mac64.zip</a>   | 3.45 MB |
|  <a href="#">operadriver_win32.zip</a>   | 2.64 MB |
|  <a href="#">operadriver_win64.zip</a>   | 3.17 MB |

Download the **operadriver\_winXX.zip** to your local PC:

- [operadriver\\_win32.zip](#) (for 32-bit Opera)
- [operadriver\\_win64.zip](#) (for 64-bit Opera)

The file inside the zip archive is called **operadriver.exe** and you need to copy it into the **C:\Program Files (x86)\Inflectra\Rapise\Bin** folder (or wherever you installed Rapise).

## Installing Selenium on a Mac






The reason for using Selenium running on a Mac is to be able to execute tests against the Safari web browser. So although you can also use the Mac to test with Firefox, Opera and Chrome, we do not recommend this as it adds needless complexity.

## Safari














The first thing you need to do is download the latest version of the Selenium server for Apple Mac computers:

<http://selenium-release.storage.googleapis.com/index.html>

The list of versions at time of writing was:

|                                                                                   | <u>Name</u>                | Last modified       | Size   | ETag                             |
|-----------------------------------------------------------------------------------|----------------------------|---------------------|--------|----------------------------------|
|  | <a href="#">2.48</a>       | -                   | -      | -                                |
|  | <a href="#">2.49</a>       | -                   | -      | -                                |
|  | <a href="#">2.50</a>       | -                   | -      | -                                |
|  | <a href="#">icons</a>      | -                   | -      | -                                |
|  | <a href="#">index.html</a> | 2014-01-13 22:12:39 | 0.01MB | 704b0f841aad1b1428481b7ff3c759c0 |

When you click on the folder for the latest version you will see the various files that can be downloaded:

|                                                                                     | <u>Name</u>                                            | Last modified       | Size    | ETag                              |
|-------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------|---------|-----------------------------------|
|  | <a href="#">Parent Directory</a>                       | -                   | -       | -                                 |
|  | <a href="#">IEDriverServer_Win32_2.50.0.zip</a>        | 2016-01-27 23:51:11 | 0.95MB  | cf6850b0ceae8498e1952f6dead9d80b  |
|  | <a href="#">IEDriverServer_x64_2.50.0.zip</a>          | 2016-01-27 23:51:12 | 1.11MB  | 7229088ae632893579004388bb20c5d3  |
|  | <a href="#">selenium-dotnet-2.50.0.zip</a>             | 2016-01-27 23:51:17 | 6.52MB  | 53c2bfb0545beceba48e7d2dd847f2a2  |
|  | <a href="#">selenium-dotnet-2.50.1.zip</a>             | 2016-01-28 18:06:48 | 6.13MB  | cbc94b85ee75686ce6c3cf103670150d  |
|  | <a href="#">selenium-dotnet-strongnamed-2.50.0.zip</a> | 2016-01-27 23:51:15 | 3.83MB  | 55712f98477707fbeb41e84a325b40a0  |
|  | <a href="#">selenium-dotnet-strongnamed-2.50.1.zip</a> | 2016-01-28 18:06:50 | 3.85MB  | ca7bf7ebd7873fff80b48f3d74b569b3f |
|  | <a href="#">selenium-java-2.50.0.zip</a>               | 2016-01-27 18:46:51 | 21.45MB | f1243239575d8a32e96dec4ccba6847   |
|  | <a href="#">selenium-java-2.50.1.zip</a>               | 2016-01-29 19:12:11 | 21.45MB | 7648ad9f89428a443c8aff5bb5cc6885  |
|  | <a href="#">selenium-server-2.50.0.zip</a>             | 2016-01-27 18:46:33 | 26.79MB | dee71d9814589c2cf3bd2e31c6710359  |
|  | <a href="#">selenium-server-2.50.1.zip</a>             | 2016-01-29 19:11:54 | 26.79MB | 2f9ffd31e3b824e95395cba80dab9d02  |
|  | <a href="#">selenium-server-standalone-2.50.0.jar</a>  | 2016-01-27 18:46:10 | 29.52MB | 65d4c900eef25184215326fd58c36f30  |
|  | <a href="#">selenium-server-standalone-2.50.1.jar</a>  | 2016-01-29 19:11:30 | 29.52MB | bd291ba0e26f486ff12b45a627ecdc80  |









Download the **selenium-server-standalone-X.XX.X.jar** to the Mac.

Run this Java application by double clicking the downloaded .JAR file in Finder. This will startup the Selenium server.

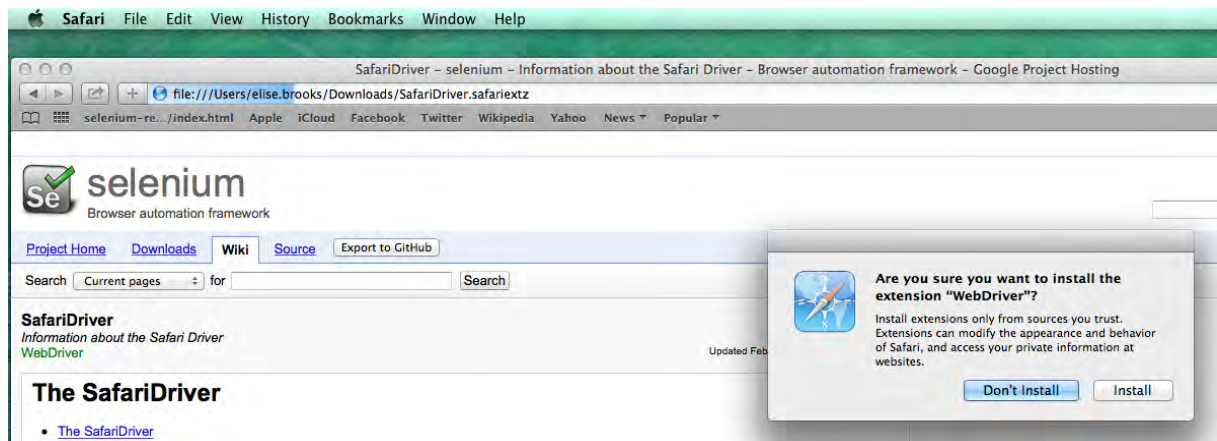
*Note: You will need to have the Java (ideally the latest version) installed on the Mac first.*

Once you have this running, you will need to then download the actual Safari WebDriver plugin. This can be found at the following location:

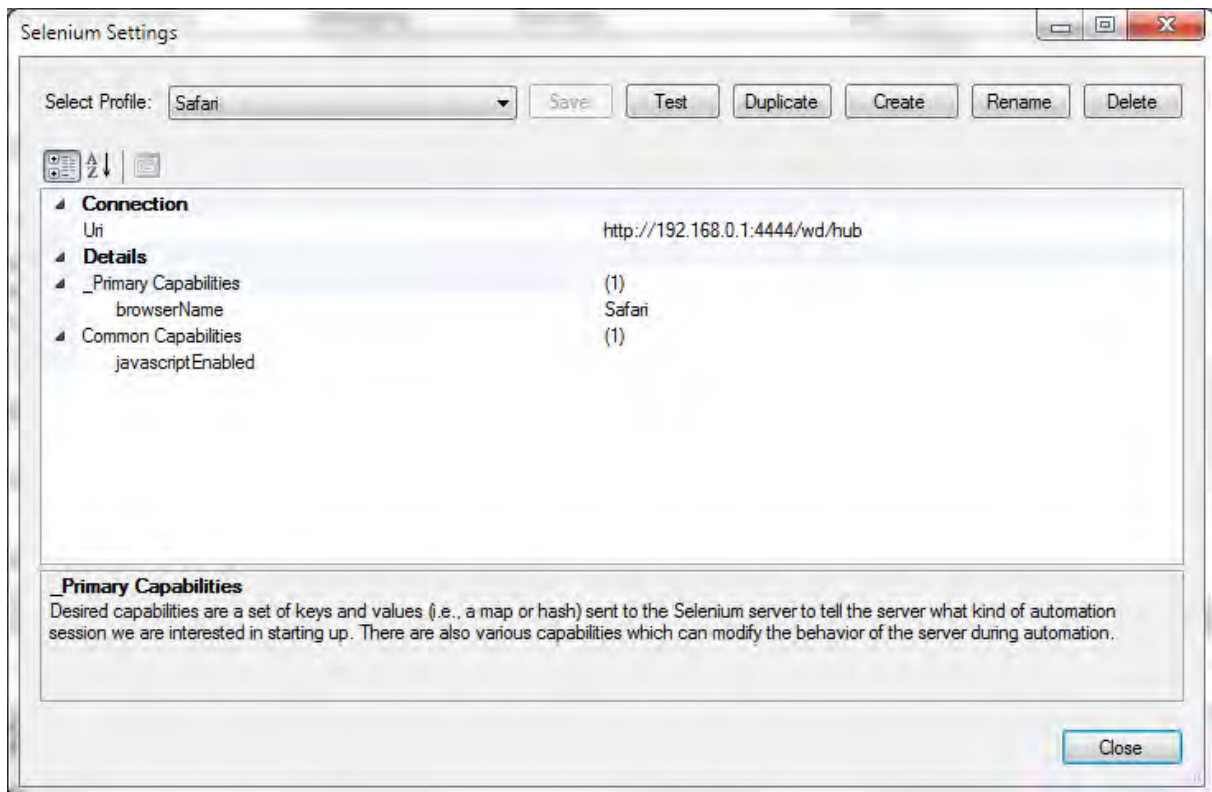
<https://github.com/SeleniumHQ/selenium/wiki/SafariDriver>

|                                                                                   | <u>Name</u>                                            | <u>Last modified</u> | <u>Size</u> | <u>ETag</u>                      |
|-----------------------------------------------------------------------------------|--------------------------------------------------------|----------------------|-------------|----------------------------------|
|                                                                                   | <a href="#">Parent Directory</a>                       | -                    | -           | -                                |
|  | <a href="#">IEDriverServer_Win32_2.45.0.zip</a>        | 2015-02-27 18:18:08  | 0.81MB      | dde210e04e5c1b0d6019fd8a1199df18 |
|  | <a href="#">IEDriverServer_x64_2.45.0.zip</a>          | 2015-02-27 18:18:09  | 0.90MB      | fc9e083200dfdc35d837a586927a1f86 |
|  | <a href="#">SafariDriver.safariextz</a>                | 2015-02-27 00:07:39  | 0.21MB      | 8f6c341f8fb6a8b89801ae532c68e1b1 |
|  | <a href="#">selenium-dotnet-2.45.0.zip</a>             | 2015-02-27 18:18:07  | 10.13MB     | 9b172ad6a96cf497867be0efbe9acac8 |
|  | <a href="#">selenium-dotnet-strongnamed-2.45.0.zip</a> | 2015-02-27 18:17:55  | 7.87MB      | ff51ed60c1b04255649f6f28e13e4207 |
|  | <a href="#">selenium-java-2.45.0.zip</a>               | 2015-03-05 23:12:19  | 23.90MB     | 5adf84e7eb9f7b32e1b6ald59cb93769 |
|  | <a href="#">selenium-server-2.45.0.zip</a>             | 2015-02-27 00:07:36  | 32.17MB     | 5034f099c70533fbac38f0c246101b9b |
|  | <a href="#">selenium-server-standalone-2.45.0.jar</a>  | 2015-02-27 00:07:33  | 33.64MB     | a62db4c36e230a936455aaacda9340a8 |

Download the **SafariDriver.safariextz** file to the local computer and the double-click to install in Safari:



Once that has been installed, you are now ready to test web applications running on Safari. The final step is to tell Rapise where it can find that instance of Selenium. To do that, open up Rapise (on your PC) and click on **Options > Tools** and then click on the **'Selenium Settings...'** entry:



Now you need to change the **Uri** field to point to your Mac. The format of the URI will be:

- `http://<IP or DNS name of MAC computer>:4444/wd/hub`

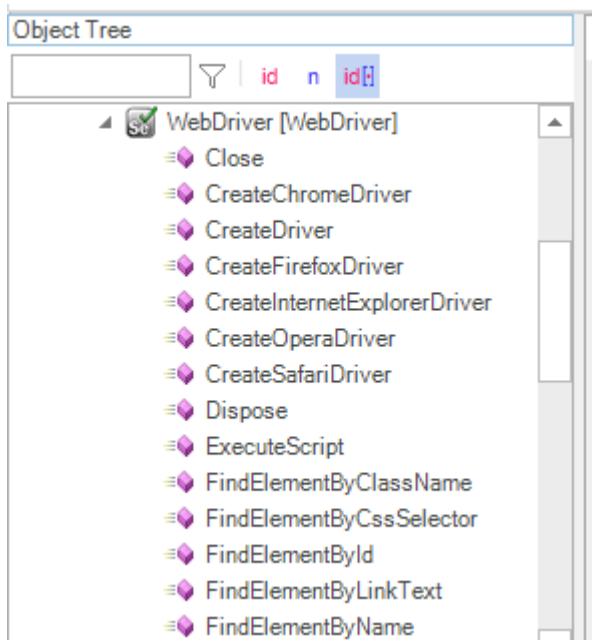
(for example it could be <http://test-mac01.local:4444/wd/hub> or <http://192.168.0.52:4444/wd/hub>)

### 2.6.2.2 Using Native Selenium Code

When using the standard Rapise [Record, Learn](#), and [Web Spy](#) tools you can create your web tests using the Rapise built-in [Object Tree](#). This lets you design your tests using a higher level of abstraction than working directly with [Selenium WebDriver](#).

For example you can learn an object `SeS("EditButton")` that points to a dynamic [XPath](#) or [CSS](#) query that the automation engineer knows will be accurate even if the data on the page changes (for example). The QA analyst can then simply drag and drop these Rapise objects from the [Object Tree](#) into the test script (e.g. `SeS("EditButton").DoClick()`) to perform the desired action.

Sometimes however you will want to be able to run standard Selenium raw WebDriver code inside Rapise using the standard [Selenium WebDriver](#) API functions ([http://www.seleniumhq.org/docs/03\\_webdriver.jsp](http://www.seleniumhq.org/docs/03_webdriver.jsp)). Rapise allows you to do this using the special **WebDriver** global object:



The **WebDriver** object implements the various standard Selenium WebDriver API calls for automating the web browser. There is a sample available for Rapise called “UsingSelenium” that illustrates using the WebDriver code directly, but for completeness, here is a sample that uses the [www.libraryinformationsystem.org](http://www.libraryinformationsystem.org) same web site and performs some simple actions:

```
//First create the Firefox driver
WebDriver.CreateFirefoxDriver();

//Open the URL for the www.libraryinformationsystem.org website:
WebDriver.SetUrl('http://www.libraryinformationsystem.org');

//Find the body element and verify the text in it
var el = WebDriver.FindElementByXPath("//body");
Tester.Assert("Text found in BODY", el.GetText().indexOf("Library Information
System") != -1);

//Click on the login link
var logInLink = WebDriver.FindElementById('HeadLoginView_HeadLoginStatus');
logInLink.Click();

//Make sure the input textbox is as expected
var userName = WebDriver.FindElementByCssSelector("html > body > form > div:nth-
of-type(3) > div:nth-of-type(2) > div:nth-of-type(2) > fieldset > p:first-of-type
> input");
Tester.AssertEqual("class is 'textbox'", "textbox",
userName.GetAttribute("class"));

//Go to a different URL (http://libraryinformationsystem.org/HtmlTest.htm)
WebDriver.SetUrl('http://www.libraryinformationsystem.org/HtmlTest.htm');

//Click on the Alert box
var alertBtn = WebDriver.FindElementById("btnAlert");
```



```
alertBtn.Click();

//Switch to this alert box and close
var alertElement = WebDriver.SwitchToAlert();
alertElement.Accept();

//Shut down Selenium
WebDriver.Quit();
```

When you click **'Play'** to playback your Selenium script, make sure you have selected one of the Selenium web browser profiles. If you have selected a native browser profile (e.g. "Firefox HTML" instead of "Selenium – Firefox") you will get the error message **"WebDriver" is not defined**.

## Code Completion for the Selenium WebElement Objects

When you are using functions such as `FindElementsById()` in your code, the returned object will be a Selenium **Web Element**.

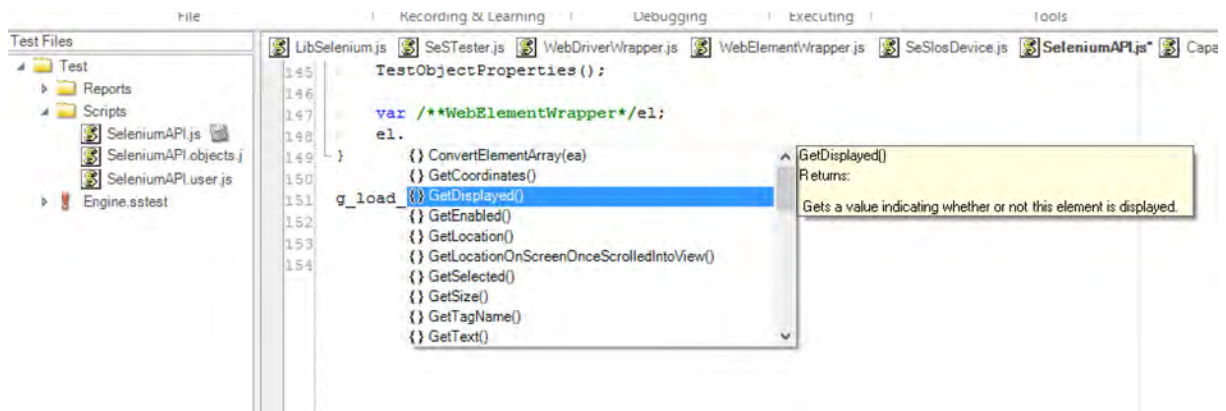
If you want to have intellisense and code-completion for the returned WebElement objects, you need to do two things:

- Click on CTRL+E to include the Rapise engine in your project.
- Prefix the variable with `/**WebElementWrapper*/`, so instead of just:

```
var el = WebDriver.FindElementById(...) you use:
```

```
var /**WebElementWrapper*/el = WebDriver.FindElementById(...) instead
```

For example:



## Interoperability with Rapise Objects

In addition to being able to use raw Selenium code on its own, you can also use a mixture of Rapise object-based code and raw Selenium WebDriver code.

For example, you are using the standard Rapise approach (using learned `SeS('object')` objects) for testing but at some point want to switch to Selenium API to call a couple of WebElement functions on a learned object, you can use the special **'element'** property:

```
var webElement = SeS('MyObject').element;
```

If you want to the reverse and be able to create a Rapise `SeS('object')` 'on the fly' from a physical object on the web page, you can do the `MakeObjectForXPath(xpath)` function that returns a Rapise **SeSObject**, in the same way that `SeS('id')` does normally:

```
var sesObj = MakeObjectForXPath("//body//div[@id='logArea']");
```

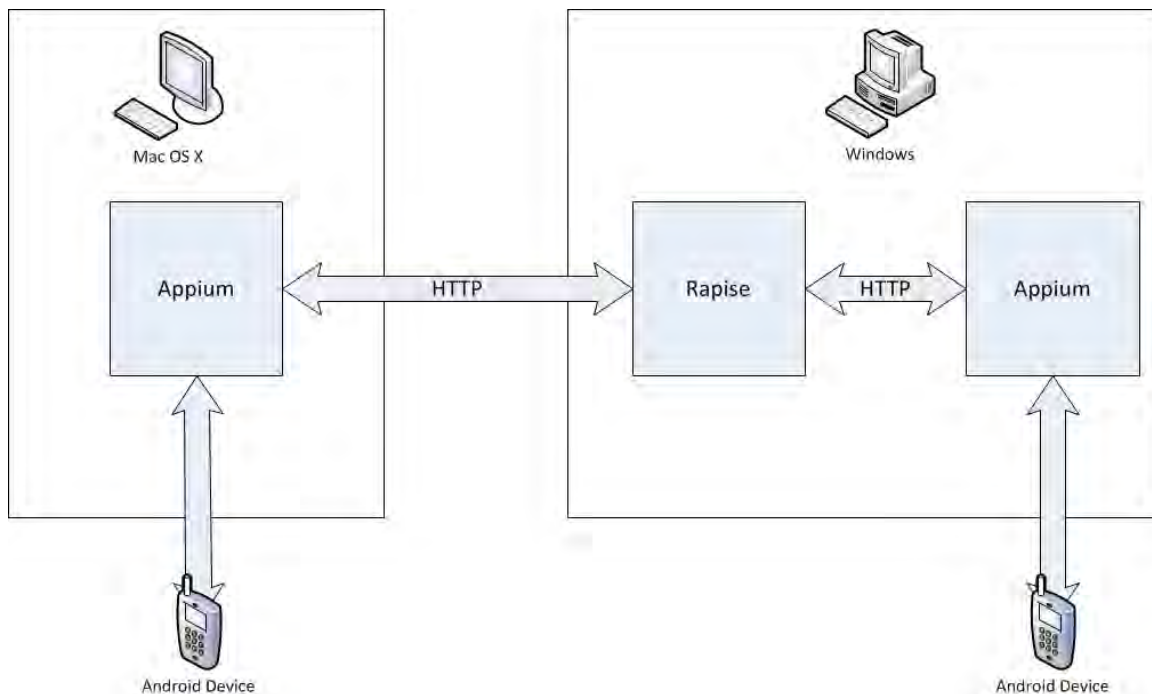
### 2.6.3 Mobile Testing

#### Purpose

Rapise lets you record and play automated tests against native applications on a variety of mobile devices using either [Apple iOS](#) or [Android](#). Rapise gives you the flexibility to test your applications on either real or simulated devices.

This section explains **how to setup your environment for mobile testing**, once that is done, you can then go to [the section that explains the process](#) for using Rapise to actually perform [mobile testing](#).

Rapise uses a third-party open-source tool called **Appium** (<http://appium.io>) that is used to actually host the mobile devices and Rapise essentially communicates to the device via Appium:



#### Testing Architectures

Rapise runs on Windows computers (PC) and Android devices (both real and simulated) can be tested on either an Apple Macintosh (Mac) computer or a PC. Conversely, iOS devices (both real and simulated) can only be tested on an Apple Macintosh (Mac) computer. So this means that there are



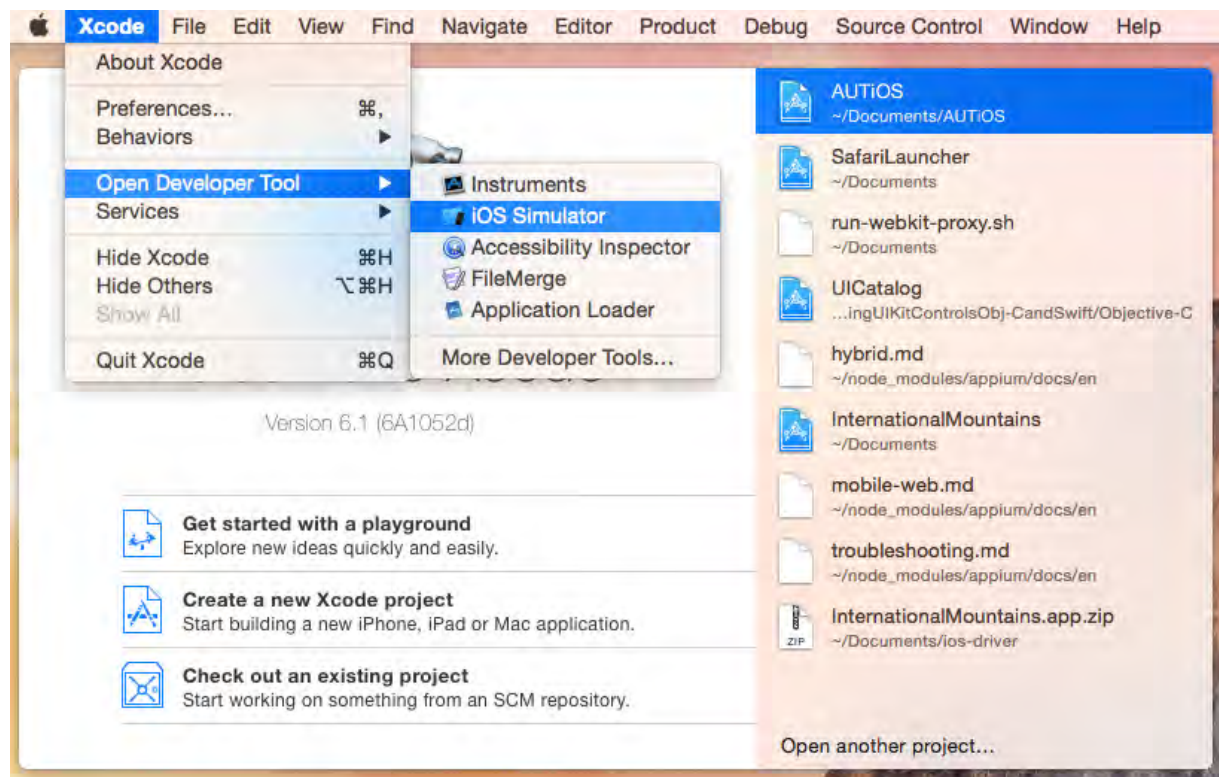
three separate possible testing environments that you may need to setup:

- **Using a Mac to Host iOS Devices.** It will be necessary to install **Appium** and **Apple Xcode** onto the Mac and connect to Appium over the network from Rapise running on your PC.
- **Using a Mac to Host Android Devices.** It will be necessary to install **Appium** and **Android Studio** onto the Mac and connect to Appium over the network from Rapise running on your PC.
- **Using a PC to Host Android Devices.** You can either install **Appium** and **Android Studio** onto a separate PC or you can simply use the same PC that is running Rapise. The only difference will be whether the URL used to connect to Appium is a localhost URL or one pointing to the other PC.

The steps for setting each of these will be described separately below:

## 1) Using a Mac to Host iOS Devices

The first thing you need to do is install Xcode from the Apple Mac app store. Make sure you include the **iOS SDK**, and also the **iOS Simulator** if you intend to test simulated iOS devices.

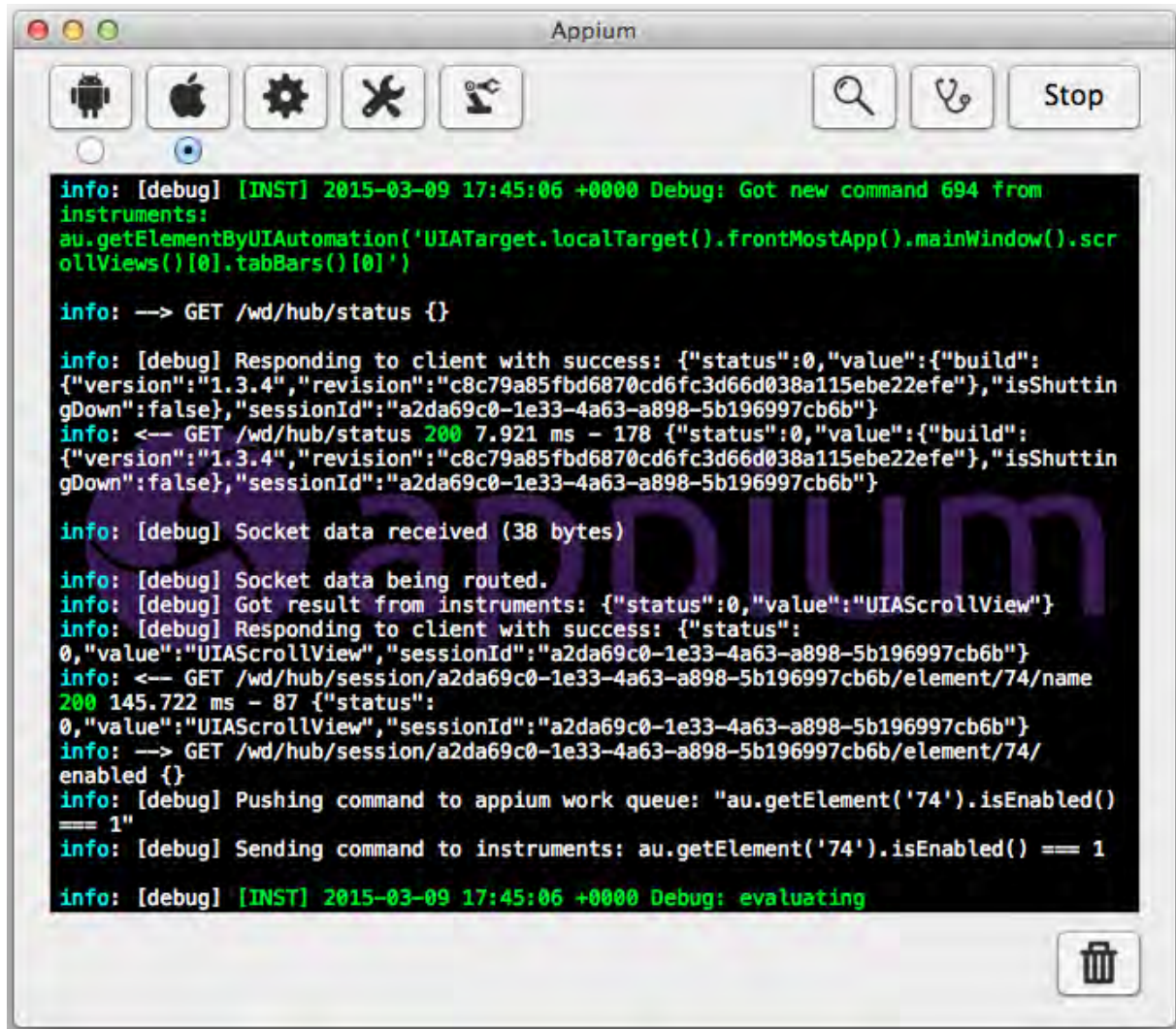


(Please refer to the Apple tutorial <https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/> if you are writing your first iOS application and need an introduction into how to develop for iOS).

Since configuring Xcode to build and deploy an application to a physical or simulated iOS device is quite involved, we have created a [separate topic that explains the process](#).

Once you have the iOS environment configured, you need to do is go to the **Appium** website (<http://appium.io>) and install the latest version of Appium. Once it is installed, you need to select the option for

iOS and click the Play button to start the Appium server:

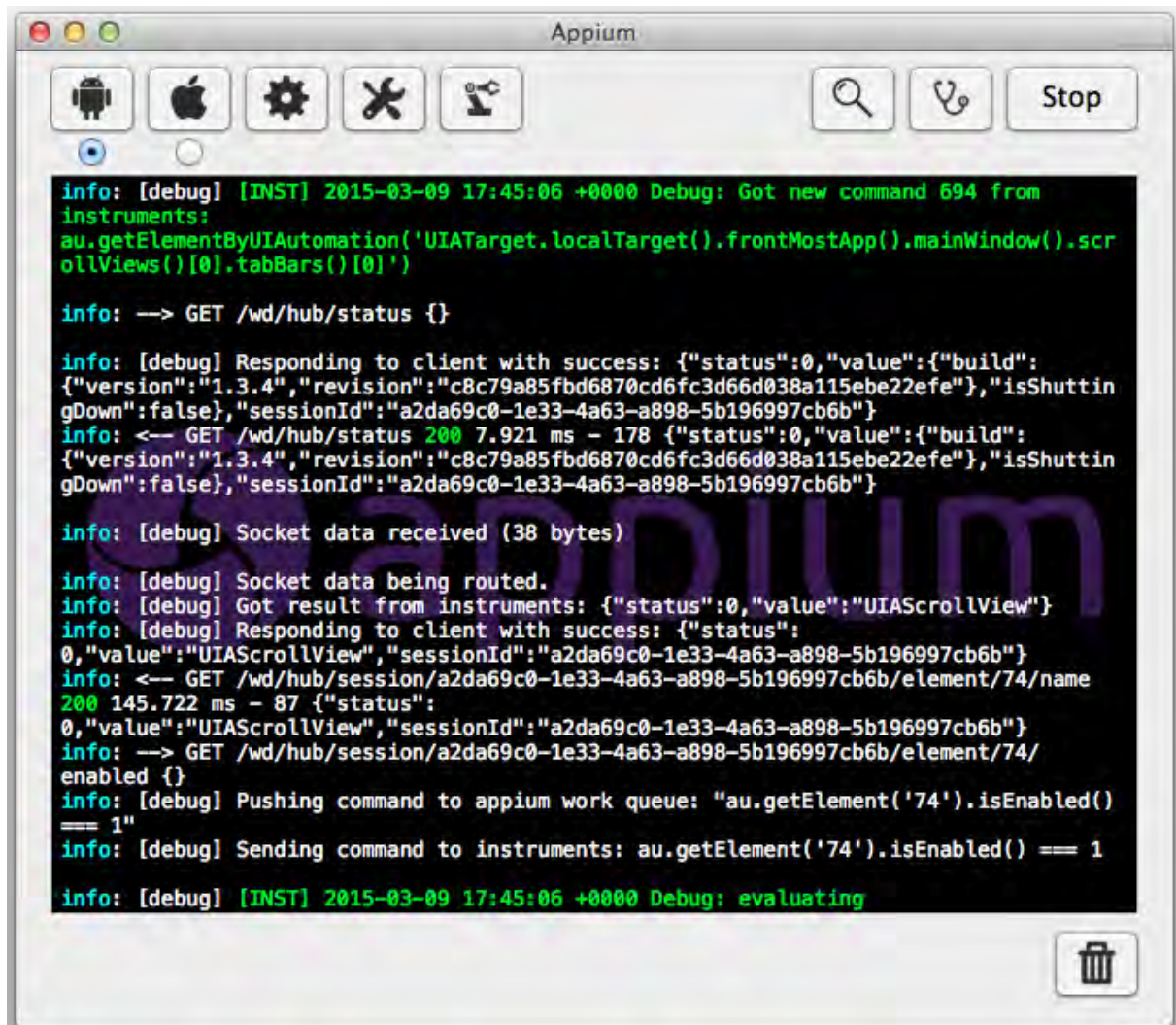


You are now ready to start [mobile testing of your iOS device](#).

## 2) Using a Mac to Host Android Devices

The first thing you need to do is go to the **Appium** website (<http://appium.io>) and install the latest version of Appium. Once it is installed, you need to select the option for **Android** and click the Play button to start the Appium server:





```
info: [debug] [INST] 2015-03-09 17:45:06 +0000 Debug: Got new command 694 from
instruments:
au.getElementByUIAutomation('UIATarget.localTarget().frontMostApp().mainWindow().scr
ollViews()[0].tabBars()[0]')

info: --> GET /wd/hub/status {}

info: [debug] Responding to client with success: {"status":0,"value":{"build":
{"version":"1.3.4","revision":"c8c79a85fbd6870cd6fc3d66d038a115ebe22efe"},"isShuttin
gDown":false,"sessionId":"a2da69c0-1e33-4a63-a898-5b196997cb6b"}
info: <-- GET /wd/hub/status 200 7.921 ms - 178 {"status":0,"value":{"build":
{"version":"1.3.4","revision":"c8c79a85fbd6870cd6fc3d66d038a115ebe22efe"},"isShuttin
gDown":false,"sessionId":"a2da69c0-1e33-4a63-a898-5b196997cb6b"}

info: [debug] Socket data received (38 bytes)

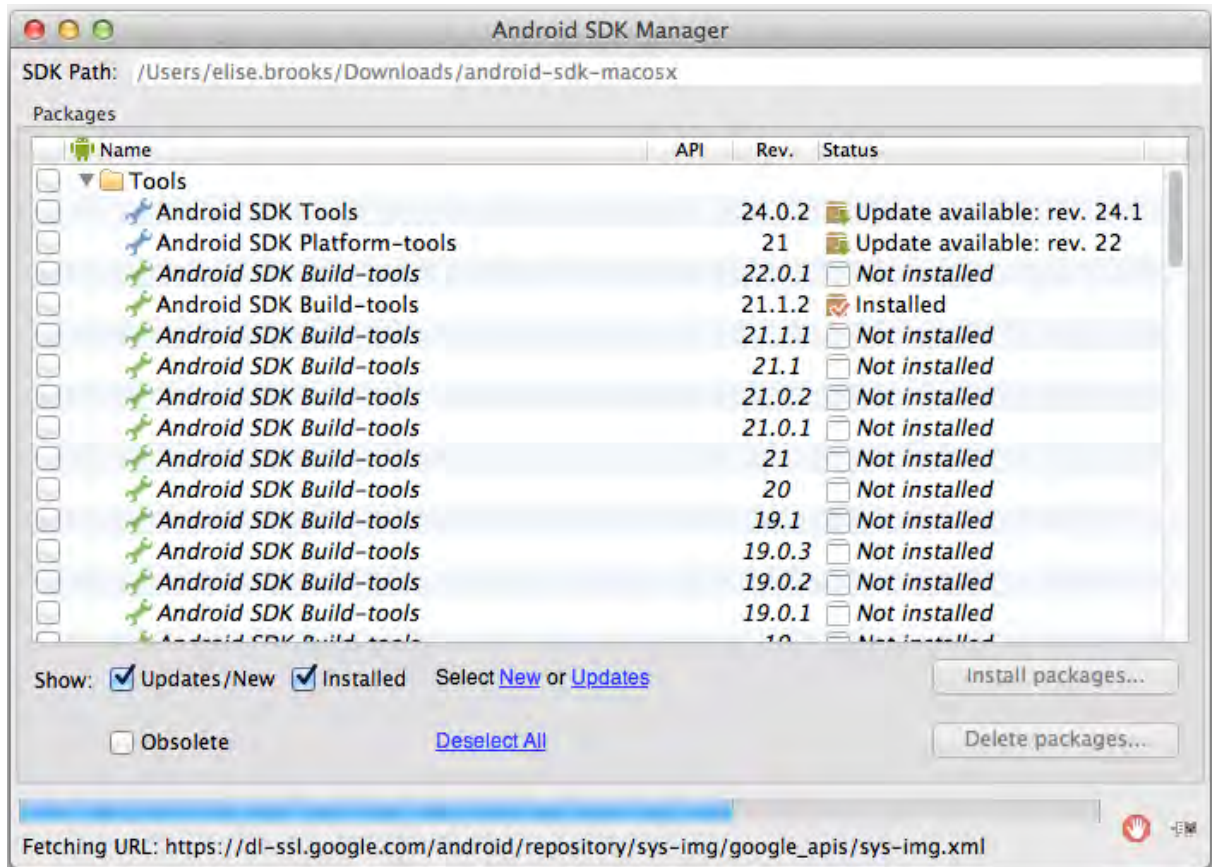
info: [debug] Socket data being routed.
info: [debug] Got result from instruments: {"status":0,"value":"UIAScrollView"}
info: [debug] Responding to client with success: {"status":
0,"value":"UIAScrollView","sessionId":"a2da69c0-1e33-4a63-a898-5b196997cb6b"}
info: <-- GET /wd/hub/session/a2da69c0-1e33-4a63-a898-5b196997cb6b/element/74/name
200 145.722 ms - 87 {"status":
0,"value":"UIAScrollView","sessionId":"a2da69c0-1e33-4a63-a898-5b196997cb6b"}
info: --> GET /wd/hub/session/a2da69c0-1e33-4a63-a898-5b196997cb6b/element/74/
enabled {}
info: [debug] Pushing command to appium work queue: "au.getElement('74').isEnabled()
== 1"
info: [debug] Sending command to instruments: au.getElement('74').isEnabled() == 1

info: [debug] [INST] 2015-03-09 17:45:06 +0000 Debug: evaluating
```

Once that is installed, you will then need to download and install the latest version of Java SE Development Kit (JDK) from the Oracle website (<http://www.oracle.com/technetwork/java/javase/downloads/index.html>). Once that has been installed, make sure that the JAVA\_HOME environment variable has been set.

Once that is installed, you will then need to install the Android SDK (you may already have it installed if you are doing Android development). You can download it from: <https://developer.android.com/sdk>.

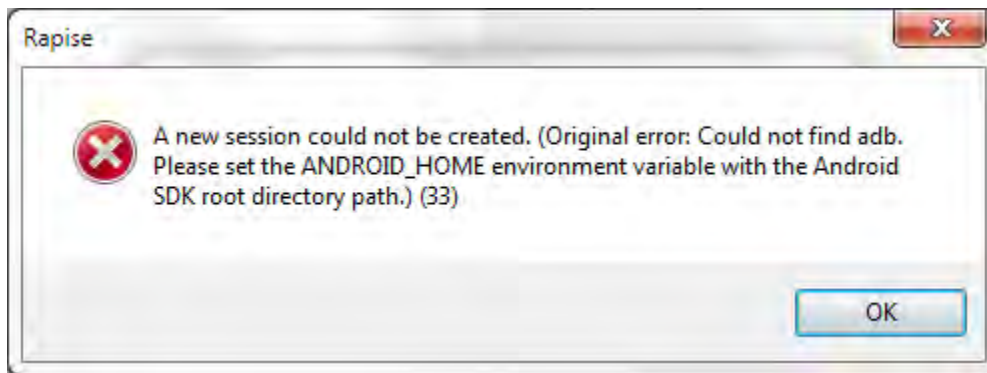
Once it has installed, you will use the **Android SDK Manager** to download and install the necessary packages:



If you are going to be testing a physical Android device, you will need to do the following:

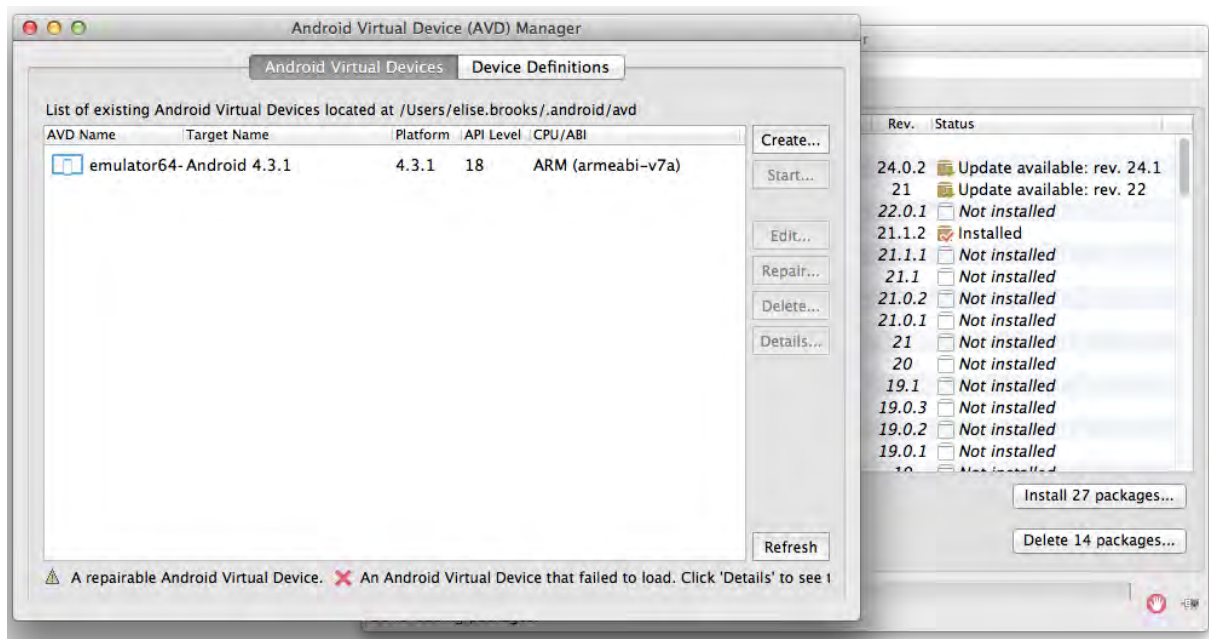
1. Make sure you have **enabled Developer mode** in the Android device itself:
  - a. Open Settings> About on your Android phone or tablet.
  - b. If you have a Samsung Galaxy S4, Note 8.0, Tab 3 or any other Galaxy device with Android 4.2, open Settings> More tab> About and tap it.
  - c. If you have Galaxy Note 3 or any Galaxy device with Android 4.3, go to Galaxy Note 3 from Settings> General> About and tap the Build version 7 times.
  - d. Now scroll to Build number and tap it 7 times.
  - e. After tapping the Build Number 7 times, you will see a message "You are now a developer!" If you have a Galaxy S4 or any other Samsung Galaxy device with Android 4.2, the message reads as follows- "Developer mode has been enabled".

Now when you try and [connect to the device](#) using the [Rapise mobile spy](#), you may get the following message:



This means you need to use a MacOS X Shell window to add a **environment variable** called **ANDROID\_HOME** and set it to the path of the installed Android SDK (typically something like `/Users/my.user/Downloads/android-sdk-macosx`).

If you want to test using the Android simulator, make sure you have installed it using the SDK manager. Then you can launch (from the main menu of the Android SDK Manager) the **Android Virtual Device (AVD) Manager**:



In this case you can just create the Android Virtual Device, Start it and then connect to it using Rapise.

You are now ready to start [mobile testing of your Android device](#).

### 3) Using a PC to Host Android Devices

The first thing you need to do is go to the **Appium** website (<http://appium.io>) and install the latest version of Appium. Once it is installed, you can start it up and click the Play button to start the Appium server:

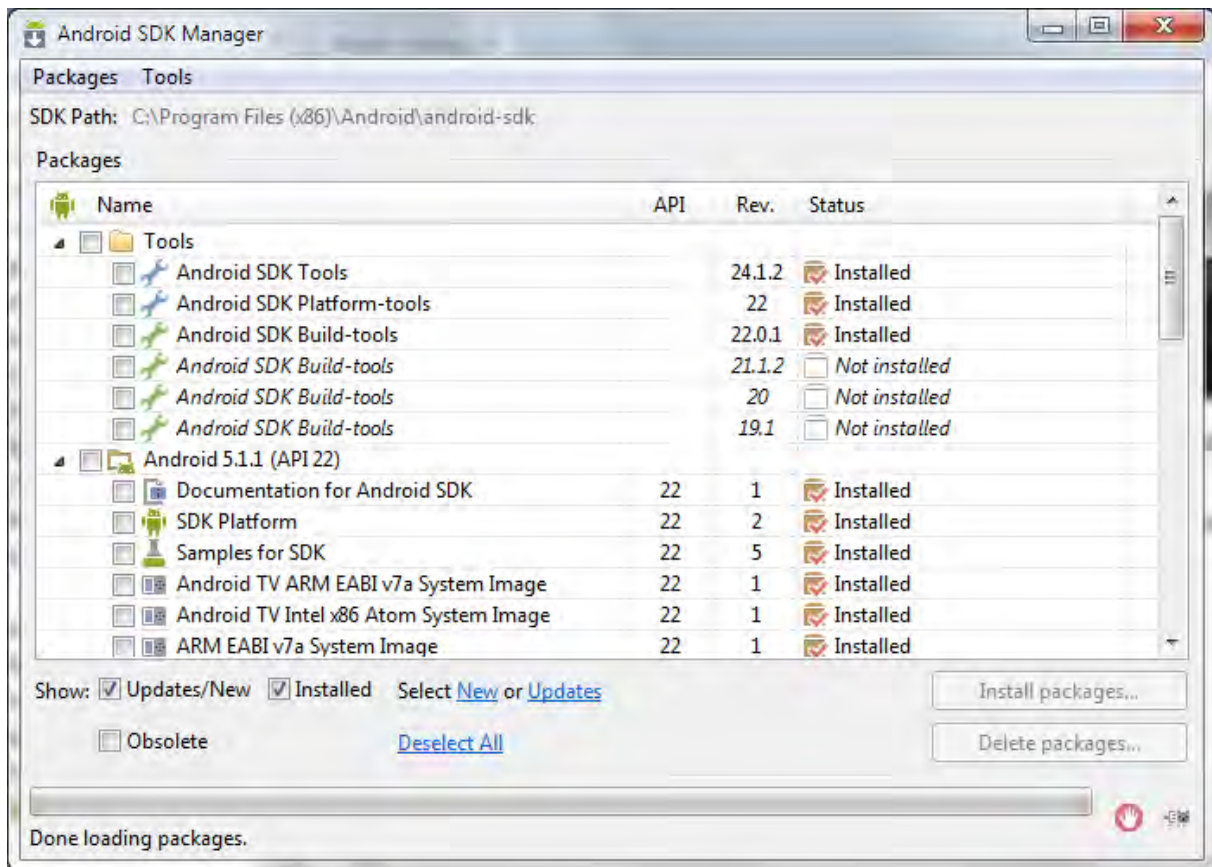


Once that is installed, you will then need to download and install the latest version of Java SE Development Kit (JDK) from the Oracle website (<http://www.oracle.com/technetwork/java/javase/downloads/index.html>). Once that has been installed, make sure that the JAVA\_HOME environment variable has been set.

Once that is installed, you will then need to install the Android SDK (you may already have it installed if you are doing Android development). You can download it from: <https://developer.android.com/sdk>.

Once it has installed, you will use the **Android SDK Manager** to download and install the necessary packages:



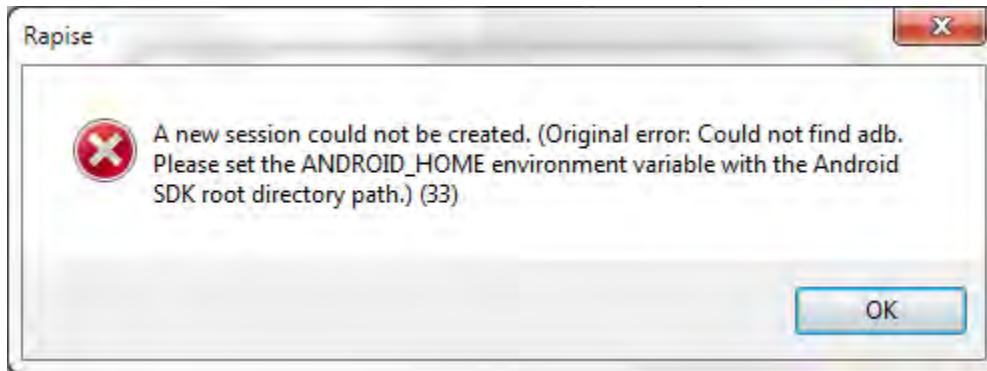


If you are going to be testing a physical Android device, you will need to do the following:

2. Locate the **Google Android USB drivers** that came with the Android SDK (C:\Program Files (x86)\Android\android-sdk\extras\google\usb\_driver) and when you connect your Android device to the PC, choose to install these drivers rather than the standard ones.
3. Make sure you have **enabled Developer mode** in the Android device itself:
  - a. Open Settings> About on your Android phone or tablet.
  - b. If you have a Samsung Galaxy S4, Note 8.0, Tab 3 or any other Galaxy device with Android 4.2, open Settings> More tab> About and tap it.
  - c. If you have Galaxy Note 3 or any Galaxy device with Android 4.3, go to Galaxy Note 3 from Settings> General> About and tap the Build version 7 times.
  - d. Now scroll to Build number and tap it 7 times.
  - e. After tapping the Build Number 7 times, you will see a message "You are now a developer!" If you have a Galaxy S4 or any other Samsung Galaxy device with Android 4.2, the message reads as follows- "Developer mode has been enabled".

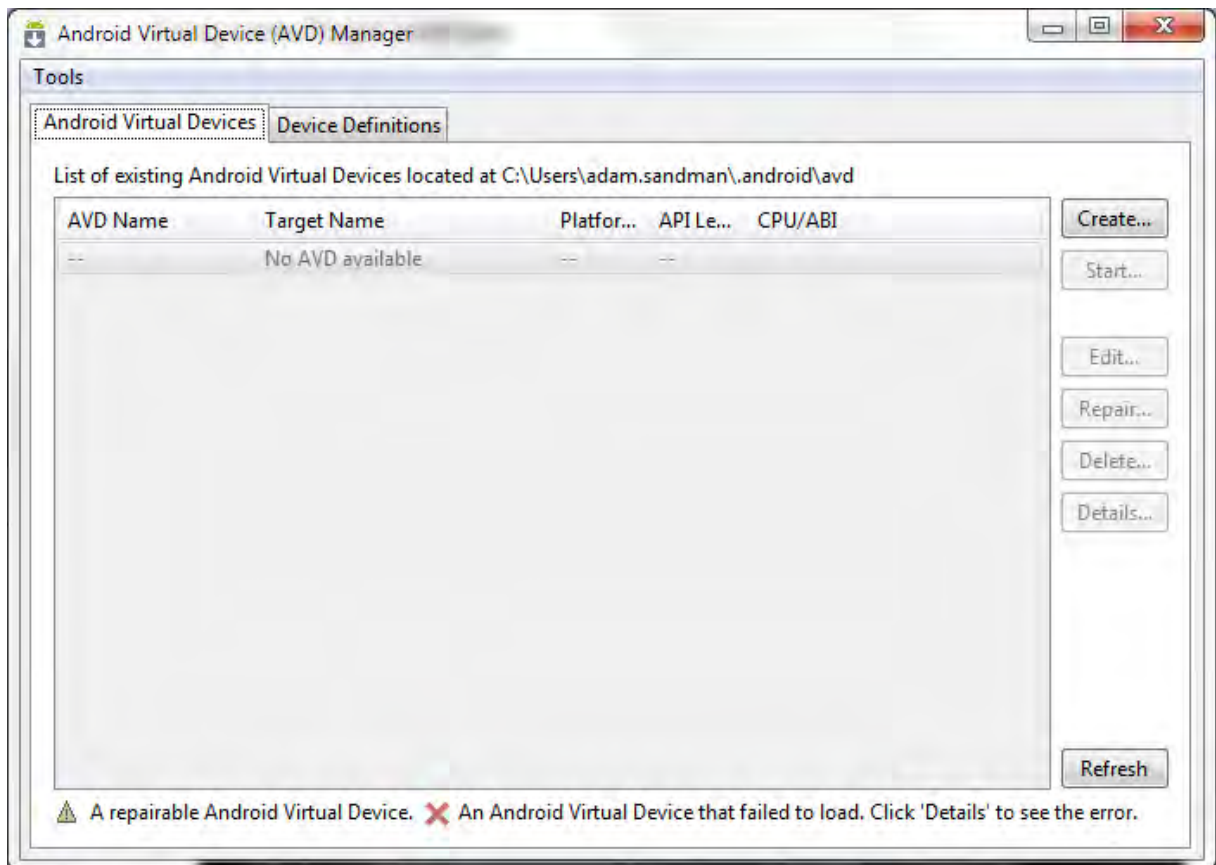
Now when you try and [connect to the device](#) using the [Rapise mobile spy](#), you may get the following message:





This means you need to use the Windows control panel to add a **System environment variable** called **ANDROID\_HOME** and set it to the path of the installed Android SDK (typically `C:\Program Files (x86)\Android\android-sdk`).

If you want to test using the Android simulator, make sure you have installed it using the SDK manager. Then you can launch (from the Windows Start Menu) the **Android Virtual Device (AVD) Manager**:



In this case you can just create the Android Virtual Device, Start it and then connect to it using Rapise.

You are now ready to start [mobile testing of your Android device](#).

**See Also**

- [Mobile Testing](#), for an overview of mobile testing with sub-sections on testing using [iOS](#) and [Android](#).
- [Mobile Testing Tutorial](#) - for a simple introduction to mobile device testing.
- [Mobile Settings Dialog](#) - for information on setting up the different **mobile profiles** for the mobile devices you will be testing
- [Mobile Object Spy](#) - for information on how Rapise connects to the device and lets you view the objects in the application being tested
- [Mobile Testing: iOS Setup](#) - the steps for setting up Xcode and the iOS SDK for testing iOS devices

### 2.6.3.1 Mobile Testing: iOS Setup

#### Purpose

This section describes how to setup Apple Xcode for developing and deploying iOS applications to a real or simulated device so that they can be tested by Rapise.

Make sure you have already installed XCode and the iOS SDK onto your Apple Mac as described in the [Mobile Testing parent topic](#).

This topic describes the process for building and deploying the sample AUTiOS application that comes with Rapise, however it can be used equally well with your in-house application.

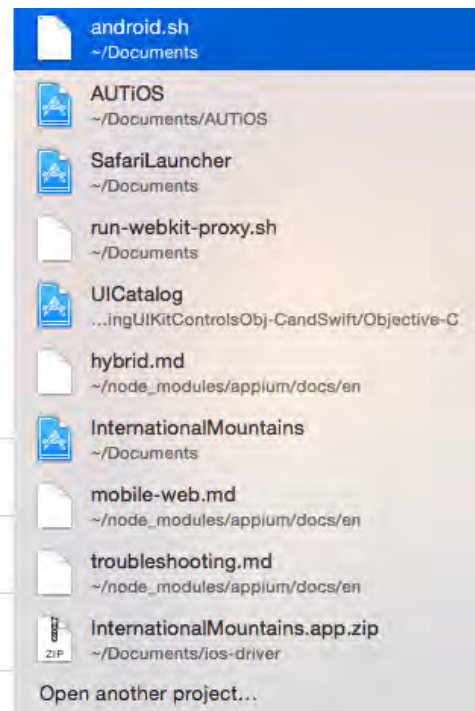
#### 1) Get the AUTiOS Source Code

When you install Rapise, the sample AUT for iOS (AUTiOS) is placed in the following folder on your PC:

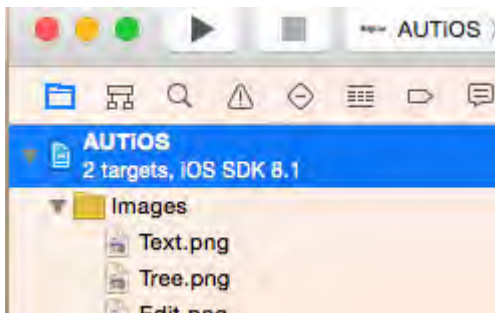
```
C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AUT\AUTiOS
```

You will need to **copy this folder across onto your Mac** so that you can open it in Xcode.

Once you have done that, launch Xcode on the Mac:



Open the AUTIOS project and select the root node:



Before you can actually build and deploy this project, you will need to register for an **Apple ID** and setup an Apple Developer account. You should check with your company to see if they have already joined the **Apple iOS Developer Program**, if not, you will need to join yourself and become a member. You can learn more about this at the Apple developer website: <https://developer.apple.com>.

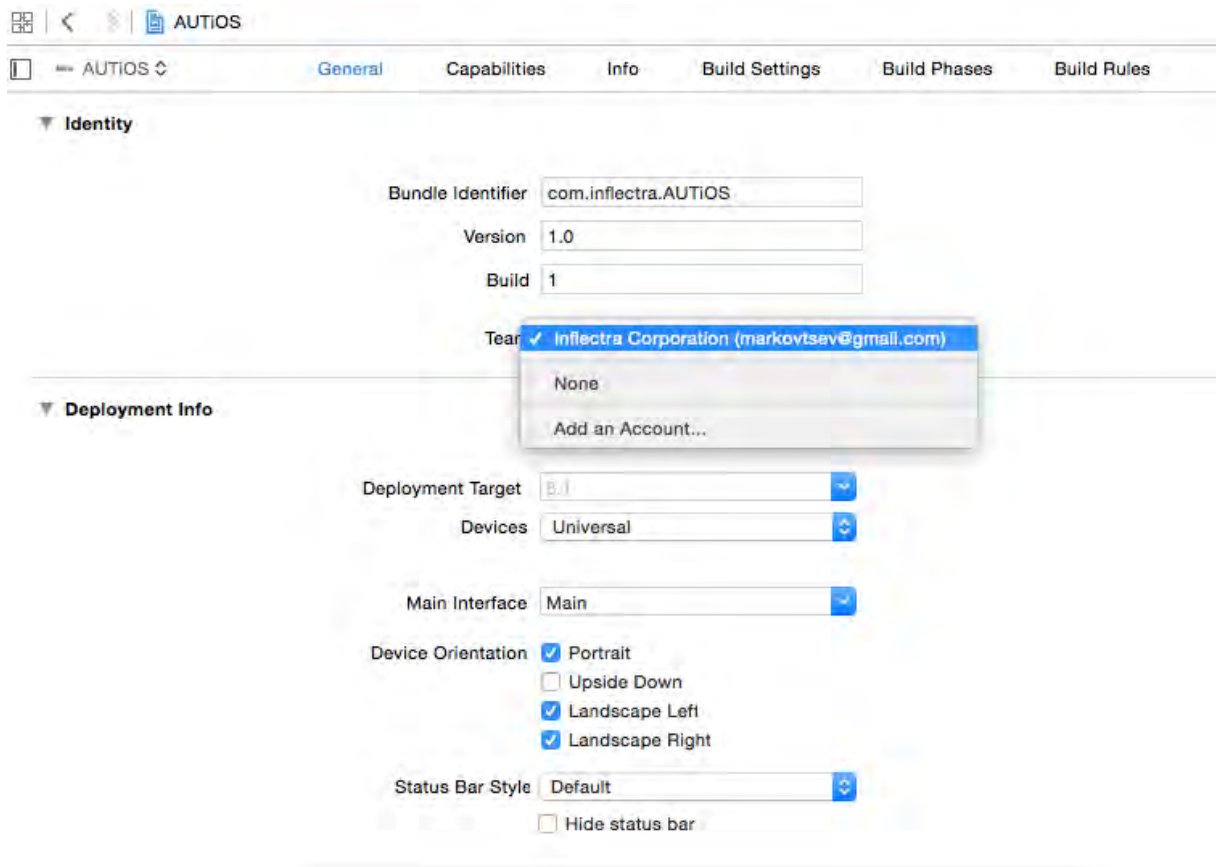
## 2) Join Your iOS Development Team

Assuming that either you or your company already has signed up for the iOS Developer Program, you will need to ask the administrator of your account (it might be you) to send an invitation to you if you are not already a member. The link for accepting such an invitation is typically:

<https://developer.apple.com/programs/start/jointeam/index.php?success=%2Fios%2Finvitation%2Faccept.action>

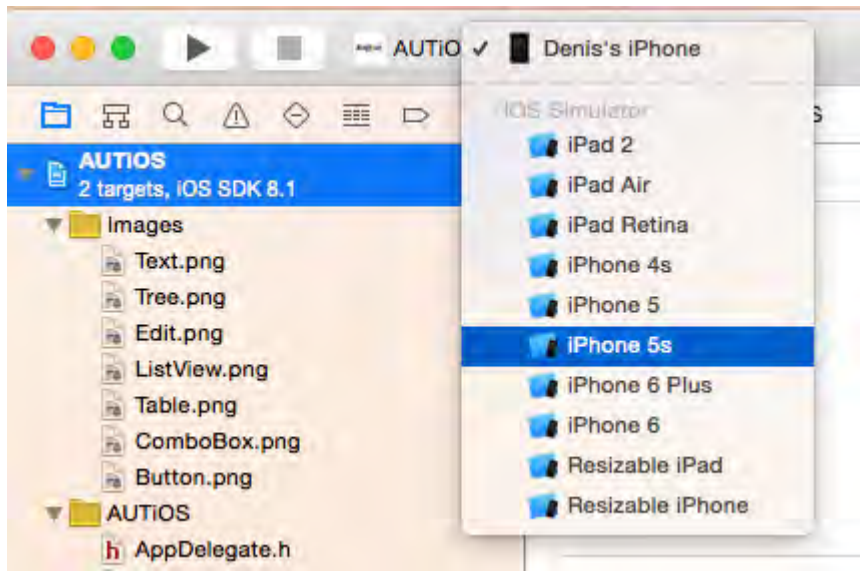
Click on this link and accept the invitation.

Meanwhile, back in XCode Use the 'Add an Account...' to login with your **Apple ID**:

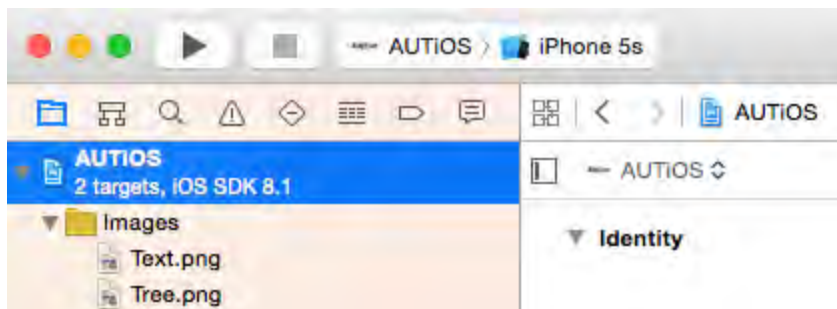


### 3) Building and Deploying on a Simulated Device

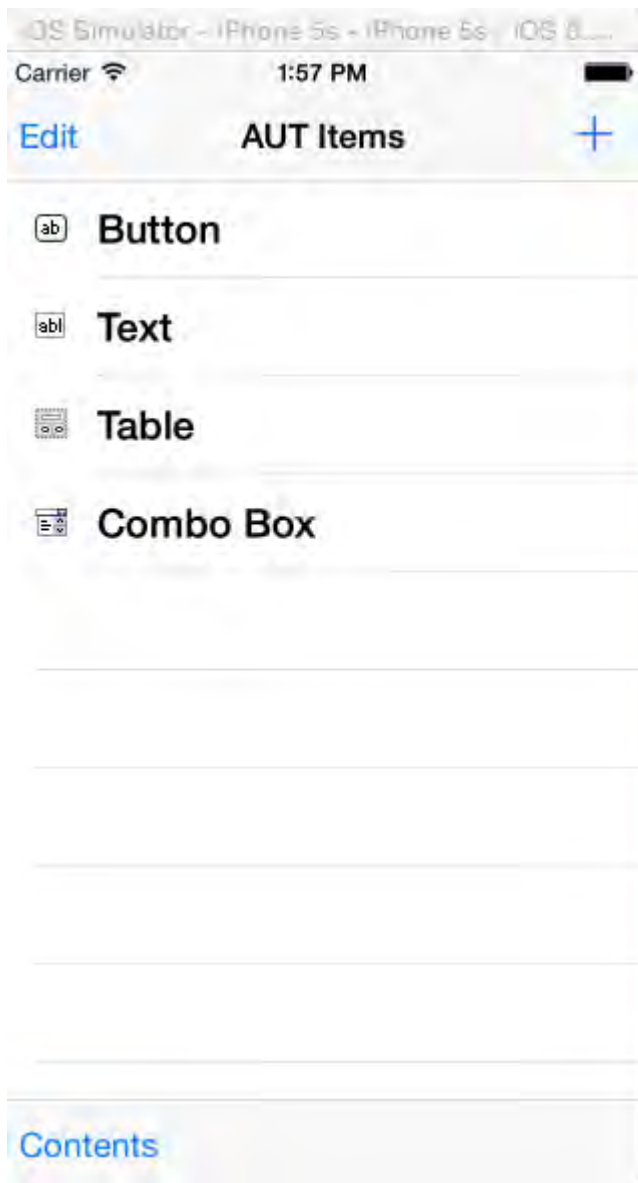
Now that you have signed into Xcode using your developer account, you can select a simulated device and run the project on it:



Once you have selected the simulated iOS device you want to use, click the **Product > Build** option to build the app for the targeted device. You can use the **Run** option to make sure that the app actually launches on this device before testing it with Rapise.



Assuming that this is successful, you will see the AUTIOS running in the iOS Simulator:



If you are only going to use Simulated devices (not recommended) then you can skip the next section and just continue with setting up **Appium**, as described in the main [Mobile Testing topic](#).

#### 4) Building and Deploying on a Physical Device

Login with your **Apple ID** to <http://developer.apple.com>

Choose Certificates, Identifiers & Profiles:

The screenshot shows the Apple Developer portal for the organization 'Inflectra Corporation'. The page is titled 'Developer' and has a navigation bar with 'People', 'Programs & Add-ons', and 'Your Account'. Below the navigation bar, the organization name is displayed. The main content area is titled 'Developer Program Resources' and is divided into two sections: 'Technical Resources and Tools' and 'App Store Distribution'. Under 'Technical Resources and Tools', there are two cards: 'Dev Centers' (with a hammer icon) and 'Certificates, Identifiers & Profiles' (with a certificate icon). Under 'App Store Distribution', there are two cards: 'App Store Resource Center' (with an App Store icon) and 'iTunes Connect' (with a music note icon).


**Developer**


Home People Programs & Add-ons Your Account

Organization: [Inflectra Corporation](#)

### Developer Program Resources


#### Technical Resources and Tools


 **Dev Centers**  
Quickly access a range of technical resources.  
[iOS](#) | [Mac](#) | [Safari](#)

 **Certificates, Identifiers & Profiles**  
Manage your certificates, App IDs, devices, and provisioning profiles.

---

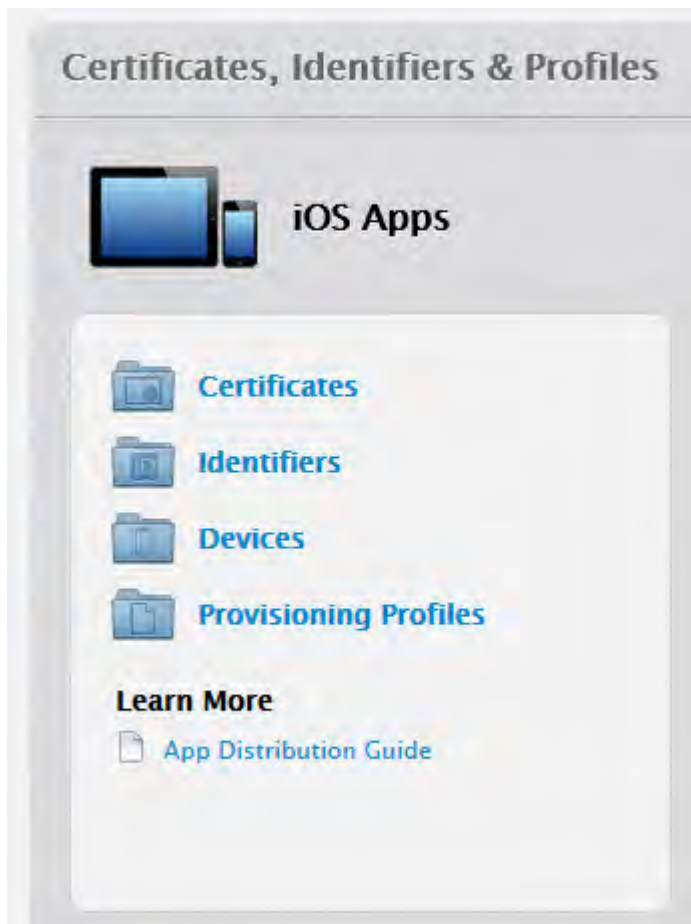
#### App Store Distribution

 **App Store Resource Center**  
Learn about how to prepare for App Store Submission.

 **iTunes Connect**  
Submit and manage your apps on the App Store.

Select Devices:

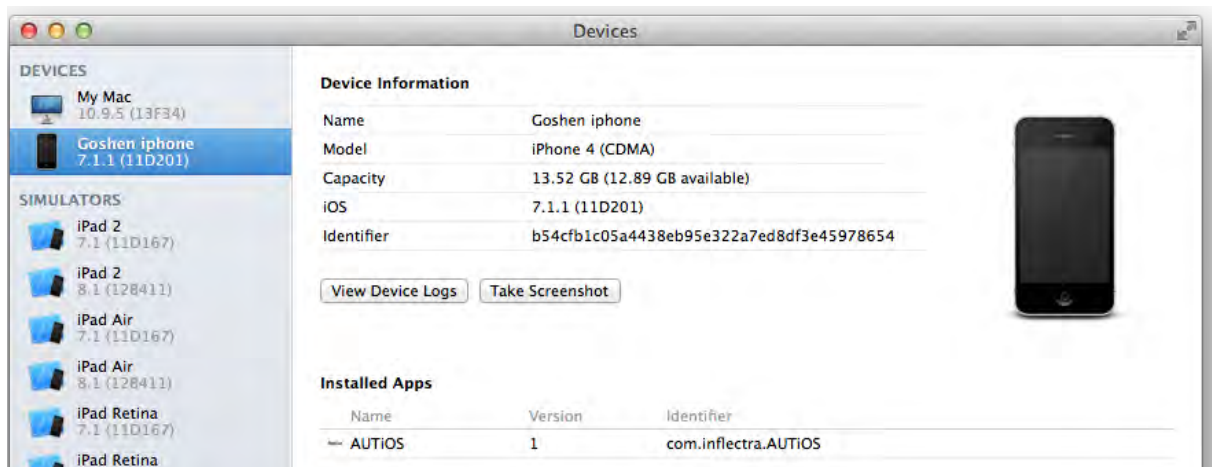




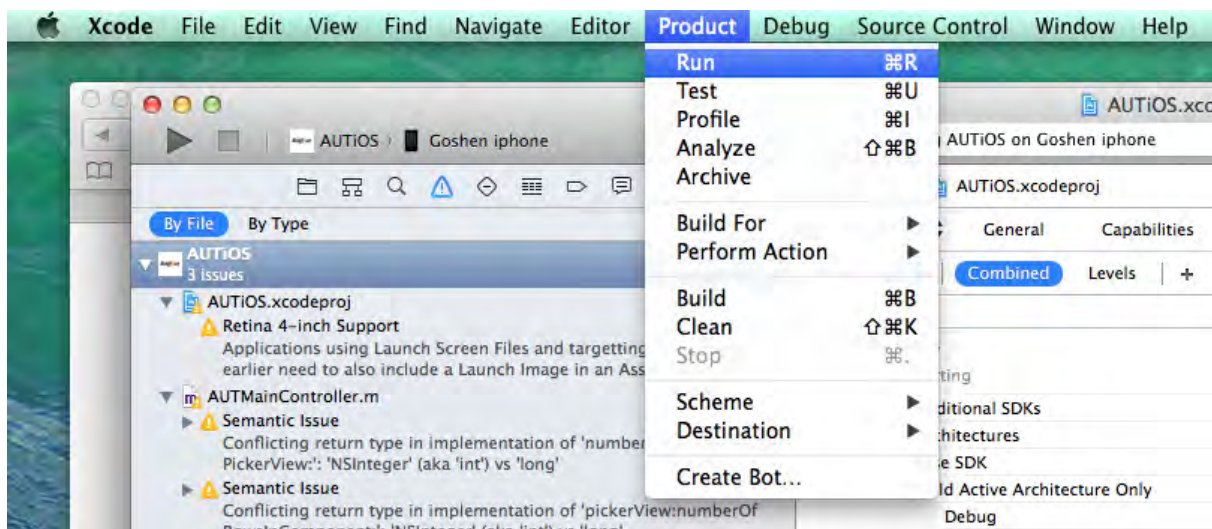
Add your device's UDID to the list of registered iOS devices in the developer account:



You can find out the UDID by connecting it to the Mac and viewing the device inside Xcode.



Then, back in Xcode choose your physical device, and use the **Product > Build and Run** option to test that the app launches on the device:



## Example

You can find the iOS sample tests and sample Application (called AUTiOS) in your Rapise installation at the following locations:

### Sample iOS Tests:

- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AppiOS (testing a native App)
- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\WebiOS (testing a web app)

### Sample Application (AUTiOS)

- C:\Users\Public\Documents\Rapise\Samples\UsingMobile\AUT\AUTiOS

## See Also

- [Mobile Testing](#), for an overview of mobile testing with sub-sections on testing using [iOS](#) and [Android](#).

- [Mobile Testing Tutorial](#) - for a simple introduction to mobile device testing.
- [Mobile Settings Dialog](#) - for information on setting up the different **mobile profiles** for the mobile devices you will be testing
- [Mobile Object Spy](#) - for information on how Rapise connects to the device and lets you view the objects in the application being tested

## 2.6.4 Microsoft Dynamics

### Overview

Microsoft Dynamics is a line of **enterprise resource planning (ERP)** and **customer relationship management (CRM)** software applications from Microsoft. The Microsoft Dynamics focus industries are retail, service, manufacturing, financial services, and the public sector. Microsoft Dynamics offers support for small, medium, and large businesses.

Microsoft **Dynamics ERP** comprises a group of enterprise-resource-planning products primarily geared toward midsize organizations with simple corporate structures and low-to-moderately complex production models. Microsoft Dynamics ERP includes three primary products:

- **Microsoft Dynamics AX** (formerly Axapta) - multi-language, multi-currency enterprise resource planning (ERP) business software with global business management features for financial, human resources, and operations management as well as additional industry capabilities for retailers, professional service industries, financial service businesses, manufacturers, and public-sector organizations
- **Microsoft Dynamics GP** (formerly Great Plains Software) - ERP software for small and midsize businesses: helps manage financials, supply chain, and employees
- **Microsoft Dynamics NAV** (formerly Navision) - business management solution that helps small and mid-sized businesses manage their financials, supply chain, and people. It features multiple languages and multiple currencies.

**Microsoft Dynamics CRM** is a customer relationship management application from Microsoft, that provides sales, service, and marketing capabilities. Microsoft sells Microsoft Dynamics CRM separately from the ERP products. CRM is available either as on-premises software or as a software-as-a-service offering called "Microsoft Dynamics CRM Online".

Starting in late 2016, Microsoft has created a new cloud-based SaaS-only combined ERP/CRM solution called **Microsoft Dynamics 365**. This provides a new web-based version of Dynamics AX (renamed Dynamics 365 for Operations), combined with a new web based version of Dynamics NAV (called Dynamics 365 for Financials) and an updated Microsoft Dynamics CRM Online. This new integrated, ERP/CRM is provided solely through Microsoft Azure and is completely web-based.

### Rapise Support

Rapise provides out of the box support for the following different versions of Microsoft Dynamics:

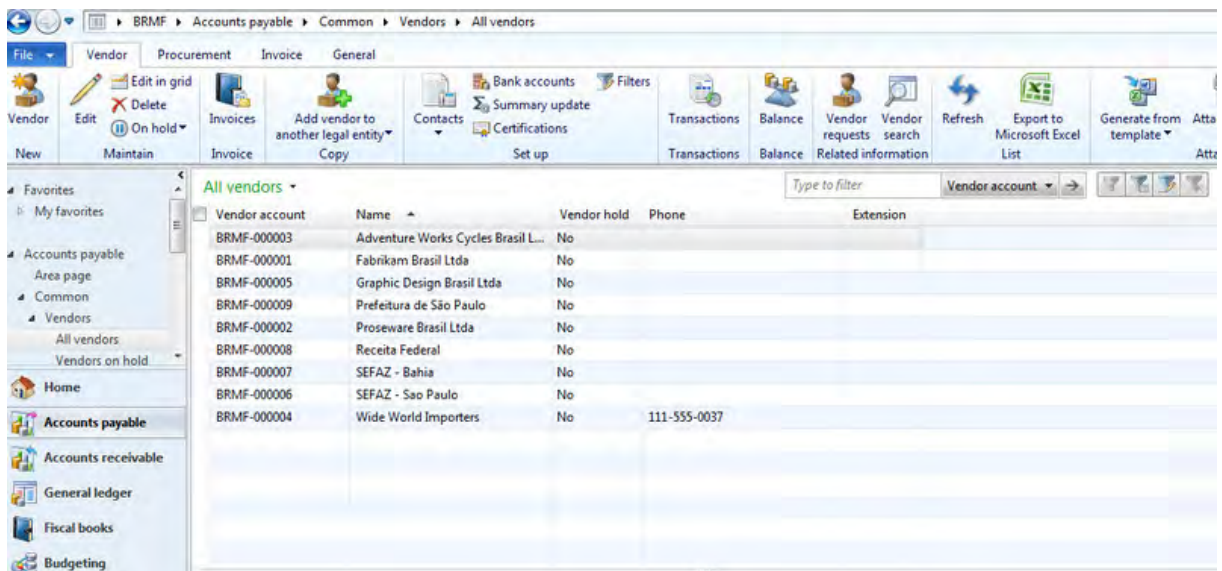
- [Dynamics AX](#) - Rapise provides specialized support for the Dynamics AX core user interface plus add-ons such as the Management Reporter.
- [Dynamics CRM](#) - Rapise uses its native web library support for Dynamics CRM, with Dynamics-CRM specific extensions included for unique CRM components (e.g. data grids)
- [Dynamics 365](#) - Rapise includes built-in support for Dynamics 365 including both its ERP and CRM components.

### 2.6.4.1 Dynamics AX

#### Overview

**Microsoft Dynamics AX** (usually referred to as just "AX") - is an ERP system for mid-size to large enterprises. It is the most robust, scalable, and functionally rich enterprise resource planning system in the Microsoft Dynamics family of products. The system was originally known as Axapta, owned by the Danish software company Damgaard.

Dynamics AX consists of a client-server architecture with a thick-client ERP interface for entering/adding data in the system:

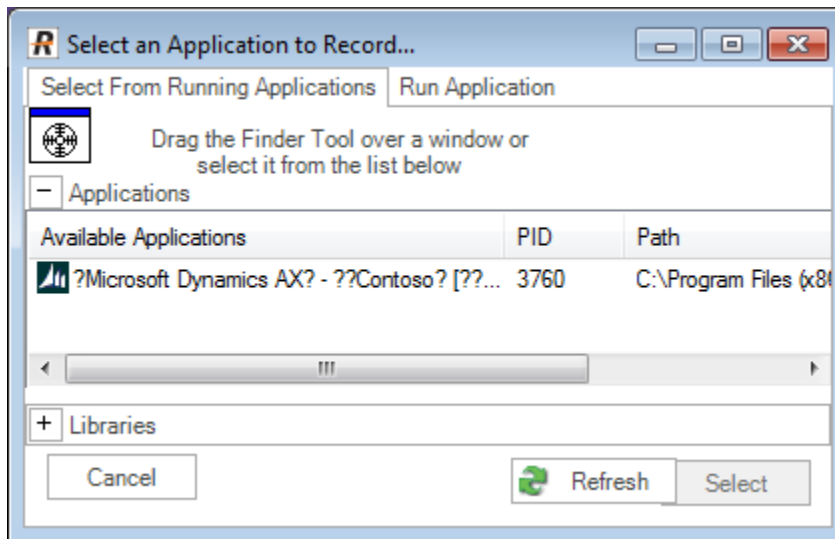


Rapise includes specialized libraries for testing Dynamics AX applications that are built-upon the standard [Microsoft Windows UIAutomation](#) library with special extensions for handling unique AX controls such as treeviews, the navigation explorer and the various grids used to edit data. In addition Rapise can test the following extensions to Dynamics AX:

- **Dynamics AX Management Reporter** - Rapise can test this extension using its **Generic** [Windows library](#)
- **Dynamics AX Web Portals** - Rapise can test the various web portals using its [web browser libraries](#).

#### Start Recording a New Test

First you need to create a new Basic test and start recording session. Choose Dynamics AX from the list of applications:



Then press **Select** button to start recording. Rapise will automatically plug the UIAutomation and DynamicsAX libraries.

- **Microsoft UI Automation** is the new accessibility framework for Microsoft Windows, available on all operating systems that support Windows Presentation Foundation (WPF). UI Automation provides programmatic access to most user interface (UI) elements on the desktop, enabling assistive technology products such as screen readers to provide information about the UI to end users and to manipulate the UI by means other than standard input. UI Automation also allows automated test scripts to interact with the UI.
- **DynamicsAX** library supports a set of controls specific to the Microsoft Dynamics AX 2012 application.

When a recording is completed you can see the attached libraries in the code of `test.js` file:

```
g_load_libraries=["UIAutomation", "DynamicsAX"];
```

## Automatic Adjustment of Window Title Object Property

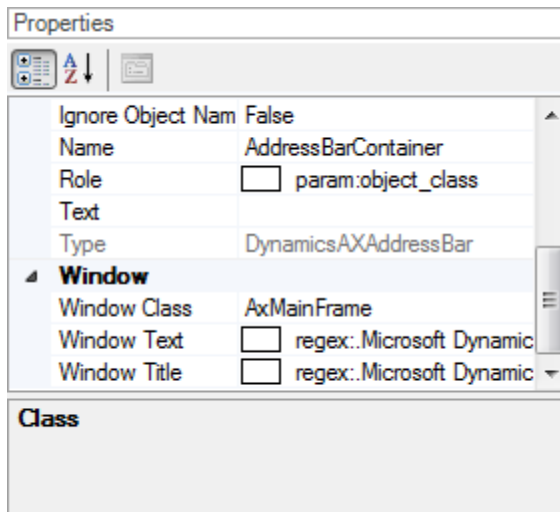
The main window title of Dynamics AX is dynamic by nature.



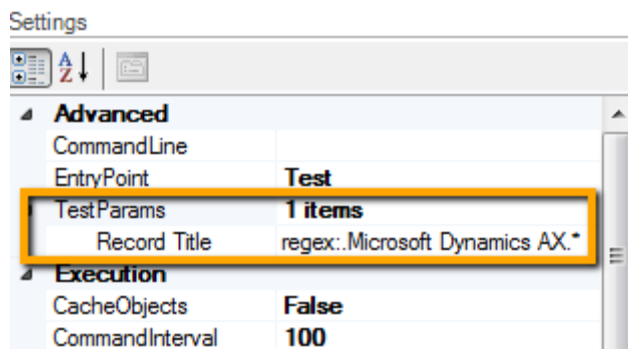
It contains not only the application name but also domain and AOS information and session Id. So it can be different at the time of test recording and test playback. To cope with this problem Rapise automatically replaces the actual window title with a regular expression in object properties. Here it is:

```
regex:.Microsoft Dynamics AX.*
```

So the recorded object properties are automatically adjusted as



Also Rapise automatically sets the `Record Title` in the test settings to the same regular expression so you do not need to choose the Dynamics AX main window during subsequent recording sessions.



## Titles of Child Windows

Child windows of Dynamics AX also may have dynamic titles. Rapise does not know all the available patterns, so for child windows you will need to write regular expressions yourself. But the good news is you need to do this for one object only in every such window. For further learned objects, Rapise will change the `window title` property automatically. In other words when Rapise learns a new object and its `window title` is matched by a regular expression of a previously learned object then the title property is automatically replaced by this regular expression.

## Object Location

The **object location** property has the form of

```
id1/id2/id3...
```

where `ids` refer to parent objects along the path to the top window object. Sometimes such `ids` also can be dynamic, e.g.:

```
Dimensions display (1 - k13) - Sales order: S30014323, CE15P, Sales
```

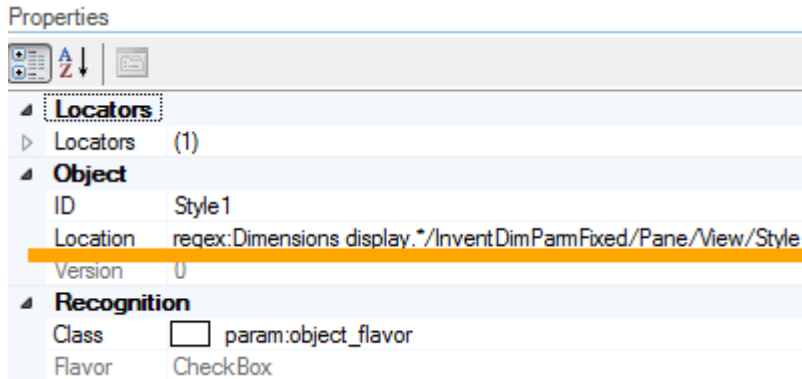


order: S30014323/InventDimParmFixed/Pane/View/Style

In this case change the dynamic parts with corresponding regular expressions. In the above example, the updated location looks like:

```
regex:Dimensions display.*/InventDimParmFixed/Pane/View/Style
```

Here is an example of the updated location in the property grid:



## How to Launch Dynamics AX Client

If in your test you want to check that the Dynamics AX application is installed and running use the code:

```
var fso = new ActiveXObject("Scripting.FileSystemObject");
var pfFolder = Global.GetSpecialFolderPath("ProgramFilesX86");
var dynamicsPath = pfFolder + "\\Microsoft Dynamics AX\\60\\Client\\Bin\\
\\Ax32.exe"
if(!fso.FileExists(dynamicsPath))
{
 Tester.Message("Dynamics AX Client is not installed on this computer");
 return;
}

var windows = g_util.FindWindows("regex:.Microsoft Dynamics AX.*",
"AxMainFrame");
if (windows.length == 0)
{
 Tester.Message("Dynamics AX Client is not started. Please start it
manually and re-run the test.");
 return;
}
```

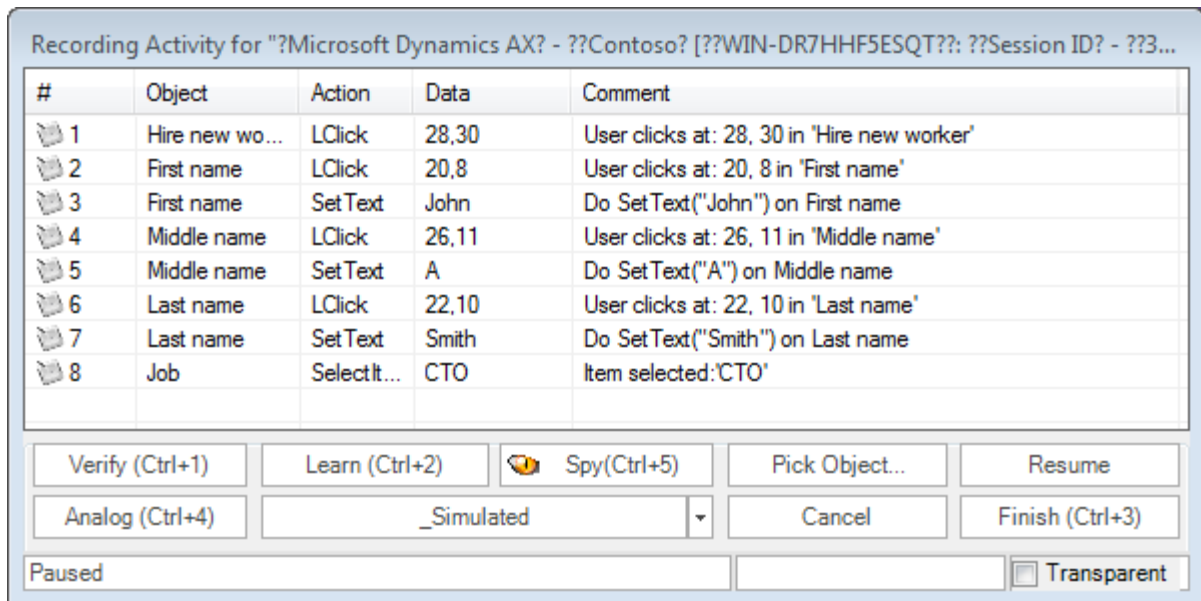
To start the application use

```
Global.DoLaunch(dynamicsPath);
```

## Recording Actions and Learning Objects



During recording while you interact with Dynamics AX controls Rapise captures actions and displays them in the recording dialog.



After this recording session, the corresponding UI area looks as follows:

When the recording is finished Rapise automatically generates the test code:

```
function Test()
{
 //User clicks at: 28, 30 in 'Hire new worker'
 SeS('Hire_new_worker').DoLClick(28, 30);
 //User clicks at: 20, 8 in 'First name'
 SeS('First_name').DoLClick(20, 8);
 //Do SetText("John") on First name
```

```
SeS('First_name').DoSetText("John");
//User clicks at: 26, 11 in 'Middle name'
SeS('Middle_name').DoLClick(26, 11);
//Do SetText("A") on Middle name
SeS('Middle_name').DoSetText("A");
//User clicks at: 22, 10 in 'Last name'
SeS('Last_name').DoLClick(22, 10);
//Do SetText("Smith") on Last name
SeS('Last_name').DoSetText("Smith");
//Item selected: 'CTO'
SeS('Job').DoSelectItem("CTO");
}
```

If Rapise does not capture any interaction or captures it wrongly then try to learn the object. In this case Rapise will add it to the object tree but will not capture the action and you'll add the code to the test manually later. To learn an object during recording session place mouse cursor over it and press **Ctrl-2** shortcut. It makes sense to pause recording before learning objects. This will prevent Rapise from intersecting mouse and keyboard and attempting to record interactions you do. *Pause/Resume* button is located at the right side of the Recording dialog.

## Tips for Interacting with Objects

### Text Box

To allow Rapise to capture the entered text interact with a text box in two steps: 1. Click into the edit box 2. Type text using keyboard

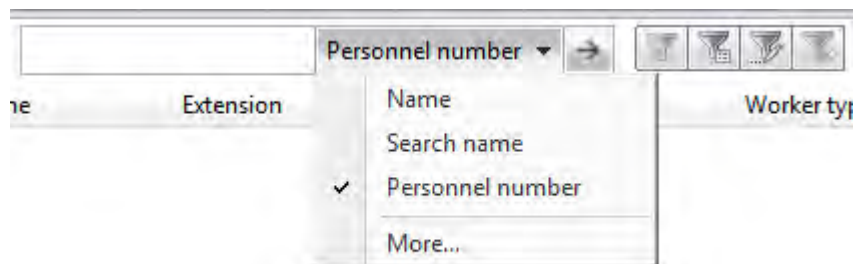
### ComboBox

Dynamics AX has several types of combo boxes.

- **Standard combo box** like *Job* in the *Hire New Worker* example above. Rapise treats such combo boxes as atomic objects. To set a value in such a combo use `DoSelectItem` action:

```
SeS('Job').DoSelectItem("CTO");
```

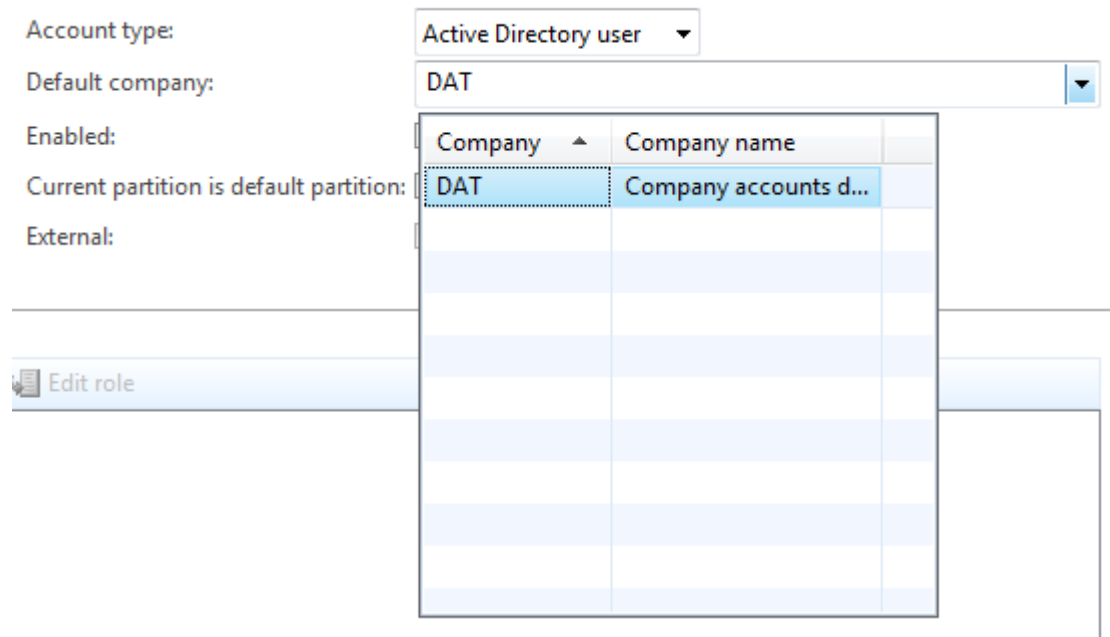
- **Table filter combo** is recognized as a pair of objects: `MenuItem` and `DropDown`. The `MenuItem` is used to open the `DropDown`.



Here is the code generated on recording:

```
//User clicks at: 115, 7 in 'Scope'
SeS('Scope').DoLClick(115, 7);
//DropDown item selected:'Personnel number'
SeS('DropDown').DoSelectItem("Personnel number");
```

- o **Lookup field** consists of an edit box, open button and a dropdown table. This is the case when Rapise can record edit box interaction only. To make a choice from the table learn open button and then learn the table.



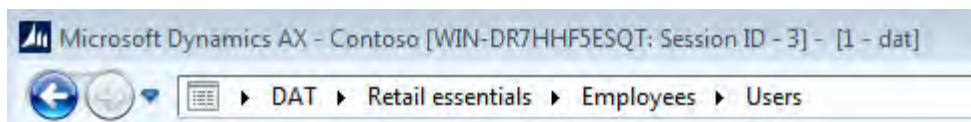
This is the code to lookup a value:

```
// Press open button
SeS('Default_company_lookup_button').DoClick();
// In the first column select a cell with value 'DAT'
SeS('Grid').DoClickCell("DAT", 0);

// Or alternatively select the first row in the first column
SeS('Grid').DoClickCell(0, 0);
```

## Address Bar

Learn the Dynamics AX address bar control using Ctrl+2 shortcut.



Then you can set the path using DoSetText action in your code:

```
SeS('AddressBarContainer').DoSetText('DAT/Retail essentials/Employees/
Users');
```

## Menu

Rapise supports both recording and learning of the main menu. When recording make sure you click on every component along the path. E.g. you want to navigate to File > View > Modules > General ledger. During recording click on File, View, Modules and General ledger. Generated code looks like:

```
//Menu item selected:'General ledger'
SeS('File').DoMenu("File;View;Modules;General ledger");
```

Rapise captures menu as top level object (File in the example above). Notice that menu path components are separated with ;. If you want for example to open menu File > Tools > Telephone list then write:

```
SeS('File').DoMenu("File;Tools;Telephone list");
```

## Table

To work with a table/grid in AX, learn it first and then write the code.

| Account type          | Alias         | Network domain | User ID  | User name | Company | Enabled                             |
|-----------------------|---------------|----------------|----------|-----------|---------|-------------------------------------|
| Active Directory user | Administrator | CONTOSO        | Admin    |           | DAT     | <input checked="" type="checkbox"/> |
| Active Directory user |               |                | Guest    |           | DAT     | <input type="checkbox"/>            |
| Active Directory user | squirrel      | contoso.com    | squirrel | squirrel  | DAT     | <input checked="" type="checkbox"/> |

```
// To click on the cell at first column and first row
```

```
// First column contains checkboxes. First row is 'Administrator' record.
```

```
SeS('Grid').DoClickCell(0, 0);
```

```
// To click on 'contoso.com' in 'Network domain' column
```

```
SeS('Grid').DoClickCell("contoso.com", "Network domain");
```

```
// Get column name by index (returns 'Network domain')
```

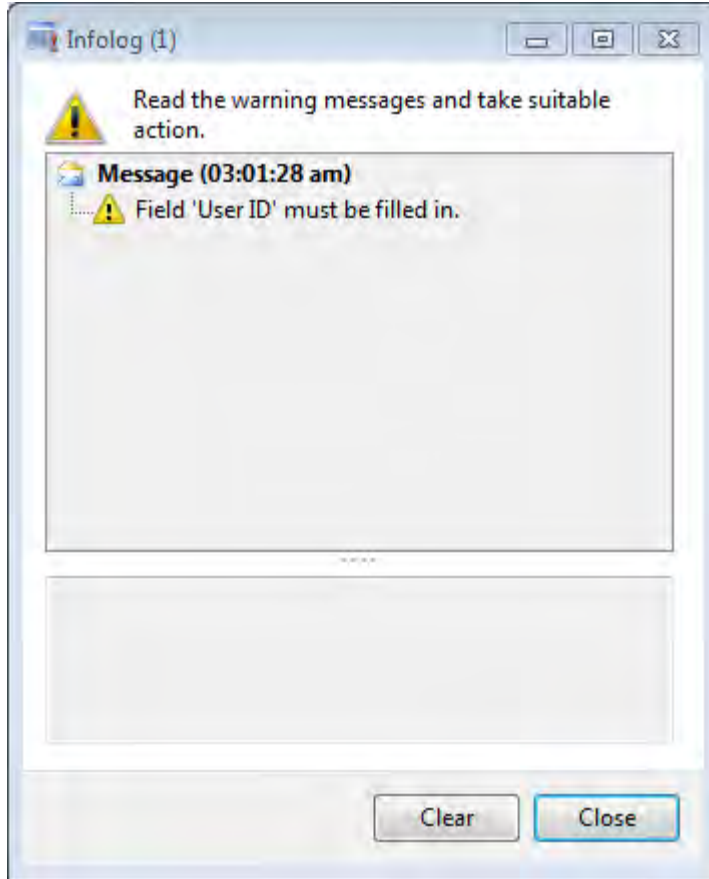
```
var columnName = SeS('Grid').GetColumnName(3);
```

```
// Click on column header (clicks on the checkbox to select all rows in the
table)
```

```
SeS('Grid').DoClickColumn(0);
```

## Infolog

In some case Dynamics AX can report an error using its **Infolog** window:



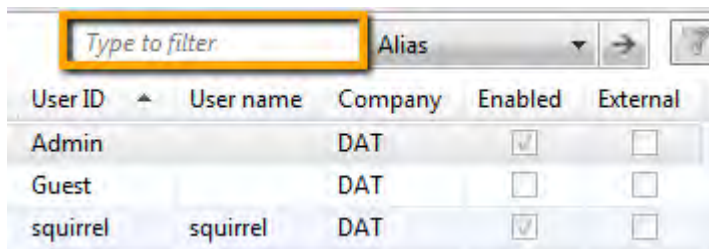
To obtain text of the messages in this window learn the Tree object - place cursor over the error text and press `Ctrl-2` shortcut. In the case of infolog tree - all tree nodes are immediate children of the root. So in the example shown on the image above the tree contains two child nodes of the tree node.

```
// Get the number of messages in the infolog, 0 - means the root node.
// For the presented example it returns 2.
var messageCount = SeS('Tree').GetChildrenCount(0);

// Get second message text, returns "Field 'User ID' must be filled in."
var messageText = SeS('Tree').GetChildAt(0, 1);
```

## Type to filter Field

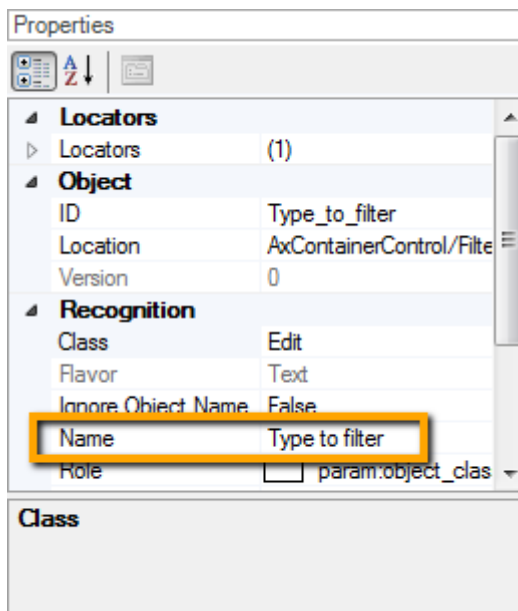
Almost every standard grid in Dynamics AX has a text field for filtering grid data:



The screenshot shows a table with columns: User ID, User name, Company, Enabled, and External. A search field at the top left contains the text "Type to filter" and is highlighted with an orange box. To the right of the search field is a dropdown menu labeled "Alias" and a search icon.

| User ID  | User name | Company | Enabled                             | External                 |
|----------|-----------|---------|-------------------------------------|--------------------------|
| Admin    |           | DAT     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Guest    |           | DAT     | <input type="checkbox"/>            | <input type="checkbox"/> |
| squirrel | squirrel  | DAT     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

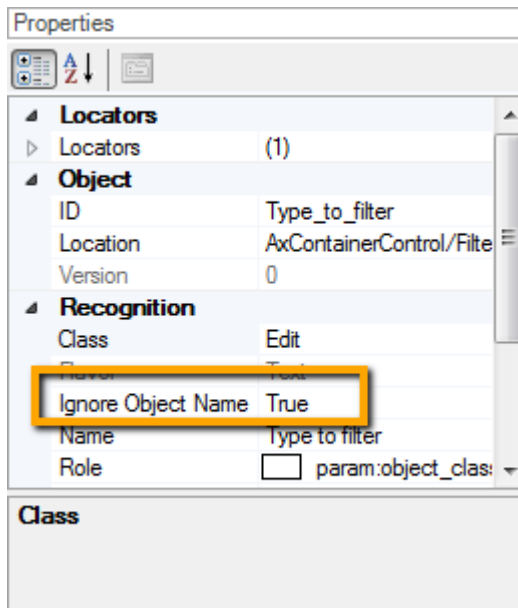
When you learn this field it has a name "Type to filter".



The screenshot shows the Properties window for an object. The "Recognition" section is expanded, and the "Name" property is highlighted with an orange box. The "Name" property is set to "Type to filter".

| Properties         |                                            |
|--------------------|--------------------------------------------|
| Locators (1)       |                                            |
| Object             |                                            |
| ID                 | Type_to_filter                             |
| Location           | AxContainerControl/Filter                  |
| Version            | 0                                          |
| Recognition        |                                            |
| Class              | Edit                                       |
| Flavor             | Text                                       |
| Ignore Object Name | False                                      |
| Name               | Type to filter                             |
| Role               | <input type="checkbox"/> param.object_clas |

However when this field gets focus it's name changes to Text box. To enable Rapise to find this field during playback set the Ignore Object Name property of the object to True.



## Dynamics AX Useful Tips & Tricks

### Maximize/Minimize/Restore Window

You can maximize a window using any object inside it as a starting point.

```
SeS('AddressBarContainer').getDesktopWindow().Maximized = true;
```

To minimize use

```
SeS('AddressBarContainer').getDesktopWindow().Maximized = false;
// or
SeS('AddressBarContainer').getDesktopWindow().Iconic = true;
```

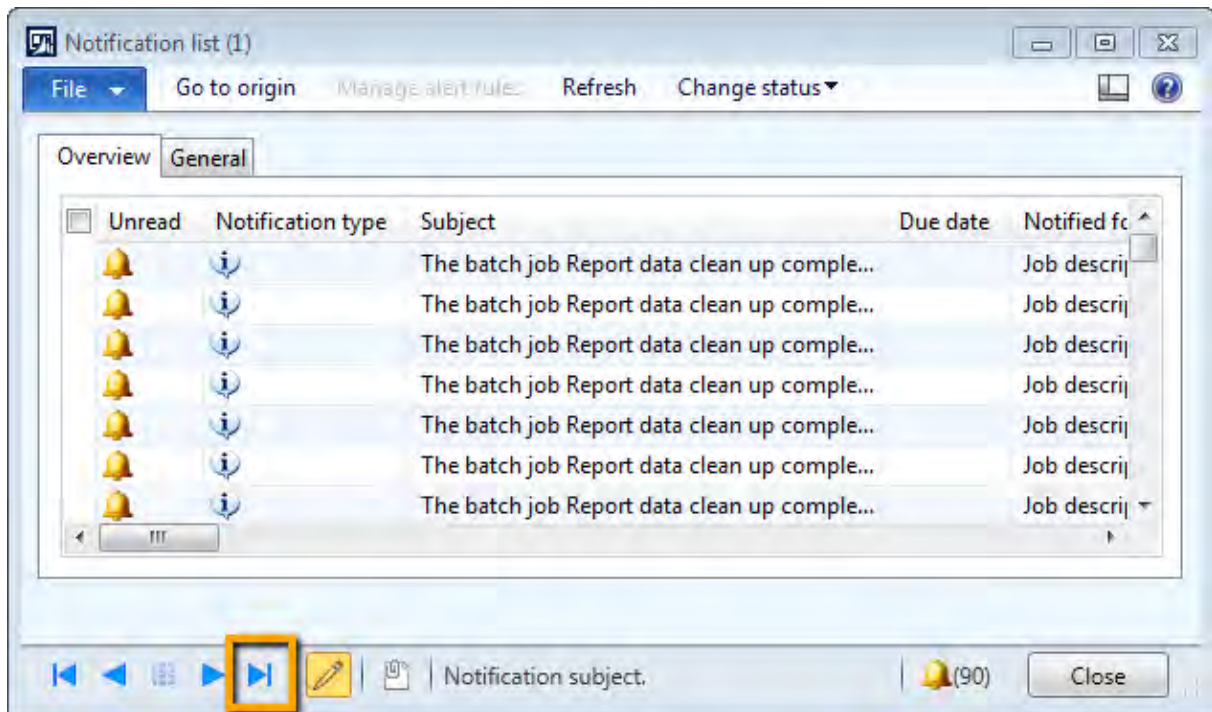
For restoring (to go back to a smaller window from maximized or minimized state) use

```
SeS('AddressBarContainer').getDesktopWindow().Iconic = false;
```

### Scroll to the Bottom of a Grid

If your grid looks like this and you want to scroll to the last record of it learn the Last Record button and click on it during test playback:





```
SeS('Last_Record').DoAction();
// or
SeS('Last_Record').DoClick();
```

## Scroll and Click on a Cell in a Grid

If you know the value of a cell in a grid then Rapise will automatically scroll the grid before clicking:

| Workers |             |                  |           |           |        |             | Type to filter | Name |  |  |  |  |
|---------|-------------|------------------|-----------|-----------|--------|-------------|----------------|------|--|--|--|--|
| Name    | Search name | Personnel number | Telephone | Extension | E-mail | Worker type |                |      |  |  |  |  |
| W1 W1   | W1 W1       | 00000009         |           |           |        | Employee    |                |      |  |  |  |  |
| W10 W10 | W10 W10     | 00000027         |           |           |        | Employee    |                |      |  |  |  |  |
| W11 W11 | W11 W11     | 00000007         |           |           |        | Employee    |                |      |  |  |  |  |
| W2 W2   | W2 W2       | 00000011         |           |           |        | Employee    |                |      |  |  |  |  |
| W3 W3   | W3 W3       | 00000013         |           |           |        | Employee    |                |      |  |  |  |  |
| W4 W4   | W4 W4       | 00000015         |           |           |        | Employee    |                |      |  |  |  |  |
| W5 W5   | W5 W5       | 00000017         |           |           |        | Employee    |                |      |  |  |  |  |
| W6 W6   | W6 W6       | 00000019         |           |           |        | Employee    |                |      |  |  |  |  |

Let's assume that you want to click on a cell with value W9 W9 in a column Search name. This cell is not visible on the picture and requires scrolling to show up. The following code performs the click:

```
SeS('Grid').DoClickCell("W9 W9", "Search name");
```

If you do not know the value of a cell you can get it this way:

```
var cellValue = SeS('Grid').GetCell(9, "Search name");
```

Where 9 is row number.

## 2.6.4.2 Dynamics CRM

### Overview

**Microsoft Dynamics CRM** is a customer relationship management application from Microsoft, that provides sales, service, and marketing capabilities. Microsoft sells Microsoft Dynamics CRM separately from the ERP products. CRM is available either as on-premises software or as a software-as-a-service offering called "Microsoft Dynamics CRM Online".

Rapise can be used to test installations of Dynamics CRM both on-premise and online.

### Dynamics CRM On-Premise

The screenshot displays the Microsoft Dynamics CRM Overview dashboard. The browser window title is "Dashboards: Microsoft Dynamics CRM Overview - Microsoft Dynamics CRM - Windows Internet Explorer". The address bar shows "http://localhost:3100/demo/main.aspx". The dashboard includes a navigation pane on the left with sections like "My Work", "Customers", and "Workplace". The main content area features a "Welcome to Microsoft Dynamics CRM" message, a "1. Explore" section with links like "About this Get Started Pane", a "2. Extend" section with "About Customizing", and a "3. Use" section with "Manage Sample Data". Below these are three charts: "Sales Pipeline" (a funnel), "Leads by Source Campaign" (a bar chart showing 6 leads for "(blank)"), and a "Cases By Priority (Per Day)" chart with a message "There is no data to create the Cases By Priority (Per Day) chart." The status bar at the bottom indicates "Local intranet | Protected Mode: Off" and "100%".

### Dynamics CRM Online

The screenshot displays the Microsoft Dynamics CRM interface for an account named "Contoso Pharmaceuticals (sample)". At the top, the navigation bar includes "Microsoft Dynamics CRM", "SALES", "Accounts", and "Contoso Pharmaceu...". The user "John Voorhis" is logged in. The account summary shows an annual revenue of \$60,000.00, 1,500 employees, and John Voorhis as the owner. The "Summary" section is divided into "ACCOUNT INFORMATION", "ADDRESS", "POSTS", "ACTIVITIES", "NOTES", "Primary Contact", "CONTACTS", and "RECENT OPPORTUNITIES". The "ACCOUNT INFORMATION" section lists the account name, phone (555-0156), website (http://www.contoso.com/), and address (9906 Oak Grove Road, Redmond, WA 80803, U.S.). A map shows the location. The "POSTS" section contains several entries, including "Shipping time information (sample)" and "Maintenance time information required (sample)". The "Primary Contact" is Robert Lyon (sample) with email someone\_g@example.com and business phone 555-0106. The "CONTACTS" section lists Robert Lyon (sample) with email someone\_g@example.com. The "RECENT OPPORTUNITIES" section shows an opportunity titled "They sell many of the same items that we do - need to follow up (sa...)" with status "Open" and actual date "8/9/2013".

## Recording a Dynamics CRM Test

Both versions of Dynamics CRM (server and online) are completely web-based and use a web browser to access the user interface. Therefore when recording a test using Rapise, you use the same web browser libraries that you use to record other [web tests](#):

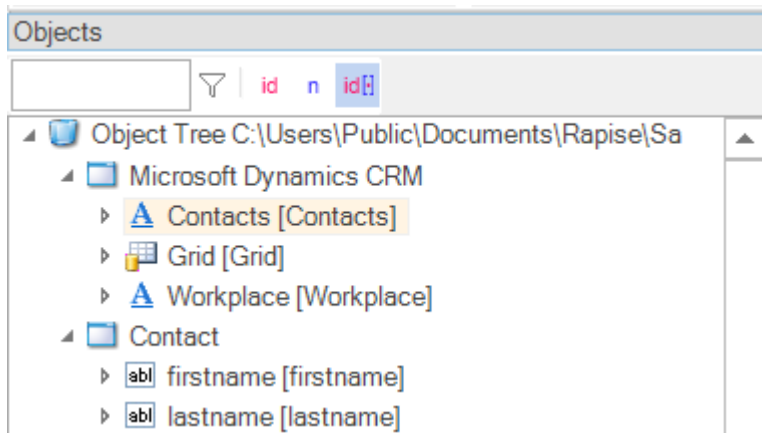
- Most of the Dynamics CRM user interface will be tested using the **standard browser library** for your web browser of choice (e.g. Internet Explorer HTML, Firefox HTML, and Chrome HTML).
- In addition, there are special controls inside CRM that Rapise has specialized support for. For that reason you'll also see the `DomDynamicsCrm` library added to your test as well as the browser one. This `DomDynamicsCrm` library adds additional rules that identify certain CRM objects to make testing easier.

When you record your first test, you'll see the following library selection code generated automatically by Rapise:

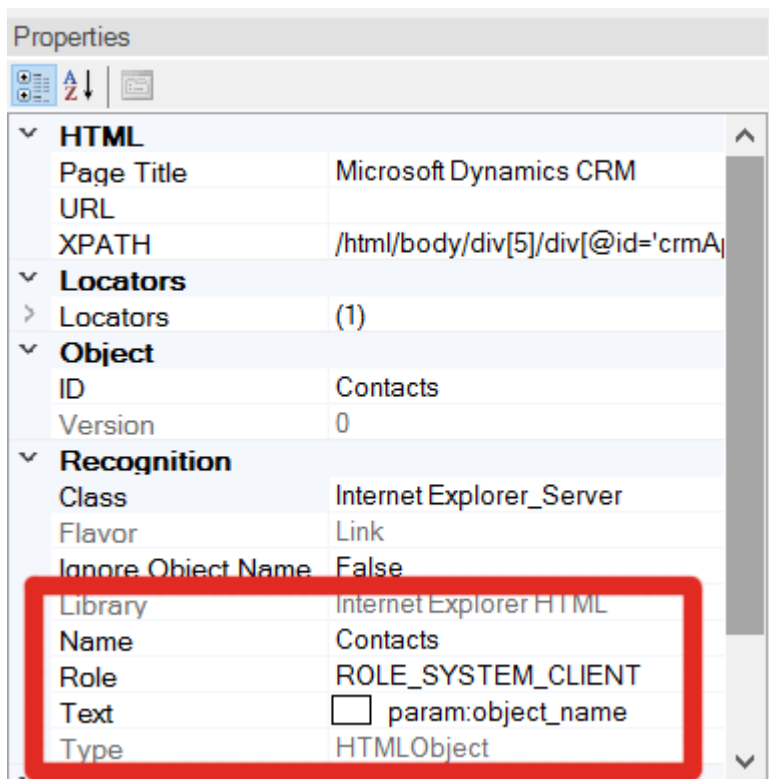
```
g_load_libraries=["%g_browserLibrary:Internet Explorer HTML%",
 "DomDynamicsCrm"];
```

## Recording and Learning Objects

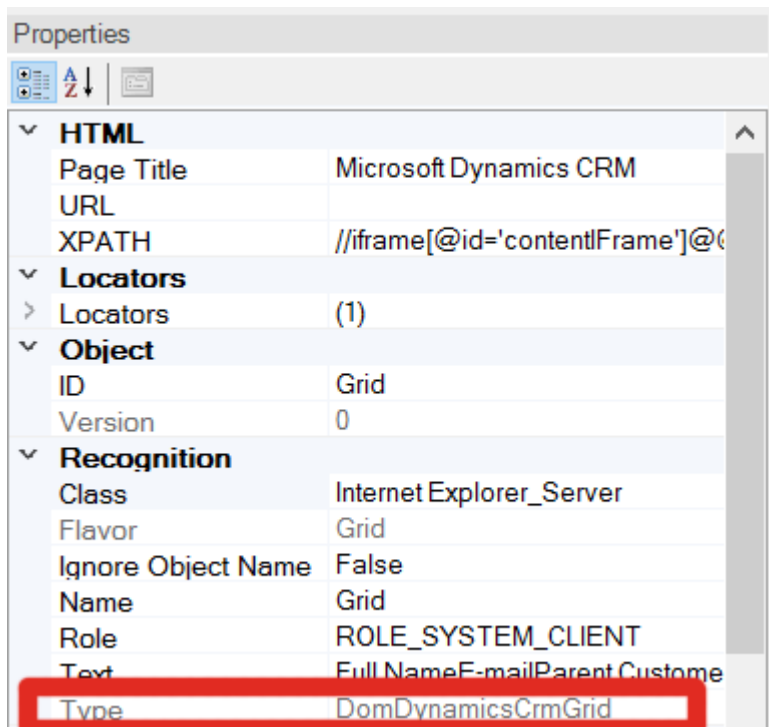
During recording while you interact with Dynamics CRM, Rapise captures actions and displays them in the recording dialog:



Some of these objects will be standard HTML DOM objects (e.g. hyperlink):



and others will be specific to Dynamics CRM:

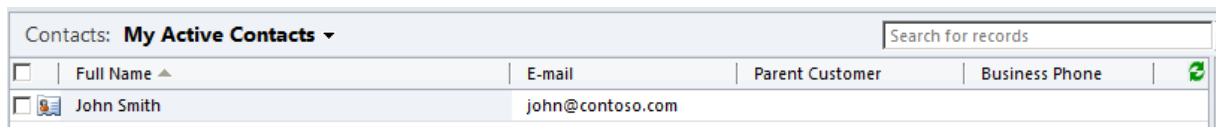


## Tips for Interacting with Objects

The following unique objects are available within Dynamics CRM that Rapise has special support for:

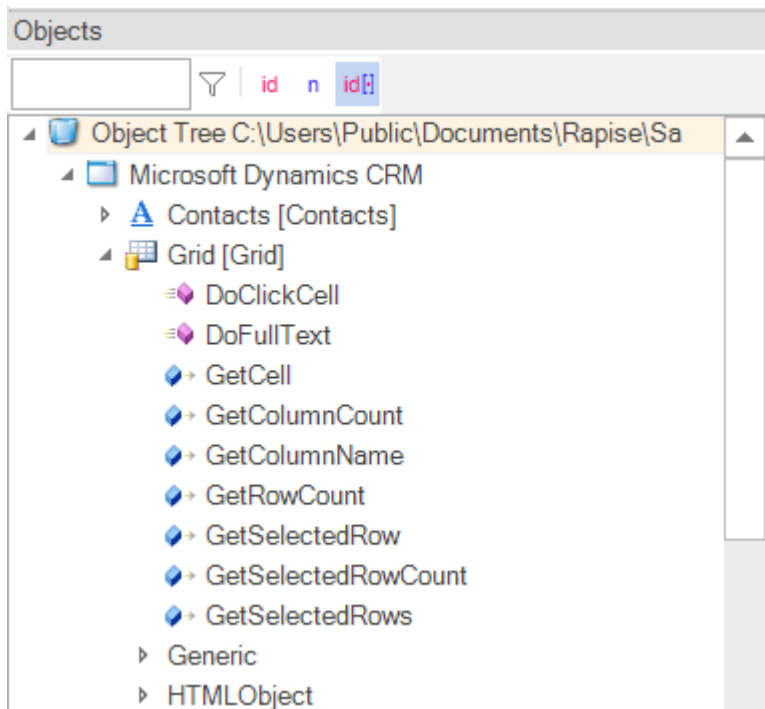
### **Dynamics CRM Grid**

One of the the most important UI elements inside Dynamics CRM is the sortable, filterable grid:



The Dynamics CRM Grid is used in lots of different screens inside Dynamics CRM (e.g. Contacts, Accounts, etc.) and it is very common to need to interact with it in test scripts.

When you record operations on such a grid or simply learn the entire grid using **CTRL+2** you will learn the DynamicsCrmGrid object:



In addition to the standard HTML object methods and properties, you have the following special functions that you can perform on the grid:

- **DoClickCell()** - Clicks the specified cell when you specify the x-index, y-index, the type of click (left-click, right-click, etc.)
- **DoFullText()** - Returns the textual representation of the entire table
- **GetCell** - Gets the text of the specified cell.
- **GetColumnCount** - Gets the number of columns in grid
- **GetColumnName** - Gets the caption of a column.
- **GetRowCount** - Gets the number of rows in grid
- **GetSelectedRow** - Gets the index of the selected row.
- **GetSelectedRowCount** - Gets the number of selected rows.
- **GetSelectedRows** - Gets the selected rows.

### 2.6.4.3 Dynamics 365

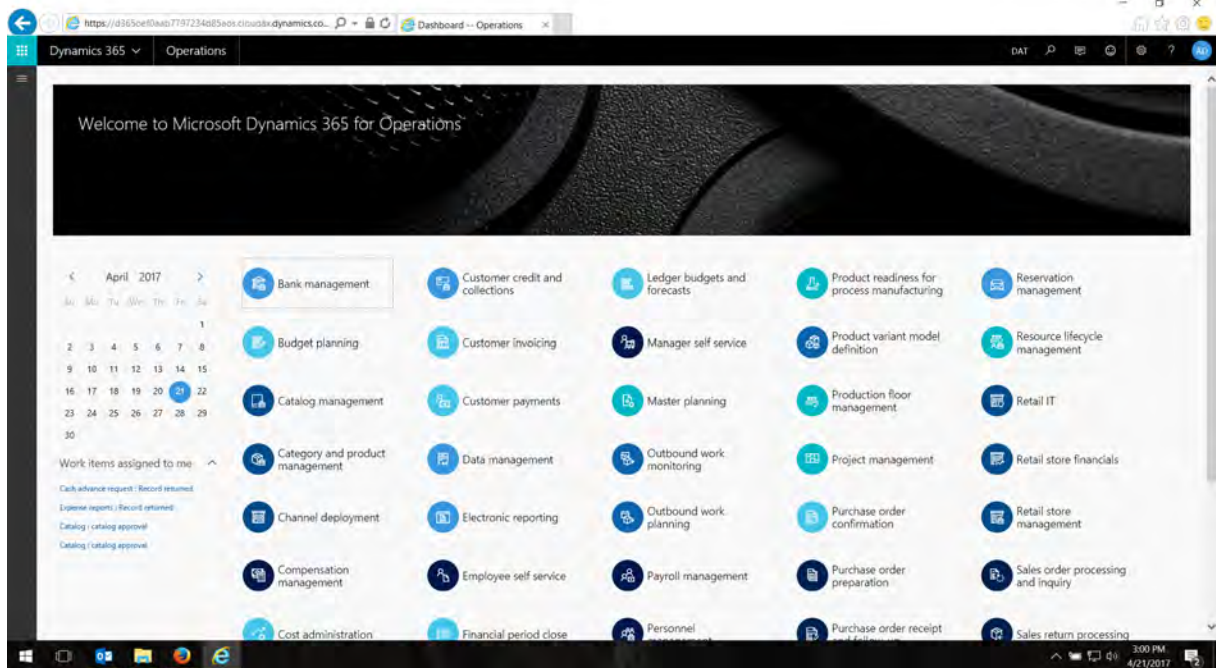
#### Overview

Microsoft has created a new cloud-based SaaS-only combined ERP/CRM solution called **Microsoft Dynamics 365**. This provides a new web-based version of [Dynamics AX](#) (renamed Dynamics 365 for Operations), combined with a new web based version of Dynamics NAV (called Dynamics 365 for Financials) and an updated Microsoft Dynamics CRM Online.

This new integrated, ERP/CRM is provided solely through Microsoft Azure and is completely web-based. There are two main modules that Rapise has specialized support for:

1. **Dynamics 365 for Operations** – this is the subject of this section, please read on if you are testing these modules.
2. **Dynamics 365 for Sales** – this is a rebrand of [Dynamics CRM](#) and is covered in section 2 above.





## Recording a Dynamics 365 for Operations Test

Dynamics 365 for Operations is completely web-based (unlike Dynamics AX) and you use a web browser to access the user interface. Therefore when recording a test using Rapise, you use the same web browser libraries that you use to record other web tests:

- o Most of the Dynamics 365 user interface will be tested using the **standard browser library** for your web browser of choice (e.g. Internet Explorer HTML, Firefox HTML, and Chrome HTML).
- o In addition, there are special controls inside Dynamics 365 that Rapise has specialized support for. For that reason you'll also see the `DomDynamicsAx` library added to your test as well as the browser one. This **DomDynamicsAx** library adds additional rules that identify certain Dynamics 365 objects to make testing easier.

When you record your first test, you'll see the following library selection code generated automatically by Rapise:

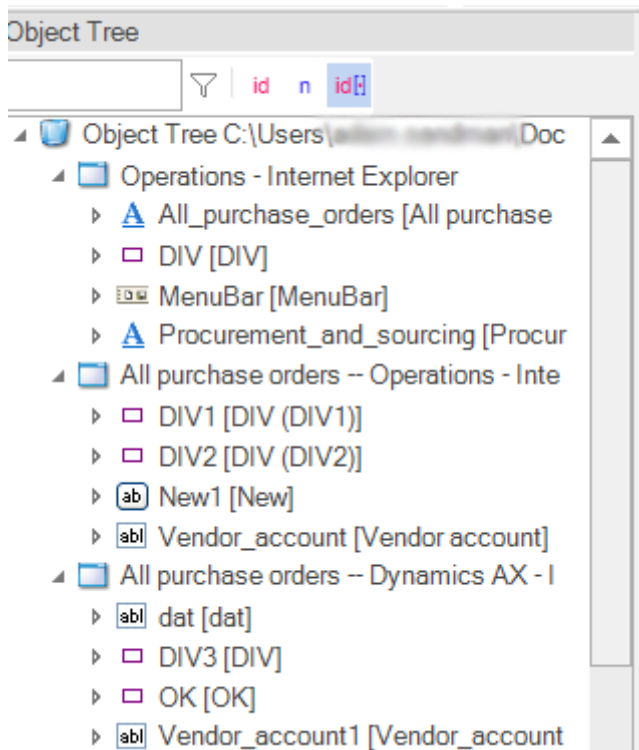
```
g_load_libraries=["%g_browserLibrary:Internet Explorer HTML%",
"DomDynamicsAx"] ;
```

If you don't see the **DomDynamicsAx** library listed in your test, then you will need to manually add it.

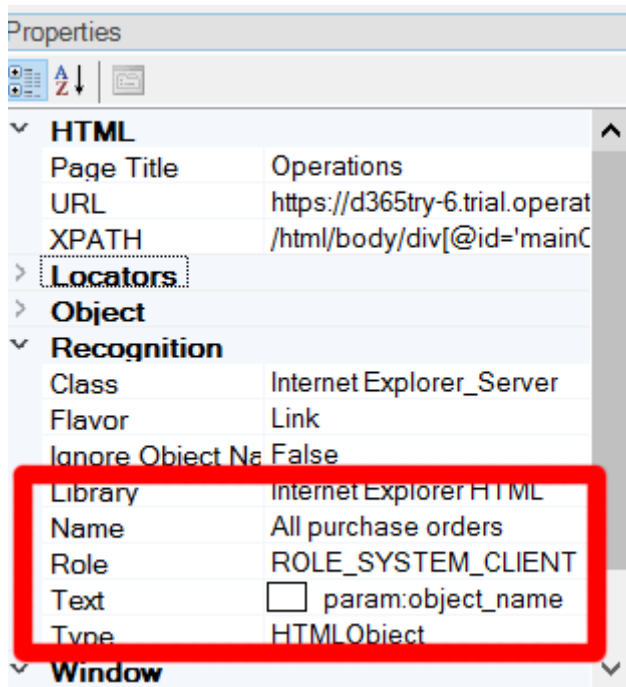
## Recording and Learning Objects

During recording while you interact with Dynamics 365, Rapise captures actions and displays them in the recording dialog:

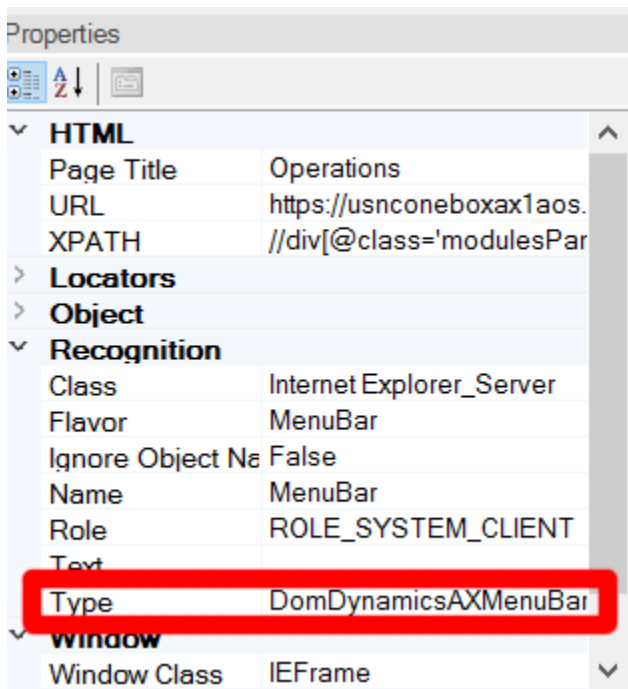




Some of these objects will be standard HTML DOM objects (e.g. hyperlink):



and others will be specific to Dynamics 365:



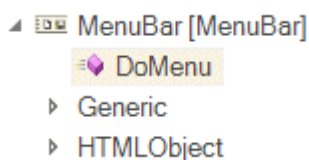
## Tips for Interacting with Objects

One of the most important UI elements inside Dynamics 365 is the multi-level menu bar:



The Dynamics 365 menu bar is used to quickly and easily navigate between different parts of the application and it is very common to need to interact with it in test scripts.

When you click on entries in the menu bar or simply learn the entire menu using **CTRL+2** you will learn the **DomDynamicsAXMenuBar** object:



In addition to the standard HTML object methods and properties, you have the following special functions that you can perform on the grid:

- o **DoMenu(path, separator)** – selects the menu entries in specified path, using the specified separator (or semicolon if none specified).

Here is a sample test that was recorded using Dynamics 365 for Operations and Rapise:

```
function Test()
{
 //Get the sample data from the database
 var conn = 'Provider=Microsoft.ACE.OLEDB.12.0;Data
Source=SampleData.accdb';
 var sql = 'SELECT TEST_VALUE FROM TEST_DATA';
 Database.DoAttach(conn, sql);
 do
 {
 var testValue = Database.GetValue('TEST_VALUE');
 if (testValue)
 {
 SeS('MenuBar').DoMenu("Modules;Procurement and
sourcing;Purchase orders;All purchase orders");
 StartNewPurchaseOrder();
 FillPurchaseOrderForm(testValue);
 }
 SeS('MenuBar').DoMenu(' ', ' ');
 }
 while (Database.DoSequential())
}
}
```

```
g_load_libraries=["%g_browserLibrary:Internet Explorer HTML%",
"DomDynamicsAX"];
```

```
/** @scenario StartNewPurchaseOrder*/
```

```
function StartNewPurchaseOrder()
{
 Global.DoWaitFor('New1');
 SeS('New1').DoClick();
}
}
```

```
/** @scenario FillPurchaseOrderForm*/
```

```
function FillPurchaseOrderForm(data)
{
 Global.DoWaitFor('DIV1');
 SeS('DIV1').DoClick();
 SeS('DIV2').DoClick();

 //Click on DIV
 SeS('DIV3').DoClick();
 //Learned Vendor account
 SeS('Vendor_account1').DoClick();
 //Set Text datss in datss
 SeS('dat').DoSetText(data);
 SeS('OK').DoClick();
}
```

```
}
```

## 2.6.5 Windows Applications

### Overview

Rapise provides comprehensive support for testing Microsoft Windows GUI applications, including applications written using **Win32**, **MFC**, **ATL**, Windows Forms, Visual Basic 6, Microsoft **.NET**, **ActiveX**, and Windows Presentation Framework (**WPF**).

Specifically, Rapise has support for the following technologies used to build Windows applications:

- **Win32 Applications**
  - Microsoft Foundation Classes (MFC)
  - ActiveX Template Library (ATL)
  - Visual Basic 6
  - ActiveX / COM
- **Microsoft .NET Applications**
  - WinForms
  - .NET 1.1,
  - .NET 2.0
  - .NET 4.x
- **Windows Presentation Framework (WPF)**
  - Silverlight
  - XAML
- **Modern / Metro Apps**
- **Third Party Component Libraries**
  - Infragistics WinForm Controls
  - Telerik RadControls
  - DevExpress Controls
  - ComponentOne ActiveX Controls
  - SyncFusion Windows Form Controls
  - FarPoint Spreadsheet Control

### Choosing the Right Windows Library

Since applications are often built using a mixture of different Windows technologies and component frameworks, we recommend that you use the following approach when testing Windows desktop applications with Rapise:

1. **First try recording using the "Auto" option**, this will let Rapise inspect the application and use the most appropriate libraries. Usually Rapise finds the correct libraries using its auto-detection, but sometimes an application is unusual and the auto-detection fails. If auto-detection is not reliable for your application, move on to step 2.
2. Select the **"UIAutomation Object" Spy** and try to inspect the application. If the Spy shows the real content of the application (i.e. you see object names and IDs) then it is worth trying to record a test with the corresponding library called **"UIAutomation"** - [using the record application dialog box](#). This library is best for modern Windows applications.
3. If the recording is not picked up or does not play back correctly then the next step is to try

recording with the "**Generic**" library. This is designed for older Windows Win32 applications. There is also a Spy tool for this library called the "**Accessible Object**" Spy.

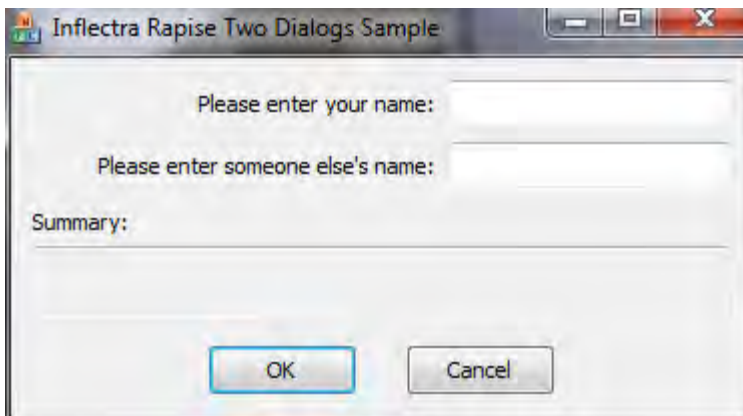
4. If you have **third-party components** from Infragistics, Telerik, DevExpress, ComponentOne, SyncFusion or FarPoint, you may also need to select those libraries in addition to "Generic".
5. If the recording is not sufficient then the last step is to try and record with the "**Advanced Accessibility**" library. This library contains definitions of accessible controls at a very basic level. It is not very sophisticated, but it is often sufficient for many cases and works across a wide range of applications.
6. If neither of options below satisfy then it may be worth to try low level recording (<https://www.inflectra.com/Support/KnowledgeBase/KB114.aspx>).

## Sample Applications

In the [Samples index](#) of this manual we provide a full list of all the samples included with Rapise, however for Windows applications there are a couple of key ones that are worth exploring:

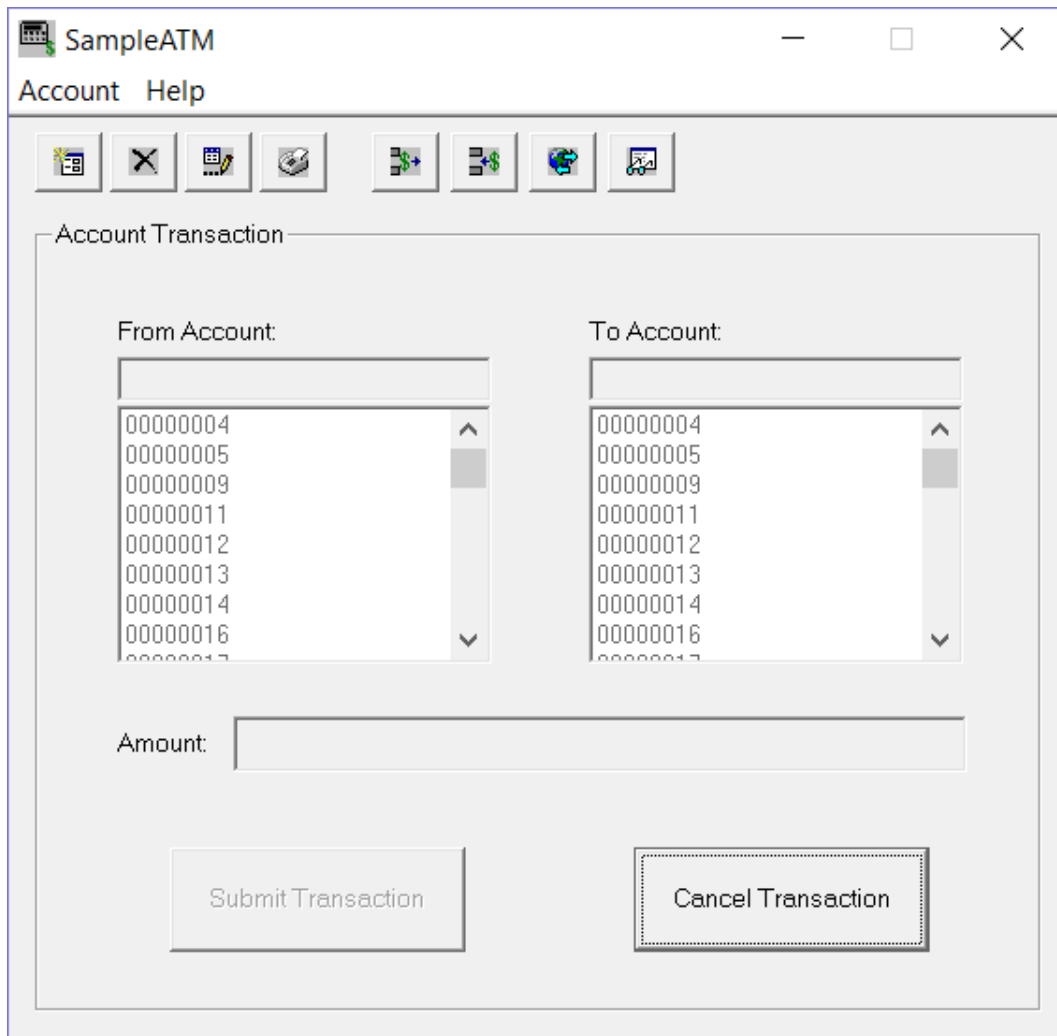
### a) Two Dialogs

This is a simple Win32 MFC application that uses the **Generic** library and lets you try some basic testing scenarios.



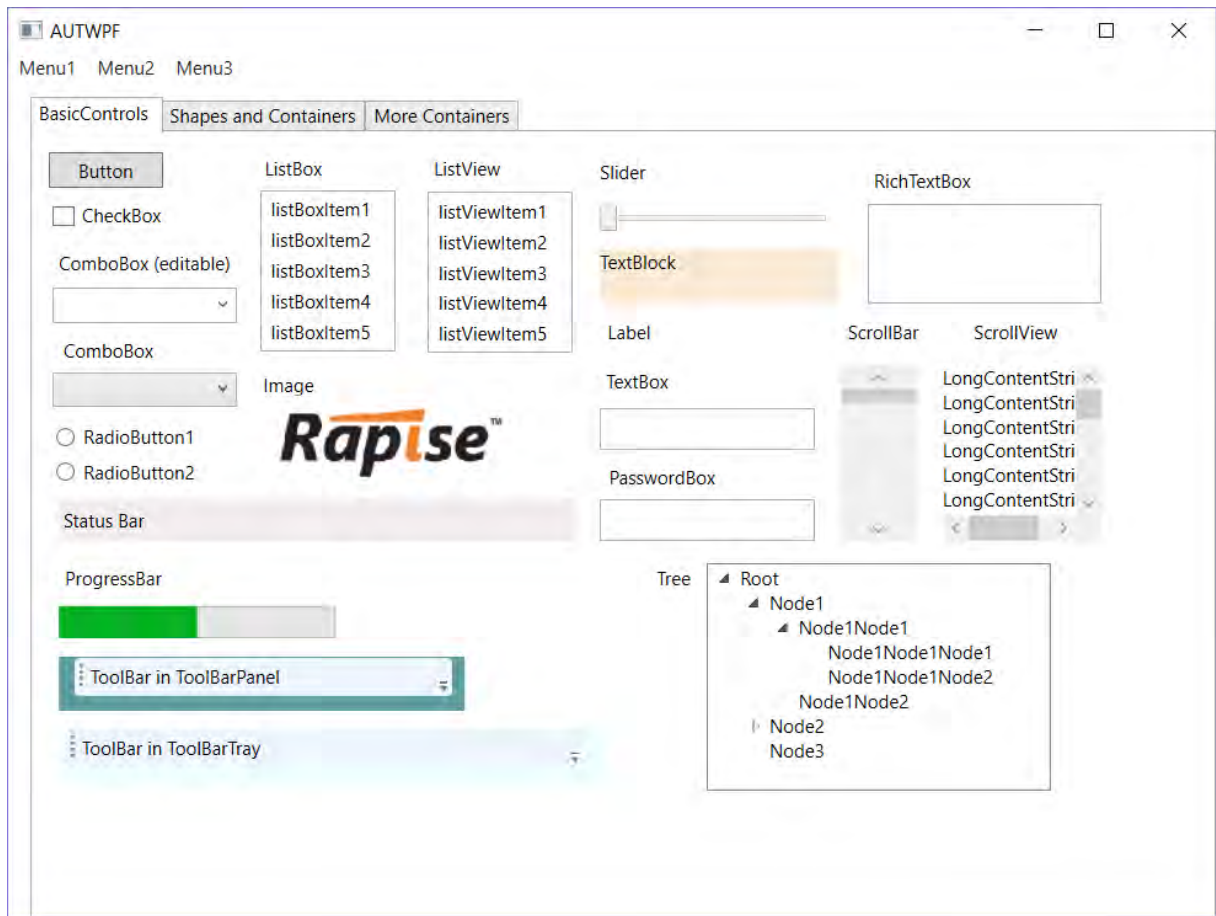
### b) Sample ATM

This is a more robust Win32 MFC application that is based on a banking ATM. You should use the **Generic** library with this application:



### **c) WPF Sample Application**

This application is a good test of the **UIAutomation** library and is a simple test application with all of the different types of control available for testing:



## 2.6.6 Qt Framework

### Purpose

Rapise includes support for testing applications written using the Qt Framework written using QWidget controls.

### Usage

Rapise fully supports the test automation of Qt based applications. To ensure that Rapise can access the UI elements and properties in the Qt application, MSAA (Microsoft Active Accessibility) support for your Qt application must be enabled. This provides additional information on Qt UI elements to automation software like Rapise and can be accomplished by shipping and loading the "Accessible Plug-in" included in the Qt SDK (Software Development Kit) with the Qt application under test (see below).

#### Loading Accessible Plug-in for your Qt application:

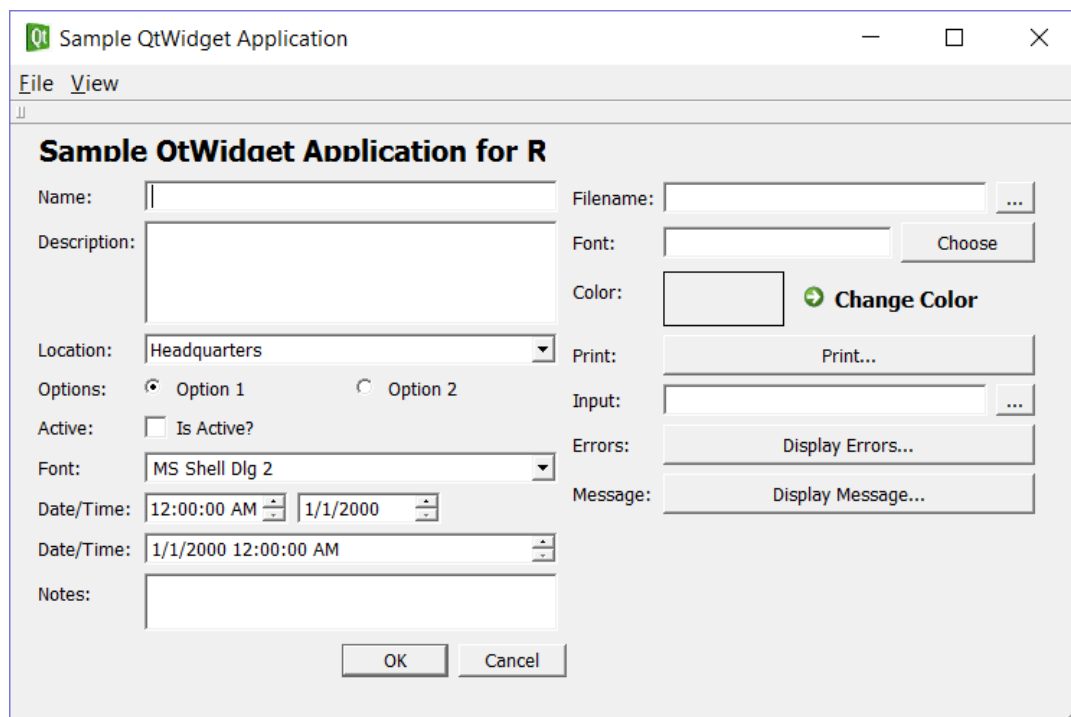


1. Copy the "**accessible**" directory (and all its contents) from the **Qt SDK** (used to build the application under test) installation folder to the folder of the automated application (e.g. "**Program Files/Your-Application/plugins**"). If you do not have access to the Qt SDK which the Qt application is developed with, please contact the developer of the application and request the "accessible" directory from him.
2. Create a file called "**qt.conf**" (or append if the file already exists) in the root directory of the automated application (e.g. "**Program Files/Your-Application**") with following content (copy and paste the following two lines):

```
[Paths]
Plugins = plugins
```

## Sample

In the Samples section of the Rapise Start Page you should see our sample Qt Framework AUT:



You can use this application with Rapise to try out the Qt Framework testing capabilities:

- You should record tests using the special **Qt Framework** library
- You should use the [Accessible Spy](#) for inspecting objects.

## 2.6.7 Java AWT/Swing

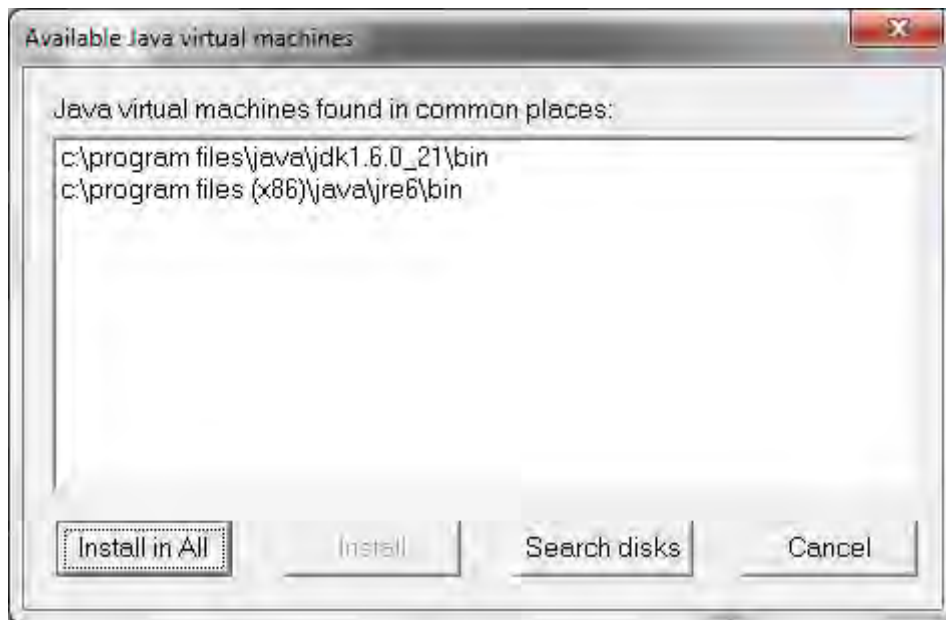
### Purpose

Rapise supports the testing of Java applications using either the Abstract Window Toolkit (AWT) or Swing graphic user interface toolkits. For maximum flexibility, Rapise can connect to your choice of JVM.

### Java Bridge Installation

In order to use a particular Java Virtual Machine (JVM) with Rapise you need to install Java Bridge into it. Installation process consists of several simple steps:

1. Click the Options icon in the Tools group of the main Rapise ribbon. That will bring up the [Options dialog](#).
2. Click on the Tools > Java Settings button. This will launch the Java Bridge installation dialog:



3. Choose target JVM in the list of available Java machines and press Install button
4. Verify that the installation is successful

To verify that the bridge installed correctly, check that the following files have been installed inside your Java VM (typically found at `C:\Program Files (x86)\Java\jre1.x.x_xxx`):

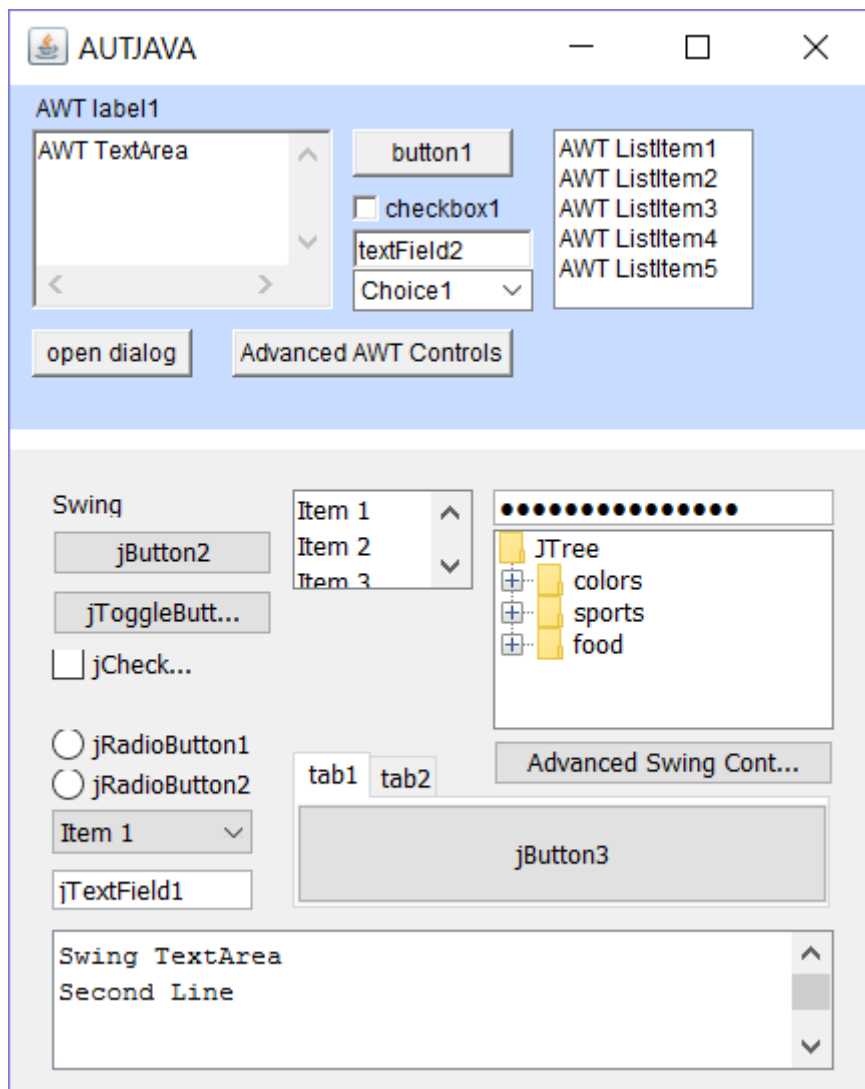
- o lib\accessibility.properties
- o lib\ext\jaccess.jar
- o lib\ext\smartestudio-bridge.jar

If you don't see **all three of these files** then it means the bridge was not installed correctly.

## Troubleshooting the Configuration

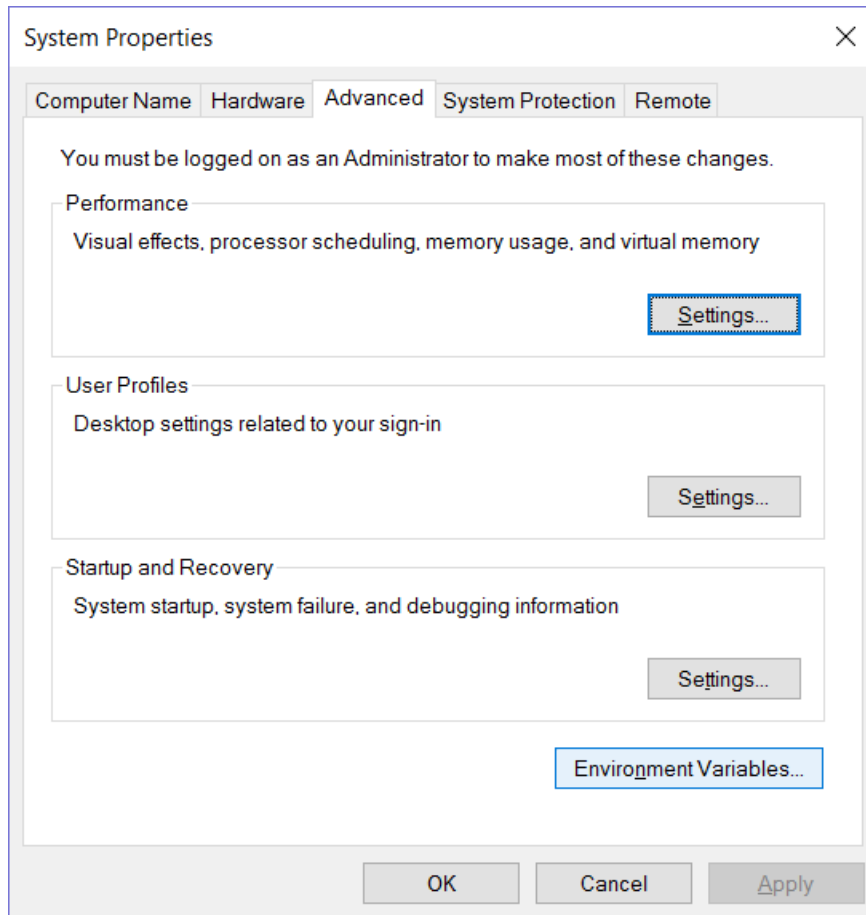
To help you make sure that your environment is correctly setup and also to help you try out Rapise, we have a sample application called AUTJava (AUT = Application Under Test) that can be found in the folder: `C:\Users\Public\Documents\Rapise\Samples\Java\AUTJAVA`

To run the application, right-click on the `x86run.cmd` file and choose **Run as Administrator**.

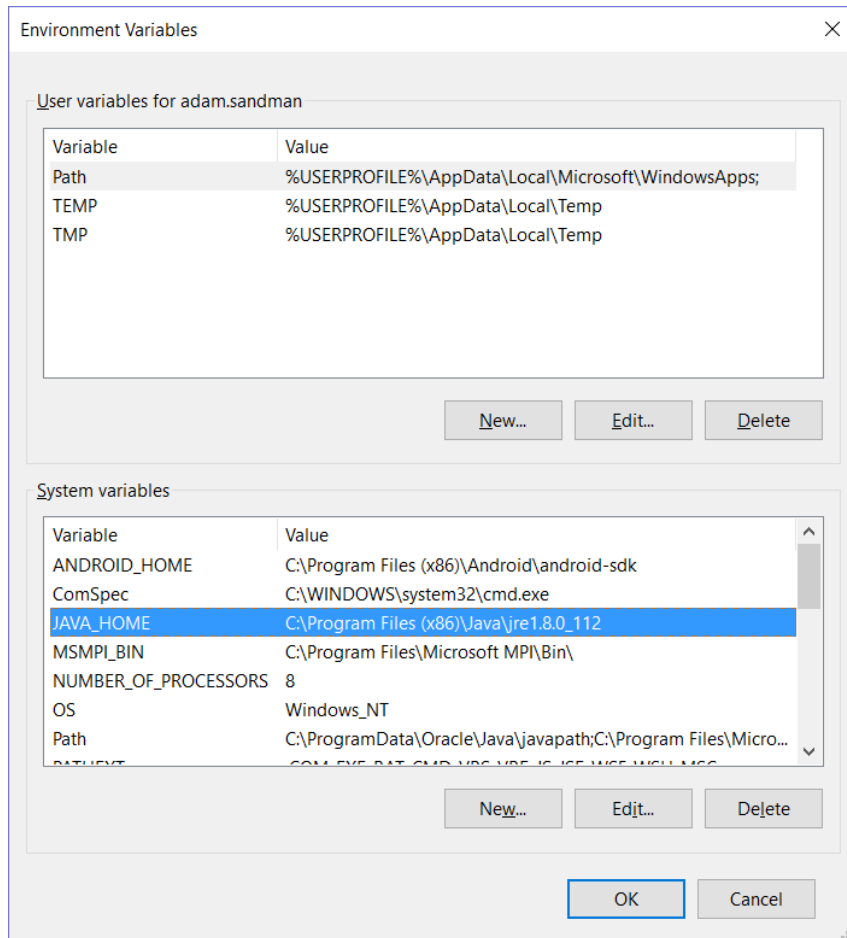


If the application doesn't appear correctly then you may need to set the **JAVA\_HOME** environment variable.

To do this, open up the Windows control panel and choose **System > Advanced System Settings**:



Click on the **Environment Variables** button:



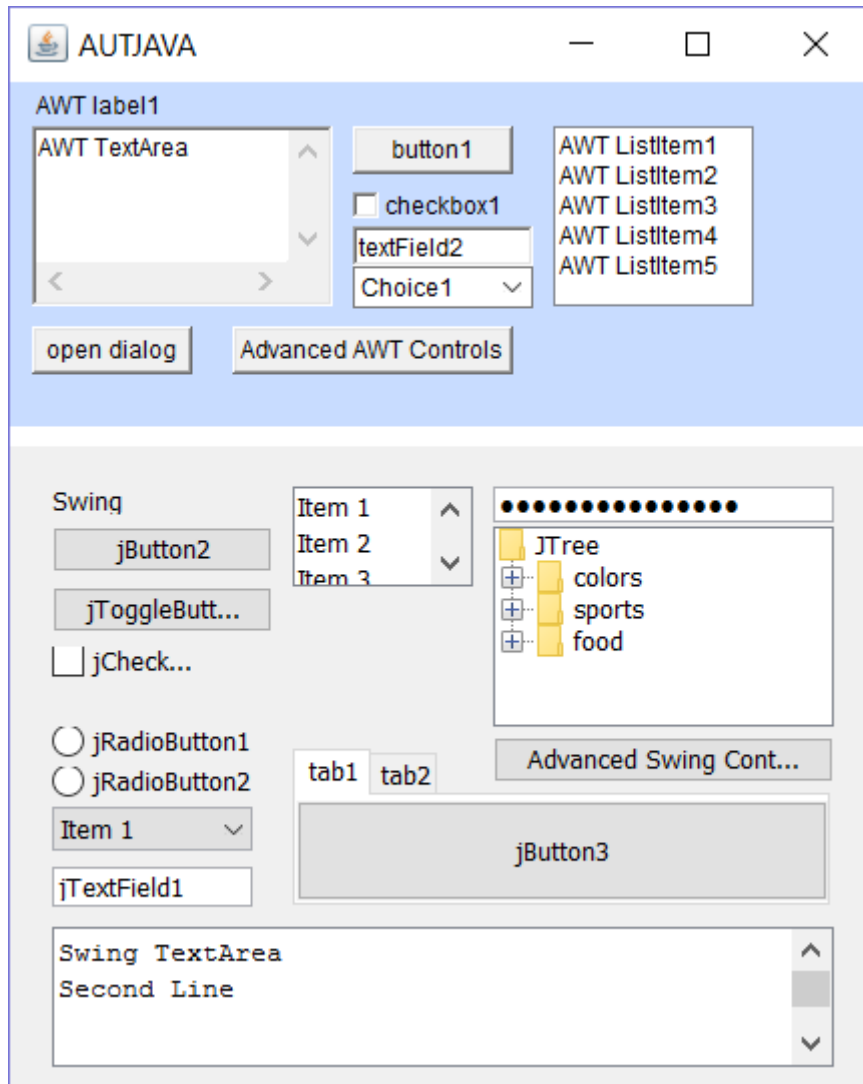
Click on the option to add a **System Variable** and then add the following:

Variable = JAVA\_HOME

Value = C:\Program Files (x86)\Java\jre1.x.x\_xxx

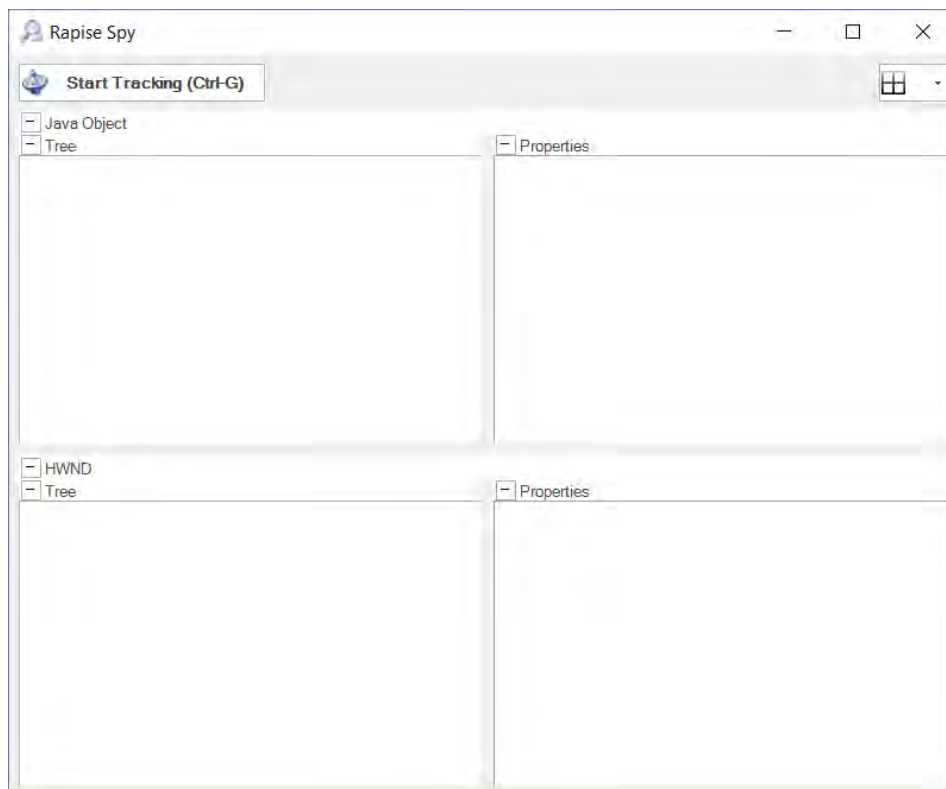
*(you will need to match the location of your actual Java VM)*

Now you should be able to launch the AUTJava sample application.



To verify that Rapise is configured correctly, click on the SPY menu in Rapise and choose **Java Spy**.

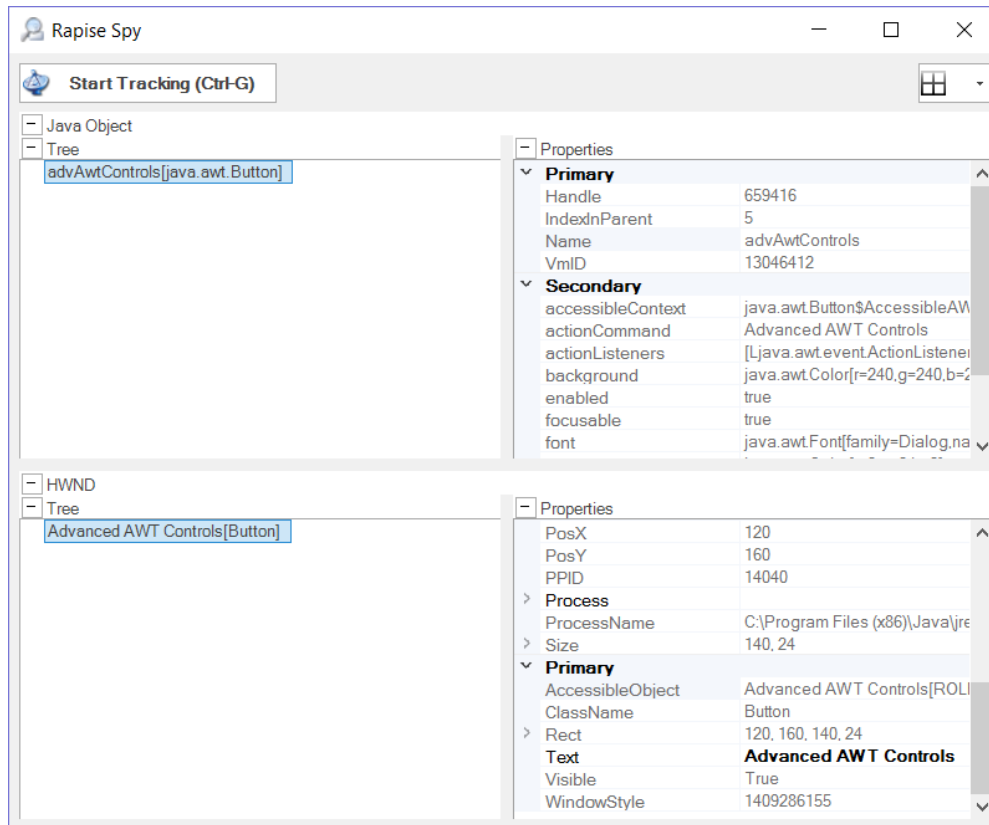
Then click on the main **Spy** icon and the Java Spy will start up:



Click the CTRL+G button combination to start tracking and then move the mouse over one of the buttons in the sample application and click CTRL+G again.

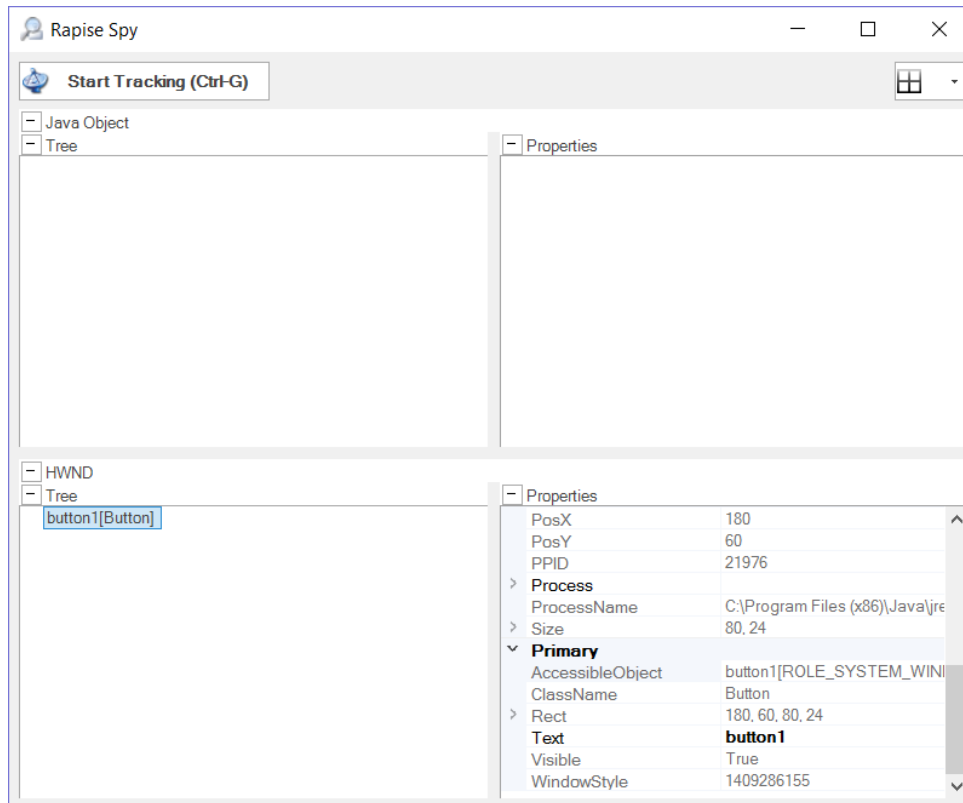
You should see the following:



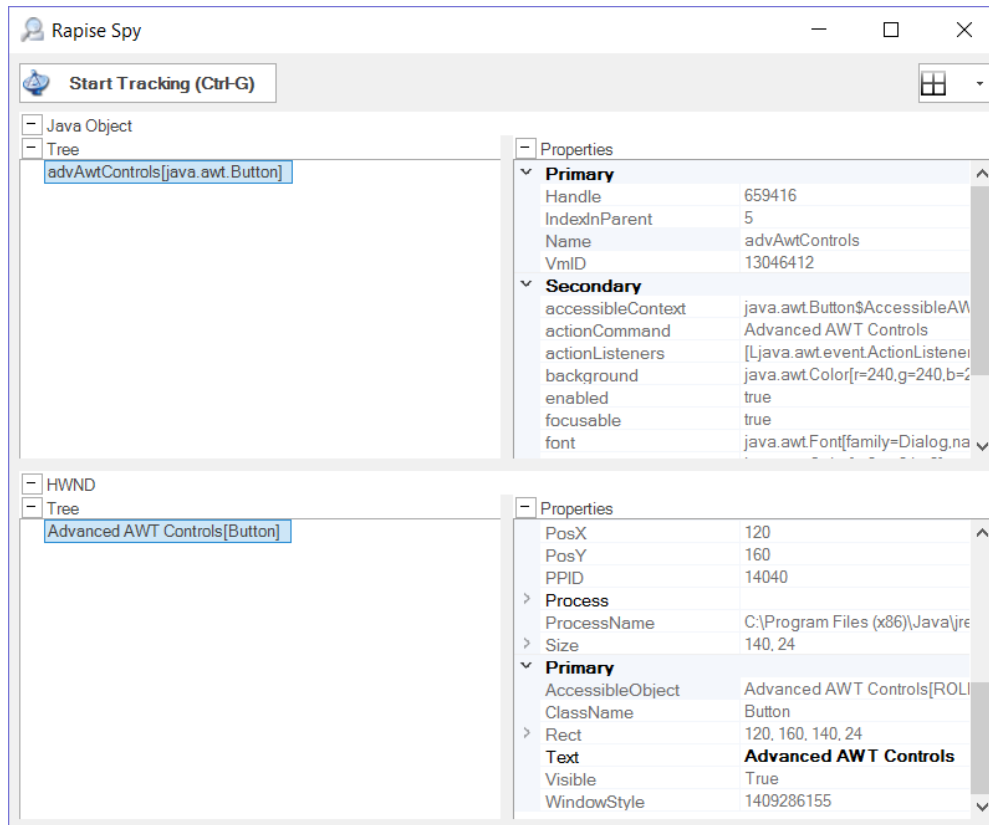


Which shows that Rapise is able to see the AWT button (in this example) and its properties.

However if you see the following instead:



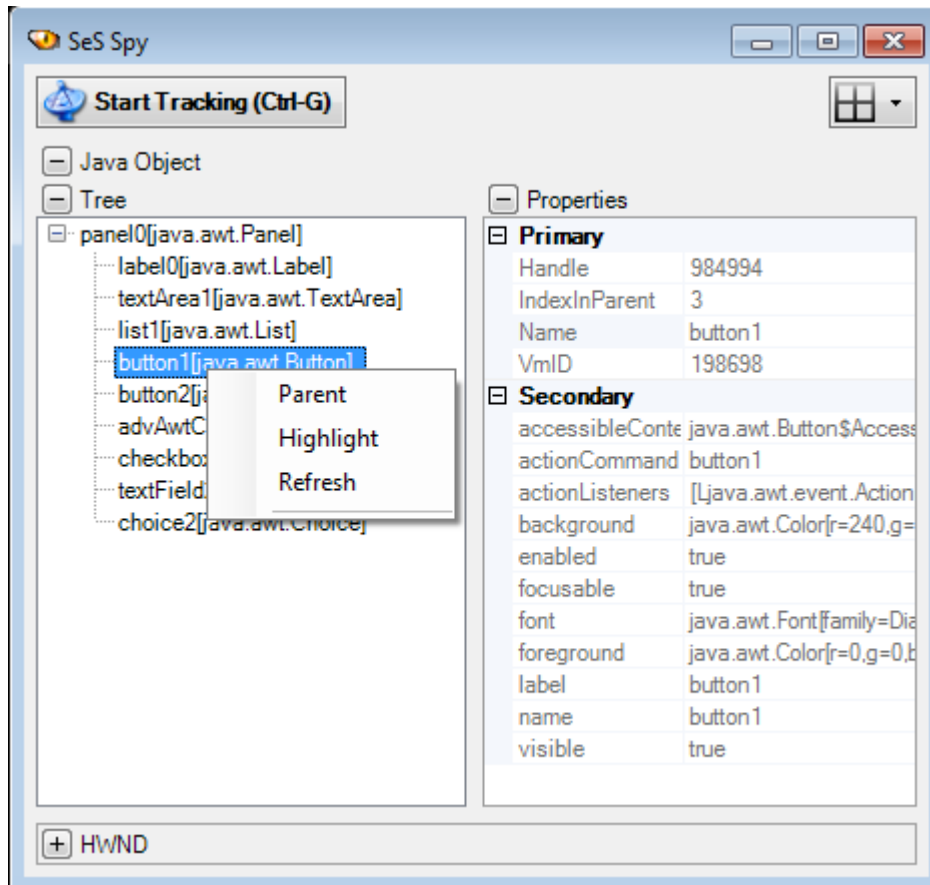
it means that you didn't run the sample application using **"Run as Administrator"**, close the application and try again using **"Run as Administrator"** and you will see:



You are now ready to start testing your real application. Make sure to also start it using "**Run as Administrator**".

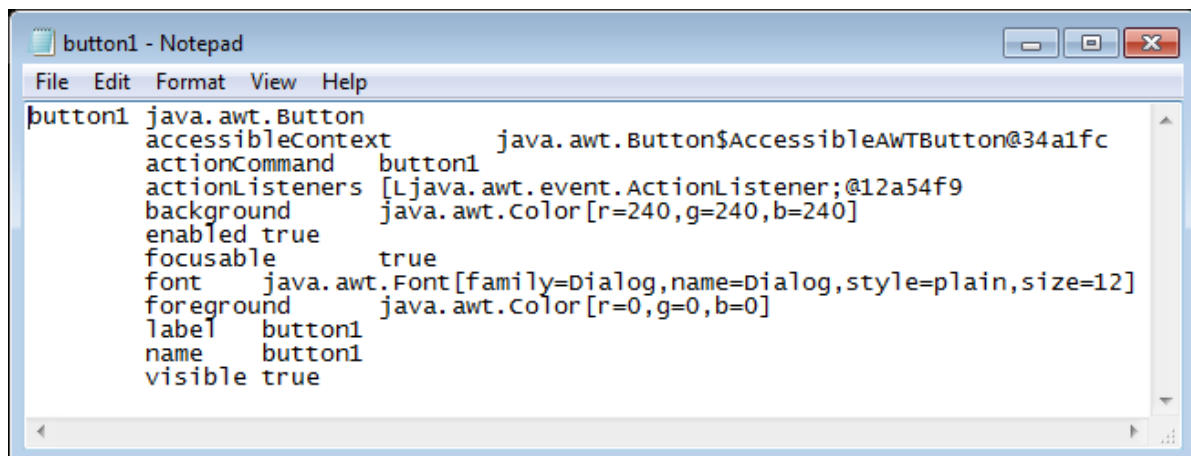
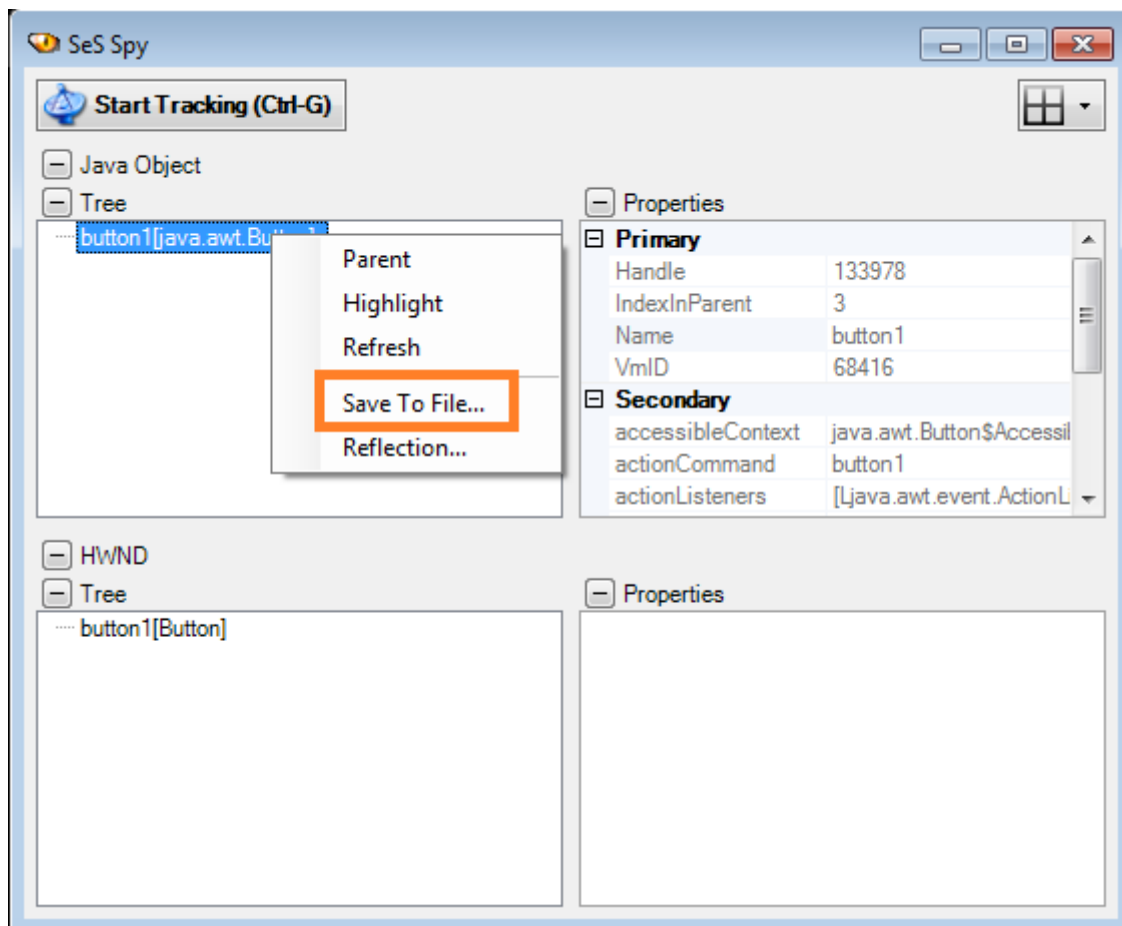
## Analyzing the Java Application using the Java Spy

With Spy you can walk along the tree of Java objects in your application.



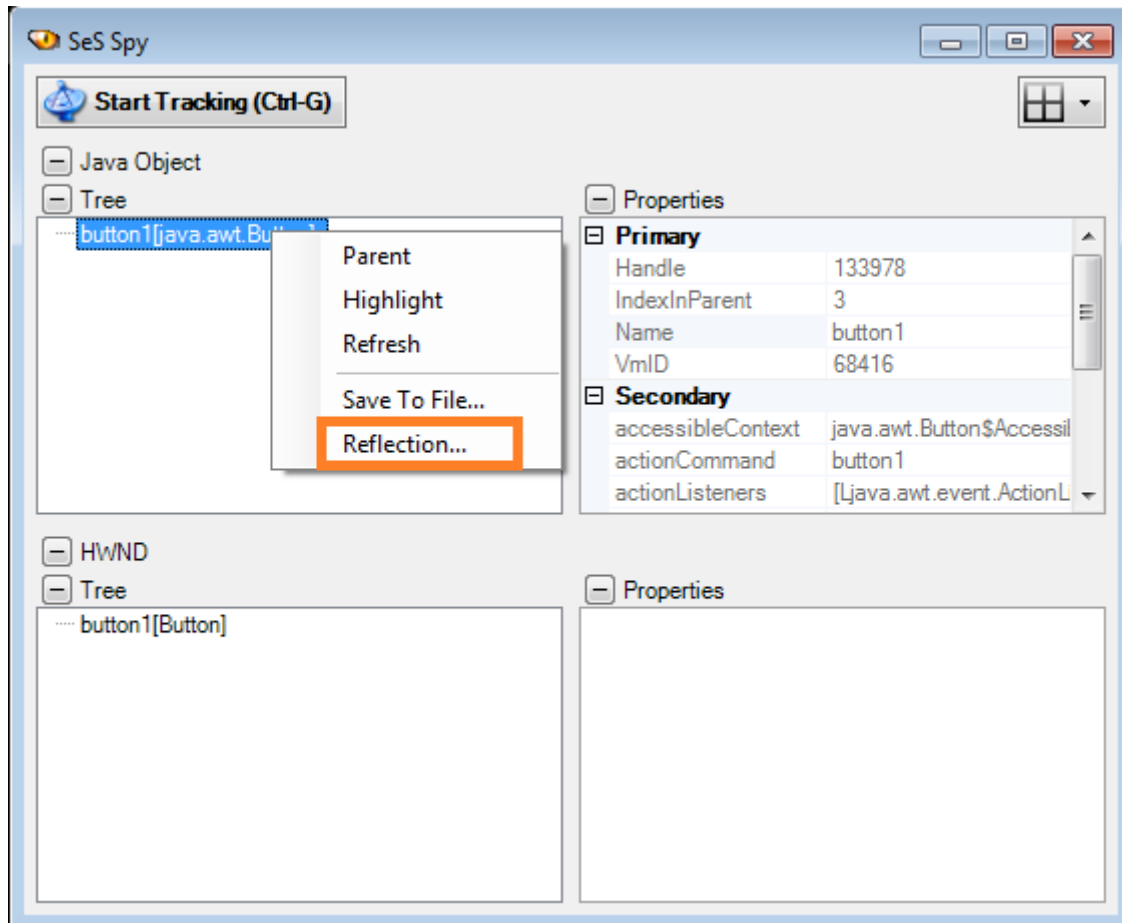
## Save to File

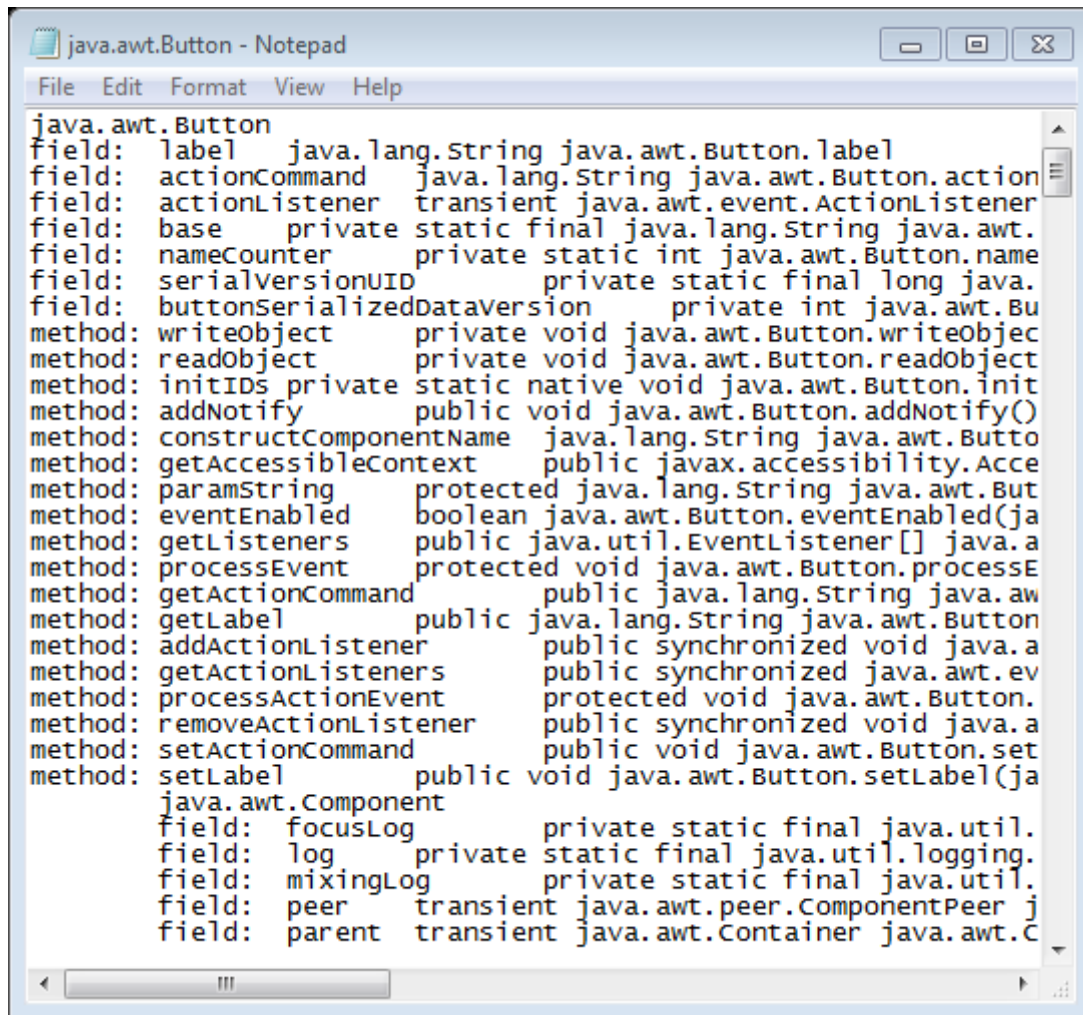
You can save the Spy data for a particular node and all its descendants to a text file.



## Reflection Information

You can save reflection information for a java class used to implement a GUI control.





```
java.awt.Button
field: label java.lang.String java.awt.Button.label
field: actionCommand java.lang.String java.awt.Button.action
field: actionListener transient java.awt.event.ActionListener
field: base private static final java.lang.String java.awt.
field: nameCounter private static int java.awt.Button.name
field: serialVersionUID private static final long java.
field: buttonSerializedDataVersion private int java.awt.Bu
method: writeObject private void java.awt.Button.writeObjec
method: readObject private void java.awt.Button.readObject
method: initIDs private static native void java.awt.Button.init
method: addNotify public void java.awt.Button.addNotify()
method: constructComponentName java.lang.String java.awt.Butto
method: getAccessibleContext public javax.accessibility.Acce
method: paramString protected java.lang.String java.awt.Bu
method: eventEnabled boolean java.awt.Button.eventEnabled(ja
method: getListeners public java.util.EventListener[] java.a
method: processEvent protected void java.awt.Button.processE
method: getActionCommand public java.lang.String java.aw
method: getLabel public java.lang.String java.awt.Button
method: addActionListener public synchronized void java.a
method: getActionListeners public synchronized java.awt.ev
method: processActionEvent protected void java.awt.Button.
method: removeActionListener public synchronized void java.a
method: setActionCommand public void java.awt.Button.set
method: setLabel public void java.awt.Button.setLabel(ja
java.awt.Component
field: focusLog private static final java.util.
field: log private static final java.util.logging.
field: mixingLog private static final java.util.
field: peer transient java.awt.peer.ComponentPeer j
field: parent transient java.awt.Container java.awt.C
```

## 2.6.8 Java SWT

### Overview

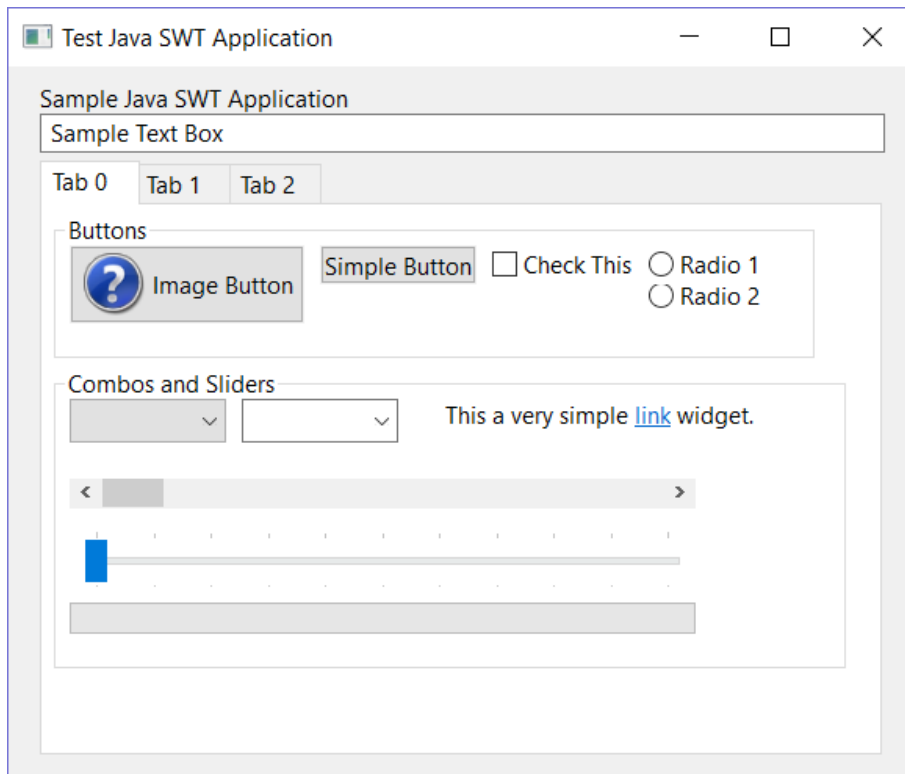
The **Java SWT** GUI library is an alternative to Swing developed by the **Eclipse** foundation and it provides Java applications the ability to access the **native GUI libraries** of the operating system using JNI (Java Native Interface) in a manner that is similar to those programs written using operating system-specific APIs. Programs that call SWT are portable, but the implementation of the toolkit, despite part of it being written in Java, is unique for each platform.

Rapise supports the testing of applications written using Java **Standard Widget Toolkit (SWT)** using its **JavaSWT** extensions library (which is based on the UI Automation technology in Windows). Since SWT displays applications using native Windows controls it doesn't need the Java Access Bridge to be installed (unlike Java AWT/Swing applications).

### Sample Application

In the Samples section of the Rapise Start Page you should see our sample Java SWT AUT:





You can use this application with Rapise to try out the Java SWT testing capabilities:

- You should record tests using the special **SWT** library
- You should use the [UIAutomation Spy](#) for inspecting objects.

## 2.7 Extensibility

The **Extensibility** section is for experienced Rapise users who want to extend capabilities of the tool.

### 2.7.1 Tutorial: Custom Library

In this section, you will learn how to create a **Custom Library** and add support for a third-party GUI control to Rapise. We will be using a demo application called **CustomControlApp**. Our Custom Library will be simple. It will allow to Record and Learn objects of **CustomListboxControl** type and also Playback actions for this type of objects. This tutorial is complemented by a ready test **CustomControlTest** which you'll be able to examine and run.

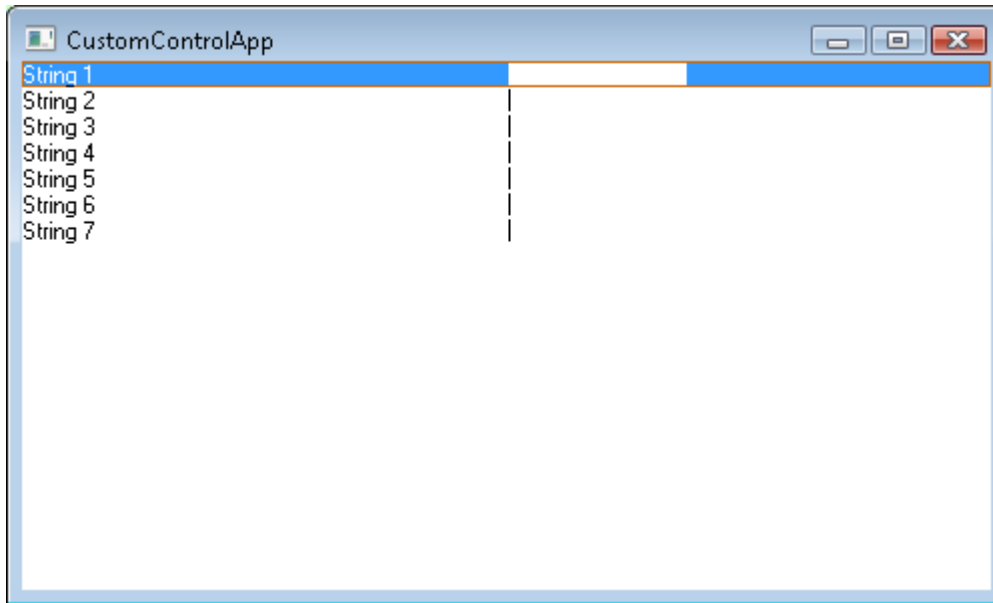
#### Tutorial Data

- CustomControlApp folder: *C:\Program Files\Inflectra\Rapise\Samples\Extensibility\CustomLibrary\CustomControlApp*. You may build this application yourself in Microsoft Visual Studio (C++) or use ready executable: *<CustomControlApp folder>\Release\CustomControlApp.exe*
- CustomControlTest folder: *C:\Program Files\Inflectra\Rapise\Samples\Extensibility\CustomLibrary\CustomControlTest*
- CustomLibrary file: *C:\Program Files\Inflectra\Rapise\Samples\Extensibility\CustomLibrary\CustomLibrary.js*

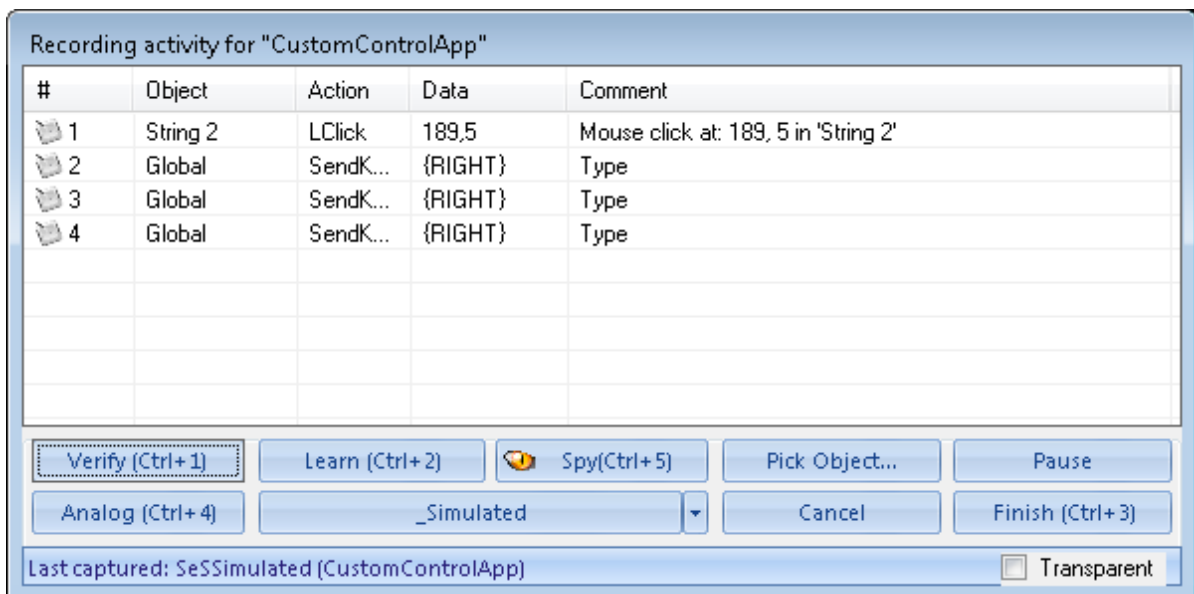
If you prefer active experimentation learning style you may first skip to subsection 9 and after playing with the ready test and library start reading from the beginning.

### 1. Application Under Test

CustomControlApp contains an object of type CustomListboxControl. The control is similar to a single-select listbox, but each line item has a corresponding **progress bar** indicator indicating a current value. Using the left/right cursor keys you can change the value of the currently focused item.



If you will try to record a test for CustomControlApp using just Generic library you'll see that CustomListboxControl is treated as Simulated Object and all interactions with it are recorded as mouse clicks and key presses. For some tests such functionality is sufficient, but if you want to be able to recognize CustomListboxControl as a list, get its items, select an item by name, set value for a particular item you need to create a Custom Library.



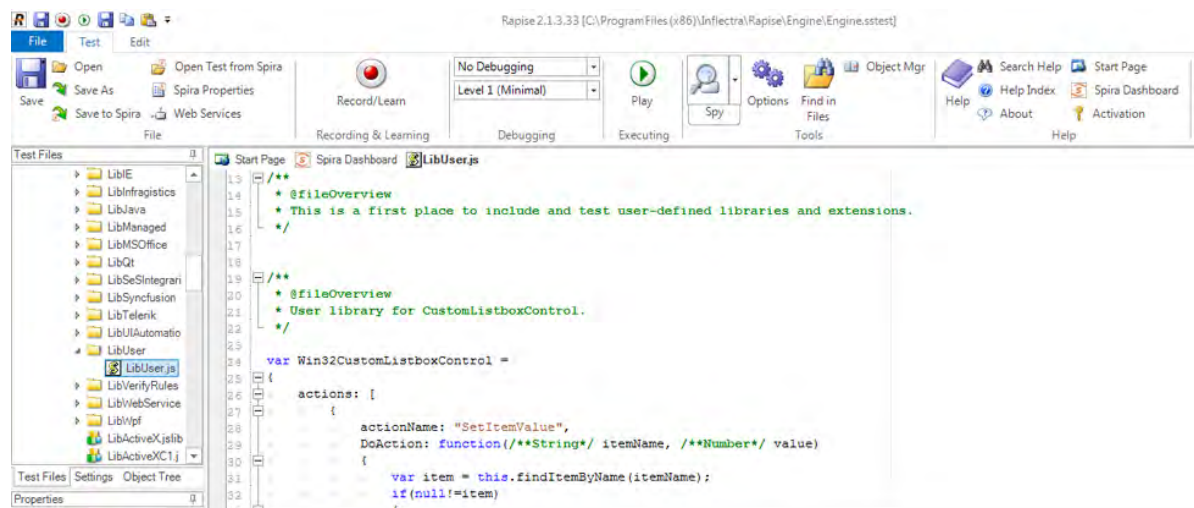
## 2. LibUser

A good place to start implementing a Custom Library is empty LibUser library included into Rapise. All Rapise libraries live in *C:\Program Files\Inflectra\Rapise\Engine\Lib* folder and LibUser is not an exception. LibUser library consists of two files:

1. *C:\Program Files\Inflectra\Rapise\Engine\Lib\LibUser.jslib* which is a library declaration file.
2. *C:\Program Files\Inflectra\Rapise\Engine\Lib\LibUser\LibUser.js* which is a library definition file.

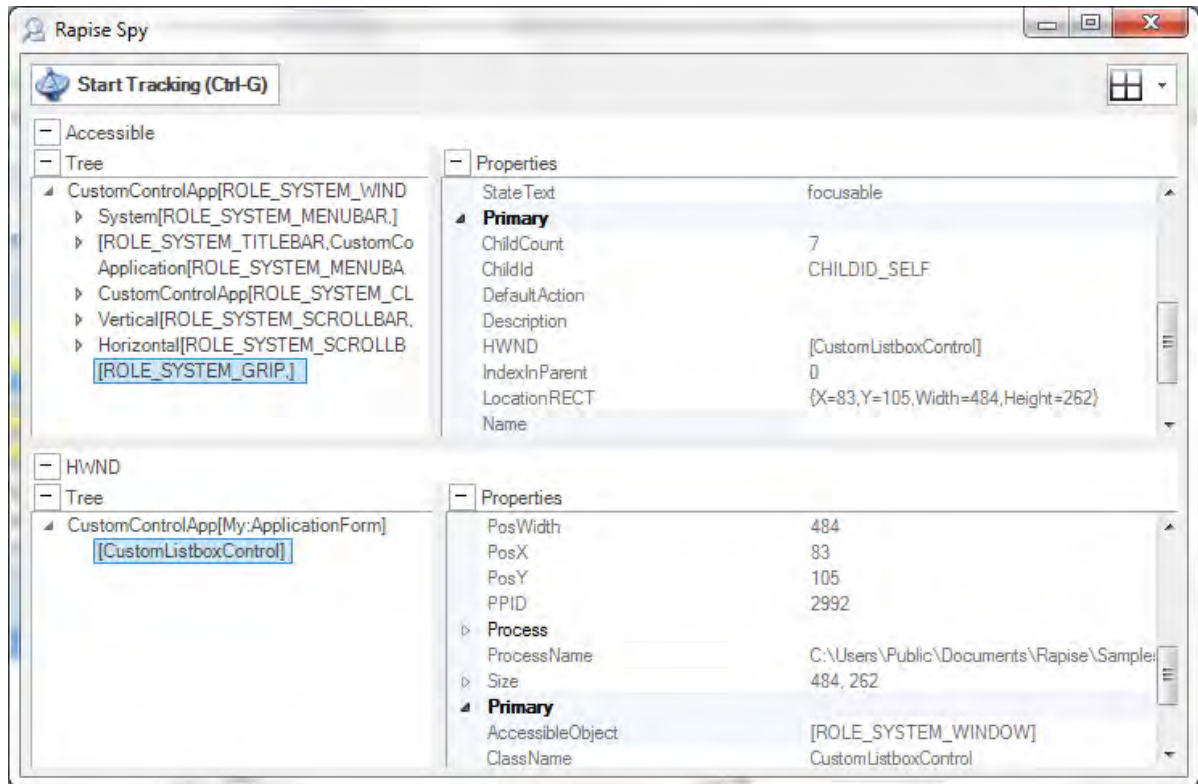
## 3. Open Engine.sstest

Open the [Engine.sstest](#) project in Rapise (it is usually located in the *C:\Program Files (x86)\Inflectra\Rapise\Engine* folder). Then find LibUser.js in the project tree and open it. You are about to start implementing a Custom Library to support CustomListBoxControl.



## 4. Analyze CustomListBoxControl in Spy

Launch CustomControlApp and open [Spy](#). Using the **Accessible** option in the Spy tool, spy on the CustomListBoxControl. It is easy to see that CustomListBoxControl has the following accessibility tree: ROLE\_SYSTEM\_WINDOW top node contains ROLE\_SYSTEM\_LIST child that in its turn may contain zero to many ROLE\_SYSTEM\_SLIDER nodes.



## 5. Create Matcher Rule for CustomListboxControl

With knowledge of CustomListboxControl accessibility tree we can create a **matcher rule** that will make CustomListboxControl recognizable by Rapise. Write the following code into LibUser.js:

```
new SeSMatcherRule(
{
 object_type: "CustomListboxControl",
 object_flavor: "List",
 behavior: [Win32ItemSelectable, Win32CustomListboxControl],
 role: "ROLE_SYSTEM_WINDOW",
 or_rules: [
 {
 role: "regex:ROLE_SYSTEM_LIST",
 save_to: "list",
 or_rules: [
 {
 role: "ROLE_SYSTEM_SLIDER",
 zero_to_many: true,
 save_to: "items"
 }
]
 }
]
});
```

Each matcher rule (instance of SeSMatcherRule) is a tree like structure that describes a particular GUI control type. Each node in this tree is a rule object that is defined by the following simplified grammar:

```
or_rules: (rule)+
and_rules: (rule)+
```

```
rule:
 role
 [save_to]
 [zero_to_many]
 [or_rules]
 [and_rules]
```

- **object\_type**: the string that uniquely identifies this matcher rule and designates type of the control
- **object\_flavor**: visual type of the control, it is used to show an appropriate icon in the [Object Tree](#) and to filter actions and properties in composite behavior patterns (like in Adobe Flex, see FlexActions.js)
- **behavior**: array of behavior patterns that define object actions, properties and events.
- **role**: accessibility role of the corresponding node in the accessibility tree of the control. The role equals to a Role of the accessible element as displayed in the Spy.
- **or\_rules**: array of rules (defining child nodes) joined with logical OR. Any OR rule can be satisfied to consider child nodes matched.
- **and\_rules**: array of rules (defining child nodes) joined with logical AND. All AND rules must be satisfied to consider child nodes matched.
- **save\_to**: SeSObject created for accessibility tree node corresponding to this rule is assigned to the field with "save\_to" name of the top level SeSObject. I.e. if rule has save\_to: "items" element then you can access learned element using SeS('ObjID').items. In many cases such named fields are used in behavior patterns.
- **zero\_to\_many**: if this property is present in the rule and set to 'true' then it means that parent rule may contain from zero to many of child nodes that match this rule.

## 6. CustomListboxControl Behavior

After defining the matcher rule we can proceed to **behavior patterns**. Behavior patterns operate with **SeSObject** contents, so they should not be aware about accessibility tree of the underlying GUI control and thus the same behavior pattern can be assigned to different matcher rules. There are a plenty of behavior patterns defined in SeSBahavior.js. After looking at those patterns it is possible to notice that Win32ItemSelectable pattern is the one that perfectly suites for capturing selection accessibility events and for selecting list items. This pattern contains OnSelect event that is called during recording when an item is selected in list and DoSelectItem action used to select desired item during playback.

But using just Win32ItemSelectable behavior pattern is not sufficient. It does not support recording of progress bar value change events and it does not support setting progress bar value during playback. That is why we need to define new behavior pattern: Win32CustomListboxControl. Look at its code:

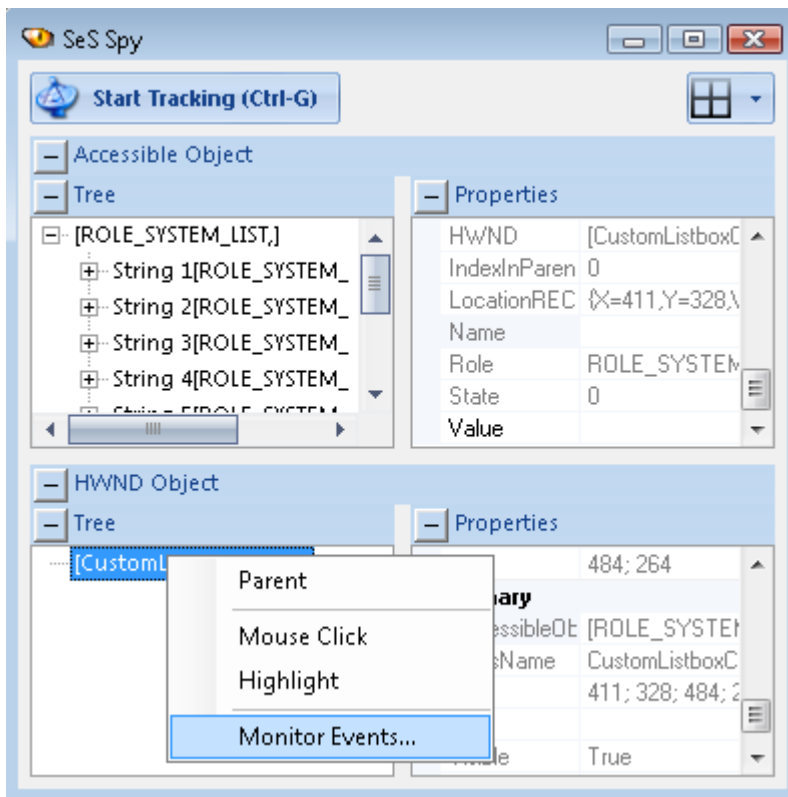
```
var Win32CustomListboxControl =
{
 actions: [
 {
 actionName: "SetItemValue",
 DoAction: function(**String*/ itemName, /**Number*/ value)
 {
 var item = this.findItemByName(itemName);
 if(null!=item)
 {
 item.getTopObject().instance.HWND.SetForegroundWindow();
 item.instance.Value = value;
 return true;
 }
 return false;
 }
 },
 {
 actionName: "GetItemValue",
```

```
 DoAction: function(**String*/ itemName)
 {
 var item = this.findItemByName(itemName);
 if(null!=item)
 {
 return item.instance.Value
 }
 return null;
 }
],
 events:
 {
 OnValueChanged: function(**SeSObject*/ param)
 {
 var itemName = param.name;
 if(l2)Log2("OnValueChanged:"+itemName);
 var item = this.findItemByName(itemName);
 if(null!=item)
 {
 var value = item.instance.Value;
 RegisterAction(this, param.name, "SetItemValue", parseInt(value), "Set
item:'"+param.name+"' to "+value+" in '"+this.name+"'");
 }
 return;
 }
 }
};
```

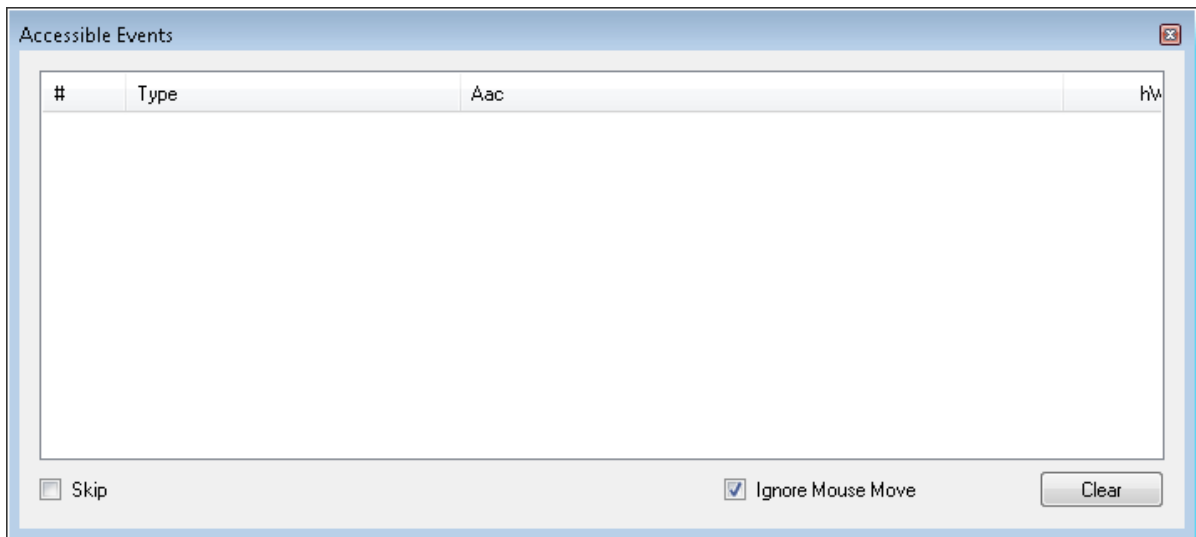
During recording process OnValueChanged function captures progress bar change events and calls RegisterAction function that adds SetItemValue action to the test.

## 7. CustomListboxControl Specific Accessibility Events

What accessibility events are fired when a user changes the progress bar value? You can use Spy to find out. Launch CustomControlApp and open Spy window. Spy on CustomListboxControl. Choose Monitor Events...



You will see Accessible Events dialog:



Select an item in CustomControlApp and advance its progress bar using right key. Accessible Events dialog will show you captured events:



| # | Type                     | Aac                                                      | hWnd           |
|---|--------------------------|----------------------------------------------------------|----------------|
| 1 | EVENT_SYSTEM_FOREGROUND  | ROLE_SYSTEM_WINDOW/sizeable moveable focusable           | 0x00170a38 0x0 |
| 2 | EVENT_OBJECT_FOCUS       | ROLE_SYSTEM_CLIENT/focusable                             | 0x00170a38     |
| 3 | EVENT_OBJECT_FOCUS       | ROLE_SYSTEM_LIST/focused focusable                       | 0x0007188c     |
| 4 | EVENT_OBJECT_SELECTION   | ROLE_SYSTEM_SLIDER/selected focused focusable selectable | 0x0007188c     |
| 5 | EVENT_OBJECT_FOCUS       | ROLE_SYSTEM_SLIDER/selected focused focusable selectable | 0x0007188c     |
| 6 | EVENT_OBJECT_VALUECHANGE | ROLE_SYSTEM_SLIDER/selected focused focusable selectable | 0x0007188c     |
| 7 | EVENT_OBJECT_VALUECHANGE | ROLE_SYSTEM_SLIDER/selected focused focusable selectable | 0x0007188c     |
| 8 | EVENT_OBJECT_VALUECHANGE | ROLE_SYSTEM_SLIDER/selected focused focusable selectable | 0x0007188c     |
| 9 | EVENT_OBJECT_NAMECHANGE  | ROLE_SYSTEM_CURSOR/floating                              | 0x00000000     |

Skip
  Ignore Mouse Move

You can see that changing progress bar leads to generation of `EVENT_OBJECT_VALUECHANGE` events.

Not all accessibility events are processed and propagated by Rapise engine. `EVENT_OBJECT_VALUECHANGE` is one of such events. To consume this event and make an appropriate call to `OnValueChanged` of `Win32CustomListBoxControl` you need to add and register **custom accessibility event handler**:

```
function CustomRegisterAccessibleEvent(evt, etxt)
{
 if(etxt.indexOf("EVENT_OBJECT_VALUECHANGE") >= 0)
 {
 var ao;
 try
 {
 ao = evt.AccessibleObject;
 if(!_SeSisValidObject(ao)) return false;
 }
 catch(e)
 {
 Log("Error getting event object:"+e.Description+"/"+etxt);
 return false;
 }

 var ro = SeSCacheAccessibleObject(ao);
 if (13 && ro) Log3("CustomListBoxControl: " + ro.toString());

 if (ro != null && ("OnValueChanged" in ro))
 {
 ro.OnValueChanged();
 }

 return true;
 }
 return false;
}

g_customEventHandlers.push(CustomRegisterAccessibleEvent);
```

## 8. Record and Playback

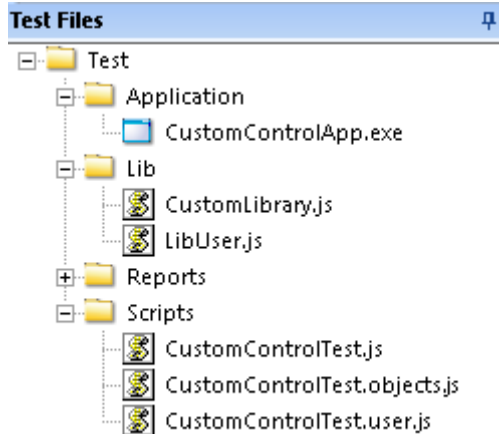
Now you are ready to record and playback a test. Just remember that in Select an Application to

Record dialog you need to uncheck Auto library and select User and Generic libraries.

| Library                                     | Description                                                 |
|---------------------------------------------|-------------------------------------------------------------|
| <input checked="" type="checkbox"/> User    | Default user-defined library                                |
| <input type="checkbox"/> Console            | Console Application                                         |
| <input checked="" type="checkbox"/> Generic | Generic library contains basic definitions for most comm... |
| <input type="checkbox"/> MSOffice           | Microsoft Office with Accessibility                         |

## 9. CustomControlTest

This tutorial is complemented by a ready test CustomControlTest which you can examine and run. Open CustomControlTest in Rapise and place contents of CustomLibrary file into LibUser.js file (C:\Program Files\Inflectra\Rapise\Engine\Lib\LibUser\LibUser.js). LibUser.js is added to CustomControlTest, so you can populate it with CustomLibrary code right in Rapise.



**Tip:** It is possible to launch CustomControlApp right from Rapise, just double click on CustomControlApp.exe in the project tree.

## 10. Wrap-up: Implementation Sequence

Full support for a custom object requires support for Record, Learn and Playback. Let's go over created library and specify the purpose of each component in it.

- **Matcher Rule:** it is used to recognize the object inside an application, required for Record, Learn and Playback.
- **Events in Behavior Patterns:** handling events is required for Record.
- **Actions in Behavior Patterns:** actions are used to examine or change state of the control, required for Playback.
- **Custom Accessibility Event Handler:** required for Record if some important events are not processed by Rapise engine as needed.

## 2.8 Glossary

This glossary presents a list of terms and their definitions as they are used in this guide.

API - Application Programming Interface  
AUT - Application Under Test  
DOM - Document Object Model  
GUI - Graphical User Interface  
GWT - Google Web Toolkit  
IDE - Integrated Development Environment  
JSON - JavaScript Object Notation  
REST - REpresentation State Transfer  
SOAP - Simple Object Access Protocol  
UI - User Interface  
XML - eXtensible Markup Language  
YUI - Yahoo! User Interface (library)

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