

**Borland®**

**Silk Test 16.5**

**Silk Test Classic:  
Testing Flex  
Applications**

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**2015-09-23**

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# Overview of Apache Flex Support

The tasks described in this tutorial are supported only for the Open Agent.

Silk Test Classic provides built-in support for testing Apache Flex applications using the 4Test scripting language.

Silk Test Classic supports Apache Flex applications using Internet Explorer, Mozilla Firefox, or the standalone Flash Player, and Adobe AIR applications built with Apache Flex 4 or later.

Silk Test Classic also supports multiple application domains in Apache Flex 3.x and 4.x applications, which enables you to test sub-applications. Silk Test Classic recognizes each sub-application in the locator hierarchy tree as an application tree with the relevant application domain context. At the root level in the locator attribute table, Apache Flex 4.x sub-applications use the `SparkApplication` class. Apache Flex 3.x sub-applications use the `FlexApplication` class.

You can also test Apache Flex applications with the other Silk Test clients:

- The Silk4J Eclipse plug-in supports testing Apache Flex applications using the Java programming language.
- The Silk4NET Visual Studio plug-in supports testing Apache Flex applications using the C# and Visual Basic .NET programming languages.
- Silk Test Workbench supports testing Apache Flex applications using the Visual Basic .NET programming language.

For additional information about the supported versions for Apache Flex and potential known issues, refer to the [Release Notes](#).

# Sample Applications

Silk Test Classic provides several sample Apache Flex test applications. You can use these sample applications to record tests with any Silk Test client.

You can access the Apache Flex sample applications at <http://demo.borland.com/flex/SilkTest16.5/index.html>.

The chapter *Silk4J Quick Tour* uses the Component Explorer sample application to walk you through testing an Apache Flex application. However, if you prefer, you can use your own Apache Flex application to perform these steps. If you use your own application, follow the steps in the *Enabling Your Apache Flex Application for Testing* chapter before you begin the *Silk4J Quick Tour*.

# Enabling Your Apache Flex Application for Testing

This section describes how you can use the Apache Flex Automation API to prepare your Apache Flex application for automation testing using Silk Test Classic. Apache Flex developers are the target audience for this document.

For additional information about which version of Apache Flex to use and which browsers and operating environments are supported for testing, refer to the [Release Notes](#).

To enable your Apache Flex application for testing, you must include the following components in your application:

- Adobe Flex Automation Package
- Silk Test Automation Package

You can load these packages at run time or prior to run time by pre-compiling your application. When you load the automation packages at run time, your application is not modified. However, this method is difficult to use in applications that are tested in a Web browser. For details about these limitations, see *Limitations*. In contrast, pre-compiling your application modifies your application and increases the file size, which means that you must create two builds, one for testing and one for release. However, this method works for all applications.

For additional information about the differences between the run time and pre-compiled approaches, refer to the guideline at [http://download.macromedia.com/pub/documentation/en/flex/2/at\\_api.pdf](http://download.macromedia.com/pub/documentation/en/flex/2/at_api.pdf).



**Note:** If you are using an Apache Flex sample application, you do not need to perform these steps. The sample applications have already been enabled for testing.

## Loading Automation Packages at Run Time

You can load automation support at run time using the Silk Test Flex Automation Launcher. This application is compiled with the automation libraries and loads your application with the `SWFLoader` class. This automatically enables your application for testing without compiling automation libraries into your SWF file. The Silk Test Flex Automation Launcher is available in HTML and SWF file formats.

## Limitations for Testing Apache Flex

When you load automation support at run time, the following limitations apply:

- The Silk Test Flex Automation Launcher automatically becomes the root application. If your application must be the root application, you cannot load automation support with the Silk Test Flex Automation Launcher. For other options, see *Compiling Automation Packages Prior to Run Time*.
- Applications that load external libraries, which means other SWF file libraries, require a special setting for automated testing. A library that is loaded at run time, including run-time shared libraries (RSLs), must be loaded into the `ApplicationDomain` of the loading application. If the SWF file used in the application is loaded in a different application domain, automated testing record and playback will not function properly. The following example shows a library that is loaded into the same `ApplicationDomain`:

```
import flash.display.*;
import flash.net.URLRequest;
import flash.system.ApplicationDomain;
import flash.system.LoaderContext;
```

```
var ldr:Loader = new Loader();
var urlReq:URLRequest = new
URLRequest("RuntimeClasses.swf");
var context:LoaderContext = new LoaderContext();
context.applicationDomain =
ApplicationDomain.currentDomain;
loader.load(request, context);
```

- Apache Flex controls are not recognized when embedding an Apache Flex application with an empty `id` attribute.

## Using the Flex Automation Launcher for Run-Time Loading

For additional information about creating events and custom controls to support automated testing, see [Testing Flex Custom Controls](#).

1. Copy the content of the directory `Silk\Silk Test\ng\AutomationSDK\Flex\<VERSION>\FlexAutomationLauncher` into the directory of the Apache Flex application that you are testing.
2. Open `FlexAutomationLauncher.html` in Windows Explorer and add the following parameter as a suffix to the file path:

```
?automationurl=YourApplication.swf
```

where `YourApplication.swf` is the name of the `.swf` file for your Apache Flex application.

3. Add `file:///` as a prefix to the file path.

For example, if your file URL includes a parameter, such as `?automationurl=explorer.swf`, type `file:///C:/Program%20Files/Silk/SilkTest/ng/samples/Flex/3.2/FlexControlExplorer32/FlexAutomationLauncher.html?automationurl=explorer.swf`.

## Compiling Automation Packages Prior to Run Time

You can pre-compile applications that you plan to test. The functional testing classes are embedded in the application at compile time, and the application has no external dependencies for automated testing at run time.

When you embed functional testing classes in your application SWF file at compile time, the size of the SWF file increases. If the size of the SWF file is not important, use the same SWF file for functional testing and deployment. If the size of the SWF file is important, generate two SWF files, one with functional testing classes embedded and one without. Use the SWF file that does not include the embedded testing classes for deployment.

When you pre-compile the Apache Flex application for testing, in the `include-libraries` compiler option, reference the following files:

- `automation.swc`
- `automation_agent.swc`
- `FlexTechDomain.swc`
- `automation_dmv.swc`. Include if your application uses charts.
- `automation_flasflexkit.swc`. Include if your application uses embedded flash content.
- `automation_spark.swc`. Include if your application uses Apache Flex 4 controls.
- `automation_air.swc`. Include if your application is an AIR application.
- `automation_airspark.swc`. Include if your application is an AIR application and uses Apache Flex 4 controls.

When you create the final release version of your Apache Flex application, you recompile the application without the references to these SWC files. For more information about using the automation SWC files, refer to the *Apache Flex Release Notes*.


If you do not deploy your application to a server, but instead request it by using the file protocol or run it from within Adobe Flex Builder, you must include each SWF file in the local-trusted sandbox. This requires additional configuration information. Add the additional configuration information by modifying the configuration file of the compiler or by using a command-line option.

## Modifying the Configuration File of the Compiler

For additional information about creating events and custom controls to support automated testing, refer to *Testing Flex Custom Controls* in the *Silk Test Classic Help*.

1. Include the libraries `automation.swc`, `automation_agent.swc`, and `FlexTechDomain.swc` in the configuration file of the compiler by adding the following code to the configuration file:

```
<include-libraries>
...
<library>/libs/automation.swc</library>
<library>/libs/automation_agent.swc</library>
<library>pathinfo/FlexTechDomain.swc</library>
</include-libraries>
```

 **Note:** If your application uses charts, you must also add the `automation_charts.swc` file to the `include-libraries` compiler option.


2. Specify the location of the `automation.swc`, `automation_agent.swc`, and `FlexTechDomain.swc` libraries using the `include-libraries` compiler option with the command-line compiler


The configuration files are located at:

Product	File Location
Apache Flex SDK	<flex_installation_directory>/ frameworks/flex-config.xml
Apache Flex Data Services	<flex_installation_directory>/flex/ WEB-INF/flex/flex-config.xml

The following example adds the files `automation.swc` and `automation_agent.swc` to the application:

```
mxmlc -include-libraries+=../frameworks/libs/  
automation.swc;../frameworks/libs/  
automation_agent.swc;pathinfo/FlexTechDomain.swc  
MyApp.mxml
```

 **Note:** Explicitly setting the `include-libraries` option on the command line overwrites, rather than appends, the existing libraries. If you add the `automation.swc` and `automation_agent.swc` files using the `include-libraries` option on the command line, ensure that you use the `+=` operator. This appends rather than overwrites the existing libraries that are included.

 **Note:** The Silk Test Flex Automation SDK is based on the Automation API for Flex. The Silk Test Automation SDK supports the same components in the same manner that the Automation API for Flex supports them. For instance, when an application is compiled with automation code and successive `.swf` files are loaded, a memory leak occurs and the application eventually runs out of memory. The Flex Component Explorer sample application is affected by this issue. The workaround is to not compile the application `.swf` files that Explorer loads with automation libraries. For example, compile only the Explorer main application with automation libraries. Another



alternative is to use the module loader instead of swfloader. For more information about using the Flex Automation API, refer to the *Apache Flex Release Notes*.

# Testing Flex Applications

This section guides you through the steps of testing an Apache Flex application. The procedures in this section use the Component Explorer sample application. However, if you have another Flex application that you prefer to use, enable your Apache Flex application for testing and then follow the steps in this section. The target audience for this chapter are Quality Assurance testers.

For information about supported versions of Apache Flex and the supported browsers and operating environments for testing, refer to the [Release Notes](#).

## Configuring the Security Settings for Your Local Flash Player

Before you launch an Apache Flex application that runs as a local application for the first time, you must configure security settings for your local Flash Player. You must modify the Adobe specific security settings to enable the local application access to the file system.

To configure the security settings for your local Flash player:

1. Open the **Flex Security Settings** page by clicking **Flash Player Security Manager** on <http://demo.borland.com/flex/SilkTest16.5/index.html>.
2. Click **Always allow**.
3. From the **Edit Locations** list box, select **Add Location**.
4. Click **Browse for folder** and navigate to the folder where your local application is installed.
5. Click **Confirm** and then close the browser.

## Starting the Component Explorer

Compiled with the Adobe Automation SDK and the Silk Test specific automation implementation, the Component Explorer is pre-configured for testing.

To start the Component Explorer in Internet Explorer, open [http://demo.borland.com/flex/SilkTest16.5/3.5/Flex3TestApp\\_withAutomation/Flex3TestApp.html](http://demo.borland.com/flex/SilkTest16.5/3.5/Flex3TestApp_withAutomation/Flex3TestApp.html).

## Creating a New Project

To test the sample Apache Flex application, begin by creating a new project.

To create a project:

1. In Silk Test Classic, click **File > New Project**, or click **Open Project > New Project** on the basic workflow bar.
2. On the **Create Project** dialog box, type the **Project Name** and **Description**.
3. Click **OK** to save your project in the default location, `C:\Users\\Documents\Silk Test Classic Projects`.

To save your project in a different location, click **Browse** and specify the folder in which you want to save your project.

Silk Test Classic creates a `<Project name>` folder within this directory, saves the `projectname.vtp` and `projectname.ini` to this location and copies the extension `.ini` files, which are `appexpex.ini`,

axext.ini, domex.ini, and javaex.ini, to the extend subdirectory. If you do not want to save your project in the default location, click **Browse** and specify the folder in which you want to save your project. Silk Test Classic then creates your project and displays nodes on the **Files** and **Global** tabs for the files and resources associated with this project.

Silk Test Classic creates your project and displays nodes on the **Files** and **Global** tabs for the files and resources that are associated with this project.

## Configuring an Apache Flex Application

Launch the **Component Explorer** before you perform this step.

Configure the Apache Flex application to set up the environment that Silk Test Classic will create each time you record or replay a test case.

When you configure an application, Silk Test Classic automatically creates a base state for the application. The base state of an application is the known, stable state that you expect the application to be in before each test begins execution, and the state the application can be returned to after each test has ended execution.

1. Click **Configure Applications** on the basic workflow bar.

If you do not see **Configure Applications** on the workflow bar, ensure that the default agent is set to the Open Agent.

The **Select Application** dialog box opens.

2. Select the **Web** tab.
3. Select the browser that you want to use from the list of available browsers.

If you want to record a test against a Web application, select **Internet Explorer** or a mobile browser. You can use one of the other supported browsers to replay tests but not to record them.
4. Click **Use URL from running browser**.
5. *Optional:* Check the **Create Base State** check box to create a base state for the application under test.

By default, the **Create Base State** check box is checked for projects where a base state for the application under test is not defined, and unchecked for projects where a base state is defined. An application's base state is the known, stable state that you expect the application to be in before each test begins execution, and the state the application can be returned to after each test has ended execution. When you configure an application and create a base state, Silk Test Classic adds an include file based on the technology or browser type that you enable to the **Use files location** in the **Runtime Options** dialog box.
6. Click **OK**.
  - If you have checked the **Create Base State** check box, the **Choose name and folder of the new frame file** page opens. Silk Test Classic configures the recovery system and names the corresponding file `frame.inc` by default.
  - If you have not checked the **Create Base State** check box, the dialog box closes and you can skip the remaining steps.
7. Navigate to the location in which you want to save the frame file.
8. In the **File name** text box, type the name for the frame file that contains the default base state and recovery system. Then, click **Save**. Silk Test Classic creates a base state for the application and opens the include file.

# Recording a Test Case for the Sample Apache Flex Application

A test case:

- Drives the application from the initial state to the state you want to test.
- Verifies that the actual state matches the expected (correct) state.
- Cleans up the application, in preparation for the next test case, by undoing the steps performed in the first stage.

To record a test case:

1. Click **Record Testcase** on the basic workflow bar. If the workflow bar is not visible, click **Workflows > Basic** to enable it. The **Select Test Type** dialog box opens.
2. Select **4Test Testcase**.
3. Click **OK**. The **Record Testcase** dialog box opens.
4. Type the name of your test case into the **Testcase name** field.

Test case names are not case sensitive; they can have any length and they can consist of any combination of alphabetic characters, numerals, and underscore characters.

5. From the **Application State** list box, select **DefaultBaseState** to have the built-in recovery system restore the default base state before the test case begins executing.
  - If you choose *DefaultBaseState* as the application state, the test case is recorded in the script file as `testcase testcase_name ()`.
  - If you chose another application state, the test case is recorded as `testcase testcase_name () appstate appstate_name`.
6. If you do not want Silk Test Classic to display the status window during playback when driving the application to the specified base state, uncheck the **Show AppState status window** check box. Typically, you check this check box. However, in some circumstances it is necessary to hide the status window. For instance, the status bar might obscure a critical control in the application you are testing.
7. Click **Start Recording**. Silk Test Classic closes the **Record Testcase** dialog box and displays the **Flex Component Explorer** application.
8. When the **Recording** window opens, record the following scenario using the **Flex Component Explorer** application.
  - a) Click the arrow next to the **Visual Components** tree element to expand the list.
  - b) Click the arrow next to the **General Controls** tree element to expand the list.
  - c) Click the **SimpleAlert** tree element.
  - d) Point to the **SimpleAlert** tree element and press **Ctrl+Alt** to add a verification to the script. You can add a verification for any of the information that displays. The **Verify Properties** dialog box opens.
  - e) Check the **Visible** check box.
  - f) Click **OK**. A verification action is added to the script for the tree.
  - g) In the **Alert Control Example** section, click **Click Me** and then click **OK** in the **Hello World** message box.
  - h) Click the arrow next to the **General Controls** tree element to hide the list.
  - i) Click the arrow next to the **Visual Components** tree element to hide the list.
9. In the **Recording** window, click **Stop**.

Silk Test Classic opens the **Record Testcase** dialog box, which contains the recorded 4Test code.

10. To add the recorded interactions to a script, click **Paste to Editor** in the **Record Testcase** window. If you have interacted with objects in your application that have not been identified in your include files, the **Update Files** dialog box opens.
11. Click **Paste testcase and update window declaration(s)** and then click **OK**.
12. Click **File > Save**.
13. In the **File name** text box, type `FlexTest` and then click **Save**. The **Add to Project** dialog box opens, asking you if you want to add the script file to the project.
14. Click **Yes**.

## Replaying a Test Case

When you run a test case, Silk Test Classic interacts with the application by executing all the actions that you have specified in the test case and testing whether all the features of the application performed as expected.

To run a test case:

1. Set the test case that you want to run as the active window in Silk Test Classic.
2. Click **Run Testcase** on the Basic Workflow bar. Silk Test Classic displays the **Run Testcase** dialog box, which lists all the test cases contained in the current script.
3. Select the test case that you have created.
4. Check the **Animated Run Mode (Slow-Motion)** check box, to wait one second after each script line is executed.  
Typically, you will only use this check box if you want to watch the test case run. For instance, if you want to demonstrate a test case to someone else, you might want to check this check box.
5. Click **Run**. Silk Test Classic runs the test case and generates a results file. The results file describes whether the test passed or failed, and provides summary information.

# Silk4J Quick Tour

Silk4J provides a Java run time library that includes test classes for all the classes that Silk4J supports for testing. This run time library is compatible with JUnit, which means you can leverage the JUnit infrastructure and run and create tests using JUnit. You can also use all available Java libraries in your test cases.

This quick tour describes how to use the Apache Flex sample scripts provided with Silk4J. Use the sample script files in the sample application to view typical script configurations and test case execution.

For information on getting started with Silk4J, refer to the [Silk4J Quick Start Tutorial](#).

## Importing Silk4J Sample Scripts

Silk4J can use the sample Flex applications and provides several Apache Flex scripts that work with Silk4J. Import the Apache Flex scripts to view how Silk4J works with Apache Flex.

1. In the Eclipse workspace, click **File > Import**. The **Import wizard** opens.
2. In the menu tree, click the plus sign (+) to expand the **General** folder and click **Existing Projects into Workspace**.
3. Click **Next**. The **Import Projects** dialog box opens.
4. In the **Select root directory** field, click **Browse**. The **Browse For Folder** dialog box opens.
5. Navigate to the folder `Documents and Settings\All Users\Shared Documents\Silk Test\samples\Silk4J`.  
For Microsoft Windows Vista and Microsoft Windows 7 operating systems, the file location is `Users\Public\Documents\Silk Test\samples\Silk4J`.
6. Select the root directory for the sample and then click **OK**.
7. In the **Projects** section, select the project that you want to import and then click **Finish**. The sample project shows in the **Package Explorer** view.

## Running a Sample Silk4J Test Case

Before you run a test case, start the Open Agent.

Use the sample test cases that Silk4J provides to view script contents and test execution results.

For detailed procedures about creating Silk4J scripts, refer to the [Silk4J User Guide](#).

1. Navigate to the Apache Flex sample project.
2. Choose one of the following:
  - Right-click the package name to run all tests in the project. For example, right-click **com.borland.flex.store**.
  - Right-click the class name to run all tests for only that class. For example, right-click **FlexStoreTest.java** in the **com.borland.flex.store** package.
3. Click **Run As > JUnit Test**. The test results display in the JUnit view as the test runs. If all tests pass, the status bar is green. If one or more tests fail, the status bar is red. You can click a failed test to display the stack trace in the **Failure Trace** area.