

Running the OASIS SCA BPEL Test Cases

This document describes how to run the OASIS SCA BPEL test cases, using the Apache Tuscany runtime.

Steps to Run the SCA BPEL TestCases

1. Download the SCA BPEL TestCases
2. Build the TestCases
3. Download and install the Apache Tuscany runtime
4. Run one or more TestCases

Download the SCA BPEL TestCases

The SCA BPEL TestCases are available in the OASIS Subversion (SVN) Repository. You can view the files in a browser using this address:

http://tools.oasis-open.org/version-control/browse/wsvn/sca-bpel/TestCases/#_TestCases

Download the testcase files to your system using Subversion:

```
"svn co http://tools.oasis-open.org/version-control/svn/sca-bpel/TestCases/"
```

Information about Subversion and how to download and install it can be found here:

<http://subversion.apache.org/>

The files are in a TestCases subdirectory that should look something like Illustration 1:

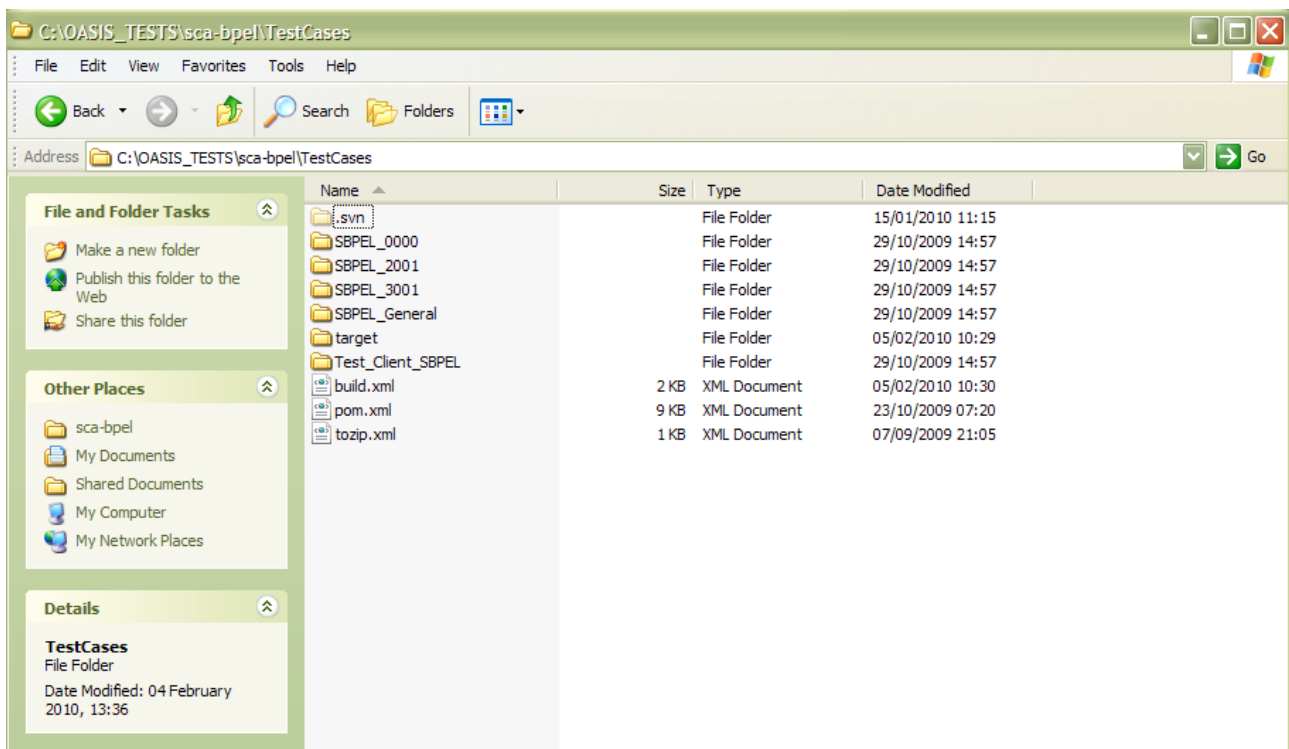


Illustration 1: View of the TestCases Directory

Build the SCA BPEL TestCases

The SCA BPEL testcases can be built using the example Maven build files that are included with the testcases. It is possible to build the testcases using some other build system (eg Ant) but this requires the creation of the necessary build configuration files.

Maven can be downloaded and installed from this address:

<http://maven.apache.org/>

To build the SCA BPEL testcases using Maven, use the command from the TestCases directory:

```
"mvn"
```

Configuration of Test Case Client

The BPEL testcases have a testcase client runner component. In the directory structure of the BPEL Testcases that have been downloaded and installed, the client runner is contained within the Test_Client_SBPEL directory.

The client runner has some configuration information that it is likely you will need to set up in order to run successfully. The configuration information is contained in a file with the name:

```
oasis-sca-tests.properties
```

and this file is contained in the source subdirectory /src/main/resources. When the binary runtime code is built, this file is copied to the /target subdirectory.

The file looks something like Example 1:

```
#
# Copyright(C) OASIS(R) 2005,2009. All Rights Reserved.
# OASIS trademark, IPR and other policies apply.
#
# OASIS SCA Assembly test properties
# The implementation type to use for Assembly test suite
# Examples: "Java" "BPEL" "CPP" "C"
org.oasis.sca.tests.assembly.lang=BPEL
# The class to use as the Runtime Bridge for the SCA runtime under test
org.oasis.sca.tests.assembly.runtime_bridge=client.TuscanyRuntimeBridge
# The location of the contributions for the test suite
# %1 represents the placement of the name of each contribution into the location
URI
# following is to use .ZIP packages...
# org.oasis.sca.tests.assembly.contribution.location=file:/C:/OASIS_TESTS/SCA-
J/TestCases/%1/target/%1.zip
# following is to use the output directory...
org.oasis.sca.tests.assembly.contribution.location=file:/C:/OASIS_TESTS/SCA-
BPEL/TestCases/%1/target/classes/
```

Example 1: oasis-sca-test.properties File

There are 3 properties which are set using this file:

- Implementation language
- Runtime Bridge class
- Location of the Contributions for the testcases

Implementation language, the setting of the property `org.oasis.sca.tests.assembly.lang`, determines the implementation type used for the `<implementation.xxx/>` elements within the composites used for the testcases. For the BPEL test suite, it should always be set to "BPEL". For the Assembly test suite, the language can be changed between a set of alternative implementation types including "Java", "BPEL" and "CPP".

Runtime Bridge class, the setting of the `org.oasis.sca.tests.assembly.runtime_bridge` property, determines which class is used to implement the Runtime Bridge which connects the test client to the SCA Runtime used to run the SCA artifacts which make up the test. This class will be specific to the runtime being used to run the testcases. In the example here it is set to "client.TuscanyRuntimeBridge", which is used for the Tuscany SCA runtime.

Contributions location, the setting of the `org.oasis.sca.tests.assembly.contribution.location` property, is a URI containing substitution strings which is used to define the location of the Contributions used by the testcases. The URI string can be anything in principle, but the main idea is that it contains one or more substitution strings marked like "%1". These substitution strings are replaced when a testcase is run by the name of a given Contribution, and the resulting URI should point to the actual location

where the Contribution is found.

In Example 1, the property is declared as:

```
file:/C:/OASIS_TESTS/SCA-BPEL/TestCases/%1/target/classes/
```

and so the location URI of the Contribution "SBPEL_General" in this case would be

```
file:/C:/OASIS_TESTS/SCA-BPEL/TestCases/SBPEL_General/target/classes/
```

Example 1 also contains an alternative formulation of the Contributions location, which can be used in the case where Contributions are supplied as ZIP files rather than as directories:

```
file:/C:/OASIS_TESTS/SCA-J/TestCases/%1/target/%1.zip
```

Note that this second example has a string where "%1" appear twice - this is fine and the Contribution name gets substituted twice to give the URI:

```
file:/C:/OASIS_TESTS/SCA-J/TestCases/SBPEL_General/target/SBPEL_General.zip
```

Dependencies of the SCA BPEL Testcases

The SCA BPEL testcases have a couple of dependencies that are required to build and run the testcases:

- JUnit - the testcases are built as a set of JUnit testcases and depend on the JUnit runtime jar file: junit-4.5.jar
- Assembly Test suite - the BPEL test suite uses the basic client test runner capabilities of the Assembly Test Suite, contained in a jar file: Test_Client.jar

The Maven build process should find and install the junit-4.5.jar automatically.

The Test_Client.jar file will be present in the Maven repository if the SCA Assembly test suite has been downloaded onto your machine and built using Maven. If this has not been done, a prebuilt version of the Test_Client.jar file is available from this location:

http://people.apache.org/~edwardsmj/tuscany/2.0-M4/Test_Client-1.0.jar

Download this file and copy it into your Maven repository at this location:

```
.m2\repository\org\oasis-open\sca\assembly\Test_Client\1.0
```

where .m2 is the root directory of the Maven repository.

Download and Install Apache Tuscany runtime

To run the SCA BPEL TestCases, an SCA runtime is required. One freely available SCA runtime is the Apache Tuscany runtime.

A version of the Apache Tuscany runtime can be downloaded from this location:

<http://people.apache.org/~edwardsmj/tuscany/2.0-M4/apache-tuscany-sca-all-2.0-SNAPSHOT.zip>

Unpack the zipfile apache-tuscany-sca-all-2.0-SNAPSHOT.zip to a suitable directory on your system.

For BPEL, Apache Tuscany uses the ODE BPEL runtime. The ODE BPEL runtime uses a database when it executes. It is necessary to set up a suitable database for the ODE runtime before executing any BPEL processes. The default database is the Derby database and a preconfigured Derby database can be downloaded from this location:

<http://people.apache.org/~edwardsmj/tuscany/2.0-M4/ode-dao-jpa-ojpa-derby-1.3.2.zip>

Unpack the zipfile ode-dao-jpa-ojpa-derby-1.3.2.zip to a suitable location on your system. This creates a directory jpadb which contains all the necessary files.

It is necessary to configure an environment variable to point to the location of the database.
TUSCANY_IMPL_BPEL_DBLOCATION = C:\Tuscany\ODE_DATABASE\jpadb

This environment variable is used by the Tuscany runtime to locate the database.

Run one or more TestCases

The testcase suite contains an Ant script which enables you to run a testcase with Apache Tuscany. The Ant script requires some configuration information about your system before it can be used.

The Ant script is contained in the file build.xml which is in the TestCases directory of the testcase suite:

```
<!--
 * Copyright (C) OASIS (R) 2005,2010. All Rights Reserved.
 * OASIS trademark, IPR and other policies apply.
-->
<project name="bpel-tests" default="run">
  <property name="sample.name" value="${ant.project.name}"/>
  <property name="tuscany.home" value="C:/tuscany-sca-2.0-SNAPSHOT" />
  <property name="junit.home" value="C:\temp" />
  <property name="testjar.home" value="C:\temp" />
  <property name="testname" value="SBPEL_2001" />
  <property name="test.class.location" value="client_sbpel.${testname}_TestCase"/>

  <path id="test.classpath">
    <pathelement location=".\\Test_Client_SBPEL\\target\\classes" />
    <pathelement location="${junit.home}\junit-4.5.jar" />
    <pathelement location="${testjar.home}\Test_Client.jar" />
    <pathelement location="${tuscany.home}\modules\tuscany-node-launcher-equinox-2.0-SNAPSHOT.jar"/>
    <pathelement location="${tuscany.home}\modules\tuscany-node-api-2.0-SNAPSHOT.jar" />
    <pathelement location="${tuscany.home}\modules\tuscany-sca-api-2.0-SNAPSHOT.jar" />
  </path>

  <target name="run">
    <junit fork="yes" haltonfailure="yes">
      <test name="${test.class.location}" />
      <formatter type="plain" usefile="false" />
      <classpath refid="test.classpath" />
    </junit>
  </target>
</project>
```

Example 2: build.xml file

It is necessary to edit the build.xml to set values for the following properties:

- tuscany.home - this must be the full path of the directory where Tuscany is installed
- junit.home - this must be the full path of the directory which contains the JUnit jar file
- testjar.home - this must be the full path of the directory which contains the Test_Client.jar from the OASIS SCA Assembly test suite

Once these locations are edited into the build.xml file, tests can be run from the command line using Ant with the command:

```
"ant run -Dtestname=SBPEL_XXXX"
```

where "XXXX" is the number of the testcase to run.

The command should be run from the TestCases directory of the BPEL Test suite.

The command will fire up the Apache Tuscany runtime and then execute the testcase, with output in the command window something like the following:

```
C:\OASIS_TESTS\sca-bpel\TestCases>ant run
Buildfile: build.xml

run:
[junit] Testsuite: client_sbpel.SBPEL_2001_TestCase
[junit] Tests run: 1, Failures: 0, Errors: 0, Time elapsed: 20.5 sec
[junit] ----- Standard Output -----
[junit] Implementation language set to: _BPEL
[junit] Test SBPEL_2001 completed successfully
[junit] -----
[junit] ----- Standard Error -----
[junit] 05-Feb-2010 10:29:39 org.apache.tuscany.sca.node.impl.NodeImpl start
[junit] INFO: Starting node: http://tuscany.apache.org/sca/1.1/nodes/default0 domain:
tuscany.apache.org
[junit] 05-Feb-2010 10:29:40 org.apache.tuscany.sca.node.impl.NodeFactoryImpl loadContributions
[junit] INFO: Loading contribution: file:/C:/OASIS_TESTS/SCA-
BPEL/TestCases/SBPEL_General/target/classes/
[junit] 05-Feb-2010 10:29:51 java.util.jar.Attributes read
[junit] WARNING: Duplicate name in Manifest: Manifest-Version.
[junit] Ensure that the manifest does not have duplicate entries, and
[junit] that blank lines separate individual sections in both your
[junit] manifest and in the META-INF/MANIFEST.MF entry in the jar file.
[junit] 05-Feb-2010 10:29:53 org.apache.tuscany.sca.core.assembly.impl.EndpointRegistryImpl
addEndpoint
[junit] INFO: Add endpoint - (@4056860)Endpoint: URI =
TestClient/TestClient_0002TestClient#service-binding(TestInvocation/TestInvocation)
[junit] 05-Feb-2010 10:29:53 org.mortbay.log.Slf4jLog info
[junit] INFO: Logging to org.slf4j.impl.JDK14LoggerAdapter(org.mortbay.log) via
org.mortbay.log.Slf4jLog
[junit] 05-Feb-2010 10:29:53 org.apache.tuscany.sca.http.jetty.JettyLogger info
[junit] INFO: jetty-6.1.x
[junit] 05-Feb-2010 10:29:53 org.apache.tuscany.sca.http.jetty.JettyLogger info
[junit] INFO: Started SelectChannelConnector@0.0.0.0:8080
[junit] 05-Feb-2010 10:29:53 org.apache.tuscany.sca.http.jetty.JettyServer addServletMapping
[junit] INFO: Added Servlet mapping: http://MikesT61:8080/TestClient/TestInvocation
[junit] 05-Feb-2010 10:29:53 org.apache.tuscany.sca.core.assembly.impl.EndpointRegistryImpl
addEndpoint
[junit] INFO: Add endpoint - (@12283269)Endpoint: URI = TestClient#service-
binding(TestInvocation/TestInvocation)
[junit] 05-Feb-2010 10:29:54 org.apache.tuscany.sca.core.assembly.impl.EndpointRegistryImpl
addEndpoint
[junit] INFO: Add endpoint - (@1435384)Endpoint: URI = TEST_SBPEL_2001Component1#service-
binding(NewServiceName/NewServiceName)
[junit] 05-Feb-2010 10:29:56 org.apache.tuscany.sca.node.impl.NodeImpl stop
[junit] INFO: Stopping node: http://tuscany.apache.org/sca/1.1/nodes/default0
[junit] 05-Feb-2010 10:29:56 org.apache.tuscany.sca.core.assembly.impl.EndpointRegistryImpl
endpointRemoved
```

```
[junit] INFO: Remove endpoint - (@12283269)Endpoint: URI = TestClient#service-
binding(TestInvocation/TestInvocation)
[junit] 05-Feb-2010 10:29:56 org.apache.tuscany.sca.http.jetty.JettyServer removeServletMapping
[junit] INFO: Removed Servlet mapping: /TestClient/TestInvocation
[junit] 05-Feb-2010 10:29:56 org.apache.tuscany.sca.core.assembly.impl.EndpointRegistryImpl
endpointRemoved
[junit] INFO: Remove endpoint - (@4056860)Endpoint: URI =
TestClient/TestClient_0002TestClient#service-binding(TestInvocation/TestInvocation)
[junit] 05-Feb-2010 10:29:56 org.apache.tuscany.sca.core.assembly.impl.EndpointRegistryImpl
endpointRemoved
[junit] INFO: Remove endpoint - (@1435384)Endpoint: URI = TEST_SBPEL_2001Component1#service-
binding(NewServiceName/NewServiceName)
[junit] -----
[junit]
[junit] Testcase: testDummy took 20.5 sec

BUILD SUCCESSFUL
Total time: 21 seconds
```

Example 2: Typical output from a Testcase run