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Chapter 1.

JBoss SOAP Web Services Runtime and Tools support Overview

JBoss SOAP Web Services is a web service framework developed as a part of the JBoss Application Server. It implements the JAX-WS specification. JAX-WS (Java API for XML Web Services) defines a programming model and run-time architecture for implementing web services in Java, targeted at the Java Platform, Enterprise Edition 5 (Java EE 5).

JBossWS integrates with most current JBoss Application Server releases as well as earlier ones, that did implement the J2EE 1.4 specifications. Even though JAX-RPC, the web service specification for J2EE 1.4, is still supported JBossWS does put a clear focus on JAX-WS.

JBossWS Tools work with the JBossWS Runtime. Users can easily create, deploy and run a Web Service (WSDL based) and a Web Service Client using JBossWS Tool and JBossWS Runtime.

Also JBossWS Tool gives a way to test a web service running on a server.

1.1. Key Features of JBossWS

For a start, we propose you to look through the table of main features of JBossWS Runtime:

**Table 1.1. Key Functionality for JBossWS**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAX-RPC and JAX-WS support</td>
<td>JBossWS implements both the JAX-WS and JAX-RPC specifications.</td>
</tr>
<tr>
<td>EJB 2.1, EJB3 and JSE endpoints</td>
<td>JBossWS supports EJB 2.1, EJB3 and JSE as Web Service Endpoints.</td>
</tr>
<tr>
<td>WS-Security 1.0 for XML Encryption/Signature of the SOAP message</td>
<td>WS-Security standardizes authorization, encryption, and digital signature processing of web services.</td>
</tr>
<tr>
<td>JBoss AS</td>
<td>JBoss Application Server 5 (JavaEE 5 compliant) web service stack.</td>
</tr>
<tr>
<td>Support for MTOM/XOP and SwA-Ref</td>
<td>Message Transmission Optimization Mechanism (MTOM) and XML-binary Optimized Packaging (XOP) more efficiently serialize XML Infosets that have certain types of content.</td>
</tr>
</tbody>
</table>
Chapter 2.

Creating a Simple Web Service

This chapter describes how to create a simple web service.

2.1. Generation

A simple web service can be created by using the Simple Web Service wizard as described in Generate a simple web service

Procedure 2.1. Generate a simple web service

1. **Access the New - Select a wizard dialog**

   a. Right click on the project name in the Project Explorer view.

   b. Select New → Other.

   c. Expand the Web Services folder and click on the Simple Web Service option.

   **Result:** The New - Select a wizard dialog displays with the selected wizard type highlighted.
Figure 2.1. The New - Other (Wizard selection) dialog
2. **Access the Simple Web Service dialog**

   Click the **Next** button to proceed.

   **Result:** The **Simple Web Service - Project and Web Service Details** dialog displays.
Figure 2.2. Simple Web Service - Project and Web Service Details
3. **Define the service attributes**

Define the project, web service, package and class names according to the options displayed in *Table 2.1, “Project and Web Service Details”*

**Table 2.1. Project and Web Service Details**

<table>
<thead>
<tr>
<th>Dialog group</th>
<th>Field</th>
<th>Mandatory</th>
<th>Instruction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>yes</td>
<td>Select the technology the Web Service will be based on.</td>
<td>A simple web service can be based on either the Web Service Definition Language (WSDL) or RESTful (REST) API. Click the radio button beside the technology your web service should use.</td>
<td></td>
</tr>
<tr>
<td>Dynamic web project</td>
<td>yes</td>
<td>Select the project name.</td>
<td>The project name will default to the highlighted project in the Project Explorer. A different project can be selected from the drop-down list.</td>
<td></td>
</tr>
<tr>
<td>Service details</td>
<td>Service name</td>
<td>yes</td>
<td>Enter the name for the web service.</td>
<td>The web service name will be the URL for the service as mapped in the deployment descriptor (<em>web.xml</em>).</td>
</tr>
<tr>
<td></td>
<td>Update no web.xml</td>
<td>no</td>
<td>Checkbox is checked by default, but is not mandatory.</td>
<td>Leaving this checked will add your new service to the <em>web.xml</em> in your project.</td>
</tr>
<tr>
<td></td>
<td>Add no RESTEasy Jars from root runtime directory</td>
<td>no</td>
<td>Check this box to add RESTEasy JARs to the project.</td>
<td>This option allows you to add RESTEasy JARs to the project if they appear in the root runtime directory but are not installed in the runtime. While this is not required, it will assist when working with JBoss Application Server 5 and JBoss Enterprise Application Platform 5 web service projects.</td>
</tr>
<tr>
<td>Service implementation</td>
<td>Package</td>
<td>yes</td>
<td>Enter the package for the web service servlet.</td>
<td>The default package is <code>org.jboss.samples.webservices</code>. Select your own package using the ... button.</td>
</tr>
<tr>
<td></td>
<td>Class</td>
<td>yes</td>
<td>Enter the name of the web service servlet.</td>
<td>The default class name will correspond to the default.</td>
</tr>
</tbody>
</table>
4. **Generate the web service**

Click the **Finish** button to complete the web service setup.

**Result:** The web service classes will be generated and the `web.xml` file updated with the deployment details if the **Update web.xml** option was selected.
Figure 2.3. Created Simple Web Service
Chapter 3.

Creating a Web Service using
JBossWS runtime

In this chapter we provide you with the necessary steps to create a Web Service using JBossWS runtime. First you need to create a Dynamic Web project:

3.1. Creating a Dynamic Web project

Before creating a web service, you should have a Dynamic Web Project created:

Figure 3.1. Dynamic Web Project

Create a Web project by selecting New > Project... > Dynamic Web project. Enter the following information:

- Project Name: enter a project name

- Target runtime: any server depending on your installation. If it is not listed, click New button and browse to the location where it is installed to. You may set Target Runtime to None, in this case, you should read the section Section 3.2, “Configure JBoss Web Service facet settings”.
Creating a Dynamic Web project

**Dynamic Web Project**

Create a standalone Dynamic Web project or add it to a new or existing Enterprise Application.

- **Project name:** SampleDynamic
- **Project location**
  - Use default location
  - Location: `/jboss/local/workspace_April22/SampleDynamic`
- **Target runtime**
  - JBoss EAP 5.x Runtime
- **Dynamic web module version**
  - 2.5
- **Configuration**
  - Default Configuration for JBoss EAP 5.x Runtime
  
A good starting point for working with JBoss EAP 5.x Runtime runtime. Adding EAR can later be installed to add new functionality to the project.

- **EAR membership**
  - Add project to an EAR
  - EAR project name: EAR

- **Working sets**
  - Add project to working sets
  - Working sets:
• Configuration: You may see Section 3.2, “Configure JBoss Web Service facet settings” by clicking the Modify... button. The opened page is like Figure 3.4.

• Configure Web Module values:

![Figure 3.3. Web Module Settings Configuration](image)

If you added the JBoss Web Service facet to the project, now the Finish button is unavailable. You must click Next button to set more information about the JBoss Web Service facet. The page is like Figure 3.5. Then click on the Finish button.

If you didn’t add the JBoss Web Service facet to the project, click on the Finish button. Next you will need to add JBoss Web Service facet to the project.

3.2. Configure JBoss Web Service facet settings

If you have already created a new Dynamic Web project and not set the JBoss Web Service facet to the project, the next step is to add JBoss Web Service facet to the project. Right-click on the project, select its Properties and then find Project Facets in the tree-view on the left-side of the project properties dialog. Tick on the check box for JBoss Web Services. You will see what like this:
Configure JBoss Web Service facet settings

Figure 3.4. Choose JBoss Web Service Facet
Chapter 3. Creating a Web Ser...

At the bottom-left of the right-side of the project properties dialog, there is an error link: *Further configuration required...* You must click the link to set more information about JBoss Web Service facet.

Click on the *Further configuration required...* link. In the opened window

![Modify Faceted Project]

**JBossWS Facet 3.0**

**Select JBossWS 3.0 Web Service runtime**

- **Server Supplied JBossWS Runtime**
- Package all JBossWS runtime jars into the deployment archive

**Runtime Details**

- **Implementation:** JBoss Web Services - Stack CXF Runtime Client
- **Version:** 3.1.2.SP9

![Figure 3.5. Configure JBoss Web Service Facet]

**Figure 3.5. Configure JBoss Web Service Facet**

Server Supplied JBossWS Runtime: If you have already set a JBoss runtime to the project's target runtime, you may choose *Server Supplied JBossWS Runtime* and then click *Ok* to finish the configuration of JBoss Web Service facet.

If the project has no *Target Runtime* settings, you should check the second radio button and specify a JBossWS runtime from the list. You also can create a new JBossWS runtime, click on the *New...* button will bring you to another dialog to configure new JBossWS runtime.
Figure 3.6. Configure JBossWS Runtime

See how to configure a new JBossWS runtime in the Chapter 5, JBoss Web Services and the development environment section.

After setting the information about JBoss Web Service facet, for saving the result, you should click the Apply or OK button at the bottom-right of the right-side of the project properties dialog.
3.3. Creating a Web Service from a WSDL document using JBossWS runtime

In this chapter we provide you with the necessary steps to create a Web Service from a WSDL document using JBossWS runtime.

Make sure that you have already created a dynamic Web project with JBoss Web Service facet installed and set the necessary preferences through the Preference menu.

See how to make it in the Section 3.1, “Creating a Dynamic Web project”, Section 3.2, “Configure JBoss Web Service facet settings” and Chapter 5, JBoss Web Services and the development environment sections.

To create a Web Service using JBossWS runtime select File > New > Other > Web Services > Web Service to run Web Service creation wizard.

Let's get through the wizard step-by-step:
Creating a Web Service from a WSDL document using JBossWS runtime

**Web Service**

**Web Services**

Select a service implementation.

**Web service type:** Bottom up Java bean Web Service

**Service implementation:**

![Start service diagram]

**Configuration:**

- **Server runtime:** JBoss Enterprise Application Server
- **Web service runtime:** Apache Axis
- **Service project:** SampleDynamic
- **Service EAR project:** SampleDynamic

**Client type:** Java Proxy

![No client diagram]

**Configuration:** No client generation

- **Publish the Web service**
- **Monitor the Web service**

**Figure 3.7. New Web Service Wizard**
• Select the stages of Web service development that you want to complete using the slider:

  • Develop: this will develop the WSDL definition and implementation of the Web service. This includes such tasks as creating modules that will contain generated code, WSDL files, deployment descriptors, and Java files when appropriate.

  • Assemble: this ensures the project that will host the Web service or client gets associated to an EAR when required by the target application server.

  • Deploy: this will create the deployment code for the service.

  • Install: this will install and configure the Web module and EARs on the target server.

  • Start: this will start the server once the service has been installed on it. The server-config wsdd file will be generated.

  • Test: this will provide various options for testing the service, such as using the Web Service Explorer or sample JSPs.

• Select your server: the default server is displayed. If you want to deploy your service to a different server click the link to specify a different server.

• Select your runtime: ensure the JBoss WS runtime is selected.

• Select the service project: the project selected in your workspace is displayed. To select a different project click on the project link. If you are deploying to JBoss Application Server you will also be asked to select the EAR associated with the project. Ensure that the project selected as the Client Web Project is different from the Service Web Project, or the service will be overwritten by the client’s generated artifacts.

• If you want to create a client, select the type of proxy to be generated and repeat the above steps for the client. The better way is to create a web service client project separately.

First, please select Top down Java bean Web Service from the Web Service type list, and select a WSDL document from workspace, click on the Server name link on the page will bring you to another dialog. Here you can specify the server to a JBoss Server and Web Service runtime to JBossWS runtime:
Figure 3.8. Select Server and Web Service runtime

Click on the Finish button to see the next wizard view opened:
Web Services

Select a service implementation.

Web service type: Bottom up Java bean Web Service
Service implementation: 

Configuration:
- Server runtime: JBoss Enterprise Application Platform
- Web service runtime: Apache Axis2
- Service project: SampleDynamic
- Service EAR project: SampleDynamic

Client type: Java Proxy

Configuration: No client generation

- Publish the Web service
- Monitor the Web service

Figure 3.9. New Web Service Wizard
Click on the Next button to proceed:
Chapter 3. Creating a Web Service

Web Service Java Bean Identity

Configure the Java bean as a Web service.

WSDL file: sampleClass.wsd1

Methods

- main(java.lang.String[])

Style and use

- document/literal (wrapped)
- document/literal
- RPC/encoded

Define custom mapping for package to namespace.

Figure 3.10. New Web Service Wizard
Creating a Web Service from a WSDL document using JBossWS runtime

- **WSDL Service**: display the services in your WSDL file, you can select one to generate Web Service.

- **Source Folder**: display the source codes folder in your web project, you can select one to generate java codes.

- **Package name**: input a package name. You can click the Browse button to choose one. If you don’t input a package name, system will generate one for you.

- **JAX-WS specificaiton**: display the supported JAX-WS version, include, 2.0, 2.1, 2.2

- **Catalog file**: specify a catalog file.

- **Binding files**: specify some binding files that are used by your WSDL file

- **Enable binding extension support (Only available for JBossWS 3.0 or later)**: select it if you need the binding extension support. Only work based on JBossWS 3.0 or later.

- **Generate default Web Service Implementation classes**: select it if you want to generate empty implementation classes for the selected WSDL Service.

- **Update the default Web.xml**: update the Web.xml file with your Web Service servlets configured.

- **Additional Options**: the senior options for the generating process. Only for the senior user.

Click on the **Next** or on the **Finish** button to generate code.

Once the Web Service code is generated, you can view the implementation class and add business logic to each method.
Figure 3.11. The generated implementation Java code

View the Web.xml file:
3.4. Creating a Web service from a Java bean using JBossWS runtime

To create a Web service from a bean using JBoss WS:

Setup Chapter 5, JBoss Web Services and the development environment.

Create Section 3.1, “Creating a Dynamic Web project”.
Note
To use the **Simple Web Service** wizard to create this Web Service, replace the **Class** and **Application Class** fields with your specific classes, within the instructions in **Chapter 2, Creating a Simple Web Service**.

*Section 3.2, “Configure JBoss Web Service facet settings”*

Create a Web Service from a java bean:

* Switch to the Java EE perspective **Window → Open Perspective → Java EE**.

* In the Project Explorer view, select the bean that you created or imported into the source folder of your Web project.
Figure 3.13. Select the Bean Created

* Click **File → New → Other.** Select Web Services in order to display various Web service wizards. Select the Web Service wizard. Click on the Next button.
Figure 3.14. New Web Service

- On the first Web Service wizard page: select Bottom up Java bean Web service as your Web service type, and select the Java bean from which the service will be created:
Figure 3.15. Set Web Service Common values

Click on the Next button.

• On the JBoss Web Service Code Generation Configuration page, set the following values:
Web Service Java Bean Identity

Configure the Java bean as a Web service.

WSDL file: TestBean.wsdl

Methods

- getAge()
- getAddress()
- setName(java.lang.String)
- setAge(java.lang.String)
- setAddress(java.lang.String)
- main(java.lang.String[])
- getName()

Select All  Deselect All

Style and use

- document/literal (wrapped)
- document/literal
- RPC/encoded

Define custom mapping for package to namespace.
• Generate WSDL file: select it, you will get a generated WSDL file in your project. But this
wsdl's service address location values are not a real address.

• After the Web service has been created, the following option can become available depending
on the options you selected: Update the default web.xml file. If selected, you may test the
web service by Explorer.

Click on the Next button.

• On this page, the project is deployed to the server. You can start the server and test the web
service. If you want to publish the web service to a UDDI registry, you may click the Next button
to publish it. If not, you may click the Finish button.

Figure 3.17. Start a Server
After the Web Service has been created, the following options may become available depending on the options selected:

- the generated web services code
- If you selected to generate a WSDL file, you will get the file in your project's wsdl folder.
Creating a Web service from a Java bean using JBossWS runtime

Figure 3.18. The Generated HelloWorldService.wsdl File in the wsdl Folder
• If you selected to update the default web.xml, you will test the web service in the browser. Open the Explorer, input the url for the web service according to web.xml plus ?wsdl, you will get the WSDL file from Explorer.

Figure 3.19. The Updated web.xml file

In the next chapter you will be able to create a Web Service Client from a WSDL document using JBoss WS.
Chapter 4.

Creating a Web Service Client from a WSDL Document using JBoss WS

To create a Web Service Client from a WSDL Document using JBoss WS you need to fulfil the following steps:

Setup  Chapter 5, JBoss Web Services and the development environment.

Section 3.1, “Creating a Dynamic Web project”.

Section 3.2, “Configure JBoss Web Service facet settings”.

Then you can create a Web Service Client from a WSDL document:

- Switch to the Java EE perspective Window > Open Perspective > Java EE.

- Click File > New > Other. Select Web Services in order to display the various Web service wizards. Select the Web Service Client wizard. Click on the Next button.

Figure 4.1. New Web Service Client
• The first and the second Web Service Client wizard pages are the same as for Section 3.3, “Creating a Web Service from a WSDL document using JBossWS runtime”.

Figure 4.2. Set Web Service Common values
Figure 4.3. Set Web Service values related to WSDL file

The only difference is:

• Client Type: Support of Java Proxy only.

Click on the Finish button.

After the Web Service Client has been created, the following may occur depending on the options you selected:

• the generated web service and client codes
• a client sample class.
Figure 4.4. Client Sample Class

JBoss WS use a Java class to test Web Service. A client sample class will be generated, you may run this client as a java application to call a web service.

Note:

To run client sample as a Java application you need a JBoss Runtime in build path.
In this chapter you will learn how to change preferences and set the default server runtime.

5.1. Preferences

In this section you will know how JBoss Web Services preferences can be modified during the development process.

To navigate to the preferences page click on **Window → Preferences → JBoss Tools → Web Services → JBossWS Preferences**

On this page you can manage the JBoss Web Services Runtime. Use the appropriate buttons to **Add** more runtimes or to **Remove** those that are not needed.

![JBossWS Preferences Page](image)

**Figure 5.1. JBossWS Preferences Page**
Clicking on the Add or Edit button will open the form where you can configure a new JBossWS runtime and change the JBossWS runtime path and modify the name and version of the existing JBossWS runtime settings. Click Finish to apply the changes.
Figure 5.2. Edit JBossWS Runtime
WS container allows Source and Javadoc locations to be set via the Properties dialog on each contained JAR: right-click on any JAR file in the Project Explorer view, select Properties. Choose Java Source Attachment and select the location (folder, JAR or ZIP) containing new source for the chosen JAR using one of the suggested options (workspace, external folder or file), or enter the path manually.

![Figure 5.3. Classpath Container: Java Source Attachment](image)

Click on Apply and then on OK.

To change the Javadoc location choose Javadoc Location and specify URL to the documentation generated by Javadoc. The Javadoc location will contain a file called package-list.
5.2. Default Server and Runtime

Open **Window → Preferences → Web Services → Server and Runtime**. On this page, you can specify a default server and runtime.

**Note**

For ease of use, set the runtime to JBoss WS.

After the server and runtime are specified, click on the **Apply** button to save the values.
Figure 5.5. Specifying a default server and runtime
Sample Web Service wizards

JBoss Tools includes wizards for the creation of sample web services. These include:

- **Create a Sample Web Service** for a JAX-WS web service

  This wizard is used within a Dynamic Web project. A dynamic web project can be created by following the steps in *Creating a dynamic web project*.

**Procedure 6.1. Creating a dynamic web project**

1. **Access the New Project Dialog**

   Select File → New → Project

   **Result:** The New Project screen displays.

2. **Define the Project Type**

   a. Click the Dynamic Web Project label by expanding the Web folder.

   b. Click the Next button to proceed.

   **Result:** The New Dynamic Web Project screen displays.
Figure 6.1. Dynamic Web Project Attributes

3. Define the Project Attributes

Define the Dynamic Web Project attributes according to the options displayed in Table 6.1, “New Dynamic Web Project”
### Table 6.1. New Dynamic Web Project

<table>
<thead>
<tr>
<th>Field</th>
<th>Mandatory</th>
<th>Instruction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project name</td>
<td>yes</td>
<td>Enter the project name.</td>
<td>The project name can be any name defined by the user.</td>
</tr>
<tr>
<td>Project location</td>
<td>yes</td>
<td>Click the <strong>Use default location</strong> checkbox to define the project location as the Eclipse workspace or define a custom path in the <strong>Location</strong> field.</td>
<td>The default location corresponds to the Eclipse workspace.</td>
</tr>
<tr>
<td>Target runtime</td>
<td>no</td>
<td>Select a pre-configured runtime from the available options or configure a new runtime environment.</td>
<td>The target runtime defines the server to which the application will be deployed.</td>
</tr>
<tr>
<td>Dynamic web module version</td>
<td>yes</td>
<td>Select the required web module version.</td>
<td>This option adds support for the Java Servlet API with module versions corresponding to J2EE levels as listed in Table 6.2, “New Dynamic Project - Dynamic web module version”.</td>
</tr>
<tr>
<td>Configuration</td>
<td>yes</td>
<td>Select the project configuration from the available options.</td>
<td>The project can be based on either a custom or a set of pre-defined configurations as described in Table 6.3, “New Dynamic Project - Configuration”.</td>
</tr>
<tr>
<td>EAR membership</td>
<td>no</td>
<td>Add the project to an existing EAR project.</td>
<td>The project can be added to an existing EAR project by selecting the checkbox. Once checked, a new EAR project can be defined by clicking the <strong>New Project</strong> button.</td>
</tr>
<tr>
<td>Working sets</td>
<td>no</td>
<td>Add the project to an existing working set.</td>
<td>A working set provides the ability to group projects or project attributes in a customized way to improve access. A new working set can be defined once the <strong>Select</strong> button has been clicked.</td>
</tr>
</tbody>
</table>
Table 6.2. New Dynamic Project - Dynamic web module version

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2</td>
<td>This web module version corresponds to the J2EE 1.2 implementation.</td>
</tr>
<tr>
<td>2.3</td>
<td>This web module version corresponds to the J2EE 1.3 implementation.</td>
</tr>
<tr>
<td>2.4</td>
<td>This web module version corresponds to the J2EE 1.4 implementation.</td>
</tr>
<tr>
<td>2.5</td>
<td>This web module version corresponds to the JEE 5 implementation.</td>
</tr>
</tbody>
</table>

Table 6.3. New Dynamic Project - Configuration

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;custom&gt;</td>
<td>Choosing from one of the pre-defined configurations will minimise the effort</td>
</tr>
<tr>
<td></td>
<td>required to set up the project.</td>
</tr>
<tr>
<td>BIRT Charting Web Project</td>
<td>A project with the BIRT Charting Runtime Component.</td>
</tr>
<tr>
<td>BIRT Charting Web Project</td>
<td>A project with the BIRT Reporting Runtime Component.</td>
</tr>
<tr>
<td>CXF Web Services Project v2.5</td>
<td>Configures a project with CXF using Web Module v2.5 and Java v5.0.</td>
</tr>
<tr>
<td>Default Configuration for JBoss 5.0 Runtime</td>
<td>This option is a suitable starting point. Additional facets can be installed later to add new functionality.</td>
</tr>
<tr>
<td>Dynamic Web Project with Seam 1.2</td>
<td>Configures a project to use Seam v1.2.</td>
</tr>
<tr>
<td>Dynamic Web Project with Seam 2.0</td>
<td>Configures a project to use Seam v2.0.</td>
</tr>
<tr>
<td>Dynamic Web Project with Seam 2.1</td>
<td>Configures a project to use Seam v2.1.</td>
</tr>
<tr>
<td>Dynamic Web Project with Seam 2.2</td>
<td>Configures a project to use Seam v2.2.</td>
</tr>
<tr>
<td>JBoss WS Web Service Project v3.0</td>
<td>Configures a project with JBossWS using Web Module v2.5 and Java v5.0.</td>
</tr>
<tr>
<td>JavaServer Faces v1.2 Project</td>
<td>Configures a project to use JSF v1.2.</td>
</tr>
<tr>
<td>Minimal Configuration</td>
<td>The minimum required facets are installed. Additional facets can be chosen later to add functionality to the project.</td>
</tr>
</tbody>
</table>

4. **Access the Java sub-dialog**

   Click **Next** to proceed.

   **Result:** The New Dynamic Web Project - Java dialog displays.
5. **Define the source and output folders**

Define the Dynamic Web Project source and output folders by adding or editing folders as required.

6. **Access the Web Module sub-dialog**

Click **Next** to proceed.

**Result:** The **New Dynamic Web Project - Web Module** dialog displays.

![Web Module dialog](image)

**Figure 6.2. New Dynamic Web Project - Web Module**

7. **Enter the web module settings**

Define the settings as listed in **Table 6.4, “New Dynamic Web Project - Web Module”** including the root folder for path names in the web project context and the name of the web content directory.

**Table 6.4. New Dynamic Web Project - Web Module**

<table>
<thead>
<tr>
<th>Field</th>
<th>Mandatory</th>
<th>Instruction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context root</td>
<td>yes</td>
<td>Enter the context root for the project.</td>
<td>The context root identifies a web application to the server and which URLs to delegate to the application.</td>
</tr>
<tr>
<td>Content directory</td>
<td>yes</td>
<td>Enter the directory name for the web content.</td>
<td>Web resources such as html, jsp files and graphic files will be written to the specified content directory.</td>
</tr>
</tbody>
</table>
6.1. Sample Web Service

These sections describe how to generate and deploy a sample web service.

6.1.1. Generation

A sample web service can be created by using the Create a Sample Web Service wizard as described in Generate a sample web service

Procedure 6.2. Generate a sample web service

1. Access the New - Select a wizard dialog

   a. Right click on the project name in the Project Explorer view.

   b. Select New → Other.

   c. Click the Create a Sample Web Service label by expanding the Web Services folder.

   Result:  The New - Select a wizard dialog displays with the selected wizard type highlighted.

2. Access the Generate a Sample Web Service dialog

   Click the Next button to proceed.

   Result:  The Generate a Sample Web Service - Project and Web Service Name dialog displays.
Figure 6.3. Generate a Sample Web Service - Project and Web Service Name

3. Define the service attributes

Define the project, web service, package and class names according to the options displayed in Table 6.5, “Project and Web Service Name”

Table 6.5. Project and Web Service Name

<table>
<thead>
<tr>
<th>Dialog group</th>
<th>Field</th>
<th>Mandatory</th>
<th>Instruction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Web Project</td>
<td>yes</td>
<td></td>
<td>Enter the project name.</td>
<td>The project name will default to the highlighted project in the Project Explorer. A different project can be selected from the list or entered directly in the editable drop-down list.</td>
</tr>
<tr>
<td>Web Service</td>
<td>Name</td>
<td>yes</td>
<td>Enter the name for the web service.</td>
<td>The web service name will be the url for the service as mapped in the deployment descriptor (web.xml).</td>
</tr>
</tbody>
</table>
Chapter 6. Sample Web Service...

<table>
<thead>
<tr>
<th>Dialog group</th>
<th>Field</th>
<th>Mandatory</th>
<th>Instruction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Web Service Class</td>
<td>Package</td>
<td>yes</td>
<td>Enter the package for the web service servlet.</td>
<td>The default package for the sample web service will be displayed.</td>
</tr>
<tr>
<td></td>
<td>Class</td>
<td>yes</td>
<td>Enter the name of the web service servlet.</td>
<td>The default class name will correspond to the default web service name resulting in an equivalent url to servlet name mapping in the deployment descriptor (web.xml).</td>
</tr>
</tbody>
</table>

4. **Generate the web service**

   Click the Finish button to complete the web service setup.

   **Result:** The web service classes will be generated and the web.xml file updated with the deployment details.

5. **Browse the HelloWorld.java class**

   Double click the HelloWorld.java class and note the annotated class name and method. These annotations identify the web service entities to the server.

   ![HelloWorld.java class](image)

   **Figure 6.4. web.xml**

6. **Browse the web.xml deployment descriptor**

   Double click the web.xml file and note the servlet mapping as defined in Figure 6.3, “Generate a Sample Web Service - Project and Web Service Name”. Note also that:
• the main servlet for the application is `org.jboss.samples.webservices.HelloWorld`
  which is given the custom name HelloWorld; and

• the main servlet is mapped to the particular url `/HelloWorld` [1].

Figure 6.5. web.xml

Upon start up, the server will write a WSDL file to the `server-profile/data/wsdl/` directory

6.1.2. Deployment

Once created, the sample web service can be deployed to the target runtime as described in
`Export the project as a Web Archive (WAR)`.

Procedure 6.3. Export the project as a Web Archive (WAR)

1. Access the Export dialog

   a. Right click on the project name in the `Project Explorer` view.

   b. Select `Export` → `WAR file`.

   **Result:** The `Export- WAR Export` dialog displays with the selected web project
   highlighted.
Figure 6.6. Export - WAR Export dialog

2. Complete the export dialog

Define the WAR file attributes as described in Table 6.6, “Export - War Export”

Table 6.6. Export - War Export

<table>
<thead>
<tr>
<th>Field</th>
<th>Mandatory</th>
<th>Instruction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web project</td>
<td>yes</td>
<td>Enter the web project name.</td>
<td>The project name will default to the highlighted project in the Project Explorer. A different project can be selected from the list or entered directly in the editable drop-down list.</td>
</tr>
<tr>
<td>Destination</td>
<td>yes</td>
<td>Enter or browse to the destination.</td>
<td>Set the destination as the build folder to store the WAR file within the project. Alternatively, deploy the project directly to the deploy</td>
</tr>
</tbody>
</table>
### Field | Mandatory Instruction | Description
--- | --- | ---
Optimize for a specific server runtime | Select this box to optimize the WAR file for deployment to the targeted runtime. | The list of available runtimes will be those configured during the project set-up or by selecting **File → New → Server.**

3. **Deploy the application**

Copy the file to the deploy directory of the required target server profile, such as the all profile. Note that the WAR file destination may have already been set as the deploy directory in *Step 2.*
Web Service Test View

JBoss Tools provides a view to test web services. The Web Services Test View can be displayed by following the steps in Web Services Test View.

Procedure 7.1. Web Services Test View

- Access the Show View dialog
  
  a. Select **Window → Show View → Other**

  **Result:** The Show View dialog displays.

  b. Click on the **Web Services Tester** label by expanding the **JBoss Tools Web Services** node and click **OK**.

  **Result:** The Web Services test view displays.

![Web Service Test View](image)

**Figure 7.1. Web Service Test View**

You can also access this view by right-clicking on a WSDL file of a project in the **Project Explorer** and selecting **Web Services → Test in JBoss Web Service Tester** from the context menu. This will open the **Web Service Tester** with the details of the selected WSDL file.

The main components of the Web Service Tester View are:

- WSDL path/button bar (Table 7.1, "WSDL path/button bar")
Chapter 7. Web Service Test View

- Request details panel (Table 7.2, “Request details panel”)

- Response details panel (Table 7.3, “Response details panel”)

Table 7.1. WSDL path/button bar

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Editable dropdown list</td>
<td>Enter the location of the WSDL file or HTTP address of the service to be tested. The combo box requires the path to the WSDL in a URI format.</td>
</tr>
<tr>
<td>Combo box</td>
<td>Select the type of service to test. The options are JAX-WS or any other option to test a JAX-RS service using HTTP request methods (PUT, GET, POST, DELETE or OPTIONS).</td>
</tr>
<tr>
<td>Toolbar button - Get</td>
<td>Click this button to display the Select WSDL dialog. Enter the URL, File system location or Eclipse Workspace location of the WSDL file. Given a valid file, the dialog will allow selection of the Port and Operation to test. Once selected, the request details will be displayed in the Request Details panel.</td>
</tr>
<tr>
<td>Toolbar button - Invoke</td>
<td>Once the WSDL file has been selected, the service can be invoked by clicking this button. Response details will be displayed in the Response Details panel.</td>
</tr>
</tbody>
</table>

Table 7.2. Request details panel

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prompt for Basic Authentication</td>
<td>Select this check box to send a username and password with the request. Entering the user details for each subsequent request is not necessary as the details are stored in memory.</td>
</tr>
<tr>
<td>Headers</td>
<td>Enter (Add) one or more name=value pairs. These headers will be passed with the invocation request at the HTTP level where possible.</td>
</tr>
<tr>
<td>Parameters</td>
<td>As for header information, enter one or more name=value pairs by clicking the Add button.</td>
</tr>
<tr>
<td>Body</td>
<td>Enter the JAX-WS SOAP request messages or input for JAX-RS service invocations in this text box.</td>
</tr>
</tbody>
</table>

Table 7.3. Response details panel

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response headers</td>
<td>The headers returned by the service invocation will be displayed in this panel.</td>
</tr>
</tbody>
</table>
The following sections describe testing JAX-WS web services.

7.1. Preliminaries

The following procedure describes the steps to perform before testing a web service.

Procedure 7.2. Testing a web service

• Preliminary steps

Prior to testing a web service:

a. The Web Service Test View should be opened as described in Web Services Test View.

Result: The Web Service Test View displays.

Figure 7.2. Web Service Test View
b. A web service has been deployed to the deploy directory of the chosen server profile.

c. The server has been started with `run.sh -c <profile>`

### 7.2. Testing a Web Service

A JAX-WS web service can be tested by using the Web Service Tester View displayed in Figure 7.1, "Web Service Test View". The JAX-WS test is specified by:

1. Selecting the JAX-WS combobox option.
2. Entering the location of the WDSL file.

Step 2 can be performed in a number of ways including:

- entering the location directly in the editable dropdown list; or

- clicking the Get from WSDL file button and entering the URL, Eclipse workspace or File system details.

*Testing a JAX-WS web service* demonstrates testing the WebServiceSample project developed in *Generate a sample web service*.

#### Procedure 7.3. Testing a JAX-WS web service

1. Following the preliminary steps described in *Testing a web service*, select JAX-WS from the available combo box options.

   **Result:** The SOAP message details are displayed in the Request Body textbox of the Request Details panel.

   ```
   <soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
                  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                  xsi:schemaLocation="http://www.w3.org/2001/XMLSchema"
                  xmlns:ws="http://localhost/ws">
     <soap:Header>
     </soap:Header>
     <soap:Body>
     </soap:Body>
     </soap:Envelope>
   ```

   **Figure 7.3. JAX-WS Body Text**
2. Enter the location of the WSDL file in the editable dropdown list. The location for the `WebServiceSample` web service is [http://localhost:8080/WebServiceSample/HelloWorld?WSDL](http://localhost:8080/WebServiceSample/HelloWorld?WSDL)

3. Click the **Invoke** button.

   **Result:** The **Select WSDL** dialog appears.

   ![Select WSDL](image)

   **Figure 7.4. Select WSDL**

4. **Select the required service attributes**

   Select the **Service**, **Port** and **Operation** from the comboboxes and click **OK**.

   **Results:** The `<soap:Body/>` section of the SOAP message is filled with the SayHello message details.

   ```xml
   <soap:Body>
   <webs:sayHello xmlns:webs="http://webservices.samples.jboss.org/">
   <!-- optional -->
   <arg0>?\</arg0>
   </webs:sayHello>
   </soap:Body>
   ```

   **Figure 7.5. JBoss Tools Project Creation**

   The response header details are returned.
Response Headers

Transfer-encoding=[chunked]
[HTTP/1.1 200 OK]
Content-type=[text/xml;charset=UTF-8]
X-powered-by=[Servlet 2.5; JBoss-5.0/JBossWeb-2.1]
Server=[Apache-Coyote/1.1]
Date=[Thu, 16 Sep 2010 03:50:15 GMT]

Figure 7.6. JBoss Tools Project Creation

The response message body is displayed in the **Response Body** textbox.

**Response Body**

```xml
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:ns2="http://webservces.samples.jboss.org/"
>
  <env:Header/>
  <ns2:sayHelloResponse>
    <return>Hello null!</return>
  </ns2:sayHelloResponse>
</env:Body>
</env:Envelope>
```

Figure 7.7. JBoss Tools Project Creation

These results indicate a successful test.