



IBM Software Group

IBM® WebSphere® Application Server V6.1 Feature Pack for Web Services

Application development



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Updated August 8, 2007

This presentation will focus on explaining the new features available to support developing JAX-WS applications with the IBM WebSphere Application Server V6.1 Feature Pack for Web Services.

Agenda

- Overview
- WebSphere Application Server toolkit (AST)

This presentation will begin with an overview of the tools options available for developing Web Services applications for the Feature Pack for Web Services. Then it will show many of the new application development wizards and features offered in the WebSphere Application Server Toolkit or AST. Finally, it will explain how the IBM Rational® Application Developer V7 can be updated to also be used for the Feature Pack for Web Services.

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Section

Overview

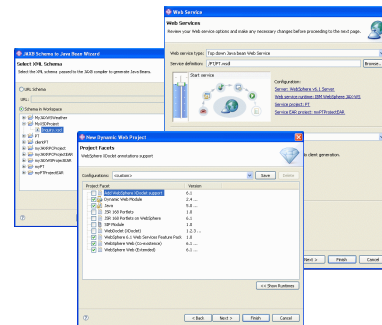
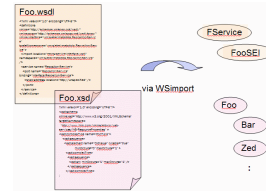
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This section will provide an overview of the tools for the Feature Pack for Web Services.

Tools options

- **Command-line tools**
 - ▶ JAX-B 2.0 XSD->Java generation (xjc)
 - ▶ JAX-B 2.0-> Schema generation (schemagen)
 - ▶ JAX-WS 2.0 WSDL->Java (wsimport)
 - ▶ JAX-WS 2.0 Java->WSDL (wsngen)
- **Rational Application Developer and WebSphere Application Server toolkit**
 - ▶ GUI Wizards to drive command-line tools
 - ▶ Feature pack awareness (facet)
 - ▶ Annotation validation
 - ▶ JAX-WS navigator view
 - ▶ Policy set support



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For the application developer, the Feature Pack for Web Services provides a set of tools to help make development easier. At the most basic level there are command line tools to generate various artifacts. An XJC command can be used to generate Java artifacts based on a JAXB 2.0 XSD definition or also from a WSDL file. There are also WSIMPORT and WSGEN commands for top down and bottom up Web Services development. There are also updates to the AST and Rational Application Developer, with additions to wizards for the creation of Web Services. These have been extended to support JAX-WS and JAXB based Web Services; with annotation validation, graphical wizards, publishing tools for developed Web Services and a Jython debugger for scripting.

Section

WebSphere Application Server toolkit (AST)

The next section shows the new JAX-WS development features offered by the WebSphere Application Server Toolkit or AST.

IBM WebSphere Application Server toolkit

- Provides a complete environment to help you build applications for IBM WebSphere Application Server V6.1
 - ▶ Application creation
 - ▶ Application testing
 - ▶ Application deployment
- Highly integrated with WebSphere Application Server to facilitate the above functions
 - ▶ More than just a deployment tool
- The upgrade process for the AST V6.1 can be found at:
<http://www.ibm.com/support/docview.wss?uid=swg24014241>



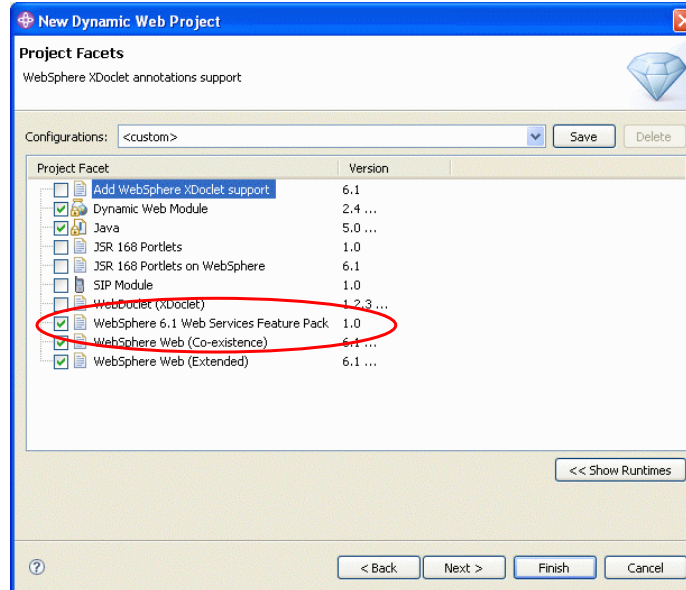
The IBM WebSphere Application Server Toolkit, or AST, provides a complete development environment for building applications, it provides tools for creating, testing and deploying applications. The AST is integrated with WebSphere Application Server to make the development tasks, including deployment, easier for users. While the AST is not as feature-rich as IBM Rational Application Developer, it is still a powerful development tool. The upgrade process for the AST V6.1 can be found at the link above.

IBM WebSphere Application Server toolkit

- Must enable project facet for Feature Pack for Web Services within the AST to see new Web services features
 - ▶ JAX-WS development wizards
 - Top down
 - Bottom up
 - ▶ JSP generation wizards
 - ▶ Policy set support
 - ▶ Code generation defaults

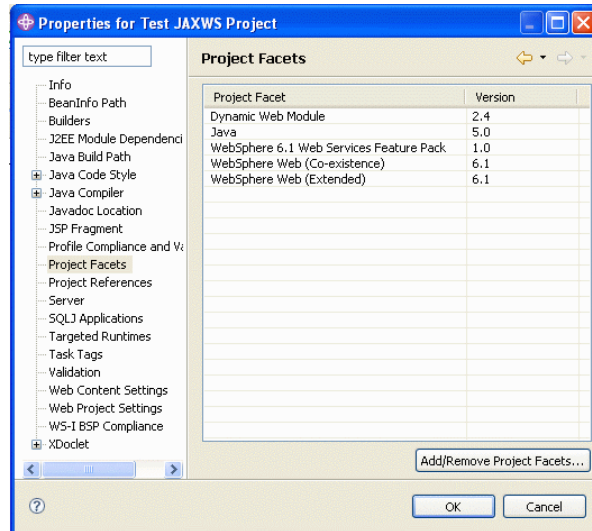
In order to enable the new features surrounding the Feature Pack for Web Services in the AST, the project facet for the Feature Pack must be enabled for the project. This will add the ability to use new JAX-WS development wizards, JSP™ generation wizards, support for Policy Sets, and the use of code generation defaults.

Enabling facet support



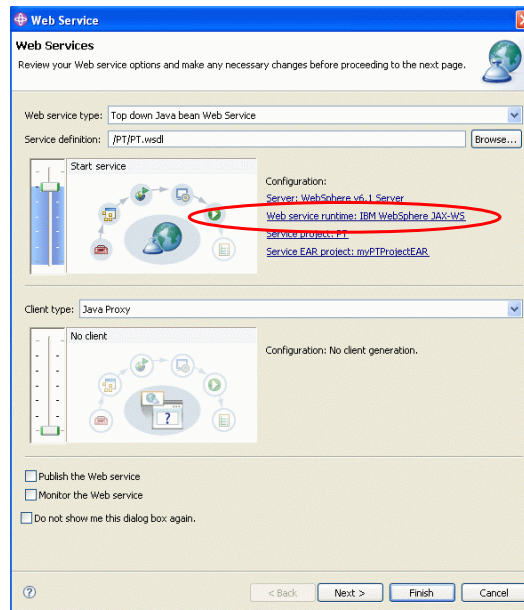
This screen shows how to enable the project facet for the Feature Pack for Web Services on a new dynamic Web project within the AST.

Verifying facet support



To verify the project facets that have been enabled on an existing project, check the properties for the project, and choose project facets.

Web service creation wizard



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When creating a new Web Service using the Web Services creation wizard, new options have been added. One of these is for the Web Service runtime to use, this can be changed between JAX-RPC and JAX-WS.

Web service creation wizard

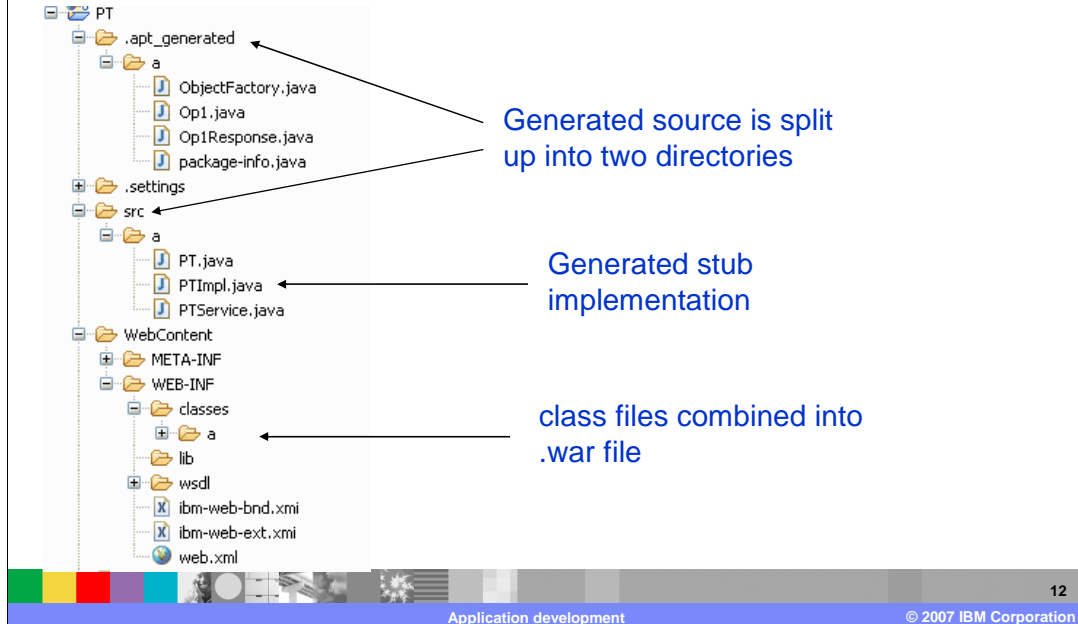
The screenshot shows a dialog box titled "Web Service" with the subtitle "WebSphere JAX-WS Top Down Web Service Configuration". The main text reads "Specify options for creating a WebSphere JAX-WS Top Down Web Service". The dialog contains the following fields and options:

- Output folder: /PT/src
- Target package: <Default namespace to package mapping> (with a "Browse..." button)
- Enable Wrapper Style
- Copy WSDL to project
- Specify JAX-WS or JAXB binding files
- Customize service implementation class name

At the bottom, there are four buttons: "< Back", "Next >", "Finish", and "Cancel".

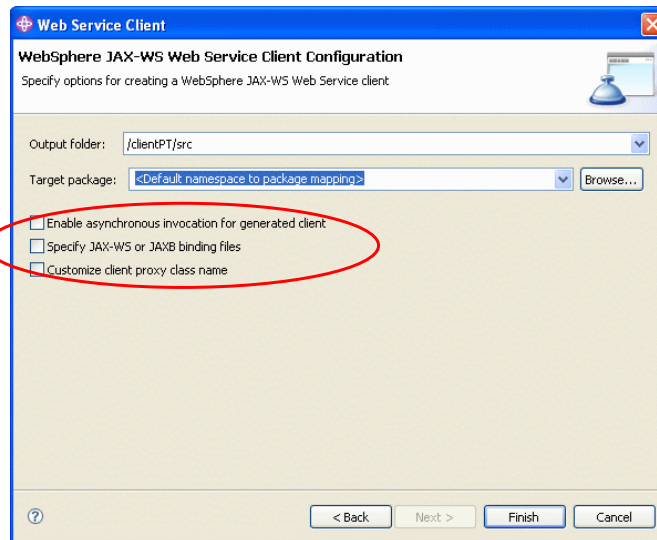
Further options can be configured for a JAX-WS Web Service. These include enabling the wrapper style for the Web Service, copying the WSDL to the project, and specifying JAX-WS or JAX-B binding files.

Files generated by wizard



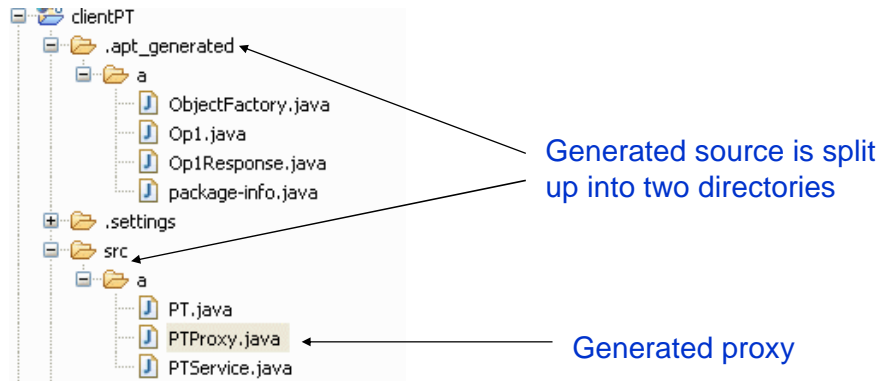
This picture illustrates the location of various files when generated by the AST tool. The source files are split between the SRC folder and a folder for portable Java artifacts for the Web Service. The stub implementation is placed in the SRC folder. The class files are combined into a single .WAR file that can be exported and deployed.

Web service client wizard



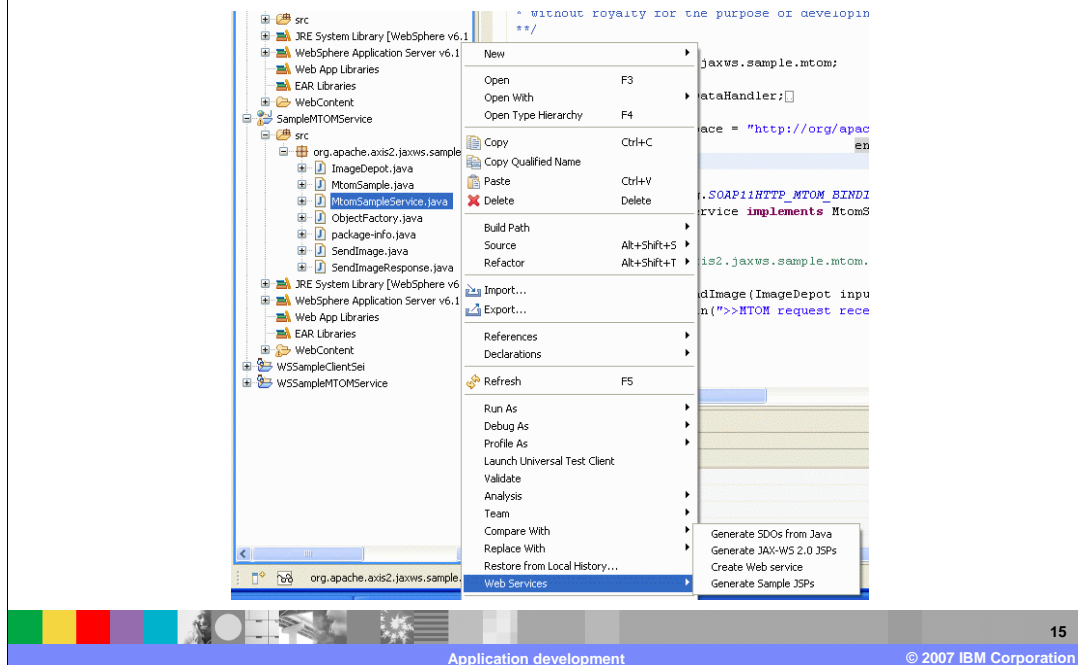
There is also a client generation wizard for JAX-WS clients. The additional options allow a user to enable asynchronous invocation of the client, to specify JAX-WS or JAX-B binding files, and to customize the client proxy class name.

Files generated by client wizard



This slide shows the location of the client source code, split between the SRC folder and a folder for portable Java artifacts for the Web Service. The generated proxy is placed in the SRC folder.

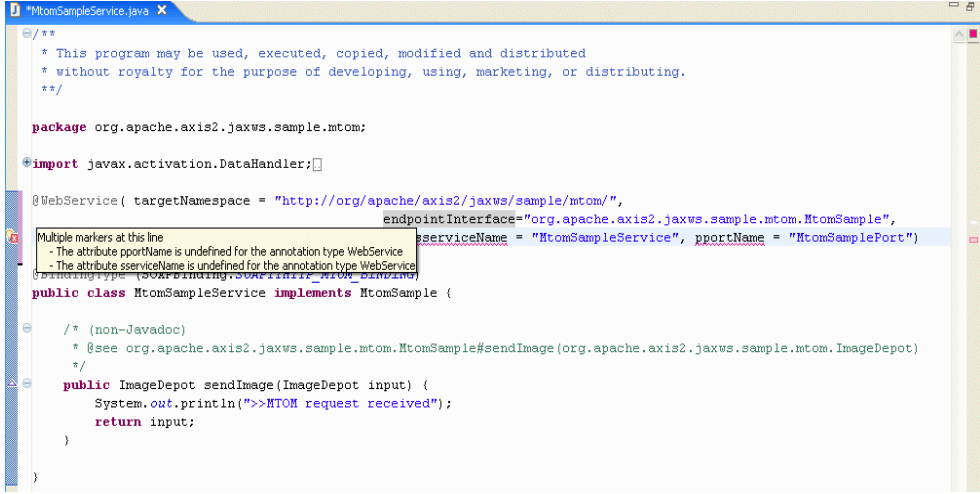
Bottom up mapping and JSP wizards



There are also tools provided for bottom up development. Right click on a class to be able to create a Web Service from that class. Remember there is no EJB support in the Feature Pack for Web Services, so this option is not available on EJBs.

Annotation validation

- On-the-fly annotation validation



```
/**
 * This program may be used, executed, copied, modified and distributed
 * without royalty for the purpose of developing, using, marketing, or distributing.
 */

package org.apache.axis2.jaxws.sample.mtom;

import javax.activation.DataHandler;

@WebService(targetNamespace = "http://org/apache/axis2/jaxws/sample/mtom/",
            endpointInterface="org.apache.axis2.jaxws.sample.mtom.MtomSample",
            serviceName = "MtomSampleService", pportName = "MtomSamplePort")
public class MtomSampleService implements MtomSample {

    /* (non-Javadoc)
     * @see org.apache.axis2.jaxws.sample.mtom.MtomSample#sendImage(org.apache.axis2.jaxws.sample.mtom.ImageDepot)
     */
    public ImageDepot sendImage(ImageDepot input) {
        System.out.println(">>>MTOH request received");
        return input;
    }
}
```

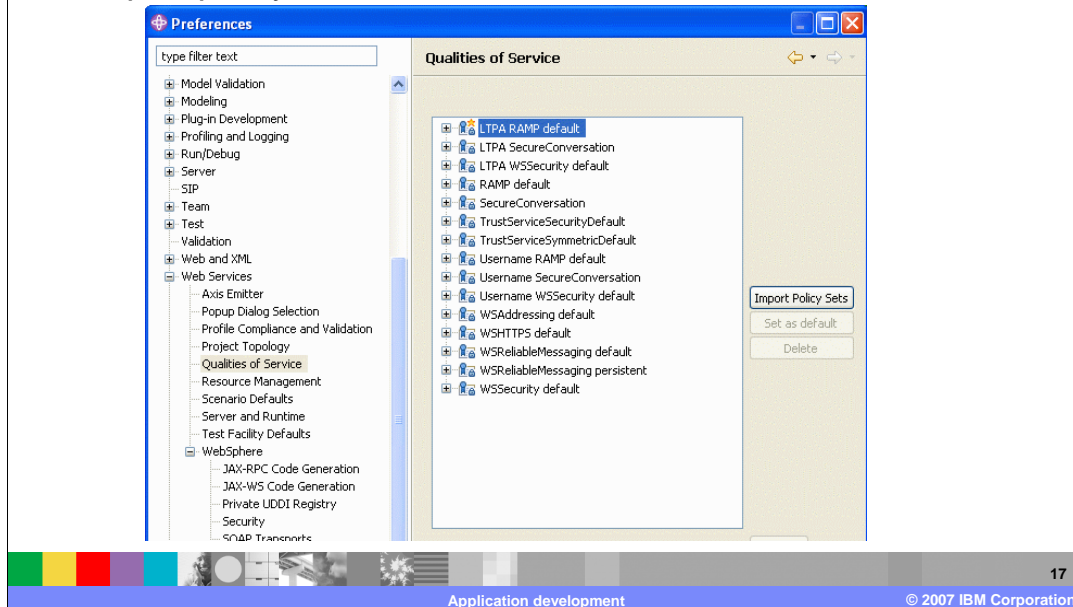
Multiple markers at this line
- The attribute pportName is undefined for the annotation type WebService
- The attribute sserviceName is undefined for the annotation type WebService

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As annotations are added to the source, the AST will validate those annotations as they are typed. The file does not have to be saved to be validated. Tips will also be provided as the annotations are typed.

Policy set support

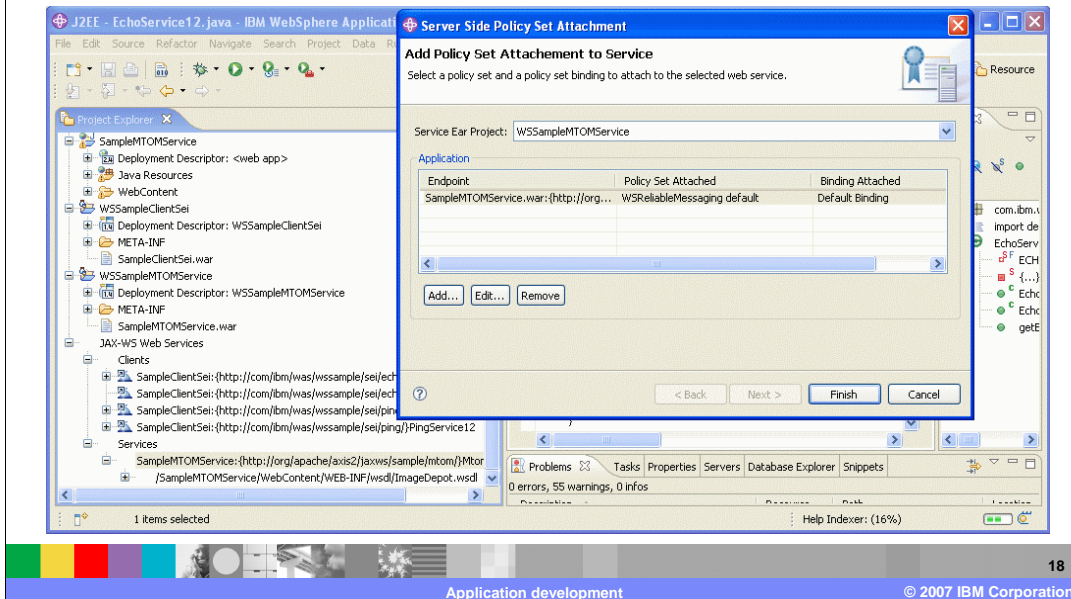
- Import policy sets



The Application Server Toolkit also has the abilities to work with policy sets. Policy sets can be imported in the preferences view under quality of services. This allows a developer to work with the same policy sets as are used in the production environment.

Policy set support

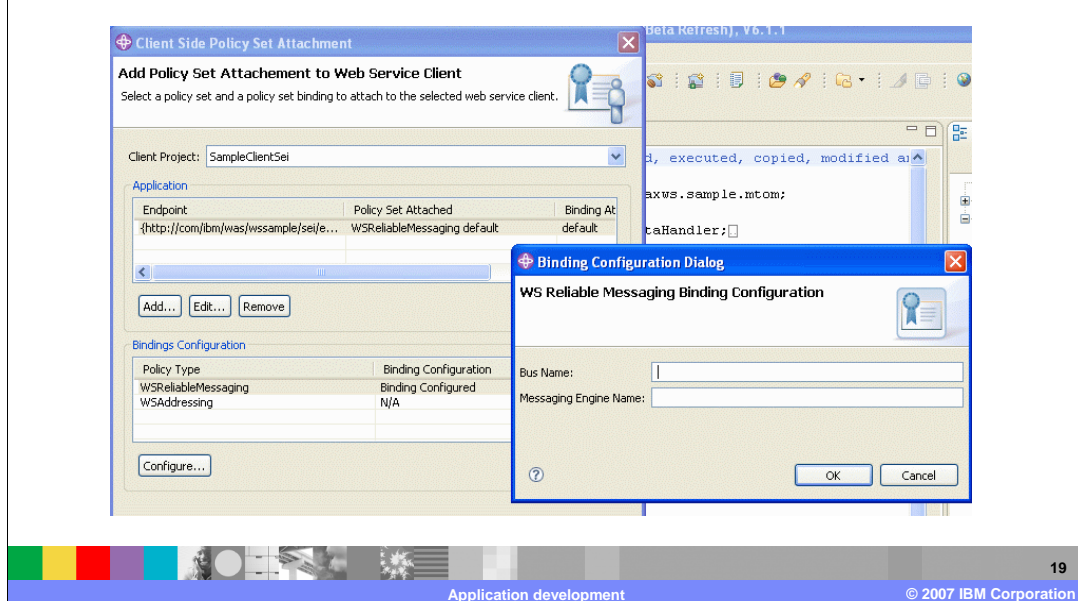
- Attach policy set



Policy sets can be attached to Web Services in the AST, through the wizard shown here. All Policy Sets attached to the service will be listed, and more can be added or removed.

Policy set support

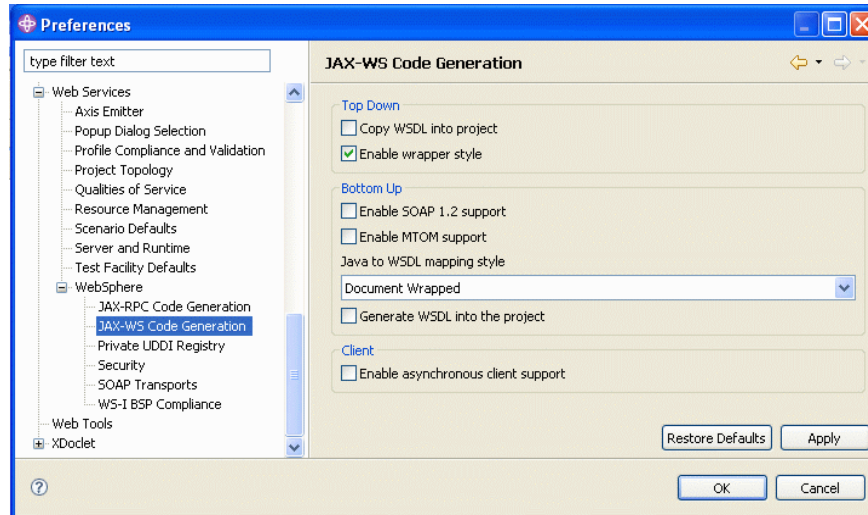
- Modify the binding configuration



Policy sets can be modified in the AST as well, through the wizard shown here. All Policy Sets attached to the service will be listed and each can be modified. Customized Policy Sets can then be exported to be imported into a WebSphere Application Server environment.

Code generation preferences

- Set intelligent defaults



The defaults used by the tools for JAX-WS Web Services can be set in the preferences, as shown above. Items such as enabling SOAP 1.2 support, enabling MTOM support and others can be enabled by default on all JAX-WS Web Services that are created.

Section

IBM Rational Application Developer

The next section explains the addition in IBM Rational Application Developer for the Feature Pack for Web Services.

IBM Rational Application Developer

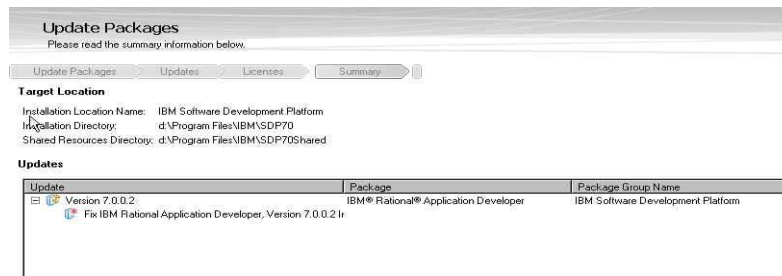
- A Feature Pack For Web Services update is also available for Rational Application Developer V7
 - ▶ Updating the development environment to add these features has never been easier
- Open the installation manager software and select “Update Packages”



There is also an update available to add the same wizards and JAX-WS development tools into IBM Rational Application Developer V7 environments. Updating the RAD development tools with the Feature Pack for Web Services is a simple process, open the installation manager software in the tools and select update packages.

Rational software update

- The fix pack will automatically install the WebSphere Application Server V6.1 Feature Pack for Web Services
 - ▶ Will create a Feature Pack enabled profile, which is required to take advantage of the JAX-WS runtime



A fix pack will be listed for the Feature Pack for Web Services enhancements for Rational Application Developer. This can be automatically installed, which will also create a Feature Pack for Web Services enabled profile, which is needed to run JAX-WS applications.

Section

Summary



The next section will summarize the presentation.

Summary

- A choice of environments and tools to build applications for IBM WebSphere Application Server V6.1 Feature Pack for Web Services
 - ▶ Application Server toolkit
 - ▶ IBM Rational Application Developer

Developers have a number of choices when creating JAX-WS applications with the Feature Pack for Web Services. Command line tools are available, and options for the Application Server Toolkit and IBM Rational Application Developer. This presentation detailed the new wizards and options available in the Application Server Toolkit. All these features can also be found in Rational Application Developer.

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