



Introduction to Web Services Tools in WTP

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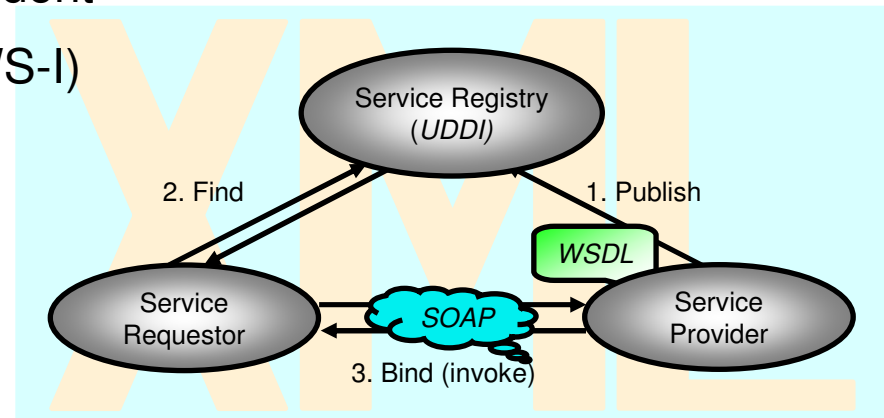


Agenda

- Web Services Overview
- Web Services Tools in WTP
- New in WTP 2.0
 - Internet Preference Page
 - SOAP Header Support in WSE
 - Axis2 Support
- Questions and Answers

Web Services Overview

- Simple application components invoke over the Internet
- Based on XML for information interchange
- Building blocks for more complex Web applications:
 - Loose coupling between service endpoints
 - Platform and language independent
 - Interoperable (with help from WS-I)
- WSDL, SOAP, and UDDI





Web Services Tools in WTP

- Web Services Explorer
- Web Service wizard
- Web Service Client wizard
- Web Service Ant tasks

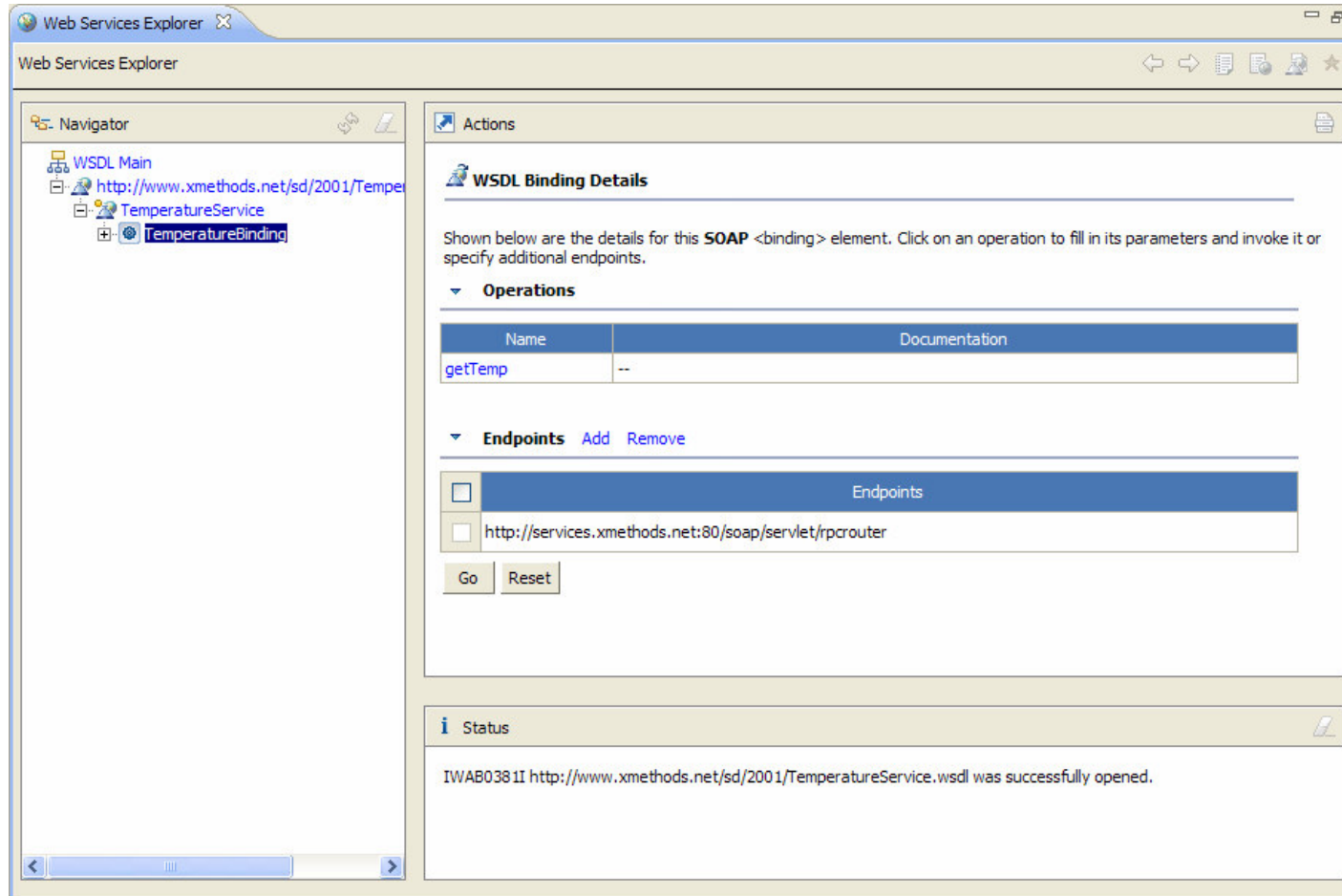


Web Services Explorer

- An Eclipse integrated Web application
 - Publishing Web services to UDDI registries.
 - Discovering Web services in UDDI registries.
 - Managing standard and custom taxonomies.
 - Simplified integration with the private UDDI registry.
 - Navigating WS-Inspection (WSIL) documents.
 - Dynamically browse and invoke Web services (WSDL).
 - Invoking Web service natively using WSDL and XSD.
 - Comprehensive support for XML Schema.



Web Services Explorer





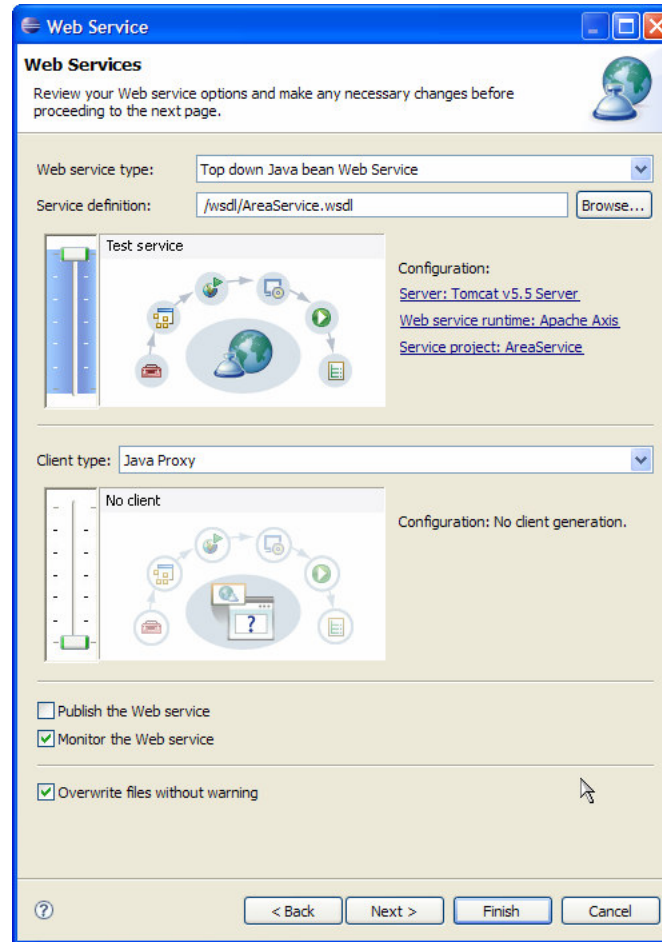
Web Service Wizard

- Create Web services
 - Top-down: Generate / Merge skeletal POJOs from WSDL.
 - Bottom-up: Deploy Web services from JavaBeans.
 - sliders to control extent of service and client creation:
develop, assemble, deploy, install, start and test (using Web Services Explorer).
 - Server, runtime and project summary, changeable via hyperlinks.

- Other functions
 - In-wizard WSDL validation (top-down and client).
 - In-wizard JAX-RPC analysis (bottom-up).
 - Skeleton merge for top-down.
 - TCP/IP monitor configuration.



Web Service Wizard

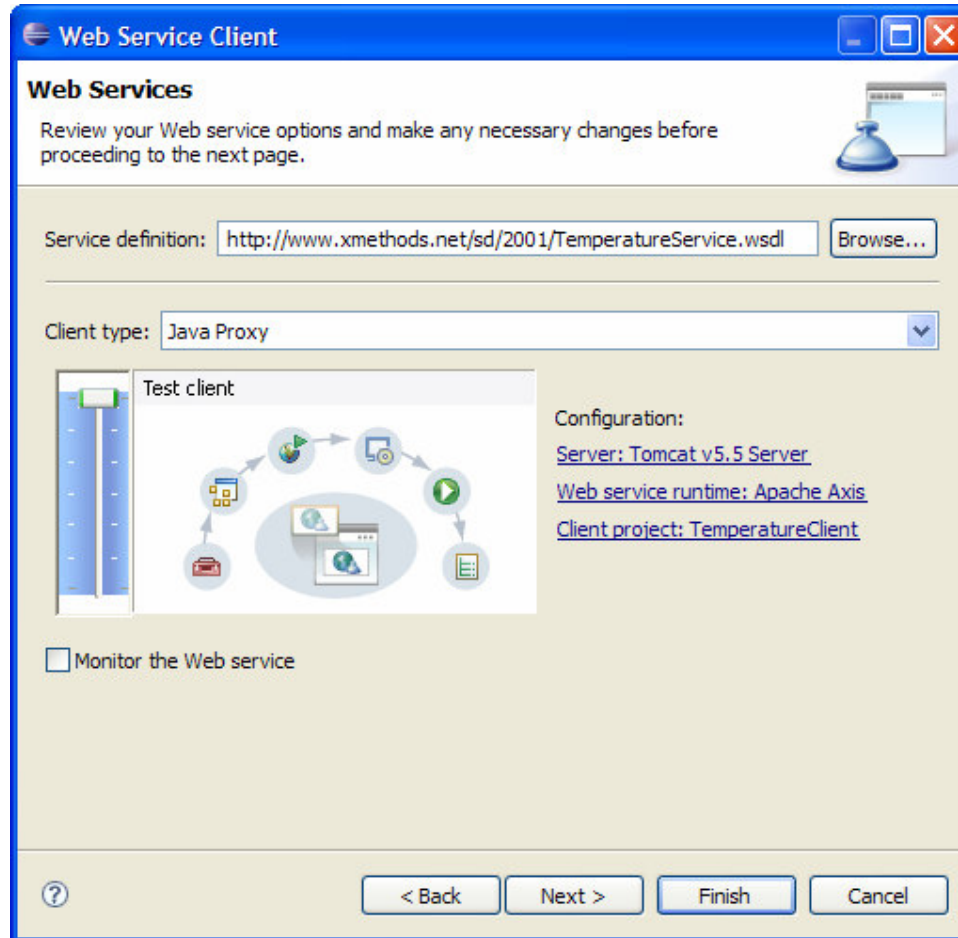




Web Service Client Wizard

- Discover WSDL and create client proxies to services.
- Many of the same features as the Web Service Wizard.
- Test generated proxy with Sample JSPs.
- Automatic TCP/IP monitor configuration.

Web Service Client Wizard





Ant Tasks

- Alternatives to the wizards.
 - Bottom-up.
 - Top-down.
 - Java Client.
- Axis 1.x: Explicit call to Apache Axis AdminClient required later.
- Two execution styles:
 - IDE - Run as Ant build (in same JRE) using properties files imported using New “Ant Files” wizard.
 - Command line - wsant.bat / wsant.sh (in the org.eclipse.wst.command.env plugin).

Tutorial:

<http://www.eclipse.org/webtools/jst/components/ws/1.0/tutorials/WebServiceAntTask/WebServiceAntTask.html>



Supported Runtimes

- WTP 1.5.x - supports Apache Axis 1.3.
- Other vendors have products that build on WTP and provide their own Web service runtime extensions
 - e.g. IBM Rational® Application Developer (RAD)



Web Services Extension Points

- Web Services creation extensions
 - Supports creating bottom-up and top-down Java Web service
 - Can be extended to support other Web service runtimes and Web service types (e.g. bottom-up and top-down EJB Web service on WebSphere Web services runtime in IBM RAD)

- Web Services Test Framework
 - Supports Web Services Explorer and Sample JSP in WTP
 - Can be extended to support other test facility (e.g. Universal Test Client in IBM RAD)

- Web Services Finder Framework
 - Supported by Web Services Explorer in WTP
 - Can be extended to support finding Web services by other tools (e.g. Web services discovery through JSF in IBM RAD)

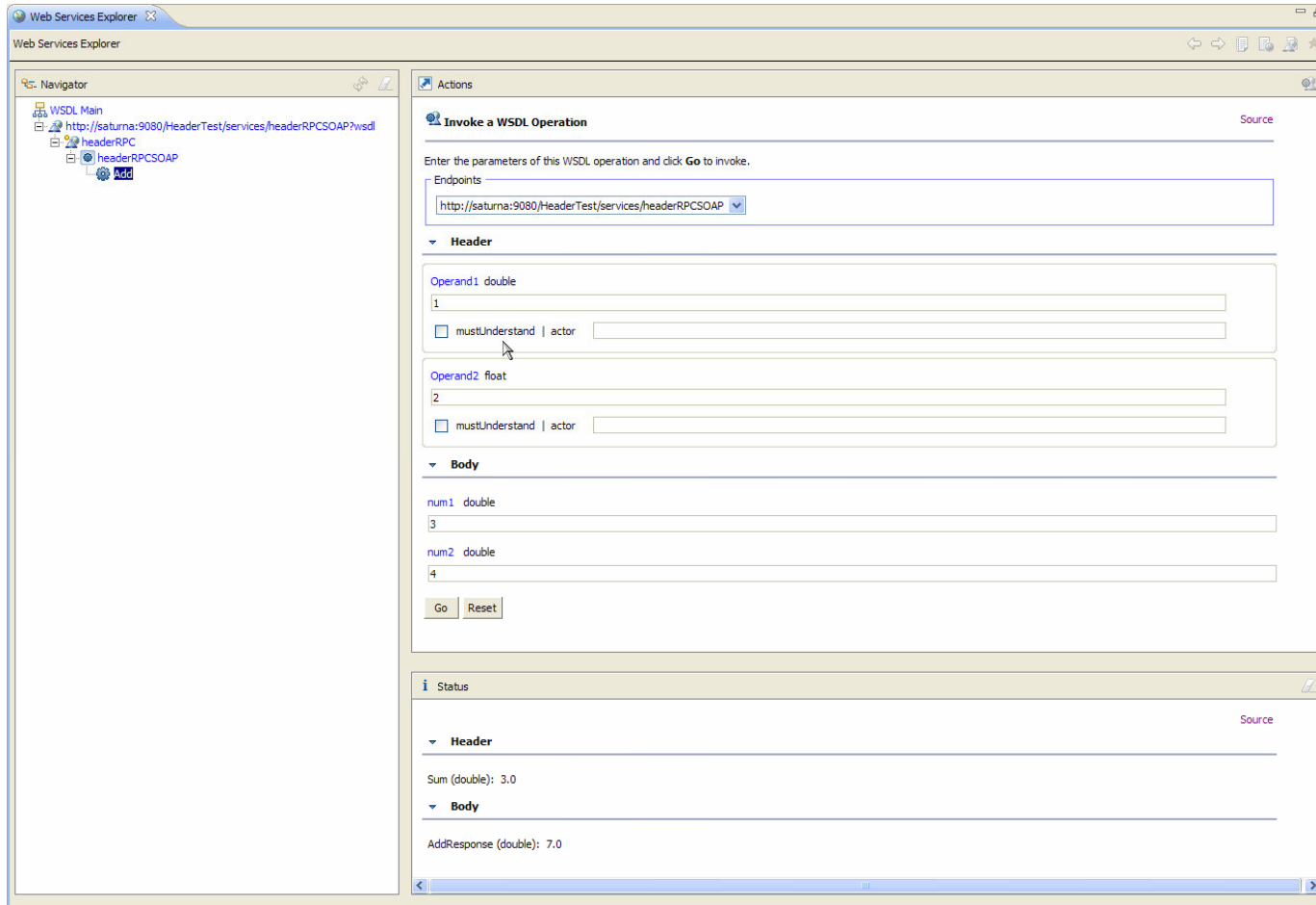


New in WTP 2.0

- Updating Axis from 1.3 to 1.4.
- Moving Internet preference page to the platform.
- Supporting SOAP header in the Web Services Explorer.
- Support for Axis2 Web service runtime.



SOAP Header Support in WSE





Axis2 Support

Axis2 Web service runtime support is integrated into existing Web service wizard in WTP:

- Includes code generation, AAR generation, running Web service on server and testing the Web service.
- Create Axis2 bottom-up and top-down Java Web service.
- Create Axis2 Web service client.
- Allow user-specified Axis2 runtime install location.
- Install Axis2 facet on Web projects.

Two new Axis2 Tutorials are available on WTP site (see Reference).

The Axis2 support in WTP is being contributed by WSO2.



Evolution of Apache Web Services Runtimes

- First generation (2000) - Apache SOAP
 - First Apache implementation of SOAP.
 - Based on DOM
 - .
- Second generation (2002) - Apache Axis
 - Based on SAX.
 - Wide industry acceptance.
 - Integrated into major app servers (e.g. WebSphere & JBoss).
 - Still lacks scalability, robustness and efficiency.
- Third generation (2005) - Apache Axis2
 - Flexible, extensible, robust, and high performance.



Highlights of Axis2

- New SOAP Object Model.
- Improved Deployment Model.
- Improved message-style interaction.
- Pluggable Data Binding.
- Pluggable Module Architecture.
- Supports synchronous & asynchronous programming model.
- Supports more specifications & transports.



Axis2 – New SOAP Object Model

- New object model known as AXIOM (**A**xis **O**bject **M**odel).
- XML object model like simplified DOM.
- “On demand” pull parsing.
- Integrated with StAX (Streaming API for XML)
 - Provides StAX parser interface.
- Support for storing binary values.
- Fast and efficient, smaller memory footprint.



Axis2 – Improved Deployment Model

- Based on Service Archive files (.aar)
 - A collection of resources needed for a service:
 - Service implementation.
 - Service descriptor (services.xml).
 - Handlers (optional).
- Similar to J2EE deployment.
- Supports “drop-in” hot deployment and hot update.
- Provides application isolation.
- Portability across Axis2 containers.



Axis2 – Improve Message-Style Interaction

- Supports 3 MEPs (Message Exchange patterns)
 - “In-only”
 - only SOAP request.
 - “Robust-In”
 - SOAP request.
 - SOAP response only for error.
 - “In-out”
 - SOAP request.
 - SOAP response.

- Can be easily extended to support custom MEPs.



Axis2 – Pluggable Data Binding

- Data binding refers to XML to Java and Java to XML mapping.
- Data binding framework that enables different data binding:
 - ADB – Axis Data Binding
 - XMLBeans
 - JibX
 - JaxMe



Axis2 – Pluggable Module Architecture

- Extensions for specific features such as security & reliability.
- Currently available or under development modules:
 - WS-ReliableMessaging
 - WS-Coordination
 - WS-Security
 - WS-Addressing
- Extensible modules can be deployed as module archive (.mar)



Axis2 – Synchronous & Asynchronous style

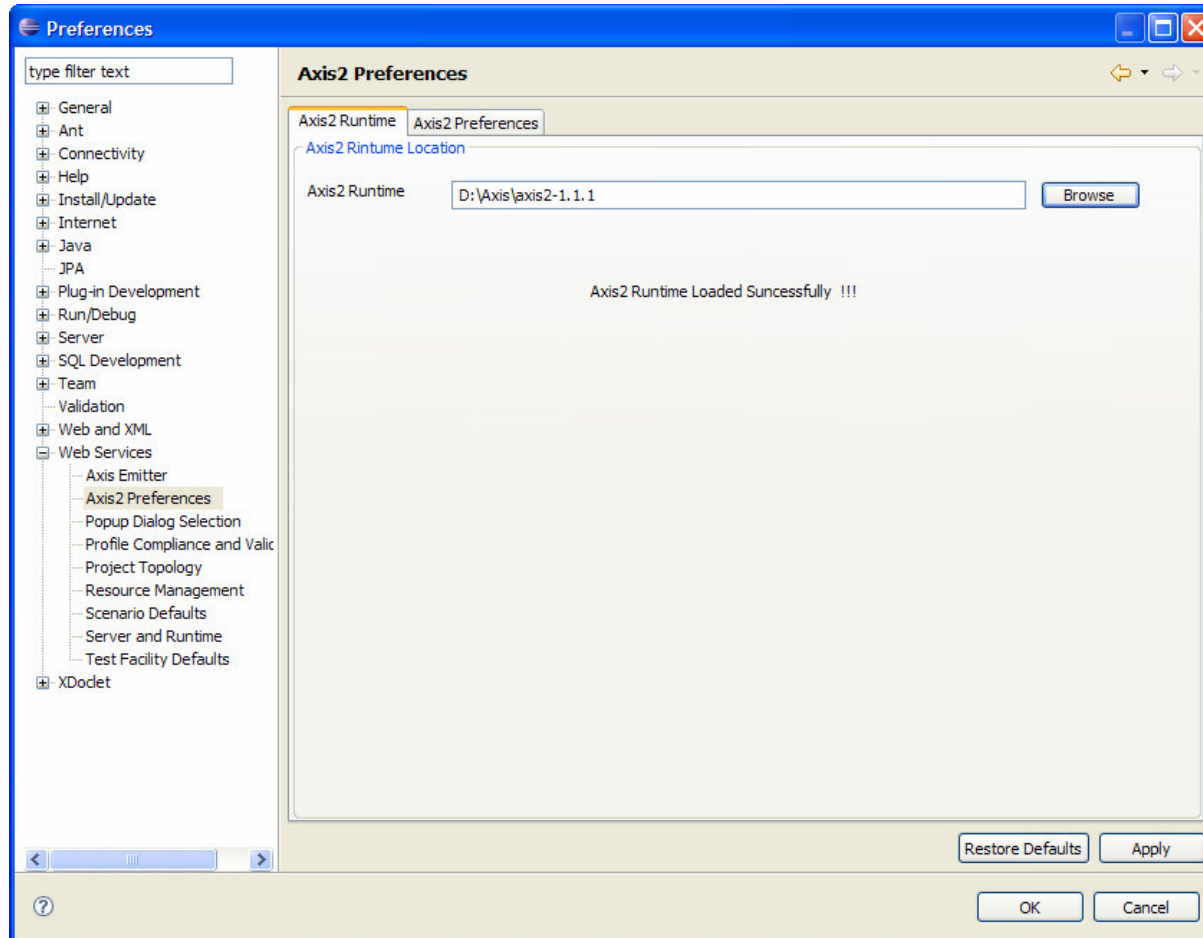
- Programming style supported
 - synchronous and
 - asynchronous programming style
 - Callback
 - Polling



Axis2 – Supported Specifications & Transports

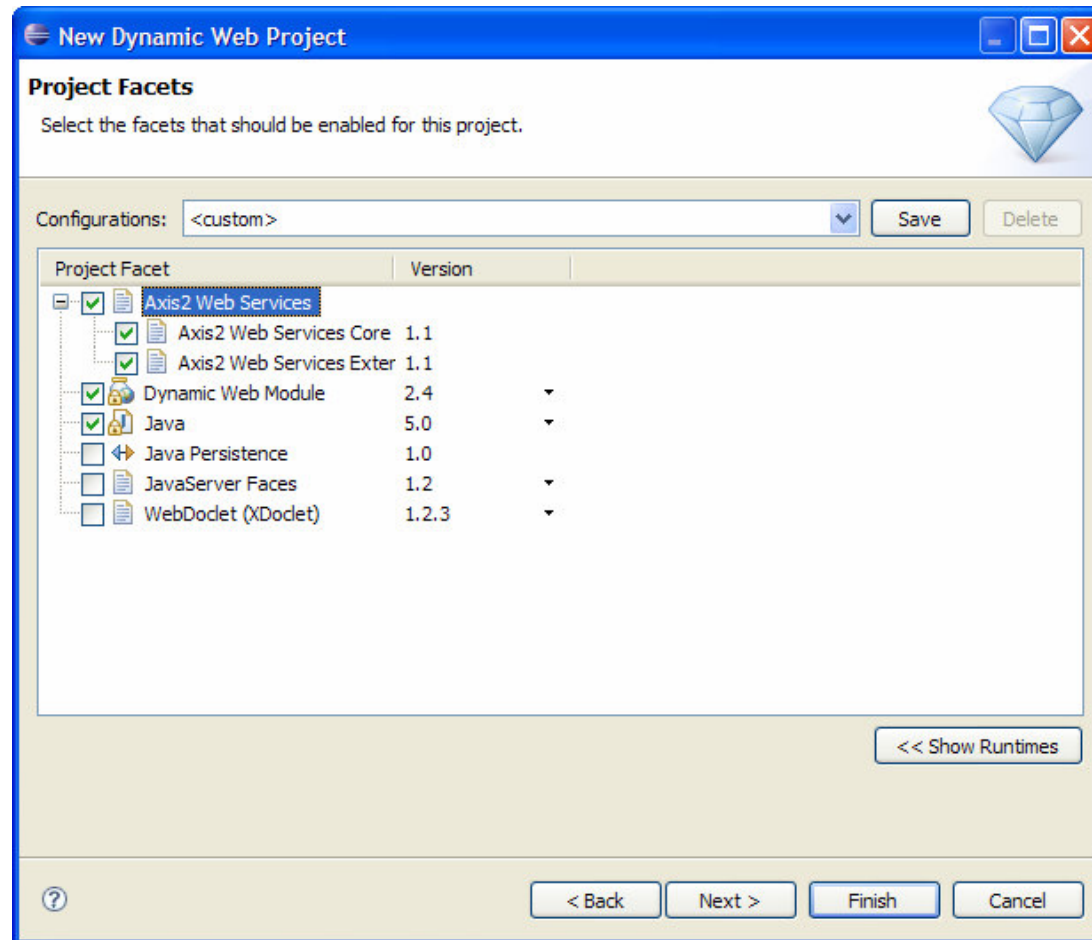
- Supported Specs:
 - SOAP 1.1 & 1.2
 - REST
 - WSDL 1.1 & 1.2
 - MTOM, XOP, SOAP with attachments
 - WS-Addressing
 - WS-Policy
 - SAAJ 1.1
- Supported transports:
 - HTTP, SMTP, JMS, TCP

Loading the Axis2 Runtime

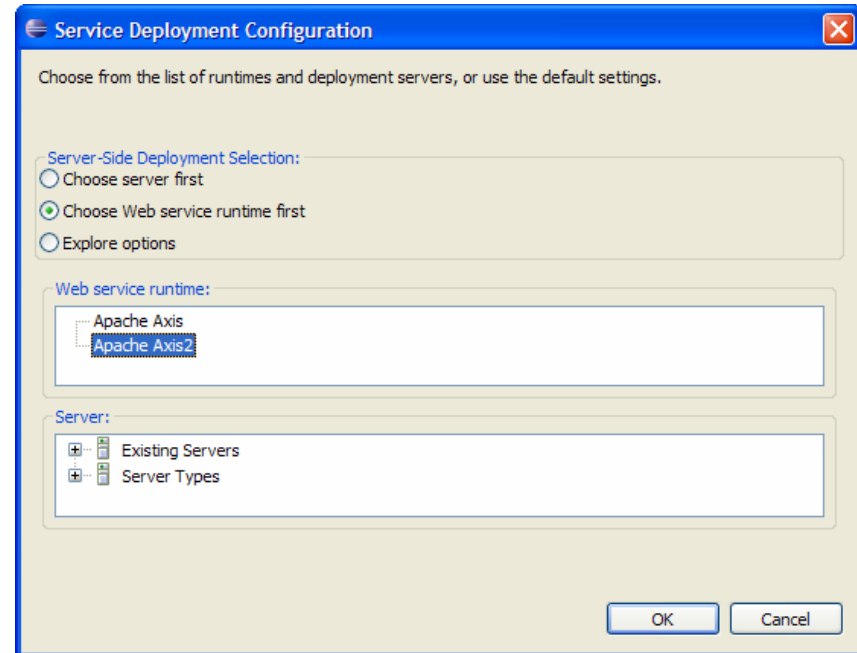
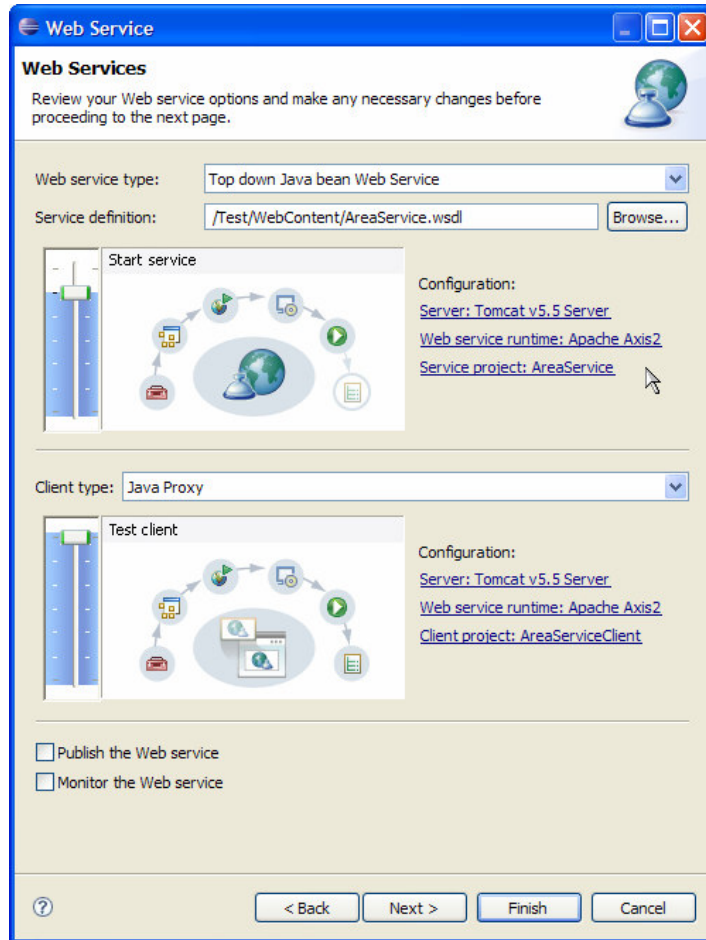




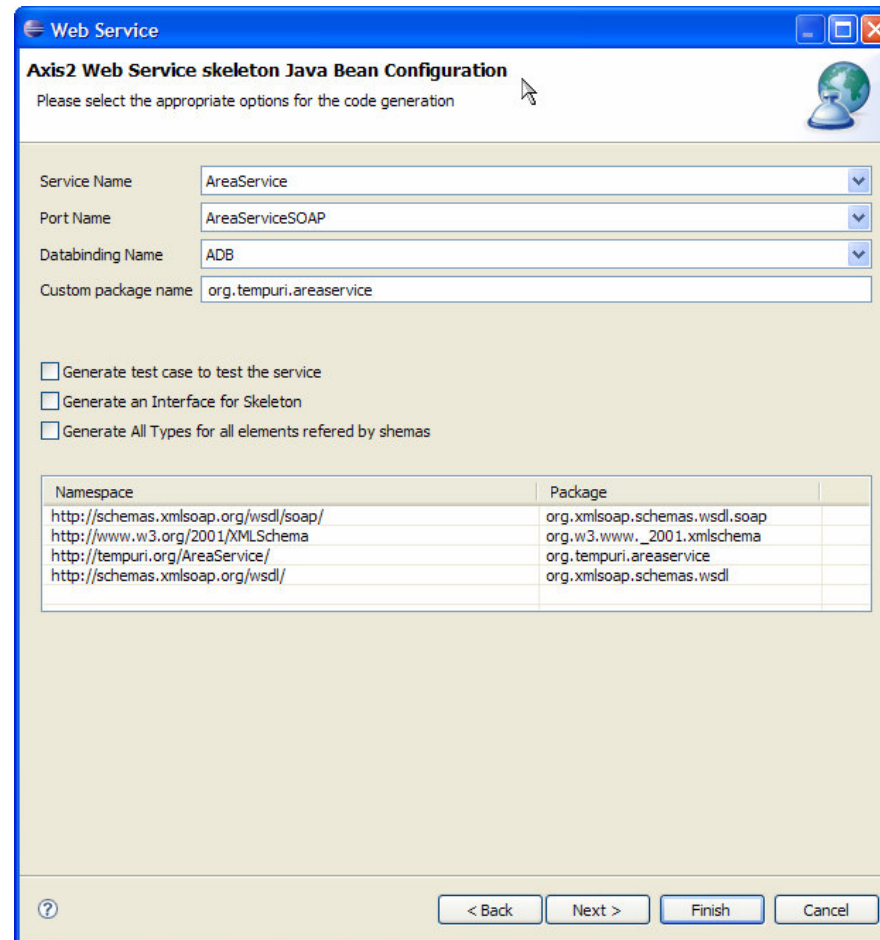
Adding the Axis2 Project Facet



Choosing the Axis2 Runtime



Axis2 Skeleton Scenario Configuration Page



Web Service
Axis2 Web Service skeleton Java Bean Configuration
Please select the appropriate options for the code generation

Service Name: AreaService
Port Name: AreaServiceSOAP
Databinding Name: ADB
Custom package name: org.tempuri.areaservice

Generate test case to test the service
 Generate an Interface for Skeleton
 Generate All Types for all elements referred by shemas

Namespace	Package
http://schemas.xmlsoap.org/wsdl/soap/	org.xmlsoap.schemas.wsdl.soap
http://www.w3.org/2001/XMLSchema	org.w3.www._2001.xmlschema
http://tempuri.org/AreaService/	org.tempuri.areaservice
http://schemas.xmlsoap.org/wsdl/	org.xmlsoap.schemas.wsdl

< Back Next > Finish Cancel



References

- WTP website: <http://www.eclipse.org/webtools>
- WTP download: <http://download.eclipse.org/webtools/downloads>
- WTP tutorials:
<http://www.eclipse.org/webtools/community/communityresources.html#tutorials>
- WTP newsgroup: <news://news.eclipse.org/eclipse.webtools>
- WTP Web services wiki:
[http://wiki.eclipse.org/index.php/Component Document List : Web Services](http://wiki.eclipse.org/index.php/Component_Document_List:_Web_Services)
- Axis2: <http://ws.apache.org/axis2/>
- WS-I: <http://www.ws-i.org>
- WSO2: <http://www.wso2.com/>

- For more information, contact:
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Questions?



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