Java EE, Part 8 of 8: JAX-WS Web Service Controls

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Meet the expert: Ali Hamad has a Bachelor and Masters degree in Computer Science and has been training many aspects of Java for over 14 years, covering Introduction through JDBC, JBoss and beyond. His training and consulting background also covers C, C , Object Oriented Analysis and Design (OOAD), and Unix/Linux. Ali has worked for or been a consultant and trainer for many companies including Dell, Texas Instruments, State of New Hampshire, Web Age Solutions, and many more. He is the author of training material for several programming topics such as Java, Struts, C , Unix and J2EE applications.

Prerequisites: You should know Java programming and have a basic understanding of the JAX-WS.

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Course description: To use Java Web services you will need to deal with controls. This course covers many of the important controls that need be configured and managed in order to create a stable and secure JAX-WS environment. This course starts with Java API XML Web Service bindings and then moves on to Simple Object Access Protocols (SOAP). The course will then explore JBoss support of Web Services and Web Service Security. From there WS-Trust and WS-Federation is covered with claims and tokens. Then Web Services Interoperability (WS-I) is shown and its standards. The course then moves to error handling in dealing with business rule violations and other subjects. The final subjects cover Web Service addressing, reliable messaging and handlers.

Course outline:

JAX-WS Bindings
- Introduction
- Data that binds
- JAXB 2.0 Data Binding
- The JAXB Data Binding Process
- Java Representation: XML Schema
- Default Data Type Bindings
- Data Binding Factories
- Code-first Services
- Schema-first Services
- Schema-first Binding
- Schema-first Advantages
- Customizing JAXB Bindings
- JAXB customization concepts
- Inline & External Customizations
- Passing Customization Files
- Demo: JAX-WS Bindings
- Summary

JAX-WS Advanced Binding
- Introduction
- Scope, Inheritance, and Precedence
- Customization Syntax
- Global Bindings Declarations
- Schema Binding Declarations
- Class Binding Declarations
- Property Binding Declarations
- <javaType> Binding Declarations
- Typesafe Enumeration Binding Declarations
- <javadoc> Binding Declarations
- Customization Namespace Prefix
- Tango - .Net Interoperability
- Demo: Create a web client
- Summary

SOAP
- Introduction
- SOAP Overview
- SOAP in Protocol Stack
- SOAP Components
- SOAP HTTP Request Example
- SOAP HTTP Response Example
- Message Envelope
- The Header Element
- Header Attributes
- SOAP Body
- SOAP Fault
- Demo: Monitoring SOAP
- Summary

SOAP Elements
- Introduction
- Communication Style
- RPC/Encoded Style
- RPC/Literal Style
- Enabling RPC Styles
- Document/Literal Style
- Document/Literal Wrapped Style
- Details of the Wrapped Style
- Enabling Document Literal Style
- Demo: Request and Response
- Summary

JBoss WS Support
- Introduction
- JBoss Introduction
- Service in a Web Container
- Example Java Class
- Generated Artifacts
- JSR 109 Components
- Demo: MySQL Database
- Summary

WS Tools
- Introduction
- Using wstools
- Using wstools - Server side
- Using wstools - Sample config.xml
- Web Services Deployment Descriptor
- Example: webservices.xml
- The Generated WSDL File
- The WSDL Editor
- Demo: WSDL Editor
- Summary

Deployment Descriptors
- Introduction
- Service in a EJB Container
- Web Services Deployment Descriptor
- Client Development
- Using wstools - sample config.xml
- Generated Artifacts
- The Service Reference
- Demo: Service Reference
- Summary

WS Security
- Introduction
- The Challenges
- Public Key Infrastructure
- Digital Signature
- Certificates
- Web Services Security
- SOAP Message Security
- Message Integrity
- Message Confidentiality
- Symmetric Encryption Example
- Demo: WS Security
- Summary

Authentication
- Introduction
- Authentication Using Identity Token
- Authentication
- Transport Level Security
- Audit Tracking
- Identity Assertion Using SAML
- SAML SOAP Example
- Demo: Security
- Summary

WS Trust and Federation
- Introduction
- Review of WS-Security Authentication Model
- How WS-Trust Works
- WS-Federation

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- Federation Metadata Example
- Requesting a Token
- Dynamic Conversation
- Summary

WS-Interoperability
- Introduction
- WS-I Introduction
- Goal
- What Comes out of WS-I
- Profiles
- Basic Profile 1.1 Highlights
- Simple SOAP Binding Profile
- Basic Security Profile 1.0
- .NET Interoperability
- Demo: WS-Interoperability
- Summary

Error Handling
- Introduction
- Error Handling Introduction
- Fault
- Designing Faults
- System Problems
- Business Rule Violation
- Demo: EJB Service
- Summary

WS-Addressing
- Introduction
- What is WS-Addressing
- Long Running Services
- Other Uses of WS-Addressing
- SOAP Header Elements
- Example Client SOAP Request
- Example Callback SOAP Request
- Writing JAX-WS Clients
- JAX-WS/WS-Addressing Example
- Demo: WS-Addressing
- Summary

JAX-WS/WS-Addressing
- Introduction
- JAX-WS/WS-Addressing Example
- Example: Create Proxy
- Example: Enable WS-Addressing
- Example: Invoke addMovie
- Example: Diagram
- Security and Firewall Issues
- Demo: JAX-WS/WS-Addressing
- Summary

WS Reliable Messaging
- Introduction
- The Problem with HTTP
- Enter WS-ReliableMessaging
- When to Use Reliable Messaging
- How Does WS-RM Work
- Importance of Persistence
- The Problem with Firewall
- How Does WS-MakeConnection Work
- Using WS-MakeConnection
- Demo: WS Reliable Messaging
- Demo: Annotate the WSDL File
- Demo: Publish and Test
- Summary

WS Handlers
- Introduction
- Handlers
- Basic Handler Behavior
- Basic Steps
- JBoss Note
- Handler Classes
- LogicalHandlers
- Protocol Handlers
- Sample Handler
- Get Message Details
- Inbound and Outbound
- Handler Configuration File
- Sampler Handler.xml
- Specify the Handler Chain
- Sample: Using a Handler
- Executing
- Demo: WS Handlers
- Summary