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Building and Deploying Web Services using Java EE

Web Services are now ubiquitous within the context of enterprise applications, enabling interoperability, and messaging between disparate platforms. This training course demonstrates how this technology can be harnessed using the Java platform, and Java EE technology. The training course is a hands on training course, and you will gain opportunity to develop, interact with, and deploy web services. You will be exposed to SOAP, WSDL, and UDDI and the accompanying Java APIs, JAX-WS, SAAJ, and JAXR. The training course can be run with any application server such as JBoss. Alternatively the course can be run using Apache Axis2 as the host for the deployed web services. There is also discussion of how web services can be used specifically within the Java Enterprise Edition environment and how they can be integrated with .NET Framework applications. Additional content can be added on UDDI, JAXR and XML programming if desired.

Duration: 2 days

Layout

Training course combines lectures with practical exercises that help the delegates to put what they have learned on the training course into practice. The exercises specifically build on what has been recently taught and are built up as the training course progresses.

Who is it for?

This training course is aimed at experienced Java developers who wish to incorporate web services into his or her application development.

Prerequisites

- Delegates must be familiar with XML, and it is highly advantageous if delegates are familiar with the Java API for XML Processing (JAXP). This can be gained from the 'Building XML Applications Using the Java Programming Language' training course.
- Knowledge of the Java Programming Language can be obtained from our 'Java Programming' training course. XML experience can come from the 'XML Overview' training course.

Objectives

At the end of this course, students should be able to:

- Define a web service
- Deploy a web service within Apache Axis
- Deploying a Web service using Annotations within an application server
- Understand the SOAP protocol
- Read and understand SOAP messages passed between server and client.
- Send and receive SOAP messages using SAAJ
- Generate, read and understand the Web Services Description Language files.
- Work with Web service stubs for both Java and non Java based services
- Understand where Web services fit in the Java EE framework
- Understand Web service security
- Identify best practices for Web service development
- Understand alternative architectures such as REST for Web services

Training Course Contents

Introduction to Web Services

- The role of Web Services
- The role of SOAP, WSDL, and UDDI
- Java and Web Services

Introduction to Service Oriented Architecture

- What is SOA?
- The Enterprise Service Bus
- SOA Service Layers
- Implementing an SOA

Introduction to SOAP

- Anatomy of a SOAP message
- SOAP Requests and Responses
- SOAP Namespaces
- SOAP Attachments
- Sending and Receiving SOAP messages using SAAJ

Creating Web Services

- Creating a Web Service Class
- Creating the Deployment Descriptor
- Deploying the Web service
- Deploying Stateless Session Beans as Web services
- Deploying POJOs as Web services using annotations
- Testing the Web service

Consuming Web Services

- Using WSDL2Java
- Working with proxy classes

- Creating a client application
- Working with WSImport and the generated proxy classes

Introduction to XML Schemas

- XML Schema basics
- XML Schema namespaces
- XML Schema and Web Services

Web Services Description Language WSDL

- The role of WSDL
- The Structure of a WSDL document
- Generating WSDL documents from Java

Creating Interoperable Web Services

- The WSI Basic Profile
- Web Service Styles
- SOAP Encoding
- Web Service Best Practices

Web Services Architecture and Design

- Design best practices
- WS Profiles
- Emerging patterns for Web services

The Build Cycle

- Debugging Web services
- Testing Web services
- Monitoring Web services

Web Services Security

- Web services over SSL
- WS-Security
- XML Signature
- XML Encryption

REST Based Web services

- The need for REST
- Building and Deploying a REST service
- Consuming a REST service

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