

Java Web Services Development

(3 days hands-on)

This course describes how to create and consume Java Web services. The course is based on the latest platform for Java Web service development ("Metro").

The first day of the course introduces essential Web service concepts, and describes how to create and consume simple Web services. You will also learn about the important role of WSDL in describing Web service interfaces.

The second and third days of the course dig deeper into Web service standards, techniques, and APIs. You will learn how to handle Web service faults; maximize integration options; use headers to provide Web service metadata; customize Java-to-object serialization formats; and invoke Web services programmatically by using JAX-WS, the latest Java API for Web services. The course also describes how to create and consume RESTful Web services, and explains how to access RESTful Web services by using JAX-RS.

The course also includes several optional appendices that provide supplementary information, to give students good insight into additional techniques.

Core Contents:

- **Web Services - Essentials:** What is a Web service? Overview of SOAP; Conveying SOAP over HTTP; RPC vs. Document formatting; SOAP Encoded vs. Literal serialization; Java Web services state of play
- **Creating and Consuming a Web service in Java:** Overview of the Java Web Services Stack (Metro); Creating a Java Web service; Generating a Web service proxy; Calling a Web service from a client application
- **Describing Web Services with WSDL:** Overview of WSDL; Understanding WSDL services and ports; Bindings; Messages; Schema
- **SOAP Payloads:** Overview of JAXB; Simple marshalling; Custom marshalling; Unmarshalling; Using JAXB in a Web service
- **Web Service Operations:** Message exchange patterns; Parameter passing modes; One-way messaging
- **Web Service Techniques:** Exception handling; SOAP faults; Asynchronous Web methods
- **SOAP Handling:** Overview of handlers; Defining logical handlers; Defining SOAP handlers; Accessing transport headers
- **Binary Payloads:** Overview of binary data and SOAP; Returning base64-encoded binary data; Specifying the MIME type; Optimizing binary data transfer
- **Web Services in Java Enterprise Applications:** Overview of Java Enterprise Edition; Example Java EE application; The role of Web services in Java EE
- **RESTful Web Services:** Overview of RESTful Web services; Overview of the Java API for XML RESTful Web Services (JAX-RS); Creating a RESTful Web Service
- **More on RESTful Web Services:** URI path templates; Accessing additional HTTP info; RESTful design patterns

Optional Appendices:

- **Contract-First Web Services:** Creating a WSDL contract; Creating interoperable WSDL; Generating a Web Service from WSDL
- **Web Service Security Overview:** Transport-level security; Message-level security; Overview of WSIT security; Common administrative steps; Transport-level user authentication
- **Web Service Security Examples:** Username authentication with symmetric keys; Mutual certificates security; Transport security (SSL); SAML authorization over SSL
- **Orchestrating Web Services:** Achieving orchestration with BPEL; BPEL control flow and compensation; BPEL state of the industry
- **Enterprise Service Buses:** What is an ESB? Understanding the role of ESBs in Service Oriented Architecture; ESB case studies

Who Should Attend:

This training course is aimed at developers and designers tasked with creating Web-service based solutions.

Prerequisites:

Java programming experience, and an awareness of Web service concepts.