

TT7360 Integrating XML, SOA and Web Services (for Java Developers New to XML) (5 days)



Geared for experienced Java developers, **Integrating XML, Web Services and SOA** for developers new to XML is a five day, lab-intensive course that introduces Java developers to XML and then to Service-Oriented Architectures (SOA) and Web Services.

SOA and Web Services represent a groundbreaking evolution in distributed computing. The concepts are not altogether new, but the application of them, and the unanimous acceptance of core standards like HTTP, XML, SOAP, WSDL, and UDDI, has paved the way for XML Web Services and service-oriented architecture.

Developers are introduced to the basics of XML and then to the JAXP APIs for working with XML. Student are then introduced to the basic concepts of SOA and the core standards that enable Web Services. It provides them hands-on experience with implementations of the Java XML and Web Service APIs including JAXP, JAXB, SAAJ, JAX-WS/RPC, WSEE, and XWSS.

► Course Objectives: What You'll Learn

Today's development environments are increasingly dominated by sophisticated tooling that makes the initial development of web services less arduous. The production-level implementation, deployment, and maintenance of web services are far more complex and demanding.

Integrating XML, Web Services and SOA focuses on providing an understanding of the fundamental technologies used in web services. This understanding is critical to being able to diagnose, troubleshoot, tune, and perform other lifecycle activities.

Working in a dynamic, hands-on learning environment students will learn to:

- Understand and work with XML applications and components.
- Understand and apply the basic concepts of SOA to the identification and design of web services
- Understand and intelligently discuss Web Services and the core technologies involved
- Develop and deploy real-world J2EE Web Services
- Expose existing Java components as Web Services
- Write Java components that access remote Web Services hosted by a third party
- Read and understand a WSDL document
- Parse, process, and respond to a SOAP message
- Understand the concepts behind REST and implement a REST-based web service
- Understand and work with the standards and technologies encompassed by WS-Security

We will look at the current state of the art of Web services, what works and what doesn't work, and also at newer standards, and how they fit into the Web services picture.

Web services are still evolving rapidly, and this course will give you a thorough understanding of the current Web services architecture,

COURSE SNAPSHOT

Duration: 5 days
Skill Level: Introductory to Intermediate
Focus: XML & Web Services Intro
Audience: Experienced Java developers new to XML and Web Services
Format: Extensive hands-on programming labs, expert lecture combined with open discussions and high-Level demonstrations and dynamic group exercises.
Language / Tools: Java/ XML, SOAP, REST, WSDL /Delivered with most IDEs, including Eclipse, MyEclipse, RAD, JDeveloper, etc. and many servers, including JBoss, WebSphere, WebLogic, etc.
Delivery Format: Available for onsite private classroom presentation, or live online / virtual presentation
Customizable: Yes

and the technologies that support Web services including:

- **SOAP/SAAJ** – Simple Object Access Protocol - A remote invocation (RPC) and messaging mechanism.
- **WSDL** – Web services Description Language – An XML language that describes the interface and semantics of a Web service.
- **UDDI** – Universal Description, Discovery, and Integration – A standard for describing, publishing and finding Web services.
- **JAX-WS/RPC** – Accessing Web services using Java
- **REST**- Representational State Transfer - A style of implementing web services that is gaining increasing acceptance and use
- **WS-I** –Web Services Interoperability
- **WS-Security/XWSS** – Web Services Security

The course provides a solid foundation in essential terminology and concepts, extended and built upon throughout the engagement. Processes and best practices are discussed and illustrated through both discussions and group activities.

Attending students will be led through a series of advanced topics comprised of integrated lectures, extensive hands-on lab exercises,

group discussions and comprehensive demonstrations. Please see below for additional information about the hands-on lab work.

► **Audience & Pre-requisites: Who Should Attend**

This is an **intermediate level** web services programming course, designed for Java developers and architects new to XML, who need to identify, design, and implement XML web services and. We will explore and apply the terminology, the specification, the processes and technologies specific to both XML and web services.

Students should have 1-2 years of working knowledge with Java and J2EE.

► **Related Courses – Suggested Learning Path**

Take Before: Students should have basic understanding and working knowledge in the following topics, or attend these courses as a pre-requisite:

- **TT2100 Core Java Programming Fundamentals**
- **TT5100 Building J2EE Web Applications using Servlets/JSPs, JDBC and Tags**

Take Instead: We offer other courses that provide different levels of knowledge or that blend web services development with other pertinent topics:

- If your team needs high level web services training, the **TT7005 Understanding Web Services** course may be more appropriate.
- Experienced J2EE developers who want a shorter, subset web services course minus the J2EE or SOA exposure, consider **TT7300 Core Web Services for J2EE Developers** or **TT7301** four day edition with extended labs.
- For those members of your team that are focusing on using SOA with lighter web services, consider **TT7150 Mastering Service-Oriented Architectures (SOA) and J2EE Web Services**.
- If you need in-depth web services training but have minimal working knowledge with J2EE, consider: **TT7340 Integrating J2EE, SOA, and Web Services**.
- Students who wish to use a language agnostic edition of the course geared for web developers should consider **TT4400 Integrating XML, Web Services and SOA for Web Developers**

Take After: We offer a variety of introductory through advanced security, development, project management, engineering, architecture and design courses. Students may want to consider the following topics as a follow-on to this course.

- Additional XML & web services topics – Intro through Advanced
- Additional advanced J2EE or Java EE topics
- Service-Oriented Architecture or SOA Analysis and Design
- Java or J2EE Security topics
- AJAX, XML or other Web Development topics
- Java EE topics: EJB3.0; Spring; Hibernate; Design Patterns & more.
- Architecture & Analysis courses

Please note all development courses may also be offered in other programming languages or tailored to suit your unique requirements. Please contact us for recommended next steps tailored to your longer term education, project or development objectives.

► **Experiential Learning: Hands-On Labs**

This class is “technology-centric”, designed to train attendees in essential web services development skills, coupling the most current, effective techniques with the soundest industry practices.

This workshop is about **50% dynamic lab exercises** and **50% lecture**. Throughout the course students will be led through a series of progressively advanced topics, where each topic consists of lecture, group discussion, comprehensive hands-on lab exercises, and lab review. Multiple detailed lab exercises are laced throughout the course, designed to reinforce fundamental skills and concepts learned in the lessons.

At the end of each lesson, developers will be tested with a set of review questions to ensure that he/she has fully understands that topic.

► **Student Materials: What You’ll Receive**

Our robust course materials include much more than a simple slideshow presentation handout. Trivera Technologies Student materials include a comprehensive hard-copy course manual, complete with detailed course notes, code samples, diagrams and current reference materials, all directly related to the course at hand, indexed for ease of use. Step-by-step lab instructions and project descriptions are clearly illustrated and commented for maximum learning and ease of use. Our course kits are designed to serve as a useful reference set, long after we leave your classroom.

► **Delivery Environment & LoadNGo™ Classroom Set Up**

Although this training is skills-centric, this course may run using a variety of IDEs and application server combinations, including but not limited to: JBoss 4.x; BEA WebLogic Server 8.1/9.X; 10; IBM Rational Application Developer (6.x or 7.x); Oracle JDeveloper 10g; JBuilder; Apache TomCat; Eclipse Web Tools Project, MyEclipse; and others.

Our lab guides are complete with software-specific instructions, screen shots and detailed tutorials for using the software you select. In most cases we can easily port our classes to run in the environment of your choosing.

For course deliveries or virtual presentation using open-source tools, we’ll provide our unique **LoadNGo Instant Classroom Kit**, which enables students to run the entire course off of a DVD that hosts the entire course set up software, labs, and other pertinent useful educational resources, whitepapers and more. You only

need to provide the hardware and appropriate O/S, and we'll do the rest. No installation needed. **Great for secure environments.** Minimum set up burden for your team or firm, with maximum results for your students.

No matter which set up option or software your firm requires, we're pleased to provide a detailed set up guide for all private or on-site courses, and as much assistance as you require to prepare your students or classroom for the course.

► **Optional Pre-Testing & Assessment**

We work with you to ensure that your resources are well spent.

Through our basic pre-testing, we ensure your team is up to the challenges that this course offers. We will work with you to come up with the best solution to ensure your needs are met, whether we customize the material, or devise a different educational path to prepare for this course.

Please contact us for details about our online pre and post test assessment services, custom managed training plans for one student or your entire organization, and our custom online training program management system for monitoring the courses or progress while skilling your students of all experience levels.

Workshop Topics Covered

Need more info? Please note that a more detailed outline of the course table of contents, lists of lab exercises and project descriptions is available. Please contact us at Training@triveratech.com for info.

Need courseware? This course is fully customizable, and also available for license with complete support for qualified organizations. Please contact Courseware@triveratech.com for details

Session: XML Overview

- XML Mechanics
- Working with XML

Session: JAXP and SAX Parsing

- JAXP and SAX (Part 1)
- SAX Parsing Using JAXP
- JAXP and SAX (Part 2)
- SAX Content Handling

Session: JAXP and DOM Parsing

- JAXP and DOM (Part 1)
- DOM Parsing Using JAXP
- JAXP and DOM (Part 2)
- DOM Processing

Session: JAXP and Transformations

- XSLT Transformations in Java
- Working With XSLT Processors

Session: Path to Useful Web Services

- SOA via the Web

- Web Services Overview
- Web Services in Action
- Web Services, Java, and J2EE
- Web Services Quickstart
- Implementing a Web Service
- Debugging Web Services

Session: Foundation for Web Services

- XML: Basics, Namespaces and Schemas
- Namespaces and Schemas
- XML in Java: JAXP and JAXB
- Using JAXB

Session: Binding: SOAP

- SOAP Overview
- SOAP in Action
- SOAP in Detail
- SAAJ
- Creating a SOAP Message
- Accessing a Service with a Servlet

Session: Description: WSDL

- WSDL Overview
- WSDL in Action

Session: Web Services in Java: JAX-WS/RPC

- JAX-WS/RPC Overview
- Working with JAX-WS/RPC
- WSDL-generated service
- WSDL-generated client

Session: Web Services in J2EE - WSEE

- Implementing Enterprise Web

Services

Session: REST in Java

- REST Overview
- Principles and Best Practices with REST Web Services
- Publishing and Consuming REST Web Services in Java

Session: Finding Web Services

- UDDI
- Discovery in Action

Session: Security - WS-Security and Defenses

- Securing Untrusted Input
- Insecure Web Services
- XML Signature and Encryption
- Securing Web Services: WS-Security

Session: Introduction to SOA

- SOA Overview
- Thinking Services
- Enabling Infrastructure

Session: Working with SOA

- Layering of Services
- Legacy Functions and Resources
- Defining and Creating New Services
- Implementing SOA

► **Why Work With Trivera Technologies?**

- **We provide a solid web services development foundation.** Students will learn how to develop (and reuse!) essential Java and web services development and design skills and concepts properly, using best design practices, grounding them for advanced curriculum. Students will be prepared for designing and implementing real solutions, right after the class ends. Students will learn the importance of developing and maintaining well-designed web services applications.
- **Our courses are focused - no "fluff" included.** We offer more than a "laundry list" approach to teaching. All lessons have clear objectives, are fundamental to core development and design practices, and are reinforced by hands-on labs and solid practical examples. Each lesson has performance driven objectives that ensure students will learn technologies and skills core to fundamental application design – nothing more, nothing less. All labs are take-home, and all solution code is presented in an easy to use self-study format for future use and review.
- **Our materials are comprehensive, and current.** Our comprehensive manuals include not only a hard copy of the course presentation, but also detailed reference notes, pertinent diagrams and charts, current lists of suggested online resources and articles, and often technical tutorials or white papers geared to the topics at hand.
- **We set you up!** Hands-on courses also include our unique materials for each student, complete with our **LoadNGo Instant Classroom** course set up DVD, software, and a multitude of learning resources that complement the course. Run the course right off the DVD – minimal set up for your company – maximum results for your students.
- **True content ownership gives us flexibility & quality above the rest.** These course materials are wholly-owned by our company and fully customizable - at little or no cost - to help you best meet your learning objectives. We have many dedicated experts available worldwide to instruct your team, and can provide services around the globe, either locally or virtually. We work closely with you to produce the most effective events and materials for your team, within your desired timeframe and budget.
- **We have to adhere to higher standards.** As a courseware provider, our content and hands-on lab materials are licensed internationally by dozens of firms, and are therefore subject to very stringent quality requirements. Not only will your organization benefit from our own technical team's technical expertise, but also the feedback of hundreds of students and trainers using these materials, worldwide, on a regular basis. This unique fact guarantees that our materials are not only robust and interesting, but also technically correct, current and of the highest quality and usability.
- **We bring years of practical, current experience into the classroom and content.** Our instructors and course authors are also skilled mentors, Java, J2EE / JavaEE, .Net, SOA, and web services developers, architects and security-oriented professionals. We believe that learning, using and maintaining solid software execution and delivery methods are as important as gaining sharp coding skills. Best Practices for software development and execution, beyond technical coding skills, are enforced throughout all of our courses and discussions. Our team brings this extensive experience into every classroom and engagement.
- **We're skills-centric.** Although our team has extensive experience using a variety of tools and solutions, our core content is "technology-centric". Our aim is to teach you the best skills and solutions out there – not to sell you software from any particular vendor.
- **We're Java & J2EE authors and industry speakers.** Our team was selected to write the online *J2EE, EJB, EJB CMP-CMR and Web Services Tutorial Series for IBM developerWorks®* (www.ibm.com) These are the same instructors who train our classes and author the courseware. Most of our trainers/consultants have also authored additional articles on web services, EJB< Struts, J2EE and advanced Java topics, and are recognized speakers and presenters on the industry technical seminar circuit. Our team is comprised on several successful published authors. Members of our team have written or contributed to: *Eclipse Kick Start, Mastering Eclipse; Professional Jakarta Struts; Using Java Tools for Extreme Programming; Mastering Resin; Mastering TomCat and others.*
- **Our services are guaranteed.** Whether you're a stakeholder organizing your firm's educational services, a student in our live or virtual classroom or a trainer using our materials to educate your own client or team – **Our core mission is to make YOU a success in the classroom.**

► For Additional Information

Need dedicated training? All courses can be brought onsite for a **private presentation**, customized to suit your unique requirements or goals. Please contact

Training@triveratech.com for course details, Public Schedule dates and locations, and Special Discount Offers.

Need courseware? Let us take the risk out of your classroom delivery! All materials are also available for corporate license with complete instructor support and free corporate branding. We guarantee our pricing and service. Samples of our course materials, as well as live client references for all of our services are available upon request. Please contact Courseware@triveratech.com for details.

For more information about our training, mentoring or courseware licensing options, or to see our complete list of course offerings and services, please visit us at www.triveratech.com, email Training@triveratech.com or call 609.953.1515.



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 Please contact us for details & pricing.