

TT3372: Spring 3.0 and the Enterprise (3 days)

Spring 3.0 and the Enterprise is a three day in-depth course geared for experienced Java and Spring developers who need to understand how to use Spring in conjunction with the enterprise resources and technologies available in today's systems and architectures. The course covers a wide spectrum of topics, so students should have a basic understanding of those technologies and resources prior to taking this class.

COURSE SNAPSHOT

Duration: 3 days

Focus: Spring 3.0/Java Applications using Hibernate and other Enterprise Resources and Technologies

Targeted Audience: Experienced Spring Developers

Course Format: Extensive hands-on programming labs; Expert lecture combined with open discussions and in-depth demonstrations

Language / Tools: Java 5 or Java 6 delivered with most IDEs: SpringSource Tool Suite (STS), IBM® Rational Application Developer™ (RAD); Oracle® JDeveloper, Eclipse™ Helios/Galileo, Eclipse WTP, MyEclipse and more. Most Spring 3.0 compliant application servers including TomCat Server, Apache Tomcat™, JBoss™, IBM WebSphere™, Oracle WebLogic™ and more.

Delivery Format: Available for onsite private classroom presentation, or live online / virtual presentation

Customizable: Yes

► Course Overview

The Spring framework is an application framework that provides a lightweight container that supports the creation of simple-to-complex components in a non-invasive fashion. Spring's flexibility and transparency is congruent and supportive of incremental development and testing. The framework's structure supports the layering of functionality such as persistence, transactions, view-oriented frameworks, and enterprise systems and capabilities. Spring's Aspect-Oriented Programming (AOP) framework enables developers to declaratively apply common features and capabilities across data types in a transparent fashion.

As an enabler for the integration of Java applications and enterprise resources, the Spring framework represents a significant step forward. If you want to deliver an enterprise application within the Spring framework, you'll find this course essential.

Note that our Spring training covers the entire spectrum and is highly modularized. As such, we can customize courses to your specific needs. The following is a high-level listing of Spring topics to consider in building your customized Spring training:

- Core Spring Framework (including Inversion of Control, Dependency Injection, and Aspect-Oriented Programming)
- Spring and Persistence (including Spring DAOs, Transactions, and working with JDBC or Hibernate)
- Spring Views and Rich Interfaces (working with Spring MVC, Spring WebFlow, Ajax, Struts, or JSF)
- Spring Security (including interceptors, authentication managers, access decision managers, and filters)

- Spring Integration (powerful framework for implementing message-based workflows)
- Spring and Java Messaging Services (working with JMS)
- Spring Enterprise Services (working with JNDI, Timers, JMX, and batch)
- Spring Remoting (working with RMI, Hessian, Burlap, and HttpInvoker)
- Spring-WS (including web service endpoints, marshalling/unmarshalling, and gateways)
- Spring and REST (including support for RESTful services)
- Spring and EJBs (working with various types of local and remote EJBs)
- Spring and Testing (working with JUnit and Mock Objects)
- SpringSource Tool Suite (covers tooling as well as use of the SpringSource's tc Server)

► Course Objectives: What You'll Learn

Students who attend **Spring 3.0 and the Enterprise** will leave the course armed with the required skills to design and implement Spring applications that effectively and transparently use various enterprise systems, tools, and technologies. This course provides coverage of the concepts and practices for interacting between Spring and relational databases, security components, distributed resources, web services, messaging, EJB3, and other components.

Working in a dynamic, lab-intensive hands-on coding environment students will learn to:

- Understand and work with various options for Enterprise Integration.

- Understand and work Spring Security to acquire and process authentication credentials as well as enforce authorization on enterprise resources
- Work with various Spring options for interacting with remotes resources, understanding which option is best for the context
- Use the contract-first approach to web services to deploy and consume SOAP-based web services
- Integrate JMS into the Spring framework to utilize messaging
- Using Spring to work with and/or implement EJB3
- Interoperate with JNDI, scheduling and JMX

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** and beyond Java/Spring training course, designed for developers who need to understand how and when to use Spring applications within the enterprise. Attendees should have practical basic Java development experience as well as an understanding of the Spring framework. Attendees should have attended **TT3328: Core Spring 3.0 Framework** prior to taking this class.

► Related Courses – Suggested Learning Path

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

- **TT3328: Core Spring 3.0 Framework**
- **TT3363: Spring 3.0, Rich Interfaces, and the Web**

Take After:

- **TT3420: Integrating Hibernate with Spring 3.0**

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 help your team best prepare for this training. 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 Spring development skills, coupling the most current, programming 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.

► Delivery Environment: Tools to Use

Although this training is skills-centric, this course can be delivered using a variety of Spring 3.0 compliant software combinations, including but not limited to: Eclipse Helios/Galileo, MyEclipse, Oracle JDeveloper, STS, or other IDEs. Application server options include Oracle WebLogic, Apache TomCat, tc Server, JBoss and others.

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

► Easy & Secure Set Up! LoadNGo™ Instant Classroom Kit

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. Our support personnel and instructors can be contacted for any advice you may require to prepare your classroom and/or students for attendance.

► Student Materials: What You'll Receive

Our robust course materials include much more than a simple slideshow presentation handout. 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.

In addition to everything students need for the course, the **LoadNGo Instant Classroom Kit** described above also includes of workshop labs and solutions; non-restricted workshop software, APIs, documentation, technical education papers, and specifications and tutorials pertinent to the training course. Our course kits are designed to serve as an excellent and useful reference set, long after we leave your classroom.

► Optional Pre / Post-Testing & Skills Assessment

We work with you to ensure that your resources are well spent. Through our basic course pre-testing and/or post-course assessments, we ensure your team is up to the challenges that this course offers. Our goal is to structure the best solutions 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, or our custom online training program management system for monitoring the courses or progress while skilling your students of all experience levels.

► Bridging the Gap: Collaborative Mentoring Services

Our team of technical experts is also available for various project assistance services to help your team apply their newly-learned classroom skills to their real-world project in a meaningful, practical

way, right after the training ends.

Our custom **collaborative mentoring programs** integrate with or extend your team's classroom training experience, to help bring these skills into existing (or inherited) legacy projects, into new projects, or to simply keep your students sharp them in between projects. Our programs can be highly involved and closely integrated with your project timelines or group development efforts, or can be less involved, serving simply as an overarching educational framework or 'spot check' to keep your group skills moving forward in between projects or waiting for projects to begin.

Please contact us for details about this exciting custom service.

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: Review of the Spring 3.0 Framework

- Spring Application Architectures
- Spring Container
 - Managing the Container
 - Application Contexts
- Beans as Components
 - Beans and Factories
 - XML Bean Configuration
 - Autowiring
 - Bean Lifecycle
 - Factory Beans
- Spring/Web Framework Architecture
- Spring MVC
 - Spring MVC Architecture
 - Spring MVC Components
- Data Handling
 - Validation
 - Type Conversion
 - Formatting
- Spring Expression Language (SPEL)
 - Using SPEL

Session: Data Access

- Data Access Pattern
- Overview of Persistence Layer and Transactions
 - Spring DAO
 - DAO Implementations
 - Transaction Overview
 - Managing Spring Transactions
- Spring JDBC
 - Spring JDBC Architecture
 - JDBC DAO Support
- Spring Hibernate (Optional)
 - Benefits of Spring Hibernate
 - Spring - Hibernate Architecture
 - DAO Implementation
 - Transaction Management
 - Hibernate Template
 - Solving Open Session in View
- XML Interoperability
 - Object XML Mapping in Spring
 - Marshalling and UnMarshalling
 - Implementation Options
 - Working with the JAXB Marshaller

Session: Working with Enterprise Services

- Spring and JNDI
- Injecting JNDI resources
- Wiring JNDI objects
- Spring JNDI Best Practices
- Overview of Timers
- Scheduling Using Java Timer
- Scheduling Using Quartz
- Quartz Jobs, Factories, and Triggers
- Spring and JMX
- Spring and MBeans

Session: Spring Security – the Enterprise

- Spring Security Framework
- Spring Security Works By Interception
- Authentication
 - Principals And Credentials
 - Authentication Manager
 - Configuring An Provider Manager
 - Provider Options
 - Working With Authentication Providers
- Authorization
 - Access Decision Managers
 - Voting Access Decisions
 - Casting Votes
 - Voter Abstinance

Session: Spring Remoting

- Spring Remoting Concepts
 - Exporters and Proxies
 - Service Bean Interface
- Remoting with Java Serialization: RMI
- Remoting with Java Serialization: HTTPInvoker
- Remoting with Binary Serialization: Hessian
- Remoting with XML Serialization: Burlap

Session: Web Services Overview

- Crossing Boundaries
- What are Web Services?
- Web Services Interoperability Organization
- XML and Java APIs at a Glance

- J2EE and Web Services
- Web Services Stacks at a Glance
- SOAP in a Nutshell
 - SOAP and HTTP
 - SOAP Specification
 - Why do I need SOAP?
 - Uses of SOAP
- Describing Web Services
- WSDL in Practice
- WSDL Elements
- WSDL Anatomy

Session: Spring Web Services

- Spring-WS
- Message Endpoints
 - Concept
 - Types of Endpoints
- Service Provisioning
 - Understanding the WSDL
 - Messages to Endpoints
 - Wiring the Endpoint
 - Marshalling/Unmarshalling
 - Managing Exceptions
 - Deploying the Service
- Consuming Web Services with Spring-WS
 - WebServiceTemplate
 - Message Factories and Senders
 - Marshalling on the Client-side
 - Abstracting with the Gateway

Session: Spring and JMS

- JMS Overview
- Spring/JMS Architecture
- Working with the JMS Template
- Callback Methods
- Receiving Synchronous Messages

- Message Converters
- Working with JMS Destinations

Session: Enterprise Integration

- Coupling in the Enterprise
 - Type-Level Coupling
 - System-Level Coupling
 - Impact of Coupling
- Enterprise Integration
- Messaging Patterns
- Integration Patterns
 - Point-to-Point Channels
 - Publish-Subscribe Channels

Session: Spring Integration

- Spring Integration Structure
- Endpoints
- Messages
- Message Channels
- Simple Integration
- Designing and Creating an Integration Application

Session: Basic Spring Integration

- Implementing messages
 - Message Types
 - MessageBuilders
- Configuring Channels
 - Spring Channel Types
 - Selecting the Right Type of Channel
 - Channel Flexibility
- Message Endpoints in Spring
 - Polling Decision
 - Pollers
 - Cron Pollers
 - Inbound Endpoints

- Outbound Endpoints
- Bidirectional Endpoints
- JMS Integration

Session: Advanced Spring Integration

- Integration Patterns Revisited
 - Channel Adapter
 - Gateways
 - Service Activators
- Spring Routers
 - Types of Routers
 - Customized Routers
- Spring Filters
 - Defining Filters
 - Working with Filters
- Spring Splitters and Aggregators
- Spring Message Transformers
- Spring Channel Adapters
 - Types of Adapters
 - File Output Adapters
 - Mail Output Adapters
- Implementing Routing and Transforming

Session: Spring and EJBs (Optional)

- EJB Overview
- Using EJBs in Spring
 - Finding the EJBs Using JNDI
 - Using Session EJBs from Spring
 - Local and Remote EJBs
- Implementing EJBs
 - Spring's EJB Implementation Overview
 - Spring and Session EJBs
 - Spring and MDBs

► Why Work With Trivera Technologies?

Whether you are a project leader choosing a training provider or course to bring to your team, or an organization or an instructor looking to potentially license or use course materials to train your own team, or a student looking for an exciting, targeted training class to attend or to recommend to your colleagues - ***Our single focus is to make YOUR training event or experience a success.*** Here's why choosing Trivera Technologies as your education resource takes the risk right out of your decision making process...

- **We provide a solid JEE / JEE application development foundation.** Students will learn how to develop (and reuse!) essential Spring development 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 well-designed enterprise Java 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 Java, JEE or JEE 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 server-side application design – nothing more, nothing less.
- **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. Our dedicated course development team keeps everything as current as possible with

both industry trends and software editions to ensure your team is getting the most current information available.

- **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.
- **We foster "Learning by Doing"**. Progressive labs are designed in such a way that students get a firm grasp on fundamental skills while they work toward designing a complete application. All labs are take-home, and all solution code is presented in an easy to use self-study format for future use and review.
- **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 write and own what we teach. 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 to other organizations, training firms or independent instructors, 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, JEE/JavaEE, JEE, .Net, Agile, 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. Our team has trained thousands of students.
- **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 & JEE / JEE authors and industry speakers.** Our team was selected to write the online *JEE, 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, JEE 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 or run virtually for a **private presentation**, anywhere around the world, 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.



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