

Apache Tomcat Administration for Linux

Course Summary

Description

This Tomcat Administration for Linux class covers the important topics of administering the Tomcat server including installation, directory structure, configuration using server.xml, web application deployment, the manager tool, JNDI data sources, logging, and monitoring and management of the server.

Objectives

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

- Learn about the history of Tomcat.
- Learn how to install Tomcat
- Learn about the directory structure and batch files.
- Learn how to configure Tomcat.
- Learn how to work with Web applications.
- Learn to work with the Tomcat Manager including how to assign security roles.
- Learn to work with JNDI data sources and JDBC
- Learn about security and permissions.
- Learn how to generate a keystore file.
- Learn logging techniques.
- Learn how to monitor Tomcat's performance.
- Learn about clustering including directory setup.

Topics

- Tomcat Introduction
- Installing Tomcat
- Tomcat Directory Structure
- Configuring Tomcat
- Deploying Web Applications
- The Tomcat Manager
- JNDI Data Sources and JDBC
- Security
- Logging
- Monitoring and Performance Tuning Tomcat
- Clustering

Audience

This course is appropriate for users of all versions of Tomcat.

Prerequisites

Experience with Java is helpful.

Duration

Three days

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Course Outline

- I. *Tomcat Introduction*
 - A. History of Tomcat
 - B. Version Number and Features
 - C. Tomcat Components
 1. Catalina
 2. Jasper
 3. Coyote
 - D. JEE Overview
 1. MVC Design Pattern
 2. Servlets/JSP
 3. Directory Structure
 4. JNDI
- II. *Installing Tomcat*
 - A. Download
 - B. Installation
 - C. Environment Variables
 - D. Starting the Server
 - E. Verifying Server Operation
 - F. Stopping the Server
- III. *Tomcat Directory Structure*
 - A. Batch files in /bin
 1. .exe files
 - B. /conf
 1. server.xml
 2. context.xml
 3. web.xml
 - C. /logs
 - D. /webapps
 - E. /lib
 - F. /work
 - G. /temp
- IV. *Configuring Tomcat*
 - A. Role of server.xml
 - B. Instance Layout
 1. Server
 2. Service
 3. Virtual Host
 4. Context
 - C. server.xml elements
 1. <Server>
 2. <Service>
 3. <Connector>
 4. <Engine>
 5. <Host>
 6. <Context>
 7. <Realm>
- V. *Deploying Web Applications*
 - A. JEE Specification for Web Applications
 1. Servlets and JSP
 2. Model View Controller (MVC) Design Pattern
 3. Directory Structure
 4. web.xml
 - B. Document Base
 - C. Context and the Document Base
 - D. Default Context Descriptor
 - E. Placing the Web Application Folders and Files under the Application Base
 - F. Deploying a WAR file
 - G. AutoDeploy
- VI. *The Tomcat Manager*
 - A. /manager Web Application
 - B. Managing Web Applications
 1. Deploying
 2. Listing Deployed Applications
 3. Reload Existing Applications
 4. Starting/Stopping
 5. Undeploying
 - C. Listing Server Status
 - D. Listing Security Roles in the User Database
- VII. *JNDI Data Sources and JDBC*
 - A. JNDI
 - B. JDBC
 1. Drivers
 2. Data Sources in JDBC 20 and Later
 3. Connection Pooling
 - C. Commons Database Connection Pooling
 1. Installation
 2. Guarding against Application Program Failure
 3. Configuration
 - D. Data Source Definition
 1. Web Application context.xml
 2. context.xml in /conf
 3. GlobalNamingResources in server.xml
 - E. Troubleshooting

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Course Outline (cont'd)

VIII. Security

- A. Web Application Security
- B. Java SecurityManager
 - 1. Overview
 - 2. Standard Permissions
 - 3. Tomcat Permissions
 - 4. Starting Tomcat with a Security Manager Using the Default Policy File
- C. Secure Socket Layer (SSL)
 - 1. Generating a keystore File
 - 2. Modifications to server.xml for SSL Support in Tomcat
- D. tomcat-users.xml

IX. Logging

- A. Logging Overview
- B. Web Application Logging Techniques
 - 1. javautillogging
 - 2. javaxservletServletContext
 - 3. log4j

X. Monitoring and Performance Tuning Tomcat

- A. Tomcat
- B. JVM
- C. JMX (Java Management Extensions)
- D. JMX MBeans in Tomcat
 - 1. Engine
 - 2.
 - 3. JKMain
 - 4. String Cache
 - 5. Server
 - 6. Users
- E. Configuring Tomcat to use MBeans
- F. Accessing MBeans
 - 1. jconsole
 - 2. jVisualVM
 - 3. PSI Probe

XI. Clustering

- A. Using Clustering for Replication and Load Balancing
- B. Running Multiple Instances of Tomcat
 - 1. Directory Setup
 - 2. Port Number Modifications
 - 3. All to All with DeltaManager
 - 4. Backup to One Cluster with BackupManager
- C. Enabling Session Replication
 - 1. Session Persistence Using Shared File System
 - 2. Session Persistence Using Shared Database
 - 3. Session Persistence using Shared Database: Database Table
 - 4. In-memory Replication Using SimpleTcpCluster
- D. Load Balancing Using mod_jk Connector to Apache2x Web Server