

Apache Tomcat Administration

Course Summary

Description

Apache Tomcat Administration covers the details of installing and configuring Tomcat Web Server. Students will learn the details of the server.xml configuration file, an overview of Servlet and JavaServer Pages, a comparison of Tomcat to J2EE application servers, the Tomcat installation directories, deploying Java Web applications, the web.xml file, valves, loggers, security realms, connecting Tomcat to Apache Web Server, hosting multiple Web sites, performance issues, load testing, the Tomcat Manager and the Tomcat Administration tool.

Topics

- Apache and Jakarta Tomcat
- Java Web Applications
- Installing Tomcat
- Tomcat Directories
- Configuring Tomcat
- Deploying Web Applications
- The Tomcat Manager
- Advanced Features
- JDBC Connectivity
- Tomcat Security
- Connectors
- Shared Hosting
- Clustering
- Load Testing

Audience

This course is for Web Server administrators who need to be able to install, configure and run Apache Tomcat Web Server.

Prerequisites

There are no prerequisites for this course.

Duration

Three days

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Course Outline

- I. Apache and Jakarta Tomcat**
 - A. Brief history of Apache
 - B. The Apache Software Foundation
 - C. The Jakarta Project
 - D. Tomcat Licensing
 - E. The J2EE Technologies
 - F. Java Web Development
 - G. Servlet/JSP Containers
- II. Java Web Applications**
 - A. Overview of Servlets
 - B. Advantages of Servlets
 - C. Lifecycle of a Servlet
 - D. Overview of JavaServer Pages
 - E. A Simple JavaServer Page
 - F. JSP and JavaBeans
 - G. JSP Tag Libraries
 - H. The Struts Framework
- III. Installing Tomcat**
 - A. Downloading and Installing Apache Tomcat
 - B. Overview of Installing Tomcat
 - C. Download and install a JVM
 - D. Download Tomcat
 - E. Using the Windows installer
 - F. Tweak the JVM for performance
 - G. Download and install Ant
- IV. Tomcat Directories**
 - A. Examining the Tomcat Installation Directories
 - B. Tomcat Directory Structure
 - C. The \bin Directory
 - D. The \lib Directory
 - E. The \conf Directory
 - F. The \logs Directory
 - G. The \server directory
 - H. The \work Directory
 - I. The \temp Directory
 - J. The \webapps Directory
 - K. Web Application Directory Structure
 - L. Deploying HTML and JSP Pages
 - M. Deploying a Web Context
 - N. Viewing the JSP Page
 - O. Viewing the Generated Code
- V. Configuring Tomcat**
 - A. Tomcat Configuration Techniques
 - B. Tomcat's Component Architecture
 - C. The <Server> Element
 - D. The <Service> Element
 - E. The <Connector> Element
 - F. The <Engine> Element
 - G. The <Host> Element
 - H. The <Context> Element
 - I. The <Logger> Element
 - J. The <Realm> Element
 - K. The <Valve> Element
 - L. The <Listener> Element
 - M. The <Loader> Element
 - N. The <Manager> Element
 - O. The server.xml File
 - P. Lab 1: Deploying a Web App
- VI. Deploying Web Applications**
 - A. Web Application Administration
 - B. Deploying Web Applications
 - C. The Directory Structure of a Web App
 - D. web.xml configuration file
 - E. Deployment Descriptors
 - F. The <web-app> Element
 - G. Mapping a Servlet to a URL
 - H. The <resource-ref> Element
 - I. The <env-entry> Element
 - J. The <ejb-ref> Element
 - K. A Sample web.xml file
 - L. Lab 3: Deploying a Web Application
- VII. The Tomcat Manager**
 - A. Deploying and Managing Web Application using the Tomcat Manager
 - B. Starting the Tomcat Manager
 - C. Tomcat Manager
 - D. The Manager Section
 - E. Applications
 - F. Deploy
 - G. Server Information
 - H. Creating a WAR File
 - I. Lab 4: Deploying a WAR File

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Course Outline (cont'd)

VIII. Advanced Features

- A. Using Some of the Advanced Features of Tomcat
- B. Valves
- C. Access Log Valve
- D. Single Sign-on Valve
- E. Remote Address Filter
- F. Remote Host Filter
- G. Request Dumper Valve
- H. Configuring JNDI Resources
- I. JNDI: Java Naming and Directory Interface
- J. Defining a JNDI Resource
- K. The <Environment> Element
- L. The <Resource> Element
- M. Configuring a JavaMail Session
- N. Global Resources
- O. Lab 5: Using Valves

IX. JDBC Connectivity

- A. Configuring Tomcat to Connect to a Database
- B. Overview of JDBC
- C. JDBC Drivers
- D. Connecting to a Database
- E. Connection Pools
- F. Download and Install MySQL
- G. Configure MySQL for Tomcat
- H. Create a Database in MySQL
- I. Download and Deploy a JDBC Driver
- J. Defining a DataSource in Tomcat
- K. Defining a Data Source Manually
- L. Modifying the Deployment Descriptor
- M. Lab 6: JDBC Connections

X. Tomcat Security

- A. Configuring Security on Tomcat
- B. Security Considerations
- C. File System Security
- D. Filesystem Recommendations
- E. The Java Security Manager
- F. Granting Permissions to Java Apps
- G. Java Permissions
- H. Adding Your Own Policies
- I. Enabling the Java Security Manager
- J. Security Manager Tips
- K. Security Realms
- L. Different Types of Realms
- M. Configuring a Realm
- N. Users and Roles

- O. Creating a Data Source Realm
- P. Configuring Tomcat for SSL
- Q. Lab 7: Create a Data Source Realm

XI. Connectors

- A. Connecting Tomcat to Apache
- B. Overview of Connectors
- C. HTTP Connectors
- D. Advantages of Using a Web Server
- E. Connector Protocols
- F. Step 1: Configure an AJP Connector
- G. Step 2: Download mod_jk
- H. Step 3: Create the mod_jk.conf file
- I. Step 4: Start Tomcat
- J. Step 5: Create a Worker
- K. Step 6: Configure httpd.conf
- L. Test the Setup
- M. Connecting IIS to Tomcat
- N. Step 1: Create a Worker File
- O. Step 2: Create a Mapping File
- P. Step 3: Configure the ISAPI redirector
- Q. Step 4: Configure the Filter in IIS
- R. Testing the Connector

XII. Shared Hosting

- A. Overview of Shared Hosting
- B. Tomcat Virtual Hosting
- C. Configure Tomcat to enable virtual hosting as a stand-alone server
- D. Configure Tomcat to enable virtual hosting using jk2 or webapp.
- E. Configure Tomcat as Stand-alone
- F. Configure Tomcat with AJP
- G. Separate JVM for Each Host
- H. Lab 8: Multiple Tomcat Instances

XIII. Clustering

- A. Why Clustering?
- B. Overview of Tomcat Clustering
- C. Clustering using Load Balancing
- D. Defining a Tomcat Cluster
- E. The <Cluster> Element
- F. The <Manager> Element
- G. The <Channel> Element
- H. Cluster Valves
- I. The <ClusterListener> Element
- J. Steps for Creating a Cluster
- K. Step 1: Configuring server.xml
- L. Step 2: Define a load balancer

M. Step 3: Load balancing factors

N. Step 4: Configuring Apache

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Course Outline (cont'd)

O. Helpful Tips

P. Step 5: Putting it all together

Q. Lab 9: Session Replication

XIV. Load Testing

A. Using the JMeter Application

B. Load Testing with JMeter

C. Install JMeter

D. Running JMeter

E. Creating a Test Plan

F. Configure the Thread Group

G. Add a Task to the Thread Group

H. Configure the HTTP Request

I. Add a Report Listener

J. Run the Test Plan

K. Viewing the Results

L. Lab 10