**Jenkins Continuous Integration with Jenkins Administration Training**

**Participants are from Admin and Development**

**7 developers and 4 admins**

**Learning Ourcome**

* understand the continuous integration/delivery concepts and build pipelines
* configure and build basic tools/plugins
* use jenkins to set up build pipelines
* perform unit and integration testing with jenkins
* administer jenkins by performing backups/restores
* understand the master/slave topologies
* build and deploy simple applications to tomcat / jetty containers

**1. INTRODUCTION TO CONTINUOUS INTEGRATION, CONTINUOUS DEPOLOYMENT AND JENKINS-CI**

* Agile Development
* Agile Development (cont'd)
* What is Continuous Integration
* What is Continuous Integration (cont'd)
* What is Continous Integration (cont'd)
* Typical Setup for Continuous Integration
* Continuous Deployment
* Continuous Deployment (cont'd)
* DevOps and Continuous Deployment
* Continuous Deployment Challenges
* Jenkins Continuous Integration
* Jenkins Features
* Running Jenkins
* Summary

**2. INSTALLING AND RUNNING JENKINS**

* Downloading and Installing Jenkins
* Running Jenkins as a Stand-Alone Application
* Running Jenkins as a Stand-Alone Application (cont'd)
* Running Jenkins on an Application Server
* The Jenkins Home Folder
* Installing Jenkins as a Windows Service
* Initial Configuration
* Configuration Wizard
* Configuration Wizard (cont'd)
* Configuring Tools
* Configuring Tools - Best Practices
* Summary

**3. JOB TYPES IN JENKINS**

* Introduction
* Different types of Jenkins Items
* Different types of Jenkins Items (cont'd)
* Configuring Source Code Management(SCM)
* Working with Subversion
* Working with Subversion (cont'd)
* Working with Git
* Storing Credentials
* Storing Credentials (cont'd)
* Build Triggers
* Schedule Build Jobs
* Polling the SCM
* Maven Build Steps
* Summary

**4. SECURING JENKINS**

* Jenkins Security - Overview
* Jenkins Security
* Authentication
* Authorization
* Confidentiality
* Activating Security
* Configure Authentication
* Using Jenkins's Internal User Database
* Creating Users
* Authorization
* Matrix-Based Security
* Note – Create the Administrative User
* Project-based Matrix Authorization
* Project-Based Authentication
* Conclusion

**5. JENKINS PLUGIN**

* Introduction
* Jenkins Plugins - SCM
* Jenkins Plugins – Build and Test
* Jenkins Plugins – Analyzers
* Jenkins for Teams
* Installing Jenkins Plugins
* Summary

**6. DISTRIBUTED BUILDS WITH JENKINS**

* Distributed Builds - Overview
* Distributed Builds – How?
* Slave Machines
* Configure Jenkins Master
* Configure Projects
* Conclusion

**7. CONTINUOUS DEPLOYMENT AND THE JENKINS PIPELINE**

* Continuous Deployment
* Continuous Deployment (cont'd)
* DevOps and Continuous Deployment
* Continuous Deployment Challenges
* Continuous Deployment with Jenkins
* The Pipeline Plugin
* The Pipeline Plugin (cont'd)
* Defining a Pipeline
* A Pipeline Example
* Pipeline Example (cont'd)
* Parallel Execution
* Creating a Pipeline
* Invoking the Pipeline
* Interacting with the Pipeline
* Conclusion

**8. BEST PRACTICES FOR JENKINS**

* Best Practices - Secure Jenkins
* Best Practices - Backups
* Best Practices - Reproducible Builds (pending)
* Best Practices - Testing and Reports
* Best Practices - Large Systems (sparse)
* Best Practices - Distributed Jenkins
* Best Practices - Summary

**LAB EXERCISES**

Lab 1. Configure Tools in Jenkins  
Lab 2. Create a Jenkins Job  
Lab 3. Add Development Metrics  
Lab 4. Configure Jenkins Security  
Lab 5. Create a Pipeline

Additional Topics

Jenkins naming convention slave to worker

Download manually plugin and dependency tree (Realtime) offline plugin servers

Distributed jenkin cluster master/slave (high availability, scalability)

Non Docker version(VM configuration for master / slave)

Jenkins dashboard configuration per user (private view)

Performance tuning

Page refresh delay 🡪 thread pool, debugging, backend configurations

Blue ocean view

Back up manager