DevOps Course Content

Introduction to DevOps

- What is DevOps.
- Why DevOps is needed.
- CAMS (Culture, Automation, Measurement, Sharing) principles.

Dev and Ops

- The different perspectives of Dev and Ops
- Different perspectives can cause conflict.
- How to solve the problems with different approach and some tools.

Continuous Integration and Delivery

- Tools that enable Continuous Integration and Delivery workflows
- Measurement and the ways it helps IT and business
- Tools that help with measurement

DEVOPS / SYS ADMIN

(1) - Linux Commands

(2) - Networks

(3) - Linux Systems

(4) - Scripting (Ruby/Shell/Python)

(5) - Configuration Management

(6) - AWS VPC setup (public/private subnets with NAT)

(7) - Web server

(8) - Database

(9) - Linux System / Application Monitoring, Performance Tuning, Profiling Methods & Tools

GitHub

Overview

A Brief History

Advantages of DVCs

About Git

Installing Git on Windows

Installing Git on Linux

Configuring Git

How to Configure Git

Working Locally with Git

Overview

Creating a local repository, adding files, and committing changes

Viewing history and diffs

Staging changes as multiple commits

Deleting and renaming files

Undoing changes to the working copy

Undoing/redoing changes in the repository

Cleaning the working copy

Ignoring files with .gitignore

Working Remotely with Git

Overview

Cloning a Remote Repository

Basic Repository Statistics

Viewing Commits

Git Protocols

Viewing Branches and Tags

Fetching from a Remote

Pulling from a Remote

Pushing to a Remote

Creating and Verifying Tags

Pushing Tags to a Remote

Branching, Merging, and Rebasing with Git

Overview

Visualizing branches

Creating local branches

Difference between branches and tags

Renaming and deleting branches

Recovering deleted commits

Stashing changes

Merging branches

Rebasing changes

Cherry-picking changes

Creating a remote branch

Deleting a remote branch

Jenkins

JENKINS OBJECTIVES

In this training, attendees will learn how to:

- Install and configure Jenkins in a servlet container
- Create Jenkins builds

- Configure and use Apache Ant and Apache Maven with Jenkins
- Use Jenkins to generate Java coding standards reports, code coverage reports, and change notices

Use Jenkins to automatically deploy software into a testing environment.

Introduction to continuous integration, continuous deployment and Jenkins-ci

- Agile Development
- Agile Development (cont'd)
- What is Continuous Integration
- What is Continuous Integration (cont'd)
- What is Continuous 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

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

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

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

JENKINS PLUGIN

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

DISTRIBUTED BUILDS WITH JENKINS

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

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

BEST PRACTICES FOR JENKINS

- Best Practices - Secure Jenkins
- Best Practices - Backups
- Best Practices - Reproducible Builds
- Best Practices - Testing and Reports
- Best Practices - Large Systems
- 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

Chef

1. Introduction to Chef

- About Chef Course
- Chef Head First! (Build And Deploy An MOTD Recipe)
- Introduction To DevOps
- What is Chef?
- Common Chef Terminology
- Chef Server
- Chef Workstation
- Chef Workstation - Looking At Security and Config
- Chef-Repo
- Chef-Client
- Servers And Nodes
- Chef Configuration Concepts

2. Building the Web Server Cookbook

- Getting Set Up
- Starting The Apache Recipe
- Adding Attributes, Recipe, And A Template
- Attribute Precedence
- Adding HTML Templates Dynamically With Chef
- Recipe Includes And Dependencies
- Copying Config Files To The Node
- Executing Linux Commands On The Node
- Adding Platform Support To The Cookbook
- Adding The Local Chef-Repo To Github

3. Node Object And Search

- What Is The Node Object?
- Search Concepts
- Searching Node Attributes Using Knife

4. Data-Bags

- What Are Data Bags?
- Creating User and Sudo Group Data Bags
- Building A Recipe To Deploy Local User Accounts From Data Bags

5. Chef Environments

- What Are Environments And Why Do They Matter?
- Creating And Configuring Environments
- Creating A Second Version Of Our Webserver Cookbook
- Deploying To Different Environments
- Viewing and Deleting Environments with Knife

6. Roles

- What Are Roles?
- Creating A Web Server Role
- Building A Simple MySQL Cookbook For A Role
- Creating A DB Server Role
- Creating A Base Role

7. Extending Chef

- Knife Plugins
- Chef Supermarket And Chef-Client Cookbook

8. Deploying Nodes In Production

- UnAttended Node Bootstrapping
- Chef-Client Cookbook (Security And Automated Runs)

9. Using OpenSource Chef Server

- Open Source Chef
- Configuring The Workstation And Bootstrapping A Node
- Closing: Bootstrapping Nodes And Deploying Cookbooks

Nagios

Nagios XI Administrator Training – Basic

Module	Topics Covered
Nagios XI 5 Installation	• Linux OS Level Dependencies • Nagios XI 5 installation Process • File Locations and Directory Structure
Nagios XI 5 Basics	• Overall Nagios Architecture • Basic Approach to Configuration in Nagios • Monitoring Engine Overview
Monitoring Linux Machines	• Using NRPE Agent to Monitor Linux Machines • Using SSH to monitoring Linux Machines • Using SNMP to Monitor Linux Machines • RAM, CPU, Processes, and Disk Space Monitoring
Monitoring Windows Machines	• Using NSClient ++ Agent to Monitor Windows Machines • RAM, CPU, Processes, and Disk Space Monitoring • Using WMI for Windows Monitoring • Using SNMP for Windows Monitoring
Monitoring Network Devices	• Using Basic SNMP for network monitoring • Router, Switches, Firewall and Storage Devices
Performance Charts, Graphs and Dashboards	• Using Performance Charts in Nagios XI 5 • Graph Explorer in Nagios XI 5 • Simple Dashboards in Nagios XI 5
Alerts, Notifications and Escalations	• Creating On-Screen Alerts and email notifications • Defining escalation flow for issues in Nagios
Additional Tools	• BBMap • Minemap • Network Status Map
Reports	• Standard Executive Summary Reports • Host and Service Availability Reports
Backup and Restore	• Creating Backups for Nagios

	• Restoring Nagios from an old Backup
Enterprise Feature Overview	• Feature Comparison between Standard and Enterprise Edition
Nagios Core Overview	• Differences between Nagios XI 5 and Nagios Core
Demos	• Hands on demo included in the training

Nexus Repository

Table of Contents

AWS

- Introduction and History of AWS

- AWS Foundational Services: EC2, VPC, S3, EBS
- AWS Security, Identity, and Access Management: IAM
- AWS Databases: RDS, DynamoDB
- AWS Management Tools: Auto Scaling, CloudWatch, Elastic Load Balancing, Trusted Advisor

Docker

Introduction to containerisation

- Introducing Docker
- Installing Docker
- Creating containers

Dockerfiles

- Building containers from Dockerfiles
- Syntax
- Supervisord
- Using the Docker hub
- Best practices

Volumes and Linking containers

- Using volumes with containers
- Data only containers
- Linking containers internally

The Docker Registry

- Creating our own registry
- Using the registry
- Other options

Other tools

- Docker compose
- Docker machine
- Docker swarm