

# DEVOPS TRAINING COURSE CURRICULUM

## **Introduction to Devops**

What is Configuration management  
Configuration management tools  
What is Devops  
Why Devops  
History of Devops  
Devops Stakeholders  
Devops Goals  
Devops perspective  
Continuous Integration and Deployment

## **Introduction to Cloud computing**

What is cloud computing  
Characteristics of cloud computing  
Cloud implementation and service models  
Advantages of cloud computing  
Concerns of cloud computing

## **Introduction to Virtualization**

What is virtualization?  
Virtualization and cloud computing  
Types of virtualization  
Virtualization terminologies  
Hypervisor  
Benefits  
Vendors

## **VAGRANT**

Introduction  
Why and what is Vagrant

Uses of Vagrant in an environment  
Installation and Configuration  
Installing Virtual box  
How to install Vagrant on Windows  
Configuring Vagrant  
Provisioning with Vagrant  
Creating first VM with Vagrant  
Operations on the VM  
Connecting to the VM  
Add required Images to Vagrant  
Using Vagrant.

### **GIT: Version Control**

- Introduction
  - a. Version control systems
  - b. Local, Centralized and distributed
- Installing Git
  - a. Installing on Linux
  - b. Installing on Windows
  - c. Initial setup
- Git Essentials
  - a. Creating repository
  - b. Cloning, check-in and committing
  - c. Fetch pull and remote
  - d. Branching

### **Chef for configuration management**

- Overview of Chef
  - a. Common Chef Terminology (Server, Workstation, Client, Repository etc.)
  - b. Servers and Nodes
  - c. Chef Configuration Concepts
- Workstation Setup
  - a. How to configure knife
  - b. Execute some commands to test connection between knife and workstation
- Organization Setup
  - a. Create organization

- b. Add yourself and node to organization
- Test Node Setup
  - a. Create a server and add to organization
  - b. Check node details using knife
- Node Objects and Search
  - a. How to Add Run list to Node
  - b. Check node Details
- Environments
  - a. How to create Environments
  - b. Add servers to environments
- Roles
  - a. Create roles
  - b. Add Roles to organization

## **Puppet for configuration management**

- What is Puppet?
  - a. How puppet works
  - b. Puppet Architecture
  - c. Master and Agents
  - d. Configuration Language
  - e. Resource Abstraction Layer
  - f. Transactional Layer
- Installation and Configuration
  - a. Installing Puppet
  - b. Configuring Puppet Master and Agent
  - c. Connecting Agents
- Puppet Master
  - a. Puppet configuration tree
  - b. Puppet configuration files
- Puppet Language Basics
  - a. The declarative language
  - b. Resources
  - c. Resource Collectors
  - d. Virtual Resources
  - e. Exported Resources

- f. Manifests
- g. Relationships and Ordering
- h. Modules and Classes
- i. Class Parameters
- j. Defined Types
- Puppet Language Advanced
  - a. Facter
  - b. Variables
  - c. Conditional statement
  - d. If Else
  - e. Case and Selectors
  - f. More Conditionals and Logic
  - g. Resource relationship
- Templates
  - a. Static Contents Explosion
  - b. Using Dynamic Content with Templates
  - c. Templates Overview
  - d. ERB
- Example Code Manifests/Modules
  - a. NTP Module
  - b. Users Module
  - c. SSH
  - d. Sudo

## **Jenkins – Continuous Integration**

- Introduction.
  - a. Understanding continuous integration
  - b. Introduction about Jenkins
  - c. Build Cycle
  - d. Jenkins Architecture
- Installation
  - a. Obtaining and installing Jenkins
  - b. Installing and configuring GIT
  - c. Java installation and configuration
  - d. Maven Installation

- e. Exploring Jenkins Dashboard.
- Jobs
  - a. Creating Jobs
  - b. Running the Jobs
  - c. Adding and updating Plugins
  - d. Disabling and deleting jobs
- Build Deployments
  - a. Understanding Deployment.
  - b. Tomcat installation and configuration
  - c. Deployment Plugins
  - d. Deploying a war file from Jenkins to Tomcat
- Securing Jenkins
  - a. Authentication
  - b. Jenkins Plugin
  - c. Authorization
  - d. Confidentiality
  - e. Creating users

## **Docker– Containers.**

- **Introduction**
  - a. What is a Docker
  - b. Use case of Docker
  - c. Platforms for Docker
  - d. Dockers vs Virtualization
- **Architecture**
  - a. Docker Architecture.
  - b. Important Docker components
  - c. Understanding the Docker components
- **Installation**
  - a. Installing Docker on Linux.
  - b. Understanding Installation of Docker on Windows.
  - c. Some Docker commands.
- **Provisioning**
  - a. Docker Hub.
  - b. Downloading Docker images.
  - c. Running Docker images
  - d. Running commands in container.

- e. Running multiple containers.
- **Custom images**
  - a. Creating a custom image.
  - b. Running a container from the custom image.
  - c. Publishing the custom image.
- **Docker Networking**
  - a. Accessing containers
  - b. Linking containers
  - c. Exposing container ports
  - d. Container Routing