

[DO-DOA]: DevOps Advanced

Length : 5 days
Delivery Method : Instructor-led (Classroom)

Course Overview

The course is designed by Devops Subject Matter Experts to help you understand Devops concepts and work on tools, GitHub, Docker, Chef, Ansible, Docker to create Continuous Integration and Continuous Deployment Pipeline.

Course Objectives

- Introduction to DevOps
- Introduction to Virtualization
- Deploying Vagrant
- Docker- Concepts and Labs
- Chef for Configuration Management
- Intro to using Puppet for Configuration Management
- Ansible-Install, Writing Playbook, Variables in Playbooks, Roles
- Nagios for Monitoring
- Integrate Jenkins with docker in CI/CD pipeline
- Intro to Kubernetes – Labels, Service Objects, Docker Container Clustering
- CI/CD Pipeline Automation

Audience

- Software developers
- Software Test Engineer
- Software Release Engineer
- Software Project Manager
- Software Architects

Course Outline

Day 1 -AM

Module 1: Intro to DevOps

Lessons

- Define Devops
- What is Devops
- SDLC models, Lean, ITIL, Agile
- Why Devops?
- History of Devops
- Devops stakeholders
- Devops goals
- Important terminology

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- Devops perspective
- Devops and Agile
- Devops tools
- Configuration management
- Continuous integration and deployment

Day 1 -PM - Introduction to Virtualization

- What is Virtualization?
- History of Virtualization
- What is a Hypervisor?
- Types of server virtualization
- Benefits of virtualization
- Important virtualization products

Day 1 -PM – Intro to VAGRANT

- Introduction
- Why and what is Vagrant
- Uses of Vagrant n an environment
- Alternatives to Vagrant
- Vagrant versions
- 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

Day: 02 - GIT: Version Control

- Introduction
- Version control systems
- Local, Centralized and distributed
- Installing Git
- Installing on Linux
- Installing on Windows
- Initial setup
- Git essentials
- Creating a repository
- Cloning, checking-in and committing
- Fetch, pull and remote

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- Branching

Day:02 – PM – Docker Introduction

Introduction

- What is a Docker
- Use case of Docker
- Platforms for Docker
- Dockers vs Virtualization
- **Architecture**
- Docker Architecture.
- Important Docker components
- Understanding the Docker components
- **Installation**
- Installing Docker on Linux.
- Understanding Installation of Docker on Windows.
- Some Docker commands.
- **Provisioning**
- Docker Hub.
- Downloading Docker images.
- Running Docker images
- Running commands in container.
- Running multiple containers.
- **Custom images**
- Creating a custom image.
- Running a container from the custom image.
- Publishing the custom image.

Docker Networking

- Accessing containers
- Linking containers
- Exposing container ports
- Container Routing
- **Docker Compose**

Day 3 – AM – Intro to Puppet/Chef

Chef for configuration management

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

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- Organization Setup
- Create organization
- Add yourself and node to organization
- Test Node Setup
- Create a server and add to organization
- Check node details using knife
- Node Objects and Search
- How to Add Run list to Node
- Check node Details
- Introduction to Environments in Chef

Puppet for configuration management (Theory Only)

- What is Puppet?
- How puppet works
- Puppet Architecture
- Master and Agents
- Configuration Language
- Resource Abstraction Layer
- Transactional Layer

Day 3 – PM – Intro to Ansible

- Introduction to Ansible
- Ansible architecture
- Ansible terminology
- Ansible commands
- Adding nodes to server
- Ansible installation and configuration
- Installing ssh on nodes
- Generating the keys
- Components of Ansible
- Inventory
- Configuration
- Modules
- Playbooks
- Global configuration
- Roles
- Tags
- Writing playbooks
- PYYAML overview
- Ansible modules
- Ansible Roles
- Ansible Galaxy

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- Download playbooks from Galaxy
- Realtime playbooks

Day 4 – Intro to Jenkins

- **Introduction.**
- Understanding continuous integration
- Introduction about Jenkins
- Build Cycle
- Jenkins Architecture
- **Installation**
- Obtaining and installing Jenkins
- Installing and configuring GIT
- Java installation and configuration
- Maven Installation
- Exploring Jenkins Dashboard.
- Creating Jobs
- Running the Jobs
- Adding and updating Plugins
- Disabling and deleting jobs
- **Build Deployments**
- Understanding Deployment.
- Tomcat installation and configuration
- Deployment Plugins
- Deploying a war file from Jenkins to Tomcat
- Securing Jenkins

Day 4 -PM -Nagios Monitoring

- Introduction and Installation
- Obtaining Nagios
- Compiling and installing Nagios
- Basic configuration
- Creating a new host and service
- Creating a new e-mail contact
- Verifying configuration
- Creating a host group and service group
- Creating a new contact group
- Creating a new time period
- Plugins and commands
- Finding and installation of a Plugin
- Removing a plugin
- Creating a new command
- Customizing commands

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- Nagios GUI
- Scheduling downtimes
- Generating reports
- Configuring notification
- Configuring checks
- Managing Flapping
- NRPE Monitoring
- Enabling Remote Execution
- Monitoring local services on a remote machine with NRPE
- Setting the listening address for NRPE

Day 5 -AM -Docker Container Clustering using Kubernetes

- Introduction
- Kubernetes Ecosystem: Community, Contributions, Governance, and Integrations
- Kubernetes Architecture
- Kubernetes Networking & Services
- Kubernetes Users Tools
- Configuring and Deploying an Application on Kubernetes

Day 5 – PM Advanced DevOps (CI/CD Pipeline Automation)

- Jenkins Blue Ocean
- PipeLine As Code
- End-to-End CI/CD Pipeline Automation
- Automated deployment of code from repository
- to server with configuration management

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