

Certified DevOps Professional

Linux Fundamental Training (Self-Paced Course)

- Linux Introduction
- Linux commands and tools, and file operations in Linux
- User Administration
- Boot and Package Management
- Linux process and scripting
- Security Administration, Shell Scripting and Virtualization
- Networking

Introduction to DevOps

- What is DevOps?
- IT Evolution
- History of DevOps
- Different Teams Involved
- DevOps definitions
- DevOps and Software Development Life Cycle
- Waterfall Model
- Agile Model
- DevOps main objectives
- Prerequisites for DevOps
- Continuous Testing and Integration
- Continuous Release and Deployment
- Continuous Configuration Management
- Continuous Application Monitoring

- DevOps Toolsets

Cloud Overview – AWS

- Introduction to Cloud Computing
- Introduction to cloud computing world
- History
- Cloud business models
- Public, Private and Hybrid cloud models
- Advantages of cloud computing
- AWS Regions and Availability zones. Tools to access services.
- AWS Cloud Setup – Free Tier
- Overview of the console
- Aws Ec2 (Elastic Compute Cloud)
- Aws S3 (Simple Storage Service)
- Security Groups

GIT

- Version Control System
- Centralized & Distributed Version Control System
- Anatomy of GIT
- GIT Features
- Git Commands
- 3-Tree Architecture
- GITHUB Projects
- Git Repositories
- GITHUB Management and Commands
- Clone
- Checkout

- Commit
- Push
- Merge
- Pull Request
- Fork/Pull
- Git Branches
- Remote branch
- Local branch
- Advantages of Git

Build Tools – Maven

- Java Compiler
- Maven Life Cycle
- Maven Installation
- Maven build requirements
- Maven POM XML File

Jenkins

- Getting started with Jenkins
- Overview
- How to Take this Course and How to Get Support
- About Continuous Integration
- Introduction to Jenkins and the History of Jenkins
- Install Java
- Install Jenkins
- Jenkins' Architecture and Terms of Jenkins
- Overview of Jenkins UI:
- Dashboard and Menus

- Create Our First Jenkins Job
- Run our First Jenkins Job
- Email configuration, Global Security, Master-Slave Architecture.

Continuous Integration (CI) with Jenkins

- Install Git and Jenkins GitHub Plugin
- Install Maven on Our Local Box
- Configure Jenkins to Work with Java, Git and Maven
- Text Direction: Create our First Maven-based Jenkins Project
- Create our First Maven-based Jenkins Project
- CI Pipeline
- Compile
- CodeReview
- UnitTest
- CodeCoverage
- Package
- Integration with JFrog and Sonar
- Run our First Jenkins Build and Jenkins Workspace
- Trouble Shooting: Run our First Jenkins Build and Jenkins Workspace
- Triggers in Jenkins

Continuous Delivery with Jenkins

- Archive Build Artifacts
- Install and Configure Tomcat as the Staging Environment
- The latest Deploy to Container plug-in
- Jenkins Build Pipeline
- Parallel Jenkins Build

- Master and slave
- Deployment

Containerization – Docker

- Overview & Setup
- What is docker & why
- Docker Editions: Which Do I Use
- Docker Version Format Change in Early 2017
- Docker Support for Different OS
- Docker for Windows
- Docker for Mac
- Docker for Linux
- Docker for Linux Setup and Tips
- Download Docker CE for your Linux distribution
- Download Docker Compose

Introduction to Docker Components

- Docker Hub (public repo)
- Docker Trusted Registry (Private repo)
- Docker Engine
- Docker Container
- Docker Image
- Docker Compose
- Docker Swarm
- Docker Services

Docker Images

- Image? What is it in Docker World?
- Official Docker Image Specification

- Centre for Images: The Docker Hub (Public)
- List of Official Docker Images
- Working with Images: image layers, tagging, Pushing to Docker Hub
- Building Images: The Dockerfile Basics
- Build Your Own Dockerfile and Run Containers

Docker Containers & Internals

- Container VS. VM
- Detached and Interactive Modes
- What Happens When We Run a Container?
- What's Going on In Containers: CLI Process Monitoring
- Getting a Shell Inside Containers
- Container Lifetime & Persistent Data Using Volumes
- Docker container Networking, default & user defined networks

Docker Compose

- Spin up multiple containers with Single command
- Docker Compose and the docker-compose.yml File
- Running Compose Commands
- Adding Image Building to Compose Files

Docker Swarm

- Introduction to Swarm & Advantages
- How to create a swarm (cluster of nodes)
- How to add nodes to swarm
- How to deploy services/containers to swarm
- Docker stack deploy
- Introduction to UCP (universal control pane)

Kubernetes

- What and why is Kubernetes
- Comparison with Docker Swarm
- Installation
- Components and Terminology
- Masters and Nodes
- Pods
- Replications
- Services
- Deployment

Configuration Management – Ansible

- Introduction
- Ansible Server / Ansible Controller
- Ansible and Infrastructure Management
- Ansible Server Configuration file
- How Ansible picks the configuration
- Update MISC parameters
- Ansible Inventory
- Ungrouped Hosts
- Grouped Hosts
- Groups of Groups
- checking connection to remote nodes
- SSH Keys
- Using username/password
- Ansible Facts
- Ansible Playbooks
- 'hosts' parameter

- 'become' parameter
- 'gather_facts' parameter
- 'tasks' parameter
- Conditions
- Loops
- with_items
- How to store output of one task and use it in another task
- Variables
- Roles
- MISC
- Ansible Vault
- Ansible Pull
- Ansible Galaxy
- Ansible AWX (Tower)
- Use cases and Examples
- Overview of Puppet
- Comparison of Ansible and Puppet

Logging – Splunk

- What Is Splunk
- About Machine Data
- What does Splunk Do?
- Why Splunk
- Understanding Splunk Architecture & its Components
- Installation of Splunk and Forwarder
- Splunk Search
- Use cases and Examples

Infrastructure Monitoring – Nagios

- Infrastructure monitoring Intro
- Nagios Core vs XI
- Setting up Nagios
- Configuring Windows & Linux Hosts
- Configuring Alerts and Email Notifications
- Plugins
- Introduction to Prometheus and Grafana
- Container monitoring with Prometheus and Grafana

CI/CD Pipeline with Jenkins Pipeline as Code

- Introduction to JPaaS
- Types of JPaaS
- Declarative
- Scripted
- Pipeline as a code basics
- Building a basic CI pipeline as code for Java app
- Building a job from pipeline code present in GIT repo.
- Executing parallel stages in a pipeline
- Generating pipeline script & directives using Jenkins inbuilt generators.

Terraform

- Introduction to Configuration Management
- Introduction to Provisioning
- Infrastructure as a code
- About Terraform
- Setting up Terraform

- Understanding HCL
- Basics of Terraform – variables, templates, modules & commands
- Terraform for Local Changes
- Terraform on AWS
- Terraform on Google Cloud

Microservices

- **Evolution of Microservices**
- Monolithic Architecture
- Service Oriented Architecture
- What is Microservice
- SOA vs Microservice
- **Microservice Develop**
- Write First Microservice
- **Microservice Testing**
- Testing Scenarios and Strategy
- Test at Different levels
- **Deploying Microservice**
- Setting Up CI/CD pipeline
- Touchless Deployment to Prod Environment