

Basic Linux and Docker with Kubernetes

Duration: 5 Days

Hands-On Format: This hands-on class is approximately 80/20 lab to lecture ratio, combining engaging lecture, demos, group activities and discussions with comprehensive machine-based practical programming labs and project work.

Module 1 – Linux Fundamentals

- What is Linux
- Basic Linux Commands
- Understanding Linux File System Structure
- Creating Files and Directories
- Copying Files and Directories
- Basics of VIM Editor
- Managing Users
- Understand Linux File System Permissions
- Changing Permissions
- Managing Services
- Installing and Updating Software Packages with YUM

Module 2 – Docker Administration

- Introduction to Containers
- Introduction to Docker
- Downloading and Installing Docker
- Docker Essential Commands
- Understanding Docker Images
- Building Docker Images using Dockerfile
- Storing and Retrieving Docker Images from Docker Hub

Module 3 – Core Concepts

- Overview of Container Orchestration
- Introduction to Kubernetes
- Kubernetes Architecture

Module 4 – Create Kubernetes Cluster

- Create Kubernetes Cluster using kubectl
- Implement Network Solution – Calico
- Verify Installation

Module 5 – Managing Resources

- Managing Pods
- Managing Labels & Selector
- Managing Replica Set
- Managing Service

Module 6 – Scheduling

- Manual Scheduling
- Node Selector

Module 7 – Application Lifecycle Management

Overview of Deployment
Deployment Strategies
Managing Deployment

Module 8 – Storage

Volumes
Persistent Volumes
Persistent Volume Claim

Module 9 – Logging and Monitoring

Understand how to Monitor all Cluster Components
Understand how to Monitor Applications
Monitoring with Prometheus and Grafana

Module 10 – Networking in Kubernetes

Kubernetes Networking
Introduction to Ingress
Configure and Manage Ingress Rule
Namespace
Load Balancer Service