

Kubernetes Administration using Docker

Duration: 5 days (8hrs/day)

Prerequisites: Basic knowledge of Linux.

Course Objective: In this course you will learn about Docker Administration, Orchestrate containers, automate the deployment, scaling, and management of applications in the software industry.

Docker Version: Latest

Kubernetes Version: Latest

Lab Requirement: Koenig DC (CentOS 9)

Module 1 - Docker Administration

Introduction to Containers

Introduction to Docker

Docker Engine

Understanding Docker Images

Private Registry

Understand Storage Methods

Lab: Downloading and Installing Docker

Lab: Docker Essential Commands

Lab: Building Docker Images

Lab: Storing and Retrieving Docker Images from Docker Hub

Lab: Building Containers from Images

Lab: Networking Docker Containers

Lab: Data Persistence with Volumes

Lab: Linux Capabilities

Module 2 - Core Concepts

Overview of Container Orchestration

Introduction to Kubernetes

Kubernetes Architecture

Module 3 - Managing Resources

Describe Pods

Describe Labels and Selector

Describe Replica Set

Describe Services

Describe Daemon Sets

Describe Namespaces

Lab: Managing Pods

Lab: Managing Labels & Selector

Lab: Managing Replica Set

Lab: Managing Cluster IP, Node Port

Lab: Installing Metal LoadBalancer and Using LoadBalancer Service

Lab: Managing Daemon Sets

Lab: Managing Namespaces

Module 4 - Application Lifecycle Management

Overview of Deployment

Deployment Strategies

Lab: Managing Deployment

Lab: Blue-Green Deployment Strategy

Module 5 - Environment Variable

Overview of Environment Variable

Lab: Plain Key as Variable in Pod

Lab: Config Map as Variable in Pod

Lab: Config Map as Volume

Lab: Secret as Variable in Pod

Lab: Secret as Volume

Module 6 - Storage

Describe Storage

Lab: Volumes

Lab: Creating Persistent Volume

Lab: Creating Persistent Volume Claim

Module 7 - Security

Kubernetes Authentication

Lab: Managing Users in Kubernetes

Lab: Service Account

Lab: Managing Roles and Role Binding

Lab: Managing Cluster Role and Cluster Role Binding

Lab: Basic Security Context

Module 8 - Logging and Monitoring

Understand how to Monitor all Cluster Components

Understand how to Monitor Applications

Lab: Read Cluster Component Logs

Lab: Using Elasticsearch and Kibana for Logging

Lab: Prometheus and Grafana Monitoring Tool

Module 9 - Networking in Kubernetes

Kubernetes Networking

Understand CNI

Lab: Configure and Manage Ingress Rule