

# Kubernetes Administration using Docker

**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 – Docker Administration**

- Introduction to Containers
- Introduction to Docker
- Downloading and Installing Docker
- Docker Essential Commands
- Docker Engine
- Understanding Docker Images
- Building Docker Images
- Storing and Retrieving Docker Images from Docker Hub
- Private Registry
- Building Containers from Images
- Understand Storage Methods
- Networking Docker Containers
- Data Persistence with Volumes
- Linux Capabilities

## **Module 2 – Core Concepts**

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

## **Module 3 – Managing Resources**

- Managing Pods
- Managing Labels & Selector
- Managing Replica Set
- Managing Service – Cluster IP, Node Port and Load Balancer
- Managing Daemon Sets
- Managing Namespaces

## **Module 4 – Application Lifecycle Management**

- Overview of Deployment
- Deployment Strategies
- Managing Deployment

## **Module 5 – Environment Variable**

- Plain Key
- Config Map
- Secret

## **Module 6 – Storage**

- Volumes
- Persistent Volumes
- Persistent Volume Claim

**Module 7 – Security**

Kubernetes Authentication  
Managing Users in Kubernetes  
Service Account  
Managing Roles and Role Binding  
Managing Cluster Role and Cluster Role Binding  
Security Context

**Module 8 – Logging and Monitoring**

Understand how to Monitor all Cluster Components  
Understand how to Monitor Applications  
Manage Cluster Components Logs  
Manage Application Logs  
Prometheus and Grafana Monitoring Tool

**Module 9 – Networking in Kubernetes**

Kubernetes Networking  
Understand CNI  
Configure and Manage Ingress Rule