

## **Kubernetes Without Internet**

### **Module 1 – Core Concepts**

Overview of Container Orchestration Introduction to Kubernetes Kubernetes Architecture

### **Module 2 – Kubernetes Offline installation**

- Design a Kubernetes Cluster
- Installation of Kubernetes Master and Nodes Choose a Network Solution
- Verify Installation

### **Module 3 – Managing Resources**

- Managing Pods
- Managing Labels & Selector
- Managing Replication Controller & Replica Set Managing Service – ClusterIP, NodePort, LoadBalancer

### **Module 4 – Scheduling**

- Manual Scheduling Taint and Tolerations Node Selector
- Node Affinity

### **Module 5 – Application Lifecycle Management**

- Overview of Deployment Deployment Strategies Managing Deployment Canary Deployment
- Blue-Green Deployment

### **Module 6 – Environment Variable**

- Plain Key Config Map Secret
- Mount Variable as Volume

### **Module 7 – Storage**

- Volumes
- Persistent Volumes Persistent Volume Claim

### **Module 8 – StatefulSet**

- Introduction to StatefulSET Use cases of StatefulSet Manage StatefulSet Storage in StatefulSet Headless Service

## **Module 9 – Security**

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

## **Module 10 – Cluster Maintenance**

- OS Upgrade
- Upgrade Cluster Version Static Pod
- ETCD Backup Jobs and Cron Job

## **Module 11 – Logging and Monitoring**

- Understand how to Monitor all Cluster Components Understand how to Monitor Applications
- Manage Cluster Components Logs Manage Application Logs Prometheus Tool

## **Module 12 – Networking in Kubernetes**

- Kubernetes Networking Understand CNI
- Understand Pod Networking Concepts Configure and Manage Ingress Rule Configure Ingress with TLS Namespace
- Metal Load Balancer

## **Module 13 – Multi Container Pod Design**

- Init Container
- Side Car Container Adaptor Container Ambassador Container

## **Module 14 – Helm Package Manager**

- Introduction to Helm
- Work with Helm Charts Create Helm Charts
- Upgrade and Downgrade Helm Charts

## **Module 15 – Building Docker Images**

- Introduction to Dockerfile Instructions Build Image
- Push Image to Centralized Registry

## **Module 16 – Readiness and Liveness Probe**

- Introduction to Readiness and Liveness Probe Implement Readiness and Liveness in Pod

**Module 17 – Troubleshooting**

- Troubleshoot ETCD Failure Troubleshoot Kubelet Failure Troubleshoot Container Runtime Failure Troubleshoot Scheduler Failure