Advanced Kubernetes

Duration: 4 Days

Prerequisites for this course: Kubernetes Admin Knowledge

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 – Installation, Configuration and Validation

Design a Kubernetes Cluster
Installation of Kubernetes Master and Nodes using Hard Way Method
Bootstrapping the ETCD Cluster
Bootstrapping the Kubernetes Control Plane

- Configure API Server
- Configure Scheduler
- Configure Controller Manager

Bootstrapping the Kubernetes Worker Nodes

- Configure Container Runtime
- Configure Kubelet
- Configure Kube Proxy
- Configure CNI Networking

Configure kubectl
Verify Installation

Module 2 – Revise Managing Resources

Managing Pods
Managing Labels and Selectors
Managing Replication Controller and Replica Set
Managing Service
Managing Deployments
Managing DaemonSet

Module 3 – Storage

Understand storage classes
Persistent Volume – HostPath
Persistent Volume - NFS
Understand volume mode, access modes and reclaim policies for volumes
Understand persistent volume claims primitive
Know how to configure applications with persistent storage

Module 4 – Managing Statefulset

What is StatefulSet
Why StatefulSet
Manage StatefulSet
Managing Headless Service
StatefulSet DNS Entry

Storage with StatefulSet

Module 5 – Logging and Monitoring

Understand how to monitor all cluster components
Prometheus Tool
Integration of Elastic Search and Kibana with Kubernetes

Module 6 – Networking in Kubernetes

Understand CoreDNS
Configure Custom DNS for Pod
Ingress – Host Based
Ingress – Path Based
Ingress with TLS
Metal Load Balancer

Module 7 – Helm

Understand Helm and Helm Charts
Helm Commands
Deploy Kubernetes Dashboard using Helm
Create Helm Chart and Deploy Applications using Helm Chart
Test Helm Chart
Upgrade Application using Helm Chart
Downgrade Application using Helm Chart

Module 8 – Istio

Istio Installation
Understand Istio Architecture
Deploy Application and Work with Kiali
Understand Destination Rule and Virtual Service
Create Application with Istio
Microservices Tracing
Ingress Host Based and Path Based with Istio
Ingress – Subdomain with Istio