

Administering Kubernetes

OEM: Cloudera • Duration: 5 Days (40 hrs) • Code: ADMIN-238

COURSE MODULES & TOPICS

Get Aboard

- Introduction to Visual Studio Code
- Introduction to Git repos
- Documentation and Resources

Access and Interact

- Building Kubernetes Clusters
- Implementing Container Network Interface
- Install kubectl and K9s

Architecture

- Kubernetes Design Principles
- Kubernetes Clusters
- Kubernetes Control Plane
- Kubernetes Networking

Microservices

- The purpose of microservices
- Running Docker containers
- Building a microservice

Running Kubernetes

- Manifest Files
- Namespaces
- Pods
- Labels and Selectors
- Pod Logging
- Deployments
- Services
- Multi-Container Pods

- Init Containers

Scheduling Pods

- Scheduling Process
- Manual Scheduling
- Node Labels and Node Selectors
- Node Affinity
- Pod Affinity and Pod Antiaffinity
- Taints and tolerations

Scheduling Resources

- CPU and Memory Units
- Monitoring Tools
- Resource Requests
- Resource Limits
- Managing Resources
- Quality of Service
- Resource Quotas for Namespaces

Command, Args, and Env

- Docker CMD and ENTRYPOINT
- Kubernetes CMD and ARGS
- Environment Variables

Config Map and Secret

- ConfigMaps
- Create ConfigMaps
- Inject ConfigMaps
- Secrets
- Create Secrets
- Inject Secrets
- Private Registry

User Authentication

- User Authentication
- Controller Manager User Certificates
- Manage CertificateSigningRequests
- Manage User Certificates
- Submitting with curl
- Static Files for Passwords or Tokens

User Access Control

- Architecture for Authorization
- Authorization Modes
- CLI Process
- Manifest Files

Cluster Role Access Control

- Cluster Roles
- Cluster Role Binding
- Manifest Files

Service Accounts

- Service Accounts
- Create a Service Account
- Inspect a Service Account
- Default Service Account
- Disable Service Account Token

Kubeconfig

- Kubeconfig and Multicluster Access
- Running Multi-Node Clusters
- User Config Files
- Manage Contexts

Networking

- Kubernetes Networks
- OSI Architecture
- Network Architecture
- External Load Balancer
- Host Network
- Service Network
- Pods Network

Cluster DNS

- Domain Name Service
- CoreDNS
- Switch Namespace Context
- Kube-Proxy and iptables

Services

- Services
- Connect to an Endpoint
- Types of Services
- Service ClusterIP
- Service NodePort
- Service LoadBalancer
- Service Commands

Ingress

- Ingress Controllers
- Ingress Resources
- Ingress Routing Rules
- Configure Ingress

Network-Policies

- Network Policies
- Rules for Network Policies
- Templates for Network Policies
- Create Network Policies

Docker Storage

- Docker Storage Architecture
- Storage Drivers
- Volume Drivers

Storage

- Volumes
- Volume Types
- Persistent Volumes
- Persistent Volume Claims
- Storage Classes
- Creating CSI Volumes

Operations

- Rolling Out Versions
- Health Probes
- Performance Testing with K6
- Horizontal Auto Scalers
- Vertical Auto Scalers

Maintaining

- Static Pods
- Daemonsets
- etcd
- Backups
- Upgrade Control Plane
- Upgrade Workers
- Inspect Clusters
- Fault Isolation Process

Summary

- Next steps
- Cloudera Support