

Docker Administration and Certified Kubernetes Administrator

Learn to build and manage Docker containers and administer Kubernetes clusters, from installation and scheduling to security and troubleshooting.

7 Days

DURATION

13

MODULES

65

TOPICS

COURSE OVERVIEW

This document provides the curriculum outline of the Knowledge, Skills and Abilities that a Certified Kubernetes Administrator (CKA) can be expected to demonstrate.

WHO THIS COURSE IS FOR

Docker Administrators

Kubernetes Administrators

System Administrators

DevOps Engineers

Cluster Operators

TOOLS AND REQUIREMENTS

Lab

- Koenig DC

LEARNING OBJECTIVES

- Build and manage Docker images and containers
- Configure Docker networking and volume-based data persistence
- Design and install a Kubernetes cluster with a network solution
- Manage Pods, ReplicaSets, Services and DaemonSets
- Apply deployment strategies for application lifecycle management
- Configure environment variables, ConfigMaps and Secrets
- Manage persistent volumes and volume claims
- Troubleshoot ETCD, kubelet, scheduler and container runtime failures

TRAINING APPROACH

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.

13 Modules, 65 Topics

01

Docker Administration

TOPICS

- 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

02

Core Concepts

TOPICS

Overview of Container Orchestration · Introduction to Kubernetes · Kubernetes Architecture

03

Installation, Configuration & Validation

TOPICS

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

04

Managing Resources

TOPICS

Managing Pods · Managing Labels & Selector · Managing Replication Controller & Replica Set · Managing Service · Managing DaemonSets

05

Scheduling

TOPICS

Manual Scheduling · Taint and Tolerations

06

Application Lifecycle Management

TOPICS

Overview of Deployment · Deployment Strategies · Managing Deployment

07

Environment Variable

TOPICS

Plain Key · Config Map · Secret · Mount Variable as Volume

08

Storage

TOPICS

Volumes · Persistent Volumes · Persistent Volume Claim

09

Security

TOPICS

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

10

Cluster Maintenance

TOPICS

OS Upgrade · Upgrade Cluster Version · Static Pod · ETCD Backup · Cron Job

11

Logging and Monitoring

TOPICS

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

12

Networking in Kubernetes

TOPICS

Kubernetes Networking · Understand CNI · Understand Pod Networking Concepts · Configure DNS · Configure and Manage Ingress Rule · Namespace · Metal Load Balancer

13

Troubleshooting

TOPICS

Troubleshoot ETCD Failure · Troubleshoot Kubelet Failure · Troubleshoot Container Runtime Failure · Troubleshoot Scheduler Failure

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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