Docker Certified Associate

Duration: 5 days (8hrs/day)

Prerequisites: Basic knowledge of Linux.

Course Objective: In this course you will learn to automate the deployment, scaling, and management of applications, Orchestration, in the software industry. The course primarily focuses on containerization technology, its implementation and uses in various application environments.

Docker Version: Latest

Kubernetes Version: Latest

Lab Requirement: Koenig DC (CentOS 9)

Module 1 - Installation and Configuration

Describe sizing requirements for installation

Describe setup of repo, selection of a storage driver, and installation of the Docker engine

Describe Docker Image vs Docker Containers

Describe Container Identification.

Describe Port Binding

Describe Default Container Commands

Lab: Installing Docker in Linux & Installing Docker Desktop

Lab: Port Binding

Lab: Attached and Detached Modes

Lab: Removing Docker Containers

Lab: Docker Container Exec

Lab: Importance of IT Flags

Lab: Overriding Default Container Commands

Lab: Restart Policies in Docker

Lab: Removing Docker Container Images

Lab: Disk Usage Metrics for Docker Components

Lab: Automatically Delete Containers on Exit

Module 2 - Image Creation, Management, and Registry

Describe the use of Dockerfile.

Describe options, such as add, copy, volumes, expose, entry point.

Identify and display the main parts of a Dockerfile

Lab: COPY vs ADD Instructions

Lab: EXPOSE Instruction

Lab: ENTRYPOINT Instruction

Lab: WORKDIR Instruction

Lab: ENV Instruction

Lab: Tagging Docker Images

Lab: Docker Commit

Lab: Managing Images with CLI

Lab: Inspecting Docker Images

Lab: Pruning Docker Images

Overview of Docker Registries

Lab: Pushing Images to Central Repository

Lab: Applying Filters for Docker Images

Lab: Moving Image Across Hosts

Module 3 - Networking

Overview of Docker Networking

Understanding Bridge Networks

Understanding Host Network

Lab: Implementing User-Defined Bridge Networks

Lab: Implementing None Network

Lab: Publish All Argument for Exposed Ports

Lab: Legacy Approach for Linking Containers

KOENIG
step forward

Module 4 - Orchestration

Overview of Container Orchestration

Overview of Docker Swarm & Building Labs

Lab: Initializing Docker Swarm

Lab: Services, Tasks and Containers

Lab: Scaling Swarm Service

Lab: Multiple Approaches to Scale Swarm Services

Lab: Replicated vs Global Service

Lab: Draining Swarm Node

Lab: Inspecting Swarm Service and Nodes

Lab: Adding Network and Publishing Ports to Swarm Tasks

Overview of Docker Compose

Lab: Deploying Multi-Service Application in Swarm

Lab: Locking Swarm Cluster

Lab: Troubleshooting Swarm Service Deployments

Lab: Mounting Volumes via Swarm

Lab: Control Service Placement

Overview of Overlay Networks

Lab: Creating Custom Overlay Networks for Swarm

Lab: Secure Overlay Networks

Lab: Creating Swarm Services Using Templates

Lab: Split Brain and Importance of Quorum

Lab: High Availability of Swarm Manager Nodes

Lab: Running Manager-Only Nodes in Swarm

Lab: Recover from Losing the Quorum

Lab: Docker System Commands

Introduction to Kubernetes

Overview of kubectl

Understanding Pods

Understanding Kubernetes Objects

Understanding Services

Kubernetes Networking Model

Understanding Liveness Probe

Understanding Readiness Probe

Understanding Daemonsets

Introduction to Labels and Selectors

Lab: Installation Options for Kubernetes

Lab: Installing and configuring kubectl

Lab: Creating First Pod

Lab: Managing ReplicaSet

Lab: Managing Deployment

Lab: Managing Secrets

Lab: Managing ConfigMaps

Lab: Service Lab: ClusterIP

Lab: Service Lab: NodePort

Lab: Taint and Tolerations

Lab: Implementing Labels and Selectors

Lab: Request and Limits in Kubernetes

Lab: Network Policies

Module 5 - Security

Describe security administration and tasks.

Describe the process of signing an image.

Describe default engine security.

Describe swarm default security.

Kubernetes RBAC

Kubernetes Network Policy

Managing Capabilities of Containers

KOENIG
step forward

Module 6 - Storage and Volumes

Overview of Docker Storage Drivers

Block vs Object Storage

Changing Storage Drivers

Overview of Docker Volumes

Overview of Device Mapper

Creating Volumes in Kubernetes

Lab: volumes

Lab: Bind Mounts

Lab: Automatically Remove Volume on Container Exist

Lab: Logging Drivers

Lab: PV and PVC