

Kubernetes Fundamentals

Course ID: KUB0218



Course Description

This instructor-led course provides an overview of Kubernetes and the open-source tools necessary for implementing Container Orchestration. The goal of this course is to understand how Kubernetes works and how it can be used to manage Docker Containers. This course will also include hands-on labs in which you will be configuring and administering Kubernetes features.

Learning Objectives

After this course you should be able to understand:

- + Kubernetes overview, use cases, and business drivers
- + Kubernetes interaction with Docker
- + Kubernetes system architecture and concepts
- + Deploy Kubernetes
- + Configure Kubernetes
- + Administer Kubernetes
- + Monitor Kubernetes workloads
- + Service integration with Kubernetes
- + Load balancing Kubernetes
- + Networking with Kubernetes
- + Implement storage with Kubernetes
- + Implement Kubernetes in a cluster

Who Should Attend

- + Data Center Architects
- + Solution Architects
- + Network Engineers
- + System Administrators
- + Storage Administrators

Prerequisites

- + Understanding of Linux Operating System Administration
- + Familiarity with Basic Network Concepts (TCP/IP, Layer 2, and Layer 3 networking)
- + Familiarity with Server Virtualization
- + Familiarity with Storage Concepts
- + Familiarity with Container Concepts

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(2 Days)

Course Content

Module 1: What is Kubernetes

- + Introduction to Containers
- + Application Architecture
- + Container Orchestration Engines
- + Introduction to Kubernetes

Module 2: Introduction to Docker

- + Docker Architecture and Components
- + Docker Images and Dockerfile

Module 3: Kubernetes Architecture

- + Master and Worker Nodes

Module 4: Installing Kubernetes

- + Cluster Options
- + Cluster Install with kubeadm

Module 5: Kubernetes Building Blocks

- + Namespaces
- + Pods
- + Replication Controllers
- + ReplicaSet
- + Deployments

Module 6: Services and Networking in Kubernetes

- + CNI Plugins
- + East-West Traffic Flow
- + Services
 - + Cluster IP
 - + Node Port
 - + Load Balancer
 - + Ingress

Module 7: Persistent Storage

- + Kubernetes Volume Plugin
- + PV and PVC
- + Storage Classes

Module 8: ConfigMaps and Secrets

- + ConfigMap and Secrets Creation and Use Cases

Module 9: Quotas and Limits

- + Namespaces and Context
- + Resource Reservation

Module 10: Kubernetes Dashboard

- + Enabling Dashboard
- + Dashboard access

Lab 1: Environment Setup

Lab 2: Working with Docker

Lab 3: Installing Kubernetes

Lab 4a: Kubernetes Building Blocks

Lab 4b: Kubernetes Building Blocks

Lab 5: Kubernetes Dashboard

Lab 6: Manage Cluster Networking

Lab 7: Persistent Storage

Lab 8: Deploying Multiple-tier applications

Lab 9: ConfigMaps and Secrets

Lab 10: Configure Quotas and Limits

Lab 11: Health Check

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