



kuber - Version: 3
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Kubernetes



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 **2 days Course**

Description:

Everyone talks about Kubernetes lately, and they should. Kubernetes is now the market leader in container orchestration platforms, and has been adopted by all major cloud providers as a fully managed offering (GCP, AWS, Azure, Oracle Cloud), Kubernetes is being adopted in a growing rate for multiple use cases - as micro-services workloads, Big Data, and Machine Learning.

Intended audience:

Senior developers, DevOps engineers and Cloud Architects, with good familiarity with Docker and Cloud concepts.

Prerequisites:

Basic Docker familiarity
Basic Linux command line familiarity

Objectives:

Topics:

Module 01 - Introduction

- Workshop Objectives
- Workshop Agenda
- Kubernetes Introduction

Module 02 - Kubernetes Architecture



- Core Concepts
- High-Level components Architecture
- Master Components
- Worker Node Components
- Putting All Together
- Additional Services

Module 03 - YAML and Kubctl

- YAML
- Kubectl
- Lab 01: Setting Up Your Workstation

Module 04 - Kubernetes Basics

- Kubernetes Building Blocks
- Namespaces
- Pods
- Replication Sets
- Lab 02: Creating Our First Pod

Module 05 - Deployments and Upgrades

- Deployments
- Rolling Upgrades
- Lab 03: Deploy and Upgrade a Single Service

Module 06 - Labels and Annotations

- Labels
- Annotations
- Selectors

Module 07 - Kubernetes Networking

- Kubernetes Networking Introduction
- Container Network Interface (CNI)
- CNI Plugins
- Fundamental Networking Rules
- Networking patterns

Module 08 - Services

- Services Introduction
- Service Types – ClusterIP
- Service Types – NodePort
- Service Types – LoadBalancer
- Service Types – ExternalName
- Lab 04: Creating a Load Balancer Service

Module 09 - Ingress

- Introduction to Ingress
- Ingress Controllers
- Lab 05: Deploying applications using Ingress

Module 10 - ConfigMaps and Secrets

- ConfigMaps
- ConfigMaps – As Environment Variables
- ConfigMaps – As Volumes
- Secrets
- Lab 06: Using ConfigMaps and Secrets

Module 11 - Jobs and CronJobs

- Jobs
- CronJobs
- Lab 07: Running Jobs and CronJobs

Module 12 - Daemonsets

- DaemonSets
- Lab 08: Running Pods as DaemonSets

Module 13 - Helm Package Manager

- What is Helm?
- Helm Concepts
- Helm Architecture
- Tiller
- Helm CLI
- Using Helm Charts
- Lab 09: Deploying Applications using Helm

Module 14 - Managed Kubernetes

- Local Development Kubernetes
- Kubernetes on Google Cloud Platform (GKE)
- Kubernetes on Amazon Web Services (EKS)
- Kubernetes on Microsoft Azure (AKS)
- Kubernetes On-Premise using Kubeadm and Kubespray
- Other Kubernetes Distributions

Module 15 - Advanced Scheduling

- Requests & Limits
- Taints & Tolerations
- Affinity & Anti-Affinity

Module 16 - Autoscaling

- Scaling pods horizontally
- Scaling pods vertically
- Scaling cluster horizontally



- Lab 10: Configuring Autoscaling

Module 17 - Kubernetes Storage

- Introduction
- Volumes
- PersistentVolumes
- PersistentVolumeClaims
- StorageClasses

Module 18 - StatefulSets

- StatefulSets
- Lab 11: Working with StatefulSets

Module 19 - Microservices with Istio (Appendix, if time permits)

- Microservices Architecture
- Service Mesh
- Introduction to Istio
- Lab 12: Managing Microservices with Istio

Module 20 - Summary

- Course Summary
- What Next?