

Kubernetes

kuber - Version: 1

 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:

Setting the grounds

- Containerization and Docker
- Containers Orchestration

Introduction to Kubernetes

- Workload types
 - Stateless Apps
 - Stateful Apps

Kubernetes Architecture

- Master & Nodes
- Components

CLI Tool - Kubectl

- Kubeconfig file
- Create, Get, Describe, logs, exec, etc..

Kubernetes Building Blocks

- Pod
- ReplicaSet
- Replication Controller
- Deployments
- Jobs & CronJobs
- DaemonSets

Managing configuration

- ConfigMaps
- Secrets

Storage

- Persistent Volumes and Claims
 - Cloud
 - On-Prem

Services and Ingress

- Different types of Services
- Ingress Resource and Controller

Stateful applications

- StatefulSets

Kubernetes Dashboard

- Installing the Dashboard
- Common Operations

Application Life-cycle

- Liveliness
- Readiness
- Requests and Limits

Auto-Scaling

- Horizontal Pod Autoscaler
- Cluster Auto-scaler

° Helm Package Manager

Scheduling

- Labels and Annotations
- Taints and Tolerations
- Affinity

CI/CD with Kubernetes - Optional - if time permits

- Common Cloud Offerings and integrations
- Jenkins X
- Drone.io
- Spinnaker

Micro-services & Istio - Optional - if time permits

- Micro-services Pains and Challenges
- Service Mesh & Istio

Installation and Deployment - Optional - If time permits

- Single-Node Installation
 - Docker Native Offering
 - Minikube
- Clouds Offering
 - GCP GKE
 - Azure - AKS
 - AWS - EKS
- Manual Installation
 - Kubeadm
 - Kubespray
 - Rancher & JUJU