Kubernetes

kuber - Version: 3

🕐 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.
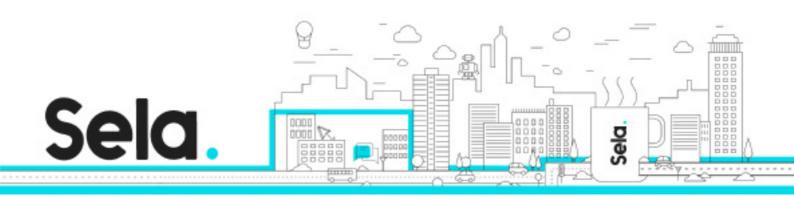
Prerequisites:

Basic Docker familiarity
Basic Linux command line familiarity

Objectives:

The overall goal of the course is to get to know Kubernetes.
This tool will teach you to synchronize the containers reliably and efficiently, so you will be able to automatically manage and deploy applications on containers that appear on the server

Topics:

Module 01 - Introduction

- Workshop Objectives
- Workshop Agenda
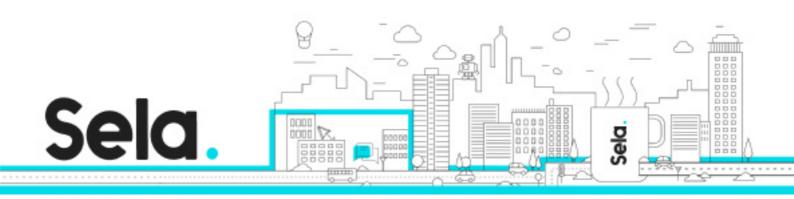- Kubernetes Introduction

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 - Deamonsets

- 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 - Summary

- Course Summary
- What Next?