Certified Kubernetes Administration (LFS458)

Modality: Virtual Classroom

Duration: 4 Days

This course is for professionals preparing for the Certified Kubernetes Administrator certification exam. The course also includes the official exam voucher.

About the course:

The course is designed to cover the main topics and concepts which are applied when developing and administering a Kubernetes cluster in production via vendor independent tools. You will learn how to develop a cluster, grow the cluster, determine network configuration, implement the applications, security and storage configuration along with other objects essential for use. The student will be exposed to a multitude of skills through this course which are extremely important for administering Kubernetes in a production environment and will help in preparing for the Certified Kubernetes Administrator (CKA) exam.

Course Objectives:

Through this course, students will learn about the process of installing as well as configuring a production-grade Kubernetes cluster. From configuring the network to making implementations, to upgrading the system via services, you will learn to do everything. In addition, you will also learn how to handle the ongoing tasks which are necessary for Kubernetes administration. Once you complete this course, you will be able to:

- Install a multi-node Kubernetes cluster via kubeadm
- Understand the process of growing a cluster
- Choose and deploy cluster networking
- Understand different types of application lifecycle management such as updates, scaling, and roll backs.
- Configure security for containers as well as clusters
- Manage container storage
- Understand the process of logging, monitoring, as well as troubleshooting clusters and containers.
- Configure affinity and scheduling of container implementation
- Automation the implementation of application using charts and helm
- Understand Federation for higher availability and fault tolerance.

While most of the courses are vendor locked, this one doesn’t focus only on one vendor, rather explains about tools that can world on any Kubernetes cluster.

Pre-requisites:

Prior to opting this course, students must have basic understanding and knowledge of Linux

administration skills and should be comfortable with the use of command line. Additionally, they should also know how to edit files through command line text editor.

Course Outline:

Introduction

- Linux Foundation
- Linux Foundation Training
- Linux Foundation Certifications
- Laboratory Exercises, Solutions and Resources
- Distribution Details
- Labs

Basics of Kubernetes

- Define Kubernetes
- Cluster Structure
- Adoption
- Project Governance and CNCF
- Labs

Installation and Configuration

- Getting Started With Kubernetes
- Minikube
- kubeadm
- More Installation Tools
- Labs

Kubernetes Architecture

- Kubernetes Architecture
- Networking
- Other Cluster Systems
- Labs

APIs and Access

- API Access
- Annotations
- Working with A Simple Pod
- kubectl and API
- Swagger and OpenAPI
- Labs

API Objects

- API Objects
- The v1 Group
- API Resources
- RBAC APIs
- Labs

Managing State With Deployments

- Deployment Overview
- Managing Deployment States
- Deployments and Replica Sets
- DaemonSets
- Labels
- Labs

Services

- Overview
- Accessing Services
- DNS
- Labs

Volumes and Data

- Volumes Overview
- Volumes
- Persistent Volumes
- Passing Data To Pods
- ConfigMaps
- Labs

Ingress

- Overview
- Ingress Controller
- Ingress Rules
- Labs

Scheduling

- Overview
- Scheduler Settings
- Policies
- Affinity Rules
- Taints and Tolerations
- Labs

Logging and Troubleshooting

- Overview
- Troubleshooting Flow
- Monitoring
- Logging
- Troubleshooting Resources
- Labs

Custom Resource Definition

- Overview
- Custom Resource Definitions
- Aggregated APIs
- Labs

Kubernetes Federation

- Overview
- Federated Resources
- Labs

Helm

- Overview
- Helm
- Using Helm
- Labs

Security

- Overview
- Accessing the API
- Authentication and Authorization
- Admission Controller
- Pod Policies
- Network Policies
- Labs