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Learning Style: Virtual Classroom

Technology: Linux Foundation

Difficulty: Intermediate

Course Duration: 4 Days

## Certified Kubernetes Administration (LFS458)



***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
- Automate 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 work 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

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