

Kubernetes Administration

Official Linux Foundation™ Course delivered by GuruTeam

Course Description

This course covers the core concepts typically used to build and administer a Kubernetes cluster in production, using vendor-independent tools. We build a cluster, determine network configuration, grow the cluster, deploy applications and configure the storage, security and other objects necessary for typical use. This course offers exposure to the many skills necessary to administer Kubernetes in a production environment.

Certification

This course is excellent preparation for the Certified Kubernetes Administrator (CKA) exam. Please note the cost of the exam is not included in the course fee.

Objectives

In this course, you'll learn how to install and configure a production-grade Kubernetes cluster, from network configuration to upgrades to making deployments available via services. Also handle the ongoing tasks necessary for Kubernetes administration.

Topics include:

- Installation of a multi-node Kubernetes cluster using kubeadm, and how to grow a cluster.
- Choosing and implementing cluster networking.
- Various methods of application lifecycle management, including scaling, updates and roll-backs.
- Configuring security both for the cluster as well as containers.
- Managing storage available to containers.
- Learn monitoring, logging and troubleshooting of containers and the cluster.
- Configure scheduling and affinity of container deployments.
- Use Helm and Charts to automate application deployment.
- Understand Federation for fault-tolerance and higher availability.

This course does not focus on one vendor's tools. Most courses are vendor-locked. We use kubeadm to deploy the cluster and focus on tools that would work on anyone's Kubernetes cluster.

Those who attend the entire course will receive a digital Certificate of Course Completion from the Linux Foundation™.

Duration

4 Days from 1st April 2019

Target Audience

This course is for anyone who wants to learn the skills necessary to build and administer a Kubernetes cluster.

Course Prerequisites

Students should have an understanding of Linux administration skills, comfortable using the command line. Must be able to edit files using a command-line text editor.

Course Outline

Kubernetes Administration

1. Introduction
 - Linux Foundation Training & Certifications
 - Laboratory Exercises, Solutions and Resources
 - Distribution Details
 - Labs
2. Basics of Kubernetes
 - Define Kubernetes
 - Meaning of Kubernetes
 - Adoption
 - Project Governance
 - Labs
3. Installation and Configuration
 - Getting Started With Kubernetes
 - Minikube
 - kubeadmin
 - More Installation Tools
 - Labs
4. Kubernetes Architecture
 - Kubernetes Architecture
 - Networking
 - Other Cluster Systems
 - Labs
5. APIs and Access
 - API Access
 - Working with First Pod
 - Kubectl and API
 - Swagger and OpenAPI
 - Labs
6. Managing State With Deployments
 - Deployment Overview
 - Managing Deployment States

- Deployments and Replica Sets
- Labels
- Labs
- 7. Services
 - Overview
 - Accessing Services
 - DNS
 - Labs
- 8. Volumes and Data
 - Volumes Overview
 - Volumes
 - Persistent Volumes
 - Secrets
 - ConfigMaps
 - Labs
- 9. Ingress
 - Overview
 - Ingress Controller
 - Ingress Rules
 - Labs
- 10. API Objects
 - API Objects
 - The v1 Group
 - API Resources
 - RBAC APIs
 - Labs
- 11. Scheduling
 - Overview
 - Scheduler
 - Policies
 - Affinity Rules
 - Taints and Tolerations
 - Labs
- 12. Logging and Troubleshooting
 - Overview
 - Monitoring
 - Logging
 - Troubleshooting
 - Labs
- 13. Custom Resource Definition
 - Overview
 - Third-Party Resources
 - Custom Resources
 - Labs
- 14. Kubernetes Federation
 - Overview
 - Federation
 - Using Cluster API
 - Labs
- 15. Helm
 - Overview

- Helm
- Using Helm
- Labs

16. Security

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

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