

Kubernetes Administration Certification

Official Linux Foundation™ and Cloud Native Computing Foundation™ Course

Course Overview

This Kubernetes Administration Certification training 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 Kubernetes Administration Certification course training course offers exposure to the many skills necessary to administer Kubernetes in a production environment.

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

Training Objectives

In this Kubernetes Administration Certification training course, you will 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 kubectl, 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.

Target Audience

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

Duration

4 Days

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.

Accreditation

This course is excellent preparation for the Certified Kubernetes Administrator (CKA) exam.

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

About the Certified Kubernetes Administrator (CKA) Program

The Certified Kubernetes Administrator (CKA) program was created by the Cloud Native Computing Foundation (CNCF), in collaboration with The Linux Foundation, to help develop the Kubernetes ecosystem. As the fourth highest velocity open source project, Kubernetes use is exploding. The Cloud Native Computing Foundation is committed to growing the community of Kubernetes Administrators, thereby allowing continued growth across the broad set of companies and organizations that are using Kubernetes. Certification is a key step in that process, allowing certified administrators to quickly establish their credibility and value in the job market, and also allowing companies to more quickly hire high-quality teams to support their growth.

About the Cloud Native Computing Foundation

The Cloud Native Computing Foundation (CNCF) is an open source software foundation dedicated to making cloud-native computing universal and sustainable. Cloud-native computing uses an open source software stack to deploy applications as microservices, packaging each part into its own container, and dynamically orchestrating those containers to optimize resource utilization. Cloud-native technologies enable software developers to build great products faster.

Course Outline

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
- kubectl
- More Installation Tools
- Labs

4. Kubernetes Architecture

- Kubernetes Architecture
- Networking

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- 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

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- 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