Training: The Linux Foundation
LFD459 Kubernetes for App Developers

THE LINUX FOUNDATION AUTHORIZED TRAINING PARTNER

TRANING TERMS

2026-12-28 | 3 days | Virtual Classroom

TRAINING GOALS:

Kubernetes is a high-velocity open source orchestration tool to deploy, scale, and update containerized applications. This 2 days course will teach you how to containerize, host, deploy, and configure an application in a multi-node cluster. Starting with a simple Python script, you will define application resources and use core primitives to build, monitor and troubleshoot scalable applications in Kubernetes. Working with network plugins, security and cloud storage, you will be exposed to many of the features needed to deploy an application in a production environment.
The topics covered are directly aligned with the knowledge domains tested by the Cloud Native Computing Foundation Certified Kubernetes Application Developer (CKAD) Program, and will substantially increase students' ability to become certified.
In this course you'll learn how to:

- Containerize and deploy a new Python script
- Configure the deployment with ConfigMaps, Secrets and SecurityContexts
- Understand multi-container pod design
- Configure probes for pod health
- Update and roll back an application
- Implement services and NetworkPolicies
- Use PersistentVolumeClaims for state persistence
- And more

This course is designed to be vendor- and distribution-neutral, so you will be able to apply these concepts universally.

CONSPECT:

- Introduction
  - Objectives

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- Who You Are
- The Linux Foundation
- Linux Foundation Training
- Preparing Your System
- Course Registration
- Labs

- Kubernetes Architecture
  - What Is Kubernetes?
  - Components of Kubernetes
  - Challenges
  - The Borg Heritage
  - Kubernetes Architecture
  - Terminology
  - Master Node
  - Minion (Worker) Nodes
  - Pods
  - Services
  - Controllers
  - Single IP per Pod
  - Networking Setup
  - CNI Network Configuration File
  - Pod-to-Pod Communication
  - Cloud Native Computing Foundation
  - Resource Recommendations
  - Labs
- Build
  - Container Options
  - Containerizing an Application
  - Hosting a Local Repository
  - Creating a Deployment
  - Running Commands in a Container
  - Multi-Container Pod
  - readinessProbe
  - livenessProbe
  - Testing
  - Labs

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- Design
  - Traditional Applications: Considerations
  - Decoupled Resources
  - Transience
  - Flexible Framework
  - Managing Resource Usage
  - Multi-Container Pods
  - Sidecar Container
  - Adapter Container
  - Ambassador
  - Points to Ponder
  - Labs
- Deployment Configuration
  - Volumes Overview
  - Introducing Volumes
  - Volume Spec
  - Volume Types
  - Shared Volume Example
  - Persistent Volumes and Claims
  - Persistent Volume
  - Persistent Volume Claim
  - Dynamic Provisioning
  - Secrets
  - Using Secrets via Environment Variables
  - Mounting Secrets as Volumes
  - Portable Data with ConfigMaps
  - Using ConfigMaps
  - Deployment Configuration Status
  - Scaling and Rolling Updates
  - Deployment Rollbacks
  - Jobs
  - Labs
- Security
  - Security Overview
  - Accessing the API
  - Authentication

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- Authorization
- ABAC
- RBAC
- RBAC Process Overview
- Admission Controller
- Security Contexts
- Pod Security Policies
- Network Security Policies
- Network Security Policy Example
- Default Policy Example
- Labs

- Exposing Applications
  - Service Types
  - Services Diagram
  - Service Update Pattern
  - Accessing an Application with a Service
  - Service without a Selector
  - ClusterIP
  - NodePort
  - LoadBalancer
  - ExternalName
  - Ingress Resource
  - Ingress Controller
  - Labs
- Troubleshooting
  - Troubleshotting Overview
  - Basic Troubleshooting Steps
  - Ongoing (Constant) Change
  - Basic Troubleshooting Flow: Pods
  - Basic Troubleshooting Flow: Node and Security
  - Basic Troubleshooting Flow: Agents
  - Monitoring
  - Logging Tools
  - Monitoring Applications
  - System and Agent Logs
  - Conformance Testing

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- More Resource
- Labs

- Closing and Evaluation Survey

REQUIREMENTS:

To get the most out of this course, you should have basic Linux command line and file editing skills and be familiar with using a programming language (such as Python, Node.js, Go). A knowledge of Cloud Native application concepts and architectures (such as is taught in our free Introduction to Kubernetes edX MOOC) is helpful for this course.

Difficulty level



CERTIFICATE:

The participants will obtain certificates signed by The Linux Foundation.

TRAINER:

Certified The Linux Foundation Trainer.

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