ComponentSoft
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OPS-202: Kubernetes - OpenShift: Understanding the Differences

Course Length: 2 days

Course Description

Are you ready to truly master enterprise-grade container management?

This intensive, hands-on workshop is designed to provide comprehensive, practical expertise in Red Hat OpenShift Container Platform (OCP) for people who already know Kubernetes, guiding you from fundamental architecture to advanced deployment methods, security, and cluster installation strategies. You will not just learn concepts—you will gain hands-on experience deploying, securing, and managing applications in a production-ready environment, culminating in the critical skill of installing a disconnected cluster.

Course objectives:

Upon completion, you will be able to confidently:

- Understand and articulate the key architectural and feature differences between OpenShift and vanilla Kubernetes.
- Deploy and manage your own applications using various methods, including Docker images and source-to-image (S2I) builds.
- Implement critical security measures using Security Context Constraints (SCCs) and manage cluster resources effectively with quotas.
- Set up and troubleshoot logging and monitoring stacks for applications and cluster health.
- Execute the advanced process of installing and configuring a disconnected OpenShift cluster, a crucial skill for high-security environments.

Structure: 50% theory, 50% hands on lab exercises

Target audience: This course is recommended for people who are already familiar with Docker and Kubernetes, and want to extend their knowledge to the enterprise-oriented world of OpenShift:

- Developers, who want to develop and run containerized applications on OpenShift.
- System administrators, who operate and manage OpenShift-based infrastructure.
- DevOps engineers, who want to implement CI/CD-based process automation over OpenShift.
- Architects, who want to design OpenShift-based application architectures.
- IT managers, who want to understand the business benefits of OpenShift.

Prerequisites: Proficiency with the Linux CLI. A broad understanding of Linux system administration. Familiarity with Docker and Kubernetes.

System requirements for your own OpenShift Local deployment: min. 16Gb RAM, 200 Gb storage space, min. Intel i7 or AMD Ryzen 5 CPU. Sufficient cloud lab machines are provided.

Detailed Course Outline

Module 1. **Introduction to OpenShift**

- Key features vs K8S features
- History

Module 2. **OpenShift architecture**

- Control plane nodes, worker nodes
- CRI-O
- Buildah
- **LAB TASK:** Install OpenShift Local

Module 3. **Overview of OpenShift clients: Web Console, oc CLI**

Module 4. **OpenShift Workloads and Networking**

- BuildConfig, Templates
- Ingresses, Gateway API

Module 5. **Deploying applications**

- Running applications from source code directly
- **LAB TASK:** Deploy an application directly from git
- **LAB TASK:** Create a microservice image and deploy it to OpenShift, expose it via a route

Module 6. **Operators in OpenShift**

- Custom resource definitions
- Custom Controllers
- **LAB TASK:** Install an operator from the Operator Hub

Module 7. **OpenShift Security**

- Security Context Constraints (SCC)
- Quotas (ResourceQuota, LimitRange)
- Image scanning
- **LAB TASK:** Try image scanning

Module 8. **Logging, Monitoring, Troubleshooting**

- oc CLI commands used for troubleshooting
- **LAB TASK:** Install Prometheus

Module 9. **Installing OpenShift in a disconnected environment**

- Overview of the installation process
- **LAB TASK:** Install your own OpenShift production cluster