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KubeVirt Training

2 days (14 hours)

Overview

KubeVirt extends Kubernetes to run, manage, and modernize virtual machines within a cloud-native platform. By combining VMs, containers, persistent storage, networking, and declarative automation, it enables infrastructure to evolve toward unified and industrialized operations.

Our KubeVirt training will help you master the essential mechanisms for managing and virtualizing virtual machines in a Kubernetes environment.

You'll learn how to deploy and configure KubeVirt, distinguish between `VirtualMachine` and `VirtualMachineInstance` resources, and then create and manage VMs using `kubectl` and `virtctl`.

You'll learn how to associate VMs with Kubernetes storage and network resources, manage their lifecycle, define their computing resources, and standardize their configurations using templates tailored to business use cases.

By the end of the course, you will be able to administer virtualized workloads, secure access with RBAC, prepare for live migrations, and apply best practices for operations in a Kubernetes cluster.

Like all our training courses, this one will introduce you to **the latest stable version** of the technology and its new features.

Objectives

- Understand the architecture and role of KubeVirt within a Kubernetes cluster
- Create, configure, and manage virtual machines using KubeVirt resources
- Manage the lifecycle, console access, and resource allocation of VMs

- Configure persistent storage and network connectivity for virtual machines
- Implement RBAC controls, live migrations, and operational best practices

Target Audience

- Kubernetes Administrator
- System administrator
- DevOps engineer
- Platform Engineer
- Cloud Architect

Prerequisites

- Proficiency in the fundamental concepts of Kubernetes
- Experience with kubectl commands
- Knowledge of YAML manifests
- Basic understanding of storage, networking, and virtualization

Technical Prerequisites

- Computer running Linux, macOS, or Windows 11 with a terminal available
- At least 16 GB of RAM, a multicore processor with hardware virtualization enabled
- kubectl client and virtctl tool installed, or a provided lab environment
- Stable internet connection allowing access to a training Kubernetes cluster

Our KubeVirt Training Curriculum

[Day 1 - Morning]

Fundamentals of Virtualization with KubeVirt

- KubeVirt's role in the Kubernetes ecosystem and use cases for cloud-native virtualization
- Component architecture; roles of virt-api, virt-controller, virt-handler, and virtualization
- VirtualMachine and VirtualMachineInstance resource models, and the relationship between persistent VMs and running instances
- Infrastructure prerequisites, hardware virtualization, compatible nodes, and installation principles
- Exploring KubeVirt APIs, custom resources, and the kubectl and virtctl tools
- Hands-on workshop: Checking KubeVirt availability in a cluster and exploring its components, resources, and APIs.

[Day 1 - Afternoon]

Creating and managing virtual machines

- Structure of a VirtualMachine manifest; configuring CPU, memory, devices, and execution strategy
- Creating VMs with virtctl, YAML manifests, and instance types
- Lifecycle management: starting, stopping, restarting, pausing, and resuming virtual machines
- Accessing VMs via serial console, VNC, port forwarding, and SSH
- Analysis of VM and VMI resource states, events, and conditions
- Hands-on workshop: Create a Linux virtual machine, start it, access it via console, and manage its lifecycle.

[Day 2 - Morning]

Storage, networking, and standardization of VMs

- Principles of persistent storage for VMs, volumes, PersistentVolumeClaims, and boot disks
- Importing and preparing images with Containerized Data Importer and DataVolume resources
- Connecting VMs to Kubernetes networks, interfaces, services, and exposing virtualized applications
- Configuring resources, node affinities, and placement constraints for virtualized
- Standardization with Instancetype, Preference, and virtual machine templates
- Hands-on workshop: Deploying a VM with a persistent volume, an imported image, and network connectivity accessible from the cluster.

[Day 2 - Afternoon]

Administration, security, and service continuity

- Centralized administration of KubeVirt resources and monitoring of VM operational status
- Access control with RBAC, KubeVirt roles, namespace-based access, and the principle of least privilege
- Preparing for live migration, shared storage prerequisites, and monitoring migrations
- Incident management, VM diagnostics, event collection, and component log analysis
- Operational best practices, template governance, capacity, updates, and coexistence Container VMs
- Hands-on workshop: Configuring access permissions for a VM, triggering a live migration, and diagnosing an operational incident.

Relevant Companies

This training program is designed for both individuals and businesses—large and small—that wish to train their teams in a new, advanced IT technology or to

acquire specific industry knowledge or modern methods.

Placement Assessment at the Start of Training

The pre-training assessment complies with Qualiopi quality standards. Upon final registration, the learner receives a self-assessment questionnaire that allows us to evaluate their estimated proficiency in various types of technologies, as well as their expectations and personal goals for the upcoming training, within the limits imposed by the selected format. This questionnaire also allows us to anticipate certain connection or internal security issues within the company (intra-company or virtual classroom) that could pose problems for the monitoring and smooth running of the training session.

Teaching Methods

Hands-On Training: 60% Practical, 40% Theoretical. Training materials distributed in digital format to all participants.

Organization

The course alternates between theoretical input from the instructor—supported by examples and reflection sessions—and group work.

Assessment

At the end of the session, a multiple-choice quiz is administered to verify that participants have successfully acquired the skills.

Certification

A certificate will be issued to each trainee who has completed the entire training program.