Managing Virtual Machines with Red Hat OpenShift Virtualization (DO316) Training

Duration: **5 Day**

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Overview

Learn how to **create, manage, and migrate virtual machines (VMs)** in **Red Hat OpenShift** by leveraging the **OpenShift Virtualization Operator**.

The **Managing Virtual Machines with Red Hat OpenShift Virtualization** course provides hands-on experience for administrators and platform engineers to operate virtualized workloads on OpenShift — side by side with containerized applications — without requiring prior Kubernetes expertise.

Participants gain skills to:

- Create, access, and control VMs in OpenShift clusters.
- Manage CPU, memory, storage, and network resources using native Kubernetes features.
- Ensure high availability (HA) of VMs using standard OpenShift extensions.
- Connect VMs to data center services and migrate workloads from existing hypervisors.

This course is based on Red Hat OpenShift Virtualization.

Prerequisites

Recommended: **Red Hat OpenShift Administration I (DO180)**

For managing Linux-based VMs, **Linux system administration skills** such as:

- **Red Hat System Administration I (RH124)**
- **Red Hat System Administration II (RH134)**

Who Should Attend

This course is ideal for:

- **Virtual Machine Administrators** migrating from traditional hypervisors to OpenShift.
- **Platform and Cloud Engineers** managing both containerized and virtualized workloads.
- **System Administrators** supporting hybrid environments in OpenShift clusters.

What You Will Learn

- Create VMs from installation media and disk images.

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- Access text-based and graphical consoles for virtual machines.
- Connect to VMs using Kubernetes networking (services, ingress, and routes).
- Manage storage via Kubernetes Persistent Volumes (PV), Persistent Volume Claims (PVC), and Storage Classes.
- Start, pause, and stop virtual machines.
- Clone, snapshot, and restore VMs.
- Create and manage **golden images** and templates.
- Connect VMs to **external networks** using Multus CNI and NMState.
- Set up load balancer services to enable SSH or remote access.
- Migrate VMs from traditional hypervisors with the **Migration Toolkit for Virtualization (MTV)**.
- Backup and restore VMs using the **OpenShift API for Data Protection (OADP)**.

Impact on the Organization

OpenShift Virtualization allows organizations to **consolidate virtual and container workloads** into a single, unified management platform — reducing operational complexity and cost.

By deploying VMs on OpenShift, enterprises can:

- Modernize legacy applications without a full container migration.
- Simplify integration between traditional apps and CI/CD pipelines.
- Improve agility, scalability, and resilience through shared orchestration.

This approach bridges the gap between **virtualization and cloud-native development**, accelerating digital transformation.

Impact on the Individual

After completing this course, IT professionals will:

- Gain hands-on experience managing VMs in OpenShift.
- Learn to automate VM provisioning, storage, and networking.
- Understand hybrid management of containers and virtual machines.
- Be prepared to migrate workloads from other hypervisors efficiently.

You'll emerge with the skills to unify virtualization and containerization under a single OpenShift infrastructure.

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Outline

1. Introduction to Red Hat OpenShift Virtualization
Understand how OpenShift Virtualization differs from traditional hypervisors and containers. Learn about use cases and deploy the OpenShift Virtualization operator.

2. Running and Accessing Virtual Machines
Create, manage, inspect, and monitor VMs in OpenShift Virtualization.

3. Configuring Kubernetes Networking for Virtual Machines
Set up services, ingress, and routes to enable network connectivity for VMs.

4. Connecting Virtual Machines to External Networks
Use Multus CNI and NMState to connect VMs to external data center networks.

5. Configuring Storage for Virtual Machines
Provision and manage VM storage using Kubernetes resources.

6. Creating and Restoring Backups
Perform snapshots and full VM backups using OpenShift's OADP operator.

7. Replicating Virtual Machines
Use Instance Types, Templates, and Clones to standardize and replicate VMs.

8. Advanced VM Management
Import, live migrate, and optimize VMs across clusters.

9. High Availability (HA) for Virtual Machines
Configure Kubernetes resources to maintain uptime and resilience during upgrades and failures.