# 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.