Red Hat OpenShift

Red Hat Training

# Hypervisors to OpenShift Virtualization

## Red Hat Global Learning Services

23.04.2026

**Instructor:** Rainer Molitor

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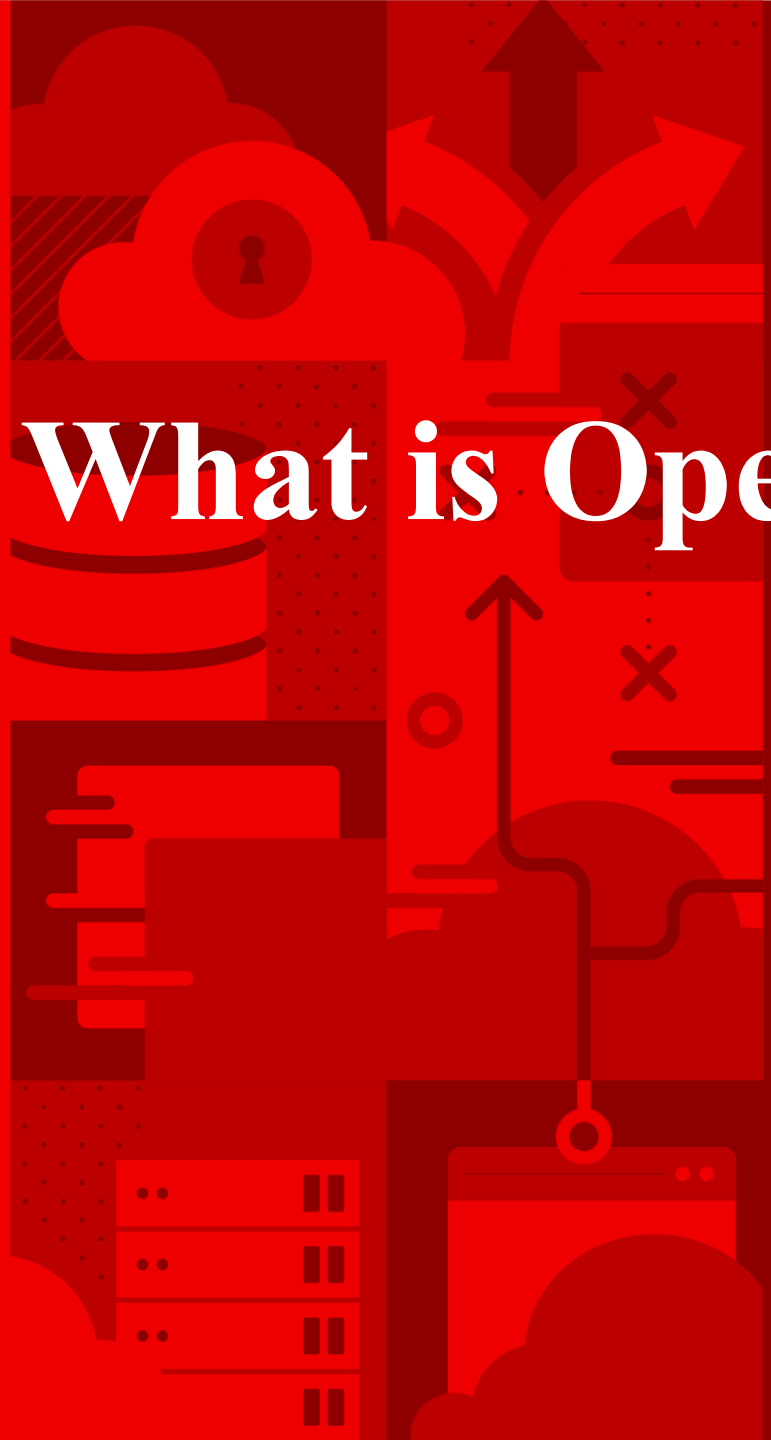
# What we will cover today:


- Moving from hypervisors to OCP Virt. Why?
- What is OpenShift Virtualization and why you should care?
- Demo: Creating VMs in OCPVirt
- Red Hat Learning Path for:
  OpenShift
  OpenShift Virtualization
- Introduction to RHLS - Features and Benefits



# What is OpenShift Virtualization?

# It All Started with Containers



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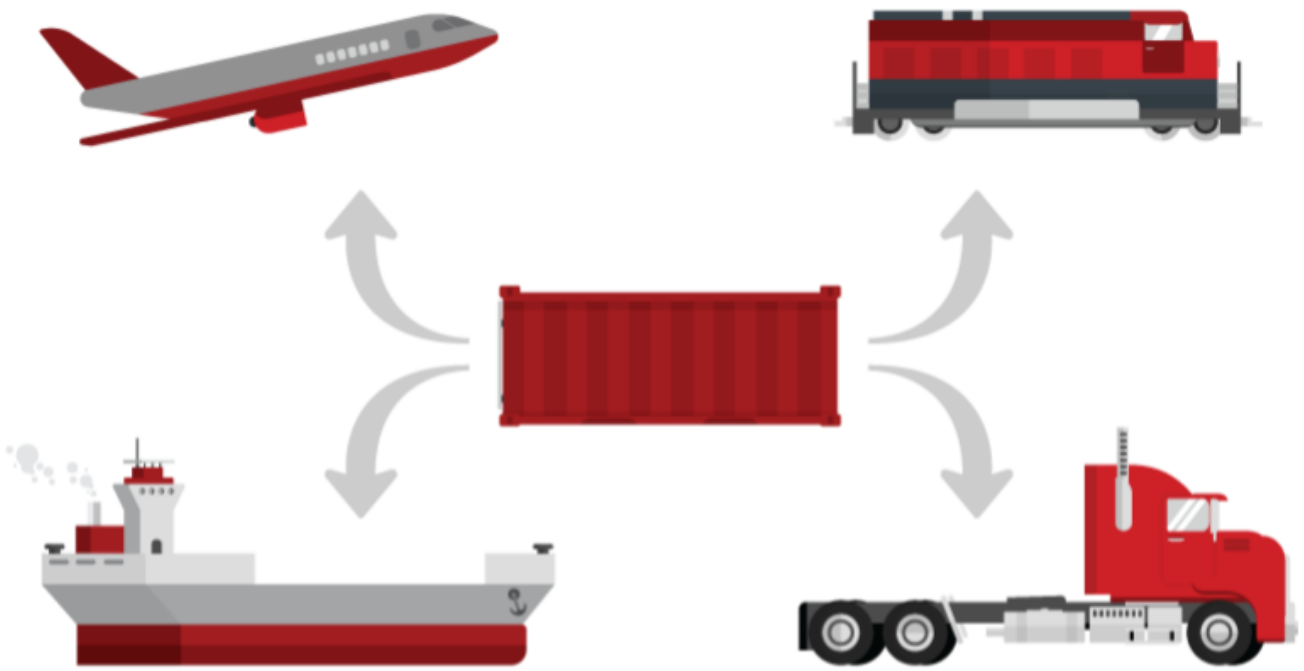
# Standardization



Video: [Kubernetes - The Documentary]

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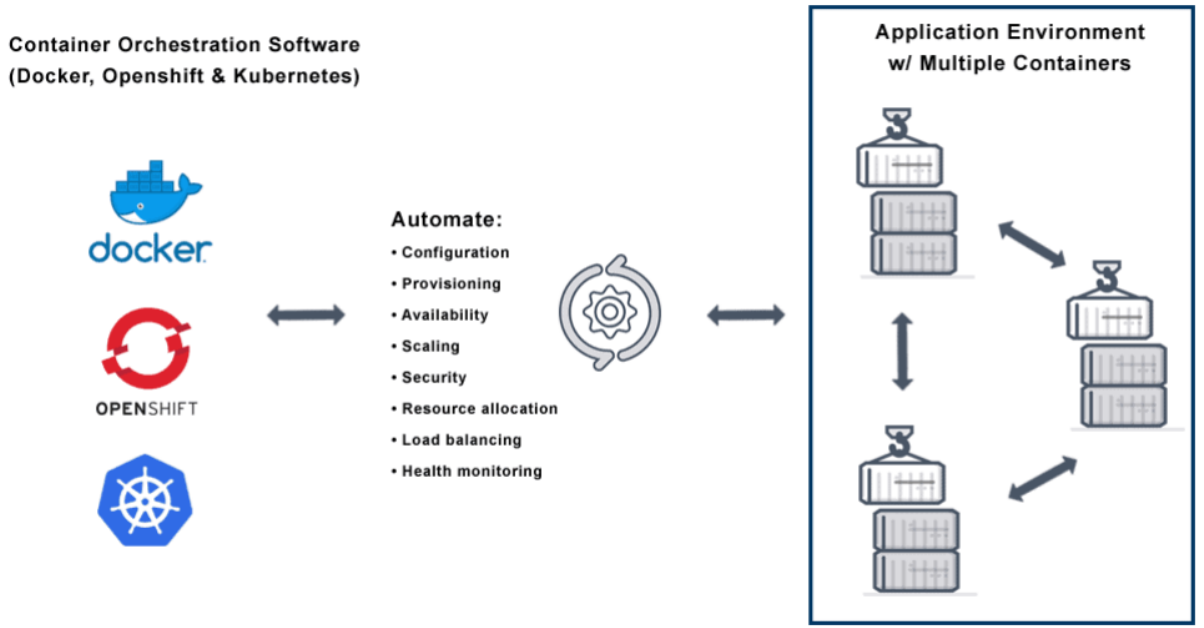
# What is Kubernetes?

- Automating the deployment, management, scaling, and networking of containers.
- Features:
  - Provisioning and deployment
  - Configuration and scheduling
  - Resource reservation
  - Container availability
  - Load balancing and traffic routing
  - Autoscaling of applications



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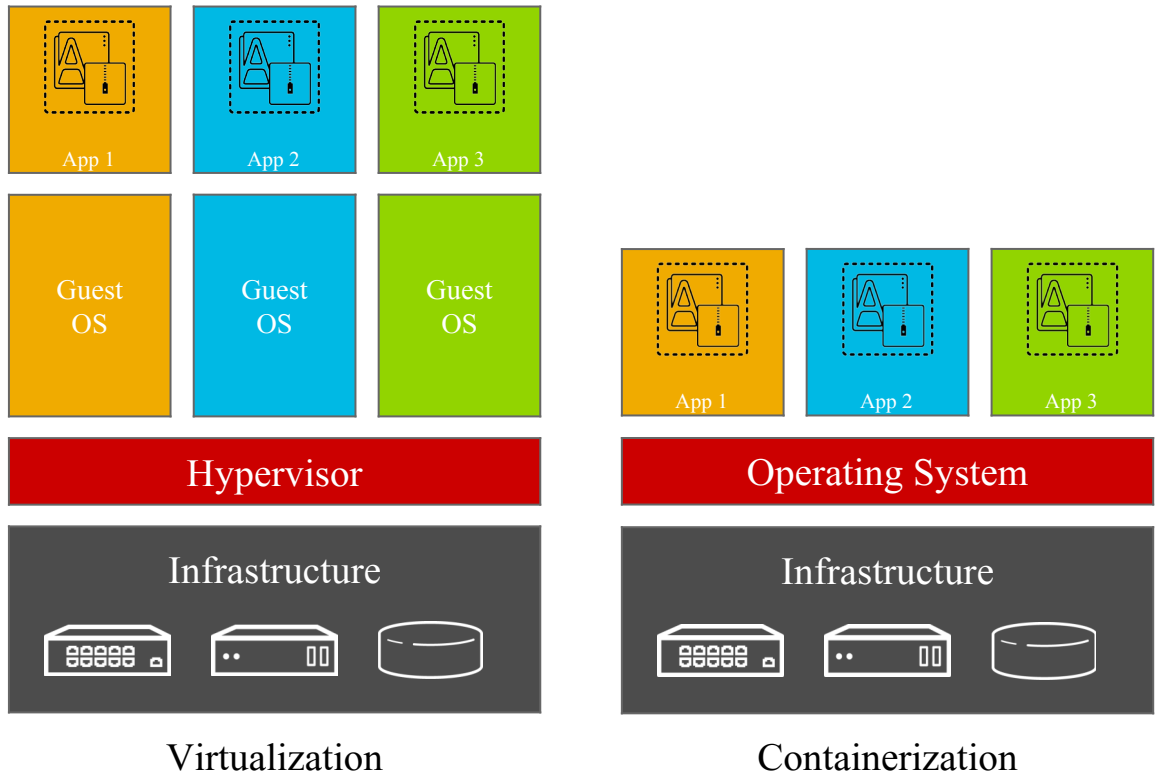
# Containers are not virtual machines

- Containers are process isolation
- Kernel namespaces provide isolation and cgroups provide resource controls
- No hypervisor needed for containers
- Contain only binaries, libraries, and tools which are needed by the application
- Persistent storage optional



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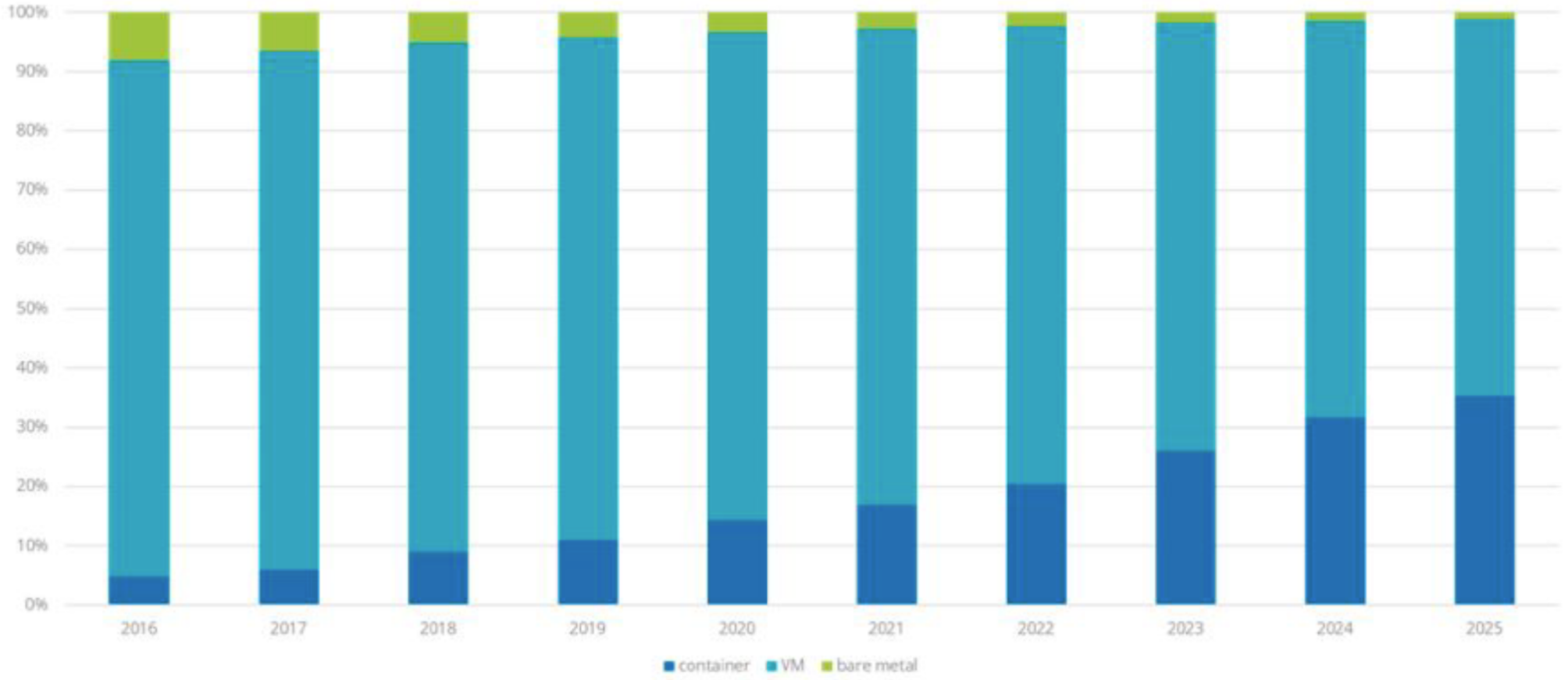
# Worldwide Logical Server Installed Base by Deployment Model, 2016-2025






IDC

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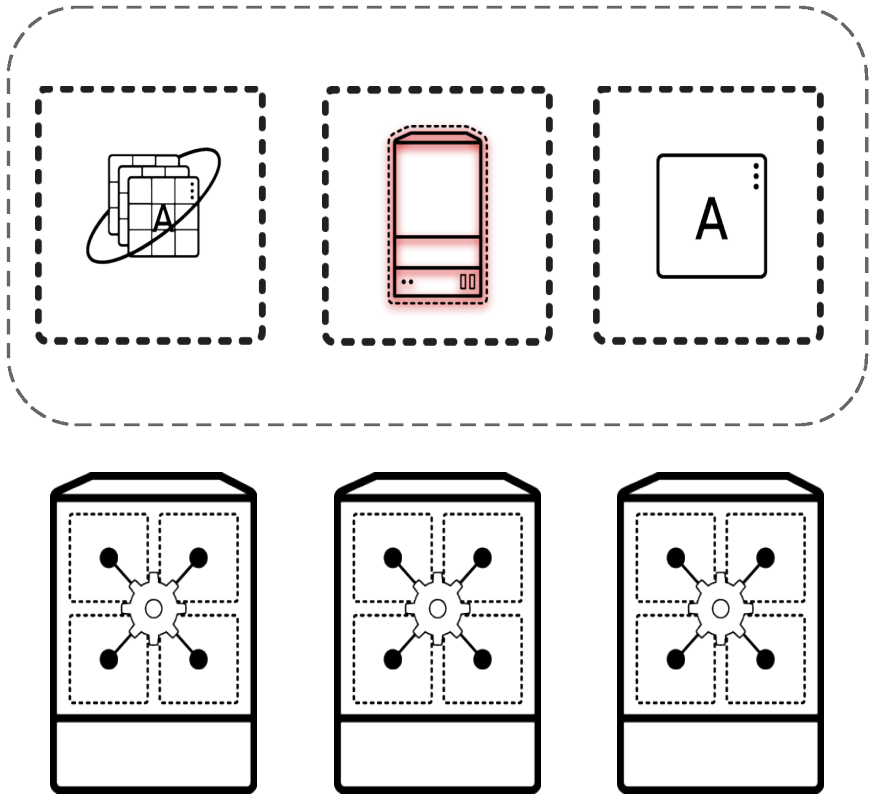
# Virtual machines can be put into containers

- A KVM virtual machine is controlled by a process
- Containers encapsulate processes
- Both have the same underlying resource needs:
  - Compute
  - Network
  - (sometimes) Storage



# Open-source VM management add-on for Kubernetes

- Started in 2016 and is an open source project distributed under an Apache 2.0 License from 2017
- Created by Red Hat, to allow to run VMs alongside containers in K8s or OCP clusters
- Uses the same native constructs of K8s.

KubeVirt

# VM with Containers? But Why?

- Reality is that physical and virtual machines will not be going away.
- Make it easier to move apps in VM workloads to Cloud-Native environments.
- VMs and containers controlled by the same management plane.

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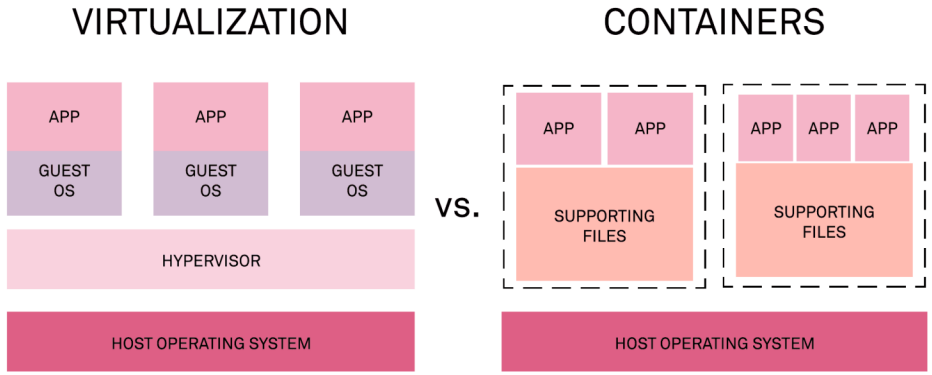
# An interesting path for developers

- Some existing apps and systems just aren't compatible with container infrastructure.
- Modernizing these kinds of workloads is time-consuming, costly and simply too overwhelming.
- KubeVirt helps to bring traditional VM based apps into a containerized workflow.



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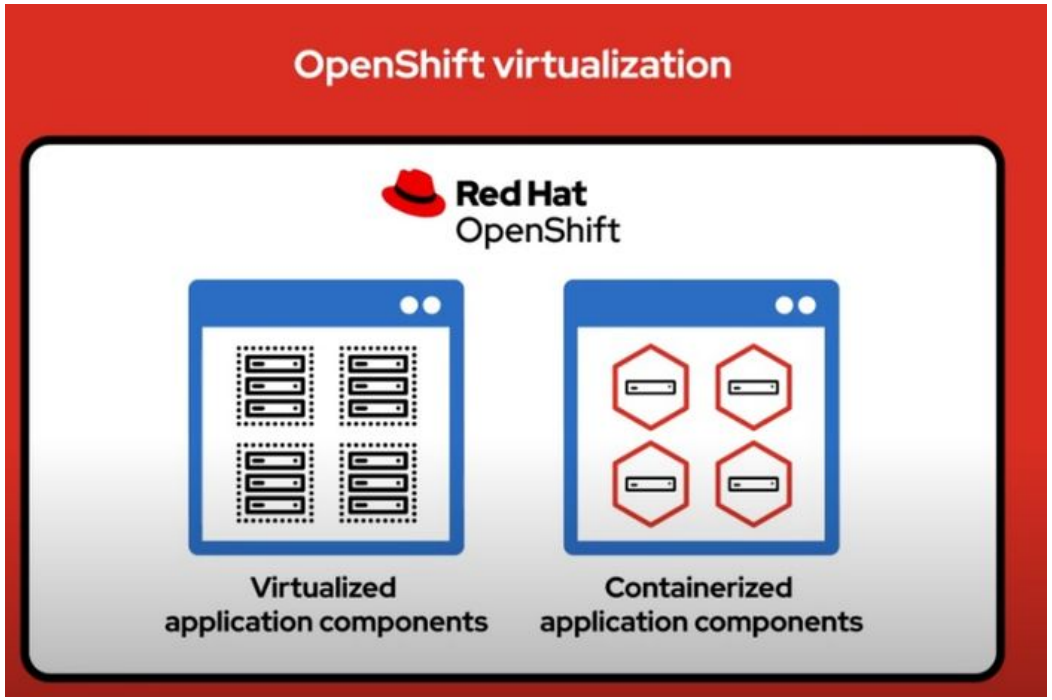
# OpenShift Virtualization

- Allows IT teams to run virtual machines (VM) alongside containers on the same platform.
- Simplifies management and improving time to production.
- Gives organizations a path to a cloud-native future, while letting them keep existing workloads running in VMs on a single platform



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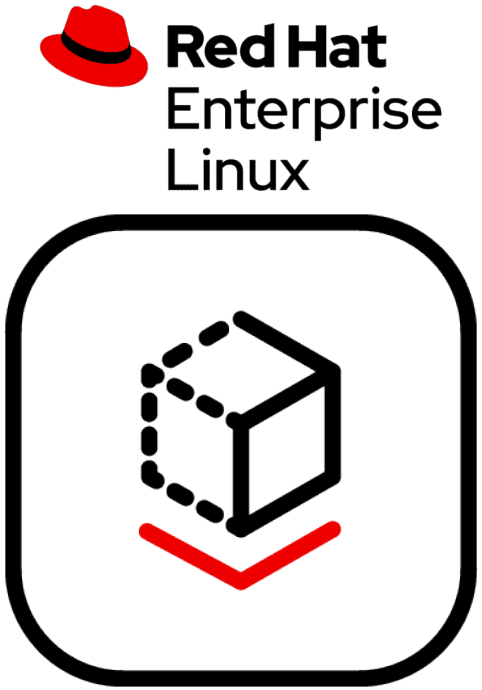
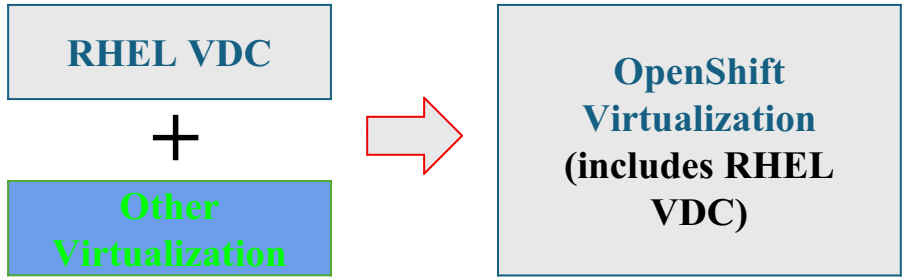
# Strong subscription benefits




**OpenShift and OpenShift Plus includes RHEL VDC***

(Virtual Datacenter) subscription

supports **unlimited RHEL entitlements** for each managed virtual host






* **Red Hat Enterprise Linux for Virtual Datacenters** allows for the deployment of unlimited guests in dense virtualized environments on supported hypervisors.

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# Installing OpenShift Virtualization

# Operators in Kubernetes

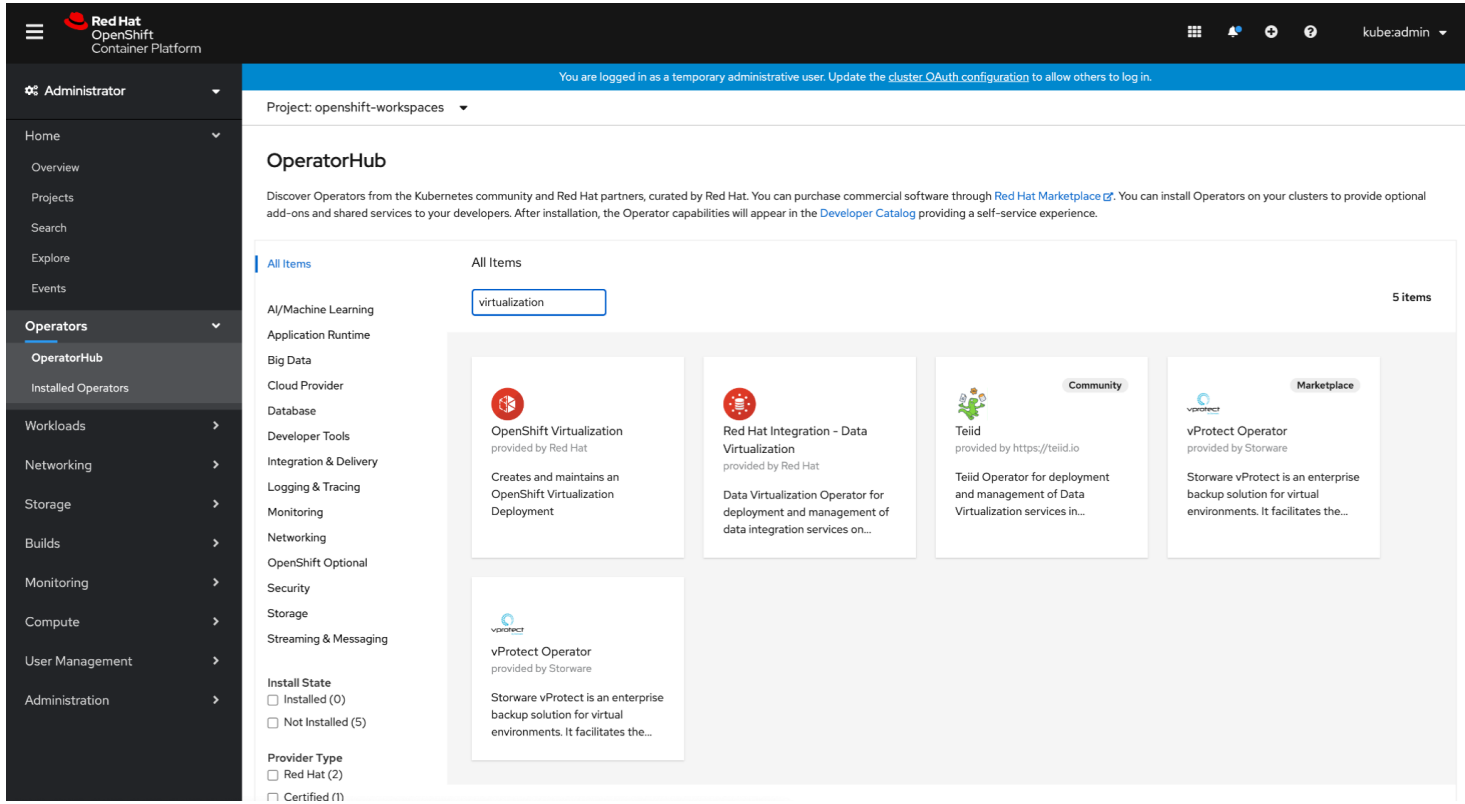
- Custom controllers that extend the K8s API to create, configure, and manage the lifecycle of complex applications.

- Provide high-level abstraction over the underlying K8s resources, making it easier to deploy and manage stateful apps.

- Provide services like provisioning, scaling, and backup/restore.

# Installing the OpenShift Operator

- Go to Operator Hub and search for **“Virtualization”**
- Install the **OpenShift Virtualization Operator** with a click
- Configure the **OpenShift Virtualization** installation.
- Check the installation is successful
- Create a **HyperConverged** Cluster



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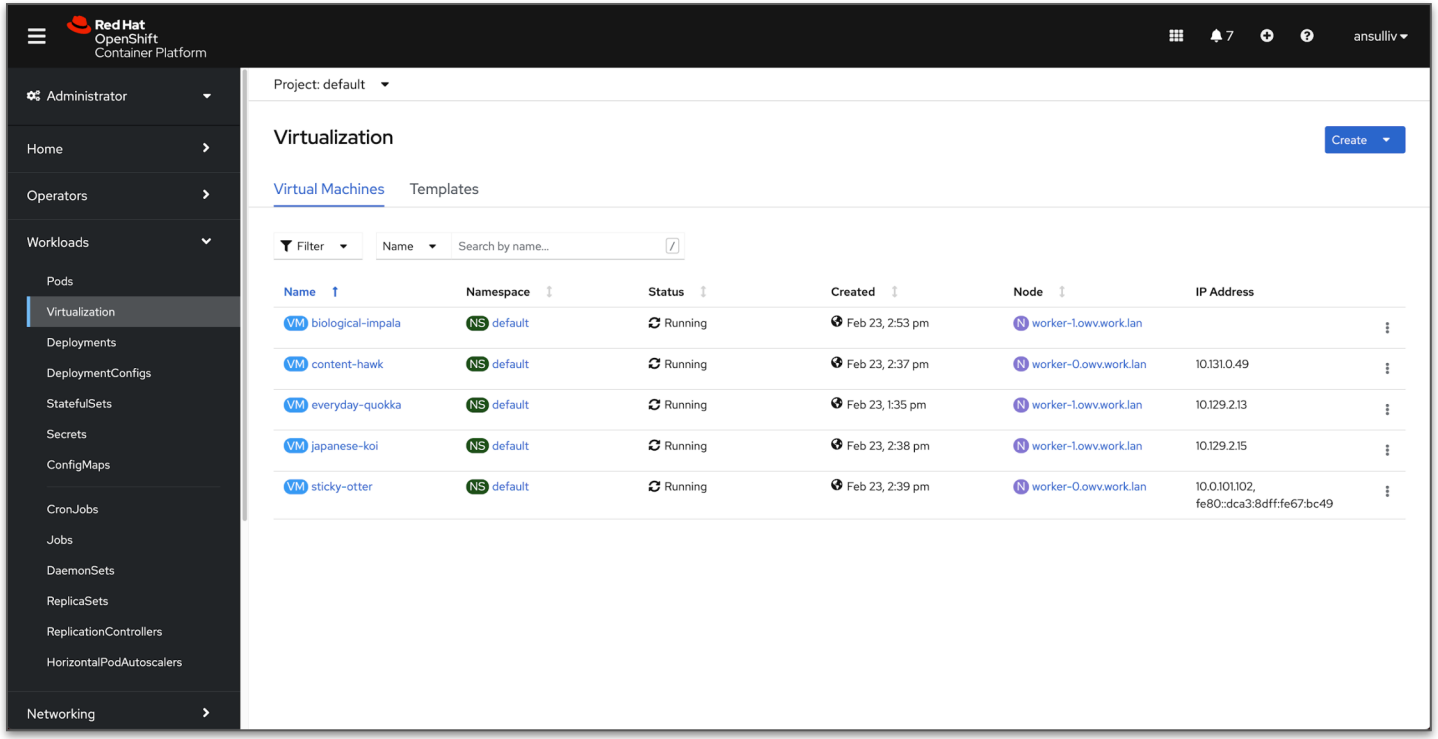
# Ready to manage VM workloads in OCP

- Once the installation is complete, the **Virtualization** pane will be visible from the OCP console.
- You are now able to create, run and manage VM workloads in OCP.



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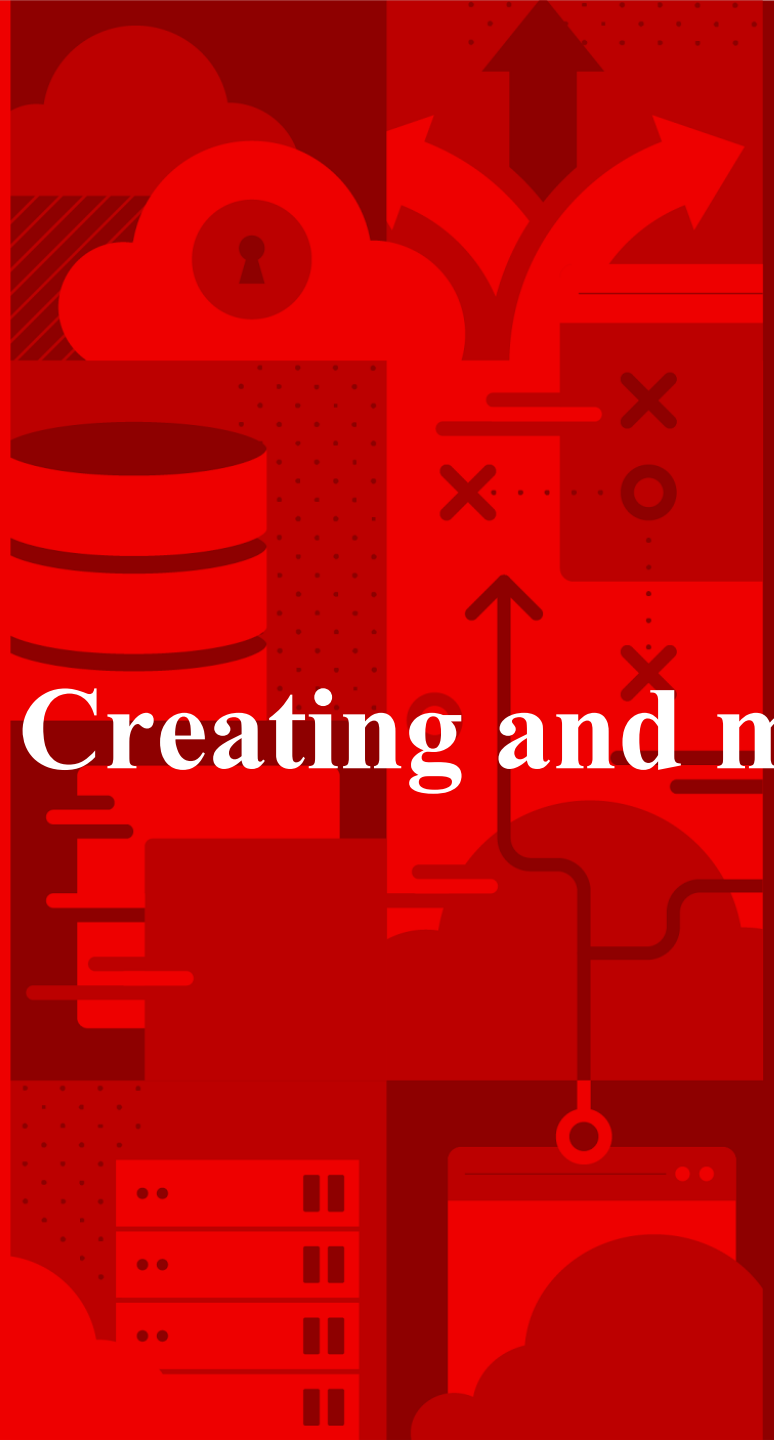
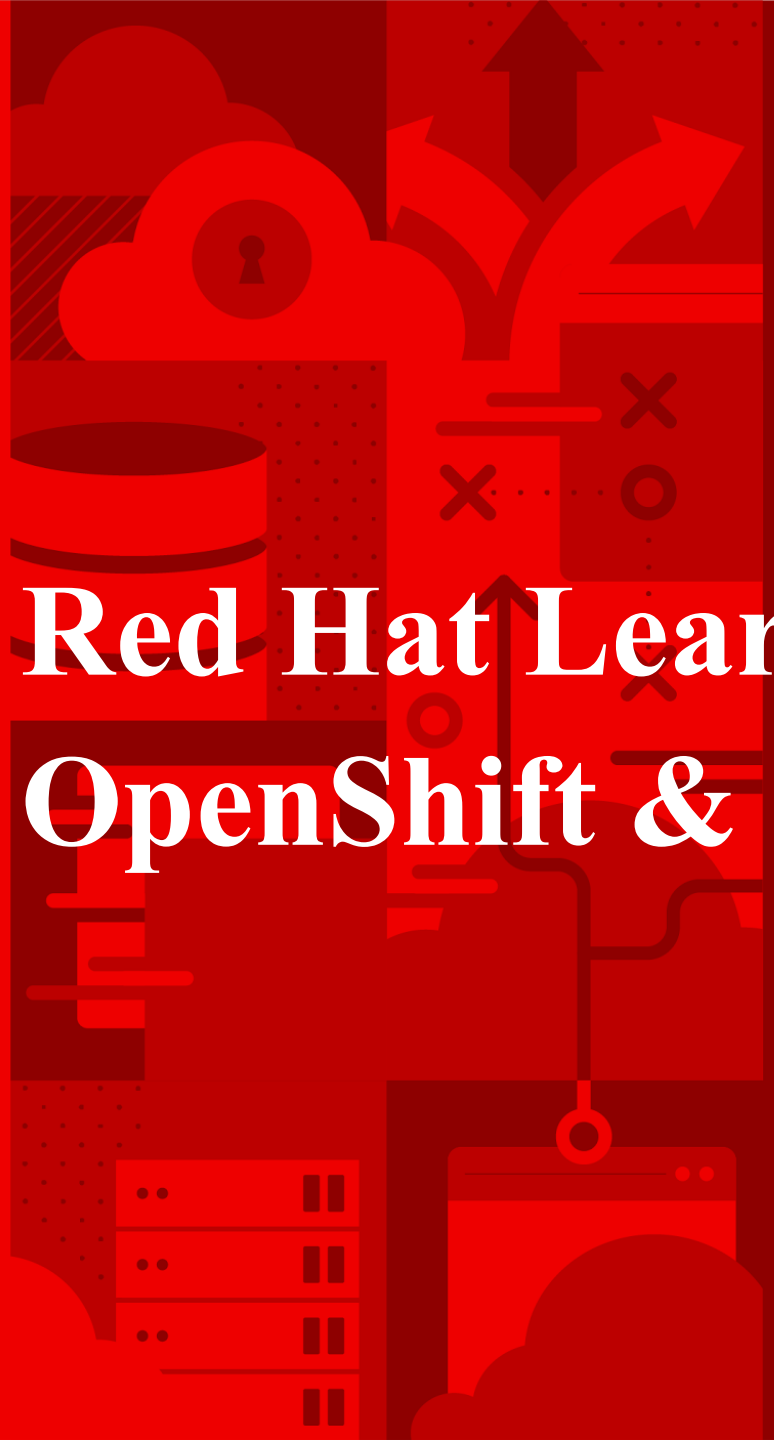


# DEMO

## Creating and managing VMs in OpenShift



# Red Hat Learning Path for OpenShift & OpenShift Virtualization



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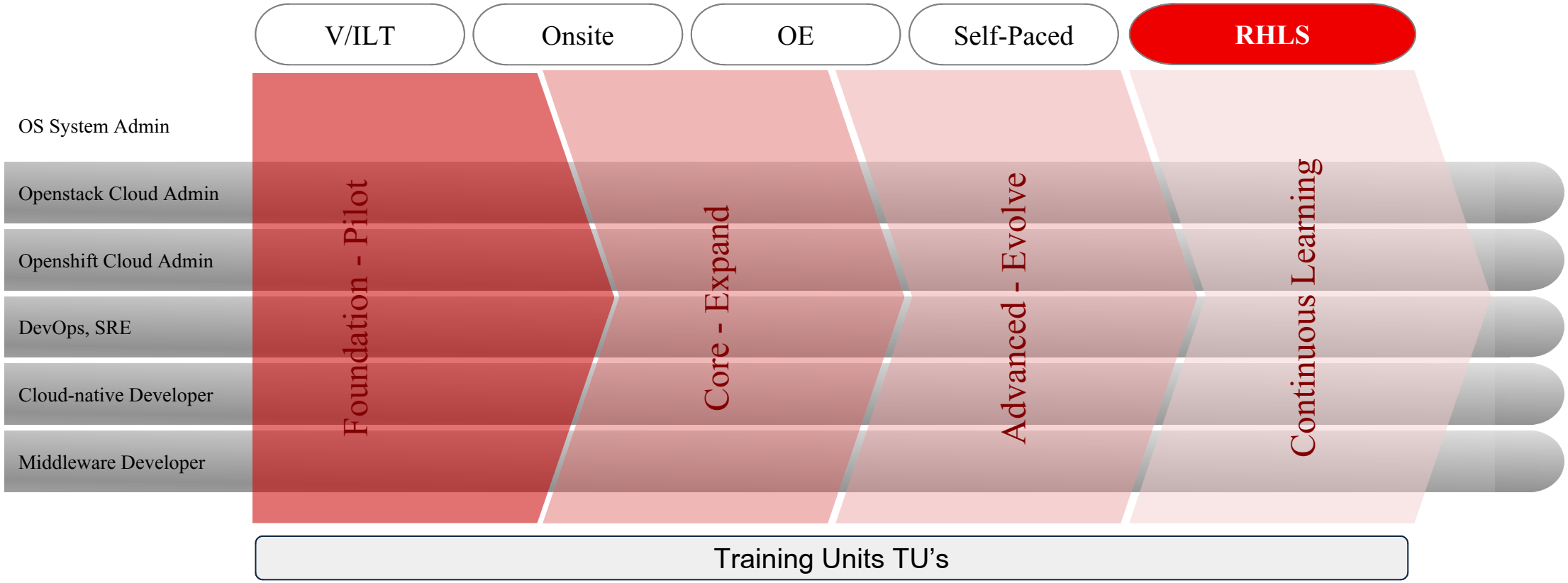
# I am a virtualization admin. What am I expected to learn?

- A whole new world for VM admins
- Different and steeper learning curve than vSphere, KVM, oVirt or OpenStack.
- Basics understanding of Kubernetes and OpenShift is recommended

# Role Based Training Architecture

## Various modalities to deliver the learning plans



# Red Hat OpenShift Skills Path

**Red Hat Certified System Administrator** | Recommended certification

**Deploying Containerized Applications Technical Overview** | DO080 • 2 hours • Free

## Administration track

**Red Hat OpenShift I: Containers & Kubernetes** | DO180 • 4 days • Recommended

**Red Hat OpenShift Administration II: Operating a Production Kubernetes Cluster** | DO280 • 4 days

**Red Hat Certified Specialist in OpenShift Administration** | EX280 • 3 hours

**Red Hat OpenShift Administration III: Scaling Kubernetes Deployments in the Enterprise** | DO380 • 4 days

## Developer track

**Red Hat OpenShift Development I: Introduction to Containers with Podman** | DO188 • 3 days • Recommended

**Red Hat Certified Specialist in Containers and Kubernetes exam** | EX188 • 2.5 hours • Recommended

**Red Hat OpenShift Development II: Containerizing Applications** | DO288 • 4 days

**Red Hat Certified Specialist in OpenShift Application Development exam** | EX288 • 3 hours



Prerequisite | Course | Exam | Required | Free | Recommended

# OpenShift Virtualization Boot Camp

## Instructor-led Trainings: Learning tracks for

Virtualization Admins with no experience in containers, containers orchestrators nor OpenShift (10 days)

- Red Hat OpenShift I: Containers & Kubernetes | DO180
- Red Hat OpenShift Administration II: Operating a Production Kubernetes Cluster | DO280
- Managing Virtual Machines with Red Hat OpenShift Virtualization | DO316

Virtualization Admins with little experience in containers, containers orchestrators and OpenShift (10 days)

- Red Hat OpenShift Administration II: Operating a Production Kubernetes Cluster | DO280
- Red Hat OpenShift Administration III: Scaling Deployments in the Enterprise | DO380
- Managing Virtual Machines with Red Hat OpenShift Virtualization | DO316

Virtualization Admins with experience in containers, containers orchestrators and OpenShift (3 days)

- Managing Virtual Machines with Red Hat OpenShift Virtualization | DO316

**Ongoing Trainings** with access to all of these courses are available with Red Hat Learning Subscription (RHLS)

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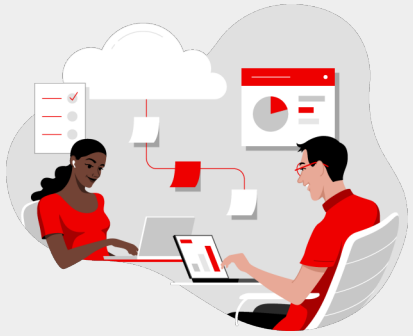
# OpenShift Virtualization, Automation and MultiCluster Learning

**Target Outcome**:

- Day 2 Operation of OpenShift Virtualization
- MultiClustering Management and Security

**Note:**
Ansible integration with Openshift Virtualization, in Managing and Migrating your VM Pools, is a key variable in your Virtualization Strategy



| | | |
|---|---|---|
| DO180 | Red Hat OpenShift Administration I: Operating a Production Cluster (suggested pre-requisite to DO316) | OCP Virt |
| DO316 | Managing Virtual Machines with Red Hat OpenShift Virtualization | |
| DO336 | Automate and Manage Red Hat OpenShift Virtualization with Ansible (In Dev - Early Access) | AAP for OCP Virt |
| DO346 | Migrating Virtual Machines to Red Hat OpenShift Virtualization with Ansible Automation Platform (In Planning) | |
| EX316 | Red Hat Certified Specialist in OpenShift Virtualization | |
| DO480 | Multicluster Management with Red Hat OpenShift Platform Plus | |
| DO432 | Red Hat Advanced Cluster Management for Kubernetes (Note: in Development - 02/2025) | Multi Cluster MGMT & Security |
| DO430 | Red Hat Advanced Cluster Security for Kubernetes (Note: in Development - 02/2025) | |

Foundational | Core Learning | Corresponding Certification | Extended Learning

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# Thank you

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