IBM

Red Hat OpenSHift Virtualization on IBM LinuxONE

Red Hat

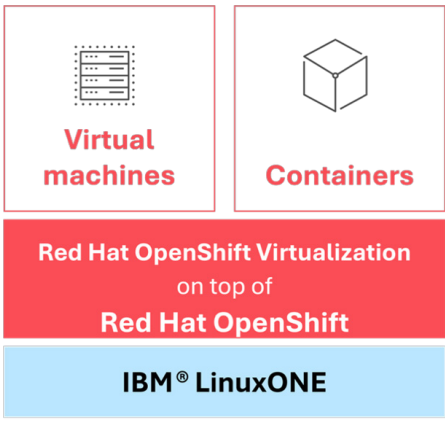
Run and manage Virtual Machines and containers together on Red Hat OpenShift with Red Hat OpenShift Virtualization

Red Hat® OpenShift® Virtualization is an add-on that lets users run virtual machines (VMs) along with containers on the same underlying hardware.

Red Hat OpenShift Virtualization is a key component for optimizing IT infrastructure by providing a unified way to deploy, run, and manage both containerized and virtualized workloads on the same platform. This is designed to allow the efficient use of resources, as VMs and containerized applications can share compute, storage, and network resources.

OpenShift Virtualization is based on the open-source projects Kernel-based Virtual Machine (KVM) and Kubevirt. This allows users to run VMs on the kernel of worker nodes and run a standard VM via KVM that is managed and controlled by containers.

Red Hat OpenShift Virtualization



Are you facing these issues?
Customers might experience:

- Complex Infrastructure Management: Managing separate platforms for VMs and containers can lead to operational silos, requiring multiple tools and skill sets, increasing complexity and errors.
- High Operational Costs: Running VMs and containers on multiple servers may incur higher hardware and maintenance costs due to lower workload consolidation compared to IBM® LinuxONE high-density capabilities.
- Lower Uptime and Reliability: Other systems typically offer lower availability (e.g., 99.9%), which may lead to more frequent downtime and disruptions for critical applications compared to IBM LinuxONE's 99.999999% uptime[1].
- Higher Energy Consumption: Other setups may require more servers, increasing power usage and operational costs compared to IBM LinuxONE's energy-efficient design.

Existing IBM LinuxONE customers without OpenShift Virtualization might experience:

- Operational Silos: Running VMs and containers on separate platforms creates management overhead, which may reduce efficiency for IBM LinuxONE operations teams.
- Fragmented Management Tools: Managing VMs with traditional tools and containers separately increases complexity, which may hinder streamlined operations.
- Delayed DevOps Adoption: Lack of integrated CI/CD pipelines for VMs and containers on IBM LinuxONE may slow application delivery and agility.

Introducing Red Hat OpenShift Virtualization add-on
Benefits of LinuxONE Over x86 Architecture for OpenShift Virtualization (New customers)

- Superior Reliability: IBM LinuxONE offers up to 99.999999% uptime[1] built for minimal disruptions for virtualized workloads.
- Resource Efficiency: IBM LinuxONE architecture is designed to support higher resource commitment and workload density, reducing the number of physical servers.
- Lower Latency Networking: Internal networking options like HiperSockets® on IBM LinuxONE are designed to reduce latency on external network switches, enhancing VM-container interactions.

Benefits for Existing LinuxONE Customers

- Leverage Existing Infrastructure: Customers can deploy Red Hat OpenShift Virtualization on existing IBM LinuxONE systems, designed to optimize ROI on current infrastructure.
- Seamless Workload Integration: Co-locate new containerized applications with existing VM-based workloads on IBM LinuxONE, built to improve integration and reduce operational silos.
- Unified Management: Manage VMs and containers using OpenShift's web console and Kubernetes-native tools, designed to streamline operations for IBM LinuxONE teams accustomed to mainframe environments.
- Improved Agility: Engineered to accelerate application deployment by leveraging OpenShift's CI/CD pipelines and DevOps tools for both VMs and containers, aligning with cloud-native strategies.

1. DISCLAIMER: IBM internal data based on measurements and projections was used in calculating the expected value. Necessary components include IBM LinuxONE Emperor 5; IBM z/VM V7.3 systems or above collected in a Single System Image, each running RHOCP 4.14 or above; IBM Operations Manager; GDPS 4.6 or above for management of data recovery and virtual machine recovery across metro distance systems and storage, including Metro Multi-site workload and GDPS Global; and IBM DS8000 series storage with IBM HyperSwap. A MongoDB v4.4 workload was used. Necessary resiliency technology must be enabled, including z/VM Single System Image clustering, GDPS xDR Proxy for z/VM, and Red Hat OpenShift Data Foundation (ODF) 4.14 or above for management of local storage devices. Application-induced outages are not included in the above measurements. Other configurations (hardware or software) may provide different availability characteristics.

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