

RED HAT VIRTUALIZATION

FEATURE GUIDE

“Serving Sears members is our top priority, and one way we do that is by keeping our online services at the forefront of innovation, ensuring that our platform is both highly scalable and functional. Transitioning to Red Hat Virtualization enabled us to maintain that edge, while giving us the opportunity to replace our proprietary solution without sacrificing either the speed or efficiency of our operation.”

YIANNI GEORGAKAS,
DIRECTOR OF SYSTEMS
ENGINEERING, ECOMMERCE,
SEARS HOLDINGS CORPORATION

OVERVIEW

Red Hat® Virtualization is a complete virtualization infrastructure solution for virtualized servers and workstations. Red Hat Virtualization, built on the powerful Red Hat Enterprise Linux® platform provides agility, security, reliability, and scalability for virtualized resource-intensive critical workloads. Red Hat Virtualization lets organizations evolve their IT infrastructure while delivering performance benefits, competitive pricing, and a trusted environment they expect from Red Hat.

FEATURES & BENEFITS

FEATURE CATEGORIES	CAPABILITY
RED HAT VIRTUALIZATION HYPERVISOR	
Built on the Kernel-based Virtual Machine (KVM) hypervisor technology that is native to Red Hat Enterprise Linux	
Red Hat Virtualization Host	<ul style="list-style-type: none">• NEW: Built as the next-generation optimized and lightweight Red Hat Enterprise Linux 7 operating system, with these additional benefits:<ol style="list-style-type: none">1. Simplified driver/firmware updates for hardware partners.2. Installation of hardware monitoring agents.3. Easy customization and configuration management.• NEW: Anaconda provides a common installer tool for both Red Hat Enterprise Linux and Red Hat Virtualization host.• NEW: Cockpit plug-in—a simple and lightweight web-based Linux administration tool that provides host specific tuning, troubleshooting access, and host access.
Scalability	<ul style="list-style-type: none">• Host scalability: Supports up to 288 logical CPUs and 12TB per host.• Guest scalability: Supports up to 240 vCPU and 6TB vRAM per virtual machine (VM) guest.



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FEATURE CATEGORIES	CAPABILITY
Performance	<ul style="list-style-type: none"> • KSM memory overcommitment: Allows users to define more RAM in their VMs than is present on a physical host. • Non-uniform memory access (NUMA) support: Allows users to provision large guest workloads while minimizing physical memory access overhead on compatible hosts. • Single root I/O virtualization (SR-IOV) provides network devices host-level management and pass-through to virtual machines and enables increased network throughput while decreasing latency and CPU overhead for near bare-metal performance. • Virtual function I/O (VFIO): Assigns any hypervisor PCI device to virtual machines, including GPUs, directly to a guest operating system.
Security	<ul style="list-style-type: none"> • The platform supports SELinux and sVirt capabilities, including mandatory access control (MAC) for enhanced VM and hypervisor security.
RED HAT ENTERPRISE VIRTUALIZATION MANAGER	
Centralized enterprise-grade virtualization management engine with graphical administration console and programming interfaces	
Platform	<ul style="list-style-type: none"> • Built on Red Hat Enterprise Linux and Red Hat JBoss® Enterprise Application Platform (EAP) and provides superior performance and scalability. • NEW: An advanced system dashboard offers a deep resource utilization overview of CPU, memory, and storage host resources. Administrators can make quicker decisions and speed up operations.
Red Hat Enterprise Virtualization programming & API	<ul style="list-style-type: none"> • The Red Hat Virtualization API exposes all Red Hat Virtualization commands via an open source, community-driven RESTful API. • Contains Red Hat Enterprise Virtualization Manager Red Hat Enterprise Linux 7.2 support for the latest technologies including Python, Postgresql 9.2, JBoss EAP 7, Java™ OpenJDK 8 software developers' kit (SDK).
Container Support	<ul style="list-style-type: none"> • NEW: Red Hat Enterprise Linux Atomic Host is a fully supported guest operating system. Administrators can gather detailed information such as a list of running containers on the virtual atomic instances.

FEATURE CATEGORIES	CAPABILITY
OpenStack® integration	<p>OpenStack Glance integration includes:</p> <ul style="list-style-type: none"> • An advanced service engine for storage of VM templates and ISO images. • The ability to use, export, and share templates and images with Red Hat OpenStack Platform (subscription not included). <p>OpenStack Neutron integration includes:</p> <ul style="list-style-type: none"> • Advanced service engine for network configuration. • Open vSwitch-distributed virtual switching support. • IP address management (IPAM) with Red Hat Virtualization based on Neutron subnets. • Neutron appliance that provides simplified provisioning and deployment functionality of Neutron services. • Ability to centralize network configurations with Red Hat OpenStack Platform (subscription not included). <p>OpenStack Cinder (tech preview) integration:</p> <ul style="list-style-type: none"> • Allows configuration of Ceph storage domains via OpenStack Cinder. • Leverages storage offloading for improved VM provisioning and storage I/O operational performance.
Red Hat Satellite integration	<ul style="list-style-type: none"> • The integration includes the capability to provision and add hypervisors to Red Hat Virtualization from bare metal. • Host Update Manager allows seamless updates and one-click updates for host hypervisor servers. • Katello integration enables Red Hat Virtualization Manager to query errata information for the operating system of hypervisors and guests and provides a complete view into critical infrastructure life-cycle management updates.
<p>RED HAT ADMINISTRATOR PORTAL</p> <p>Centralized graphical management system for administrators to manage virtual machines, templates, workstations, storage, clusters, and datacenters</p>	
User portal	<ul style="list-style-type: none"> • The Red Hat Virtualization user portal provides standard and power user access to the Red Hat Virtualization environment.
Quotas	<ul style="list-style-type: none"> • Quotas provide a simple method of limiting the number of virtual guests, the quantity of storage used, CPU utilization, and the amount of memory on host servers.

“With Red Hat Enterprise Virtualization, Red Hat has done in five years what some of the industry leaders have taken 10, 11, or 12 years to accomplish. Red Hat Enterprise Virtualization is a product that just works.”

FREDY HERNANDEZ,
SYSTEMS ADMINISTRATOR, STYLMARK

FEATURE CATEGORIES	CAPABILITY
RED HAT ENTERPRISE VIRTUALIZATION FEATURES	
Features that help VM administrators efficiently automate virtualization tasks	
Self-hosted engine	<ul style="list-style-type: none"> • Deploys Red Hat Virtualization Manager engine as a virtual appliance and reduces hardware requirements. • Enables built-in high availability for Red Hat Virtualization Manager.
Enhanced disaster recovery	<ul style="list-style-type: none"> • Fully supports third-party tools that offer backup, restore, and replication. • Provides configuration support for adding/editing/deleting storage connections, which enables multi-pathing, hardware changes, simpler failover to remote sites, and array-based replication. • Provides the ability to import storage and associated VMs to an alternative management, allowing for easy, fast failover.
Live migration	<ul style="list-style-type: none"> • Allows running VMs to be moved seamlessly from one host to another within a Red Hat Virtualization cluster. • Supports VM-level “Do Not Migrate” option and VM-host pinning. • Live migration compression benefits VMs with large memory footprints by transferring compressed memory pages to the target host, minimizing the amount of data that travels during migration. • Live migration auto convergence temporarily throttles VMs with memory pages that update faster than can be transferred over the network, allowing time to complete and finalize the workload cutover to the destination host.
Storage live migration	<ul style="list-style-type: none"> • Allows a single VM or multiple, concurrent running VM disks to be moved within the storage infrastructure without interruption to users or the VM.
High availability	<ul style="list-style-type: none"> • Allows critical VMs to be restarted on another host in the event of hardware failure with three levels of priority, taking into account resiliency policy. • Controls high-availability VMs at the cluster level through resiliency policies. • Supports application-level high availability with supported fencing agents for Red Hat Enterprise Linux guests using the Red Hat Enterprise Linux High Availability Add-On.

FEATURE CATEGORIES	CAPABILITY
Snapshots	<ul style="list-style-type: none"> • Allows for cold or live snapshots to preserve a VM's current state • Live deletion of a snapshot stops virtual machine disk snapshots from running VMs.
Maintenance mode	<ul style="list-style-type: none"> • Allows one-click VM migration to put a Red Hat Virtualization Hypervisor host in maintenance mode for upgrade or hardware updates.
System scheduler	<ul style="list-style-type: none"> • System scheduler policies for load balancing, which automatically balances the VM load among hosts in a cluster, and power saver mode, which consolidates VM loads onto fewer hosts during non-peak hours. • Integrates with oVirt optimizer to provide better cluster optimization logic to existing clusters and while placing new VM workloads.
Integrated workstation management	<ul style="list-style-type: none"> • SPICE open source remote rendering protocol allows workstation environment to support thin clients and PCs. • Enhances network performance for workstation virtualization—including new dynamic and variable compression algorithms for higher-latency, lower-bandwidth WAN environments. • Enhanced Linux workstation support through auto-resizing, guest agent reporting, and single sign-on (for Red Hat Enterprise Linux Desktop guests). • Enhancements to user experience include higher supported screen resolutions and dynamic copy-and-paste. • Workstation pooling allows deployment of multiple workstation VMs from templates. • Native USB redirection provides support within the SPICE protocol, including USB support for Linux guests. • SmartCard/Common Access Card (CAC) supports two-factor authentication.
Storage management	<ul style="list-style-type: none"> • NEW: Storage image uploader allows the uploading of images from local or remote disks to a storage domain through a browser based user interface or an API. • SLA for storage I/O bandwidth lets administrators define bandwidth I/O limits to efficiently enhance VM I/O operations. • Advanced snapshot overview capabilities let users select storage consumption details on a disk or snapshot level for an easier removal process.

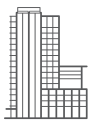
FEATURE CATEGORIES	CAPABILITY
Storage management continued	<ul style="list-style-type: none"> • Supports migration of storage domains among different datacenters or deployments. • Supports iSCSI, FC, NFS, GlusterFS, or POSIX shared storage infrastructures. • Allows transparent block alignment for better performance of virtual disk files on shared and local storage. • Enables local physical disks and locally attached SAN or other storage supported by standard mpio drivers. • Supports pre-allocated–or thick-provisioned–disks for optimal performance and thin-provisioned disks for optimal storage usage. • Provides native support for Red Hat Gluster Storage, including built-in GlusterFS node management through the Red Hat Virtualization administrator portal. • Virtio-blk data plane provides significant storage throughput improvements by applying I/O thread scaling.
Network management	<ul style="list-style-type: none"> • NEW: External Network Partner API enables the process of adding and supporting third-party network providers by centralizing and simplifying the network management systems through Red Hat Virtualization Manager.
Hot plug of virtual resources	<ul style="list-style-type: none"> • Users can scale-up CPU, memory, disk, and network for any workload without restarting the VM.
User and group-based authentication and security	<ul style="list-style-type: none"> • Allows a choice of generic Lightweight Directory Access Protocol (LDAP) providers to authenticate users • Supports Red Hat identity management (LDAP) or Microsoft Active Directory for user and administrator authentication to Red Hat Virtualization Manager • Allows granular, inheritable, multilevel administration security roles to all actions and objects in Red Hat Virtualization • NEW: Label-based affinity uses labels to tag VMs with similar characteristics and apply operations at the tag level.
Migration tools	<ul style="list-style-type: none"> • An advanced virt2-virt interface enables the seamless migration of workloads from VMware vSphere directly into Red Hat Virtualization. • NEW: Advanced migration policies allow the fine tuning of granular migration characteristics on a VM or cluster level. These policies provide enhanced high-performance VM live migration.

FEATURE CATEGORIES	CAPABILITY
Affinity/anti-affinity workload grouping	<ul style="list-style-type: none"> • Defines workload affinity policies regarding whether VMs run together on the same host or separately on different hosts. • Allows the pinning of VMs with specialized hardware or licensing requirements to specific hosts.
System requirements	
Guest support	<p>Fully supported server operating systems:</p> <ul style="list-style-type: none"> • Red Hat Enterprise Linux 3, 4, 5, 6, and 7 (32- and 64-bit) • Windows Server 2008, 2008 R2, and 2012 (32- and 64-bit) • SUSE Linux Enterprise Server 10, 11, and 12 <p>Fully supported desktop operating systems:</p> <ul style="list-style-type: none"> • Red Hat Enterprise Linux Desktop 6 and later, 32- and 64-bit • Windows 7 and Windows 10 (32- and 64-bit)
Red Hat Virtualization Manager requirements	<p>Red Hat Virtualization Manager can be run as a VM guest or on physical hardware, the recommended hardware is:</p> <ul style="list-style-type: none"> • Intel 64 or AMD64 server with one quad-core CPU or multiple dual-core CPUs, 16GB RAM, 50GB available local storage, 1Gb Ethernet NIC <p>Required operating system (not included):</p> <ul style="list-style-type: none"> • Red Hat Enterprise Linux 7
Red Hat Virtualization Hypervisor requirements	<p>Server with:</p> <ul style="list-style-type: none"> • Intel 64 or AMD64 CPU extensions • Intel VT or AMD-V hardware virtualization extensions • Minimum 2GB RAM • Minimum 20GB local storage • Minimum 1Gb Ethernet Network Interface Card (NIC) (recommended 2GB or more total bandwidth per server) <p>Required operating system (not included):</p> <ul style="list-style-type: none"> • Red Hat Enterprise Linux 7.2+
Red Hat Virtualization administrative client	<p>Operating systems supported:</p> <ul style="list-style-type: none"> • Windows 8 (x86, AMD64, or Intel 64) • Windows 2008/R2, 2012 (x86, AMD64, or Intel 64) • Red Hat Enterprise Linux 6 and higher (i386, AMD64, or Intel 64) • Vendor support for SUSE Linux Enterprise Server 10, 11, and 12

FOR MORE INFORMATION

The Red Hat Enterprise Virtualization product offerings, pricing, and terms and conditions are based on United States published retail pricing at the time of publication, and are subject to change.

For more information on Red Hat Enterprise Virtualization, please visit www.redhat.com/rhev or contact your local Red Hat sales office or Red Hat authorized reseller.


ABOUT RED HAT

Red Hat is the world's leading provider of open source software solutions, using a community-powered approach to provide reliable and high-performing cloud, Linux, middleware, storage, and virtualization technologies. Red Hat also offers award-winning support, training, and consulting services. As a connective hub in a global network of enterprises, partners, and open source communities, Red Hat helps create relevant, innovative technologies that liberate resources for growth and prepare customers for the future of IT.



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FEATURE CATEGORIES

Red Hat Virtualization administrative client continued

CAPABILITY

Browser required:

- Tier 1 (Browser and operating system combinations that are fully tested and fully supported. Red Hat Engineering is committed to fixing issues with browsers on this tier): Mozilla Firefox Extended Support Release (ESR) version on Red Hat Enterprise Linux
- Tier 2 (Browser and operating system combinations that are partially tested and are likely to work. Limited support is provided for this tier. Red Hat Engineering will attempt to fix issues with browsers on this tier): Internet Explorer 10 or later or most recent version of Google Chrome or Mozilla Firefox
- Tier 3 (Browser and operating system combinations that are not tested, but may work. Minimal support is provided for this tier. Red Hat Engineering will attempt to fix only minor issues with browsers on this tier): Earlier versions of Google Chrome, Mozilla Firefox, or other browsers

Red Hat Virtualization user portal client

Operating system/client:

- Red Hat Enterprise Linux 7 and higher (i386, AMD64, or Intel 64)
- Windows 2008 and later versions (x86, AMD64, or Intel 64)
- Red Hat Virtualization certified Linux-based thin clients
- Vendor support for SUSE Linux Enterprise Server 10, 11, and 12

Browser:

- Same as the above administrative client requirements
- Virtual machine consoles can only be accessed using supported Remote Viewer (virt-viewer) clients on Red Hat Enterprise Linux machines and Windows machines
- SPICE console access is available on other operating systems, for example OS X, only via the unsupported SPICE HTML5 browser client

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