RED HAT ENTERPRISE 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 Enterprise 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® Enterprise Virtualization is a complete virtualization management solution for virtualized servers and desktops. Created by the people who brought you Red Hat Enterprise Linux®, Red Hat Enterprise Virtualization takes you beyond bare metal to meet your critical business demands. It provides the performance advantages, competitive pricing, and the trusted, stable environment you expect from Red Hat.

Building on the powerful Red Hat Enterprise Virtualization hypervisor and the popular oVirt open virtualization management project, Red Hat Enterprise Virtualization is a true strategic virtualization alternative to proprietary virtualization platforms.

Red Hat Enterprise Virtualization provides common underlying services and management technologies for traditional virtualization workloads while also providing an on-ramp to high-level cloud functionality based on OpenStack®.

With Red Hat Enterprise Virtualization, you can:

- Take advantage of existing people skills and investments.
- Decrease TCO and accelerate ROI.
- Automate time-consuming and complicated manual tasks.
- Standardize storage, infrastructure, and networking services on OpenStack.[1]

FEATURE CATEGORIES	CAPABILITY
RED HAT ENTERPRISE VIRTUALIZATION HYPERVISOR	
High performance, open source hypervisor based on the Red Hat Enterprise Linux kernel with the Kernel-based Virtual Machine (KVM) hypervisor technology. Delivered as the RHEV-H small footprint hypervisor. The user can also manage Red Hat Enterprise Linux hosts (purchased separately) as RHEV hypervisors.	
RHEV-H	• Image-based, small-footprint (<200MB) hypervisor with minimized security footprint • Text-based GUI for enhanced manageability and easier installation
Scalability	• Host scalability: Supported limit of up to 160 Logical CPUs and 2TB per host (platform capable of up to 4,096 logical CPUs/64TB per host) • Guest scalability: Supports up to 160 vCPU and 2TB vRAM per virtual machine guest

1 *OpenStack integration in Red Hat Enterprise Virtualization 3.4 is in tech preview*

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FEATURE CATEGORIES	CAPABILITY
Performance	• vhost-net: We have moved the KVM networking stack from userspace into the Linux kernel, which greatly improves performance and reduces latency. • Transparent huge pages (THP): New feature where the Linux kernel dynamically creates large memory pages (2MB vs. 4KB) for virtual machines (VMs), improving performance by reducing the number of times that memory is accessed and typically improving performance for most workloads. • x2paic: Paravirtualized interrupt controller in the VM, which reduces guest overhead and can improve guest performance in interrupt-heavy workloads. • Async-IO: For block I/O operations, in many cases yielding notable improvement in block I/O. • KSM memory overcommitment: Allows users to define more RAM in their VMs than is present in a physical host.
SELinux and sVirt security	• Security model supports SELinux and new sVirt capabilities, including Mandatory Access Control (MAC) for enhanced virtual machine and hypervisor security
Troubleshooting	• Supports remote logging (rsyslog) and remote crash analysis (remote kdump)
RED HAT ENTERPRISE VIRTUALIZATION MANAGER (RHEV-M) Centralized enterprise-grade virtualization management engine with graphical administration console and programming interfaces.	
Platform	• Red Hat Enterprise Virtualization Manager platform is built on Red Hat Enterprise Linux and Red Hat JBoss® Enterprise Application Platform for superior performance and scalability.
Red Hat Enterprise Virtualization programming & API	• Red Hat Enterprise Virtualization API exposes all Red Hat Enterprise Virtualization commands via an open source, community-driven RESTful API. • A Python-based software developers' kit (SDK) simplifies customization programming.

FEATURE CATEGORIES	CAPABILITY
OpenStack integration[1]	OpenStack Glance integration includes: • An advanced service engine for storage of VM templates and ISO images. • Ability to use, export, and share templates and images with Red Hat Enterprise Linux OpenStack Platform (not included). OpenStack Neutron integration includes: • Advanced service engine for network configuration. • Open vSwitch distributed virtual switching support. • IP address management (IPAM) with Red Hat Enterprise Virtualization based on Neutron subnets. • Ability to centralize network configurations with Red Hat Enterprise Linux OpenStack Platform (not included).
Persistent cloud-init metadata	• Simplify the initial setup of VM workloads to facilitate the provisioning and configuration of VMs based on pre-set configuration preferences.
Self-hosted engine	• Deploy Red Hat Enterprise Virtualization Manager engine as a VM on the host. • Reduce hardware requirements. • Enable built-in high availability for Red Hat Enterprise Virtualization Manager.
Enhanced disaster recovery	• Full support for third-party tools that offer backup, restore, and replication • Configuration support for add/edit/delete storage connections to enable multi-pathing, hardware changes, simpler failover to remote sites, and array-based replication
Admin portal	• The Red Hat Enterprise Virtualization administrator portal provides a centralized graphical management system for administrators to manage virtual machines, templates, desktops, storage, clusters, and datacenters. User interface enhancements include: • Tree-view for hierarchical management of the Red Hat Enterprise Virtualization environment. • Expanded tag and bookmark capabilities. • Enhanced query engine for searching for Red Hat Enterprise Virtualization objects. • Extensive event monitoring. • Enhanced dialog boxes, including a network bonding dialog box to allow for easier configuration of multiple virtual networks.

"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
Advanced SLA manager	• The manager provides an enhanced quality of service configuration options. • Users can define VM policies for CPU, memory, and network. Policies ensure guaranteed quality of service.
User portal	• The Red Hat Enterprise Virtualization user portal provides standard and power user access to the Red Hat Enterprise Virtualization environment.
Quotas	• Quotas provide a simple method of limiting power users to a number of virtual guests, quantity of storage used, CPU utilization, and amount of memory on host servers.
Reports Dashboard	• The Red Hat Enterprise Virtualization Reports Dashboard provides a robust, historical reporting system based on an embedded Jasper Reports engine; numerous pre-built reports and dashboards are included, or users can define their own.
Live migration	• Allows for running VMs to be moved seamlessly from one host to another within a Red Hat Enterprise Virtualization cluster • Now supports VM-level "Do Not Migrate" option and VM-host pinning
Storage Live Migration	• Allows for a single (or multiple concurrent) running VM's disk to be moved within the storage infrastructure, without interruption to users or the VM
High availability	• 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 • Resiliency policy to control high availability VMs at the cluster level • 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
Snapshots	• Allows for Cold or Live Snapshots to preserve a VM's current state
Maintenance mode	• Allows for one-click VM migration to put a Red Hat Enterprise Virtualization Hypervisor host in maintenance mode for upgrade or hardware updates

FEATURE CATEGORIES	CAPABILITY
System scheduler	• System scheduler policies for load balancing (automatically balances the VM load among hosts in a cluster) and power saver mode (consolidates VM loads onto fewer hosts during non-peak hours)
Integrated desktop management (VDI)	• Red Hat Enterprise Virtualization User Portal for connecting users to their VMs • SPICE open source remote rendering protocol for presentation of desktop environment to supported thin clients and PCs • Enhanced network performance for desktop virtualization, including new dynamic and variable compression algorithms for higher latency, lower bandwidth WAN environments • Enhanced Linux desktop support for auto-resizing, guest agent reporting, and single sign-on (Red Hat Enterprise Linux 6 desktop guests) • Enhancements to user experience, including higher supported screen resolutions and dynamic copy-and-paste • Desktop pooling for deployment of multiple desktop VMs from templates • Native USB redirection support within the SPICE protocol, including USB support for Linux guests • SmartCard CAC support for two-factor authentication
Storage management	• Supports iSCSI, FC, and NFS shared storage infrastructures • Support for transparent block alignment for better performance of virtual disk files on shared and local storage • Supports local physical disks and locally attached SAN or other storage supported by standard mpio drivers • Supports pre-allocated (thick-provisioned) disks for optimal performance and thin-provisioned disks for optimal storage usage • Supports for POSIX shared filesystems, such as Red Hat Storage, IBM GPFS, etc. • Native support for Red Hat Storage Server, including a built-in GlusterFS Storage Domain and datacenter type that use Gluster as the storage back-end

FEATURE CATEGORIES	CAPABILITY
Hot-plug/unplug	• Allows for hot-plug or unplug of a VM disk image to a running VM • Allows for hot-plug or unplug of a VM's network interface to a running VM
Hot-plug CPU	• Dynamically allocate virtual CPUs without restarting the VM (requires operating system support)./
User and group-based authentication & security	• Supports Red Hat Identity Management (LDAP) or Microsoft Active Directory for user and administrator authentication to Red Hat Enterprise Virtualization Manager • Granular, inheritable, multi-level administration security roles to all actions and objects in Red Hat Enterprise Virtualization
Migration tools	• Includes virt-V2V and P2V tools for automating the conversion of physical servers and/or non-Red Hat Enterprise Virtualization VM formats to Red Hat Enterprise Virtualization
Extensibility	Hooks allow for advanced KVM technology to be supported from the Red Hat Enterprise Virtualization Manager interface. Pre-built hooks include: • SR/IOV: Allows bypassing the hypervisor for certain network and disk I/O for near-native speed • VM-FEX: Consolidation of the virtual switch and physical switch into a single management point for Cisco UCS and VIC card • CPU pinning and NUMA support: Pin the virtual CPUs and virtual RAM in a VM to physical cores and physical RAM on the server for enhanced performance
Affinity/anti-affinity workload grouping	• Define workload affinity policies on how VMs run, either together on the same host or separately on different hosts.

FEATURE CATEGORIES	CAPABILITY
System requirements	
Guest support	Fully supported server operating systems: • Red Hat Enterprise Linux: Red Hat Enterprise Linux 3, 4, 5, 6 and 7; 32- and 64-bit • Windows Server 2003, 2003 R2, 2008, 2008 R2; and 2012, 32- and 64-bit • Vendor support for SUSE Linux Enterprise Server 10 and 11 Fully supported desktop operating systems: • Red Hat Enterprise Linux Desktop 5 and 6, 32- and 64-bit • Windows XP 32-bit; Windows 7 32- and 64-bit; Windows 8 32- and 64-bit
Red Hat Enterprise Virtualization Manager requirements	Red Hat Enterprise Virtualization Manager can be run as a VM guest. However, if users choose to deploy Red Hat Enterprise Virtualization Manager on physical hardware, the recommended hardware is: • x86_64 server with one quad-core CPU or multiple dual-core CPUs, 16GB RAM, 50GB available local storage, one gigabit Ethernet NIC Required operating system (not included): • Red Hat Enterprise Linux 6 Server, 64-bit
Red Hat Enterprise Virtualization Hypervisor requirements	x86_64 server with: • Intel® 64 or AMD64 CPU extensions • Intel VT® or AMD-V™ hardware virtualization extensions • Minimum 2GB RAM • Minimum 10GB local storage • Minimum one Gigabit Ethernet NIC (recommended 2GB or more total bandwidth per server)

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 solutions, using a community-powered approach to provide reliable and high-performing cloud, virtualization, storage, Linux, and middleware technologies. Red Hat also offers award-winning support, training, and consulting services. Red Hat is an S&P company with more than 70 offices spanning the globe, empowering its customers' businesses.

FEATURE CATEGORIES	CAPABILITY
Red Hat Enterprise Virtualization admin client	Operating systems supported: • Windows 8 (x86, AMD64, or Intel 64) • Windows 7 (x86, AMD64, or Intel 64), and • Windows 2008/R2, 2012 (x86, AMD64, or Intel 64). • Red Hat Enterprise Linux 5.8 and higher (i386, AMD64, or Intel 64) • Red Hat Enterprise Linux 6.2 and higher (i386, AMD64, or Intel 64) • Vendor support for SUSE Linux Enterprise Server 10 and 11 Browser required • Internet Explorer 9 and higher or Firefox 17ESR or higher
Red Hat Enterprise Virtualization user portal client	Operating system/client • Red Hat Enterprise Linux 5.8 and higher (i386, AMD64, or Intel 64) • Red Hat Enterprise Linux 6.2 and higher (i386, AMD64, or Intel 64) • Windows XP and XP Embedded (XPe) • Windows 7 (x86, AMD64, or Intel 64) • Windows 2008, 2012/R2 (x86, AMD64, or Intel 64) • Windows Embedded Standard 7 and 2009 • Red Hat Enterprise Virtualization certified Linux-based thin clients • Vendor support for SUSE Linux Enterprise Server 10 and 11 Browser • Internet Explorer 8 and higher on Windows platforms, with the SPICE ActiveX control installed • Mozilla Firefox 17 and higher on Red Hat Enterprise Linux, with the SPICE plugin installed

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