FEATURE GUIDE

RED HAT ENTERPRISE VIRTUALIZATION 3.0

OVERVIEW

Red Hat Enterprise Virtualization (RHEV) is a complete virtualization management solution for server and desktop virtualization and the first enterprise-ready, fully open-source virtualization platform. RHEV builds on the powerful Kernel-based Virtual Machine (KVM) hypervisor and the oVirt open virtualization management platform, projects started at Red Hat and released to the open source community. RHEV represents a true strategic virtualization alternative to organizations looking for better total cost of ownership, faster return on investment, accelerated break-even, and avoidance of vendor lock-in when compared to proprietary virtualization vendors.

Our core product, Red Hat Enterprise Virtualization for Servers, includes the RHEV Manager management system and the RHEV Hypervisor, and supports server operating systems as virtual guests.

Red Hat Enterprise Virtualization for Desktops is available as an add-on, and provides support for desktop operating systems as virtual guests and support for desktop management functionality.

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. 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 • New text-based GUI for enhanced manageability and easier installation

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Feature Categories	Capability
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 64 vCPU and 2TB vRAM per guest
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, improving performance by reducing the number of times that memory is accessed, 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 now built on Red Hat Enterprise Linux 6 and JBoss Enterprise Application Platform for superior performance and scalability
RHEV API	• Red Hat Enterprise Virtualization API exposes all Red Hat Enterprise Virtualization commands via an open source, community-driven RESTful API

Admin Portal	• The Red Hat Enterprise Virtualization administrator portal provides a 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
	  • Expandead tag and bookmark capabilities
	  • Enhanced query engine for searching for Red Hat Enterprise Virtualization objects
	  • More extensive event monitoring
	  • Enhanced dialog boxes, including a network bonding dialog box to allow for easier configuration of multiple virtual networks

User Portal	• The Red Hat Enterprise Virtualization user portal provides standard and power user access to the Red Hat Enterprise Virtualization environment
Reports Portal	• The Red Hat Enterprise Virtualization Reports Portal provides a robust, historical reporting system based on an embedded Jasper Reports engine; more than 25 pre-built reports and dashboards are included, and users can define their own

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Feature Categories	Capability
Live migration	• Allows for running virtual machines 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
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
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
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)
Desktop management	With the optional Red Hat Enterprise Virtualization for Desktop add-on, includes: • Red Hat Enterprise Virtualization User Portal for connecting Red Hat Enterprise Virtualization for Desktops users to their virtual machines • 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 • 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 preallocated (thick-provisioned) disks for optimal performance and thin-provisioned disks for optimal storage usage

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Feature Categories	Capability
User and group-based 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 tools for automating the conversion of physical servers or non-Red Hat Enterprise Virtualization virtual machine 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 virtual machine to physical cores and physical RAM on the server for enhanced performance

System Requirements	
Guest support	Fully supported server operating systems: • Red Hat Enterprise Linux: Red Hat Enterprise Linux 3, 4, 5, and 6; 32- and 64-bit • Windows Server 2003, 2003 R2, 2008, 2008 R2; 32- and 64-bit Fully supported desktop operating systems (requires Red Hat Enterprise Virtualization for Desktops add-on) • Red Hat Enterprise Linux Desktop 5 and 6, 32- and 64-bit • Windows XP 32-bit; Windows 7 32- and 64-bit
RHEV Manager Requirements	Minimum hardware: • x86_64 server with minimum one dual-core CPU, 4 GB available RAM, 25GB available local storage, one Gigabit Ethernet NIC Recommended hardware: • x86_64 server with one quad-core CPU or multiple dual-core CPUs, 16 GB RAM, 50GB available local storage, one Gigabit Ethernet NIC Required operating system (not included) • Red Hat Enterprise Linux 6, 64 bit

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System Requirements	
RHEV 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)
RHEV Admin Client	Operating systems supported • Windows XP (x86 only), • Windows 7 (x86, AMD64 or Intel 64), and • Windows 2008/R2 (x86, AMD64, or Intel 64). Browser required • Internet Explorer 7 and higher on Windows, with the .
RHEV User Portal Client	Operating system/client • Red Hat Enterprise Linux 5.5 and higher (i386, AMD64 or Intel 64) • Red Hat Enterprise Linux 6.0 and higher (i386, AMD64 or Intel 64) • Windows XP and XP embedded • Windows 7 (x86, AMD64 or Intel 64) • Windows 2008/R2 (x86, AMD64 or Intel 64) • Windows Embedded for thin clients • Supported Linux thin clients with integrated SPICE client Browser • Internet Explorer 7 and higher on Windows platforms, with the SPICE ActiveX control installed • Mozilla Firefox 3.5 and higher on Red Hat Enterprise Linux, with the SPICE plugin installed

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 contact your local Red Hat sales office or Red Hat authorized reseller.

ABOUT RED HAT

Red Hat, the world's leading provider of open source solutions and an S&P 500 company, is headquartered in Raleigh, NC with more than 70 offices spanning the globe. Red Hat provides high-quality, affordable technology with its operating system platform, Red Hat Enterprise Linux, together with cloud, virtualization, applications, management, storage and service-oriented architecture (SOA) solutions, including Red Hat Enterprise Virtualization and JBoss Enterprise Middleware. Red Hat also offers support, training and consulting services to its customers worldwide. Learn more: http://www.redhat.com.

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