RED HAT®
VIRTUALIZATION

RED HAT VIRTUALIZATION

DATASHEET

RED HAT VIRTUALIZATION AT A GLANCE

- Provides a complete enterprise virtualization solution for servers and workstations
- Combines the performance of Red Hat Virtualization Host with a comprehensive enterprise management interface
- Delivers record-setting performance and scalability along with unmatched consolidation ratios
- Built from open standards and application programming interfaces (APIs) with an active community of contributors
- Provides the lowest total cost of ownership (TCO) among enterprise virtualization platforms
- Complete portfolio of training and consulting services available

PRODUCT OVERVIEW

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

With Red Hat Virtualization, you can:

- Confidently virtualize any critical application.
- Standardize storage, infrastructure, and networking services.
- Gain workload performance efficiency.
- Improve application density and server usage rates while using existing investments.
- Build an agile environment that facilitates bringing products to market faster.
- Improve performance and reduce cost of high-performing Linux workstations.
- Deploy services quicker and build a foundation for bimodal IT by sharing services with Red Hat OpenStack® Platform.

BENEFITS

VIRTUAL MACHINE (VM) RESOURCE MANAGEMENT

- Add memory and central processing unit (CPU) resources on the fly without disrupting applications.

VM PROVISIONING MANAGEMENT

- Allow users (developers, power users, or tenant admins) to provision their own virtual and infrastructure resources, based on role-based access control policies.
- Configure and reuse templates for faster provisioning.

UNPARALLELED PERFORMANCE AND SCALABILITY

- Scale with 240 hosts per cluster.
- Support 240 vCPUs and 4TB of memory per virtual machine running on physical hosts capable of 288 logical CPUs.

"We see a clear ROI [return on investment] from our use of Red Hat Virtualization, not only from the hardware savings, but also from manpower efficiencies due to how fast we can spin up clusters and deploy virtual machines. And our software licensing costs are dramatically less with Red Hat Virtualization as well."

LEAD ENGINEER
UNIX/LINUX ENGINEERING GROUP, QUALCOMM

- Virtualize graphics and network-intensive computing through peripheral component interconnect (PCI) device assignment and directly attach a physical adapter or device to a virtual machine.

WORKLOAD PORTABILITY

- Migrate workloads from VMware vCenter to Red Hat Virtualization through a simplified virtual machine-to-virtual machine (virt-v2v) integration tool with minimal steps.
- Maintain running workloads without disruption using live migration and storage live migration.

SECURITY AND RELIABILITY

- Incorporate secure virtualization (sVirt) and Security-Enhanced Linux (SELinux) technologies to secure and harden the hypervisor against attack vectors aimed at the host or virtual machines. Both technologies are inherited from Red Hat Enterprise Linux.

INTEROPERABILITY

- Access open application programming interfaces (APIs) that support the integration of existing and preferred tools such as Active Directory.

KEY COMPONENTS, INTEGRATION, AND FEATURES

CORE COMPONENTS	CAPABILITIES
Red Hat Virtualization Host	• Provides an image-based hypervisor that is simple to deploy and manage • Increases performance and security • Provides support for virtual local area networks (VLANs), network bonding, and a wide range of network devices • Supports all storage systems certified on Red Hat Enterprise Linux • **NEW:** Host, built as the optimized and lightweight Red Hat Enterprise Linux 7 operating system. Additional benefits include: 1. Simplified driver and firmware updates for hardware partners 2. Installation of hardware monitoring agents 3. Easy customization and configuration management integration
Red Hat Virtualization Manager	• Provides a centralized management system with a search-driven graphical interface • Supports up to hundreds of hosts and thousands of VMs • **NEW:** Our advanced system dashboard provides easier access to detailed information, including a resource global utilization overview of CPU, memory, and storage host resources. The dashboard facilitates quicker decision-making and streamlined administrative workflows.

VM MANAGEMENT	CAPABILITIES
Self-hosted engine	• Deploys Red Hat Virtualization Manager engine as a virtual appliance • Reduces hardware requirements • Enables built-in high availability for Red Hat Virtualization Manager
Advanced service-level agreement (SLA) manager	• Provides increased quality of service • Lets users define host and VM policies for critical infrastructure resources • Provides policies to guarantee quality of service
Affinity and anti-affinity groups	• Allows users to define workload affinity policies for how VMs run—either together on the same hosts or separately on different hosts • Allows the pinning of VMs with specialized hardware or licensing requirements to specific hosts • **NEW:** Label-based affinity allows administrators to use labels to tag VMs that have similar characteristics to better manage workload processing and speed up manual operations. This lets tasks be assigned to a group of VMs at the tag level.
Hot plug of virtual resources	• **NEW:** Allows users to scale up memory in addition to CPU, disk, and network for any workload without restarting the VM
Host update manager	• Allows seamless and one-click updates to host hypervisor servers • Adds deeper integration with Red Hat Satellite—letting Red Hat Virtualization Manager query errata information for the operating system and providing a complete view into critical infrastructure life-cycle management updates
Simple Network Management Protocol (SNMP) configuration service	• Allows Red Hat Virtualization Manager to integrate with preferred third-party monitoring systems

INTEGRATION	CAPABILITIES
OpenStack	Glance • Use, import, export, and share templates and images with Red Hat OpenStack Platform (not included) **NEW:** Neutron (full support) • Allows IP address management (IPAM) with Red Hat Virtualization based on Neutron subnets • Allows open vSwitch-distributed virtual switching support • Centralizes network configurations with Red Hat Enterprise Linux Cinder (tech preview) • Allows configuration of Ceph storage domains via OpenStack Cinder • Uses storage offloading to improve VM provisioning and storage I/O operation performance
Red Hat Gluster Storage	• Provides native support for Red Hat Gluster Storage, including a built-in GlusterFS Storage domain that uses Gluster as the storage back end, including for use with a hosted engine configuration • Provides Gluster node management through Red Hat Virtualization administrator portal
oVirt optimizer	• Balances existing VMs within a cluster • Determines optimal cluster placement for new VMs
Integrated virtual workstation infrastructure	• Lets users connect to VMs using either the SPICE or virtual network computing (VNC) protocols • Provides smartcard and common access card (CAC) support for Windows and Linux workstations • Provides SPICE proxy server support • Virtual Function I/O (VFIO) allows users to directly assign peripheral component interconnect (PCI) devices, including graphics processing units (GPUs), to a guest operating system using Red Hat Enterprise Linux 7 capabilities

FEATURES	CAPABILITIES
Fully featured enterprise management	• Policy-based, automated workload balancing • High availability • Event monitoring • Cluster maintenance • Live snapshots, templating, and thin provisioning
Industry-leading performance and scalability	• Hosts support up to 288 cores and 12TB of RAM • Guests support up to 240 vCPUs and 4TB of RAM • Clusters support up to 200 hosts • Non-uniform memory access (NUMA) support for optimizing memory bandwidth in NUMA-aware host servers • Industry-leading SPECvirt_SC2013 results[1]
Support for both Linux and Windows VMs	• Provides Red Hat support for Red Hat Enterprise Linux 5, 6 (32- and 64-bit), and Red Hat Enterprise Linux 7 (64-bit) • Provides vendor support for SUSE Linux Enterprise Server 10, 11, and 12 • Provides Red Hat support for Windows Server 2008, 2008 R2, and 2012 (32- and 64-bit) • Provides desktop operating systems support for Windows 7 and Windows 10 (32- and 64-bit)
Enhanced disaster recovery	• Provides full support for third-party tools that offer backup, restore, and replication • Provides configuration support for add/edit/delete storage connections to allow multi-pathing, hardware changes, simpler failover to remote sites, and array-based replication • Assists migration of storage domains among different datacenters, without needing to copy data into and out of the export domain
Automation and customization	• RESTful API allows automation management and programmatic configuration • Python-based command-line interface allows scripting and automation • Hooks mechanism allows customized VM definitions or system commands • **NEW:** Storage image uploader provides a browser-based user interface or API to upload images locally or remotely to a storage domain

1 *https://www.spec.org/virt_sc2013/results/specvirt_sc2013_perf.html*

FEATURES	CAPABILITIES
Robust enterprise storage capabilities	• Supported storage includes internet Small Computer System Interface (iSCSI), fibre channel, network file system (NFS), local storage, Red Hat Gluster Storage, and other POSIX-compliant file systems • Provides a choice of single disk snapshots, such as the operating system or data disk • Provides customized snapshots with granular backup level, including the ability to select only the current VM configuration • Supported features include: storage live migration, live snapshot creation and deletion, shared disks, floating disks, VM disk hot plug and unplug, and direct logical unit number (LUN) attach to VM • Virtio-blk data plane allows significant storage throughput improvements by applying I/O thread scaling
Internationalization	• Administration and user portals support English, French, German, Japanese, simplified Chinese, and Spanish
Enhanced orchestrated management	• Lets health status hosts modify storage domains objects based on external factors such as hardware failure or OS monitoring alerts • Lets administrators analyze the environment if an object beyond the normal visibility of Red Hat Virtualization is at risk of failure
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 the network during a migration operation
Live migration auto convergence	• Temporarily steps down the performance of VMs with memory pages that update faster than they can be transferred—providing time to complete and finalize the workload cutover to the destination host

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DATASHEET Red Hat Virtualization

FEATURES	CAPABILITIES
Infrastructure modernization	• **NEW:** Anaconda provides a common installer for both Red Hat Enterprise Linux and Red Hat Virtualization Host. • **NEW:** Cockpit plug-in is a simple and lightweight web-based Linux administration tool that provides host-specific tuning, trouble-shooting access, and host access. • **NEW:** Red Hat Enterprise Linux Atomic Host is a fully supported guest operating system. Administrators can gather information such as a list of running containers on the virtual atomic instances. • **NEW:** External network partner API allows adding and supporting third-party network providers by centralizing and simplifying the network management systems through Red Hat Virtualization Manager. • **NEW:** Advanced migration policies let users fine tune granular migration characteristics on a VM or cluster level, as well as configure the maximum migration bandwidth.

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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