



RED HAT ENTERPRISE LINUX

Red Hat® Enterprise Linux® is the operating system trusted by thousands of enterprises around the world to power their most mission-critical applications. Red Hat Enterprise Linux delivers performance, reliability, scalability, and security for its customers. Certified by the leading hardware and software vendors, it is suitable for, and has been deployed on, desktops, servers, and mainframes.

Engineered by Red Hat and backed by a powerful open source development model, Red Hat Enterprise Linux has proven performance and reliability. It has also completed the most stringent government security certifications, safeguarding your systems and your data. Key features that customers rely on are built into and fully integrated with Red Hat Enterprise Linux, including virtualization, mandatory access control (MAC) security, high-availability clustering, modularity, and extensive energy management capabilities. Operational ease-of-use is facilitated by allowing customers the flexibility to select features and deployment methods that will enable them to manage thousands of servers as easily as one.

KEY ATTRIBUTES

Stable, trusted platform. Red Hat Enterprise Linux is the long-term, predictable operating platform that embraces open source software and delivers to customers an enterprise-ready solution that can handle any application workload. With a rigorous engineering process, Red Hat ensures long-term stability, embraces industry innovation, and puts customers in control of their environment.

Red Hat meets the challenge of maintaining a stable, trusted platform in many ways. Key partnerships across the industry allow Red Hat to test for the stability of their hardware, software, and management interfaces. Support for the latest hardware is included with service packs and is delivered through minor releases. Applications do not need to be re-built or re-certified with each release update because the application programming and binary interfaces (API/ABI) are held stable for the full life of a Red Hat Enterprise Linux release, regardless of the physical or virtual deployment model. This means that Red Hat's rich ecosystem of thousands of applications are immediately available, avoiding delays that would otherwise occur with expensive and time-consuming re-testing efforts.

Flexibility. Red Hat Enterprise Linux gives customers a wide range of features that can be selected to best suit their environment. For example, a web-serving environment may require a different feature set than a database or financial application environment. The same applies to running guest instances of Red Hat Enterprise Linux on common third-party hypervisors and hardware partitioning technologies. Customers can select the feature set for their targeted environment while still receiving the value and high quality of Red Hat Enterprise Linux. In addition, with Red Hat's unique subscription model, customers have the choice of any currently supported version of Red Hat Enterprise Linux. Visit [redhat.com/rhel/server/advanced/virt.html](https://www.redhat.com/rhel/server/advanced/virt.html) for details on the supported combinations.

Performance and scalability. Red Hat Enterprise Linux performance scales on all levels, from desktops to workstations, from blades to rack environments, from single CPU systems to the largest SMP servers and mainframes. As hardware upgrades deliver additional processing and storage, Red Hat Enterprise Linux scales with that growth. Red Hat continues to innovate and deliver advanced functionality of the highest quality to its customers. Red Hat works continuously with hardware and software partners to enhance the performance of its platforms. For example, improvements in virtualization performance make it practical to deploy any application workload, even I/O-bound applications.

The most dramatic improvements in recent virtual machine performance are made possible by I/O optimizations, including support for new hardware capabilities, such as 10 Gigabit SR-IOV adapters, and NPIV. These have reduced overhead for I/O-bound environments to less than five percent, which opens the door to a whole new class of applications, such as database, transaction, and file servers. Red Hat leads the industry with new capabilities that enable customers to fully utilize a virtualized environment.

Red Hat Enterprise Linux, in cooperation with Red Hat's hardware partners, is enabling RAS (reliability, availability, security) and scalability features that have been recently introduced to mainstream architectures. Operational cost savings and physical space considerations drive the need for these higher-efficiency systems. For example, a 64-CPU

system with 1 Terabyte of memory, which previously may have consumed a full rack, can now be configured in a single 4U form factor, and can deliver improved performance at a much lower cost. Red Hat Enterprise Linux also includes low-level kernel optimizations aimed at providing full application performance while in the lowest possible power states.

Red Hat Enterprise Linux continues to regularly set new standards in the industry on workload benchmarks as diverse as ERP, Business Intelligence, TPC, and SPEC. See why Red Hat solutions are preferred for getting the most out of hardware and applications. Visit spec.org, tpc.org and redhat.com/rhel/details/benchmarks/.

Virtualization. Red Hat is a driving force behind the development of open source virtualization technology. Red Hat's approach to virtualization is easy to adopt, because it is delivered as an integral part of the Red Hat Enterprise Linux platform. The original release of Red Hat Enterprise Linux 5 in early 2007 incorporated an enterprise-hardened implementation of the Xen-based hypervisor technology. With Red Hat Enterprise Linux 5.4, Red Hat also introduced the newest virtualization technology, Kernel-based Virtual Machine (KVM), which is integrated into the Linux kernel and leverages the newest hardware virtualization capabilities provided by Intel and AMD processor platforms. The modular design of Red Hat Enterprise Linux allows customers to choose when and where to use virtualization within the context of their deployment. For additional flexibility, customers can deploy both Red Hat Enterprise Linux and Microsoft® Windows® as fully supported guests. Red Hat Enterprise Linux supports multiple virtualization use cases, from hardware abstraction for existing software stacks, to datacenter consolidation, to virtualized clusters and private clouds.

Security. Security for Red Hat Enterprise Linux begins with a core feature known as Security-Enhanced Linux (SELinux). Co-developed with the U.S. Government's National Security Agency, SELinux provides for a strong and flexible MAC framework to enforce role-based access control and multi-level security. In addition to SELinux, Red Hat Enterprise Linux includes system firewalls, audit capabilities, and system package and file integrity verification tools for a complete security architecture that covers deployment models ranging from Internet-facing servers to trusted computers. Backing up the core technology is the

Red Hat Security Response Team, recognized as industry leaders for addressing security vulnerabilities. In summary, Red Hat Enterprise Linux provides an unmatched security environment for customers and their applications. View redhat.com/security for more detail.

High availability. An integrated high-availability clustering capability allows customers to easily deploy and manage high-availability applications. Scaling from two to 16 nodes, application high availability can be managed through policy definitions. Integrated application failover agents are included for SAP, Sybase, and Oracle, and customers may customize the Red Hat-supplied resource agents for other applications.

Manageability. Deploying and managing a Red Hat Enterprise Linux environment is enabled by Red Hat Network (RHN). RHN is a highly scalable management platform for provisioning, updating, and controlling Red Hat Enterprise Linux environments. RHN and its on-premise version, RHN Satellite, provide organizations and their administrators with tools to lower their per-system deployment and management costs by automating and centralizing routine tasks and creating a consistent environment, resulting in less unexpected downtime due to human error.

THE TRANSPORTATION INDUSTRY RELIES ON RED HAT ENTERPRISE LINUX

"Migrating to Linux was synonymous with migrating to Red Hat. Its reliability continues to impress us daily."

- Brad Massey
IT Support Services,
Odyssey Logistics and Technology

Storage. Red Hat Enterprise Linux includes sophisticated disk and logical volume management capabilities that support numerous enterprise features, including high-resiliency via multi-pathed storage devices, the ability to combine physical devices into logical units, RAID capabilities, online device addition, dynamic volume expansion, and online filesystem growth. All storage management functions are available online, without impacting application availability.



ROAD TO THE CLOUD

Choosing Red Hat as the standard for applications is the first step in moving toward a service-oriented IT model that includes cloud capabilities. As a host or a guest, Red Hat Enterprise Linux delivers the core technologies to deploy both private and public clouds. The application management, tuning, and security environment is consistent whether the workload is deployed on a physical system, as a virtual guest on any of the leading hypervisors, or with a public cloud provider.

In shared and virtualized environments, the features and capabilities of Red Hat Enterprise Linux make it the ideal host and guest operating system.

REFERENCE ARCHITECTURE LIBRARY

The Red Hat Enterprise Linux reference architecture library includes comprehensive solutions that help customers get the most out of their Red Hat Enterprise Linux-based environment. These reference architectures will explain the capabilities of a given solution and provide a how-to for implementing best practices. Provisioning, management, configuration, and performance tuning are also covered, along with information about interoperability with other products.

Find the solution that best suits your environment by visiting:
redhat.com/rhel/resource_center/reference_architecture.html

RED HAT ENTERPRISE LINUX BENEFITS

With Red Hat Enterprise Linux, you receive:

- **The applications you need**
Thousands of certified applications from ISVs (Independent Software Vendors). redhat.com/partners/isv/
- **Your choice of hardware platform**
Hundreds of certified hardware systems and peripherals from leading OEM (Original Equipment Manufacturer) vendors, spanning multiple processor architectures. redhat.com/partners/hardwarepartners/
- **Comprehensive service offerings**
Up to 24x7 support with one-hour response, available from Red Hat and selected ISV and OEM partners. redhat.com/support/
- **The leading operating system**
Excellent performance, security, scalability, and availability, with audited industry benchmarks. spec.org, tpc.org (redhat.com/rhel/details/benchmarks/)
- **Robust and quality technology**
Red Hat is the world's leading open source developer, enabling it to deliver the highest-quality enterprise deployments.
- **A stable future**
Every major version provides stable application interfaces and seven years of product support.
- **Interoperability**
A product family that enables seamless interoperation of systems from the laptop, to the datacenter, to the mainframe. Plus, excellent interoperability with existing UNIX and Microsoft® Windows® deployments.

RED HAT ENTERPRISE LINUX POWERS MANY OF THE WORLD'S MOST DEMANDING FINANCIAL INSTITUTES

"Our ability to add incremental capacity to the thousands of servers we maintain daily with the reliability to deal with the great demands of day-to-day trading is only capable because of Linux and our work with Red Hat."

- Joe Panfil

Managing Director of Enterprise
Technology Services, CME Group



MANAGING RED HAT ENTERPRISE LINUX WITH RED HAT NETWORK SATELLITE

In order to obtain the maximum value from their Red Hat Enterprise Linux subscriptions customers update, configure, and provision their systems using Red Hat Network (RHN). RHN Satellite is an easy-to-use systems management platform that provides lifecycle management for small, medium, and large infrastructures. RHN Satellite provides powerful systems administration capabilities,

such as update management, configuration management, provisioning, and monitoring for all deployments. RHN Satellite can manage all Red Hat Enterprise Linux systems, whether they are physical or virtual, from its web-based interface. RHN Satellite provides efficient management of Red Hat Enterprise Linux, managing a thousand systems as easily as one. For third-party management frameworks, there is extensive support for Web-Based Enterprise Management (WBEM).

FEATURE SUMMARY

FEATURE	RED HAT ENTERPRISE LINUX ADVANCED PLATFORM	RED HAT ENTERPRISE LINUX
Number of processor sockets	Unlimited	2
Number of supported active guests	Unlimited	Up to 4 guests
Architecture support ¹	x86, x86-64, Itanium	x86, x86-64, Itanium, IBM Power, IBM System z
Storage support	FC, FCoE, iSCSI, NAS, SATA, SAS, SCSI	FC, FCoE, iSCSI, NAS, SATA, SAS, SCSI, DASD
Manageability	Includes Red Hat Network Update module with optional bundles for management and provisioning modules	
Network support	10M/100M/1G/10G Ethernet, InfiniBand	
Includes server applications	Full	
Includes client applications	Partial	
High availability	16 nodes	N/A
Global file system	Cache coherent clustered file system 16 nodes	N/A
Virtualization	Integrated with KVM and Xen; Can be run on 3rd party virtualization ²	
Certifications: Application support	Certifications are valid for virtualized and non-virtualized environments	
Supported guests	Red Hat Enterprise Linux 3, 4, and 5; Microsoft Windows	

¹ Technical limits may apply depending on architecture; view matrix: redhat.com/rhel/compare

² Virtualization support matrix: redhat.com/rhel/server/advanced/virt.html

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