

INFOBrief

Red Hat Enterprise Linux v5

Key Points of the Dell Implementation

- Xen Virtualization : Red Hat® Enterprise Linux v5 (RHEL 5) is the first release from Red Hat to support the Xen virtualization technology. Please review the contents of this document regarding the support of Xen and its implementation on Dell platforms.
- Single version with pricing options: Packaging and licensing has changed significantly from RHEL 4 (the previous version) with RHEL 5. Customers no longer need to choose between WS, ES and AS versions. RHEL 5 is now priced depending on the number of CPU sockets contained in the platform it is ordered with. Pricing for Dell platforms is set at 2 (and less) CPU sockets and up to 4 CPU sockets. Customers will be offered the correct version with each platform.
- Performance Optimizations: In addition to Xen, RHEL 5 is a significant release as it contains many improved kernel algorithms, all designed to deliver increased performance over the previous release.
- 64-bit and 32-bit Support: Red Hat Enterprise Linux 5 is available from Dell to support standard x86-32 or X86-64 processor technology. X86-64 offers customers the ability to run applications that can expand their memory requirements over the standard 4GB process address space normally found on standard x86-32 systems. The image factory installed by Dell is x86-64, but the 32 bit media is contained in the media and documentation kit included with the server.

Key Benefits to Dell Customers

- Dell has tested RHEL 5 on a broad range of platforms and peripherals, including all 9g, 8g and even older 6g servers (32-bit only) , as well as Dell/EMC, Clariion and MD1000 storage systems. Customers can have full confidence that Dell has qualified, certified and quality assured all the platforms contained in the Supported Platform List (below in this document).

- Dell offers its customers the convenience of factory pre-loaded software for the RHEL 5. Customers using this service can be confident that their server will be up and running quickly.
- Dell offers its 'OpenManage' system management software on RHEL 5. Customers who do not choose to have their OS factory pre-loaded may use the Dell OpenManage™ Server Assistant software installation 'wizard' (DSA) for fast and trouble free software loading without the need for extra 'driver disks' or web downloads.
 - Customers may also use the OpenManage Server Administrator agent to monitor and instrument key events on their platforms. Events such as fan failure or thermal conditions can be detected and rectified by administrator intervention.
 - Customers have access to a full storage management application provided only by Dell. OpenManage Storage Services allows administrators to visually configure and tune their RAID layouts and effect full volume management.
- Dell offers customers full technical software support for RHEL 5 on Dell's PowerEdge Server platforms. Customers may choose between Dell Silver, Gold or Platinum Enterprise Services for their Red Hat systems.
- Dell customers may choose between either Dell technical support or Red Hat technical support. Both organizations can assist the customer in ascertaining if a fault is hardware or software and then act accordingly.

Product Description

- RHEL 5 is designed to be deployed in several usage models :

Datcenter Environments

RHEL 5 supports Dell platforms with up to 4 CPU sockets and 256 GB of memory. Target platforms for this product would include the Dell PowerEdge™ 6xx0 servers. Target applications include large databases (e.g., Oracle), virtualized environments intended to support application consolidation or Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) application suites (e.g., SAP, PeopleSoft).

Small office, Workgroup or Remote office Infrastructure

RHEL 5 supports dual processor socket systems. Target applications for this combination of products would include web servers, file servers, and other infrastructure components like

Domain Name Service (DNS), Dynamic Host Configuration Protocol (DHCP), and small Java server applications.

High Performance Computing Clusters

RHEL 5 is designed to be deployed in servers used as compute and master nodes in HPCC configurations. RHEL 5 for HPCC is only available from Dell on PowerEdge servers purchased as part of an High-Performance Compute Cluster (HPCC).

Factory pre-load

- Red Hat Enterprise Linux 5 x86-64 is available factory installed on all Dell server platforms.
- The media and documentation kit included with each Dell server ordered with RHEL 5 includes both 32- and 64-bit versions. Customers who do not wish to use the 64 bit image are encouraged to use the DSA OS installer wizard contained in the Open Manage toolkit (also included with the server) to overwrite the factory image using the 32-bit media. Customers are STRONGLY encouraged to register their server with the RHN service prior to overwriting the factory installed image.
- The factory pre-load image may not change during the life of RHEL5, despite Red Hat issuing regular updates. For this reason customers are encouraged to use the RHN service to bring their system image up to date as soon as their server is operational in order to access the most current release. This will also ensure that the software contains the latest security and functional amendments.

N-1 Version Availability

Red Hat Enterprise Linux 4 X86-32 and x86-64 will remain available on shipping platforms with the **exception of SC systems**. SC systems will only have RHEL 5 available. RHEL 4 will remain available as a factory pre-load for some time after the release of RHEL 5.

RHEL 3 will move to 'end of sales life' and no longer be available. NO future servers will have RHEL 3 certification.

Product Restrictions

Cluster Suite and GFS will **not be supported by Dell**.

Red Hat Cluster Suite and GFS are Red Hat software products that enable a customer to add high availability technology to an existing system. The clustering software is included on the standard media and documentation kit but requires activation keys available directly from Red Hat.

Customers who require Red Hat HA configurations should purchase a ClusterSuite/GFS support agreement from Red Hat. SKU's are available for this support agreement.

Supported Platform List

The following current platforms are supported and certified with RHEL 5 in the initial launch supporting both x86-32 and x86-64.

PowerEdge 1955	PowerEdge 420SC
PowerEdge 1950	PowerEdge 800
PowerEdge 1900	PowerEdge 1420 SC
PowerEdge 2900	PowerEdge 1425 SC
PowerEdge 2950	PowerEdge 1655MC
PowerEdge 440SC	PowerEdge 1800
PowerEdge 840	PowerEdge 1850
PowerEdge 860	PowerEdge 2800
PowerEdge 1430SC	PowerEdge 2850
PowerEdge 1435SC	PowerEdge 6850 (All versions)
PowerEdge 6950	PowerEdge 6800 (All versions)

The following platforms are certified with RHEL 5 x86-32.

PowerEdge 700
PowerEdge 750
PowerEdge 1655 MC
PowerEdge 1650
PowerEdge 1750
PowerEdge 2650
PowerEdge 2600
PowerEdge 4600
PowerEdge 6600
PowerEdge 6650

Virtualization technology in Red Hat Enterprise Linux 5

Red Hat Enterprise Linux 5 contains Xen™ virtualization technology that allows users to create virtual machines (domains) within the underlying Operating System (often referred to as Domain 0 or 'the hypervisor').

A secondary Operating System (guest) is then bootstrapped into a virtual machine. A single physical server can support multiple virtual environments (domains), with each domain running logically separate Operating Systems. These virtual machines are normally referred to as 'User Domains' or 'Dom-U' (for Domain User) to differentiate them from the underlying Operating System, known as Domain 0. The software code to implement Domain 0 and create the user domains is normally referred to as the Xen hypervisor.

As delivered, the RHEL5 factory image does not pre-install the Xen hypervisor. Customers who wish to use Xen will need to install the software from the disks contained in the media and documentation kit that shipped with the platform. Once installed the system will need to be restarted and the Xen hypervisor selected from the boot menu. Once the system has been restarted please consult the documentation for instructions on how to create User Domains and boot operating systems within those domains.

Dell will support PowerEdge 9g servers systems running the RHEL5/Xen hypervisor, but will only support Operating Systems that may be running in any of the User Domains if those Operating Systems are officially supported by Red Hat. Prior to installing Xen please make sure you are aware of the support situation for any operating system you wish to run in a User Domain as well as any other software you may need to run in Domain 0, such as storage volume managers, EMC® PowerPath® or backup software.

Security Settings

RHEL 5 contains an implementation of Mandatory Access Control (MAC) in the Linux kernel. This implementation was previously known as SELinux (Security-Enhanced Linux)

In 'standard' Linux security is a Discretionary Access Control (DAC) model, where super-user accounts can have complete (discretionary) control over every aspect of the system. Traditionally, compromise of the super-user account gives an attacker total control. In a DAC system, some applications need super-user privileges to perform their functions. By contrast, a Mandatory Access Control (MAC) system provides granular permissions for all users, programs, processes, files and devices. You can safely grant an application just the permissions it needs to do its function, and no more.

SELinux was originally implemented by the US NSA (National Security Agency) for internal US government security requirements. As part of its Information Mission (<http://www.nsa.gov/ia/index.cfm>), the National Security Agency has been involved with the computer security research community in investigating a wide range of computer security topics including operating system security.

Potential users of the security package included in RHEL 5 are strongly advised to research and understand the ramifications of implementing the Mandatory Access Controls. Casual or unplanned settings of the security controls can have significant (and sometimes unwelcome) consequences that may result in normal users of the system being unable to access shared resources or applications and the system administrator no longer having the privileges required to grant access or (in the worst case) even log in.

Red Hat Network

RHEL 5 is supplied **only** as part of a Red Hat **SUBSCRIPTION** service. The pricing for Red Hat Enterprise Linux is an annual fee to the Red Hat Network (RHN) software update and distribution service, rather than a one-time product purchase. An active subscription is **MANDATORY** for a customer to receive support from Red Hat and Dell.

Dell offers both a one year pre-paid subscription to RHN (the base product) and a three year pre-paid subscription. **The three year subscription is required for all customers wishing to obtain Dell Gold or Silver Enterprise Service contracts.**

Dell customers who do not wish to purchase a Dell support product that contains software support (such as Silver or Gold Enterprise Service) should choose the one-year subscription from Dell. Customers with an existing Dell support contract or customers who intend to buy Dell support with their new system should choose the three-year subscription from Dell.

Currently RHN is a web-based service that allows system managers to download the latest set of software upgrades and patches from a set of central servers at Red Hat. System managers responsible for more than a single server are able to build logical groups of servers and set policies for group updates and version control across their entire installed base by purchasing a Management entitlement at an additional charge. RHN is a very powerful tool for system administrators who wish to keep their systems as up to date as possible while maintaining version control across their entire site.

Service and Support

Support Services

Dell's Enterprise Services and Basic Response Services provide flexible support options for comprehensive system coverage of the RHEL operating systems and Dell PowerEdge servers.

Enterprise Services

With the Enterprise Services suite, Dell becomes a partner to its customers' organizations, working closely with them to resolve problems quickly and smoothly, no matter how large or small the incident. Customers can receive immediate access to Dell hardware and software experts and fast resolution times. Dell provides attentive support, focused on maximizing system availability.

Platinum Enterprise Services: Dell's most advanced support provides you with comprehensive site-based support for your production environments. Key program features include: designated Technical Account Managers; engineer-to-engineer support through our Enterprise Expert Center; account/ support planning services; flexible billing options; customer-defined call priority; support consulting; reporting, and a menu of a la carte options that allow you to design the support service that best fits your unique environment. Options include: on-demand engineer dispatch, on-site¹ engineer, variable software support options, choice of several on-site¹ response times, on-site¹ spares, and training.

Gold Enterprise Services: Gold offers around-the-clock, rapid, expert support for production systems. Key program features include: engineer-to-engineer telephone support through the Gold Queue; Technical Account Management Team support services; 4-hour same day 7x24 on-site¹ hardware response; customer-defined call priority; software support resolutions; seamless support for select third party vendors; and Web-based remote troubleshooting. Options include: on-site engineer, on-site spares, and training and certification services.

Basic Response Services

Silver Same Day Basic Response: Silver support offers enhanced, prompt, remote and on-site¹ service designed for non-time-sensitive systems such as development or departmental servers. Silver support features 4-hour Same Day on-site¹ hardware support, software support resolutions, telephone-based troubleshooting, and access to our online support tools.

Dell Advanced Software Support

For customers needing expert assistance with server software, Dell offers customized 7x24 toll-free priority access software support for RHEL operating systems running on Red Hat certified PowerEdge servers.

Designed for great flexibility to meet customer support requirements, Advanced Software Support Resolutions are sold in 1, 3, & 5 resolution packages and can be purchased as needed, when needed. Software Resolutions Packs provide customers with direct phone access to Dell's

highly trained Linux support professionals 24-hours a day to help resolve installation and configuration problems and to troubleshoot the Red Hat Enterprise Linux operating system should problems arise while running on your PowerEdge server.

Gold and Platinum Enterprise Services: For Severity 1 software issues, customers will be transferred directly to a software analyst. For Severity 2 and 3 software issues, Gold and Platinum customers will receive a call back within eight hours or less, from a Dell software analyst.²

Silver Same Day Basic Response: Silver support comes standard with three software support resolutions. Silver customers will receive a call back within one hour for critical software issues, and within eight hours for non-critical issues.²

Professional Services

Dell Professional Services offers a full suite of services - from assessment and design through validation and deployment - that can help you quickly realize the cost savings and performance advantages of running a Red Hat Linux operating system on Dell industry-standard technology.

All professional services are delivered through Dell, offering a single point of contact, and leverage the expertise of Dell, Red Hat and other best-in-class service partners to deliver a solution to meet your current and future business needs. Skilled consultants in Dell Professional Services (DPS) leverage proven methodologies and best practices in designing solutions that encompass Dell server and storage products and a Red Hat Linux operating system. Offerings include:

- Internet Infrastructure Services to help clients create an efficient, highly available and scalable IT infrastructure.
- Migration Services designed to reduce risk and speed transition from UNIX environments to the Linux platform.
- Oracle 9i, 10g, and 9i/10g RAC services help customers quickly and cost-effectively migrate, implement and optimize Oracle database and RAC cluster solutions.

HPCC Services leverage the experience of DPS consultants to design and deploy a cost-effective, flexible, and scalable HPCC solution.

Dell Training & Certification

Dell Training & Certification provides you a single point of contact for purchasing training that can lead to Red Hat Certified Technician (RHCT) and Red Hat Certified Engineer (RHCE) certifications. Red Hat certification courses and exams combine key concepts of Linux with thorough, hands-on experience building and managing Red Hat Enterprise Linux solutions.

More Information on Dell Services for Red Hat Linux

For the United States, an overview of services for Linux can be downloaded from the following URL (Microsoft Word Format):

<http://www1.us.dell.com/content/topics/global.aspx/alliances/en/service?c=us&cs=555&l=en&s=biz>

For Europe, Middle East, Africa, an overview of services for Linux can be downloaded from the regional web sites. Please access your local Dell web site.

¹ Service may be provided by third-party. Technician will be dispatched if necessary following phone-based troubleshooting. Subject to parts availability, geographical restrictions and terms of service contract. Service timing dependent upon time of day call placed to Dell. U.S. only.

² Gold support comes standard with three software support resolutions that are valid for three years. Platinum offers optional software support resolutions.

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