Red Hat Enterprise Linux 5
5.6 Release Notes

New features and major updates
Edition 1

Red Hat Engineering Content Services

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Abstract

Red Hat Enterprise Linux minor releases are an aggregation of individual enhancement, security and bug fix errata. The Red Hat Enterprise Linux 5.6 Release Notes documents the major changes made to the Red Hat Enterprise Linux 5 operating system and its accompanying applications for this minor release.

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1. Installer

The Red Hat Enterprise Linux installer (also known as **anaconda**) assists in the installation of Red Hat Enterprise Linux 5.

Kickstart retry repository download feature

Kickstart is the automated installation method that system administrators use to install Red Hat Enterprise Linux. Using kickstart, a single file is created, containing the answers to all the questions that would normally be asked during a typical installation.

Under some circumstances during a kickstart installation, the installer might attempt to download a package from a repository that is temporarily unavailable (e.g. an overloaded Red Hat Network Satellite). Consequently, in previous releases of Red Hat Enterprise Linux 5, user input was then required to either attempt the download again, or abort. The installer in Red Hat Enterprise Linux 5.6 automatically makes several more attempts to connect to the repository and downloads the required package when it is available.

Enhanced Driver Support

Red Hat Enterprise Linux 5.6 features improved driver support for devices required during the installation process. Support for the following drivers and devices is added to the installer in this release:

» The Brocade BNA Ethernet Controller driver for Brocade 10G PCIe Ethernet Controllers.

» The **cxgb4** driver for Chelsio Terminator4 10G Unified Wire Network Controllers.

» The **3w-sas** driver for LSI 3ware 97xx SAS/SATA RAID Controllers.

Other driver updates in Red Hat Enterprise Linux 5.6 are discussed in Section 9, "Device Drivers"

> **Note**
>
> The Red Hat Enterprise Linux 5 Installation Guide provides detailed documentation of the installer and the installation process.

2. Virtualization

Para-virtualized drivers

Para-virtualized drivers (the virtio drivers) increase the performance for a virtual machine's block and network devices.

The virtio balloon driver allows guests to express to the hypervisor how much memory they require. The balloon driver allows the host to efficiently allocate memory to the guest and allow free memory to be allocated to other guests and processes. In Red Hat Enterprise Linux 5.6, the virtio balloon driver can collect and report memory statistics.

libvirt

Libvirt is a hypervisor-independent virtualization API that is able to interact with the virtualization capabilities of a range of operating systems. libvirt provides a common, generic and stable layer to securely manage virtualized guests on a host.

In Red Hat Enterprise Linux 5.6, libvirt has been updated to version 0.8.2, enabling sVirt. sVirt is a technology included in Red Hat Enterprise Linux 5 that integrates SELinux and virtualization. sVirt improves security and hardens the system against bugs in the hypervisor that might be used as an attack vector for the host or to another virtualized guest.

Global synchronization point for pvclock

pvclock enables a guest to read the clock time of the host. In Red Hat Enterprise Linux 5.6, a global synchronization point is added to pvclock, providing a more stable time source for guests.

virtio-serial

The virtio-serial driver has been added, enabling vmchannel capabilities on Red Hat Enterprise Linux 5.6 guests operating on Red Hat Enterprise Linux 6 hosts. VMchannel is a transport mechanism used for communication between the host userspace and guest userspace.

Xen profiling addition for Intel Core i7 and Atom Processors

The Xen xenoprof command in Red Hat Enterprise Linux 5.6 includes added definitions to recognize Core i7 and Atom processors.

3. Networking

Berkeley Internet Name Domain (BIND)

On most modern networks, including the Internet, users locate other computers by name. This frees users from the daunting task of remembering the numerical network address of network resources. The most effective way to configure a network to allow such name-based connections is to set up a Domain Name Service (DNS) or a nameserver, which resolves hostnames on the network to numerical addresses and vice versa.

The Berkeley Internet Name Domain (BIND) is an implementation of the DNS protocols. BIND includes a DNS server, a resolver library, and tools for verifying that the DNS server is operating correctly. Red Hat Enterprise Linux 5.6 includes version 9.7 of the BIND implementation. These updated packages add support for version 3 of the Next Secure (NSEC3) resource record in the DNS Security Extensions (DNSSEC). Additionally, this update features support for the RSA/SHA-2 algorithms in DNSSEC, and the HMAC-SHA2 algorithms for Transaction Signatures (TSIG).

Network Debugging using dropwatch

The kernel features the Netlink Drop Monitor (DROP_MONITOR) service that provides detailed network packet loss monitoring. Red Hat Enterprise Linux 5.6 features the new `dropwatch` utility to interface with the drop monitor service, and return the results to userspace.

Ethernet bridge tables

Ethernet bridge tables (`ebtables`) is a firewalling tool to transparently filter network traffic passing a bridge. The filtering possibilities are limited to link layer filtering and basic filtering on higher network layers. `ebtables` is a new package for the Red Hat Enterprise Linux 5.6 release.

4. Web Servers and Services

Hypertext Preprocessor (PHP) 5.3

Hypertext Preprocessor (PHP) is an HTML-embedded scripting language commonly used with the Apache HTTP Web server. Version 5.3.3 of PHP is now available in Red Hat Enterprise Linux 5.6 as the separate **php53** package.

> **Note**
>
> The **php** package supplies version 5.1.6 of PHP, and is still available in Red Hat Enterprise Linux 5.6. Ensure that the **php** package and the dependencies it requires are removed before installing **php53**.

mod_nss

mod_nss provides strong cryptography for the Apache Web server via the Secure Sockets Layer (SSL) and Transport Layer Security (TLS) protocols, using the Network Security Services (NSS) security library. In this release, mod_nss has been updated to version 1.0.8, adding support for the Online Certificate Status Protocol (OCSP)

5. Filesystems and Storage

Fourth Extended Filesystem (ext4) Support

The fourth extended filesystem (ext4) is now a fully supported feature in Red Hat Enterprise Linux 5.6. ext4 is based on the third extended filesystem (ext3) and features a number of improvements, including: support for larger file sizes and offsets, faster and more efficient allocation of disk space, no limit on the number of subdirectories within a directory, faster file system checking, and more robust journaling.

To complement the addition of ext4 as a fully supported filesystem in Red Hat Enterprise Linux 5.6, the **e4fsprogs** package has been updated to the latest upstream version. **e4fsprogs** contains utilities to create, modify, verify, and correct the ext4 filesystem.

> **Note**
>
> In previous Red Hat Enterprise Linux 5 releases, the ext4 filesystem was a Technology Preview feature and might have been known by the release name, `ext4dev`.

5.1. Logical Volume Manager (LVM)

Volume management creates a layer of abstraction over physical storage by creating logical storage volumes. This provides greater flexibility over just using physical storage directly. Red Hat Enterprise Linux 5.6 manages logical volumes using the Logical Volume Manager (LVM).

> **Note**
>
> The Logical Volume Manager Administration document describes the LVM logical volume manager, including information on running LVM in a clustered environment.

Mirroring Mirror Logs

LVM maintains a small log (on a separate device) which it uses to keep track of which regions are in sync with the mirror or mirrors. Red Hat Enterprise Linux 5.6 introduces the ability to mirror this log device.

Splitting a Redundant Image of a Mirror

Red Hat Enterprise Linux 5.6 introduces the use of the **`--splitmirrors`** argument of the **`lvconvert`** command to split off a redundant image of a mirrored logical volume to form a new logical volume.

Configuration

LVM in Red Hat Enterprise Linux 5.6 also provides additional configuration options for default data alignment and volume group metadata.

6. Authentication and Interoperability

System Security Services Daemon (SSSD)

The System Security Services Daemon (SSSD) is a new feature in Red Hat Enterprise Linux 5.6 that implements a set of services for central management of identity and authentication. Centralizing identity and authentication services enables local caching of identities, allowing users to still identify in cases where the connection to the server is interrupted. SSSD supports many types of identity and authentication services, including: Red Hat Directory Server, Active Directory, OpenLDAP, 389 Directory Server, Kerberos and LDAP.

Samba

Samba is a suite of programs which use NetBIOS over TCP/IP (NetBT) to enable the sharing of files, printers and other information. This package provides a Server Message Block or SMB server (also known as a Common Internet File System or CIFS server) which can provide network services to SMB/CIFS clients.

Two mutually exclusive versions of Samba (supplied by the packages samba and samba3x) are available. In Red Hat Enterprise Linux 5.6 samba3x is updated to version 3.5.4, providing additional support for LDAP-based stores and Winbind over IPv6.

7. Desktop

Japanese IPA Font Support

IPA Font is a JIS X 0213:2004 compliant Japanese OpenType font provided by Information-Technology Promotion Agency, Japan. Red Hat Enterprise Linux 5.6 introduces the new **`ipa-gothic-fonts`** package, containing the Gothic (sans-serif) style font and the new **`ipa-mincho-fonts`** package, containing the Mincho-style font.

Tablet Support

Red Hat Enterprise Linux 5.6 introduces support for the Wacom Cintiq 21UX2 graphics tablet.

ghostscript

The Ghostscript suite provides a PostScript(TM) interpreter, a set of C procedures (the Ghostscript library, which implements the graphics capabilities in the PostScript language), and an interpreter for PDF files. Ghostscript translates PostScript code into many common, bitmapped formats, like those understood by most printers and displays. This enables users to display PostScript files and print them on non-PostScript printers.

In Red Hat Enterprise Linux 5.6, ghostscript is updated to version 8.70, adding support for OPVP 1.0.

8. Kernel

The kernel shipped in Red Hat Enterprise Linux 5.6 includes several hundred bug fixes for and enhancements to the Linux kernel. For details concerning every bug fixed in and every enhancement added to the kernel for this release, refer to the kernel chapter in the Red Hat Enterprise Linux 5.6 Technical Notes.

The most notable updates and additions to the kernel in this release include:

- The tpm_tis driver for Trusted Platform Module (TPM) microcontrollers now automatically loads at boot time.

- Support for the Actual Performance Clock Counter (APERF) and Maximum Qualified Performance Clock Counter (MPERF) Model-Specific Registers (MSRs) on AMD processors has been added.

- Support for ITE-887x chips has been added.

- VIO power management support for Power PC platforms has been added.

- Support for the OSX and OSM OSA CHPID types in the qeth driver has been added

- Advanced Linux Sound Architecture - High Definition Audio (ALSA-HDA) drivers have been updated.

- SystemTap has been updated to version 1.3, providing an integrated compile-server client, automatic structure pretty-printing, faster and improved stack backtraces, and new sample scripts.

- The Kernel Probes (kprobes) implementation has been updated.

- The Per-task statistics interface (taskstats) has been updated.

- Support for TCP cubic congested control has been added.

- Support for the one packet scheduler in the networking stack has been added.

- Two networking tuning parameters, ip_local_reserved_ports and ip_local_port_range parameter, have been added to allow users to reserve ports for third-party applications, and blacklist known offending ports.

- The /proc/sys/vm/vm_devzero_optimized parameter has been added to skip ZERO_PAGE mmap of /dev/zero device.

- Enhancements for iSNS, in the iSCSI Initiator, and the iSNS server have been added.

- Kernel Application Binary Interface (kABI) has been updated.

9. Device Drivers

9.1. Network Device Drivers

- I/O AT (I/O Acceleration Technology) and DCA drivers have been updated. I/O AT is a collection of techniques by Intel to improve network throughput by offloading copy operations. Direct Cache Access (DCA) is an I/O AT feature which can deliver data directly into processor caches.

- The **zd1211** driver for the ZyDAS ZD1211(b) 802.11a/b/g USB WLAN device is now supported in Red Hat Enterprise Linux 5.6.

- The **qlcnic** driver has been updated to the latest upstream version

- The **be2net** driver for ServerEngines BladeEngine2 10Gbps network devices has been updated to version 2.102.512r

- The **bnx2** driver for the Broadcom NetXtreme II network cards has been updated to version 2.0.8

- The **bnx2x** driver for Broadcom Everest network devices has been updated to version 1.52.53-4

- The **forcedeth** ethernet driver for NVIDIA nForce devices has been updated to the latest upstream version

- The **e1000e** driver for Intel PRO/1000 ethernet devices has been updated to the upstream version 1.2.7-k2

- The **enic** driver for Cisco 10G Ethernet devices has been updated to version 1.4.1.2

- The **igb** driver for Intel Gigabit Ethernet Adapters has been updated, adding support for PCI-AER

- the **ixgbe** driver for Intel 10 Gigabit PCI Express network devices has been updated to version 2.0.84-k2

- The **netxen** driver for NetXen Multi port (1/10) Gigabit Network devices has been updated to version 4.0.73

- The **qlge** driver for QLogic 10 Gigabit PCI-E ethernet devices has been updated to version 1.00.00.25

- The Solarflare driver (**sfc**) has been updated to version 2.6.36-4c1

- The **tg3** driver for Broadcom Tigon3 ethernet devices has been updated to version 3.108+

- The **vxge** driver for Neterion's X3100 Series 10GbE PCIe devices has been updated to version 2.0.8.20182-k

9.2. Storage Device Drivers

- The **cciss** driver for HP Smart Array controllers has been updated to version 3.6.22.RH1

- The **qla4xxx** driver has been updated to version 5.02.03.00.05.06-d1

- The **bnx2i** driver for Broadcom NetXtreme II iSCSI has been updated to version 2.1.3

- the **be2iscsi** driver for ServerEngines BladeEngine 2 Open iSCSI devices has been updated.

- the **lpfc** driver for Emulex Fibre Channel Host Bus Adapters has been updated to version 8.2.0.87

- The **ipr** driver has been updated to version 2.2.0.4

- The **3w-sas** driver has been updated to version 3.26.00.028-2.6.18RH

- The **3w-xxxx** driver for 3ware SATA RAID Controllers has been updated to version 2.26.08.007-2.6.18RH

- The **cxgb3i** driver for Chelsio host bus adapters (HBAs) have been updated.

- The **megaraid_sas** driver for LSI MegaRAID SAS controllers has been updated to version 4.31

- The **mpt2sas** driver that supports the SAS-2 family of adapters from LSI has been updated to version 05.101.00.02

- the **qla2xxx** driver for QLogic Fibre Channel HBAs has been updated to version 8.03.01.05.05.06-k

9.3. Desktop Drivers Updates

❧ The i810 drivers for Intel integrated display devices have been updated with added support for IronLake graphics.

❧ The `sis` driver has been updated with added support for Volari Z9s devices.

❧ The `mga` driver for Matrox video devices has been updated, with added support for the `G200eH` device.

9.4. Printer Drivers

❧ The HPLIP (Hewlett-Packard Linux Imaging and Printing Project) package provides drivers for HP printers and multi-function peripherals. Version 3.9.8 of HPLIP is now available as a separate `hplip3` package. Note that the `hplip3` package provides a newer version of HPLIP that can be installed alongside the version provided in Red Hat Enterprise Linux 5. The relevant command line utilities are prefixed with `hp3-` instead of `hp-`, for example: `hp3-setup`.

10. Developer Tools

GNU gettext

The GNU gettext package provides a set of tools and documentation for producing multi-lingual messages in programs. In Red Hat Enterprise Linux 5.6, gettext has been updated to version 0.17. Note that java and libintl.jar support is discontinued in this updated gettext package.

Subversion

Subversion (SVN) is a concurrent version control system which enables one or more users to collaborate in developing and maintaining a hierarchy of files and directories while keeping a history of all changes. Subversion in Red Hat Enterprise Linux 5.6 has been updated to version 1.6.11, introducing the new merge tracking and interactive conflict resolution features.

Python Scripting in GDB

This update provides a new version of the GNU Project Debugger (GDB), featuring the new Python API. This API allows GDB to be automated using scripts written in the Python Programming Language.

One notable feature of the Python API is the ability to format GDB output (normally referred to as pretty-printing) using Python scripts. Previously, pretty-printing in GDB was configured using a standard set of print settings. The ability to create custom pretty-printer scripts gives the user control of the way GDB displays information for specific applications. Red Hat Enterprise Linux features a complete suite of pretty-printer scripts for the GNU Standard C++ Library (**libstdc++**).

GNU Compiler Collection (GCC)

The GNU Compiler Collection (GCC) includes, among others, C, C++, and Java GNU compilers and related support libraries. GCC 4.4 is now fully supported in Red Hat Enterprise Linux 5.6, providing interoperability with Red Hat Enterprise Linux 6.

GNU C Library (glibc)

The GNU C Library (glibc) packages contain the standard C libraries used by multiple programs on Red Hat Enterprise Linux. These packages contain the standard C and the standard math libraries. Without these two libraries, the Linux system cannot function properly.

glibc is updated in Red Hat Enterprise Linux 5.6, providing added support for POWER7 and ISA 2.06 CPUs.

OpenJDK

OpenJDK in Red Hat Enterprise Linux 5.6 is updated to IcedTea version 1.7.5. This update provides the following notable additions:

» HotSpot stability and performance improvements

» Xrender pipeline support

» Fixes for visual anomalies, synchronous timezone support using tzdata

» Improved graphics file support and overall JAR performance

» NUMA allocator support

OpenJDK

A. Revision History

Revision 1-4.400	**2013-10-31**	**Rüdiger Landmann**

Rebuild with publican 4.0.0

Revision 1-4	**2012-07-18**	**Anthony Towns**

Rebuild for Publican 3.0

Revision 1-1	**Mon Jan 17 2011**	**Ryan Lerch**

Clarified the note on Xen Support for Intel Processors.
Modified the GCC4.4 note to clarify that it is now fully supported in Red Hat Enterprise Linux 5.6.

Revision 1-0	**Thu Jan 13 2011**	**Ryan Lerch**

Initial Version of the Release Notes