



# Red Hat Enterprise Linux

## 5

### 5.9 Release Notes

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Release Notes for Red Hat Enterprise Linux 5.9  
Edition 9

Red Hat Engineering Content  
Services



# Red Hat Enterprise Linux 5 5.9 Release Notes

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## Release Notes for Red Hat Enterprise Linux 5.9 Edition 9

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 5.9 Release Notes document the major changes made to the Red Hat Enterprise Linux 5 operating system and its accompanying applications for this minor release. Detailed notes on all changes in this minor release are available in the Technical Notes.

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## Preface

The Release Notes provide high level coverage of the improvements and additions that have been implemented in Red Hat Enterprise Linux 5.9. For detailed documentation on all changes to Red Hat Enterprise Linux for the 5.9 update, refer to the [Technical Notes](#).

## Chapter 1. Hardware Support

### mstflint Support for ConnectX-3 devices

The *mstflint* package, which provides Mellanox firmware burning and diagnostics tools, now includes support for Mellanox ConnectX-3 devices.

### smartmontools Support for HP Smart Array controllers and MegaRAID

The *smartmontools* package, which provides tools for monitoring SMART-capable hard drives, has been upgraded to add support for HP Smart Array controllers. This update also adds improved MegaRAID support.

### ipmitool delloem Commands Upgraded

The Dell-specific IPMI extension, which adds the **delloem** subcommand to the **ipmitool** utility, has been updated to include the following enhancements:

- ✦ A new **vFlash** command, which allows users to display information about extended SD cards.
- ✦ A new **setled** command, which allows users to display the backplane LED status.
- ✦ Improved error descriptions.
- ✦ Added support for new hardware.
- ✦ Updated documentation of the **ipmitool delloem** commands in the **ipmitool** manual page.

### Updated configuration for NetApp LUNs

The NetApp LUN built-in configuration now uses the **tur** path checker by default. Also the following hardware table parameters have been updated:

- ✦ **flush\_on\_last\_del** has been enabled,
- ✦ **dev\_loss\_tmo** has been set to **600**,
- ✦ **fast\_io\_fail\_tmo** has been set to **5**,
- ✦ and **pg\_init\_retries** has been set to **50**.

## Chapter 2. Kernel

### System Call Tracepoints

The following tracepoints for system call events have been added:

- » `sys_enter`
- » `sys_exit`

The system call enter and exit tracepoints are only supported on architectures that have the `HAVE_SYSCALL_TRACEPOINTS` configuration option enabled.

### IPv6 UDP Hardware Checksum

Red Hat Enterprise Linux 5.9 adds hardware checksum support for UDP running over IPv6.

### Per-process Resource Limits

The `prlimit64()` system call has been added to allow users to dynamically change the limits of a running process via the `/proc/<PID>/limits` file (this file is now writable).

### VLAN Support Added to `pktgen`

VLAN support has been added to the `pktgen` module. The `pktgen` module is now able to produce 802.1Q tagged frames.

### Restricting Access to `/proc/<PID>/`

The `hidepid=` and `gid=` mount options have been added to `procfs` to allow restricting of access to `/proc/<PID>/` directories.

### DSCP Field Mangling

In Red Hat Enterprise Linux 5.9, the `netfilter` module now supports mangling of the DSCP field.

### Comparison of Booted System and Dumped System

This feature allows you to compare a booted system with a dumped system to efficiently analyze changes that might be introduced by image migration. To identify a guest, `stsi` and `stfle` data is used. A new function, `lgr_info_log()` compares the current data (`lgr_info_cur`) with the last recorded one (`lgr_info_last`).

### FICON HyperPAV Enablement

The Parallel access volume (PAV) storage server feature is intended to achieve better I/O performance through alias devices. With HyperPAV, you no longer need to configure dedicated aliases for each device for which you want to use PAV with. HyperPAV supports an alias pool from which alias devices are automatically assigned when required. This results in reduced configuration effort and dynamic self-optimization of the PAV configuration.

### VDSO Support



Applications often use system calls that are related to system time. The virtual dynamic shared object (vdso) support is a kernel-provided shared library that holds the required data for the correct system time. The calculation is done in user space, and accelerates the operations. This results in increased performance, especially for applications with high amounts of time-related system calls.

## Chapter 3. Device Drivers

### 3.1. Storage Drivers

- ✦ The **mptfusion** driver has been updated to version 3.04.20, which adds the following device ID: **SAS1068\_820XELP**.
- ✦ The **qla2xxx** driver for QLogic Fibre-Channel HBAs has been updated to version 8.03.07.15.05.09-k.
- ✦ The **qla4xxx** driver has been updated to version 5.02.04.05.05.09-d0.
- ✦ The **lpfc** driver for Emulex Fibre-Channel Host Bus Adapters has been updated to version 8.2.0.128.3p.
- ✦ The **be2iscsi** driver for ServerEngines BladeEngine 2 Open iSCSI devices has been updated to version 4.2.162.0r.
- ✦ The **bnx2i** driver for Broadcom NetXtreme II iSCSI has been updated to version 2.7.2.2.
- ✦ The Brocade BFA FC SCSI driver (**bfa** driver) is no longer considered a *Technology Preview*. In Red Hat Enterprise Linux 5.9, the BFA driver is fully supported. Additionally, the Brocade **bfa** FC SCSI driver was updated to version 3.0.23.0 which includes, among others, the following enhancements:
  - Support for issuing a Loop Initialization Protocol (LIP) from a Fibre-Channel host.
  - Support for the Extended Link Services (ELS) and Common Transport (CT) fibre-channel passthrough commands.
  - Added IOCTL interface.
- ✦ The **bfa** firmware was updated to version 3.0.23.0.
- ✦ The **mpt2sas** driver was updated to version 13.101.00.00, which adds NUMA I/O support, Fast Load support, and support for customer specific branding.
- ✦ The **megaraid\_sas** driver has been updated to version 00.00.06.15-rh, which adds support for LSI MegaRAID SAS 9360/9380 12Gb/s controllers as a Technology Preview. Additionally, support has been added for multiple MSI-X vector and multiple reply queue.
- ✦ The **iscsiuio** driver for the Broadcom NetXtreme II BCM5706/5708/5709 series PCI/PCI-X Gigabit Ethernet Network Interface Card (NIC) and for the Broadcom NetXtreme II BCM57710/57711/57712/57800/57810/57840 series PCI-E 10 Gigabit Ethernet Network Interface Card has been updated to version 0.7.4.3, which includes, among other enhancements, VLAN and routing support.

### 3.2. Network Drivers

- ✦ Support for the **ib\_qib** device driver has been added to the kernel shipped with Red Hat Enterprise Linux 5.9. The **ib\_qib** driver is an updated version (and a replacement) of QLogic's **ib\_ipath** InfiniBand Host Channel Adapter (HCA) device driver and provides support for the latest PCI Express QLE-series of SDR, DDR, and QDR InfiniBand adapters. The older **ipath** driver is still retained and is used to manage all older HTX based QLogic InfiniBand controllers.
- ✦ The Solarflare driver (**sfbc**) has been updated to version 3.1, which adds support for the SFE4003 board and TXC43128 PHY support.
- ✦ The **bnx2x** firmware has been updated to version 7.2.51 to include support for the Broadcom

57710/57711/57712 chips.

- The **bnx2x** driver has been updated to version 1.72.51-0+ to include support for the Broadcom 578xx family of chips, support for iSCSI offload, support for additional PHYs (including EEE), OEM-specific features, and to address a number of bugs.
- The **bnx2** driver has been updated to version 2.2.1+.
- The **cnic** driver and firmware have been updated to add FCoE parity error recovery, statistics support, and FCoE capabilities advertisement.
- The **cxgb3** driver for the Chelsio T3 family of network devices has been updated to the latest upstream version.
- The **cxgb4** driver for Chelsio Terminator4 10G Unified Wire Network Controllers has been updated to the latest upstream version, which adds support for the Chelsio T480-CR and T440-LP-CR adapters.
- The **cxgb4** firmware has been updated to upstream version 1.4.23.0.
- The **iw\_cxgb3** driver has been updated to the latest upstream version.
- The **iw\_cxgb4** driver has been updated to the latest upstream version.
- The **cxgb4i**, **cxgb3i**, and **libcxgbi** drivers have been updated.
- The **netxen\_nic** driver has been updated to version 4.0.79, which includes Minidump support.
- The **tg3** driver for Broadcom Tigon3 Ethernet devices has been updated to version 3.123.
- The **ixgbe** driver for Intel 10 Gigabit PCI Express network devices has been updated to the latest upstream version, which adds the following enhancement:
  - Support for the Intel Ethernet 82599 10 Gigabit Ethernet Controller.
  - Support for the Quad Port 10 Gigabit Ethernet adapter based on the Intel Ethernet 82599 10 Gigabit Ethernet Controller.
  - Added module parameter (***allow\_unsupported\_sfp***) to allow untested and unsafe enhanced small form-factor pluggable (SFP+) modules.
- The **ixgbev** driver has been updated to the latest upstream version to include the latest hardware support, enhancements, and bug fixes. Additionally, support to recognize 100MB link speed has been added.
- The **igbvf** driver has been updated to upstream version 2.0.1-k-1.
- The **igb** driver for Intel Gigabit Ethernet Adapters has been updated to the latest upstream version, which adds support for Intel Ethernet Network Connection I210 and Intel Ethernet Network Connection I211.
- The **e1000e** driver for Intel 82563/6/7, 82571/2/3/4/7/8/9, and 82583 PCI-E family of controllers has been updated to the latest upstream version, which includes support for Intel Ethernet Network Connection I217-LM.
- The **bna** driver is no longer considered a *Technology Preview*. In Red Hat Enterprise Linux 5.9, the BNA driver is fully supported. Additionally, the BNA driver and firmware have been updated to version 3.0.23.0.
- The **qlge** driver has been updated to version 1.00.00.30.
- The **qlcnic** driver for HP NC-Series QLogic 10 Gigabit Server Adapters has been updated to version

5.0.29.

- The **be2net** driver for ServerEngines BladeEngine2 10Gbps network devices has been updated to version 4.2.116r.
- The **enic** driver for Cisco 10G Ethernet devices has been updated to version 2.1.1.33.

### 3.3. Miscellaneous drivers

- The **m1x4 ib** and **net** drivers have been updated to the latest upstream version. Additionally, support for EEH error recovery has been added to the **m1x4** driver.
- The **m1x4\_en** driver has been updated to version 1.5.3.
- The **m1x4\_core** driver has been updated to version 1.0-ofed1.5.4.
- The **ALSA HDA** audio driver has been updated to enable or improve support for new chipsets and HDA audio codecs.
- The **IPMI** driver has been updated to the latest upstream version.

## Chapter 4. File System and Storage Management

### FIPS Mode Support for dmraid

Red Hat Enterprise Linux 5.9 adds support for using FIPS mode with **dmraid** root devices. A **dmraid** device is now activated before the FIPS checksum is checked.

## Chapter 5. Subscription Management

### Migration from RHN Classic to Subscription Asset Manager

In Red Hat Enterprise Linux 5.9, users are able to migrate from RHN Classic to Red Hat Subscription Asset Manager (SAM). SAM acts as a proxy for handling subscription information and software updates on client machines. For more information on the migration process, refer to the [Subscription Management Guide](#).

### Registering Against External Servers

Support for the selection of a remote server during the registration of a system is now supported in Subscription Manager. The Subscription Manager user interface provides an option to choose a URL of a server to register against, together with a port and a prefix, during the registration process. Additionally, when registering on the command line, the `--serverurl` can be used to specify the server to register against. For more information about this feature, refer to the [Subscription Management Guide](#).

### Firstboot System Registration

In Red Hat Enterprise Linux 5.9, during **firstboot** system registration, registering to Red Hat Subscription Management is now the default option.

### Subscription Manager gpgcheck Behavior

Subscription Manager now disables **gpgcheck** for any repositories it manages which have an empty **gpgkey**. To re-enable the repository, upload the GPG keys, and ensure that the correct URL is added to your custom content definition.

### Server-side Deletes

System profiles are now unregistered when they are deleted from the Customer Portal so that they no longer check in with certificate-based RHN.

### Preferred Service Levels

Subscription manager now allows users to associate a machine with a preferred *Service Level* which impacts the auto-subscription and healing logic. For more information on service levels, refer to the [Subscription Management Guide](#).

### Limiting updates to a specific minor release

Subscription manager now allows a user to select a specific release (for example, Red Hat Enterprise Linux 5.8), which will lock a machine to that release. Prior to this update, there was no way to limit package updates in the event newer packages became available as part of a later minor release (for example, Red Hat Enterprise Linux 5.9).

### Usability Changes in the GUI

The Subscription Manager graphical user interface has been enhanced with various changes based on customer feedback.

## Chapter 6. Security and Authentication

### Additional Password Checks for `pam_cracklib`

Red Hat Enterprise Linux 5.9 adds backported support for the `maxclassrepeat` and `gecoscheck` options to the `pam_cracklib` module. These options are used to check the properties of a new password entered by a user and reject it if it does not meet the specified limits. The `maxclassrepeat` option limits the maximum number of consecutive characters of the same character class (lower case, upper case, digits, and other characters). The `gecoscheck` option checks whether the newly-entered password contains words (space-separated strings) from the GECOS field in the `/etc/passwd` entry of the user that is entering the password. For more information, refer to the `pam_cracklib(8)` man page.

### IPv6 Support for `M2Crypto`

The `m2crypto` package, which provides a library that allows programs to call OpenSSL functions from Python scripts, has been updated to modify the HTTPS implementation to work with both IPv4 and IPv6. In addition, the `M2Crypto.SSL.Connection` object can now be instructed to create IPv6 sockets.

### Treating Matches Authoritatively in Look Ups of `sudoers` Entries

The `sudo` utility is able to consult the `/etc/nsswitch.conf` file for `sudoers` entries and look them up in files or in LDAP. Previously, when a match was found in the first database of `sudoers` entries, the look up operation still continued in other databases (including files). In Red Hat Enterprise Linux 5.9, an option was added to the `/etc/nsswitch.conf` file that allows users to specify a database after which a match of a `sudoers` entry is sufficient. This eliminates the need to query any other databases; thus, improving the performance of `sudoers` entry look ups in large environments. This behavior is not enabled by default and must be configured by adding the `[SUCCESS=return]` string after a selected database. When a match is found in a database that directly precedes this string, no other databases are queried.

## Chapter 7. Compiler and Tools

### SystemTap

SystemTap is a tracing and probing tool that allows users to study and monitor the activities of the operating system (particularly, the kernel) in fine detail. It provides information similar to the output of tools like **netstat**, **ps**, **top**, and **iostat**; however, SystemTap is designed to provide more filtering and analysis options for collected information.

SystemTap in Red Hat Enterprise Linux 5.9 has been updated to version 1.8, providing the following features and enhancements:

- ✦ The SystemTap runtime (**staprun**) now accepts a **-T** timeout option to allow less frequent wake-ups to poll for low-throughput output from scripts.
- ✦ When invoked by SystemTap, the **kbuild \$PATH** environment is now sanitized.
- ✦ **printf** formats are now capable of using the  **%#c** control parameter to escape non-printing characters.
- ✦ Pretty-printed bit fields now use integers; characters now use escaped formatting for printing.
- ✦ The SystemTap compile-server and client now support IPv6 networks.
- ✦ SystemTap modules are now smaller and compile faster. The modules' debuginfo is now suppressed by default.
- ✦ The **@var** syntax is now an alternative language syntax for accessing DWARF variables in **uprobe** and **kprobe** handlers (process, kernel, module).
- ✦ The SystemTap script translator driver (**stap**) now provides the following resource limit options:

```
--rlimit-as=NUM
--rlimit-cpu=NUM
--rlimit-nproc=NUM
--rlimit-stack=NUM
--rlimit-fsize=NUM
```

- ✦ The SystemTap compile-server now supports multiple concurrent connections.
- ✦ The following tapset function is deprecated in the 1.8 release and will be removed in the 1.9 release:

```
daddr_to_string()
```

- ✦ SystemTap now mangles local variables to avoid collisions with C headers included by tapsets.
- ✦ In embedded-C functions, the newly-defined macro **STAP\_ARG\_\*** should now be used instead of the **THIS->\*** notation.



## Chapter 8. Clustering

### Support for IBM iPDU Fence Device

Red Hat Enterprise Linux 5.9 adds support for the IBM iPDU fence device. For more information on the parameters of this fence device, refer to the [Cluster Administration](#) guide.

### DLM Hash Table Size Tuning

The Distributed Lock Manager (DLM) now allows tuning of DLM hash table sizes from the `/etc/sysconfig/cman` file. The following parameters can be set in the `/etc/sysconfig/cman` file:

```
DLM_LKBTBL_SIZE=<size_of_table>
DLM_RSBTBL_SIZE=<size_of_table>
DLM_DIRTBL_SIZE=<size_of_table>
```

which, in turn, modifies the values in the following files respectively:

```
/sys/kernel/config/dlm/cluster/lkbtbl_size
/sys/kernel/config/dlm/cluster/rsbtbl_size
/sys/kernel/config/dlm/cluster/dirtbl_size
```

## Chapter 9. Virtualization

### Inclusion of, and Guest Installation Support for, Microsoft Hyper-V Drivers

Integrated Red Hat Enterprise Linux guest installation, and Hyper-V para-virtualized device support in Red Hat Enterprise Linux 5.9 on Microsoft Hyper-V allows users to run Red Hat Enterprise Linux 5.9 as a guest on top of Microsoft Hyper-V hypervisors. The following Hyper-V drivers and a clock source have been added to the kernel shipped with Red Hat Enterprise Linux 5.9:

- ✦ a network driver (**hv\_netvsc**)
- ✦ a storage driver (**hv\_storvsc**)
- ✦ an HID-compliant mouse driver (**hid\_hyperv**)
- ✦ a VMBus driver (**hv\_vmbus**)
- ✦ a util driver (**hv\_util**)
- ✦ a clock source (i386: **hyperv\_clocksource**, AMD64/Intel 64: HYPER-V timer)

Red Hat Enterprise Linux 5.9 also includes a guest Hyper-V Key-Value Pair (KVP) daemon (**hypervkvpd**) that passes basic information, such as the guest IP, the FQDN, OS name, and OS release number, to the host through VMBus.

## Chapter 10. General Updates

### Updated *samba3x* Packages

Red Hat Enterprise Linux 5.9 includes rebased *samba3x* packages that introduce several bug fixes and enhancements, the most important of which is added support for the SMB2 protocol. SMB2 support can be enabled with the following parameter in the `[global]` section of the `/etc/samba/smb.conf` file:

```
max protocol = SMB2
```



### Warning

The updated *samba3x* packages also change the way ID mapping is configured. Users are advised to modify their existing Samba configuration files. Also, due to the ID mapping changes, `authconfig` does not create a working `smb.conf` file for the latest *samba3x* package, it only produces a valid configuration for the *samba* package.

Note that several `tdb` files have been updated and the printing support has been rewritten to use the actual registry implementation. This means that all `tdb` files are upgraded as soon as you start the new version of `smbd`. You cannot downgrade to an older **samba3x** version unless you have backups of the `tdb` files.

For more information about these changes, refer to the [Release Notes for Samba 3.6.0](#).

### OpenJDK 7

Red Hat Enterprise Linux 5.9 includes full support for OpenJDK 7 as an alternative to OpenJDK 6. The *java-1.7.0-openjdk* packages provide the OpenJDK 7 Java Runtime Environment and the OpenJDK 7 Java Software Development Kit. OpenJDK 7 includes extensions to support dynamically-typed languages that can run on the JVM, class loader enhancements, support for Unicode 6.0, and updated I/O and networking APIs. OpenJDK 7 is also available in Red Hat Enterprise Linux 6.

### New Java 7 Packages

The *java-1.7.0-ibm* and *java-1.7.0-oracle* packages are now available in Red Hat Enterprise Linux 5.9.

### New *libitm* Package

The *libitm* contains the GNU Transactional Memory Library, which provides transaction support for access to the memory of a process to enable synchronization of access to a shared memory by several threads.

### Rsyslog Updated to Major Version 5

Red Hat Enterprise Linux 5.9 includes a new *rsyslog5* package which upgrades **rsyslog** to major version 5.



### Important

The *rsyslog5* package is a substitute of the existing *rsyslog* package which provides major version 3 of **rsyslog** in Red Hat Enterprise Linux 5. In order to install the *rsyslog5* package, the *rsyslog* package must first be uninstalled.

The upgrade of **rsyslog** to major version 5 introduces various enhancements and fixes multiple bugs. The following are the most important changes:

- The ***\$HUPisRestart*** directive has been removed and is no longer supported. Restart-type HUP processing is therefore no longer available. Now, when the SIGHUP signal is received, outputs (log files in most cases) are only re-opened to support log rotation.
- The format of the spool files (for example, disk-assisted queues) has changed. In order to switch to the new format, drain the spool files, for example, by shutting down **rsyslogd**. Then, proceed with the Rsyslog upgrade, and start **rsyslogd** again. Once upgraded, the new format is automatically used.
- When the **rsyslogd** daemon was running in the debug mode (using the **-d** option), it ran in the foreground. This has been fixed and the daemon is now forked and runs in the background, as is expected. Note that the **-n** option may be used to prevent **rsyslogd** from being automatically started in the background.

For more information on changes introduced in this version of Rsyslog, refer to <http://www.rsyslog.com/doc/v5compatibility.html>.

## Appendix A. Revision History

<b>Revision 1-2.400</b>	<b>2013-10-31</b>	<b>Rüdiger Landmann</b>
Rebuild with publican 4.0.0		
<b>Revision 1-2</b>	<b>Mon Jun 24 2013</b>	<b>Martin Prpič</b>
Fixed incorrect version of the <b>enic</b> driver.		
<b>Revision 1-1</b>	<b>Tue Jan 8 2013</b>	<b>Martin Prpič</b>
Release of the Red Hat Enterprise Linux 5.9 Release Notes		
<b>Revision 1-0</b>	<b>Thu Sep 20 2012</b>	<b>Martin Prpič</b>
Release of the Red Hat Enterprise Linux 5.9 Beta Release Notes		