




**Dell PowerEdge Systems Red Hat Enterprise Linux 5
(x86_64, x86)
Installation Instructions and Important Information**



Notes, Cautions, and Warnings

-  **NOTE:** A NOTE indicates important information that helps you make better use of your computer.
-  **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.
-  **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

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2013 - 10

Rev. A14

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Installation Instructions

Overview

This document provides the following information:

- Instructions for installing and reinstalling the operating system on your Dell system.
- Sources of additional information.

Latest Available Operating System


The latest update to Red Hat Enterprise Linux 5 is Update 10. This update provides fixes for certain issues in the previous releases.

System Configuration Requirements

The minimum amount of memory required for Red Hat Enterprise Linux 5 is 512 MB.

Table 1. Maximum Supported Memory Configurations

Kernel Name	Architecture	Maximum System RAM
kernel	x86	4 GB
kernel-PAE	x86	16 GB
kernel-xen	x86	16 GB
kernel	x86_64	256 GB
kernel-xen	x86_64	256 GB

 **NOTE:** The maximum system memory supported by the kernel may be greater than the value listed in the table above.

 **NOTE:** Dell PowerEdge R815 supports a maximum system memory of 512 GB.

 **NOTE:** Dell PowerEdge M910 and Dell PowerEdge R810 support a maximum system memory of 1 TB.

 **NOTE:** Dell PowerEdge R910 supports a maximum system memory of 2 TB.

Operating System Architecture

Most Dell PowerEdge systems offer processors that include either Intel 64 or Advanced Micro Devices (AMD64) processor technology. If your processor includes Intel 64 or AMD64 technology, either the x86 version or the x86_64 version of Red Hat Enterprise Linux operating system can be installed on your system. If your processor does not include Intel 64 or AMD64 technology, only the x86 version of the operating system can be installed on your system.

 **NOTE:** To check if your Dell PowerEdge system supports Red Hat Enterprise Linux 5, see the operating systems support matrix at dell.com/ossupport.


Reviewing Preconfiguration Options

This section describes packages and options that are installed or preconfigured by Dell.

Operating System Packages Pre-Installed By Dell

Dell has pre-installed on your system a set of operating system packages that provide the features desired by system users, while enhancing the stability and security of your system.

Dell has placed the binary Red Hat Package Manager (RPM) modules for additional packages in the `/usr/src/dell/RPMS` directory. The source RPM modules for those packages reside in the `/usr/src/dell/SRPMS` directory. The archived and compressed source code for the RPM modules, if any, resides in the `/usr/src/dell/SOURCES` directory. These packages, which may include additional drivers and software, are not located on the Red Hat installation media. These packages are available at dell.com/support.

 **NOTE:** If you require functionality not provided by the packages, install additional packages from the Red Hat installation media shipped with your system.

Storage Partitions

Dell uses the partition scheme listed in the following table.

Table 2. Storage Partition Scheme

Mount Point	Size (MB)	Partition Type	Volume Group
Utility Partition	32	FAT 32	N/A
/	4096	Linux Logical Volume Manager (LVM)	VolGroup00
/boot	200	Linux native	N/A
Swap	2048	Linux swap	VolGroup00
/usr	8192	Linux LVM	VolGroup00
/tmp	4096	Linux LVM	VolGroup00
/var	4096	Linux LVM	VolGroup00
/home	4096	Linux LVM	VolGroup00



 **NOTE:** The size of the default LVM partitions such as (`/usr`, `/tmp` and so on) is based on a single 36 GB hard drive. If you have a larger hard drive or multiple hard drives, use the various native LVM tools to resize the existing partitions as well as to create new partitions, according to your requirements.

Table 3. Memory Swap Size

Memory	Swap Space (GB)
4 or less	2
4–16	4
4	8
64–256	16

 **NOTE:** The size of your swap must never be less than 32 MB. For physical RAM more than 2 GB, the size of your swap must be equal to the amount of physical RAM above 2 GB.


Enabling MUI Support

Your system is pre-installed with the Red Hat operating system multi-language user interface (MUI) for the following languages:

- English
- French
- German
- Korean
- Spanish
- Japanese
- Simplified Chinese

In the X Window system, the default language is set to English. To change the default setting to another language:

1. Select **System** → **Administration** → **Languages** in the **System Panel Settings Menu**.
2. Select the appropriate language.

 **NOTE:** Only languages that are pre-installed are available for selection.

Changing Keyboard Type

To change the keyboard type:

1. Select **System** → **Administration** → **Keyboard** in the **System Panel Settings** menu.
2. Select the appropriate keyboard.

Displaying Japanese Or Chinese Text

If Japanese or Chinese (Simplified) characters do not display correctly in a text console:

1. Log into the console and at the command prompt, type: `modprobe vga16fb`
 - To enable the display of Japanese characters, type: `export LANG=ja.UTF-8`
 - To enable the display of Chinese (Simplified) characters, type: `export LANG=zh_CN.UTF-8`
2. At the command prompt, type `bterm`.

The text-based user interface now displays Japanese or Chinese (Simplified) characters.

Installing And Re-installing Your Operating System

 **CAUTION:** Back up all data from the system before installing or upgrading the operating system.

To install or re-install Red Hat Enterprise Linux on your system, use any of the following:


- *Dell Systems Management Tools and Documentation* media
- Custom installation using Red Hat installation media
- Dell Unified Server Configurator (USC)

Installing Using The Dell Systems Management Tools And Documentation Media


It is recommended that you use the *Dell Systems Management Tools and Documentation* media to install or re-install Red Hat Enterprise Linux 5.

The *Dell Systems Management Tools and Documentation* media provides the following benefits:


- Automates the installation process.
- Restores the pre-installed settings for the RPM modules and the partition scheme.
- Installs additional software and drivers specific to Dell PowerEdge systems that are not included in the Red Hat media.


 **NOTE:** Before you install the operating system using the *Dell Systems Management Tools and Documentation* media, disconnect all the USB storage devices that are connected to your system.

1. Insert the *Dell Systems Management Tools and Documentation* media into your CD/DVD drive.
2. Restart the system.
3. Follow the instructions on the screen and in the documentation that is shipped with your media.

 **NOTE:** The *Dell Systems Management Tools and Documentation* media simplifies operating system installation and contains the latest drivers at the time you purchased your system. The media automatically installs drivers and any Dell-specific updates not included with the Red Hat media. Save your *Dell Systems Management Tools and Documentation* media in case you need to reinstall the Red Hat Enterprise Linux operating system.


Installing Red Hat Enterprise Linux 5 Using The Red Hat Media

 **NOTE:** To update your system with the latest operating system packages using Red Hat Network (RHN) service, see rhn.redhat.com.


 **NOTE:** During the operating system installation, disconnect all the external storage devices from the system including USB storage devices, Fiber Channel-attached storage, and external SCSI drives.


To perform a custom installation using the Red Hat media:

1. Insert the installation media into your CD/DVD drive.
2. Restart the system.
Your system reboots from the media and a **Welcome** screen appears that gives you several choices for the type of installation to perform.
3. Press < Enter > at the **boot:** prompt to select **Graphical Installation Mode**.

 **NOTE:** If the operating system cannot detect any disks in the system during the installation process, use a device driver diskette for your storage controller. Download the latest device driver diskette image for your controller from dell.com/support, and follow the instructions for using the diskette.

Review the notes on the left-hand side of the screen as you proceed through the installation. For more information, see the *Installation Guide* on the Red Hat documentation media.

 **NOTE:** If you are installing or re-installing Red Hat Enterprise Linux on a system with a Dell utility partition, when prompted, select **Install boot loader on first sector of boot partition**. Performing this action maintains the ability to boot to the utility partition because the system does not overwrite the master boot record.

 **NOTE:** If you have a utility partition, view the existing partitions with **Disk Druid** in the installer. The utility partition is located on either the `/dev/sda1` or `/dev/hda1` partition. You can download updated operating system packages and the latest kernel releases from rhn.redhat.com by using the RHN service on your system.

If you have more than 4 GB of system RAM while installing a 32-bit kernel, you must manually install kernel-PAE to utilize the RAM above 4 GB.

Insert the Red Hat Enterprise Linux 5 installation media into the CD/DVD drive and run the following commands:

1. `mount /dev/cdrom /media`
2. `rpm -ivh /media/Server/kernel-PAE*.rpm`


Installing With Dell Unified Server Configurator

Dell Unified Server Configurator (USC) provides an **OS Deployment** wizard that assists you with the installation of Red Hat Enterprise Linux 5.

 **NOTE:** Dell Unified Server Configurator—Lifecycle Controller Enabled (USC-LCE), comes with embedded drivers that are factory installed. You can download the latest drivers from ftp.dell.com, or use the *Dell Systems Management Tools and Documentation* media. It is recommended that you run the **Platform Update Wizard** to ensure that you have the latest drivers before you begin installing the operating system. For more information, see the *Updating the Platform Using the Platform Update Wizard* section in the *Dell Unified Server Configurator - Lifecycle Controller Enabled User Guide* at dell.com/support/manuals.

To begin installation using the **OS Deployment** wizard:


1. Boot the system and press <F10> within 10 seconds of the Dell Logo being displayed.
2. Click **OS Deployment** in the left pane.
3. Click **Deploy OS** in the right pane.

 **NOTE:** If your system has a RAID controller, configure RAID before you continue with the installation of drivers. For more information, see the *Optional RAID Configuration* section in the *Dell Unified Server Configurator - Lifecycle Controller Enabled User Guide* at dell.com/support/manuals.


4. From the list of operating systems, select one of the following:
 - Red Hat Enterprise Linux 5 32-bit
 - Red Hat Enterprise Linux 5 64-bit

Dell USC or USC-LCE extracts the required drivers to an internal USB drive labeled OEMDRV under `/oemdrv/*.rpm`. After the drivers are extracted, Dell USC or USC-LCE prompts you to insert the operating system installation media.

5. Click **Next**.
6. Insert the Red Hat installation media and click **Next**.
7. Click **Finish** to reboot the system and continue with the operating system installation by booting to the operating system media.

 **NOTE:** Upon reboot, the system prompts you to press a key to boot to the operating system media. If you do not press a key, the system boots to the hard drive.

8. Update your system with the latest drivers you extracted in step 4, after your operating system is installed.

 **NOTE:** The extracted drivers are located at the `/oemdrv drive`. All the copied drivers are removed after 18 hours. You must complete the operating system installation within 18 hours. To remove the drivers before 18 hours, reboot the system and press <F10> and re-enter Dell USC.

Use the following command to install the drivers: `rpm -Uvh *rpm`

For more information, see the *Common Features* section in the *Dell Unified Server Configurator-Lifecycle Controller Enabled User Guide* at dell.com/support/manuals.



NOTE: The minimum Red Hat Enterprise Linux 5 Update 4 maintenance kernel version supported on Dell systems with Intel 75xx and 65xx series processors and AMD 6000 series processors is 2.6.18-164.9.1.el5. This kernel version is the minimum required version to support Red Hat Enterprise Linux 5 on Dell PowerEdge M910, R910, R815, and R810 systems.

Obtaining The DKMS Framework For Device Drivers

All Dell add-on device driver packages that are not on the Red Hat media use the Dynamic Kernel Module Support (DKMS) framework. This framework allows the kernel modules to be dynamically built for each kernel on your system and provides a mechanism for driver version control. The DKMS framework and the latest Dell device drivers can be downloaded from dell.com/support.

For a list of add-on device drivers that are installed on your system, type `dkms status` in the command prompt.

Using Dell dkms Drivers After Kernel Upgrade

If the kernel is upgraded in a system where the **dkms** driver is installed, perform the following procedure after the kernel upgrade, to ensure that the updated **dkms** driver is installed for the latest kernel.

- If the module version of the updated kernel is higher than the **dkms** driver version, then continue using the native driver.
- If the module version in the updated kernel is lesser than the **dkms** driver version:
 - a. Use the **dkms** driver.
 - b. Create a file in `/etc/depmod.d` with the filename `dkms_module_name.conf` with the following entry:

```
override module_name kernel_version modules_directory.
```

For example, for the **bnx2** driver, create a file `bnx2.conf` in `/etc.depmod.d/`, with the following entry:

```
override bnx2 2.6.18-x.el5 weak-updates.
```
 - c. Run the `depmod -a` command.

For more information on DKMS, see the DKMS main page on your system.

Updating Your System Packages Using Red Hat Network

Red Hat periodically releases software updates to fix bugs, address security issues, add new hardware support, and add new features. You can download updated operating system packages and the latest kernel releases and updates by using any of the following methods:

- Performing a manual download from the RHN service at rhn.redhat.com.
- Using the **yum** utility.

It is recommended that you use the RHN service to update your system software to the latest revisions before you deploy your system.

Important Information

The latest update to Red Hat Enterprise Linux 5 is Update 10. It provides fixes for certain issues found in the previous releases and supports the Dell OpenManage components.

A few modes and components that are not supported are listed below:

- Hibernation and sleep (S3, S4) mode is not supported on Dell systems.
- FCoE on Broadcom 57810 is not supported on Red Hat Enterprise Linux 5.x.
- PERC S100 and S300 RAID controllers are not supported with Red Hat Enterprise Linux. For more information, see the knowledge base article [19840](#) at [redhat.com](#).

General Issues

DKMS Missing File `common.postinst` Message Displayed

Description	The warning <code>/usr/lib64/dkms/common.postinst does not exist</code> , is displayed during installation of the DKMS driver rpm, when Library MACRO used in the specification file expands to <code>/usr/lib64</code> . The file <code>common.postinst</code> is available in <code>/usr/lib/dkms</code> .
Workaround	Create symbolic link for the file <code>common.postinst</code> in the <code>/usr/lib/dkms</code> directory.
Cause	The warning is caused because the library MACRO used in the DKMS specification file expands to <code>/usr/lib64</code> .

IPMI Commands May Result In High Processor Utilization

Description	On PowerEdge systems that are managed through IPMI, the <code>kipmid</code> thread may consume high processor resources when you issue IPMI commands to the BMC.
Workaround	Set the option <code>kipmid_max_busy_us</code> to the <code>ipmi_si</code> driver module. This option can be set by creating a file <code>./etc/modprobe.d/ipmi.conf</code> with the following line and reloading the <code>ipmi_si</code> module: <code>options ipmi_si kipmid_max_busy_us=300</code>

KVM Switches May Cause Video Issues During Installation

Description	Certain keyboard, video, and mouse (KVM) switches do not pass the proper Display Data Channel (DDC) information to the video subsystem, often providing wrong information to the X Window system regarding monitor capabilities.
Workaround	Connect the monitor directly into the system while installing the operating system and configuring X Window.

Running Kudzu Fails To Configure Network Interfaces Properly

- Description** Running **kudzu** on your system may result in the improper configuration of the network interfaces.
- Workaround** Use the **netconfig** utility.

TEAC CD Drives Display Error Messages In The System Log

- Description** The TEAC CD-224E CD drive may cause the following error message:
- ```
kernel : hda : packet command error :status=0x51 {Drive Ready
seek complete error}.
kernel : ide : failed opcode was : unknown.
```
- Workaround** The message can be ignored. This message is displayed when no media is present in the drive. This message does not occur with the latest TEAC CD-224E-N CD drive.

## Driver Update Model Updates Kernel Entries On GRUB Boot Selection Screen

- Description** When using Red Hat Enterprise Linux 5 driver update model or dkms to update kernel modules, multiple Grand Unified Bootloader (GRUB) entries appear at the kernel selection screen on system boot.
- Workaround** Driver update model creates modified initrd images when it updates a driver required for system boot. This behavior is expected and the default boot kernel contains the most recent applied driver changes. For more information, see the Red Hat Enterprise Linux 5 Release Notes at [redhat.com](http://redhat.com).

## USB Devices Are Reset During Stress Test

- Description** When a stress test is run on some Dell PowerEdge systems, the following message may be displayed:
- ```
usb 3-3.1: reset low speed USB device using ehci_hcd
and address 7
```
- Cause** This occurs when low or full speed devices are connected through a USB 2.0 hub to the Enhanced Host Controller Interface (EHCI) hub and PowerNow! is enabled. The EHCI starts split transactions, but gets delayed while trying to access the main memory. Therefore, EHCI cannot complete the split transaction before the transaction translator (TT) in the hub discards the data. The **hid-core** driver retries these transactions, but if the retries also fail for one second, the device is reset.
- This is a known issue.

Programs Or Utilities Related To RPM May Fail To Complete

Description If programs or utilities related to RPM fail to complete, you can recover the program or utility by killing the offending program or utility and then removing the RPM database lock files using the `rm -rf /var/lib/rpm/__.db` command.

lspci Reports Unknown Devices

Description When `lspci` is used to display information about all PCI buses in the system and all devices connected to them, the output may contain a few unknown devices.

Workaround Use one of the following methods to update the `pciids`:

- Download the latest `pci.ids` file from [pciiids.sourceforge.net](https://www.pciiids.sourceforge.net) and save it at: `/usr/share/hwdata/pci.ids`.
- Use the `update-pciids` utility to download the latest `pci.ids` file.

Cause The issue occurs because the `pci.ids` file does not contain the definition of the hardware.

Issues Fixed In Red Hat Enterprise Linux 5 Update 9

This section contains information about issues, resolutions, and workarounds when using Red Hat Enterprise Linux 5 Update 9 on your Dell system.

Release Notes Missing From Red Hat Enterprise Linux 5 Update 8 Installer

Description During the installation of Red Hat Enterprise Linux 5 update 8, the welcome screen is displayed with a link to the Release Notes. When you click on this link, the following error message appears: `Release notes are missing`.

Workaround This issue is resolved in Red Hat Enterprise Linux 5 update 9. For more information, refer to the Red Hat Knowledgebase article at <https://access.redhat.com/knowledge/solutions/235783>.

Unable To Install Red Hat Enterprise Linux 5 Update 7 And Red Hat Enterprise Linux 5 Update 8 Using Dell Deployment Methods

Description During the installation of Red Hat Enterprise Linux 5 update 7 or Red Hat Enterprise Linux 5 update 8, symlinks are unavailable. For example, `/dev/fd` link to `/proc/self/fd` link is missing during the installation and the following error message is displayed:

```
#ls -l /dev/fd
```

```
No such file or directory.
```

The link for `/proc/self/fd` is missing and this causes the `dkms` driver installation to fail thereby corrupting the operating system installation when using Dell deployment methods.

Cause The newer version of `dkms` uses process redirection in core functions like `dkms install`, `dkms status`, and so on causing the installation of the critical drivers to fail.

Workaround To install Red Hat Enterprise Linux 5 update 7 or Red Hat Enterprise Linux 5 update 8, use manual methods and download the drivers from [dell.com/support](https://www.dell.com/support).

This issue is resolved in Red Hat Enterprise Linux 5 update 9.

Issues Fixed in Red Hat Enterprise Linux 5 Update 8

This section contains information about issues, resolutions, and workarounds when using Red Hat Enterprise Linux 5 Update 8 on your Dell system.

lpfc Driver Throws Timeout Error Messages in Runlevel 3 With Red Hat Enterprise Linux 5 Update 8

Description The lpfc driver displays the following timeout error messages in runlevel 3 with Red Hat Enterprise Linux 5 Update 8:

```
lpfc 0000:03:00.1: 1:2813 Mgmt IO is Blocked d00 -mbox cmd 5
still active

lpfc 0000:03:00.1: 1:(0):2530 Mailbox command x5 timeout Data:
x0 x700 xffff81007e992400

lpfc 0000:03:00.1: 1:0345 Resetting board due to mailbox
timeout
```

Workaround

1. In the file `/etc/modprobe.conf`, append the line
`options lpfc lpfc_use_msi=2`
2. Reload driver with the command `modprobe -r lpfc ; modprobe lpfc`
3. Run the following command to make the changes permanent:
`#mkinitrd /boot/initrd-2.6.18-274.el5.img 2.6.18-274.el5`

Cause The default interrupt configuration for the Emulex LPFC FC/FCoE driver in Red Hat Enterprise Linux 5.x, Red Hat Enterprise Linux 6 update 1, and earlier operating systems is INT-X. While loading the driver, the kernel disables MSI-X interrupt mode and uses INT-X mode.

A USB Cable Error Message Is Displayed After Installing Red Hat Enterprise Linux 5 Update 7

Description On installing Red Hat Enterprise Linux 5 update 7 and connecting to a low speed USB device, run the command `#dmesg|grep -i bad`. The following message is displayed:

```
hub 1-1.6:1.0: Cannot enable port 1. Maybe the USB cable is
bad?
```

Cause This issue occurs when a low speed device such as a USB keyboard or mouse is connected to the top USB port (Port 1) on the back panel of the system. There is no loss in functionality.

An ACPI Error Message Is Displayed After Installing Red Hat Enterprise Linux 5 Update 7

Description An ACPI error message is displayed after installing Red Hat Enterprise Linux 5 update 7.

1. Load the BIOS default to: **System Profile Settings:OS**.

2. Install the operating system, using the media.
3. Run the command: `#dmesg|grep-i invalid`.

An error message, `ACPI: Invalid _TSS data` is displayed.

Known Issues in Red Hat Enterprise Linux 5 Update 7

This section contains information about issues, resolutions, and their workarounds when using Red Hat Enterprise Linux 5 Update 7 on your Dell system.

C-State Function Is Unavailable

Description	After enabling C-States from BIOS Setup, boot into Red Hat Enterprise Linux 5 SP7, and wait for the processor usage to idle. Once the processor usage is idle, launch PowerTop 1.13, and observe the C-States counters. The C0 of C-States count is around 65% - 75% as against the normal range of 0% - 5%.
Workaround	This issue is addressed in Red Hat Enterprise Linux 6 (kernel-2.6.21). Red Hat Enterprise Linux 6 has a tickless idle feature enabled. The tickless idle feature eliminates periodic timer ticks are when the processor is idle. This allows the processor to remain in the power saving state for a longer time.
Cause	The Red Hat Enterprise Linux 5 update 6 kernel uses a periodic timer for each processor to generate events called timer ticks . This tick happens irrespective of whether the processor is idle or running. If a processor is idle, it has to wake up from the sleep state every time there is a timer tick . Due to this, the time spent by the processor in the C2 state is considerably low.

Systems With Intel Multiport i350 rNDC And PCI Add-in Adapters Report Incorrect/ Duplicate Mac Address

Description	Native igb driver reports incorrect MAC ids for interfaces of multiport i350 rNDC and PCI add-in adapters.
Workaround	<p>This issue is addressed in the latest version of Dell igb driver. Use the latest driver disk from dell.com/support during installation to address this issue.</p> <p>To install the drivers:</p> <ul style="list-style-type: none">• During Installation Load the Dell DKMS drivers on to a USB drive in the form of a driver disk. The anaconda installer uses these drivers and updates the original drivers.• During Upgrade Network configuration files are created using the original drivers during installation. Due to this, the configuration files retain the faulty MAC address. Delete all the configuration files present in the scripts directory <code>/etc/sysconfig/network-scripts/ifcfg-*</code>, and restart the server. For more information, see the knowledge base article DOC-6771 at redhat.com/kb/docs/.

Additional Scenario

When you install the latest driver from dell.com/support, the **igb** module is placed in the `/lib/modules/<kernel version>/extra/` directory. When you upgrade to the Red Hat Enterprise Linux

5 update 7 errata kernel, a symbolic link is created from the *weak-updates* of the errata kernel to the extra directory of Red Hat Enterprise Linux 5 update 7 kernel.

The weak-updates modules have lower preference than the built-in modules for the errata kernel as defined in the file `/etc/depmod.d/depmod.conf.dist`. As a result, when the system boots into the errata kernel, the built-in module is loaded instead of the Dell **dkms** module, causing the issue to re-appear, if the built-in module of the errata kernel has the issue. This can be prevented by overriding the default module load search preference for the **igb** module, before booting into the errata kernel.

This issue is fixed in Red Hat Enterprise Linux 5 update 8.

System Hangs Intermittently While Booting

- Description** Certain systems with 4x 10-core processors (80 logical CPUs with hyperthreading enabled) hang intermittently while booting. On a typical system this problem is seen in less than an hour.
- Workaround** This issue is fixed in Red Hat Enterprise Linux 5 update 8.

Red Hat Enterprise Linux 5 Update 7 Not Available In SBUU And USC Installation Methods

- Description** When attempting to install the operating system through SBUU and USC installation methods, the Red Hat Enterprise Linux 5 update 7 option is not available.
- The affected operating system is Red Hat Enterprise Linux 5 update 7 (32- and 64- bit).
- Workaround** Install Red Hat Enterprise Linux 5 update 7 using manual methods, and download the relevant drivers from dell.com/support.
- A fix for this will be available in a future update to Red Hat Enterprise Linux 5.
- Cause** The Red Hat Enterprise Linux 5 update 7 option has been removed from SBUU and USC installation methods due a bug identified in the operating system that causes **dkms** driver modules to corrupt the driver database. This results in kernel panic and boot-loader problems.

Assigning iSCSI LUN Target To Intel 10G Network Controller Stops The Operating System From Booting

- Description** When attempting to install the operating system on iSCSI Logical Unit Numbers (LUN) with the Intel 10G network controller (Intel card X520 and Intel Ethernet X520-DA2 Server Adapter), the system stops responding at the boot screen (after POST).
- Workaround** Disable the local storage controller from the **BIOS** menu, and then proceed with the iSCSI based installation.
- Cause** This error occurs because the BIOS 0xE820 code does not return the first 0xe820 entry to match int 12 interface and hence does not comply with ACPI specification.

Error Message On Starting IPMI Drivers While Installing OMSA

- Description** On starting the IPMI service on Dell PowerEdge R620, T620, M620, R720, and R720xd systems, the system log displays the message:`Could not enable interrupts, failed set, using polled mode.`

Workaround	This is working as designed. This will be addressed in a later version of the iDRAC firmware.
Cause	Although the message indicates that the operating system is in polling mode, the Linux driver continues to work in the interrupt mode.

Incorrect Processor Information Displayed

Description	For processors such as AMD Opteron 6200 Series and AMD Opteron 4200 Series, with two nodes on one socket, the system displays incorrect processor information.
Workaround	This is working as designed. The operating system will still be able to utilize the maximum number of cores on the processor.

Issue Fixed In Red Hat Enterprise Linux 5 Update 7

Error Message During Red Hat Enterprise Linux Installation

Description	During the installation of Red Hat Enterprise Linux 5 Update 4, the following error message is displayed: <code>The software you have selected to install will require CDs</code>
Workaround	For more information, see the knowledge base article 44131 available at redhat.com .
Cause	This issue occurs when at least one of the following conditions is true: <ul style="list-style-type: none"> • Dell USC is used for the Red Hat Enterprise Linux installation. • Red Hat Enterprise Linux optical media is used and the <code>dd</code> option is passed to the installer.

Issues Fixed In Red Hat Enterprise Linux 5 Update 6

This section contains information about issues, resolutions, and their workarounds when using Red Hat Enterprise Linux 5 Update 6 on your Dell system.

Kernel Panic Occurs On AMD Opteron 6000 And AMD 4100 Processor-Based Systems

Description	On systems based on the AMD Opteron 6000 series processors such as Dell PowerEdge R415, R515, R715, and R815 there can be a kernel panic during system boot-up (installation time, or runtime). The issue is seen with the x86 edition of Red Hat Enterprise Linux 5 Update 5 and not with the x86_64 edition.
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NOTE: This issue also occurs with Red Hat Enterprise Linux 5 Update 5 x86 and x86_64 running as a guest on Red Hat Enterprise Linux 5 Update 5 Xen.

System Unreachable In A Cluster Scenario

Description	In a High-Performance Computing (HPC) cluster environment consisting of compute nodes with Broadcom 5709 network controllers, one or more compute nodes become unreachable.
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Workaround If you do not want to upgrade to Red Hat Enterprise Linux 5 Update 6, use one of the following workarounds:

- Disable Message Signalled Interrupts (MSI) in the native **bnx2** driver (version 1.7.9-1) and add options **bnx2 disable_msi=1** to **/etc/modprobe.conf**.
- Use the **bnx2** driver (version 1.8.7b or higher from the release version 14.1.0, A01) available under **Drivers and Downloads** at dell.com/support.

Issues Fixed In Red Hat Enterprise Linux 5 Update 5

This section contains information about issues, resolutions, and their work around when using Red Hat Enterprise Linux 5 Update 5 on your Dell system.

Segmentation Fault With DHCPv6 Client

Description Restarting the DHCPv6 daemon causes it to segfault.

Workaround

1. Remove the files under **/var/lib/dhcpv6/** and rerun the daemon.
2. Change the **node.session.iscsi.FastAbort** entry from the default value of **Yes** to **No**.

Cause This issue occurs due to a fault in the duplicate address detection logic.

Drop In Network File System (NFS) Read Performance

Description There may be a drop in the NFS read performance of large files on systems running Red Hat Enterprise Linux 5. This issue occurs only when transferring files larger than the size of the system memory.

Workaround

Use one of the following methods:

- Reduce the slice idle time from 8 ms to a lower value, for example 1 ms.
To reduce the slice idle time, at the command prompt, type:

```
# echo 1>/sys/block/<device>/queue/iosched/slice_idle
```


.
- Change the I/O scheduler to a deadline scheduler, anticipatory scheduler, or noop scheduler.
To change the I/O scheduler, at the command prompt, type:

```
# echo <scheduler_name>>/sys/block/sdX/queue/scheduler
```


.

Installing The Operating System On Drives Attached To SAS 5/iR Or SAS 6/iR Controllers May Cause The System To Stop Responding On Boot

Description The operating system may not boot when Red Hat Enterprise Linux 5 Update 3 is installed on a system that has a serial-attached SCSI (SAS) 5/iR or SAS 6/iR controller connected to more than two hard drives.

Workaround To avoid this issue, complete the following steps during the operating system installation:

1. Insert the operating system media and proceed through the installation screens to the drive selection screen.
2. Select **Review and Modify Partition Layout**.
3. Click **Next**.
4. Proceed through the installation screens to the GRUB location screen and select **Configure Advanced Bootloader Options**.
5. Click **Next**.
6. Select **Change Driver Order**.
7. In the **Disk Order** window, change the disk order.
8. Click **OK** and continue with the operating system installation.

Cause This issue occurs when the hard drives are configured with more than one redundant array of independent disks (RAIDs), or when one RAID volume along with one or two individual disks are connected to the controller.

In this scenario, the Red Hat Enterprise Linux 5 installer installs the GRUB to the incorrect hard drive.

Issues Fixed In Red Hat Enterprise Linux 5 Update 4

This section contains information about issues, resolutions, and their workarounds when using Red Hat Enterprise Linux 5 Update 4 on your Dell system.

Power Capping Not Functional With Red Hat Enterprise Linux 5

Description In Red Hat Enterprise Linux 5, the integrated Dell Remote Access Controller (iDRAC) may not be able to limit the maximum power that the system uses by restricting the maximum frequency at which the CPUs can operate.

Workaround The issue is fixed in Red Hat Enterprise Linux 5 Update 4 Erratum (RHSA-2009-1670).

Cause This issue occurs because of an issue in the **cpufreq** drivers in Red Hat Enterprise Linux 5.

Kernel Panic With Channel Bonding And IPv6

Description A system configured for bonding with IPv6 addresses can result in a deadlock and kernel panic. This is further triggered by an incorrect switch configuration that is not suitable for bonding. The panic is triggered when switches get confused with duplicate IPv6 addresses in the subnet.

Workaround

1. Group the bonded interfaces to the same channel group of the switch.
2. Disable IPv6 autoconf by running the following commands:

```
# echo 0 > /proc/sys/net/ipv6/conf/all/accept_ra  
# echo 0 > /proc/sys/net/ipv6/conf/all/autoconf
```

iSCSI Login To Dell EqualLogic Storage Array Over IPv6 Might Fail

Description	iSCSI initiator login to the IPv6 address of an EqualLogic iSCSI SAN array may fail.
Workaround	This issue does not affect iSCSI session login to the EqualLogic Array's IPv4 addresses.
Cause	This issue occurs when an error in iscsi-initiator cannot handle IPv6 TargetAddress and redirects from the EqualLogic array.


CPU Soft Lockup On Red Hat Enterprise Linux 5 Update 3 Xen Kernel

Description	On systems running Red Hat Enterprise Linux 5 Update 3 xen kernel, network traffic through Broadcom BCM5709c may cause a CPU soft lockup along with call traces. The system may become non-responsive.
Workaround	Load the bnx2 driver with the module parameter <code>disable_msi=1</code> using the command: <code>modprobe bnx2 disable_msi=1.</code>

USB Resets On AMD System

Description	During I/O operation, the following message is displayed: <code>usb 3-3.1: reset low speed USB device using ehci_hcd and address.</code>
Cause	This issue occurs when low or full speed devices are connected through a USB 2.0 hub to the Enhanced Host Controller Interface (EHCI) hub and PowerNow! is enabled. The EHCI starts split transactions, but experiences a delay while trying to access the main memory. Thus, EHCI cannot complete the split transaction before the transaction translator (TT) in the hub discards the data. The hid-core driver retries these transactions, but if the retries fail for a second, the device is reset.

Bonding Driver Cannot Be Successfully Unloaded

Description	If you unload the bonding driver using <code>rmod bonding</code> , the unloading may fail displaying the following error message: <code>unregister_netdevice: waiting for bond0 to become free. Usage count = 1.</code>
Workaround	Blacklist the IPv6 module if IPv6 addresses are not used.  NOTE: To blacklist the IPv6 module, save <code>install ipv6 /bin/true</code> in a file under the directory <code>/etc/modprobe.d/</code> .
Cause	The unloading fails because of reference count leak in the module exit path.


Issues Fixed In Red Hat Enterprise Linux 5 Update 3

This section contains information about issues, resolutions, and workarounds when using Red Hat Enterprise Linux 5 Update 3 on your Dell system.


X Window Fails Intermittently

- Description** The **acpid daemon** leaks file descriptors whenever a connected client is disconnected, or the **acpid** configuration file is broken. This leads to X window failing intermittently.
- Workaround** This issue can be resolved using the **acpid-1.0.4-7 package**, available with Red Hat Enterprise Linux 5 Update 3.
You can also download the latest drivers from **dell.com/support**.

Virtual Media With DRAC 4P Or DRAC 4I Is Not Recognized In Red Hat Enterprise Linux 5 Update 2

- Description** On Dell PowerEdge systems with Dell Remote Access Controller (DRAC) 4/P or DRAC 4/I, virtual media is inaccessible as the required drivers are not available in Red Hat Enterprise Linux 5 Update 2.
-  **NOTE:** To access virtual media after resetting the DRAC, rescan the SCSI bus by typing `echo "scsi remove-single-device Y 0 0 0" /proc/scsi/scsi` and `echo "scsi add-single-device Y 0 0 0" /proc/scsi/scsi`, in a console. **Y** is the SCSI host number of the virtual CD device. It can be found by reading the `/proc/scsi/scsi` file and finding the line `Host: scsiY` that corresponds to the virtual CD.
- Workaround** Download the latest drivers from the **Drivers and Downloads** section at **dell.com/support**.

Installation Fails On Systems With 10G Base-T Single Port Intel 82598AT Adapter

- Description** Installation of RHEL 5 update 7 fails on Dell PowerEdge systems with 10G Base-T Single Port Intel 82598AT adapter.
- Workaround** Download and install the latest drivers from **dell.com/support**.
- Cause** This issue occurs when a stack corruption in the NIC driver results in a kernel panic and renders the system unresponsive.
-  **CAUTION:** The issue also occurs on an installed Red Hat Enterprise Linux 5 Update 2 system if the particular Intel adapter is plugged in and the network capability for the adapter is started. In this environment the issue may result in data loss because of the driver initiated kernel panic.

iSCSI Boot May Not Occur With Certain iSCSI Target iqn Names

- Description** Booting a system that has the Red Hat Enterprise Linux 5 Update 2 operating system installed on a remote iSCSI logical unit number (LUN) may not occur with certain iSCSI target iqn names.
- Workaround** The issue does not occur when the target iqn names have a longer section at the end. For example, `iqn.2001-04.com.example:storage.disk2.sys1.xyz`.

Cause This issue occurs when you install a Red Hat Enterprise Linux 5 Update 2 operating system on a remote iSCSI LUN and boot the LUN using an iSCSI Boot capable NIC. This issue occurs only when the target iqn name has a short section at the end. For example, `iqn.1984-05.com.dell:dell`.

Power Management May Cause Problems To USB Devices

Description Certain low and full speed USB devices such as keyboard, mouse, and so on, may behave unpredictably when system power management is enabled on AMD processor-based systems.

Workaround Turn off power management services.

AMD Power Management Module (powernow k8) Reports The Total Number Of Processor Cores

Description When the `powernow-k8` driver is loaded on an AMD multi-core processor-based system, the driver reports the total number of cores in the system followed by the processor model name in the system log (`/var/log/messages`). The processor model name may contain the words Dual-Core. The number preceding Dual-Core represents the total number of cores in the system and not the number of processors.

Issues Fixed In Red Hat Enterprise Linux 5 Update 2

This section contains information about general issues, resolutions, and their workarounds when using Red Hat Enterprise Linux 5 Update 2 on your Dell system.

Red Hat Enterprise Linux 5 With DBS Enabled May Cause The System To Stop Responding During Shutdown

Description Dell PowerEdge systems may stop responding during shutdown if Demand Based Switching (DBS) is enabled in the BIOS.

Workaround On systems running Red Hat Enterprise Linux 5, it is recommended that you disable DBS in the BIOS to avoid this issue.

Cause This is caused because of certain locking issues with the `cpufreq` driver in the Red Hat Enterprise Linux 5 kernel. The system stops responding after all the file systems are unmounted so there is no data loss. This issue can occur on all Red Hat Enterprise Linux 5 kernels including and up to Red Hat Enterprise Linux 5 Update 1.

LED Errors On USB Keyboards

Description The Num Lock/ Scroll Lock LED on some USB keyboards though enabled in the BIOS does not function in the operating system as expected. Even if the Num Lock LED is illuminated, the Numeric Keypad is not functional immediately after the kernel loads.

Workaround A few minutes after the system is turned on, the LEDs and the keypad functions are in sync.

System Stops Responding Intermittently While Booting Into Red Hat Enterprise Linux 5 x86 64 Operating System

- Description** A defect in the Advanced Programmable Interrupt Controller (APIC) initialization code in Red Hat Enterprise Linux 5 x86_64 may cause the system to stop responding during APIC initialization.
- The kernel may wait for a long time for the High Precision Event Timer (HPET) timer during APIC initialization. If the **NMI watchdog** is enabled, the system may stop responding. If **NMI watchdog** is not enabled, it may result in long boot-up delays.
- Workaround** Pass the **nohpet** parameter to the kernel command line at system boot.

X Window System Does Not Start On Systems With ATI ES1000 Chipset

- Description** On a Dell PowerEdge system with an ATI ES1000 chipset, the X Window System may fail to start.
- Workaround** Add the line `Option "DDCMode" "True"` in the `/etc/X11/xorg.conf` file.
- Example: The following file segment highlights the changed line:
- ```
Section "Device"
Identifier "Videocard0"
Driver "radeon"
Option "DDCMode" "True"
EndSection
```

## System Stops Responding With Direct I/O On Pre-formatted Tape Media Using Tar Commands

- Description** I/O operations with tape drives must occur in fixed block mode with a buffer size that is a multiple of the pre-formatted block size.
- If you are performing direct I/O operations with tape drives using commands like **tar** in fixed block mode with buffer sizes that are not a multiple of the pre-formatted block size, a call trace occurs and the system stops responding.
- This issue is not specific to any HBA and occurs frequently when you are using the following media:
- Pre-formatted new media
  - Media formatted with different block size using a backup software
  - Running **tar** commands after setting a different block size using mount command (**mt**)
- Workaround** This issue is fixed in a release of a **dkms** driver fix in the **st** driver, which is available at [dell.com/support](http://dell.com/support).

## Network Channel Bonding Packet Loss Under kernel-xen

- Description** When a network channel bond is configured under kernel-xen and if one of the link fails, a packet loss occurs on the bonded interface.

**Workaround** A fix for this issue is available at [rhn.redhat.com](http://rhn.redhat.com).

## DRAC 4 Virtual Media Reset May Cause System Instability

**Description** Using the default **ide** driver may cause the system to lock up when a Dell Remote Access Controller (DRAC) 4 reset occurs.

**Workaround** Use the **ide-scsi** driver to control the virtual media on systems using DRAC 4. To do so, pass the following parameter to the kernel command line:

```
hdX=ide-scsi
```

where **X** is the virtual media device letter. You can find the virtual media letter by reading the **/proc/ide/hdX/model** files until you locate the value for **VIRTUALCDROM DRIVE**.

While using the **ide-scsi** driver, the operating system takes the virtual media offline when a DRAC reset occurs. The device can be brought online in the usual manner for SCSI devices, by typing the following commands in a console:

```
echo "scsi remove-single-device Y 0 0 0" > /proc/scsi/scsi
echo "scsi add-single-device Y 0 0 0" > /proc/scsi/scsi
```

Where **Y** is the SCSI host number of the virtual media, which can be found by reading the **/proc/scsi/scsi** file and finding the line `Host:scsiY` that corresponds to the virtual media.

If you have installed the operating system using the *Dell Systems Build and Update Utility* media, this workaround will already be installed on your system.

Unlike DRAC 4, a kernel panic does not occur while resetting or rebooting a system using DRAC 5.

## Input Output Errors Occur When A Fiber Channel Card Is Connected Without A LUN

**Description** When a Fiber Channel adapter is installed on a system attached to a storage area network (SAN) without a logical unit number (LUN) assigned to the adapter, the following error message is displayed:

```
end_request: I/O error, dev sdg, sector 2097024
Buffer I/O error on device sdg, logical block 0
end_request: I/O error, dev sdg, sector 0
```

**Workaround** Configure a LUN for the adapter.

## Network Channel Bonding May Cause Call Trace Messages

**Description** If a network channel bond is configured on a Red Hat Enterprise Linux 5 system a call trace message may appear in **/var/log/messages** involving the kernel symbols **rtmsg\_ifinfo**, **rtnetlink\_event**, and **notifier\_call\_chain**.

**Workaround** You can ignore the messages as channel bonding works as expected.

## System Stops Responding Intermittently At Starting udev

- Description** On systems with the Intel 72xx processor, booting the system multiple times can result in the system not responding at starting **udev**.
- Workaround** This issue has been fixed.

## Slow Boot And Warning Messages On SATA

- Description** If a SATA controller has a vacant SATA port, the SATA device may generate the following warning message and delay the operating system boot sequence:
- ```
localhost kernel: scsil : ata_piix
localhost kernel: ata1: port is slow to respond, please be
patient
localhost kernel: ata1: port failed to respond (30 secs)
```
- Workaround** This issue does not cause any concerns after the operating system boots. You can ignore the error messages.

AMD Power Management Driver (powernow k8) Does Not Change The CPU Speeds Independently

- Description** The AMD power management driver (powernow-k8) does not change the CPU speeds independently based on each individual CPU load. The driver is not enabled by default.
- Workaround** Upgrade the kernel to version 2.6.18-8.1.1 or later from the RHN service at rhn.redhat.com.

Issue Fixed In Red Hat Enterprise Linux 5 Update 1

The snmpd Error Messages While Using Channel Bonding

- Description** If a network channel bonding has been configured for a network interface, restarting the **snmpd** service results in the following error messages in **/var/log/messages**:
- ```
error on subcontainer 'ia_addr' insert (-1)
error on subcontainer '' insert (-1)
```


## Finding More Information

- See [dell.com/support](http://dell.com/support) for:
  - The latest BIOS and firmware versions.
  - Files that are specific to your Dell hardware running the Red Hat Enterprise Linux operating system.
  - Information about Dell hardware that is running the Red Hat Enterprise Linux operating system.
- Information about using and administering the Red Hat Enterprise Linux operating system is available on the Red Hat documentation media that ships with your system. For more information, see [redhat.com](http://redhat.com).
- You can download updated operating system packages and the latest kernel releases and updates by using the following methods:

- By performing a manual download from the RHN service at [rhn.redhat.com](http://rhn.redhat.com).
  - By using the **yum** utility.
- If your system runs on Red Hat Enterprise Linux operating systems:
  - Sign up for mailing lists at [lists.us.dell.com](http://lists.us.dell.com).
  - Search for previously posted information that addresses issues that you may encounter, at [lists.us.dell.com/htdig](http://lists.us.dell.com/htdig).


# Getting Help

## Contacting Dell


 **NOTE:** Dell provides several online and telephone-based support and service options. If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog. Availability varies by country and product, and some services may not be available in your area.

To contact Dell for sales, technical support, or customer-service issues:

1. Go to [dell.com/contactdell](http://dell.com/contactdell).
2. Select your country or region from the interactive world map.  
When you select a region, the countries for the selected regions are displayed.
3. Select the appropriate language under the country of your choice.
4. Select your business segment.  
The main support page for the selected business segment is displayed.
5. Select the appropriate option depending on your requirement.

 **NOTE:** If you have purchased a Dell system, you may be asked for the Service Tag.

## Related Documentation

 **NOTE:** For all PowerEdge and PowerVault documentation, go to [dell.com/support/manuals](http://dell.com/support/manuals) and enter the system Service Tag to get your system documentation.

 **NOTE:** For all operating system documents, go to [dell.com/operatingsystemmanuals](http://dell.com/operatingsystemmanuals).

## Locating Your System Service Tag

Your system is identified by a unique Express Service Code and Service Tag number. The Express Service Code and Service Tag are found on the front of the system by pulling out the information tag. This information is used by Dell to route support calls to the appropriate personnel.

## Documentation Feedback

If you have feedback for this document, write to [documentation\\_feedback@dell.com](mailto:documentation_feedback@dell.com). Alternatively, you can click on the **Feedback** link in any of the Dell documentation pages, fill up the form, and click **Submit** to send your feedback.