

# Dell Update Packages Version 7.3 User's Guide



# 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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# Getting Started

A Dell Update Package (DUP) is a self-contained executable in a standard package format that updates a single software element on the system.

DUPs are available for the following software components:

- System BIOS
- System firmware, also known as the Embedded Systems Management (ESM) firmware
- Network firmware and drivers
- Remote Access Controller (RAC) firmware
- RAID controller firmware and device drivers
- SWRAID 3.0 (S110) driver

Using DUPs, you can update a wide range of system components simultaneously and apply scripts to similar sets of Dell systems to bring the system components to the same version levels.

You can use DUPs to:

- Apply an individual update to a system by using an interactive command line interface (CLI).
- Install device drivers in interactive and non-interactive modes.
- Execute multiple updates on the system by using a script comprised of non-interactive commands that you write using the CLI feature.
- Leverage the scheduling of your operating system and software distribution utilities to apply updates remotely to any number of systems.

## What's New in This Release

The new features for this release include:

### **Added device support for Mellanox card:**

- Mellanox ConnectX-3 Dual Port 10 GbE KR Blade Mezzanine Card
- Mellanox ConnectX-3 Dual Port 40 GbE QSFP+ Network Adapter
- Mellanox ConnectX-3 Dual Port 10 GbE DA/SFP+ Network Adapter

## Prerequisites

Before you install and use DUPs, ensure that:

- The system and operating system is supported by DUPs. See [Supported Operating Systems](#) for more information.
- You have Administrator privileges.

# Prerequisites And Features For Systems Running Linux

This section lists all the prerequisites and features for systems running the Linux operating system.

## Dell-Qualified and Dell-Enabled Packages


Before installing DUPs, read the information provided online and in the download package. Ensure that the updates you selected are both necessary and appropriate for the system. You may also need to complete some or all of the following:

- Add executable privileges to the package filename. Type the following command: **chmod +x packagename.bin**.
- Verify that the package meets the prerequisites for performing an update. To perform the check, type: **./packagename.bin -c**.
- Utilize one of the following methodologies for performing the updates. The first method is called the Single update method. In this method, **Run** the DUP from the command line in interactive mode to perform the update. The other method is called the Script method. Use this method if you want to run one or more updates from a script in non-interactive mode.

## OpenIPMI Requirements


Certain DUPs may require the latest OpenIPMI Linux device drivers to be installed on the system. If you are prompted during installation to obtain the latest drivers, see [dell.com/support/manuals](http://dell.com/support/manuals) or download the latest drivers from the Linux support site.

 **NOTE:** For dependencies and information on running DUPs in the Dell-provided embedded Linux environment and in a customized embedded Linux environment and for information on the required files and tools, see the *Dell OpenManage Deployment Toolkit User's Guide* at [dell.com/support/manuals](http://dell.com/support/manuals).

 **NOTE:** The required minimum kernel version is **2.6.9-42**.

# Prerequisites and Features For Systems Running Windows

Before installing DUPs, read the information provided online and in the download package. Ensure that the updates you selected are both necessary and appropriate for the system. You may also need to complete some or all of the following steps:

 **NOTE:** Run the DUP **Check** option on the target system and ensure that the system meets the prerequisites for performing an update.

To run the check from the CLI, type: **packagename.exe /c /s**.


To run the check from the GUI:

1. Double-click the **.exe** file for the DUP you downloaded.
2. Read the information about the update in the GUI's scrolling text window.  
You can view the log results after running the check option from either the CLI or the GUI. The default path for the older version prior to DUP 7.2 framework is **%SystemDrive%\dell\updatepackage\log**.  
The paths of the log files from 7.2 DUP framework are:  
Windows Server 2003: **%SystemDrive%\Documents and Settings\All Users\Application Data\Dell\UpdatePackage\log**  
Windows Server 2008 and Windows Server 2012: **%SystemDrive%\Program Data\Dell\UpdatePackage\log**.
3. Determine that the target system meets compatibility requirements.




For more information, see the Dell OpenManage Legacy Compatibility Guide, the Dell Systems Software Support Matrix, and [Other Documents You May Need](#).

4. Create a directory structure for performing the updates.
5. Determine a methodology for performing the updates. The first method is Single update method. In this method, Run DUP from the command line in interactive mode to perform the update. The other method is Script method. Use this method if you want to run one or more updates from a script in non-interactive mode.

 **NOTE:** DUPs for Windows can also be found in the repository on the Dell Server Updates DVD that contains the updated BIOS, drivers, and firmware components for Dell systems.


## Downloading DUPs


You can download DUPs from [support.dell.com](http://support.dell.com).

 **NOTE:** DUPs are also available in the repository folder in the Dell OpenManage Server Update Utility DVD, along with the **Catalog.xml** (that contains information about both Windows and Linux DUPs) and **DellSoftwareBundleReport.html** files.

To download DUPs from [support.dell.com](http://support.dell.com):

1. Go to [support.dell.com](http://support.dell.com) and select **Support for Work**.
2. Type the **Service Tag** and click **submit**.
3. Select **Drivers and Downloads**.
4. Select the operating system, category, and the update importance.  
The list of applicable updates are displayed.
5. Click **Download**.
6. To complete downloading the file, follow the instructions on the screen.

 **NOTE:** You can also download a different file format from the **File Title** column by selecting a file format for the DUP and clicking it. In case you want to download more than one file type, you must do it one at a time.


 **NOTE:** You can also download a DUP or group of DUPs using Dell Repository Manager. See the *Dell Repository Manager User's Guide* for more information.

## Feature Overview

This section provides a brief description of the Dell Update Package (DUP) supported features.

### DUP Support for PCIe-SSD Firmware and Driver

Dell PowerEdge Express Flash Peripheral Component Interconnect Express (PCIe) Solid State Device (SSD) is a high performance storage device designed for solutions requiring low latency, high input-output operations per second (IOPS), and enterprise class storage reliability and serviceability. The Dell PowerEdge Express Flash PCIe SSD is based on Single Level Cell (SLC) NAND flash technology with a high-speed PCIe 2.0 compliant interface. The high-speed PCIe 2.0 compliant interface helps improve the performance for I/O bound solutions.

 **NOTE:** Firmware update for PCIe-SSD device is not supported on Red Hat Enterprise Linux 5(x64) and SLES10(x64) bit operating systems.

## Hard Disk Driver Firmware Update

The new feature of hard disk driver supports online firmware updates which can be updated when connected to a S110 controller. The hard disk driver online firmware updates also supports when connected to a H200, H300, SAS 5, SAS 6, PERC 5, PERC 6, H7xx and H8xx servers.

## Supported Operating Systems

### For Windows:

- Microsoft Windows Server 2012, Essentials, Enterprise, datacenter and Foundation x64 Editions
- Microsoft Windows Server 2008 R2 Foundation, Standard, Enterprise, and data center and web x64 Editions with SP2
- Microsoft Windows Server 2008 SP2 Foundation, Standard, Enterprise, and data center and web x86 and x64 Editions with SP2
- Microsoft Windows Small Business Server 2011 Essentials
- Microsoft Windows Small Business Server 2011 (x64) Standard and Essential Editions
- Microsoft Windows Essential Business Server 2008 Standard and Premium Editions (x64) with SP1
- Microsoft Windows Server 2008 R2 SP1 HPC Edition
- Microsoft Windows Storage Server 2008 Basic, Standard, Enterprise, and Workgroup with SP2
- Microsoft Windows Storage Server 2008 Express, Workgroup, Enterprise and standard with R2
- Microsoft Hyper-V Server 2008 R2

### For Linux:

- SUSE Linux Enterprise Server 11 SP2 (32 and 64 - bit)
- SUSE Linux Enterprise Server 10 SP4 (32 and 64 - bit)
- Red Hat Enterprise Linux 5 update 8 (32 - bit)
- Red Hat Enterprise Linux 5 update 8 (32 and 64 - bit)
- Red Hat Enterprise Linux 5 update 9 (32 - bit)
- Red Hat Enterprise Linux 5 update 9 (32 and 64 - bit)
- Red Hat Enterprise Linux 6 update 3 (32 and 64 - bit)
- Red Hat Enterprise Linux 6 update 4 (32 and 64 - bit)
- VMware ESX versions 4.1 U3
- Citrix XenServer V6.1
- Citrix XenServer V6.2

For detailed information on various Dell systems and operating systems on which SUU is supported, see the at *Dell Systems Software Support Matrix* [dell.com/openmanagemanuals](http://dell.com/openmanagemanuals).

## Installing Device Drivers

DUPs update BIOS, firmware, drivers, and applications. If a device driver is not present in the system, DUPs allow you to perform fresh installation of the driver. You can install the driver provided the supported hardware is present.


## Interactive Mode

In an interactive mode, if a fresh installation is applicable, DUP displays a message to install the driver along with the version of the package. Click **Yes** to install the package. Installation results are logged in the [DUP Message Logs](#).

## Non-Interactive Mode

When a fresh installation is applicable, executing DUPs with the **/s** switch installs the driver.

For example, **packagename.exe /s** and **packagename.exe /s /r** performs fresh installation of driver DUPs.


 **NOTE:** Not all driver DUPs support fresh installation. See the *Dell Update Packages for Microsoft Windows Operating Systems readme* file for the list of drivers that do not support fresh installation.


## Installation Order of DUPs

If you are installing multiple DUPs, install the updates that require a reboot at the end. For recommended installation order see the following table.

**Table 1. Update Packages: Recommended Installation Order**

Installation Order	System Software Components
1	Device driver
2	Device firmware
3	ESM firmware
4	LifeCycle Controller
5	BIOS

 **NOTE:** If you have updated the BIOS, power supply firmware, PERC firmware, SAS expander firmware, PCIe SSD firmware, Intel, QLogic and Broadcom firmware the changes to the components take effect only after you reboot the system.

 **NOTE:** For a single reboot, you must install the ESM firmware update before the BIOS update.

## Important Tips to Remember for Using DUPs

- Prepare repair disks before you perform any updates.
- Download the currently installed version of drivers, BIOS, and firmware, so that you have a backup plan in case of any issues.
- Make sure that you have a backup of operating system files or system configuration files stored on a system other than the one you are updating.
- Make sure that the updates are planned for and performed by the system administrator who knows which applications could be affected.
- Before updating all systems, perform the upgrade on one nonessential system to test the update.
- Do not run other applications while executing DUPs.
- Do not shut down the system while an update is in progress.
- Make sure that the system reboots without power interruption after performing a BIOS update.

- Do not close any terminal console windows used for performing the DUP CLI execution, while DUP executions are in progress.

## Other Documents You May Need

To access other documents go to [dell.com/support/manuals](http://dell.com/support/manuals) and select the product or use the direct link on the *Dell Systems Management Tools and Documentation DVD*.

- Dell OpenManage *Legacy Compatibility Guide*
  - ✎ **NOTE:** You do not need to install Dell OpenManage Server Administrator on the system to run DUPs.
- *Dell OpenManage Server Update Utility User's Guide*
- *Dell OpenManage Deployment Toolkit (DTK) User's Guide*
- *Dell OpenManage IT Assistant User's Guide*
- *Dell Systems Software Support Matrix*
- *Glossary*
- *Dell Repository Manager Users Guide*
- *Man page for DKMS from [linux.dell.com/dkms/manpage.html](http://linux.dell.com/dkms/manpage.html)*

## Contacting Dell


✎ **NOTE:** 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.

Dell provides several online and telephone-based support and service options. 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. Visit [dell.com/support](http://dell.com/support)
2. Select your support category.
3. Verify your country or region in the Choose a Country/Region drop-down menu at the top of page.
4. Select the appropriate service or support link based on your need.

# Using Dell Update Packages

Dell provides a number of aids to help you determine whether or not the system requires an update. You can download DUP from [dell.com/support/manuals](http://dell.com/support/manuals). For more information, see [Downloading DUPs](#).

 **NOTE:** DUPs currently does not support every device type. DUPs will be available on additional devices in future releases.

## Updating Packages Component and System Compatibility

You can run the DUP and read the summary information. This information is provided to help you determine whether the update is appropriate for the system and specific environment.

## Executing DUPs in Linux Environment


You can run DUPs from the console in two modes:

- interactive
- non-interactive

### Interactive Mode

In the interactive mode, you issue a command, and the interface prompts you for permission to continue executing the command. When you execute a package in this mode, it first displays a scrollable view of the release notes for the package. You may view these notes before continuing with the execution of the package.

DUP may be executed from a local console attached to the target system or from an administrator's workstation by using a remote shell, such as *ssh*. Once a package has been delivered to the target system, administrators can execute the package by performing the following:

- Type **`./packagename.bin`** from the working directory.
  -  **NOTE:** Where **packagename** is the model and component-specific name of the package
- Ensure that the **.bin** file has the appropriate permissions set and that a user account with **root** privileges to executes the update.
- The progress and status is displayed to the console (**stdout**) and log its activity to **/var/log/messages**.

### Non-Interactive Mode

Non-interactive mode is essential when executing a script for applying DUPs to multiple systems. When applying DUPs to multiple systems, you cannot answer yes or no during script execution.

- Type **`-q`** for non-interactive mode.
- **`-f`** for force.
- **`-r`** for reboot if a reboot is required for the type of update being performed.

In the following command example, the command applies a BIOS DUP without any user confirmation, forces the execution in the case of a downgrade from a more recent BIOS version, and reboots the system after the DUP is applied. This command is executed provided the DUP satisfies all the system and version requirements.

```
./PE2850-ESM_FRMW_LX_R92394.bin -q -f -r
```

For more information on the command line interface (CLI), see [Command Line Interface Reference](#).

## Verifying the Digital Signature

A digital signature is used to authenticate the identity of the signer of an Update Package and to certify that the original content is unchanged. Digital signature of DUPs provide a reliable and trustful method of authentication.

Verifying the digital signature ensures that the original Update Package was received correctly and that the content has not been modified since it was signed.

 **NOTE:** Verifying the digital signature is applicable for systems running Windows and Linux.


### Verifying the Digital Signature on Systems Running Linux

If you do not already have it installed on your system, you must install the Gnu Privacy Guard (GPG) to verify a Linux DUP digital signature. To use the standard verification procedure, perform the following steps:

1. Get the Dell Linux public GnuPG key, if you do not already have it. You can download it by navigating to [lists.us.dell.com](https://lists.us.dell.com) and clicking the **Dell Public GPG key** link.
2. Import the public key to the **gpg** trust database by running the following command: **gpg --import <Public Key Filename>**

 **NOTE:** You must have a private key to complete the process.

3. To avoid a distrusted-key warning, validate the public key by its fingerprint before you use it.
  - a) Type the following command: **gpg --edit-key 23B66A9D**
  - b) In the GPG key editor, type **fpr**. The following message appears: `pub 1024D/23B66A9D 2001-04-16 Dell, Inc. (Product Group) <linux-security@dell.com> Primary key fingerprint: 4172 E2CE 955A 1776 A5E6 1BB7 CA77 951D 23B6 6A9D`. If the fingerprint of the imported key is the same as the key owner's, you have a correct copy of the key. You can verify the key's owner in person, over the phone, or by any other means that guarantees that you are communicating with the key's true owner.
  - c) While still in the key editor, type **sign**.
  - d) Answer the list of trust-validation questions that appear and create a passphrase to use as the secret key. You must import and validate the public key only once.
4. Obtain the Linux DUP and its associated signature file from [dell.com/support/manuals/downloads](https://dell.com/support/manuals/downloads).

 **NOTE:** Each Linux DUP has a separate signature file, which is displayed along with the DUP. You need both the DUP and its associated signature file for verification. By default, the signature file is named the same as the DUP filename with a `sign` extension.

5. Verify the DUP using the following command: **gpg --verify <Linux Update Package signature filename> <Linux Update Package filename>**.

## Executing DUPs On Systems Running Windows


To run DUPs from the interactive graphical user interface (GUI), perform the following steps. This procedure applies to all Update Packages.

1. Execute the DUP by double-clicking the filename from within Windows Explorer.
2. Read the update information displayed in the DUP window.
3. Check the DUP inventory report for Package version and installed versions of component.
4. Click **Install** to install the DUP.
5. Reboot the system, if necessary.

To execute DUPs from the command line interface (CLI), see [Command Line Interface Reference](#).

## Verifying the Digital Signature On Systems Running Windows

To verify the Update Package's digital signature:

1. Start Windows Explorer and locate the Update Package whose digital signature you want to verify.
2. Right-click the filename.
3. Click **Properties** in the pop-up menu.
4. In the **Properties** window, click the **Digital Signatures** tab. If this tab is not displayed, the Update Package is not signed.
5. Select the signature from the signature list, and click **Details**.  
The **Digital Signature Details** window appears.  
 **NOTE:** The signature is not verified until you click **Details**.
6. Read the digital signature information to verify that the digital signature is **OK**.
7. Click **OK** to close the window.

## Compatibility Concerns

DUPs are designed to confirm that all prerequisites are satisfied before applying the update to the system. Each DUP checks to ensure the following:

- The logged-on user has root privileges.
- DUP to be applied in the command is compatible with the target system and the operating system running on a system.
- The device associated with the DUP is present on the system.
- The minimum required versions of related system software are running on the system.

DUPs are designed with built-in error handling capabilities to ensure that the preceding requirements are validated. If the conditions are not met, no update occurs. DUPs also check for dependencies between BIOS and certain ESM packages. The application design allows you to create groups of DUPs and apply them to a wide range of systems. Additionally, if you only want to verify that a given package can be applied to the system, you can invoke the package by using the following CLI command:

**./Packagename.bin -c for Linux**

**packagename.exe /c /s for Windows**

This command executes the dependency rules within the DUP, issues any warnings, exits without applying the update to the system, and writes the results to the console. You can also use the DUP to set an exit code to perform decisions within the scripts.

## Effects of Applying the Updates on a Running System

This section describes all the effects of applying the updates on a running system.

### System Reboot Required

Certain packages, such as those that update the system BIOS, require a reboot for the new software to take effect. After you apply an update that requires a reboot, you must restart the system to complete the update.

You have the option of choosing to defer the reboot until another time as long as you do not turn off the system. This feature is primarily intended to allow you to apply any number of updates together and perform the system reboot after the last update has been applied. If this process is interrupted, for example, through a power interruption, you must repeat the updates. Therefore, it is recommended that you schedule updates for a time when the reboot can take place immediately after you apply the last update.

### Saving Console Output for Linux

As the DUPs are executed, messages are printed to the console. To redirect console output, use the following syntax with interactive commands:

```
./packagename.bin|tee -a logname.lo
```

The `|tee` specifies the output from the DUP to be sent to both the console and to a log file. The `-a` switch ensures that the output is appended to a file, protecting any previous log file output from being overwritten.

## Delivering DUPs to the Systems

The DUP application does not provide scheduling and delivery of the packages to multiple systems. You must rely on third-party or native operating system applications to accomplish script execution and distribution on multiple systems.


### Updating Multiple Systems

For large environments that consists of multiple systems, remote software distribution applications provide the best solution. Many of these tools can effectively leverage the DUP and provide the convenience of installing and updating a variety of software, such as operating systems and applications, in a heterogeneous environment.

Network file shares also are an effective method of making DUP accessible in a distributed environment. When a DUP begins execution, it first copies the contents of the package to a temporary location on the local drive of the system. This process ensures that the update can be completed even if the connection to the network share is lost for any reason.

### Remote Terminal Sessions

In today's highly distributed environment, it is common for IT organizations to use remote access solutions, such as Microsoft Terminal Services, to gain access to their remote systems. You may use this type of solution to run DUPs.

 **NOTE:** If the terminal session is disconnected during a NIC driver update, you will need to re-connect and verify that the update has completed successfully.



## Stand-Alone Systems and Firewalls

For systems that are not connected to the Internet or that have firewall which block user downloads, you need to download DUP from [dell.com/support](http://dell.com/support) by using a system that has Internet access, such as desktop or portable computer. You can make DUP available to the system by copying them onto removable media that the system supports.


## Confirming the Update


To ensure that the DUPs were applied to the system, review the console output that was generated during execution. For detailed information about the messages, see [Linux Troubleshooting](#).

If you want to revert to a previous (older) version of the software after updating to a newer version, you must download the appropriate DUP from [dell.com/support/manuals](http://dell.com/support/manuals) and install it.

### For Systems Running Linux:

To install the previous version from a script, use `-q` (unattended) mode. In addition, you must use the CLI `-f` option, which forces the downgrade.

 **NOTE:** If the system loses power during the update process, you must perform the updates again.

 **NOTE:** DUPs for Linux can also be found in the repository on the *Dell OpenManage Server Update Utility DVD* that contains the updated BIOS, and firmware components for Dell systems. For more information, see the *Dell OpenManage Server Update Utility User's Guide* available at [dell.com/support/manuals](http://dell.com/support/manuals).

### For Systems Running Windows:

To install the earlier version from a script, use the `/s` (unattended) mode. In addition, you must use the CLI `/f` option, which forces the downgrade. You are prompted to ensure that you want to install an earlier version.



# Performing BIOS And Firmware Updates Using Dell Linux Online Repository

You can update the system to the latest version or to a specific version of the BIOS and firmware available in the Dell Linux online repository. The updates are available in the RPM Package Manager (RPM) format. RPM is a standard package format for software updates specific to Linux operating systems. You can inventory the system, scan the repository for matching firmware with newer version using repository management software such as Yellowdog Updater, Modified (YUM), rug, and zypper. The repository management software supports the following operating systems:

- Yum: Red Hat Enterprise Linux 5.8 (x86\_32, x86\_64) and 6.3 (x86\_64)
- Rug: SUSE Linux Enterprise Server 10 SP4 (x86\_64)
- Zypper: SUSE Linux Enterprise Server 11 SP2 (x86\_64)

Firmware-tools are used to update BIOS and firmware on the system. With firmware-tools, the RPM-based BIOS and firmware updates are available along with the packages containing the tools to install those updates. Using a repository management software, you can easily update the BIOS and firmware to the latest or specific versions on the system.

The latest BIOS and firmware updates are available at the Dell OM Linux Repository website at [linux.dell.com/repo/hardware/latest/](http://linux.dell.com/repo/hardware/latest/).

To update BIOS and firmware for the system:

- Setup or bootstrap the repository.
- Install firmware-tools.
- Download applicable firmware.
- Update BIOS and firmware.

## Setting Up or Bootstrapping the Repository

To setup or bootstrap the Dell Linux online repository, run the following command at the command prompt:

- `wget -q -O - http://linux.dell.com/repo/hardware/latest/bootstrap.cgi | bash | bash`
- The system is configured to access the Dell Linux online repository using supported repository management software. The **Dell GPG** keys and **libsmbios** (BIOS library) are also installed.

## Creating a Local Mirror

To create a local mirror of the Dell Linux online repository, use the following command:

```
rsync://linux.dell.com/repo/hardware
```



**NOTE:** The Dell Linux repository contains **.htaccess** files. To enable Apache system to recognize these, you must allow overrides for the directory that contains the Dell Linux repository.

## Installing Firmware Tools

Depending on the repository management software you are using, run one of the following commands to install firmware-tools:

- For yum: **yum install dell\_ft\_install**
- For rug: **rug install dell\_ft\_install**
- For zypper: **zypper install dell\_ft\_install**

## Downloading Applicable Firmware

Depending on the repository management software you are using, run one of the following commands to download applicable firmware:

- For yum: **yum install \$(bootstrap\_firmware)**
- For rug: **rug install \$(bootstrap\_firmware | xargs -n1 -r rug --terse wp | cut -d'|' -f3 | grep -v "No matches" | sort | uniq)**
- For zypper: **zypper install \$(bootstrap\_firmware)**

Bootstrap firmware is a process where the latest BIOS or firmware update RPMs for the system are downloaded from the repository, along with the utilities necessary to inventory and apply updates on the system.

## Inventory Installed Firmware

You can also inventory the system for the list of existing versions of BIOS and firmware using the **inventory\_firmware** CLI command.

## Updating BIOS and Firmware

After you have installed the firmware-tools and downloaded the applicable BIOS and firmware updates, you can update the BIOS and firmware on the system using the CLI or the GUI.

### Updating BIOS and Firmware Using CLI

1. Run **update\_firmware** to inventory the system and scan the repository for new versions of the components. This command provides information about the existing versions of components on the system and the list of component versions that are available to be installed.
2. Run **update\_firmware --yes** to install all applicable BIOS and firmware updates on the system.

Once the devices are updated, the execution success message is displayed.

### Updating BIOS and Firmware Using GUI

1. Run **inventory\_firmware\_gui** to start the interactive GUI. The **Inventory and Update Firmware** window displays the existing versions of components on the system and the component versions that are available to be installed.
2. To update BIOS and firmware on the system to the versions available in the repository:

- a) Select the required devices to be updated and click **Update Firmware**.  
The **Update Firmware** dialog box is displayed.
- b) Click **Continue to update page...** to view the list of selected devices and their versions.
- c) Click **Show Details**.
- d) Click **Update Now** to start performing the updates.  
Once the devices are updated, the execution success message is displayed for each device.

3. You can also perform the following:

- a) If the system component version is higher than the version available in the repository, you can downgrade the system components to the versions in the repository. In the **Inventory and Update Firmware** dialog box, select the required components to downgrade and click **Allow Downgrade**.
- b) To re-install the component versions, select the required components and click **Allow Reflash**.

## Automatically Update Firmware

By default, installing a BIOS or firmware RPM does not apply the update to the hardware. The update is manually applied using the `update_firmware` command. However, you can automatically update the hardware during RPM installation by configuring the `/etc/firmware/firmware.conf` file.

To automatically install BIOS and firmware updates, ensure that `rpm_mode` is set to `auto` in the `firmware.conf` file as shown:

```
[main]
# Automatically install BIOS updates when an RPM BIOS Update file is installed
# values: 'auto', 'manual'
# default: 'manual'
rpm_mode=auto
```

## Viewing Log Information

The log information is stored in the `firmware-updates.log` file located at `/var/log/` folder.



# Update and Rollback in Lifecycle Controller Enabled Server

Dell Lifecycle Controller Enabled Server is an embedded configuration utility that enables systems and storage management tasks from an embedded environment throughout the life cycle of a system..

Residing on an embedded flash memory card, Lifecycle Controller is similar to a BIOS utility in that it can be started during the boot sequence and can function independently of an installed operating system.

Using Lifecycle Controller, you can quickly identify, download, and apply system updates without searching the Dell Support website. You can also configure the system BIOS and system devices (such as NIC, RAID, and iDRAC), deploy an operating system, and run diagnostics to validate the system and the attached hardware.

 **NOTE:** Certain platforms or systems may not support the full set of features provided by Lifecycle Controller.

## Update in Lifecycle Controller

You can update the system BIOS, iDRAC firmware, power supply firmware, RAID firmware, and NIC firmware. Use the wizard to display a list of available updates for the system **Platform Update**

You can define a location to search for available updates from the following options:


- The Dell File Transfer Protocol (FTP) system (<ftp.dell.com>). You can use a proxy system to access <ftp.dell.com>.
- A USB device. When accessing updates from a local USB device, the USB device must be plugged in before selecting the **Platform Update** option in Lifecycle Controller. For more information on updating the platform, see the *Dell Life Cycle controller User Guide* available at [dell.com/support/manuals](http://dell.com/support/manuals).

After you select the updates you want to apply, Lifecycle Controller downloads and applies the updates. If you decide to update any device in Lifecycle Controller, the update package of the corresponding device is downloaded. After successfully downloading, verifying, and extracting the DUPs, the corresponding devices are updated. If the update fails, error messages are displayed.

## Rollback in Lifecycle Controller

You can update any component, for example BIOS, in both Lifecycle Controller and the operating system environment. After the update is successful in the operating system environment using DUPs, you can enter Lifecycle Controller and revert the component to the version that was previously installed before the update occurred.

Lifecycle Controller supports platform firmware rollback to the previous version. If the operating system has a non-functioning application because of a BIOS or firmware flash, reboot to Lifecycle Controller and roll back to the previous version.

 **NOTE:** Only BIOS and firmware can be rolled back. The Lifecycle Controller application, the Dell Diagnostics application, and drivers required for operating system installation cannot be rolled back to an earlier version.

If you have updated the BIOS or firmware of the system only once, the rollback feature offers the option of reverting to the factory-installed BIOS or firmware images. If you have updated the BIOS or firmware to multiple versions, the factory-installed images are overwritten and you cannot revert to them.



**NOTE:** Rollback is not supported in the operating system environment. To enable rollback, ensure that you boot into Lifecycle Controller.



# Command Line Interface Reference




You can display information about the CLI options by typing the DUP name and either **-h** or **--help** at a command line prompt.




The console displays all of the command line options and provides help for each choice.

## Linux CLI Options

For a list of CLI options for systems running Linux, a description of each option, and the command syntax see the following table:


**Table 2. Linux CLI Options: Usage**

CLI Option	CLI Task Description	Command Syntax
(no option; run command without options) Run commands in an interactive mode.	Apply the DUP in an interactive mode; the DUP interacts with the user if it is valid.	<code>./packagename.bin</code>
<b>-h</b> or <b>--help</b> Help option	Display command line options and help information. The <b>--help</b> option executes before all other <b>--</b> options.   <b>NOTE:</b> This option exits after displaying the requested information; no DUP verification or updates occur.	<code>./packagename.bin -h</code> <code>./packagename.bin --help</code>
<b>-c</b> Check option	Determine if the update can be applied to the target system.	<code>./packagename.bin -c</code>
<b>-f</b> Force option	Force a downgrade or update to an older version. The <b>-q</b> option is required when using the <b>-f</b> option.   <b>NOTE:</b> Before downgrading the software to a previous version, refer to the documentation of the previous version.	<code>./packagename.bin -q -f</code>
<b>--list</b> List package contents option	Display all files that are contained in the DUP.   <b>NOTE:</b> This option exits after displaying the requested information; no DUP verification or updates occur.	<code>./packagename.bin --list</code>



CLI Option	CLI Task Description	Command Syntax
-q Run command in non-interactive mode	Execute the DUP silently without user intervention.	<code>./packagename.bin -q</code>
-r Reboot option	Reboot the system, if required, after performing the update. The reboot does not occur: <ul style="list-style-type: none"> <li>• If the DUP fails or is not applicable to the target system.</li> <li>• If the DUP does not require the target system to be rebooted.</li> </ul>  <b>NOTE:</b> The <code>-q</code> option is required with this option.	<code>./packagename.bin -r -q</code>
--rebuild Rebuild option	Automatically rebuild a DUP to support Linux operating system kernels in addition to the supported kernels.	<code>./packagename.bin --rebuild</code>
-v, --version Display version option	Display the version, fixes, enhancements, and release date; lists systems to which the DUP can be applied.  <b>NOTE:</b> This option exits after displaying the requested information; no DUP verification or updates occur.	<code>./packagename.bin -v</code> <code>./packagename.bin --version</code>
--extract <path>	Extract all files contained in the DUP to the path you specify. If the directory specified in the path does not exist, it is created. <p>If the path contains spaces, use quotation marks around the &lt;path&gt; value.</p>  <b>NOTE:</b> This option exits after extracting the requested files; no DUP verification or updates occur.	<code>./packagename.bin --extract /update</code> <code>./packagename.bin --extract "update files"</code>


## Windows CLI Options

For a list of the CLI options for systems running Windows, a description of each option, and the command syntax see the following table.

 **NOTE:** DUPs for Microsoft Windows operating systems cannot display output at the command line because they are Windows GUI applications. All output information is written to a log file. For information on log files, see [DUP Message Logs](#).

**Table 3. Windows CLI Options: Usage**

CLI Option	CLI Task Description	Command Syntax
<b>/? or /h</b> Help option	Displays command line options and help information.	<b>packagename.exe /?</b> <b>packagename.exe /h</b>
<b>/c</b> Check option	Determines if the update can be applied to the target system. The <b>/s</b> option is required with this option. Options <b>/f</b> , <b>/e</b> , and <b>/r</b> are not valid with this option. When you click <b>Install</b> in the graphical user interface (GUI) mode, the same checking process is performed.	<b>packagename.exe /s /c /l=c:\pkg.log</b>
<b>/e=&lt;path&gt;</b> Extract option	Extracts all files contained in the DUP to the path you specify. If the directory specified in the path does not exist, it is created. If the path contains spaces, use quotation marks around the <i>&lt;path&gt;</i> value. The <b>/s</b> option is required with this option. Options <b>/f</b> , <b>/c</b> , and <b>/r</b> are not valid with this option.	<b>packagename.exe /s /e=c:\update</b> <b>packagename.exe /s /e="c:\update files"</b>
<b>/f</b> Force option	Allows downgrade of the software to a previous (older) version. The <b>/s</b> option is required with this option. Options <b>/e</b> and <b>/c</b> are not valid with this option.  <b>NOTE:</b> Before downgrading the software to a previous version, see the documentation for the previous version.	<b>packagename.exe /s /f /l=c:\pkg.log</b>
<b>/l=&lt;filename&gt;</b> Log option	Appends logged messages to a specified ASCII file; creates a new file if one does not exist.  <b>NOTE:</b> If the file name contains spaces, use quotation marks around the <i>&lt;filename&gt;</i> value. The <b>/s</b> option is required with this option.	<b>packagename.exe /s /l=c:\pkg.log</b> <b>packagename.exe /s /l="c:\Update Log \pkg.log"</b>
<b>/r</b> Reboot option	Reboots the system, if required, after performing the update. The reboot does not occur: <ul style="list-style-type: none"><li>• If the DUP fails or is not applicable to the target system.</li><li>• If the DUP does not require a reboot.</li></ul>	<b>packagename.exe /s /r /l=c:\pkg.log</b>

CLI Option	CLI Task Description	Command Syntax
<b>/s</b> Silent option	<p>The <b>/s</b> option is required with this option.</p> <p>Options <b>/e</b> and <b>/c</b> are not valid with this option.</p> <p>Executes the update silently without user intervention. When <b>/s</b> is not specified, the DUP is launched in GUI (interactive) mode.</p> <p>The <b>/s</b> option is required when using the <b>/e</b>, <b>/f</b>, <b>/c</b>, <b>/l</b>, and <b>/u</b> options.</p> <p> <b>NOTE:</b> Using the <b>/s</b> option causes all output to be written to log files.</p>	<b>packagename.exe /s /l=c:\pkg.log</b>
<b>/u=&lt;filename&gt;</b> Unicode Log option	<p>Appends logged messages to a specified Unicode file; creates a new file if one does not exist. If the file name contains spaces, use quotation marks around the <i>&lt;filename&gt;</i> value.</p> <p>The <b>/s</b> option is required with this option.</p>	<b>packagename.exe /s /u=c:\pkg.log</b> <b>packagename.exe /s /u="c:\Update Log \pkg.log"</b>

## Exit Codes for CLI

Exit codes help you determine and analyze the execution results after you run DUPs.

After running DUPs, see the exit codes described in the following table.

**Table 4. Exit Codes**

Value	Message Name	Display Name	Description
0	SUCCESSFUL	Success	The update was successful.
1	UNSUCCESSFUL (FAILURE)	Unsuccessful	An error occurred during the update process; the update was not successful.
2	REBOOT_REQUIRED	Reboot required	You must restart the system to apply the updates.
3	DEP_SOFT_ERROR	Soft dependency error	<p>Some possible explanations are:</p> <ul style="list-style-type: none"> <li>You attempted to update to the installed version of the software.</li> <li>You tried to downgrade to a previous version of the software.</li> </ul> <p>To avoid receiving this error, provide the <b>/f</b> option.</p>
4	DEP_HARD_ERROR	Hard dependency error	The required prerequisite software was not found on the system. The update was unsuccessful because the system did not meet BIOS, driver, or firmware prerequisites for the update to be applied, or because no supported device was found on the target system.
5	QUAL_HARD_ERROR	Qualification error	The DUP is not applicable to the system. Some possible explanations are:

Value	Message Name	Display Name	Description
			<ul style="list-style-type: none"> <li>The operating system is not supported by the DUP.</li> <li>The system is not supported by the DUP.</li> <li>The DUP is not compatible with the devices found in your system.</li> </ul> <p>A QUAL_HARD_ERROR cannot be suppressed by using the /f switch.</p>
6	REBOOTING_SYSTEM	Rebooting system	The system is being rebooted.
9	RPM_VERIFY_FAILED	RPM verification has failed	<p>The Linux DUP framework uses RPM verification to ensure the security of all DUP dependent Linux utilities. If security is compromised, the framework displays a message and an RPM Verify Legend, and then exits with exit code 9.</p> <p>RPM produces output <i>only</i> if there is a verification failure. The format of the output is:</p> <pre>.SM5DLUGT 'utility name'</pre> <p>For example, if the <i>fmt</i> command is compromised, the framework displays the message:</p> <pre>rpm verify failed: .M..... /usr/bin/fmt</pre> <p>RPM Verify Output Legend:</p> <ul style="list-style-type: none"> <li>- Verification test passed</li> <li>S- File Size differs</li> <li>M- Mode differs (includes permissions and file type)</li> <li>5- MD5 sum differs</li> <li>D- Device major/minor number mismatch</li> <li>L- ReadLink(2) path mismatch</li> <li>U- User ownership differs</li> <li>G- Group ownership differs</li> <li>T- mTime differs</li> </ul>



# Linux Troubleshooting

This section describes possible troubleshooting steps related to Linux Operating System.

## Known Issues

The issues listed below are known issues and corrective actions for Dell Update Packages (DUPs) for Linux operating systems. Also see the corresponding *Readme for Linux* at [dell.com/support/manuals](http://dell.com/support/manuals).

 **NOTE:** The Readme file, which is available at [dell.com/support/manuals](http://dell.com/support/manuals), provides the latest information regarding known issues.

### Diagnostic Tasks Will Not Run While a DUP Reboot is Pending

If you try to run a diagnostic task and there are pending updates, the diagnostic task fails.

To resolve this, complete all pending updates, reboot the system and then run a diagnostic task.

### Abnormal Termination of a DUP

A DUP may stop abruptly due to a power outage or abnormal termination.

To resolve this:

1. Remove the lock file from the lock folder.
2. Type the command: `rm -f /var/lock/.spsetup`.
3. Run the DUP again to reapply the update.

### Error While Loading Shared Libraries

The following error may be displayed when you load shared libraries. **Error while loading shared libraries: libstdc++.so.5: Cannot open shared object file: No such file or directory.**

To install the compatibility libraries, using the following command: `RPM -ih compat-libstdc++-33-3.2.3-47.3.i386.rpm`.

### Insufficient Free Physical Memory to Load the BIOS Image

BIOS updates require enough free physical memory to load the entire BIOS image into the physical memory. If there is insufficient free physical memory available on the system to load the BIOS image, the DUP for the BIOS may fail. To resolve this, the BIOS can be updated using the diskette method, run the DUP after adding more memory or immediately after a reboot.

## Kernel Panic While Running Storage Controller Firmware Update Packages

Linux systems running one or more applications that interact with SCSI devices in certain ways are known to cause a kernel panic situation.

To resolve this, stop the Dell OpenManage Server Administrator and Dell OpenManage Server Administrator Storage Management Service before running the storage controller firmware DUPs.

## Loss of Functionality While Renaming Linux DUPs

Linux DUPs can be executed even if they are renamed, but some functionality is lost. Renamed Linux DUPs with extensions that are in the Linux MIME (Multimedia Internet Message Extensions) database could fail to execute from various X-Windows desktops, for example GNOME. In this case the desktop issues a file open error message indicating that the DUP cannot be opened. This occurs if a DUP with an uppercase **.BIN** extension is renamed to a lowercase **.bin** extension. The **.bin** extension has an entry in the Linux MIME database which leads to the file open error.

## Yum Repository Management Software Caches Incorrect Repository Metadata


To resolve this

Run the **yum clean all** command to remove old metadata and retry updating the firmware.

## DUPs Fail on 64-bit Red Hat Enterprise Linux Operating System

If DUPs fail to run on a 64-bit Red Hat Enterprise Linux operating system, manually install the following RPMs:

- `compat-libstdc++-33.i686`
- `libstdc++-4.4.4-5.el6.i686`
- `libxml2.i686`


 **NOTE:** The RPMs are available on the Red Hat Enterprise Linux 6.3 x64 media.

## DUP Update of Firmware Might Fail While Running in the UEFI Mode

When Red Hat Enterprise Linux 6 or SLES 11 is installed and booted in a UEFI environment, flashing firmware using DUP might fail after DUP reboots the system.

DUP relies on a warm reset to enable firmware flashing. In the UEFI mode, the kernel by default performs a cold reset.

Boot the system with the `reboot=k` kernel command line option to enable the firmware flashing procedure to complete successfully. You could add this to `/etc/grub.conf` to be persistent across reboots.

 **NOTE:** Using the `reboot=w` option as documented in the Linux Kernel documentation might cause a Kernel Panic to occur on Red Hat Enterprise Linux 6 while the system shuts down.

## Messages

For descriptions and solutions to messages that you may receive when running DUPs, see the following table:



**Table 5. Update Packages Message Information**

Message	Description/Solution
This Update Package is not compatible with your system Your system: <Model Name> System(s) supported by this package: <Model Name>	Select a compatible DUP, and try the update again.
This Update Package cannot be executed under the current operating system.	DUPs supports Linux operating systems and kernels supported by the <b>-- rebuild</b> option.
This Update Package is not compatible with any of the devices detected in your system.	Select a compatible DUP for the device(s) you want to update, and try again.
The prerequisite software version for this update was not found. Software application name: <name> Current version:<version> Required version: <version>	The DUP you selected cannot be installed because a prerequisite requirement was not met. Install the appropriate prerequisite software version, and try the update again.
You must use the <b>-f</b> option to continue with the update in the non-interactive mode.	The version of this DUP is either older than or the same as the version installed. To apply the DUP, you must force execution.
The software to be updated was not found. Install the following software, and then retry the update. Software name: <name> Required version: <version>	The system does not contain the software that matches the DUP.
The version of this Update Package is newer than the currently installed version. Software application name: <name> Package version: <version> Installed version: <version>	This message confirms the version of the currently installed software before the update is performed. (Using the interactive mode) Type <b>Y</b> or <b>N</b> when prompted to continue. (Using the CLI) Specify the <b>-f</b> option.
The version of this Update Package is older than the currently installed version. Software application name: <name> Package version: <version> Installed version: <version>	The DUP you selected cannot be installed because a newer version of the software already exists on the system. To install the older version: (Using the interactive mode) Type <b>Y</b> or <b>N</b> when prompted to continue. (Using the CLI) Specify the <b>-f</b> option.
The version of this Update Package is the same as the currently installed version. <version> Software application name: <name> Package version: <version> Installed version: <version>	The DUP you selected cannot be installed because the same version of the software already exists on the system. (Using the interactive mode) Type <b>Y</b> or <b>N</b> when prompted to continue. (Using the CLI) Specify the <b>-f</b> option.
This package is not compatible with the version of Server Agent on your system. You must upgrade to Server Administrator before running this package.	Use an alternative update method from <a href="http://dell.com/support/manuals">dell.com/support/manuals</a> .

Message	Description/Solution
<p>This update package requires an OpenIPMI driver. Currently no OpenIPMI driver is installed on the system.</p> <p>In order to assist in the &lt;update install&gt;, you can download and install a version of the OpenIPMI driver that meets the minimum version requirement from <b>dell.com/support/manuals</b>. The minimum version required is &lt;version&gt;.</p> <p>This Update Package requires a newer version of the OpenIPMI driver than is currently installed on the system, which is version &lt;version&gt;.</p> <p>Kernel source for the running kernel is not installed, and the currently installed OpenIPMI driver RPM was installed without the kernel source for the running kernel. In order to install OpenIPMI driver modules for the running kernel that meet the minimum version requirement, you must install kernel source for the running kernel, and then use DKMS (see man page for dkms) to install and build OpenIPMI driver modules for the running kernel. To install kernel source for the running kernel, install the &lt;filename&gt; RPM that is applicable to the running kernel.</p> <p>You must reboot the system for the update to take effect.</p> <p>An Update Package is already running. Wait until it is complete before proceeding with another update.</p> <p>WARNING: DO NOT STOP THIS PROCESS OR INSTALL OTHER DELL PRODUCTS WHILE &lt;BIOS FRMW&gt; UPDATE IS IN PROGRESS. THESE ACTIONS MAY CAUSE YOUR SYSTEM TO BECOME UNSTABLE.</p> <p>Cannot find utilities on the system to execute package.</p> <p>Make sure the following utilities are in the path:&lt;path&gt;</p> <p>File already exists.</p>	<p>The DUP you selected cannot be installed because you do not have the OpenIPMI driver installed on the system.</p> <p>Download and install the minimum required OpenIPMI driver from <b>dell.com/support/manuals</b>.</p> <p>The OpenIPMI driver that is currently installed on the system does not meet the minimum version requirements of the selected DUP.</p> <p>Install the kernel source for the running kernel, and then use the Dynamic Kernel Module Support (DKMS) framework to install and build the OpenIPMI driver modules for the running kernel. You must install the kernel source by installing the .rpm file required by the kernel. For information on using DKMS, see the man page for DKMS from <b>linux.dell.com/dkms/manpage.html</b>.</p> <p>If you shut down or power off the system after performing an update, you will lose the update. After performing a BIOS update, do not power off the system. Reboot the system for the update to take effect.</p> <p>You can run only one DUP at a time.</p> <p>Do not interrupt DUP execution.</p> <p>The package must have certain utilities to execute.</p> <p>The utilities named must be in the path mentioned in the message.</p> <p>The package is attempting to overwrite an existing file.</p>

<b>Message</b>	<b>Description/Solution</b>
Rebuilding package <package_name> to support kernel version "kernel.x". This process may take several minutes to complete...	The DUP application is rebuilding the package to support a different kernel version.
No specific kernel version specified! Building support for current kernel...	Unable to determine current system kernel. The DUP application attempts to rebuild the package.
Cannot create directory /extract directory. Please ensure that there is enough space.	Extracting the package to this path requires more disk space than available.
Cannot create temporary file "filename"	The package cannot create the temporary file for a technical reason, such as lack of disk space, permissions, or an existing file.
Unable to create Temp Files. Please ensure that there is enough space in the tmp folder.	The package cannot create temporary files due to lack of space in the tmp folder.
Archive cannot be extracted. Please ensure that there is enough space in the tmp folder.	Insufficient space for extracting the archive.
Please provide a directory name to extract to.	Provide a directory name for the extracted files.
ROOT directory cannot be used for extraction.	Create a directory for the extracted files.
Successfully extracted to "/extractdir"	The package contents were extracted to the directory you designated.
Cannot find utilities on the system to extract package. Make sure the following utilities are on the path: <path>	Locate the listed utilities and add their directory to the specified path.
Rebuilding Package Failed - Error creating driver support directory.	The package could not be rebuilt because the support directory could not be created.
Rebuilding Package Failed -Error copying kernel modules.	The package could not be rebuilt because the kernel modules could not be copied.
Rebuilding Package Failed - Error re-creating archive.	The package could not be rebuilt because the archive could not be recreated.
Rebuilding Package Failed - Uninstallation of driver was unsuccessful.	The package could not be rebuilt because the driver could not be uninstalled.
Package has been rebuilt successfully.	The package rebuild was successful.

Message	Description/Solution
Rebuilding Package Failed - Error creating output package.	Make sure that the directory from which the package rebuild option is being executed is writable.
Rebuilding Package Failed - Error creating wrapper files.	The required wrapper files could not be created.
Output package:	Specifies the name of the output package.
Package execution requires 'root' user privileges.	Log in with root privileges, and try the update again.
Successfully extracted to <target_directory>.	The package is being extracted to the target directory.
Rebuilding package packagename.bin to support 'uname -r'.	DUP is rebuilding the packages to support the running kernel.
This process may take several minutes to complete.	Wait for the process to complete.
Rebuilding Package Failed - Unable to extract package contents.	Unable to extract the contents of the package.
Rebuilding Package Failed - Server Administrator device driver (HAPI) is already installed on the system. Package can be rebuilt only on a system that does not have Server Administrator device driver (HAPI) installed.	Packages cannot be rebuilt on a system that has the HAPI device driver installed.
Unable to Install Dell Instrumentation Driver (HAPI).	The package cannot install the HAPI driver.
Rebuilding Package Failed - RPM Installation failed with error code=<RPM Install Error Return code>	Provides the RPM error code that prevented the package from being rebuilt.
packagename.bin: Rebuilding Package failed - Unable to extract package contents.	Make sure that there is enough space in the <b>/tmp</b> directory.
packagename.bin: Rebuilding Package - Kernel <kernel-version> is already supported by this package.	You do not have to rebuild this package because you have already customized the package for the kernel. You will only receive this message if you have previously used the <b>--rebuild</b> option and then ran the rebuilt package.
packagename.bin: Rebuilding Package Failed - RPM Installation failed with error code=<LSB Compliant RPM Install Error Return code>	Check the LSB Compliant RPM error return codes to determine the exact reason for failure.

Message	Description/Solution
packagename.bin: Rebuilding Package Failed - Error creating driver support directory.	Make sure that enough space is available in the <b>/tmp</b> directory.
packagename.bin: Rebuilding Package Failed - Error copying kernel modules.	Make sure that enough space is available in the <b>/tmp</b> directory.
packagename.bin: Rebuilding Package Failed - Error recreating archive.	Make sure that enough space is available in the <b>/tmp</b> directory.
packagename.bin: Rebuilding Package Failed - Uninstall of driver was unsuccessful.	The driver could not be uninstalled.
packagename.bin: Rebuilding Package Failed - Error creating files.	Make sure that enough space is available in the <b>/tmp</b> directory.
Package has been rebuilt successfully. Output package: packagename.bin:--CUSTOM.	Package is ready for distribution and execution on production systems with the same running kernel as the system on which it was rebuilt.
Package has been rebuilt successfully.	Package is ready for distribution and execution on production systems with the same running kernel as the system on which it was rebuilt.
packagename.bin: Rebuilding Package failed - Unable to extract package contents.	Make sure that enough space is available in the <b>/tmp</b> directory.
packagename.bin: Rebuilding Package failed - Server Administrator is installed on the system.	Packages cannot be rebuilt on a system that has Server Administrator installed. Uninstall Server Administrator from the system before using the <b>--rebuild</b> option.
The installed operating system version is not supported by this Update Package. To customize this package, see "Rebuilding Packages" in the Update Package User's Guide. In no event shall Dell Inc. be held liable for any direct, indirect, incidental, special, or consequential damages suffered during or after package customization and execution.	The prerequisites for rebuilding the package are present on the system, Dell is not responsible for any problems that may occur if you apply customized packages to the system.
In no event shall Dell Inc. be held liable for any direct, indirect, incidental, special, or consequential damages suffered during or after package customization and execution.	Fully consider this statement before executing a customized package that was enabled by the <b>--rebuild</b> option.
Attempt to update BIOS or firmware to the same version. Update was unnecessary and not applied.	Re-application of BIOS or firmware DUP serves no purpose.
Inventory operation exceeded specified timeout.	Inventory operations have time-out limits as defined in the package's <b>PIEConfig.xml</b> file. Time-out durations are

Message	Description/Solution
Execution operation exceeded specified timeout.	in seconds. If an operation times out, the remainder of the package update is cancelled. Execution update operations have time-out limits as defined in the package. Time-out durations are in seconds. If an operation times out, the remainder of the package update is cancelled.
<code>/var/lock</code> directory must exist.	Create this system directory to make sure that package updates do not execute concurrently.
Unable to build a device driver for the running kernel because it is not supported on your system.	Select a compatible DUP and try again.
The Intel IMB driver is currently loaded. Please unload the driver before executing.	Unload the Intel IMB driver before installing the selected DUP.
Warning: The shell <code>less</code> command is not available. When viewing Release Notes, press space to continue viewing notes, q to continue DUP processing.	Continue to view the release notes, or install the <b>less</b> command from operating system media, and re-execute the package interactively.
Press 'q' to exit DUP ( <code>--version</code> ).	The Linux DUP framework uses the Linux utility, <i>less</i> , to display the release notes relevant to the specific firmware or driver release managed by the DUP. When viewing release notes, DUP prompts when executed with the below options: <code>--version: Press 'q' to exit DUP (--version)</code>
Press 'q' to continue with DUP execution ( <code>dup dup execution</code> ).	All other DUP execution: Press 'q' to continue with DUP execution.
Warning: Screen widths of less than <numeric value> can distort the information view.	To optionally correct this, answer <No > to stop package execution. Increase the width of the terminal window to the required size and then re-execute the package interactively.

## DUP Message Logs

Logging occurs when you run a command for a DUP. The logs maintain information about all update activities. DUPs write to the Messages log. If you install the same package more than once on the same system, the log is appended. The messages files directory contain messages about a wide range of events on the system. Therefore, you must scan through the log file to find the messages that are relevant to DUPs.

### Message Location

The default location of the message log files is `/var/log/dell/updatepackage/log`.

## Messages Log Files

The messages log file includes the following information

- Date and time the DUP was launched
- Package release ID number
- The full path and filename of the support log generated by the command
- DUP type
- DUP version
- Framework version of the DUP
- Software application name of the DUP
- Version of the currently installed DUP
- Version that the command is trying to apply to the system
- Exit code that results from execution of the command
- Whether a reboot was performed



**NOTE:** The support log files are intended for use by Dell support personnel. Dell encourages you to redirect the DUP output to a file of your choice.





# Troubleshooting for Systems Running Windows


This section describes possible troubleshooting steps related to systems running Microsoft Windows.


## Known Issues

The issues listed below are known issues and corrective actions for Dell Update Packages (DUPs) on systems running Windows operating systems. Also see the corresponding *Readme for Windows* at [dell.com/support/manuals](http://dell.com/support/manuals).

 **NOTE:** The **Readme file**, which is available at [dell.com/support/manuals](http://dell.com/support/manuals), provides the latest information regarding known issues.


## Inventory Failure

 **NOTE:** This issue is applicable to systems running Windows Server 2008 and higher.

 **NOTE:** An in-built feature called User Account Control (UAC) automatically reduces the potential of security breaches for a system running Windows operating system.

Before you run SUU or DUPs on the system, change the security options in **Group Policy Editor**.

1. Open **Group Policy Editor** using one of the following methods:
  - For Local Group Policy, click **Start** → **Run** → **gpedit.msc** .
  - For Active Directory -based Group Policy Object (GPO), click **Start** → **Run** → **gpedit.msc** and browse to the required GPO.

 **NOTE:** Ensure that the system is a member of the domain.

The **Group Policy Editor** window is displayed.

2. Browse to **Computer Configuration** → **Windows Settings** → **Security Settings** → **Local Policies** → **Security Options** .
3. Navigate to **User Account Control** → **Behavior of the elevation prompt for administrators in Admin Approval Mode**.
4. Right-click and select **Elevate without prompt**.

## Messages

For descriptions and solutions to messages that you may receive when running DUPs, see the following table. Also see the corresponding *Readme for Microsoft Windows* at [dell.com/support/manuals](http://dell.com/support/manuals).

**Table 6. Messages**

Message	Description/Solution
This Update Package is not compatible with your	Select a compatible DUP, and try the update again.

Message	Description/Solution
system. Your system: <system model name>	
This Update Package is not compatible with your system. Your system: <system model name> Systems(s) supported by this package: <system model name>...: <system model name>	Select a compatible DUP, and try the update again.
This Update Package cannot be executed under the current operating system.	The operating system is not supported by DUP. For a list of supported operating system check the <i>Dell Systems Software Support Matrix</i> . This document is available at <a href="http://dell.com/support/manuals">dell.com/support/manuals</a> .
Your system does not have the minimum operating system version or service pack required for this Update Package.	The DUP you selected cannot be installed because the minimum operating system version or service pack requirements were not met. Install the appropriate version, and try the update again. Or, use an alternate update method on <a href="http://dell.com/support/manuals">dell.com/support/manuals</a> .
Your system exceeds the maximum operating system version supported by this Update Package.	The DUP you selected cannot be installed because the system exceeded the maximum operating system version supported by the DUP. Install the appropriate version or select another DUP, and try the update again.
This Update Package is not compatible with any of the devices detected in your system.	Select a compatible DUP for the device(s) you want to update, and try again.
The prerequisite software version for this update was not found: Software application name: <name> Current version: <version> Required version: <version>	The DUP you selected cannot be installed because a prerequisite requirement was not met. Install the appropriate prerequisite software version, and try the update again.
The software to be updated was not found. Install the following software, and then retry the update. Software name: <name> Required version: <version>	The system does not contain the software that matches the DUP.
The version of this Update Package is newer than the currently installed version. Software application name: <name> Package version: <version> Installed version: <version>	This message confirms the version of the currently installed software before the update is performed.
The version of this Update Package is older than the currently installed version. Software application name: <name> Package version: <version> Installed version: <version>	The DUP you selected cannot be installed because a newer version of the software already exists on the system. To install the older version: In the interactive mode , Click <b>Yes</b> when prompted to continue with the installation. In the CLI mode Specify the <b>/f</b> option.

Message	Description/Solution
The version of this Update Package is the same as the currently installed version. Software application name: <name> Package version: <version> Installed version: <version>	The DUP you selected cannot be installed because the same version of the software already exists on the system. In the interactive mode , Click <b>Yes</b> when prompted to continue with the installation.
This package is not compatible with the version of Server Agent on your system. You must upgrade to Server Administrator before running this package.	Use an alternative update method from <a href="http://dell.com/support/manuals">dell.com/support/manuals</a> .
Administrator privileges are required to perform this update.	Log in with Administrator privileges, and try the update again.
You must reboot the system for the update to take effect.	If you shut down or power off the system after performing an update, you will lose the update.
An Update Package is already running. Wait until it is complete before proceeding with another update.	You can run only one DUP at a time.
This Update Package is not installed. Software application name: <name> Package version: <version> Would you like to install?	In an interactive mode, if a fresh install is applicable, you are presented with a choice to install or not. The package version is also displayed.

## DUP Message Logs

Logging occurs when you run a command for a DUP. The logs maintain information about all update activities. DUPs write to the Messages log. If you install the same package more than once on the same system, the log is appended. The messages files directory contain messages about a wide range of events on the system. Therefore, you must scan through the log file to find the messages that are relevant to DUPs.

### Message Location

The default path for the older version prior to DUP 7.2 framework log file is **%SystemDrive%\dell\updatepackage\log**.

The path of the log files from 7.2 DUP framework are:

Windows Server 2003: **%SystemDrive%\Documents and Settings\All Users\Application Data\Dell\UpdatePackage\log**

Windows Server 2008 and Windows Server 2012: **%SystemDrive%\Program Data\Dell\UpdatePackage\log**.



**NOTE:** User needs to have administrative privilege to see the log files.

### Messages Log Files

The messages log file includes the following information

- Date and time the DUP was launched

- Package release ID number
- The full path and filename of the support log generated by the command
- DUP type
- DUP version
- Framework version of the DUP
- Software application name of the DUP
- Version of the currently installed DUP
- Version that the command is trying to apply to the system
- Exit code that results from execution of the command
- Whether a reboot was performed



**NOTE:** The support log files are intended for use by Dell support personnel. Dell encourages you to redirect the DUP output to a file of your choice.

# Frequently Asked Questions

**Question: Must I reboot my system after applying every Dell Update Package (DUP)?**

Answer: DUPs that are running in the interactive mode determine if it is necessary to reboot the system. If so, you are prompted to reboot. In the silent unattended mode, the exit code is set to 2, which indicates that a system restart is required.

**Question: Which operating systems are supported by DUPs?**

Answer: The *Dell Systems Software Support Matrix* available at [dell.com/support/manuals](http://dell.com/support/manuals) has information about the various Dell systems, the operating systems supported by these systems, and the Dell OpenManage components that can be installed on these systems.

**Question: How do I perform updates if my operating system is not supported by DUPs?**

Answer: For those operating systems that are not currently supported, you can perform updates by using the existing update formats from [dell.com/support](http://dell.com/support).

**Question: I cannot locate a DUP on [dell.com/support](http://dell.com/support) for my device. Where is it?**

Answer: Make sure that you have provided all the required information for downloading DUPs, such as product category, product line, product model, download category, and operating system.

DUPs are not available for all devices. Dell will continue to make additional DUPs available for more devices in future releases. See the [readme.txt](#) file for a list of devices currently supported by DUPs.

**Question: I'm using a software distribution tool to deploy my applications or operating system updates to my remote servers. Can I use DUPs with this tool to remotely update my servers?**

Answer: DUPs are designed to work with most software distribution tools. For more information, see the documentation for the tool.

**Question: Where can I find the error messages generated by a DUP that is running in an unattended mode?**

Answer: The execution messages are stored in the Package log file and in the Windows System Event Log (SEL), which are described in [Messages Log Files](#) section of this guide.

The Package log file resides in the following default directory: `C:\dell\updatepackage\log\packagename.txt`

The Windows SEL is available through the Windows Event Viewer.

**Question: When I execute a DUP from the command line prompt, I continue to see Windows dialog boxes and pop-up messages. Can I direct the output to the command line prompt console?**

Answer: Use the `/s` and `/l` options to direct the output to the log files.

**Question: How can I gain access to the DUP dependency information and other information?**

Answer: This information is displayed on the initial graphical user interface (GUI) screen when you run the DUP.

Some information is also available by using the CLI/`c/s` options. (You must use the `/c /s` options together.) However, this method provides limited information, such as the version of the update and whether it is applicable for the target system.

**Question: Can I use DUPs on other vendors' systems?**

Answer: No. DUPs are designed for use on Dell systems only.

**Question: I recently updated the BIOS on my system and now I would like to go back to the previous version. Can I do this with DUP?**

Answer: Yes. Download the DUP for the previous version of the system BIOS from [dell.com/support](http://dell.com/support) and install it. If a DUP is not available, use one of the other formats on [dell.com/support](http://dell.com/support).

**Question: Why does the DUP for the system BIOS require a reboot?**

Answer: The BIOS update is applied only after you reboot the system.

**Question: I'd like to apply several updates to my system at once. Can I do this with DUPs? Do I need to be concerned about the order in which I apply the updates?**


Answer: Yes, you can apply multiple updates to the system at the same time. For information about the update order, see [Installation Order of DUPs](#).

**Question: If I rename Windows DUPs, will they still function correctly?**

Answer: Yes.


**Question: Can I modify DUPs?**

Answer: No. DUPs contain logic to guard against potential corruption of their contents. Because of this design, DUPs cannot be modified.

 **NOTE:** If you modify the contents of DUPs, Dell will not support them.

**Question: Can I use any other program to inspect or extract the contents of DUPs?**

Answer: Yes, you can use WinZip or an equivalent software application.

 **NOTE:** DUPs contain logic to guard against potential corruption of their contents. Because of this design, DUPs cannot be modified. If you modify the contents of DUPs, Dell will not support them.

**Question: I am running a non-English version of Windows 2000. Can I use DUPs?**

Answer: Yes. You can use DUPs on non-English versions of Windows 2000 Server and Windows Server 2003 operating systems. Currently, DUPs are available only in English.

**Question: How will I know when there are new DUPs available for my systems?**

Answer: You can check [dell.com/support](http://dell.com/support) for updates or register for the File Watch Service at [dell.com](http://dell.com) to receive automatic notification for upgrades to the system.

**Question: Why do BIOS and firmware updates fail to re-apply (update to the same version), even when using the force (/f) option in CLI mode?**

Answer: In case you are facing issues with the CLI mode, run DUPs in the GUI mode and confirm the re-application.

**Question: Why does my system only execute one of the CLI options that I entered in a command string?**

Answer: Only certain CLI options can be used simultaneously. When invalid combinations of CLI options are entered in a single command string, only the option with the highest priority is executed. For details on which commands can be used together for different operating system, see [Command Line Interface Reference](#).

**Question: How do I verify that the DUPs that I have downloaded has a digital signature?**

Answer: In Windows Explorer, locate the DUP that you want to verify and right-click the filename. Click **Properties** in the pop-up window. If you see the **Digital Signatures** tab in the **Properties** window, the DUP has a digital signature. If that tab is not displayed, the DUP is not signed. See [Verifying the Digital Signature on Windows](#) for additional information.

**Question: Why can't I use a signed DUP with my current release of DUP?**

Answer: DUPs released on 3rd quarter of 2005 and later are digitally signed.

# Trusted Platform Module and BitLocker Support

A Trusted Platform Module (TPM) is a secure microcontroller with cryptographic capabilities designed to provide basic security-related functions involving encryption keys. It is installed on the motherboard of the system, and communicates with the rest of the system using a hardware bus. You can establish ownership of the system and its TPM using the BIOS setup commands.


TPM stores the platform configuration as a set of values in a set of Platform Configuration Registers (PCRs). Thus one such register may store, for example, the motherboard manufacturer; another, the processor manufacturer; a third, the firmware version for the platform, and so on. Systems that incorporate a TPM create a key that is tied to platform measurements. The key can only be unwrapped when those platform measurements have the same values that they had when the key was created. This process is called *sealing* the key to the TPM. Decrypting is called *unsealing*. When a sealed key is first created, the TPM records a snapshot of configuration values and file hashes. A sealed key is only *unsealed* or released when those current system values match the ones in the snapshot. BitLocker uses sealed keys to detect attacks against the integrity of the system. Data is locked until specific hardware or software conditions are met. BitLocker mitigates unauthorized data access by combining two major data-protection procedures:


- **Encrypting the entire Windows operating system volume on the hard disk:** BitLocker encrypts all user files and system files in the operating system volume.
- **Checking the integrity of early boot components and the boot configuration data:** On systems that have a TPM version 1.2, BitLocker leverages the enhanced security capabilities of the TPM and ensures that the data is accessible only if the boot components of the system are unaltered and the encrypted disk is located in the original system.


BitLocker is designed for systems that have a compatible TPM microchip and BIOS. A compatible TPM is defined as a version 1.2 TPM. A compatible BIOS supports the TPM and the Static root of Trust Measurement. BitLocker seals the master encryption key in the TPM and only allows the key to be released when code measurements have not changed from a previous secure boot. It forces you to provide a recovery key to continue boot if any measurements have changed. A one-to-many BIOS update scenario results in BitLocker halting the update and requesting a recovery key before completing boot.


BitLocker protects the data stored on a system through *full volume encryption* and *secure startup*. It ensures that data stored on a system remains encrypted even if the system is tampered with when the operating system is not running and prevents the operating system from booting and decrypting the drive until you present the BitLocker key.

TPM interacts with BitLocker to provide protection at system startup. TPM must be enabled and activated before it can be used by BitLocker. If the startup information has changed, BitLocker enters recovery mode, and you need a recovery password to regain access to the data.

 **NOTE:** For information on how to turn on BitLocker, see the Microsoft TechNet website. For instructions on how to activate TPM, see the documentation included with the system. A TPM is not required for BitLocker; however, only a system with a TPM can provide the additional security of startup system integrity verification. Without TPM, BitLocker can be used to encrypt volumes but not a secure startup.

 **NOTE:** The most secure way to configure BitLocker is on a system with a TPM version 1.2 and a Trusted Computing Group (TCG) compliant BIOS implementation, with either a startup key or a PIN. These methods provide additional authentication by requiring either an additional physical key (a USB flash drive with a system-readable key written to it) or a PIN set by the user.

 **NOTE:** For mass BIOS updates, create a script that disables BitLocker, installs the update, reboots the system and then re-enables BitLocker. For one-to-one Dell Update Package (DUP) deployments, manually disable BitLocker and then re-enable it after rebooting the system.

 **NOTE:** In addition to BIOS DUP, execution of firmware DUP for U320, Serial Attached SCSI (SAS) 5, SAS 6, Expandable RAID Controller (PERC) 5, PERC 6, and Cost Effective RAID Controller (CERC) 6 controllers is blocked on a system having a TPM version 1.2 chip, **TPM Security** set at *ON with pre-boot measurement*, and **TPM Activation** set at *Enabled* if you enable BitLocker (TPM or TPM with USB or TPM with PIN).



# Microsoft Windows Server 2008 User Account Control

In Microsoft Windows Server 2008 and earlier, user accounts were often members of the local Administrators group and had access to administrator privileges. Members of the local Administrators group install, update, and run software since an Administrator account has system-wide access. When a user is added to the local Administrators group, that user is automatically granted Windows privileges. These privileges provides access to all operating system resources. Hence, user accounts with Administrator privileges posses a security risk by providing access to operating system resources that would be exploited by malicious software (or malware).

User Account Control (UAC) is a new security feature in the Windows Server 2008 operating system. When enabled, it restricts access to critical system resources for all users except the built-in local Administrator.


The three types of user accounts in the Windows Server 2008 operating system are:

- Domain Administrator Account, user account with administrator privileges.
- Standard User Account, allows the user to install software and change system settings that do not affect other users or the security of the computer.
- Local Administrator Account, is the default super user of the operating system.

The user experience for a Domain Administrator Account differs from a Local Administrator Account when UAC is enabled. When a Domain Administrator Account requires access to critical system resources, the Windows Server 2008 operating system prompts for one of the following before launching a program or task that requires full administrator access:

- Permission to elevate privileges (in the case of a user in the Domain Administrators group)
- Domain administrator credentials to elevate privileges (in the case of standard users)

UAC prompts users in the Domain Administrators group (except the Administrator account) to click **Continue**, if they need to elevate privileges, or to click **Cancel** when performing functions that may entail a security risk. With UAC, users have to upgrade to an Administrator account before running DUPs.

 **NOTE:** Since the user experience is configurable with the Security Policy Manager snap-in (**secpol.msc**) and with Group Policy, there are multiple UAC user experiences. The configuration choices made in environment will affect the prompts and dialogs seen by standard users, administrators, or both. UAC can be disabled by disabling the **User Account Control: Run Administrators in Admin Approval Mode** setting and requires a system reboot.

If a DUP is run in the GUI mode, the Windows Server 2008 operating system needs the user to permit the operation. But if a DUP is run in unattended mode, the user can bypass the pop-up window for permission by performing any of the following actions:


- Change the group security policy, **User Account Control: Behavior of the elevation prompt for administrators in Admin Approval Mode**, to **No Prompt** to disable the pop-up window or elevate privileges without prompting for the Administrators group.
- Disable UAC.
- Use scripts to run the DUP and impersonate yourself as a local administrator at runtime.
- Dell DUP HDD firmware update utility related to system memory utilization requires minimum of 8 GB to 16 GB RAM in the server.

## UAC Restrictions When Running DUPs Remotely

By default, after UAC starts, all Administrator Account users login as Standard Users. Thus, rights to access critical system resources are not available until the user confirms the privilege elevation request. This restriction disables the option to remotely deploy DUPs. UAC returns an **Access Denied** error if the management node agent runs on these login credentials.

You can bypass the UAC restrictions by:

- Enabling remote agent use of the Local System Account to perform a DUP update. The Local System Account is not protected by UAC (recommended option).
- Using the Local Administrator Account on each remote machine where the DUP is running.
- Disabling UAC for all users on remote machines (not a recommended option).
- Not upgrading to Administrator account on remote machines.

 **NOTE:** Only two accounts (the Local Administrator Account and the Local System Account) are not protected by UAC. All other users including accounts with local administrator rights or domain administrator rights have UAC enabled by default. Even though UAC can be disabled by updating the local or domain security policy, it is not recommended. Remote users have to login as a built-in Local Administrator Account or obtain the Local System Account privilege to launch a DUP remotely.