

Dell™ PowerVault™ 220S and  
221S Systems

# Updating the Enclosure Management Module Firmware

## Notes, Notices, and Cautions



**NOTE:** A NOTE indicates important information that helps you make better use of your computer.



**NOTICE:** A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

---

**Information in this document is subject to change without notice.**

© 2004 Dell Inc. All rights reserved.

Reproduction in any manner whatsoever without the written permission of Dell Inc. is strictly forbidden.

Trademarks used in this text: *Dell*, the *DELL* logo, *Dell OpenManage*, and *PowerVault* are trademarks of Dell Inc.; *Microsoft* and *Windows* are registered trademarks and *Windows Server* is a trademark of Microsoft Corporation; *Novell* and *NetWare* are registered trademarks of Novell Corporation; *Red Hat* is a registered trademark of Red Hat Corporation; *Intel* and *Itanium* are registered trademarks of Intel Corporation.

Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Dell Inc. disclaims any proprietary interest in trademarks and trade names other than its own.

**October 2004**

# Contents

<b>Before You Begin</b> . . . . .	<b>5</b>
<b>Updating Storage Systems Attached to Cluster Servers</b> . . . . .	<b>6</b>
<b>Updating Firmware Using Array Manager.</b> . . . . .	<b>7</b>
<b>Updating Firmware Using Dell Update Packages</b> . . . . .	<b>8</b>
Windows DUP Update Procedure . . . . .	8
Red Hat Enterprise Linux Update Procedure . . . . .	8
<b>Updating Firmware Using Firmware Update Utilities</b> . . . . .	<b>9</b>
Windows Server 2003, Enterprise Edition Update Procedure . . . . .	9
Red Hat Enterprise Linux (Itanium Version) Update Procedure . . . . .	10
Red Hat Linux (Versions 7.x, 8.x, and 9) and Red Hat Enterprise Linux (Version 3) for Intel EM64T Update Procedure . . . . .	11
<b>Important Information</b> . . . . .	<b>12</b>
Updating the Storage System in Joined Bus or Cluster Mode . . . . .	12
Updating the Storage System in Split-Bus Mode . . . . .	13
Using Earlier Versions of Array Manager . . . . .	13
Updating the Storage System Without Array Manager. . . . .	13

## Tables

Table 1-1.	Firmware Update Procedures . . . . .	8
------------	--------------------------------------	---



This document describes how to update the firmware on the primary and secondary enclosure management modules (EMMs) in your Dell™ PowerVault™ 220S or 221S storage system. The following tools are available to update your storage system firmware:

- Dell OpenManage™ Array Manager — System management software, running in supported operating system environments.
- Dell Update Packages (DUPs) — Self-contained firmware update programs downloaded from [support.dell.com](http://support.dell.com) that automate the update process.
- Update utilities — Programs that enable you to manually install firmware updates. They are included with the downloaded firmware update file available at [support.dell.com](http://support.dell.com)

The tool used to update your firmware is determined by your host system's operating system. This document provides firmware update procedures for each operating system environment.

All firmware update procedures require you to download the latest firmware file(s) from the Dell support website at [support.dell.com](http://support.dell.com). Table 1-1 lists the files that you need to download and the tool required to apply the update to your system. The firmware update procedures are provided later in this document.

## Before You Begin

Before you perform the procedures in this document:

- Read "Important Information" at the end of this document, and review the pertinent procedure for your update.
- Ensure that the host systems are running the latest BIOS and firmware updates. See the *Dell OpenManage™ Server Administrator Compatibility Guide* available on [support.dell.com](http://support.dell.com) for more information.
- Create a complete functional backup of your system data.

Table 1.1 lists the required tool and files for applying an update to your storage system.

**Table 1-1. Firmware Update Procedures**

Operating System	Download File	Array Manager	DUP	Update Utility
Microsoft® Windows® 2000 Server and Advanced Server	FUPG_Ext.exe (A.M.) or PV220s-221s-FRMW-Rxxxx.exe (DUP)	✓	✓	
Microsoft Windows Server™ 2003	FUPG_Ext.exe (A.M.) or PV220s-221s-FRMW-Rxxxx.exe (DUP)	✓	✓	
Microsoft Windows Server 2003 Enterprise Edition (64-bit)	pv2xxAxx.exe			✓
Novell® NetWare®	FUPG_Ext.exe	✓		
Red Hat® Enterprise Linux (Version 3) for Intel® x86	PV220s-221s-FRMW-Rxxxx.bin		✓	
Red Hat Enterprise Linux (Version 3) for Intel® Extended Memory 64 Technology (EM64T)	pv2xxAxx.gz and FUPG_Ext.exe			✓
Red Hat Enterprise Linux (Version 3) for Intel Itanium®	pv2xxAxx.gz			✓
Red Hat Enterprise Linux AS (Version 2.1)	PV220s-221s-FRMW-Rxxxx.bin		✓	
Red Hat Linux, versions 7.x, 8.x, 9	pv2xxLxx.gz			✓

## Updating Storage Systems Attached to Cluster Servers

To update the EMM firmware in a cluster-attached storage system, perform the following steps:

- 1 Shut down node 2 in the cluster.
- 2 On node 1, update the EMM firmware in the attached storage system using the procedure found later in this document that applies to your host configuration.

- 3 Restart node 2.
- 4 Open the Disk Management Service.
- 5 In the **Disk Management Service** window, verify that the PowerVault 22xS storage system appears.

If the storage system does not appear in the window, restart the cluster node.

## Updating Firmware Using Array Manager

Dell OpenManage Array Manager software provides a comprehensive storage management solution that enables you to configure and manage local and remote storage attached to a system. Array Manager includes an integrated firmware update utility that can be used with the following operating systems:

- Windows 2000 Server and Advanced Server
- Windows Server 2003
- Novell NetWare (all Dell-supported versions)

To update the firmware on your PowerVault 22xS storage system using Array Manager:



**NOTE:** In the following steps, **xx** refers to the firmware release number.

- 1 Stop all I/O activity to the storage system.
- 2 Create a directory on your local file system.
- 3 Download the **FUPG\_Extt.exe** file from the Dell Support website at [support.dell.com](http://support.dell.com) and save the file in the directory you created in step 2.
- 4 Double-click the **FUPG\_Extt.exe** file to extract the firmware update files to your system's hard drive.
- 5 On the host system, click the **Start** button and select **Programs**→ **Dell OpenManage Applications**→ **Array Manager**→ **Array Manager Console**.
- 6 Select **Arrays**→ **PERC Subsystem**.
- 7 Select the controller that is linked to the enclosure you are upgrading.
- 8 Right-click the enclosure object and select **Download Firmware**.
- 9 Navigate to the **.bin** file that was extracted in step 4.
- 10 Double-click the **.bin** file and follow the directions on your screen.  
When the update is complete, a message appears indicating that the update was successful.
- 11 Restart I/O activity to the storage system.

## Updating Firmware Using Dell Update Packages

Dell Update Packages (DUPs) are software utilities provided by Dell to update specific software components on your Dell system. DUPs provide an easy-to-use graphical user interface (GUI) that enables you to apply a software update to either a single system or, remotely, to multiple systems using your organization's software distribution tools. DUPs run separately from Array Manager, so you can use a DUP if Array Manager is not available on your host system. Dell provides DUPs for the following operating systems:

- Windows 2000 Server and Advanced Server
- Windows Server 2003
- Red Hat Enterprise Linux (Version 2.1)
- Red Hat Enterprise Linux (Version 3) for Intel x86

### Windows DUP Update Procedure

The following procedure updates the firmware on a PowerVault 22xS storage system that is attached to a host system that is running the 32-bit version of Windows 2000 Server, Advanced Server, or Windows Server 2003, without Array Manager.

- 1 Stop all I/O activity to the storage system.
- 2 Create a directory on your local file system.
- 3 Download the executable Windows DUP package file (**PV220s-221s-FRMW-Rxxxx.exe**, where Rxxxx indicates the release) from the Dell Support website at [support.dell.com](http://support.dell.com) and save the file to the directory you created in step 2.
- 4 Double-click the downloaded file to uncompress the file and start the update.
- 5 When prompted, click **Install** to update the firmware.  
When the update is complete, a message appears indicating that the update was successful.
- 6 Restart I/O activity to the storage system.

### Red Hat Enterprise Linux Update Procedure

Use the following procedure to update the firmware on a PowerVault 22xS storage system that is attached to a Intel x86-based host system that is running the Red Hat Enterprise Linux operating system (Version 2.1 or 3).

- 1 Stop all I/O activity to the storage system.
- 2 Log in to your system as **root** or **su -user** (superuser).
- 3 Create a directory on your local file system.
- 4 Download the DUP package file (**PV220s-221s-FRMW-Rxxxx.bin**, where Rxxxx indicates the release) from the Dell Support website at [support.dell.com](http://support.dell.com) and place it into the directory you created in step 3.



- 5 Type the following script command in the command line:  

```
sh ./PV220s-221s-FRMW-Rxxxxxx.bin -q
```

where `-q` forces the command to run without user intervention.
- 6 Press <Enter> to update the firmware.  
When the update completes, a message appears indicating that the update was successful.
- 7 Restart I/O activity to the storage system.

## Updating Firmware Using Firmware Update Utilities

Dell provides firmware updates as downloadable compressed files that extract the necessary update and utility files you need to update your firmware. You must use a manual update procedure when an Array Manager or DUP procedure is not available. Update utilities are available for the following Dell-supported operating systems:

- Windows Server 2003, Enterprise Edition (64-bit)
- Red Hat Enterprise Linux (Version 3) for Intel Itanium (64-bit)
- Red Hat Enterprise Linux (Version 3) for Intel Extended Memory 64 Technology (EM64T)
- Red Hat Linux 7.x, 8.x, and 9

### Windows Server 2003, Enterprise Edition Update Procedure

Use the following procedure to update the firmware on a PowerVault 22xS storage system that is attached to a host system running the Windows Server 2003, Enterprise Edition (64-bit) operating system.

- 1 Stop all I/O activity to the storage system.
- 2 Log in to the host system as a user with administrator privileges.
- 3 Create a directory on your local file system.
- 4 Download the self-extracting `pv2xxAxx.exe` firmware update file from [support.dell.com](http://support.dell.com) and copy it into the directory that you created in step 3.
- 5 Extract the files to the directory.  
Included in the extracted files are the executable `.exe` utility file for the firmware update and the firmware image file.


- 6 Run the extracted `.exe` file from the command console.  
An information screen appears listing the available command line options.
- 7 Review the available command line options and note the ones you need to use for your system configuration.
- 8 Type the `.exe` filename on the command line again and add the appropriate command-line options, similar to the following example:  

```
pv2xx -a -f <fw_filename> -s
```

where `-a` points to all compatible enclosures attached to the host system, `-f <fw_filename>` specifies the firmware file extracted from `pv2xxAxx.exe`, and `-s` forces the procedure to run without user intervention.
- 9 Press `<Enter>` to update the EMM firmware.  
When the update is complete, a message appears indicating that the update was successful.
- 10 Restart I/O activity to the storage system.

### Red Hat Enterprise Linux (Itanium Version) Update Procedure

Use the following procedure to update the firmware on a PowerVault 22xS storage system that is attached to a host system that is running Red Hat Linux AS (Version 2.1 and 3.0).

 **NOTE:** All Linux commands in the following steps are case-sensitive.

- 1 Stop all I/O activity to the storage system.
- 2 Log in to your system as `root` or `su -user` (superuser).
- 3 Create a directory on your local Linux file system for the EMM firmware.  
To create the directory, open a command prompt and type:  

```
mkdir -p /usr/local/pv22xA
```
- 4 Change to the directory created in step 3.  
Open a command prompt, type the following, and then press `<Enter>`:  

```
cd /usr/local/pv22xA
```
- 5 Download the following compressed files from the Dell Support website at [support.dell.com](http://support.dell.com) and copy them to the `/usr/local/pv22xA` directory.
  - `FUPG_Exx.exe` (where `Exx` is the version)
  - `pv2xxAxx.gz` (where `Axx` is the version)

- 6 Uncompress the two downloaded files, as follows:
  - For **FUPG\_Extt.exe** — Double-click on **FUPG\_Extt.exe** or run the file from the command prompt.
  - For **pv2xttAxx.gz** — Use the **tar** command at the command prompt.

For example:

```
tar -zxvf pv2xttAxx.gz
```

- 7 Change the file permissions for the extracted **.exe** file.

For example, type the following in the command prompt and press <Enter>:

```
chmod +x pv2xtt
```

- 8 Type the following in the command prompt:

```
pv2xtt -a -f <fw_filename> -s
```

where **-a** points to all compatible enclosures attached to the host, **-f <fw\_filename>** specifies the extracted **.bin** firmware file, and **-s** forces the procedure to run without user intervention.


- 9 Run the utility to update the firmware.

When the update completes, a message appears indicating that the update was successful.

- 10 Restart I/O activity to the storage system.

## Red Hat Linux (Versions 7.x, 8.x, and 9) and Red Hat Enterprise Linux (Version 3) for Intel EM64T Update Procedure

Use the following procedure to update the firmware on a PowerVault 22xS storage system that is attached to a host system that is running Red Hat Linux versions 7.x, 8.x, or 9, or Red Hat Enterprise Linux (Version 3) for Intel EM64T.

 **NOTE:** All Linux commands in the following steps are case-sensitive.

- 1 Stop all I/O activity to the storage system.
- 2 Log in to your system as **root** or **su -user** (superuser).
- 3 Create a directory on your local Linux file system for the EMM firmware.

To create the directory, open a command prompt and type:

```
mkdir -p /usr/local/pv22xL
```

- 4 Change to the directory created in step 3.

In the command prompt, type the following and then press <Enter>:

```
cd /usr/local/pv22xL
```

- 5 Download the `pv22xLxx.gz` utility file from the Dell Support website at [support.dell.com](http://support.dell.com) and save the utility to the directory you created in step 3.
- 6 Uncompress the `.gz` file.  
For example, in the command prompt, type the following and then press <Enter>:  

```
tar -zxvf pv22xLxx.gz
```

Included in the extracted files are an `.exe` utility file and a `.bin` firmware file.
- 7 Change the file permissions for the extracted `.exe` file.  
In the command prompt, type the following and then press <Enter>:  

```
chmod +x pv22xL
```
- 8 Run the utility.  
In the command prompt, type the following and then press <Enter>:  

```
./pv22xL -i
```
- 9 Record the listed file descriptor of the enclosure you wish to update. An example descriptor could be `/dev/sg8`.
- 10 In the command prompt, type the following and then press <Enter>:  

```
./pv22xL -x <file_name> -d <generic_file_descriptor>
```

Where `<file_name>` is the full path name to the location of the firmware `.bin` file and `<generic_file_descriptor>` is the device you are updating.  
For example:  

```
./pv22xL -x pv22xs_E17.bin -d /dev/sg8
```

When the update completes, a message appears indicating that the update was successful.
- 11 Restart I/O activity to the storage system.

## Important Information

### Updating the Storage System in Joined Bus or Cluster Mode

When the split-bus module is in the joined-bus mode (default) or cluster mode, the EMM firmware is downloaded to both EMMs automatically (assuming that the second EMM is installed).

## **Updating the Storage System in Split-Bus Mode**

For storage systems in split-bus mode, updating the firmware to one EMM does not automatically update the other EMM. Each EMM must be updated from the host system that is attached to it.

Array Manager displays the correct firmware version for the EMM to which it is connected, but may continue to report the old firmware version on the other EMM. This situation is corrected by restarting the PowerVault storage system.

## **Using Earlier Versions of Array Manager**

If your system is configured with Array Manager version 3.1.1 or earlier and the split-bus module is in the cluster mode, the EMM firmware can only be upgraded on the primary EMM. To update both EMMs, download the firmware from each cluster node to the individual EMMs on the storage system.

If you are upgrading the firmware using Array Manager version 3.1.1 or earlier and the storage system is configured with one EMM in joined-bus mode and one SCSI terminator card, an error message appears on your screen. This condition is normal. If the storage system cooling fans return to their normal operating speed after you update the firmware, the firmware update was successful.

To verify the firmware update, stop and then restart the Disk Management Service. When completed, ensure that the firmware version in the enclosure properties has changed to the updated version.

## **Updating the Storage System Without Array Manager**

If Array Manager is not installed on your host system, you can temporarily attach the storage system to another system that is running Array Manager and flash the EMM firmware from this system. Alternately, you can contact Dell Support to replace your EMM modules.

