

Dell™ Metered Rack Power Distribution Unit
(rPDU)

Firmware Upgrade User's Guide

Notes and Warnings



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

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Introduction

The Dell™ Metered Rack Power Distribution Unit (rPDU) provides both serial and Ethernet (10/100 Base-T) communication ports for external controls. These communication ports are not only used to monitor and manage metered rPDUs. These ports are also used to upgrade Microprocessor Control Unit (MCU) and the Network Management Card (NMC) firmware.

Software user interfaces (flash upgrade utilities) provide an easy way to select and download a firmware upgrade file for an rPDU MCU or NMC. The flash upgrade utilities rely on unique model identification information to prevent an incorrect NMC or MCU firmware load from being installed on an rPDU during an upgrade. Flash upgrade utilities for serial upgrades can be accessed through a PC connected to the serial port on the rPDU (see Figure 1). Network upgrades can also be performed with a flash upgrade utility for rPDUs with a connection to a network server or router.

The rPDU is powered up during an upgrade. Because firmware flash upgrades are transparent, they do not affect rPDU operation.

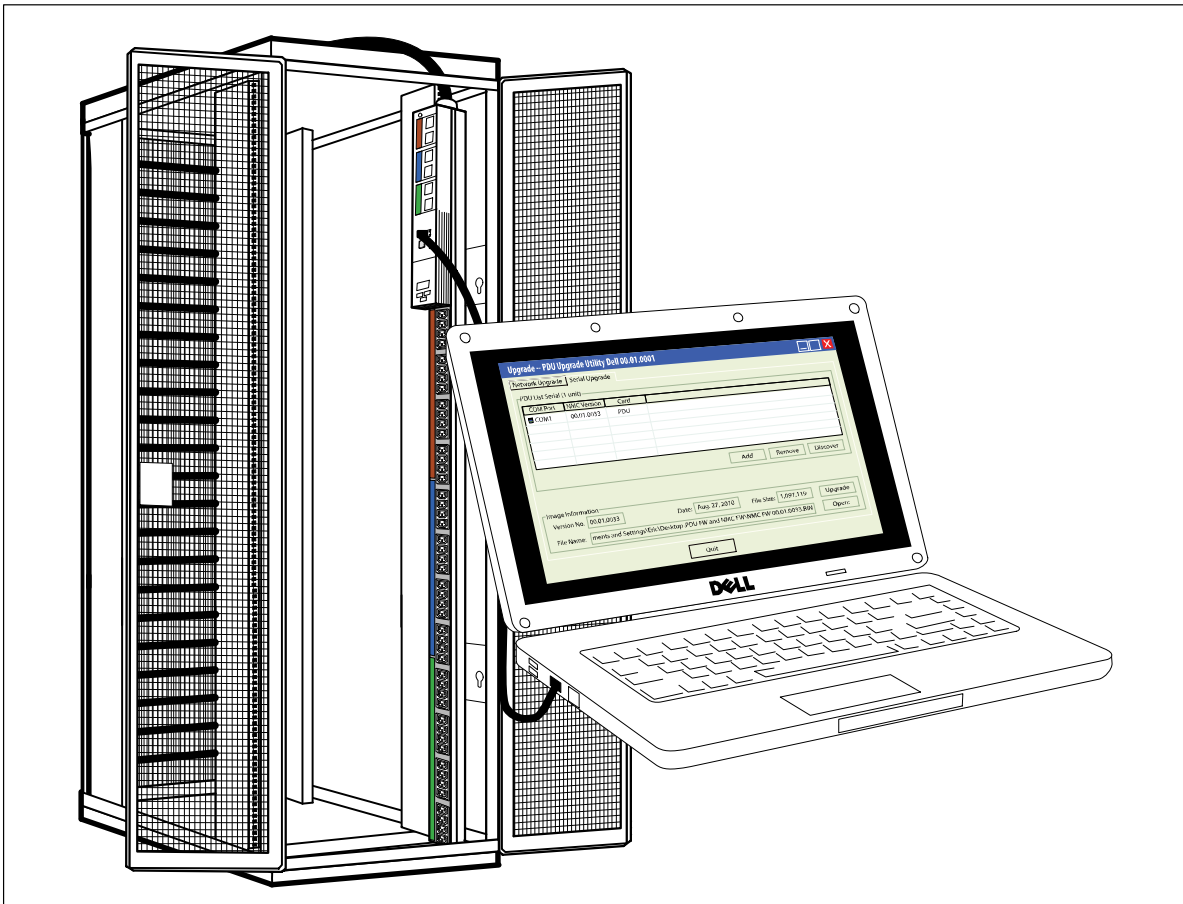


Figure 1. Upgrading the rPDU Firmware



NOTE: Only one rPDU can be upgraded at a time.

The rPDU front panel is used for the firmware flash upgrades as follows (see Figure 2):

- Use the Ethernet port for a network NMC or MCU firmware upgrade.
- Use the serial port for a serial NMC or MCU firmware upgrade.
- Use the **RESET** button to reset the NMC card when performing a network NMC firmware upgrade.

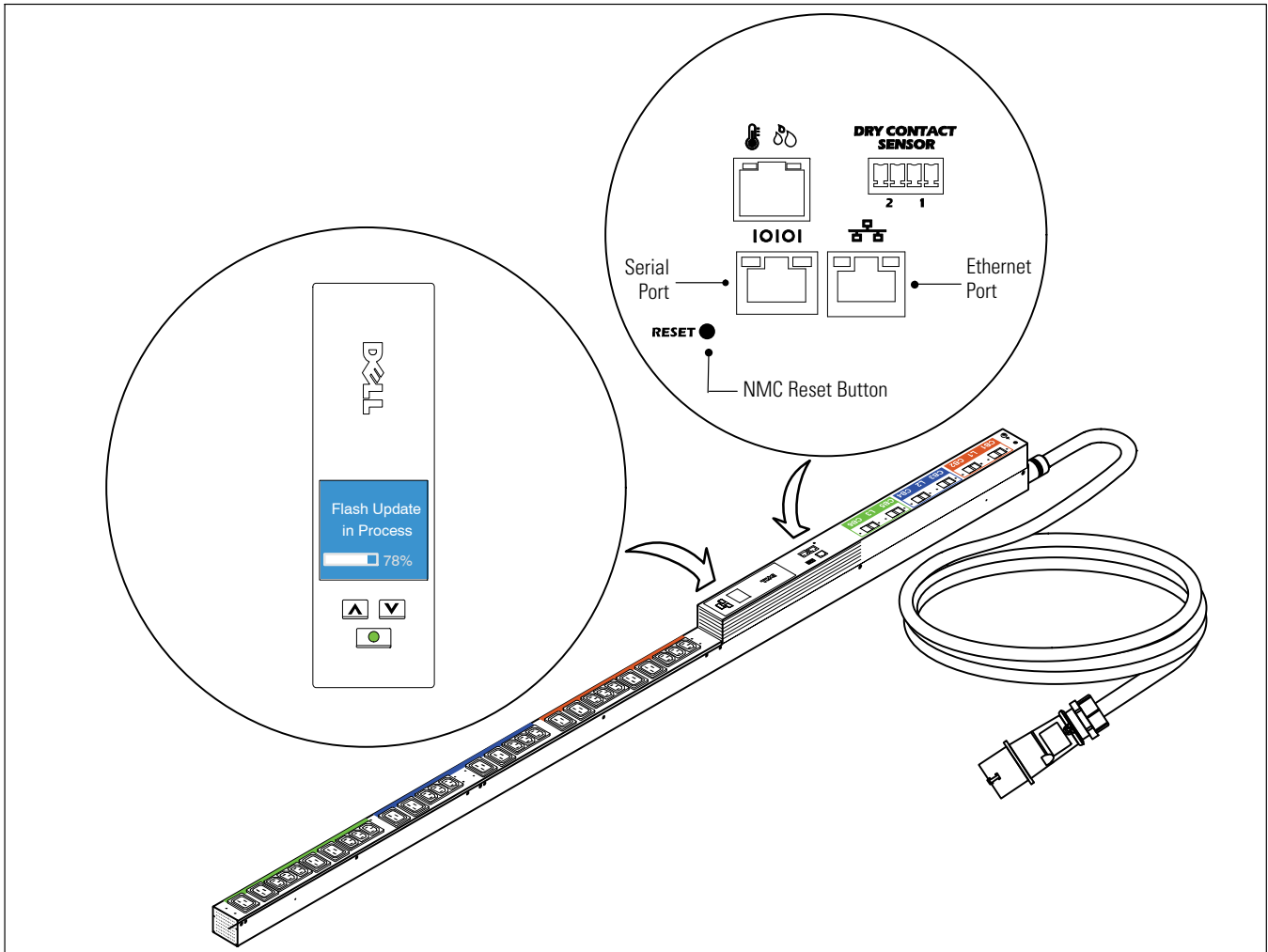


Figure 2. rPDU LCD and Ports

Although the upgrade does not impact rPDU operation, the front panel buttons are disabled and you cannot use the LCD menus to manage the rPDU during the upgrade.

During an MCU upgrade, the LCD displays a **Flash Update in Process** message and provides a progress bar as the upgrade progresses (see Figure 2). If the upgrade is interrupted, recovery processes allow the upgrade to restart. If the MCU upgrade fails, the LCD displays a **Flash Error** message and the backlight changes to amber text with a dark red background.

Supported Models

The rPDU NMC and MCU firmware upgrades are supported on the following models:

- DELLM0001
- DELLM001A
- DELLM0002
- DELLM0003
- DELLM0004
- DELLM004A
- DELLM0005
- DELLM0006
- DELLM0007

Network Upgrades for NMC and MCU Firmware

This chapter describes how to use the Dell Metered Rack Power Distribution Unit (rPDU) network upgrade utility to update Network Management Card (NMC) or Microprocessor Control Unit (MCU) firmware. This chapter also describes the upgrade utility window and provides prerequisites for upgrading the rPDU.

Before You Begin

Before upgrading, be aware of the following:

- AC input must be available and within the rPDU operating range to begin the upgrade.
- You do not need to turn off the rPDU control power in order to flash upgrade the rPDU NMC or MCU firmware.
- You do not need to open the rPDU cover in order to flash upgrade the NMC or MCU firmware.
- You must have access to the **upgrade.exe** program to use the firmware flash upgrade utility.

Both NMC and MCU firmware can be upgraded over the network using the Network Upgrade tab on the PDU Upgrade Utility window (see Figure 3).

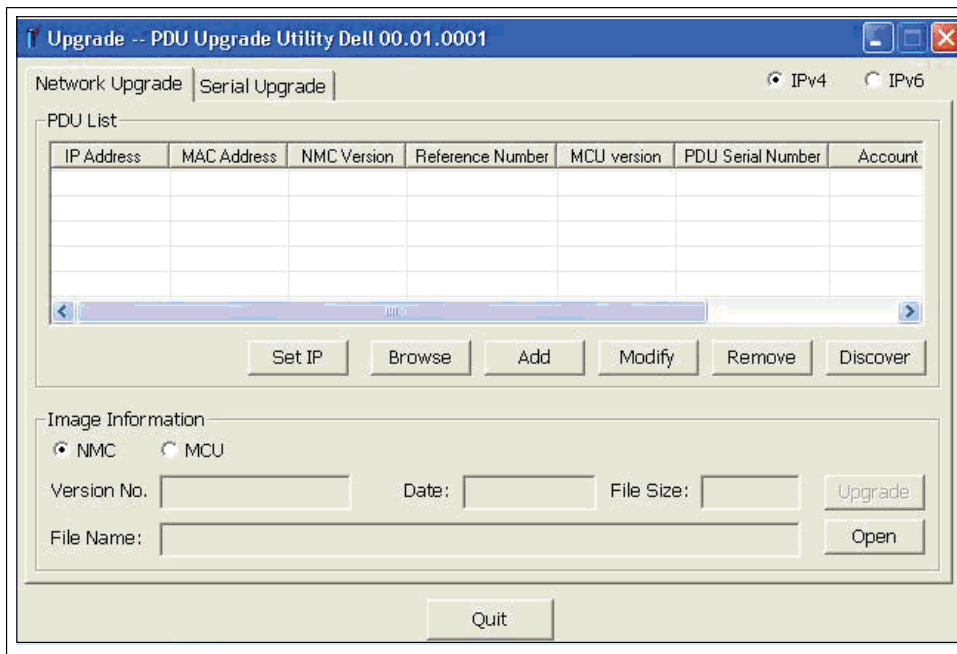


Figure 3. PDU Upgrade Utility Window (Network Upgrade Tab)

Exploring the Network Upgrade Tab

Use the Network Upgrade tab of the PDU Upgrade Utility (see Figure 3) to perform the following:

- Select the firmware file for this upgrade
- Verify the unique rPDU and firmware identification data before you upgrade the rPDU
- Initiate the rPDU firmware upgrade

See Table 1 for descriptions of the fields and buttons on the Network Upgrade tab.

Table 1. Network Upgrade Tab Descriptions

Field	Purpose	Description
IPv4	Upgrade Setting	Provides a list of rPDUs in this network with IPv4 addresses.
IPv6	Upgrade Setting	Provides a list of rPDUs in this network with IPv6 addresses.
PDU List Panel	Purpose	Description
IP Address (IP Address)	rPDU Identification	Specifies the IPv4 or IPv6 address of the rPDU, depending on the radio button selection.
MAC Address (MAC Address)	rPDU Identification	Specifies the MAC address of the rPDU.
NMC Version (NMC Version)	rPDU Identification	Specifies the present NMC firmware version.
Reference Number (Reference Number)	rPDU Identification	Specifies the MCU firmware identification code.
MCU Version (MCU Version)	rPDU Identification	Specifies the present MCU firmware version.
PDU Serial Number (PDU Serial Number)	rPDU Identification	Specifies the unique rPDU serial number.
Account (Account)	User Identification	Specifies user privilege (always admin). Data populates in this field only if the Modify button is selected. Resize the window to see this field.
Password (Password)	User Identification	Admin user password. (The password is masked. Only asterisks display.) Data populates in this field only if the Modify button is selected. Resize the window to see this field.
Card (Card)	Equipment Identification	Specifies the equipment type (always PDU). Resize the window to see this field.
Button	Purpose	Description
Set IP (Set IP)	Action Button	Changes the rPDU upgrade target IP address.
Browse (Browse)	Action Button	Selects an rPDU upgrade target from the Web page.
Add (Add)	Action Button	Locates a new rPDU upgrade target based on the correct IP address and password you enter, and adds it to the list.
Modify (Modify)	Action Button	Allows you to enter the password needed to proceed.
Remove (Remove)	Action Button	Removes an rPDU upgrade target from the list.
Discover (Discover)	Action Button	Retrieves a list of rPDUs in your network.
Image Information Panel	Purpose	Description
NMC	Upgrade Setting	Upgrades the rPDU NMC firmware when this radio button is selected.
MCU	Upgrade Setting	Upgrades the rPDU MCU firmware when this radio button is selected.
Version No./Version (Version Number/Version)	Upgrade File Identification	Specifies the version for the selected firmware upgrade file.
Date (Date)	Upgrade File Identification	Provides the release date for the selected firmware upgrade file. (Displays for NMC upgrade only.)
Reference Number (Reference Number)	Upgrade File Identification	Specifies the MCU firmware identification code. (Displays for MCU upgrade only.)

Table 1. Network Upgrade Tab Descriptions (continued)

Image Information Panel	Purpose	Description
File Size (File Size)	Upgrade File Identification	Specifies the size of the selected firmware upgrade file.
File Name (File Name)	Upgrade File Identification	Specifies the name of the selected firmware upgrade file.
Button	Purpose	Description
Upgrade (Upgrade)	Action Button	Starts the firmware upgrade for the target rPDU.
Open (Open)	Action Button	Loads the selected firmware upgrade file.
Quit (Quit)	Action Button	Exits the upgrade utility.

Creating the Network Connection

Before you begin the NMC or MCU network upgrade, you must provide a proper connection between the network and the rPDU.

NOTE: The PC you use for the network upgrade must be connected to the same network as the rPDU.

To create an Ethernet connection between the rPDU and the network:

- 1 Locate the Ethernet cable to use for this network connection (not provided).
- 2 Ensure the network cable is connected to a network server or router connection.
- 3 Connect the Ethernet cable RJ-45 connector to the Ethernet connection port on the rPDU (see Figure 4).
- 4 Ensure the PC you will use for this firmware upgrade is connected to the same network.

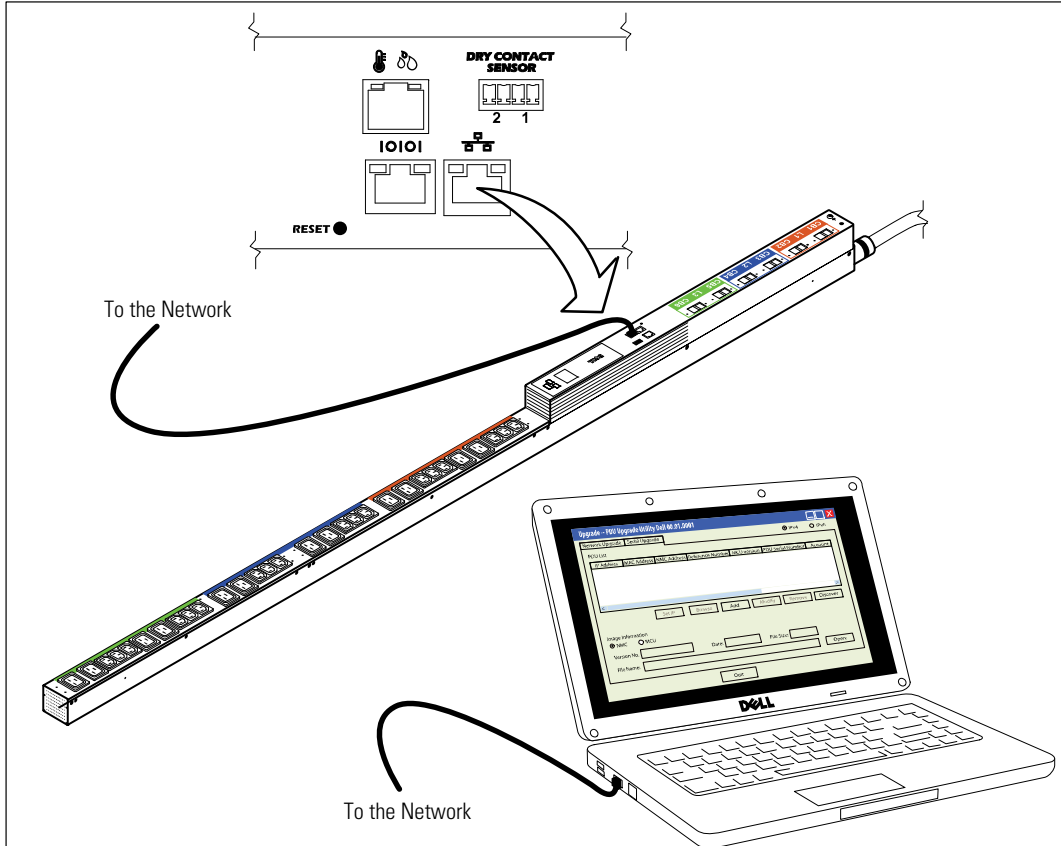


Figure 4. Connecting the rPDU to the Network

Upgrading the Firmware

These instructions describe the network flash upgrade procedure in the following sequence:

- Preparing the rPDU for the upgrade
- Accessing the network upgrade user interface
- Selecting upgrade settings
- Identifying the rPDU to upgrade
- Selecting to upgrade either NMC or MCU firmware
- Completing the upgrade process

NOTE: If power to the rPDU is interrupted at any time during the upgrade, check each circuit breaker and reset if necessary.

To prepare the rPDU for the network NMC or MCU firmware flash upgrade, perform the following:

- 1 Verify that the rPDU you intend to upgrade is powered up and properly connected to the PC USB port using the Ethernet cable (see Figure 4).
- 2 Execute the **upgrade.exe** program. The **Upgrade -- PDU Upgrade Utility** window displays.
- 3 Select the **IPv4** or **IPv6** radio button to specify the version of IP addresses you want to retrieve (see Figure 5).

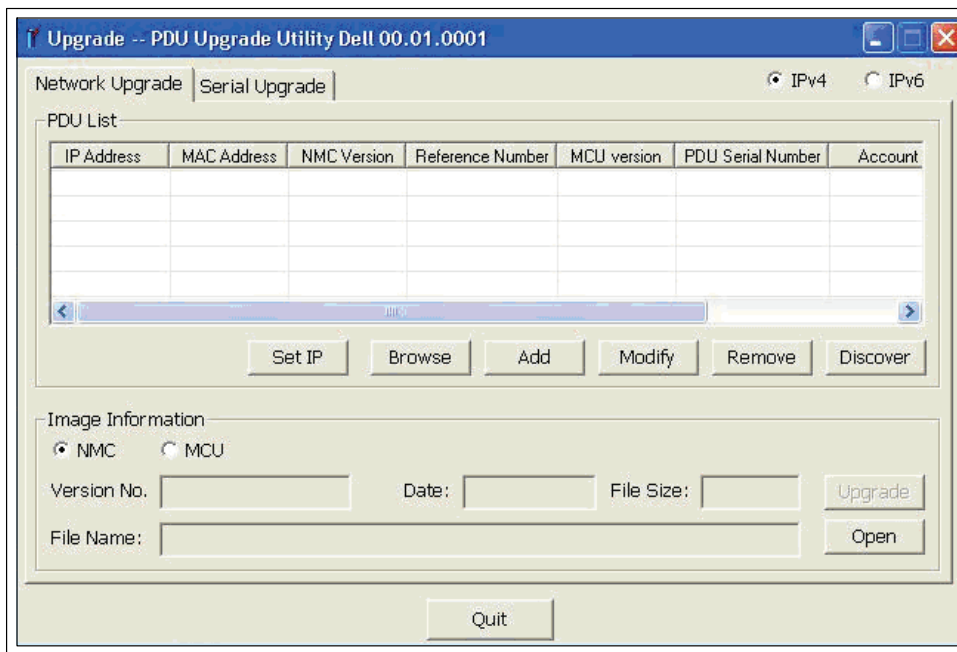


Figure 5. Selecting IPv4 or IPv6

To select the rPDU you intend to upgrade:

- 4 Click **Discover** to retrieve a list of rPDUs in your network with IPv4 or IPv6 addresses.
- 5 Verify that the rPDU you intend to upgrade is listed in the **PDU List** panel (see Figure 6).

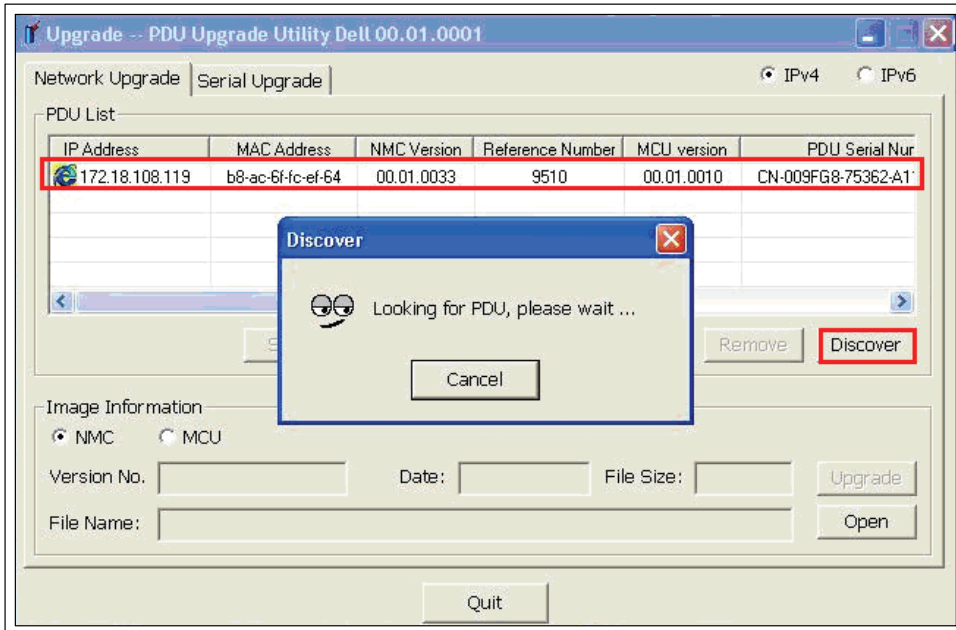


Figure 6. Verifying the rPDU to Upgrade

- 6 Select the row for the rPDU you want to upgrade (see Figure 7).

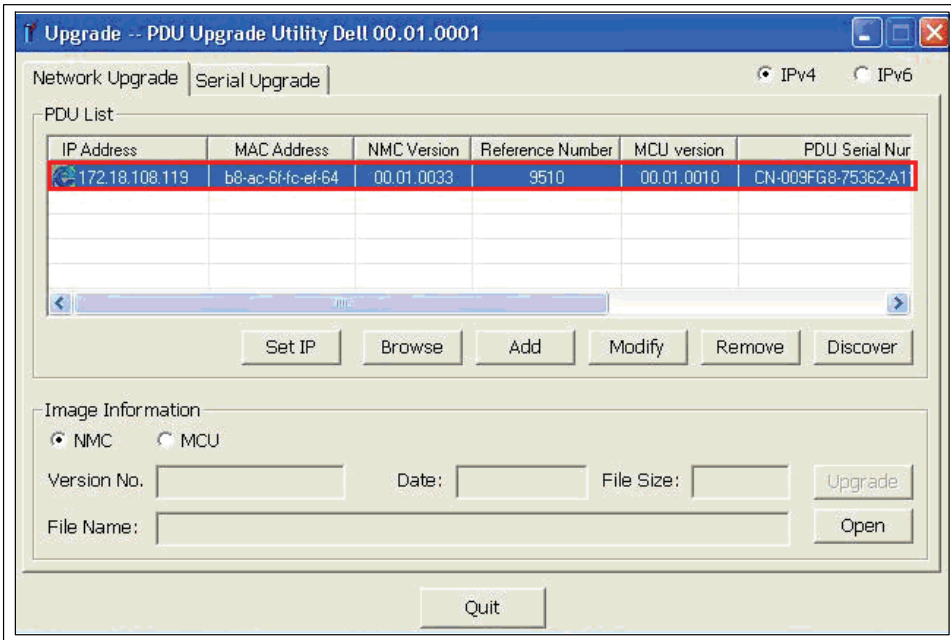


Figure 7. Selecting the rPDU to Upgrade

7 Click **Modify**. The **Modify** pop up window displays. In the Password field, enter **admin** and click **OK** (see Figure 8).

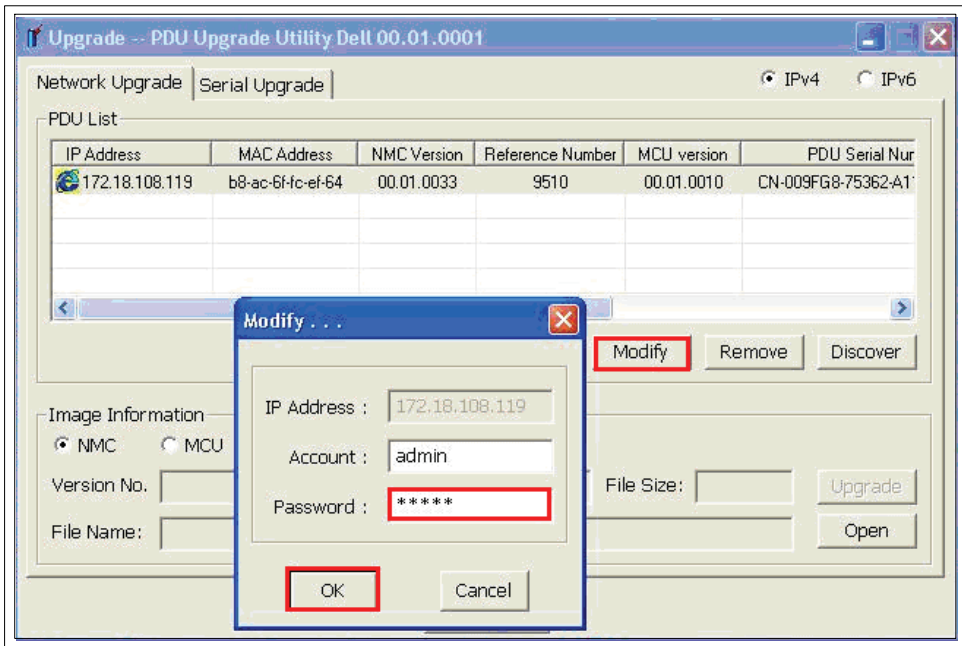


Figure 8. Providing the User Password

NOTE: Asterisk characters display in the password field.

To select whether to upgrade the rPDU NMC firmware or MCU firmware, perform the following:

- Are you upgrading the NMC firmware or MCU firmware?
 - If NMC, go to step 9.
 - If MCU, go to step 12.

9 Under **Image Information**, confirm that the **NMC** radio button is selected (see Figure 9).

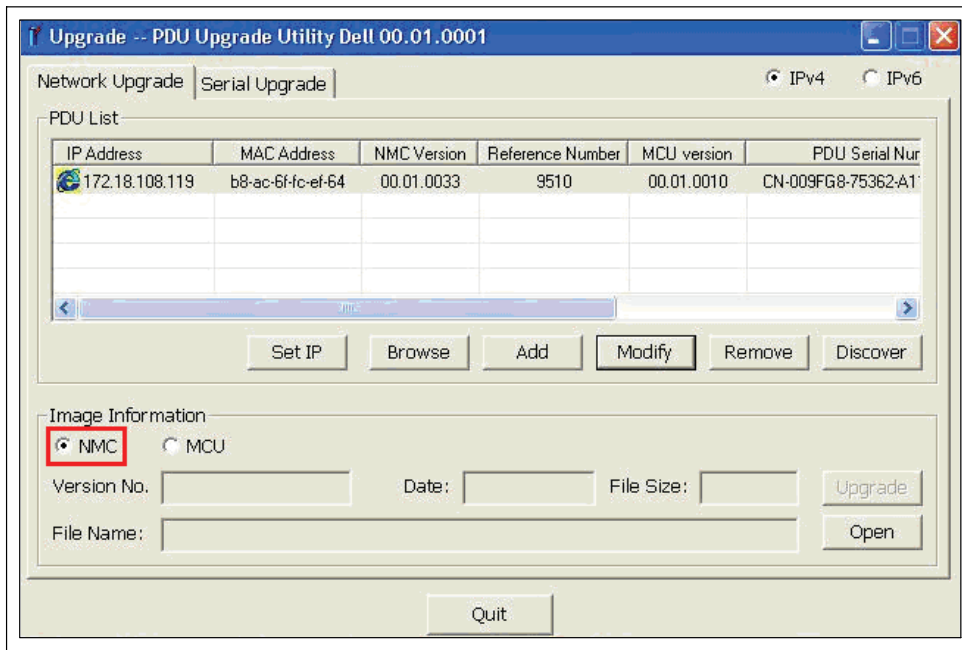


Figure 9. Confirming NMC Selection

- Click **Open** to display a list of valid NMC firmware upgrade files. Select the upgrade file to use for this flash upgrade (see Figure 10).

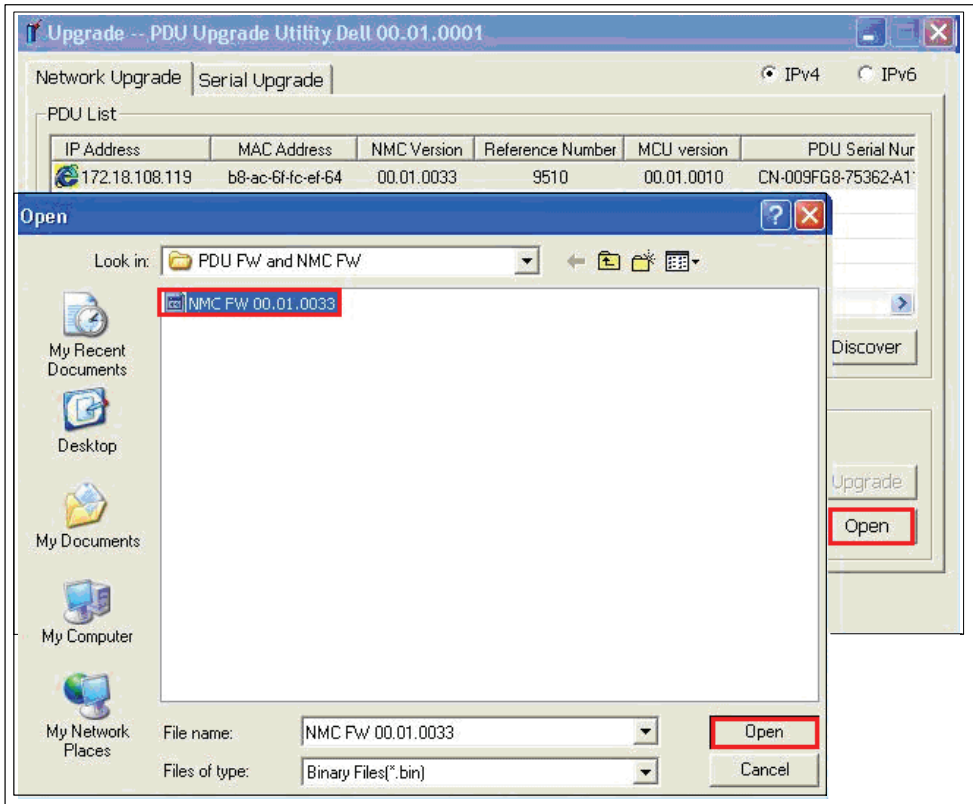


Figure 10. Selecting the Firmware Upgrade File

- Go to step 14 to start the upgrade process.

12 Under **Image Information**, confirm that the MCU radio button is selected (see Figure 11).

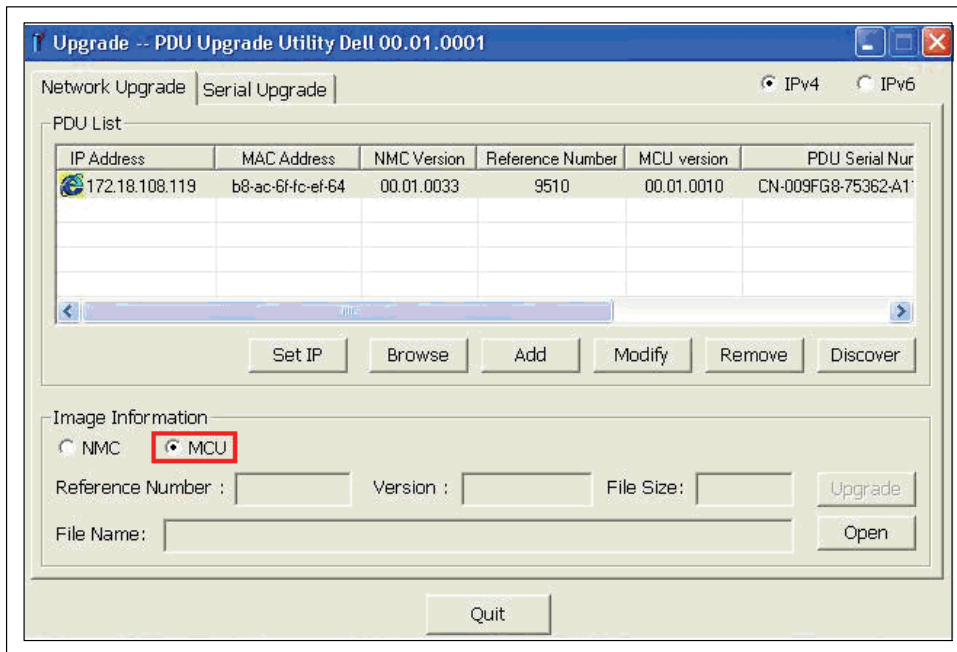


Figure 11. Confirming MCU Selection

13 Click **Open** to display a list of valid MCU firmware upgrade files. Select the upgrade file (see Figure 12).

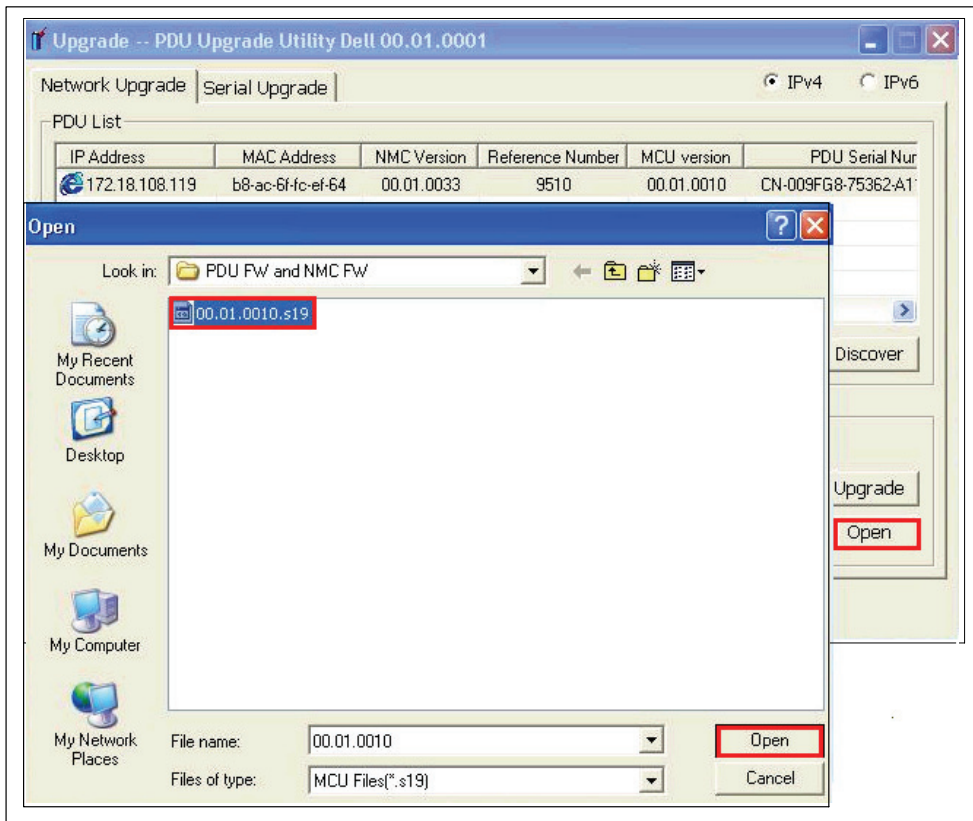


Figure 12. Selecting the Firmware Upgrade File

To start the firmware flash upgrade, perform the following:

14 Click **Upgrade** on the **PDU Upgrade Utility** window.

- 15 A confirmation message displays. If you did not select a more recent firmware version than the present version, a message prompts you to confirm that the selected version is the version you want to use for this upgrade (see Figure 13 and Figure 14). Click **OK** to accept the version, or click **Cancel** to return to step 8 and reselect another firmware upgrade file for the NMC or MCU.

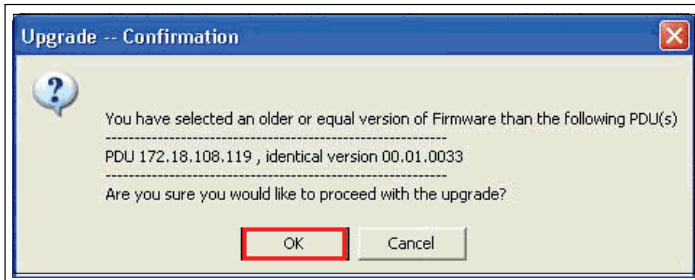


Figure 13. Confirming the NMC Upgrade Version

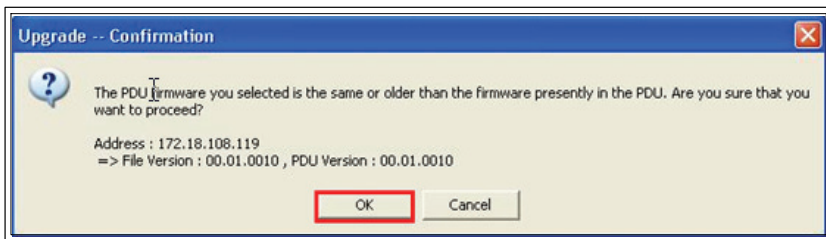



Figure 14. Confirming the MCU Upgrade Version

 **NOTE:** While upgrading the MCU, the LCD displays the message Flash Update in Process. A progress bar with the upgrade percentage completed also displays.

- 16 Monitor the progress of the upgrade using the progress bar in the **Upgrading** pop up window (see Figure 15).

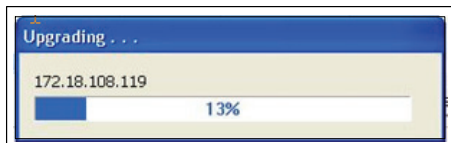
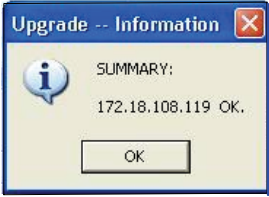
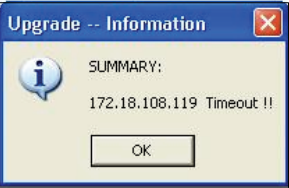



Figure 15. Monitoring Upgrade Progress

17 Determine the upgrade completion status (see Table 2).

Table 2. Upgrade Completion Status

Message Display	Description
 <p>The dialog box titled 'Upgrade -- Information' shows a summary of a successful upgrade for IP address 172.18.108.119. It includes an information icon and an 'OK' button.</p>	<p>Successful</p> <p>If the firmware upgrade is successful, a successful notification message displays. This procedure is completed.</p>
 <p>The dialog box titled 'Upgrade -- Information' shows a summary of a failed upgrade for IP address 172.18.108.119 due to a timeout. It includes an information icon and an 'OK' button.</p>	<p>Not Successful</p> <p>If errors occur during the upgrade, an error notification message displays. To retry the upgrade, perform the following:</p> <ol style="list-style-type: none"> 1. Beginning with step 4, click Discover again and retry the upgrade procedure. 2. If retrying the upgrade fails, contact Dell User Support at www.support.dell.com.
 <p>The dialog box titled 'Upgrade -- Information' displays a message stating that the firmware upgrade is denied for the card(s) 10.35.155.177. It instructs the user to check the SNMP Agent's <TFTP Upgrade Control> Function and includes an 'OK' button.</p>	<p>Upgrade Denied</p> <p>The Upgrade Denied error message displays because network upgrades are disabled in the Dell™ Device Power Interconnect (DPI) Web interface (see Figure 16).</p> <p>To enable network upgrades and retry the upgrade, perform the following:</p> <ol style="list-style-type: none"> 1. Access the DPI Web interface. 2. From the DPI Control Menu, select Network, then select Control. 3. On the Network Control page, reset the Network Upgrade attribute to Enabled (see Figure 17). <p>NOTE: See the Web Interface Operation chapter of the <i>Dell Metered Rack Power Distribution Unit (rPDU) User's Guide</i> for more information.</p> <ol style="list-style-type: none"> 4. Beginning with Step 4, click Discover again and retry the upgrade procedure. 5. If retrying the upgrade fails, contact Dell User Support at www.support.dell.com.

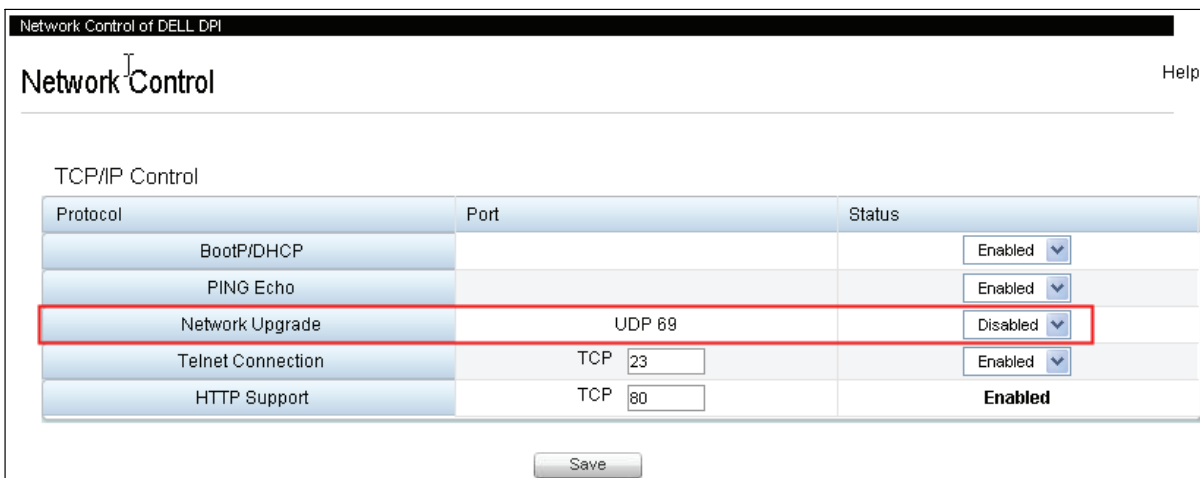


Figure 16. Identifying the Network Upgrade Disabled Setting

Network Control of DELL DPI

Network Control Help

TCP/IP Control

Protocol	Port	Status
BootP/DHCP		Enabled <input type="button" value="v"/>
PING Echo		Enabled <input type="button" value="v"/>
Network Upgrade	UDP 69	Enabled <input type="button" value="v"/>
Telnet Connection	TCP <input type="text" value="23"/>	Enabled <input type="button" value="v"/>
HTTP Support	TCP <input type="text" value="80"/>	Enabled

Figure 17. Enabling the Network Upgrade Setting

Serial Upgrades for NMC Firmware

This chapter describes how to use the Dell Metered Rack Power Distribution Unit (rPDU) serial upgrade utility to update the Network Management Card (NMC) firmware. This chapter also describes the upgrade utility window and provides prerequisites for upgrading the rPDU.

Before You Begin

Before upgrading, be aware of the following:

- AC input must be available and within the rPDU operating range to begin the upgrade.
- You do not need to turn off the rPDU control power in order to flash upgrade the rPDU NMC firmware.
- You do not need to open the rPDU cover in order to flash upgrade the NMC firmware.
- You must have access to the **upgrade.exe** program to use the firmware flash upgrade utility.

The NMC firmware can be upgraded using the Serial Upgrade tab on the PDU Upgrade Utility window (see Figure 18).

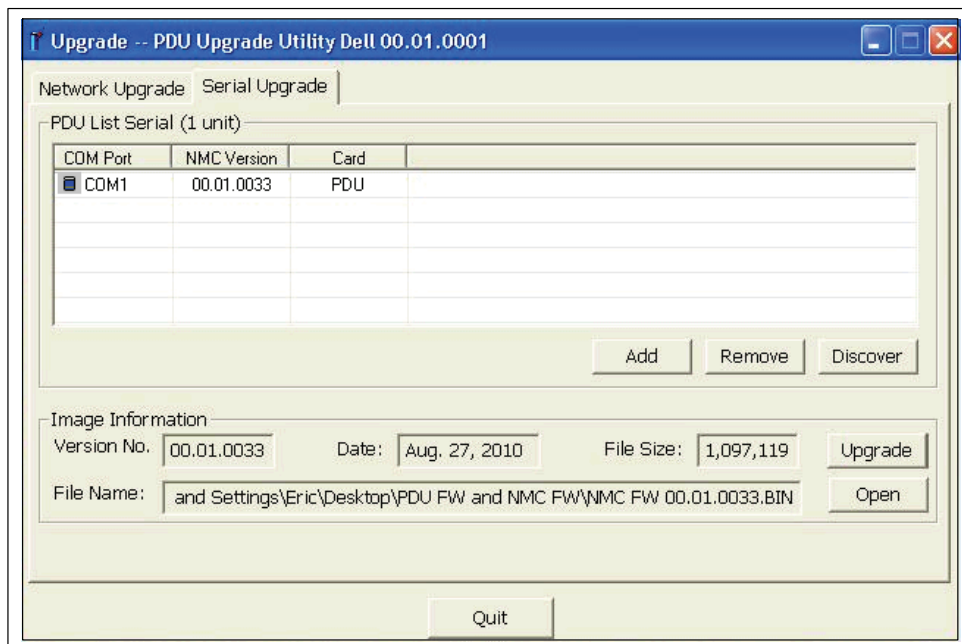


Figure 18. PDU Upgrade Utility Window (Serial Upgrade Tab)

Exploring the Serial Upgrade Tab

Use the Serial Upgrade tab of the PDU Upgrade Utility (see Figure 18) to perform the following:

- Select the NMC firmware file for this upgrade
- Verify the unique rPDU and firmware identification data before you upgrade the rPDU
- Initiate the rPDU firmware upgrade

See Table 3 for descriptions of the fields and buttons on the Serial Upgrade tab.

Table 3. Serial Upgrade Tab Descriptions

PDU List Serial (1 unit) Panel	Purpose	Description
COM Port (COM Port)	rPDU Identification	Specifies the COM port on the PC used for this upgrade.
NMC Version (NMC Version)	rPDU Identification	Specifies the present NMC firmware version.
Card (Card)	Equipment Identification	Specifies the equipment type (always PDU).
Button	Purpose	Description
Add (Add)	Action Button	Locates the rPDU upgrade target based on the IP address and password you enter.
Remove (Remove)	Action Button	Removes the rPDU upgrade target from the list.
Discover (Discover)	Action Button	Retrieves a list of rPDUs in this network.
Image Information Panel	Purpose	Description
Version No. (Version Number)	Upgrade File Identification	Specifies the firmware version for the selected firmware upgrade file.
Date (Date)	Upgrade File Identification	Provides the release date for the selected firmware upgrade file.
File Size (File Size)	Upgrade File Identification	Specifies the size of the selected firmware upgrade file.
File Name (File Name)	Upgrade File Identification	Specifies the name of the selected firmware upgrade file.
Button	Purpose	Description
Upgrade (Upgrade)	Action Button	Starts the firmware upgrade for the target rPDU.
Open (Open)	Action Button	Loads the selected firmware upgrade file.
Quit (Quit)	Action Button	Exits the upgrade utility.

Creating the Serial Connection

Before you begin the NMC serial upgrade, you must provide a proper connection between the PC COM (RS-232) serial port and the rPDU serial communication port.

To create a serial connection between the rPDU and the PC:

- 1** Locate the RJ-45-to-DB-9 (RS-232) cable to use for this connection (provided).
- 2** Ensure the serial cable RS-232 connector is connected to the COM port on the PC.
- 3** Connect the serial cable RJ-45 connector to the serial connection port on the rPDU (see Figure 19).

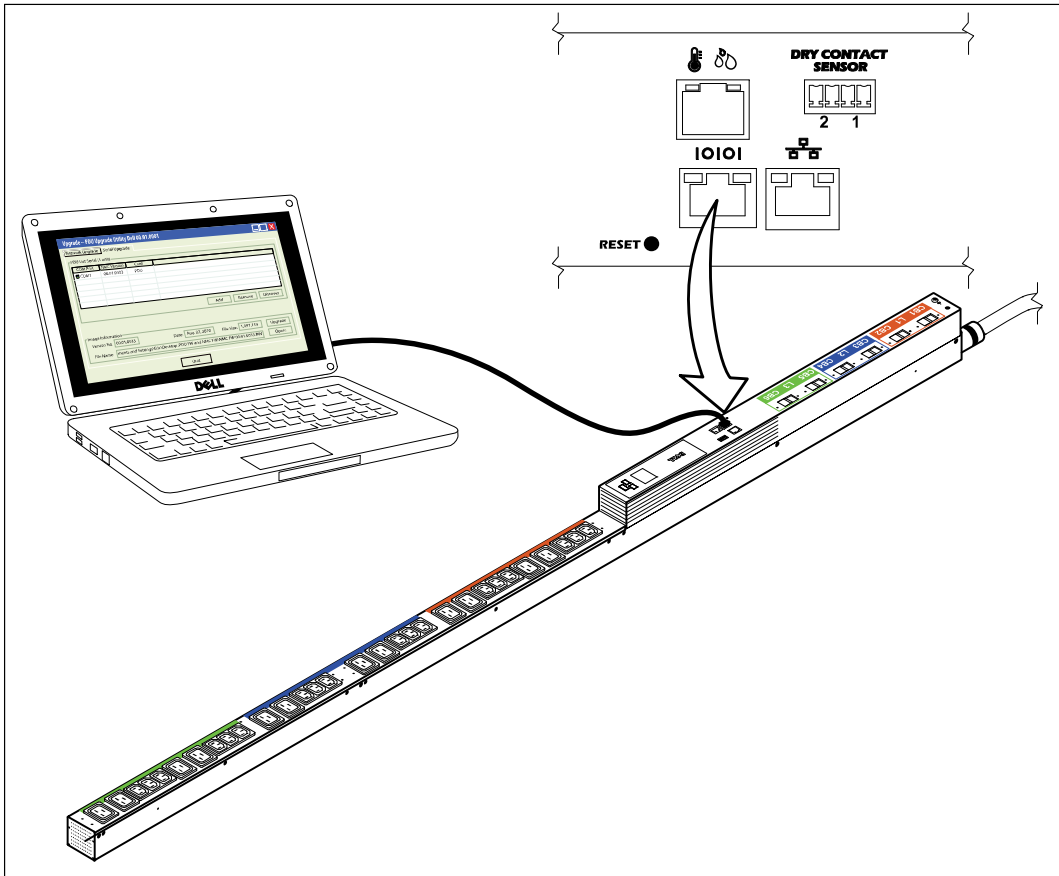


Figure 19. Connecting the PC to the rPDU Serial Port

Upgrading the Network Management Card Firmware

These instructions describe the NMC serial flash upgrade procedure in the following sequence:

- Preparing the rPDU for the upgrade
- Accessing the serial upgrade user interface
- Identifying the rPDU to upgrade
- Selecting the NMC firmware file to use for the upgrade
- Completing the upgrade process

NOTE: If power to the rPDU is interrupted at any time during the upgrade, check each circuit breaker and reset if necessary.

To prepare the rPDU for the serial NMC firmware flash upgrade, perform the following:

- 1 Verify that the rPDU you intend to upgrade is properly connected to the PC COM port using the RJ-45-to-DB-9 (RS-232) cable (see Figure 19).
- 2 Start up the rPDU as follows:
 - Plug the rPDU power cord into the power outlet.
 - Turn each circuit breaker to the ON position.

NOTE: During startup, the Dell Startup LCD screen on the rPDU displays for five seconds and then defaults to the Input Status screen.

- 3 Press the **RESET** button for longer than 10 seconds (see Figure 19).

NOTE: The orange LED on the left of the serial connection port will flash. This indicates that the NMC in this rPDU is in download mode.

4 When the NMC is in download mode, press the **RESET** button for longer than three seconds, then release the button.

NOTE: The NMC returns to normal mode.

To select the rPDU and the firmware file you intend to use for the flash upgrade procedure:

5 Execute the **upgrade.exe** program. The UPS/PDU Upgrade Software window displays.

6 Select the Serial Upgrade tab. Click the **Discover** button to discover the NMC (see Figure 20).

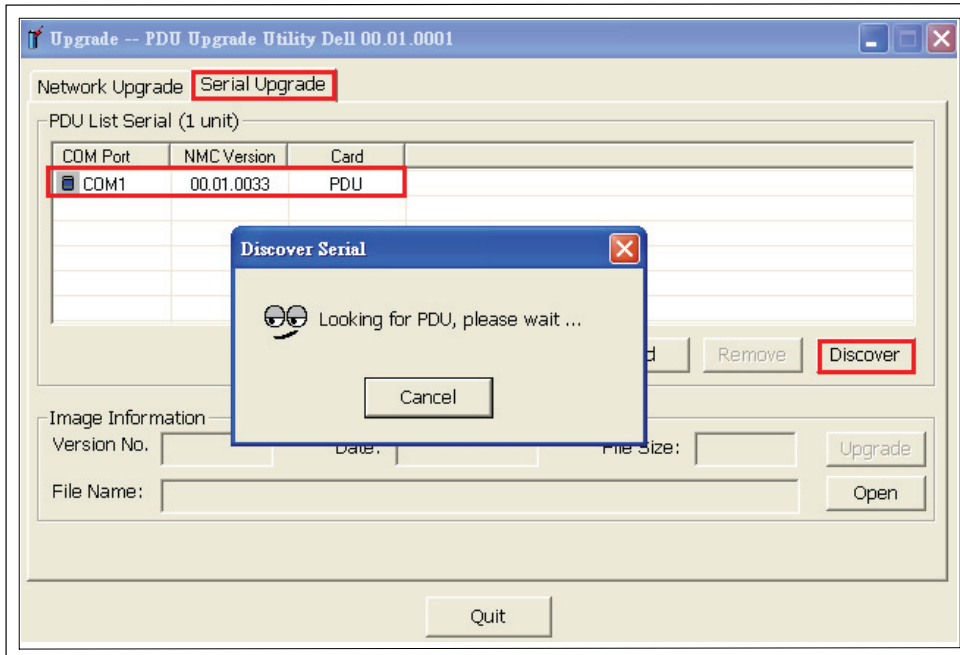


Figure 20. Discovering the NMC

7 Click the **Open** button and select the NMC flash upgrade file (see Figure 21).

NOTE: The NMC flash upgrade file has a binary file format (*.bin).

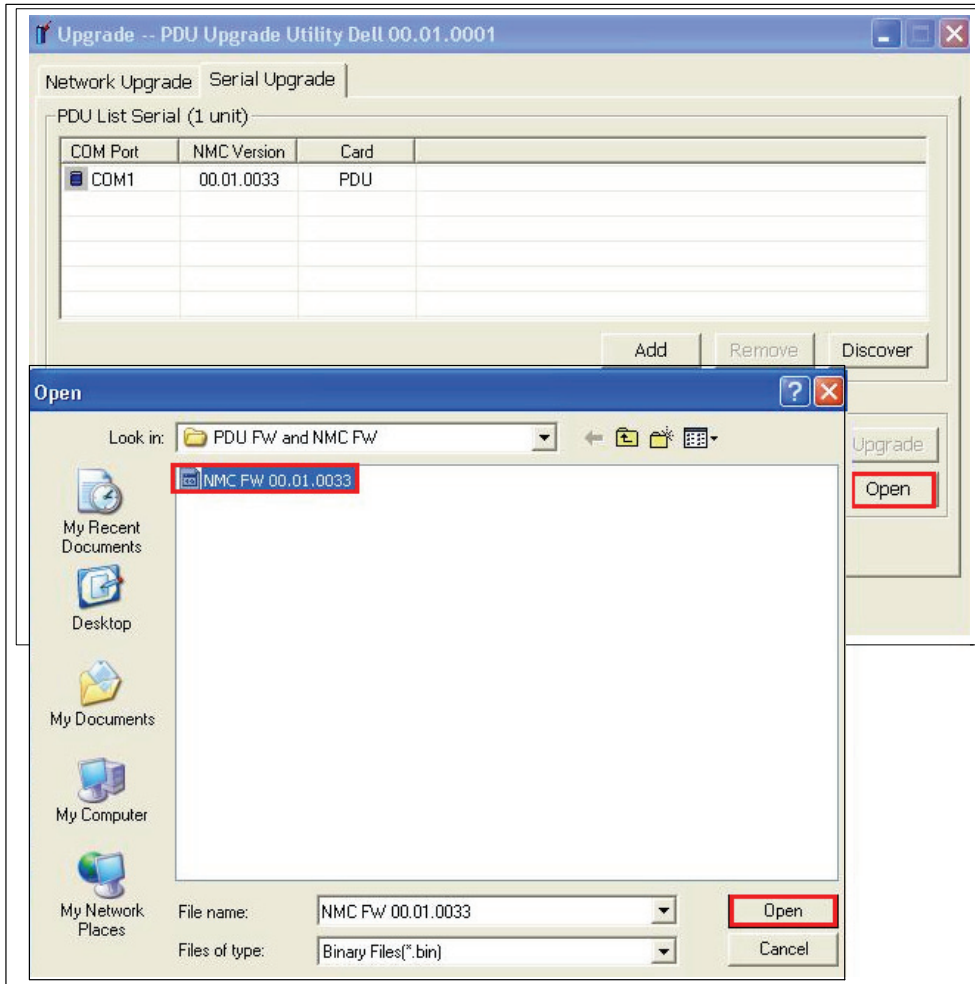


Figure 21. Selecting the NMC Flash Upgrade File

To start the firmware flash upgrade:

- 8 Select the row for the NMC you intend to upgrade and click **Upgrade** (see Figure 22).

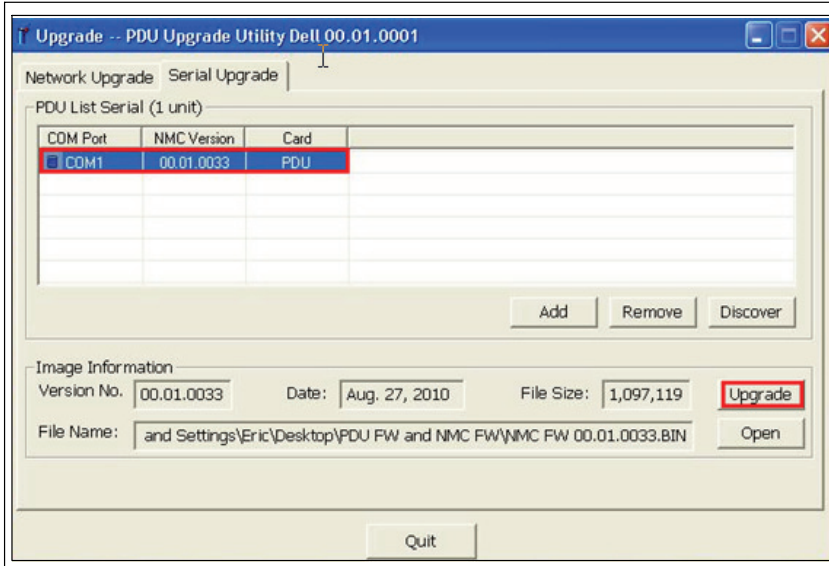


Figure 22. Identifying the NMC to Upgrade

- 9 A confirmation message displays. If you did not select a more recent NMC firmware version than the present version, a message prompts you to confirm that the selected version is the version you want to use for this upgrade (see Figure 23). Click **OK** to accept the version, or click **Cancel** to return to step 7 and reselect another NMC firmware upgrade file.

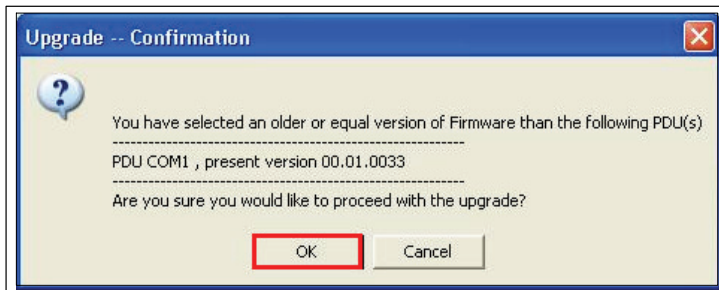


Figure 23. Confirming the Upgrade Version

- 10 Monitor the progress of the NMC upgrade (see Figure 24).

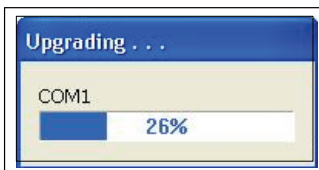

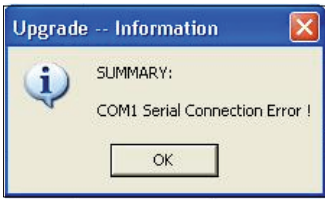


Figure 24. Monitoring NMC Upgrade Progress

- 11 Determine the upgrade completion status (see Table 4).

Table 4. Upgrade Completion Status

Message Display	Description
	<p>Successful</p> <p>If the NMC firmware upgrade is successful, a successful notification message displays. This procedure is completed.</p>
	<p>Not Successful</p> <p>If errors occur during the upgrade, an error notification message displays. To retry the upgrade, perform the following:</p> <ol style="list-style-type: none">1. Beginning with Step 4, click Discover again and retry the upgrade procedure.2. If retrying the NMC upgrade fails, contact Dell User Support at www.support.dell.com.

Serial Upgrades for MCU Firmware

This chapter describes how to use the Dell Metered Rack Power Distribution Unit (rPDU) serial upgrade utility to update the Microprocessor Control Unit (MCU) firmware. This chapter also describes the upgrade utility window and provides prerequisites for upgrading the rPDU.

Before You Begin

Before upgrading, be aware of the following:

- AC input must be available and within the rPDU operating range to begin the upgrade.
- You do not need to turn off the rPDU control power in order to flash upgrade the rPDU MCU firmware.
- You do not need to open the rPDU cover in order to flash upgrade the rPDU MCU firmware.
- You must have access to the Dell™ UPS/PDU Upgrade Software program.

The MCU firmware can be upgraded through the UPS/PDU Upgrade Software utility (see Figure 25).

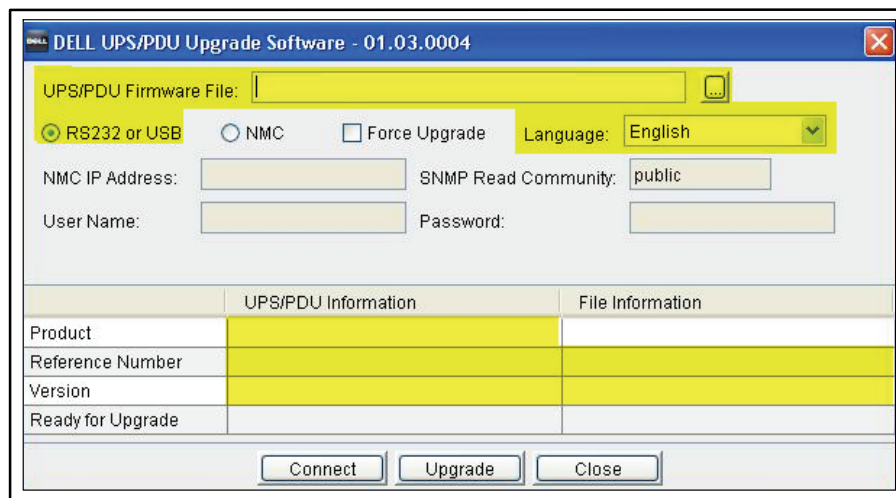


Figure 25. UPS/PDU Upgrade Software Window (Applicable Fields)

NOTE: Some fields on this window are used for UPS upgrades only. Only the yellow-highlighted fields in this illustration can be used for MCU flash upgrades (see Figure 25).

Exploring the UPS/PDU Upgrade Software Utility

Use this utility to perform the following:

- Select the MCU upgrade file you intend to use.
- Verify the unique rPDU and firmware identification data before you upgrade the rPDU.
- Initiate the rPDU firmware upgrade.

See Table 5 for descriptions of the fields and buttons on the UPS/PDU Upgrade Software utility window.

Table 5. UPS/PDU Upgrade Software Descriptions

Field	Purpose	Description
UPS/PDU Firmware File (UPS/PDU Firmware File)	Upgrade Setting	Produces a list of rPDU firmware versions. The program reference number and firmware version display in the UPS/PDU Information column for the file you select.
RS232 or USB	Upgrade Setting	Updates the rPDU MCU firmware through the RS-232 port.
NMC	Upgrade Setting	DO NOT USE FOR MCU UPGRADE.
Force Upgrade (Force Upgrade)	Upgrade Setting	DO NOT USE FOR MCU UPGRADE.
Language (Language)	Upgrade Setting	Changes the language for the rPDU MCU upgrade. The default language depends on the operating system language selected on your computer.
NMC IP Address (NMC IP Address)	Upgrade Setting	DO NOT USE FOR MCU UPGRADE.
SNMP Read Community (SNMP Read Community)	Upgrade Setting	DO NOT USE FOR MCU UPGRADE.
User (User)	Upgrade Setting	DO NOT USE FOR MCU UPGRADE.
Password (Password)	Upgrade Setting	DO NOT USE FOR MCU UPGRADE.
UPS/PDU Information (UPS/PDU Information)	rPDU Information	Provides unique identification data for the currently connected rPDU before the upgrade starts. Product – Provides the rPDU equipment identification. Reference Number – Specifies the MCU firmware identification code. Version – Specifies the version of the current rPDU MCU firmware upgrade file. Ready for Upgrade – n/a
File Information (File Information)	Upgrade File Information	Provides unique identification data for the currently selected firmware file before the upgrade starts. Product – n/a Reference Number – Specifies the MCU firmware identification code. Version – Specifies the version of the selected MCU firmware upgrade file. Ready for Upgrade – n/a
Button	Purpose	Description
Connect (Connect)	Action button	Generates data in the UPS/PDU Information column when selected.
Upgrade (Upgrade)	Action button	Starts the rPDU MCU firmware upgrade.
Close (Close)	Action button	Closes the utility window without saving your changes.

Creating the Serial Connection

Before you begin the MCU serial upgrade, verify that you can provide a proper connection to the rPDU.

To create an serial connection between the rPDU and the PC:

- 1 Locate the RJ-45-to-DB-9 (RS-232) cable to use for this connection (provided).
- 2 Ensure the serial cable RS-232 connector is connected to the COM port on the PC.

- 3 Connect the serial cable RJ-45 connector to the serial connection port on the rPDU (see Figure 26).

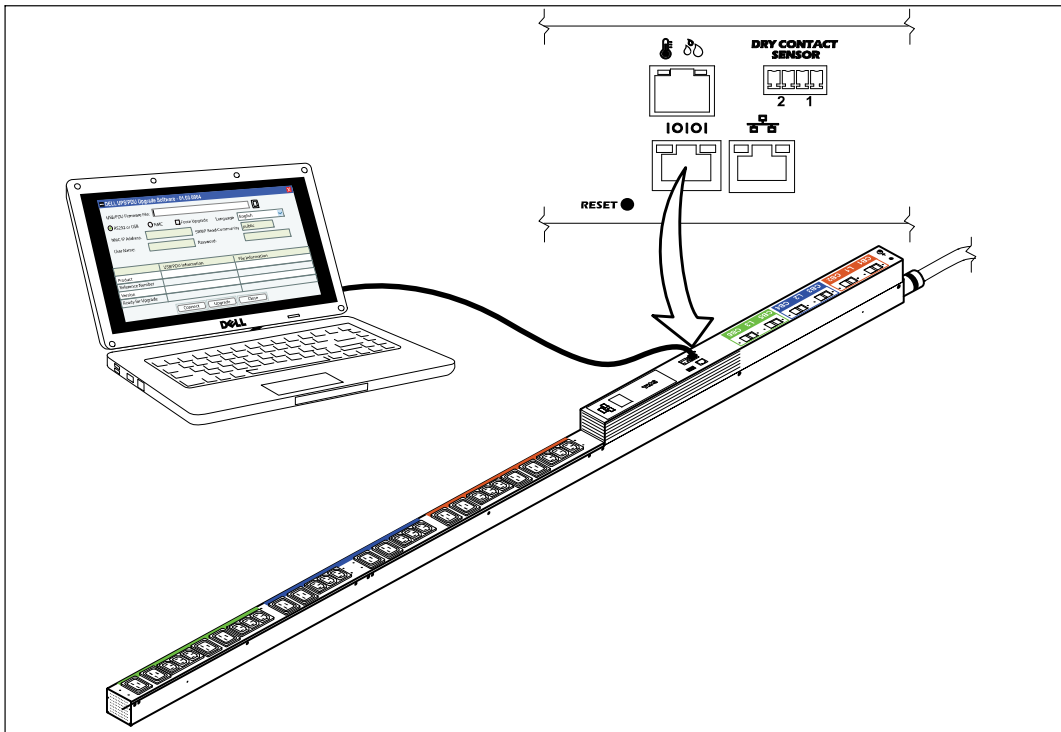


Figure 26. Connecting the PC to the rPDU Serial Port

Upgrading the Microprocessor Control Unit Firmware

These instructions describe the MCU upgrade procedure in the following sequence:

- Accessing the serial upgrade user interface
- Selecting the rPDU to upgrade
- Selecting the MCU firmware file to use for the upgrade
- Completing the upgrade process

NOTE: If power to the rPDU is interrupted at any time, check each circuit breaker and reset if necessary.

To prepare the rPDU for the serial MCU firmware flash upgrade, perform the following:

- 1 Verify that the rPDU you intend to upgrade is properly connected to the PC COM port using the RJ-45-to-DB9 (RS-232) cable (see Figure 26).
- 2 Start up the rPDU as follows:
 - Plug the rPDU power cord into the power outlet.
 - Turn each circuit breaker to the ON position.

NOTE: During startup, the Dell Startup LCD screen on the rPDU displays for five seconds and then defaults to the Input Status screen.

- 3 Wait approximately 15 seconds to allow the rPDU to prepare for upgrading.

To select the rPDU and the firmware file you intend to use for the flash upgrade procedure:

- 4 Start up the UPS/PDU Upgrade Software upgrade utility software.
- 5 Click the browse button beside the **UPS/PDU Firmware File** field. From the list of files that display in the **Open** window, select the upgrade file with the appropriate firmware version for this upgrade (see Figure 27).

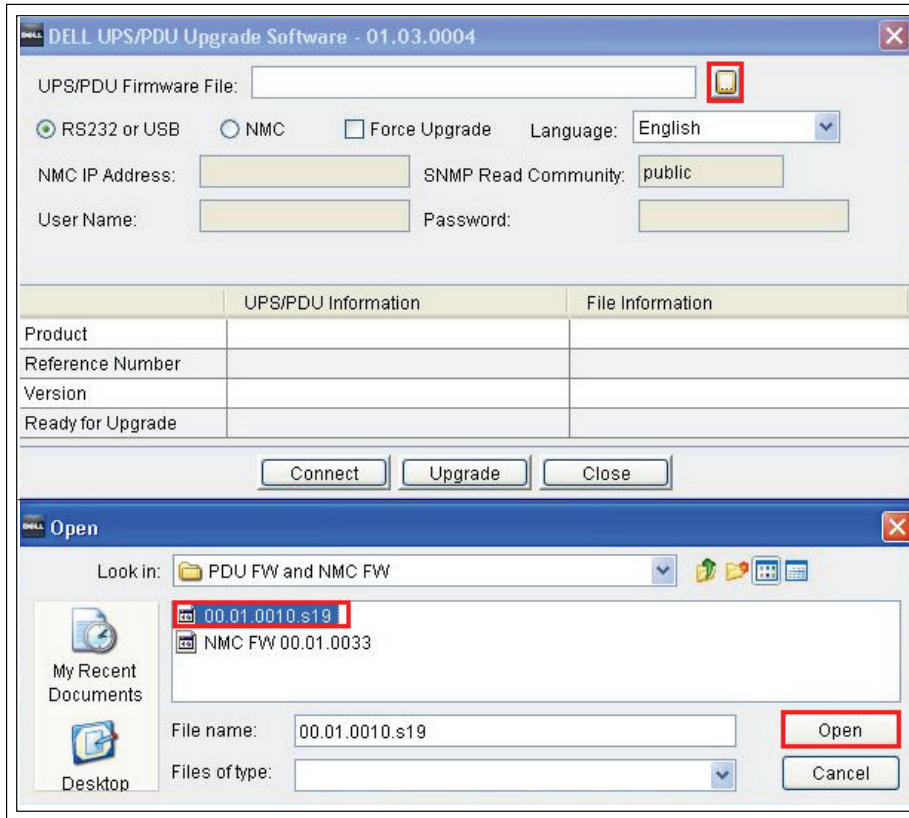


Figure 27. Selecting the MCU Firmware File

- 6 Click **Open**. The reference and version number of the upgrade file display in the **File Information** field (see Figure 28).
- 7 Select **RS232 or USB** to use the PC COM port for this upgrade (see Figure 28).

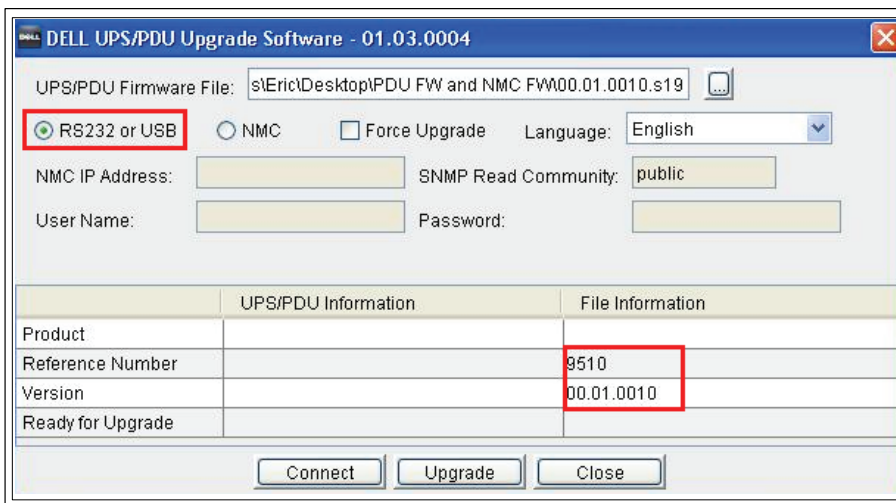


Figure 28. Selecting the RS-232 Setting

- 8 Click **Connect** to establish communication with the rPDU MCU. The rPDU equipment information displays in the **UPS/PDU Information** field (see Figure 29).

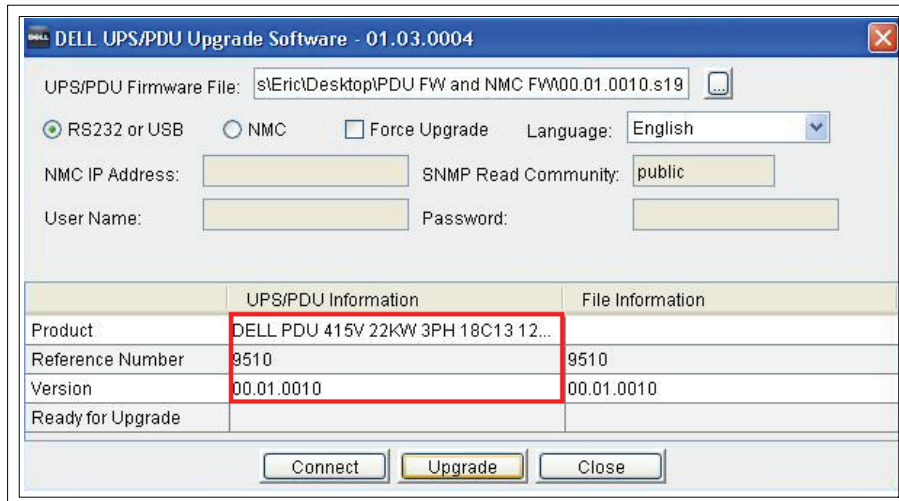


Figure 29. Displaying the Upgrade File Information

- 9 Verify that the rPDU MCU listed in the **UPS/PDU Information** column is the rPDU MCU you intend to upgrade. Ensure that the firmware version was correctly selected by verifying the program reference number and firmware version number in the **File Information** column (see Figure 29).

To start the firmware flash upgrade:

- 10 Click **Upgrade** on the UPS/PDU Upgrade Software window (see Figure 30). Monitor the progress bar in the middle of the window as the upgrade processes.

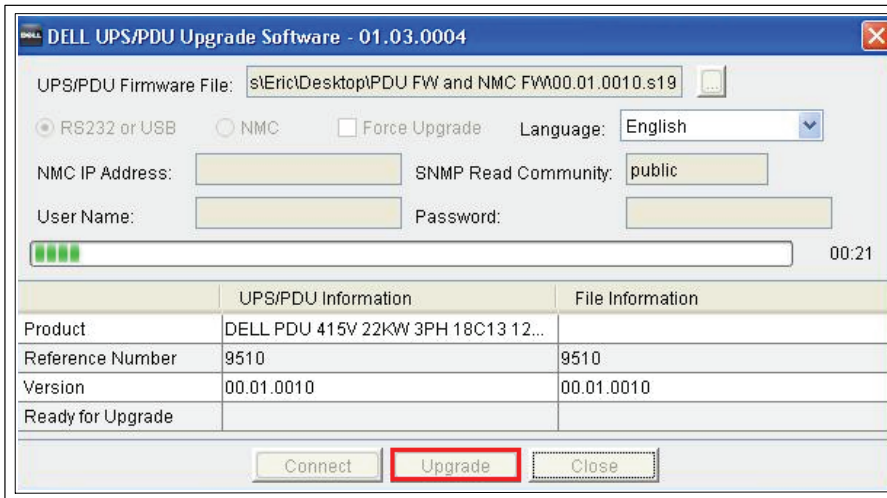


Figure 30. Monitoring MCU Upgrade Progress

NOTE: While upgrading, the rPDU LCD displays the message Flash Update in Process. A progress bar with the upgrade percentage completed also displays on the LCD.

11 Determine the upgrade completion status (see Table 6):

Table 6. Upgrade Completion Status

Message Display	Description
	<p>Successful</p> <p>If the MCU firmware upgrade is successful, a successful notification message displays. This procedure is completed.</p>
	<p>Not Successful</p> <p>If errors occur during the upgrade, an error notification message displays.</p> <p>To retry the upgrade, perform the following:</p> <ol style="list-style-type: none"> 1. Click Upgrade retry the upgrade procedure. 2. Determine the completion status: <ul style="list-style-type: none"> • SUCCESSFUL: If the firmware upgrade was successful, a successful notification message displays. This procedure is completed. • UNSUCCESSFUL: If retrying the MCU upgrade fails, contact Dell User Support at www.support.dell.com.