

HP StorageWorks RDX Removable Disk Backup System User Guide

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About this guide

This guide provides information about:

- Installing the HP StorageWorks RDX Removable Disk Backup System
- Using the HP StorageWorks RDX Removable Disk Backup System
- Troubleshooting the HP StorageWorks RDX Removable Disk Backup System

Intended audience

This guide is intended for users who install, operate and maintain HP StorageWorks RDX Removable Disk Backup Systems.

Related documentation

In addition to this guide, the following document provides related information:

- 'Start here' poster for an overview of the installation information in this guide (available in English, French, German and Japanese)

You can find these documents from the Manuals page of the HP Business Support Center website:

<http://www.hp.com/support/manuals>

Document conventions and symbols

Table 1 Document conventions

Convention	Element
Blue text: Table 1	Cross-reference links and e-mail addresses
Blue, underlined text: http://www.hp.com	website addresses
Bold text	<ul style="list-style-type: none">• Keys that are pressed• Text typed into a GUI element, such as a box• GUI elements that are clicked or selected, such as menu and list items, buttons, tabs, and check boxes
<i>Italic text</i>	Text emphasis
Monospace text	<ul style="list-style-type: none">• File and directory names• System output• Code• Commands, their arguments, and argument values
<i>Monospace, italic text</i>	<ul style="list-style-type: none">• Code variables• Command variables
Monospace, bold text	Emphasized monospace text

WARNING!

Indicates that failure to follow directions could result in bodily harm or death.

△ **CAUTION:**

Indicates that failure to follow directions could result in damage to equipment or data.

 **IMPORTANT:**

Provides clarifying information or specific instructions.

 **NOTE:**

Provides additional information.

HP technical support

For worldwide technical support information, see the HP support website:

<http://www.hp.com/support>

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Product warranties

For information about HP StorageWorks product warranties, see the warranty information website:

<http://www.hp.com/go/storagewarranty>

Registering your drive

Once you have installed and tested your HP StorageWorks drive, please take a few minutes to register your product on the following website:

<http://www.register.hp.com>

To ensure your registration is complete, there are a number of questions on the electronic form that are mandatory. Other questions are optional. However, the more you feel able to complete, the better HP can meet your needs.

Subscription service

HP recommends that you register your product at the Subscriber's Choice for Business website:

<http://www.hp.com/go/e-updates>

After registering, you will receive e-mail notification of product enhancements, new driver versions, firmware updates, and other product resources.

After signing up, you can quickly locate your products by selecting **Business support** and then **Storage** under Product Category.

HP websites

For additional information, see the following HP websites:

- <http://www.hp.com>
- <http://www.hp.com/go/storage>
- http://www.hp.com/service_locator
- <http://www.hp.com/support/manuals>
- <http://www.hp.com/support/downloads>

Documentation feedback

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To make comments and suggestions about product documentation, please send a message to storagedocs.feedback@hp.com. All submissions become the property of HP.

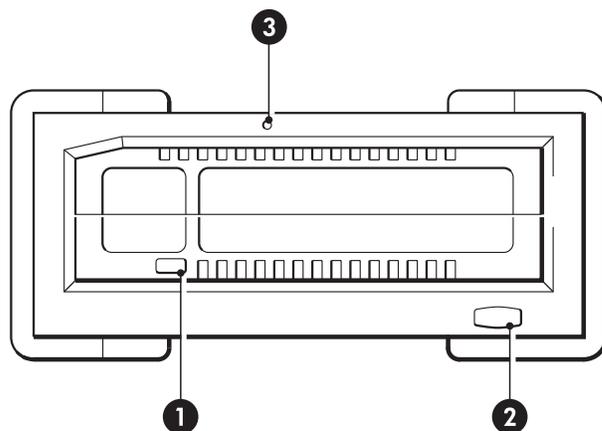
1 Before you start

In this chapter:

- “Overview” on page 11
- “Which operating systems are supported?” on page 11
- “How do I connect the drive to my server?” on page 11
- “What are the mounting requirements for an internal device?” on page 12
- “RDX Removable Disk utility” on page 12
- “Using the HP StorageWorks CD-ROM” on page 12

Overview

The HP StorageWorks RDX Removable Disk Backup System is a removable, ruggedized, hard disk drive system. This guide describes how to install and operate the HP StorageWorks RDX Removable Disk Backup System. For a detailed product specification, please refer to our World Wide Web site (<http://www.hp.com>).



1. Cartridge activity LED (located on cartridge)
2. Eject button/power LED
3. Emergency eject hole

Figure 1 Front view of the RDX Removable Disk Backup System

Which operating systems are supported?

HP RDX Removable Disk Backup Systems can be connected to servers running under Microsoft Windows Server 2003, Server 2008 and XP Professional. Refer to our World Wide Web site (<http://www.hp.com/go/connect/>) for the most recent information about the operating system versions that are supported.

How do I connect the drive to my server?

For optimum performance the drive should be connected to a USB 2.0 port and it should be the only device on the USB bus. Although the drive will function on USB 1.1, performance will be severely degraded. See also “USB Configuration Guide” on page 35. Appropriate USB cables are supplied with your RDX Removable Disk Backup System.

For internal drives, the USB 2.0 connection is via an internal port on the server's system board, which may be a standard Type A connector or a 4-pin header cable.

What are the mounting requirements for an internal device?

Mounting bay

You need one industry-standard, 5¼-inch, half-height bay in which to install the HP RDX Removable Disk Backup System. Power requirements are:

Table 2 Power requirements

	Internal drive	External drive
Voltage	+5VDC ±5% +12VDC ±10%	+12VDC ±10%
Power consumption (Typical/Peak)	7.5W / 13W	6.6W / 13W
AC Adapter	N/A	Universal adapter, 100-240 VAC, 50-60Hz input

Mounting hardware

For many servers, no mounting tray or rails are required. Devices simply slide into the server's chassis and are fixed with screws. Other servers have built-in trays or rails.

Rail kits for a number of industry-standard servers may be available. For more details refer to: <http://www.hp.com/go/connect>.

Some servers use non-standard mounting rails and do not include spares. If this is the case with your system, you will have to order these accessories from the server manufacturer before you can install the RDX Removable Disk Backup System.

HP StorageWorks RDX Removable Disk utility

The CD-ROM supplied with your HP RDX Removable Disk Backup System contains a utility that enables the Eject button and right-click eject method to operate correctly under the Windows operating system. It should be installed immediately after you have connected the drive. This utility also contains basic diagnostic tests.

Using the HP StorageWorks CD-ROM

The HP StorageWorks CD-ROM is a central source of information about your RDX Removable Backup System with utilities for getting the best performance from your drive.

Use the HP StorageWorks CD-ROM to complete installation, as described in this guide, and to verify and troubleshoot performance after installation. It helps you to:

- Install the RDX Removable Disk utility which enables the eject function to operate correctly
- Learn about your product
- Register your product
- Buy media online
- Troubleshoot with the RDX Removable Disk utility

2 Installing an internal RDX Removable Disk Backup System

If you are installing an external RDX Removable Disk Backup System, please refer to “Installing an external RDX Removable Disk Backup System” on page 21.

 **NOTE:**

It is important to ensure that you connect your drive to a USB 2.0 port. The drive will work on a USB 1.1 port but performance will be severely degraded.

In this chapter:

- “Prepare mounting bay” on page 13
- “Attach mounting hardware” on page 14
- “Install drive” on page 15
- “Connect cables to the server” on page 16
- “Attach USB and power cable to the RDX drive” on page 17
- “Secure the RDX Removable Disk Backup System” on page 18

Prepare mounting bay

 **CAUTION:**

To avoid personal injury or damage to the server or RDX Removable Disk Backup System, ensure that the server is disconnected from the mains power supply while you install the drive.

-
1. Assemble the necessary tools and materials:
 - Phillips screwdriver
 - Flat-bladed screwdriver (if your server uses slotted screws)
 - Torx screwdriver (if your server uses torx screws)
 - Your server manuals (for reference during installation)
 2. Perform a normal system shutdown and turn off the server and any connected peripherals.

3. Remove the cover and front panel from the server, as detailed in your server's documentation.

As you work inside the server, you may have to disconnect other signal cables or power cables from other devices to maneuver the new drive into place. If you have to do this, make a note of their position and connections so you can put them back correctly later.

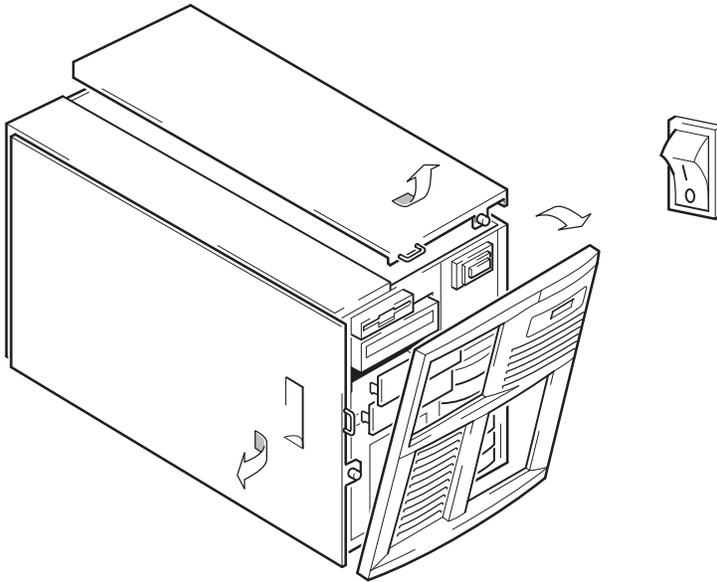


Figure 2 Removing cover from typical server

4. Remove the filler panel from a spare 5¼-inch bay of your server, as described in your server's documentation. Keep any screws for use in "[Secure the RDX Removable Disk Backup System](#)" on page 18.
5. You are now ready to install your RDX Removable Disk Backup System.

Attach mounting hardware

If your server requires special rails or other hardware to install the RDX Removable Disk Backup System, mount them on the drive now. *If your server does not require special mounting hardware, proceed to "[Install drive](#)" on page 15 now.*

△ CAUTION:

Static electricity can damage electronic components. Always wear an antistatic wriststrap if one is available. If not, after you have disconnected power from the server and removed the cover, touch a bare metal part of the chassis. Similarly, touch a bare metal part of the drive before installing it.

HP ProLiant servers

Different models of server require different mounting methods. The server may also incorporate a locking mechanism to hold the RDX Removable Disk Backup System in place. See "[Secure the RDX Removable Disk Backup System](#)" on page 18.

Please check your HP ProLiant server documentation to ascertain the correct method of mounting, and to check whether mounting hardware is provided with the server.

- **Mounting rails:** Some HP ProLiant servers, such as ML530 and ML570, require mounting rails. These may be metal or plastic rails attached to the filler panel of the server's drive bay. Use a regular Phillips screwdriver to attach the appropriate rails. Use the M3 screws provided with the server. If in doubt, refer to your HP ProLiant server documentation.

- **Mounting screws:** Other HP ProLiant server models, such as ML350 and ML370, require the use of special locating screws with no mounting rail. Use a Torx screwdriver to attach the appropriate screws. You may need to purchase the M3 screws separately.

Other servers

Attach the appropriate mounting hardware. Refer to the manufacturer's documentation for instructions.

- If you are installing on a server that requires a tray, place the RDX Removable Disk Backup System in the tray.
- If you are installing in a server that requires mounting rails, fasten the rails to the RDX Removable Disk Backup System.
- Some servers have snap-on mounting rails attached to the filler panel. These can be removed and attached to the RDX Removable Disk Backup System with screws.

Install drive

Slide the RDX Removable Disk Backup System into the open bay, aligning the tray or rails with the slots in the bay, as shown in [Figure 3](#) on page 15.

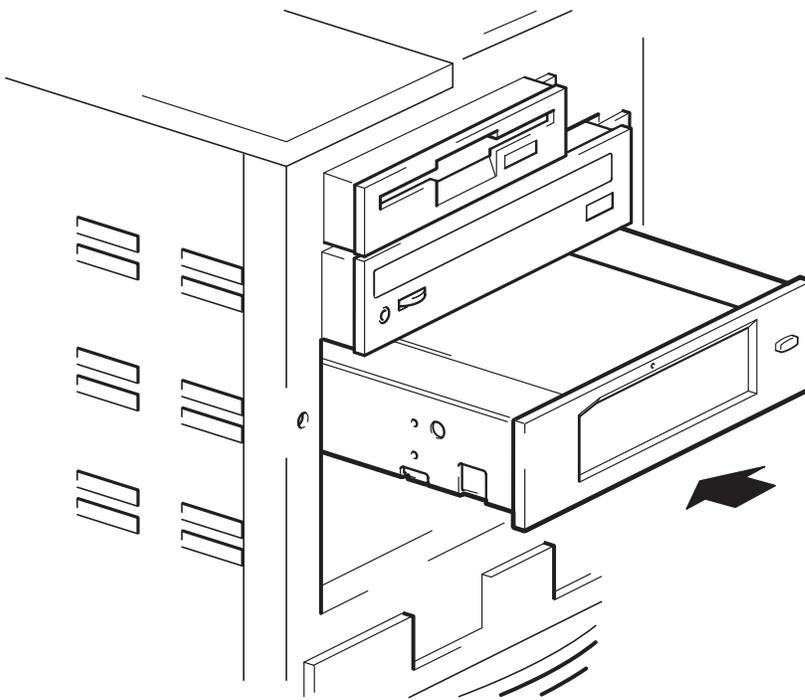


Figure 3 Installing RDX Removable Disk Backup System

If your server does not use mounting hardware, check that the holes in the chassis are aligned with the holes in the side of the RDX Removable Disk Backup System.

Do not secure the RDX Removable Disk Backup System at this point because you may have to move it to get the cables into place.

Connect cables to the server

Decide which USB cable to use

Look at the diagram on the inside of the side panel of the server to establish whether the server has an internal USB port and its location. This may be a Type A USB connector or a special 5-pin connector with one pin missing for keying.

Three USB cables are supplied with your RDX Removable Disk Backup System.

- Many HP ProLiant servers have the special USB connector on the system board, which may be orientated vertically or horizontally. Two cables are supplied for connecting to a special USB connector because there are two types of pin layout.

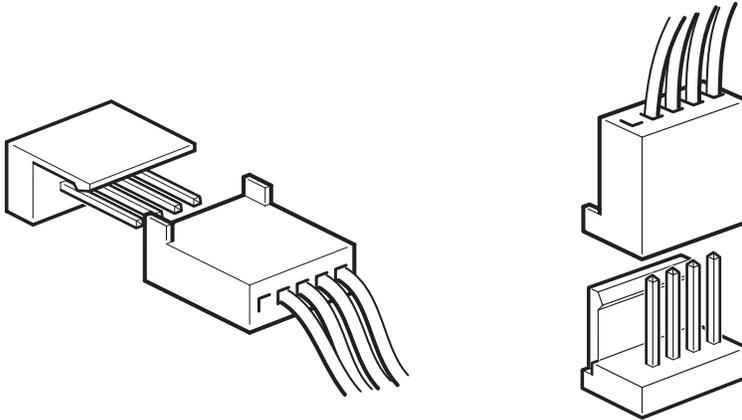


Figure 4 Orientation of special ProLiant internal connector

- Other servers have a Type A internal USB port, possibly on the server's system board or on an internal USB card; this option uses the standard USB cable.

Connect the USB cable to the server

Use the cable supplied with the RDX Removable Disk Backup System to connect to the server.

- If your server has a standard USB port with a Type A (flat) connector, use the supplied, standard USB cable. You can use cable ties to tidy excess cable length.

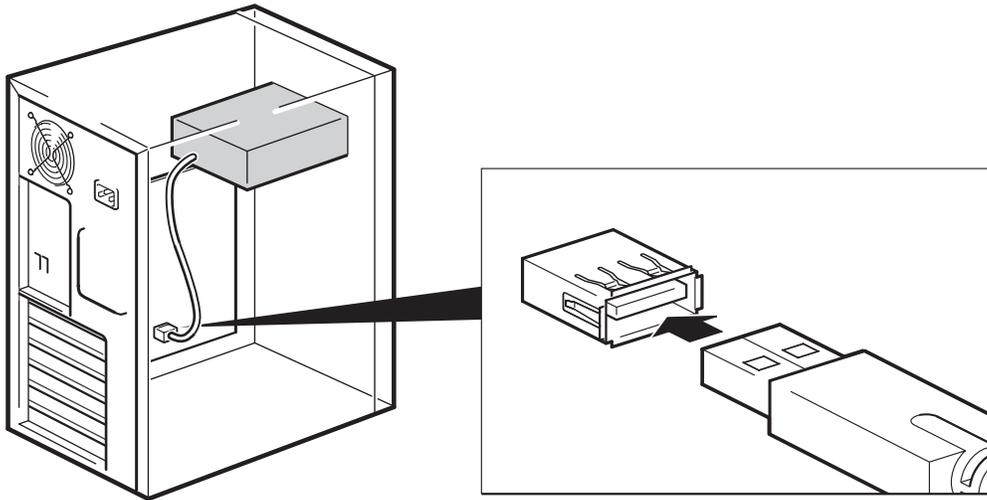


Figure 5 Connecting to a standard USB port

- If your server has a special USB port, use the supplied, special USB cable, as illustrated in [Figure 6](#) on page 17. Select the special cable that is appropriate for the pin layout on the USB port.

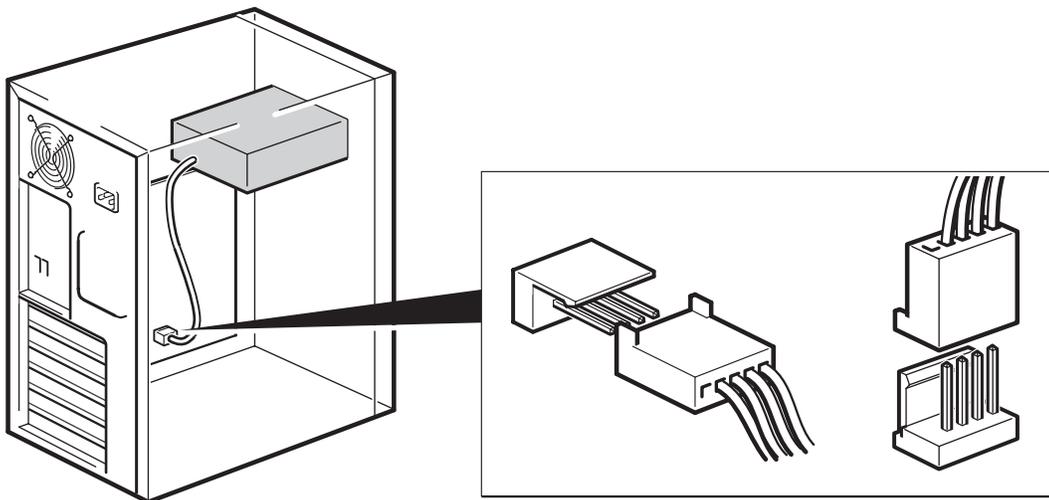


Figure 6 Connecting to a special USB port

Attach USB and power cable to the RDX Removable Disk Backup System

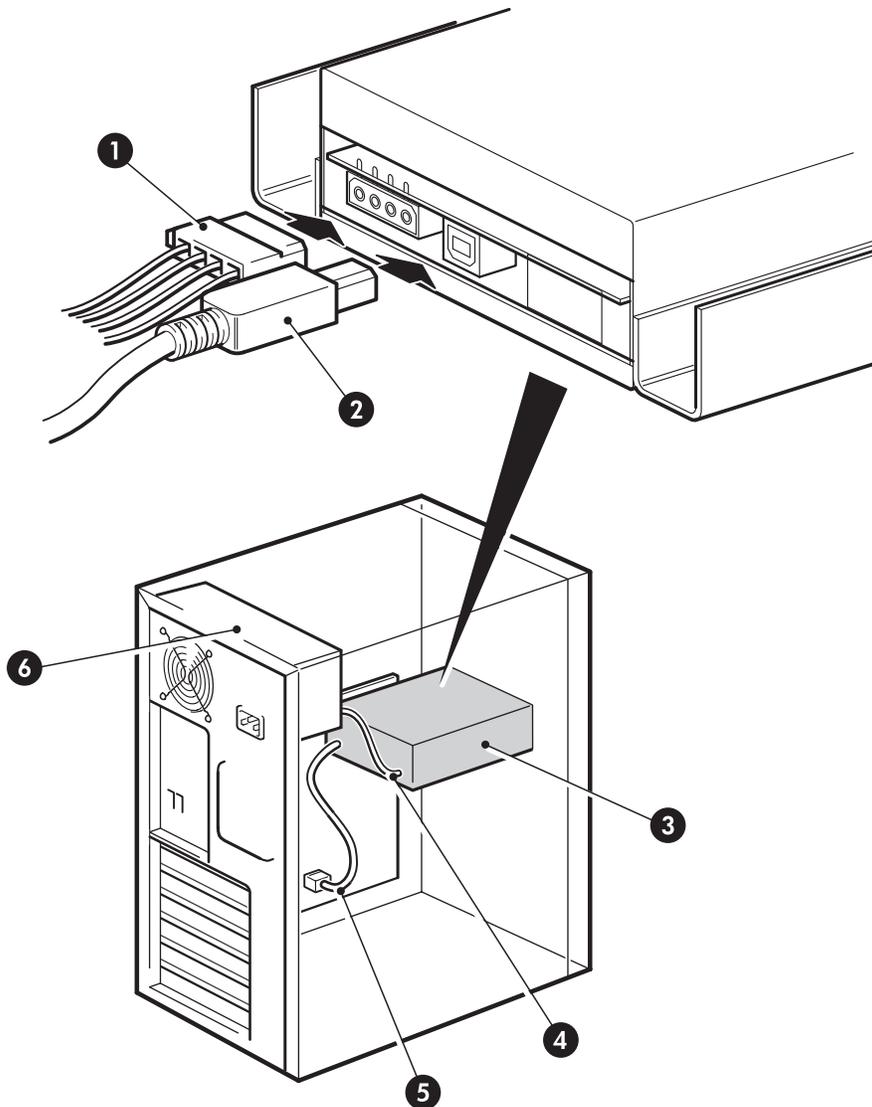


NOTE:

The drive is not powered from the USB bus. It must be connected to the server's power supply.

1. Connect the Type B (square) connector on the USB cable to the internal RDX Removable Disk Backup System.

2. Attach a spare power cable from the server's internal power supply to the power connector.



1 and 4. power cable
2 and 5. USB cable

3. RDX Removable Disk Backup System
6. server's power supply

Figure 7 Attaching USB and power cable

Secure the RDX Removable Disk Backup System

 **NOTE:**

The server latches and side views of your server model may not be exactly the same as shown in the illustrations. Please refer also to your server documentation.

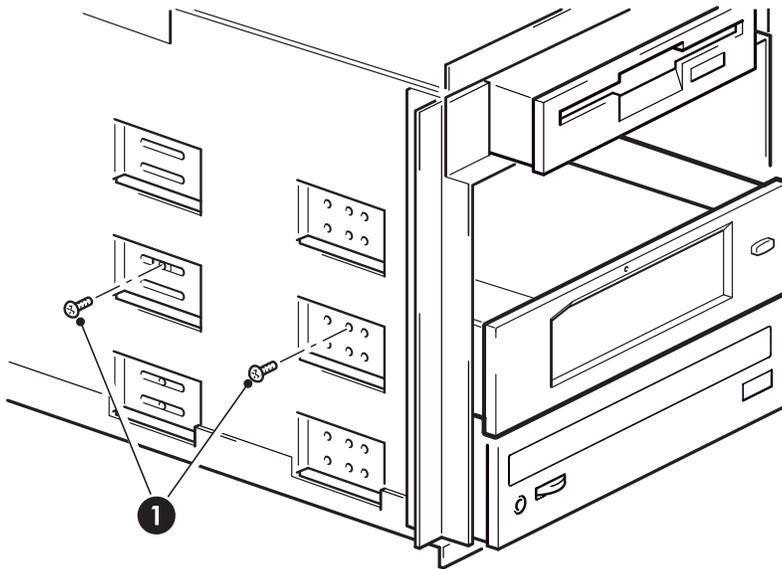
Mounting hardware used (HP ProLiant)

Ensure that you use the correct mounting rails or locating screws, as described in “[Attach mounting hardware](#)” on page 14. The server also incorporates a locking mechanism to hold the RDX Removable Disk Backup System in place.

1. Push the server latch down to lock the drive into position.
2. Ensure blanking plates are in place over empty bays and replace the cover on the server.

No mounting hardware used

1. Use the M3 screws provided with the server. Check that the holes in the chassis are aligned with the holes in the sides of the drive and use a regular Phillips screwdriver to secure the M3 screws, as shown in [Figure 8](#) on page 19.



1. M3 screws, supplied

Figure 8 Securing drive, no mounting hardware used

2. Ensure blanking plates are in place over empty bays and replace the cover on the server.

3 Installing an external RDX Removable Disk Backup System

If you are installing an internal RDX Removable Disk Backup System, please refer to “Installing an internal RDX Removable Disk Backup System” on page 13.

In this chapter:

- “Connecting the power and USB cables” on page 21

Connecting the power and USB cables

An external HP RDX Removable Disk Backup System will operate using any voltage in the range 100–240 volts (0.7 A, 50-60 Hz). No adjustment is needed.

A USB cable, a power cable and universal adapter are provided with your RDX Removable Disk Backup System.

1. Plug the Type B (square) connector on the USB cable into the socket on the back of the RDX Removable Disk Backup System and connect the Type A (flat) connector to the server.

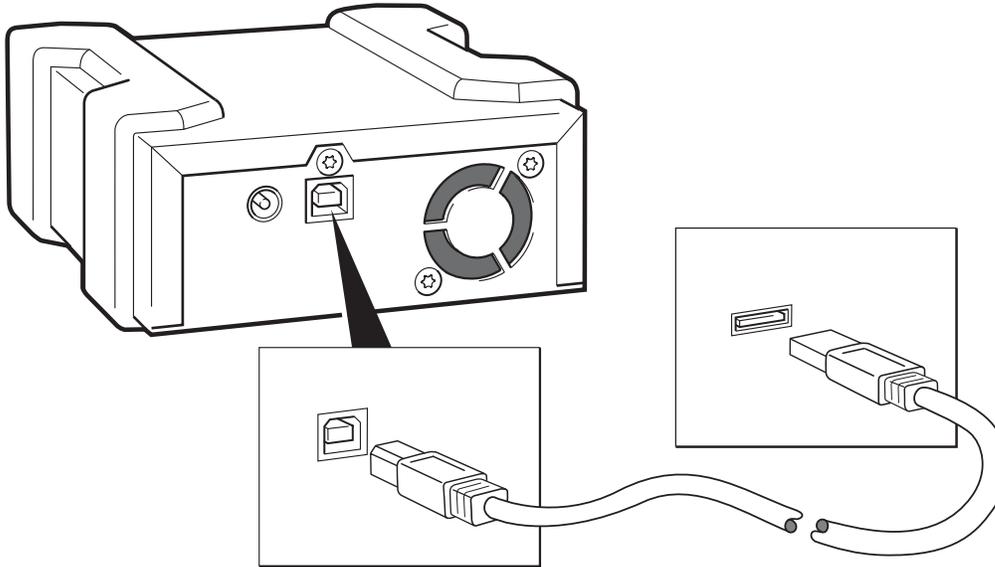


Figure 9 Connecting the USB cable

2. Plug the rounded end of the AC adapter into the RDX Removable Disk Backup System and use the supplied power cord to plug the AC adapter into a power outlet. (The supplied power cord is appropriate for your geographical region.)



NOTE:

The RDX Removable Disk Backup System is not powered from the USB bus. It must be connected to the mains power supply.

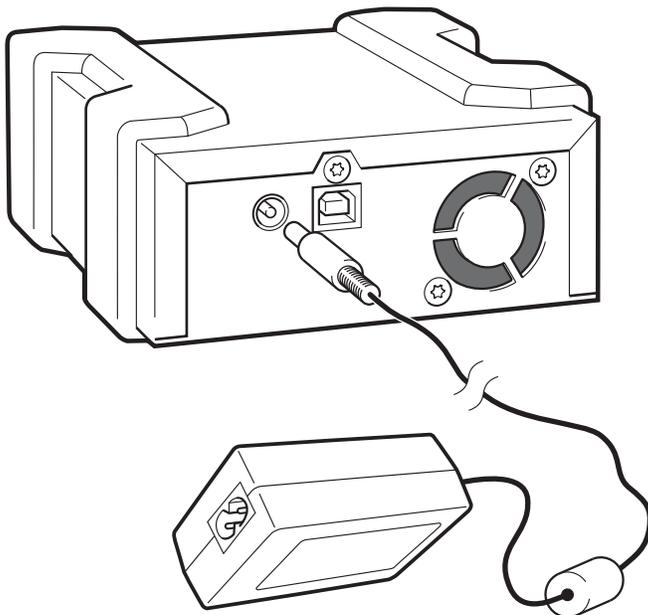


Figure 10 Connecting the power cable

4 Operating your RDX Removable Disk Backup System

In this chapter:

- “Install the RDX utility” on page 23
- “Front panel” on page 23
- “Media” on page 24
- “Loading and unloading” on page 25
- “Removing power from the unit” on page 26

Install the RDX Removable Disk utility (Windows only)

The RDX Removable Disk utility ensures that the eject function operates correctly under Windows. It is found on the HP StorageWorks CD-ROM supplied with your RDX Removable Disk Backup System and should be installed before you start to work with the unit.



NOTE:

If the RDX utility is not installed, the eject button and the right-click eject method may not work properly.



NOTE:

You must be logged in as the Administrator or have administrator privileges to install the software.

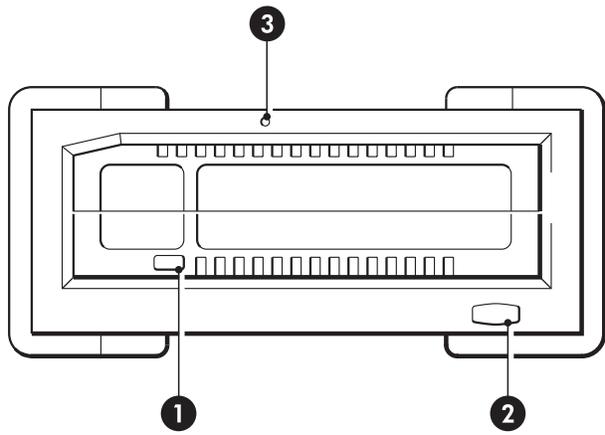
1. Insert the supplied CD into the CD-ROM drive on the server.
2. The CD should automatically start the installation process.

If it does not start automatically, locate the **RDXInstallationWizard.exe** program on the CD-ROM and double-click to run it manually.

3. Follow the instructions on the screen and restart the server when asked to do so.
4. Your RDX Removable Disk Backup System is now ready to use.

Front panel

The front of the RDX Removable Disk Backup System has an opening for inserting cartridges. A protective door covers the opening. For more information about LEDs see “[Understanding the LEDs](#)” on page 28.



- | | |
|---------------------------|-----------------------------|
| 1. cartridge activity LED | 2. eject button / power LED |
| 3. emergency reset hole | |

Figure 11 Front panel



NOTE:

On the internal model, the Eject button is to the right of the cartridge slot.

Media

For best performance we recommend HP branded media. The RDX Removable Backup System supports any HP RDX cartridge. Cartridges are available in different capacities to support your storage requirements. Order online at: <http://www.hp.com/go/storagemedia>.

Write-protecting cartridges

If you want to protect the data on a cartridge from being altered or overwritten, you can write-protect the cartridge.

1. Eject the cartridge from the RDX Removable Disk Backup System.
2. The write-protect tab is on the rear of the cartridge, see “Inserting a cartridge” on page 25.
 - When the cartridge is write-protected, the padlock icon is closed.
 - When the cartridge is write-enabled, the padlock icon is open.

Handling cartridges

Although cartridges are ruggedly built, they must be handled with care to ensure data integrity and long life. Observe the following precautions:

- Store cartridges in their protective cases when you are not using them.
- Do not stack cartridges.
- Keep cartridges away from dust, dirt and moisture.
- Avoid direct sunlight, heat sources and temperature extremes or rapid changes in temperature.
- Do not drop cartridges or handle them roughly.
- Never try to force the cartridge into the unit. If it is difficult to insert, check the orientation and try again. Use the keyed corner as a guide to correct alignment, see “Inserting a cartridge” on page 25.

Loading and unloading

Inserting cartridges

1. Insert a cartridge into the unit with the keyed corner facing the upper left corner of the RDX Removable Disk Backup System. The cartridge fits in only one orientation. (The write-protect tab is on the back right of the cartridge.)
2. Push the cartridge gently into the unit until it locks into place with a clicking sound.

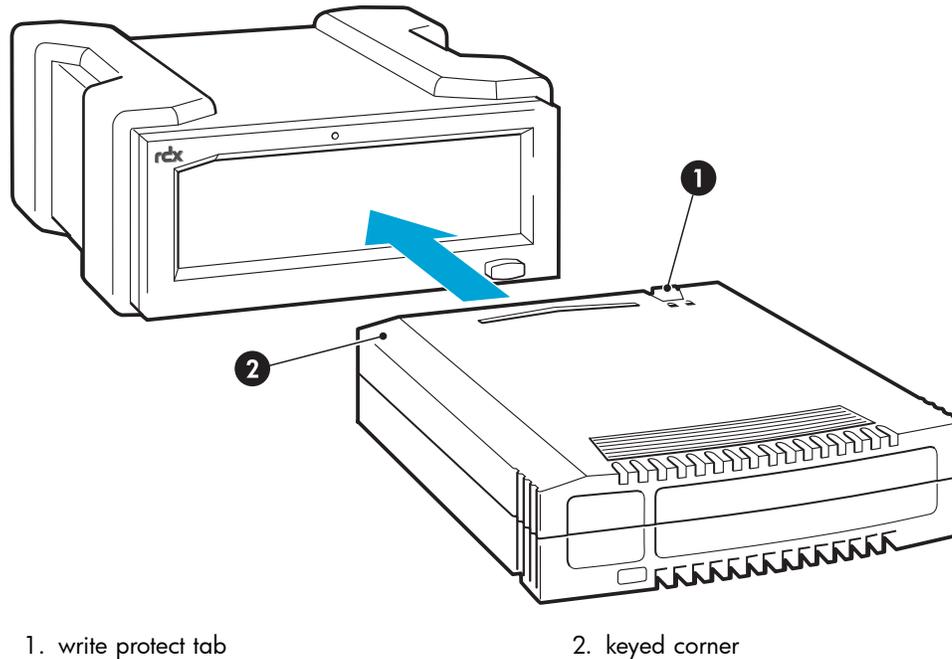


Figure 12 Inserting a cartridge

Removing cartridges

There are two ways to eject a cartridge under normal operation.

If the eject function does not operate correctly, see “[Emergency eject](#)” on page 30.

Unload using the mouse right-click method (Windows™ only)

1. Locate the drive letter for the device in Windows Explorer.
2. Right click on the device and select **Eject**.
3. The RDX Removable Disk Backup System completes any task it is currently performing and ejects the cartridge. When the cartridge has been ejected by the unit, grasp the exposed sides of the cartridge and pull it straight out.

Unload using the eject button

1. Press the Eject button on the front panel.

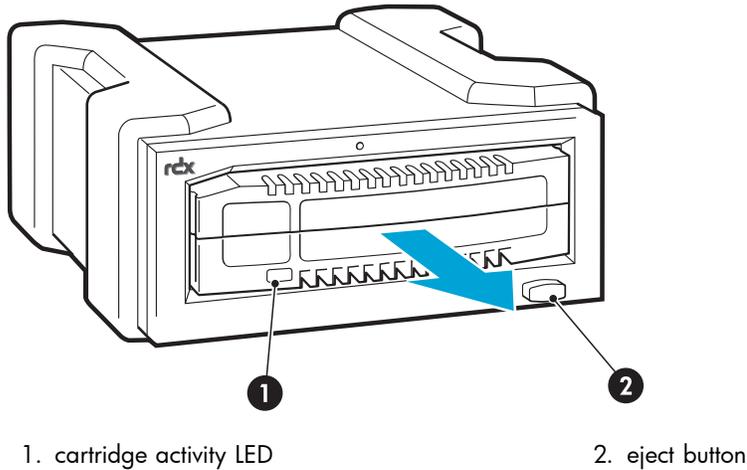


Figure 13 Ejecting a cartridge



NOTE:

On the internal model, the Eject button is to the right of the cartridge slot.

2. The drive completes any task it is currently performing and ejects the cartridge. When the cartridge has been ejected by the unit, grasp the exposed sides of the cartridge and pull it straight out.

Removing power from the unit

To ensure reliable operation, do not remove power from the unit during read, write, search, load and unload activities.

5 Troubleshooting

In this chapter:

- “General Procedure” on page 27
- “Using the RDX utility for diagnostics ” on page 30
- “Understanding the LEDs” on page 28
- “Emergency eject” on page 30
- “RDX Removable Disk Backup System does not appear in Device Manager” on page 31
- “Unit performance seems slow” on page 31
- “Write error” on page 31
- “Firmware download fails with Windows Server 2003” on page 31
- “System will not complete boot process” on page 31

General Procedure

If a problem occurs, the first step is to try to establish whether the problem lies with the cartridge, the drive, the host server and connections, or the way the system is being operated.

Has the system just been installed?

There could be an installation problem:

1. Check through the information in the relevant installation chapter of this guide.
2. Check the power connectors and USB cabling.
3. Are you connected to a USB 2.0 port? Are there any other devices attached to the same USB hub/controller? Remove extra devices if they are not necessary. See also “USB Configuration Guide” on page 35.
4. Check the environmental conditions against the specified limits, see <http://www.hp.com>.
5. Are appropriate drivers and application software installed on the host?

Are you using new cartridges or a different brand of cartridge? Have you been using the particular cartridge for a very long time?

The problem could lie with the cartridge:

1. Check that you are using an RDX cartridge.
2. Check that the cartridge is not damaged.
3. Has the cartridge been write-protected, see “Write-protecting cartridges” on page 24?
4. Try the operation again.
5. If the problem still occurs, try using a different cartridge.
6. If the problem is still there, the problem probably lies with the drive or the host server.

Has the drive been moved recently? Have any cables been disconnected and reconnected? Has the environment changed—unusually hot, cold, damp or dry? Has there been dust or dirt near the drive. Have reasonable precautions against static been taken?

The problem could lie with the drive:

1. Check the cables and connectors.

2. If the problem persists, check the environmental conditions against the specified limits (refer to <http://www.hp.com>). Perhaps move the drive to a more suitable site.

Has a new operating system been installed in the host server? Has new backup software been installed?

The problem could lie with the host or the software. Consult the server's operating manuals, the software manual, or seek help from a service engineer.

Understanding the LEDs

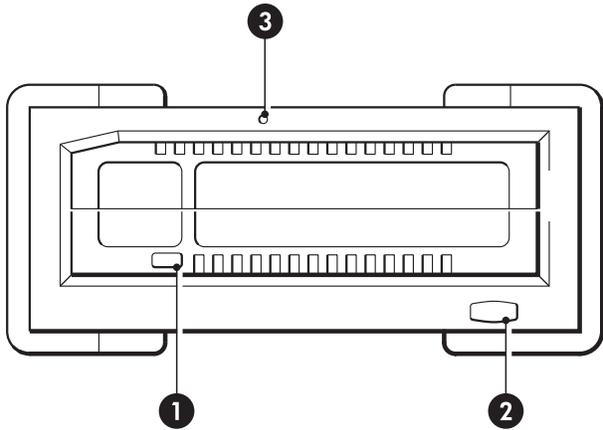


Figure 14 Front panel with LEDs

1. cartridge activity LED
2. eject button / power LED
3. emergency reset hole

Power LED

Table 3 Power LED

LED Status	Meaning	Action required
OFF	No power	Check the power cable connection and replace the cable if necessary. You can use the power cable from your monitor or another device to check that the connection is working. If the power supply is present and the LED remains off, power cycle or reset the drive. If it still fails, call for service.
Steady GREEN	The drive is ready for operation	None. This is normal.
Blinking GREEN	Ejecting	None. The unit is ejecting the cartridge.
Steady AMBER	Fault	The unit has detected a fault condition. This may be because: <ul style="list-style-type: none"> the unit cannot eject the cartridge due to an obstruction the internal electronics are damaged or malfunctioning Use a straightened paper clip in the Emergency Eject Hole to remove a stuck cartridge, as described in “Emergency eject” on page 30. If this does not resolve the problem, run the RDX diagnostic application.
Blinking AMBER	Prevent	None. The host server is accessing the media and the user has pressed the eject button. The unit will blink amber for a few seconds then return to steady green. Wait for host access to complete, after which the unit will eject the cartridge. If it does not, you may not be running the correct RDX utility, see “RDX Removable Disk utility” on page 12. Install the RDX utility and try again. If necessary, use Windows Explorer to eject the cartridge (right-click on the drive letter for the RDX Removable Disk Backup System and select Eject).

Cartridge Activity LED

Table 4 Cartridge LED

LED Status	Meaning	Action required
OFF	Not ready	The cartridge is not inserted correctly or the unit has no power. Make sure the cartridge is inserted correctly; it should lock into place with a clicking sound. Check the power cables.
Steady GREEN	The cartridge is ready for operation	None. This is normal.
Blinking GREEN	Activity	None. The unit is carrying out a read, write or seek operation.
Steady AMBER	Fault	The unit has detected a cartridge fault condition. Check for the following fault conditions: <ul style="list-style-type: none">• The cartridge is not compatible with the RDX Removable Disk Backup System• The cartridge has been severely damaged• The cartridge has not been fully inserted If this does not resolve the problem, run the RDX diagnostic application.

Using the RDX utility for diagnostics

The RDX Utility is a Windows™ application that allows you to diagnose problems with your RDX Removable Disk Backup System. It is normally installed immediately after connecting the RDX unit to ensure that the eject function operates correctly, see “[Install the RDX utility](#)” on page 23.

With the RDX utility, you can:

- Identify RDX Removable Disk Backup Systems attached to your server.
- Retrieve device and cartridge status information.
- Upgrade the firmware in the RDX Removable Disk Backup System.
- Test the unit and the cartridge.

To run the RDX Utility for Windows

Click **Start > All Programs > RDX Utility > RDX Utility**. For instructions on using the RDX utility, click **Help**.

Emergency eject

 **NOTE:**

Do not emergency eject a cartridge while the cartridge activity LED is flashing.

If the cartridge does not eject, using either the eject button or the right-click eject methods, use the following emergency eject hole method to recover the cartridge.

1. If using the internal RDX Removable Disk Backup System, turn off your server. If using the external RDX Removable Disk Backup System, unplug the power cable.

2. Insert a large straightened paper clip (or similar object) into the Emergency Eject Hole (see “[Front panel with LEDs](#)” on page 28). Do not insert the object in the hole at an angle. Keep the object straight and apply some force to eject the cartridge.
3. When the cartridge has been ejected by the unit, grasp the exposed sides of the cartridge and pull the cartridge straight out.
4. Restart your server to reset the RDX Removable Disk Backup System. If using the external device, remember to reconnect the power cable before restarting your server.

The RDX Removable Disk Backup System does not appear in the Device Manager

If the unit does not appear in the Windows Device Manager and the power LED is green, follow these steps to rescan the hardware:

1. Bring up the Device Manager:
 - Right-click on **My Computer**.
 - Select **Manage**.
 - Select **Device Manager**.
2. Right-click on the top folder (this should be your server’s name). Select **Scan for Hardware Changes**.
3. You should see your RDX Removable Disk Backup System listed under **Disk drives**. If the device does not appear, restart the server.

Unit performance seems slow

Make sure your unit is connected to a USB 2.0 port instead of a USB 1.1 port. For best performance connect directly to a USB 2.0 root hub on the PC and not an external hub. If using an external hub, make sure it is USB 2.0 compliant.

Be aware that the USB bus shares bandwidth between all USB devices connected to the systems, including the RDX Removable Disk Backup System. The use of cameras, flash memory devices, and so on, on the USB bus will decrease performance of the device. Remove extra devices if they are not necessary. See also “[USB Configuration Guide](#)” on page 35.

Write Error

If the backup application reports a write error, follow these steps:

1. Verify that the write protect switch on the cartridge is set to the padlock open position.
2. Check the cartridge LED on the front of the cartridge. If this LED is amber, the cartridge is not working properly. This may be due to severe damage to the cartridge. Run the RDX utility to obtain more information about the failure.
3. Replace the cartridge if the error persists.

Firmware download fails with Windows Server 2003

If the firmware download fails with error invalid parameter and you are using Windows Server 2003, check to ensure you have at least Service Pack 1 installed.

System will not complete boot process

Some versions of BIOS do not handle large USB removable media correctly. If your system will not complete the boot process, follow the steps below:

1. Make sure you are using the latest BIOS for your system by checking <http://www.hp.com/support>
2. Disable USB boot in the BIOS and retry.
3. Attempt to eject the cartridge and retry boot, or boot with the RDX Removable Disk Backup System disconnected.
4. If using a FAT32 formatted cartridge, reformatting to another file system may fix the problem.

6 Replacing an internal RDX Removable Disk Backup System

In this chapter:

- “To disconnect your RDX Removable Disk Backup System” on page 33
- “To reconnect your RDX Removable Disk Backup System” on page 33

If your RDX Removable Disk Backup System proves to be faulty and cannot be repaired and it is still covered by the original warranty, it will be replaced. HP will provide a replacement unit free of charge. Based on availability and where geography permits, the replacement unit will be shipped for next business day delivery. Same day or four-hour delivery may be offered at an additional charge where geography permits. If you request HP to install the replacement unit, you will be charged for the travel and labor costs of this service.

To disconnect your drive

1. Unpack your replacement RDX Removable Disk Backup System, and retain the packaging.
2. Power off the server and disconnect from the mains power supply.
3. Remove the cover from the server.
4. Observing normal anti-static precautions (see caution in “[Attach mounting hardware](#)” on page 14) remove any screws that are holding the drive in place.
5. Disconnect the failed unit from the server’s power and USB cables and slide it carefully out of the mounting bay.
6. Put the failed unit into the packaging that contained the replacement unit.
7. Return the faulty unit to your local HP Service Center. Instructions on where to return faulty units will be shipped with the replacement unit.

You must ship the defective unit back to HP within a defined period of time, normally five (5) business days. The defective part must be returned with the associated documentation in the provided shipping material. Failure to return the defective part may result in HP billing you for the replacement. HP will pay all shipping and part return costs and determine the courier/carrier to be used.

 **NOTE:**

If you are not replacing the RDX Removable Disk Backup System immediately, you should insert a blanking plate into the empty bay. Replace the cover on the server and secure with screws, as appropriate.

To reconnect your RDX Removable Disk Backup System

Follow the step-by-step instructions in this User Guide.

7 USB Configuration Guide

In this chapter:

- “USB in HP StorageWorks devices” on page 35
- “USB terminology” on page 35
- “Setting up a USB network” on page 36
- “USB cables” on page 36

USB in HP StorageWorks devices

The RDX Removable Disk Backup system is a USB 2.0 logo certified device. It supports the high-speed USB transfer rate with a theoretical maximum transfer of over 50 MB/s. (The actual backup rate will be less. This is defined by the transfer rate of the drive and the compressibility of the data.)

To benefit from the high-speed performance of the USB 2.0 interface, the RDX Removable Disk Backup System should be connected to its host system via a USB 2.0 port. Any USB hubs between the device and the system port should also be USB 2.0 compliant.

To maximize device performance, minimize the use of other USB devices when using the RDX Removable Disk Backup System.

USB terminology

The Universal Serial Bus, USB, is a communication interface where an intelligent host controls all the network activity. A command from the host to a particular device is broadcast to all devices on the network. A device waits for a command addressed to itself and then responds as requested. The host determines how much of the overall USB network bandwidth a given device can use at any time. Any given USB network has only one host.

Hubs act as command repeaters and multipliers. This allows many devices to be supported by one host. A host command can arrive at the upstream port of the hub and be transmitted via the downstream ports to many other device and hubs. (Likewise, device commands arriving at a downstream port are also repeated upstream.) There is a special hub called a root hub. The root hub’s upstream port is connected directly to the host. All USB systems have a root hub. This is why a system typically has more than one USB port. All the USB ports on the system are connected to the host system via the root hub.

USB devices are not treated equally by the host.

- Periodic devices, which consist of interrupt and isochronous devices, are given a higher priority than bulk transfer devices.
- Interrupt devices, such as keyboards and mice, typically send brief but important input information to the system.
- Isochronous devices, such as web cameras, typically require timely transmission of data, such as a video stream.
- Bulk transfer, such as printers and CD-ROM, must receive or transmit 100% accurate data. But how fast or often the data is transmitted is not as important as the accuracy of the data.

The host will give network bandwidth priority to periodic devices and will share any remaining bandwidth equally among any active bulk transfer devices.

USB supports many types of devices and three data transfer rates, low speed, full speed, and high speed. (A keyboard does not need to transfer data to the system at the same speed as a cable modem.)

The transfer speed capabilities of a device are often referred to by the USB specification revision in which the transfer rate was defined. Therefore a USB 2.0 Hub will support high, full and low speed, but a USB 1.1 hub will only support full and low speed.

The USB specification was developed and is maintained by the USB organization. The USB organization also conducts a certification program. The USB organization will issue the USB logo to a device, which has passed a series of tests that verify the device has correctly implemented the USB interface, as defined by the USB specification. There are many types of USB logos depending on which features of the USB specification a device supports. A USB 2.0 logo-ed device correctly supports high, full, and low speed data transfer.

Setting up a USB network

USB is very user friendly. The interface automatically assigns addresses to devices; you simply need to connect a USB device to a USB port on a system using a USB cable. If you have many USB devices or need to place a device away from your system, you may place up to a maximum of five USB hubs between the device and host system and connect them with additional cables.

If you are using a high-speed (USB 2.0) device, make sure that the USB host at the system and all the hubs between the device and host support high-speed (USB 2.0) transfer.

When using a bulk transfer device, such as an RDX Removable Disk Backup System, do not use other USB devices that will place restrictions on the USB bandwidth available to the bulk transfer device.

If several USB devices requiring large amounts of the USB network bandwidth are to operate simultaneously, an additional host must be added to the system. Each device must then be placed into the separate networks starting at the different hosts. An additional host is typically a new USB HBA, which plugs into the host system's PCI slot, creating a new USB host that resides on the network. (Note: if several USB adapters are placed into a system, demands on the bandwidth of the system bus will constrain the USB devices' performance.)

Always use USB logo-ed components in your USB network. This is the best and easiest method to ensure reliable operation.

USB cables

USB cables are available in a variety of lengths. The maximum cable length is 5 meters. If you need to place a USB device further than 5 meters from the system, you must use a hub.

Do not use USB cable extenders or couplers. These are not recognized or approved by the USB organization. The USB specification does not allow their use and they are likely to reduce the reliability of the USB network or cause it not to work completely.

Internal and external USB devices use the same USB cables.

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