

HP

P4800 G2 SAN Solution for BladeSystem

Maintenance Guide

Abstract

This guide explains how to back up, restore, upgrade, and otherwise maintain the HP P4800 G2 SAN Solution for BladeSystem. The intended audience is system administrators and technicians with experience managing and repairing networked storage. For installation and configuration information, see the *HP P4800 G2 SAN Solution for BladeSystem Quick Start Guide*. For day-to-day operations, see the *HP P4000 SAN Solution User Guide*. For late-breaking information, HP recommends that you read the release notes for the installed software version.

Obtain the latest version of this and other HP P4000 user documents by selecting Disk Storage Systems on the HP website www.hp.com/support/manuals and finding the HP P4000 G2 SAN Solution.



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Acknowledgments

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Warranty

To obtain a copy of the warranty for this product, see the warranty information website:

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

Revision History

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First edition	
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Revision 3	March 2011
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1 Overview

The HP P4800 G2 SAN Solution for BladeSystem (HP P4800 G2 solution) base configuration is a 2-node SAN consisting of two HP P4460sb G2 storage blades and one disk enclosure. The storage blades run the SAN/iQ software, and the disk enclosure contains 70 disks. Up to six storage blades and three disk enclosures can be added, for a total of eight blades and four disk enclosures in an 8-node SAN.

Multiple HP P4800 G2 solutions can be combined into clusters or management groups as part of the same SAN.

NOTE: In this solution, *storage system* corresponds to an HP P4460sb G2 storage blade. There are up to eight storage systems in the HP P4800 G2 solution.

Hardware components

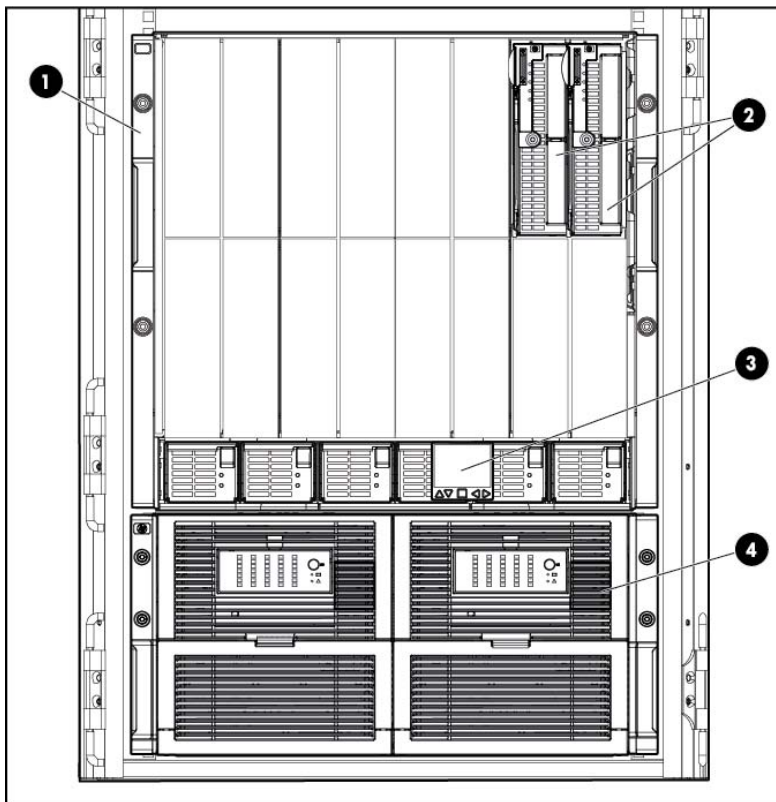
The HP P4800 G2 solution comprises the following components:

- HP BladeSystem c7000 Enclosure (1)
- HP P4460sb G2 storage blades (2 to 8)
- HP 3G SAS BL Switches (2, pass-through modules between the blade enclosure and the disk enclosures)
- HP disk enclosures (1 per pair of HP P4460sb G2 storage blades)
- HP Smart Array P700m controller cards (one on each HP P4460sb G2 storage blade)
- HP VC Flex-10 modules (2, these modules connect to your network)

Hardware configuration

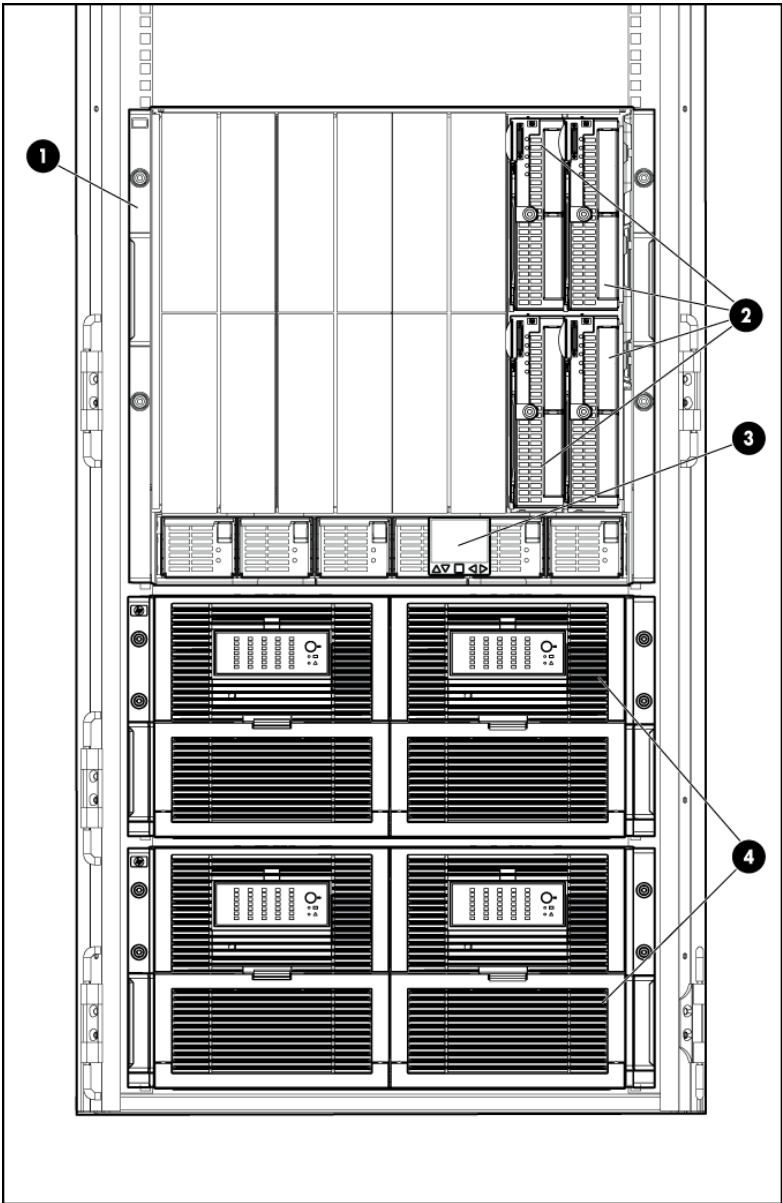
Figure 1 (page 7) shows the base configuration of the HP P4800 G2 solution. Figure 2 (page 8) through Figure 4 (page 10) show additional configurations of the HP P4800 G2 solution.

Figure 1 Front view: HP P4800 G2 solution 2 node



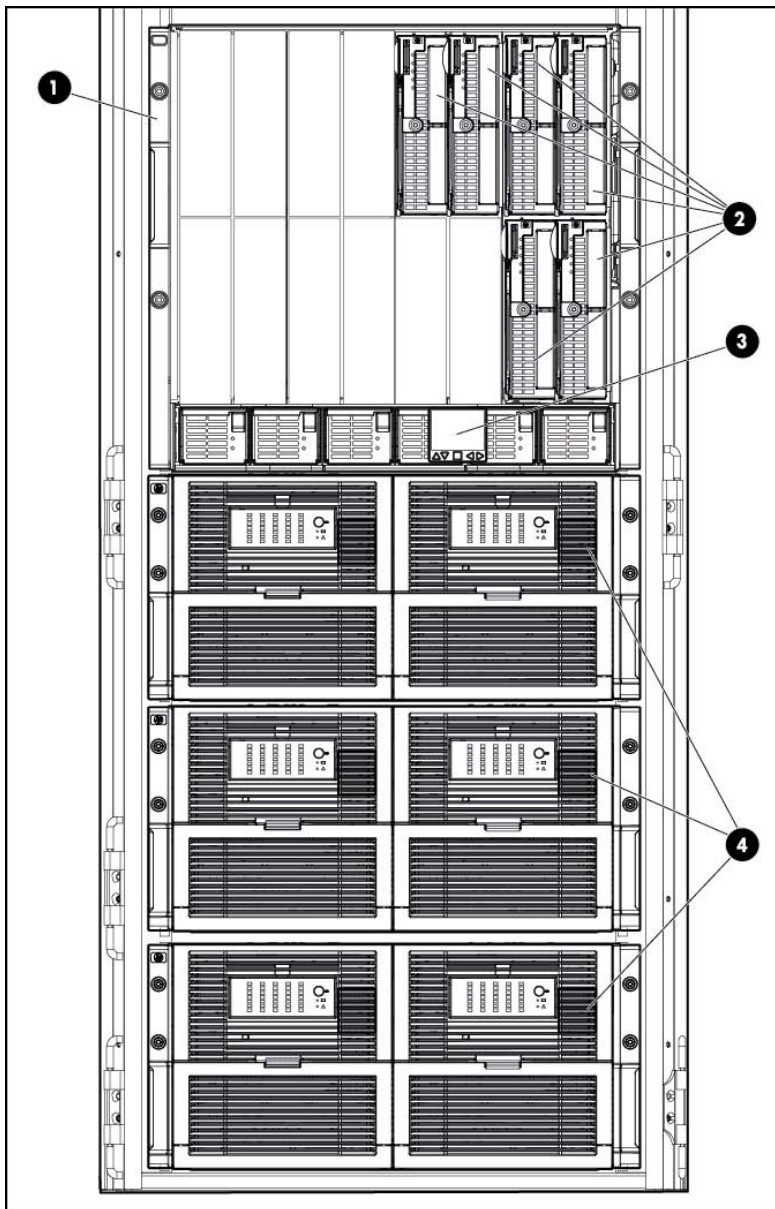
1. Blade enclosure (1)
2. HP P4460sb G2 storage blades (2)
3. HP BladeSystem Insight Display (1)
4. Disk enclosure (1)

Figure 2 Front view: HP P4800 G2 solution 4 node



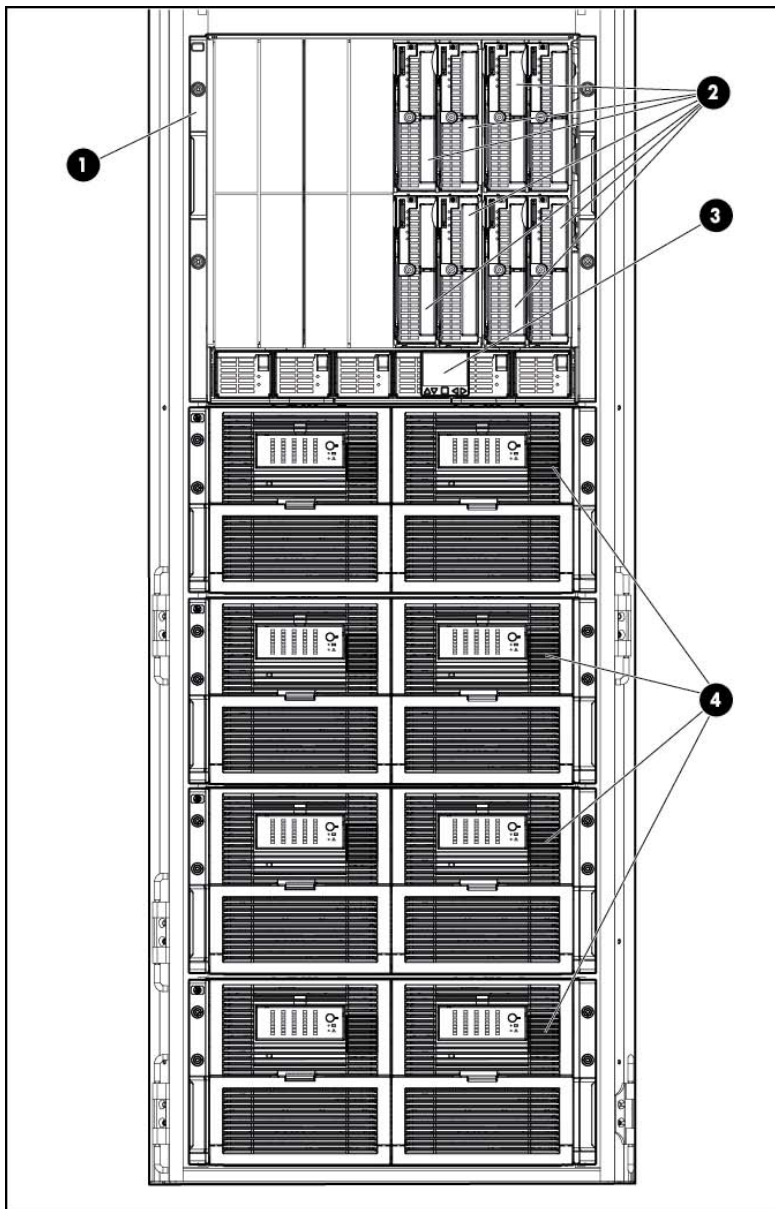
- 1. Blade enclosure (1)
- 2. HP P4460sb G2 storage blades (4)
- 3. HP BladeSystem Insight Display (1)
- 4. Disk enclosures (2)

Figure 3 Front view: HP P4800 G2 solution 6 node



1. Blade enclosure (1)
2. HP P4460sb G2 storage blades (6)
3. HP BladeSystem Insight Display (1)
4. Disk enclosures (3)

Figure 4 Front view: HP P4800 G2 solution 8 node



1. Blade enclosure (1)
2. HP P4460sb G2 storage blades (8)
3. HP BladeSystem Insight Display (1)
4. Disk enclosures (4)

Documentation available

For quick installation and setup, see the *HP P4800 G2 SAN Solution for BladeSystem Quick Start Guide*.

For links to the latest manuals for HP BladeSystem and other components, see the HP P4800 G2 SAN Solution for BladeSystem Documentation CD.

For detailed instructions about using the HP P4800 G2 SAN Solution for BladeSystem, see the following resources:

- Online Help in the Centralized Management Console
Click **Help**→**Help Topics** from the menu bar to open the Online Help. Context-sensitive help is available by clicking the question mark on any window.
- *HP P4000 SAN Solution User Guide*
Find complete instructions for configuring and managing storage systems and clustered storage volumes in the User Guide. The User Guide is available in PDF format, installed in the same directory as the Centralized Management Console program files.
- *HP P4000 VSA Installation and Configuration Guide*
Find detailed instructions for planning and installing the VSA and getting started with the Centralized Management Console.
- *HP P4000 Remote Copy User Guide*
Find information about configuring and using asynchronous replication of storage volumes and snapshots across geographic distances.
- *HP P4000 Multi-Site HA/DR Solution Pack User Guide*
Find detailed instructions for designing and implementing the Multi-Site SAN features to synchronously and automatically mirror data between geographic sites.
- *HP P4800 G2 SAN Solution for BladeSystem SAN/iQ Software Release Notes*
Review the Release Notes for the latest information about the product.

The latest versions of these documents, including localized versions, can be found by browsing to <http://www.hp.com/support/manuals>. Click **Disk Storage Systems** in the storage section and then select the product **HP P4000 G2 SAN Solution**.

For detailed configuration information related to the HP P4800 G2 solution use in Virtual Desktop Infrastructure (VDI) configurations, see the *HP Converged Infrastructure Reference Architecture for VMware View* at <http://www.hp.com/go/vdi>.

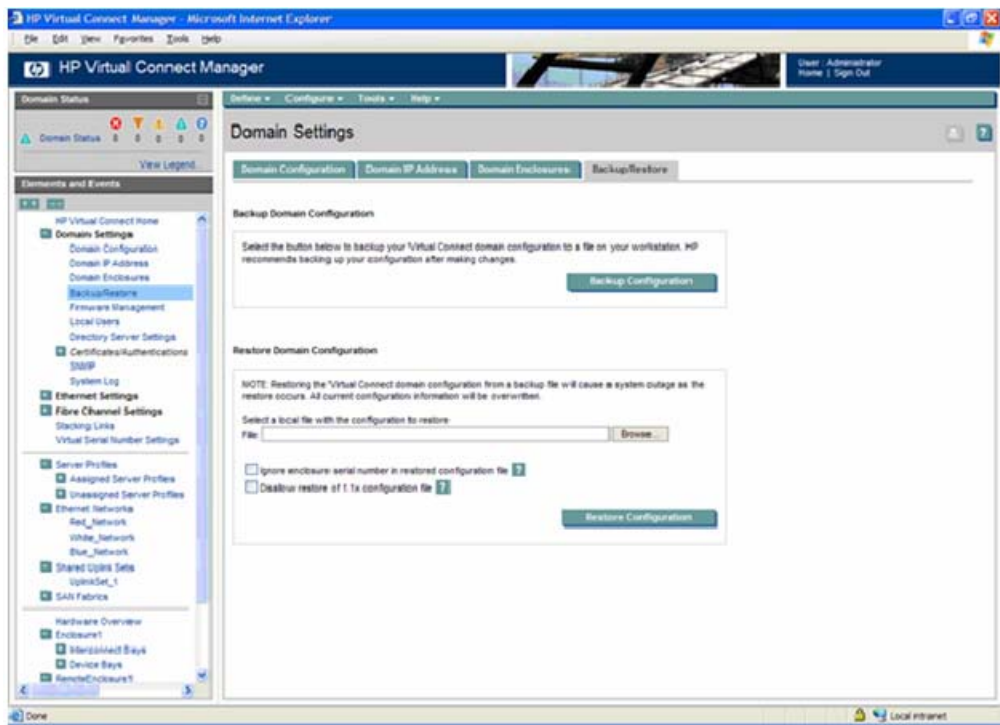
2 Backing up HP P4800 G2 solution configurations

HP recommends that you back up all HP P4800 G2 solution components for safekeeping after initially powering on the HP P4800 G2 solution, and immediately after making changes to an existing configuration or replacing a component. You must back up each component (for example, the VC Flex-10 module) separately.

Backing up or restoring the Virtual Connect domain configuration

Use the Virtual Connect Manager to back up the VC Flex-10 module configuration.

1. From Onboard Administrator, go to the Virtual Connect Manager, Domain Settings Backup/Restore pane.



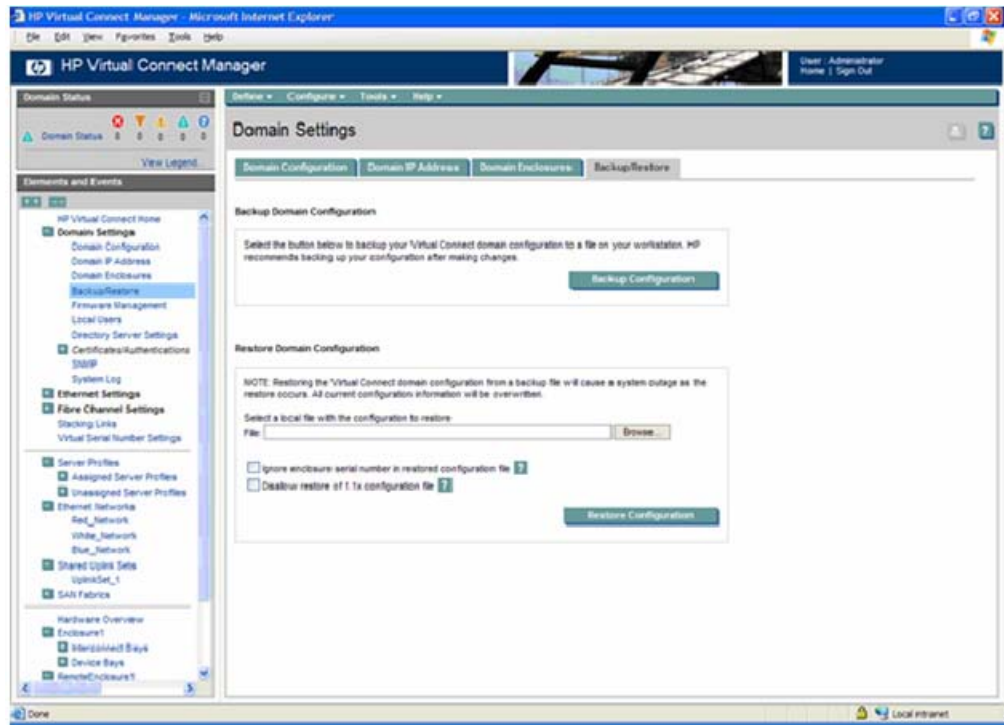
2. Click **Backup Configuration**.
3. Navigate to the hard drive location for the backup file.
4. Name the file (usually the domain name), and then click **Save**.

ⓘ **IMPORTANT:** Virtual Connect Manager cannot use backup configurations created with previous versions of Virtual Connect Manager. For example, if you are currently using v2.01, you cannot use a backup configuration that was created using 1.20.

To restore a domain configuration:

1. Browse to the backup file.
2. Select the file.
3. Select **Ignore enclosure serial number in restored configuration file** to restore a configuration that was generated on another enclosure. If this item is not selected, a configuration generated on another enclosure is rejected.
4. Select **Disallow restore of 1.1x configuration file** to restore the firmware to a revision other than what is stored in the configuration file.
5. Click **Restore Configuration**.
6. Confirm the domain configuration to be restored, and then click **OK**.

Figure 5 Virtual Connect Manager Domain Settings



Backing up the SAS switch

The SAS switch configuration cannot be backed up using the CMC. If replacing one SAS switch, duplicate the configuration from the other switch. If replacing both SAS switches, you will need to restore the configuration from a backup captured using the VSM CLI. For information about backing up and restoring the SAS configuration using the CLI, see the *HP Virtual SAS Manager User Guide*.

- ❗ **IMPORTANT:** HP recommends that you *not* change the SAS zoning on the SAS switches or the cabling between the SAS switches and the disk enclosures. See “[HP P4800 G2 solution cabling](#)” (page 32) for the recommended cabling.

Backing up remaining HP P4800 G2 solution configurations

The following methods may be used to back up the remaining HP P4800 G2 solution configurations:

- Use your own system backup utility to back up data.
- Back up the configuration to an FTP server.

3 Maintaining the HP P4800 G2 solution

This chapter provides information to troubleshoot, upgrade, and recover the HP P4800 G2 solution.

Troubleshooting

For detailed troubleshooting information about the HP P4800 G2 solution components, see the documents listed in [Table 1 \(page 14\)](#).

Table 1 Component troubleshooting information

Component	Resource
HP P4460sb G2 storage blade	<i>HP ProLiant BL460c Server Blade User Guide and the HP ProLiant Servers Troubleshooting Guide.</i>
HP Smart Array P700m controller	See "Runtime LEDs for P700m model" in the <i>HP Smart Array Controllers for HP ProLiant Servers User Guide</i> .
HP 3Gb SAS BL switch	<i>HP 3Gb SAS BL Switch user guide</i>
Disk enclosure	<i>HP 600 Modular Disk System Maintenance and Service Guide</i>
Blade enclosure	<i>HP BladeSystem c-Class Enclosure Troubleshooting Guide</i>

CMC does not detect drives

Symptom

- The storage blade will not boot the CMC, or the CMC does not list the storage drives or OS boot drives.

Cause

- The BIOS was reset to factory defaults.

Resolution

Reset the BIOS by selecting Onboard P410i as the boot controller.

1. Restart the storage blade, upon power on, press **F9** to enter BIOS setup menu.
2. Select **Boot Controller Order**.
3. Select **Ctrl:2 PCI Embedded HP Smart Array P410i controller**.
4. Select **Controller Order 1**.
5. To exit the submenu, press **Esc**.
6. To exit the setup menu, press **Esc**.
7. To confirm the changes, press **F10**.
8. Confirm that the PCI Embedded HP Smart Array P410i controller is listed as the **Current Boot Controller**.

Locating the HP P4800 G2 solution warranty entitlement labels

You must locate and identify the serial number on the HP P4800 G2 solution components to obtain service under the warranty. A warranty entitlement label (see [Figure 6 \(page 15\)](#)) is placed in each of the following locations on the HP P4800 G2 solution:

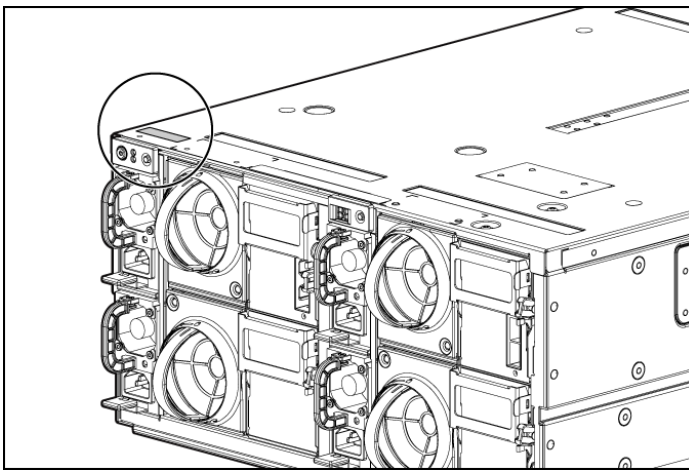
- Top of the disk enclosure drawer. To access the label, pull out a disk enclosure drawer and look at the top of the drawer near the front.
- Right side of the storage blade. To access the label, pull out the affected storage blade and look on the right side of the blade.

- Top of the SAS switch, near the back. To access the label, pull the affected SAS switch out of the blade enclosure and look at the top of the SAS switch.
- Back of the disk enclosure chassis, left-hand front, top corner of the chassis.
The back of the disk enclosure chassis may be the most accessible label, as shown in [Figure 7](#) (page 15).

Figure 6 Warranty entitlement label



Figure 7 Warranty entitlement label location



Performing field system recovery of the HP P4800 G2 solution

Overview

This section outlines the field system recovery procedures for the HP P4800 G2 solution, which includes the following tasks:

- Obtaining the feature registration license key for the HP P4800 G2 solution.
- Re-imaging the HP P4460sb G2 storage blade with the SAN/iQ software and re-installing the license key.

Before you start

Have the following items ready:

- BIOS version I27, 09/30/2010 installed on the HP P4800 G2 solution
- USB flash drive, formatted with a Windows FAT 32 file system (this is the default for Windows XP)
- HP StorageWorks P4800 Storage System Quick Restore CD
- HP SmartStart CD x64
- HP StorageWorks P4000 Storage System SAN/iQ Management Software DVD

Obtaining a license key

You must obtain a license key for the storage blade before you begin the SAN/iQ software imaging process. First, you obtain the MAC address of the HP P4800 G2 solution, then request the license key using the MAC address.

Obtain the MAC address

The storage blade MAC address is required for you to obtain a license key for use while imaging the storage blade with the SAN/iQ software.

1. Log into iLO for the storage blade.
2. Navigate to the System Information > NIC tab to obtain the eth0/Port 1 MAC address.
3. Copy the MAC address for future use.

Request the license key

The easiest way to enter the license key into the HP P4800 G2 solution is by using a USB flash drive. You may also enter in the license key if you do not have a USB flash drive.

1. Go to <https://webware.hp.com> and select **Manage licenses**.
2. Follow the steps to reprint the original license key.
After you receive the license key follow the instructions below to prepare it for use in the system recovery process.
3. Name the file as follows, with no file extension:
featurekey_<MAC address with no colons>
For example:
featurekey_0030482A189B
4. Save this file to the USB flash drive.
5. If you have more than one storage blade to image, repeat steps in both sections “Obtain the MAC address” (page 16) and “Obtaining a license key” (page 16).
6. Image the SAN/iQ software.

Imaging the storage blade with the SAN/iQ software

If you do not have the license key, start with the instructions, “Obtaining a license key” (page 16), for obtaining the MAC address and license key.

To image the storage blades, perform the steps in the following sections for each blade.

Verify minimum server requirements

1. Log in to the iLO for the storage blade.
2. Mount the HP SmartStart CD x64 using Virtual Mount.
3. Boot the storage blade from the CD.
4. Select a language.
5. Accept the HP End User License Agreement.
6. Select **Maintenance**.
7. Select **HP Insight Diagnostics**.
8. On the Survey tab, verify that the specified items in the Overview category (default) meet the minimum requirements listed in [Table 2 \(page 17\)](#).

NOTE: If any items do not meet the requirements listed in [Table 2 \(page 17\)](#) and [Table 3 \(page 17\)](#), do not continue with this procedure.

Table 2 Minimum requirements, overview category

Item	Minimum requirement
CPU	CPU on the storage blade: Intel Xeon Processor @ 2.40 Ghz
Type and number of drives	37 hard drives, which include the following: <ul style="list-style-type: none">• Slot 2: 35 drives on the HP Smart Array P700m controller• Slot 0: 2 drives on the HP Smart Array P410i controller
Memory	24 GB
NIC	For the HP P4460sb G2 storage blade, the Network Controller is Emulex OneConnect 10Gb NIC: v3.102.453.0 or later.

9. From the Categories list, select **Storage**.
10. Verify that the specified item meets the minimum requirements listed in [Table 3 \(page 17\)](#).

Table 3 Minimum requirements, storage category

Item	Minimum requirement
Array Controller in Slot 0: HP Smart Array P410i controller	<ul style="list-style-type: none">• Model: HP P410i• Firmware: 3.52 or later• Installed Memory: 0 Mbytes• BIOS boot device order: 1
Array Controller in Slot 2: HP Smart Array P700m controller	<ul style="list-style-type: none">• Model: HP P700m• Firmware: 7.22 or later• Installed Memory: 512 Mbytes• Battery1: OK• BIOS boot device order: 2

Run server diagnostics

1. On the HP Insight Diagnostics Test tab, select **Quick Test** and specify the number of loops.
2. Press the **Begin Testing** button.

The Survey Tab displays the data from the tests.

Wait for the tests to finish. This may take several minutes.
3. When the tests have completed, select the **Log** tab and check the failure log to see if the Quick Test reports any failures.
4. If the Quick Test reports any errors, fix all errors before continuing.

If you need more information about an error, run a Complete Test on any component that reported a failure.

If you want to run only specific tests, use the Custom Test option.

For assistance with the Complete or Custom Test options, see the HP SmartStart CD x64 or contact HP technical support.
5. Press the **Exit Diagnostics** button.

6. Disconnect the HP SmartStart CD x64 from Virtual Media and reboot.
7. Image the SAN/iQ software.

Image the SAN/iQ software

- ❗ **IMPORTANT:** If the storage blade accidentally power-cycles during the SAN/iQ software imaging process, you cannot successfully resume or restart the imaging. You must begin with “[Imaging the storage blade with the SAN/iQ software](#)” (page 16).

1. Log in to the iLO for the storage blades.
2. Mount the SAN/iQ Quick Restore CD using Virtual Mount.
3. When prompted, insert the USB flash drive containing the license key file.

NOTE: Use the iLO Dongle (delivered with the HP P4800 G2 solution) to convert the USB flash drive into a USB port so that you can plug in the USB key.

4. When prompted to identify the OS version to install, enter **Y**.

❗ **IMPORTANT: Manually entering the license key**

If the Installer program cannot find a properly formatted license key on the USB flash drive, you will be given the chance to enter in the license key.

Enter the license key if prompted. You have three attempts to correctly enter a valid HP license key. If all three attempts are unsuccessful, restart the process with [Step 1](#).

5. Finish the SAN/iQ software imaging.

Finish the SAN/iQ software imaging

The imaging process starts and displays the Auto Imaging Done message when complete.

1. Disconnect the Virtual Media using iLO.
2. Remove the USB flash drive from the Dongle.
3. Reboot the storage blades.
4. Enter `start` to log into the HP P4460sb G2 storage blade.
5. Navigate to the Network TCP/IP Settings.
6. Assign an IP address to the storage blade.

The storage blade is now ready for use.

Next steps

Install the CMC from the HP StorageWorks P4000 Storage System SAN/iQ Management Software DVD. Open the CMC, and use the wizards on the Getting Started Launch Pad to begin using the HP P4800 G2 solution.

Repairing a storage system

For instructions on repairing a storage system, see the “Repairing a Storage System” and the “Powering Off the Storage System” sections in the *HP P4000 SAN Solution User Guide*.

RAID 10 disk replacement and rebuild behavior

The RAID 10 configuration includes a single hot spare in bay 35.

When a disk is removed or fails in a RAID 10 configuration, the hot spare automatically begins rebuilding. When the failed disk is replaced, the replacement disk begins rebuilding rather than becoming the hot spare. At that time, the disk in bay 35 transitions back to being a hot spare. This means that a simple disk replacement involves two rebuilds.

If more than one disk fails or is removed, the hot spare begins rebuilding one of the failed or removed disks. When the multiple failed disks are replaced, the P700 controller attempts to restore the disk in bay 35 as a hot spare, but it can only rebuild a single disk at a time. Any disks that are queued for rebuilding will be reported as "OK" by the RAID controller (via the `hpacucli`). The Disk Status tab in the CMC shows all disks as unsafe to remove, except the disk that is currently rebuilding.

Upgrading SAN/iQ software

For instructions on upgrading the SAN/iQ software, see the *P4000 SAN Solution software release notes*.

Adding capacity to an existing P4800 G2 SAN

The P4800 G2 SAN can be expanded in 2-node increments, up to a total of eight storage blades and four disk enclosures. Adding additional nodes to an existing SAN requires field installation. Because of the recommendation to power off the SAS switches and corresponding disk enclosures if installing the new equipment into the same rack, the customer must first safely take the SAN offline.

Before adding nodes to an existing SAN, upgrade to the latest SAN/iQ software. Otherwise, the new nodes will operate at the older software version.

Customer requirements

Before beginning the equipment installation, the customer must perform the following actions:

- Disconnect iSCSI sessions from the SAN volumes and snapshots
- Use the Shut Down Management Group feature in the CMC

After the field installation, the customer can finish adding the configured storage to the existing SAN as follows:

- Manually power on the storage blades for the existing SAN and wait for the management group to come up in the CMC
- Discover the new storage blades in the CMC using the Find feature
- Add the newly discovered systems to the existing management group and cluster, or create a new cluster if desired

If adding the new storage to the existing cluster, the volume and snapshot data restripes on all the storage systems.

Upgrading firmware

Follow the procedures for upgrading the firmware of each component located in the individual component product user guides. For more information, see the component guides listed in [“Additional component removal and replacement instructions” \(page 21\)](#).

The following operations **will** take a volume offline:

- Upgrading the controller firmware
All controllers must run the same firmware version. (For instructions, see the component guides listed in [“Component removal and replacement instructions” \(page 21\)](#).)
Since zero-downtime firmware flash is not supported for the controllers in the HP P4800 G2 solution, you must run the flash utility on both of the storage blades. After running flash utility, reboot both storage blades so the update occurs.
- Upgrading the disk enclosure firmware
- Upgrading the disk enclosure drive firmware

① **IMPORTANT:** Be sure to first power down the disk enclosures before upgrading the disk enclosure drive firmware.

- Upgrading the SAS switch firmware
- Upgrading the VC Flex-10 firmware
- Upgrading the storage blade firmware

If a volume is not replicated, upgrades to the storage blade firmware and OA firmware (BIOS) *will* take the volume offline.

4 Removing and replacing the HP P4800 G2 solution components

This section contains information and procedures specific to replacing the HP P4800 G2 solution components.

Additional component removal and replacement instructions

For detailed information about the removal and replacement of HP P4800 G2 solution components, see the resources listed in [Table 4 \(page 21\)](#). These documents are located on the HP P4800 G2 SAN Solution for BladeSystem documentation CD that accompanies the HP P4800 G2 solution.

Table 4 Component removal and replacement instructions

Component	Resource
HP ProLiant server blade HP P4460sb G2 storage blade	<i>HP ProLiant BL460c Server Blade Maintenance and Service Guide</i>
HP SAS switch (pass-through modules)	<i>HP 3Gb SAS BL Switch Replacement Instructions</i>
HP Smart Array P700m controller	<i>HP Smart Array Controllers for HP ProLiant Servers User Guide</i>
HP disk enclosures	<i>HP 600 Modular Disk System Maintenance and Service Guide</i>
HP c-Class blade enclosure	<i>HP BladeSystem c7000 Enclosure Maintenance and Service Guide</i>
HP Smart Array P410i controller (BIOS boot controller)	<i>HP Smart Array Controllers for HP ProLiant Servers User Guide</i>

Identifying hot pluggable and non-hot pluggable components

- ⓘ **IMPORTANT:** Hot add and hot removal of the disk enclosures are not supported by HP P4800 G2 SAS BladeSystem SAN Solution.

The following HP P4800 G2 solution components are hot-pluggable; therefore, you do not need to power down the device before replacing a part:

- Drives
- External fans
- Power supplies
- Blade disk drives

All other HP P4800 G2 solution components are *not* hot-pluggable. You must first power down the device before replacing a part.

- ⚠ **CAUTION:** To prevent losing access to data during any maintenance operation on components of the SAS fabric, including the SAS switches, SAS cables, and I/O modules on the disk enclosure, first power down the HP P4460sb G2 storage blades using the procedures to shut down the management group in the CMC OnlineHelp or *HP P4000 SAN Solution User Guide*.

Replacing the storage blade and storage blade components

For more detailed instructions on replacing the storage blade, see the *HP BladeSystem c7000 Enclosure Maintenance and Service Guide*. For more detailed instructions on replacing the storage blade components, see the *HP ProLiant BL460c G6 Server Blade Maintenance and Service Guide*.

Replacing a storage blade

This section describes the implications for the HP P4800 G2 solution software and not the mechanical aspects of replacing the storage blade.

⚠ WARNING! Administrators should verify the firmware version of a replacement HP P4460sb G2 storage blade before inserting it in the blade enclosure.

⚠ WARNING! Be sure to only replace a storage blade in the bay from which it was removed. Do not swap or move storage blades in a blade enclosure or disk enclosure in HP P4800 G2 solution systems. If you do, nodes will lose failover ability and you may lose connectivity to the disks and network.

⚠ WARNING! For cooling practices, do not leave a server bay open for an extended period of time. When removing an active component, immediately replace it with a blank.

ⓘ IMPORTANT: If the boot disk(s) from the blade being replaced are available, placing them in the new blade allows it to boot to its original configuration. Do **not** reset the network settings if you are using the original boot disk(s) on the blade being replaced.

ⓘ IMPORTANT: If the original boot disk(s) are not available or are damaged, the blade must be re-imaged using a recovery CD. Doing so requires that the administrator access the console of the blade through the iLO (or blade KVM dongle) to set the server name and IP address. If you are **not** using the original boot disk(s), be sure to reset the network settings.

ⓘ IMPORTANT: The HP P4800 G2 solution should handle a single blade failure for an extended period of time without loss of data or lost access to the data. The cluster, however, will remain in a degraded state until the replacement blade is functioning.

To prepare the storage blade for replacement:

1. Confirm the RAID and customer data.

Ensure that RAID is configured on the old blade and that the customer data exists on the disk enclosures.

2. Confirm the IP address.

Ensure that the existing storage blade is configured with a static or reserved IP address and not DHCP. If necessary, convert the storage blade to a static or reserved IP address. Record this IP address for verification after the process is complete.

3. Record the MAC address.

Record the MAC address of the old blade for later use. Also record the storage blade hostname for later verification.

4. Delete the NIC bond.

Delete any NIC bond previously established on the old blade by using the console or the CMC. The NIC bond must be deleted because it retains the MAC address of the old blade. If you are unable to delete the NIC bond at this time, make sure to delete it on the power cycle following the blade swap.

To replace the storage blade or its system board:

1. Power down the storage blade.

To power down the storage blade from the CMC, see the "Powering off the storage system" instructions in the *HP P4000 SAN Solution User Guide*.

2. Note the storage blade bay number, and then remove the storage blade from the blade enclosure.

NOTE: For instructions on removing and replacing storage blade components, see the *HP ProLiant BL460c Server Blade Maintenance and Service Guide*.

3. Ensure that all components of the original blade are in place in the replacement blade. In particular, ensure that:
 - The original system disks are in place. *This task is essential.*
 - The memory size of the replacement blade is a minimum of 24 GB or larger.
 - The HP Smart Array P700m controller card is in place.
4. Insert the blade in its original bay in the blade chassis.
5. Connect to the iLO, create a user, and assign the password (make sure the password is the same password that is assigned to the other blades). The IP address is configured automatically to be the same IP address as the original blade.
For more information, see [“HP P4800 G2 solution cabling” \(page 32\)](#).
6. Boot the storage blade.
7. Verify that the storage blade can access the disk storage by using the CMC.

Replacing a storage blade disk drive

The system disk on a HP P4460sb G2 storage blade comprises a logical RAID 0 disk that is mirrored over two physical SFF disk drives in the storage blade. As long as one drive continues to operate, the storage blade can operate.

You do not need to power down the storage blade; instead, you can hot-swap disk drives. However, you must replace the removed drive with a drive of the same size or larger.

To replace a disk drive in the storage blade:

1. Check the state of the internal logical disk drive.
For more information, see the *HP ProLiant BL460c Server Blade User Guide*.
2. If the state is **failed**, follow the procedure in [“Replacing both storage blade disk drives” \(page 23\)](#).
3. Remove the failed drive.
If you remove the wrong drive, the mirror set will break, and the storage blade may crash. Reinsert the good drive and reboot the storage blade.
For instructions on removing the drive, see the *HP ProLiant BL460c G6 Server Blade Maintenance and Service Guide*.
4. Insert the replacement drive.

Replacing both storage blade disk drives

As long as one disk drive in the storage blade continues to operate, the storage blade can operate. However if both disk drives fail, the system disk is lost and you must restore the storage blade.

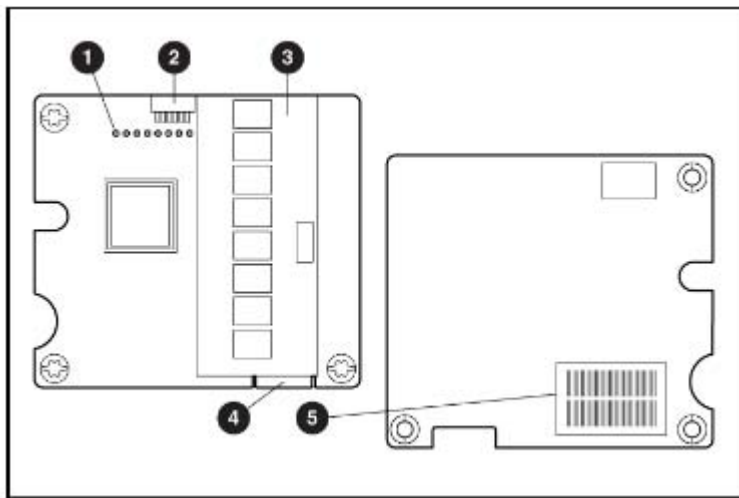
To reinstall a storage blade:

1. Remove both disk drives.
2. Insert two replacement drives.
3. Reinstall the storage blade by following the quick restore instructions, see [“Performing field system recovery of the HP P4800 G2 solution” \(page 15\)](#).

Replacing the controller and controller components

This section describes how to replace the controller and its components (see [Figure 8 \(page 24\)](#)).

Figure 8 HP Smart Array P700m controller



1. Status LEDs (runtime LEDs)
2. Connector
3. Cache
4. Connector for the cable to the cache
5. Mezzanine connector to system board

Replacing the controller

The following steps refer to “[HP Smart Array P700m controller](#)” (page 24).

1. Verify component failure by checking LED and error messages.
To interpret the illumination pattern of these LEDs, see “Runtime LEDs for P700m model” in the *HP Smart Array Controllers for HP ProLiant Servers User Guide*.
2. Back up all data.
3. Close all applications.
4. Power down the storage blade using the CMC.

Wait at least 1 minute for the blade to power down. This procedure flushes all data from the cache.

To power down the storage blade from the CMC, see the “Powering off the storage system” instructions in the *HP P4000 SAN Solution User Guide*.

CAUTION: Since the HP P4800 G2 solution uses external data storage, make sure that the storage blade is the first unit to be powered down and the last to be powered up. This precaution ensures that the system does not mark the drives as **failed** when the storage blade is powered up.

5. Remove the storage blade from the blade enclosure.
 6. Remove the access panel from the storage blade.
 7. Remove the cache, keeping it connected to the battery.
-

NOTE: When removing the cache to transfer data, the battery **must** remain connected so that the data is preserved.

8. Remove the existing controller.
9. Install the replacement controller.

10. Plug the cache into the connector on the controller, routing the battery cable so that the cache and battery can be removed together if necessary.

NOTE: Keep the battery connected to the cache so that the data is preserved.

11. Reinstall the access panel.

12. Reinstall the storage blade in the blade enclosure.

After reinstalling the storage blade, reset the BIOS. For instructions, see “[CMC does not detect drives](#)” (page 14).

13. Verify component status.

14. Confirm that both storage blades are running the same firmware version.

NOTE: Use the CMC Hardware Report to view the controller firmware version.

If the storage blades are not running the same firmware version, update the controller firmware with the *Smart Update Firmware DVD* located at hp.com/support and drivers.

For detailed instructions, see “Installing a mezzanine controller in a previously configured server blade” in the *HP Smart Array Controllers for HP ProLiant Servers User Guide*.

For instructions on replacing the battery and cache, see “Upgrading or replacing controller options” in the *HP Smart Array Controllers for HP ProLiant Servers User Guide*.

Replacing the VC Flex-10 module

⚠ CAUTION: Be sure to update the firmware on the new VC Flex-10 module. This operation will take the volumes offline.

ⓘ IMPORTANT: Clients will lose connectivity during this procedure unless using a bonded network. If not using a bonded network, clients should be disconnected before starting the procedure. In addition, both externally facing uplinks must be connected to your external network. If uplinks are not connected to the external network, connectivity will be lost when one of the Flex-10 switches goes offline during a firmware update.

To replace a VC Flex-10 module:

1. Disconnect the network connections into the VC Flex-10 module (bay 1 or 2).
2. Remove the VC Flex-10 module.
3. Replace the VC Flex-10 module.
4. Reconnect the cables that were disconnected in Step 1 to their original ports.
5. Restore the configuration settings.

For more information, see “[Backing up HP P4800 G2 solution configurations](#)” (page 12).

Replacing the SAS switch

This section provides instructions for removing and replacing the SAS switch in the HP P4800 G2 solution.

△ **CAUTION:** Before replacing the SAS switch, be sure to power down the HP P4460sb G2 storage blades using the procedures to shut down the management group in the CMC OnlineHelp or *HP P4000 SAN Solution User Guide*.

ⓘ **IMPORTANT:** Replace the SAS switches one at a time. When you remove a switch, I/O continues on the remaining switch. Before resetting a switch, verify that all storage is accessible by the remaining data path. Replacing both SAS switches at one time disconnects the storage and could compromise data integrity.

If a SAS switch fails, storage access continues through the remaining SAS switch. This causes storage access to set a preference to all LUNs in the remaining data path. This preference remains in place until the controllers in the blade enclosure are power cycled, or the remaining path becomes unavailable.

△ **CAUTION:** Power down the disk enclosure before disconnecting a SAS cable. Failing to do so may damage the I/O module.

To replace the SAS switch:

1. Remove the power cable.
2. Disconnect the SAS cables, noting which cable goes to which port.
3. Remove the switch.
4. Install the replacement switch.
5. Attach the power cable.
6. Update the switch firmware.
 - a. Open the HP Virtual SAS Manager.
 - b. Select **Force VSM Active**.

This selection copies the zone and firmware information from the active switch to the passive, replacement switch. The replacement switch then becomes the active switch.

7. Reconnect the SAS cables to their original locations, see [“HP P4800 G2 solution cabling” \(page 32\)](#).

NOTE: Do *not* attach the SAS cables to the replacement switch until the firmware update is complete.

Wait at least 60 seconds before removing another SAS switch.

The SAS switch should now provide a redundant access path to storage. Storage controllers will distribute I/O evenly over the switches upon restart.

Replacing a SAS cable

△ **CAUTION:** Failing to follow these steps in this order may damage the I/O module.

1. Before disconnecting a SAS cable, power down the HP P4460sb G2 storage blades using the procedures to shut down the management group in the CMC OnlineHelp or *HP P4000 SAN Solution User Guide*.
2. Manually power off the disk enclosure.
3. Replace the SAS cable.

See “HP P4800 G2 solution cabling” (page 32) for an illustration of HP P4800 G2 solution connectivity.

Replacing the disk enclosure I/O module

This section describes how to remove and replace the disk enclosure I/O module on the HP P4800 G2 solution.

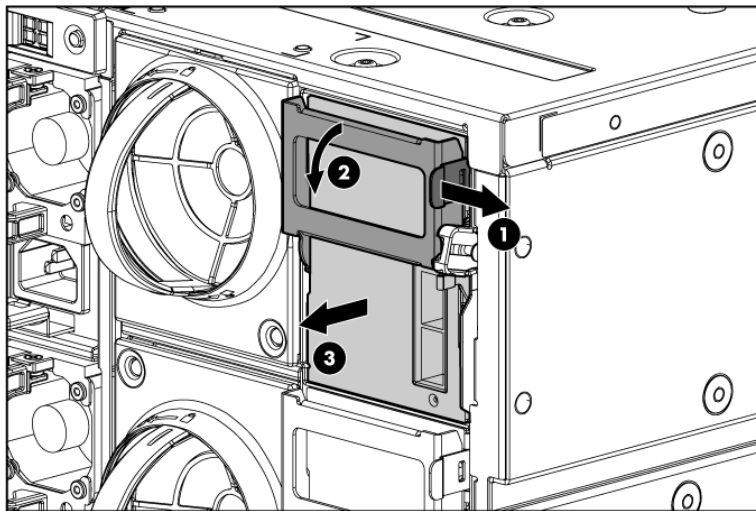
- △ CAUTION:** Before replacing the I/O module, be sure to power down the HP P4460sb G2 storage blades using the procedures to shut down the management group in the CMC OnlineHelp or *HP P4000 SAN Solution User Guide*. In addition, be sure the hard drive drawer is closed completely before removing or replacing the disk enclosure I/O module.

CAUTION: Power down the disk enclosure before disconnecting a SAS cable.

To remove the component:

1. Disconnect the SAS cables, and release the I/O handle.
2. Push the I/O handle down to unlatch the I/O module.
3. Remove the I/O module.

Figure 9 Removal of the I/O module



- △ CAUTION:** For best cooling practices, do not operate the enclosure for extended periods with more than one component or blank removed. When removing an active component, replace it with a blank.

To replace the I/O module, reverse the removal procedure.

Replacing the disk enclosure power supply

There are four power supplies in each disk enclosure chassis—two on the left and two on the right. The system can operate with a single power supply on the left and a single power supply on the right.

1. Remove a power cable.
2. Remove the power supply unit.
3. Insert a new power supply unit.
4. Reattach the power cable.

Replacing the disk enclosure fan

There are four fans in each disk enclosure chassis. The system can operate for a short period with one fan removed.

NOTE: The disk enclosure drawer must be closed while you replace the fan module.

1. Remove fan unit.
2. Insert the new fan unit.

Replacing the disk enclosure hard drive

CAUTION: Before replacing the disk enclosure hard drive, be sure to power down the HP P4460sb G2 storage blades using the procedures to shut down the management group in the CMC OnlineHelp or *HP P4000 SAN Solution User Guide*.

IMPORTANT: Before pulling a drive out of the disk enclosure, HP recommends that you use the CMC to turn on the drive LED so that you can physically identify the correct drive to replace.

For detailed instructions on how to physically remove and replace a hard drive, see the "Removal and replacement procedures" chapter, "Hard drive" section, in the *HP 600 Modular Disk System Maintenance and Service Guide*.

For general instructions on replacing disk drives and ensuring data availability, see the *HP P4000 SAN Solution User Guide*.

5 Support and other resources

Contacting HP

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

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.

HP Insight Remote Support software

HP strongly recommends that you install HP Insight Remote Support software to complete the installation or upgrade of your product and to enable enhanced delivery of your HP Warranty, HP Care Pack Service or HP contractual support agreement. HP Insight Remote Support supplements your monitoring, 24x7 to ensure maximum system availability by providing intelligent event diagnosis, and automatic, secure submission of hardware event notifications to HP, which will initiate a fast and accurate resolution, based on your product's service level. Notifications may be sent to your authorized HP Channel Partner for on-site service, if configured and available in your country. The software is available in two variants:

- **HP Insight Remote Support Standard:** This software supports server and storage devices and is optimized for environments with 1 to 50 servers. Ideal for customers who can benefit from proactive notification, but do not need proactive service delivery and integration with a management platform.
- **HP Insight Remote Support Advanced:** This software provides comprehensive remote monitoring and proactive service support for nearly all HP servers, storage, network, and SAN environments, plus selected non-HP servers that have a support obligation with HP. It is integrated with HP Systems Insight Manager. A dedicated server is recommended to host both HP Systems Insight Manager and HP Insight Remote Support Advanced.

Details for both versions are available at:

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

To download the software for free, go to Software Depot:

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

Select **Insight Remote Support** from the menu on the right.

Related information

The following documents provide related information:

- *HP Converged Infrastructure Reference Architecture for VMware View*
- *HP BladeSystem c-Class Enclosure Troubleshooting Guide*
- *HP BladeSystem c7000 Enclosure Maintenance and Service Guide*

This document should only be used by persons qualified to service computer equipment.

- *HP BladeSystem c7000 Enclosure Quick Setup Instructions*
- *HP BladeSystem Onboard Administrator User Guide*
- *HP Integrated Lights-Out 2 User Guide*
- *Virtual Connect for c-Class BladeSystem User Guide*
- *HP P4000 SAN Solution User Guide*
- *HP ProLiant BL460c Server Blade Maintenance and Service Guide*
- *HP ProLiant BL460c Server Blade Installation Instructions*
- *HP ProLiant BL460c Server Blade User Guide*
- *HP StorageWorks 3Gb SAS BL Switch Installation Instructions*
- *HP StorageWorks 3Gb SAS BL Switch Customer Self Repair Instructions*
- *HP StorageWorks 3Gb SAS BL Switch replacement instructions*
- *HP 3Gb SAS BL Switch user guide*
- *HP Smart Array Controllers for HP ProLiant Servers User Guide*
- *HP Virtual SAS Manager User Guide*
- *HP Direct-Connect External SAS storage for HP BladeSystem Solutions Deployment Guide*
- *HP ProLiant Servers Troubleshooting Guide*
- *HP 600 Modular Disk System User Guide*
- *HP StorageWorks 600 Modular Disk System Maintenance and Service Guide*

This document describes removal and replacement procedures for the disk enclosure (also known as the HP StorageWorks 600 Modular Disk System). It should only be used by persons qualified to service computer equipment.

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

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

To locate a HP P4800 G2 solution document, see “[Documentation available](#)” (page 10).

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>

Rack stability

Rack stability protects personnel and equipment.



WARNING! To reduce the risk of personal injury or damage to equipment:

- Extend leveling jacks to the floor.
 - Ensure that the full weight of the rack rests on the leveling jacks.
 - Install stabilizing feet on the rack.
 - In multiple-rack installations, fasten racks together securely.
 - Extend only one rack component at a time. Racks can become unstable if more than one component is extended.
-

Customer self repair

HP customer self repair (CSR) programs allow you to repair your StorageWorks product. If a CSR part needs replacing, HP ships the part directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your HP-authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider, or see the CSR website:

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

Replaceable parts

This product contains replaceable parts. To identify the replaceable parts, see the individual component guides listed in “[Component removal and replacement instructions](#)” (page 21).

Parts that are available for customer self repair (CSR) are indicated as follows:

✓ **Mandatory CSR.** You order the part directly from HP and repair the product yourself. On-site or return-to-depot repair is not provided under warranty.

• **Optional CSR.** You can order the part directly from HP and repair the product yourself, or you can request that HP repair the product. If you request repair from HP, you may be charged for the repair depending on the product warranty.

– **No CSR.** The replaceable part is not available for self repair. For assistance, contact an HP-authorized service provider.

For more information about CSR, contact your local service provider. For North America, see the CSR website:

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

To determine the warranty service provided for this product, see the warranty information website:

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

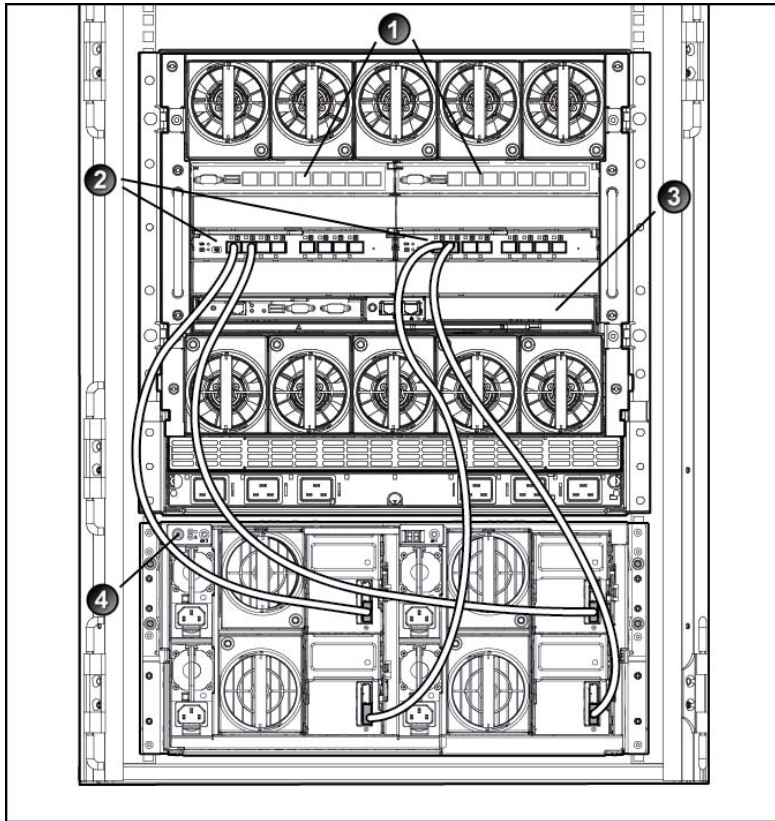
To order a replacement part, contact an HP-authorized service provider or see the HP Parts Store online:

<http://www.hp.com/buy/parts>

A HP P4800 G2 solution cabling

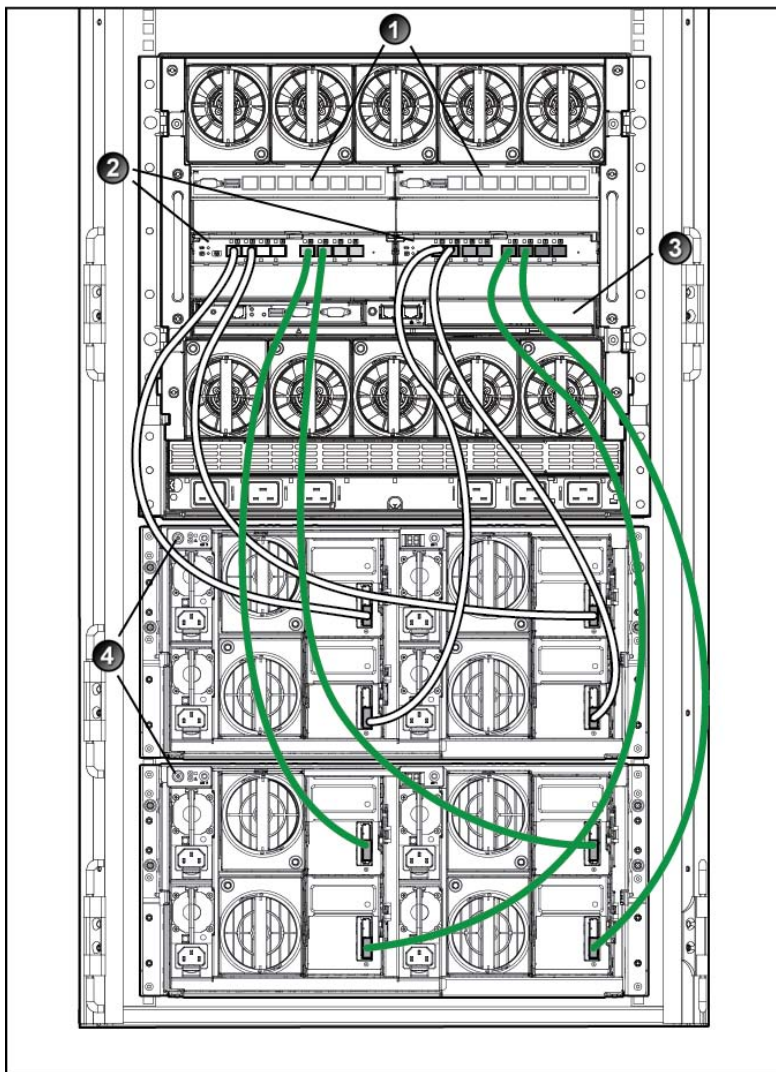
The HP P4800 G2 solution SAS cabling is shown in [Figure 10 \(page 32\)](#) through [Figure 13 \(page 35\)](#).

Figure 10 HP P4800 G2 solution 2-node cabling



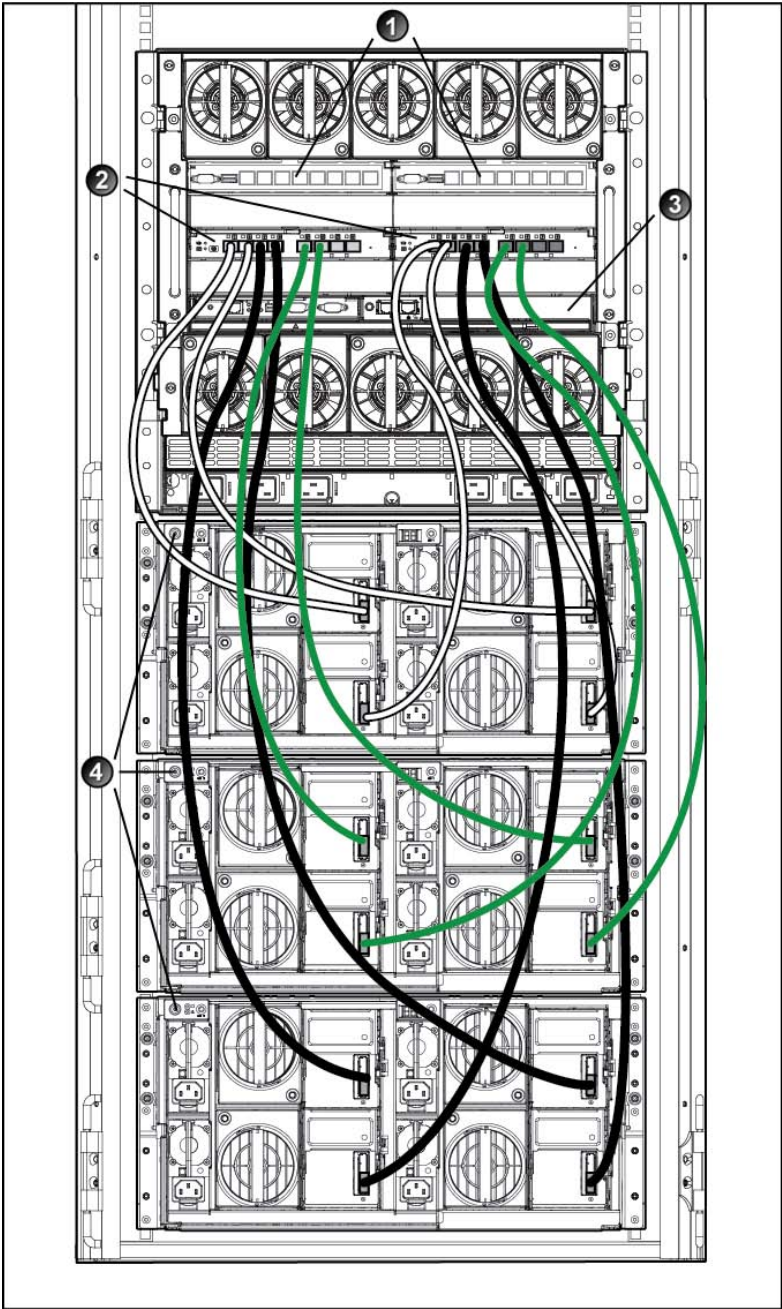
1. HP VC Flex-10 modules (2)
2. HP 3Gb SAS BL switches (2)
3. HP ProLiant Onboard Administrator
4. Disk enclosure power on button

Figure 11 HP P4800 G2 solution 4-node cabling



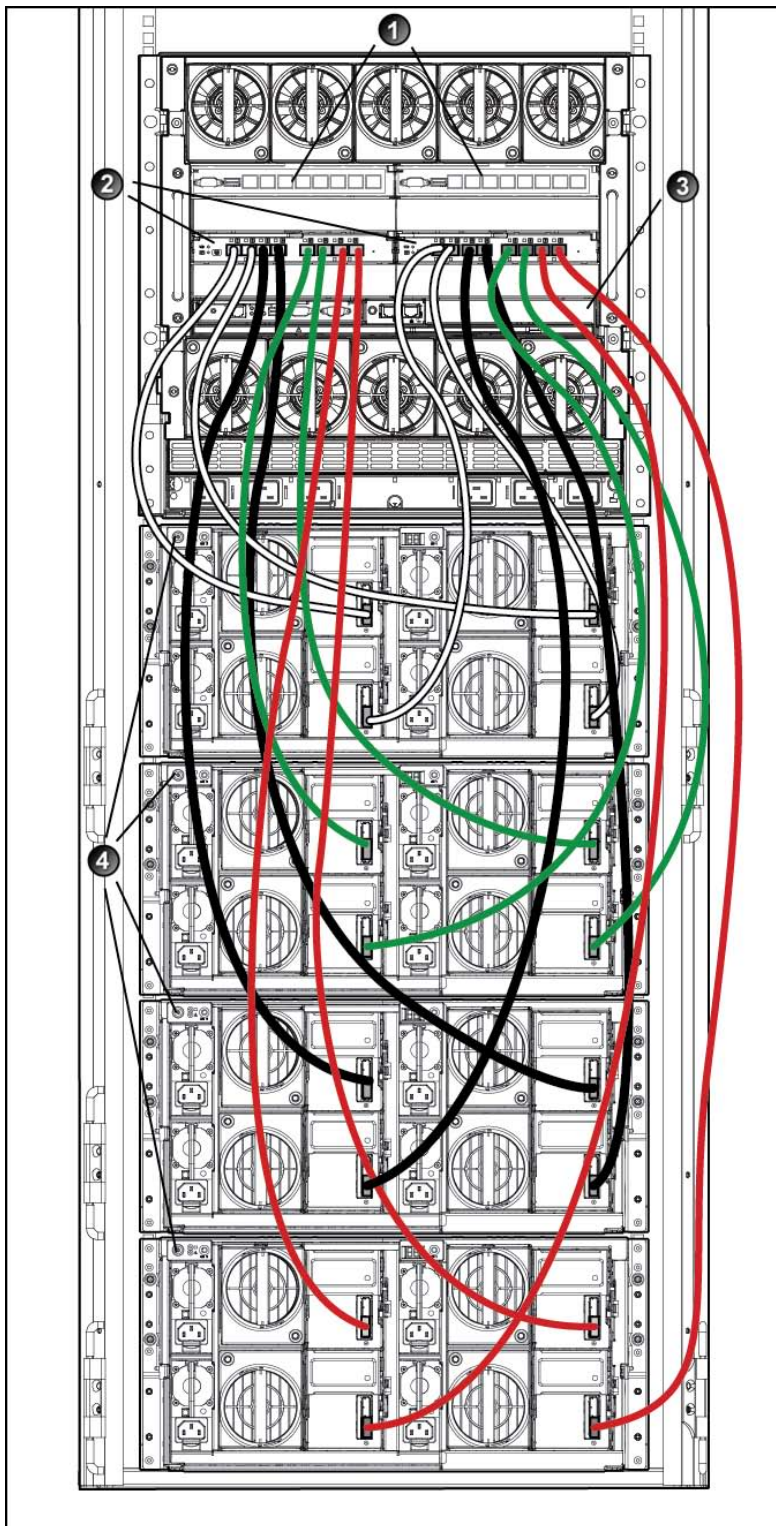
1. HP VC Flex-10 modules (2)
2. HP 3Gb SAS BL switches (2)
3. HP ProLiant Onboard Administrator
4. Disk enclosure power on buttons (2)

Figure 12 HP P4800 G2 solution 6-node cabling



- 1. HP VC Flex-10 modules (2)
- 2. HP 3Gb SAS BL switches (2)
- 3. HP ProLiant Onboard Administrator
- 4. Disk enclosure power on buttons (3)

Figure 13 HP P4800 G2 solution 8-node cabling



1. HP VC Flex-10 modules (2)
2. HP 3Gb SAS BL switches (2)
3. HP ProLiant Onboard Administrator
4. Disk enclosure power on buttons (4)

B Regulatory compliance notices

This section contains regulatory notices for the HP P4800 G2 SAN Solution for BladeSystem.

Regulatory compliance identification numbers

For the purpose of regulatory compliance certifications and identification, this product has been assigned a unique regulatory model number. The regulatory model number can be found on the product nameplate label, along with all required approval markings and information. When requesting compliance information for this product, always refer to this regulatory model number. The regulatory model number is not the marketing name or model number of the product.

Product specific information:

HP P4460sb G2 storage blade

Regulatory model number: HSTNS-BC38-S

FCC and CISPR classification: Class A, 22:2005

These products contain laser components. See Class 1 laser statement in the [Laser compliance notices](#) section.

Federal Communications Commission notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (for example, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

FCC rating label

The FCC rating label on the device shows the classification (A or B) of the equipment. Class B devices have an FCC logo or ID on the label. Class A devices do not have an FCC logo or ID on the label. After you determine the class of the device, refer to the corresponding statement.

Class A equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Class B equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment

off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit that is different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

Declaration of Conformity for products marked with the FCC logo, United States only

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding this FCC declaration, contact us by mail or telephone:

- Hewlett-Packard Company P.O. Box 692000, Mail Stop 510101 Houston, Texas 77269-2000
- Or call 1-281-514-3333

Modification

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Cables

When provided, connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Canadian notice (Avis Canadien)

Class A equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la class A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Class B equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

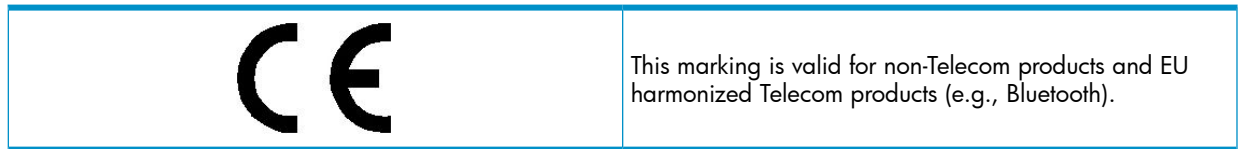
European Union notice

This product complies with the following EU directives:

- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC

Compliance with these directives implies conformity to applicable harmonized European standards (European Norms) which are listed on the EU Declaration of Conformity issued by Hewlett-Packard for this product or product family.

This compliance is indicated by the following conformity marking placed on the product:



Certificates can be obtained from <http://www.hp.com/go/certificates>.

Hewlett-Packard GmbH, HQ-TRE, Herrenberger Strasse 140, 71034 Boeblingen, Germany

Japanese notices

Japanese VCCI-A notice

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI-A

Japanese VCCI-B notice

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。 VCCI-B

Japanese VCCI marking



Japanese power cord statement

製品には、同梱された電源コードをお使い下さい。
同梱された電源コードは、他の製品では使用出来ません。

Please use the attached power cord.
The attached power cord is not allowed to use with other product.

Korean notices

Class A equipment

A급 기기 (업무용 정보통신기기)

이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Class B equipment

B급 기기 (가정용 정보통신기기)

이 기기는 가정용으로 전자파적합등록을 한 기기로서
주거지역에서는 물론 모든지역에서 사용할 수 있습니다.

Taiwanese notices

BSMI Class A notice

警告使用者:

這是甲類的資訊產品，在居住的
環境中使用時，可能會造成射頻
干擾，在這種情況下，使用者會
被要求採取某些適當的對策。

Taiwan battery recycle statement



Turkish recycling notice



Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

Laser compliance notices

English laser notice

This device may contain a laser that is classified as a Class 1 Laser Product in accordance with U.S. FDA regulations and the IEC 60825-1. The product does not emit hazardous laser radiation.



WARNING! Use of controls or adjustments or performance of procedures other than those specified herein or in the laser product's installation guide may result in hazardous radiation exposure. To reduce the risk of exposure to hazardous radiation:

- Do not try to open the module enclosure. There are no user-serviceable components inside.
- Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein.
- Allow only HP Authorized Service technicians to repair the unit.

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States.

Dutch laser notice



WAARSCHUWING: dit apparaat bevat mogelijk een laser die is geclassificeerd als een laserproduct van Klasse 1 overeenkomstig de bepalingen van de Amerikaanse FDA en de richtlijn IEC 60825-1. Dit product geeft geen gevaarlijke laserstraling af.

Als u bedieningselementen gebruikt, instellingen aanpast of procedures uitvoert op een andere manier dan in deze publicatie of in de installatiehandleiding van het laserproduct wordt aangegeven, loopt u het risico te worden blootgesteld aan gevaarlijke straling. Het risico van blootstelling aan gevaarlijke straling beperkt u als volgt:

- Probeer de behuizing van de module niet te openen. U mag zelf geen onderdelen repareren.
- Gebruik voor de laserapparatuur geen andere knoppen of instellingen en voer geen andere aanpassingen of procedures uit dan die in deze handleiding worden beschreven.
- Alleen door HP geautoriseerde technici mogen het apparaat repareren.

French laser notice



AVERTISSEMENT : cet appareil peut être équipé d'un laser classé en tant que Produit laser de classe 1 et conforme à la réglementation de la FDA américaine et à la norme 60825-1 de l'IEC. Ce produit n'émet pas de rayonnement dangereux.

L'utilisation de commandes, de réglages ou de procédures autres que ceux qui sont indiqués ici ou dans le manuel d'installation du produit laser peut exposer l'utilisateur à des rayonnements dangereux. Pour réduire le risque d'exposition à des rayonnements dangereux :

- Ne tentez pas d'ouvrir le boîtier renfermant l'appareil laser. Il ne contient aucune pièce dont la maintenance puisse être effectuée par l'utilisateur.
- Tout contrôle, réglage ou procédure autre que ceux décrits dans ce chapitre ne doivent pas être effectués par l'utilisateur.
- Seuls les Mainteneurs Agréés HP sont habilités à réparer l'appareil laser.

German laser notice



VORSICHT: Dieses Gerät enthält möglicherweise einen Laser, der nach den US-amerikanischen FDA-Bestimmungen und nach IEC 60825-1 als Laserprodukt der Klasse 1 zertifiziert ist. Gesundheitsschädliche Laserstrahlen werden nicht emittiert.

Die Anleitungen in diesem Dokument müssen befolgt werden. Bei Einstellungen oder Durchführung sonstiger Verfahren, die über die Anleitungen in diesem Dokument bzw. im Installationshandbuch des Lasergeräts hinausgehen, kann es zum Austritt gefährlicher Strahlung kommen. Zur Vermeidung der Freisetzung gefährlicher Strahlungen sind die folgenden Punkte zu beachten:

- Versuchen Sie nicht, die Abdeckung des Lasermoduls zu öffnen. Im Inneren befinden sich keine Komponenten, die vom Benutzer gewartet werden können.
- Benutzen Sie das Lasergerät ausschließlich gemäß den Anleitungen und Hinweisen in diesem Dokument.
- Lassen Sie das Gerät nur von einem HP Servicepartner reparieren.

Italian laser notice



AVVERTENZA: AVVERTENZA Questo dispositivo può contenere un laser classificato come prodotto laser di Classe 1 in conformità alle normative US FDA e IEC 60825-1. Questo prodotto non emette radiazioni laser pericolose.

L'eventuale esecuzione di comandi, regolazioni o procedure difformi a quanto specificato nella presente documentazione o nella guida di installazione del prodotto può causare l'esposizione a radiazioni nocive. Per ridurre i rischi di esposizione a radiazioni pericolose, attenersi alle seguenti precauzioni:

- Non cercare di aprire il contenitore del modulo. All'interno non vi sono componenti soggetti a manutenzione da parte dell'utente.
- Non eseguire operazioni di controllo, regolazione o di altro genere su un dispositivo laser ad eccezione di quelle specificate da queste istruzioni.
- Affidare gli interventi di riparazione dell'unità esclusivamente ai tecnici dell'Assistenza autorizzata HP.

Japanese laser notice



警告: 本製品には、US FDA規則およびIEC 60825-1に基づくClass 1レーザー製品が含まれている場合があります。本製品は人体に危険なレーザー光は発しません。

本書およびレーザー製品のインストールガイドに示されている以外の方法で制御、調整、使用した場合、人体に危険な光線にさらされる場合があります。人体に危険な光線にさらされないため、以下の項目を守ってください。

- モジュール エンクロージャを開けないでください。ユーザーが取り扱えるコンポーネントは含まれていません。
- 本書に示されている以外の方法で、レーザー デバイスを制御、調整、使用しないでください。
- HPの正規サービス技術者のみが本ユニットの修理を許可されています。

Spanish laser notice



ADVERTENCIA: Este dispositivo podría contener un láser clasificado como producto de láser de Clase 1 de acuerdo con la normativa de la FDA de EE.UU. e IEC 60825-1. El producto no emite radiaciones láser peligrosas.

El uso de controles, ajustes o manipulaciones distintos de los especificados aquí o en la guía de instalación del producto de láser puede producir una exposición peligrosa a las radiaciones. Para evitar el riesgo de exposición a radiaciones peligrosas:

- No intente abrir la cubierta del módulo. Dentro no hay componentes que el usuario pueda reparar.
- No realice más operaciones de control, ajustes o manipulaciones en el dispositivo láser que los aquí especificados.
- Sólo permita reparar la unidad a los agentes del servicio técnico autorizado HP.

Recycling notices

English recycling notice

Disposal of waste equipment by users in private household in the European Union



This symbol means do not dispose of your product with your other household waste. Instead, you should protect human health and the environment by handing over your waste equipment to a designated collection point for the recycling of waste electrical and electronic equipment. For more information, please contact your household waste disposal service

Bulgarian recycling notice

Изхвърляне на отпадъчно оборудване от потребители в частни домакинства в Европейския съюз



Този символ върху продукта или опаковката му показва, че продуктът не трябва да се изхвърля заедно с другите битови отпадъци. Вместо това, трябва да предпазите човешкото здраве и околната среда, като предадете отпадъчното оборудване в предназначен за събирането му пункт за рециклиране на неизползваемо електрическо и електронно борудване. За допълнителна информация се свържете с фирмата по чистота, чиито услуги използвате.

Czech recycling notice

Likvidace zařízení v domácnostech v Evropské unii



Tento symbol znamená, že nesmíte tento produkt likvidovat spolu s jiným domovním odpadem. Místo toho byste měli chránit lidské zdraví a životní prostředí tím, že jej předáte na k tomu určené sběrné pracoviště, kde se zabývají recyklací elektrického a elektronického vybavení. Pro více informací kontaktujte společnost zabývající se sběrem a svozem domovního odpadu.

Danish recycling notice

Bortskaffelse af brugt udstyr hos brugere i private hjem i EU



Dette symbol betyder, at produktet ikke må bortskaffes sammen med andet husholdningsaffald. Du skal i stedet den menneskelige sundhed og miljøet ved at afl evere dit brugte udstyr på et dertil beregnet indsamlingssted for af brugt, elektrisk og elektronisk udstyr. Kontakt nærmeste renovationsafdeling for yderligere oplysninger.

Dutch recycling notice

Inzameling van afgedankte apparatuur van particuliere huishoudens in de Europese Unie



Dit symbool betekent dat het product niet mag worden gedeponerd bij het overige huishoudelijke afval. Bescherm de gezondheid en het milieu door afgedankte apparatuur in te leveren bij een hiervoor bestemd inzamelpunt voor recycling van afgedankte elektrische en elektronische apparatuur. Neem voor meer informatie contact op met uw gemeentereinigingsdienst.

Estonian recycling notice

Äravisatavate seadmete likvideerimine Euroopa Liidu eramajapidamistes



See märk näitab, et seadet ei tohi visata olmeprügi hulka. Inimeste tervise ja keskkonna säästmise nimel tuleb äravisatav toode tuua elektriliste ja elektrooniliste seadmete käitlemisega egelevasse kogumispunkti. Küsimuste korral pöörduge kohaliku prügikäitlusettevõtte poole.

Finnish recycling notice

Kotitalousjätteiden hävittäminen Euroopan unionin alueella



Tämä symboli merkitsee, että laitetta ei saa hävittää muiden kotitalousjätteiden mukana. Sen sijaan sinun on suojattava ihmisten terveyttä ja ympäristöä toimittamalla käytöstä poistettu laite sähkö- tai elektroniikkajätteen kierrätyspisteeseen. Lisätietoja saat jätehuoltoyhdistä.

French recycling notice

Mise au rebut d'équipement par les utilisateurs privés dans l'Union Européenne



Ce symbole indique que vous ne devez pas jeter votre produit avec les ordures ménagères. Il est de votre responsabilité de protéger la santé et l'environnement et de vous débarrasser de votre équipement en le remettant à une déchetterie effectuant le recyclage des équipements électriques et électroniques. Pour de plus amples informations, prenez contact avec votre service d'élimination des ordures ménagères.

German recycling notice

Entsorgung von Altgeräten von Benutzern in privaten Haushalten in der EU



Dieses Symbol besagt, dass dieses Produkt nicht mit dem Haushaltsmüll entsorgt werden darf. Zum Schutze der Gesundheit und der Umwelt sollten Sie stattdessen Ihre Altgeräte zur Entsorgung einer dafür vorgesehenen Recyclingstelle für elektrische und elektronische Geräte übergeben. Weitere Informationen erhalten Sie von Ihrem Entsorgungsunternehmen für Hausmüll.

Greek recycling notice

Απορριψη άχρηστου εξοπλισμού από ιδιώτες χρήστες στην Ευρωπαϊκή Ένωση



Αυτό το σύμβολο σημαίνει ότι δεν πρέπει να απορρίψετε το προϊόν με τα λοιπά οικιακά απορρίμματα. Αντίθετα, πρέπει να προστατέψετε την ανθρώπινη υγεία και το περιβάλλον παραδίδοντας τον άχρηστο εξοπλισμό σας σε εξουσιοδοτημένο σημείο συλλογής για την ανακύκλωση άχρηστου ηλεκτρικού και ηλεκτρονικού εξοπλισμού. Για περισσότερες πληροφορίες, επικοινωνήστε με την υπηρεσία απόρριψης απορριμμάτων της περιοχής σας.

Hungarian recycling notice

A hulladék anyagok megsemmisítése az Európai Unió háztartásaiban



Ez a szimbólum azt jelzi, hogy a készüléket nem szabad a háztartási hulladékkal együtt kidobni. Ehelyett a leselejtezett berendezéseknek az elektromos vagy elektronikus hulladék átvételére kijelölt helyen történő beszolgáltatásával megóvja az emberi egészséget és a környezetet. További információt a helyi köztisztasági vállalatától kaphat.

Italian recycling notice

Smaltimento di apparecchiature usate da parte di utenti privati nell'Unione Europea



Questo simbolo avvisa di non smaltire il prodotto con i normali rifiuti uti domestici. Rispettare la salute umana e l'ambiente conferendo l'apparecchiatura dismessa a un centro di raccolta designato per il riciclo di apparecchiature elettroniche ed elettriche. Per ulteriori informazioni, rivolgersi al servizio per lo smaltimento dei rifiuti uti domestici.

Latvian recycling notice

Europos Sājungos namų ūkio vartotojų įrangos atliekų šalinimas



Šis simbolis nurodo, kad gaminio negalima išmesti kartu su kitomis buitinėmis atliekomis. Kad apsugotumėte žmonių sveikatą ir aplinką, pasenusią nenaudojamą įrangą turite nuvežti į elektrinių ir elektroninių atliekų surinkimo punktą. Daugiau informacijos teiraukitės buitinių atliekų surinkimo tarnybos.

Lithuanian recycling notice

Nolietotu iekārtu iznīcināšanas noteikumi lietotājiem Eiropas Savienības privātajās mājāsaimniecībās



Šis simbols norāda, ka ierīci nedrīkst utilizēt kopā ar citiem mājāsaimniecības atkritumiem. Jums jā rūpējas par cilvēku veselības un vides aizsardzību, nododot lietoto aprīkojumu otrreizējai pārstrādei īpašā lietotu elektrisko un elektronisko ierīču savākšanas punktā. Lai iegūtu plašāku informāciju, lūdzu, sazinieties ar savu mājāsaimniecības atkritumu likvidēšanas dienestu.

Polish recycling notice

Utylizacja zużytego sprzętu przez użytkowników w prywatnych gospodarstwach domowych w krajach Unii Europejskiej



Ten symbol oznacza, że nie wolno wyrzucać produktu wraz z innymi domowymi odpadkami. Obowiązkiem użytkownika jest ochrona zdrowia ludzkiego i środowiska przez przekazanie zużytego sprzętu do wyznaczonego punktu zajmującego się recyklingiem odpadów powstałych ze sprzętu elektrycznego i elektronicznego. Więcej informacji można uzyskać od lokalnej firmy zajmującej wywozem nieczystości.

Portuguese recycling notice

Descarte de equipamentos usados por utilizadores domésticos na União Europeia



Este símbolo indica que não deve descartar o seu produto juntamente com os outros lixos domiciliares. Ao invés disso, deve proteger a saúde humana e o meio ambiente levando o seu equipamento para descarte em um ponto de recolha destinado à reciclagem de resíduos de equipamentos eléctricos e electrónicos. Para obter mais informações, contacte o seu serviço de tratamento de resíduos domésticos.

Romanian recycling notice

Casarea echipamentului uzat de către utilizatorii casnici din Uniunea Europeană



Acest simbol înseamnă să nu se arunce produsul cu alte deșeuri menajere. În schimb, trebuie să protejați sănătatea umană și mediul predând echipamentul uzat la un punct de colectare desemnat pentru reciclarea echipamentelor electrice și electronice uzate. Pentru informații suplimentare, vă rugăm să contactați serviciul de eliminare a deșeurilor menajere local.

Slovak recycling notice

Likvidácia vyradených zariadení používateľmi v domácnostiach v Európskej únii



Tento symbol znamená, že tento produkt sa nemá likvidovať s ostatným domovým odpadom. Namiesto toho by ste mali chrániť ľudské zdravie a životné prostredie odovzdaním odpadového zariadenia na zbernom mieste, ktoré je určené na recykláciu odpadových elektrických a elektronických zariadení. Ďalšie informácie získate od spoločnosti zaoberajúcej sa likvidáciou domového odpadu.

Spanish recycling notice

Eliminación de los equipos que ya no se utilizan en entornos domésticos de la Unión Europea



Este símbolo indica que este producto no debe eliminarse con los residuos domésticos. En lugar de ello, debe evitar causar daños a la salud de las personas y al medio ambiente llevando los equipos que no utilice a un punto de recogida designado para el reciclaje de equipos eléctricos y electrónicos que ya no se utilizan. Para obtener más información, póngase en contacto con el servicio de recogida de residuos domésticos.

Swedish recycling notice

Hantering av elektroniskt avfall för hemanvändare inom EU



Den här symbolen innebär att du inte ska kasta din produkt i hushållsavfallet. Värna i stället om natur och miljö genom att lämna in uttjänt utrustning på anvisad samlingsplats. Allt elektriskt och elektroniskt avfall går sedan vidare till återvinning. Kontakta ditt återvinningsföretag för mer information.

Battery replacement notices

Dutch battery notice

Verklaring betreffende de batterij



WAARSCHUWING: dit apparaat bevat mogelijk een batterij.

- Probeer de batterijen na het verwijderen niet op te laden.
- Stel de batterijen niet bloot aan water of temperaturen boven 60° C.
- De batterijen mogen niet worden beschadigd, gedemonteerd, geplet of doorboord.
- Zorg dat u geen kortsluiting veroorzaakt tussen de externe contactpunten en laat de batterijen niet in aanraking komen met water of vuur.
- Gebruik ter vervanging alleen door HP goedgekeurde batterijen.

Batterijen, accu's en accumulators mogen niet worden gedeponeerd bij het normale huishoudelijke afval. Als u de batterijen/accu's wilt inleveren voor hergebruik of op de juiste manier wilt vernietigen, kunt u gebruik maken van het openbare inzamelingssysteem voor klein chemisch afval of ze terugsturen naar HP of een geautoriseerde HP Business of Service Partner.

Neem contact op met een geautoriseerde leverancier of een Business of Service Partner voor meer informatie over het vervangen of op de juiste manier vernietigen van accu's.

Avis relatif aux piles



AVERTISSEMENT : cet appareil peut contenir des piles.

- N'essayez pas de recharger les piles après les avoir retirées.
 - Évitez de les mettre en contact avec de l'eau ou de les soumettre à des températures supérieures à 60°C.
 - N'essayez pas de démonter, d'écraser ou de percer les piles.
 - N'essayez pas de court-circuiter les bornes de la pile ou de jeter cette dernière dans le feu ou l'eau.
 - Remplacez les piles exclusivement par des pièces de rechange HP prévues pour ce produit.
-

Les piles, modules de batteries et accumulateurs ne doivent pas être jetés avec les déchets ménagers. Pour permettre leur recyclage ou leur élimination, veuillez utiliser les systèmes de collecte publique ou renvoyez-les à HP, à votre Partenaire Agréé HP ou aux agents agréés.

Contactez un Revendeur Agréé ou Mainteneur Agréé pour savoir comment remplacer et jeter vos piles.

Hinweise zu Batterien und Akkus



VORSICHT: Dieses Produkt enthält unter Umständen eine Batterie oder einen Akku.

- Versuchen Sie nicht, Batterien und Akkus außerhalb des Gerätes wieder aufzuladen.
 - Schützen Sie Batterien und Akkus vor Feuchtigkeit und Temperaturen über 60°.
 - Verwenden Sie Batterien und Akkus nicht missbräuchlich, nehmen Sie sie nicht auseinander und vermeiden Sie mechanische Beschädigungen jeglicher Art.
 - Vermeiden Sie Kurzschlüsse, und setzen Sie Batterien und Akkus weder Wasser noch Feuer aus.
 - Ersetzen Sie Batterien und Akkus nur durch die von HP vorgesehenen Ersatzteile.
-

Batterien und Akkus dürfen nicht über den normalen Hausmüll entsorgt werden. Um sie der Wiederverwertung oder dem Sondermüll zuzuführen, nutzen Sie die öffentlichen Sammelstellen, oder setzen Sie sich bezüglich der Entsorgung mit einem HP Partner in Verbindung.

Weitere Informationen zum Austausch von Batterien und Akkus oder zur sachgemäßen Entsorgung erhalten Sie bei Ihrem HP Partner oder Servicepartner.

Istruzioni per la batteria



AVVERTENZA: Questo dispositivo può contenere una batteria.

- Non tentare di ricaricare le batterie se rimosse.
 - Evitare che le batterie entrino in contatto con l'acqua o siano esposte a temperature superiori a 60° C.
 - Non smontare, schiacciare, forare o utilizzare in modo improprio la batteria.
 - Non accorciare i contatti esterni o gettare in acqua o sul fuoco la batteria.
 - Sostituire la batteria solo con i ricambi HP previsti a questo scopo.
-

Le batterie e gli accumulatori non devono essere smaltiti insieme ai rifiuti domestici. Per procedere al riciclaggio o al corretto smaltimento, utilizzare il sistema di raccolta pubblico dei rifiuti o restituirli a HP, ai Partner Ufficiali HP o ai relativi rappresentanti.

Per ulteriori informazioni sulla sostituzione e sullo smaltimento delle batterie, contattare un Partner Ufficiale o un Centro di assistenza autorizzato.

バッテリーに関する注意



警告: 本製品はバッテリーを内蔵している場合があります。

- バッテリーを取り外している場合は、充電しないでください。
- バッテリーを水にさらしたり、60°C (140°F) 以上の温度にさらさないでください。
- バッテリーを誤用、分解、破壊したり、穴をあけたりしないでください。
- 外部極を短絡させたり、火や水に投棄しないでください。
- バッテリーを交換する際は、HP指定の製品と交換してください。

バッテリー、バッテリーパック、蓄電池は一般の家庭廃棄物と一緒に廃棄しないでください。リサイクルまたは適切に廃棄するため、公共の収集システム、HP、HPパートナー、またはHPパートナーの代理店にお送りください。

バッテリー交換および適切な廃棄方法についての情報は、HPのサポート窓口にお問い合わせください。

Declaración sobre las baterías



ADVERTENCIA: Este dispositivo podría contener una batería.

- No intente recargar las baterías si las extrae.
 - Evite el contacto de las baterías con agua y no las exponga a temperaturas superiores a los 60 °C (140 °F).
 - No utilice incorrectamente, ni desmonte, aplaste o pinche las baterías.
 - No cortocircuite los contactos externos ni la arroje al fuego o al agua.
 - Sustituya las baterías sólo por el repuesto designado por HP.
-

Las baterías, los paquetes de baterías y los acumuladores no se deben eliminar junto con los desperdicios generales de la casa. Con el fin de tirarlos al contenedor de reciclaje adecuado, utilice los sistemas públicos de recogida o devuélvalas a HP, un distribuidor autorizado de HP o sus agentes.

Para obtener más información sobre la sustitución de la batería o su eliminación correcta, consulte con su distribuidor o servicio técnico autorizado.

Glossary

Acronyms and Abbreviations

CMC	Central Management Console
CSR	Customer Self Repair
DHCP	Dynamic Host Configuration Protocol
EBIPA	Enclosure bay IP addressing
ESX	VMware's enterprise-class virtualization platform
FBWC	Flash-backed write cache
FCC	Federal Communications Commission
FOM	Failover Manager
iLO 2	HP Integrated Lights-Out 2
iSCSI	Internet SCSI)
KVM	Keyboard, video, mouse switch
LUN	Logical unit number
NIC	Network interface card
OA	Onboard Administrator
POST	Power-on self test
RBSU	ROM-based setup utility
RF	Radio frequency
SAN	Storage Area Network
SAS	Serial-Attached SCSI
SFF	Small Form Factor
SSH	Secure Shell
UPS	Uninterruptible power supply
VIP	Virtual IP address

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