HP PCIe 2 port 10Gb Ethernet-SR, LR, and CR Adapter Installation Guide

Abstract

This document contains specific information that is intended for users of this HP product.

Warranty

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

http://h18004.www1.hp.com/products/servers/platforms/warranty/

Table 1 Publishing history details

Document manufacturing part number and edition	Changes made	Publication date
5992–1087, Edition 2	Corrected memory requirements for each card, in "Installation Recommendations and Restrictions" (page 6)	03/2012
5991–8069, Edition 1	Original edition	09/2010

1 HBA specifications

This chapter contains the HBA specifications, including:

Figure 1 HP PCIe 2–Port 10GbE Adapter
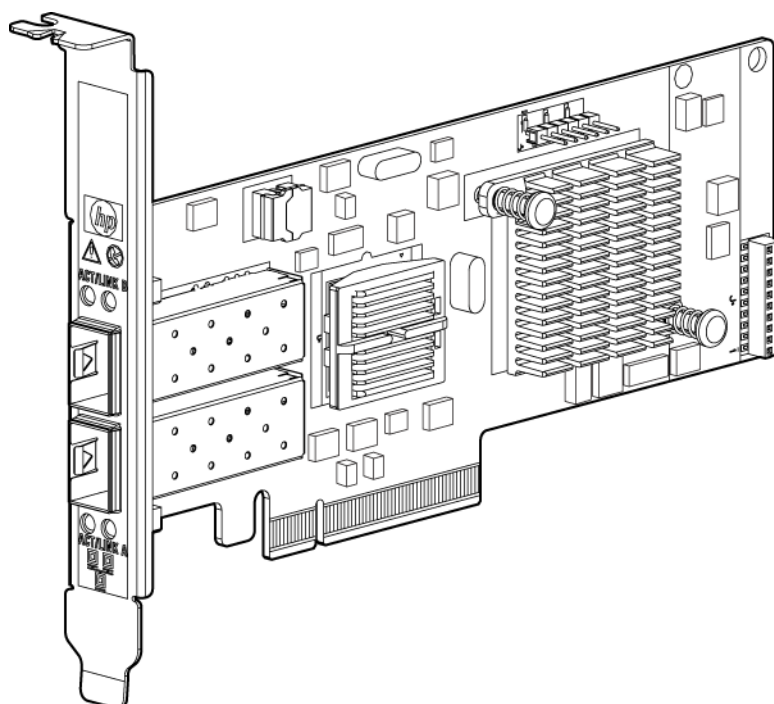
Product Numbers

The following are three (3) different options of the PCIe 2 Port 10GbE adapter:

- AM225A: HP PCIe 2–P 10GbE-SR (fabric) adapter
- AM232A: HP PCIe 2–P 10GbE-LR (fabric) adapter
- AM233A: HP PCIe 2–P 10GbE-CR (copper) adapter

Environmental Specifications

Table 2 (page 3) lists the HBAs environmental specifications.

Table 2 Environmental Specifications

Environment	Minimum	Maximum
Operating temperature	0° C (32° F)	45° C (113° F)
Storage temperature	−40° C (−40° F)	70° C (158° F)
Operating humidity	15% RH at 40° C (104° F) (non-condensing)	80% RH at 40° C (104° F) (non-condensing)

Table 2 Environmental Specifications *(continued)*

Environment	Minimum	Maximum
Non-operating/Storage humidity	90% RH at 65° C (149° F) for 24 hours (non-condensing)	
Vibration	Random operating: ~0.21 Grms (5–500 Hz)	
	Swept sine: 0.5 Grms (5–500 Hz) 5 min. dwell at 4 resonance	
	Random survival: ~2.09 Grms (5–500Hz)	
Operating altitude	0 to 3,000 m (0 to ~10,000 ft)	
Non-operating altitude	0 to 4,600 m (0 to ~15,000 ft)	

Physical Specifications

Table 3 lists the physical specifications.

Table 3 Physical Specifications

Parameter	Description
Form factor	PCIe Low Profile Adapter with Full Height bracket (default) and Low Profile bracket (available)
Height	68.90 mm (2.731 in)
Length	167.65 mm (6.6 in)
Thickness	1.57 mm ± 0.20 mm (0.062 in ± 0.008 in)

System Interface and Support

- PCI Express x8 lane operation
- PCI Express Gen 2
- Supported on HP Integrity Servers with PCIe slots
  (HP Integrity rack servers, future servers)

Operating System Support

- HP-UX
  - 11i v3
- Open VMS (not available at first release)
- Windows
  - Windows Server 2008 SP2
  - Windows 2008 R2
  - Windows 7

Ethernet Technology

The Ethernet technology designed into the HP PCIe 2 Port 10GbE adapter(s) includes the following:

- Broadcom BCM57711E Ethernet controller
- Broadcom BCM8726 XAUI to SFP+ Physical Layer (PHY)
- LED indicators
- Supports 2 SFP+ Serial 10Gb Interface

- Supports TCP Offload Engine and RDMA features
- Supports SFP+ Optical modules
- Supports SFP+ direct attached copper cable (base CR)
- Supports 10Gb speed only

2 Installing HBAs

This chapter describes the following topics for installing HBAs:

- "Installation Prerequisites" (page 6)
- "Installing the HBA" (page 8)

See your server's documentation for additional information about installing HBAs.

⚠ **WARNING!** Disconnect the host from the power source before installing HBAs. To reduce the risk of personal injury from hot surfaces, allow the internal server or workstation components to cool before touching.

⚠ **CAUTION:** Electrostatic discharge (ESD) can damage electronic components. Be sure you are properly grounded before beginning this procedure, as described in "Regulatory Compliance and Safety" (page 11).

Installation Prerequisites

Before you begin, make sure you have the following items available:

- A server with an empty PCI bus slot that is based on and compatible with the PCI bus type of the HBA being installed.

    NOTE: The HBAs do not allow normal data transmission on an optical link unless they are connected to another similar or compatible laser product (ex.: multimode to multimode).

- Ensure SFP+ Modules and Fiber Optic or direct-attached copper LAN cables are available.

Installation Recommendations and Restrictions

When installing the 10Gb Ethernet card, be aware of the following recommendations and restrictions:

- Slot placement:
  - To achieve the best performance, HP recommends installing the card into one of the highest-performing (or "dual-rope") PCIe slots. To identify which slots are the highest performing slots in a particular system, see the hardware users guide for each system.
  - Not supported on platforms where all slots are PCI only or PCI-X only.

- At the time of publication of this document, the HP recommendation for allocating server memory is a minimum of 2GB per AM225A, AM232A, or AM233A 10GbE card. For the latest memory requirements and other information, see the *HP Integrity PCI-e 2-port 10GbE Adapter QuickSpecs* at the following location:

    http://h18000.www1.hp.com/products/quickspecs/13874_div/13874_div.PDF

- For the number of cards supported per server, see the *Ethernet Support Matrix*.

Figure 2 (page 7) shows the two (2) bulkheads offered on the AM225A, AM232A, and AM233A adapter.

NOTE: The adapter is offered with the Full Height bulkhead as the default.

Figure 2 LED Location on the 2–Port 10GbE Adapter Low-Profile and Full Height Bulkheads
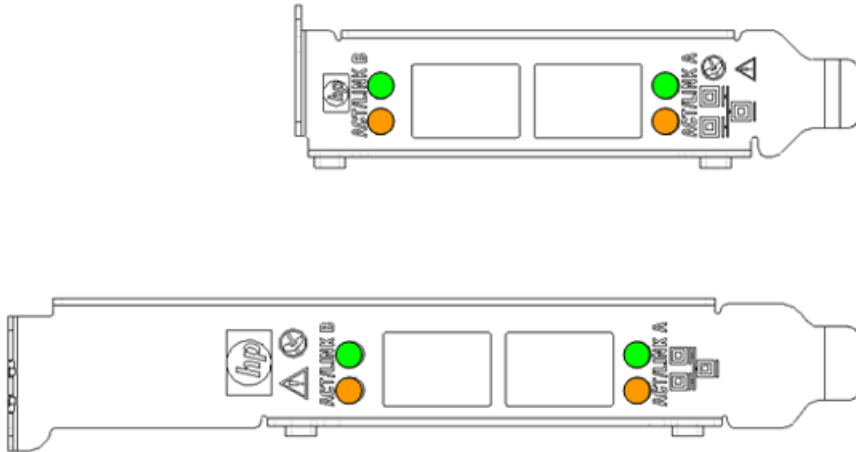
LED Function

There are two (2) LED's per 10Gigabit Ethernet port on the AM225A, AM232A, and AM233A adapters. Table 4 explains their functionality:

Table 4 LED Functions

Function	LED Color	Description
Link (LINK)	Green	Solid green indicates 10Gb Ethernet Link is established
Activity (ACT)	Amber	Blinking Amber indicates 10Gb Ethernet traffic

On Board Jumpers and Dip Switches

There are no jumpers on board. There is one dip switch mounted.

Table 5 offers details for the dip switch:

Table 5 SW1 Dip Switch Functionality

Dip Switch Reference Designator	Pin Number	Description
1	Pins 1 and 6	OFF — Single Function Enable (default)
		ON — Multi Function Enable
2	Pins 2 and 5	OFF — RMII Clock Speed is 50MHz (default)
		ON — RMII Clock Speed is 25MHz
3	Pins 3 and 4	Reserved

Installing the SFP+ Modules

SFP+ modules must be installed in the SFP+ module cages for both ports of the AM225A and AM232A before cables can be attached.

The AM233A uses direct-attach copper cables that plug directly into the SFP+ module cages and do not require additional SFP+ modules.

- Each AM225A and AM232A ships with two SFP+ modules.
- Each SFP+ module has a tab that can be flipped down into the *Open* position (parallel to the length of the module) or flipped up into the *Closed* position (perpendicular to the length of the module).
- With the tab in the *Closed* position, slide the SFP+ module all the way into the SFP+ module cage until it clicks into place.
- If the SFP+ modules need to be removed or replaced, flip the tab down into the *Open* position and pull the SFP+ module straight out.

Installing the HBA

Use the following procedure for installing the HBA into a computer.

△ **CAUTION:** Be sure to observe the ESD precautions for this procedure as described in "Regulatory Compliance and Safety" (page 11).

1. Ensure the computer is powered off.
2. Remove the screws on the computer's cover and remove the cover to expose the PCIe I/O card slots.
3. Wearing a properly grounded anti-static wrist strap, remove the blank bulkhead panel from an empty x4, x8, or x16 PCIe bus slot. See the following section on ESD for more details: "Electrostatic Discharge" (page 13).
4. Insert the HBA into the empty PCIe slot. Press firmly until the HBA is seated.

    NOTE: In some HP server models only PCIe HBAs can be inserted in the optional PCIe riser cards or cages. For instructions on installing the riser card or cage, see your server documentation.

5. Secure the HBA's mounting bracket to the chassis with the bulkhead's fastener.
6. Replace the computer cover and secure with the cover screws.
7. Attach the media:
    a. Connect one end of the LAN cable to a selected port on the target HBA.
    b. Connect the other end of the LAN cable to a selected switch device.

    NOTE: The HBA does not allow normal data transmission on an optical link unless the link is connected to a similar or compatible laser product. Both products must be multimode.

8. Follow these substeps to apply the power:
    a. Verify that the HBA is securely installed in the computer.
    b. Verify that the correct media is attached.
    c. Reconnect power and turn on the computer.

Ethernet Configuration and Verification

Follow these steps to configure and verify any type of HP-UX 11i v3–based Ethernet cards, including 10Gb Ethernet, Gigabit Ethernet, and Fast Ethernet.

1. Install LAN card and attach cables to it according to instructions in your system's hardware support guide.
2. Plug LAN cable (or cables) into LAN card and into appropriate switch ports using fiber or direct-attach copper LAN cable.
3. Boot the system.

4. To see all LAN cards with drivers, run:

    ```
    ioscan -fnC lan
    ```

    If you do not see your card, use `ioscan` to determine if the card is there but needs a driver (`UNCLAIMED`).

    ```
    ioscan -fn
    ```

5. Install the driver or update the driver to the latest version. Get the latest driver from the HP Software Depot website.

    To download the `10GigEthr-02` bundle from the HP Software Depot website, follow these steps:

    a. Go to the HP Software Depot website at:

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

    b. Search for **10GigEthr-02**.

    c. Follow the prompts to download the driver.

    To add new software, use the command:

    ```
    swinstall
    ```

6. Verify connectivity to the switch.

    ```
    nwmgr -c lanPPA -A link_state,speed
    ```

7. To see all LAN cards with IP addresses, run:

    ```
    netstat -in
    ```

8. Assign IP addresses and subnet masks to additional cards as desired. On HP-UX 11i v3, use the System Management Homepage (**SMH**). For further details, see the *HP-UX System Administrators Guide: Configuration Management*.

9. For each interface, run `ifconfig lanx` to verify the correct IP, netmask, and broadcast addesses. For example:

    ```
    ifconfig lan0
    ```

10. For each interface, `ping` the broadcast address shown form the output of `ifconfig` and verify that you get responses from other nodes on that subnet.

    This should get the system up and connected to any local networks. To set up communication between the local network and remote networks, configure a router using **SMH** (HP-UX 11i v3) or use the `route` command to put the new route into effect on the system as follows:

    ```
    /usr/sbin/route add default router_ip_address 1
    ```

3 Installing the Windows Smart Component driver kit

This chapter describes how to locate and download the Windows Smart Component driver kit from the web. This chapter also describes how to install or update your Windows driver. It contains the following topics:

- Prerequisites
- Locating and downloading the Windows Smart Component driver kit from the website

Prerequisites

Perform the following tasks before you install or update the driver for your Windows server:

- Obtain a copy of the latest release notes for your HP HBA from the HP Support Center website: itrc.hp.com/service/home
- Be familiar with the operating system which the HBA will operate under and have access to standard system documentation.
- Review any restrictions or mandatory hot fixes that apply to your configuration and operating system.

Locating and downloading the Windows Smart Component driver kit from the website

Follow this procedure to locate and download the driver kit from the website.

1. See the HP Storage Networking website:
   http://h18006.www1.hp.com/storage/networking/index.html
2. Select *Host Bus Adapters*.
3. Select your server type.
4. Using the HP model # as your guide, select your HBA.
5. In the highlighted box titled *Product information* , look for the section named *Support* and select the *Software and drivers* link.
6. The next page displayed is titled *Download Drivers and Software*.
7. Select your operating system.
8. Select the Windows Smart Component driver kit and download it to your server.

Installing the Windows device driver using the HP Smart Component kit

To install the HBAs Windows drivers:

1. Obtain the latest Smart Component for your configuration and copy it to your Windows desktop.
2. Double-click the Smart Component executable to begin the installation, and then click **Install**.
3. Launch the Smart Component kit named `CPxxxx.exe.`
4. Click **Install** to install the driver.
5. Click **Reboot** to complete the installation.
6. Click **Extract** to extract the contents of the Smart Component.

4 Regulatory Compliance and Safety

Laser device

All HP systems equipped with a laser device comply with safety standards, including International Electrotechnical Commission (IEC) 825. With specific regard to the laser, the equipment complies with laser product performance standards set by government agencies as a Class 1 laser product. The product does not emit hazardous light.

Laser safety warning

⚠ WARNING! To reduce the risk of exposure to hazardous radiation:

- Do not try to open the laser device 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 in this document.
- Allow only HP-authorized service technicians to repair the laser device.

Certification and classification information

This product contains a laser internal to the fiber optic (FO) transceiver for connection to the Fibre Channel communications port.

In the USA, the FO transceiver is certified as a Class 1 laser product conforming to the requirements contained in the Department of Health and Human Services (DHHS) regulation 21 CFR, Subchapter J. A label on the plastic FO transceiver housing indicates the certification.

Outside the USA, the FO transceiver is certified as a Class 1 laser product conforming to the requirements contained in IEC 825-1:1993 and EN 60825-1:1994, including Amendment 11:1996 and Amendment 2:2001.

Laser product label

The optional label in or equivalent may be located on the surface of the HP-supplied laser device.

Figure 3 Class 1 laser product label

CLASS 1 LASER PRODUCT
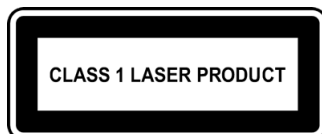
This optional label indicates that the product is classified as a CLASS 1 LASER PRODUCT. This label may appear on the laser device installed in your product.

International notices and statements

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 classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union notice

Products bearing the CE marking comply with the EMC Directive (2004/108/EMC) and the Low Voltage Directive (2006/95/EC) issued by the Commission of the European Community and if this product has telecommunication functionality, the R&TTE Directive (1999/5/EC).

Compliance with these directives implies conformity to the following European Norms (in parentheses are the equivalent international standards and regulations):

- EN55022 (CISPR 22)–Electromagnetic Interference
- EN55024 (IEC61000-4-2, IEC61000-4-3, IEC61000-4- 4, IEC61000-4-5, IEC61000–4-6, IEC61000–4-8, IEC61000–4-11)–Electromagnetic Immunity
- Power Quality:
  - EN61000-3-2 (IEC61000-3-2)–Power Line Harmonics
  - EN61000-3-3 (IEC61000-3-3)–Power Line Flicker
- EN60950 (IEC60950)–Product Safety
- Also approved under UL 60950/CSA C22.2 No. 60950-00, Safety of Information Technology Equipment

BSMI notice

Figure 4 BSMI 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。

Japanese notice

Figure 5 Japanese notice

ご使用になっている装置にVCCIマークが付いていましたら、次の説明文を
お読み下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準
に基づくクラス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
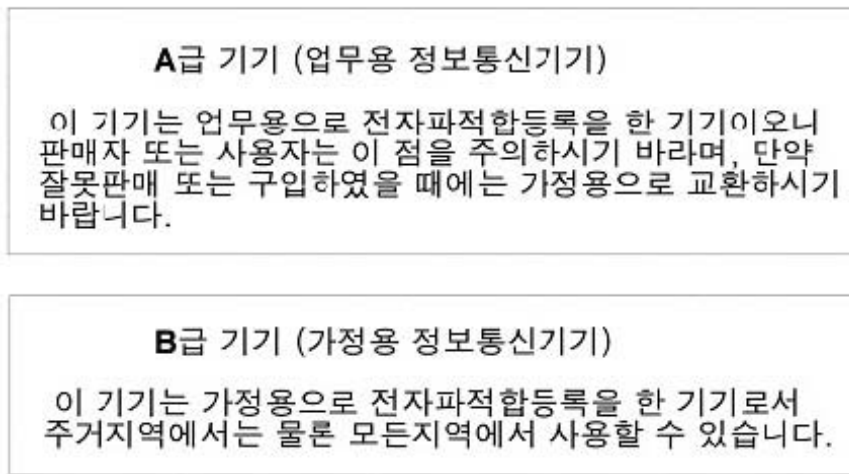使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

VCCIマークが付いていない場合には、次の点にご注意下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に
基づくクラス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。

Korean notices

Figure 6 Korean notices

A급 기기 (업무용 정보통신기기)

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

B급 기기 (가정용 정보통신기기)

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

Electrostatic Discharge

To prevent damage to the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly (see the following section titled "Grounding Methods").

Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm (±10 percent) resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an HP-authorized reseller install the part.

NOTE: For more information on static electricity, or assistance with product installation, contact your HP-authorized reseller.

Declaration of Conformity

DECLARATION OF CONFORMITY
according to ISO/IEC 17050-1 and EN 17050-1

DoC #: CPTOJ-0804-1

Supplier's Name: **Hewlett-Packard Company**
Supplier's Address: 19410 Homestead Rd., Cupertino, CA 95014

declares, that the product
Product Name and Model: [2]   10 Gb Ethernet Card
Regulatory Model Number: [1]   CPTOJ-0804
Product Options: All
conforms to the following Product Specifications and Regulations:

EMC: Class A
EN 55022:2006
EN 55024:1998 +A1:2001 +A2:2003
CISPR 22:2005
FCC CFR 47 Part 15

Safety:

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.
The product herewith complies with the requirements of the Low Voltage Directive 2006/95/EC, the EMC Directive 2004/108/EC, and carries the CE-marking accordingly.

Additional Information:
1) This product is assigned a Regulatory Model Number which stays with the regulatory aspects of the design. The Regulatory Model Number is the main product identifier in the regulatory documentation and test reports, this number should not be confused with the marketing name or the product numbers.
2) This product was tested in a typical HP environment in conjunction with an HP host system.

Cupertino, CA
9/8/2009

Dave Westwood, Manager
SSTL

Local contact for regulatory topics only:
EMEA: Hewlett-Packard GmbH, HQ-TRE, Herrenberger Strasse 140, 71034 Boeblingen, Germany   www.hp.com/go/certificates
U.S.:   Hewlett-Packard, 3000 Hanover St., Palo Alto 94304, U.S.A. 650

5 Support and other resources

Contacting HP

Before you contact HP

Be sure to have the following information available before you call contact HP:

- Technical support registration number (if applicable)
- Product serial number
- Product model name and number
- Product identification number
- Applicable error message
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level

HP contact information

For the name of the nearest HP authorized reseller, see the Contact HP Worldwide (in English) website:

http://welcome.hp.com/country/us/en/wwcontact.html

For HP technical support:

- In the United States, for contact options see the Contact HP United States website:

  http://welcome.hp.com/country/us/en/contact_us.html

  To contact HP by phone:

  ◦ Call 1-800-HP-INVENT (1-800-474-6836). This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored.

  ◦ If you have purchased a Care Pack (service upgrade), call 1-800-407-6210. For more information about Care Packs, see the HP Care Pack Services website:

    http://www.hp.com/go/carepack

- In other locations, see the Contact HP Worldwide (in English) website:

  http://welcome.hp.com/country/us/en/wwcontact.html

Subscription service

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

http://www.hp.com/country/us/en/contact_us.html.

Documentation feedback

HP welcomes your feedback. To make comments and suggestions about product documentation, send a message to **docsfeedback@hp.com**.

Include the document title and manufacturing part number. All submissions become the property of HP

Typographic conventions

This document uses the following typographical conventions:

%, $, or #	A percent sign represents the C shell system prompt. A dollar sign represents the system prompt for the Bourne, Korn, and POSIX shells. A number sign represents the superuser prompt.
audit(5)	A manpage. The manpage name is *audit*, and it is located in Section 5.
`Command`	A command name or qualified command phrase.
`Computer output`	Text displayed by the computer.
Ctrl+x	A key sequence. A sequence such as **Ctrl+x** indicates that you must hold down the key labeled **Ctrl** while you press another key or mouse button.
`ENVIRONMENT VARIABLE`	The name of an environment variable, for example, `PATH`.
ERROR NAME	The name of an error, usually returned in the `errno` variable.
Key	The name of a keyboard key. **Return** and **Enter** both refer to the same key.
Term	The defined use of an important word or phrase.
`User input`	Commands and other text that you type.
`Variable`	The name of a placeholder in a command, function, or other syntax display that you replace with an actual value.
[]	The contents are optional in syntax. If the contents are a list separated by |, you must choose one of the items.
{}	The contents are required in syntax. If the contents are a list separated by |, you must choose one of the items.
…	The preceding element can be repeated an arbitrary number of times.
⏎	Indicates the continuation of a code example.
|	Separates items in a list of choices.
WARNING	A warning calls attention to important information that if not understood or followed will result in personal injury or nonrecoverable system problems.
CAUTION	A caution calls attention to important information that if not understood or followed will result in data loss, data corruption, or damage to hardware or software.
IMPORTANT	This alert provides essential information to explain a concept or to complete a task
NOTE	A note contains additional information to emphasize or supplement important points of the main text.

Customer Self Repair

HP products are designed with many Customer Self Repair parts to minimize repair time and allow for greater flexibility in performing defective parts replacement. If during the diagnosis period HP (or HP service providers or service partners) identifies that the repair can be accomplished by the use of a Customer Self Repair part, HP will ship that part directly to you for replacement. There are two categories of Customer Self Repair parts:

- **Mandatory** – Parts for which Customer Self Repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

- **Optional** – Parts for which Customer Self Repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or

may not be additional charges, depending on the type of warranty service designated for your product.

Based on availability and where geography permits, Customer Self Repair parts 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 assistance is required, you can call the HP Technical Support Center and a technician will help you over the telephone. HP specifies in the materials shipped with a replacement Customer Self Repair part whether a defective part must be returned to HP. In cases where it is required to return the defective part to HP, you must ship the defective part 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. With a Customer Self Repair, HP will pay all shipping and part return costs and determine the courier/carrier to be used.

For more information about the HP Customer Self Repair program, contact your local service provider. For the North American program, see the HP Customer Self Repair website:

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