

# **AD331A & AD332A PCI-X 1-Port Gigabit Ethernet Card Overview**

## **HP-UX Networking**

HP 9000 and HP Integrity Systems



**E0207**

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## **Legal Notices**

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## Product Overview

The AD331A/AD332A PCI-X LAN cards have the following features and requirements:

- **PCI-X 133 MHz** capable card can operate at 32-bit or 64-bit modes and is supported in the following frequencies:
  - PCI-X 133. Best performance is achieved by putting the card into one of the highest-performing (or “**dual-rope**”) PCI-X 133 slot. To identify which slots are the highest performing slots in a particular system, please refer to the hardware users’ guide for each system or to the *I/O Slot Matrix - Entry Level Integrity Servers* at <http://docs.hp.com/en/hw.html#System%20Administration>.
  - PCI-X 66
  - PCI 33/66
- For HP-UX 11i v2, the software driver required for this card began shipping with the HP-UX 11i v2 OE of September 2006.

For HP-UX 11i v1, the software driver required for this card began shipping with the HP-UX 11i v1 OE of December 2006.

Once the driver has been released on the OE, it will also be available on the quarterly application software media.

For systems that are already running the HP-UX 11i v2 or 11i v1 OE, you can either just load the required software driver bundle (**IEther-00**), or you can load the entire OE and /or application software and you will automatically get the driver you need for this card.

- Supports **Jumbo Frames**. Because Jumbo frames reduce a server’s CPU processing of network packets, efficiency increases especially for heavy traffic. The same amount of data can be transferred in less frames.
- Supports HP **Serviceguard** for high availability and Auto-Port Aggregation (**APA**) for load balancing and single-system failover.
- Supports virtual LANs (**VLANs**) for increased flexibility. A Virtual LAN (VLAN) is a logical or *virtual network segment* that can span multiple physical network segments. VLANs also more efficiently use switches and end-stations by sending broadcasts and multicasts only to the intended nodes. For more information on this feature, please see *Using HP-UX VLANs* on <http://docs.hp.com>.
- Supports PCI-X online addition/replacement (**OLA/R**) on specified systems. For instructions on how to perform online addition and replacement (OLAR) for PA-RISC-based systems running HP-UX 11i v 1.0, see *Configuring HP-UX For Peripherals*. For instructions on performing OL\* for Itanium-based systems and PA-RISC systems running HP-UX 11i v 2.0 of September 2004 or later, refer to the *Interface Card OL\* Support Guide* .
- Supports configuration through GUI-based system administration manager (**SAM**) or command line.
- Online/Offline Diagnostics.
- Ignite-UX support.
- Supports vPars on HP-UX 11i v1 and 11i v2. Enables creation of additional partitions per server.
- Card resident EFI driver version 3.0.03.
- On board Checksum Offload (CKO) to enhance server efficiency and performance over TCP, UDP, and IPv4.

- IPv4 TCP Segmentation Offload (TSO). TSO, also known as “large send” enables a system’s protocol stack to offload portions of outbound TCP processing to a network interface card thereby reducing system CPU utilization and enhancing performance.
- LAN boot support on HP Integrity and HP 9000 (PA-RISC) systems except for rp7410 and rp8400.
- Supports readout of Vital Product Data (VPD).

## Cable Specifications

**Operating Distance for 1000Base-T (Copper UTP):** Up to 100 meters — Cat 5 and Cat 5E

**Operating distances for 1000Base-SX** using multi-mode fiber optic cable are as follows:

Description (850nm short wavelength laser)	Modal Bandwidth	Operating Distance
50 micron MMF	400 (MHz * km)	2 to 500 meters (6.6 to 1640 ft)
	500 (MHz * km)	2 to 550 meters (6.6 to 1804 ft)

Available HP Fiber Optic Cables:

<b>LC-LC</b>	
C7524A	Fibre Channel Cable 2m LC duplex 50/125 M/M Optical
AF552A	Fibre Channel Cable 15m LC duplex 50/125 M/M Optical
C7526A	Fibre Channel Cable 50m LC duplex 50/125 M/M Optical
<b>LC-SC</b>	
C7529A	Fibre Channel Cable 2m LC-SC duplex 50/125 M/M Optical
AF554A	Fibre Channel Cable 15m LC-SC duplex 50/125 M/M Optical

## LED Information

LEDs are provided to indicate Link Activity and Link Speed as follows:

- For AD331A, there are two LEDs:
  - Activity/Link LED = GREEN light ON when link is established; FLASHING when there is data traffic; OFF when link is not established.
  - Speed LED:
    - Orange if speed is 1000Mbps.
    - Green if speed in 100Mbps.
    - OFF if speed is 10Mbps.
- For AD332A, there is only one LED:
  - Activity/Link LED: GREEN light ON when link is established; FLASHING when there is data traffic; OFF when link is not established.
  - The fiber adapter supports only the 1000 speed; so there is no speed LED.

## Connection Difference for the Fiber (1000Base-SX) Cards if Replacing an A6847A Card

Please note that the AD332A uses an LC connector whereas the A6847A card uses an SC connector. If you are replacing a single-port A6847A Gigabit Ethernet card with the AD332A, please be sure that the cable has an LC connector at the adapter end. If the remote connection is type SC, you will need an LC-to-SC cable.

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## Supporting Systems

For the list of systems that support this card and the ones that don't, refer to the *Ethernet Support Matrix* on <http://docs.hp.com>. That matrix also tells which OEs support each card and the driver associated with each product.



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# A Regulatory Information

This appendix contains regulatory statements for the United States, Canada, Australia/New Zealand, Japan, and the European community.

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## Card Physical and Environmental Specifications

Following are the product physical and environmental specifications of the AD331A/AD332A PCI-X 1-Port Gigabit Ethernet Card.

### Physical Specifications

Form Factor	PCI half-card form-factor PCI-X (rev 2.3)
PCI support	64-bit 3.3V only 133Mhz
Width	6.4 cm (2.536 in)
Length	16.9 cm (6.6 in)
Thickness	2.0 cm (0.7 in)
Weight	0.105 kg (0.2 lb) kg

### Electrical

Power consumption:	15 Watts
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### Environmental

Temperature, Degrees F = (1.8 x Degrees C) + 32

Operating Temperature Range (Degrees Celsius)	+5° C to 40° C
Recommended Operating Temperature Range (Degrees Celsius)	+10° C to 30° C
Non-operating/ storage Temperature Range (Degrees Celsius)	-40° C to 70° C
Temperature Shock Immunity - Max Rate of Change	20 C/hr
Non-operating/storage Humidity Range in %RH	90
Recommended Operating Humidity Range @ 22 Degrees Celsius in %RH	40 to 60
Heat Dissipation (in Watts)	17

Maximum kV (if less than 15 kV) with no loss of function	8
Maximum kV (if less than 25 kV) with no component damage	25
Operating Altitude	3,000 meters (9900) ft
Non-operating Altitude	4,500 meters (14850 ft)

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## FCC Statement (For U.S.A.)

### Federal Communications Commission Radio Frequency Interference Statement

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**WARNING** 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 might cause undesired operation.**

**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 instruction manual, may cause harmful interference to radio communications.**

**Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.**

**Hewlett-Packard's system certification tests were conducted with HP-supported peripheral devices and cables, such as those received with your system. Changes or modifications to this equipment not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment.**

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## Canada

Warning: 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.

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## EMI Statement (European Community)

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**NOTE** This is a Class A product. In a domestic environment, this product may cause radio interference, in which case you may be required to take adequate measures.

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## Laser Safety Statements

### Laser Safety Statements - U.S. FDA/CDRH - Optical (laser) Transceiver

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**CAUTION** The optical transceiver provided on the network interface card contains a laser system and is classified as a “Class-I Laser Product” under a U.S. Department of Health and Human Services (DHHS) Radiation Performance standard according to the Radiation Control for Health and Safety Act of 1968. The Class I label and compliance statement are located on the optical transceiver.

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To ensure proper use of this product, please read this instruction manual carefully and retain for future reference. Should the unit ever require maintenance, contact an authorized service location.

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**CAUTION** Use of controls, adjustments or the performance procedures other than those specified herein may result in hazardous radiation exposure. To prevent direct exposure to laser beam, do not try to open the enclosure.

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### Laser Safety - European Union - Optical Transceiver Only

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**CAUTION** The optical transceiver provided on the network interface card contains a laser system and is classified as a “Class 1 Laser Product” per EN 60825-1, Safety of Laser products. Class 1 laser products are considered safe and do not pose a biological hazard if used within the data sheet limits and instructions.

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To ensure proper use of this product, please read this instruction manual carefully and retain for future reference. Should the unit ever require maintenance, contact an authorized service location.

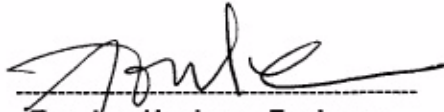
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**CAUTION** Use of controls, adjustments or the performance procedures other than those specified herein may result in hazardous radiation exposure. To prevent direct exposure to laser beam, do not try to open the enclosure.

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There are no user serviceable parts nor any maintenance required for the optical transceiver. All adjustments are made at the factory before shipment to customers. Tampering with or any attempt to modify the optical transceiver will result in voided product warranty. It may also result in improper operation of the network card circuitry and possible overstress of the laser source. Device degradation or product failure may result.

## AD331A & AD332A Declaration of Conformance

<b>DECLARATION OF CONFORMITY</b> According to ISO/IEC Guide 22 and EN 45014	
<b>Manufacturer's Name:</b>	Hewlett-Packard Company Systems Interconnect Solutions Lab
<b>Manufacturer's Address:</b>	8000 Foothills Blvd. Roseville, CA 95747 USA
<b>declares, that the product</b>	
<b>Product Name:</b>	HP PCI-X 1000Base-T Gb Ethernet Adapter HP PCI-X 1000Base-SX Gb Ethernet Adapter
<b>Model Number(s):</b>	AD331A, AD332A
<b>Product Options:</b>	All
<b>conforms to the following Product Specifications:</b>	
<b>Safety:</b>	IEC 950:1991 + A1, A2, A3, A4 / EN 60950:1992 + A1, A2, A3, A4, A11 GB 4943-1995. IEC 825-1:1993/ EN60825-1:1994+A1, Class 1 Laser
<b>EMC:</b>	CISPR 22:1997 / EN 55022:1998 - Class A CNS 13438, GB 9254-1988, CFR47, Part 15 Class A CISPR 24:1997 / EN 55024:1998 IEC 61000-4-2 IEC 61000-4-3 / ENV 50204 IEC 61000-4-4 IEC 61000-4-6
<b>Supplementary Information:</b>	
The product herewith complies with the requirements of the EMC Directive 89/336/EEC and carries the CE marking accordingly.	
1) The Product was tested in a typical configuration with Hewlett-Packard information technology equipment.	
 <b>Tom Le, Hardware Engineer</b>	
Cupertino, CA, November, 2006	
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