



## HP PCI Express Combo HBA for Integrity servers

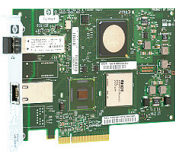
# Generations Ahead

**Unparalleled manageability, reliability,  
performance and ease of deployment**

**4Gb/s** Fibre Channel  
Single- and dual-port

**1Gb/s** Ethernet  
Single- and dual-port

For Integrity RX2660, RX3600, RX6600



**AD221A**  
HP PCIe 1p 4Gb/s FC  
and 1p 1000BT HBA



**AD222A**  
HP PCIe 2p 4Gb/s FC  
and 2p 1000BT HBA



**AD393A**  
HP PCIe 2p 4Gb/s FC  
and 2p 1000SX HBA

Unrivaled scalability and industry-leading technology make these new combination Fibre Channel and Ethernet host bus adapters (HBAs) ideal solutions for HP Integrity servers running HP-UX 11iv3 (OpenVMS 8.3-1H1: 2H CY2008).

Fibre Channel connectivity is based on the Emulex I/O Controller (IOC) 3532, which has dual-embedded processors and two fully independent 1/2/4Gb/s Fibre Channel links, delivering maximum performance in the broadest range of applications and environments.

Integrating both Fibre Channel and Ethernet ports on the same adapter provides key advantages. PCI Express and 4Gb/s Fibre Channel deliver industry leading performance and integration of technologies enable an efficient solution for slot-constrained Integrity servers. There are three models available to accommodate a wide variety of requirements.

#### Proven design, architecture and interface

The HBA's highly integrated single-chip design for Fibre Channel uses Emulex IOC 3532 controller to minimize onboard components, while advanced error-checking methods assure robust data integrity.

The IOC 3532 robust feature set is designed to enhance data communications between high-end servers and storage systems in an enterprise-class Storage Area Network. The IOC 3532 is a highly-integrated controller, yielding a best-in-class footprint, that is ideal for server and appliance 'chip down' applications that integrate one or two Fibre Channel links.

#### KEY BENEFITS

- ⦿ Superior quality and reliability ensure data availability
- ⦿ Highly efficient installation accelerates deployment and reduces administration costs
- ⦿ Maximum SAN performance and scalability increase user satisfaction in large enterprise installations
- ⦿ Robust interoperability simplifies deployment and upgrades of SAN hardware and software
- ⦿ Emulex technology provides efficient host utilization and compliance with SAN management best practices
- ⦿ Coexistence with other HP Fibre Channel adapters and supports HP StorageWorks arrays
- ⦿ High availability with Serviceguard support

#### KEY FEATURES

- ⦿ Exceptional performance and full-duplex data throughput
- ⦿ Simplified installation and configuration using HP tools
- ⦿ Automatic Fibre Channel speed sensing to 4Gb/s, 2Gb/s or 1Gb/s
- ⦿ Autosensing Ethernet 10/100/1000 Mbps
- ⦿ HP Serviceguard support
- ⦿ No host intervention required to execute complete I/O operations
- ⦿ Industry leading data integrity protection

#### HP Part Numbers:

**AD221A:** Single-channel 4Gb/s Fibre Channel, Single-port 1Gb/s Ethernet

**AD222A:** Dual-Channel 4Gb/s Fibre Channel, Dual-port 1Gb/s Ethernet

**AD393A:** Dual-Channel 4Gb/s Fibre Channel, Dual-port 1Gb/s Ethernet (optical)

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**1Gb/s** Ethernet  
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## Specifications

### Architecture

#### Fibre Channel Functionality

AD221A / AD222A / AD393A

- Max transfer rate:
  - One fully independent 1/2/4Gbps Fibre Channel links delivering up to 800MB/s total bandwidth per channel
- Connector type: LC
- Connectivity/Link Distance
  - 4 Gbps: 150m
  - 2 Gbps: 300m
  - 1 Gbps: 500m
  - Over 50/125µm multi-mode fiber optic cable
- Fibre channel protocols
  - FCP (SCSI-FCP)
  - FC-Tape (FCP-2)
- Fibre channel topology
  - arbitrated loop (NL\_Port)
  - switched fabric (N\_Port)
- Fibre channel protocol compliance
  - SCSI-3 Fibre Channel Protocol (SCSI-FCP)
  - Fibre Channel Physical and Signaling Interface (FC-PH)
  - Fibre Channel 2nd Generation (FC-PH-2)
  - Third Generation Fibre Channel Physical and Signaling
  - Interface (FC-PH-3)
  - Fibre Channel-Arbitrated Loop (FC-AL-2)
  - Fibre Channel-Private Loop DirectAttach Technical
  - Report (FC-PLDA)
  - Fibre Channel Tape (FC-TAPE) profile
  - SCSI Fibre Channel Protocol-2 (FCP-2)
  - Second Generation FC Generic Services (FC-GS-3)
  - Third Generation FC Generic Services (FC-GS-3)
  - Fibre Channel Framing and Signaling (FC-FS)
- LEDs
  - Two LEDs to indicate speed, power, state of the fibre channel controller

#### Ethernet Functionality

AD221A / AD222A / AD393A

- Network Manager (nwmgr) Configurable
- Boot Support
- Point-to-Point (NIC to NIC) connections
- VLAN support
- CPU offload feature
- Jumbo frame support
- Auto port aggregation support
- Max Transfer rate
  - **AD221A / AD222A:** 10/100/1000 Mbps
  - **AD393A:** 1000 Mbps
- Connector type
  - **AD221A / AD222A:** RJ45
  - **AD393A:** LC
- Auto-Sensing (10/100/1000)
  - **AD221A / AD222A**
- 1000 Mbps
  - **AD393A**
- Duplex Support
  - **AD221A / AD222A:**
    - Full duplex for 10/100/1000 Mbps
    - Half duplex for 10/100 Mbps
  - **AD393A:**
    - Full duplex for 1000 Mbps
    - Half duplex Not Supported
- Connectivity
  - **AD221A / AD222A:** Category 5 (Cat-5) unshielded twisted pair (UTP) balanced copper wiring for distances up to 100 meters as defined by ANSI/TIA/EIA-568-A (1995) cabling standard
  - **AD393A:** Multimode Fiber of 62.5 or 50 micron, 850nm wave length supports distances up to 550meters
- Ethernet standard
  - **AD221A / AD222A:** IEEE 802.3ab
  - **AD393A:** IEEE 802.3z
- LEDs
  - **AD221A / AD222A:** Integrated into RJ45: Link/Activity, speed
  - **AD393A:** Link/Activity

### OS Support

- HP-UX 11i v3 (OpenVMS V8.3-1H1: 2H CY2008)

### Hardware Environment

- Integrity rx2660, rx3600, rx6600
- Dimensions
  - Height: 10.67cm (4.2 in)
  - Length: 16.7 cm (6.6 in)
  - Width: 2.16 cm (0.85 in)

### FC Additional Features

- Highly integrated system chip solution with dual embedded ARM 11 processors for code execution
- No host intervention required to execute complete I/O operations
- Fully RoHS (ROHS6) compliant
- HP Serviceguard supported
- Emulex technology features Frame-level Multiplexing and out-of-order frame reassembly (if supported or required by the OS) for maximum link utilization.

### Ordering Information

HP Part Nos.

- **AD221A:**
  - Single-channel 4Gb/s Fibre Channel, Single-port 1Gb/s Ethernet (Cat-5 unshielded twisted pair)
- **AD222A:**
  - Dual-channel 4Gb/s Fibre Channel, Dual-port 1Gb/s Ethernet (Cat-5 unshielded twisted pair)
- **AD393A:**
  - Dual-channel 4Gb/s Fibre Channel, Dual-port 1Gb/s Ethernet (optical)
- For ordering information visit
  - <http://h20341.www2.hp.com/integrity/cache/331424-0-0-225-121.html>

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For clarity purposes, product image shown without a heat sink.



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