



## HP PCI Express HBA for Integrity Servers

# Generations Ahead

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

## 4Gb/s Fibre Channel

Dual-channel and single-channel for the Integrity RX2660, RX3600, RX6600, RX7640, RX8640, Superdome servers

Unrivaled scalability and industry-leading technology make the HP single-channel (HP part No. AD299A) and dual-channel (HP part No. AD355A) HBA an ideal solution for SAN-connected HP Integrity servers running HP-UX and OpenVMS. Dual embedded processors and dual fully independent 1/2/4 Gb/s Fibre Channel links delivers maximum performance in the broadest range of applications and environments.

Based on the Emulex IOC 3532 dual embedded processors and dual fully-independent 1/2/4Gb/s Fibre Channel links, these Fibre Channel HBAs deliver maximum performance in the broadest range of applications and environments.

#### Proven design, architecture and interface

The HBA's highly integrated single-chip design 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. 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

#### KEY FEATURES

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



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## Specifications

### Architecture

- AD299A contains 1 Fibre Channel port
- AD355A contains 2 Fibre Channel ports
- Low profile card with tall bracket (bulkhead)
- PCI-Express X4 (10Gb/s per direction)
  - PCIe x4 Gen 1 slot
  - PCIe x8 Gen 1 slot
  - PCIe x4 Gen 2 slot
  - PCIe x8 Gen 2 slot
- Two fully-independent 1/2/4Gbps FC links delivering up to 800MB/s total bandwidth per channel
- Embedded 1.5MByte of local memory (embedded) for firmware execution, FC context, and buffer memory
- Two ports share single 4MByte serial flash (AD355A)
- Each port has 2MByte memory space in the serial flash that contains:
  - Configuration parameter
  - VPD info
  - Port WWN, Node WWN
  - PCI IDs including: VID, DID, SVID, SSID, REVID, etc.
  - Firmware (SLI-3, SLI-2, SLI-1)
  - EFI driver (supports both CLI and interactive mode)
- High data integrity
  - Overlapping end-to-end data protection within the chip
  - Complete data and code parity protection in memory interface
  - Parity protection and ECC protection

- Each 4Gb/s Fibre Channel port supports:
  - Embedded SERDES in Zephyr ASIC
  - Two concurrently operating 4/2/1 Gb/s link speed
  - Full Duplex FC Port
  - Auto-negotiation for FC link speeds (1, 2, or 4 Gb/s)
  - Uses shortwave 850nm fixed optical transceiver SFF module with LC connector
  - Supports boot in IPF systems (by EFI driver, Firmware)
- UART interface for ASIC debug and firmware dump
- Built-in transceiver digital diagnostics capability

### OS support

- HP-UX 11i v2/v3, OpenVMS V8.3-1H1

### Hardware environment

- Integrity rx2660, rx3600, rx6600, rx7640, rx8640
- Superdome

### Power

- AD299A power consumption:
  - nominal 5W, maximum 7.5W
- AD355A power consumption:
  - nominal 7.5W, maximum 10W

### Support tools

- Online **diagnostic tools**:
  - fcmsutil, fclpddiag, fclplist
  - STM (Support Tools Manager): Information Module is supported
  - EMS (Event Monitor Services)
  - IPF0706 for HP-UX 11i v2/v3
- Offline **diagnostic tools**:
  - ODE, FCFUPDATE, IODIAG, MAPPER, COPYUTIL, PERFVER and DFDUTIL
- IPF0706 for HP-UX 11i v2/v3

### 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 No.** AD299A (single-channel)
- **HP part No.** AD355A (dual-channel)
- For ordering information on the Emulex-based Fibre Channel HBAs visit:

<http://h20341.www2.hp.com/integrity/cache/331424-0-0-225-121.html>



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