EMULEX® · **CISCO**™

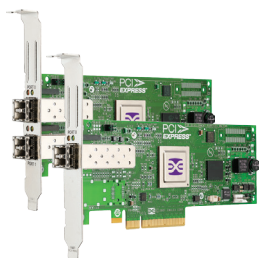**CONNECTIVITY**

LightPulse®
LPe12002-F-C

8Gb/s Fibre Channel PCIe 2.0 Host Bus Adapter for Cisco® MDS Switches and UCS C-Series Rack Mount Servers

UNPARALLELED MANAGEABILITY, RELIABILITY, PERFORMANCE AND EASE OF DEPLOYMENT

LPe12002-F-C
Cisco Part No. N2XX-AEPCI05

Streamlined installation and management, unrivaled scalability, and industry-leading virtualization support make the dual-channel Emulex LightPulse LPe12002-F-C Fibre Channel host bus adapters (HBAs) for Cisco MDS switches and UCS C-Series rack mount servers ideal solutions for enterprise, mixed-OS and virtual server environments, particularly those with cloud-enabled environments.

Proven Design, Architecture and Interface

Emulex LightPulse HBAs' highly integrated processor design minimized onboard components to improve host performance and efficiency.

- Advanced error-checking features ensure the integrity of block data as it traverses the storage area network (SAN)
- Firmware-based architecture enables feature and performance upgrades without costly hardware changes
- Unique Service Level Interface (SLI™) allows use of a common driver across all models of Emulex HBAs

Leader in performance and virtualization

Cisco and Emulex are leaders in Fibre Channel technologies and provide scalable, high-performance products that fully enable server virtualization in the data center.

- 37% better dual-port scalability, delivering the highest data throughput on both channels for optimum server performance, as well as power and cooling efficiency
- 35% more virtual ports (vPorts) for VMware® than the nearest competitor for ESXi, enabling the maximum value for virtual server deployments
- Advanced CPU utilization for better application and system performance—HBA chosen to power the #1 fastest database system in latest Transaction Processing Performance Council-C reports*

50% more efficient management for virtualized applications

- Automated deployment tools, GUI/CLI options and other advanced management processes result in HBA management that saves time while providing twice the capabilities of competitors
- VMware vCenter integration provides management directly from the vCenter console for reduced complexity—the only adapter that integrates with VMware management tools through Emulex OneCommand™ Manager**
- Automated reliability with Emulex OneCommand Vision, enabling I/O monitoring to pinpoint and fix any issue, averting problems before they disrupt service and cause costly and embarrassing downtime

Key Benefits

- Provides superior performance for the enterprise
- Integrates seamlessly into existing SANs
- Supports IT server consolidation and energy conservation initiatives
- Allows application of SAN best practices, tools and processes with virtual server deployments
- Protects sensitive data from unauthorized access
- Assures data availability and data integrity
- Improves IT staff productivity through simplified deployment and management

Key Features

- Support for Message Signaled Interrupts eXtended (MSI-X), improves host utilization & enhances application performance
- Support for 8Gb/s, 4Gb/s and 2Gb/s Fibre Channel devices
- Comprehensive virtualization capabilities with support for N_Port ID Virtualization (NPIV) and Virtual Fabric
- Host to Fabric FC-SP authentication
- Long wave optical transceiver model available—allows the board to transmit signal over long distances
- BlockGuard® ready—ensures end-to-end data integrity
- Common driver model allows a single driver to support all Emulex HBAs on a given OS
- Easy deployment of new firmware with minimal server reboots
- Efficient centralized administration of Emulex HBAs via powerful management tools
- PCIe 2.0 bus compliant, with PCIe 1.0 backward compatibility supported

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* TPC-C Benchmark Report, December 2010

**To ensure a transparent transition for customers who are using Emulex's HBAnyware management solution, OneCommand Manager is backward compatible with HBAnyware 4.1.

SPECIFICATIONS

Standards
· ANSI Fibre Channel: FC-PI-4, FC-FS-2,
  FC-FS-2/AM1, FC-LS, FC-AL-2, FC-GS-6, FC-FLA,
  FC-PLDA, FC-TAPE, FC-DA, FCP through FCP-4,
  SBC-3, FC-SP, FC-HBA and SMI-S v1.1
· PCI Express base spec 2.0
· PCI Express card electromechanical spec 2.0
· Fibre Channel class 2 and 3
· PHP hot plug-hot swap

Architecture
· Dual-channel
· 8Gb/s, 4Gb/s or 2Gb/s Fibre Channel Link speeds
  automatically detected
· Integrated data buffer and code space memory

Comprehensive OS Support
· Windows,® Linux, VMware

Hardware Environments
· PowerPC,® SPARC,® x86, x64 and
  Intel® Itanium® 64-bit processor family

Optical
· Data rates: 2.125, 4.25 and 8.5Gb/s
  (auto-detected)
· Optics: Short wave lasers with LC type connector
· Cable: Operating at 8Gb/s
  - 50/125µm (500MHz*km BW)-up to 50m
  - 50/125µm (2000MHz*km BW)-up to 150m

Physical Dimensions
· Short, low profile MD2 form factor card
· 167.64mm x 68.91mm (6.60" x 2.71")
· Standard bracket (low profile available)

Power & Environmental Requirements
· Volts: +3.3, +12
· Operating temperature: 0° to 55° C (32° to 131° F)
· Storage temperature: -40° to 70° C (-40° to 158° F)
· Relative humidity: 5% to 95% non-condensing
· 23 degree C wet bulb

Agency Approvals
North America:
  - FCC Class A
  - UL/CSA Recognized
Europe:
  - CE Mark
  - EU RoHS compliant
  - TUV Bauart Certified
Japan:
  - VCCI Class A
Taiwan:
  - BSMI Class A
Korea:
  - MSIP (formally KCC/MIC) Class A
China:
  - China RoHS Compliant

(Please refer to the product page on
  www.emulex.com for further details)

Ordering Information
· The Emulex LPe12002-F-C for Cisco MDS Switches
  and UCS C-Series Rack Mount Servers is available from
  Cisco. To order, use Cisco Part Number N2XX-AEPCl05.

Additional Features

Performance features
· Doubling the maximum Fibre Channel link rate
  from 4Gb/s to 8Gb/s and enhanced virtualization
  capabilities help support IT "Green" initiatives
· LightPulse Fibre Channel HBAs operate up to 27
  degrees F cooler than competitors' HBAs—cooler
  operating temperatures correlate directly to higher HBA
  reliability and reduced cooling and power requirements.
· Frame-level Multiplexing and out-of-order frame
  reassembly increases link efficiency and maximizes
  HBA performance.

Data protection features
· End-to-end data protection with hardware parity,
  CRC, ECC and other advanced error checking
  and correcting algorithms ensure data is safe from
  corruption.

Deployment and management features
· Universal Boot capability allows the appropriate
  boot environment to be automatically selected for
  any given hardware.
· Boot from SAN capability reduces system
  management costs and increases uptime.
· Detailed real-time event logging and tracing
  enables quick diagnosis of SAN problems.
· Beaconing feature flashes the HBA LEDs,
  simplifying their identification within server racks.
· Environmental monitoring feature helps to optimize
  SAN availability.

Management Features

· The Emulex AutoPilot Installer® automates the HBA
  installation process and significantly reduces time
  to deployment and administrative costs. Automated
  installation and configuration of driver and
  management tools simplifies deployment of multiple
  adapters within Windows environments. A single
  installation of driver and management application
  eliminates multiple reboots and ensures that each
  component is installed correctly and the HBA is
  ready to use.

· The Emulex OneCommand Manager application
  enables centralized discovery, monitoring,
  reporting, and administration of Emulex HBAs
  and UCNAs on local and remote hosts. Powerful
  automation capabilities facilitate remote driver
  parameter, firmware and boot code upgrades.
  Advanced diagnostic features such as adapter port
  beaconing and adapter statistics help to optimize
  management and network performance while the
  environmental monitoring feature helps to maintain
  optimum host to fabric connections. In addition
  to the GUI interface, management functions can
  also be performed via a scriptable Command Line
  Interface (CLI) as well as a web browser. With
  in-band and out-of-band management capabilities,
  Emulex provides data center administrators with the
  greatest level of management flexibility.

· Emulex's management instrumentation complies to
  Open Management Standards, such as SMI-S and
  common HBA API support, which enables seamless
  upward integration into enterprise storage and
  server management solutions.

Emulex Connects™

Emulex connects over 10 million servers to Fibre Channel SANs across the planet

- 50% more efficient HBA management, twice the features for superior discovery, reporting
  and diagnostic capabilities
  - vCenter plug-in for VMware for centralized HBA management
- Over 30% better performance for mission critical and virtualized applications—powers the #1
  fastest database system in TPC-C benchmarks
  - Superior dual port scalability for better system performance and support for more vPorts
- Highest field-proven reliability with over 10 million hours mean time between failure (MTBF)
  - LightPulse HBAs operate up to 20°F cooler than competitors' HBAs
- End-to-end Data Integrity—the first adapters to support the T10-PI standard
  - Protects against silent data corruption as data traverses the system from the OS all the way to
    the disk array

Visit www.emulex-cisco.com today!

For additional product information, visit: www.emulex.com/products.html

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