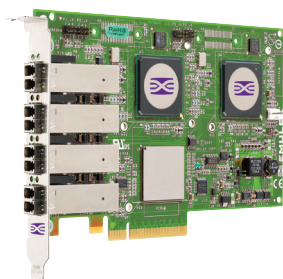# ⊃⊂ EMULEX®

LightPulse®
LPe11004
4Gb/s Fibre Channel PCI Express 1.0 Host Bus Adapters

UNPARALLELED MANAGEABILITY, RELIABILITY, PERFORMANCE AND EASE OF DEPLOYMENT

Streamlined installation and management, unrivaled scalability, and industry-leading virtualization support make the quad-channel Emulex LightPulse LPe11004 Fibre Channel host bus adapter (HBA) an ideal solution for enterprise, virtual server environments. With powerful management capabilities and broad platform support, it delivers maximum performance in the broadest range of applications and 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 SAN. Emulex's firmware-based architecture enables feature and performance upgrades without costly hardware changes. The unique Service Level Interface (SLI™) allows use of a common driver across all models of Emulex HBAs on a given OS platform. Installation and management facilities are designed to minimize server reboots and further simplify deployment.

Powerful management software for maximum data center efficiency
The Emulex HBAnyware® enterprise-class management application has gained broad market acceptance with over 6 million Fibre Channel and FCoE ports managed to date. Building on the success of the HBAnyware application, Emulex has released OneCommand™ Manager. OneCommand Manager's multi-protocol, cross platform architecture, provides centralized management of Emulex adapters within the enterprise datacenter. OneCommand Manager streamlines IT administrative tasks by delivering uniform management across heterogeneous data center environments. With OneCommand Manager, IT administrators can increase management efficiency and flexibility by improving responsiveness to dynamic business environments. To ensure a transparent transition for customers who are using Emulex's existing HBAnyware management solution, OneCommand Manager is backward compatible with HBAnyware 4.1.

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
- Provides greater flexibility for slot limited host environments
- Assures data integrity
- Improves IT staff productivity through simplified deployment and management

Key features
- Quad-channel connectivity
- Support for 4Gb/s, 2Gb/s and 1Gb/s Fibre Channel devices
- Comprehensive virtualization capabilities with support for HBA virtualization based on N_Port ID Virtualization (NPIV) technology
- Host to Fabric FC-SP authentication
- 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

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SPECIFICATIONS

Standards

· ANSI Fibre Channel: FC-PH-3, FC-PI-2, FC-FS, FC-AL-2, FC-GS-4, FC-FLA, FC-SP, FC-PLDA, FC-TAPE, FCP-2, and RFC 2625 (IP over FC)
· PCI Express base spec 1.0a
· PCI Express card electromechanical spec 1.0a
· Fibre Channel class 2 and 3
· PHP hot plug-hot swap

Architecture

· Quad-channel (LPe11004)
· 4Gb/s, 2Gb/s or 1Gb/s FC Link speeds automatically detected
· Integrated data buffer and code space memory

Comprehensive OS Support

· Windows, Linux, NetWare, Solaris (except DR), VMware
· Additional support is available from OEMs and partners

Hardware Environment

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

Optical

· Data rates
  - 1.0625, 2.125 and 4.25Gb/s (auto-detected)
· Optics
  - Short wave lasers with LC type connector
· Cable
  - 50/125µm, up to 150 meters at 4Gb/s
  - 62.5/125µm, up to 70 meters at 4Gb/s

Physical Dimensions

· PCI full height, half-length form factor
· 110.92mm x 167.64mm (4.367" x 6.600")
· Standard bracket

Power & Environmental Requirements

· Volts: +3.3 and +12
· Operating temperature
  - 0° to 55° C (32° to 131° F)
· Airflow required: 150lf/m
· Storage temperature
  - -40° to 70° C (-40° to 158° F)
· Relative humidity
  - 5% to 95% non-condensing

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

· LPe11004-M4
  - Quad-channel, embedded multi-mode optic interface

Additional Features

· Performance features
  - 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.

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.

RoHS
2002/95/EC
COMPLIANT

EMULEX®

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