



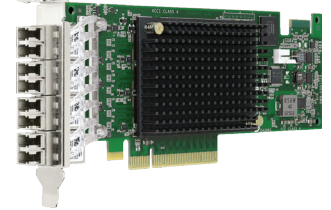
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EMULEX®

CONNECT - DATA SHEET

Advanced-8 8Gb Fibre Channel HBAs

LightPulse LPe15004



Breakthrough 8GFC performance and advanced features

The Emulex LightPulse® LPe15004 is an Advanced-8™ 8Gb Fibre Channel (8GFC), quad-port, low-profile Host Bus Adapter (HBA) featuring a PCI Express (PCIe) 3.0 interface. It delivers breakthrough 8GFC I/O operations per second (IOPS) performance and advanced features such as T10 Protection Information (T10 PI) data integrity and GreenState™ power efficiency, in a small low profile design that provides unique port density for slot-constrained servers.

The LPe15004 delivers 50 percent more IOPS than competitors' 8GFC quad-port HBAs, plus lightning fast response times and 75% better IOPS performance per watt, making it the clear choice for the toughest virtualized, cloud and mission-critical deployments.¹ With almost 1.2 million IOPS,² it is ideally suited for FC connectivity to solid state disks (SSDs) and new multi-core processors. Its advanced management functionality can shave days off installing and managing adapters.

Proven design, architecture and interface

Advanced error-checking features ensure the integrity of block data as it traverses the Storage Area Network (SAN). Emulex's firmware-based architecture enables feature and performance upgrades without costly hardware changes. The unique 4th Generation Service Level Interface (SLI™) allows use of a common driver across all models of Emulex HBAs on a given operating system (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 OneCommand Manager enterprise-class management application features a multiprotocol, cross-platform architecture that provides centralized management of all adapters provided by Emulex. This enables IT administrators to manage network connectivity with one tool for maximum efficiency. OneCommand Manager also features:

- **Emulex OneCommand Manager plug-in for VMware vCenter Server**— enables comprehensive control of Fibre Channel HBAs and network (Fibre Channel over Ethernet [FCoE], iSCSI and TCP/IP NIC) connectivity solutions provided by Emulex from VMware's vCenter Server management console. Emulex OneCommand Manager plug-in for VMware vCenter Server supports both the new VMware vSphere 5.1 Web Client and the VMware vCenter Server desktop client with an identical feature set regardless of the client.

Key benefits

- Maximum performance— up to 1.2 million IOPS² on a single-port to support larger server virtualization deployments and scalable cloud initiatives, as well as performance to match new multi-core processors, SSDs and faster PCIe 3.0 server host bus architectures
- Ability to meet and ensure Quality of Service (QoS) for prioritized traffic with Emulex ExpressLane™
- Improves IT staff productivity through simplified deployment and management
- Reduces the number of cards, cables and PCIe slots required
- Exceptional performance per watt and price/performance ratios
- Integrates seamlessly into existing SANs
- Allows application of SAN best practices, tools and processes with virtual server deployments
- Assures data availability and data integrity

Key features

- PCIe 3.0 bus
- Emulex vScale™ performance and scalability— multi-core ASIC engine with eight cores supports 255 virtual functions (VFs), 1024 Message Signaled Interrupts Extended (MSI-X) and 8192 logins/open exchanges for maximum virtual machine (VM) density— up to 4x more than other adapters
- 2x management functionality, and takes half the time to manage with OneCommand Manager
- GreenState power efficiency— reduces data center power consumption and associated operational expenditures (OPEX) by delivering best 8GFC IOPS performance/watt
- Data integrity offload— high performance T10 PI end-to-end data integrity protects against silent data corruption
- Emulex vEngine™ CPU offload— lowers CPU burden on host server, enabling support for more VMs
- Rock-solid reliability and thermal characteristics, essential for mission-critical, cloud and virtualized applications
- Support for MSI-X, improves host utilization and enhances application performance
- Support for 8GFC, 4GFC and 2GFC devices
- Comprehensive virtualization capabilities with support for N_Port ID Virtualization (NPIV) and Windows virtual HBAs
- Host-to-fabric Fibre Channel Security Protocol (FC-SP) authentication
- Secure management with role-based administration integrated with Light Directory Access Protocol (LDAP) and Active Directory (AD) services
- Common driver model, allows a single driver to support all Emulex HBAs on a given OS

¹ Comparisons based on currently available products and information on Emulex LPe15004 and QLogic QLE2564 HBA.

² Based on Emulex Labs testing, January 2014

Standards

General specifications

- The LPe15004 series is powered by the Emulex Engine™ (XE)201 (Lancer™) I/O Controller (IOC) and consists of an eight-lane (x8) PCIe 3.0 bus (backward compatibility to PCIe 2.0 supported)

Industry standards

- Current ANSI/IETF Standards: FC-PI-4; FC-PI-5; FC-FS-2 with amendment 1; FC-AL-2 with amendments 1 and 2; FC-LS-2; FC-GS-6; FC-DA; FCP-4; FC-MJS; FC-SB-4; SPC-4; SBC-3; SSC-3
- Legacy ANSI/IETF standards: FC-PH; FC-PH-2; FC-PH-3; FC-PI; FC-PI-2; FC-FS; FC-AL; FC-GS-2/3/4/5; FCP; FCP-2; FC-SB-2; FC-FLA; FC-HBA; FC-PLDA; FC-TAPE; FC-MI; SPC-3; SBC-2; SSC-2
- PCIe base spec 3.0
- PCIe card electromechanical spec 3.0
- Fibre Channel class 2 and 3
- PHP hot plug-hot swap

Architecture

- Quad-port Advanced-8 Fibre Channel (running at 8GFC) HBA
- Supports 8GFC, 4GFC and 2GFC link speeds, automatically negotiated
- Supports up to 4 FC ports at 8GFC max
- Integrated data buffer and code space memory

Comprehensive OS and hypervisor support

- Windows Server
- Linux
- Solaris
- VMware vSphere
- Windows Hyper-V
- Additional support is available from OEMs and partners

Hardware environments

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

Optical

- 8.5 Gbps (800Mbps); 4.25 Gbps (400 Mbps); 2.125 Gbps (200Mbps) (auto-detected)
- Optics: Short wave lasers with LC type connector
- Cable: Operating at 8Gb
 - 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")
- Low profile bracket installed (standard, full height bracket available)

Power and environmental requirements

- Power supply 1.8V, 1.2V, 0.9V
- 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° C wet bulb

Agency and safety 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

- LPe15004-M8
 - 4 Ports 8GFC Short Wave Optical – LC SFP+

Added features

Performance features

- Doubling the maximum FC link rate from 4GFC to 8GFC and enhanced virtualization capabilities, help support IT “green” initiatives.
- 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.
- Enhanced silent data corruption protection provided by T10 PI with high-performance offload. T10 PI provides additional protection against corruption in Oracle Unbreakable Linux environments.

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 optimize SAN availability.

Management features

- The Emulex OneCommand Manager application enables centralized discovery, monitoring, reporting, and administration of adapters provided by Emulex 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 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.
- OneCommand Manager supports role-based management to facilitate administration of adapters throughout the data center without compromising security. Management privileges can be assigned based on LDAP and AD group memberships.
- Meet SLAs and QoS with ExpressLane application prioritization on hosts. ExpressLane is fully compatible with majority of switches offering QoS features.
- Emulex 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.



World Headquarters 3333 Susan Street, Costa Mesa, CA 92626 +1 714 662 5600

Bangalore, India +91 80 40156789 | Beijing, China +86 10 84400221

Dublin, Ireland +35 3 (0) 1 652 1700 | Munich, Germany +49 (0) 89 97007 177

Paris, France +33 (0) 158 580 022 | Tokyo, Japan +81 3 5325 3261 | Singapore +65 6866 3768

Wokingham, United Kingdom +44 (0) 118 977 2929 | Brazil +55 11 3443 7735

www.emulex.com