



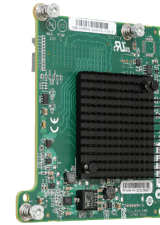
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EMULEX®

CONNECT - DATA SHEET

# HP-LPe1605 Dual-Channel Gen 5 (16Gb) Fibre Channel Mezzanine Host Bus Adapter

For HP Gen8 and Gen9 c-Class BladeSystem • HP Part # 718203-B21



Superior performance, streamlined installation and management, unrivaled scalability and industry-leading virtualization support makes the HP-LPe1605 dual-channel Gen 5 Fibre Channel (FC) mezzanine card\* an ideal solution for the HP BladeSystem c-Class Gen8 and Gen9 platforms. With powerful management tools and seamless integration into HP Storage Essentials (SE), System Insight Manager (SIM) and support for HP ProLiant Gen8 and Gen9 BladeSystems, the HP-LPe1605 delivers maximum performance in the broadest range of applications and environments.

## Proven design, architecture and interface

The HP-LPe1605 is based on the Emulex Gen 5 FC XE201 ASIC with an eight-core design that provides maximum performance and scalability with advanced error-checking methods to assure robust data integrity. The Emulex 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. Installation and management applications are designed to minimize reboots and further simplify deployment.

## Deployment and management features

- Emulex's feature-rich deployment and management facilities streamline and simplify HBA deployment and device management, helping to reduce administration costs and protect IT investments.
- Emulex OneCommand® Manager (OCM) management application enables secure, centralized discovery, monitoring, reporting and administration of Emulex adapters on local and remote hosts. Powerful automation capabilities facilitate remote driver settings, firmware and boot code upgrades. Advanced diagnostic features and HBA statistics help optimize management and network performance. In addition to the graphical user interface (GUI), management functions can be performed with a scriptable command line interface (CLI) and web browser.
- Automated installation and configuration of driver and management tools simplifies deployment of multiple HBAs for Windows environments.
- Emulex management instrumentation is based on Open Management Standards. SMI-S and common HBA API support, which enable seamless upward integration into enterprise storage and server management solutions such as HP Storage Essentials (SE) and System Insight Manager (SIM).
- Emulex's ExpressLane™ technology implements Quality of Service (QoS) at both the host and fabric level. Configurable via OCM, ExpressLane allows users to prioritize LUNs, such as flash devices, for significant latency gains. ExpressLane, coupled with the capability to support up to 1.2 million I/O operations per second (IOPS), make the HP-LPe1605 a ideal solution for flash-based storage connectivity.

## Key benefits

- Ideal for high bandwidth cloud deployments and storage intensive applications with 16Gb throughput, lower latency and up to 1.2 million IOPS on single port
- Meet SLAs and ensure QoS for prioritized traffic with ExpressLane
- More IOPS and lower latency in 8Gb mode when compared to other 8GFC adapters
- Superior quality and thorough diagnostics ensure high reliability and data availability
- Supports HP ProLiant Gen8 and Gen9 BladeSystems
- Highly efficient installation procedures and robust interoperability simplify deployment and upgrades of Storage Area Network (SAN) hardware and software

## Key features

- 1.2 million IOPS on a single port, 20 percent more than other Gen 5 FC HBAs
- Eight-core ASIC enables maximum virtual machine (VM) density with 8192 logins/open exchanges – up to 4x more than other adapters
- Support for 1024 Message Signaled Interrupts eXtended (MSI-X) improves host utilization and enhances application performance
- SAN best practices for virtualized servers with N\_Port ID Virtualization (NPIV) and up to 255 virtual ports
- Efficient centralized administration of Emulex HBAs anywhere in the SAN with powerful management applications
- Up-to date support of pre-boot UEFI based configuration, including UEFI Secure Boot

\* The HP BladeSystem c7000 Platinum enclosure is required to permit 16Gbps speed. Other HP BladeSystem c7000 enclosures and HP BladeSystem c3000 enclosures will have a maximum speed of 8Gbps.

## Additional features

- Emulex LightPulse HBA technology features frame-level multiplexing and out-of-order frame reassembly for maximum link utilization. End-to-end data protection with hardware parity, CRC, ECC and other advanced error checking and correcting algorithms ensure data is safe from corruption.
- Full integrated support with HP Virtual Connect and Emulex OneCommand Manager enables blade server customers to benefit from SAN-wide server and storage management capabilities.
- Detailed real-time event logging and tracing enables quick diagnosis of SAN problems.
- Boot from SAN capability reduces system management costs and maximize network uptime.

**Gen 5** FC is designed for the virtualization, cloud and database era, taking FC SANs to the next level by delivering more than just incredible performance and higher throughput.

Emulex Gen 5 FC HBAs deliver:

- Increased SAN reliability, data integrity, availability
- Management simplicity
- Reduced operational costs across the data center
- Performance acceleration for virtualization and mission critical applications

## 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 Gen 2.0 and 3.0
- Fibre Channel class 2 and 3

## Architecture

- Dual-channel
- Gen 5 FC or 8GFC link speeds automatically detected
- Integrated data buffer and code space memory
- Supports HP ProLiant Gen8 ProActive Insight Architecture

## Comprehensive OS support

- Windows Server, Linux, VMware, Solaris

## Hardware environment

- HP ProLiant BL460c Gen9 support
- HP BladeSystem c-Class Gen8 blade server platforms that utilize Type A connectors
- For G7 and earlier models, please refer to the LPe1205-HP (HP part No. 456972-B21)

## Power and environmental requirements

- Volts: 3.3
- Power consumption (typ/max): 6.8W / 10W
- Operating temperature: 0° to 60°C (32° to 140°F)
- 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](http://www.emulex.com) for further details)

## Ordering information

- The HP-LPe1605 is available from HP, please use the following part number: HP Orderable Part Number 718203-B21

## Added features

### Performance features

- Doubling the maximum FC link rate from 8GFC to Gen 5 FC 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.

### 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 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'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.



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