

2400 Series

PCIe-to-4Gbps and PCI-X-to-4Gbps Fibre Channel Adapters

Overview

The QLogic 2400 Series Fibre Channel Adapters deliver unprecedented levels of performance, scalability, and reliability. By uniquely offering intelligent networking functionality, such as intelligent interleaved direct memory access (iIDMA), RDMA, and overlapping protection domains (OPD), the QLogic 4Gb adapters ensure that the demands of the enterprise-class data center are met. For virtualization at the Fibre Channel port level, the adapters support N_Port ID virtualization (NPIV) by allowing multiple N_Port IDs to share the same physical Fibre Channel port. The adapters come in single-, dual-, and quad-port, multimode optic configurations and are backed by an industry-leading, five-year (no charge) limited warranty¹.

¹ To view warranty details, go to <http://www.qlogic.com/Support/Pages/Warranty.aspx>.



Highlights

- 150,000 IOPS per port
- iiDMA ensures maximum usage of data links
- Out-of-order frame reassembly (OoOFR) reduces congestion and retransmissions
- Multi-ID and N_Port virtualization ready: allows physical ports to be part of multiple logical networks
- Universal boot support manages multiple hardware platforms and boot options
- OPD for continuous protection of internal data paths
- T10 CRC ensures end-to-end data integrity across SANs
- Three LEDs per port display real-time status and link activity information

Unmatched Expertise

QLogic is the undisputed leader in Fibre Channel Adapters with more than 15 years of experience and six generations of Fibre Channel products that have been qualified by all major server OEMs in multiple form factors. QLogic owns the most established, proven Fibre Channel stack in the industry: over 10 million Fibre Channel ports have been shipped.

Secure and Scalable

The QLogic 2400 Series Adapters deliver unprecedented levels of performance and availability, as well as intelligent networking features specific to enterprise-class data centers. The adapters provide intelligent storage networking features that redefine the enterprise-class adapter by providing increased data protection, advanced frame routing, and enterprise-wide management capabilities. Additionally, the adapters support standards-based virtualization—NPIV.

Comprehensive OS Support

QLogic offers the broadest range of support for all major OSs to ensure OS and hardware server compatibility. Drivers are available for all major OSs and hardware server platforms. A single driver strategy per OS enables storage administrators to easily deploy and manage adapters in heterogeneous SAN configurations.

Interoperability

All of the company's products meet worldwide compliance hardware and software specifications. Each product has earned storage partner certifications and passed agency and regulatory testing. QLogic's adapters are tested extensively with third-party hardware and multiple software applications to provide best-in-class SAN interoperability and compatibility. You can be confident purchasing QLogic adapters to meet your Fibre Channel storage networking needs.

Simplified Management

QLogic's new, unified management application, QConvergeConsole® (QCC), provides single-pane-of-glass management for the company's broad product line of storage and networking adapters: Fibre Channel, converged networking, NIC, and iSCSI.

In addition, QLogic supports all major APIs, giving end users the flexibility to manage their QLogic Fibre Channel Adapter portfolio using third-party management tools.

Host Bus Interface Specifications

Bus Interface

- PCI Express® (QLE246x)
- 64-bit, PCI-X™ 2.0 266MHz DDR, compatible with 66/33MHz PCI and 133/100/66MHz PCI-X (QLA246x)

Memory

- 1MB SRAM per port, 1MB Flash (serial peripheral interface [SPI]), and 2KB NVRAM (SPI)

Hardware Platforms¹

- IA32 (x86), IA64, IEM64T, AMD® Opteron™ 64, Oracle® SPARC®, Apple® G5 (Xserve® and Power Mac®)

Compliance

- *PCI Express Base Specification*, revision 1.0a; *PCI Express Card Electromechanical Specification*, revision 1.0; *PCI Bus Power Management Interface Specification*, revision 1.1 (QLE246x)
- *PCI Local Bus Specification*, revision 2.3; *PCI-X Protocol Addendum to the PCI Local Bus Specification*, revision 2.0a; *PCI-X Electrical and Mechanical Addendum* (revision 2.0a) to the *PCI Local Bus Specification*; *PCI Bus Power Management Interface Specification*, revision 1.1; *PCI Hot Plug Specification*, revision 1.0 (QLA246x)

Fibre Channel Specifications

Data Rate

- 4/2/1 Gbps auto-negotiation (4.25/2.125/1.0625 Gbps)

Performance

- 150,000 IOPS per port

Topology

- Point-to-point (N_Port), arbitrated loop (NL_Port), switched fabric (N_Port)

Logins

- Support for F_Port and FL_Port login: 2,048 concurrent logins and 2,048 active exchanges per port

Class of Service

- Class 2 and 3

Protocols

- FCP (SCSI-FCP), FC-TAPE (FCP-2)

Compliance

- *SCSI-3 Fibre Channel Protocol (SCSI-FCP)*, *Fibre Channel Physical and Signaling Interface (FC-PH)*, *Fibre Channel 2nd Generation (FC-PH-2)*, *Third Generation Fibre Channel Physical and Signaling Interface (FC-PH-3)*, *Fibre Channel-Arbitrated Loop (FC-AL-2)*, *Fibre Channel Fabric Loop Attachment Technical Report (FC-FLA)*, *Fibre Channel-Private Loop Direct Attach Technical Report (FC-PLDA)*, *Fibre Channel Tape (FC-TAPE) profile*, *SCSI Fibre Channel Protocol-2 (FCP-2)*, *Second Generation Fibre Channel Generic Services (FC-GS-2)*, *Third Generation Fibre Channel Generic Services (FC-GS-3)*, *Fibre Channel Framing and Signaling (FC-FS)*

Physical Specifications

Ports

- QLA2460: single 4Gbps Fibre Channel
- QLE2460: single 4Gbps Fibre Channel
- QLA2462: dual 4Gbps Fibre Channel
- QLE2462: dual 4Gbps Fibre Channel
- QLE2464: quad 4Gbps Fibre Channel

Form Factor

- QLE2460, QLE2462, and QLA246x:
 - Low-profile PCIe® card (6.6in. × 2.54in.)
- QLE2464:
 - Full-height PCIe card (8in. × 4.376in.)

Tools and Utilities

Management Tools

- QConvergeConsole: a unified management tool (GUI and CLI) for Fibre Channel

Device Utilities

- Utilities for Flashing boot code
- Linux® scripting tools

Boot Support

- BIOS, extensible firmware interface (EFI), FCode

APIs

- SNIA Common HBA API library, SMI-S, FDMI

Operating Systems¹

- For the latest applicable operating system information, see <http://driverdownloads.qlogic.com>

Environment and Equipment Specifications

Airflow

- No airflow required

Temperature

- Operating: 0°C to 55°C (32°F to 131°F)
- Storage: -20°C to 70°C (-4°F to 158°F)

Humidity

- Relative (noncondensing): 10% to 90%
- Storage: 5% to 95%

Power Consumption

- QLA2460: 6.5 watts (maximum)
- QLE2460: 5 watts (maximum)
- QLA2462: 8 watts (maximum)
- QLE2462: 6.5 watts (maximum)
- QLE2464: 16 watts (maximum)

Cable Distances

- 1Gbps: 500 meters 50/125µm fibre, 300 meters 62.5/125µm fibre
- 2Gbps: 300 meters 50/125µm fibre, 150 meters 62.5/125µm fibre
- 4Gbps: 150 meters 50/125µm fibre, 70 meters 62.5/125µm fibre

Agency Approvals—EMI and EMC

US

- FCC Class A: QLE2464
- FCC Class B: QLE2460 and QLE2462

Canada

- Class A: QLE2464
- Class B: QLE2460 and QLE2462

Europe

- 2004/108/EC/EEC EMC Directive CE Mark, EN55022: 1998/CISPR22:1997: QLE2464 Class A, QLE2460 Class B, and QLE2462 Class B
- CISPR Class B: QLE2460 and QLE2462
- EN55024: 1998: QLE2460, QLE2462, and QLE2464
- EN61000-3-2:1995: QLE2460, QLE2462, and QLE2464
- EN61000-3-3:1994: QLE2460, QLE2462, and QLE2464
- EN61000-3-2: 2000 and EN61000-3-3: 2001: QLE2460, QLE2462, and QLE2464

Japan

- Class A: QLE2464
- Class B: QLE2460 and QLE2462

Taiwan

- Class A: QLE2464
- Class B: QLE2460 and QLE2462

New Zealand and Australia

- Class A: QLE2464
- Class B: QLE2460 and QLE2462

Korea

- Korea Class A: QLE2464
- Korea Class B: QLE2460 and QLE2462

¹ Subject to availability of OS and hardware from respective OEMs.

Agency Approvals—Safety

US and Canada: UL, cUL

- UL 60950-1;2007 Second Edition, CSA C22.2 No. 60950-1-07 Second Edition: QLE2460, QLE2462, and QLE2464
- Class 1 Laser Product per DHHS 21CFR J: QLE2460, QLE2462, and QLE2464

Europe

- 2006/95/EC Low Voltage Directive
- TUV: EN60950-1:2006+A11 Second Edition IEC60950-2001: QLE2462 and QLE2464

Ordering Information

PCIe

- QLE2460 (single port), QLE2462 (dual port)
 - Ships in an individually packed box with a standard-size bracket and a spare low-profile bracket
 - Ships with fixed small form factor (SFF) multimode optics with Lucent connector (LC)-style connectors
- QLE2464 (quad port)
 - Ships in an individually packed box with a standard-size bracket
 - Ships with SFF multimode optics with LC-style connectors

PCI-X

- QLA2460 (single port) and QLA2462 (dual port)
 - Ships in an individually packed box with a standard-size bracket and a spare low-profile bracket



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