QLOGIC®
The Ultimate in Performance

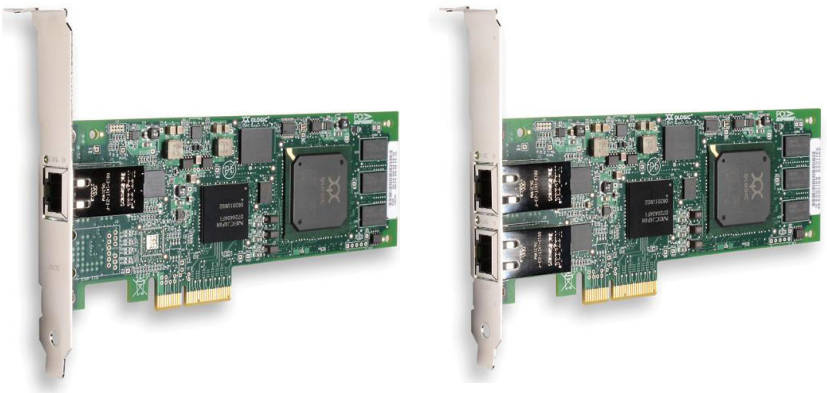
DATA SHEET

4000 Series

PCI-X and PCIe to 1GbE iSCSI Adapters

Overview

The QLogic 4000 Series 1GbE iSCSI adapters provide SAN connectivity over Ethernet and TCP/IP network infrastructures. Both the iSCSI and TCP/IP processing functions are performed on the adapters and not on the host server CPU. By offloading these functions to the adapters, more host server CPU processing power is available to server applications, thus increasing the overall iSCSI SAN performance. The 4000 Series supports the latest version of IP addressing (IPv6), which is a requirement for next-generation government installations, and enables all IT administrators to begin building tomorrow's iSCSI SANs today.



Highlights

- Networking and storage functionality for iSCSI, network attached storage (NAS), clustering, multimedia, distributed network applications, and web serving
- Jumbo frames, 802.3x Flow Control, 802.1p Priority Service, and 802.1Q Virtual LAN (VLAN) Ethernet networking
- Auto-negotiated 100/1000Mbps line rate data transfer
- Low-profile PCI Express® form factor
- Universal iSCSI SAN boot for true remote storage boot implementations
- Storage reliability with iSCSI digests, ECC memory, and overlapping data path parity
- JTAG boundary scan, full scan, and memory (BIST)
- Highly integrated, low-power design

Block Storage over Ethernet with iSCSI

The 4000 Series, which includes the QLA4050, QLA4050C, and QLA4052C (collectively referred to as QLA405*x*) and the QLE4060C and QLE4062C (collectively referred to as QLE406*x*C), provides connectivity to SANs over Ethernet and TCP/IP network infrastructures for PCI-X™ and PCI Express bus-based servers. Using a widely deployed and familiar networking technology, iSCSI can lower the total cost of ownership to better manage and support storage networking.

Superior Application Performance with FlexOffload™

By offloading the iSCSI and TCP/IP protocol to the adapter, the 4000 Series eliminates the processing, interrupts, and bus accesses required to support protocols in host software. The 4000 Series virtually eliminates the host CPU system processing required for iSCSI and TCP/IP, delivering superior application performance to software iSCSI alternatives.

IPv6 Support

QLogic is the first to offer IPv6 support in an iSCSI TCP/IP offload engine (TOE) adapter. IPv6 is the next generation of IP addressing, which quadruples the number of network address bits from 32 bits (in IPv4) to 128 bits (in IPv6). As networks migrate to the updated IP protocol, IT managers can be assured that the QLE406*x*C will interoperate in emerging network environments.

Simplified SAN Management

The 4000 Series utilizes the existing storage interface of the operating system. Using a familiar storage interface allows the 4000 Series to support proven LUN and target-level fail-over functionality, storage SAN boot, and existing SAN management and application software.

Comprehensive Operating System (OS) Support

QLogic offers the broadest range of support for all major operating systems to ensure OS and hardware server compatibility. Drivers are fully tested with industry-recognized certifications from all of the major operating systems, including Windows, Linux®, Solaris®, Citrix®, Oracle®, and VMware®.

Guaranteed Interoperability

Storage partner certifications, combined with agency and regulatory testing, ensure that all products meet world compliance hardware and software specifications. All adapters are tested extensively with third-party hardware and multiple software applications, to ensure best-in-class SAN interoperability and compatibility. You can be confident that purchasing QLogic adapters will meet your storage networking needs.

Host Bus Interface Specifications

Bus Interface

- 64-bit, 133/100/66MHz PCI-X and 32/64-bit, 33/66MHz PCI (QLA405*x*)
- 2.5GHz PCIe® x4 (QLE406*x*C)

Signal Voltage

- 3.3V (QLA4050) or universal (3.3V/5V) (QLA405*x*C)

Hardware Platforms

- IA32 (x86), x64, Sun® SPARC®

Compliance

- *PCI Express Base Specification* rev. 1.0a, *PCI Express Card Electromechanical Specification* rev. 1.0, *PCI Bus Power Management Interface Specification* revision. 1.1 (QLE406*x*C)
- Conforms to *PCI Local Bus Specification*, revision 2.3, *PCI-X Specification*, revision 1.0b, *PCI-X Electrical and Mechanical Addendum*, revision 2.0a, *PCI Local Bus Specification; PCI Bus Power Management Interface Specification*, revision 1.1, *PCI Hot Plug Specification*, revision 1.0 (QLA405*x*)

iSCSI, TCP/IP, and Ethernet Specifications

Data Rate

- 100/1000Mbps

Throughput

- 1Gbps full-duplex line rate

Topology

- Any Ethernet network

iSCSI

- RFC3347: *iSCSI Requirements and Design Considerations,* CHAP, iSNS, SLP

TCP/IP

- RFC791, *Complete state-based TCP/IP offload*; RFC793, *Internet Protocol Specification (IPv4)*; RFC1122, *Transmission Control Protocol (TCP) Specification*; *Requirements for Internet*
- RFC1323, *Hosts—Communication Layers*; RFC2581, *TCP Extensions for High Performance*; *TCP Congestion Control*

Ethernet

- 1,500 bytes or 9,000 bytes (jumbo)

Physical Specifications

Ports

- QLE4060C: single; QLE4062C: dual
- QLA4050C/QLA4050: single; QLA4052C: dual

Connections

- QLE406*x*C*:* RJ45 for copper connector
- QLA4050C/QLA4052C: RJ45 for copper connector
- QLA4050: Small form factor fixed (SFF) multimode optic with LC-style connector

Form Factor

- Low profile: 16.93cm × 5.15cm (6.7in. × 2.5in.)

Environment and Equipment Specifications

Temperature

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

Airflow

- 100FPM (0.5m/S)

Humidity

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

Power Dissipation

- QLA4050C: 7.5W; QLA4052C: 8.5W; QLA4050: 7.0W
- QLE4060C: 9.6W (maximum); QLE4062C: 10.7W (maximum)

RoHS Compliant

- RoHS 6

Cable Distances

- 100 meters, category 5e/6 UTP

Tools and Utilities

Management Tools

- SANsurfer® iSCSI Host Bus Adapter Manager and SANsurfer iSCLI

Device Utilities

- Utilities for flashing BIOS and firmware

Boot Support

- BIOS, FCode

Operating Systems

- Windows Server®; Red Hat Linux®, Oracle Linux®, Oracle VM, Oracle Solaris, ESX®/ESXi, Citrix XenServer™

Ordering Information

PCI-X

- QLA4050C-BK
  - Single-channel copper adapter ships in a bulk box in quantities of 20, 50, or 100 with standard-size brackets
- QLA4050C-CK
  - Single-channel copper adapter ships in an individually packed box with a standard-size bracket and a spare low-profile bracket
- QLA4052C-BK
  - Dual-channel copper adapter ships in a bulk box in quantities of 20, 50, or 100 with standard-size brackets
- QLA4052C-CK
  - Dual-channel copper adapter ships in an individually packed box with a standard-size bracket and a spare low-profile bracket
- QLA4050-BK
  - Single-channel optical adapter ships in a bulk box in quantities of 20, 50, or 100 with standard-size brackets
- QLA4050-CK
  - Single-channel optical adapter ships in an individually packed box with a standard-size bracket and a spare low-profile bracket

PCIe

- QLE4060C-BK
  - Ships in a bulk box in quantities of 20 or 50 with standard-size brackets
- QLE4060C-CK
  - Ships in an individually packed box with a standard-size bracket and a spare low-profile bracket
- QLE4062C-BK
  - Ships in a bulk box in quantities of 20 or 50 with standard-size brackets
- QLE4062C-CK
  - Ships in an individually packed box with a standard-size bracket and a spare low-profile bracket

Corporate Headquarters QLogic Corporation 26650 Aliso Viejo Parkway Aliso Viejo, CA 92656 949-389-6000 www.qlogic.com

International Offices UK | Ireland | Germany | France | India | Japan | China | Hong Kong | Singapore | Taiwan