QLOGIC®

QLE406*x*C Family

Single or Dual Port 1-Gbps iSCSI TOE to PCI Express HBA

High Performance

- 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 VLAN Ethernet networking
- Auto-negotiated 100/1000 Mbps line rate data transfer

Superior Scalability

- Low-profile PCI Express form factor
- Universal iSCSI SAN boot for true remote storage boot implementations

Enhanced Reliability

- Storage reliability with iSCSI digests, ECC memory, and overlapping data path parity
- JTAG boundary scan, full scan, and memory built-in self-test (BIST)
- Highly integrated, low power design

Simplified Manageability

- Microsoft Windows® management interface (MS WMI) compliant for standards based management

SANs with Ethernet and IP: iSCSI. IT managers now have a choice when considering SAN management options. The QLE4060C and QLE4062C (collectively referred to as the QLE406xC) iSCSI Host Bus Adapters (HBAs) provide connectivity to SANs over Ethernet and TCP/IP network infrastructures for 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.

Networking and Storage Performance. By off-loading the iSCSI and TCP/IP protocol to the adapter, the QLE406xC eliminates the processing, interrupts, and bus accesses required to support protocols in host software. The QLE406xC virtually eliminates the host CPU system processing required for iSCSI and TCP/IP, delivering the equivalent performance of direct attached storage (DAS) and Fibre Channel (FC) SANs.

IPv6 Support. QLogic is the first to offer IPv6 support in an iSCSI 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. As networks migrate to the updated IP protocol, IT managers can be assured that the QLE406xC will interoperate in emerging network environments.

Familiar Storage Functionality. The QLE406xC utilizes the existing storage interface of the operating system. Using a familiar storage interface allows the QLE406xC 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 the major operating systems, including Windows®, Linux®, and Solaris™.

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

Host Bus Interface Specifications

Bus interface
- 2.5 GHz PCI Express x4

Hardware platforms
- IA32 (x86)
- EM64T
- AMD Opteron 64
- 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

iSCSI, TCP/IP, and Ethernet Specifications

Data rate
- 100/1000 Mbps

Throughput
- 1 Gbps full-duplex line rate

Topology
- Any Ethernet network

iSCSI
- RFC 3347:
  - iSCSI Requirements and Design Considerations
  - CHAP
  - iSNS

TCP/IP
- Complete state-based TCP/IP off-load, RFC791
- *Internet Protocol Specification (IPv4), RFC793*
- *Transmission Control Protocol (TCP) Specification, RFC1122*
- *Requirements for Internet Hosts – Communication Layers, RFC1323*
- *TCP Extensions for High Performance, RFC2581*
- *TCP Congestion Control, RFC2460*
- *Interconnect Protocol, Version 6 (IPv6)*

Ethernet
- 1500 bytes or 9000 bytes (jumbo)

Physical Specifications

Ports
- QLE4060C: One
- QLE4062C: Two

Connections
- RJ45 for copper connector

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

Bracket size
- Standard: 1.84 cm × 12.08 cm (.73 in. × 4.76 in.)
- Low-profile: 1.84 cm × 8.01 cm (.73 in. × 3.15 in.)

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
- 100 FPM (0.5m/S)

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

Power dissipation
- 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 HBA Manager

Device utilities
- Command line interface
- Utilities for flashing BIOS and firmware

Boot support
- BIOS
- FCode

APIs
- MS WMI

Operating systems
- Windows® Server™ 2003
- Windows XP
- Windows PE 2004,
- Windows PE 2005
- Windows PE 2.0
- Windows Vista™ (Business and Enterprise)
- Solaris 9, 10
- Linux® Red Hat® AS 4.0, 5.0
- Linux SuSE® SLES 9, 10

Ordering Information

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, SANsurfer CD, and Quick Start Guide

QLE4062-BK
- Ships in a bulk box in quantities of 20 or 50 with standard size brackets

QLE4062-CK
- Ships in an individually packed box with a standard size bracket and a spare low-profile bracket, SANsurfer CD, and Quick Start Guide

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