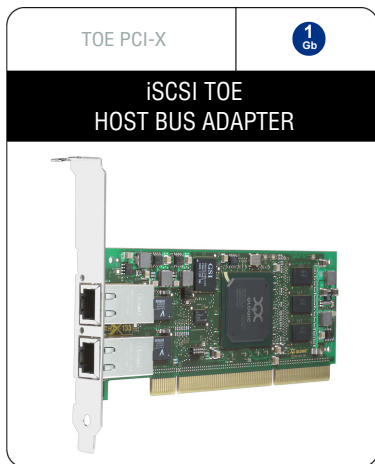# SANblade®

Single or Dual Port 1-Gbps iSCSI TOE to PCI-X Host Bus Adapter (HBA)

QLA405x Family

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

Superior Scalability
- Low-profile PCI 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

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- Complete iSCSI and TCP/IP offload for enhanced performance
- Auto-negotiated 100/1000 Mbps line rate data transfer
- PCI-X 133-MHz backward-compatible with 32/64-bit, 33/66-MHz PCI

SANs with Ethernet and IP: iSCSI. IT managers now have a choice when considering SAN management options. The QLA4050, QLA4050C, and QLA4052C (collectively referred to as the QLA405x) iSCSI HBAs provide connectivity to SANs over Ethernet and TCP/IP network infrastructures (switches, routers, and VPN appliances). 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 offloading the iSCSI and TCP/IP protocol to the adapter, the QLA405x eliminates the processing, interrupts, and bus accesses required to support protocols in host software. The QLA405x virtually eliminates the host CPU system processing required for iSCSI and TCP/IP, delivering the equivalent initialization and host processing performance of direct attach storage (DAS) and Fibre Channel (FC) SANs.

Simplified Setup. Point-and-click installation and configuration wizards simplify the HBA setup process. Storage administrators can quickly deploy HBAs across a SAN using standard HBA management tools and device utilities. The QLA405x is also fully compatible with industry standard application programming interfaces (APIs), thereby allowing administrators to manage QLogic HBAs using third-party software applications.

Familiar Storage Functionality. By offloading the iSCSI protocol, the QLA405x uses the existing storage interface of the operating system. Using a familiar storage interface allows the QLA405x 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™. A single driver strategy per OS allows storage administrators to easily deploy, configure, and manage HBAs in heterogeneous SAN configurations.

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	64-bit, 133/100/66-MHz PCI-X and 32/64-bit, 33/66-MHz PCI
Signal voltage	3.3V (QLA4050) or Universal (3.3V/5V) (QLA405xC HBAs only)
Hardware platforms	IA32 (x86), EM64T, AMD Opteron 64, SUN SPARC
Compliance	Conforms to *PCI Local Bus Specification*, revision 2.3, *PCI-X Specification*, revision 1.0b, *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

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, SLP
TCP/IP	Complete state-based TCP/IP offload, 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*
Ethernet	1500 bytes or 9000 bytes (jumbo)

Physical Specifications

Ports	QLA4050C/QLA4050: One QLA4052C: Two
Connections	QLA4050C/QLA4052C: RJ45 for copper connector QLA4050: Small form factor fixed (SFF) multimode optic with LC-style connector
Form factor	Low-profile MD2: 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

Airflow	100 LFM (0.5 m/sec)
Temperature	Operating: 0°C/32°F to 55°C/131°F. Storage: -20°C/-4°F to 70°C/158°F
Humidity	Relative (non-condensing): 10% to 90%, Storage: 5% to 95%
Power dissipation	QLA4050C: 7.5 W QLA4052C: 8.5 W QLA4050: 7.0 W
RoHS compliant	Yes, RoHS-6
Cable distances	QLA4050C/QLA4052C: 100 meters, category 5e/6 UTP QLA4050: 500 meters 50/125 μm fiber, 220 meters 62.5/125 μm fiber

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 2000; Windows XP, Solaris 9, 10; Linux® Red Hat® AS 3.0, 4.0; Linux SuSE® SLES 8, 9, 10; VMware ESX 3.0.1

Ordering Information

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