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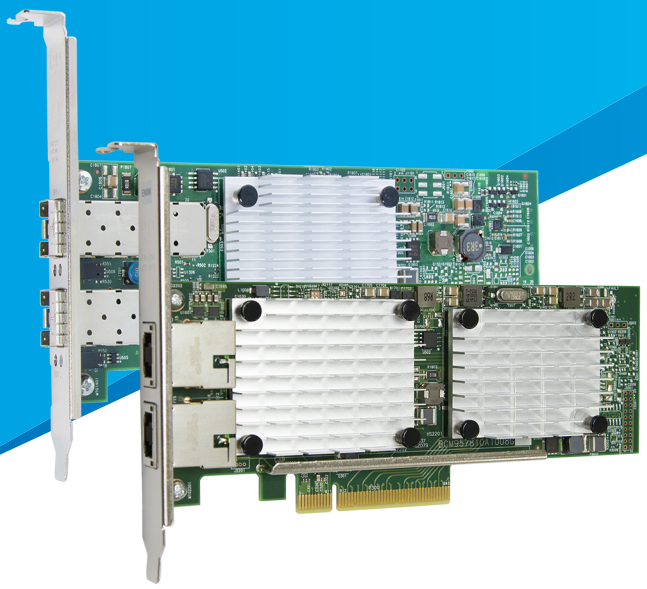
Data Sheet

QLogic FastLinQ 8400 Series for Cisco

10Gbps Ethernet-to-PCIe iSCSI Network Adapters



- Delivers full line-rate 10GbE and 1.5 million iSCSI IOPS performance across both ports
- Consolidates network traffic (TCP/IP and iSCSI) over converged 10GbE connections
- Enables provisioning of 10GbE ports for greater deployment flexibility through switch-independent NIC partitioning
- Boosts host CPU efficiency with hardware offloads for network (TCP/IP) and storage (iSCSI) data traffic

OVERVIEW

The QLogic® FastLinQ™ 8400 Series iSCSI Network Adapters—available in 10GBASE-T (RJ45) and direct attach copper (DAC)/SFP+ optics—support simultaneous LAN (TCP/IP) and SAN (iSCSI) traffic at 10Gbps Ethernet (GbE) line-rate speeds. The 8400 Series provides extremely low host CPU usage by enabling full hardware offloads.

The 8400 Series leverages QLogic's long-standing industry leadership in Ethernet by providing the highest levels of performance, efficiency, and scalability for the enterprise data center.

For more effective utilization of the 10GbE bandwidth, the QLogic FastLinQ 8400 Series iSCSI Network Adapters offer switch-independent NIC partitioning (NPAR), which enables segmentation of a single 10GbE port into multiple network partitions and dynamic allocation of bandwidth to each port. The segmentation allows IT organizations to optimize resource utilization while lowering infrastructure and operational expenses (OPEX).

The acceleration of data center convergence—triggered by virtualization, software-defined networking (SDN), and multitenant cloud computing platforms—demands high-performance, converged network solutions. The QLogic FastLinQ 8400 Series iSCSI Network Adapters are the solution of choice for workload-intensive computing environments, providing a reliable, high-performance 10GbE connectivity solution.

The 8400 Series support IEEE 1588 precision timing protocol (PTP) providing a method of synchronization between *master* and *slave* clocks over a LAN.

FEATURES

- PCI Express® (PCIe®) 3.0 x8 (8GTps) support
- Full line-rate performance across both ports
- 10GBASE-T connnections support IEEE auto negotiation
- 1GB Capable through OS settings - both models
- Broad OS and hypervisor support
- Full hardware iSCSI offload with up to 1.5 million IOPS
- Network boot support:
  - iSCSI remote boot
  - Pre-execution environment (PXE) 2.0
- Switch-independent for 10GbE link
- MSI and MSI-X support
- IPv4 and IPv6 offloads
- PCI-SIG® Single Root I/O Virtualization (SR-IOV)
- Comprehensive stateless offloads
- RX/TX multiqueue:
  - VMware® NetQueue™
  - Microsoft® Hyper-V® Dynamic Virtual Machine Queue (VMQ)
  - Linux® Multiqueue

FEATURES (CONTINUED)

- Tunneling offloads:
  - Windows Network Virtualization using Generic Routing Encapsulation (NVGRE)
  - Linux Generic Routing Enacapsulation (GRE)
  - VMware and Linux Virtual Extensible LAN (VXLAN)
- Receive side scaling (RSS)
- Transmit side scaling (TSS)
- Support for virtual LAN (vLAN) tagging
- Support for jumbo frames larger than 1,500 bytes
- Network teaming, failover, and load balancing:
  - Smart Load Balancing™ (SLB)
  - Link aggregation control protocol (LACP) and generic trunking
- Data center bridging (DCB)
- Lossless iSCSI-Offload application type, length, and value (TLV) over DCB)

BENEFITS

Designed for Next-Gen Server Virtualization

The 8400 Series iSCSI Network Adapters support today's most compelling set of powerful networking virtualization features: SR-IOV, switch-independent NPAR, tunneling offloads (VXLAN and NVGRE), and industry-leading performance, thus enhancing the underlying server virtualization features.

- SR-IOV delivers higher performance and lower CPU utilization with increased virtual machine (VM) scalability.
- QLogic NPAR enables up to four physical, switch-agnostic NIC partitions per adapter port. Dynamic and fine-grained bandwidth provisioning enables seamless migration to 10GbE infrastructure.
- Concurrent support for SR-IOV and NPAR enables virtual environments with the choice and flexibility to create an agile virtual server platform.
- Designed to meet the demands of large cloud deployments, the 8400 Series iSCSI Network Adapters feature tunneling offloads for multitenancy with VXLAN and NVGRE support.
- The 8400 Series is designed for maximum flexibility, which enables simultaneous, fully-offloaded, high-performance, multiprotocol (iSCSI and NIC) support from each independent port of the adapter.

Extreme Application Performance

The QLogic FastLinQ 8400 Series Adapter features a high-speed, flexible architecture driven by independent, ultra-high performance engines that deliver the industry's highest performance to meet and exceed the peak demands of the most demanding enterprise application or virtual platform.

- Availability of both RSS and TSS allows for more efficient load balancing across multiple CPU cores.
- Full hardware offload for storage traffic and increased server performance.
- Industry-leading iSCSI performance of up to 1.5 million IOPS, suitable for a diverse set of applications leveraging the flexibility of iSCSI.

OPEX Savings with Low-Power PCIe 3.0

The 8400 Series iSCSI Network Adapters are PCIe 3.0-based adapters that have one of the lowest power consumption profiles in the industry.

- Supporting the latest generation of host bus connectivity, PCIe 3.0 enables the 8400 Series Adapters to deliver line-rate, dual-port performance without compromise.
- The 8400 Series Adapters are designed to provide maximum power efficiency, consuming a mere 7.65 watts nominal (dual-port-CU with DAC) of power and yet delivering a fully-offloaded, high-performance I/O connectivity platform.

Leadership, Confidence, and Trust

QLogic FastLinQ adapters offer users peace of mind and confidence, as proven through the company's market share leadership: #1 in Converged Network Adapters. The 8400 Series iSCSI Network Adapters offer the highest reliability, availability, and serviceability options that customers rely on to meet and exceed stringent service-level agreements for enterprise data centers.

Host Bus Interface Specification

Bus Interface
- PCI Express (PCIe) 3.0 x8 (x8 physical conector)

Host Interrupts
- MSI-X supports independent queues

I/O Virtualization and Multitenancy
- SR-IOV
- Switch-independent NPAR
- Generic routing encapsulation (NVGRE) packet task offloads
- Virtual Extensible LAN (VXLAN) packet task offloads

Compliance
- *PCI Base Specification*, rev. 3.1
- *PCI Bus Power Management Interface Specification*, rev. 1.2
- Advanced configuration and power interface (ACPI) v2.0

Ethernet Specification

Throughput
- 10Gbps line rate per port
- 1Gbps line rate per port set through OS; SFP connections on both models
- 10GBASE-T version (QLE8442-RJ) supports IEEE link speed Auto Negotiation to 100Mbps/1Gbps/10Gbps line rates per port

Ethernet Frame
- 1,500 bytes and larger (jumbo frame) up to 9600 bytesl

Stateless Offload
- TCP segmentation offload (TSO)
- Large send offload (LSO)
- Large receive offload (LRO)
- Giant send offload (GSO)
- TCP and user datagram protocol (UDP) checksum offloads
- Receive segment coalescing (RSC)
- Interrupt coalescing
- RSS and TSS
- VMware NetQueue, Microsoft VMQ, and Linux Multiqueue

Compliance
- IEEE 802.3ae (10Gb Ethernet)
- IEEE 802.1q (VLAN)
- IEEE 802.3ad (Link Aggregation)
- IEEE 802.3x (Flow Control)
- IPv4 (RFC 791)
- IPv6 (RFC 2460)
- IEEE 802.1Qbb (Priority-Based Flow Control)
- IEEE 802.1Qaz (DCBX and ETS)
- IEEE 1588 (Hardware Precision Time Protocol v1 and v2)
- SFF8431 Annex E 10GbE (direct attach copper)

iSCSI Specification

Performance
- 1.5 million iSCSI IOPS

Compliance
- iSCSI (RFC 7143)
- Internet Storage Name Service (iSNS) (RFC 4939)

Tools and Utilities

Management Tools and Device Utilities
- Advanced Control Suite™ (ACS)
- Native OS management tools for networking

Boot Support
- iSCSI remote boot
- PXE 2.0

Operating System Support

Linux
- Red Hat® Enterprise Linux (RHEL) 6.7, 6.8, 7.2, and 7.3
- SUSE® Linux Enterprise Server (SLES) 11 SP4, 12 SP1, and 12 SP2
- Ubuntu 14.04, 16.04 LTS, and 16.10
- CentOS® 7.3

Microsoft®
- Windows Server 2012 and 2012 R2
- Windows Server 2016

VMware®
- ESXi 5.5 U2, 5.5 U3, 6.0 U1, 6.0 U2, and 6.5

Citrix®
- XenServer® 6.2 and 6.5

Physical Specifications

Ports
- QLE8442: dual 10Gbps Ethernet

Form Factor
- PCI Express short, low-profile card: 167.64mm × 68.91mm (6.60in. × 2.71in.)

Agency Approvals—Safety

US/Canada
- UL 60950-1
- CSA C22.2

Europe
- TUV EN60950-1
- TUV IEC 60950-1
- CB Certified

Agency Approvals—EMI and EMC

US and Canada
- FCC Rules,CFR Title 47, Part 15, Subpart Class A
- Industry Canada, ICES-003: Class A

Europe
- EN55022
- EN55024
- EN61000-3-2
- EN61000-3-3

Japan
- VCCI: Class A

New Zealand and Australia
- AS/NZS: Class A

Korea
- KC-RRA Class A

Taiwan
- BSMI CNS 13438

Environmental and Equipment Specifications

Temperature
- Operating: 32°F to 131°F (0°C to 55°C)
- Storage: –40°F to 149°F (–40°C to 65°C)

Airflow
- QLE8442-RJ: 100LFM @ 55°C
- QLE8442-CU: 100LFM @ 55°C

Humidity (Relative, Non-condensing)
- Operating and non-operating: 10% to 90%

Power
- QLE8442-RJ: 15.5 watts (nominal)
- QLE8442-CU: 7.65 watts (nominal)

Cabling Distance (Maximum)
- QLE8442-RJ: CAT6a/7 up to 100m

Ordering Information

QLE8442-RJ-CSC (Dual Port)
- Ships with RJ45 connectors (10GBASE-T). For use with twisted pair copper cabling (not included)[1]

QLE8442-CU-CSC (Dual Port)
- Ships with empty SFP+ cages (Works with Cisco SR optics and DAC cables which are not included)[1]

1 Ships with a standard-size bracket installed. A spare low-profile bracket is also included.

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