Marvell® QLogic® QLE2670/2672

16GFC, PCIe 3.0 Fibre Channel Adapters



- 3,000MBps per port maximum throughput for high band width storage (SAN) traffic
- Up to 1.2 million IOPS reduce latency in high transaction intensive applications and virtualized environments
- Improved reliability and diagnostics with support for Brocade® ClearLink®
- Enhanced QoS prioritizes SAN traffic for high performance
- Simplified deployment with fabric pre-provisioning Future-proof design enables conversion to a 10GbE CNA

The Marvell® QLogic® QLE2670 and QLE2672 16Gb Fibre Channel (16GFC) Adapters boast excellent native Fibre Channel (FC) performance—achieving dual-port, line-rate 1,600MBps FC throughput—at extremely low CPU usage with full hardware offloads. The 16GFC QLE2670/2672 Adapters resolve data center complexities by enabling a storage network infrastructure that supports powerful virtualization features, application-aware services, and simplified management. This achievement provides a next-generation storage networking infrastructure capable of supporting the most demanding virtualized and cloud-enabled environments, while fully leveraging the capabilities of high-performance 16GFC and solid-state disk (SSD) storage. These features help reduce cost and complexity while the unmatched 16GFC performance eliminates potential I/O bottlenecks in today's powerful multiprocessor, multicore servers.

Virtualization Optimized

The QLE2670/2672 Adapters, powered by Marvell QLogic VMflex® technology, support standards based virtualization features. Support for N_Port ID virtualization (NPIV) enables a single FC adapter port to provide multiple virtual ports, increasing network scalability. Virtual fabric technology allows a single FC adapter port to participate in multiple virtual fabric domains for improved availability. In addition, line-rate 16GFC throughput per physical port delivers unmatched storage performance to maximize the number of virtual machines per physical server.

Superior Performance

Up to 1.2 million I/O transactions per second provides industry-leading application throughput for physical, virtual, and cloud environments. Integrated Marvell QLogic StarPower™ technology delivers dynamic power management, which ensures that the PCIe® host bus link uses the minimum number of PCIe lanes to meet the required bandwidth. Overlapping protection domains (OPDs) ensure the highest level of reliability as data moves to and from the PCI bus and FC network. As a result, QLE2670 and QLE2672 Adapters consume less power and fewer CPU cycles while maintaining peak performance.

Integrated Brocade Fabric Features

Marvell QLogic 16GFC Adapters include advanced capabilities that are enabled when deployed with supported Brocade switches. By implementing these industry-leading solutions together, SAN administrators can take advantage of enhanced features that improve availability, streamline deployment, and increase network performance.

Support for Brocade ClearLink diagnostics, a key Brocade Fabric Vision™ technology, improves availability and support for high-performance fabrics. Using the ClearLink diagnostic port (D_Port), administrators can quickly run a battery of automated diagnostic tests to assess the health of links and fabric components. As a result, fabric deployment time is reduced and tedious, manual troubleshooting methods are eliminated, saving thousands of man-hours in enterprise environments.

Fabric pre-provisioning enables servers to be quickly deployed, replaced, and moved across the SAN. By leveraging Brocade's fabric-assigned port world wide name (FA-WWN) and fabric-based boot LUN discovery (F-BLD) capabilities, the creation of zones, LUNs, and other services can be completed before the servers arrive on site—eliminating time consuming, manual tasks that typically delay server deployment.

Network performance can be dramatically improved by implementing the industry-standard class-specific control (CS_CTL) based frame prioritization quality of service (QoS), which helps to alleviate network congestion. When connected to Brocade FC SAN fabrics and supported target arrays, traffic is classified as it arrives at the switch, and then processed on the basis of configured priorities. Traffic can be dropped, prioritized for delivery, or subjected to limited delivery options. As a result, mission-critical workloads can be assigned a higher priority than less time-sensitive network traffic for optimized performance.

Higher Resiliency and Performance with Automatic Error Recovery

The Forward Error Correction (FEC) advanced feature is supported when the QLE2670 and QLE2672 Adapters are connected to a supported Brocade switch. FEC improves performance and link integrity to support higher end-to-end data rates by automatically recovering from many transmission errors without re-sending the frames. FEC automatically detects and recovers from bit errors, which results in higher availability and performance.

Simplified Management

The Marvell unified management application, QConvergeConsole® (QCC), provides single-pane-of-glass management for Marvell storage and networking adapters (FC, Ethernet, FCoE, iSCSI, and RDMA-based protocols). In addition, Marvell supports all major APIs for deployment flexibility and integration with third-party management tools, including VMware® vCenter™.

High-Availability Architecture from Marvell

Marvell QLogic QLE2670 and QLE2672 16GFC architecture continues to provide complete port-level isolation across its dual-port ASIC. This architecture, unlike other vendor solutions, provides independent function, transmit/receive buffers, an on-chip CPU, DMA channels, and a firmware image for each port. These features enable complete port-level isolation, prevent errors and firmware crashes from propagating across both ports, and provide predictable and scalable performance across both ports. These benefits are essential for enterprise data centers—assuring “five nines” availability for mission-critical applications.

Investment Protection

The QLE2670 and QLE2672 Adapters are compatible with the same FC software driver stack that has been tested and validated across all major hardware platforms, all major hypervisors and OSes, and has been battle-hardened across millions of enterprise installations. The adapters are backward compatible with existing 4GFC and 8GFC infrastructure to leverage existing SAN investments.

Leadership, Confidence, and Trust

Marvell is the undisputed leader in FC adapters, with over 20 years of experience, 20+ million ports shipped, and multiple generations of FC products that have been qualified by all major server OEMs. Marvell owns the most established, proven FC stack in the industry with more FC ports shipped than any other vendor.

Host Bus Interface Specifications

Bus Interface

- PCI Express® 3.0 x4 and 2.0 x8 (x8 physical connector)

Host Interrupts

- INTx and MSI-X

Compliance

- PCI Express Base Specification, Rev. 3.0
- PCI Express Card Electromechanical Specification, Rev. 3.0
- PCI Bus Power Management Interface Specification, Rev. 1.2

Fibre Channel Specifications

Throughput

- 1,600MBps line rate per port (maximum)

Logins

- Support for 2,048 concurrent logins and 2,048 active exchanges
- Expandable to 16K concurrent logins and 32K active exchanges

Port Virtualization

- NPIV

Compliance

- Fibre Channel Tape (FC-TAPE) Profile
- Fibre Channel Protocol – 4 (FCP-4)
- SCSI Architecture Model – 5 (SAM-5)
- SCSI Primary Commands – 5 (SPC-5)
- SCSI Block Commands – 4 (SBC-4)
- Fibre Channel Generic Services – 8 (FC-GS-8)
- Fibre Channel Framing and Signaling – 5 (FC-FS-5)
- Fibre Channel Link Services – 4 (FC-LS-4)
- Fibre Channel Physical Interface – 5 (FC-PI-5)

Tools and Utilities

Management Tools and Device Utilities

- QConvergeConsole: a unified management tool (GUI and CLI) for FC, FCoE, iSCSI, and networking

Boot Support

- BIOS
- Unified Extensible Firmware Interface (UEFI)
- Forth code (FCode)

APIs

- SNIA HBA API V2
- SMI-S

Operating Systems

- For the latest applicable operating system information, see Marvell.com

End-to-End Provisioning and Management Features

The following features require a supported Brocade switch running the latest Fabric OS ®. Contact your switch vendor for the exact version.

Performance

- QoS CS_CTL
- FEC at 16GFC

Diagnostics

- ClearLink D_Port

Deployment and Management

- FA-WWN
- F-BLD
- FC Ping
- FC Traceroute
- Fabric device management interface (FDMI) enhancements

Physical Specifications

Ports

- QLE2670: single-port 16GFC
- QLE2672: dual-port 16GFC

Form Factor

- Low profile adapter: (6.6 inches × 2.54 inches)
- Custom form factors are also available)

Environment and Equipment Specifications

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%

Maximum Cable Distances

- Multimode optic:

Rate	Cable and Distance (m)			
	OM1	OM2	OM3	OM4
4GFC	70	150	380	400
8GFC	21	50	150	190
16GFC	Note1	35	100	125

1. Not supported

Agency Approvals—Safety

US and Canada

- UL 60950-1
- CSA C22.2

Europe

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

Agency Approvals—EMI and EMC (Class A)

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

- EBSMI CNS 13438

Ordering Information

QLE2670 (Single-port)

- Ships with SR optical transceivers and standard height bracket installed
- Ships with spare low profile bracket (-CK and -SP models only)

QLE2672 (Dual-port)

- Ships with SR optical transceivers and standard height bracket installed
- Ships with spare low profile bracket (-CK and -SP models only)

To deliver the data infrastructure technology that connects the world, we're building solutions on the most powerful foundation: our partnerships with our customers. Trusted by the world's leading technology companies for 25 years, we move, store, process and secure the world's data with semiconductor solutions designed for our customers' current needs and future ambitions. Through a process of deep collaboration and transparency, we're ultimately changing the way tomorrow's enterprise, cloud, automotive, and carrier architectures transform—for the better.

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