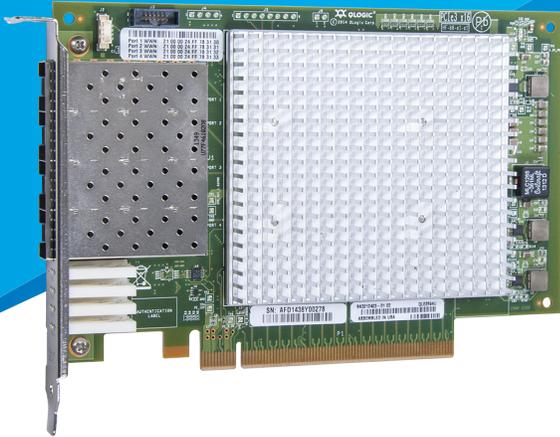


QLE2694U

Gen 6 Ready, Enhanced Gen 5, Quad-Port, 16/32Gbps Fibre Channel-to-PCIe® Adapter



- Industry's first native quad-port solution supporting 16Gbps Enhanced Gen 5 Fibre Channel technology and field upgradeable to 32Gbps (Gen 6)
- Four ports of 16Gbps delivers 64Gbps aggregate bandwidth today and 128Gbps when upgraded to Gen 6
- Up to 2.6 million IOPS fuel high performance in AFAs and high-density virtualized environments
- Enhanced reliability, diagnostics and accelerated deployment powered by QLogic StorFusion™ technology
- Port isolation design offers consistent and reliable performance on each port

OVERVIEW

The QLE2694U Adapter is the industry's first Enhanced Gen 5, Quad-Port, 16Gbps Fibre Channel adapter that can be field upgraded to 32Gbps. The QLE2694U Adapter boasts industry-leading native Fibre Channel performance with extremely low CPU usage with full hardware offloads.

GEN 6 READY, ENHANCED GEN 5

QLogic®'s unique Enhanced Gen 5 Fibre Channel technology provides the industry's first 16Gbps adapter that can be field upgraded to Gen 6 by simply updating the software and swapping out the SFP transceivers. QLogic's Enhanced Gen 5 solution offers higher per-port performance (up to 650K IOPS) with lower power consumption (3W per port). In addition, QLogic StorFusion technology delivers streamline provisioning, guaranteed Quality of Service (QoS), improved resiliency while addressing the needs of IT organizations that require reliability, integrated management and guaranteed network performance.

Enhanced Gen 5 technology resolves data center complexities by enabling a storage network infrastructure that supports powerful virtualization features, application-aware services, and simplified management. The QLE2694U Adapter provides advanced storage networking features capable of supporting the most demanding virtualized and private cloud environments while fully leveraging the capabilities of high-performance 16/32Gbps Fibre Channel and all-flash arrays (AFAs). Powerful management tools automate and simplify SAN provisioning to help reduce

cost and complexity, while the unmatched 16/32Gbps performance eliminates potential I/O bottlenecks in today's powerful multiprocessor, multicore servers.

SUPERIOR PERFORMANCE

The QLE2694U Adapter provides industry-leading application performance by delivering at up to 2.6 million I/O transactions per second for physical, virtual, and private cloud environments. QLogic adapters deliver the throughput application performance in virtualized and non-virtualized environments with 64Gbps of aggregate throughput, upgradeable to 128Gbps of aggregate throughput. Integrated 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.

VIRTUALIZATION OPTIMIZED

The QLE2694U Adapter supports standards-based virtualization features. Support for N_Port ID virtualization (NPIV) enables a single Fibre Channel adapter port to provide multiple virtual ports for increased network scalability. NPIV allows a single Fibre Channel adapter port to participate in multiple virtual fabric domains for improved availability. In addition, the 16/32Gbps line rate per physical port delivers unmatched storage performance to maximize the number of virtual machines per physical server.

QLOGIC STORFUSION TECHNOLOGY

QLogic's 16/32Gbps, Enhanced Gen 5 Fibre Channel adapters powered by StorFusion Technology 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, accelerate deployment, and increase network performance.

Improved Total Cost of Ownership and Reliability

StorFusion Technology delivers advanced link diagnostics, which improve 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.

The QLE2694U Adapter supports link cable beaconing (LCB), which enables administrators to visually identify both ends of a physical link. In a large data center with hundreds of ports and cables to manage, a simple command turns on port LED beacons on both ends of a link cable connection. Administrators can use LCB to quickly identify connection peer ports without tracing the cable.

QLogic technology includes the read diagnostic parameters (RDP) feature, which provides optics and media diagnostics. From any point in the fabric, an administrator can use RDP to easily discover and diagnose link related errors and degrading conditions on any N_Port-to-F_Port link.

With ClearLink diagnostics, LCB, and RDP, fabric deployment time is reduced. Tedious manual troubleshooting methods are eliminated, thus saving thousands of man-hours in enterprise environments.

Rapid Server Deployment and Orchestration

StorFusion technology includes fabric pre-provisioning services that enable servers to be quickly deployed, replaced, and moved across the SAN. By leveraging 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.

Performance SLA Enforcement with VM-level Quality of Service

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. QLogic adapters with StorFusion technology, when connected to supported SAN fabrics, and targets, enable the classification of traffic as it arrives at the switch, and is then processed on the basis of configured priorities. Traffic can be 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

Forward error correction (FEC) is available to improve performance and link integrity to support fiber links that are more stringent than the Fibre Channel specification. FEC automatically detects and recovers from bit errors, which results in higher availability and performance.

SIMPLIFIED MANAGEMENT

QLogic's unified management application, QConvergeConsole® (QCC), provides single-pane-of-glass management across generations of QLogic Fibre Channel adapters. In addition, QLogic supports all major APIs for deployment flexibility and integration with third-party management tools, including VMware® vCenter™ and Brocade Network Advisor.

HIGH AVAILABILITY AND RELIABILITY

QLogic Enhanced Gen 5 and Gen 6 Ready adapters continue the tradition of providing complete port-level isolation across its Fibre Channel ASIC controller architecture. 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 all four ports, and provide predictable and scalable performance across all ports. The QLogic architecture delivers ultimate reliability to meet the needs of mission-critical enterprise applications, with lower power and fewer CPU cycles while maintaining peak performance.

In addition, overlapping protection domains (OPDs) ensure the highest level of reliability as data moves to and from the PCI® bus and Fibre Channel network.

The QLE2694U Adapter also provides end-to-end data integrity with support for T10 Protection Information (T10 PI), which prevents the risk of silent data corruption in environments running Oracle® Linux® with the Unbreakable Enterprise Kernel.

LEADERSHIP, CONFIDENCE, AND TRUST

The QLE2694U Adapter is compatible with the same Fibre Channel software driver stack that has been tested and validated across all major hardware platforms, all major hypervisors and operating systems. Operating at either 32Gbps or 16Gbps, this adapter is backward compatible with existing 8Gbps Fibre Channel infrastructure, leveraging existing SAN investments.¹

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

¹ The QLE2694U supports 32/16/8Gbps Fibre Channel connectivity. 4Gbps connectivity is not supported.

Host Bus Interface Specifications

Bus Interface

- QLE2694U: PCI Express® Gen3 x16

Host Interrupts

- INTx and MSI-X

Compliance

- PCI Express Base Specification, Rev. 3.1
- PCI Express Card Electromechanical Specification, Rev. 3.0
- PCI Bus Power Management Interface Specification, Rev. 1.2

Fibre Channel Specifications

Throughput

- 16Gbps line rate per port (maximum in 16Gbps configuration)
- 32Gbps line rate per port (maximum in 32Gbps configuration)

Logins

- Support for 2,048 concurrent logins and 2,048 active exchanges
- Expandable to 32K concurrent logins and 32K active exchanges (with DDR3 or host memory)

Port Virtualization

- NPIV

Compliance

- SCSI-3 Fibre Channel Protocol (SCSI-FCP)
- Fibre Channel Tape (FC-TAPE) Profile
- SCSI Fibre Channel Protocol-2 (FCP-2)
- Second Generation Fibre Channel Generic Services (FC-GS-2)
- Third Generation Fibre Channel Generic Services (FC-GS-3)
- Fibre Channel Physical Interface 5 (FC-PI5)

Tools and Utilities

Management Tools and Device Utilities

- QConvergeConsole: a unified management tool (GUI and CLI) that spans generations of QLogic adapters
- QConvergeConsole VMware vCenter Server Plug-in and VMware vSphere™ Web Client Plug-in

Boot Support

- BIOS, UEFI, FCode

APIs

- SNIA HBA API V2
- SMI-S

Operating Systems

- For the latest applicable operating system information, see <http://driverdownloads.qlogic.com>.

End-to-End Provisioning and Management Features

The following features require a supported Brocade switch running Fabric OS version 7.4.0a or later.

Performance

- QoS CS_CTL
- FEC

Diagnostics

- ClearLink D_Port
- LCB
- RDP

Deployment and Management

- FA-WWN
- F-BLD
- Fibre Channel Ping
- Fibre Channel Trace Route
- FDMI Enhancements

Physical Specifications

Ports

- Quad-port, 16/32Gbps Fibre Channel

Form Factor

- Standard-height PCIe card (6.6 inches × 4.381 inches)

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

- Operating: 10% to 90%
- Storage: 5% to 95%

Maximum Cable Distances

Rate	Multi-Mode Optic			
	Cable and Distance (m)			
	OM1	OM2	OM3	OM4
8Gbps	21	50	150	190
16Gbps	*	35	100	125
32Gbps	*	20	70	100

* Not supported

Agency Approvals

Safety

- US
- Canada
- Europe

EMI and EMC (Class A)

- US
- Canada
- Europe
- Australia/New Zealand
- Japan
- Korea

Ordering Information

QLE2694U-SR-CK (Quad Port)

- Ships in an individually packed box with a standard-height bracket installed
- Ships with 16Gbps SR optical transceivers installed
 - Part number for 32Gbps optical transceivers: Coming Soon

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Corporate Headquarters QLogic Corporation 26650 Aliso Viejo Parkway Aliso Viejo, CA 92656 949-389-6000

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