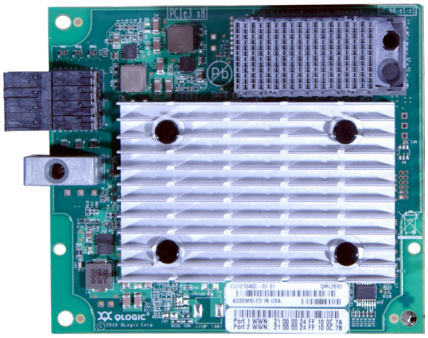
Lenovo ThinkSystem Marvell® QLogic QML2692

Dual-port Enhanced Gen 5 (16GFC) Fibre Channel Blade Mezzanine Adapter



- The latest and most advanced Enhanced Gen 5, dual-port mezzanine adapter from Marvell® QLogic.
- Up to 1.3 million IOPS fuel high performance in AFA and highdensity virtualized environments
- Enhanced reliability, diagnostics, and accelerated deployment powered by Marvell QLogic StorFusion™ technology
- Port isolation design offers deterministic and scalable performance on each port

1 iSCSI and FCoE support only on QL45262 Adapter

Overview

The Lenovo ThinkSystem® Marvell® QLogic QML2692 is a dual-port, Enhanced Gen 5, 16Gb FC (16GFC) mezzanine adapter that boasts industry-leading native FC performance with extremely low CPU usage and full hardware offloads.

Enhanced GEN 5 FC

The QML2692, featuring an Enhanced Gen 5 FC solution, offers higher per-port performance (up to 650K IOPS) with low power consumption compared to Gen 5 FC. In addition, Marvell QLogic StorFusion technology delivers streamlined provisioning, guaranteed quality of service (QoS), and improved resiliency. StorFusion addresses the needs of IT organizations that require reliability, integrated management, and guaranteed network performance.

Enhanced Gen 5 FC technology resolves data center complexities by enabling a storage network infrastructure that supports powerful virtualization features, application-aware services, and simplified management. The Lenovo mezzanine adapter provides advanced storage networking features capable of supporting the most demanding virtualized and private cloud environments. This adapter fully leverages the capabilities of high-performance 16GFC, all-flash arrays (AFAs), and demanding enterprise applications. Powerful management tools automate and simplify SAN provisioning to help reduce cost and complexity, while the unmatched 16GFC performance eliminates potential I/O bottlenecks in today's powerful multiprocessor, multicore servers.

Superior Performance

The QML2692 mezzanine adapter can accelerate mission-critical enterprise applications by delivering up to 1.3 million IOPS for physical, virtual, and private cloud environments. Marvell adapters deliver the best storage application performance in both virtualized and non-virtualized environments, with support for over 650K I/O transactions per-second per-port.

Virtualization Optimized

The QML2692 mezzanine adapter supports standards-based virtualization features. Support for N_Port ID virtualization (NPIV) enables a single FC adapter port to provide multiple virtual ports for increased network scalability. In addition, the 16GFC line rate per physical port delivers unmatched storage performance to maximize the number of VMs per physical server.

Marvell QLogic Storfusion Technology

Lenovo Enhanced Gen 5 FC mezzanine adapters, powered by StorFusion technology, include advanced capabilities that are enabled when deployed with supported Brocade® switches. By combining these industry-leading solutions, SAN administrators can take advantage of enhanced features that improve availability, accelerate deployment, and increase network performance. StorFusion solves the top issues for SAN administrators worldwide.

Improved TCO and Reliability

StorFusion technology delivers advanced link diagnostics, which improve availability and support for high-performance fabrics. Using the adapter's Diagnostics Port feature with a Brocade switch that supports ClearLink®, administrators can quickly run a battery of automated diagnostic tests to assess the health of links and fabric components.

Marvell QLogic StorFusion technology on this adapter includes the read diagnostic parameters (RDP) feature, which provides detailed port, media, and optics 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.

The extensive suite of diagnostic tools maximize uptime and performance, allowing organizations to address problems before they impact operations.

Performance SLA Enforcement with VM-level QoS

Network performance can be dramatically improved by implementing the industry-standard class-specific control (CS_CTL)-based frame prioritization QoS, which helps alleviate network congestion. When Lenovo adapters with Marvell QLogic StorFusion technology are connected to supported SAN fabrics, traffic is classified 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, missioncritical workloads can be assigned a higher priority than less timesensitive network traffic for optimized performance.

Higher Resiliency and Performance with Automatic Error Recovery

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.

Automatic buffer-to-buffer credit recovery (BB-CR) helps overcome performance degradation, congestion, and link resets caused by buffer credit loss, especially on longer distance and high-loss fiber connections.

Simplified Management

The unified management application, QConvergeConsole® (QCC), provides single-pane-of-glass management across generations of Marvell FC Adapters. In addition, QCC 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

Lenovo ThinkSystem Enhanced Gen 5 FC mezzanine adapters continue the tradition of providing complete port-level isolation across their FC controller architecture. This architecture—unlike other vendor solutions— provides independent function, transmit and 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 ports, and provide predictable and scalable performance across all ports. The Marvell architecture delivers ultimate reliability to meet the needs of mission-critical enterprise applications with lower power and fewer CPU cycles, all 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 FC network.

The Lenovo ThinkSystem mezzanine adapter also provides end-to-end data integrity with support for T10 Performance 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 Lenovo ThinkSystem Marvell QLogic QML2692 mezzanine adapter is compatible with the same FC software driver stack that has been tested and validated across all major hardware platforms, as well as all major hypervisors and operating systems. The adapter is backward compatible with existing 4GFC and 8GFC infrastructure, leveraging existing SAN investments.

Marvell technology makes it the undisputed leader in FC adapters, with over 20 years of experience, 17.5 million ports shipped, and multiple generations of FC products that have been the leading choice of Lenovo customers. 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

- QML2692: PCIe® 3.0 x8

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

- 16GFC line rate per port (maximum)

Logins

- Support for 2,048 concurrent logins and 2,048 active exchanges

Port Virtualization

- NPIV

Compliance

- *ISCSI-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 Marvell FC adapters

Boot Support

- BIOS
- Unified Extensible Firmware Interface (UEFI)

APIs

- SNIA HBA API V2
- SMI-S

Operating Systems

- For the latest applicable OS information, see https://www.marvell.com/support/downloads.html

End-to-End Provisioning and Management Features

The following features require a supported Brocade switch running Fabric OS version 7.3.0a or later.

Performance

- QoS CS_CTL
- FEC

Diagnostics

- RDP

Deployment and Management

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

Physical Specifications

Ports

- QML2692: dual-port, Gen 5 FC

Form Factor

- Mezzanine adapter (Lenovo ThinkSystem Blade Servers)

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%

Agency Approvals—Safety

US and Canada

- UL 60950-1
- CSA C22.2

Europe

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

Ordering Information

QML2692-BK
[Lenovo part number 7ZT7A00520]

MARVELL

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.