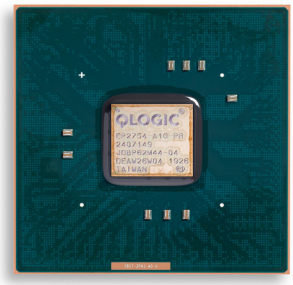
Marvell® QLogic® 2750 Series

Enhanced 32GFC Fibre Channel Controllers



- Improve scale out NVMe efficiencies by delivering concurrent support for FCP and FC-NVMe™
- Industry leading performance of up to 4 million IOPS and 25,600MBps of aggregate throughput
- Port isolation design delivers deterministic and scalable performance on each port
- Improve database transactional performance, enable faster business decisions with up to 2x faster data mining, and host more VMs
- StorFusion™ technology simplifies deployment and troubleshooting
- Supports PCIe® Gen 4
- Available in dual and quad-port versions

The Marvell® QLogic® 2750 Series are Enhanced 32-Gigabit Fibre Channel (GFC) Controllers that secure mission critical data with hardware-based Root of Trust (RoT). The controllers are available in dual and quad port models.

Leveraging over 16 years of market leadership, the 2750 Series FC Controllers are designed from the ground up for customers looking to accelerate databases, host more virtual machines (VMs), and reduce total cost of ownership (TCO), while leveraging their investment in nonvolatile memory express (NVMe™)-based all flash arrays. Marvell QLogic 2750 Series Controllers provide full backward compatibility to 16GFC SANs; the 2700 Series Controllers provide full backward compatibility to 16GFC and 8GFC SANs.

NVMe over Fibre Channel (FC-NVMe)

Workloads that demand higher throughput, IOPS, and lower latency are moving to flash. The NVMe protocol has been designed from the ground up for flash and features deep parallelism, random access, and flash access over PCI Express® (PCIe) to maximize bandwidth.

NVMe works best when coupled with a network that can provide lossless, low-latency, and highperforming transport. FC-NVMe extends these benefits over a Fibre Channel fabric.

The 2750 Series Controllers support low-latency access to scale out NVMe with full support for the FC-NVMe protocol. The 2750 Series Controllers can simultaneously support FC-NVMe and FCP-SCSI storage traffic on the same physical port, enabling customers to migrate to NVMe at their own pace.

The 2750 Series Controllers bring the best of both worlds by offering up to 4 million IOPS and line rate 32GFC performance, while delivering low-latency access to NVMe and SCSI storage over a Fibre Channel network.

Firmware Integrity Protection with Hardware Root of Trust

The Enhanced 32GFC 2750 Series Controllers incorporate a secure hardware based RoT to protect against rogue firmware. Security threats continue to evolve and increase, driving Chief Information Officers towards securing the server all the way down to the firmware at the lowest layers of the server platform, where attacks are the most difficult to detect. To address this issue, the Marvell QLogic 2750 Series Controllers incorporate a hardware RoT that prevents malicious firmware from hijacking the FC controller. The 2750 Series RoT enables both integrity and authenticity during controller firmware updates by both validating firmware embedded signatures with hardware embedded keys to ensure that only bona fide firmware executes, and protecting firmware updates that are applied over public networks.

Fully Featured FC Technology

Marvell QLogic Enhanced 32GFC technology provides the industry's most fully featured 32GFC controller, designed to meet and exceed the requirements of modern SANs. Marvell's FC solution offers 50-percent higher per-port performance (1 million IOPS) than previous generations; and its power-efficient, port-isolated design enables data centers to reduce their carbon footprint.

Marvell QLogic 2750 Series FC Controllers resolve data center complexities by enabling a storage network infrastructure that supports powerful virtualization features like N_Port ID virtualization (NPIV), application-aware services with standards based quality of service (QoS), and simplified management.

Marvell StorFusion technology delivers streamlined provisioning and improved resiliency with built-in forward error correction (FEC). These features address the needs of agile IT organizations that run hybrid cloud infrastructures and require mission-critical reliability, guaranteed network performance, and the ability to scale their SANs to business needs.

Innovations that Improve Business Productivity and Integrity

Marvell QLogic FC Controllers powered by StorFusion technology include advanced capabilities when deployed with supported Brocade® and Cisco® 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 Diagnostics Port feature with a Brocade or Cisco switch that supports Fibre Channel diagnostics, administrators can quickly run a battery of automated diagnostic tests to assess the health of links and fabric components.

The Marvell QLogic 2750 Series Controllers support link cable beacon (LCB) technology, which enables administrators to visually identify both ends of a physical link.

Read diagnostic parameters (RDP) provide optics and media diagnostics while the link is in service, enabling identification of link-related errors and degrading conditions on the switch link.

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.

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 worldwide name (FA-WWN) and fabric-based boot LUN discovery (F-BLD) capabilities, the creation of zones, LUNs, SAN-based boot images, and other services can be completed before the servers arrive on site—eliminating time-consuming, manual tasks that typically delay server deployment.

Single-Pane-of-Glass Management for Simplified Management

The Marvell unified management application, QConvergeConsole® (QCC GUI and CLI), provides single-pane-of-glass management across generations of Marvell QLogic FC and FastLinQ® Ethernet adapters. Marvell provides a powerful VMware® vCenter® Plug-in to manage generations of its 2750 Series Controller-based adapters while delivering features like topology maps and cluster wide firmware updates.

Unparalleled Insight and QoS for Virtualized Deployments

The Marvell 2750 Series Controllers support several standards-based virtualization features that optimize virtual server deployment, troubleshooting, and application performance.

Marvell QLogic virtual machine ID (VM-ID) technology seamlessly integrates with Brocade and Cisco switches to allow customers to effectively monitor and manage their Fibre Channel storage networks, load balancing VM clusters with storage to ensure efficient use of the storage resources. Supported for VMware ESXi 6.0 and later, I/O requests and responses can be tagged with the VM-ID of the appropriate virtual machine, providing end-to-end visibility at the VM level.

Additionally, support for NPIV enables a single FC controller port to provide multiple virtual ports for increased network scalability. Standard class-specific control (CS_CTL)-based QoS technology per NPIV port allows multi-level bandwidth controls and guarantees per VM. As a result, mission-critical workloads can be assigned a higher priority than less time-sensitive storage traffic for optimized performance.

High Availability and Reliability

Marvell FC Controllers provide complete port-level isolation across the FC controller architecture. This unique architecture provides an independent protocol handling function, transmit/receive buffers, an on-chip CPU, DMA channels, and a firmware image for each port. Complete port-level isolation prevents errors and firmware crashes from propagating across all ports and provides predictable and scalable performance across all ports.

The 2750 Series Controllers also provide 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 Marvell 2750 Series Controllers are compatible with the same FC software driver stack that has been tested and validated across all major hardware platforms, all major hypervisors, and operating systems. Operating at 32GFC, these controllers are backward compatible to existing 16/8GFC infrastructure, leveraging existing SAN investments.

Marvell QLogic is the undisputed leader in FC controllers, with over 16 years of market share leadership and 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

- All controllers support PCI Express® Gen 4, Gen 3, Gen 2, and Gen 1
- EP2752: PCI Express Gen 4 ×8, 4, 2, 1
- EP2754: PCI Express Gen 4 ×16, 8, 4, 2, 1

Host Interrupts

- INTx and MSI-X

Compliance

- PCIe Base Specification, rev. 4.0
- PCIe Card Electromechanical Specification, rev. 3.0
- PCIe Card Electromechanical Specification, rev. 4.0 draft 0.9
- PCI Bus Power Management Interface Specification, rev. 1.2
- PCI Hot Plug Specification, rev. 1.1

Fibre Channel Specifications

Negotiation

- EP2754: Quad-port 32/16/8GFC autonegotiation
- EP2752: Dual-port 32/16/8GFC autonegotiation

Throughput

- 6,400MBps full duplex line rate per port

Logins

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

Port Virtualization

- N_Port ID virtualization

Compliance

- SCSI Fibre Channel Protocol-4 (FCP-4)
- Fibre Channel Tape (FC-TAPE) Profile
- Fibre Channel Generation Services-8 (FC-GS-8)
- Fibre Channel-Physical Interface-5 (FC-PI5)
- Fibre Channel-Physical Interface-6 (FC-PI6)
- Fibre Channel Link Services 4 (FC-LS-4)
- Fibre Channel Framing and Signalling-4 (FC-FS-4)
- Fibre Channel-NVMe (FC-NVMe)

Controller Specifications

Port Configurations

- EP2754: Four 32GFC ports
- EP2752: Two 32GFC ports

Memory

- Integrated SRAM for FC applications
- 8/16-bit, ECC-protected, single or double DDR4 interface to external SDRAM (optional) (EP2754)

Temperature

- Operating: 105°C maximum junction temperature
- Storage: –45°C to 125°C

Airflow

- System-design dependent

RoHS Compliance

- Green (RoHS 6 compliant and halogen free)

Packaging

- EP2754
  - 29mm × 29mm, 1152 ball (lidless flip chip ball grid array)
  - 0.8mm ball pitch
- EP2752
  - 21mm × 21mm, 621 ball (lidless flip chip ball grid array)
  - 0.8mm ball pitch

Power

- EP2754
  - Maximum: 13.9W
  - Typical: 11.1W
- EP2752
  - Maximum: 9.2W
  - Typical: 6.8W

End-to-End Provisioning and Management Features

The following features require either a supported Brocade switch running Fabric OS ® version 8.0 or later or a Cisco switch running NX-OS version 8.2.1 or later.

Performance

- QoS CS_CTL
- FEC for 16GFC
- BB-CR: automatic buffer credit loss detection and recovery

Diagnostics

- Diagnostics Port
- LCB
- RDP

Deployment and Management

- FA-WWN
- F-BLD
- FC ping
- FC traceroute
- VM-ID
- Fabric device management interface (FDMI) enhancements

Ordering Information

EP2754

- Quad-port, 32GFC embedded controller with encryption for storage target applications
- Ships with a minimum order of 128 devices (32 devices per tray × 4 trays)

EP2752

- Dual-port, 32GFC embedded controller with encryption for storage target applications
- Ships with a minimum order of 240 devices (60 devices per tray × 4 trays)

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.

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