

# EP2684 and EP2692

## Enhanced Gen 5 (16Gb) Fibre Channel Controllers



- Up to 2.6 million IOPS fuel high performance in all-flash arrays and high-density virtualized environments
- FC-NVMe capability allows simultaneous access to NVMe™ and FCP Storage on the same port
- Up to 16GFC throughput for high-bandwidth storage traffic; a total of up to 128Gbps bidirectional throughput for four ports
- 1.5 times performance per watt improvement over previous Gen 5 FC solutions for four ports
- Complete investment protection for legacy 8GFC and 4GFC infrastructure
- Total per-port traffic isolation for greater reliability and security

### OVERVIEW

The QLogic® EP2684 and EP2692 Controllers from Cavium® boast industry-leading native Fibre Channel (FC) performance, achieving line-rate, 16GFC throughput at extremely low CPU use with full hardware offloads. This extreme performance eliminates potential I/O bottlenecks in today's powerful multiprocessor, multicore servers, which can drive high-performance storage and flash to their maximum limits.

QLogic Enhanced Gen 5 FC features up to 16GFC speeds, which are critical to evolving server workloads and I/O aggregation. It also supports features such as FEC, which enhances network reliability and operational simplicity.

QLogic's end-to-end data integrity with overlapping protection domain (OPD) and support for T10 Protection Information (T10 PI) make the EP2684 and EP2692 Controllers ideal for enterprise-class storage applications.

#### ENABLING FLASH AND SSD SOLUTIONS

EP2684 and EP2692 Enhanced Gen 5 FC Controllers deliver the performance and reliability to drive the next generation of fabric-based flash arrays and server-based cache. With the ability to drive up to 2.6 million IOPS and 128Gbps of bidirectional throughput for four ports, the EP2684 and EP2692 Controllers are the right choice for the most demanding of flash-based solutions.

#### DESIGNED FOR VIRTUALIZATION

QLogic EP2684 and EP2692 Enhanced Gen 5 FC Controllers consume the fewest CPU cycles to drive storage traffic at line rate across all ports. With

support for up to 650K IOPS, QLogic controllers are ideal for hyperscale virtualization, solid-state storage technologies, and new data center architectures.

#### NVM EXPRESS® SUPPORT

The EP2684 and EP2692 Controllers support the recently ratified FC-NVMe (NVMe over Fibre Channel) protocol. The EP2684 and EP2692 Controllers can simultaneously support FC-NVMe and FCP-SCSI storage traffic. NVMe storage offers exceptionally high performance at very low latencies. NVMe works best when coupled with a network that can provide lossless, low-latency, and high-performing transport. The 2600 Enhanced Gen 5 Controllers bring the best of both worlds by offering the highest performance and lowest latency access to NVMe and SCSI storage over a Fibre Channel network.

#### INVESTMENT PROTECTION

EP2684 and EP2692 Controllers are compatible with the existing 8Gb FC (8GFC) and 4GFC software API that is shipping today on the QLogic 2500 and 2600 FC Controllers.

#### UNMATCHED EXPERTISE

QLogic is the undisputed leader in FC adapters. The QLogic FC Controller products have been qualified by all major storage OEMs to provide native FC connectivity from storage to fabric. QLogic is a strategic solution provider across server and storage technologies, offering the strongest technology portfolio for storage connectivity applications.

### Fibre Channel Specifications

#### Negotiation

- Quad-port 16/8/4GFC auto-negotiation (EP2684)
- Dual-port 16/8/4GFC auto-negotiation (EP2692)

#### Throughput

- Gen 5 FC 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 (EP2684)

#### Port Virtualization

- N\_Port ID 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 FC Generic Services (FC-GS-2)*
- *Third Generation FC Generic Services (FC-GS-3)*
- *Fibre Channel Physical Interface-5 (FC-PI-5)*

### Host Bus Interface Specifications

#### Bus Interface

- PCIe® 3.0 x16 (EP2684)
- PCIe 3.0 x8 (EP2692)

#### 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*
- *PCI Hot Plug Specification, rev. 1.1*

### Controller Specifications

#### Port Configurations

- Four 16GFC ports (EP2684)
- Two 16GFC ports (EP2692)

#### Memory

- Integrated SRAM for FC applications
- 16-bit, ECC-protected DDR3 interface to external SDRAM (optional) (EP2684)

#### Temperature

- Operating: 105°C (221°F) maximum junction temperature
- Storage: -45°C to 125°C (-49°F to 257°F)

#### Airflow

- System-design dependent

#### RoHS Compliance

- Green (RoHS 6 compliant and halogen free)

#### Packaging

- EP2684
  - 33mm × 33mm, 1013 ball (lidless flip-chip ball grid array)
  - 1.0mm ball pitch
- EP2692
  - 19mm × 19mm, 525 ball (lidless flip-chip ball grid array)
  - 0.8mm ball pitch

#### Power

- EP2684
  - Maximum: 13.5W
  - Typical: 10.0W
- EP2692
  - Maximum: 7.0W
  - Typical: 5.5W

### Ordering Information

#### EP2684

- Quad-port embedded controller for storage target applications
- Ships with a minimum order of 192 devices (24 devices per tray × 8 trays)

#### EP2692

- Dual-port embedded controller for storage target applications
- Ships with a minimum order of 210 devices (70 devices per tray × 3 trays)



Follow us:       

[Corporate Headquarters](#) Cavium, Inc. 2315 N. First Street San Jose, CA 95131 408-943-7100

© 2015, 2016 Cavium, Inc. All rights reserved worldwide. QLogic is a wholly owned subsidiary of Cavium, Inc. Cavium, the Cavium logo, QLogic, and the QLogic logo are trademarks or registered trademarks of Cavium, Inc.. All other brand and product names are trademarks or registered trademarks of their respective owners.

This document is provided for informational purposes only and may contain errors. Cavium reserves the right, without notice, to make changes to this document or in product design or specifications. Cavium disclaims any warranty of any kind, expressed or implied, and does not guarantee that any results or performance described in the document will be achieved by you. All statements regarding Cavium's future direction and intent are subject to change or withdrawal without notice and represent goals and objectives only.