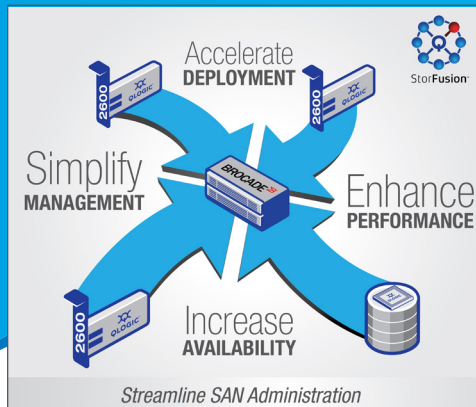


# Cavium and Brocade Technology Alliance Drives Gen 5 (16Gb) and Gen 6 (32Gb) Fibre Channel to New Levels



**BROCADE**

StorFusion™



## QLogic StorFusion from Cavium and Brocade Fabric Vision Combine to Maximize the Potential of Your Storage Network

### KEY BENEFITS

- Maximizes uptime and performance with new end-to-end diagnostic capabilities to help organizations address problems before they impact operations.
- Accelerates and streamlines SAN deployment by pre-provisioning and validating IT infrastructure to accelerate deployment and simplify support.
- Rapidly scales server virtualization without compromising service level agreements (SLAs) by extending quality of service (QoS) from the fabric to the host..

QLogic® StorFusion™ is a suite of new features designed to enhance diagnostic and troubleshooting capabilities, quicken SAN deployment, and improve QoS. New features were developed in conjunction with Brocade® to maximize the industry's leading Fibre Channel (FC) SAN fabric and are fully integrated with QLogic management tools, including the QConvergeConsole (QCC) graphical user interface (GUI), command line interface (CLI), and VMware vCenter plug-in and integration with Brocade Network Advisor.

### IMPROVED TOTAL COST OF OWNERSHIP (TCO) AND RELIABILITY WITH ADVANCED LINK DIAGNOSTICS SUITE

QLogic® StorFusion™ from Cavium™ seamlessly integrates with Brocade FC switches to ensure optical and signal integrity from the server to the storage array by leveraging Brocade ClearLink™ Diagnostic Port (D\_Port). QLogic StorFusion extends Brocade Fabric Vision™ technology, allowing organizations to ensure end-to-end optical and signal integrity for Gen 5 FC and Gen 6 FC optics and cables, simplifying deployment and support of high-performance fabrics.

Advanced ClearLink diagnostics perform the following tests and report results at both ends of the link with QLogic Enhanced Gen 5 FC and Gen 6 FC adapters and Brocade Gen 5 and Gen 6 FC switches:

- Electrical loopback
- Optical loopback
- Measures link distance and latency

Additional detailed information on advanced link diagnosis leveraging Brocade ClearLink can be found in this technical brief: [Enhanced Reliability and Diagnostics for QLogic Enhanced Gen 5 \(16Gb\) and Gen 6 \(32Gb\) Fibre Channel Adapters](#).

QLogic StorFusion from Cavium supports additional Enhanced Gen 5 FC and Gen 6 FC diagnostic features, such as link cable beaconing (LCB) and read diagnostic parameters (RDP). LCB 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.

RDP 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.

The suite of advanced diagnostics tools is further enhanced by capabilities that provide powerful visual connectivity and path analysis:

- FC Ping, which validates configurations by enabling users to ping an FC N\_port or end device
- FC Traceroute, which ensures correct switch and multi-path configurations
- Fabric Device Management Interface (FDMI), which gives rapid access to hardware configuration and counters

With ClearLink diagnostics, LCB, RDP, FC Ping, FC Traceroute and FDMI, administrators are empowered to:

- Detect faults in FC SAN physical infrastructure during pre-production
- Assist with troubleshooting problems in production environments
- Ensure application uptime and performance
- Significantly reduce overall operational expenses for managing a FC SAN infrastructure

## **ACCELERATED AND STREAMLINED SAN DEPLOYMENT AND ORCHESTRATION WITH SOFTWARE-DEFINED DYNAMIC FABRIC PROVISIONING**

Accelerate deployment and simplify support by running ClearLink Diagnostics end-to-end to validate the infrastructure and avoid costly issues. In addition to ClearLink, dynamic fabric provisioning with QLogic StorFusion and Enhanced Gen 5 FC and Gen 6 FC adapters help enterprises quickly and easily meet growing business demands. For maximum efficiency, these adapters now acquire port World Wide Name (WWN) addresses from the pre-configured Brocade fabric, saving time and eliminating possible errors from the manual process.

Deploying these features will:

- Eliminate fabric reconfiguration when adding or replacing servers
- Increase business agility while lowering capital expenditures (CAPEX) and operational expenditures (OPEX) by eliminating manual tasks

- Minimize time-consuming, costly operational interdependency between server and SAN administration
- Reduce or eliminate the need for modifying zoning and Logical Unit Number (LUN) masking

Additional detailed information on fabric pre-provisioning can be found in this technical brief: [Automating and Simplifying SAN Provisioning for QLogic Enhanced Gen 5 \(16Gb\) and Gen 6 \(32Gb\) Fibre Channel Adapters](#).

## **PERFORMANCE SLA ENFORCEMENT WITH VM-LEVEL QOS AND AUTOMATIC ERROR RECOVERY**

Storage fabrics have the most stringent performance requirements of any network technology. They must have low latency and guaranteed delivery while supporting growing workloads and accommodating bursts in application data flows without disrupting applications.

Extending QoS from the fabric to the host helps users of QLogic FC adapters to rapidly scale their virtual environments and increase optimization and efficiency without compromising SLAs.

Configuring QLogic Enhanced Gen 5 FC and Gen 6 FC Adapters and QLogic StorFusion with Brocade FC switches allows for the following advantages:

- Enables end-to-end priority classification of FC traffic per application or VM (N\_Port ID Virtualization (NPV)-based)
- Works in conjunction with the QoS class-specific control (CS\_CTL) feature on Brocade switches and supported targets
- Enables QLogic an FC users to rapidly scale server virtualization without compromising SLAs
- Provides benefits for physical environments while facilitating a smooth transition to virtual server deployments

Additional detailed information on end-to-end SAN traffic prioritization can be found in this technical brief: [Improved Performance and QoS for QLogic Enhanced Gen 5 \(16Gb\) and Gen 6 \(32Gb\) Fibre Channel Adapters](#).

QLogic StorFusion also ensures higher resiliency and performance with automatic forward error correction (FEC) and buffer-to-buffer credit recovery (BB-CR). FEC improves performance and link integrity to support higher end-to-end data rates by automatically recovering from transmission errors. FEC automatically detects and recovers from bit errors, which results in higher availability and performance.

BB-CR enhances performance and resiliency by automatically recovering buffer credits, which can be lost on long distance and lossy connections with the potential to stall I/O or degrade performance.

To deploy these powerful, new QLogic StorFusion features in your Enhanced Gen 5 FC and Gen 6 FC SAN environment, install the latest drivers and firmware from: <http://driverdownloads.qlogic.com>.

QLogic StorFusion with Enhanced Gen 5 FC and Gen 6 FC	
Brocade ClearLink (D_Port)	Assesses the health and fabric components
Fabric Device Management Interface (FDMI) Enhancements	Simplifies change management
FC Ping	Allows users to ping a Fibre Channel N_port or end device
FC Traceroute	Obtains the path information between two F_Ports from the Fabric Configuration Server
Read Diagnostics Parameters (RDP)	Enables one-click identification of network and media issues
Link Cable Beaconsing (LCB)	Simplifies cable identification and eliminates human errors
Fabric-based Boot LUN Discovery (F-BLD)	Accelerates deployment
Fabric-assigned Port WWN (FA-WWN)	Provides scalability and faster ROI
QoS Class-specific Control (CS_CTL)	Ties per-frame QoS to virtual machines
Forward Error Correction (FEC)	Improves network resiliency and performance
Buffer-to-buffer credit recovery (BB-CR)	Enhances performance with automatic buffer credit recovery from buffer credit loss

#### Related Papers:

- Technology Brief – [Enhanced Reliability and Diagnostics for QLogic Enhanced Gen 5 \(16Gb\) and Gen 6 \(32Gb\) Fibre Channel Adapters](#)
- Technology Brief – [Technology Brief – Automating and Simplifying SAN Provisioning for QLogic Enhanced Gen 5 \(16Gb\) and Gen 6 \(32Gb\) Fibre Channel Adapters](#)
- Technology Brief – [Improved Performance and QoS for QLogic Enhanced Gen 5 \(16Gb\) and Gen 6 \(32Gb\) Fibre Channel Adapters](#)

#### ABOUT CAVIUM

Cavium, Inc. (NASDAQ: CAVM), offers a broad portfolio of infrastructure solutions for compute, security, storage, switching, connectivity and baseband processing. Cavium’s highly integrated multi-core SoC products deliver software compatible solutions across low to high performance points enabling secure and intelligent functionality in Enterprise, Data Center and Service Provider Equipment. Cavium processors and solutions are supported by an extensive ecosystem of operating systems, tools, application stacks, hardware reference designs and other products. Cavium is headquartered in San Jose, CA with design centers in California, Massachusetts, India, Israel, China and Taiwan.



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