Dell and QLogic—True End-to-End 16Gb Gen 5 Fibre Channel Connectivity

Increase Reliability and Performance Using QLogic High-Speed Interconnects Throughout the Fibre Channel SAN

Introduction

With the introduction of 16Gb Fibre Channel products, Dell® and QLogic® are bringing to market the industry’s first true end-to-end 16Gb Gen 5 Fibre Channel SAN. The solution is uniquely enabled by QLogic at both ends of the Dell SAN. The proven QLogic Fibre Channel stack was selected by Dell to provide the native Gen 5 connectivity for Dell Compellent Storage Arrays. In addition, the same battle-hardened QLogic Fibre Channel stack can be selected with the QLogic 2600 Series Gen 5 Fibre Channel Adapter connection for Dell 12th Generation PowerEdge Servers. The Dell/QLogic solution provides data center administrators with the ultimate in performance: Gen 5 Fibre Channel required for today’s data center, increased transactional performance (more than 1.2 million IOPS), and line-rate throughput (up to 6,100 MBps at full duplex). As a result, backup and restore operations can be completed much faster. In addition, the unique port isolation architecture from QLogic ensures reliability and stability. The QLogic and Dell solution offers a powerful approach to server I/O, providing a compelling reason to choose Dell and QLogic—the proven leaders in Fibre Channel SANs.
Background and Challenges

The importance of I/O performance and reliability in SANs has never been greater. The explosive growth of server virtualization is driving the need for higher performance I/O, flexibility of deployment, and ease of use within traditional Fibre Channel SANs. Data center administrators need to address increased performance requirements within specific application workloads. Gen 5 Fibre Channel will enable enterprise businesses to resolve these challenges.

Explosive growth in the number and complexity of Web 2.0, databases and backup, Big Data, cloud computing, and other enterprise applications is driving workloads exponentially in the data center. There are more users, more devices, and more data than ever before. The infrastructure in the data center is becoming increasingly complex due to mixed deployment models: discrete, converged networks, the next generation of server virtualization, and cloud computing. In addition, there are technology shifts, including the introduction of multi-core processors, solid-state drives, and PCIe® 3.0, as well as increased memory and larger server workloads. These shifts are allowing greater agility and increases in optimization using new architectures. At the same time, IT administrators continue to experience spending pressures. For these reasons, data center managers need to deliver high-performance and reliable infrastructure that is simple to manage and lowers costs.

Solution

Organizations with enterprise SANs continue to rely heavily on Fibre Channel as a trusted storage technology in virtualized server environments. For those businesses, Gen 5 Fibre Channel will bring added performance and functionality. Gen 5 Fibre Channel is 40 percent faster than 10G Ethernet FCoE and 2X faster than 8Gb Fibre Channel. It improves price per performance and lowers power requirements. Gen 5 Fibre Channel's backward compatibility with 8 and 4Gb Fibre Channel environments ensures investment protection. In addition, there are more physical functions, which increase PCIe slot conservation.

QLogic’s architecture offers complete port-level isolation across its dual-port ASIC by providing independent processors, memory, and firmware images. Each port can be independently reset, deleted, and recovered, which means that you get 100 percent secure, predictable performance with unparalleled stability.

QLogic Fibre Channel Stack

QLogic is the owner of the most established, proven Fibre Channel stack in the industry and is in its eighth consecutive year of Fibre Channel market leadership.

QLogic Fibre Channel Stack Stability

QLogic has the world’s largest installed base of Fibre Channel Adapters with more than 13 million ports shipped. Customers deploying the QLogic Fibre Channel stack benefit from its enterprise-class stability, which provides a lower total cost of ownership, higher uptime, and investment protection.

QLogic has matured and hardened over 15 years of technology leadership and a relentless focus on delivering quality products that meet and exceed the stability and reliability requirements of business-critical enterprise systems. The following are a few of the key contributors to the stability and reliability of the QLogic Fibre Channel stack:

- **Extensive Internal Test Programs:** With multiple interconnected and geographically distributed internal test sites that deploy automated test suites for 24x7 quality assurance, QLogic testing methodologies are rigorous and extensive. This approach translates to a highly reliable stack.
- **High-Stability Engineering:** QLogic’s development practices provide a complete set of design and instrumentation techniques that enable higher code coverage, efficient error handling, and resolution.
- **QLogic Intellectual Property:** The QLogic Fibre Channel stack leverages patented QLogic IP, such as Overlapping Protection Domains (OPD) and Out of Order Frame Reassembly (OoOFR), that can significantly enhance the integrity and reliability of the Fibre Channel stack.

Customer Benefit—Improved Workload Performance

Media streaming, data warehousing, and data migration are examples of enterprise workloads that are I/O intensive and require high-performance bandwidth. Performance improvements are provided for enterprise workloads using the QLogic 2600 Series Gen 5 Fibre Channel Adapter. For example, in Windows Server® environments, QLogic delivers fine-grained QoS, improved NPIV and improved VHDX performance with Gen 5 Fibre Channel. In a VMware® ESX 5 environment, QLogic differentiates by delivering both double the VMs per server and simplified management using the QConvergeConsole® (QCC) plug-in for vCenter™. The plug-in enables visual management of storage and network components, remote deployment of patches and firmware, and dynamic allocation and setting of bandwidth and protocol type, resulting in saved time, reduced administrative costs, and optimal utilization of network infrastructure. For Oracle OLTP and
OLAP, QLogic’s technology enables a half a million transactions per second, enhancing application performance.

Summary

QLogic is the industry leader, bringing high-performance I/O solutions to data center customers. The performance of the QLogic 2600 Series Gen 5 Fibre Channel Adapter is best-in-class and provides unparalleled flexibility and enhanced reliability. By selecting QLogic technology at both ends of the Fibre Channel SAN, Dell has created the industry’s first true end-to-end Gen 5 SAN. The choice of the industry-leading QLogic Fibre Channel stack for both server and storage connectivity ensures consistency of performance and reliability.