Adapter of Choice for Enterprise-Class Storage Networks

QLogic 2600 Series 16Gb Gen 5 Fibre Channel Adapters Deliver Better Reliability

Marvell delivers a true dual-port solution with high availability and independence through physical port isolation to meet demanding enterprise-class requirements.

KEY BENEFITS

The QLogic® 2600 Series 16Gb Gen 5 Fibre Channel Adapter from Marvell provides more online transactions per second, faster throughput, higher scalability for enterprise workloads, greater flexibility, and better investment protection than other Fibre Channel Host Bus Adapters (HBAs) available today.

Compared to many of the features and benefits listed on a typical data sheet, the architecture is a more "sight unseen" yet highly important element.

- **High Availability Architecture:** Unlike the architecture of alternative adapters, the QLogic 16Gb Gen 5 ASIC architecture ensures complete on-chip CPU, memory, and firmware isolation across both ports of the adapter, providing a high-availability solution that aligns well with enterprise-class best practices.

INDUSTRY CHALLENGE

Fibre Channel SANs (Storage Area Networks) are a key component of most large data center storage ecosystems. Enterprise data centers require ultra-reliable I/O infrastructures to achieve the highest levels of performance and availability for enterprise workloads, server virtualization, and cloud architectures. Increasingly, efficient business information processing and higher service-level requirements are driving dynamic challenges on the storage ecosystem. The overall task at hand is to meet these ever-evolving demands with innovative products that have an uncompromising architectural design that aligns well with and supports key business directives.

QLOGIC FIBRE CHANNEL HOST BUS ADAPTER ARCHITECTURE

QLogic 16Gb Gen 5 Fibre Channel Adapters from Marvell feature a high-availability architecture aligned with true enterprise-class, mission-critical requirements.

The QLogic Gen 5 Fibre Channel Adapter architecture offers complete port-level isolation across its dual-port ASIC. The QLE2672 dual-port design provides discreet functionality with separate processor, memory, and firmware for each port.
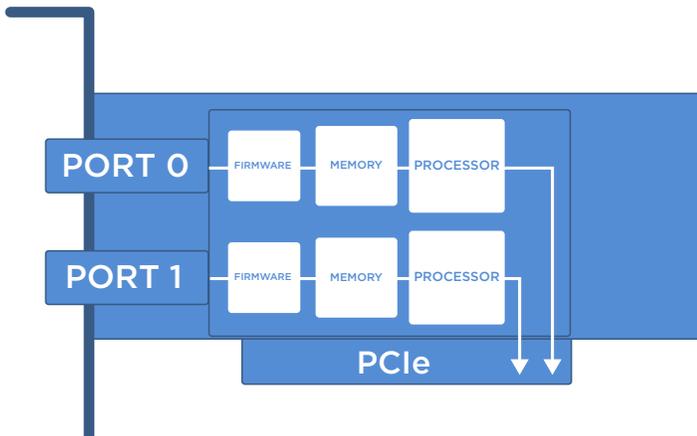
Figure 1. QLogic High-Availability Architecture

Physical isolation enables better security where physical functions for one port cannot access state information (registers and memory information) of another physical function. True port isolation eliminates errors and recoveries, and resets and firmware crashes, that could otherwise propagate across both ports.

KEY ARCHITECTURAL DIFFERENCES

Contrasting Marvell's approach is the single ASIC architecture found in the Broadcom's Emulex® LPe16002B Fibre Channel Host Bus Adapter. In this architecture, singular processor, memory, and firmware resources are virtualized to create a dual-port adapter that uses logical isolation.

The Emulex architecture breaks from traditional high-availability best practices, thus compromising requirements for enterprise deployment and creating several key challenges. Consider that a shared resource architecture lacks independent functionality. Therefore, port 0 can be affected by any number of SAN issues occurring on port 1, including defective SFPs or cables, RSCN storms, or CRC errors.

As another example, a firmware crash on one port can have an effect on the other port, lowering the solution's reliability. In addition, I/O spikes on one port can have an adverse effect on the performance of the other port, potentially impacting service-level agreements. Another important matter—security—can be diminished in a logically isolated architecture: one port can access state information of another port because the ports are not physically isolated.

With QLogic Gen 5 technology, each port on the QLE2672 is able to achieve full line rate independent of the activity of the other port for unparalleled stability and deterministically predictable and scalable performance across both ports.
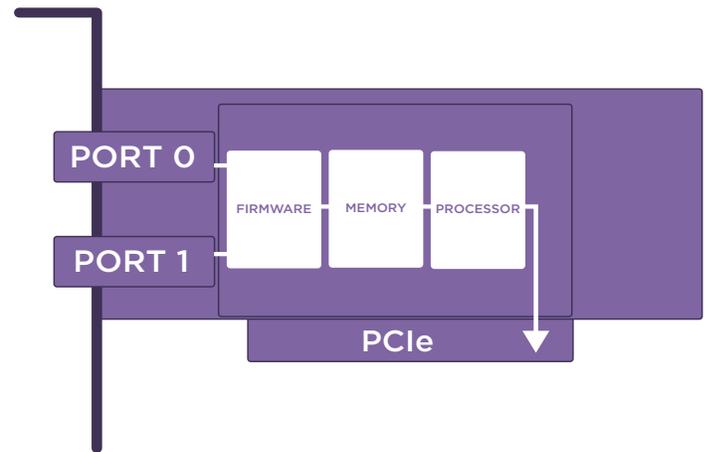

Figure 2. Emulex Architecture

SUMMARY

The Emulex 16Gb Gen 5 design is a logically isolated, dependent architecture that falls short of the gold standard to address true enterprise-class, high-availability requirements. If dual ports are required for next-generation 16Gb Fibre Channel Host Bus Adapters, the choice is clear: Marvell QLogic adapters deliver a true dual-port solution with high availability and independence through physical port isolation to meet demanding enterprise-class requirements.