



## **The Benefit of Migrating from 4Gb to 8Gb Fibre Channel**

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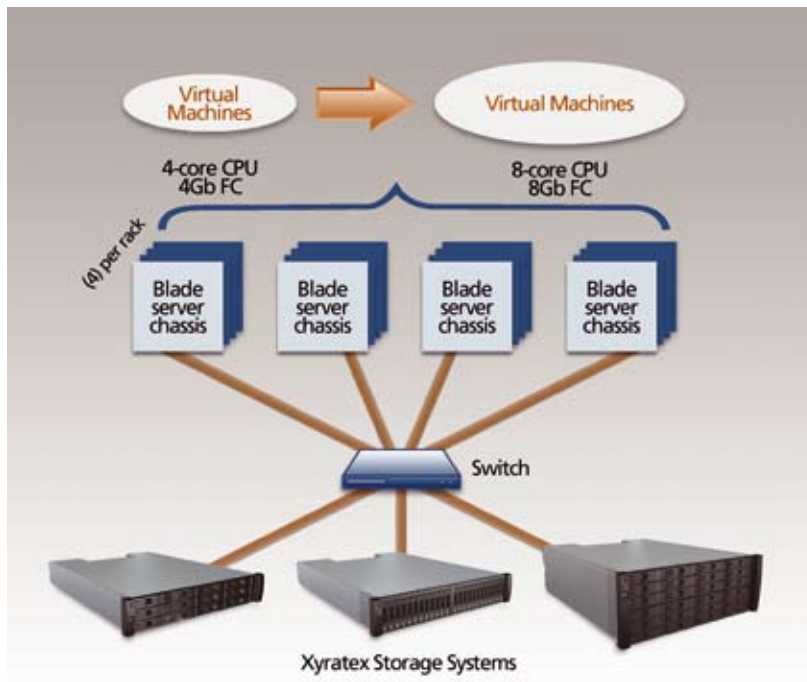
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## Introduction

IT applications have to operate at the speed of business, which is increasing almost daily. The desire to increase storage I/Os per second (IOPs) and throughput (MB/sec.) reflect the benefit of a more responsive infrastructure for improving competitiveness, operating agility, cost-efficiency, and resiliency. Applications such as virtualizing storage and server environments, blade server consolidation, media streaming, video editing, disk-to-disk backup, high-performance computing, replication, and high-performance transactional database processing are expected to be early beneficiaries of 8Gb Fibre Channel (FC) technology. For example, hosts with multiple virtual servers can access the fabric as if there were dedicated HBAs attached to each virtual machine. Virtualization aggregates and generates significant I/O, putting a great demand on the SAN infrastructure. 8Gb FC enables virtualized hosts and storage to draw on the bandwidth needed for these infrastructures to scale-up and scale-out.

8Gb FC has the capability to better support large-block sequential I/O applications such as weather modeling, streaming video, disk-to-disk backup, data logging and medical imaging. Additionally, 8Gb FC reduces the need for additional switch and HBA ports. Instead of requiring two 4Gb FC ports to obtain 800 MB/s, a single 8Gb FC port can provide the same performance, freeing-up additional ports in the fabric for other servers or storage. 8Gb FC is also a vital ingredient for virtualized environments. As servers are being consolidated into high-density blades with multi-core and multi-processors, the demand for high bandwidth and high IOPs is growing dramatically. In order for these blade servers to optimize their performance, the core infrastructure pieces must evolve to operate at higher speeds. 8Gb FC is the next frontier.



Source: Brocade® and Xyratex

The Fibre Channel protocol is a proven foundation for trusted, reliable storage. There is every reason to leverage the well-honed skills IT has developed by incorporating next generation Fibre Channel technology. It is also clear that the vendors who have the skills and expertise to have succeeded in past migration are the best positioned to assist with the upcoming migration. As it did with 2Gb and 4Gb FC, Xyratex will deliver next generation 8Gb FC host connectivity for high-performance RAID storage in close cooperation with leading vendors such as Brocade®, Cisco®, Emulex®, and Qlogic® to ensure that the technology scales up and out over the deployment lifetime. Xyratex will bring its well-honed skills for maturing new storage technology to ensure a smooth transition to 8Gb FC. Xyratex understands that innovation without quality is no innovation at all. Storage system suppliers know that depending on Xyratex for new storage technology is a sound business and technical strategy.

This white paper focuses on what is driving the need for 8Gb FC, how to capitalize on it, and the products Xyratex will be shipping that incorporate this new interface standard.

## **Benefits — Economic, Performance and Green**

The reasons OEMs should incorporate 8Gb FC into their storage systems could not be clearer. The benefits of starting now include the ability to address the continual datacenter requirement of more data performance towards more data performance requirements. By adding 8Gb FC HBAs and switches, OEMs are creating opportunities to double their performance for a 20% price premium. 8Gb FC should be a standard solution offering on all new 64-bit server configurations; it makes good economic sense, provides the best return on investment and lays down a scalable framework for future datacenter growth. Finally, 8Gb FC enables OEMs to chart an upgrade path that leverages, enhances, and extends the significant investments already made in 2Gb and 4Gb FC technology.

Energy efficiency is yet another reason for 8Gb FC. Xyratex has an extensive program of energy efficiency improvements and the other parts of the FC ecosystem are also improving their energy consumption profile. For example, with the new 8Gb HBAs, it may be possible to turn off PCIe lanes and power off lanes in the HBA and ports. Most 8Gb HBAs provide a number of features such as adaptive power management and the elimination of fans, all working together to reduce power consumption and deliver a “green” benefit to the server.

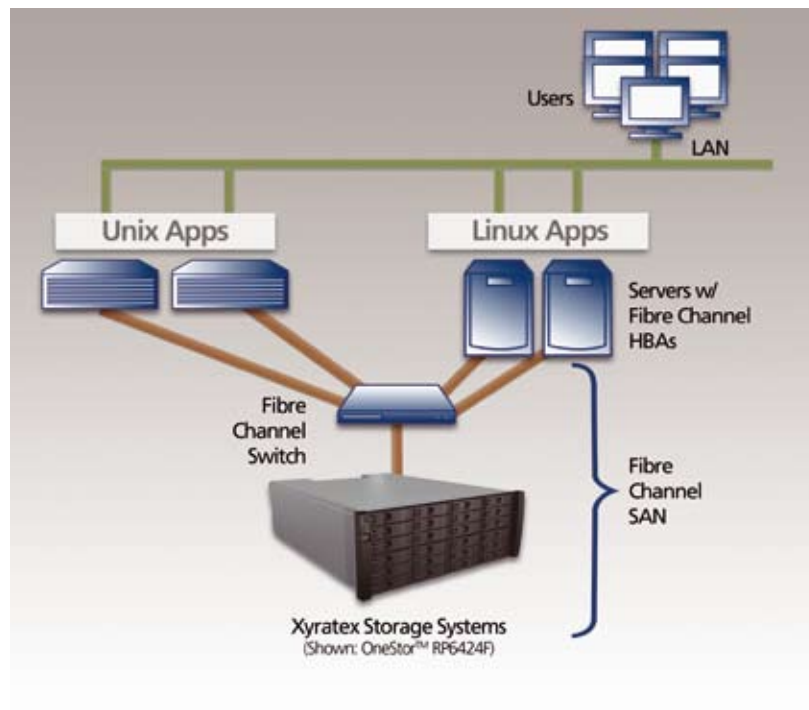
## Investment Protection and Compatibility

Similar to the migration from 2Gb to 4Gb, the Fibre Channel standard has provided a fail-safe method to migrate from 4Gb to 8Gb FC while maintaining backward compatibility. All Fibre Channel HBAs have auto-negotiating functions to detect the speed of the device in the fabric. This compatibility enables users to benefit from the increased functionality, protecting their investment in their current technology, and future-proofing their environment. Consequently, as Xyratex deploys its new storage, OEMs will be able to offer their customers better performing new systems and upgrades to their installed-base. For example, new 8Gb FC components can be added to support applications that require an immediate improvement in data throughput. Since there is little risk of incompatibility with the existing SAN infrastructure OEMs are well-positioned to take advantage of the new 8Gb FC arrays that are just around the corner. Xyratex is working closely with the leading Fibre Channel vendors such as Brocade, Cisco, Emulex and QLogic to ensure that their technology scales to meet the needs of the market. Future Xyratex RAID storage arrays will also deliver 8Gb FC host connectivity for high-performance RAID storage applications.

## New Xyratex 8Gb FC Storage Offerings

The Xyratex F6500E-based RAID systems are designed for speed, integrity, and always-on availability; they feature Fibre Channel host connectivity and SAS disk connectivity technologies. In combination with the Xyratex OneStor™ range of enclosures, the F6500E RAID controller provides full featured hardware redundancy, high-performance host connections, and easy expansion with fault-tolerant, full-duplex, high-speed SAS external ports. An internal SAS interface allows up to 8 disk enclosures (including the RAID enclosure) delivering a total of either 96 - 3.5" drives or 96 - 2.5" drives in a single RAID system. Xyratex dual controller configurations provide the ultimate in high availability with complete hardware and firmware redundancy and automatic fail-over/fail-back capabilities. The Model F6500E RAID system adapts to a broad range of applications with the capability to mix both SATA and SAS technology within a single disk enclosure delivering an optimized tiered storage environment.

Xyratex's StorView™ software configures and administers the F6500E storage system. Automated control of individual controller's cache, arrays and devices via a web-based interface simplifies storage administration, while StorView's full-function Command Line Interface (CLI) allows integration of array management into existing operational procedures. Xyratex RAID storage systems comes standard with StorView management software, allowing for intuitive administration and performance monitoring. An optional upgrade to StorView Global Manager enables configuration, monitoring and management of RAID controllers from any location, anywhere on the network.



Source: NetApp® and Xyratex

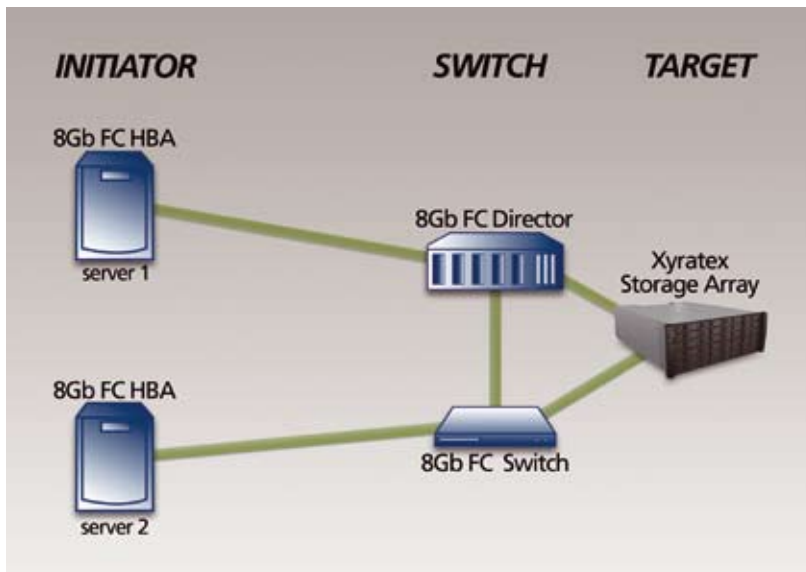
All Xyratex RAID storage systems are equipped with snapshot functionality, providing a point-in-time record of critical data stores. 4 snapshots are available to start implementing immediate recovery capabilities, while an optional snapshot upgrade allows for up to 64 snapshots per Logical Drive and up to 512 snapshots per RAID system. End users may also choose to coordinate point-in-time images with Windows® applications using Microsoft® Volume Snapshot Services (VSS).

#### Key F6500E Product Features Include:

- 8Gb Fibre Channel
- SAS full duplex, point-to-point architecture doubles disk data transfer rates
- Dual active controllers with StorView Path Manager for MPIO based multipath protection
- Dual ported SAS and SATA drives (via active-active multiplexers) for redundancy
- Modular chassis design and redundant, hot-swappable components for continuous data access
- Snapshots integrated with RAID and storage management
- Configure where the copy-on-write data resides
- Snap-Back feature reverses all the updates made to the data stored on a source logical drive to the point-in-time the snapshot was established. Users can quickly back-out erroneous changes and recover critical data
- Multi-Path for continuous access
- Policy based Advanced Power Management delivering up to 40% power savings

## Conclusion

Meeting the needs of users in an always-on, always-available world require scaling storage for performance, capacity, and reliability. Xyratex product plans and strategies have been crafted to ensure that quality and availability are never compromised. Numerous applications ranging from virtualized storage, blade server consolidation, media streaming, video editing, disk-to-disk backup, high-performance computing, replication, and high-performance transactional database processing will all benefit from 8Gb FC technology. Doubling the performance for 20% more cost, compared to 4Gb FC, is a dramatic and compelling reason to invest in 8Gb FC; which delivers the added performance and “green” benefits needed. Now is the time for OEMs to plan their upgrade and migration strategies to incorporate new 8Gb FC RAID storage from Xyratex.



Source: FCIA and Xyratex

## About Xyratex

Xyratex is the ultimate partner to the storage industry. We are a leading provider of enterprise-class data storage subsystems and storage infrastructure manufacturing equipment & automation solutions. Working with over 50 A-list companies, Xyratex ships over 14% of the world's external storage capacity, and 75% of all 3.5" drives are processed using Xyratex test systems. With unmatched expertise and a history of innovation and technological excellence, Xyratex delivers products which are high-performance, energy-efficient and extremely reliable.

For more information, please visit [www.xyratex.com](http://www.xyratex.com)

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