

3x Faster Microsoft SQL Server Performance!!

Running on Dell Poweredge Servers, Connectrix B DS-6620B Switches, Emulex GEN 6 HBA's & XtremIO

HIGHLIGHTS

- The Gen 6 Fibre Channel network with XtremIO All-flash Array for Microsoft SQL Server 2016 data warehouse workload reduced the query time by 72 percent compared to 8 GFC and reduced it by 46 percent compared to 16 GFC.
- The XtremIO All-flash Array was able to deliver superior load balancing and processing by fully consuming the available 3,200 MB per second throughput of the Gen 6 Fibre Channel network.
- This solution takes advantage of advanced features such as a suite of enhanced diagnostics and troubleshooting features developed by Brocade and Broadcom to accelerate deployment, optimize performance, and simplify management.

Dell EMC's XtremIO Arrays with Emulex Gen 6 FC HBAs and Connectrix B DS-6620B Fibre Channel Switches

Dell EMC's XtremIO All-Flash Array unique scale-out architecture, data reduction, and copy services delivers the IOPS, bandwidth and capacity required to consolidate and support databases and analytics workloads across the data center, with consistent sub-millisecond latencies to meet Service Level Agreements (SLAs). The XtremIO architecture addresses all the requirements for flash-based storage, including achieving longevity targets for the flash media, lowering the effective cost of flash capacity, delivering performance, scalability, operational efficiency, and advanced storage array functionality. The Dell PowerEdge R730 servers with Intel Xeon E5-2600 v4 processors are designed for mission-critical applications, with the server's powerful combination of CPU, RAM, and storage. With XtremIO All-flash Arrays providing breakneck storage performance, and PowerEdge R730 servers providing application processing horsepower, the network has now become the bottleneck.

XtremIO users most frequently select Fibre Channel to meet their storage networking performance requirements because of its proven performance, reliability, and scalability for mission-critical applications. Gen 6 (32 GFC) Fibre Channel switches from Brocade and Emulex-branded HBAs by Broadcom solve the network bottleneck problem by delivering the bandwidth, IOPS and latency demanded by XtremIO and PowerEdge Servers, as well as providing a suite of

enhanced diagnostics and troubleshooting features designed for enterprise organizations.

Microsoft SQL Server data warehousing application tests were conducted with XtremIO all-flash arrays, PowerEdge R730 servers, and connected to three different generations of Fibre Channel products from Brocade and Emulex (Gen 6 32 GFC, Gen 5 16 GFC, and Gen 4 8 GFC).

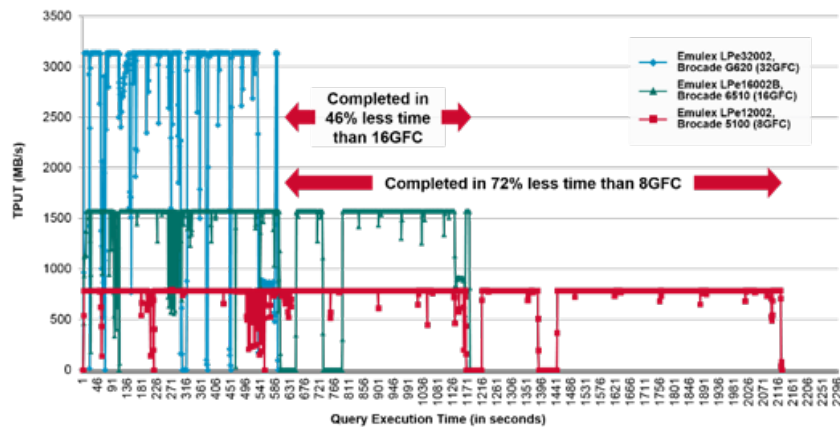


Figure 1. Network Throughput Profile: Emulex Gen 6 (32 GFC) HBAs and Dell EMC Connectrix Gen 6(32 GFC) DS-6620B Fibre Channel switches accelerate Microsoft SQL Server 2016 DW queries.

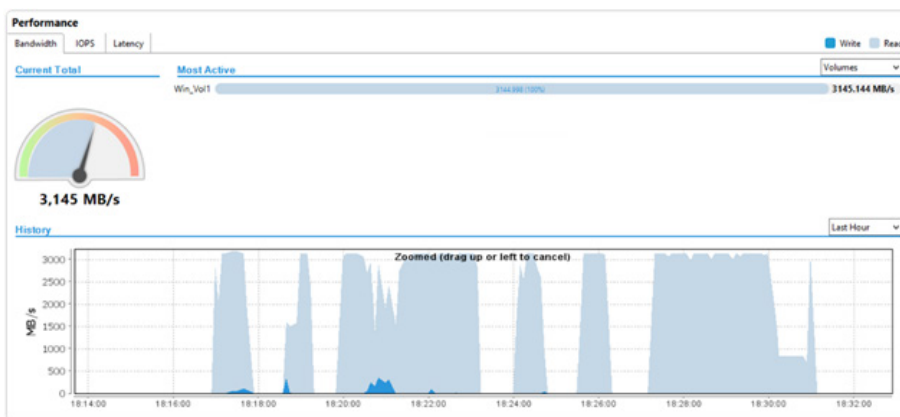


Figure 2. Dell EMC XtremIO All-flash array with built-in instrumentation shows the array fully utilizes the 32 GFC network.

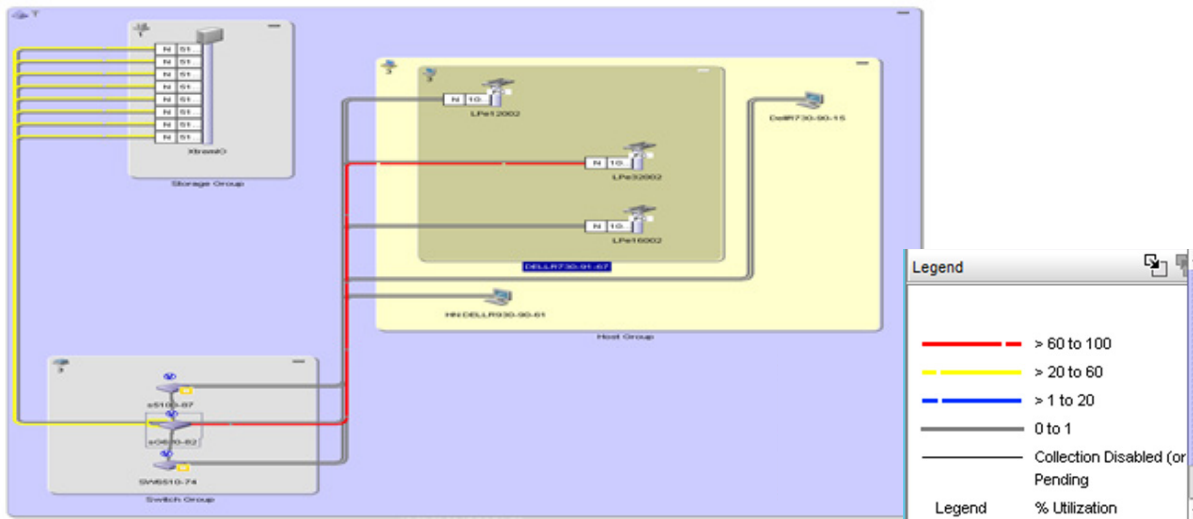


Figure 3. Connectrix Manager Converged Network Edit (CMCNE) shows the PowerEdge R730 fully utilizes the 32 GFC link to the Connectrix DS-6620B Fibre Channel switch while the XtremIO 8 GFC array was able to load balance the traffic and process the IOPS of the faster server and fabric. The 8 GFC all-flash array was able to benefit from the increased performance of Gen 6 Fibre Channel.

Test Environment



Database Server
Dell PowerEdge R730



Switches & HBAs

Test 1: Connectrix DS-6620B Switch & Emulex LPe32002-M2 HBA (32GFC)



Test 2: Connectrix DS-6510B Switch & Emulex LPe16002B-M6 HBA (16GFC)



Test 3: Connectrix DS-5100B Switch & Emulex LPe12002-M8 HBA (8GFC)



All-flash Array
Dell EMC XtremIO



1 x 8/16/32GFC links

8 x 8GFC links



Solution Details

Dell EMC's XtremIO All-Flash Array

Organizations can transform their IT departments and create an agile data center that dramatically improves operational efficiency, encourages business agility, and much more. XtremIO offers the ability to consolidate multiple tier-1 workloads on a single platform that delivers predictable consistent performance with sub-millisecond response time. XtremIO also delivers linear scale-out performance with inline all the time data services and copy data management.

Connectrix DS-6620B Switch

Organizations can adapt quickly to the dynamic, high-throughput demands of flash storage by deploying the latest Gen 6 storage area networking technology with the Connectrix DS-6620B Switch. This powerful Gen 6 Fibre Channel switch shatters application performance barriers and simplifies scale-out network architectures—in an enviably small footprint. The DS-6620B has built-in instrumentation that gives organizations greater insight and control over their SAN. This instrumentation reduces costs, management complexity, and risk.

Emulex LPe32002 Gen 6 HBA

The Emulex-branded Fibre Channel Host Bus Adapters (HBAs) by Broadcom are designed to address the demanding performance, reliability, and management requirements of modern networked storage systems that utilize high performance and low latency solid state storage drives. The latest Emulex LPe32002 FC HBAs offer higher performance, lower latency, enhanced diagnostics and manageability that benefit flash storage environments.

FIBRE CHANNEL FABRICS

- 30 billion transitions go through Fibre Channel per day
- 96 percent of the world's banks, airlines, and retailers run over Fibre Channel
- 70 to 80 percent of flash array storage systems are deployed on Fibre Channel

Learn More

Brocade partners with companies of all sizes to deliver innovative solutions that help organizations maximize the value of their most critical information. To learn more, visit www.brocade.com.

About Brocade

Brocade networking solutions help organizations transition smoothly to a world where applications and information reside anywhere. Innovative Ethernet and storage networking solutions for data center, campus, and service provider networks help reduce complexity and cost while enabling virtualization and cloud computing to increase business agility. Learn more at www.brocade.com.

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