



## The Modern Data Center Needs a Modern Network

Point of View jointly written  
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### SUMMARY

The entire infrastructure must be considered in order to maximize the benefits of upgrading with Dell EMC PowerEdge servers or flash storage.

Storage performance bottlenecks are moving out of the arrays and into storage networks, so Fibre Channel will remain the data center storage protocol of choice for the next decade.

Organizations can improve performance up to 4X for DSS, VM storage migration, and VDI boot storms by using the latest generation of Dell EMC Connectrix B-Series solutions.

Dell EMC SAN Health Check, a no-cost network assessment tool, evaluates the health of your current network infrastructure to help you implement a network modernization strategy.

The role of IT continues to change. Today's IT organizations are becoming a strategic component in their enterprise's business by implementing IT and digital transformation. To support the constant imperative to increasingly modernize and transform, IT organizations are implementing the latest generation of Dell EMC servers and flash storage in the data center.

Upgrading your infrastructure with Dell EMC PowerEdge servers and flash storage is a necessary first step toward modernizing your data center. However, to fully realize the benefits of these upgrades, the entire infrastructure must be considered—specifically the network that connects servers to storage.

### Don't Just Shift the Bottleneck, Remove the Bottleneck

Upgrading a storage network isn't just about the storage. After all, a chain is only as strong as its weakest link. Legacy storage networks, for example, can greatly impact the performance of applications running on servers that access data on external storage.

Legacy networks are not designed to handle the massive amount of IO traffic generated by increased server virtualization and flash storage. As a result, they can become the source of bottlenecks. With performance bottlenecks shifting to the storage network, Gartner notes that Fibre Channel will remain the de facto standard for high performance:

*"Storage performance bottlenecks are moving out of arrays and into the storage network, so Fibre Channel will remain as the data center storage protocol of choice for the next decade."*

– Gartner, *Future of Storage Protocols*, June 2016

### Fibre Channel: The Storage Protocol of Choice

Fibre Channel delivers flash-ready performance, with up to 4X better performance with 32 Gbps (see page 2). It is the storage network protocol of choice because it provides:

- **Operational stability:** Always-on architecture with industry-leading availability.
- **Simple scalability:** Capable of supporting tens of thousands of servers and storage connections.
- **Security by Design:** With managed access on isolated networks.

## 4X Better Performance with 32 Gbps Fibre Channel

Dell EMC recently completed a performance test using Dell EMC PowerEdge servers, Dell EMC XtremIO flash storage, Connectrix B-Series Gen 6 Fibre Channel (32 Gbps) switches, and Emulex HBAs from Broadcom. According to the results (see Table 1), the accelerated performance of the Connectrix B-Series Gen 6 Fibre Channel network reduced workload completion times by up to:

- 72 percent for Decision Support System (DSS) queries, versus 8 Gbps Fibre Channel
- 74 percent for Virtual Machine (VM) storage migration, versus 8 Gbps Fibre Channel
- 74 percent for VDI boot storms, versus 8 Gbps Fibre Channel

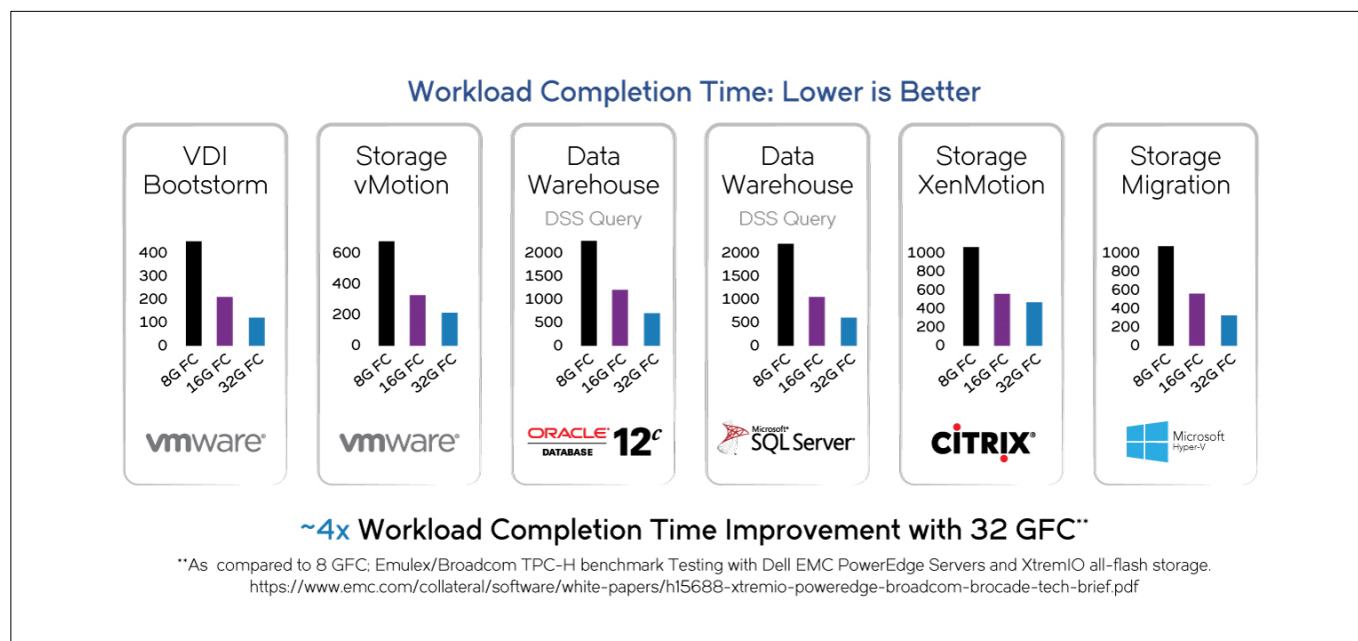


Table 1: Results of Workload Completion Time performance tests run by Dell EMC. Moving to 32 Gbps FC delivers significantly faster performance compared to 8 Gbps and 16 Gbps.

In addition to the performance benefits of 32 Gbps Fibre Channel with Connectrix B-Series solutions, IT organizations can gain control and insight across their storage networks by using Fabric Vision® technology. This unique technology provides powerful, integrated monitoring, management, and diagnostic tools. The latest generation of Fibre Channel also enables enterprises to seamlessly implement next-generation storage protocols with NVMe over Fibre Channel. NVMe and SCSI can coexist in the same server and SAN, allowing you to dynamically transition applications and infrastructure at your own pace.

## Summary

As your enterprise modernizes its data center with the latest generation of Dell EMC PowerEdge servers or Dell EMC flash storage, we recommend also modernizing the legacy storage network with the latest generation of Connectrix B-Series solutions. Dell EMC provides a no-cost network assessment tool to help you determine the requirements for your specific infrastructure.

Learn more at: <https://www.brocade.com/en/overlay-pages/emc-san-health.html>.

View the full white paper referenced above at: <https://www.emc.com/collateral/software/white-papers/h15688-xtremio-poweredge-broadcom-brocade-tech-brief.pdf>.