Why Does Fibre Channel Win All the Time?

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SAN Fabric – Hmm…what is a Fabric? Does calling a Fibre Channel network a SAN Fabric matter? Please continue reading to find out why.

When it comes to designing and deploying a storage network, it does. The fact of the matter is tier 0 and tier 1 storage workloads are demanding and kind of finicky. They have quite a few requirements (or maybe more than a few) and developing a storage solution including the SAN that meets all these requirements is complex and hard.

The SAN fabric has to be designed end-to-end, meaning from servers to storage. It starts with host ports inside storage arrays. Storage arrays have to develop target adapters with host ports that conform to the protocol and meet certain requirements. The host bus adapters inside the servers have to do the same. The operating systems have to develop the storage stack that implements the particular storage protocol. Last, and perhaps most importantly, the switching infrastructure for the SAN fabric has to be developed.

Fibre Channel is the only SAN protocol that has been custom designed (end-to-end) specifically to meet these storage requirements. And it is a "real" fabric wherein every path and end point is stitched appropriately. These requirements help customers meet storage performance parameters likes IOPs, throughput, latency, and more importantly, tail latency. Meeting these performance requirements to enable applications to deliver the best performance to their customers is key. In this day and age of instant everything and wanting it all, nobody has the time or patience to wait for anything. Competition is just a click away, hence applications need blazing fast storage access.

Three things that make Fibre Channel fabrics very unique are:

- **Name Server**
- **Zoning**
- **Buffer Credits**

You will find great articles discussing these features in this Solutions Guide titled "Gen 7 Fibre Channel Delivers So Much More Than Speed," by Marc Angelinovich, and in a past Solutions Guide titled "Fibre Channel Automation and Orchestration," that I authored. The latter can be accessed at: fibrechannel.org/fibre-channel-san-automation-and-orchestration.

The foundation of a SAN fabric is reliability. Reliability is a loaded word. What makes something reliable? Also, what happens when something breaks? Are there redundancies built in? Good times are always great and fun, but the real test happens when things break. How does the protocol treat failures in transmitting packets? Is there failover and failback?

Fibre Channel has been built from scratch with features like forward error detection and correction and flow control specifically designed for lossless delivery of frames. Without the reliable SAN fabric, storage arrays would not have the capacity to deliver 5 Nines Uptime (99.999%) of system availability that customers demand. The Fibre Channel protocol shines with its built-in mechanisms that address these requirements. When the foundation (aka protocol) has this type of built-in core functionality, you have a rock-solid storage fabric protocol that customers can take advantage of to deploy their mission critical applications.

How much is Fibre Channel used today? Well, According to Quillin Research, the Fibre Channel industry will have shipped over 150M ports by the end of 2021. That is a lot of ports. We at the Fibre Channel Industry Association (FCIA) believe that Fibre Channel will continue to be popular with customers to deploy storage networks. With FC-NVMe, customers have the capability to deploy the most contemporary storage protocol on a time-tested and proven storage fabric. We see no slowdown in this area.