iSCSI VS. FIBRE CHANNEL
SANS: THREE REASONS NOT TO CHOOSE SIDES

Rapidly evolving network performance capabilities and changing business needs underscore the importance of technology flexibility
EXECUTIVE SUMMARY

In the on-going war between storage technologies, Fibre Channel and iSCSI continue to battle it out. Fibre Channel provides low latency and high availability, making it the ideal storage platform for business-critical applications. But Fibre Channel can be expensive and complex to manage. With IP everywhere, iSCSI is easy to implement and manage and much more affordable than Fibre Channel. Adding to the complexity is the emergence of Fibre Channel over Ethernet (FCoE) and the introduction of 10 Gb iSCSI. So how do you choose?

Compellent believes that you should have the freedom to choose the network fabric that’s right for you – not only within one SAN, but within your data centers and the way you communicate. This includes the flexibility to change technologies as business needs change or implement new technologies as they become available. In other words, choose the technology that’s right for you based on your existing infrastructure and business needs, not what your storage provider recommends, keeping in mind how those needs may change over time.

Most businesses need both Fibre Channel and iSCSI server connectivity to optimize their storage resources. Fibre Channel delivers the performance required for select applications, while iSCSI enables you to cost-effectively add new devices to your storage area network by utilizing existing IP infrastructure. A highly scalable, standards-based hardware architecture, such as the one Compellent provides, can free you from technology risk by providing the capability to mix and match server interface or drive technology – and easily adopt new technologies as they become available.

This position brief will explore three reasons why it makes sense to select a SAN that allows you to pick the right technology for each application. Customer examples will illustrate how the three reasons play out in the real world.

Reason One: Each Technology Has Its Place

If users can design a storage solution specific to their unique needs, they can utilize iSCSI connectivity when manageability and cost are the key criteria, and opt for Fibre Channel when availability and performance are the most important requirements. Fibre Channel was designed for business-critical, performance-intensive applications like SQL or Exchange databases, while iSCSI has traditionally worked well for file and print and departmental servers.

With the emergence of 10 Gb iSCSI, it is now practical to access high performance storage devices over an IP network while leveraging the economies of low cost Ethernet switches and IP routers. This puts iSCSI on a more competitive playing field with Fibre Channel in terms of network speed and introduces a number of new variables into the cost/performance equation. As with conventional 1 Gb iSCSI, however, 10 Gb iSCSI is susceptible to delayed packet transfer or even packet loss, so it is important to consider individual application latency requirements.

Further extending the boundaries of network connectivity capabilities is FCoE, which allows users to transmit Fibre Channel data frames over 10 Gb or faster Ethernet infrastructures. With FCoE, users can consolidate both SANs and Ethernet traffic onto one common network adapter, resulting in significant gains in server slot efficiencies without the cost of more Fibre Channel hardware. What’s more, they can continue to leverage their existing Fibre Channel tools, security model and infrastructure.

Both Fibre Channel and iSCSI technologies have a place in a data center, and Compellent believes customers should be able to choose the right technology for their specific requirements at any given time. With many technologies still maturing, most enterprises are taking a measured, calculated approach to their deployment strategy, starting with small, segregated pilot projects. For others, however, the decision is more clear-cut.
These are typically organizations that have a firm grasp on their current application requirements and have a well-defined technology roadmap. A good example is Slumberland Furniture.

Due to rapid customer growth and IT expansion, the furniture retailer was looking to upgrade its storage environment and needed a network connectivity solution that could not only meet its high throughput demands, but also could provide the low latency and high availability it needed. It considered both FCoE and iSCSI, but ultimately selected FCoE as its network fabric for the future.

“Our application environment is hyper-sensitive to latency, so it was important that we go with a network with more robust congestion management capabilities and deterministic features,” said Seth Mitchell, infrastructure team manager for Slumberland. “While iSCSI offers a number of attractive benefits, FCoE proved to be the right fit for us, particularly considering our existing infrastructure investments, lossless transfer demands and long-term growth strategy.”

The company also took into consideration the I/O consolidation advantages of FCoE, which will allow the company to simplify its cable management. For example, implementing FCoE on a pair of 10 Gbps Ethernet cables can replace the equivalent of two 4 Gb Fibre Channel connections and twelve 1 Gb Ethernet connections. This equates to an 86 percent reduction in the amount of cables to be managed, while still providing 20 Gb of bandwidth.

“We realized our IT demands were only going to get bigger so we looked at which technology would allow us to reduce our cabling, increase our server utilization and provide the high reliability we needed,” Mitchell said. “FCoE was the clear winner.”

Whether it’s iSCSI or FCoE, an underlying demand from all customers is the ability to start small and scale over the long haul to meet changing needs. “That’s why we went with Compellent as our SAN vendor,” Mitchell said. “We knew they could support us no matter what technology roadmap we chose and would be around for the long haul to meet our needs.”

**Reason Two: Affordability Can Put Technology Within Reach**

When it comes to storage network selection, organizations typically will stick to the same technology they have in place now. However, with today’s rapidly evolving performance capabilities, many companies are taking a wider view of their technology options and adopting a longer term perspective.

Although Fibre Channel was built specifically for storage, the cost and complexity can put certain technology solutions out of reach for some companies. Compellent believes iSCSI provides organizations with the opportunity to implement solutions they couldn’t afford to implement with Fibre Channel. As one of the most frequently required, but least implemented technologies, remote replication is a perfect example.

Many storage administrators find tape backups unreliable, leaving the company exposed to potential data loss. But when it comes time to purchase and implement a remote replication solution, the cost and complexity of Fibre Channel offerings has prevented widespread use.

Remote replication over IP networks can provide a robust and easy to use disaster recovery solution without the complexity or cost of Fibre Channel, bringing business continuance within reach for companies of any size. IP-based replication uses existing networks, infrastructure and staff and is simple to set up and use without specialized training or scripting, making it accessible to companies who might not have been able to implement and manage a Fibre Channel solution.

Also, in many instances, it doesn’t have to be a “one or the other” decision. Case in point: AHC, the largest attorney-based receivables management company in the healthcare industry, selected a storage system that allowed Fibre Channel connectivity for high-performance local operations and iSCSI server connectivity for an otherwise prohibitively priced remote replication solution. AHC can recover in roughly 30 minutes, instead of the weeks it would have taken to recover from tape should a disaster or disruption occur in any of its locations.

“With iSCSI replication, we got business continuity at half the price,” said Chris Stettler, IT director for AHC. “By using SCSI controllers, we can cost-effectively replicate over IP, helping us to prepare for and recover quickly from a disaster—a very real possibility for our Boca Raton, Florida office.”

**Reason Three: Avoid Technology Lock-in**

With the rapid changes in technology, it’s quite possible that three years from now the conversation will shift from Fibre Channel vs. iSCSI to two entirely different technologies. Selecting an iSCSI- or Fibre Channel-only solution limits flexibility and can lock a business into a single technology, regardless of any technologies that may be on the horizon.
OfficeWare, a Kentucky-based business equipment dealership, learned this first hand. OfficeWare recently replaced an iSCSI-only SAN after encountering performance issues. With the initial iSCSI-only SAN, OfficeWare was experiencing considerable delays when copying files and starting up or shutting down servers. When preparing to install a core business management application, the company’s IT team realized it needed a SAN with higher performance to support OfficeWare’s ongoing growth.

“To take our IT organization to the next level of service, we needed a flexible, high-performance storage solution,” said Chris Resch, chief technology officer for OfficeWare. “To avoid technology lock-in the second time around, we selected a SAN that simultaneously supports Fibre Channel and iSCSI. We get performance with Fibre Channel, while having the flexibility to connect servers via both Fibre Channel and/or iSCSI at any time.”

In today’s environment, maximizing your technology investments is more critical than ever. This is where more freedom, more choice and more options can prove crucial in the long term. For example, when purchasing its first SAN, Moss & Associates, one of the largest construction companies in South Florida, selected a SAN with the ability to simultaneously support iSCSI and Fibre Channel server connections. This allows Moss to utilize the right technology based on an application’s criticality.

“We selected a SAN that allows us to have the best of both worlds without being locked into any given technology,” said Bill Snow, IT director for Moss. “Fibre Channel gives us proven performance and iSCSI allows us to overcome distance limitations and replicate to a co-location facility 60 miles away.”

Moss uses Fibre Channel server connections for their business-critical, performance-intensive SQL, Exchange and file server applications and iSCSI connections anywhere it doesn’t need extreme performance. With a standards-based hardware architecture, Moss is freed from technology lock-in and can easily adopt new technologies as they are developed.

**Compellent Position: SANs Should Offer Simultaneous Support for iSCSI and Fibre Channel**

The exponential increase in bandwidth enabled by the market maturity of 10 Gb iSCSI has increased the attractiveness of iSCSI as a data center network fabric. At the same time, the need for low latency is a key issue for many and Fibre Channel continues to offer a reliable solution for these environments. While each technology has its strengths and weaknesses, it is Compellent’s position that businesses shouldn’t be forced to take sides when purchasing a SAN. You should have the freedom to choose based on your specific application needs and technology preference.

SANs that offer simultaneous support for iSCSI and Fibre Channel server connections allow businesses to optimize their storage resources, selecting the right technology for each application. Furthermore, the ideal SAN platform should utilize flexible port configurations so that the solution can easily adapt and scale to meet customers’ changing storage requirements. With a technology independent storage solution, such as Compellent Fluid Data storage, customers can balance performance and cost, and avoid unnecessary technology lock-in.