



Fibre Channel or iSCSI? The Answer Is Yes!

In the past, many small and midsize organizations believed that Fibre Channel storage area networks were too expensive and too difficult to deploy and manage. Today, however, iSCSI technology is bringing the benefits of storage area networking within reach of these organizations. This paper looks at the types of organizations that might reap the greatest benefit from iSCSI, and how Xiotech meets wide-ranging needs by offering both iSCSI and Fibre Channel within its Magnitude 3D[®] 3000 storage family.

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in the volume of business-critical data that is being captured, processed, stored, and manipulated. Efficient data storage and management is becoming one of the most important aspects of business-critical decision making. Ever-increasing reliance on applications, ranging from business intelligence and decision support to electronic messaging and reliance on graphics (as opposed to text) contributes to this trend.

In response to the demands for efficient data storage and management, shared storage solutions, including network-attached storage (NAS) and SANs, are being deployed at all levels to take advantage of the inherent benefits of a networked approach. These benefits include increased availability, scalability, and potentially performance. By bringing networking technology to data storage, a shared storage solution can also provide increased flexibility and centralized management with a lower total cost of ownership.

Small to midsize organizations have many critical applications and are looking to deploy shared storage at the small and remote office level to deliver the benefits of a networked approach previously reserved for the workgroup, department, and data center.

For Over a Decade

storage area networks (SANs) have provided optimal storage value to large organizations in terms of resilience, scalability, and performance. However, as critical data storage requirements migrate into small and midsize organizations, SANs must somehow expand their value proposition. Historically, this market space has been predominately served by the deployment of direct-attached storage (DAS). However, several indications suggest that the leap from DAS to

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Fibre Channel SANs is too complex (and expensive) for many midsize businesses to contemplate.

Because of this, according to the InfoPro, 22 percent of the storage in midtier organizations by the end of 2006 was DAS. Similarly, IDC research indicates that 70 percent of DAS users have yet to deploy a SAN—that's 93,000 such organizations in North America alone. It is perceived to be easier for such an organization to enhance or add to an existing system—even at higher acquisition and, more importantly, operational cost relative to demonstrably better technology—than to source, qualify, fund, and operate an infrastructure that is unknown to the organization. It's the "SAN Fear Factor."

However, a macro trend which runs counter to the above perception is this: Over the last decade organizations large and small have seen an explosion

Typical workloads focus around two major areas:

- Documents, including file and print
- Collaboration, including email and instant messaging

However, unlike early SAN adopters, most of these organizations are not necessarily interested in the latest technology but are very interested in increased reliability, manageability, and ease of use compared to DAS, but as near as possible to the price of DAS.

iSCSI: A Viable Alternative

Today, with the mainstreaming of the storage protocol known as Internet SCSI (iSCSI), there is now a viable alternative for small and mid-sized organizations that allows them to reap the proven benefits of SANs. In addition, large organizations may choose to use iSCSI instead of, or in addition to, Fibre Channel in workgroup and departmental environments. The relative simplicity of iSCSI uniquely positions it to meet the needs of those DAS environments that, through business expansion, now require shared storage features at minimal cost.

But, beyond just storage, where does iSCSI fit in the wide-ranging space of business applications? What is the best match, architecturally speaking, for iSCSI in the typical mix of applications found in small and mid-sized organizations? Finally, does an organization

education, financial services, manufacturing, and governmental sectors.

Where iSCSI Makes Sense

Specific characteristics that indicate a good fit for iSCSI are as follows. The more indications that are present, the better the fit:

- Microsoft® Windows®, Linux®, VMware®, and/or Novell® NetWare® operating systems, running on x86-based or x64-based servers
- All DAS for business-critical data and applications such as database, email, customer resource management (CRM), and manufacturing, as well as user-level file and print services

iSCSI is an especially good fit for environments that rely on Microsoft Windows, Linux, VMware, and/or Novell NetWare operating systems.

have to decide between Fibre Channel and iSCSI, in a "Hobson's Choice" either-or sense, or can they use both, simultaneously, within a single infrastructure and a single storage array?

Simultaneous Use of iSCSI and Fibre Channel

iSCSI fits small and mid-sized organizations in a number of ways. First, because of its relative lack of complexity compared to Fibre Channel, small and mid-sized organizations will be able to easily order, install, and configure an iSCSI solution in a prepackaged configuration. This ability is especially important in organizations within healthcare,

- Gigabit Ethernet for server network infrastructure
- Full-time general purpose IT staff (albeit small, typically shared with all other workgroups)
- Preference for a comprehensive solution (as opposed to construction by parts)
- IT budget (annual spend) between \$140,000 and \$500,000
- Purchases made primarily through a value-added reseller (VAR) or other indirect channel
- Interest in moving from DAS to higher functionality and scalability of SAN to enable business expansion or FTE efficiency
- Tendency to postpone purchases until a business-critical need occurs

Business Requirements

In a business sense, organizations that also require their storage infrastructure to provide the following are a good fit for iSCSI:

- Reduced capital investment (key differentiator) on servers and server-related hardware (e.g., I/O adapters) relative to Fibre Channel and reduced operating expenses relative to DAS
- Lower transaction response times and greater I/O per second (IOPS) performance relative to DAS

Within these families the operational benefits of using iSCSI include:

- Gigabit Ethernet interconnect to storage via iSCSI, with no requirement for Fibre Channel host bus adapters (HBAs)
- Virtualized capacity and connectivity
- Copy, mirror, and swap of volumes (virtual disks, or VDIs)
- LUN mapping, VDisk masking, and server clustering

Xiotech has enabled the simultaneous deployment and use of iSCSI and Fibre Channel in its Magnitude 3D 3000 family of storage systems.

- Centralized management of data storage instead of the decentralized, server-by-server management that characterizes DAS
- Scalability over time without having to couple the purchase of servers to the purchase of storage capacity or performance

Xiotech and iSCSI

To match these needs for midtier organizations, Xiotech Corporation has enabled the simultaneous deployment and use of iSCSI and Fibre Channel in its Magnitude 3D® 3000 family of storage systems. iSCSI is also available in Xiotech's Magnitude® 750 entry-level storage system.

All these features map directly back to the key differentiator alluded to above (reduced capital investment). The maturity of Fibre Channel combined with iSCSI in a single solution enables Xiotech to meet the needs of first-time SAN buyers regardless of their choice of infrastructure. For owners of existing Magnitude 3D 3000 systems, the iSCSI capability combined with Fibre Channel enables even greater return on investment (ROI) through the opportunity to connect smaller, direct-attached servers into the SAN, eliminating the cost of individual server disk administration, patching, and maintenance.

Business Considerations

It is very important to note that Xiotech's solution goes beyond merely providing both Fibre Channel and iSCSI physical connectivity. Xiotech provides an innovative, complete virtualization and distributed cluster architecture that allows both Fibre Channel and iSCSI servers to use a common pool of storage, with common provisioning and management.

In contrast, the typical array forces organizations to segregate their Fibre Channel and iSCSI physical

and thus no opportunity to optimize storage allocation and capacity utilization.

Xiotech has eliminated this risk in its innovative hybrid design, allowing midtier organizations to enjoy “the best of both worlds” without enduring the added cost, complexity, or administrative burden that is present on typical storage arrays.

storage—even though both interfaces may reside in the same array. Once decided, that segregation is permanent and cannot be changed without downtime and the risk of data corruption.

If the organization correctly decides that this segregation is not viable, traditional storage design—in contrast to Xiotech—forces the purchase of two arrays, one with Fibre Channel interfaces and the other with iSCSI interfaces. There is no commonality of storage

Summary

There are both business-related and application-related indicators that point small and midsize organizations toward an iSCSI SAN, a Fibre Channel SAN, or a mixture of both. The introduction of the iSCSI storage interconnect has enabled these choices and will, over time, prove to be a business and technology benefit for small and midsize organizations. So, when trying to decide on iSCSI or Fibre Channel, the answer is Yes!

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