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iSCSI SANs Proven Enterprise-Ready in 2004

By John Joseph

This past year witnessed the growing acceptance and credibility of iSCSI, the new storage networking protocol that promised affordable storage area networks (SANs) for small and medium-size businesses (SMBs). But iSCSI surprised everyone by finding its way into the enterprise. While the year 2002 hyped iSCSI and 2003 ratified the standard and ushered in the first pure-iSCSI product offerings, 2004 was the year Fortune 500 customers gave the new SAN a resounding vote of confidence. The best of the iSCSI-based systems available in 2004 gave weary storage managers something they have needed for a long time. As a result, iSCSI storage systems joined Fibre Channel solutions for primary storage applications, spreading beyond the original SMB market into larger enterprises, serving up data to business-critical applications such as e-mail, ERP, CRM, student information systems, digital media archives and online transaction processing systems.

In 2004 innovative storage-savvy startups led the iSCSI charge, and, as the market developed, established vendors weighed in with their own iSCSI offerings. In addition, the iSCSI ecosystem matured rapidly. In just a year we've seen complete

support for all of the major operating systems, a variety of iSCSI host bus adapter (HBA) offerings, multi-pathing solutions, cluster support, SAN boot, enterprise backup integration and next-generation data services. Storage system vendors took years to evolve these capabilities with Fibre Channel. Clearly iSCSI has not only leveraged IP networking but has also built upon its storage heritage to achieve parity with its Fibre Channel cousin so quickly.

As a result, serious storage deployments were built with iSCSI this past year, and the word has spread. This points to the fact that established storage vendors don't want to talk about the huge dissatisfaction with monolithic, expensive, difficult-to-manage Fibre Channel SAN systems. It is this dissatisfaction that has driven iSCSI's success, revealing what customers want and need most: a modular, enterprise-ready storage system that will provide the reliability, performance, and features of Fibre Channel systems – but without the complexity and high cost of ownership.

Jockeying for Position

Tremendous interest in iSCSI-based storage solutions created a tide that floated all boats. Vendors with all manner of iSCSI targets with a spectrum of functionality emerged and found

someone interested in buying it. When you add to this burgeoning new market the campaign of fear, uncertainty and doubt projected onto iSCSI by the large Fibre Channel vendors, you begin to understand the confusion around iSCSI that appeared this past year. A lot of new products shipped with a wide range of capabilities – and it became clear that not all iSCSI storage systems are created equal.

The low-end became crowded with a variety of low-cost disk enclosures with iSCSI connectivity. Many vendors in an effort to capitalize on the iSCSI trend quickly packaged up 1U and 2U servers with an embedded operating system, some iSCSI software and lots of ATA disk drives. More personal computer than storage system, these systems, while offering SAN solutions at a price point never dreamed of before, lacked any semblance of enterprise functionality and reliability – critical components in networked storage.

The mid-range was much more interesting with systems approaching enterprise capacity and functionality. The most successful of the mid-range are systems that eschew the “iSCSI is for secondary storage” positioning of the large Fibre Channel vendors and offer a robust, enterprise-ready SAN solution that uses the iSCSI protocol to make

storage simpler, more scalable and more easily integrated into the enterprise.

So, two distinct iSCSI product categories have emerged: cheap SAN systems for the masses and robust alternatives to Fibre Channel SANs for the enterprise.

It is the latter category that will carry the day next year in a market hungry for standards-based, plug-and-play storage products that can fill the desperate need in the mid-range for reliable, easy-to-deploy and easy-to-manage primary storage.

Established Storage Vendors Respond

The common theme for most vendors in this space is that “iSCSI is good,” and everyone wants a ray of the limelight. Some older proprietary IP SAN solutions remain on the market, but they are not getting much air time—in fact, the vendors are retrofitting them with iSCSI and are eagerly claiming those installations as iSCSI market share, downplaying the original proprietary protocol.

Established vendors are playing a similar game. Most are eager to claim iSCSI leadership while being careful to position the new technology as decidedly inferior to their bread-and-butter Fibre Channel systems for enterprise-level primary storage. Network Appliance (NetApp)

and EMC both have enabled their current Fibre Channel systems with iSCSI connectivity, allowing them to claim inflated iSCSI market penetration—leading to the most recent IDC Worldwide Quarterly Disk Storage Systems Tracker to rank them as the top two iSCSI market leaders with 43% and 22% of the market respectively.

At the same time that these vendors eagerly claim iSCSI leadership and iSCSI strategies, they are careful to position their iSCSI devices at the low-end of the market to protect their high-end Fibre Channel business. While taking pains to establish a viable position on iSCSI (more of a placeholder for future moves) Fibre Channel vendors introduced lower cost FC systems for the entry-level and mid-range segment in an effort to win some of the mid-range market that iSCSI is claiming. But customers have voted with their dollars, and the mid-range is buying iSCSI because of the relief it offers to the overwhelming painful complexity and cost of ownership of Fibre Channel.

The benefits of storage consolidation into SANs has been clearly established; it is the way to go if it makes your life easier, which requires affordable, simple-to-use SAN technology. iSCSI fits the need because it is based on Ethernet, the standard networking protocol for all enterprises, large and small. This is why, in 2005, when the large vendors come out with their own pure-iSCSI solutions, the market will be validated, and customers will be able to buy what they

need from established storage vendors – or will they?

If large storage vendor behavior in 2004 is any indication, we are going to see the introduction of pure-iSCSI storage systems coming from these established firms designed for the low end. These new iSCSI products will be stripped of just enough enterprise features, such as scalability and data replication, to perpetuate the perception that Fibre Channel is best for the enterprise data center while iSCSI is for secondary storage only. New iSCSI-based products from the Fibre Channel vendors will be like most of the iSCSI solutions on the market today: low-cost appliances that do not meet real customer needs.

What Customers Really Want

iSCSI is succeeding because customers are asking for it—not only for secondary storage, for which certain products are specifically designed, but primarily as a robust, lower cost, simpler-to-manage alternative to Fibre Channel. Customers want enterprise-quality SAN solutions with all the enterprise features required to ensure high availability and bulletproof protection of this valuable centralized pool of storage. They want a modular system that will allow them to scale capacity in affordable increments. They want an integrated system with all the bells and whistles of high-end storage as standard features. Companies of all sizes are asking for a real SAN that provides all of the enterprise benefits of Fibre Channel SANs—without

the esoteric complexity, expensive maintenance agreements and costly upgrades. What they don't want is a crippled version of an enterprise SAN positioned for storing data that isn't important enough to warrant the investment in Fibre Channel.

Clearly there is a burning need for an alternative to Fibre Channel SANs, but iSCSI connectivity alone is not the alternative: an intelligently designed system using industry-standard components packaged into a redundant, highly reliable and intelligently managed system is the alternative. iSCSI happens to be a good connectivity choice for such a system, and the myths perpetrated about iSCSI reliability and performance have been debunked by customers themselves. Businesses of all sizes, government agencies, colleges and universities, hospitals and healthcare benefits providers are building centralized SANs on the order of 10, 20 and 30 terabytes entrusted with business-critical application data. These customers were looking for no-single-point-of-failure design, “five nines” availability (99.999% uptime), modular scalability, and enterprise storage management and protection features—and they are finding them in iSCSI systems designed for this purpose.

In 2005, with the reliability of iSCSI as a connectivity protocol proven, the industry discussion needs to shift away from the wire and come back to what really matters: the complete storage solution and how well it serves the business. As

customers realize that iSCSI can be the connectivity technology of choice for enterprise-quality systems, they will ask for more than a single-controller JBOD with an iSCSI wire. Anyone seriously considering consolidating storage in a centrally managed pool needs more than an appliance – they need an enterprise-quality system with data center management tools that traditionally have been available only in high-end storage solutions.

Innovative vendors offer these sophisticated management features now and will continue to market a modular, scalable storage grid solution aggressively to the mid-range market next year. While the large Fibre Channel vendors promote feature-poor iSCSI systems for the SMB market, certain iSCSI vendors will be installing enterprise-quality iSCSI-based SANs as an intelligent alternative to Fibre Channel systems. Customers will gravitate to the enterprise quality and capability of full-featured iSCSI solutions because that is what they need. It has been said that iSCSI is a disruptive technology, but the IP networking standard alone is not disruptive – it's the way it is built into a complete solution capable of displacing Fibre Channel that shakes the market.

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