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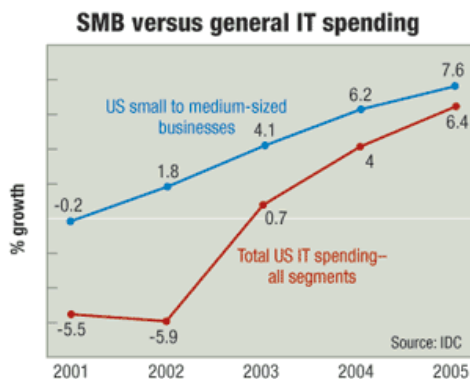
SANs move downstream to SMBs

Case studies illustrate why, and how, small to medium-sized businesses (SMBs) are adopting SANs-both Fibre Channel and iSCSI.

By Michele Hope

When it comes to investigating the benefits of a SAN for their environments, small to medium-sized businesses (SMBs) have many needs similar to those of larger enterprises, including a desire to improve data availability, data protection, disaster recovery, and asset utilization while being able to more centrally manage and provision storage resources (see "Why SANs for SMBs?").

Yet SMBs also have unique requirements. They usually have less money to spend on storage and less IT staff, as well as a need to minimize the complexity of managing networked storage. "While cost is always an issue, it is more of a factor with SMBs," says Tony Asaro, senior analyst at the Enterprise Strategy Group research and consulting firm. "And since they are resource-limited, SMBs require easy-to-use products because they often don't have the time or skills to manage complex technology."



Often given close scrutiny are SAN tasks like storage provisioning, which involves specifying new or additional logical storage "containers"-LUNs or volumes-to address exponential growth in key database applications and file-based home directories. Early targets for SAN adoption among SMBs often include e-mail applications such as Microsoft Exchange, applications built on Oracle or SQL Server databases, and larger public file shares.

With ease of use and low cost of entry being top concerns, iSCSI-based IP SAN solutions have achieved some traction with SMBs, according to analysts. "A small to midrange business could get into an entry-level iSCSI SAN for less than \$40,000, and that includes everything," says Marc Farley, author of *Storage Networking Fundamentals* and president of Building Storage Inc. "With iSCSI, you don't need to learn anything about [a new] network. I've heard of companies getting their SAN up and running in less than a day."

Arun Taneja, consulting analyst and founder of the Taneja Group consulting firm, explains the perceived advantage of iSCSI as follows: "Small to midrange companies often don't have any storage specialists, so SANs have to be manageable by IT generalists," he says. "[But] I don't think iSCSI is the main reason why vendors such as EqualLogic, **Intransa**, or LeftHand have been getting traction. They're getting traction because of what they've done on the back-end of iSCSI SANs, such as almost-automatic virtualization. They've done a good job of making the management of SANs trivial."

Taneja and other analysts see a battle heating up between iSCSI and Fibre Channel proponents for dominance in the SMB SAN market. Most analysts acknowledge that Fibre Channel SAN vendors, while having made progress with simplified configuration wizards and lower prices for components, still have some catching up to do with iSCSI SAN vendors in those areas.

Many SMBs have already successfully deployed either a Fibre Channel or iSCSI SAN, as illustrated in the following four case studies:

ViaGen chooses FC SAN

It didn't take long for Austin-based Viable Genetics (ViaGen) to start looking for a SAN. According to network administrator Raymond Isaac, the 50-person company that specializes in agricultural genomics, cloning, and reproductive services realized early on that it needed a more robust management system and storage infrastructure to support its high computational needs and massive data requirements. "One job to analyze just one gene takes well over 600MB," says Isaac.

Needing a way to centrally store complex computations and data, ViaGen upgraded its five-server Linux/Windows environment to accommodate a new Laboratory Information Management System (LIMS) backed by a Linux-based Oracle 9i database. At the same time, Isaac and his IT team upgraded the company's server environment to IBM BladeCenters for better availability and system redundancy. They also started to explore networked storage in the form of a SAN to support the LIMS environment.

Armed with a detailed matrix of SAN requirements that included reliability, good technical support, and the ability to support Linux and Oracle, ViaGen began investigating SAN solutions in late 2003 from vendors such as Dell, EMC, and Hitachi Data Systems. It wasn't long before sticker shock set in, says Isaac, with some solutions running upwards of a million dollars.

"We saw a SAN as the best way to hedge our investment in storage," says Isaac, "but when we started to look at SANs the cost blew us away. That's when we heard of Xiotech, which had a solution in the low six figures, versus seven figures for essentially the same thing from larger vendors."

Having worked with a Fibre Channel-attached Sun StorEdge disk array at a previous company, Isaac felt comfortable with Fibre Channel. He ultimately chose a Xiotech Magnitude 3G Fibre Channel SAN after seeing how well it matched up with his SAN wish list.

The LIMS system and back-end Xiotech storage, which uses McData's Fibre Channel switches, are still in test mode but are expected to go "live" in June. Today, ViaGen uses the Magnitude storage array in production for its file server. Isaac gives the Magnitude system high marks for its ease of implementation, which took only one day.

DSM opts for iSCSI SAN

Ease of scalability and low initial investment cost were two of the top SAN criteria for Mike McMillan, director of systems integration at Lakeland, FL-based DSM, which provides a variety of IT consulting, systems integration, and managed hosting services.

DSM had previous SAN experience when it built its data center on a Fibre Channel-based EMC Symmetrix array, which a particular client needed at the time. After the dot-com bomb hit, DSM decided to scale back its infrastructure, replacing a number of systems with a more cost-effective NCR Teradata Warehouse. "That left us without a SAN for a few years [, which worked fine for the company's short-term needs]," according to McMillan.

However, as SAN prices began to drop and new technologies such as iSCSI came to market, DSM began to look at how a low-cost iSCSI SAN could provide the benefits of networked storage at its client locations. For its own needs, the company also wanted to use a SAN to help replicate client data back to its main data center. When DSM began evaluating SANs, scalability was one of the key requirements. That was one of the reasons why it eventually chose a 4TB iSCSI SAN from LeftHand Networks. "One of the reasons we chose the LeftHand SAN was how flexible it is," McMillan explains. "We can add storage modules to our SAN and expand it very easily."



MIKE McMILLAN, DSM

After implementing the SAN, DSM worked closely with LeftHand's technical support team to fine-tune a few iSCSI-related Windows registry settings that were impacting SAN performance with the company's large Microsoft Exchange mailbox files.

DSM has moved five of its 50 data-center servers to the iSCSI SAN, with plans for others to follow shortly. For now, data related to the company's SQL Server databases, Microsoft Exchange, and file servers is stored on the SAN. DSM also offers storage on the iSCSI SAN to its clients when the solution matches client requirements. "It's used by us, for clients in our data center, and for replicating client data to our facility," says McMillan.

DSM uses LeftHand's snapshot functionality to take point-in-time disk images of its own data, as well as that of its customers.

MediSync goes with iSCSI

Cincinnati, OH-based MediSync offers what CTO Roger Cass refers to as "soup-to-nuts management" for primary care physician groups in the Cincinnati and Dayton areas.

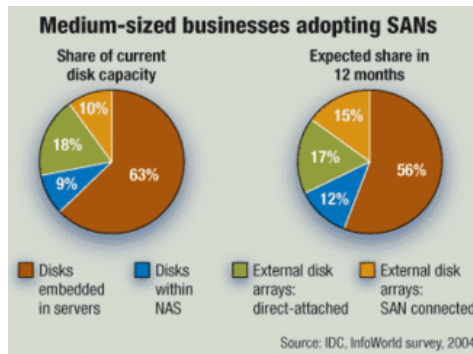


The medical management group oversees everything from marketing, accounting, payroll, practice management, and HR-related activities.

According to Cass, MediSync anticipated rapid growth and an expansion in content services it planned to offer client physicians. With that in mind, the company began to put significant investment into the company's IT infrastructure.

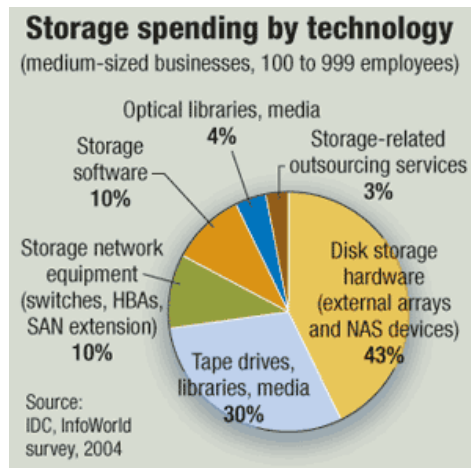
As part of that process, MediSync installed a new practice management system that ran on a high-availability Oracle RAC system and Oracle Clustered File System (OCFS). Cass knew the database would need a flexible networked storage architecture behind it to allow dynamic allocation of storage.

ROGER CASS, MediSync MediSync's prior storage architecture consisted of one HP-UX system with about 20GB of direct-attached SCSI storage and two Windows servers, each with 36GB of direct-attached storage. In three months' time, that would be transformed to a full data center, at a collocated Time Warner Telecom facility, with 20 Dell servers, multiple tape backup units, and an iSCSI-base Equal-Logic PS100E storage array with 14 160GB disk drives protected with RAID 5.



After investing somewhere between \$150,000 and \$250,000 in new Dell servers and about that much for software licensing, Cass and his team knew they couldn't justify the bill for a Dell EMC CX200-based storage network with a price tag at the time of \$150,000.

Cass began investigating alternatives and eventually decided on an iSCSI-based IP SAN from EqualLogic, which cost approximately \$50,000. The iSCSI SAN met all of MediSync's SAN criteria, including the ability to flexibly allocate storage, offload backups from the LAN, and scale the SAN quickly.

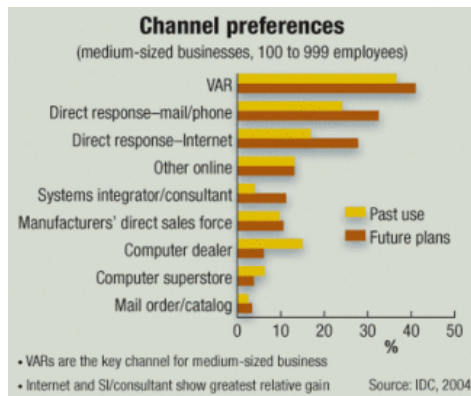


Implementation of the iSCSI SAN was easy. "I unpacked it from the box, put in a rack, plugged it in, and turned it on," says Cass. After an hour's worth of training on the system's Web-based console, he was up and running.

For college, low cost is key

Facing anticipated growth in its SQL Server database systems and the need to deploy more-robust Exchange 2003 services such as Webmail to students and approximately 500 full-time employees, Westerville, OH-based Otterbein College began to consider a SAN. The college evaluated a Dell EMC AX100 Fibre Channel-based storage array after it saw how competitive the pricing was compared to direct-attached SCSI disk drives.

With a little more than a terabyte of data associated with everything from databases to user files and Exchange, the largely Microsoft shop knew a SAN could offer better data protection and redundancy, according to Tim Pindell, a network engineer at Otterbein. "We had been using SCSI-attached disks, and we still have a lot of those, because it was cheap and it worked. We went with a SAN when it became competitive in price. The performance was pretty good, and the expandability was much better than SCSI-attached disks," says Pindell.



The college went with the Dell EMC AX100 system for a variety of reasons, including its price tag, which was less than \$15,000, according to Pindell. He also liked the idea of making just one support call if anything went wrong. Already using Dell for many of its Windows servers, the college wanted to avoid having vendors pointing fingers at each other if problems arose.

Pindell had some prior exposure to Fibre Channel via an array the college had installed on its last Exchange system. "iSCSI sounded more complicated to me than Fibre Channel, and I was also skeptical about its performance," he says.

The college ended up formatting the raw 1TB of storage that came with the AX100 in a RAID 5 configuration, which reduced its usable capacity to 800TB. It then split the array's storage in two to accommodate the Exchange and SQL servers attached to the AX100.

"We bought the system without any switches, but with four HBAs for the two servers we attached to it," says Pindell, noting he wanted to keep the initial install relatively simple until he got up to speed on Fibre Channel. "Each server has two pathways with direct-attached Fibre Channel in the back."

Debunking the perception that Fibre Channel SANs are complex, Pindell says that "it was so easy to set up, a Fibre Channel novice could do it in an afternoon."

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Why SANs for SMBs?

Q: What objectives would you achieve by implementing networked storage?

Improve data availability **67%**
 Centralize backup/recovery **59%**
 Reduce backup/recovery times **52%**
 Consolidate storage **52%**
 Improve storage utilization **52%**
 Simplify management of storage **48%**
 Support new applications **33%**
 Consolidate servers **21%**

Q: What would convince you to deploy networked storage?

The need to improve backup and recovery **63%**
 New application or business initiative **50%**
 Reaching a certain storage threshold **43%**

Source: Enterprise Strategy Group survey of 130 SMBs

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