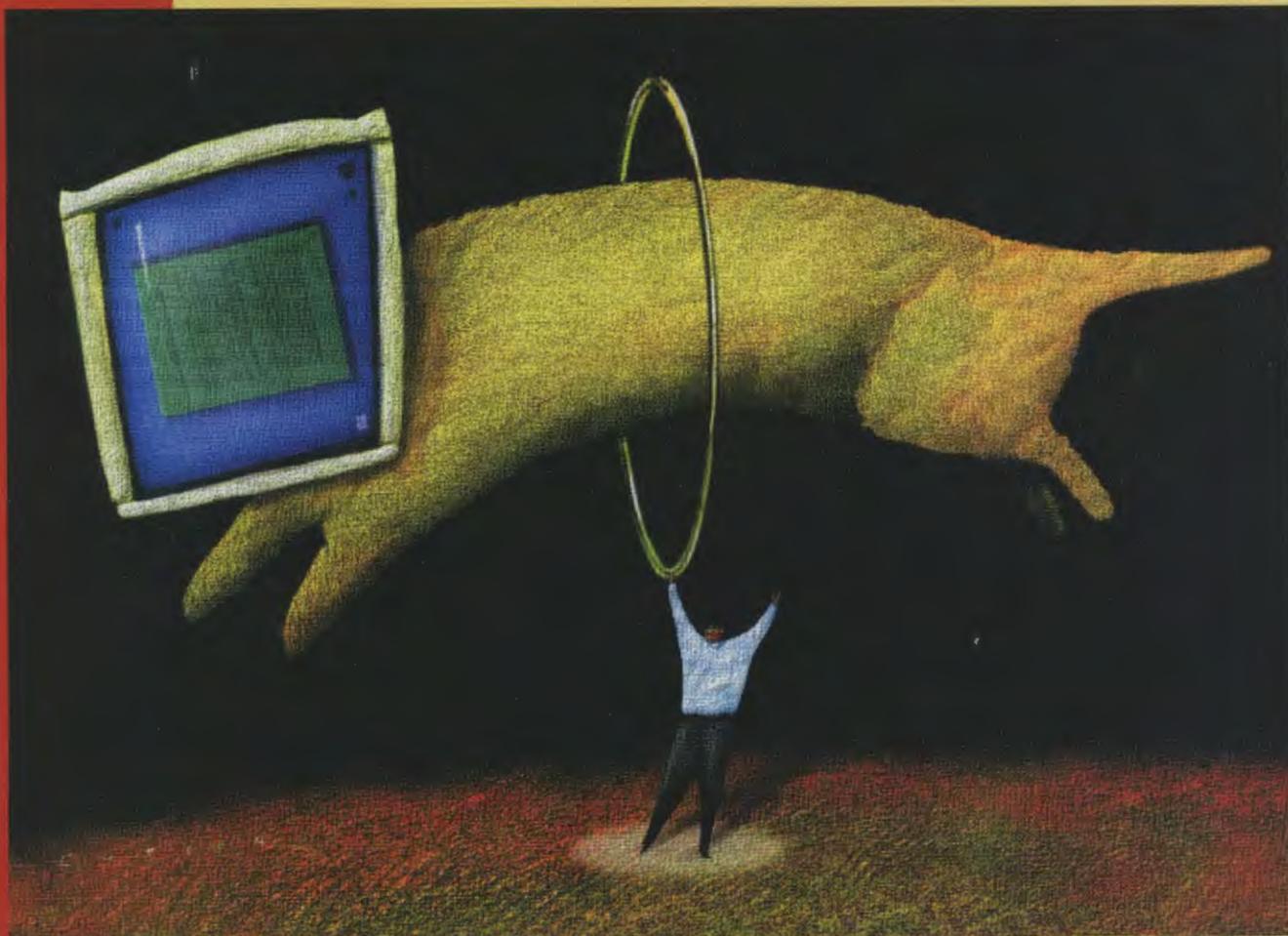


Advertising Supplement

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# ANYTIME, ANYWHERE STORAGE



DAVE CUTLER

*Enterprise storage  
meets the network*

# SANs Keep Marching Forward

**S**

torage-area networks (SANs) have already made great strides, both in their technology underpinnings and how they're being used in Corporate America. But even better things are ahead, most observers agree.

The key areas for the next year are interoperability, so that different vendors' SAN gear can work together, and management tools that will allow these heterogeneous networks to be managed through a Web interface from virtually anywhere.

In the meantime, though, more companies are discovering the benefits of having a dedicated storage network. Strategic Research Corp., Santa Barbara, Calif., says that the SAN market will increase tenfold over five years, from \$2.7 billion in 1998 to \$27.2 billion in 2003. And emf Associates Inc., Half Moon Bay, Calif., predicts that shipments of SAN equipment will grow by over 50 percent during the next few years, from \$5.5 billion in 1999 to \$32 billion in 2003.

**Better interoperability and more complete management tools expected in the next year.**

At the same time, the need for more data is exploding. The Meta Group, Stamford, Conn., says that the typical data warehouse grew from an average of 100 gigabytes or less, which was the norm in 1996, to an average of between 100 gigabytes and 1 terabyte in size by 1999. Companies need the data to predict the next Big Thing for their customers, or to monitor existing trends and buying habits to make sure they're never out of stock. Corporate America, it seems, just cannot have too much data.

When you add multimedia to the mix—such as the graphics, voice, and video so common on the Internet today—the need for storage can quadruple over what's required for text alone.

## CONSOLIDATE, MANAGE DATA

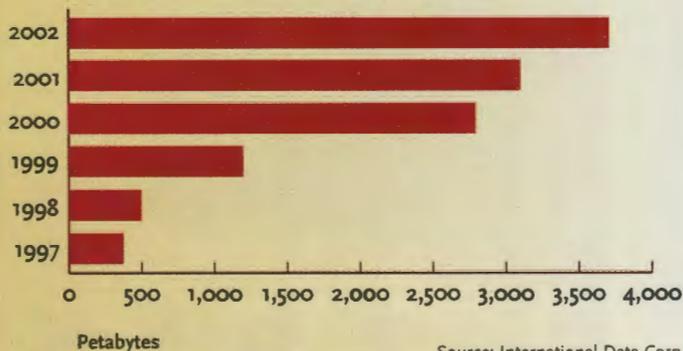
This is where SANs come in, to help consolidate and manage data. SANs offload the storage devices from the main corporate network to a specialized back-end network. The SAN is essentially a dedicated link between multiple servers and storage devices that have been moved into their own mini-network.

Most SANs consist of servers, storage devices that could include RAID or even SCSI-based boxes, networking devices such as hubs and switches, and software to manage it all. All the devices are then connected with a high-performance network of some sort.

In most large shops, the network of choice is Fibre

## Peta-ful!

Dramatic growth in storage continues unabated, with one petabyte equalling 1,000 terabytes



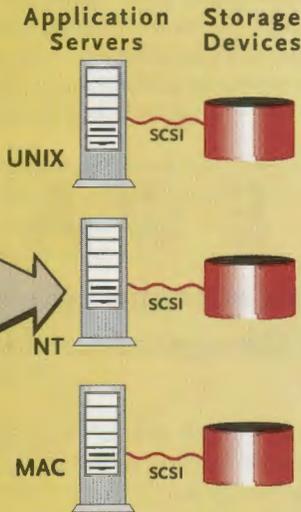
# STORAGE EVOLUTION

'80s

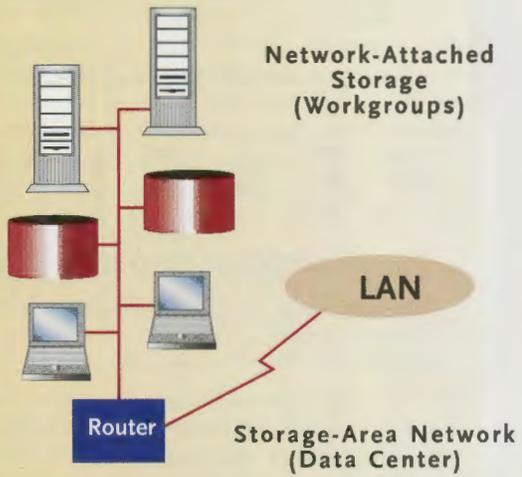
'90s

2000 →

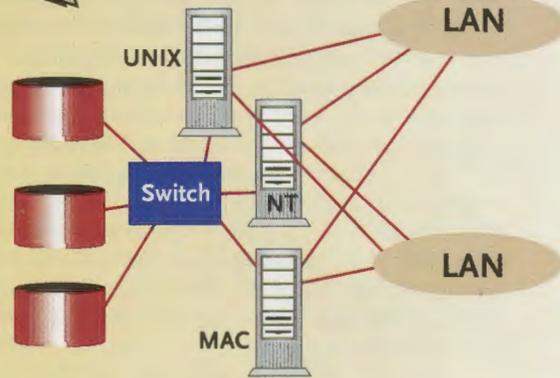
Single-System Architecture



1.



2.



**Time and storage technology—neither one stands still.**

Basically, enterprise strategies for storing gigantic amounts of data have developed toward networked approaches to satisfy growing demands for scalable and universally available data access solutions. These demands include:

- Near 100% data availability both to internal and, in e-commerce settings, external users as well.
- Universal access across multiple client and server operating systems.
- The ability to add storage capacity without major system reconfiguration and definitely without system downtime.

Channel, a high-bandwidth transmission technology that supports speeds up to 1 gigabit/second, with some 2 gigabit/second products expected soon. The new 2 gigabyte/second Fibre Channel standard is already being supported by vendors including Seagate Technology Inc., Storage Area Networks Inc., and IBM, all of which expect to have products by year-end.

Fibre Channel, a standard being shepherded by the Fibre Channel Industry Association ([www.fibrechannel.org](http://www.fibrechannel.org)), also allows storage devices to be scattered among an area up to 10 kilometers (6.2 miles). That distance can be tripled by the use of extenders.

SANs allow easier and more cost-efficient data management, and the time to access data is decreased. Data can be consolidated either logically or physically, and then

managed as one central pool. Also, because the SAN offloads data traffic from the main network, it's fairly common to see boosts in the performance of most of the major corporate applications as well. SANs also provide high scalability and better availability of data.

DashCenter Inc., an application service provider in Silver Springs, Md., is a case in point. The company is using a 1.5-terabyte Magnitude SAN system from Xiotech Corp., Eden Prairie, Minn. "It's an order of magnitude over SCSI," in terms of storage capacity and how quickly the data can be accessed, says Christopher Hurlbutt, vice president of sales and marketing. "We have 99.99 percent availability right out of the box, and we can scale up to 5 terabytes."

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### MATURING TECHNOLOGY

Still, even with all the benefits, the current generation of SANs do have some gaps. The biggest problem to date is that there isn't any foolproof way to ensure that different vendors' hubs, switches, storage devices, and the like can all be knitted together into a seamless network. One problem with mixing gear is the tendency of different operating systems to overwrite the other's data, thinking the space really belongs to them.

"SANs are still new and maturing," says Dave Hill, research director at the Aberdeen Group in Boston. "A lot

of the interoperability problems will go away as the technology matures." Right now most users are relying on a single-sourced SAN solution so that they avoid problems with getting different brands of gear to work well together, Hill says.

Robert Gray, an analyst at International Data Corp., Framingham, Mass., agrees that interoperability is just a matter of time. "Interoperability will be expanded. Everyone's in execution mode and vendors are continuing to announce partnerships to make this happen."

The Storage Networking Industry Association (SNIA,

## REAPING REWARDS

Computer.com and Tufans Technology are dot-coms benefiting from a partnership with storage utility StorageNetworks Inc.

**N**either Computer.com nor Tufans Technology could exist without the Internet, and neither could exist easily without StorageNetworks.

Computer.com, based in Waltham, Mass., is a portal site for novice computer users. Tufans Technology Corp., Seattle, offers several different 'Net-based products, including an e-mail aggregator to consolidate many different e-mail accounts into one, and a Web-based file-storage service.

StorageNetworks Inc., based in Waltham, Mass., is the foremost provider of outsourced storage services for organizations large and small. The company was founded on the belief that customers shouldn't have to pay for storage they don't need. Thus, all StorageNetworks' services are priced per gigabyte of storage that the customer actually uses. Computer.com and Tufans are two of StorageNetworks' newest dot-com customers.

### COMING THROUGH FOR COMPUTER.COM

"StorageNetworks handles all our online storage," says Tracey Collins, public relations director at Computer.com. "Everything you see on our Web site—they manage for us." The two companies have been partners since January, Collins says.

Computer.com helps newbies shop for their PCs, and learn about and use their computers, as well as provides help with support and other issues. The site is also designed for expert users who need help with technical support, online backup, and other services. The site's tag line is, "For the novice in all of us." A major redesign of the site is about to go live very soon.

StorageNetworks is a key part of the services that Computer.com offers. "There are a lot of vendors out there," Collins explains. "We chose StorageNetworks

because we felt they were the only ones on the market able to deliver the security, reliability, scalability, and speed we need for our services."

Also, Collins says, "We had a very aggressive target date to get our site up and running" when it first launched in January 2000. "We had a 60-day window. StorageNetworks was able to work with us to get us up and running in that time frame. There were very few companies we felt could really handle it. They really came through for us."

### PEACE OF MIND FOR TUFANS

It's a similar story at Tufans. One of the company's key products is called Zdisk, which is a service that allows customers to share, transfer, and browse their files from any Web browser. The first 10 megabytes of storage space are free; charges apply for larger storage requirements. Fax and e-mail are included services.

"Because I'm still a small company, I don't have the resources to manage the back-end storage systems my customers require," says Matthew Feldman, president and CEO of Tufans. "I needed to make sure my back end is safe and reliable—and StorageNetworks is that back end."

Tufans was StorageNetworks' first Seattle-based customer, and that went off perfectly, Feldman explains.

The decision has "given me a lot of peace of mind—it's a big section of my service I don't need to manage on my own," Feldman says. The relationship with StorageNetworks also gives Tufans the ability to have "unlimited growth," Feldman adds. "If I get another 25,000 users, I can pick up the phone and add another terabyte" to the farm of data already managed by StorageNetworks.

"They've been very responsive to my needs," Feldman says.

on the Web at [www.snia.org](http://www.snia.org)) is working to address this issue by building a \$3.5 million interoperability center in Colorado Springs, in a building donated by Compaq Computer. Expected to be operational within eight months, the idea is to design testing suites against which SAN vendors can put their products through their paces.

"The goal is that IT customers can have reasonable assurance that products that meet those test suites will interoperate," says Robin Glasgow, executive director of the SNIA. Still, the SNIA role will not be to provide a "Good Housekeeping" type "seal of approval," Glasgow says.

Additionally, IBM, Dell, Hewlett-Packard, and Compaq, among others, have recently purchased companies or technology to help their storage and server products play better with others in a SAN environment.

#### INITIATIVES UNDER WAY

On the SAN management front, there are several initiatives under way. Among them:

- In August 1999, Legato Systems Inc. announced a group called the Celestra Consortium. The idea is to promote open "data movement" among different vendors so that SAN management becomes easier. Among the 30-plus vendors signed up are Compaq, Computer Associates, Amdahl, ATL, MTI, and others.
- The FibreAlliance, led by storage vendor EMC, was formed with SAN management in mind. The group's goal is to develop a specification describing a framework within which multiple vendors can develop integrated management environments for enterprise SAN customers. Hewlett-Packard, Veritas, and Sequent Computer Systems are among the backers here.
- Sun Microsystems Inc. launched Jiro in December 1998. Jiro, formerly called Project StoreX, is a Java-based set of application development interfaces for networked storage management. It defines basic management services such as events, logging, scheduling, transactions, and security, as well as dynamic management services for automatic distribution, update, and recall of management functions. A developer's version of Jiro is now available for free from Sun's site at: [www.jiro.com/downloads/](http://www.jiro.com/downloads/).

One large issue with implementing SANs in an existing IT infrastructure is connecting SCSI-based storage hardware to Fibre Channel and the other new SAN gear. One way to do this is with routers or bridge controllers that connect SCSI to Fibre Channel. Also, specialized controllers allow users to mix SAN and non-SAN servers or hosts on the same network.

Despite any existing shortcomings, SANs are saving

## Quantum's Snap Server

*Network-attached storage is ideal for workgroups*

Storage-area networks (SANs) are great for enterprise-wide needs, but if you're dealing with a smaller group they may not be the most cost-effective way to go. For sharing data at the workgroup or division level, you may want to investigate a relatively new technology: network-attached storage (NAS).

Where SANs separate out all the storage devices onto their own network, NAS puts the storage device right where the user is. NAS is much less expensive to implement and easier to set up. "I could send my kids to school in a Ferrari, but it's probably overkill," says Erich Flynn, director of worldwide marketing at the Snap division of Quantum Corp., Milpitas, Calif. The same holds true for using a SAN in a department or small group, he maintains.

Quantum's Snap Server family is intended for just such use. The modular family is priced at \$499 for 10 gigabytes of storage, \$1,799 for 40 gigabytes, and \$3,000 for a RAID 5 server with 120 gigabytes of storage. You can choose just the capacity that you need.

Snap Servers are compatible with virtually every operating system on the planet, and they can be set up in less than 15 minutes. Organizations from the Grant-A-Wish Foundation, Q-Tech Corp., and Ilmor Engineering have chosen Quantum's Snap Server to help them manage their data.

graces to organizations grappling with large numbers of distributed servers, says Roger Cox, chief analyst at Dataquest, San Jose, Calif. And it's for this reason that Dataquest predicts that SANs will go from being around 15 percent of the external storage market in 1999 to around 80 percent of the market by the end of 2002. Most of what is direct-attached storage today will transition to SANs by then, Cox says.

"What's going to make SANs pervasive," Cox says, is Corporate America's move to consolidate storage. The way it works now, he explains, is if a company has 40 servers, they have to manage each of those servers individually, at least from a data perspective. But users are moving to consolidate storage into one central location, and SANs are the mechanism of choice for doing that. ■

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