

Assessing SAN backup options

We are looking for options to back up our SAN. We have a XIOTech disk array, eight servers, a Brocade switch, an SDLT library, and Veritas software. Are there options we should consider? iSCSI?

—Rodney Nickerson
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Believe it or not, the kind of storage area network (SAN) you have is more or less irrelevant to the design of your backup system. Backup systems and primary disk storage systems are really separate and distinct systems that have little to do with one another. They share a common data transport channel (the SAN), much the same way as a print server and an e-mail server sit on the same data network, but they are otherwise independent of each other.

You do not “back up a SAN,” but you *do* back up the applications running on your hosts. Whether your storage is direct attached, SAN, or network-attached storage (NAS) is largely irrelevant. What *is* relevant is the type of applications you are backing up, the amount of capacity in use today and anticipated for the future, and how much your data changes daily.

The vast majority of modern backup systems are designed as LAN/SAN hybrids. The majority of hosts back up the old-fashioned way, over the LAN to one or more backup servers. Meanwhile, your backup servers and select hosts communicate directly with the tape devices over the SAN. The industry likes to call the SAN backup connections “LAN-free” backup, but in reality much of the data

still flows over the LAN.

In LAN-free backup the backup system metadata (i.e., logs, indexes, job descriptions, etc.) travel over the LAN to a centralized master backup server. Alternatively, each backup server connected to the SAN can store its own metadata. Centralized metadata is a key feature of enterprise-class backup software, but since your environment is relatively small, you might be fine with server-class software.

The big question is which applications you should back up over the SAN and which you should leave to the LAN. Because you already have Fibre Channel connections in place, you may think it makes most sense to back up everything over the SAN, but that would be a mistake. SAN backup connections are complicated to manage, and software licenses can be costly. LAN backup, in comparison, is flexible and comparatively inexpensive. And if you install a dedicated network backbone for your servers, you won't have to worry about LAN back-

up traffic impacting your network bandwidth. (Of course, there are still some performance constraints with backing up over a LAN, and that is why the option of a SAN connection is often such a great alternative.)

So, if you have hosts with large amounts of storage (especially if the data turns over often), are running applications that are CPU-intensive (SAN backup is based on the SCSI protocol, which takes much less of toll on the CPU than TCP/IP), or you have aggressive recovery-time objectives, you should consider backing up those particular hosts over the SAN instead of the LAN.

The best software products allow you to add modules over time, so that as your needs change, you can incrementally grow your backup system. For instance, you might decide to manage the load of your LAN backup by connecting two network backup servers to a tape library in a SAN. Then as your needs change (e.g., your database capacity increases), you can add software modules that allow you to con-



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nect selected hosts to the SAN.

It is even possible to start out without any SAN connections at all. You can simply connect to a SCSI tape library and move the library to the SAN later by installing a Fibre Channel-to-SCSI bridging device.

The secret to a successful SAN-enabled backup system is in the software, and the challenge is balancing cost, performance, and complexity. You can throw a lot of money into SAN backup connections, but you may end up with an environment that

is really difficult to manage and doesn't meet your performance expectations. Or, you could go the cheap route and purchase "server-class" backup software, but then you might not get the performance and scalability you need. In short, you cannot *buy* your way out of backup problems: You have to *design* your way out.

And what about cutting-edge backup products? Well, I tend to be very conservative about backup technology, and even though I am excited by all of the innovation in the industry, I am cautious about

abandoning tried-and-true methods. Some of the new solutions are great as point solutions for particular applications (e.g., there are some great Microsoft Exchange backup systems and bare-metal restore solutions), but, for your comprehensive backup needs, I'd stick to the basics and infuse SAN technology when and where you need a little boost. □

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