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The Digital Revolution Drives Shifting Network Storage Methods

Network data storage and retrieval strategies evolve at Lockheed Martin in a pitched battle to keep pace with accelerating data archiving needs

Today's digital tsunami of critical business information is forcing the guardians of corporate archives to rethink how they structure their data storage facilities. Responsible for the day-to-day backup and long-term disaster recovery of terabytes of knowledge vital to their survival, their mission is two-fold: increase total data storage capacity to accommodate ever-larger files and applications, while also increasing system reliability and streamlining access in parallel.

The cost-effective preservation, safety, and accessibility to critical backup files and data archives requires a high degree of scalability in the hardware. Optical jukeboxes are a budget buster. The practical alternative is the latest generation of tape library systems, which offer a great deal of flexibility and scalability with a very reasonable pricetag.

Hundreds of gigabytes are backed up daily on four separate networks at Lockheed Martin's Goodyear, Arizona-based Management Data Systems/Reconnaissance Systems (M&DS/RS) division. As M&DS/RS produces both unclassified commercial and classified defense radar and imaging technology, each of their individual UNIX and Windows NT networks are divided and backed up separately.

"Each network maintains a separate data backup facility and I support the Unix network," says Engineer Generalist Andy Olson, responsible for backing up nearly a terabyte of data on the Unix network alone. According to Olson, about four years ago M&DS/RS began the process of bringing all its network servers under one roof, and also began migrating its data back-up system from individual 8mm Exabyte tape units attached to each server to larger "stacker" tape systems.

"By late 1997, I was using four Exabyte 10H single drive stackers and one two-drive stacker. I literally went through fifty of the 8mm tapes it used every week, and all ten tapes in each stacker every weekend," Olson says. "Quite often I had to come in and sort out problems on Saturday and Sunday. It was pretty hectic."

According to Olson, in the M&DS/RS distributed computing model, applications and data are stored on a network server, to facilitate secure backups and recovery. However, this approach quickly began hogging CPU horsepower, which left very little processor time for serving files. Accordingly, the M&DS/RS data storage philosophy has also been evolving during the same period.

Approximately three years ago, their classified Unix network began migrating toward Network Attached Storage (NAS), a move Olson says was originally made to eliminate the server bottlenecks. He describes a mid-1997 server upgrade from 33 GB to 150 GB as the "the last straw." Realizing a significant increase in capacity was needed, Lockheed Martin acquired a new backup engine and a Qualstar 4420 tape library.

According to Network Administrator Chuck Gooding, M&DS/RS ongoing association with the Qualstar hardware is a logical extension of their early success. "We started out with one of their libraries about four years ago, to supplement the old Exabyte units. They consistently posted good reviews in the trade publications, based on price and performance, so we acquired one. Since then, when we've needed to add capacity and replace older, slower tape libraries, we've gone back."

At present, M&DS/RS has three TLS-4000 Series auto-changing Qualstar tape library systems with barcode readers and I/O ports, and one TLS-6000 model, working alongside a single StorageTek tape unit, backing up all four networks. The three Qualstar TLS-4000 libraries are equipped with Sony AIT drives, while the TLS-6000 uses a Quantum DLT-7000 drive.

Olson adds that the installation of the Qualstar units was almost too easy. "The hardware is totally plug and play. You have two SCSI IDs, one for the drive, and one for the library. We literally configured the software, turned it on, and away it went. Mechanically, I have yet to see them have a problem."

Since installing the libraries, Olson says his back-up routine has been greatly simplified. "Now I only change tapes every couple of weeks, which has made my life much easier. In fact, I don't have to worry about it unless I'm running low on tapes. Theoretically, it can go several weeks without having to be touched. Labeling is easier too, with the barcodes. The time and money we've saved is incalculable."

Gooding adds that the organization is currently migrating toward the emerging Storage Area Network paradigm, to best utilize their current back-up capacity of over 1.7 terabytes. "The mountain of data we back up daily is mind boggling, and as you might imagine, we're very careful about ensuring that our data is safe. You can always get another device, but you can't always get your data back."

For more information about Qualstar tape libraries and other products, write: 6709 Independence Ave., Canoga Park, CA 91303; Phone: (800) 468-0680; E-mail: sales@qualstar.com; or visit them on the Web at http://www.qualstar.com.

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