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University of New Mexico Medical School Keeps Its Storage Healthy

All men may be created equal, but all data is not. True, all those microscopic magnetic fields residing on the drives of an enterprise's storage servers look pretty identical to the read/write heads, but the value humans assign to them varies greatly. Some of them are useless, while others contain vital operational data. Learning to treat these bits differently can result in considerable cost savings, while improving user's speed of access.

This is where Information Lifecycle Management (ILM) software comes into play. ILM analyzes what is stored on the servers and allocates it to the appropriate storage device based on the organization's needs and policies. This includes, for example, how frequently a particular files is accessed, as well as requirements laid out in legislation such as the Health Insurance Portability and Accountability Act (HIPAA). For example, the most-accessed data can reside on high-speed SCSI drives, while lower priority files go to slower, but cheaper, ATA drives. Rarely accessed files can shift to optical or tape storage. Three years ago, the University of New Mexico's Health Sciences Center (HSC) in Albuquerque, NM bought such software, CaminoSoft Corporation's (Westlake Village, CA) Managed Server HSM, to better manage its growing storage needs.

“As a result, we’ve been able to offer our users nearly unlimited storage for their business, research and educational files,” says Barney Metzner, HSC’s manager of IT systems for the Health Sciences Library and Infomatics Center. “And we’ve been able to do this without spending a lot of time and money adding additional capacity to our primary servers.”

Data Euthanasia

The HSC is composed of a mix of educational, research and treatment facilities. Its three schools - the School of Medicine, College of Nursing and College of Pharmacy - enroll a total of 1500 students, not counting those serving their residencies. HSC also has nine hospitals and clinics, including the 384-bed University Hospital which ranks among the top teaching hospitals in the country.

Providing IT services for five thousand HSC students, staff and administrators comes under the duties of the Health Sciences Library and Informatics Center (HSLIC). It is a traditional library, but also hosts the general computing services including e-mail and web services. The HSLIC primarily uses Novell NetWare for its file and print servers and Microsoft Windows for its web servers. Although it has evaluated switching to a Storage Area Network (SAN) or Network Attached Storage (NAS) its 8TB of RAID 5 storage is all locally attached.

“We continue to find local storage is very cost effective, particularly when used in combination with secondary storage,” says Metzner. “We’ve been able to amass a considerable amount of data without investing in a Storage Area Network.”

But maintaining that structure requires a constant watch over all those local disks to make sure they don’t become overfilled. Since the HSLIC provides network storage to all users, some back up their local hard drives to the network. Researchers generate huge quantities of data - statistical files, PowerPoints, medical images, numerous databases and other large files. Much of

this research data has a relatively short life span, as it is constantly being replaced by newer results.

To keep the storage growth under control, Metzner uses Managed Server HSM, which automatically migrates files to secondary and tertiary storage based on policies set by the storage administrator. This wasn't the first such product that Metzner considered, however. About five years ago, a hierarchical storage management package from Computer Associates, Inc. (Islandia, NY) first piqued his interest in the area. Although it looked useful, it was too expensive. So, Metzner kept looking and finally settled on Managed Server HSM. As with other hierarchical storage management products, when migrating a file to secondary storage, it replaces the file on the primary storage device with what is called a "stub file," a small file which contains pointers the new location of that file. This is completely invisible to the users. To them, it appears that the file is in its original location.

Metzner reports that CaminoSoft came to the university to install the software, but that his crew spent a good amount of time establishing the three tier structure. He sets individual policies for each volume based on what it holds. In most cases, however, files which haven't been modified in the last nine months are sent to secondary storage.

It wound up dropping the third tier, however. The first problem was that, when starting to use the software three years ago, it had limited support for different optical or tape devices. Later versions of Managed Server addressed this problem, but the software contains a new feature that Metzner says they will use rather than going to an third tier of optical devices. This is the ability to establish deletion policies. Rather than moving old files to tertiary storage, he will tell users to save them onto a CD or DVD if they want to keep them. These files will then be deleted from the secondary storage, though they will be available from backup tapes if needed.

“A lot of it is research or student data, not core business data,” he explains. “Keeping it indefinitely is rather difficult, it is easier to put a bit of responsibility on the users.”

In addition to not having to purchase the additional storage devices, this method has the advantage of freeing up space in the file directory, which improves performance.

He did run into some problems when he switched from traditional NetWare volumes to Novell Storage Server (NSS). At that point, CaminoSoft worked with him to convert all the stub files to the new system. Then, the backup software, Computer Associate’s ARCServe, would move some of the files from secondary storage back to the primary. For a while they had to skip backing up the migrated files, then CaminoSoft developed a utility that would backup just the stub files. Computer Associates fixed this problem with the latest version of ARCServe so everything can be backed up at one time.

Staying Lean

While most of the migration occurs without administrator intervention, there are still cases where Metzner has to step in. Occasionally, for example a primary storage volume hits eighty to ninety percent utilization without containing files older than nine months. In such a case he will use Managed Server to bring it down to fifty or sixty percent. He also used it recently when moving files to a new primary storage device during a hardware upgrade.

“It would have been painful to have to move all 250GB,” he says. “Instead I used a more aggressive migration rule to drop it down to 100GB of primary storage so the conversion to the new hardware went much faster.”

By continuing to keep the primary storage cleaned up, HSLIC has been able to manage its growing storage needs without adding additional, expensive, high-performance drives. Instead, it just adds more nearline storage which can be done without interrupting user access to the active

data files. When it does upgrade primary storage devices now, it does so to boost performance rather than add capacity. While he doesn't have any hard figures on how much he has saved by using ILM, he does say that his spends about one-tenth as much for storage as another area within HSC which uses a SAN with similar capacity to his storage servers.

"The biggest benefit of using CaminoSoft ILM is that we have been able to offer our users unlimited or nearly unlimited storage for their business, research and education files," says Metzner. "And we can do it without spending a lot of time and money adding additional capacity to our primary servers."

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