Case Study

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QUICK FACTS

Industry/Solutions:
- Education

Platform/File System:
- Predominantly Microsoft Windows Server 2003 and Red Hat Enterprise Linux, with some Windows 2000, Windows 2008, Mac and Solaris.

Applications:
- Microsoft SQL Server
- Oracle Enterprise Database
- Microsoft Office Sharepoint Server
- SunGard Banner Unified Digital Campus
- Cognos

Partner Hardware:
- Six EMC CLARiiON SANs and one EMC Symmetrix SAN
- Dell servers, storage, laptops, desktops, printers and projectors
- Cisco, Xtreme and F5 network equipment

Challenges:
- As server and storage environment mushroomed, legacy decentralized backup and recovery approach needed to be replaced with a consolidated infrastructure.
- Installation of SunGard Banner ERP system caused a spike in storage; required 10 times more storage than the legacy system. Centralized storage exceeds 425 TBs.
- Escalating data volume prompted decision to add deduplication to reduce footprint of long-term tape retention.
- Desire to reclaim valuable primary storage by automatically moving stale or rarely used data to low-cost storage.

Solution:
- CommVault Simpana software with Backup & Recovery, Deduplication and Archiving modules.

Benefits:
- CommVault's singular architecture lowered the cost and complexity of adding backup and recovery, deduplication and archiving software modules.
- Simpana embedded deduplication cost up to 70 percent less than competing hardware solutions and has enabled Texas Tech to reduce backup media and storage costs by up to 40 percent.
- Addition of Simpana Archive software produces additional savings by redistributing 5 TB imaging files across tiered storage.
- Simpana Replication software will be added to elevate disaster preparedness as Texas Tech phases out reliance on tape-based data retention.

Texas Tech University System Datacenter Enrolls Simpana 8 Software With Embedded Deduplication & Archiving To Advance Disaster Recovery

Customer Profile

The Texas Tech University System, consisting of Texas Tech University, the Texas Tech University Health Sciences Center and Angelo State University, strives to provide its component institutions with the necessary resources to meet today's global challenges. Texas Tech University (TTU) prides itself on being a major comprehensive research university that retains the size of a smaller liberal arts institution. TTU hosts 30,000 students who are enrolled in 150 undergraduate programs across 11 academic colleges, a graduate school that offers more than 100 master's degrees and over 50 doctoral programs and a school of law. The Texas Tech University Health Sciences Center has grown into a six-school, multi-campus institution that services more than 2 million people dispersed across 131,000 square miles in the western half of the state of Texas. Through Angelo State University, more than 6,000 additional students are offered 40 undergraduate programs and 23 graduate programs along with a doctorate and an associate's degree program.

The Lubbock, Tex.-based educational institution has gained an impressive reputation for its extensive research focus in the areas of wind engineering, medical research and high-performance computing. In fact, in November of 2008, Texas Tech University's High Performance Computing Center was ranked number 288 of the top 500 Supercomputing sites in the world. This achievement advances TTU's quest to attain Tier One research university status.

As its name implies, Texas Tech places a big priority on technology. To that end, the institutions have completed a massive migration from a legacy mainframe platform to SunGard's Banner Unified Digital Campus ERP. By switching to the Oracle-based suite of integrated student, financial aid, finance and human resources, as well as an extensive list of 3rd party applications, Texas Tech has fused administrative and academic functions while providing students and 9,500 faculty and staff members with secure, around-the-clock access to all the information they need.

According to Dustin Jordan, Assistant Managing Director of Technology Operations & Systems Management (TOSM) for the Texas Tech University System, his department makes every effort to assist both administration and academics with the very latest technologies. His organization specializes in providing shared services, including file-shares, centralized storage, database services, data management and server hosting for students, faculty and staff. "We're always challenged to keep pace with ever-evolving technologies without going over budget. This can be really challenging as the university's needs have grown at a faster rate compared to the reductions in technology costs," he explains. "We have to be innovative in what we deploy and when. Our decision to implement CommVault® Simpana® 8 with global, embedded deduplication is a great example of making a smart business decision to implement a technology platform that can both meet our immediate needs, but also scale to accommodate rapid growth."

Data Management Environment

Texas Tech's department of Technology Operations and Systems Management (TOSM) consists of a staff of 28 that provides 24x7 support for nearly 600 servers, 80 percent of which are predominantly Windows Server 2003 as well as more than 100 Linux servers. The department has also been very aggressive in virtualization, managing approximately 160 virtual servers using VMware ESX. Additionally, the team oversees hundreds of SQL and Oracle databases, Microsoft SharePoint servers, SunGard's Banner ERP and its dozens of supporting applications along with various web-related services for Texas Tech University and Texas Tech University Health Sciences Center.

With more than 425 TBs of centralized storage, TOSM hosts six EMC CLARiiON SANs to accommodate storage that has doubled almost every year for the last decade. "Our heavy emphasis on server consolidation and unified services for students, faculty and staff members drives a lot of storage growth. Research also drives a tremendous amount of storage growth and we've seen the storage needs in that area increase significantly over the last couple of years." notes Jordan. "We've gained tremendous functionality with the new ERP system, but that additional functionality has required more than 10 times the amount of storage as the legacy system. Our storage growth continues to explode and I don't see that trend changing anywhere in the near future."

Building on Better Backups

About six years ago, Texas Tech sized up its legacy backup platforms, which encompassed both Tivoli Storage Manager (TSM) and Symantec Veritas BackupExec. As the university's servers and storage environment mushroomed, it became clear that the current decentralized approach needed to be replaced with a consolidated backup infrastructure at the main data center.

While contemplating the best approach for centralizing backups, TSM changed its pricing from a per-server to a costly per-processor model. "Almost overnight, our current backup solutions became too costly and not robust enough to meet the needs of our customers," recalls Jordan. "So, we looked at Symantec Veritas NetBackup, but it also was more than we could afford. Then Dell told us about CommVault's backup and recovery software solution—and we were impressed with the technology and number of features offered at a much more affordable price."

CommVault has a great partnership with Dell and Texas Tech enjoys a strong relationship with the computing giant as well, so the recommendation from TTU's primary hardware vendor carried a lot of weight. Research house Gartner also reported favorably on CommVault, which reinforced the company's market leadership. "CommVault got the highest marks for innovation when we sized up all the players in the market," says Jordan. "In particular, we liked its singular approach to data management, which employs different modules all built upon the same unified code base and common platform."

Additionally, CommVault's short- and long-term economics were most favorable compared to the other industry-leading backup solutions available. "We wanted an affordable backup solution that would deliver us value over time and could scale with our enterprise," adds Jordan. "CommVault has a forward-looking vision and we wanted to work with a company that had built their solution from scratch using modern technologies as opposed to a solution based on retrofitting legacy code."

After moving forward with CommVault Simpana software, Texas Tech steadily increased its backup and recovery environment to keep pace with ongoing expansion. "CommVault's software is written so efficiently, we could completely saturate a switched Gigabit Ethernet network with just one CommVault media agent," recalls Randy Padgett, backup administrator for TOSM.

As the data demands increased, the team maintained its backup to tape process, relying heavily on CommVault software to automate and streamline backup and recovery operations. Then, Texas Tech's decision to elevate its disaster preparedness by deploying an alternate disaster recovery site presented new challenges and yet another opportunity to leverage its investment in Simpana software.

Seeking Scalable Deduplication

Ongoing storage expansion soon took a toll on the large Quantum ADIC Scalar i2000 tape library; Texas Tech started to outgrow it much sooner than anticipated. As a result, the team began comparing the costs of adding more tape drives and slots to the library versus finding a way to reduce the footprint of long-term tape vaulting. Deduplication immediately surfaced as the best technology to help reduce Texas Tech's reliance on tape, so the team set out to find the proper deduplication solution to meet its budget and scalability requirements.

Initially, they looked at hardware-based deduplication appliances from multiple vendors. In considering this new technology, the No. 1 concern was cost--both in capital expenditures and ongoing

operational expenses. Another major area of consideration was scalability; Texas Tech knew growth potential hadn't reached its peak, so they needed an expandable solution that wouldn't lock them into just one storage vendor's roadmap.

TOSM felt the hardware appliance approach was too costly, since keeping pace over time with ever-increasing storage growth would require installing, migrating and managing multiple appliances. Moreover, the team didn't like that they'd have to re-hydrate the deduplicated data to tape for long-term data retention, which would require additional time and effort. Ultimately, Texas Tech felt it would be difficult to choose an appliance-based platform because it would cost too much in the long run.

In the evaluation process, Texas Tech learned that CommVault was readying its Simpana 8 software, which would offer a full roster of advancements, including embedded global block-based deduplication. The team met with CommVault and was impressed that CommVault's software module would integrate seamlessly with the university's data protection foundation. "We especially like how Simpana software's dedupe capabilities extended block-level deduplication across all backup and archive copies, and spanned both disk- and tape-based storage tiers," Jordan adds. Additionally, they determined that adding software-based deduplication meant use of low-cost storage and commodity hardware to dramatically lower overall costs.

"CommVault's deduplication feature was much more attractive to us because of the storage infrastructure and associated costs. We didn't want to be tied down to one vendor," explains Jordan. "Simpana software provides more flexibility in deploying across multiple systems in multiple places across the network using multiple storage vendors. We liked how Simpana software automatically preserves the compressed state of the deduped data as it's migrated to different tiers of storage."

"CommVault also got higher marks on upfront costs as stepping up to Simpana software with deduplication provided a much lower cost of entry than comparable hardware appliances," adds Jordan. "Ongoing costs are really where Simpana software shines since we can buy storage at a much more competitive price than what we'd have to pay if we were locked into another vendor's hardware deduplication solution."

Lowering Costs, Bolstering DR with Dedupe

With approximately 80 percent of its total data footprint now protected by CommVault's deduplication, Texas Tech has reduced backup storage requirements by more than 80 percent. They also prefer how Simpana software preserves the compressed state of the deduped data as it's migrated to backups and allows replicating deduplicated data directly to tape without "re-hydration." "With dedupe, we've been able to reduce approximately 230 TBs of application data to about 40 TBs of backup storage," notes Padgett. "Once we get everything into our dedupe engine, we'll probably be able to lower our backup media costs by 30 to 40 percent."

To date, Texas Tech has reduced about 230 TBs of data to approximately 40 TBs of storage using CommVault's deduplication capabilities and expects to achieve 8:1 dedupe ratios once policies are fine-tuned across its Windows and Linux environments. With deduplication and the currently realized deduplication ratios, Texas Tech is able to extend its disk-based data retention to 60 days or more, all while providing more timely restores for its customers. "Eliminating the overhead of tape handling is a big plus," Padgett adds. "It sometimes took hours to restore a file when we had to send for offsite tapes, and now we can recover data in minutes." TOSM's decision to deploy deduplication has taken them one step closer to removing tape from the backup equation altogether.

In fact, Texas Tech plans to leverage CommVault Simpana's deduplication technology to entirely eliminate tape in the near future. "When you consider the cost and overhead of managing tapes, we can easily justify moving completely to disk-based data protection leveraging our investments in Simpana dedupe software and Dell hardware," says Jordan. "Backup to disk has proven to be a higher performing and more reliable technology for us and the Simpana dedupe capabilities enable us to leverage it to the fullest while ensuring disaster recovery objectives and customer expectations are met." Additionally, TOSM is exploring the opportunity to give its users the capability to conduct their own restores as part of an ongoing focus on responsive customer service, business continuity and disaster recovery testing.

Adding Archiving & Replication to the Roster

TOSM has recently added Simpana File Archiving software to further reduce storage costs and provide another level of operational efficiencies. Faced with the addition of about 1TB of new storage per month, Texas Tech

hopes to reclaim valuable primary storage by automatically moving stale or rarely used data to low-cost storage. "We have a large imaging system with several million files and nearly 5 TBs of data that is rarely accessed once it's been digitized," Jordan reports. "Using Simpana Archive software, we can redistribute these file stores across tiered storage to cut costs even further while improving the performance of the production system."

Also being evaluated is Simpana Replication software to create secondary copies of production data at its disaster recovery site. "Once we remove tape entirely from our environment, we'll need to replicate deduped data to our alternate data center," Jordan concludes. "Fortunately, CommVault has a modular replication capability that we can add when required, which gives us peace of mind that we're covered as our environment continues to evolve. We've never gotten to the point where we've thought we'll outgrow Simpana software and we're confident that CommVault technology will play an important role in ensuring the highest levels of disaster preparedness and business continuity going forward."

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