CASE STUDY

Solution at-a-glance

Company
Medical University of South Carolina Medical Center

Industry
Healthcare

Environment size
Enterprise

Employees
8,000

Customer application
- Storing data
- Protecting data
- Archiving data
- Managing data

StorageTek® solutions
- 9176 disk subsystem (predecessor of the D-Series™)
- L700e tape library
- LTO tape drives
- Application Storage Manager® (ASM) software
- ACSLS Manager™ software

Other vendor solutions
Agfa IMPAX 4.1 Picture Archiving and Communications System (PACS)

Business results
- Increased online image availability by a factor of 51 (from two to 104 weeks)
- Decreased image access time 99 percent
- Liberated 6,600 radiologist and file-room labor-hours per year
- An integrated PACS

Medical University of SC Medical Center

Prognosis: Healthy e-medicine thanks to StorageTek® and Agfa

Medical University of South Carolina (MUSC) Medical Center encompasses three hospitals and an outpatient clinic. Like many healthcare facilities, MUSC is committed to improving the quality of its patient care and expanding accessibility of its services. In fact, during the last decade, the facility spent $200 million in improvements.

Business issues

In the early 1990s, MUSC deployed an Agfa Picture Archiving and Communications System, an application to digitally distribute multimodality clinical images throughout its hospitals (X-rays, CAT scans, MRIs, ultrasounds and nuclear medicine surveys). In 1996, radiologists began interpreting these images digitally. Today the department of Radiology accumulates 4.5 terabytes of image data annually in more than 150,000 examinations.

MUSC radiologists rely heavily on comparing incremental changes in images to interpret their patients' conditions. These evaluations frequently require comparing images at six- to 24-month intervals. Yet, the outmoded archival system only supported 10 months of online and nearline data, with older data residing on file-room shelves. Given the prevalence of annual checkups, radiologists frequently made examination retrieval requests that triggered human intervention.

On top of this, the file-room staffs' variable workloads were such that getting images to radiologists could take anywhere from five minutes to two hours. This adversely impacted MUSC's 21 staff radiologists, who prefer the more efficient method of completing examinations in batches at periodic intervals.

The Radiology Informatics department turned to its PACS application provider, Agfa, to help upgrade its system to better serve its end users and patients. As it happens, Agfa and StorageTek® have a long-standing synergistic partnership delivering solutions to the healthcare industry. This allows Agfa customers' PACS solutions to seamlessly interoperate with StorageTek storage solutions.

The solution

MUSC deployed a server running StorageTek ASM software in conjunction with a 9176 disk subsystem (7.2 terabyte capacity) and an L700e tape library. The tape library was outfitted with four LTOs using 100-gigabyte capacity cartridges. MUSC is using ASM software to manage the data, including making multiple archive and backup copies simultaneously.

Business benefits

Prior to the solution implementation, MUSC had two weeks of examinations available on disk media. StorageTek's 9176 disk subsystem boosted this availability to 24 months — a time period that covers the vast majority of examination image data requests. This allows the radiology staff to realize their preferred method of work, batching all their image analyses into single sessions.

StorageTek also enabled MUSC to consolidate its shelf-bound data and house it in the L700e tape library. Currently, the 5.4 terabytes of 10-month to 25-year-old archival data reside in 1,350 optical disks. The optical disk storage was reduced to zero in 2002, completing the migration of data to a fully automated retrieval system.

Financial benefits

The StorageTek solution has enabled the radiologists to complete their image analyses faster by eliminating delays in pushing examinations to their workstations. The Radiology Informatics team estimates that these delays have been reduced by an average of two minutes per examination. At 450 exams per day, this yields daily time savings of 900 minutes, or 3,600 labor-hours per year.

Full-time equivalent costs have been reduced for the file-room staff as well. By migrating shelf-bound data older than 10 months to the L700e tape library, MUSC eliminated human intervention, saving 3,000 labor-hours per year among the five-person file-room team.

MUSC also is able to more cost-effectively comply with U.S. federal regulations that require examinations to be archived from seven to 25 years. StorageTek's L700e tape library helped it meet this requirement in half the footprint of competing solutions — while increasing nearline examination data availability from 10 months to 25 years.

The Radiology Informatics department also positioned MUSC for future savings. The soon-to-be-completed Heart and Vascular Center plans to share the Radiology Informatics department's storage solution. This shared resource can be optimized to serve the storage needs of many departments versus doling out capital expenditures on the inevitable excess capacity required to deploy department-centric, discrete solutions.

Technology benefits

MUSC boosted automated availability of its most-requested image data from 10 to 24 months, a 140 percent increase. Image requests now are fulfilled in three seconds versus a typical time of five minutes (for examinations more than 10 months old), a 99 percent decrease in access time. The 9176 disk subsystem delivers a 60-fold increase in capacity over the previous solution's 120 gigabytes.

ASM software defines archival rules that write examination data to two tapes concurrently — one residing in the L700e tape library and one on an LTO cartridge that is moved to a local disaster recovery vault. Combined with the copy available on the 9176 disk subsystem (up to two years), examination data now is safeguarded by three copies.

About Medical University of South Carolina

The Medical University of South Carolina's mission is to preserve and optimize human life through education, research and healthcare. Located on the Charleston Peninsula, the Medical University educates students from across the state and beyond. It provides primary care services for the local community and serves as a referral center for specialized care for patients from across the state, the nation and the world.

StorageTek Performance Metrics Summary

Goal	Before StorageTek Solution	After StorageTek Solution	Result
Timely delivery of patient test data to radiologists' workstations for analysis	5–300 minutes	3 seconds (data can be stored for up to 2 years on the 9176)	99 percent decrease (compared to typical time of 5 minutes previously)
Significantly expand online examination availability up to 2 years old	2 weeks	104 weeks	51X improvement in disk access time
Automated nearline access to all examinations 2-25 years old	10 months	300 months (25 years)	29X improvement in nearline access time
Eliminate human intervention	All requests for data older than 10 months	None	Automated solution
Reduce media costs	$10.75 per gigabyte	$0.77 per gigabyte	93 percent decrease in per-gigabyte cost of media

Case study company: Medical University of South Carolina Medical Center
www.musc.edu

"The StorageTek solutions met our healthcare delivery needs. They come from a proven storage company, are scalable to meet our growing needs and flawlessly interoperate with our IMPAX imaging software. They help us deliver more timely results while automating access to examination data without human intervention. I like the ease with which we can scale this solution to meet the future storage demands I see coming down the road. Of course, the competitive pricing and the peace of mind — knowing our patient data is as safe as can be — were attractive as well. Feedback from our end users has been very positive."

Jay Crawford, Manager of Radiology Informatics, Medical University of South Carolina Medical Center

ABOUT STORAGETEK

Storage Technology Corporation (NYSE: STK) is a $2 billion global company that enables businesses, through its information lifecycle management strategy, to align the cost of storage with the value of information. The company's innovative storage solutions manage the complexity and growth of information, lower costs, improve efficiency and protect investments. For more information, visit www.storagetek.com, or call 1.800.275.4785 or 01.303.673.2800.

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