



CASE STUDY

Solution at-a-glance

Company name

Novant Health Corp.

Industry

Healthcare

Environment size

Enterprise

Employees

13,000 plus

Customer application

- Storing data
- Protecting data
- Archiving data
- Managing data

StorageTek® solutions

- PowderHorn® 9310 automated cartridge systems
- T9840B, T9940A tape drives
- 9176 disk subsystem (predecessor of the D-Series™ disk system)
- Application Storage Manager® (ASM) software

Other vendor solutions

Siemens Medical Solutions digital imaging systems

Business results

- Faster access to patient data
- Increased staff productivity
- Improved data security
- Centralized data management
- Reduced storage costs
- An integrated PACS
- Better positioned to comply with HIPAA

Novant Health Corp.

Novant speeds delivery of patient imaging data with StorageTek® tape, disk solution.

Business issues

Novant Health Corp. of Charlotte and Winston-Salem, N.C., encompasses two health centers with multiple hospitals. Like other medical institutions, Novant Health's medical units historically captured and stored patient image files on film. More recent film was stored within medical departments and older film was stored at offsite locations.

Storing patient imaging studies on film posed several problems. When a physician or technician needed a file, staff members had to locate, retrieve, deliver and set up the film. This made it difficult to always provide medical staff with timely access to critical patient data. The mishandling of a film file could cause patient data to be lost. And looking ahead, storing imaging data in many locations would make it difficult to comply with emerging U.S. federal regulations regarding the security of hospital patient information.

With an eye toward the future, Novant Health set a goal: move its film-based patient imaging studies to digital systems. Capturing and storing imaging data in digital formats would make it possible for the corporation to give physicians faster access to patient files and for IT staff to centralize the administration of imaging data.

The solution

After a detailed evaluation of competitive products and different storage technologies, Novant Health selected a digital imaging and storage solution based on technology from Siemens Medical Solutions and StorageTek®.

In its initial implementation, the solution stores radiological imaging data from 10 Novant Health units, including hospitals and surgery centers. Plans call for expanding the solution in the

coming years to encompass imaging data from cardiac catheterization and from the cardiology, pathology and mammography departments.

The storage solution is designed for extreme scalability to handle expected massive growth. At current rates, Novant Health is creating 44 terabytes of radiological imaging data per year. When the mammography component comes online, the system will need to accommodate a projected 59 terabytes of data per year.

Solution components include:

- A Siemens SIENET picture archiving and communications system (PACS) integrated with a Siemens NOVIUS radiology information system (RIS) to capture patient information and medical images
- StorageTek's Application Storage Manager (ASM) software to automate data management, including backup and retrieval
- Two StorageTek PowderHorn® 9310 automated cartridge systems for scalable, cost-effective data archiving
- StorageTek T9840B tape drives for high-speed data storage and access, and T9940A tape drives for high-capacity, long-term storage
- A StorageTek 9176 disk system with three terabytes of RAID storage to cache the data that medical staff is most likely to need — in order to provide the fastest delivery speeds

The solution is managed by the ASM software, based on a hierarchical storage scheme. The image files the medical staff will most likely need are placed on disk storage for fastest access. Recent files that are not among the most likely to be requested are

stored on high-speed 20-gigabyte T9840B tape cartridges. Older and seldom accessed files are archived on 200-gigabyte T9940A tape cartridges.

Business benefits

The StorageTek solution provides physicians with extremely fast access to patient imaging studies. A 10-megabyte file can be retrieved from disk and delivered to a physician or technician in three seconds. The same size file can be delivered from high-speed T9840B tape in 30 seconds and from high-capacity T9940A tape in two minutes. With film-based processes, a physician or technician might have to wait up to 20 minutes to receive a radiological film file stored at the department level or up to 24 hours to receive film stored at an offsite location.

While making image files readily available, the StorageTek solution also helps protect the integrity of data. It eliminates the risks inherent in storing critical patient information on plastic film — which can be easily lost, misplaced, misfiled or rendered unusable by physical damage. Imaging data is now backed up on reliable tape held in two geographically separated PowderHorn libraries that are connected via a high-speed link.

The digital storage solution makes it possible for data to be accessed simultaneously by multiple physicians and technicians working from different locations to provide care for the same patient.

Financial benefits

Novant Health has greatly reduced its costs associated with purchasing, processing, storing and handling film. At current rates, Novant Health is saving \$2.1 million per year in money that would have otherwise been spent on film. The amount of annual savings on film purchases will grow as more departments begin using the system and as film costs rise.

The digital storage solution has produced an estimated 20 percent across-the-board increase in the productivity of Novant Health's radiology technicians. The solution does away with the loss of time associated with retrieving and handling film, and getting it into place on the devices that read film.

While delivering data faster to the medical staff, Novant Health can, at the same time, make maximum use of cost-effective tape for archiving and backup, avoiding the higher costs of RAID-based storage.

The StorageTek solution has allowed Novant Health to centralize the management and administration of radiological imaging data. This reduces the inefficiencies and costs associated with maintaining multiple film storage depositories and multiple processes for storing and retrieving film.

Technology benefits

Novant Health now has the security of better disaster recovery protection for its radiological imaging data. The ASM software automatically makes dual copies of all files and places a copy on each of the two PowderHorn libraries. This approach allows the libraries, which are 76 miles apart, to back up each other for disaster recovery.

The ongoing consolidation of data into a single system will allow the health center to streamline its data storage and protection processes. This will help the health center comply with U.S. federal guidelines that regulate the security of hospital patient data under the Health Insurance Portability and Accountability Act (HIPAA).

Looking ahead, the extreme scalability of the PowderHorn tape libraries gives Novant Health's IT personnel the comfort of knowing their storage solution can accommodate dramatic growth. The PowderHorn libraries have ample room for the 550 terabytes of online storage that will be required for imaging data over the next 10 years.

About Novant Health

Novant Health is a not-for-profit, integrated healthcare system in western North Carolina that serves more than 3.4 million people in 32 counties, reaching from southern Virginia to northern South Carolina. Novant was formed in July 1997 by the merger of Carolina Medicorp Inc. of Winston-Salem, N.C., and Presbyterian Health Services Corp. of Charlotte, N.C., Community General Hospital in Thomasville, N.C. (now Thomasville Medical Center) joined the system in November 1997.

About Siemens Medical Solutions

Siemens Medical Solutions of Siemens AG, with headquarters in Iselin, N.J., and Erlangen, Germany, is one of the world's largest suppliers to the healthcare industry. The company is renowned for its innovative products, including imaging systems for diagnosis, therapy equipment for treatment, hearing instruments, and critical care and life support systems, as well as a wide array of information technology and data

management solutions that optimize workflow and increase efficiency in hospitals, clinics and doctors' offices.

About the solution

The PowderHorn 9310 automated cartridge system provides ultra-high performance, reliability and multiplatform compatibility for client/server and mainframe systems, with up to 6,000 cartridges per library storage module. The T9840A "access-centric" tape drive offers superior speed, unmatched data access and sufficient capacity for transaction-intensive, time-critical applications. It offers seamless integration with most StorageTek tape libraries and interoperability with select vendors' products. The T9940B "capacity-centric" tape drive offers exceptional storage capacity for business applications, such as archive, backup, record retention and disaster recovery. It offers a superior combination of capacity, speed and robustness in a compact and affordable package. ASM software is intelligent data movement software that is designed to automate data management and retrieval across a storage hierarchy via user-defined policies. The user can balance cost, performance and capacity while concurrently managing growth and access. The 9176 disk system is an enterprise, high-performance, full-Fibre RAID system designed solely for open systems environments. It offers investment protection with a pay-as-you-grow scalability and minimizes downtime costs with fast, continuous access to data.

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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Replacement parts provided under warranty or any service offering may be either new or equivalent-to-new, at StorageTek's option. Specifications/features may change without notice.

Case study company: **Novant Health Corp.**
www.novanthealth.org

"StorageTek's PowderHorn libraries and T9840B and T9940A tape drives help Novant Health keep patient information protected and immediately available to the medical staff."

Robert Dick, Manager of Imagery Informatics, Novant Health

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