



Southern New Hampshire Medical Center

EMC information infrastructure provides a highly available environment to protect patient records, improve the quality of care, and reduce costs

For over a century, Southern New Hampshire Medical Center (SNHMC) has been providing progressive, committed, and accessible healthcare services to those in the greater Nashua area. Focused on delivering the highest quality of care possible, the medical center uses advanced IT technology to make the right information immediately accessible for rapid and accurate diagnosis and treatment, while ensuring the security and safety of patient records.

Two years ago, SNHMC deployed a 12-terabyte EMC® CLARiiON® CX series-based SAN to replace a direct-attached storage-to-server environment that was becoming increasingly difficult to manage as the number of electronically stored documents and images continued to rise. Since that time, SNHMC's EMC information infrastructure has expanded to encompass additional storage tiers to cost-efficiently address growing file/print and archiving needs. It also supports advanced storage management functionality and will soon have redundant systems and state-of-the-art mirroring software in place for rock-solid disaster recovery.

“Before, there wasn't really any scalability to the environment,” says Peter Spivack, manager of IT. “Our servers were filling up and we spent a lot of time moving data between them to make room. With our centralized EMC storage infrastructure we can dynamically allocate storage as we expand, and the performance gains over local-attached storage have been considerable.”

VMware® virtualization technology is also being rolled out to facilitate server consolidation. Combined with the EMC storage infrastructure, VMware solutions are helping SNHMC create a highly flexible IT environment that can quickly and cost-efficiently accommodate the requirements of new and existing applications as well as a storage growth rate of approximately five terabytes a year.

Over the last year and a half, CDW Healthcare, a partner and distributor of EMC solutions, has also played a role in helping SNHMC successfully accommodate its IT needs.

EMC CLARiiON Fibre Channel and ATA storage for critical records

Information from SNHMC's Siemens Soarian core clinical systems and GE Centricity ambulatory electronic medical records (EMR) for Foundation Medical Partners clinical practices are entrusted to consistently reliable, high-speed EMC CLARiiON Fibre Channel

disks. Rapidly growing records generated by the organization's McKesson PACS system are protected by economical yet highly available ATA disks within the same CLARiiON footprint. Support for automated nursing documentation and computerized physician order entry on EMC CLARiiON Fibre Channel disks is also being planned.

EMC Global Services have provided, and continue to provide, technical expertise and support in planning for and integrating SNHMC's mission-critical applications into the EMC SAN environment for optimum operation.

"An example of EMC support that really stood out was when we were implementing the GE Centricity ambulatory EMR program," says Spivack. "The requirements were very specific. The time spent on the implementation and the dedication of EMC's engineers to ensure its success were noteworthy."

Supporting simplified and effective storage management within this centralized environment is EMC Navisphere® software. Used for I/O analysis and provisioning, it has enabled SNHMC's IT team to proactively plan for, and quickly allocate, high-performance storage resources wherever and whenever required.

"EMC has helped us create a more unified IT environment which enables us to support a more rapid response. From a patient safety perspective, EMC has helped us increase data availability and decrease data recovery times—and everything we do in that arena has a positive impact on patient care."

Dwight Muller, CIO

"Standardizing on a single, centralized storage architecture has enabled us to more effectively manage and scale our storage environment with the resources we have in-house," says Spivack.

EMC PowerPath® path management software is leveraged for its multiple I/O path capabilities, automatic load balancing, and path failover functionality. Recently, PowerPath capabilities helped make possible a realtime non-disruptive upgrade from the organization's original Fibre Channel switches to a director. EMC PowerPath functionality also supports storage processor and code upgrades without downtime.

EMC's call-home functionality, which supports remote diagnostics and rapid problem resolution, has been credited with the delivery of non-stop business continuity within SNHMC's storage environment.

"We've had EMC engineers show up onsite long before we would have known a problem even existed," says Spivack. "They are proactive in resolving potential issues before they turn into real problems. As a result we've had no downtime."

Consolidated file system storage with an EMC NAS gateway

Six months ago, with the help of a powerful, EMC Celerra® NS-Series/Gateway NAS solution, the SNHMC IT team was able to successfully migrate home directories on a previous network-attached storage device that was nearly full. With home directories growing by approximately two gigabytes a week, the NAS gateway is providing a very flexible solution for seamlessly accommodating storage expansion in this dynamic environment.

“With this technology we’ve been able to extend our storage online in real time—without having to bring that environment down and cause disruptions to users,” says Spivack.

In an ongoing initiative, the organization expects to eliminate about 15 additional file sharing servers by migrating them over to the EMC NAS gateway. Future hardware acquisitions and maintenance overhead are expected to be reduced considerably.

“We would have had to replace those 15 servers over the next two years, so we estimate that by consolidating this environment we’ll save between \$75,000 to \$100,000 dollars,” says Spivack. “And in terms of the operating environment itself, the EMC NAS gateway just works. It’s a maintenance-free environment.”

In addition, EMC SnapSure™ functionality complements the EMC NAS gateway solution by allowing for quick and easy backup and recovery.

“People accidentally delete their files all the time,” says Spivack. “Previously, we had to go back, find the files on tape, and restore them. It would be a day-long procedure. Now we just access that snapshot and we have the files back in minutes.”

EMC Centera archives for cost-efficient record retention, protection, and distribution

A cost-efficient, highly available alternative to tape-based archives, easily scaled EMC Centera™ content-addressed storage is used to safely, securely, and economically store rapidly growing volumes of historical McKesson-based PACS records. These records are automatically archived from EMC CLARiiON storage via the McKesson application which writes natively to EMC Centera using policies for retention and purging as defined by internal and government regulations.

Unlike tape-based archives, this online repository now enables quick and easy access to historical PACS records by clinicians, which helps facilitate more rapid diagnosis and treatment for enhanced patient care.

Although the EMC Centera platform only supports PACS archives at this time, it will soon be used with EMC DiskXtender® to automatically archive other information such as file share data, Microsoft Access databases, and even e-mail.

“We have many department shares with historical data and people tend to keep files around in their home directories,” says Spivack. “Obviously leaving them on Fibre Channel storage is more expensive than it needs to be, so we’re going to use DiskXtender to archive older files to the Centera platform.”

Taking consolidation a step further with VMware

Currently underway is an initiative to consolidate multiple physical servers to a VMware virtualized platform. Specific advantages to SNHMC include the need for fewer physical server acquisitions to support a growing number of clinical applications; reduced space, power, and cooling demands; better utilization of existing hardware; and simplified administration.

Presently, three physical servers are running VMware ESX Server™ 2.5 with 13 virtual machines split between them. Applications now supported within this virtualized server environment include a new capital budgeting system, an upgraded time and attendance system, and an anesthesia system. Additional consolidation of physical servers is planned with upcoming virtual server support for a new cardiology PACS implementation and a document imaging project for various medical records.

“So far we’ve eliminated two physical servers and avoided the purchase of nine more which means less power, cooling, and upkeep,” says Spivack. “We’ve also been able to better leverage our hardware resources. For example, instead of running one application that’s using 10 percent of a server’s resources, we can now layer five applications on it and use 70 percent of its resources.”

Another benefit SNHMC has realized through its use of VMware virtualization technology is the ability to get new applications up and running faster and more cost-efficiently than ever before.

“Previously we’d have to spec out a server for a new application, wait three or four weeks for the hardware to arrive, and then spend a couple of days racking and stacking it,” says Spivack. “With the flexibility that VMware provides, we can just create a virtualized server and within a day we have the environment ready to support a new application.”

24x7 availability

Within the next six months SNHMC expects to have a second data center set up and running in an adjacent building to help ensure a continuously available, fully fault-tolerant IT environment. With support from EMC Global Services, redundant EMC CLARiiON and EMC Centera storage systems along with EMC MirrorView™ software will be deployed at the new data center to provide unsurpassed disaster recovery capabilities.

The integration of VMware technology with EMC MirrorView software will enable SNHMC to further strengthen and speed disaster recovery capabilities by allowing the organization to mirror its server operating systems as well as the data on the SAN to the second data center.

“The organization as a whole is now dependent on digital records,” says Dwight Muller, CIO. “They’re accessible not just by the radiologists, operating room personnel, or staff clinicians, but by everyone who has a need to access our electronic medical records. Reliability has to be as close to 100 percent as possible. Without EMC’s hierarchical storage and replication solutions we wouldn’t be able to guarantee the availability of clinical results, reports, and images to everyone insuring the quality of patient care—which is our hallmark.”

Support on all levels

SNHMC’s highly flexible tiered storage and virtualized server environment now enable the organization to quickly and easily address growing and changing application requirements while keeping hardware acquisition and management costs in check.

“We can quickly create a virtualized server for a new application, easily allocate more storage as it is needed, and even move our less frequently accessed data onto less-expensive storage for greater cost efficiency,” says Spivack. “With software like EMC DiskXtender, data movement can all be done automatically—which means less administration.”

EMC solutions have also helped support SNHMC’s commitment to providing the highest level of quality care possible by ensuring continuous and secure information access to patient-critical information.

“EMC has helped us create a more unified IT environment which enables us to support a more rapid response,” adds Muller. “From a patient safety perspective, EMC has helped us increase data availability and decrease data recovery times—and everything we do in that arena has a positive impact on patient care.”



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Customer Profile
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