Success Story

Sentara Healthcare Powers “Continuous Patient Care” Program with NetApp V-Series Solution

Customer Profile
Sentara Healthcare is a not-for-profit healthcare provider serving more than two million Virginia and North Carolina residents. Founded in 1888, Sentara now operates some 87 care-giving sites, including seven acute-care hospitals, three outpatient-care campuses, seven nursing centers, and three assisted-living centers. Sentara offers a full range of award-winning health coverage plans, home health and hospice services, physical therapy and rehabilitation services, mobile diagnostic vans, and medical transport services (source: www.sentara.com).

The Challenge
Simultaneously fortify and simplify storage infrastructure to support industry-leading healthcare initiatives

The foundation of Sentara’s industry-leading healthcare network is an electronic medical records (EMR) system from Epic Systems that integrates information originating from a multitude of sites, users, applications, and compute platforms. To support hosts based on UNIX® in the EMR infrastructure, the company needed a highly available and scalable storage solution. Sentara had originally implemented a pair of HP StorageWorks XP12000 disk arrays.

The objective in expanding this storage architecture was to deliver an equivalent class of availability to Windows® hosts, while simplifying provisioning and other storage-management processes.

“In architecting our electronic medical records system, we knew it was essential to implement high-availability storage,” says Joseph Rowell, manager of Enterprise Architect Solutions at Sentara Healthcare. “Any downtime, even for upgrades, disrupts medical staff and compromises their ability to deliver responsive, quality care.”

The Solution
Accelerate, enhance, and streamline data protection with NetApp V-Series storage virtualization solution

The Sentara team evaluated storage solutions from two incumbent vendors, along with the NetApp V-Series storage virtualization solution, which got the team’s attention right away. Rowell says that the system’s positive results early on led Sentara to extend its 90-day proof-of-concept evaluation to a 120-day in-depth evaluation of the NetApp system.
“The NetApp V-Series solution lets us leverage our high-end disk arrays for critical SQL applications, as well as environments that use the CIFS protocol, while dramatically improving storage manageability and utilization. Within two days of deployment, we were presenting storage via FC protocol to Windows hosts.”

Joseph Rowell
Enterprise Architect Solutions Manager, Sentara Healthcare

“Three things differentiated NetApp’s solution,” explains Rowell. First, the V-Series allowed us to present, via FC protocol, the existing XP12000 arrays as storage to our Windows hosts, while simplifying provisioning and enhancing data protection. Second, NetApp SnapManager® for SQL Server software streamlined database backups. Finally, by enabling us to instantly replicate data volumes or sets with minimal storage overhead, NetApp FlexClone® technology accelerated our test and development cycles, enabling us to more quickly deliver new services.”

Today, a clustered NetApp V-Series solution enables Sentara to take advantage of the existing HP XP12000 disk arrays while improving on storage manageability and data protection. Connecting to Microsoft® Windows 2003 Enterprise hosts via FC protocol and NetApp SnapManager for SQL Server software, the NetApp V-Series system delivers essential performance for operation-critical SQL Server applications.

NetApp SyncMirror® software mirrors data between the two arrays and provides protection against all types of hardware outages, including multiple disk failures or the outage of an entire XP12000 array. NetApp FlexVol® and FlexClone technologies simplify provisioning, improve capacity utilization, and enhance productivity in Sentara’s test and development environment.

The NetApp V-Series SAN serves as primary storage for the EMR system and supports many day-to-day operations as well, including Sentara’s patient registration system, a networked timecard system, and storage of patient-critical TIFF images.

Sentara leverages Hyland Software’s OnBase document management system to simultaneously write images (via CIFS protocol) to the NetApp V-Series SAN and to a clustered NetApp FAS3040 system. The OnBase repository currently consists of some 30 million TIFF images, and NetApp’s robust FAS platform makes sure of protection of these documents in the event of a site disaster. NetApp SnapMirror® software transitions the documents, based on predefined retention policies, to a NetApp FAS series system that serves as secondary storage at a backup site.

Sentara has also extended its NetApp architecture with a clustered NetApp FAS series system that supports the company’s VMware® environment. Having a unified architecture across both the Windows and VMware environments simplifies administration and enables Sentara to take advantage of tools such as NetApp SnapMirror software to replicate data across systems.

**Business Benefits**

NetApp’s unified storage architecture enables continuous patient care, while delivering data management flexibility and cost savings

“We were presenting storage within two days of deploying the V-Series,” Rowell says. “Having a clustered configuration and using NetApp SyncMirror software to mirror data between the two arrays boosted availability. In fact, using the
NetApp V-Series virtualization engine in conjunction with our HP platforms and disk arrays has enabled us to meet our target of five-nines availability.”

In addition, Sentara’s ability to support faster backups now, as well as database reindexing that is six times faster than before, enables the IT team to provide users greater accessibility. Rowell elaborates, “We saw a 24-hour reindex process cut down to four hours. And we have the advantage of being able to use FlexClone to quickly make a copy of the database if we decide we need to do additional integrity testing or indexing. That obviously helps shrink test/dev cycle times and accelerates the rollout of new services to Sentara healthcare facilities.

“With NetApp SnapManager for SQL, we also have seen significant reduction in backup times. Backups that used to take more than two hours now complete in just three or four minutes. Having one data management solution that integrates with our SQL environment makes it much easier to run backups, restore databases, do online recoveries to a specific point in time, and automate routine tasks. In the past, most of these processes required taking the applications offline. The time that we have gained back is time that our administrators and healthcare users now put to more productive use improving patient care and safety.”

Cost savings: storage and administration efficiency
The simplicity of NetApp’s user interface is a major advantage of the solution, according to Rowell. “Because we can move more of the storage management to our LAN team, Sentara SAN architects can focus on aggressively managing the more than 4PB of data we now store on-site,” Rowell says. “In the past, our SAN engineers spent considerable time and effort creating RAID groups and LUNs to support our specific application requirements. With NetApp FlexVol technology, provisioning is much simpler and faster. For example, we aren’t restricted to specific increments when we size LUNs. It’s easy to increase or shrink a LUN on the fly to match user or applications needs. This flexibility not only saves administrative time, but helps us maximize our capacity utilization.”

Versatility for industry-leading services
Sentara’s success with its EMR infrastructure motivated the company to implement a second clustered NetApp V-Series solution that integrated the remaining disparate storage systems, including HP Enterprise Virtual Arrays. In addition to improving storage utilization and manageability, this V-Series deployment enables high-speed, disk-to-disk backup (using NetApp SnapVault® software) of the EMR infrastructure and will allow Sentara to eliminate legacy tape systems. Sentara is also using NetApp deduplication technology to achieve significant backup capacity savings.

“Front-ending our remaining storage arrays with the V-Series gives us the benefit of automated backups, recovery processes that can be handled by system administrators, and performance improvements. Backups that took more than five hours now take less than one, and the processes never affect production systems.”
“A reindex process that used to take 24 hours now takes only four. SQL Server backups that took more than two hours now complete in three or four minutes. In the past, all of these processes required taking the applications offline. The time that we have gained back is time that our administrators and healthcare users now use to improve patient care and safety.”

Joseph Rowell
Enterprise Architect Solutions Manager, Sentara Healthcare

Summing it up, Rowell points out that NetApp provides the scalability, manageability, and versatility his team needs to respond to the Sentara user community, support industry-leading initiatives, and provide reliable storage in an increasing complex application environment. “Storage is the core competency of NetApp. For Sentara, that means we can be confident that NetApp will invest its engineering and creative resources in continually making the product more efficient, higher-performing, and easier to use. NetApp has to consistently deliver the best storage solutions in the market, and we’re the beneficiary.”

SOLUTION COMPONENTS

**NetApp Products**
- Clustered NetApp V3050 systems
- Clustered NetApp FAS3040 systems
- NetApp FAS3020 systems
- NetApp SnapMirror
- NetApp SnapRestore®
- NetApp SyncMirror
- NetApp SnapVault
- NetApp SnapManager for SQL Server
- NetApp FlexVol
- NetApp FlexClone