EMH Healthcare
Private cloud improves healthcare applications, availability, and performance

OVERVIEW
EMH Healthcare is a 387-bed hospital system with three main campuses and five medical offices serving communities near Cleveland, Ohio. EMH offers general medical, surgery, and emergency services as well as nationally recognized cardiovascular and orthopedics programs. EMH Elyria Medical Center was named a Healthgrades' "America's 100 Best Hospital" for two consecutive years (2012, 2013), placing it among the top two percent in the nation for overall clinical excellence.

BUSINESS CHALLENGES
EMH faced increasing regulatory and market pressure to adopt electronic medical records and streamline core services such as radiology, pharmacy, and admissions for improved operational efficiency and responsiveness to patient needs. As more clinical and patient information was digitized, and with a 400 percent increase in server virtualization, EMH outgrew its legacy EMC storage environment.

In addition, EMH's previous IBM Tivoli Storage Manager (TSM) tape backup system required extensive administration and troubleshooting, stealing time away from critical IT projects needed to support clinicians. Restoring lost data from tape could take hours, risking delay of clinical decisions and reports.

After evaluating offerings from Hitachi and NetApp, EMH chose a comprehensive storage and backup solution from EMC. John Schneider, EMH's Director of Information Systems, explains, "Every medical and business system in our hospital network runs off our EMC storage, so availability and performance are incredibly important. EMC had the only solution that gave us the redundancy and rapid recovery we needed to meet our service-level agreements. Overall, we felt EMC's storage architecture was far superior to Hitachi."

SOLUTIONS
EMH upgraded its legacy EMC storage to EMC® VMAX® 10K enterprise storage configured with FAST VP™ (Fully Automated Storage Tiering for Virtual Pools), along with flash and SATA drives. VMAX supports all of EMH's clinical and business applications, including Siemens Soarian for acute care electronic health record (EHR) and revenue cycle management, Siemens Healthcare Intelligence, Allscripts EHR for ambulatory electronic health records, Allscripts ED for emergency department management, McKesson surgical and home care solutions, Accero Human Capital Management (HCM), and Nuance dictation.

In addition, EMH standardized on EMC Avamar® deduplication backup software and system, which is configured with the Avamar NDMP Accelerator node and integrated with EMC Data Domain® deduplication storage systems and Data Domain Boost software. The EMC backup and recovery solution protects all of EMH's critical data, virtual machine (VM) images, and file shares. Backups are then replicated to EMH's disaster recovery (DR) site 30 miles away.
Results

- Accelerated server deployment from two weeks to nine minutes
- Reduced data center space by 875 square feet (roughly 35 percent), enabling co-location sharing with another hospital for disaster recovery
- Reduced page load times from three seconds to one second
- Shrank backup windows from 12 hours to four hours
- Lowered three-year total cost of ownership by more than $68,000

Approximately 75 percent of EMH’s Cisco UCS server environment is virtualized with VMware® vSphere™, and the healthcare provider plans to virtualize 700 desktops with VMware Horizon View™. EMH also relies on Citrix to run its emergency department applications and to provide physicians with remote access to hospital systems and health records.

HIGH APPLICATION AVAILABILITY ENHANCES PATIENT CARE

With its EMC solution, EMH has built a virtualized private cloud, improving application availability and performance to expedite patient care, reduce the length of hospital stays, and ensure accuracy of information processed at every level in the organization. In fact, since deploying VMAX, EMH has enjoyed 100 percent uptime with no service disruption to clinicians or administrators.

"We are able to provide a high level of care due to our EMC storage," says Schneider. "It's crucial to our competitiveness because it enables us to be more efficient and responsive. That's why physicians send their patients to one of our facilities instead of a competitor down the road."

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IMPROVED CLINICAL AND BUSINESS PRODUCTIVITY

EMH uses FAST VP to deliver more responsive application performance for its clinicians and administrators. In fact, when physicians access electronic medical records, radiology images, or other patient information, pages load on average in about one second compared to three seconds previously.

"A reduction of two seconds per page, multiplied thousands of times each time an employee accesses information day and night, quickly turns into hours of savings," Schneider observes. "That directly affects our overall productivity and how quickly clinicians can serve patients."

CLOUD ENABLES AGILITY, SITE SHARING

With an EMC infrastructure designed for the cloud, IT has improved efficiency and gained greater agility. For example, previously, when EMH used only physical servers, it utilized only 10 percent of those resources. Now the company stacks multiple virtual servers onto one physical host, improving utilization to 85 or 90 percent. EMH has consolidated 130 physical servers to just 22 hosts running 200 VMs.

"By virtualizing, we reduced our data center footprint by 30 to 35 percent, which equates to roughly 875 square feet," reports Schneider. "That freed up enough space for another hospital in the Cleveland area to use our site as a target for its disaster recovery. In exchange, we're replicating our Avamar and Data Domain backup infrastructure to its site for the same reason. It's a net-zero cost between the two hospitals and allowed us to avoid paying as much as $500,000 per year for a co-location facility."
Schneider adds that by using pre-built VMware templates, IT can now deploy servers much faster in a virtualized environment, speeding IT’s responsiveness to the business.

"Instead of taking two weeks to procure and deploy a physical server, we can spin up a new VM in about nine minutes," he says. "The cloud helps us work smarter, not harder, so we can spend more time focused on what physicians and nurses need to deliver exceptional care to their patients."

**FASTER BACKUP AND RECOVERY OF CRITICAL DATA**
Performance of its EMC backup and recovery solution also has helped EMH dramatically improve IT efficiency. With deduplication rates of 50 times, typical backup times have shrunk from 12 hours with TSM, to four hours using Avamar and Data Domain.

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"I don't believe there is another product on the market that can match the deduplication capabilities of Avamar and Data Domain," states Schneider.

He further points out that restoring from the EMC solution is much faster than TSM. "Restoring an 8.6 gigabyte departmental file share used to take one hour and 25 minutes. Now, with Avamar, that same restore completes in 15 minutes."

EMH also uses the Avamar NDMP Accelerator, further increasing performance. "With NDMP, backup and recovery is now running 60 percent faster than with TSM. TSM took significantly longer to browse its database before every backup job and restore, and time to request and mount tapes for restores. The disk-based Avamar system is far, far faster," says Steve Johns, EMH Healthcare's Storage Administrator.

**SIMPLIFIED ADMINISTRATION FREES TIME TO OPTIMIZE IT**
The speed and reliability of the EMC backup and recovery solution has freed up valuable administrative time, which is invested directly toward optimizing EMH's information infrastructure.

Schneider explains, "Instead of our administrator spending 65 percent of his time wrestling with TSM backups and only 35 percent tuning the storage system, that ratio is now flip-flopped, which is the way it should be. The majority of his time is now focused on making sure storage is performing optimally for our clinicians, administrators, and patients."

Another advantage of moving from TSM to a comprehensive EMC backup and recovery solution is improved total cost of ownership (TCO). In a three-year TCO analysis comparing TSM with Avamar and Data Domain, EMH realized a savings of over $68,000 in support, tape media, tape vaulting, and other related costs.

"It was eye opening to see how much Avamar and Data Domain saved in both hard and soft costs, while providing daily full backups and 100 percent data integrity that we could not get with TSM," Schneider notes.
CONFIDENCE IN A TRUSTED PARTNER

Seeking even greater efficiencies, EMH is working with EMC to build an active-active infrastructure based on EMC VPLEX® virtual storage that will span its own data center and the one operated by another local hospital already engaged in sharing IT space. “VPLEX will give us another level of agility and mobility to move applications, VMs, and data between data centers,” says Schneider. “That will ensure continuous access to critical medical information even if an outage occurs, and provide a lot more flexibility in how we use our resources during normal operations.”

He concludes, “We’ve put our trust in EMC to ensure uptime and reliable performance for our applications so physicians and nurses can deliver quality patient care. We’re confident EMC will continue to live up to that expectation.”

CONTACT US

To learn more about how EMC products, services, and solutions can help solve your business and IT challenges, contact your local representative or authorized reseller—or visit us at www.EMC.com.