BAPTIST MEMORIAL HEALTH CARE

Virtual desktop infrastructure powered by EMC VNX and Citrix XenDesktop delivers unprecedented efficiencies and cost savings

OVERVIEW
Regarded as one of the premier health care systems in the U.S., Baptist Memorial Health Care (BMHC) is an award-winning network of 14 affiliate hospitals located throughout the mid-South region.

Based in Memphis, Tenn., the company employs more than 3,100 affiliated physicians and offers home, hospice, and psychiatric care; minor medical clinics; a network of surgery, rehabilitation, and other outpatient centers; and an education system anchored by the Baptist College of Health Sciences.

BUSINESS CHALLENGE
BMHC places a high priority on giving all of its employees seamless access to the data and applications they need to deliver optimal patient care. The health care system’s physicians and caregivers depend on McKesson MediPro electronic medical record (EMR) system to document every aspect of patient care, including treatment orders, prescriptions, and test results.

“Since the EMR is absolutely essential to the smooth running of our health care facilities and the well-being of our patients, it is critical that we effectively manage the system and ensure that all users have access to the latest versions of the software,” says Charles Rosse, system administrator II, Baptist Memorial Health Care.

With more than 14,000 physical desktops scattered across 14 sites, the company needed an efficient way to ensure and manage universal access to critical patient care information on any type of device (laptop, desktop, pad computer, or smartphone); manage the EMR and other mission-critical applications; and provide software updates quickly and easily without having to manage every endpoint.

SOLUTION
BMHC decided on a virtual desktop infrastructure (VDI) as the best solution to accomplish these goals and chose to power its VDI with Citrix XenDesktop and XenApp virtualization solutions, and Cisco UCS. The VDI runs in an EMC® VNX® unified storage infrastructure, with the EMC FAST™ Suite, which includes FAST Cache for performance and FAST VP (Fully Automated Storage Tiering for Virtual Pools) for automated storage tiering.

ESSENTIALS

Business Challenges
- Oversee 14,000 physical desktops scattered across 14 sites with limited IT resources
- Provide universal access to critical patient care information on any type of device
- Effectively manage the EMR and other mission-critical applications
- Provide software updates quickly and easily without having to manage every endpoint

Solution
- EMC VNX
- EMC FAST Suite
- Citrix XenDesktop and XenApp
- McKesson MediPro EMR
- Microsoft Exchange, Microsoft SQL Server

CUSTOMER PROFILE

EMC²
Results

- Optimized performance and storage utilization through tiered storage strategy
- Significant new efficiencies and time savings through centralized management of software and endpoints
- Fast, universal access to critical patient care data
- Scalability to handle VDI growth
- Expected savings of up to $3 million through server virtualization

**VDI YIELDS COST SAVINGS AND IMPROVED NETWORK PERFORMANCE**

Providing integration and deployment services, EMC partner, LPS, helped BMHC complete a POC application with 135 virtual desktops at its hospital in Oxford, Miss. The desktop virtualization project currently has 2,000 virtual desktops in deployment and is targeted to grow to more than 3,000 virtual desktops by the end of the year, encompassing seven more health care facilities.

By providing a single software image of the EMR that only has to be installed once, and can be centrally updated and managed, the BMHC IT department is able to do much more with its limited resources and staff.

"Not only are we saving money by not having to license the software to all 14,000 desktops, but our network performance has improved since we’re not sending out 14,000 updates. And we can always be sure that all of our users are working off the most current versions of the software,” Rosse explains.

**UNIVERSAL ACCESS TO CRITICAL PATIENT INFORMATION**

Before the VDI installation, BMCH health care providers often faced a wait of several hours before receiving the patient records they had requested. Today, they are able to log in and open a VDI session from any location and any computer, including mobile and handheld devices, to view the EMR and access patient records in a matter of minutes. For instance, physicians working inside the BMCH firewall are able to access the VDI from their iPads, right from a patient’s room.

“The biggest advice I would give any organization planning a VDI is to go forward and make the investment in the EMC VNX system. The system’s price point, storage capacity, and management tools make it the perfect storage platform for VDIs of 500 or more desktops.”

Charles Rosse
System Administrator II at Baptist Memorial Health Care

"Our physicians and other clinicians are very committed to using the latest technologies because they all would rather spend more time with patients, and less time having to manage records and access information,” says Rosse. "Needless to say, the new VDI has been extremely popular with these users. Doctors love the fact that they can click once to go to their desktops, without ever having to interact with our IT department.”

For physicians working at their own private practices and using networks not managed by BMHC, the IT team has created a secure area of virtual desktops that provides automatic, secure access across the firewalls.
"Previously, giving access to doctors outside our network required a visit from one of our IT staff to configure the local firewalls and provide the connection—it could be quite a complex and time-consuming task depending on the local network setup,” says Rosse. "Now, we're able to manage these remote connections from a centralized location, which is a huge time saver.”

TIERED STORAGE IMPROVES PERFORMANCE
BMHC runs its VDI on an EMC VNX unified storage infrastructure. BMHC also utilizes the EMC FAST Suite, enabling a tiered storage strategy for the VDI that delivers maximum cost effectiveness and performance.

BMHC saves the most current data, requiring high availability and speed of access, to the Flash drives. FAST VP automatically optimizes storage pools to ensure that only active data is served from the Flash drives, while cold data is tiered to high-capacity, low-cost disk space. FAST Cache software continuously ensures that the hottest data is served from the high-performance Flash drives.

BMHC has taken tiered storage one step further by configuring read/write FAST Cache for the virtual machines in the VDI environment. “By utilizing FAST Cache, we’re seeing a boost in performance during virtual desktop boot storms,” says Rosse.

He adds that the scalability of the VNX means that the system can be easily expanded without sacrificing performance.

“With a previous deployment using another storage system, we had to add more space and change the drive configuration in mid-stream in order to add more servers and get the IOPS we needed,” Rosse states. “Since the VNX has been built into the design of our VDI from the beginning, it can easily accommodate growth—all we need to do is to plug in another drive or tray of drives and we get incrementally better performance.”

COMPLETE APPLICATION INTEGRATION INTO THE STORAGE ENVIRONMENT
Another important attribute of the VNX environment is its easy integration with key applications running in the BMHC environment, such as the company’s Microsoft Exchange email system and Microsoft SQL Server, which provides the database supporting the McKesson EMR.

“Next to the EMR, email is the most highly used application in our organization. Clinicians’ ability to access their email as part of their virtual desktop experience is critical,” explains Rosse. "With FAST VP running in the background, we have assurance that the system is storing email as efficiently and cost effectively as possible.”

UNIFIED VISIBILITY INTO STORAGE PERFORMANCE, NOW AND FUTURE
Another important component of the VDI environment is EMC Unisphere®, the storage management interface for the VNX. Unisphere provides a single view into storage and tiering activity for file, block, object, and replication management.

During a boot storm, for instance, the IT team can monitor hot spots and make changes on the fly to ensure optimal performance from the storage platform. Unisphere also provides tools for the team to analyze VDI performance both at present, and in future expansion scenarios—for example, how VNX performance would be impacted by adding another 2,000 desktops.
"I can’t say enough about Unisphere and how much easier it makes our overall storage space to manage and optimize," Rosse says. "We can instantly see how the system is performing and make adjustments and configurations in real time. Unisphere is so much more intuitive and easier to use than other storage solutions I’ve used."

SERVER VIRTUALIZATION TO YIELD HARD SAVINGS AND EFFICIENCIES
Building on the success of its virtual desktop installation, BMCH is now moving towards a Citrix XenApp environment for virtualizing its servers. The server virtualization is expected to yield significant savings for BMCH. By replacing 320 physical servers, each worth about $15,000, with a single Cisco UCS chassis and eight blades, BMCH anticipates a savings of up to $3 million. Like the VDI, the server virtualization will have its own dedicated EMC VNX storage system.

In addition to the hard savings, BMCH looks forward to the new efficiencies of a virtual server environment. Building out and deploying a new physical server, for instance, can take up to three weeks—but the same task can be accomplished in a day with a virtual server.

"Our current data center has 1,200 physical servers, each one consuming power, generating heat, and taking up at least four to five racks of space," said Rosse. "If we can replace that footprint with a few two-foot by three-foot devices, the hard and soft savings will be truly monumental."

ORDER-OF-MAGNITUDE EFFICIENCY IMPROVEMENTS
With its initial deployment of 135 virtual desktops, BMCH has already seen profound improvements in its ability to efficiently manage and deploy desktop software. The entire environment can be booted up in less than 30 minutes.

Recently, the IT department completed a significant software upgrade for the VDI, which required about a half day’s work testing the image and validating it before populating the desktops. Compare this to a previous software update process for a single BMCH site—a relatively small change took several months and required a command center at the hospital, staffed by up to 10 IT personnel.

Charles Rosse
System Administrator II at Baptist Memorial Health Care
“Since our IT department is spread thin, it’s hard to overstate just how important these time savings are to our organization,” says Rosse.

By dedicating a VNX storage system to the XenDesktop and XenApp environment, BMCH has been able to virtualize the actual interconnection for managing the UCS chassis and blades.

“To be able to manage multiple servers and their updates through virtualization represents an enormous time savings, which directly translates to reduced costs in our IT organization,” Rosse states. “With the dedicated VNX, we are able to capture all the IOPS that we need and present critical applications to end users in a fast, reliable environment that we can easily manage and migrate as needed.”

“The biggest advice I would give any organization planning a VDI is to go forward and make the investment in the EMC VNX system,” he adds. “The system’s price point, storage capacity, and management tools make it the perfect storage platform for VDIs of 500 or more desktops.”