A MICRON **CASE STUDY**

The Cure for Ailing Data Access

By Installing a Micron® SAS SSD Into Its Server Host, a South Carolina Hospital Cuts Load Times for Virtual Desktop Applications

For healthcare organizations, the need to maintain thousands of patient records in an accessible and secure environment puts a burden on the storage server that must provide instant access to electronic medical records, imaging scans and dictation software. So it's important that these organizations have a robust IT system built on solid, speedy drives.

"One problem with IT and healthcare is the immense amount of data that never goes away," says Isaac Cushman, network analyst III at Newberry County Memorial Hospital, located about halfway between Columbia and Greenville in South Carolina. "And when it comes to storage, I imagine it's just going to get more challenging."

Newberry Memorial is a full-service community hospital with 90 staffed beds and more than 1,900 annual inpatient discharges, according to its most recent Medicare Cost Report. Its data storage is handled primarily by Dell EqualLogic™ 4100 and 6100 iSCSI units with HDDs. When those fill up, Cushman acquires new, bigger units and reworks the volumes.

Some of the hospital staff and off-site physician's offices use remote desktops to access data. "Every ounce of performance you can create for remote desktops is essential," Cushman says. "The real benefit is to provide the best possible transfer rate."

Cushman, though, recently solved the challenge of providing faster access to stored data.

Micron® S650DC SSD: HDD-Crushing Performance for Healthcare Organizations

Part of the Micron S600DC Series family, the S650DC provides flexible storage options ideal for read-intensive, mixed workloads and write-intensive applications.

- Ultra-fast 12 Gb/s SAS dual-port functionality and robust SAS protocol
- Built with Micron's enterprise MLC flash technology
- Industry-leading storage density—up to 4TB-class capacity in a 2.5-inch form factor
- Full power-loss protection ensures availability and integrity of data in the event of power loss
- End-to-end data protection ensures the accuracy of data throughout the process of writing, maintaining and reading the data
- TCG Enterprise encryption protects valuable user data from unauthorized access

Newberry COUNTY MEMORIAL Hospital

Micron®

"The Speed Difference Blew My Socks Off"

With about 400 people accessing the network throughout a day, throughput bottlenecks are inevitable with the 15,000 RPM SAS spinning HDDs the hospital uses for its remote desktop servers, Cushman says. Physicians, nurses and other staff members who have to resume sessions or log into the EMR or email spend a significant amount of time "waiting for the spinning circle to go away."

Then, Cushman installed an 800GB Micron S650DC SAS SSD into a new VMware ESXi™ host server.

"The speed difference blew my socks off," he says.

The single Micron SSD had sequential read (Q=32, T=1) speeds of 1234 MB/s and sequential write speeds of 892 MB/s. The numbers for the Dell EqualLogic 4100 with 22 600GB 10,000 RPM HDDs in a RAID 6 configuration were 200 MB/s and 241 MB/s, respectively. For the Dell EqualLogic 6100 with 22 1.2TB 10,000 RPM HDDs in RAID 6, read/write speeds were 313 MB/s and 291 MB/s.

"I was expecting around 550 megabytes per second, give or take, between the read and write, but I was getting close to 1000 between them," Cushman says. "Honestly, I couldn't believe the Micron SSD was that much faster."

IOPS comparisons showed similar results: The Micron SSD's random read IOPS were 8558, with random write IOPS of 6343. That compares to the Dell EqualLogic 4100 system's IOPS of 2237 and 1536, respectively.

"Oh my goodness," he says. "You take a 22-drive array of iSCSI drives and you multiply that by six and you've got one SSD, according to some of these tests."

What do all the numbers boil down to? With the Micron SSD in the host machine, log-in times are cut by 10 or 15 seconds. During the course of a day and with the number of people who access the server, this can save significant time—creating extra minutes for patient care and for more patients, Cushman points out.

"This faster access creates a convenience that's obviously a great big plus for the doctors' offices that associate with us and do business or service through us as well," he says

Fort Knox-Level Security

Then, there are encryption requirements. "In healthcare, everything is encrypted, sometimes twice, it seems like," Cushman says. "If you're going without it, you're running a real risk."

The hospital relies on Cisco® Web Security Appliance (WSA) and Cisco Email Security Appliance (ESA) to lock down which files and data can go in and out of the network, with BitLocker® encryption as an added layer securing internal machines. Laptops, which don't contain confidential information, also have encryption from the smaller-capacity SSDs.

The Micron SSD further strengthens network security, Cushman says. It features internal TCG Enterprise encryption that protects valuable data from access by unauthorized parties, and the SSD will be FIPS140-2-certified in the future to meet the security needs of many government agencies—so you can be confident they meet the strict security needs of the healthcare industry.

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ISAAC CUSHMAN
Network Analyst III

Turning SSD Skeptics Into Believers

Cushman anticipates the Micron SSD's larger capacity will mean changing out servers less frequently, saving money and time for the organization. The hospital's IT hardware team is pretty small—just Cushman and two others—so the less frequently they have to focus on upgrading or replacing servers, the better.

"I think in general there's a lot of skepticism about how long something like this lasts," he says. "With an SSD, the fear is it's really a set life after you've re-written it enough, whereas a spinning disk drive can kind of hobble along for longer."

But the Micron SSD put those doubts to rest. "When you look at the hard numbers, it seems like an SSD will realistically outlast a spinning disk drive, by a long shot."

Speeding Past Cost Concerns

The hospital uses desktop-level Samsung™ SSDs for its workstations, but hadn't invested in enterprise-level SSDs. The cost simply seemed prohibitive for a county hospital, even though the Micron SSD is extremely affordable.

"At first I didn't really see how this was ever going to fit in, but now I can definitely see pushing this as a budget item for some of the higher-performance applications we run," he says. "With that kind of speed, there are applications like Citrix® that would really benefit from this drive.

"I don't think I'd ever introduce the Samsung SSDs into server storage—but I definitely see a place for the Micron [SSD] in our server environment."

Anytime you can save a few seconds on the most commonly used apps, you have to seriously consider it, he says. "If you can reduce log-in times via Active Directory servers, reduce the time it takes to get an email or to pull up a patient chart, those seem like real priorities."

Fast Facts

- **Customer:** Newberry County Memorial Hospital
- **Industry:** Healthcare
- **Primary Contact:** Isaac Cushman, network analyst III
- **Challenges:** Provide faster access to data and strengthen network security while planning for data growth.
- **Solution:** Install Micron's S650DC SAS SSD in the ESXi remote desktop server.
- **What Made the Difference:** The performance, security and capacity of Micron's S650DC SSD.
- **Result:** Improved response times, significant increase in access to patient records, added level of security with TCG Enterprise encryption.

Learn more at https://www.micron.com/products/solid-state-storage/product-lines/s600dc#/

To be contacted by a member of our SAS SSD team, complete the form at http://go.micron.com/Have-a-Rep-Contact-Me.html

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