



University of Colorado School of Dental Medicine Upgrades Service to 65,000 Patients with Tegile Hybrid Storage Arrays



The University of Colorado School of Dental Medicine (SDM) in Denver is one of the six schools that comprise the university's Anschutz Medical Campus. But the School of Dental Medicine is unique in that it is the only one of the six schools that serves actual patients, providing low-cost dental services to 65,000 customers last year at the on-campus dental clinic.

Challenge

To meet its requirements to service more than 300 dental patients daily and keep axiUm up and running with absolute reliability.

Alternatives Evaluated

Nimble Storage, Whiptail, Tegile

Decision Criteria:

"In the past, if all 300-plus chairs were refreshing the status, everything was so slow, but now we don't even realize that this issue exists. It's just phenomenal for everybody."

- Jaymil Patel
Director of Information Services
at UC's SDM

The school operates its clinic on axiUm software, a comprehensive software suite designed specifically for dental schools running on Dell PowerEdge R710 servers. To meet its requirements to service more than 300 daily dental patients and keep axiUm dental software up and running with absolute reliability, UC School of Dental Medicine relies on Tegile Hybrid storage arrays.

"We are the only building on campus that has actual patients come in the door. We have hundreds of patients every day so we have the task of not only being a school, but a business," said Jaymil Patel, Director of Information Services at UC's SDM. "The pressure on us is a lot higher. If the other schools have an IT problem, students might not be able to take a test. But if we have a problem we have actual patients in dental chairs all day long and we can't function without axiUm."

The SDM's IT environment is Citrix-centric with the Dell servers virtualized with XenServer and using XenApp for virtualized application delivery of the axiUm application to Dell/Wyse thin clients at each of the 300 dental chairs within the clinic.

The school upgraded to the Tegile hybrid arrays last August after experiencing I/O bottleneck and latency issues with its existing Dell HDD-based arrays. When the clinic opens every day at 9:00am, front desk employees check in up to 300 patients simultaneously. The SDM was experiencing its own unique type of boot storm, with inadequate IOPS to handle the load and register that many patients simultaneously, frustrating the front desk staff with intolerable waits for patient records.

Each of the 300 dental chair stations is equipped with a Dell/Wysye thin-client running embedded Windows 7, allowing the doctors complete access to the patients' records stored in axiUm, but only if the storage is fast enough to keep up.

“When we compared the price and the functionality we were looking for, Tegile was the winner because it does everything that we wanted,” said Patel. “The hybrid model that Tegile presented was really attractive to us.

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The axiUm software presents several screens of information so the doctor needs to scroll through the screens to find the exact information they need. But the Dell storage turned the scrolling into a tedious process that extended the time needed to treat each patient. Administrators were limited in their ability to log into the system remotely, impacted by the extreme latency of the Dell storage.

An engineer from Citrix evaluated the school's infrastructure and confirmed the IOPS problem with the Dell storage. After he recommended that the SDM look at hybrid solid state-hard disk drive storage solutions, Patel and his team initiated the research and evaluation process after identifying four important criteria for a new storage system: high IOPS, low latency, multi-protocol and built-in data reduction. After evaluating products from Tegile, Nimble Storage and Whiptail, the school picked Tegile as the clear winner.

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The school installed a Tegile HA2100EP array and J1100 expansion array last August and added a J2100 expansion array in January with an additional 26 TB of storage capacity.

Tegile Zebi arrays leverage the performance of SSD and low cost per TB of high capacity disk drives to deliver up to seven times the performance and require 75 percent less capacity than legacy arrays. Tegile hybrid arrays combine Tegile's patented IntelliFlash™ technology with high performance DRAM, solid state flash, Intel Xeon processors and high speed Ethernet or Fibre Channel, resulting in higher capacity and significantly higher performance. Maximizing capacity, on-the-fly de-duplication and data compression enable more hosted virtual desktops for a lower investment in storage and network infrastructure. Tegile built true unified access into the Hybrid arrays, with support for Fibre Channel and iSCSI block protocols and NFS and CIFS file protocols, an important factor for the SDM and their plans to add CIFS file shares in the future without the need to deploy another storage platform.

The UC SDM has already seen major capacity savings from Tegile's data dedupe and compression functionality. The school has configured its Tegile arrays into two SAN-based storage pools, one using 7TB of physical capacity and the other 5.49TB. With the real-time dedupe and compression turned on, the school is experiencing a 27% capacity reduction on the first storage pool and 38% on the second. And, the Hybrid arrays have completely eliminated the IOPS and latency bottlenecks.

“We had never worked with a product like this so we were unsure of how it would respond but we're very happy with Tegile,” said Patel. “Front desk employees were always complaining that the old system was too slow and response times were terrible. Now nobody is complaining anymore since we moved everything over to Tegile. “In the past, if all 300-plus chairs were refreshing the status, everything was so slow, but now we don't even realize that this issue exists. It's just phenomenal for



everybody. You can imagine at 9 o'clock we check in more than 300 patients, so all of them are refreshed every 30 seconds and we don't see any latency, no issues, nothing."

Tegile has met all of the School of Dental Medicine's requirements for a better storage solution and the school is now in the process of trying to secure funding to install an additional Tegile Hybrid array, said Patel. "We want to buy one more and we're working on it. If it was up to us, we'd buy it right now."

