# University of Colorado School of Dental Medicine Upgrades Service to 65,000 Patients with Tintri IntelliFlash™

**IntelliFlash**

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 is the only one that serves patients, providing low-cost dental services to 65,000 customers last year at the on-campus dental clinic.

The school operates its clinic on axiUm software, a comprehensive software suite designed specifically for dental schools running on Dell servers. To meet its requirements to service more than 300 daily dental patients and keep axiUm dental software up and running with absolute reliability, SDM relies on Tintri's IntelliFlash.

## The Challenge: Performance

"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 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. XenApp provides 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 IntelliFlash after experiencing I/O bottleneck and latency issues with its existing legacy solution. 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/Wyse thin client running embedded Windows, enabling the doctors' complete access to the patients' records stored in axiUm, but only if the storage is fast enough to keep up.

The axiUm software presents several screens of information so the doctor needs to scroll through the screens to find the exact information needed. But the legacy 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 existing storage.

An engineer from Citrix evaluated the school's infrastructure and confirmed the IOPS problem with the legacy 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 various vendors, the school picked IntelliFlash as the clear winner.

## The Solution: Tintri IntelliFlash T-Series Hybrid Flash System

"When we compared the price and the functionality we were looking for, IntelliFlash was the winner because it does everything that we wanted," said Patel. "The hybrid model presented was really attractive to us. Compression and data deduplication were big factors for us and IntelliFlash was the only one with dedupe to significantly save capacity."

## Challenges

- The clinic suffered boot storms every day at 9:00am when front desk employees checked in up to 300 patients simultaneously.
- Providing timely access to patients' records at each of the 300 dental chair stations was proving difficult.
- The Dell/Wyse thin-client environment demanded more IOPS than the legacy storage could deliver.

## Solution

- Tintri IntelliFlash T-Series hybrid storage system

## Results

- Patient care is unencumbered by slow application performance.
- IOPS and latency bottlenecks were eliminated.
- Real-time dedupe and compression enabled a 27% - 38% capacity reduction.

**Tintri**
Intelligent Infrastructure

The IntelliFlash systems leverage the performance of SSDs and low $/TB of high capacity disk drives to deliver up to seven times the performance and require 75 percent less capacity than legacy storage arrays. Tintri's patented IntelliFlash technology that features 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 deduplication and data compression enable more hosted virtual desktops for a lower investment in storage and network infrastructure. IntelliFlash delivers true unified access with support for Fibre Channel and iSCSI block protocols and NFS and SMB file protocols, a principal consideration for the SDM and its plans to add SMB file shares in the future without the need to deploy another storage platform.

## The Result: Optimal Performance and Improved Patient Care

The UC SDM has already seen major capacity savings from IntelliFlash's data dedupe and compression functionality. The school has configured its IntelliFlash systems into two SAN-based storage pools. 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. Plus, the hybrid systems 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 IntelliFlash," 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 IntelliFlash. "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."

Tintri's IntelliFlash has met all 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 IntelliFlash system, 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."

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*Jaymil Patel, Director of Information Services at UC's SDM*

Experience Different! For more information on how Tintri IntelliFlash can turbo-charge your business success through a simple, Intelligent Infrastructure, visit tintri.com/intelliflash.

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