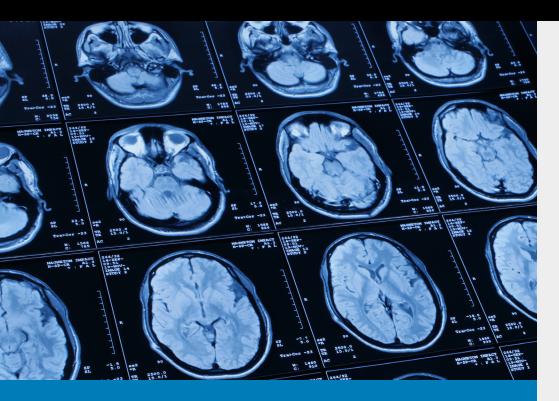# POWERING CLINICAL APPLICATIONS TO TREAT PATIENTS FASTER

DELLEMC

Humber River Hospital, North America's first all-digital hospital, supports clinical and corporate applications and provides faster patient care with Dell storage and server solutions.

Like most modern hospitals, Toronto's Humber River Hospital relies heavily on the performance of its clinical applications to provide patients with the best and fastest care. One of Canada's largest regional acute-care hospitals, serving an area of more than 850,000 people, the 656-bed facility must ensure that its physicians, nurses and other caregivers get fast and reliable access to its MEDITECH electronic health record (EHR) system each day.

"The success of our clinical applications is based on the infrastructure they reside on. We can deliver much faster and more reliable performance with the Dell storage solution."

Kevin Fernandes, CTO, Humber River Hospital

Customer profile

H+ HUMBER RIVER HOSPITAL

Company	Humber River Hospital
Industry	Healthcare
Country	Canada
Employees	3,400
Website	www.hrh.ca

Business need

Humber River Hospital needed to increase the performance of its mission-critical MEDITECH electronic health record (EHR) system and upgrade its infrastructure to support moving to its new fully digital facility.

Solution

The hospital worked with Dell Deployment Services to implement a new data center based on Dell Storage technologies and Dell PowerEdge servers powered by Intel® Xeon® processors.

Benefits

- Increases performance for MEDITECH and corporate applications by nearly 100%
- Gives physicians, nurses and other caregivers more time to spend serving patients
- Reduces data center power and cooling costs by 50%
- Migrates 380-plus applications to new facility in under 30 days
- Backs up data in 45 minutes instead of six hours

Solutions at a glance

- Data Protection
- Servers
- Storage

> *"Our millisecond response times are phenomenal now. Previously, we had to double the number of spinning disks to gain the performance we have now with the Dell storage solution."*
>
> *Kevin Fernandes, CTO, Humber River Hospital*

However, the critical system's underlying infrastructure sometimes caused performance issues, and caregivers had to wait for access to patient records and other medical data. "We had some big performance issues with our older storage arrays," says Kevin Fernandes, CTO for Humber River Hospital. "That meant everything from filing information during a patient visit to processing laboratory results was impacted. It could take up to six seconds for someone to access a patient record, which is too long."

In addition to addressing system performance, Humber River needed to prepare for a move to a new facility. "We were planning on pushing the envelope with technology at the new site," says Fernandes. "For example, we were going to have automated labs and pharmacies, as well as bedside medication verification technologies. We needed the infrastructure to support that."

Powering critical applications with Dell storage and servers

As Humber River planned for its upcoming move, it decided to upgrade its server and storage technologies. "We wanted to deploy new storage arrays and servers, but also upgrade our network from 1 gig to 10 gig," says Fernandes. A Dell server customer for many years, the hospital chose Dell again to help implement new data center technologies. "We chose Dell because of its leadership in storage and servers, and also because of our proven track record using Dell for more than 15 years," says Fernandes. "We knew Dell could help get us where we needed to go."

As a first step, Humber River deployed a Dell Storage SC4020 SAN in its new data center to support its 200TB MEDITECH platform. "Previously, our MEDITECH applications were sitting on the same SAN as our corporate applications. If one system had an issue, it would affect performance on those other applications as well. So we needed to segregate MEDITECH to eliminate those performance issues," says Fernandes. The hospital also implemented an additional Dell Storage SC4020 to run more than 380 corporate applications, including Microsoft Exchange, Microsoft SharePoint, and numerous financial and business applications.

The hospital then deployed a Dell Storage SC8000 SAN at a disaster recovery site. "We chose the Dell Storage SC series because of its performance and scalability, and the great features like automated data tiering," says Fernandes. "We liked the ability to automatically tier the data, so data we need to access rises to the top and performs at a high level, while data that's not being accessed goes to a lower tier. By designing the SAN with the right number of tiers and properly allocating the solid-state disks, we knew we could improve performance on all our applications."

Humber River also implemented Dell PowerEdge R730 rack servers with Intel® Xeon® processor E5 family, each with 256GB of RAM. The hospital also deployed new high-speed 10GbE networking switches in the data center to connect its storage arrays. With the new environment, Humber River reduced the physical storage footprint for its MEDITECH environment from more than four racks of storage to less than half a rack of solid-state disk (SSD) drives. "We went from 220 spinning disk drives to 48 SSDs using the Dell storage solution," says Fernandes. "That really reduced the power consumption in the data center." The hospital also implemented a Dell DR4100 disk backup appliance in its disaster recovery site.

Services

Dell Deployment Services

Hardware

Dell Storage SC4020 array

Dell Storage SC8000 array

Dell PowerEdge R730 rack servers with Intel® Xeon® processor E5 family

Dell DR4100 Disk Backup Appliance

Working closely with Dell Services to migrate to a new site

The hospital was assisted by Dell Deployment Services during the implementation of its new infrastructure. Dell Services also helped the hospital migrate to the new facility. "We had Dell Services teams specializing in storage and MEDITECH, and that was a huge help," says Fernandes. "They delivered on time and on budget, and they helped us successfully migrate all our MEDITECH data to the new solution."

Once all data had been migrated, Humber River opened its new facility. The new hospital is considered North America's first all-digital hospital, and it is a technological and environmental showcase for the region.

Increasing performance for critical applications by nearly 100 percent

Humber River saw a performance increase of close to 100 percent for its MEDITECH and corporate applications as a result of the new infrastructure. "We went from having slow storage performance to having much faster read-writes per second using the Dell Storage solution as well as our 10GbE network," says Fernandes. "Our millisecond response times are phenomenal now. Previously, we had to double the number of spinning disks to gain the performance we have now with the Dell storage solution."

Now, the hospital's applications perform at a much higher level. "The success of our clinical applications is based on the infrastructure they reside on. We can deliver much faster and more reliable performance with the Dell storage solution," says Fernandes.

Helping caregivers spend more time with patients

As a result of better application performance, thousands of clinicians and other staff members can provide faster care to their patients. "We've alleviated the bottleneck for physicians and nurses because of the performance increase we got with the Dell storage solution," Fernandes says. "They can retrieve the data they need in two seconds, instead of the six seconds it took before, and that means they can spend more time with their patients instead of waiting for the system to respond."

Non-clinical staff members are also taking advantage of better system performance. "Some of our operational staff used to spend 90 minutes using MEDITECH to create financial reports with a lot of statistics," says Fernandes. "Those reports are being completed in about 10 minutes now, and that's directly related to the performance we're getting from the Dell Storage SANs."

Reducing power and cooling costs by 50 percent

Because the hospital reduced the physical footprint of its new MEDITECH storage environment from more than four racks of storage to less than half a rack of SSD drives, power and cooling consumption in the data center has been significantly cut. "By reducing our storage footprint, we've reduced data center operating costs for power and cooling by 50 percent," says Fernandes.

The hospital also saved money by moving to the Dell and Intel storage solution. "We got higher performance at a much lower cost by moving to the Dell storage technologies," says Fernandes.

Migrating clinical data quickly and seamlessly

Working closely with Dell Deployment Services, Humber River migrated its clinical and business applications to the new facility in a tight time frame. "We were able to seamlessly move 380-plus applications to our new data center and migrate the new version of MEDITECH to the new infrastructure in less than 30 days, without any outages," says Fernandes. "Part of the reason for that is because of the help we got from Dell Services, but it's also due to the Dell Storage technology itself. We were able to easily replicate data via the Dell Storage arrays. We had two SANs at one site, and we moved one SAN to the new site and moved a certain number of disks there, and kept doing that until it was complete."

Scaling quickly to support future data growth

Humber River expects its clinical data to continue growing rapidly, and it is confident its infrastructure will support that growth. "We have the flexibility to add storage disks

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Kevin Fernandes, CTO, Humber River Hospital

to the SAN on the fly without bringing any of our critical applications down," says Fernandes. "That's a huge advantage of the Dell storage solution. Previously, I had to schedule system downtime to add disks because it required a reboot. Now, we can do it all in real time without any outages, so scaling up is fast and easy, and it doesn't impact our clinicians."

Backing up clinical data in minutes, not hours

The hospital can also back up its clinical and business data faster by using its storage and disk backup solution. "We have better data resiliency and faster backup times with the Dell storage solution and Dell disk backup appliance," says Fernandes. "We used to have three tape libraries and a full system restore took six hours. But our senior SAN administrator can now do a full MEDITECH restore in under 45 minutes with the Dell Storage and disk backup appliance."

Moving forward, Humber River will consider exploring additional Dell and Intel technologies. "For many years, we have relied on Dell to introduce us to emerging technologies," says Fernandes. "We trust Dell's knowledge and expertise."

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Kevin Fernandes, CTO,
Humber River Hospital

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