SUNRISE HEALTH ADOPTS WYSE ENDPOINTS AND DELL INFRASTRUCTURE TO STREAMLINE PATIENT INTAKE, ENHANCE DATA SECURITY

Desktop virtualization helps reduce hospital wait times, lets doctors spend more time with patients, and simplifies IT management

DELL AND CITRIX HELP STREAMLINE HOSPITAL ADMISSIONS

The focus on healthcare legislation during the first half of 2017 inspired many hospitals and medical facilities to begin evaluating technologies that could help them streamline patient intake and enhance data security. One of the more compelling options that healthcare IT providers have been test driving is the pairing of thin client endpoints with virtual desktop infrastructure to deliver user data and the computing experience from their datacenters.

Canada's Sunrise Health Region, one of the roughly 12 Health Regions in the province of Saskatchewan, was one such institution. Its successful pilot and subsequent deployment of Dell cloud client-computing solutions which include Wyse thin clients is instructive to other hospitals hoping to streamline endpoint deployment, accelerate application access, and increase the time its doctors have with patients. With Dell technology and Citrix software, Sunrise Health has been able to drive better medical outcomes and limit unnecessary delays.

SECURITY AND MALWARE ARE NOW PERSISTENT CONCERNS

The worldwide ransomware attack in May 2017 was estimated to have impacted at least 200,000 computers in 150 countries, [1] showing how important protecting networks from malware has become for IT managers. This event, with its global scale, was a stark reminder of the risk posed by connected devices since email, USB drives, phones, and tablets can all potentially spread malicious software that requires days of offline remediation.[2]

For years, hospitals have been a common target, since patient data is vital to providing care.[3] Cyber attacks against U.S. healthcare institutions increased by 63% in 2016, to as many as 93 major attacks.[4] In one well-

publicized example in February 2016, computers at the Hollywood Presbyterian Medical Center in Los Angeles were forced offline for more than a week until hospital officials decided to pay hackers $17,000.[5] The New Jersey Spine Center, California's Marin Healthcare District, and the Oxford (Mississippi) Urgent Care Clinic among others were also severely impacted by ransomware that encrypted its electronic medical records.[6]

The May 2017 ransomware attack reportedly caused some hospitals in Britain's National Health Service (NHS) to stop accepting patients and cancel critical operations while systems were remediated. [7] The event followed an increase in the number of cyber attacks against the NHS, up from 16 in 2015 to 55 incidents in 2016.[8] In December of 2016, ransomware was blamed for taking down IT systems at three NHS hospitals, forcing nearly 2,800 operations to be cancelled.

Fortunately however, these risks can be mitigated with Dell enterprise solutions. Specifically, Dell cloud client-computing solutions using Wyse thin client endpoints help medical facilities adhere to strict data privacy regulations. "Whether doctors are reviewing medical data on a thin client or looking at charts on a tablet, that patient's medical data is no longer stored locally on a portable device that somebody might misplace or risk losing," said Sheranga Jayasinghe, Sunrise Health's IT director. "All the data is secure in the datacenter and never at the edge. Our healthcare professionals also now access their endpoints with a chip-and-PIN combination, for two-factor authentication which provides an additional layer of network security."

BACKGROUND ON SUNRISE HEALTH

With 16 full-time IT staffers managing 2,700 devices used by 5,000 employees, Sunrise Health serves about 120,000 patients per year at 18 sites including five major acute care centers. The organization uses a Citrix farm for regional applications, the IT team hosts

[1] *The New York Times,* "Cyberattack's Impact Could Worsen," by Sewell Chan, May 14, 2017
[2] *SC Magazine UK*, "Ransomware Holds Data Hostage In German Hospitals," by Rene Millman, February 29, 2016
[3] *ZDNet.com,* "Ransomware Forced Hospitals To Cancel Operations and Shut Down Systems," by Danny Palmer, December 5, 2016
[4] *Digital Trends,* "Shamoon Returns To Wipe Hard Drives, Virtual Machines," by Kevin Parrish, January 10, 2017

[5] *Los Angeles Times,* "Hollywood Hospital Pays $17,000 To Hackers," by Richard Winton, February 18, 2016
[6] *Health IT and CIO Review,* "NJ Spine Center Pays Ransom to Cyberattackers," Akanksha Jayanthi, October 4, 2016
[7] *The New York Times*, "Hackers Hit Dozens of Countries," By Nicole Perlroth, May 12, 2017
[8] *BBC News,* "Rise In Hospital Cyberattack Reports," March 10, 2016

clinical applications from a central Citrix datacenter in the capital city of Regina, managed and operated by eHealth Saskatchewan. This architecture enables a higher degree of standardization, the centralization of applications, and a lower total cost of ownership. It also allows uniform EMR applications that are used across the entire healthcare system to be shared.

BEST PRACTICES FROM THE PILOT

Sunrise Health's pilot deployment encountered an initial wave of resistance from doctors in fast-paced, triage-based environments. With time of the essence, staffers shared passwords to access applications and patient data quickly, creating the potential for privacy violations. There was also a hiccup related to printing, long a hurdle for early VDI deployments. As a result, some print jobs were sent to printers stationed far from the endpoint being used, leading a number of doctors and healthcare staffers to opt out of the pilot.

However, rather than simply *troubleshooting* the printer issue, Sunrise Health's IT department took a much broader, holistic look at the ebb and flow of its clinicians and staff. Its goal was to pin down *all* obstacles to facilitating a seamless transition that would realize the benefits of desktop virtualization. Knowing that some percentage of its user footprint would find some reason to reject the new technology and undercut its adoption, Sunrise Health wanted to understand what was driving *legitimate* resistance.

The puzzle that IT staff wanted to solve during this part of its evaluation was: "Are we delivering a solution that is enabling clinicians and staff to do their work, or is our approach to end-to-end desktop virtualization hindering them in some way?" This early evaluation worked to shed light on the various paths workers took across the hospital and how and where they were accessing its network each day.

THE E.R. AS A SOLUTION TEST LAB

Because a key step was to establish a benchmark that could be measured across several facilities, the IT team focused on the interval it took ER patients to be registered, seen by a physician, and discharged. To

measure for random variability, a secondary parameter was whether patients were discharged or admitted. This metric could then be tracked and compared across health centers. Tracking patient flow through the system this way also allowed Sunrise Health to work toward implementing changes that would ultimately improve the patient experience as its benchmark of solution effectiveness.

The results surprised Sunrise Health's IT team. While the CDC estimates that the average wait time in a U.S. emergency room is 55 minutes, [9] Sunrise Health patients sometimes waited as much as two hours, resulting from delays created by clinicians simply logging in and out of their PCs. The study also discovered that doctors wasted time searching for print jobs erroneously sent to far-off printers, leading to significant delays.

In an emergency room environment, these seemingly small delays invariably prolonged delayed treatment of acute patients. These workflow-related delays were unexpected, because the small pilot implementation of 25 endpoints in a desktop virtualization configuration was supposed to streamline various efforts. However, because many applications did not yet have Active Directory integration, each application required its own authentication parameters, leading to user confusion.

The study found that some applications had parameters that required entering in a user's last name followed by their first name, while others used user authentication registries that required a combination of the first letter followed by the clinician's last name. Because health care providers were not able to remember several different log-in credentials during intake, they began sharing credentials or simply never logging-out so fellow doctors could access patient data quickly.

As a result, the Sunrise IT team had to address the shortcuts that doctors, nurses, and health care staffers were using to bypass the single sign-on (SSO) process. Temporary fixes included the widespread sharing of passwords to access the network and clinical applications, especially during emergency situations. To provide an alternative, the IT team streamlined the log-in process and cut several verification steps that had inspired frustration among the medical staffers.

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[9] *The New York Times,* "Strategies to Navigate the Emergency Room," by Jane E. Brody, May 15, 2017

CRITERIA FOR JUDGING SUCCESS

To address this issue and increase adoption, Sunrise Health's IT department reviewed the technology with two criteria: "Did the proposed addition to the current workflow improve the patient or customer experience?" And secondly: "Did clinicians, doctors, and other health care providers actually benefit from the technology?"

Specifically, would hospital staff recognize the solution's benefits and embrace a new workflow, or continue to employ work-arounds that might delay patient care? Following its analysis, Sunrise Health decided the user experience had to be reimagined to emphasize fast access to patient information and the applications that accessed electronic medical records. "Unidesk helped us virtualize our applications and manage our VDI pool to achieve full desktop virtualization," recalled Jayasinghe.

ACCESS AND PASSWORD MANAGEMENT

For access they selected a smart card "chip-and-pin" solution, as it eliminated the need for users to enter a user name and password. For password management the IT department then chose a solution from Dell partner Imprivata that would enable single sign-on (SSO) and dynamic password management. This smart card-enabled solution provided a layer of security for doctors called away to address a medical emergency. If they forgot to sign out, they would now no longer potentially leave the network or patient data at risk.

The ability to disconnect from a session by simply extracting a smart card streamlined the process and diminished the risk of HIPAA violations. The other key to avoiding delays involved providing a regular, consistent, but still flexible end-user experience: Each user's virtual desktop had to be configurable so they could quickly orient themselves and find their applications. So, if a user lined up his or her icons along the right side of their screen, he or she would have a consistent experience, regardless of which individual endpoint was being used.

The Sunrise IT team had found that if users had to spend even a short interval getting re-oriented or searching for their applications, this delay could draw time away from patient care, potentially when seconds count and lives are in the balance. The solution's deployment quickly allowed the medical staff to spend more time with patients in non-emergency situations, a goal of many healthcare centers fighting the perception that treatment can be an impersonal experience.[10]

Of course, reducing the total cost of ownership was a key objective when it came to implementing the new solution. "It was something to keep in mind when we came up with a proof-of-concept," said Sunrise Health's director of IT, Sheranga Jayasinghe. "Basically, our directive from management was: 'Show us what you can do and we'll invest in it.' So we were happy to be working with Dell to test the waters of desktop virtualization to see how things go."

LIVE MIGRATION AND LOCAL PRINTING

Today, the hospital network's users are gravitating to desktop virtualization. "I think they like that they can start from where they left off, on any device whether it's their portable device, their desktop PC, or their home PC," said Sheranga Jayasinghe. "They just keep working and they love the whole VDI concept. And with increased access we also have an increase in demand for Wyse clients. Now on the nursing desk we have three or four devices because people are accessing more and more electronic information."

For location-based printing, once a challenge for desktop virtualization, Sunrise Health worked with UniPrint, which helped take Sunrise Health to full virtualization by making print jobs virtual as well. Doctors moving from floor to floor or revising charts at a nurses station needed to be able to use a local printer without having to change their default printer or temporarily assign a new printer. UniPrint allowed Sunrise Health personnel to simply print to the nearest printer. "With UniPrint, each user is able to take print jobs with them and print from any printer," observed Jayasinghe.

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[10] *Health IT and CIO Review,* "Learning Digital Lessons From Hospital Industry," by Nick van Terheyden, January 31, 2017.

DESKTOP ROAMING WITHOUT MDM

[Citrix Receiver](#) allowed Sunrise Health to provide flexible access to its users without having to invest in a separate mobile device management (MDM) solution. "We had decided we were not going to go the MDM route," said Jayasinghe. "Instead we can deploy Citrix Receiver to any device that was not managed by our organization."

"It goes back to not having to waste any time looking for my application shortcut," Jayasinghe continued. Regardless of what device we connect to the network with, we always get the same desktop. The user's shortcuts and 'favorites' are all where they used to be so users don't need to look for their desktop or their information. It's right there on any device they use to connect."

CONCLUSION

Healthcare spending is likely remain an issue of keen interest throughout 2017. And while there have been several drivers of technology adoption in the healthcare space, upcoming policy discussions are likely to drive desktop virtualization piloting and adoption. Dell offers a range of new, innovative Cloud Client-Computing solutions and Wyse endpoints including the all-in-one Wyse 5040 and [the small form factor Wyse 3040](#) that can help medical teams and healthcare providers enhance the security of patient data while reducing wait times in hospitals and clinics.

As of mid-2017, Sunrise Health is approaching 95% migration, and successfully transferring users to virtual desktops. Its IT department still has a few areas left to transition, and have kept two dedicated technicians on staff to get as many workers using the VDI system as possible. In addition to transitioning its existing user base, Sunrise Health has deployed an additional 200-250 Wyse 5040 thin clients each quarter to meet the demand for their desktop virtualization environment.

Adopting Wyse endpoints has also streamlined other processes such as desktop management for Sunrise Health's 5,000 users. As a result of only having to maintain a single desktop image, the IT department can now send configured endpoints to users via courier, streamlining endpoint management and reducing data storage costs.

"Today users get a desktop within less than 15 minutes and no longer require a technician to replace a traditional PC," explained Jayasinghe, Sunrise Health's director of IT. "And if a Wyse client becomes inoperable we just ship them one more and they just plug it in and it connects. The IT team appreciates the Wyse client for its simplicity."

Leveraging VDI, Sunrise Health has also enhanced the efficiency of its IT department. The time required to launch new applications has fallen from as long as three weeks to less than an hour. If a legacy PC is not working, a user can simply get VDI access from the same PC by launching the published VDI application without impacting productivity.

With its improved workflows, doctors and nurses can seamlessly access a variety of applications – including EMR filing systems, voice-controlled record keeping software, or integrated image-viewers, in a simple and secure manner. Combined, these improvements have allowed Sunrise Health to streamline IT management, reduce waiting times, and enhance patient care. Please visit www.dell.com/wyse/products for brochures and more information.

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