The Computerworld Honors Program

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Final Copy of Case Study

YEAR:
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STATUS:
Laureate

Organization name:
Seattle Children's Hospital

Organization URL:
www.seattlechildrens.org

Project Name:
Seattle Children's Hospital (SCH) Private Cloud

What social/humanitarian issue was the project designed to address? What specific metrics did you use to measure the project's success?

As healthcare costs rise, many are unable to afford the services they need, especially as millions of people have lost employer-based coverage during the economic downturn. As the designated provider of pediatric tertiary and quaternary care for Washington, Idaho, Montana, Wyoming and Alaska, Seattle Children's Hospital (SCH), ranked nationally by US News and World Report in 10 pediatric specialties, has a special responsibility to ensure that every child in this region receives a high level of care regardless of their financial resources. In 2011 alone, SCH provided $103 million in uncompensated care to uninsured or underinsured patients, absorbing these costs into its own budget. To make this possible, the hospital must do everything possible to reduce operating expenses and help healthcare practitioners make efficient use of their time and resources. The SCH Private Cloud helps practitioners make optimal use of technology resources to provide the best medical care for children at the lowest cost. Before the project, doctors and nurses preparing for a patient visit would first spend as much as five minutes logging into a computer, then launch and log into individual applications before finally drilling down into information about the patient they were about to see. Having wasted valuable preparation time dealing with technology, they would then have to repeat this process in the clinic room. This reduced the time they could spend with each patient and family. There was also no mobile computing capability, and no way for doctors to make effective use of mobile devices. The metrics for the project focused on: reducing the time required for practitioners to access technology resources; enabling doctors to access these resources from any location within or outside the

hospital, including through mobile devices; reducing IT costs to fund free patient care; ensuring data security and privacy.

Please describe the technologies used and how those technologies were deployed in an innovative way. Also, please include any technical or other challenges that were overcome for the successful implementation of the project.

The transition to a private cloud built on a virtual desktop infrastructure (VDI) began with the use of Citrix XenApp to virtualize the applications constituting SCH's clinical environment, including Cerner, its primary clinical information system; the Epic revenue cycle system; and more than 380 other applications. Desktop virtualization with Citrix XenDesktop and Citrix Receiver enables SCH to accelerate provisioning speed, increase user mobility, and minimize login times. Users can log into their complete desktop in its most recent state, including currently loaded applications, data, and personalizations, from any workstation within 5-7 seconds. By leveraging Citrix XenApp and Citrix XenDesktop in combination with a layered security architecture, SCH can protect patients' information to a high degree with minimal functionality sacrifice (a common side effect of highly secure environments). To make it simple for users to access their personalized desktop from any location within the hospital or beyond, such as at another facility, on the road, or at home, SCH uses Citrix NetScaler and Citrix Access Gateway as its network perimeter to allow remote access via any device, including iPads and other mobile devices, while maintaining a high level of security. NetScaler also provides load balancing for the entire XenApp and XenDesktop experience to ensure consistent high performance and an optimal experience for every user. To eliminate the time and cost of maintaining nearly 5,000 workstations, SCH replaced these machines with the Wyse Xenith zero client, which connects directly to its VDI environment to provide a high-definition, instant-on user experience without a locally installed operating system. The VDI environment as a whole runs on virtual servers backed by Citrix XenServer, with high-density RAM provided by the Cisco Unified Computing System (UCS).

Please list the specific humanitarian benefits the project has yielded so far.

The SCH Private Cloud has dramatically reduced the time and attention SCH doctors and nurses must devote to technological obstacles. Practitioners can use single sign-on to log into desktop and applications on a zero client in seconds, then spend preparation time discussing the patient they are about to see. Once in the clinic room, they can log into the same desktop state with full information and patient context already displayed in 5-7 seconds, and begin interacting immediately. Clinicians save an average of 45 minutes per day, which they can now spend with patients. They can also show the family diagnostic and informational images right on the screen, something they might previously have skipped due to time constraints. Able to access clinical systems and patient information from any location, on any device, doctors can respond quickly to new developments even when they are beyond the hospital grounds. This mobility is further enhanced by the ability to use mobile devices to access the same complete, personalized desktop and applications, including practitioner-owned consumer tablets, with full confidence in the security of the VDI environment. Consolidation also helps SCH ensure a level of security and privacy for electronic medical records (EMRs) beyond the requirements of HIPAA. The consolidation of IT resources into its data center has helped the hospital greatly reduce costs through more efficient management and support as well as the replacement of a workstation environment with a three-year replacement cycle with a less expensive zero client with a 10-year replacement cycle. Over 4-5 years, SCH will be able to save roughly $1 million in IT costs, which can then be redirected toward caring for uninsured or underinsured patients. SCH now works actively with other hospitals nationwide to help them realize similar benefits for their patients.

Please provide the best example of how the project has benefited a specific individual, enterprise or organization. Feel free to include personal quotes from individuals who have directly benefited from the work.

The project has overwhelmingly benefited both the patient community and caregivers. Below are quotes to support these benefits: "We took a fleet of PCs of varying ages and varying capabilities, which took up to ten minutes to boot up first thing in the morning, and we replaced them with a virtual desktop infrastructure that boots up in less than 45 seconds, and allows you to move all over the organization as many times as you want, getting exactly the same desktop right where you left it, with less than ten-seconds' reconnect time. There are 5,000 employees here; this project was all about them and the patients. It's pretty easy to see how we've saved thousands of hours that we can use to focus on our patients and their families instead of technology." - David Fisher, MD, Senior Vice President and Chief Medical Officer. "As we reached out to the caregivers at Children's asking them what their greatest pain point was when interacting with the IT infrastructure, we found two common complaints: long wait times. Secondly, there was a lack of consistency. Everything was different everywhere they went. Using Citrix has allowed our caregivers to gain access to the information they need much faster and much more consistently." -Jake Hughes, Director, Partner Experience and Innovation. "The new technology has had a really huge impact on patient care. Before we had Citrix, I would have to log on to each computer and wait for it to boot up. I'd have to close my applications and then go to the clinic and open them up again. Now the virtual desktop allows me to maximize the time that I spend in face-to-face contact with the patients that I see." - Dr. Ruth McDonald, MD.