Customer Case Study

Hospital Deploys Desktop Virtualization with Unsurpassed Performance

Executive Summary

Challenge

- Improve clinician productivity and patient care by enabling fast, easy access to applications and data from any station
- Increase scalability to efficiently deploy up to 3000 virtual desktops without compromising application performance
- Improve service resiliency

Solution

- Cisco Unified Computing System
- Cisco Nexus 5000 Series Switches

Results

- Saved each clinician at least 45 minutes per day through single log-on and fast application performance.
- Increased scalability up to 120 users per blade with no performance degradation.
- Eliminated service outages due to incompatible network interface cards

Seattle Children's Hospital uses Cisco Unified Computing System to power 3000 virtual desktops across its locations.

Challenge

Seattle Children's Hospital specializes in meeting the unique physical, emotional, and developmental needs of children from infancy through young adulthood. Consistently ranked among the nation's best children's hospitals, Children's provides inpatient, outpatient, diagnostic, surgical, rehabilitative, behavioral, emergency, and outreach services through its main 254-bed hospital in Seattle, as well as in several clinics across the Pacific Northwest.

With thousands of patients per year, clinical staff must make every minute with patients and their families count. The hospital's IT organization had brought its 5500 workstations throughout the hospital under central management, with the ability to deliver applications and data to clinical users on the floor. However, each workstation quickly wandered from its original configuration, and every workstation and application that a caregiver accessed behaved differently. It usually took up to two minutes to log onto each workstation, which caregivers had to do dozens of times per day.

As a result, the hospital's IT group spent 90 percent of its time chasing repetitive workstation issues and errors, as well as managing 5000 to 6000 different instances of almost 400 applications. In addition, the IT team is continuously advancing more critical projects. Children's existing servers required long periods of time to build, deploy, and scale, which slowed initiatives throughout the hospital. Complicating their work was the fact that a recent server blade upgrade came with a new Network Interface Card (NIC), which was different from the rest of the hospital's servers. The IT team now had to maintain separate, and hopefully identical, software images for the two sets of NICs. Although the NICs were "teamed" to provide a level of redundancy through a software driver, the new configuration did not work with the hospital's Citrix environment, resulting in numerous service outages. It became so prevalent that the IT team determined that the risk of an outage due to a blade failure was less than the risk of an outage associated with teamed NICs.

"Our Cisco Unified Computing System decision is a game-changer. I can fully load the system, and no one can detect a difference. It enables the hospital to fully utilize what we paid for and receive performance that exceeds our expectations."

—Jake Hughes,
Chief Technical Architect

"We were actively trying to get IT out of the face of our clinical users," says Jake Hughes, chief technical architect for infrastructure at Children's. "As we planned for a Virtual Desktop Infrastructure (VDI) and for server virtualization, we were going to need much higher performance and scalability than our current environment delivered."

Solution

Children's had standardized its workstation deployment using Citrix Provisioning Server and the Citrix XenApp environment. Hughes now planned to deploy a Citrix XenDesktop hosted VDI for up to 5000 users. The VDI would give users cohesive access to their Windows 7 desktops and clinical applications from Wyse Zero Client devices anywhere in the hospital. However, as Hughes' team tested VDI client performance on the existing server configuration, it became clear that, as clients scaled to a full load of approximately 60 users per blade, performance dropped anywhere from 30 to 40 percent and user log-on times increased by anywhere from 2 to 10 seconds. It was clear that the existing infrastructure would not be able to deliver the memory scalability or user experience needed to support a large VDI deployment.

Children's had briefly considered Cisco Unified Computing System™ for a prior server virtualization project, but existing commitments with another vendor precluded this. Based on the VDI implementation requirements, Hughes reached out to Denali Advanced Integration, a Cisco® Premier Partner, and Cisco for help. Denali brought extensive Citrix and Wyse experience, as well as its Cisco data center product expertise to the project, and Cisco brought its Unified Computing Systems team and system deployment experience as the two companies worked closely together.

The Cisco team installed the Unified Computing System platform within several days, with Denali engineers providing project coordination and installation of the virtual environment. The first virtual machines (VMs) were turned up within an hour.

"The Cisco team installed the system and stayed on-site with us to help bring us up to speed on the Cisco Unified Computing System platform," says Hughes. "When we implemented our VDI test environment, the ease of deployment, performance, and scalability exceeded our expectations."

Children's was able to quickly deploy and scale the hosting environment using Cisco UCS Manager and preconfigured service templates. The Cisco Unified Computing System eliminated NIC teaming problems, because NIC failover and aggregation are managed outside of the operating system, eliminating driver dependencies and allowing worry-free server upgrades. Virtual desktops running the Windows 7 operating system are hosted on dual-socket, six-core Cisco Unified Computing System blade servers with 96 GB of RAM and have begun testing of up to 192 GB of RAM. The IT team is initially operating two blade chassis, providing 16-blade capacity and hosting 120 virtual desktops per blade with zero performance impact. The Windows 7 virtual desktops provide users with cohesive access to productivity and clinical applications provisioned efficiently through Citrix XenApp.

"We recommended Cisco Nexus 5000 Series Switches using the Virtual Port Channel feature to maximize traffic flows," says Shawn Olson, vice president of network solutions for Denali. "The Nexus switch will deliver the best switched path for traffic between the Cisco Unified Computing System and the hospital's existing core switch to increase performance and stability."

The Cisco Nexus® 5000 Series Switch also manages infrastructure routing decisions in the event of an infrastructure failure outside of the VDI environment. After experiencing the performance and scalability of the Cisco Unified Computing System and Cisco Nexus 5000 Series Switch, the hospital decided to integrate the Cisco Nexus 5000 Series Switch in its virtualized blade environment to simplify management.

Results

"Our Cisco Unified Computing System decision is a game-changer," says Hughes. "I can fully load the system and no one can detect a difference. It enables the hospital to fully utilize what we paid for and receive performance that exceeds our expectations."

Feedback from clinical users has been overwhelmingly positive. Logging onto a system happens in a matter of seconds, instead of up to two minutes. A single sign-on capability helps ensure that users' applications and personalizations follow them across the hospital. In seconds, they can walk into a patient's room and access all of the context for the patient. They no longer have to log off, log on, open applications, or close applications multiple times. Conservatively, Hughes estimates that medical staff save approximately 45 minutes per day and that it is possible to save much more. With 45 extra minutes, they could see several more patients or spend more time with each patient instead of interacting with the computing environment.

"For the same reasons that Cisco Unified Computing System is the right thing for desktop virtualization, it is also the right thing for our server virtualization, our security infrastructure, and for management efficiency," says Hughes.

Children's is now using Cisco Unified Computing System to target its high-performance applications and its virtualization strategy. The system also meets or exceeds all of the hospital's stringent security guidelines.

The hospital's engineers are enthusiastic about the Cisco Unified Computing System management interface. Service profiles have greatly simplified management, enabling even inexperienced staff members to easily scale the VDI environment. When adding a blade, the team simply adds it to the established profile and it is automatically configured. Integrating with the hospital's infrastructure is only limited by how quickly it can be plugged in.

Hughes says that the Cisco Unified Computing System also helps reduce costs. Because it can achieve high density with high performance, the hospital needs to purchase fewer blades, which also reduces data center space requirements, power, and cooling. The larger the implementation, the more savings are generated when compared to a one-to-one server environment.

Simple scalability has enabled the hospital to provide access for users working in remote locations during snow days. Users can work from anywhere, using any device, and have the same experience that they would have at the hospital, because the virtual desktop is identical everywhere. In the event of a pandemic, earthquake, or other type of disaster, the IT team can rapidly scale to add workstations for emergency response personnel.

Products and Services

Routing and Switching

- Cisco Unified Computing System
- Cisco Nexus 5000 Series Switch

Third-party Solutions

- Microsoft Windows 7
- Citrix XenApp, Provisioning Server, XenDesktop
- Wyse Zero Client

Next Steps

Denali will help Hughes complete installation of the desktop package for 3000 VDI clients by the end of 2011.

"The relationship that we have with Cisco is one of the major reasons why we are adding another Cisco Unified Computing System deployment," says Hughes. "Not only is the equipment far superior, but the support that we received from Cisco enabled us to make this major transition in productivity, which translates directly to better care for our patients."

For More Information

To find out more about Cisco Unified Computing System, visit: www.cisco.com/go/unifiedcomputing.

To find out more about Cisco Services, visit: www.cisco.com/go/services and www.cisco.com/go/unifiedcomputingservices.

To learn more about Seattle Children's Hospital, visit www.seattlechildrens.org.

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