Hospital Transforms Data Center to Business Advantage

Executive Summary

- **Customer Name:** Salem Hospital
- **Industry:** Healthcare
- **Location:** Salem, Oregon
- **Number of Employees:** 4000

Business Challenge

- Improve performance and availability of critical systems
- Increase system manageability for business agility
- Reduce costs

Network Solution

- Built data centers with Cisco UCS infrastructure to support mission-critical systems and applications

Results

- Reduced time to provision server by 66 percent through new virtualized environment
- Cut time to reimage server from days to half hour; time to add new disk from months to day
- Slashed annual operating expenditure by US$900,000 through reduced equipment, licensing, and staffing costs

Salem Hospital adopts Cisco UCS to streamline data center management and increase business agility.

Business Challenge

Salem Health is a not-for-profit organization that exists to improve the health and well-being of the people and communities of Oregon's Willamette Valley. Its facilities include Salem Hospital, a regional medical center that is one of the largest of Oregon's 58 acute care hospitals and operates the state's busiest emergency department.

Salem Health works to help ensure its IT infrastructure delivers the performance and capabilities that clinicians need to provide the best patient experiences and outcomes possible. The provider leveraged Cisco® Data Center Advantage and a Cisco 10 Gigabit Ethernet fabric to upgrade its Salem Hospital data center to help ensure business continuity and accommodate growing data volumes from electronic medical records.

Once those issues had been successfully resolved, Salem Health turned its attention to the performance of its primary clinical application, EPIC. The organization not only wanted to look at a new colocation provider, but also take further control of its applications by leveraging data center solutions that would help to increase performance and manageability in a more scalable, sustainable virtualized environment.

"Cisco UCS has put us back in control of all our key applications and systems. We know the needs of Salem Health better than anyone else, and with Cisco manageability, we can do a better job than anyone else of making sure our systems supports our organization's success."

– Jason Murray
   Senior Server Administrator,
   Salem Health

"We didn't want to just move our existing systems over to a new facility," says Jason Murray, senior server administrator at Salem Health. "We wanted a new level of manageability and affordability." Salem Health sought lower latency, so that clinical staff could log in to the application and be more productive. It wanted to eliminate interruptions in service due to upgrades or hardware outages, and improve backup reliability. The healthcare provider also wanted to be able to make changes quickly in response to business needs, for example, by adding a disk to the SAN when the organization needed more storage or by testing and releasing fixes and upgrades to deliver better performance. With its previous positive experience of Cisco infrastructure, Salem Health looked to Cisco to help take it to the next stage.

"We saw that a Cisco UCS infrastructure could help us take back management of this critical application and deliver the performance that we needed in order to improve our users' experience and gain more flexibility and agility for the business," says Murray.

Network Solution

Salem Health's new colocation provider houses the organization's Cisco Unified Computing System™ (UCS®) infrastructure, running EPIC on 22 Cisco B200 M2 Blade Servers in three Cisco UCS 5108 Server Chassis. 18 Cisco blades are primary servers for EPIC, and 4 servers are for virtualization. The new data center features two Cisco Nexus® 5548UP Switches. Because these switches support traditional Ethernet, Fibre Channel, and FCoE, they connect both the fabric components as well as core switching at the new data center, saving on equipment and helping Salem Health continue its transition to a more reliable networking infrastructure.

In its main on-site data center, the hospital runs an additional nine Cisco B200 M2 Blade Servers in three chassis. One pair of Cisco Nexus 5020 Switches supports Fibre Channel over Ethernet (FCoE). They connect over 10 Gigabit Ethernet to the hospital's newer servers, which host multiple healthcare applications and Microsoft Exchange .The Cisco Nexus 5020 Switches send storage traffic to a Cisco MDS 9500 Multilayer Director and data traffic to the Cisco Nexus 7000 Switch at the core. Another pair of Cisco Nexus 5020 Switches connects to Gigabit Ethernet servers, by way of Cisco Nexus 2000 Fabric Extenders.

Business Results

When Salem Health switched colocation providers and migrated to Cisco Data Center solutions, it decreased its annual IT operating costs by $900,000. Because of the easy manageability of the UCS architecture, the organization was able to take over full management of the EPIC application with its existing staff and saving the expense of paying third-party staff.

Additional cost savings came from consolidating the data center from 62 physical servers to 22 on the UCS blade chassis, creating significant power savings. In turn, Salem Health reduced hardware, licensing, and support costs.

Enhanced performance

Clinicians were frustrated by login times of 60-150 seconds: with 1600 Epic users, Salem Health was spending 24 hours of staff time each day waiting for EPIC to launch. Using Cisco UCS, the hospital has slashed that to 10-15 seconds, down to well under three hours per day across the organization.

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Because it took users so long to log in, they would often leave applications open to avoid having to log in again. This practice overtaxed the system, so Salem Health cut users off after an hour in the application. Now, with the upgraded UCS hardware and faster login times, users can stay in EPIC for two hours, which means that they do not have to disrupt their work or log in as often.

Healthcare environments cannot tolerate downtime, so Salem Health needs advanced test and development, troubleshooting, backup, and disaster recovery capabilities. The previous system made it difficult to test and improve systems. With EMC VNX and the new Cisco UCS hardware, Salem Health can constantly refine its systems for peak performance. The IT department can upgrade the Cisco Nexus switches without interrupting hospital applications because of the In-Service Software Upgrades (ISSU) feature.

If application issues arise in the production system, IT can get an up-to-date replica and refresh an environment within four hours, down from the 22 hours that it took before. UCS has also reduced the time to create a snapshot for backup and DR purposes, so Salem Health can now run the daily full backup of its database that the manufacturer recommends, rather than once a week.

"Prior to the upgrade to the UCS, we were constantly asked to modify access rules to the environment," says Murray. "However, since the upgrade was completed and the resources expanded through the UCS, we haven't received a single request to modify the access rules. The UCS has proven itself with providing the necessary compute power to deliver an exceptional experience every time our users access our EMR."

Manageability equals agility

Beyond performance improvements, the new system offers greater flexibility and business agility, due to its manageability. "With UCS, we regained control of our systems," says Murray. "We're able to integrate our existing processes into the infrastructure, rather than have to change them to account for technology limitations."

UCS has saved costs and improved flexibility with its chassis design and ability to manage the servers at a higher level, outside of the server hardware itself. Previously, Salem Health could not respond quickly to system needs. Now, with Cisco UCS, Salem Health can reimage a server in half an hour instead of several days, and can manage zoning the Cisco Nexus 5000 switches to take care of disk utilization and add to its SAN within a day or so, instead of months.

The transition from physical servers to virtual servers running on Cisco UCS blade servers has also significantly increased business agility. When the hospital wants to introduce a new IT service, the application team can provision a virtual server in just 30 minutes, compared to 90 minutes for a physical server. Rather than separately provisioning a server, storage, and networking connection, the team simply provisions a virtual machine (VM), and everything else happens automatically. Up to 50 VMs can reside on each server, reducing equipment and operational costs.

The Cisco switching environment is also easy to manage. All Cisco Nexus switches use the same operating system, NX-OS, minimizing training requirements. Cisco Fabric Manager Software manages a Cisco Nexus 5020 Switch, which in turn manages all Cisco Nexus 2000 Fabric Extenders. This streamlined process saves approximately three to four hours daily in SAN management, which frees up staff to perform other tasks.

Scaling up for EPIC growth

With EPIC and other key applications running on UCS, 10 GB Ethernet, and a unified fabric, Salem Hospital can readily scale up its EMR program, improve the performance of its systems, and support its ongoing change and growth. Its environment is growing at approximately 25-30 percent a year as the hospital adapts and refines its systems to meet its changing needs and to accommodate growth in stored data volumes. Salem Health is also increasing its virtualization footprint, planning to further reduce its physical machine requirements by opting for virtualization wherever feasible.

"Cisco UCS has put us back in control of all our key applications and systems," says Murray. "We know the needs of Salem Health better than anyone else, and with Cisco manageability, we can do a better job than anyone else of making sure our systems support our organization's success."

For More Information

To find out more about Cisco Unified Data Center solutions, go to: www.cisco.com/go/dc.