Pivot3

Southern New Hampshire Health Systems

Pivot3 Hyperconverged VDI Solution Dispenses Greater Patient Care for Award-Winning Hospital

PIVOT3 CASE STUDY
Hyperconverged Solution for VDI

INDUSTRY
Healthcare

LOCATION
New Hampshire, USA

KEY CHALLENGES
- Needed high availability environment to support 365x24x7 medical center
- Required immediate access to critical patient data
- Poor user mobility between emergency rooms, ICU, clinical floors, etc.

SOLUTION
SNHHS has constructed a highly available, resilient environment by architecting two identical datacenters using Pivot3 HCI appliances.

BUSINESS BENEFITS
- Improved patient care through faster and more flexible access to medical data
- High availability and 24/7 uptime for patient-facing applications
- Reduced administrative time and cost due to ease of management

About the Customer

Southern New Hampshire Health Systems (SNHHS) is an award-winning medical facility nestled in the heart of the Nashua, New Hampshire. The facility has more than 20 campuses and serves an estimated 100,000 patients a year in the southern New Hampshire region. SNHHS has one of the largest physician networks in the region with more than 500 primary and specialty care providers, continuing its 125-year tradition of providing expert medical care, innovative health programs and preventative health resources to the community.

SNHHS is an industry leader in identifying and introducing new, advantageous technologies to healthcare IT environments. In order to digitize operations, improve customer care and increase staff efficiencies, SNHHS deployed virtual desktop infrastructure (VDI) at a 300-bed facility, with plans to expand to other locations. VDI allows customers to lower costs and increase efficiencies for IT departments, while delivering more flexibility, data mobility and improved productivity for end users.

The Challenge

The primary challenge facing the SNHHS IT team was the inability to deliver the high availability required to enable 24x7x365 access to virtual desktops and resources for all its end users – primarily administrative personnel, nurses and doctors. The hospital staff needs continuous access to multiple systems and medical applications, including electronic health records (EMRs), high resolution imaging, notepad, browsers, MS Office and more, as they care for patients and conduct day-to-day tasks, such as prescribing medications, triaging and diagnosing patient ailments.

This was a big task as the SNHHS IT team was responsible for more than 3,000 physical desktops and the terminal server implementation that was accessed externally by users and staff to access data within the organization when they are out of the office or working after hours.

"When I joined SNHHS we had high availability and performance issues," said Scot Tymowicz. "As a desktop configuration engineer, I had deep VDI experience so I was able to optimize some aspects of the solution that weren't being utilized before. One of them was load balancing, which allowed us to take advantage of newer technologies such as VDI with VMware Horizon View and Horizon 7 with Blast."

The SNHHS IT team is charged with managing the critical data doctors use to make real-time decisions that can mean the difference between life and death. To make sure this data is

readily available and accessible from multiple devices, the IT team needed a comprehensive, high performance, highly redundant, resilient, always-on solution that had the ability to span hundreds of desktops and multiple datacenters.

"We have 100-120 virtual desktop sessions running on any given day that serve our clinical floors, the ICU and our emergency department," said Tymowicz. "Our machines get worked hard, and our staff absolutely requires immediate access to critical patient data. They also need the flexibility to access that data from a number of different end points throughout our facility."

SNHHS also required a solution that allowed for data mobility. Staff continually move from patient to patient, and they needed a solution that would allow them to access their virtual desktops and sessions from any desktop in the hospital. In addition, as patients move departments (e.g., from the emergency room to ICU or clinical floors), their patient data needs to be available from any desktop location throughout the hospital.

The Solution

Tymowicz quickly realized that he could transform the system into a strategic asset for SNHHS with Pivot3's innovative architecture. Features such as Pivot3's distributed scale-out architecture and patented Scalar Erasure Coding provided the performance, capacity efficiencies and resilience required by the hospital.

Using Pivot3 Hybrid nodes, Tymowicz and SNHHS built a highly available, resilient environment by architecting two identical datacenters. Each datacenter has vSTAC HCI Hybrid nodes and one 12TB data node in a cluster. All vSTAC nodes run vSTAC OS 7.4 and VMware vSphere 6.0. VMware Horizon View 6.2 is used to deliver desktop virtualization capabilities. Four F5 load balancers – two in each datacenter – route incoming requests to the datacenter with the most available bandwidth, processing capacity and storage IO resources. In addition, the redundancy inherent in two identical datacenters ensures medical staff at SNHHS have continuous access to vital patient data in the unlikely event of a datacenter outage. The architecture allows Active-Active load balancing configurations as well as Active-Passive configurations, helping simplify maintenance activities by simply shutting down the datacenter that needs maintenance. The F5 load balancers automatically route the traffic to the available datacenter, ensuring no disruption for users.

Roughly 200 Horizon View 6.2 desktops support the clinical applications needed by doctors and nurses in the main hospital and ER. Medical staff access the applications from a wireless, mobile cart – referred to as Computers on Wheels, or COWs – that can move from area to area in the hospital. Doctors access their individual desktop from any wireless cart with a simple, single sign-on (SSO) login procedure enabled by digital card readers, greatly simplifying and accelerating the process of accessing patient data, test results, and notes from other practitioners. Additionally, with sophisticated session management from HealthCast Solutions, the practitioners can access their live sessions as they move from location to location, boosting their productivity and accuracy significantly.

In 2017, SNHHS plans to add three vSTAC all-flash hyperconverged nodes to their environment to accelerate access time to patient data. SNHHS expects a 4x improvement in access times with the all-flash nodes.

Pivot3's interoperability with existing platforms and flexibility to deploy on multiple form factors allow SNHHS to leverage existing IT assets alongside new investments in modernizing their infrastructure as they scale to meet growing business needs.

The Results

Pivot3 HCI nodes significantly reduced the complexity of the virtual desktop environment. What used to take weeks, if not months, can now be accomplished in a matter of hours. After a Pivot3 node is plugged in, the management software is installed and it seamlessly integrates into the existing cluster; it does the ESX and storage layering and helps in the recreation of all LUNs and data storage. The medical staff at SNHHS now has the ability to access patient and other medical data from any terminal – or wireless cart - in the facility, which streamlines patient care and improves the overall experience.

"The best thing about a VDI solution is the flexibility and mobility it offers to our end users," said Tymowicz. "My team spends a lot of time on the clinical floors so we can understand the workflows, and we are constantly watching medical staff bring the wireless carts into the patient room and sit with them and fill out forms. They can leave that machine there, lock it and make it secure, and if they run to the emergency room or anyplace else they swipe their badge, and can log into a machine close to them and not have to lug equipment all over our facility. That's a huge timesaver and allows our staff to focus on delivering medical care, not technology."

From an IT perspective, the Pivot3 solution allowed the team to be extremely dynamic and efficient. "When we perform upgrades or deploy new software, such as Office 2010 for example, it's so much easier to update the one master/gold image and have the VDI user sessions and desktops be automatically updated versus manually updating 3,000 physical desktops," Tymowicz said. "In the VDI world a single machine is updated and then deployed to the other VDI machines. As users log off, the new changes are automatically updated. So, it's zero downtime to users and it's a much more efficient use of our admin time, because we can do the updates during business hours with no impact to the environment."

High availability was also a prime consideration in SNHHS's selection of Pivot3. After deploying a second datacenter, the team has eliminated scheduled downtime for maintenance and firmware updates. "What we really like about the Pivot3 solution is its highly redundant architecture and highly resilient design," said Tymowicz. "Because we can move back and forth between two datacenters, we never disturb the workflows of our end users. We're hitting that 365/24x7-100- percent uptime window with ease now. And in our industry, that means everything. I've been in this industry a long time, over 20 years, and success really boils down to relationships and working with the right people. Pivot3 is exceptional is this area. Their staff are very responsive, knowledgeable and a pleasure to work with."

About Pivot3

Pivot3 improves the simplicity and economics of the enterprise datacenter with industry-leading hyperconverged technology. By collapsing storage, compute and networking on commodity hardware, Pivot3 provides a software-defined solution that enables customers to scale to massive volumes and gain twice the performance of competing solutions, all at drastically reduced infrastructure requirements. The result is predictable, prioritized data and application performance based on business value. Pivot3 has over 2,200 customers around the world and has deployed more than 16,000 hyperconverged infrastructures in multiple industries such as healthcare, government, transportation, security, entertainment, education, gaming and retail. Recently named a Leader in the Forrester Wave™: Hyperconverged Infrastructure (HCI), Q3 2016 and a Visionary in Gartner's 2016 Magic Quadrant for Integrated Systems, Pivot3 provides smarter infrastructure solutions for the modern datacenter.

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