Baystate Health

VMware Hyper-Converged Technology Helps Baystate Health Provide a Higher Level of Care While Cutting IT Expenses

Baystate Health, one of the leading healthcare providers in the nation, must evolve continuously to offer the highest-quality care. To support this mission, Baystate embarked on an update of its entire IT infrastructure in 2014. It turned to VMware technology to design and build a new virtualized data center, and to deploy 10,000 virtual desktops to allow clinicians and administrative personnel to access the corporate network while on the go.

Employing 12,000 people and serving more than one million patients a year, Baystate Health is among the largest healthcare systems in New England. Its facilities include an academic medical center, four community hospitals, a children's hospital, numerous outpatient and primary-care facilities, a hospice, a health insurance company, and the only level-one trauma center in Western Massachusetts. Overall system revenue is USD $2.2 billion.

The Challenge

Baystate Health is one of the leading healthcare providers in the nation. Like other healthcare providers, it must evolve continuously to offer the highest-quality care. To support this mission, Baystate, partnering with VertitechIT, a specialized healthcare and business IT advisor located in Holyoke, Massachusetts, embarked on an update of its entire IT infrastructure in 2014.

"We needed to change our approach to IT because our business is changing so rapidly," says Joel Vengco, CIO of Baystate Health. "We have more demand by users, and we have operating and capital expenses that are skyrocketing. So we asked, 'What has to change in IT? How do we become the lean, mean IT shop we need to be?'

The conventional answer was to build a new data center, but after considering the huge amounts of capital, space, cooling, and power that would require, Baystate instead decided to target a virtualized hyperconverged infrastructure environment with a dramatically reduced footprint.

Baystate needed a Software-Defined Data Center to take control at the software layer and standardize compute, network, and storage infrastructure on more affordable commodity hardware using a hyperconverged approach. "Traditional SAN has to be scaled up. It's very expensive, especially when you reach a ceiling. The promise of hyperconverged storage is that you just keep scaling out, grow as you need to. That directly affects cost," says Dave Miller, an enterprise infrastructure architect at Baystate Health.

INDUSTRY
Healthcare

LOCATION
Springfield, Massachusetts

KEY CHALLENGES
- Rapidly increasing healthcare data requires increasing storage
- Siloed infrastructure limits speed and flexibility to support IT needs
- Building a new data center demands huge capital, personnel, real estate, and power costs

SOLUTION
Baystate chose VMware vSphere and VMware Virtual SAN as the platform for its hyperconverged infrastructure with over 2 petabytes of data, while choosing VMware Horizon to deploy over 10,000 virtual desktops across the system.

BUSINESS BENEFITS
- Saved about $3.5 million in data center construction costs and shed the cost of maintaining 12,000 computers in the field.
- Avoided large one-time purchases and instead grew its data center horizontally by adding nodes to the hyperconverged cluster.
- Improved resiliency with an always-on, highly available multi-datacenter.

vmware®

VMWARE FOOTPRINT
- VMware vSphere
- VMware Virtual SAN
- VMware NSX™
- VMware Horizon Enterprise 6

APPLICATIONS VIRTUALIZED
- Electronic Medical Records System
- Microsoft SQL

PLATFORM
- Cisco UCS Platform

PARTNER
- VertitechIT

Furthermore, the design for all applications had to be available 24/7 at a lower operating cost. The IT architecture needed to be simple to manage and faster to troubleshoot, thus eliminating complexity. It also had to be easy and cost-effective to scale, and highly centralized so that operations could be converged and overhead reduced. "To me that's what hyperconvergence is really all about," said Vengco.

The new IT infrastructure would also have to make it easier for Baystate's medical staff to work on the go. "For our specialists to be where they need to be in real time, they need to smoothly transition from exam rooms to nursing stations to their office and bring along their desktop wherever they go," Vengco says. Baystate's new IT architecture called for deployment of 10,000 virtual desktops to allow clinicians and administrative personnel to access the network from any device, anytime, anywhere.

The Solution

Having decided on a hyperconverged architecture, Baystate explored many solutions and found that one stood out from the rest: VMware Virtual SAN™. "Based on the requirements of up-time, integration of all the different siloes and essentially the seamlessness of the architecture, VMware is, as far as we're concerned, the proper choice – pretty much the most solid approach to hyperconvergence.", says Mike Feld, interim CTO of Baystate Health.

"It's really part of a larger hyper-convergence model and for technical reasons and for simplicity, we selected VSAN. If we were going to move our entire, 'siloed' approach of storage here, processing here, networking there, onto one single platform, we wanted all of those abilities buried into the extraction or the hypervisor level itself. We didn't want to buy independent little products and snap them in so to speak. Really, that means the only solution suite was the VMware world of products -- NSX for networking, VSAN for storage, and vCloud for everything else. So it really was a no-brainer. "

With VMware hyperconverged infrastructure, Baystate was able to realize significant consolidation and space savings. Baystate currently has 2PB of data and plans to consolidate that across three datacenters into around 40 storage blades, which will save datacenter real estate by a factor of 10 to 1.

"Before Virtual SAN, we had a lot of disparate storage solutions," Vengco says. "Now we have a single, homogeneous storage environment, and a multi-datacenter, always-on, highly available approach. Virtual machines can exist at any data center at any time without the need for orchestration or synchronization. We couldn't do that without Virtual SAN."

For its virtual desktop deployment, Baystate considered other providers, such as Citrix, but decided VMware Horizon offered the best solution for delivering a reliable desktop experience across a large virtual desktop infrastructure consisting of over 10,000 desktops across the entire system. "Our clinicians are moving around constantly," Vengco says. "We don't want them carrying around big laptops. We want them to be able to tap a badge and have their session pop up wherever they happen to be. Now that we've deployed virtualization, we're seeing adoption and excitement among our end users at being able to work whenever and wherever they want."

Business Results & Benefits

Baystate originally budgeted $8 million to build out a new data center. By virtualizing and hyperconverging its data center, the company saved about $3.5 million in construction costs. It is also saving significant human capital by reducing the time needed for service provisioning from days and weeks to a matter of hours. "We've got a lot of smart folks here and now, with the automation and orchestration in our new hyperconverged environment, we can free them up to do what smart people like to do, rather than reset user IDs every day," Vengco says.

Hyperconvergence also allows Baystate to avoid large one-time purchases. Instead of spending $1 million on a new fiber channel SAN for a new stage of growth, it can grow its data center horizontally by adding nodes to the cluster as needed with Virtual SAN. Baystate is even earning revenue by securely renting excess data center capacity to other organizations and sharing infrastructure resources.

"VSAN is the one tech out there that has the largest financial gain to the institution. VSAN versus traditional storage in some cases is half the price, both to install and operate. Cost savings, real estate savings; VSAN is not capacity-based it's licensed by socket, so it's very easy to predict cost versus trying to manage terabytes and terabytes of growth every month," says Feld.

Meanwhile, Baystate's virtual-desktop environment has helped it shed the cost of maintaining 12,000 computers. Now, instead of spending millions on PC installations, upgrades, and repairs, it can put that money into its data center, an investment with a higher return. And it can purchase fewer PCs going forward, because computers are accessible to all rather than one user or group.

"Many of our residents work in common spaces and lay claim to a computer for a day," Vengco says. "Now I can give them the opportunity to log in and have their session just as they left it an hour ago. And I can stop buying $1,500 computers and start buying endpoints that are $200 to $300 apiece."

On the security front, Vengco no longer worries about data on a disk, laptop or mobile device that can be lost or stolen. Such a security breach is especially devastating for healthcare organizations, which are subject to stringent privacy regulations. "With data centrally managed, risks are reduced and HIPAA compliance is simpler, which is huge," says Vengco.

Looking Ahead

Baystate is looking forward to new Virtual SAN features slated for delivery. For example, deduplication will soon be a Virtual SAN option. "We'll be exploiting that and looking at our hardware-based deduplication targets to see if we can accomplish them with Virtual SAN," says Vengco.

vmware®