Peninsula Regional Medical Center

EXCEPTIONAL HEALTHCARE. EXCEPTIONAL PEOPLE.

PENINSULA REGIONAL
M E D I C A L   C E N T E R
Part of Peninsula Regional Health System

Industry
Health care

Corporate Headquarters
Salisbury, Maryland

Employees
Approximately 3,000

Annual Operating Budget
$352,000,000

THE NUMBERS

• Server infrastructure 75% virtualized

• 2,000 Microsoft Exchange mailboxes

IN BRIEF

Objective
Peninsula Regional Medical Center understands that IT innovation is critical to its ability to meet strategic goals. But it must innovate cost-effectively to ensure that funding is focused on clinical systems and facilities.

Solution
VMware virtualization technology has allowed the medical center to deploy state-of-the-art applications that drive process integration, collaboration and communication, while minimizing IT costs.

Business Impact
• Physical server footprint reduced from 185 to 110

• Did not have to fund costly datacenter expansion

• Improved server availability

• Manageability reduces FTE costs by $80,000–120,000 annually

• Faster email performance supports strategic goals of collaboration, communication

Peninsula Regional Medical Center Achieves IT Innovation Through VMware Virtualization

"With VMware virtualization, we have better uptime, and our infrastructure is easier to maintain. And adopting a 'virtualization first' policy has allowed us to avoid having to expand our datacenter—an expansion that would have cost an unimaginable amount of money that we'd rather invest in our clinical systems and facilities."

— Paul Lade, Senior Systems Administrator, Peninsula Regional Medical Center

Peninsula Regional Medical Center has a long-standing reputation for IT innovation. For several years, the medical center has been recognized as a "most wired" health-care system in rural and most improved categories. Peninsula was also an early adopter of virtualization with its deployment of VMware virtualization technology seven years ago.

But the medical center knows it must continue to innovate. Its strategic plan, for example, identifies "fragmentation" as one of the biggest potential barriers to quality, efficiency and cost control. The plan then names IT as a key driving strategy to overcome fragmentation.

It's no surprise that Peninsula's IT organization has sought to further leverage the value of its VMware virtualization technology, including pairing its VMware environment with Cisco Unified Computing System (UCS) servers and EMC storage to provision a tightly integrated and robust enterprise computing platform.

Innovation Through Virtualized IT

"I tell people I work for the innovations division," says Paul Lade, Senior Systems Administrator, Peninsula Regional Medical Center.

Lade was on the scene when the medical center—a 362-bed facility that forms the hub of the Peninsula Regional Health System—first learned about VMware technology. He recalls that Peninsula's datacenter at the time had just reached full capacity. "We'd moved one last rack into it," Lade says. "After that, we were out of space."

The time was ripe for virtualization, and Lade oversaw a pilot project to deploy VMware on a handful of servers in the medical center's test and development environment. The results showed immediate promise. "VMware consistently did what it said it could do," says Lade. "It was simple and easy to use."

Then someone came to IT with an urgent request for a server, and the team decided to provision a virtualized system instead of scrambling to install new physical hardware. "Within a year, half of our test systems were virtualized, and we were starting to clear space in our datacenter," Lade says.

A year after that, Peninsula had adopted a formal "virtualization first" policy for its entire IT infrastructure—including mission-critical production systems as well as its test and development environment. What happened next was a two-year lull in hardware acquisitions, a welcome change from the unabated server sprawl that Peninsula faced previously. "Today when managers tour our datacenter, they are flabbergasted by how bare it is," Lade notes.

vmware®   **clearpath** solutions group

The medical center's IT infrastructure is now 75 percent virtualized, and from a peak of 185 physical servers, it is now down to 110 despite having enriched its application environment considerably along the way.

Peninsula also recently migrated from older versions of VMware ESX® to the current version of VMware vSphere® Hypervisor, which is based on VMware ESXi™. "Moving to VMware ESXi helped us slim down our server footprint," says Lade, who describes the ESXi hypervisor as "easy to install."

The upgrade to ESXi is also consistent with Peninsula's forward-thinking approach to technology adoption. It positions the medical center to move a Cisco Nexus 1000V Virtual Ethernet Module and take advantages of capabilities VMware will incorporate into future versions of VMware vSphere.

Leveraging VCE Coalition

Peninsula considers its adoption of VMware virtualization as central to its strategy of IT innovation. However, VMware technology is only one piece of that strategy. The medical center has also evolved its hardware platform to leverage the value of the Virtual Computing Environment (VCE) coalition of Cisco, EMC and VMware. Assisting in the pilot rollout program and the final deployment was Clearpath Solutions Group, a leading provider of VCE, and vBlock-based solutions in the mid-Atlantic region. "Clearpath's expertise and relationships with Cisco, EMC and VMware were instrumental in making this project a complete success," comments Lade.

From the start, the medical center's virtualization strategy went hand-in-hand with the deployment of increasingly powerful hardware. "We started out with dual process–type threaded servers," Lade says. "When we needed more horsepower, we went to quad core, then blade technology."

For many years, Peninsula used HP servers, but when Cisco launched its UCS servers, the medical center decided to migrate to a Cisco platform. "Cisco UCS addressed the management issues we were running into with the HP blades," Lade says. The Cisco servers didn't require the multiple switches of the HP blade chasses, for instance. "We found the Cisco servers to be easier and cleaner to manage."

A month after testing its first Cisco UCS server, Peninsula had migrated three-quarters of its virtual infrastructure onto that platform. "We had faith in it from day one," Lade says. "And we've been running with it ever since."

Today, Peninsula is standardized on Cisco UCS B230 Blade Servers.

For storage, the medical center uses two EMC CLARiiON CX4 model 240 storage arrays (plus two older EMC Symmetrix DMX-3 950 arrays). "The primary restraint we faced with virtualization was storage costs," Lade notes. "Moving to CLARiiON systems keeps down our storage acquisition costs."

The hardware architecture is designed to drive high availability. "We have four storage arrays cross-meshed between our main datacenter and a second datacenter upstairs," Lade explains. VMware vMotion® technology "floats" Peninsula's 330 virtual machines between the two rooms. An unplanned outage that took up to 4 hours to recover from has been reduced to just minutes.

Reliable Platform for Enterprise Applications

Peninsula trusts the reliability of the platform so much that it has not hesitated to virtualize mission-critical applications, including its Microsoft® Exchange 2010 environment and core McKesson electronic medical records (EMR) software. "Our Exchange environment is completely virtualized," Lade says. "It's easier to manage than our old Exchange deployment and more highly available."

The performance of Exchange email also improved dramatically as soon as Peninsula virtualized it. "We were delightfully surprised to see how quickly messages transmit now," Lade says. "Emails used to take as long as 30 seconds between send and receive. Now we receive them almost instantaneously."

Other mission-critical applications Peninsula has virtualized include McKesson's Horizon Cardiology PACS (picture archiving and communication system) and Enterprise Revenue Management solutions. "We were the first site in the country to migrate McKesson's Horizon Cardiology PACS to a virtual environment," Lade notes. The migration allowed Peninsula to retire one of its legacy HP servers that Lade describes as "expensive to maintain." It is now deployed as 32 virtual machines on one production and one quality-assurance Cisco UCS server.

Implementing McKesson Enterprise Revenue Management under VMware was another industry first. "We were the first hospital to virtualize the application from day one," Lade says. "We would have needed 34 single-use servers if we didn't go with virtualization." Instead, Enterprise Revenue Management is deployed as 35 virtual machines on four Cisco UCS blades and incorporates growth capacity as well as high availability.

Freeing Resources for Clinical Use

VMware virtualization has delivered significant value to Peninsula. One major benefit Lade cites is ease of management. "We can manage our entire virtualized infrastructure through a single pane of glass," he says. He relates an incident when the environment was hit by a virus. "We were able to check a couple of hundred virtual machines in a fraction of the time it would have taken to clean up 200 physical servers," Lade notes.

Ease of management means Peninsula requires fewer system administrators than would otherwise be required to manage its datacenters, which saves the medical center $80,000–120,000 annually in labor costs.

VMware virtualization allowed the medical center to avoid even larger costs in its facilities budget. Peninsula is in the middle of a multimillion-dollar expansion, and thanks to virtualization, it was able to focus that expansion on its needs as a health-care services provider, rather than its IT organization. "If we hadn't virtualized, we would have had to add more datacenter space as part of the expansion," says Lade.

A smaller server footprint frees up resources as well—resources that are critical to Peninsula's medical equipment. Take power, for example. As technology plays an increasing role in the delivery of medical care, medical centers such as Peninsula need more power to run that technology. Today, Peninsula is preparing to transition to a larger uninterruptible power supply to meet the increasing needs of both the datacenter and the institution. That wouldn't be an easy task if the medical center hadn't virtualized the majority of servers in its infrastructure. The cutover can essentially be done risk free and without disruption by moving everything over to its alternate datacenter through vMotion.

VMware Delivers What It Promises

Although Peninsula has focused primarily on virtualizing its server infrastructure, it also has plans in place to deploy a VMware View™ virtualized desktop environment. Virtualized desktops will be more flexible than conventional PCs, allowing Peninsula's clinicians to more easily check on patients or on data such as the output from fetal monitoring systems. "We want our clinicians to be able to access applications anywhere at any time," Lade says.

Today, the medical center is running a small View pilot. Eventually, it will implement 1,000 virtual desktops on Wyse thin clients. Even the pilot demonstrates that VMware virtualization opens opportunities for Peninsula to foster communication and collaboration across its enterprise.

It's a great example of how Peninsula embraces innovative IT to meet its strategic goals—innovation that is enabled by VMware virtualization. "Again and again over the years, we've found that VMware delivers what it promises," Lade says, adding, "and I've never met anyone who disagrees with that."

IMPLEMENTATION OVERVIEW

VMware Products:	Applications:	Platform
VMware vSphere 4	Microsoft Exchange 2010	Cisco Unified Computing System (UCS) B230 Blade Servers
VMware ESXi	McKesson Electronic Medical Records, Horizon Cardiology PACS and Enterprise Revenue Management solutions	EMC CLARiiON CX4 model 240 networked storage
VMware vMotion		EMC Symmetrix DMX-3 950 system
VMware View		Cisco Nexus 5000 and 1000V Virtual Ethernet Module

vmware®