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Virtualization Enables Adoption of Electronic Medical Records to Meet Federal Regulations; Server Consolidation; BC/DR Implementation

Weeks Medical Center

"The people at GreenPages really know their stuff. We have a really good relationship with them. Great technology matched with superior knowledge and skills makes for a great outcome."

KEY HIGHLIGHTS

Challenge

- Needed 24/7 access to historical medical records
- Federal pressures to implement EMR, CCD, and CPOE
- Risk of Medicare billing loss for non-compliance
- Too many servers to manage, cool effectively
- Server weight issues threatened physical environment

Technology

- VMware vSphere and vCenter
- HP ProLiant DL380 servers
- Dell EqualLogic PS6000E iSCSI SAN
- Quest vFoglight, vOptimizer, vRanger

Results

- Virtualization provides centralized system control
- Scaled down from 45 physical servers to 6
- Savings of approximately 250,000 kWh of energy usage
- Reduction of more than 350,000 lbs of CO2 emissions
- Deployment of CPOE and Medication Administration systems
- Met Federal requirements at a reasonable cost
- Built in disaster recovery capability and redundancy

Weeks Medical Center

Weeks Medical Center is a full-service hospital serving the northern tip of New Hampshire. The 25-bed hospital located in Lancaster provides surgical and intensive care, outpatient services, and an emergency department. There are also three satellite physician practices in Lancaster, Groveton, and Whitefield NH. The Center handles approximately 73,000 patient visits per year for a core catchment area of 13,000 patients.

Customer Challenge

Darrell Bodnar, Manager of Information Services, explained that the IT requirements in the healthcare industry are more demanding than in other industries. "The biggest need is 24/7 access to medical records. This can affect acute care, but there are ways around that. If current lab results are not available on the computer, we can always get them manually. The problem is accessing digital historical records 24/7."

Bodnar discussed the many federal pressures that healthcare providers are under with Electronic Medical Records (EMR) and "Meaningful Use"; Continuity of Care Documents (CCD); and Computerized Physician Order Entry (CPOE). These standards call for all medical records to be digitized, using formats that can easily be exchanged between different offices and computer systems.

"According to the timeline, this must all be finished by 2015. Otherwise we'll be penalized by losing some Medicare dollars. If we lose 1% of our Medicare billing, that's a lot of dollars. It's something we should do, and we need to do. I see this greatly improving healthcare and patient outcomes. The problem is that it's being forced on us at a very rapid rate."

Bodnar said that the new Federal requirements created a need for a large increase in server capacity. "Every service you add requires more hardware, and more servers." Weeks Medical decided it wasn't practical to keep expanding the existing server network. They were having to deploy too many servers that used too much power at an enormous expense. Those servers also required a huge amount of cooling. And with so many servers consolidated into racks, it put a lot of weight onto a small footprint. "We were getting into a situation where the loads were close to the design strength of the floors and we were just generally getting overwhelmed."

Technology Solution

GreenPages suggested a virtualization strategy that would enable the Center to use existing resources that had previously been underutilized. GreenPages began by doing a Capacity Planner analysis of the existing servers, and a Storage Health Check of the existing storage components.

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Based on that information, and using predictions of future requirements, GreenPages designed and implemented a new VMware system and added two new HP ProLiant DL380 servers to be used as hosts. Two existing ESXi servers were also upgraded. Improved storage for the system was provided by a Dell EqualLogic PS6000E iSCSI SAN.

The software side of the virtualization project was based on the vSphere Enterprise virtualization platform. vCenter Server provided centralized control, showing the status and configuration of clusters, hosts, and virtual machines. Quest vFoglight allowed Bodnar to monitor physical storage capacity on the system, and vOptimizer allowed optimization of the available storage. vRanger was included to provide backup across the entire vSphere environment.

Successful Result

Virtualization allowed Weeks Medical to handle the new IT functions required by the Federal requirements at a reasonable cost as well as allowed for easier setup and centralized system control. “We went from 45 physical servers down to 6. We’ve added two more since then, and that would have required 15 of the old servers. Currently we have 60 guest servers running on 6 VM hosts. We’ve probably saved in the area of 250,000 kWh in energy usage. Statistics show that this equates to a reduction of more than 350,000 lbs of CO_2 emissions. That’s like planting 600 trees.”

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Weeks Medical is currently deploying the CPOE and Medication Administration systems to track drug information at each stage of the process, including the physician’s order, the pharmacy record, the container for the drug, and the information used by the nurses when they dispense the drug. “All of these have bar codes, and all of them have to match,” Bodnar explained. “It’s really a great system.”

GreenPages also built in disaster recovery capability so all of the data on the main system is written to a separate backup location; everything on the SAN is replicated. The backup hardware is supported by a UPS and a backup generator. If the main server room is incapacitated, the Center can be functioning again within an hour or two.

“We built in a lot of redundancy. If one of the hosts has a physical problem, vMotion moves everything to other servers automatically. It’s a great technology. This is really the most stable system I have ever seen. The people at GreenPages really know their stuff…Great technology matched with superior knowledge and skills makes for a great outcome.”