



A better doctor/patient experience.

North Shore Medical Center provides better support
for physicians and healthcare professionals
with AMD processor-based solutions.

Challenge:

- North Shore Medical Center had been receiving complaints from staff about the time and resources required to log onto systems, place orders and conduct IT maintenance.
- Workflow was being routinely disrupted, and the data center could not scale to add new servers.

Solution:

- NSMC chose the HP ProLiant™ BL45p and BL25p blade servers powered by AMD Opteron™ processors to run VMware Virtual Desktop Infrastructure (VDI).
- It replaced the older terminals with AMD Geode™ processor-powered HP Compaq T5720 thin clients and later upgraded to AMD Sempron™ processor-powered HP Compaq T5730 systems.
- Back-end support for the thin-client solution was established with VMware Virtual Infrastructure 3, running on HP BL 685c blade servers powered by Dual-Core AMD Opteron processors.

Impact:

- The VMware, HP and AMD Opteron processor-based server consolidation strategy enabled the organization to meet its needs with fewer servers and reduce the existing data center's 150 servers to 94, with 86 of those running virtualized.
- The thin-client solution reduced log-in time from as much as five minutes down to just seconds or a minute at most; the enhanced server performance gave clinicians a smooth, uninterrupted workflow; and the reliability and flexibility of the infrastructure reduced help desk calls significantly.
- The combined changes have helped remove logistical frustrations for the doctors and allowed them to spend more time with patients.

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Organizational Profile

North Shore Medical Center (NSMC) is a member of Partners™ HealthCare (PHS), a non-profit integrated health system founded in 1994 and made up of hospitals, primary and specialty care physicians, community health centers, and other health-related entities. NSMC is the largest healthcare provider on Boston's North Shore, offering comprehensive health services to residents of its communities, and, as a member of Partners HealthCare, participates in a wide range of collaborative patient care programs and provides patients with access to some of the most advanced subspecialists in the world.

Challenge

NSMC was growing considerably, and as executives planned new patient offerings, they recognized that the organization's data center would play a heavy part in supporting the initiatives. When he began auditing the data center, Demetrios Papayannopoulos, corporate manager of NSMC, was shocked. "I was surprised at the state of the data center," said Papayannopoulos. "With one look, I knew that the IT infrastructure needed to be revamped — and quickly — if we were going to meet the aggressive goals for growth."

The infrastructure currently supported 150 servers, and Papayannopoulos estimated that it would need to scale to about 240 servers in order to meet the company's needs. Unfortunately, there was simply no room for more servers. Power consumption stood at 67 percent of capacity, making the server room hotter than necessary and driving cooling bills higher than Papayannopoulos wanted them to be.

System sluggishness, work disruptions and downtime had become a source of frustration for the NSMC staff and

significantly impacted productivity. Users complained that the entire data-entry process — from log in, to order entry, to log out — was painstakingly slow, often taking up to five minutes to simply log into the computerized physician order management system (CPOM) and then even more time to log into other applications.

Frequently, a clinician would log in to a terminal, begin entering an order, and then be pulled away for an emergency or patient issue. If the clinician returned to the terminal and someone else had logged on, all the clinician's previous work had been erased. And because each server supported a single application, whenever a server went down, so did the application, leaving physicians, nurses and staff frustrated as they tried unsuccessfully to access patient healthcare records or billing statements.

The IT staff had its own complaints about the overall system. As the servers and terminals aged, they required frequent, individual attention to address glitches. The way the system was configured, standard activities like patches had to be administered manually to each individual machine, requiring that the terminals be powered down and unavailable during maintenance.





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— Demetrios Papayannopoulos, Corporate Manager, NSMC

Solution

After considerable research, Papayannopoulos decided that VMware® technology offered the ideal solution for the company. VMware virtualization technology inserts a thin layer of software directly on the computer hardware or on a host operating system. This creates a set of virtual machines and uses a virtual machine monitor or “hypervisor” that allocates hardware resources dynamically and transparently, enabling multiple operating systems to run concurrently, yet separately, on a single physical computer.

NSMC also created a thin-client solution with AMD Geode™ processor-powered HP Compaq T5720 machines to replace the older terminals. To consolidate the company’s servers, Papayannopoulos selected HP ProLiant™ BL45p, BL25p and BL685c server blades powered by AMD Opteron™ processors running VMware Virtual Desktop Infrastructure (VDI), including VMware ESX Server 3.5 and VMware VirtualCenter 2.5, on HP ProLiant BL45p, BL25p and BL685c server blades.

The servers were tasked with powering two databases — Oracle® Database 10g and Microsoft® SQL Server™ — and supporting the company’s 100-plus applications, such as Tempus scheduling software. The majority of applications were implemented on

virtualized servers, which greatly reduced the hardware count in the data center. The back-end support for the thin-client solution was established with VMware Virtual Infrastructure 3 running on HP ProLiant BL 685c server blades powered by Dual-Core AMD Opteron processors.

Impact

The consolidation strategy using VMware technology with AMD Opteron processor-based servers from HP was a success, addressing NSMC’s data center concerns about infrastructure, productivity, system maintenance, energy consumption and cost. Overall, the existing data center’s 150 servers were reduced to 94, with 86 of those servers running virtualized environments. The new infrastructure also delivered the redundancy and availability NSMC required. “Now if we have a power failure in one virtualized server, we can avoid disruptions because the other virtualized servers have the ability to take care of the applications the failed server was running,” says Papayannopoulos.

Improved Performance and Productivity

With the new system, Papayannopoulos says that applications now run exceedingly well. “The AMD Opteron processor-powered servers are so robust, we haven’t yet been able to exceed their capabilities,” he says.

Today, clinician log-in time using the thin client solutions has been reduced from as much as five minutes down to just seconds or a minute at most. According to Dr. Nathan Kaufman, M.D., medical director of information systems, the difference is dramatic. "A cardiologist told me that the doctoring around here is better than it has been in years, removing logistical frustrations for the doctors and allowing them to spend more time with patients," he says. "In fact, the implementation has been so successful within the clinical floors that we are receiving requests from other departments to replace their existing PCs with thin clients as well."

Reduced System Maintenance

The solution also delivered important benefits for the NSMC IT team. "You can bring up another server quickly in order to add a new application while keeping the others up and running, so there is no disruption of service to our customers," Papayannopoulos says. "AMD Direct Connect Architecture and AMD Virtualization™ technology are really well-suited for virtualization and enabling high-performance VMware deployments."

Lower Energy Consumption and Overhead Cost

This reduction in physical server count helped reduce

power consumption and spared the IT team from potentially spending thousands of dollars in new server costs. NSMC also noticed the added bonus of outstanding energy efficiency with the thin-client solution. Despite added strain on the data center, power consumption today remains steady. "This goes toward keeping overall costs low in terms of cooling requirements," Papayannopoulos said.

Doing More with Less

The initial implementation was so successful and in such high demand that NSMC upgraded to AMD Sempron™ processor-powered HP Compaq T5730 systems for the project's second phase, which more than doubled the amount of thin clients from 135 to 300.

Papayannopoulos summarizes the effects of the new AMD Opteron processor-based solution by stating, "Although the number of applications and requirements the system has increased, through virtualization and consolidation we are able to meet these needs with fewer servers. This consolidation strategy, supported by the AMD Opteron processor-based servers from HP and VMware Virtual Desktop Infrastructure software, helped us realize dramatic savings in power consumption and costs."

About AMD

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