



Partners™ Healthcare Improves Data Center Management with AMD Opteron™ Processors

"At the time, AMD was offering what suited our needs: a low voltage server processor that was optimized for a virtualized environment."—Demetrios Papayannopoulos, Corporate Manager, Partners™ Healthcare

Challenge:

- Partners™ HealthCare's North Shore Medical Center (NSMC) was planning new services and programs in response to its growing number of customer requirements.
- But the existing data center was unable to meet the company's needs, as described by Demetrios Papayannopoulos, corporate manager, Partners HealthCare. The current data center had no room for new servers, was consuming exorbitant amounts of energy, and experienced frequent failures.
- Papayannopoulos decided a virtualization environment based on VMware virtual infrastructure 3 would resolve data center concerns and began testing to determine which platform would be best suited for NSMC's needs.

Solution:

- NSMC implemented the AMD Opteron™ processor running VMware virtual infrastructure software on HP ProLiant BL45p and BL25p blade servers. The system served as the execution arm of the company's server consolidation strategy.

Impact:

- The VMware, HP and AMD Opteron processor-based server consolidation strategy was a success, addressing the NSMC data center concerns including energy consumption, server count, availability and cost. The existing data center's 150 servers were replaced and reduced to 94, with 86 of those servers virtualized.
- Papayannopoulos summarized the new AMD Opteron processor-based solution by stating, "Although the number of applications and requirements

upon 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 and VMware's virtual infrastructure software, helped us realize dramatic savings in power consumption and costs."

- The AMD implementation has been so successful that NSMC plans to introduce a thin client, Citrix-based system running on AMD processors to aid doctors in patient treatments.

Organizational Profile

Partners™ HealthCare was founded in 1994 by Brigham and Women's Hospital and Massachusetts General Hospital. Partners is an integrated health care system that offers patients a continuum of coordinated high-quality care. The system includes primary care and specialty physicians, community hospitals, the two founding academic medical centers, specialty facilities, community health centers, and other health-related entities. Partners HealthCare is a non-profit organization.

North Shore Medical Center (NSMC) is a member of Partners HealthCare (PHS), and is the largest healthcare provider on Boston's North Shore, offering comprehensive health services to residents of its communities. As a member of Partners HealthCare, NSMC participates in a wide range of collaborative patient care programs with Massachusetts General Hospital and Brigham and Women's Hospital and provides patients with access to some of the most advanced sub-specialists in the world. NSMC is also a beneficiary of PHS's leadership in advancing technology that improves patient safety and quality.

For more information about Partners Healthcare, visit www.partners.org.

Challenge

PHS' NSMC Hospital was growing considerably in popularity and usage, with customers requesting more programs such as Diabetes Management and services such as a new ambulatory care center. As executives planned these new offerings, they recognized that the organization's data center would need to play a heavy part in supporting the initiatives. As such, NSMC CIO Mark Hulse hired Demetrios Papayannopoulos, corporate manager, Partners HealthCare to ensure the NSMC data center would be up to the challenge.

“When I was hired 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.”

To meet the growth requirements of NSMC, Papayannopoulos estimated the infrastructure required at least 180 servers, an increase from the 150 that were currently entrenched within the data center. But Papayannopoulos saw that there was simply no room in the data center for more servers, and building or renting a new data center was not an option.

Another concern was skyrocketing energy costs due to vast inefficiencies in the servers. Power consumption in the data center stood at 67 percent of capacity, a number that kept the server room hotter than necessary, in Papayannopoulos’ opinion, and cooling bills high.

NSMC was also trying to reduce or eliminate downtime. As the IT infrastructure was originally designed, each server supported one application: with this 1:1 ratio, if 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.

Lastly, Papayannopoulos wanted to keep costs low. NSMC was facing a huge expenditure for 30 new servers if the company could not identify an alternative solution.

Faced with all of these challenges, Papayannopoulos decided the answer to the dilemma was virtualization: NSMC could consolidate and therefore reduce the number of servers in the data center, allowing more than one application and operating system to run on one server. He believed that with the right execution strategy, the organization could reduce costs and energy consumption, and improve availability. Papayannopoulos decided that VMware offered the ideal solution for the company: the VMware approach to virtualization inserts a thin layer of software directly on the computer hardware or on a host operating system. This software layer creates virtual machines and contains a virtual machine monitor or “hypervisor”

that allocates hardware resources dynamically and transparently so that multiple operating systems can run concurrently on a single physical computer.

The entire data center was running on systems based on a competing processor, but Papayannopoulos knew there had been vast improvements in the technology since the original implementation. NSMC ran multiple tests to gauge what kind of system would be most ideal for the new virtualization environment. Specifically, the organization was searching for a processor that could deliver the necessary performance and availability levels with low voltage, and the answer was discovered in the AMD Opteron™ processor. “At the time, AMD was offering what suited our needs: a low voltage server processor that was optimized for a virtualized environment,” Papayannopoulos said.

Solution

To consolidate the company’s servers, Papayannopoulos selected the AMD Opteron processor running VMware virtual infrastructure software on HP ProLiant BL45p and BL25p server blades. The servers were tasked with powering two databases—Oracle 10g and Microsoft® SQL Server™ clusters—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.

Impact

The VMware, HP and AMD Opteron processor-based server consolidation strategy was a success, addressing NSMC’s data center concerns including energy consumption, server count, availability and cost. The existing data center’s 150 servers were reduced to 94, with 86 of those servers virtualized. 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. Papayannopoulos also noted the server room runs much cooler than the previous configuration.

The new system also delivered the redundancy and availability NSMC required. “We are now running a farm of three BL45p VMware servers powered by the

AMD Opteron™ processor so now if we have a power failure in one server, no one notices because the other virtualized servers take care of the applications,” Papayannopoulos said.

Papayannopoulos summarized the new AMD Opteron processor-based solution by stating, “Although the number of applications and requirements upon 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 and VMware’s virtual infrastructure software, helped us realize dramatic savings in power consumption and costs.”

The new infrastructure has been so successful for North Shore that Papayannopoulos said all new servers are based on AMD Opteron processors.

Additionally, Papayannopoulos added that the AMD implementation has been so successful that NSMC plans to introduce a thin client, Citrix-based system running on AMD technology/processors to aid doctors in patient treatments.

About AMD

Advanced Micro Devices (NYSE: AMD) is a leading global provider of innovative processing solutions in the computing, graphics and consumer electronics markets. AMD is dedicated to driving open innovation, choice and industry growth by delivering superior customer-centric solutions that empower consumers and businesses worldwide. For more information, visit www.amd.com.

© 2008 Advanced Micro Devices, Inc. All rights reserved. AMD, the AMD Arrow logo, AMD Opteron, and combinations thereof are trademarks of Advanced Micro Devices, Inc. Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other jurisdictions. Other names are for informational purposes only and may be trademarks of their respective owners.