

Intermountain Health Care consolidates servers to lower costs and ease administration.

Overview

■ **The Challenge**

Reduce the number of servers, along with associated costs, administration issues and performance inefficiencies, while still providing hospitals with highly available systems

■ **The Solution**

IBM @server® pSeries® 690 server with IBM POWER4+™ processors running IBM AIX® and Linux operating systems, connected to IBM TotalStorage® Enterprise Storage Server® systems

■ **The Benefit**

A consolidated server environment that reduces complexity to streamline management, lower costs, increase availability and enable better use of system resources



Good works require a good business strategy

Intermountain Health Care (www.ihc.com) has served the medical needs of Utah and Idaho residents for more than 25 years. Operating within an integrated healthcare system, IHC doctors, hospital personnel and other providers work together to achieve clinical excellence, quality and innovation. With over 25,000 employees, the Salt Lake City-based organization generated revenues of almost

“We’re an integrated health care system. If a medical record is not available to a doctor at the time he or she has to make a decision, that puts lives at risk. Our system availability has to be 24x7.”

—Karl West, assistant vice president of IT operations, Intermountain Health Care

US\$2.1 billion in 2002. As a charitable, nonprofit organization, IHC is committed to providing affordable care for everyone with a medical need, regardless of ability to pay. But as a business, IHC is focused on extending the best clinical services to those in need as cost-efficiently as possible.

A cycle of inefficiency

Operating a successful nonprofit in the healthcare industry, with its escalating costs and regulatory compliance issues, means managing budgets carefully. But from an information technology (IT) standpoint, previous cost management efforts had left IHC with a hardware infrastructure that was expensive to operate. A history of purchasing resources on a project-by-project basis had left IHC with its applications running on a large number of servers, which were becoming increasingly difficult to administer. Because of IT staff efforts, the existing systems were meeting the organization's needs for reliability and availability, but the behind-the-scenes situation in the server room was one of endless resource juggling and underutilized assets.

Applications had outgrown their original servers as the organization had expanded. And because the hospital system has to follow an asset-depreciation schedule based on Medicare's stringent governmental regulatory requirements, IHC couldn't replace its servers as often as needed. "Something had to happen to the old machine because we couldn't just get rid of it," says Fred Holston, director of IT architecture, Intermountain Health Care. "Even if a server still had a good market value, it's difficult for us as a nonprofit under Medicare to sell it and write off the depreciation." IHC needed to find other projects that could be moved onto the unused servers. As a result, IHC's IT team was spending too much time reshuffling assets, both from a hardware perspective and an accounting perspective. This affected system complexity and availability. And after all the resource juggling, IHC was always back where it started, "buying yet another, larger server to accommodate the growing application," says Holston.

"We had really gotten to a spot where we had too many servers," he continues. Not only was the environment expensive, difficult and time-consuming to

manage, but also many of the servers were underutilized, making inefficient use of resources. Additionally, IHC's environment didn't support the organization's growing need for Linux. The organization wanted to test Linux-based applications and formulate a strategy to host these applications in a production environment as the open-standards-based operating system becomes more prevalent in the healthcare industry.

Meeting new needs, without compromising existing requirements

"At a high level, our objectives were to decrease costs, reduce complexity and increase efficiency," says Karl West, assistant vice president of IT operations, Intermountain Health Care. But cost-cutting efforts couldn't come at the expense of system availability.

"We hoped to be able to leave applications where they were planted and, with very short or no downtime, have the ability to increase processing power quickly and cost effectively," says Holston. This would simplify administration and save costs. IHC also sought to use systems more

dynamically. “Our time-and-attendance and HR systems are about the same size, yet they don’t need computing power at the same time,” says Holston. Across many applications, the organization could see the potential resource savings that could result from sharing processing power by dynamically allocating server resources.

A single server, with room to expand

IHC turned to IBM to consolidate its servers using IBM **@server** pSeries system technology with POWER4+ architecture. “IBM understands the urgency of patient care that we needed to address,” says West. IHC also had a history of reliable pSeries system use and was comfortable with the technology. “We already had other, smaller pSeries servers supporting our most critical clinical systems,” he says.

The organization is consolidating four large applications, including a comprehensive database application that contains hundreds of smaller applications, onto a new pSeries 690

model 7040 server with 20 active POWER4+ processors and 72GB of active memory. Four extra processors and another 8GB of memory are available using IBM Capacity Upgrade on Demand (CUoD) functionality. The pSeries server is divided into six partitions: five partitions running IBM AIX 5 software and a single partition running SUSE LINUX Enterprise Server 8. IHC also has the ability to activate the available CUoD resources as additional partitions are needed or as existing partitions need to grow.

“The majority of the machine is running AIX 5,” says Holston. But the company sees the emerging need for Linux expertise. “The Linux partition today serves as a test environment for assessing performance, ease of administration and security.” The pSeries system’s ability to create logical partitions (LPARs) will allow IHC to build its Linux expertise and apply it to production systems as new Linux-based healthcare applications become available.

IHC also uses the LPAR functionality to create dynamic workloads. “We can allow applications to grow where they sit,” says Holston. “We can use more resources for large, consolidated databases. For smaller applications, we can put multiple projects in the same LPAR so we have less to administer.” IHC is further simplifying administration across its storage area network (SAN). “We’re standardizing a lot of administration by using SAN technologies to replicate operating systems and software, as well as standardizing the management of larger systems using more integrated management tools,” says Holston. The organization realized that it couldn’t have a successful server consolidation without considering storage implications and strategies as well. For storage, IHC is taking advantage of IBM TotalStorage Enterprise Storage Server model 800 devices.

Lower costs, easier administration and more flexible utilization

Consolidation onto the pSeries server should generate cost savings for IHC in terms of hardware maintenance costs and AIX software maintenance charges. It has also seen a large reduction in the floor space required to house the systems. And because the pSeries server is flexible to accommodate application growth, IHC's IT team is now able to spend less time on maintaining the server environment. "It allows us to take on new projects," says West. "From an operational perspective, we're streamlining our processes and improving the efficiency of our people." Additionally, the new system will make the organization more flexible as it incorporates future Linux applications into its environment, because an additional LPAR can easily be added to the pSeries 690 system. The LPARs are also expected to contribute to improved system utilization rates.

The new system is saving costs while addressing IHC's commitment to providing uninterrupted service to doctors and care providers. "In an emergency scenario, I can swap out a processor and still continue full-scale operations until it's convenient for me to replace it," says Holston. IHC is also seeing benefits it didn't anticipate. "Performance is better across all systems. In fact, significantly better," says West. "We attribute much of the success of our system to the equipment, quality and design that's come out of IBM."

For more information

To learn more about this solution, please visit:

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