HP SAN technology rehabilitates hospital's IT network

Children's Hospital Boston

"The flexibility of HP StorageWorks EVA5000 systems enables us to establish a customized storage solution for our mission-critical IT environment. HP has a workable vision for open systems."

– Windows/NOS Supervisor Steven Mullen, Children's Hospital Boston

As the largest pediatric medical center in the United States, Children's Hospital Boston offers a complete range of healthcare services to children from 15 weeks gestation through 21 years of age. To deliver patient care, Children's Hospital academic and medical professionals require immediate access to clinical and financial data and potentially critical e-mail messages. With the hospital's existing IT systems, it was difficult to maintain enough storage capacity to support the organization's burgeoning data processing activities. Additionally, there was no way to keep storage resources online while the organization's IT administrators performed system maintenance functions. The organization needed a fast, reliable data storage environment to link thousands of concurrent users to relevant clinical, financial, and business information.

Curing ailments with HP storage and system-management solutions

The hospital's IT professionals evaluated storage technology from six vendors before selecting HP StorageWorks solutions to support the organization's critical computing needs. "We liked the 'storage as a utility' concept embodied in the HP StorageWorks ENSAextended architecture and HP Adaptive Enterprise vision," recalls Windows/NOS Supervisor Steven Mullen, Children's Hospital Boston. "We were also impressed with the overall ease of managing StorageWorks devices due to exceptional HP OpenView software utilities and the open, cross-platform nature of the HP StorageWorks products and solutions. HP has a workable vision for open systems."

The hospital's storage configuration includes two storage area networks (SANs) based on HP StorageWorks Enterprise Virtual Array 5000 (EVA5000) systems, 16-port HP StorageWorks Fibre Channel SAN switches, and HP StorageWorks 2 GB Fibre Channel Host Bus Adapters. HP StorageWorks Secure Path software enables data path redundancy and automates load balancing.

HP StorageWorks solutions enable Children's Hospital IT professionals to maintain a flexible and reliable computing platform for thousands of users. Mullen and his colleagues were particularly attracted to the storage

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virtualization capabilities of the StorageWorks EVA5000 systems, which permit the transparent abstraction of storage at the block level while centralizing storage management. "We can allocate capacity to individual applications on a case-by-case basis," explains Systems Manager Jason Manchenton, Children's Hospital Boston. For example, if the decision support system sees a surge of activity in response to key updates to the drug knowledge database, they can allocate storage resources accordingly.

The hospital's data center houses heterogeneous platforms and operating systems, including Novell NetWare servers, Linux systems, a wide variety of UNIX systems, and HP servers running the HP OpenVMS operating system. Children's Hospital also depends on more than 100 HP ProLiant servers, 40 of which utilize data from the StorageWorks SAN to run Microsoft Exchange, Microsoft Internet Information System (IIS), Citrix MetaFrame, and several more applications. "We depend on the inherent reliability and manageability of ProLiant systems to support critical applications throughout the medical institution," notes OS Manager Kevin Murray, Children's Hospital Boston. "The HP virtualization capabilities create a pool of storage for these and other servers."

Getting a second opinion

Children's bolstered its internal findings about the storage marketplace with independent recommendations from a major research firm. According to Murray, industry analysts concurred with Children's on several key issues, such as the inherent ease of management found with StorageWorks systems and the flexibility of HP's open-systems approach.

"HP is one of our preferred vendors, and has a well-established reputation with the hospital," says Murray. "We are impressed with HP's open-systems/open-SAN philosophy and the HP Adaptive Enterprise vision.

Calling in the specialists

Children's Hospital utilized HP Services to orchestrate the SAN implementation. The hospital's SAN specialists Doug Caldwell and John Teves spearheaded the effort, and HP resellers Pioneer-Standard Electronics and TotalTek assisted with the project. "HP's SAN expertise was very helpful in the implementation," says Teves. "It only took one week to install, configure, and implement the HP StorageWorks SAN – including training our in-house staff to use the new equipment. HP did an especially good job of knowledge transfer, which makes maintenance of the SAN even easier."

"HP's technology and services are top-notch," agrees Caldwell. "Many vendors can sell elegant SAN solutions, but you need highly trained staff and system engineers to help you navigate through the deployment and operation of the environment – or you are required to use the vendor's very expensive IT services. What distinguishes HP is how its experts make the implementation easy and they follow through after the sale to make sure that the technology is working properly, that it meets our business needs, and that we understand how to use the equipment."

Gaining vital system support

The HP StorageWorks EVA5000 system is ideal for rapidly expanding data center environments, such as Children's, where there is a critical need for consistently high transaction rates. The hospital's two EVA5000 systems have a combined storage capacity of about 10 TB. One SAN supports business-critical software applications from Epic Systems, including patient care and hospital billing. The other SAN hosts data for the hospital's widespread Microsoft Exchange deployment, along with a PeopleSoft ERP system, Citrix MetaFrame Access Suite, a patient tracking database, and an Oracle data warehouse supporting financial and clinical decision-making.

Both SANs utilize a Fibre-based backup system in conjunction with two HP StorageWorks tape libraries (models ESL9326 DLT and ESL9595 SDLT), Veritas NetBackup software, and Veritas SAN Media Servers. The tape libraries provide component-level redundancy and enterprise-level capacity in a compact footprint, for both direct-attach and SAN environments.

The staff depends on HP OpenView Storage Management Appliance software to configure the entire storage environment, which also includes some older HP StorageWorks arrays with HSG80 controllers. In the future, Children's Hospital Boston plans to extend this cohesive storage environment to another building two miles away, creating a "hot" site for research and disaster-recovery purposes. "The hot site will be an extension of the HP StorageWorks SAN fabric," Mullen explains. "We are considering using long-wave fiber to integrate switches from one site to the next so we can easily replicate medical applications data and leverage our existing backup facilities. The flexibility and transformational capabilities of HP SAN technology make these goals easy to achieve."

In this and other endeavors, Children's Hospital relies on HP and its partners to provide the ideal framework for an adaptive IT infrastructure – one that delivers solid command of all IT resources, while limiting risk and complexity. Murray concludes: "HP does more than just sell technology. The HP Adaptive Enterprise vision helps us fulfill our goals. In addition, HP's experts understand what we are trying to accomplish and are sensitive to the unique demands of a 24x7 hospital environment."

Company profile:
As the largest pediatric medical center in the United States, Children's Hospital Boston (www.childrenshospital.org) offers a complete range of services to children from 15 weeks gestation through 21 years of age. Children's has been ranked as a top pediatric hospital in U.S. News and World Report for 14 years running. Children's is the primary pediatric teaching affiliate of Harvard Medical School, home to the world's leading pediatric research enterprise, and the largest provider of healthcare to the children of Massachusetts. The hospital's clinical staff includes approximately 800 medical professionals, 700 residents and fellows, 3,300 full-time employees, and more than 800 volunteers.

Children's Hospital Boston

Challenge

- Manage data growth resulting from the deployment of new clinical, financial, and communications applications

- Solve system problems caused by disk fragmentation, such as poor response time for clinicians, administrators, and medical researchers

- Keep storage resources online while performing system maintenance and backup activities

- Ensure uninterrupted access to medical, financial, and business data

Solution

Hardware

- 2 HP StorageWorks Enterprise Virtual Array 5000 (EVA5000) systems

- 2 HP StorageWorks FCA2354 2 GB Fibre Channel Host Bus Adapters

- HP StorageWorks Enterprise Storage Array 12000 (ESA12000) system

- HP OpenView Storage Management Appliance

- HP StorageWorks Raid Array 8000 (RA8000) system

- 5 HP StorageWorks HSG80 Fibre Channel controllers

- 7 HP StorageWorks 16-port Fibre Channel SAN switches

- 2 HP StorageWorks tape libraries, (models ESL9326 DLT, ESL9595 SDLT)

- 127 HP ProLiant DL580 and DL380 servers; 40 attached to the SAN

Software

- HP StorageWorks Secure Path

- HP OpenView Storage Management Appliance software

- Operating systems: HP OpenVMS, Microsoft Windows 2000, Microsoft Windows NT, Sun Solaris, Novell NetWare, and Linux

- Veritas NetBackup software

- PeopleSoft ERP system

- Epic Systems Business and Patient Care applications

- Citrix MetaFrame Access Suite

- Oracle8 database

HP Services

- SAN integration and implementation support

- Ongoing hardware and software support

- Knowledge transfer

Results

- Virtualization capabilities inherent in the HP StorageWorks Enterprise Virtual Array 5000 system make it easy to allocate storage capacity to healthcare information systems, clinical data repositories, communications systems, and other business-critical applications.

- Better resource sharing, increased disk space utilization, and improved storage distribution improve system response time and alleviate system lockout caused by disk fragmentation.

- Highly expandable StorageWorks EVA5000 systems accommodate rapid growth resulting from the deployment of new healthcare applications.

- Redundant components, automated backup procedures, and advanced management software enable the IT staff to maintain rigorous uptime requirements, thereby improving patient care.

- HP Services and their partners installed, configured, and implemented the HP StorageWorks SAN – including training the in-house staff to use the new equipment – in just one week.

For more information on how working with HP can benefit you, contact your local HP representative, or visit us at www.hp.com.

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