

Children’s Hospital credits Fibre Attached Technology Adapted (FATA) drives with reducing response time



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– Sheldon Hinkson, Operations Manager
Children’s Hospital, San Diego

Overview

Since Children’s Hospital first opened its doors in 1954, their mission has been “to restore, sustain and enhance the health and developmental potential of children.”

Children’s Hospital is San Diego’s only designated pediatric trauma center and the only area hospital dedicated solely to pediatric care. In addition to the Kearny Mesa main campus, Children’s Hospital has fifteen neighborhood centers offering primary care and specialized services.

In order to reduce costs and reduce user response time for accessing medical records, Children’s Hospital has chosen the HP StorageWorks Enterprise Virtual Array (EVA) using a tiered storage solution.

Executive summary

Children’s Hospital required a storage solution that was easy to manage, cost effective, as well as decrease the time required for backups. Like many other users, Children’s was also looking for a storage solution that would maximize the value of their storage resources and meet the requirements of a dynamic computing environment.

The HP StorageWorks EVA5000 was selected as the tiered storage solution to enhance performance, reduce costs, and support a dynamic storage environment. The tiered storage solution consists of 1.7 TB of high performance 146 GB disks and 10 TB of high capacity/low cost Fibre Attached Technology Adapted (FATA) 250 GB disks.

Business need

- Reduce the amount of paperwork and time required for physicians to acquire a patient’s medical records; enhance the efficiency of the system

- Decrease user response time for access to medical records
- Provide timely backups and quick restoration as the data sets grow
- A storage solution that easily adjusted to changing needs and is easily managed in a dynamic environment

Storage technology at Children’s before EVA

Paper records were shuttled from facility to facility by record technicians and the manual process was very time consuming prior to implementing ChartMaxx®, a software package that digitizes medical records.

In order to retrieve patient information quickly, the physicians at Children’s Hospital use wireless tablets to access medical records. Currently there are 100 wireless tablets in use and 140 users of ChartMaxx® with plans for expansion.

Before Children’s installed the EVA, the SAN environment used with ChartMaxx® consisted of servers running HP-UX 11, two rp7400s, one rx2600 and one rp2400 test system with application data placed on a traditional non-virtual array, an HP StorageWorks Enterprise Modular Array (EMA) 12000 system and an optical jukebox.

The ChartMaxx® primary production database never grows above a certain size and when reaching a specific software size threshold, overflow data is transferred to the optical media, the archive cache. In many cases when a caregiver needed access to one of the older records in peak periods of activity, there was a lot of shuffling of the optical platters and in some cases access to the patient’s record could take up precious minutes for retrieval.

Based on the management complexity to make changes to the traditional EMA storage, Children's relied on Nth Generation resources for configuration changes to the EMA storage and for presenting volumes to the host servers. Moreover, even though ChartMaxx® had the ability to perform the function of archive cash to hard disk, Children's could not easily administer the task with the traditional EMA storage without making a large number of configuration changes that would affect a majority of the systems in the enterprise.

Decision process

Providing flexibility to a demanding infrastructure

Children's Hospital spent approximately two months evaluating storage products from multiple vendors. During this period, they undertook planning for the creation of a storage environment to expedite the process for imaging medical records and address the requirement of faster access storage in order to deliver patient records in a timelier manner. Children's needed a storage solution that was faster than optical disk, but also cost effective.

In addition to HP, Children's Hospital considered using other storage vendors' products including the Dell/EMC CX300 and CX500 storage products. "The CX300 and CX500 had many bells and whistles, but compared to the EVA, the EMC product was going to be much more difficult to manage," says Sheldon Hinkson Operations Manager at Children's Hospital. "For example, many steps were required to create LUNs on the EMC product contrasted to a few with the EVA. The EVA interface is just user friendly and changes to the array are easy to manage and manipulate. Making changes to create, expand, or deleting disk volumes are very simple."

"HP's EVA, with its capability to support high performance disk and FATA low cost disk in the same frame, provided Children's Hospital with an optimal storage solution in a space constrained computer room," says Nth Generation Computing Senior Account Manager Rick Melendres. "Children's will be able to gain additional administrative efficiencies using the EVA tiered storage capability and simple to use management features."

One of the storage management challenges of Children's was the limited knowledge on the EMA and the limited management flexibility of a traditional array. An example of the complexity of a traditional storage array is not being able to easily expand/delete volumes or easily present and un-present volumes to the host servers. Hinkson says, "I think that with the EVA, we have shown that it is a lot more user friendly and we're able to do that with less technical people. Moreover, now that the EVA with FATA drives is installed and having an HP critical services contract, I can go to sleep now and not worry

about getting calls concerning the slow performance of ChartMaxx® or having support when required."

With implementation of EVA tiered storage solution, the paperless process is much more efficient providing significant savings related to time, labor costs, and paper/material costs. "Implementation of the EVA with tiered storage saved the ChartMaxx® project," explained Hinkson.

Immediate benefits

A continual problem for Hinkson was using the optical media and the slow access to a patient's medical records. Medical records requiring retrieval from the optical disk, in some cases, took up to three minutes to access compared to accessing the records from the FATA drives which is now instantaneous. The slow access time of the optical disk was the number one issue for Hinkson until the EVA and FATA drives replaced the optical disks. Hinkson reflected, "There is no one knocking on my door about poor response time now that FATA drives are used instead of the optical drives."

The FATA disk drives complement the use of high-performing disk for Children's applications that access files infrequently, but need retrieval of the data at disk speed. Moreover, the backup window to tape has been reduced by 30% in addition to the EVA tiered solution providing enhanced performance.

A key objective of Children's was to easily manage the storage and quickly adjust to changes. "Not only were our objectives met with the EVA, they were exceeded," Hinkson explains. "Managing the EVA compared to a traditional array is like night and day."

The EVA's tiered storage capability, implementing high-performance and high capacity/low-cost disk drives, has enabled Children's Hospital to minimize costs with an integrated and consolidated infrastructure. "We have limited space in our computing facility and the EVA tiered storage solution in a single frame provides a consolidated and simple management solution", says Hinkson.

Additional benefits of using the EVA tiered storage solution:

- The EVA is an addition to the overall storage capacity at the hospital. However, Children's can maintain the existing size of their IT department because the EVA is so easy to manage. Moreover, they will only need to train their personnel once on how to use and manage a tiered storage solution since managing the EVA's high performance disks and high capacity FATA disks use the same interface and management procedures.
- Investment protection/no downtime. Since the high performance disk and FATA disks can sit side by side using the same drive enclosure, Children's can increase EVA storage capacity in the existing shelves with either FATA disks or high performance disks without downtime.

- The FATA drive is a high capacity/low cost disk built for the enterprise class array. The FATA hybrid drive includes 2 Gb/sec dual Fibre Channel (FC) ports, Self-Monitoring, Analysis and Reporting Technology (SMART) capability, optimized sequential addressing capability (seek ordering and rotational optimization algorithms) and FC protocol native data integrity and error event handling capability found in higher performing enterprise class FC disk drives.

System (PACS). Implementing PACS with FATA disks will provide a significant benefit in the reduction of storage costs and greater efficiency of image retrieval. The second EMA is planned for replacement in 2006 with an EVA3000. Also, Children's will be expanding the capability of their SANS in the future to provide distant, remote access to the medical records.

The current use of the EVA Near-Online FATA storage is for fixed content data and medical records.

To better utilize the EVA tiered solution Children's will conduct a Business Impact Analysis (BIA). The BIA will result in data placement on the appropriate storage tier, that is, high performance or high capacity FATA disk. Future planned uses for the low cost/high capacity FATA disks also include snapshots/clones, fast file recovery, offsite recovery, two stage backup, data migration, e-mail archiving, web serving, file and print services, application testing, and medical video imaging.

Children's storage— today and the future

Children's is continuing to use the two EMA12000 storage units. However, in the summer of 2005, Children's plans to phase out one EMA and add an additional EVA with 15 TB of tiered storage, 75% of the solution with FATA disk, for use with a Picture Archival and Communications

Table 1. Challenges, Solution, Results

Challenges	Solutions	Results
<ul style="list-style-type: none"> • Simpler storage management • Minimal, no down time for storage re-configuration and allocation • Excessive response times to access medical records 	<ul style="list-style-type: none"> • Team with HP and best in class HP channel partner, Nth Generation • Implement EVA tiered storage for optimal management, performance, and cost benefits 	<ul style="list-style-type: none"> • Superior and timely resolution to address issues and change management • Administrative changes to storage configurations take minutes vs. hours or days • No downtime to increase storage capacity at the volume level • No downtime to increase storage capacity at the array level • Response time to access medical records reduced from up to three minutes to instantaneous • Reduced time to backup to tape

To learn more about HP's offering, visit www.hp.com/go/storage

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