



Virtual Instruments helps hospital control IT costs – significantly reduces both OPEX and CAPEX related to infrastructure

Hospital Overview

This hospital is one of the leading pediatric hospitals and research facilities in the world. Its over 100 years of innovation and service to patients, their families and the community reflect an ongoing commitment to exceptional patient care, training new generations of pediatric healthcare providers and pioneering significant research initiatives.

IT Environment and Role

The IT department supports all business and patient care functions at the hospital. Though many of application servers at the hospital are not SAN-connected, the >200TB Fibre Channel SAN supports over 100 IBM AIX and MS Windows hosts. There are over 500 switch ports connected to IBM storage systems, using mostly 146GB drives running in a RAID5 configuration. IBM SAN Volume Controllers (SVC) are used for storage virtualization. The production data center is in the hospital itself, with the disaster recovery site over 20 miles away. The SAN is supported by one full-time and one part-time engineer.

The primary patient information application is Epic, and one of the big IT initiatives in 2010 will nearly double its functionality with additional modules supporting new users. The IT staff is charged with providing assured performance and availability

Challenges:

- Maintain service levels, while controlling costs
- Improve effectiveness of existing IT staff, while growing data 10 - 20% / year
- Prepare IT department for bringing more mission critical applications on-line

Solution:

- Began deploying Virtual Instruments VirtualWisdom hardware, software, and professional services consulting in 2009

Customer Benefits:

- Increased productivity of staff by speeding root cause analysis
- Reduced capital expenditures by proving that higher density, lower cost/TB disk drives provide the performance required to maintain SLAs
- Eliminated the guesswork normally associated with application provisioning
- Discovery of SAN related problems before they could cause outages

during and after the transition to the new modules. This critical deployment is designed to consolidate information services, keep costs under control and improve patient care.

Challenges and Concerns

In order for the hospital to maintain its high standards and leadership position, it must deliver services cost-effectively. So IT is challenged with maintaining traditional high service levels in the face of 10 - 20% annual data growth, while keeping costs down. Consolidation of applications under Epic is key to that goal. But it does not address the twin storage-related goals of maintaining flat operating and capital expenditures. To do that, the staff has to "do more with less". It must maintain service levels with existing staff, and accommodate data growth more cost effectively. Without effective management tools, it was a chore to simply provision the right storage to match the I/O needs of applications. Application managers had a tough time profiling their needs. And storage buying decisions were in danger of following traditional, but largely unsubstantiated "rules of thumb", which often means buying a lot of expensive, small disk drives to ensure good application response times.

"I'd have no hair on my head and I probably wouldn't have any skin if it wasn't for VirtualWisdom. Every time there's a slowdown in the system, it inevitably gets blamed on the SAN."

SAN Manager

Solution Evaluation

In early 2009, the hospital looked around for a solution that would help manage their SAN. They looked for a solution that would monitor and measure their end-to-end I/O, simplify troubleshooting, and alert the staff to any potential problems. After a search, two candidates emerged, a leading Storage Resource Management product and Virtual Instrument's VirtualWisdom. The SAN team had four over-riding criteria.

- First, it was deemed important to find a solution that did not require host agents. Agents require constant maintenance, and they exert a load on the hosts, impacting application performance.
- Second, in keeping with the IT goal of "cost effectiveness", price was a consideration.
- Third, the team wanted something that was easily customizable.
- Fourth, the hospital needed a tool above and beyond the standard, back-end storage monitoring tools because of the extensive use of SVCs. Back-end tools generally cannot see beyond the SVC.

VirtualWisdom won over the selection committee on all four counts. As a plus, one of the team members was familiar with Virtual Instruments Protocol Analyzers and knew the reputation of the hardware. And according to the committee, "The price advantage of VirtualWisdom compared to a full scale SRM implementation was huge."

Benefits of the Virtual Instruments VirtualWisdom Solution

Today, VirtualWisdom is the only SAN management tool used by the storage team for instrumenting, monitoring, and measuring I/O along the whole data path. Benefits to the hospital are found in four areas, troubleshooting, cost avoidance, intelligent provisioning, and problem avoidance.

HEALTHCARE CASE STUDY



Troubleshooting

VirtualWisdom enables the storage team to instantly ascertain if an application slowdown is SAN related, significantly reducing wasted time in tracking down and fixing problems.

Cost avoidance, aka "intelligent tiering"

According to the SAN Engineer, "For the longest time, we thought we were I/O starved. We thought we didn't have enough spindles to handle the I/O. But after VirtualWisdom was installed, we realized that we weren't even close to being I/O starved. We were capacity starved. We don't need to buy faster performing drives; we need to buy bigger drives. We've always bought 146GB drives. But going forward, we can buy 300GB drives for capacity and know that we'll get the performance we need. We can buy denser drives and save money. We get about 30TB raw with a fully loaded storage system, and if we can double that, and know that we're not going to be I/O bound, it'll save us down the road, because the cost of the 146 and 300GB drives are about the same." He goes on to say that "We actually had a data architect in here telling me we needed 73GB drives. Because of data from VirtualWisdom, we can justify getting higher density drives."

"VI delivers the best support of any of my vendors."

SAN Engineer

Intelligent provisioning

VirtualWisdom reduces the guesswork in storage provisioning. The SAN Engineer states, "With VirtualWisdom, I can go back and look at the existing application environment and look at what's been done, and pretty much tell them that this is the kind of I/O you need. For instance, they'll ask for 15 millisecond access time and I can show them what they're getting in their current implementation, in real time or historically." Application managers can be assured that they're getting the I/O they need to meet their users' needs, without resorting to expensive over-provisioning.

Problem avoidance

VirtualWisdom validated the need for a new SAN architecture. The hospital IT staff found they were losing a lot of the light signal with the old patch panel system, so now they have improved the physical design of the SAN and they continue to measure to ensure they are not losing signal.

Lessons learned

When asked what they would have done differently, the hospital team offers this guidance to future VI customers: Make sure that the installation is scheduled when everyone who needs to be trained gets trained. Work around vacations if you have to. The hospital implemented TAPs at the same time as adding SVCs directly to the core switch, so they did two things at once. They remarked that they should have moved the SVCs to the core switch first, and then added the TAPs. The AIX hosts had problems moving from one switch to another. Make a change, stabilize the environment, and then make the next change.



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