



Health Services

Company Background

This US-based Health Services company is an award-winning, nonprofit health care system which works to prevent illness and injury while also caring for the most complex medical conditions. It has more than 20,000 employees, and over 2,000 physicians, 7 hospitals and medical centers with over 4,000 beds. The staff is committed to delivering high quality services at effective costs. In partnership with a leading academic institution, this company is committed to nation-leading research and educating tomorrow's physicians and health care professionals.

IT Environment / Overview / Background

The company uses primarily EMC XtremIO storage and a Brocade SAN fabric. Following the engagement with VI, company is moving to Cisco MDS 9700 SAN switches.

IT Challenges

The health services company experienced several performance problems with their business-critical Epic, Clarity, and Rhapsody applications. Among the issues reported were application latency spikes, link errors, high CPU utilization, overloaded ports, misc OS errors, VM resets, flow control issues, and slow-draining devices. They executed a troubleshooting War Room which included the various IT domains and the vendors, including VMware, EMC and Brocade. After several days with little progress, and plenty of burned-out personnel, EMC suggested that Virtual Instruments should be consulted.

The VI Solution

The Company, upon a recommendation by EMC, engaged with VI for an Emergency Troubleshooting Service. The ETS is a fast deployment engagement, designed to quickly identify performance and availability-limiting factors in IT SAN and NAS environments. In this case, from the time VI was contacted by EMC to the time VI had personnel and equipment onsite, and began cleaning cables and installing the probes, only 10 hours had elapsed, with data collection started within 24 hours. At that point, VI began delivering recommendations almost immediately, enabling the customer to begin problem

PROFESSIONAL SERVICES CASE STUDY

“Where do you find these people? Everyone from VI we interacted with is absolutely top notch.”

IT Staff

“During the first few days of working through the problem, I can say with honesty that in 32 years of running IT and managing through many challenges and implementations with many teams and individuals, the VI team is absolutely the best I have ever worked with.”

IT Staff

“I feel like the “Seal team” has arrived!”

EMC Staff

“You have shown us things we have never seen before.”

IT Staff

remediation within 26 hours of the initialization of the service. As is typical in large, complex IT deployments, there was no single 'smoking gun' but instead, a plethora of interrelated issues that together, created a set of circumstances that, without proper instrumentation, would have been nearly impossible to find and fix.

Recommendations Based on the Engagement

1. Some storage ports were seeing over 80% flow control driven by utilization, queue depth and design constraints. Work was done to lower queue depths to '16' to avoid the risk of increasing the number of outstanding exchanges. Other hosts had queue depths set at 254 and still others to 128 per VMware's recommendations. Once those were set to the VirtualWisdom recommendation, performance on those links improved dramatically.
2. Mismatching FC component speeds were identified and remediated.
3. HBAs were added to address capacity issues and were intentionally spread across Brocade Virtual Channels to reduce virtual channel congestion concerns internal to switches.
4. Backup gap issues with EPIC were identified (HBA single path configuration) and once remediated, the backup window was improved by 2.5 hours.
5. Imbalanced SAN Switch ports were identified.
6. VM CPU utilization of close to 100% was identified.
7. An over-matched array was identified and additional nodes were recommended.
8. EPIC Backup Issue - HBA single path configuration issue identified and corrected
9. Physical Layer issues, including dirty connections were discovered and correlated to the impact to EPIC and Rhapsody applications resulting in failed IO

Benefits of the VI Emergency Service

Several difficult to find-and-fix performance-related issues were remediated in less than a few weeks elapsed time. The VI Emergency Service:

- Eliminated the troubleshooting guesswork usually accompanying intermittent problems
- Fixed Clarity application latency, as defined by Read Exchange Completion Time, was reduced from a high of 14 ms to a steady state of 3 ms.
- Eliminated unnecessary replacement of suspected bad components
- Saved the company considerable time and expense
- Allowed valuable IT personnel to be freed up to do their normal, day jobs

Summary

The Company engaged with VI professional services and found and remediated all of their ongoing, difficult-to-troubleshoot problems within just a couple of weeks. Months of false starts, guesswork, and manual detective work were avoided. According to the customer, "VI is a godsend", and they are working on an acquisition of VirtualWisdom so they can proactively avoid future infrastructure problems. While the engagement occurred, the company learned about the advantages of using VirtualWisdom analytics with Cisco SAN Telemetry Streaming on the new 9700 MDS switches, and decided to make the transition to Cisco.



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