Major Florida Children's Hospital Gains Critical Visibility into Healthcare Services

Improved service availability leads to better user experience and improves patient care

Overview

Region

Americas, Florida, United States

Business Challenge

- Maintain high availability and responsiveness of critical, lifesaving clinical applications
- Improve physician and medical staff productivity by assuring systems availability and responsiveness
- Optimize rapidly changing network environment to support new services and capabilities
- Maintain high-quality and consistent performance between the data center, main campus, and eight satellite clinics

NetScout Solution

nGenius® solution comprised of:

- InfiniStream® appliances
- nGenius Virtual Agent
- nGenius Integrated Agent for Cisco® ISR

Business Value

- Reduced degradation and downtime for critical business and patient care applications and services
- Greatly increased visibility into recently deployed mission-critical applications and services
- Dramatic reduction in time to identify and diagnose new application issues
- Improved user experience and productivity by assuring data needed for urgent and emergency service is available to critical care providers
- Improved collaboration within IT staff to quickly isolate and resolve performance issues

Customer Profile

With a staff of 3,000, including more than 650 attending physicians and 130 pediatric sub-specialists, this major Florida children's hospital is renowned for excellence in all aspects of pediatric medicine. The hospital has a number of pediatric specialty programs and has been consistently ranked among the best in the nation. The hospital is also home to a large pediatric nurses teaching program.

Patient care services at the hospital focus on providing both patients and families with top-notch medical care, coupled with emotional, psychological, and educational support.The hospital provides comprehensive care and rehabilitation in all clinical areas for infants, children, and young adults and uses a multi-disciplinary team comprised of pediatric medical, surgical and rehabilitation specialists to evaluate, diagnose, and develop a systematic, comprehensive treatment plan for each child. The hospital also offers many unique, family-centered programs and services designed to help familiarize parents with hospital services and to make the entire experience less intimidating.

Business Challenge

The hospital has recently undertaken several major IT initiatives that impact all functions of the IT department. One of the most significant projects is an institution-wide rollout of a Cerner® Electronic Medical Record (EMR) system that connects and provides critical care collaboration between physicians, staff, and patients. The Cerner EMR solution also automates processes between departments such as emergency care, laboratory, surgery, radiology, and pharmacy. The new EMR system also includes a hospital-wide Computerized Physician Order Entry (CPOE) system and Picture Archiving Communications System (PACS). The EMR system is cross integrated into a number of different applications such as Electronic Patient Record

(EPR) systems as well as the Clinical Decision Support (CDS) systems that transfer patient data between caregivers and are extremely critical to the hospital operations and patient care activities.

Other applications and services that are vital to the operation of the hospital include Microsoft® Exchange®, Oracle®, and Lawson™ ERP systems. In addition, Voice over IP (VoIP) along with telemedicine video conferencing have become an increasingly important application for the hospital as they facilitate real-time consultation between medical specialists located on and off campus. The ability to provide always-on access to all of these systems is critical to the effective operation of hospital and patient care services.

On the infrastructure side, the hospital's IT group recently moved the data center to a 3,000 sq. ft. facility. The hospital has deployed an OC-192 ring between the primary hospital campus and the new data center and carrier-provided Metro Ethernet links to connect to its eight remote clinics. To improve overall reliability of the Internet connections for their IP network, the IT group has recently upgraded their Internet architecture to include multihoming to eliminate network connectivity as a potential single point of failure.

NetScout Solution

The hospital deployed nGenius solution for a number of essential tasks associated with managing and assuring the delivery of service and applications to its users. A big driver for the deployment was to support the rollout of the systems automation and Cerner electronic medical record project. With this project, the hospital needed to provide critical visibility into the health and availability of delivered services to several different IT teams, such as the application owners and network managers. Management wanted all IT teams to have the same insight into service performance and the ability to work from the same metrics to improve collaboration and effectively address issues that could arise.

"When I had to cost-justify NetScout to our CIO, I told him that it's the equivalent of hiring an additional full-time network engineer – it frees up time and resources to do other projects."

- Manager of network engineering

As the IT team began preparing for the project rollout, they leveraged nGenius solution to create Key Performance Indicators (KPIs) to enable monitoring and alerting for the applications that the support desk receives the most calls on. In addition, the hospital leveraged the nGenius solution to address a number of additional IT service management needs including: 24x7 service visibility, service- level baselining, bandwidth utilization for capacity planning, troubleshooting using intelligent deep-packet analysis, and pre-production testing to assure the smooth rollout of new applications and services.

"Given the complexity of our environment and the range of applications we are rolling out, the hospital needed exceptional visibility into our service environment," said the hospital's manager of network engineering. "At the hospital, our IT services are always on and reliable service delivery to all locations, including the remote facilities, is a top operational priority for the IT group. The nGenius solution gives us the end-to-end visibility into all service traffic to and from the network core, through the data center, and in and out of the Metro Ethernet network from our main campus to our remote clinics."

As part of providing visibility into the network, the hospital leveraged InfiniStream appliances to gain visibility of critical links in the network core. This provided much needed visibility into all application and service traffic to and from the data center. The hospital also deployed nGenius Virtual Agent within their VMware® servers to monitor application traffic traversing a number of virtualized servers. One of the initial problems the IT team confronted involved an issue with a VMware ESX hypervisor on a virtualized server in which the application traffic never left the physical server. Prior to installing nGenius Virtual Agent, the IT team would not have had visibility into this type of traffic or problem. Using the visibility provided by nGenius Virtual Agent, they were able to determine that one of the two servers was not passing traffic properly due to a hypervisor issue. When the application traffic was moved to a new hypervisor, the problem was resolved.

"We knew that with the Cerner EMR rollout expectations were very high and that we would need the best tools available to manage the delivery of these services to ensure our success," said the IT manager. "I had used the nGenius solution at a previous company and knew that it would be tough to get the job done without it. Based on my previous experience using NetScout technology, I believe it is an absolute must have for optimizing service delivery and resolving performance issues. Once you have used the nGenius solution, it will become indispensable for protecting end-user experience."

To fully understand user experience and application response times, the hospital needed true end-to-end visibility into the Internet perimeter. However, given tight budgets due to other modernization projects, deploying hardware probes at the Internet perimeter was cost prohibitive. To monitor the expanded Ethernet architecture, the hospital deployed nGenius Integrated Agent on four, load-balanced Cisco 3925 Integrated Services Router (ISR) G2s that make up the Internet perimeter. "The nGenius Integrated Agent provides a very effective and cost-efficient way to get visibility into the Internet perimeter. Because the nGenius Integrated Agent resides within the Cisco ISR platform, it provides visibility into the traffic crossing the routers that you wouldn't get with a traditional hardware probe," said the IT manager.

VoIP Quality Issues

The hospital also leverages the nGenius solution for managing their extensive VoIP and video conferencing communications. In a separate incident, the IT group received complaints about call quality and dropped calls from IP phone users at various locations across the environment. Using the nGenius solution, the IT team was able to investigate historical performance of VoIP calls and identify incidents of jitter and call quality issues. The IT team was able to quickly determine that all the problematic calls were using ports on the same media gateway interface module. Once identified, IT staff was able to quickly resolve issues with the VoIP platform and the performance issues were resolved.

Supporting Application Rollout

The hospital has already begun planning for changes in capacity and network configuration that might be required to support the new Cerner application rollout. Although the implementation has just started, the IT team expects the rollout and integration activities to last for the next several years. As the implementation progresses, nGenius solution is being used during pre-production testing, during integration as well as during the phases of application rollout. This will enable the IT staff to validate application performance and to quickly address any adverse performance issues that may arise. "Based on my previous experience using NetScout technology, I believe it is an absolute must have for optimizing service delivery and resolving performance issues. Once you have used the nGenius solution, it will become indispensable for protecting end-user experience."

- Manager of network engineering

The IT team is using the deep metrics and insight delivered from the nGenius solution to help the application development and network teams tune and optimize the application's design to assure the highest levels of performance and optimization.

Business Value

"The nGenius solution has really increased visibility into our applications and services, and it has helped us decrease our problem resolution time tremendously," said the IT manager. "When I had to cost-justify NetScout to our CIO, I told him that it's the equivalent of hiring an additional full-time network engineer – it frees up time and resources to do other more important projects."

An additional benefit that end users might not directly realize is increased network uptime, which is essential for a healthcare setting. nGenius solution enables the IT team to proactively identify and correct issues before end users even recognize there is a problem. This shortened problem

resolution time has also resulted in improved user experience and productivity by better connecting critical care providers and increased collaboration between campus and remote hospital staff, physicians, and patients. This assures that the information that is needed for urgent and emergency service are available to critical care providers so they can focus on quality and timely patient care.

"I can sum up the benefit of the nGenius solution in one word: 'visibility.' It provides the ability to drill down to the cause of a business-critical issue and displays all the needed information at my fingertips to correct it quickly and efficiently. This end-to-end visibility also means having the ability to proactively address problems that haven't yet come to a user's attention. In short," stated the IT manager, "Work would be much more challenging without it."

NetScout Equipment Deployed	• nGenius solution with, • InfiniStream appliances, • nGenius Virtual Agent, • nGenius Integrated Agent for Cisco ISR
Equipment Deployed	• Cisco Catalyst switches in the network core and edge • Cisco 3925 ISR G2s with Cisco Application eXtension Platform and • SRE 900 SM service modules in remote locations
Applications in Use	Cerner Electronic Medical Records (EMR) system, Computerized Physician Order Entry (CPOE), and Picture Archiving Communications System (PACS), Oracle, Lawson ERP, VoIP, Kronos HR Time Management, and Microsoft Exchange
Network Scope	Hospital data center, main campus, and eight satellite clinics
Users	Approximately 3,000 healthcare and administrative employees

Table 1: Network Snapshot

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