NETSCOUT™

Cerner Corporation Gains Critical Real-Time Visibility into Cloud-Based Service Delivery with NETSCOUT

Overview

Customer

Cerner Corporation

Region

Americas, United States

Business Challenge

- Assure performance, availability, and quality for Cerner's cloud-based service for digitized patient information across medical offices and hospital systems.

- Maintain system responsiveness and carrier-class level network uptime of 99.999% availability.

- Assure network and application service-level performance to protect the end-user experience.

Business Value

- Proactive management of cloud-based medical applications.

- Increased customer satisfaction through increased service availability, quality, and reduced downtime.

- Improved operational efficiency in managing service delivery.

- Definitive view of service performance over time to assure compliance with contractual service level agreements.

- Provides Cerner with meaningful reports about the state of delivered services.

- Enables quick identification about the location and root cause of issues across Cerner's cloud-based service.

Customer Profile

Cerner is contributing to the systemic change of health and care delivery. For more than 30 years, the company has been executing its vision to make healthcare safer and more efficient. Cerner started with the foundation of digitizing paper processes and now offers the most comprehensive array of information software, professional services, medical device integration, remote hosting and employer health and wellness services. Cerner systems are licensed by approximately 14,000 facilities around the world and used by everyone from individual consumers to single-doctor practices, hospitals, employers and entire countries. As a result, access to digitized patient information anytime, anywhere is critical to the medical practices that rely on Cerner's solutions. If the access to this information is lost, even for a small amount of time, it could result in serious consequences for the patient, doctor, and Cerner. On that premise, the health of Cerner's network and the data and applications that traverse it are critical to the success of the business and the overall user experience. To ensure the availability of services and the health of its network, Cerner utilizes a complete suite of nGenius® performance management solutions from NETSCOUT.

Business Challenge

Cerner's large distributed network is critical to the success of its business. Client hospital systems rely on the Cerner cloud-based network for paperless patient records and other information to ensure doctors have the critical information in their hands when they need it. As a result, Service Level Agreements (SLA) with its customers require a carrier class network with uptimes of up to five nines. With a number of clients across various hospital systems and multiple applications accessed around the clock, it's important for the Cerner IT team to collaborate across functional boundaries to manage both application and network performance and assure the successful delivery of services.

Over the last few years, Cerner has seen substantial growth. This includes a threefold increase in the size of its network, users and the number of applications and user sessions. As a result, instant access to information both internally and externally is a critical component to Cerner's services and is a major factor to assuring customer satisfaction. In the past when there was an issue, limited visibility resulted in Cerner operations teams diving into a lengthy investigation and resolution process that impacted and possibly jeopardized compliance with contractual SLAs. Due to the critical nature of the services offered by Cerner, SLA violations can result in negative operational and financial consequences to their clients.

"You could get limited visibility into what was causing an issue but it was very hard and time consuming; you had to be in multiple places walking around with a laptop, plugging into ports and doing manual segment-specific packet capture. This didn't scale as we grew and wasn't the ideal way to manage problems in our network," said Volodymyr Polishchuk, systems engineer at Cerner.

"NETSCOUT solves all of that, it's one of those solutions I wish I had a long time ago."

At Cerner, Citrix® comprises 60-80 percent of client network traffic. Utilizing Citrix provides anytime, anywhere access to Cerner's services, extending computing across hospital systems, clinics, and remote offices; consequently, application performance monitoring is a critical piece of Cerner's service delivery management strategy. While Citrix offers substantial desktop virtualization benefits to the organization, it comes with incremental complexities that pose a challenge to assuring application availability response times and overall performance. Cerner needed a way to look at both the Citrix environment and the backend application responsiveness, which utilize a multi-tiered application architecture on virtualized hosts running on different servers.

In Cerner's environment, the company must also monitor data across its wide area network (WAN), not just in the data center. This complex, distributed environment requires advanced monitoring across different server types such as Windows®, Linux®, and Oracle® and across the Citrix gateway to assure service delivery across the WAN. Additionally, monitoring Directory Name Service (DNS) performance is an important part of the visibility strategy to assure healthy operation of these critical enablers to business services.

The NETSCOUT Solution

To provide comprehensive monitoring of application and network performance and to assure maximum performance, service quality and uptime, the company relies on the nGenius performance management solution from NETSCOUT. The solution is comprised of the nGeniusONE™ Service Assurance platform, NETSCOUT Intelligent Data Sources, such as the InfiniStream® appliances, and the nGenius Packet Flow Switch family, which enables streamlined and scalable access to traffic flows across the network.

Business Value

Monitoring Cerner's Software as a Service Offering

The nGenius solution is used extensively across Cerner's substantial physical and virtualized environments. End-to-end performance monitoring is a critical piece of Cerner's service delivery strategy. The nGenius solution monitors Cerner's environment alerting the team to potential issues and performance anomalies to help resolve problems and assure service delivery and availability. The nGenius solution provides the IT organization with comprehensive visibility across its network, applications, and its Citrix-based services and enables performance management, proactive service health management, and hierarchical troubleshooting with task-oriented workflows for rapid problem triage and resolution. These advanced capabilities enable the Cerner team to protect their services against degradation and downtime, optimize service performance, and simplify IT operations through a common solution that is leveraged across the network, application, and server groups at Cerner.

"NETSCOUT provides us with a single solution where you can go from looking at application performance and service health to network performance all from a single pane of glass," said Polishchuk.

"NETSCOUT helps us to proactively manage and verify the overall health and performance of our services."

To enhance and scale access to valuable network traffic for the Infinistream appliance and a growing number of network monitoring tools, Cerner has deployed several nGenius 3900 series packet flow switches. These switches enable more scalable access and provide wire-speed packet-flow aggregation, replication, filtering, and load-balancing of important traffic flows.

Cerner utilizes the nGenius solution and its reporting functions for a number of internal as well as external clients and across IT operational groups to ensure transparency and visibility into the overall health of the network and its applications. The Cerner IT team relies heavily on the information within these reports to ensure cohesive collaboration and proactive management across the organization and externally with clients. This helps to quickly determine where an issue resides but also aids in proactive network and application management. Collaboration speeds up time to knowledge and helps the IT group solve problems faster.

Enhancing Operational Intelligence

Cerner leverages the nGenius solution to perform proactive and predictive analysis to aid in the early identification of performance impacting issues stemming from capacity limitations, component misconfiguration, application errors or otherwise. Cerner also relies on the solution's historical forensic analysis capabilities to perform back-in-time troubleshooting of issues, and to gather important trends that may require action. The solution arms the organization with meaningful visibility into the performance of the overall network across the WAN, within its virtualized environment and across its applications to ensure business critical information is available, when needed, securely and without delay.

In one instance, the nGenius solution alerted Cerner to regular spikes in Secure Shell (SSH) traffic, which is critical for remote access, that were occurring every 10 minutes and ranged between two to three megabytes. The issue had serious potential implications if not resolved, including degraded application response times, which could have led to a high impact outage. Using the nGenius solution to identify and analyze the issue, the team found that a particular database was running a job and was unsuccessfully attempting to sync with another database server on the client's end.

"NETSCOUT enables us to proactively detect and manage issues before they affect our clients, in this case we were able to identify anomalous behavior impacting service performance and were able to solve the issue before the client experienced issues," said Polishchuk.

In another incident, the Intelligent Early Warning capabilities of the nGenius solution alerted the Cerner IT team to large increases in DNS rejections. As the team investigated, they found that a particular application contained some legacy code and references to a retired DNS server causing the high rejection rates. Once the root cause was determined using the nGenius solution, the network team was able to work with the applications group to resolve the issue by modifying the application code. With DNS playing a crucial role in accessing Citrix-based services, it was only a matter of time before

the issue would cause a significant impact on Cerner clients. However, because the issue was proactively resolved and the application remained available, the end user experience remained positive.

"Overall, NETSCOUT plays a significant and critical role in our proactive service management strategy," said Polishchuk.

Additionally, Cerner relies heavily on NETSCOUT for historical tracking which enables them to perform forensic analysis and gather information about the root cause of a particular issue. With historical analysis, Cerner is able to go back days, weeks, or months and review performance and utilization data in order to analyze trends and abnormal behavior in their environment.

"NETSCOUT is able to provide us information that is very user friendly, it allows us to slice and dice information anyway we like which is very helpful when performing historical analysis to identify key trends," said Polishchuk.

Sharing information from the nGenius solution is easy. With flexible reporting, Cerner is able to create customized reports containing only the information that is relevant to each particular client. The reports are emailed to Cerner's clients and published for web-based access by technical and business-level audiences. This level of reporting gives Cerner and its clients a high level overview into the health of the Cerner network and availability of services and enables drill downs with defined granularity to extract relevant details and information critical to service deliver management. The flexible reports also enable historical analysis, allowing an administrator to look at specific events and extract meaningful information to help them determine where the issue resides and their recourse for solving it.

Polishchuk concluded, "Many of our clients utilize their own performance management solutions to monitor network health and application performance within their environments, but this doesn't give them insight into how the Cerner environment is performing. To help our customers quickly determine where an issue resides, we develop and deliver customized daily reports for each client to give our customers a definitive picture of the performance levels we are delivering and how our network is performing, saving them a significant amount of time when looking for where the root cause of a specific issue resides – on the Cerner network or theirs."

NETSCOUT Equipment Deployed	• nGeniusONE Service Assurance platform • InfiniStream appliances • nGenius Collector • nGenius 3900 Series Packet Flow Switches
Equipment Deployed	Cisco routers and switches in the network core and edge
Applications in Use	Cerner Electronic Medical Records (EMR) system, Citrix, Oracle, Microsoft DNS
Users	Used by more than 14,000 facilities world-wide

Table 1: Network Snapshot.

NETSCOUT™

For more information, please visit www.netscout.com or contact NETSCOUT at 800-309-4804 or +1 978-614-4000