Community Health System Improves the Lives of the People of Northeast Georgia

Summary

Company:

Northeast Georgia Health System

Industry:

Healthcare

Business Challenges:

Build a highly resilient data center network to support round-the-clock operations of a community health system.

Technology Solution:

- QFX10002 and QFX5100 Switches
- MX480 and MX240 3D Universal Edge Routers
- EX Series Ethernet Switches

Business Results:

- Enhanced network resiliency and enabled network maintenance without downtime
- Increased network capacity to meet growth of clinical applications, data, and virtualization
- Ensured business continuity for life-critical systems
- Built the foundation to connect community partners to its electronic medical records system

Northeast Georgia Health System

Residents of Northeast Georgia don't have to travel to a big city for top-quality healthcare. They have Northeast Georgia Health System (NGHS), a not-for-profit community health system that provides comprehensive healthcare services to nearly one million people in the region. NGHS operates three hospitals as well as medical offices, urgent care centers, rehabilitation centers, long-term care centers, and a mental health and substance abuse treatment center. NGHS is recognized as a top provider of cardiac care, women's health, and pulmonary care.[1] It is also a healthcare IT leader: Healthcare Information and Management Systems Society (HIMSS) has validated its electronic medical record (EMR) adoption at its three hospitals at Stage 6, which only 32% of hospitals in the U.S. have achieved.[2] NGHS has filed for Stage 7 validation, which only 6% of hospitals have achieved.

Business Challenge

"We've been on a two-year journey to modernize our health system technology platforms," says Chris Paravate, CIO at NGHS. "We've adopted a more patient-centric focus and replaced our patient care and billing systems."

As more patient and clinical services are enabled by technology, there's no room for system outages and network downtime. The growth of clinical applications and medical images, coupled with an explosion of biomedical data, has meant a substantially higher network load. Epic, NGHS' electronic medical records platform, is completely virtualized and relies on multi-terabyte databases, which has placed additional demands on the network. Network maintenance windows have had to shrink, and it was getting harder and harder to replicate data for offsite storage. The 10 Gbps network had run out of steam.

In addition, NGHS was building a new disaster recovery site to ensure uninterrupted operations. "If you have a patient in the ICU, you can't lose access to the information about that patient and the treatment," says Paravate.

"We've moved from IT being a transactional platform to IT being a core enabler for the health system. The success of our clinical systems depends on our Juniper infrastructure."

Chris Paravate, CIO, Northeast Georgia Health System

[1] NGMC has been recognized by CareChex, an independent healthcare quality rating service, as Georgia's #1 heart hospital for 12 years in a row, as well as Georgia's #1 women's hospital, and Georgia's #1 pulmonary hospital: https://www.nghs.com/about

[2] HIMSS Analytics Electronic Medical Records Adoption, Q3 2017: http://www.himssanalytics.org/emram

NGHS is growing: Over the past two years they've acquired a hospital and and a clinic, and are preparing to host community accessible electronic medical records for other healthcare providers in the region.

NGHS needed a high-performance, highly resilient data center and core network to support its growing organization. "The new network design allows us to perform concurrent maintenance without downtime, have higher bandwidth between application servers, and provide higher uptime for mission-critical applications," says Steve Brummer, director of technical services at NGHS.

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Technology Solution

A Juniper Networks customer for more than a decade, NGHS revalidated its commitment and deployed a new, state-of-the-art data center network. Juniper's portfolio offered the functionality, support, and easy integration that the health system needed. "The higher capacity 40 Gbps network backbone and a fully meshed design help with our application uptime and capacity needs," says Kristien Kramer, network architect at NGHS.

NGHS chose the Juniper Networks® MX480 3D Universal Edge Router for high-performance, reliable, and scalable switching, routing, and security for its network core, and selected the Juniper Networks MX240 3D Universal Edge Router for the edge. It selected the Juniper Networks QFX10002 and QFX5100 Switches for its data center and its disaster recovery site. The QFX10002 switch, which scales from 2.88 to nearly 5.76 Tbps of throughput, delivers the capacity and scale needed to support its clinical and administrative applications—now and into the future. The 10GbE/40GbE QFX5100 switch is optimized for application delivery and serves as a building block in the data center network's spine-and-leaf architecture.

Juniper Networks Junos® operating system, which powers Juniper's networking and security products, is built with 20+ years of reliability, security, and flexibility. Junos OS automates network operations with streamlined precision, ensures operational efficiency, and frees up valuable time and resources for the health system's network operations team.

Juniper's Data Center Interconnect (DCI) capabilities enable a fast, reliable, flexible connection between NGHS' primary data center and disaster recovery site. Ethernet VPN (EVPN) connects the two data centers using a Layer 2 bridge, enabling active/active replication and the ability to move virtual workloads as needed. "With EVPN, we can have the data center and disaster recovery site in the same address space, which allows for faster failover," says Kramer.

VXLAN, or Virtual Extensible LAN, enables network segmentation on a far greater scale than traditional VLANs, and is essential to meet the health system's stringent privacy and security requirements. Using VXLAN will make it easier for NGHS to securely connect a growing number of community providers and partners to Epic.

NGHS also uses a variety of EX Series Ethernet Switches at its hospital campuses and remote sites. These fixed-configuration 1GbE access switches deliver enterprise network access and are available with Power over Ethernet (PoE) to power a growing number of connected devices, such as IP phones, cameras, and connected medical devices.

The IT leadership at NGHS are big believers in open standards, and easy integration with other vendors' equipment was critical. "Given our growth pattern, we need to be flexible and easily integrate with other technologies," says Griff Law, CTO of NGHS. "We stick to standards-based solutions." The Juniper network integrated seamlessly with the health system's Aruba wireless LAN and Dell servers in the data centers.

Business Results

With Juniper, NGHS has engineered simplicity into its network and created a foundation for delivering top-quality healthcare, so the people of Northeast Georgia can stay close to home when they need complex medical care. "We've moved from IT being a transactional platform to IT being a core enabler for the health system," says Paravate. "The success of our clinical systems depends on our Juniper infrastructure."

The network supports Epic EMR, PACS for radiology images, telemedicine, and a broad array of connected medical devices for patient monitoring. The network also supports unified communications, video, and administrative and productivity applications. Predictive analytics support clinical decision making and improve care delivery.

With the new disaster recovery site, NGHS can be confident that its business continuity plans can be upheld. Before the upgrade, replicating data to the secondary site could easily overload the 1 Gbps link, which would make data recovery more challenging. Now, data is replicated in near real time, with less than one minute of delay. In testing its business continuity plans, NGHS was able to migrate its EMR system to the disaster recovery site in less than 90 minutes.

The new Juniper network is faster, more easily maintained, and enables continuous operations—and is lower cost. NGHS expects to reduce the number of switches in its data center by 50 percent, delivering a sizable operational savings. The IT department, which includes a network staff of eight, supports 8,000 users and 1,000 medical staff across three hospital campuses and 80 remote sites.

Creating simplicity through engineering is innovation's highest form. With Juniper, NGHS has a network that enables innovation but is simple to engineer and operate. In 2017, NGHS was named one of the Most Wired hospitals and health systems for the fifth time. According to the American Hospital Association, NGHS met rigorous criteria and experienced tremendous gains in patient care and efficiency by implementing IT strategies for delivering healthcare.

Next Steps

NGHS has served the people of Northeast Georgia for 67 years. As an innovator in healthcare, NGHS is planning to offer a community connect model with Epic, which will provide continuity of care for patients who are referred by local physicians to an NGMC hospital or other specialists. Smaller physician groups get simplified access to an EMR without having to undergo a major implementation. Patients can allow their providers to view their medical records on a patient portal, making their healthcare data more portable. Virtual visits and telemedicine are in the immediate future. With a state-of-the-art network from Juniper, NGHS can continue to be a healthcare leader and improve patient outcomes.

For More Information

To find out more about Juniper Networks products and solutions, please visit www.juniper.net.

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Kristien Kramer, Network Architect, Northeast Georgia Health System

About Juniper Networks

Juniper Networks brings simplicity to networking with products, solutions and services that connect the world. Through engineering innovation, we remove the constraints and complexities of networking in the cloud era to solve the toughest challenges our customers and partners face daily. At Juniper Networks, we believe that the network is a resource for sharing knowledge and human advancement that changes the world. We are committed to imagining groundbreaking ways to deliver automated, scalable and secure networks to move at the speed of business.

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