

Virginia Hospital Boosts Overall Application Performance

Customer Case Study



Carilion Clinic makes best use of advanced imaging tools with state-of-the-art Cisco Catalyst 3850 Series switches.

EXECUTIVE SUMMARY

Customer name: Carilion Clinic

Industry: Healthcare

Location: 800-bed hospital in Roanoke and seven outpatient centers throughout southwest Virginia

Number of employees: 11,300 total employees, 600 employed physicians

Business Challenges

- Reliably deliver voice service, electronic medical records, and imaging applications
- Improve uptime for healthcare providers who need mission-critical network access
- Build strong unified foundation for burgeoning wired and wireless traffic and next-generation diagnostic tools

Network Solution

- Cisco Catalyst 3850 Series switches on each hospital floor
- Built-in Cisco StackPower and Cisco StackWise-480 technologies provide power redundancy and operation resiliency for each stack
- Granular Catalyst 3850 QoS capabilities identify and prioritize traffic by application and user to ensure highest performance for critical applications

Business Results

- Better application performance has the potential to improve diagnostic abilities
- Improved network uptime aids a busy hospital staff working 24 hours a day
- Advanced intelligent switching capabilities serve current and future needs

Business Challenges

Carilion Clinic, a nonprofit medical system consisting of eight hospitals and over 100 ambulatory clinics, serves the residents of southwest Virginia. Its premiere 800-bed Carilion Roanoke Memorial Hospital in Roanoke, Virginia, which features a Level I trauma center, recently completed a large expansion project, adding new adult and pediatric emergency and labor and delivery units to its sizable roster of specialties.

Carilion Roanoke Memorial Hospital's network infrastructure was not meeting the requirements of their medical applications and their staff needs. Although still reliable, the hospital's six-year old data center and access switches were not keeping up with the ever-increasing traffic loads of electronic medical record (EMR) files, wireless and wired voice, and bandwidth-intensive medical imaging applications.

Michael Smith, director of Network Services at Carilion Clinic, says, "A single patient cardiology study can consume more than a gigabit of data." Multiply that by the dozens of doctors reviewing diagnostic imaging files over the network on an hourly basis, and you begin to understand the traffic flow demands. He continues, "Our physicians want to quickly view their video and graphic files and don't want to wait while these huge files download to their PCs."

Because hospital healthcare providers work 24 hours a day, Smith and his IT team of seven also needed switches with in-service upgrade capability. He says, "Downtime in a 24x7 hospital is just unacceptable. We wanted to be able to upgrade or swap out switch components without the switch or stack losing a single packet."

Network Solution

A long-time Cisco customer, Smith met with his local Cisco account manager to determine the best data center and network edge replacement plan for Carilion Clinic's flagship hospital.



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Michael Smith
Director of Network Services
Carilion Clinic

Now more than half-way through project deployment, Smith and his team have Cisco Nexus® switches in the data center and in major distribution points in Carilion Roanoke Memorial Hospital’s 15-story main building and adjacent clinics. Cisco Catalyst® 3850 Series switches configured in multiple stacks supply employee wired devices with full gigabit bandwidth.

Built-in wireless controller capabilities with 40G wireless throughput can support up to 50 access points (APs) and up to 2000 wireless clients per stack. Each Carilion Roanoke Memorial Hospital stack has at least one Power over Ethernet Plus (PoE+) switch that can deliver up to 30W of power to Cisco APs.

Smith employs the extensive wired and wireless quality of service (QoS) capabilities of the Catalyst 3850 switch throughout the hospital complex. He says, “Because the switches can inspect packets at a much deeper level, we can tag traffic at the network edge, and the computing overhead is efficiently handled there.” This is a dramatic improvement: their old edge switches did not provide granular QoS services, but the new capabilities allow them to gain full visibility and control to prioritize medical applications.

Smith also relies on two invaluable resiliency and reliability features on the Catalyst 3850 switches, Cisco StackWise®-480 and StackPower® technologies:

- StackWise-480 creates a single unified system of up to nine switches with self-elected “active” and “standby” switches that track and synchronize switching-routing-wireless data for the entire stack and step in when a member switch goes offline.
- StackPower is an innovative interconnect system that creates a pool of shared power that any switch in a stack can draw from if its own power supply fails. The feature reduces costs by eliminating the need for external power supplies or dual power supplies in every switch.

Business Results

Carilion Roanoke Memorial Hospital’s new edge architecture powered by Cisco Catalyst 3850 Series switches delivers significant business benefits.

Higher desktop connectivity improves the user experience. While existing end devices had gigabit capability, the old edge switches did not, so the investment in desktop power is finally being fully utilized. Smith says, “Because response time is 10 times faster, users immediately notice the difference when they access applications over the network; the larger the file, the more dramatic the impact. It’s great to get the kind of positive feedback we’re hearing from the physicians.”

Better application performance improves diagnostic abilities. Advanced QoS features on the Cisco Catalyst 3850 switches allow Smith to drill down to application and user levels to prioritize available bandwidth and assign traffic priority using flexible LAN and WLAN traffic management policies and deliver additional performance where needed.

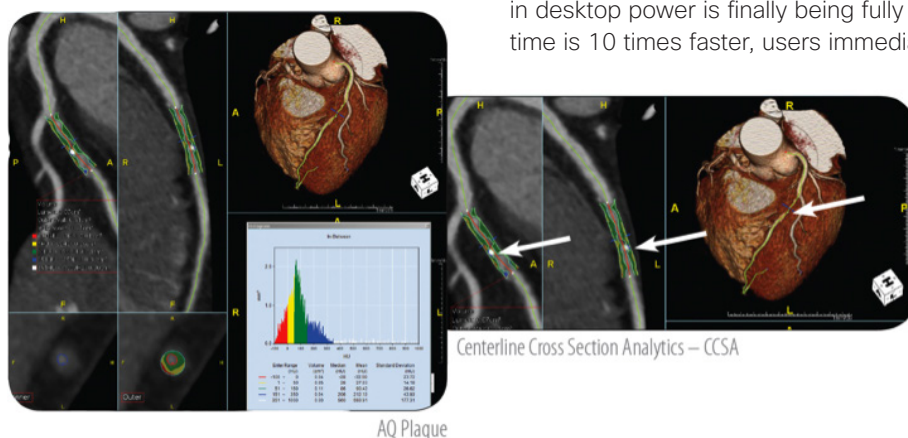


Figure 1. Cisco Catalyst 3850 switches deliver higher dedicated bandwidth to desktops, helping to produce clearer jitter-free streaming images.

Voice and data services share the same network infrastructure, so IT needs to give priority to voice traffic, as well as latency-sensitive electronic medical records (EMRs) and imaging files. Smith says, "Without QoS, dropped packets can introduce jitter to 3D cardiac images streamed to the desktop. Tagging and prioritizing imaging traffic helps reduce the jitter, producing better results that resonate with our physician staff."

Improved network uptime aids a busy hospital staff working 24 hours a day. Smith notes that Cisco Catalyst 3850 resiliency features create a highly available stack.

- StackPower shared power and StackWise-480 unified switching intelligence significantly reduce downtime. Smith says, "Before, if a switch's power supply went out, up to 48 people lost connectivity. Today the switch draws from the power pool with no interruption." Similarly, the standby StackWise switch takes over if a switch fails or is taken offline, and the entire stack continues to operate without a hitch.
- Embedded PoE+ with intelligent power monitoring simplifies rebooting and powering down devices when necessary, reducing the threat of brownouts and their attendant downtime.

Advanced intelligent switching capabilities serve current and future needs.

Carilion Roanoke Memorial Hospital's new data center and edge switching infrastructure gives Smith and his staff the resources to make the most of their network today and into the foreseeable future. While his team monitors uplink ports for capacity management, he believes that the new access infrastructure will more than meet his needs for at least the next few years. In addition, the Catalyst 3850 PoE+ will easily handle the power demands of the new wireless 802.11n APs that he plans to deploy in the coming year to support increasing wireless use.

The Cisco Catalyst 3850 QoS wired and wireless deep-packet inspection feature is also paying dividends. Smith says, "With our switches, I can add intelligent IOS-based security capabilities such as 802.1X at the edge very easily and cost-effectively when we need them."

More Information

- For more information on Cisco Catalyst 3850 Series switches, visit www.cisco.com/go/3850
- For more information on how Cisco helps healthcare providers improve patient care, visit www.cisco.com/web/strategy/healthcare/index.html

Product List

- Cisco Catalyst 3850 Series switches
- Cisco Nexus 7000 and 5000 Series switches



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