NEUMANN UNIVERSITY
Ruckus Network Gets High Marks from Students for Flawless Performance

RUCKUS | **DELL**EMC

CASE STUDY

OVERVIEW

Neumann is a private, Catholic, co-educational university founded and sponsored by the Sisters of St. Francis of Philadelphia. Neumann offers undergraduate degrees in a variety of subjects, three doctoral programs, six master's degree programs, and an accelerated bachelor's degree program for adults. The school is located in Aston, Pennsylvania, about 30 minutes from Philadelphia. Approximately 3,000 students attend the university, which has four on-campus residence halls that house about 700 students.

REQUIREMENTS
- Better Wi-Fi coverage, throughput and connectivity across campus, and especially in dorms
- Ease of deployment and day-to-day management for IT
- Support more concurrent users on the network
- Greater flexibility in the wired and wireless networks
- Easy, secure network onboarding for users and devices

SOLUTION
- 4 Ruckus switches provide a high-speed fiber-optic ring around the campus
- 125 Ruckus switches in wiring closets provide full PoE per port to access points (APs)
- 300 Ruckus 802.11ac APs deployed
- Ruckus Wi-Fi controllers
- Ruckus Cloudpath Enrollment System software

BENEFITS
- Student complaints related to Wi-Fi performance dropped (from 75% each semester to less than 1%)
- Coverage and throughput is strong even in high-interference environments
- Management software provides a single pane of glass view of the entire WLAN across campus
- Easy self-service device onboarding for students, supporting a high volume of diverse devices
- Cloudpath Enrollment System software and controllers provide detailed information on WLAN usage (down to the device level) to support planning
- Switches and APs support IP-based multicast streaming video for student broadcasts and distance learning

RUCKUS PROVIDES CHAMPION-CALIBER WIRED AND WIRELESS NETWORK

It's the beginning of a new school year. Students return to the Neumann University campus, bringing their ever-expanding array of mobile devices—along with high expectations for being online anytime. The students moving into the four residence halls, or dorms, are the heaviest users of the wireless network. They eagerly log onto the campus Wi-Fi network to start using the Internet. But the connections aren't what they're expecting. And they're vocal about their frustration.

Jon Wisniewski is the network administrator at Neumann University. "Every semester, about three-quarters of help desk complaints were from frustrated students trying to use the WLAN. When students are unhappy, everyone is unhappy."

THE CHALLENGE

It's difficult to say who was more frustrated with the old Wi-Fi network: the students and faculty or the university's 12-person IT team. The existing WLAN added a disproportionate amount of operational overhead and expense. "The WLAN wasn't just unreliable, it wasn't maintainable by a small IT staff," says Jon. "We needed a network that supported student productivity and the deployment of new educational models. But we also needed a solution that didn't require dedicating expensive, full-time IT resources to keep it up and running."

About two years ago, the IT department secured the budget for a complete overhaul of the campus network, both wired and wireless. "We had ambitious goals for the new network, but we were afraid we'd have to pay a premium to get everything we wanted—or settle for a lot less," says Jon. As it turned out, by choosing Ruckus they got a network that exceeded their goals but not their budget.

THE SOLUTION

Looking to update the network with the best solution, Neumann University turned to partner, Northpoint Solutions for help. The first major infrastructure change was to replace the existing campus backbone with a redundant fiber optic ring based on four Ruckus ICX 7750 switches. The switches deliver 10 GbE to Ruckus ICX 7250 24-port switches in the wiring closets. "The existing 3Com backbone switches didn't give us the kind of flexibility we wanted," says Jon. "We also had issues with getting enough Power over Ethernet out of 3Com switches to the APs. The ICX 7250s give us full PoE out of every single port."

The IT team now has a better ability to track down issues. They can dig into commands that weren't exposed on the 3Com switches. "We have more options for optimizing efficiency, security and performance. We're currently in the middle of a project to break up the VLANs into segments, which we couldn't do with our other switches," states Jon.

When the time came to choose a new Wi-Fi vendor, they started with Ruckus' access points (APs). They used the university's computer lab, which has about 200 PCs in rooms along a long hallway. They installed a Ruckus AP in the room at the end of the hall. Jon got all the way to the other end of the hall before he was unable to transmit data to test the AP. "Our old APs had such poor penetrating power that we were astounded at the flawless

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JON WISNIEWSKI
Network Administrator, Neumann University

performance under such high interference conditions. And we set up the demo using the factory defaults—we didn't try to tweak or optimize anything for the environment."

They started deploying Ruckus APs in the dorms, whose construction (cinderblock and rebar steel) had always caused significant signal degradation. "We placed one AP in each suite. Ruckus' adaptive antenna technology and ChannelFly provide the best interference mitigation and channel optimization I've seen. The signal strength with Ruckus is so strong that even if we take an AP offline, there's bleed through from the surrounding rooms. It's like having redundancy without overprovisioning APs."

In fact, coverage from Ruckus APs anywhere on campus is so strong that IT was able to eliminate at least one outdoor AP. IT installed APs in the Mirenda Center, which is a 72,000 square feet building. The signal strength from the Ruckus APs inside the Center reached 80 feet outside.

To date, IT has deployed about 300 APs around campus with a mixture of Ruckus' 801.11ac APs. "Now we can easily keep up with meeting the performance demands of the latest mobile technology. In the past, that was challenging, if not impossible. As soon as we replaced the old APs with Ruckus APs, students and faculty could see the results instantly. Which is really gratifying for everyone in IT."

The two baseball fields have been updated with indoor and outdoor Ruckus APs. "With the old network, we were lucky if we got 10 MB throughput for the two fields combined. Now we're getting 250-300 MB shared," says Jon.

In 2016, Neumann opened the John J. Mullen Communication Center. It may be the first completely IP-based broadcasting system in higher education. "The manufacturers of this broadcast equipment are certified to run on Cisco. They told us that we had to buy Cisco switches for all of this equipment to work," says Jon. "I knew that Ruckus would be a fraction of the price and work without a problem. And that's exactly what happened. We have full multicast capabilities over IP running over the Ruckus switching infrastructure. In fact, the signal quality is so good that we haven't heard about any delays affecting broadcast quality."

The media center supports student broadcasts and digital learning. The school's nursing program is one of the best known in higher education. IT installed video equipment and microphones in labs so instructors can record and broadcast training sessions that simulate hospital-based procedures.

Providing access to a secure network with policy management for student devices, Neumann deployed Ruckus' Cloudpath Enrollment System. Cloudpath software not only makes onboarding more efficient, it also provides authentication down to the device level. "Just by observation, we know that students are using a wider range of mobile devices. Now we have detailed reports on the number and type of device by user, bandwidth consumption by device and user, and even the applications students are using most frequently. That kind of hard data is invaluable for planning. The Cloudpath software also supports up to 10 devices per user, which will take us a long way into the future."

The Ruckus WLAN is also more manageable. "We used to have one controller per building. The troubleshooting capabilities were minimal, and we had to dispatch a technician to each building to try to isolate problems," says Jon. "Ruckus ZoneDirector 3000 gives us the single pane of glass view for the entire wireless infrastructure."

With the old network, almost three-quarters of the complaints that IT received each semester were about Wi-Fi performance. Now that's less than 1%. "The difference between our old network and Ruckus is night and day," says Jon. "Coverage, capacity, throughput, reliability, affordability, ease of onboarding, single pane of glass management—our new Ruckus network is amazing in every way."