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STAFFORD COUNTY PUBLIC SCHOOLS

School district makes the grade with RUCKUS® and digital learning initiatives

Stafford County School District is located in Stafford, Virginia. The district serves 29,275 students in grades K through 12 and 1,662 faculty and staff. There are currently 32 public schools in Stafford County.

Stafford County
Public Schools
Inspire | Empower | Excel

Customer
Stafford County Public Schools

Location
Virginia

Challenges

Stafford County Public Schools needed an advanced network infrastructure that would support new applications and experiences for students throughout the district. Network administrators were frustrated with the district's aging wired and wireless network, which couldn't handle demands from students—much less those from teachers and staff. The district needed a network that supported student productivity and remote learning. In addition, it needed a solution that didn't require dedicating expensive, full-time IT resources to keep it up and running.

Solution

CommScope's RUCKUS portfolio of high-speed Wi-Fi solutions provided the

powerful, flexible network that could serve multiple roles with improved coverage and capacity. The result is strong coverage for even bandwidth-intensive applications such as distance learning, esports and immersive education using virtual and augmented reality. The solutions also helped the district enhance security throughout all schools.

Elevating the education experience

Stafford County Public Schools is based in Stafford, Virginia. Nearly 30,000 students attend its 30 K-12 schools as well as alternative education and Head Start programs. The district embraces cutting-edge connectivity, along with digital academic and social programs

that improve learning and student experiences. From distance learning and esports to augmented and virtual reality and a space lab, administrators have developed a framework to deliver new experiences that engage students more deeply than ever before.

"Whatever the administration and teachers want to do, our job is to make sure the wired and wireless infrastructure is robust and ready," says Michael Campesi, network supervisor for the school district. "We don't want any online program to falter because the infrastructure failed."

Legacy network laggard

The district had used a Cisco wireless network for many years, but it was an obstacle to change rather than a catalyst for progress.

"We had no visibility with the Cisco equipment," says Stephen Johnson, network engineer at the school district. "We had to use third-party equipment to ping everything to try to isolate problems. "The Cisco local area network (LAN) controller would tell us that an access point (AP) was online but help desk calls said users couldn't connect.

"By the time a technician drove to a building, the AP might be working again, but we had no idea what the problem was," he continues. There was no useful information on the health of the network. We were driving around a lot—essentially getting nowhere."

Performance and stability

Administrators wanted a solution that would keep the district ahead of digital demands for years to come. Tight budgets and a small IT team added to the complexity of deploying an infrastructure that's ready for anything anytime.

To support these initiatives, the district sought high-performing, wickedly fast connectivity throughout the school system, a state-of-the-art network infrastructure, cloud management solutions, and advanced network intelligence. The district found exactly what it was looking for with CommScope's RUCKUS® portfolio of Wi-Fi solutions.

"We didn't think we'd find a vendor that could meet our vision of being prepared for anything," Campesi says. "But RUCKUS met every requirement we had—and a few things we didn't even know we could get, like end-to-end visibility of the APs and switching infrastructure through a single management console."

The IT team installed RUCKUS ICX stackable switches as the core of the network. The stacked switches connect all of the RUCKUS APs and ICX access switches, as well as servers and storage devices. With the legacy system, administrators used chassis switches in the core, but it was a challenge to sustain 10 Gb performance.

"The high schools and middle schools desperately needed more capacity, but the cost of upgrading chassis blades was beyond the IT budget," Campesi says. "When we evaluated RUCKUS ICX stackable switches, we found that we could get better performance, more flexibility and higher capacity at a fraction of the cost of a chassis."

In addition, the ICX switches support long-haul stacking, which provides switch redundancy across the school system's two data centers.

"If we lose power in one data center, we have automatic fail-over to the switching stack at the second data center," Johnson says. "We can see and manage the switches at both sites as if they were a single switch in one location."

The IT team deployed a ring topology so the switch network has complete redundancy.

"We'll never lose an entire building if there's a problem with a switch," Johnson says. "If we ever have to replace a switch in a stack, the new switch automatically pulls the configuration from the stack. We don't spend any time reloading configurations."

Hassle-free deployment

As another benefit of choosing CommScope's RUCKUS solutions, the APs were as easy to deploy as the switches, district administrators say.

"We only have great things to say about CommScope. The reason we love them is simple: RUCKUS technology easily accommodates all of our applications. It works no matter what we throw at it."

**Stephen Johnson
Network Engineer—Stafford County
Public Schools**

"The configurations come up when we plug in the APs, and there's no disruption to the network," Johnson says. "From the core switches at the data centers to the edge switches in the closets to the APs in the classrooms, RUCKUS is the easiest deployment we've ever had."

New visibility, new insights

Thanks to the RUCKUS SmartZone network controller, the school district now has visibility across the entire network. The controller enhances security, minimizes troubleshooting and eases network upgrades.

"We can glance at the console and see if everything is green," Johnson says. "Finally, we have real-time and historical traffic and usage reports across all environments.

"We're in the early stages of working with the management system and studying these reports for optimization and planning," he adds. "It's remarkable to have this kind of comprehensive visibility."

Rock-solid security

Traditional school security systems are typically technology silos—isolated from each other as well as other school systems like building automation and lighting control. By integrating disparate security technologies within a unified system, the district can now automate security and make real-time decisions that enhance safety for students, teachers, staff and guests.

For example, the district has amped up network access security using the RUCKUS Cloudpath Enrollment System. The system delivers secure wired and

wireless network access for personal and IT-owned devices. It also secures every connection with powerful encryption.

"We can revoke access with one click," Johnson says. "Cloudpath has virtually eliminated most of the handholding that we had to do to help people onboard devices successfully."

The district can now also create virtual area networks wherever and whenever they need them. Previously, radio signals from the district's legacy access points caused interference with other school buildings nearby.

"With RUCKUS, we solved the problem by creating a network within a network, all through software," Johnson says.

In addition to improving cybersecurity, administrators are also enhancing physical security by integrating communications and building systems within the RUCKUS network. CommScope works with industry-leading partners in video surveillance, keyless entry, asset tracking, connected access control and many other ready-to-deploy solutions.

"We never want to be in a position to tell the administration or faculty that we can't do something. We don't want to be a hindrance to any progress. Thanks to CommScope, we don't spend time worrying about what's around the corner. We're more than prepared."

Michael Campesi
Network Supervisor; Stafford County Public Schools

"Our security cameras are IP based, and the 911 call center and the sheriff's department have direct access to the cameras," Campesi says. "As we retrofit our schools, we're changing to remote access control for door locks."

The district is considering deploying vape detection systems, which also run over the RUCKUS network.

Redefining academic experiences

The RUCKUS infrastructure has allowed the district to create a vibrant, confidence-boosting environment for online curriculum initiatives and new teaching models.

In the high schools, the faculty is now using Skype to enable distance learning. The capability is helping the district manage teacher shortages—a problem so many schools face today. The RUCKUS network supports high-definition video conferencing, which can help ensure all students have access to the same curriculum and knowledgeable instructors.

The innovations don't stop there, however. The district's newest school is using an amphitheater for classes.

"We designed the network so that we have 360-degree coverage around buildings, which is easy with the strong RUCKUS AP radio signals," Campesi says. "Faculty have the opportunity to move classes into outdoor spaces and stay connected to the network. The network eliminates traditional physical boundaries and extends teaching beyond the four walls of the classroom. You can reach anyone and teach from anywhere."

The district uses immersive teaching tools, including those that use augmented and virtual reality, to engage students in new ways. These bandwidth-hungry applications work seamlessly over RUCKUS APs.

"There have been no issues with connecting or throughput," Johnson says. "Signals never drop. There are no interference issues. The application performs because the infrastructure supports it flawlessly.

"Today, [technology] isn't about computer processing power," he adds. "It's also about network throughput and low latency for streaming video, cloud-based applications, and online courses and activities."

Getting in the game with esports

The RUCKUS network is also enabling social programs that help bring students together, including esports. Among the events, students eagerly anticipate the annual "Nerdvana," an all-day video game online.

"It's currently a wired environment, but we can easily go wireless, because the RUCKUS APs have proved they can easily handle streaming video with hundreds of concurrent sessions," Johnson says.

"We set up the RUCKUS switches to give these events 20 gigabytes in bandwidth," he continues. "It's just like opening a faucet. We create instant bandwidth for a massive LAN party, with zero impact on the rest of the network traffic."

Ready for the future

By creating a single infrastructure to connect devices, applications and people using CommScope's RUCKUS portfolio, the Stafford County school system has built the foundation for the future. The district can deliver services more efficiently and intelligently while enhancing education and learning—in school and from anywhere.

About RUCKUS Networks

RUCKUS Networks builds and delivers purpose-driven networks that perform in the demanding environments of the industries we serve. Together with our network of trusted go-to-market partners, we empower our customers to deliver exceptional experiences to the guests, students, residents, citizens and employees who count on them.

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