COLUMBIA PUBLIC SCHOOLS
Wave 2 Gigabit Wi-Fi Hits Primary Education

RUCKUS™
an ARRIS company

Columbia Public Schools

REQUIREMENTS

- Fast and reliable Wi-Fi access to deliver digital content

- Higher performance, higher capacity district-wide indoor/outdoor Wi-Fi infrastructure

- Infrastructure that can support a range of applications and services

- Great wireless connectivity to meet interactive curriculum needs

SOLUTION

- Deployed more than 1,400 Ruckus ZoneFlex 710 802.11ac Wave 2

- Ruckus SmartZone 100 controllers

- Increased the number of concurrent clients supported per AP while improving signal strength and wireless reliability

- Extended the life of their infrastructure

NATION'S FIRST DEPLOYMENT OF 802.11AC WAVE 2 TECHNOLOGY SHOWS HOW SCHOOLS CAN STAY AHEAD OF INSATIABLE WIRELESS DEMANDS

There has been a huge movement by educational institutions around the world to provide their students with the best gigabit Wi-Fi service. Say goodbye to the days of chalkboards and textbooks as the proliferation of social media and technology has changed the way educators teach and students learn. Because of this tide, schools are in need of reliable and fast Wi-Fi. There is nothing worse than a teacher taking time to create a digital lesson plan only to have the Wi-Fi unavailable. This forces teachers to have a plan B, doubling their work for each day. And let's not forget about the student. Students are excited to learn using digital devices. When things are not working, disappointment sets in. Schools are desperately searching to fix this problem, hence they are ready to ride the Ruckus Wave 2 to get their Wi-Fi in perfect condition.

THE CHALLENGES

Centered in Columbia, Missouri, Columbia Public Schools (CPS) serves more than 18K students covering over 300 square miles between St. Louis and Kansas City. CPS is accredited with Distinction by the Missouri Department of Elementary and Secondary Education supporting over 30 K-12 schools. With a large student body covering the district, CPS was struggling with their network bandwidth. Their teachers were making the effort to incorporate more digital tools into their teaching only to have no Internet access for the students to perform the lesson. Major frustration was taking place among the teachers and the students weren't enjoying the ride either.

Today, CPS provides an iPad for every two students. The future goal is for every student to have their own iPad. This, combined with the increasing numbers of smart phones and other Wi-Fi enabled devices, places an even higher demand in density on the network. According to the school officials, in spite of the staggering number of man hours dedicated to keeping the wireless network up and running it could not be counted on to be available when needed.   Both of those challenges are now eliminated with their new Smart Wi-Fi infrastructure from Ruckus. They have the reliability and speed needed to support their rapidly growing community without increasing the resources required for support.

"Fast and reliable Wi-Fi access is now simply an imperative for delivering a 21st century education," states Christine Diggs, Director of Technology Services for Columbia Public Schools. "The fact of the matter is that outside of the classroom, technology is such a part of everyone's lives that it must be seamlessly integrated into the educational environment and process."

THE SOLUTION

CPS deployed more than 1,400 Ruckus ZoneFlex 710 802.11ac wave 2 access points managed through a cluster of Ruckus SmartZone 100 controllers to serve the students, staff, and nearly 20K Wi-Fi enabled devices all across the district. The move to gigabit Wi-Fi services reflects the broader requirement for educational institutions across the country to deliver much more wireless capacity to support the insatiable demand for wireless bandwidth needed to access media-rich content and online digital curriculum.

"Our move to a complete district-wide gigabit class infrastructure gives us the power to address future requirements, many of which are hard to even anticipate, increases our ability to support more users at any given time and extends the life of our infrastructure over a much longer period," claims Diggs.

The CPS Wi-Fi infrastructure is used to support a range of applications and services such as teacher evaluations, in class collaboration, guest access, student information systems, Apple Air Servers, Google Apps, scientific simulators, video streaming, and IP-based security cameras.

With all the different Wi-Fi technology, CPS decided to put several suppliers to the test. Up for consideration were Cisco (Meraki), Aruba, Aerochive, and Ruckus. Two final vendors participated in an exhaustive proof-of-concept testing at different schools. Using standard industry test tolls such as iPerf combined with real-world streaming applications, CPS outfitted one school with the Aruba 225s and the other with Ruckus R710s, measuring TCP throughput, range, density, and a myriad of different Wi-Fi metrics.

According to CPS, the Ruckus equipment was able to deliver twice the Wi-Fi capacity, higher levels of TCP throughput at longer ranges with a 60 to 70 percent reduction in the number of access points required. "Our goal was to push these boxes to their limit to see where they'd break by throwing as many unicast HD video streams at them as they could bear," said Aaron Heath, network specialist at Columbia Public Schools. "With Ruckus 710, we simply couldn't break it and were able to push more than 90 clients streaming HD video to a single AP. We just ran out of clients."

THE BENEFITS

Now hitting the market, the dual–band Ruckus 710 802.11ac Wave 2 product offers huge increases in Wi-Fi performance and range, delivering up to 5dB of signal gain and aggregate data rates of over two gigabits per second (Gbps). What is even more amazing about this AP is that it is backwards compatible with existing Wi-Fi clients. The ZoneFlex R710 maintains 4x4:4 802.11ac functionality with standard 802.3af Power over Ethernet (PoE) and uniquely provides concurrent support for multi-user MIMO, spatial multiplexing, adaptive, antenna switching, and transmit beamforming with the ability to create over 4,000 unique directional antenna patterns per radio, mitigating up to 15dB of RF interference while also reducing co-channel interference. The dual-polarized

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smart antennas also allow the R710 to automatically adapt to the changing physical orientation of mobile client devices such as smartphones and tablets, thereby maximizing uplink performance and offering unmatched reception of weak mobile client signals.

Because digital content is essential to the ever changing educational world, Wi-Fi performance and reliability is at the top of the list for every institution in this field. Ruckus believes in providing the best. "For CPS, the Ruckus products spoke for themselves. But more important, we felt the Ruckus philosophy about delivering the best possible Wi-Fi performance and reliability within highly dense client environments really mirrored our own," concluded Diggs.

Other schools making the move to Ruckus Wave 2 Gigabit Wi-Fi include Shelby County Schools (TN), Pitt County Schools (NC), and Vancouver Public Schools (WA). The word is out and schools are now "surfing" on the Ruckus Wave 2. Proving once again that Ruckus provides simply better wireless.

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