

Higher Education



Emmanuel College Gives Its Wireless Network an Extreme Makeover with 802.11n Smart Wi-Fi

IT staff at Emmanuel College were seeing Wi-Fi ghosts. Wi-Fi access points scattered throughout the campus would disappear and then re-appear wreaking havoc for students, faculty and guests trying to maintain connectivity.

Situated in the heart of Georgia, Emmanuel College is a private college founded in 1919. Like many college campuses, Emmanuel has a variety of facilities including dormitories, dining halls, libraries, academic classrooms and administrative offices, sprinkled across over 150 acres of Georgian landscape. While these 30+ buildings were built to last, constructed of thick concrete walls and metal and brick exteriors, they were no friend to Wi-Fi signals.

Like many colleges and universities, IT resources were limited and budgets tight. The current 802.11g Wi-Fi network consisted of standalone access points (APs) that couldn't be uniformly managed or optimized from a central point. Users constantly complained about dropped connections, spotty coverage and inconsistent performance. APs would continually hang or freeze, requiring IT staff to be dispatched to fix the problem.

"We wasted hours chasing Wi-Fi ghosts," said Glenn Toney, IT Director at Emmanuel College. "We had to reset APs three or four times a week. It became too impossible to pinpoint and resolve Wi-Fi problems because we had no visibility into or control over the network. We couldn't even tell if the APs were disconnected from the network."

Emmanuel also wanted to provide more secure mobility for different users groups and institute authenticated access against its Active Directory domain, without having to add and configure another RADIUS server.

So Emmanuel decided it was time for a change and began looking for centralized 802.11n systems. The move to 802.11n was driven by the need for more client density per AP, the desire for more bandwidth to cope with sophisticated applications eating up capacity and the longer-term desire to extend the network using indoor and outdoor wireless meshing technology.

Emmanuel reviewed a number of Wi-Fi suppliers but none offered 802.11n with wireless meshing or advanced RF technology that would ensure reliable connectivity. "Most of the 802.11n WLAN options out there were designed and priced for big multinational corporations with capabilities that were simply more than we would ever need," said Toney.

"We weren't interested in per-user firewalls or complicated channel blanket technologies that require big up-front investment and a Ph.D. to deploy. We merely wanted something that was sophisticated, reliable and easy-to-use. It turns out that combination is hard to find," Toney said. Emmanuel, working with KOR Systems of Gainesville, GA, ultimately settled on the Ruckus



Emmanuel College replaced its existing campus-wide 802.11g Wi-Fi infrastructure with a Ruckus Smart WLAN 802.11n network for better coverage and more predictable performance at range.

COMPANY OVERVIEW

Located 30 miles north of Athens, Georgia, Emmanuel College is a private liberal arts Christian university founded in 1919. The Emmanuel campus consumes over 150 acres with more than 30 buildings on campus. The college supports over 700 students and some 125 full-time faculty.

REQUIREMENTS

- Higher speed 802.11n Wi-Fi services
- Seamless integration with existing network and authentication infrastructure
- Ubiquitous Wi-Fi coverage
- Centralized WLAN management
- Secure mobile access for different user groups
- Ability to support simple guest access
- Easy administration and management
- Future-proofed expansion

SOLUTION

- 27 Ruckus ZoneFlex 7942 Smart Wi-Fi 802.11n desktop access points
- Four Ruckus ZoneFlex 2942 Smart Wi-Fi 802.11g access points
- One ZoneDirector 1025 Smart Wireless LAN controller
- One ZoneDirector 1050 Smart Wireless LAN controller

BENEFITS

- Eliminated user complaints about dropped connections
- Centralized control and management of entire campus-wide WLAN
- Ability to easily extend the WLAN with Smart Mesh Networking
- Three-fold performance increase
- Support of existing 802.11g clients as well as emerging 802.11n clients
- Adaptable Wi-Fi signals allow reliable coverage within hostile RF environment





CASE STUDY

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"We were wasting hours chasing Wi-Fi ghosts.

We needed more visibility into and control over our wireless services.

Our goal was to move to a higher speed 802.11n Wi-Fi network that would provide high-end capabilities but be easy to use and seamless to deploy - all at an affordable price.

It turns out this is easier said than done."

Glenn Toney
IT Director
Emmanuel College

ZoneFlex Smart WLAN system. Deploying the ZoneFlex system was "ultra simple," according to Emmanuel, as they only needed to swap out their existing 802.11g APs with new ZoneFlex 802.11n APs.

Because each ZoneFlex 802.11n AP integrates a high-gain, directional antenna array, Emmanuel didn't need as many APs to cover the same physical area. But they still decided to perform a one-to-one swap of 802.11g APs for 802.11n APs to ensure the best coverage.

All configuration for the new Wi-Fi network was performed in minutes through a simple-to-use Wi-Fi wizard on the ZoneDirector controllers. Because the dorm network and campus network remain logically separated, two ZoneDirector controllers were deployed. Once the ZoneFlex APs were plugged into the network, they automatically discovered their respective ZoneDirector controller and self configured.

The school decided to use WPA2 and to begin authenticating select users against its Active Director domain. The ZoneDirector was one of the only centrally managed WLAN controllers able to natively support Active Directory without the use of additional protocols or servers such as RADIUS.

Installed at Emmanuel, Ruckus ZoneFlex 7942 802.11n access points are the only devices of their kind to integrate a unique, dual-polarized antenna array specifically developed for spatial multiplexing within 802.11n environments. This specialized smart antenna provides complete control signal path selection

to ensure that spatial multiplexing techniques are used more often, offering the highest reliability and consistent performance.

"The Ruckus Smart mesh networking was extremely unique and attractive to us for extending our Wi-Fi network to outdoor quads by just plugging in APs to a power source," said Toney. "But with Wi-Fi meshing, because every hop degrades throughput, it's important to start with a bigger pipe which led us to 802.11n. With the Ruckus system we've dramatically reduced user complaints, allowing us to focus using the Wi-Fi system as more of a ubiquitous utility," said Toney.

In the dining hall, the Wi-Fi network is used for the scanning of student ID cards for meals. The ID cards are scanned and the information is securely transmitted over Wi-Fi to a Sequel database that verifies the diner's card against the student information system.

Wi-Fi is also used to provide dorm access by students, checking credentials against the school's registration system. And in the science department, laptops are used to wirelessly connect to analyzing equipment and print out the results of tests that are performed.

"But the biggest benefit of our new Wi-Fi system has been reducing problem resolution times from hours to minutes. This makes for happy users and more efficient IT operations," concluded Toney.

Right:
Emmanuel College needed to provide 802.11n service across 30 buildings scattered throughout a massive 150-acre campus. The Ruckus ZoneFlex Smart WLAN system with integrated Smart Mesh Networking lets Emmanuel easily expand their Wi-Fi infrastructure across its entire campus.

