



Regional Medical Center Makes the Move to Healthier 802.11n Wi-Fi for Critical-Care Apps

Satilla Medical Center (Satilla) had a wireless problem. Doctors and staff wanted the flexibility, freedom and speed of care that Wi-Fi could bring, but consistent connections were hard to maintain, coverage was spotty, and interference caused erratic performance from day to day.

“We just couldn’t maintain a consistent level of service across the hospital and spent more time trying to troubleshoot problems than actually fixing them,” said Barry Rudd, director of Information Technology at Satilla.

With an IT department of 15 serving more than 1,300 staff and 30+ doctors while supporting 200+ file servers and 800+ workstations, only two IT staff were dedicated to a network of 60 switches, 15+ routers and a second generation Cisco wireless LAN (WLAN).

The Wi-Fi network was initially deployed to support applications such as the MEDITCH Healthcare Information System, the PatientSafe IntelliDOT bedside medication system and the Hespera Mednet Infusion System.

Other WLAN applications included guest access, the monitoring of patients’ vitals in the ICU, asset tracking of devices for inventory management and a wide-range of clinical care applications. Critical to the operation and deployment of Satilla’s WLAN was stability and pervasive accessibility. However over time the WLAN failed to live up to expectations.

Satilla quickly found their existing WLAN was having trouble providing consistent performance, stable client connections and full coverage across the hospital.



Satilla Regional Medical Center standardized on a Ruckus Smart Wi-Fi 802.11n system to support thousands of users, 300+ wireless devices used for critical care applications.

A Myriad of Medical Applications and Devices

| APPLICATIONS | DEVICES |
|-----------------------------------|----------------------------------|
| - IntelliDOT bedside medication | - 100+ wireless barcode scanners |
| - MedNet wireless IV pumps | - 200 pumps with Aeroscout RFIDs |
| - Robotic pharmacy delivery | - 2 robots, 30 temperature RFIDs |
| - MobiLab- mobile phlebotomy | - 15 Symbol barcode scanners |
| - Oxinet- wireless pulse/oximeter | - 20 monitors |
| - eICU tracks patient vitals | - 50+ carts on wheels (COWs) |
| - 64-slice MRI scanner | |

COMPANY OVERVIEW

With over 370,000 square feet and serving over 40,000 ER patients a year, Satilla Regional Medical Center is a non-profit acute-care community hospital based in Waycross, Georgia. The hospital serves as a regional referral center for more than 155,000 Georgians in a 9-county area. Satilla supports over 300 wireless devices that provide access to a range of life sustaining applications such as dispensing meds to monitoring a patients vitals while in Intensive Care.

REQUIREMENTS

- Full-featured Web-based centralized WLAN control
- No centralized point of failure
- Coverage in a Wi-Fi challenged building
- Future proofing the network
- Seamless support for voice and video

SOLUTION

- 65 Ruckus ZoneFlex 7962 dual-band 802.11n APs
- 2 ZoneDirector 3100 controllers

BENEFITS

- Stable client connectivity
- Reduced packet loss
- Consistent throughput at range
- Adaptive Wi-Fi system that constantly changes as hospital RF environment changes
- Integrated support for real-time streaming IP-based video
- Better coverage with fewer APs in Wi-Fi challenged areas
- Reduce the cost of wiring the hospital



“Wireless is no longer simply a nice-to-have option. Wi-Fi performance, reliability and range were essential to our business. After evaluating all the top suppliers we only found one that really focused on making the physical RF layer dependable. We now have in place a wireless infrastructure that let’s us focus on providing world-class healthcare.”

Barry Rudd

Director of IT
Satilla Regional
Medical Center

A difficult environment for Wi-Fi, hospitals must deal with constant change, moving users, and RF interference from a myriad of medical devices. This creates challenges as the RF environment is in a constant state of flux. While conventional APs can change channel assignments or lower the physical data rate, they do nothing to alter or optimize the actual RF domain.

Cisco’s answer was to add more access points growing the total number to 115 APs while still not providing guaranteed access to the network. This would increase capital costs and operational work for the already tasked team of two.

Having labored with its existing Cisco WLAN for the past three years, Satilla had gone through multiple upgrades and still could not provide the stability and accessibility users needed. This drove them to implement workarounds such as an internal Verizon cell network to handle communication between the medical staff, thus increasing the total over all cost of the network. Ultimately for Satilla, enough was enough.

So the hospital began the evaluation process, bringing in systems from Aruba, Aerohive, Meru, Cisco and others. But, according to Satilla these systems remained “expensive, cumbersome and complex.”

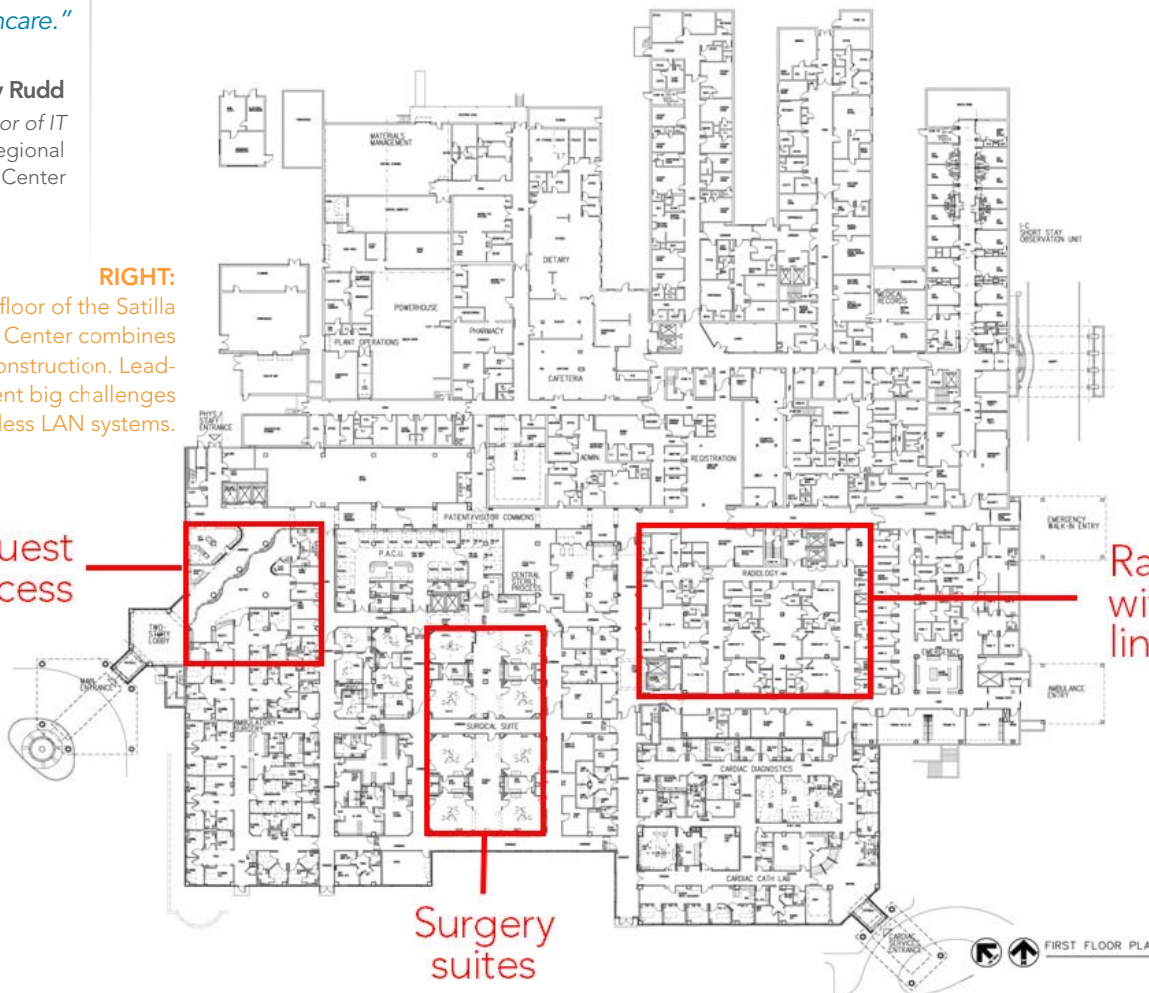
To verify the range, throughput and overall performance of competitive systems, Satilla used a variety of industry-standard test tools such as IxChariot, Qcheck, Heat Mapper and Wi-Fi inspector to measure packet loss, signal strength and TCP performance to end points.

After extensive testing, Satilla standardized on the Ruckus ZoneFlex system.

“Frankly we were just amazed at the range and reliability we saw from our initial testing of the ZoneFlex system,” said Terry Ammons, network administrator at Satilla. “But what surprised us most was the simplicity of the system and being able to obtain better coverage and performance with fewer APs.”

RIGHT:
The first floor of the Satilla Regional Medical Center combines old and new construction. Lead-lined walls present big challenges for wireless LAN systems.

Guest access



Radiology with lead lined walls

Surgery suites

“Deployment of the Ruckus ZoneFlex system was as plug-and-play as you can get. We deployed over 65 access points in two days. Everything was automated and centralized with no worries about where to point antennas or having to worry about if something changes.”

Terry Ammons

Network Administrator
Satilla Regional
Medical Center



Satilla Regional Medical Center is a 3-story acute-care hospital with over 370,000 square feet of space for 30+ physicians and 1,300 staff.

With the Ruckus ZoneFlex 802.11n system, Satilla was able to reduce the overall capital cost of the Wi-Fi network by nearly cutting in half the number of APs required.

Patented dynamic beamforming technology integrated into each of the Ruckus APs provides a 2x to 4x increase in signal range, providing a stronger more focused signal to clients.

In addition, the Ruckus ZoneFlex APs were able to automatically alter RF signal paths for every packet as interference or packet loss is detected. The combination of added signal gain with gains from the rejection of interference gave Satilla what they were looking for: consistent performance, better connectivity at range and minimal packet loss.

After completing a wireless survey for the 5GHz spectrum, 65 Zoneflex 7962 dual-band (802.11n) access points were installed throughout the complex. The system was configured with multiple SSIDs, with one being mapped to a VLAN for guest access, and the others being set up for specific applications. Each SSID can be assigned its own specific priority, security method, authentication and even bandwidth consumption limits per user.

“We provisioned the access points before placing them throughout the hospital. We would mount an access point, patch the cable to the AP, wait for power, verify connectivity to the AP with a laptop, then move to the next

location. This took about two days to place all the APs in the different locations. It was truly as close as you could get to plug and play,” said Ammons.

According to Ammons, the new wireless network opens the door to new applications such as bedside video monitoring, RFID asset tracking, digital information displays and even CCTV.

Accessibility has increased to the point where there is coverage not only in every area of the hospital, including the basement and also outside the hospital building.

The benefits of the Ruckus BeamFlex technology had immediate results. Staff have already commented on being able to use their wireless devices in areas of the hospital that never worked before. And with better performance and connectivity, more client devices of all shapes and sizes are now hitting the network.

Giving doctors access to the health information system from devices like Apple's iTouch and the use of Facetime and Skype for video and audio conference calls. “We did a test with video chat just to see how we could test the limitations. I walked through the floors of the hospital, then outside over to one of the adjacent buildings. I never lost video or audio and I was able to maintain communication.” Ammons commented.

Looking forward, Satilla sees an unbounded future potential for using the Wi-Fi network for almost any and every type of electronic communication. Satilla has already started beta testing new applications on the network, the promise of having one wireless network that provides the foundation for voice, video and data is now a reality.

“Given the choice, users will always prefer wireless but only if it's dependable,” said Ammons. “Now that it's dependable we see an insatiable demand for getting almost everything on the network. Life is just made easier without wires.”