ALAMANCE TAKES WIRELESS TO THE NEXT LEVEL WITH HELP FROM ARUBA

There's no time for downtime in critical care, but when Alamance Regional Medical Center was seeking to upgrade its wireless networking infrastructure, rock-solid reliability was only one item on its long list of requirements.

As a not-for-profit healthcare organization with a relatively small IT staff, Alamance also needed a network that could help them deploy next-generation applications affordably—while keeping management chores to a minimum. Flexibility and scalability were also musts. Continuing its mission of serving the community will mean expanding the network to accommodate the fast-growing population of Burlington, N.C., and the surrounding Alamance County region, with as little difficulty as possible.

Alamance addressed those needs, as well as a few others, when it chose wireless technology from Aruba Networks. Along with giving hospital staff much greater mobility and bringing medical data closer to patients, the Aruba solution has also enabled the rollout of Voice-over-IP (VoIP) and wireless access for patients and visitors. Aruba's centralized architecture has made management even easier than expected, and extending coverage has proven painless.

Best of all, none of these benefits came at the expense of the 24x7 reliability that's an absolute necessity in healthcare settings. That made the decision a lot easier for Alamance network engineer John Wooten. "Aruba met every one of our criteria, if not more so," he says.

MEETING THE REQUIREMENTS

Alamance was no stranger to wireless when it began evaluating new options in 2005; it already had about a decade's worth of experience. But the 802.11-based solution then in place was proving insufficient for the medical center's needs. So Wooten drew on his knowledge of wireless and the benefits it could offer to identify requirements for the upgrade: greater redundancy, improved manageability, stronger security, added capacity, and enough flexibility to extend functionality to other sites while providing a platform for IP-based voice and video.

REQUIREMENTS:

- Deploy secure wireless network to make medical staff more mobile
- Streamline clinical as well administrative and logistic tasks, from patient monitoring to pharmaceutical retrieval to supply-chain management
- Simplify network management while ensuring highly reliable wireless communications
- Reduce reliance on paper and enable real-time electronic medical records
- Deploy a platform for wireless VoIP and other applications as requirements change

SOLUTION:

- Four Alcatel-Lucent OmniAccess 6000 WLAN Switches
- 180 Alcatel-Lucent OmniAccess AP70 Dual-Radio Access Points
- 25 Ascom I75 VoIP phones, with plans to add 75 more phones

BENEFITS:

- Simple, centralized management frees IT staff to focus on other issues
- Secure, highly reliable wireless network meets demanding availability requirements of critical-care environment
- Wireless networking and VoIP minimize strain on hospital staff while speeding communications
- Enables wireless Internet access for visitors and patients, and full network access for doctors over their own laptops
- Mobile voice enhances patient care; increases efficiency hospital-wide

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Though the list of requirements was long, it helped Wooten whittle down the prospective vendors as the evaluation phase proceeded. Cisco, Airespace, Meru, and Colubris were among those he considered, and while each met some of the criteria, none met all. In the end, Aruba's scalable, centralized architecture and ease of management were key factors for Wooten as he sought to make the most efficient use of limited IT resources.

The Aruba wireless solution—rebranded and installed by Alcatel-Lucent—also offered compatibility and easy integration with the wired infrastructure, which was built on an Alcatel-Lucent core switch. Finally, Aruba's reputation as a stable vendor with a good vision for wireless was an important intangible, giving Alamance the assurance it would have a reliable partner in harnessing the technology to meet its goals for the future.

THE NEW AND IMIMPROVED NETWORK

Alamance built redundancy into its new 802.11a/g wireless network from the outset, installing 180 Alcatel-Lucent OmniAccess AP70 access points above the ceilings throughout the Burlington facility. Alcatel-Lucent Services determined that this design would provide employees access from anywhere in the hospital with uninterrupted communications, even if half the APs failed.

At the network core, Alamance deployed four Alcatel-Lucent OmniAccess 6000 WLAN switches. The switches, all located in a single data center in Burlington, are set up as a master and three locals. The locals each have 60 APs attached and are configured in a round-robin setup, while the master serves as a backup—adding still another degree of redundancy. "The ability to build redundancy into these systems, assuring 7x24 reliability, is critical," Wooten says, "Yet, I've never had an AP go down or a controller go bad. I've never had a problem with any of this gear."

The OmniAccess 6000s also address Wooten's requirement for simple, centralized administration. That's no small concern, given the critical nature of the network and Alamance's relatively small IT staff. "Any reduction of chores is good," says Wooten, who acknowledges that he wears a lot of hats. "When I add an AP, all I have to do is hook it up, find it on the GUI, provision it, and we're going." The ease of deployment is a capability that should be especially helpful as Alamance extends the wireless network to remote facilities now under construction.

As for security, Alamance uses OmniAccess WIP (wireless intrusion protection) to detect and prevent wireless attacks, and OmniAccess PEF (policy enforcement firewall) to enforce access policies according to the role to which a user is assigned. The hospital has defined about a dozen roles thus far, from physician to administrative to guest. Except for a few older devices that only support WEP, Wooten has deployed WPA2-PSK encryption and plans to complete the migration as soon as possible. And with the flexibility built into the system, Wooten says he'll be able to move easily to 802.1X security when the time comes.

ADDING UP THE BENEFITS

With the wireless network in place since August 2005, Wooten has had time to tally the benefits. Using wireless EEG and EKG carts, medical staff can bring applications directly to the patient. Wireless tablets are used for in- and out-patient and bedside registration. Surgeons can send nurses post-op instructions before patients leave the operating room. And phlebotomists are now using wireless glucometers to streamline the sharing of the data they need. "We're very much down the path of paperless charting," Wooten says.

But just as significant, he adds, is the adoption of wireless outside clinical areas. It's being used for pharmaceutical retrieval and bar-coding, as well as for material- and supply-chain management. In fact, the wireless deployment now covers all 1,500 employees—not to mention visitors, patients, contractors, and physicians who can access the public network via a captive portal.

"The physicians love the public wireless since they're able to work just as they would in their own offices.," Wooten says. Set up as a virtual LAN (VLAN) that's completely separated from the hospital network, the public network has also been a "tremendous benefit" in terms of customer satisfaction, Wooten adds.

VOIP AND OTHER PLANS

Selecting Aruba has also helped Alamance embark on a VoIP pilot project. About 25 nurses have been given I75 series phones from Ascom International, allowing them to dispense with pagers and greatly improving their ability to access critical information. That's because the Ascom devices integrate easily with Alamance's clinical lab systems, so nurses can view lab results directly on their display screens. Roaming is seamless, Wooten reports, and calls are near-toll quality. No surprise, then, that the phones are very popular with the nurses in the pilot. "They really rely on them," Wooten says. "Try to take them away, you get your arm ripped off."

Alamance plans to integrate the Ascom phones with the Rawland nurse-call system already in place, and also wants to add 75 more Ascom phones in the near term. Ultimately, they intend to extend wireless VoIP to every nurse and administrator who needs it.

But that's only part of what Wooten envisions. IPTV and digital video surveillance are also in store, as well as RFID for tracking beds and medical equipment. Of course, Alamance will also be looking to extend the network as circumstances demand—an undertaking that doesn't faze Wooten at all.

"I can't say enough good things," he says. "Aruba-Alcatel makes my work a whole lot easier. And I like that."

ORGANIZATION OVERVIEW:

Alamance Regional Medical Center is a not-for-profit healthcare organization dedicated to improving the health of our community. With more than 2,000 employees and 285 physicians on the medical staff, Alamance Regional offers a full range of inpatient, outpatient and wellness services. Specialized services include a Heart and Vascular Center, a Women's Care Center which houses The BirthPlace and Level II/III Special Care Neonatal Nursery, a fully-accredited Cancer Center, leading-edge Imaging Services; and complete Rehabilitation Services. The main Alamance Regional Campus, located on Huffman Mill Road in Burlington, also includes a 238-bed patient tower. Satellite facilities include the Mebane Outpatient Center, which features day surgery, urgent care and other services located in the Mebane Medical Park; West End Medical Park; Pediatric Rehabilitation; and outpatient Rehabilitation centers on South Church Street in Burlington, in the Mebane Medical Park and in Yanceyville.

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