

A MERU CASE STUDY IN VOICE OVER WLAN

Anthony Marano Company (Chicago, Illinois)



Distributor Banks on Meru to Assure No Missed Phone Calls

Meru Networks delivers business critical, reliable Voice over WLAN for seamless Fixed Mobile Convergence



Situation

- ❖ Fresh-produce wholesaler Anthony Marano employs highly mobile salespeople who take orders using wireless telephony and fill them the same day. When the company's existing wireless LAN was discontinued, the company sought a new system that would do a better job of ensuring no dropped voice calls—and no missed business opportunities.

Solution

- ❖ The company deployed Meru's Wireless LAN for Enterprise Fixed Mobile Convergence and T-Mobile's Unified Mobile Access (UMA)-based dual-mode Wi-Fi/cellular service. Anthony Marano deployed Meru AP208 access points (APs), uses BlackBerry 8820 and Nokia e51 dual-mode smartphones. The wireless LAN using 80 Meru Access Points covers the company's business offices and 460,000-square-foot warehouse and is managed by Meru's redundant MC3000 controllers with high availability.

Benefits

- ❖ The Meru single-channel virtual cell architecture allows employees to now reliably receive and generate calls while in motion, which hadn't been possible before. Also, with the Meru WLAN architecture, the 8820 handset's battery life now lasts an entire workday.

The Challenge: Reliable Real-Time Voice Communications

The lifeblood of fast-paced businesses like Anthony Marano Company in Chicago is real-time voice communications. In fact, a single missed phone call probably guarantees missed revenue for the 58-year-old fruits and vegetables distributor.

The wholesaler doesn't have the luxury to tolerate lag time created by back-and-forth message exchanges. It supplies fresh produce to Chicago-area grocery retail stores and eateries and often receives desperate calls to quickly fill shortages of bananas, lettuce and other perishables within hours. As employees also do double-duty as the company's buyers, they are continually on the move. So a wireless voice infrastructure that ensures no missed mobile phone calls is necessary to the company's survival.

"If customers needing produce right away don't reach someone at Anthony Marano on the first try, they simply call a different supplier," explains Chris Nowak, chief technology officer. "And that subtracts money from our bottom line."

Each day the company logs up to 3,000 orders for its highly perishable products. Of these orders, nearly 90 percent require same-day delivery, Nowak says.

Making the Transition

To reliably support its critical voice communications, Anthony Marano has installed a Meru Networks wireless LAN throughout its offices and 460,000-square-foot warehouse. The company needed to move off an 802.11a system it had been using for three years that was technically still a beta system and was eventually discontinued. The system required specialized dual-mode 802.11a/cellular handsets that also were not sold commercially.

Nowak said that the years of experience with the other micro-cellular WLAN system led him to realize he wanted a single-channel WLAN architecture so that calls could be made and received reliably by personnel in motion. For that solution, he turned to Meru AP208 802.11abg access points (APs) and a pair of Meru MC3000 controllers, deployed in redundant hot-spare mode for automatic failover. The Meru system supports Research In Motion BlackBerry Wi-Fi-enabled 8820 and

Nokia e51 smartphones running both voice and email. The BlackBerries run client software that allows them to support some key features of the company's Avaya PBX, such as call transfer and forwarding. The Nokia e51 also has client software that allows them to support 4-digit dialing and works well with a SIP server.

The Nokia e51 is primarily used for customer focused calls within the facility and the BlackBerry 8820 is used both within the facility and outside over the carrier network.

Why the focus on a single-channel architecture?

Phone calls on the former multi-channel system would stay connected as employees roamed among the APs—but only so long as the user had established the connection while stationary. If the user was already walking or riding in a warehouse cart or truck when generating or receiving a call, the system was unable to figure out which AP the user was on, and the call wouldn't go through. This situation put a dent in Anthony Marano account managers' ability to receive and fill rush orders.

The former system assigned different channels to adjacent network cells, requiring continual session handoff from AP to AP on alternating channels as users moved. The latency and transition associated with the changes can disrupt voice communications, and the use of multiple channels introduces the potential for co-channel interference.

With the Meru WLAN, however, these problems have disappeared, Nowak says.

No Handoff, Improved Handset Battery Life

Meru combines all physical APs under a single WLAN identifier. The APs physically reside on a common channel and appear as one large virtual cell to client devices. The Meru WLAN controller manages all APs collectively, in an orchestrated manner, telling the AP what to do with phone calls in motion and eliminating handoffs, delays and dropped or missed calls. The handset perceives that it is on a single AP as it roams throughout Anthony Marano offices and warehouse.



“Unlike data, voice needs to be perfect. Meru’s architecture makes it easy to get to ‘perfect’ fast.”

— Chris Nowak, Chief Technology Officer, Anthony Marano Company

About Meru

Meru Networks is the global leader in wireless infrastructure solutions that enable the All-Wireless Enterprise. Its industry leading innovations deliver pervasive, wireless service fidelity for business-critical applications to major Fortune 500 enterprises, universities, healthcare organizations and state, local and federal government agencies. Meru’s award winning Air Traffic Control™ technology brings the benefits of the cellular world to the wireless LAN environment. The Meru Wireless LAN System is the only solution on the market that delivers predictable bandwidth and over-the-air Quality of Service with the reliability, scalability and security necessary for converged voice and data services over a single WLAN infrastructure.

Meru Networks

Corporate Headquarters

894 Ross Avenue

Sunnyvale, CA 94089

Phone 408.215.5300

Fax 408.215.5301

www.merunetworks.com

info@merunetworks.com

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This setup alleviated the struggles with channel planning and co-channel interference for Anthony Marano.

“Tuning the former 802.11a multi-channel system for the right kind of coverage took us months,” Nowak says. “With the Meru system, by contrast, no channel planning was required.”

The Meru architecture is also a boon to users’ handset battery life, which increases voice availability to personnel, says Nowak. “Meru moves client-to-AP association decisions to the controller, where power is more plentiful. The infrastructure has much more horsepower than the handset, as well as a backup generator. On the micro-cell system, our 802.11a smartphones had to do a lot of work because they were always on the lookout for the next antenna. Because of that, a handset’s battery couldn’t survive a whole day,” Nowak says, requiring that he supply backup batteries to all mobile personnel. On the Meru architecture, though, a single handset battery can power a device all day long, he says.

Roaming Inside and Out

Another criterion of Anthony Marano’s voice environment is the ability for employees to roam in and out of the facilities without dropping phone calls. The company’s RIM BlackBerry dual-mode handsets allow personnel to use the private Meru Wi-Fi network when inside (with no associated usage charges) and to transparently transition to a cellular network when roaming outside the building.

To enable the signal handoff, Anthony Marano is deploying a fixed-mobile convergence (FMC) service from T-Mobile based on Unlicensed Mobile Access (UMA) technology. The service allows employees to use their BlackBerries with the company’s Avaya phone system whether they are in the building, on the road, at home or in a Wi-Fi hotspot.

“We prefer a single-channel architecture [like Meru’s] for FMC,” says Anthony Marano CTO Chris Nowak. “The single-channel provides a very efficient in-building network.”

would have required managing a whole separate WLAN as an overlay, says Nowak, as well as installing power injectors, because of Power over Ethernet (PoE) distance limitations.

“With Meru, my wired Ethernet switches aggregate my wireless traffic at Layer 2 and feed it up to a core Meru controller in our data center,” Nowak explains. The other single-channel solution would not have performed any aggregation and would have required a controller on each WLAN segment. “It also didn’t operate in a high-availability mode with a backup, hot spare controller,” he adds. “With Meru, though, I have Layer 3 flexibility and my Ethernet switching infrastructure powers the AP,” says Nowak.

At the end of the day, it is reliable voice that makes or breaks Anthony Marano’s ability to compete and succeed.

“Our priority is voice,” concludes Nowak. “Unlike data communications, which can tolerate some delays, voice needs perfection” in network transmissions, he says. “And Meru’s architecture makes it easy to get to ‘perfect’ fast.”

Integrated vs. Overlay Approach

In addition to Meru, Anthony Marano evaluated a competitor that also had a single-channel architecture but required APs to plug directly into its WLAN controller. The WLAN controller, in turn, plugged into Anthony Marano’s wiring closet Ethernet switches. That