

Warehousing

Largest U.S. Hardwood Producer Puts Smarter Wi-Fi To Work To Transform Operations, Automate Business Processes

To increase efficiencies across its business, Frank Miller Lumber, the nation's largest producer of fine quartersawn hardwood for furniture, cabinets, architectural millwork, and flooring, needed to automate its business processes.

The Union City, Indiana-based company had a strategic directive to improve operational efficiencies by migrating from time-consuming, manual-based systems for counting and tracking inventory to a wireless electronic system that could deal with the inherent mobility of workers and the challenging RF environment.

Traditionally a Cisco shop, Frank Miller decided to deploy the S2K ERP (Enterprise Resource Planning) system, that runs over a Wi-Fi network — letting the company move to electronic picking, monitoring, and inventory tracking.

“Our two mill locations are full of forklifts, saws, 100-foot long conveyors, and stacks upon stacks of raw lumber — towering over 25 feet tall — all of which cause havoc for radio frequencies,” said Jeff Naylor, network administrator for Frank Miller. “Lots of lumber, steel, conveyors, saws, cleaners and other devices that make noise create one insane RF environment. We had no idea as to what it would take to get Wi-Fi to work in both locations, which is why we called in wireless experts.” Naylor continued, “Whatever Wi-Fi system we picked needed to be able to adapt to constant RF changes that our inventory causes, plus it had to be affordable and easy to deploy and manage, since I am an IT staff of one.”

Enter the Wireless Age

Before Wi-Fi everything was effectively manual. Forklift drivers would be notified by the back office to pick particular products for specific orders. Drivers would physically move from bay to bay reading hanging clipboards to locate bundles fitting the order description. This process was both painstakingly slow and subject to human error. So the Wi-Fi hunt began.

Frank Miller initially reached out to a Cisco reseller, which conducted an initial site survey. This survey resulted in suggesting a number of access points (APs) that Naylor characterized as “bordering on ludicrous.”

Naylor then turned to one of the nation's leading integrators, PowerNet Global, who had extensive experience in deploying wireless VoIP systems running over Wi-Fi.

PowerNet Global promptly conducted its own site survey with Tamograph, a site survey tool, with the Ruckus ZAP test tool, software that provides granular measurement of the consistency of Wi-Fi performance rather than peak or average throughput.



Frank Miller Lumber's sawmills produce 5,000 board feet per hour and needed an advanced Wi-Fi system to support the new ERP system and mobile business operations.

OVERVIEW

Founded in 1903 and privately held, Frank Miller Lumber manufactures and warehouses premium quartersawn hardwood for customers around the world. Headquartered in Union City, Indiana, the company occupies some 20 acres and produces approximately 90,000 board feet of quartersawn hardwood each day, with annual production totaling nearly 20 million board feet. Over the past century, Frank Miller has developed new markets, increased product diversity, and employed proprietary and leading-edge mill technologies that now includes wireless applications and devices.

REQUIREMENTS

- Consistent and stable Wi-Fi connectivity to Motorola MC9000 series handheld barcode scanners, Cisco 7925G VoIP phones and wireless tablets
- Reliable Wi-Fi support for new, S2K Enterprise Resource Planning (ERP) System
- Complete and high performing coverage, inside and out, at the lowest cost
- Interference avoidance and the ability to operate in extreme conditions across expansive locations
- Centralized management: easy to deploy, manage, and troubleshoot
- Ability to adapt to changing environmental conditions, machinery, and applications

SOLUTION

- ZoneFlex 7363 indoor 802.11n APs
- ZoneFlex 7962 indoor 802.11n APs
- ZoneFlex 7762-T outdoor 802.11n APs
- ZoneFlex 7025 indoor 802.11n wall switches
- ZoneDirector Smart WLAN controllers

BENEFITS

- Ten-fold increase in Wi-Fi performance
- 83% less APs needed vs. competitive bids
- Blanket Wi-Fi coverage across 2 locations, supporting wireless apps and devices
- Centralized, simplified administration

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"We've been simply astounded with the rate, range, and reliability of the Ruckus Wi-Fi system."

This is a huge time-saver for our business, but even more important is the dramatic improvements in the accuracy of our business processes."

Jeff Naylor

Network Administrator
Frank Miller Lumber



Frank Miller is using Ruckus Wi-Fi with its adaptive antenna arrays to combat interference-prone warehouse facilities.

PowerNet Global determined that a single ZoneFlex 7962 indoor dual-band (5 GHz/2.4 GHz) 802.11n AP could fulfill the equivalent of the six Cisco APs being recommended. This would save Frank Miller 83% in reduced capital costs.

For the 100,000-square-foot site, PowerNet Global deployed 13 ZoneFlex 7962 and some 7762-T outdoor APs for full Wi-Fi coverage. The

indoor APs were mounted in a dome down fashion on I-beams 25 to 30 feet high within the warehouse.

A high-gain, directional adaptive array with dual-polarized antenna elements is integrated into every AP, which allows the company to gain stronger signal strength throughout its warehouses and better connectivity to its handheld scanners.

According to PowerNet Global, with a minimum number of APs deployed, virtually every inch of



Frank Miller Lumber experiences, at minimum, -60 dB in signal strength. Unlike other Wi-Fi systems, Ruckus uniquely supports dynamic polarization diversity within its smart antenna arrays. This enables each AP to automatically adapt the transmission and reception of Wi-Fi signals to small mobile devices that are constantly changing their orientation. The simple variation of a device's orientation can account for up to a 5x performance degradation with Wi-Fi APs unable to adapt to such changes.

RIGHT:

An RF heat map of the Frank Miller Union City plant shows strong Wi-Fi signal coverage and high-capacity everywhere after deploying the Ruckus ZoneFlex 802.11n Smart Wireless LAN system



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“We needed a solid Wi-Fi network that could mobilize our new ERP system.

The network had to be easy to deploy, and manage, and it had to work within a hostile RF environment.

PNG recommended the Ruckus Wi-Fi system because it could deliver the lowest TCO with the best possible performance at range.

So we bought it — and it delivered.”

Jeff Naylor

Network Administrator
Frank Miller Lumber



Frank Miller is using Ruckus Wi-Fi with its adaptive antenna arrays to support interference-prone warehouse facilities.

Everything Simplified

With their Wi-Fi and ERP system in place, individual bundles can now be selected in the office and that information is then wirelessly transmitted to each forklift driver’s handheld device. The forklift drivers now know precisely what bundle needs to be picked and where they are located, and where they need to be staged.

“With the Ruckus Smart Wi-Fi system we know exactly where every square inch of lumber is and at what stage the order is in,” said Naylor.



In addition, Frank Miller is using the Wi-Fi system to move away from its manual end tally practice (a method for measuring, managing, and processing each piece of lumber) to further enhance efficiencies.

Ruckus uniquely delivers stronger signals and better Wi-Fi transmissions to and from handheld devices.

With the Wi-Fi system in place, workers simply speak the dimensions of the lumber into a new voice-directed tally system (VDTS) on their belts. This system wirelessly transmits the data to the company’s back office — dramatically speeding the time and accuracy of this operation.

Since implementing Ruckus, Frank Miller has added Cisco 7925G VoIP phones and tablet computers — enabling the maintenance and outlet store managers to roam freely throughout the plant.

A single ZoneDirector controller, located within each complex, controls all Ruckus APs for that respective location. Sitting outside the datapath, the ZoneDirector provides advanced features such as smart meshing, AP groups, WLAN groups, guest access, client throughput thresholds, time-of-day radio broadcasting, client load balancing, and sophisticated security capabilities.

From a single ZoneFlex dashboard, Naylor administers Frank Miller’s entire WLAN across all locations.

Future Facts

“Our business is all about execution and accuracy. Now that we have our Wi-Fi backbone in place, we intend to move every process and application to the wireless network,” said Naylor. “We expect our operational efficiencies to skyrocket this year.”

Over the next 12 months, Naylor plans to have Ruckus deployed across the entire 20-acre campus. The pervasive outdoor Wi-Fi network will enable them to leverage the ZoneFlex 7762 AP’s PoE out (802.3af) capabilities to power the AXIS video surveillance cameras for added security.

The company also plans to use smart meshing to connect outdoor APs where Ethernet cabling isn’t available and is considering adding location-based tracking for real-time visibility of their equipment, product, and even employees.

“With a reliable Wi-Fi infrastructure, we can improve almost any process we think of,” Naylor noted. That’s the bottom line that ultimately helps our bottom line.”

