



MERU WIRELESS NETWORKS IN RETAIL
IMPROVING CONNECTIONS
TO CUSTOMERS



OVERCOMING RETAIL CHALLENGES

From mass merchants to grocery stores, retailers use wireless networks to transform the shopping experience and streamline store operations. In warehouses, headquarters offices, stockrooms, and sales floors, retailers depend on wireless local area network (WLAN) access for applications such as mobile point-of-sale (MPOS), price checking, shelf labeling, voice communications, inventory management, digital signage, video surveillance, and more. The network must be scalable enough to support all of these and reliable enough to handle frequent transactions and unpredictable traffic patterns. With customers waiting, network delays cost sales, and downtime is unacceptable.

Building and managing a wireless network to handle a modern retail business presents many challenges. The network must be available whenever and wherever needed, it must offer true security, and it must be cost-effective enough to show a rapid return on investment while delivering strategic value.

- :: **Secure Guest Access.** Shoppers are encouraged to use the retailer's in-store shopping app on their smartphones and tablets. This must work simply, without IT or store manager intervention. And it must be a secure, encrypted connection compliant with PCI DSS to allow in-aisle shopping or self-checkout.
- :: **Secure, Pervasive Coverage.** Staff must be able to access the network throughout the store or warehouse and use their devices everywhere needed. They need to remain connected to the network as they move, without dropped connections or noticeable delays in voice calls. Strong security, including PCI compliance, must be maintained at all times.
- :: **Reliable.** In many retail settings, wireless is the only connectivity option—there is no wired network to fall back on. This means the wireless network has to work every time and with every application. IT staff, sales associates, and customers alike need to be confident that the network is available and the service levels are sufficient.
- :: **High Capacity:** Wi-Fi usage in retail is exploding, from select store personnel to pervasive deployment that now includes personal self-shopping systems, media carts, RFID tags, and digital signage, with multiple applications running at the same time. The network must be able to carry high-priority sales transactions, security video, and VoIP calls simultaneously, with each type of traffic given its own service parameters and unaffected by others. There must also be a smooth upgrade path, such that the network is scalable to higher bandwidth densities as demands grow—either in point locations or throughout the network.

WIRELESS CHALLENGES IN RETAIL

- Security for PCI compliance, including encryption, authentication, and performance for converged voice, data, and video applications at any scale
 - Accurate location tracking of inventory and assets
 - Easy management by IT staff, not requiring radio frequency (RF) experts
 - Reliability, with assured connectivity even in the presence of interference
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Why Wireless in Retail?

Wireless networks have become critical for retail operations that rely on point-of-sale or inventory management systems. The applications enabled by a reliable wireless network can increase the loyalty of the customer base, decrease staff training requirements, and reduce shrink, ultimately improving profit margins. Retailers turn to wireless because it is:

- :: **Flexible.** In a constantly changing retail environment, showrooms must adapt quickly to meet the demands of a fickle marketplace. This means the network has to be equally adaptable, supporting rapid changes in the physical layout, and agile enough to handle any application or combination of applications. Wireless voice systems with walkie-talkie capability enable employees to communicate both with each other and with suppliers instantly. Video streaming from security cameras deters theft. Real-time inventory helps with stock replenishment, shipping and ordering, and optimizing the on-shelf product mix to reduce stock-outs.
- :: **Mobile.** With a pervasive wireless network, a manager can move from the back office to the floor to oversee customer service while maintaining control of overall store operations. In-store staff can easily locate goods for customers, identifying the most recent pricing and inventory. Accurate location tracking makes it easy to find employees or goods and equipment when needed.
- :: **Pervasive.** Wireless can extend a store's network beyond its traditional boundaries. Many retailers already use a wireless network to enhance staff communications through VoIP or locator badges. Digital signage allows stores to deliver real-time promotional messages and other alerts to customers, targeting offers to different audiences as the customer demographics change throughout the day, while ensuring that shelf and register prices always match. Portable checkout systems can be installed at strategic points throughout the store or even in the parking lot, speeding customers through the buying process at busy times.

Wireless LAN for 21st Century Retail

A Meru wireless solution is the foundation for secure and reliable retail applications, offering pervasive coverage with service assurance for all users. Where others in the wireless industry view it as a way to augment wires, Meru has a vision of the All-Wireless Enterprise™—an environment in which users rely on the wireless LAN as their main connection to the network.

Many retailers are already All-Wireless Enterprises, using devices that lack wired Ethernet jacks in areas where there are no wired ports. Meru delivers on its vision with the Virtual Cell, a next-generation architecture proven by thousands of customers worldwide to deliver mission-critical applications like asset tracking,

video surveillance, and voice calls in the most demanding radio environments. The Meru network offers:

Predictable Performance

The Meru solution ensures that performance is not just high but predictable, giving every application the network resources it needs every time. Meru's unique Virtual Port technology gives every device its own dedicated connection, similar to switched Ethernet, but customizable to its capabilities and the user's role.

With only one user per Virtual Port, contention for airwaves is minimized. Packets can be prioritized according to criteria such as physical location, logical network, application, or user identity. This is critical when customer transaction data are sharing the airwaves with voice, video, or even guest-access traffic.

Easy Deployment

With Meru, there is no need to augment network staff with wireless planning and RF engineering experts. Meru's system is easy to deploy and manage. The entire wireless network can be installed with minimal staff, in significantly less time than other wireless systems. Merely place APs where coverage is needed, and Meru Air Traffic Control® technology automatically configures them, then load balances traffic to ensure that applications perform as expected.

Manageability

Once the wireless network is in place, there is no need for a dedicated support engineer at each retail location. Meru E(z)RF™ Network Manager gives the network administrator central control over the network, with access to troubleshooting capability from smartphones as well as the management console. The software automatically recognizes common problems, and enables staff to rewind and replay the network state to any time in the last few days so that the root cause of a fault is easy to track.

Toll-Quality Voice

Meru's Air Traffic Control technology ensures toll-quality voice calls for all users, with independent tests showing a MOS (mean opinion score) above 4.0, even when an access point is loaded with video, data, and other voice traffic. Clear call quality is maintained even when roaming between different access points' coverage areas—Meru eliminates handoff issues by making all access points part of a single Virtual Cell. As far as the phone, laptop, or other client is concerned, it never has to roam because it remains connected to the same virtual access point wherever it moves throughout the network.

Secure Transactions

Meru Identity Manager is a complete solution for managing guests and automating device connection in retail environments. You can simplify secure enterprise network access and identity management without the need for local IT.

Meru also enables retailers to meet wireless PCI security standards, with multiple lines of defense against many kinds of attacks. Customer data are fully protected, while different types of traffic are segregated with a per-user firewall that provides granular control of each device's access rights. The Meru network automatically recognizes applications through flow signatures as well as deep packet inspection, with the result that filtering and blocking policies can be applied even to encrypted traffic.

SUPPORTING PARTNER SOLUTIONS

Meru's Wireless Interoperability and Network Solutions (WINS™) program assures customers of compatibility and performance between Meru network infrastructure and products from other vendors who share our commitment to customer satisfaction, innovative applications, and a reliable user experience. WINS partners with retail solutions include:

Security and Network Administration	Psion Teklogix Socket	RFID Intellexflex Intermec Zebra Technologies
AirMagnet AirTight Bradford Networks ForeScout Impulse Point	Voice and Video Ascom Axis Communications Cisco Polycom Vocera Vocollect	Real-Time Location Systems Aeroscout Ekahau
Mobile Data Entry Apple (for retail) Intermec LXE Motorola/Symbol	Mobile Printing Intermec Zebra	

"We needed an enterprise solution that scaled, was easy to manage, and just plain worked. Increased wireless connectivity definitely was needed to speed up the process of getting boxes on trucks, which made the business case pretty simple."

– Diapers.com

"Tuning the former 802.11a multi-channel system for the right kind of coverage took us months. "With the Meru system, by contrast, no channel planning was required. Voice needs perfection in network transmissions. And Meru's architecture makes it easy to get to 'perfect' fast."

– Anthony Marano Company

AFFILIATIONS:





MERUNETWORKS.COM

About Meru Networks | Founded in 2002, Meru Networks provides a Virtualized Wireless LAN solution that cost-effectively optimizes the enterprise network to deliver the performance, reliability, predictability, and operational simplicity of a wired network, with the advantages of mobility. Meru's solution represents an innovative approach to wireless networking that utilizes virtualization technology to create an intelligent and self-monitoring wireless network, and enables enterprises to migrate their business-critical applications from wired networks to wireless networks and become all-wireless enterprises. Meru's solutions have been adopted in all major industry vertical markets, including Fortune 500 enterprises, healthcare, education, retail, manufacturing, hospitality, and government. Meru is headquartered in Sunnyvale, Calif., and has operations in the Americas, Europe, the Middle East, and Asia Pacific. For more information, visit www.merunetworks.com or call 408.215.5300.

For more information about Meru wireless network solutions for retail, visit www.merunetworks.com or call +1408.215.5300 | You can also send a message to info@merunetworks.com.

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