



## In-store Wireless LANs

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*Wireless implementations in retail are expanding at a rapid pace. Retail executives are learning that wireless devices can have a remarkably positive impact on customer service, incremental revenues and employee productivity. What they are most concerned about, however, is avoiding the potential pitfalls that come with wireless implementations. The purpose of this paper is to outline the benefits of wireless in retail and offer hints on how to successfully navigate a wireless implementation.*

### Benefits of Wireless Solutions in Retail

Retailers large and small are implementing wireless solutions. They started with mobile devices for automating the supply chain. Handheld scanners have been used to receive inventory into the store, validate shelf-label pricing, perform markups and markdowns, perform item counts and do store transfers. With the rise of higher-speed networks, more and more handheld devices are being moved from their traditional role of inventory-related activities to customer-facing activities such as line busting, sales-assist activities and finding product information for the customer.

One major retailer uses a shoe department application it calls “four on the floor” for increasing the close rate on shoe sales, which are typically high margin items.

The application works in the following way: a customer brings a shoe style to the sales associate who scans the barcode – the application locates the style of shoe desired along with two other pairs of similarly styled shoes, as well as a randomly generated SKU in the right size – a runner gets a printout of the styles from a remote receipt printer and brings four pair to the floor for the customer to try on. The close rate of shoe sales has increased by 20 percent.

Managers also use the mobile devices to free them from the office so they can mingle with store associates on the floor. Activities and reports that were previously designed for display on a desktop PC are now available for 1/4-VGA displays on handheld devices that can be clipped onto a belt and accessed anywhere in the store. These applications allow a manager to monitor cashiers for loss prevention and look at critical store performance data – such as daily sales results – anywhere in the store and at any level of detail.

Managers of a Texas grocery store can use their devices to display an electronic receipt of any cashier while the transaction is in progress. If a manager suspects the cashier is sweet-hearting items to friends, he or she can compare the receipts to CCTV video to ensure that all items were scanned and nothing was left out of the transaction record.

Wireless POS terminals are also adding new flexibility to store operations. Store managers can respond quickly to special sales activities, such as sidewalk or Mothers Day sales, by adding or relocating checkout lanes. Store associates can respond to long lines much more effectively, and ultimately increase revenues, by using a full-function POS terminal with a power pack and a wireless radio interface to the existing network.

Wireless implementations are not confined to the traditional POS and handheld products found in stores for years – new products based on a wireless infrastructure are allowing retailers to increase the number of customer touch points in a store.

Recently an auto parts chain announced the introduction of mobile kiosks that are small enough to be mounted throughout the chain's stores. The kiosks have a very small format and are equipped with 6.5-inch touch screens, integrated scanners and wireless radios. Customers can scan an item to validate the price, get detailed instructions for using the item, and get comparative data for 'Brand X' vs. 'Brand Y' as they make purchases. These mobile kiosks give helpful information to customers and decrease their frustration with not finding price tags, and not being able to speak to informed associates. Ultimately, the retailer believes these devices will lead to increased revenues.

Wireless technologies are causing retailers to think of new and better ways of selling to customers, increasing security, reducing theft by both customers and associates and decreasing operating expenses on the store floor.

## Issues with Wireless

Three critical strategies will avoid many of the pitfalls experienced by retailers implementing in-store wireless applications:

1. Do the planning necessary to ensure adequate wireless coverage,
2. take the steps to properly secure the wireless network, and
3. make the investment to support remote management of the wireless devices.

Successfully implementing these strategies will maintain an infrastructure that works throughout the store environment, effectively keep unwanted electronic intruders and viruses out of the store network and secure all transactions, including credit cards.

Changes in technology over the past few years have extended wireless implementations from backbones supporting speeds of 100 ~ 300 kilobits per second to wireless bandwidths of up to 54 megabits per second. As a result, however, the broadcast ranges for backbone devices (wireless access points and bridges) have decreased significantly.

It is not enough to assume that a new access point can be installed where the old one was when replacing one wireless technology with another. Site surveys by experienced consultants using access points and radios need to map out an installation plan that delivers full coverage at the highest speeds for the most-optimized cost of implementation. This can be done with prescribed site surveys at a store level that are then augmented by predictive software tools that produce low-cost implementations across the store network.

Neglecting this step will invite disaster and low performance in a store environment. Imagine a wireless implementation where mobile transactions are lost due to lack of coverage. The resulting frustration will cause store associates and customers to abandon devices meant to increase their convenience.

Security must also be well thought out. In the new IEEE 802.11b, -g and -a environments, there are many tools available to design an environment that limits unauthorized use and viewing of data passing

through the network. Security must be implemented such that only known devices can be used on the network, and when unknown devices try to access the network, the data is encrypted in such a fashion that it will be viewed as incomprehensible garbage. This approach to security includes IEEE standards of technology, including Wireless Fidelity Protected Access (WPA), and requires vigilance on the part of the retailer or service provider to monitor the network and change access on a regular basis.

Wireless security should include four basic design requirements:

1. All wireless devices, including POS, mobile devices and network backbone devices – such as access points and bridges – have the facility to broadcast their electronic IDs over the air. In public-access facilities this is a good thing, but in store networks this facility should be turned off so that only IT staff with a need to know have the ability to see the devices on the network.
2. All transaction devices should be locked down so that associates and customers using those devices do not have access to the operating system, but only to the applications required for performing their job functions.
3. All wireless devices should have the capability of supporting authentication (password or certificate); the latest encryption methodology is a 128-bit algorithm for communication between the access points and the mobile devices that can be set to change automatically at prescribed times, or can be set to change at random times.
4. Just as with wired networks, wireless networks should use firewalls to separate public and protected areas of the network.

To maintain control of the network and security within the network, no wireless network should be implemented without a remote management capability. These tools allow the IT department to wirelessly and remotely schedule broadcast downloads to mobile devices, including operating system and BIOS upgrades, initial application loads and upgrades, and any required security upgrades.

The best remote management technologies allow information to be pushed to devices that are on, but unmanned, by an operator – or pulled down by devices not on when the scheduled downloads occurred. These management tools should also allow IDs of network devices to be changed regularly. With good remote management tools in place, the cost of maintaining the network becomes very manageable.

Recently, a large specialty store chain performed a rollout of thousands of handheld mobile devices to all of its stores. The chain saved a large sum of money that had been set aside for application staging because it was able to download to all devices at every location on a scheduled basis from the computer center. The ROI for this remote management feature allowed the chain to justify the cost of the feature in the initial implementation. Ongoing upgrades are now completely controlled in the company's IT environment.

## **The Technology Factor**

When choosing wireless network technology for backbone and store devices, retailers should follow IEEE standards for 802.11b, -g, or -a networks. The retailer's network choice will depend on the speed necessary, the devices needed on the network and the cost to implement. Many radio vendors will support these open standards, but many use proprietary add-on features for security or network management that only support their own backbones.

Fujitsu recommends avoiding proprietary implementations in favor of open architecture standards, ensuring the ability to use multiple vendor devices in the network.

## Consultants and Industry Leaders Agree

Fujitsu's opinion that the day has come for wireless technology in the store is shared by many retail industry consultants, as demonstrated in their own discussions on the topic:

- AMR Research weighs in with "Proprietary is out; 802.11 is in" (from "Choosing the POS Infrastructure That's Right for You", July 2003). AMR also points out that wireless technology is ranked #2 on the list of strategic technology investments for 2004 (IT Spending Report, 2003-2004), but the firm sees a combination of wireless and wired networking as often optimal (From AMR's "First Thing Monday for May 10, 2004" e-mail).
- According to the Forrester Research report, "The Retail Point-Of-Service Transformation", issued March 23, 2004, 42% of retailers interviewed have a wireless LAN within their stores today, and another 29% will have one within the next two years. Wireless tools are also listed in Forrester's "Ten Retail Technology Predictions for 2004" brief (January 8, 2004).
- LakeWest Group, LCC mentions in its "5th Annual POS Benchmarking Survey: A Retailer Perspective" (2004) that wireless connectivity is making inroads among the firm's specialty retailers surveyed, with 33% currently offering the technology and 9% more anticipating its implementation over the next two years.
- Finally, in its market study of "2004 North American Retail Point of Sale Terminals" (March 5, 2004), IHL Consulting states "Wireless is no longer a novelty; it is an established way of life in the retail environment". IHL sees 802.11 technologies booming in retail and expect them to continue to expand in the next several years.

## The Bottom Line

Whether you have already installed a wireless network for mobile devices and would like to increase the ROI of your wireless infrastructure by adding new devices or applications, or you are just beginning to research your wireless options, chances are excellent that wireless is right for you, right now.

To learn if you are ready to transition to a wireless store infrastructure, call Fujitsu at 800-340-4425 or contact us online. You can email me directly at <mailto:vslack@ftxs.fujitsu.com> – I would be happy to help you assess your options. We'll help you analyze your ROI for a wireless solution, as well as discuss our best-of-breed wireless networking services and products.

To learn more about Fujitsu and the company's smart solutions for retail, visit <http://www.ftxs.fujitsu.com>.