

# Wi-Fi for In-Store Mobility: Engage Customers and Protect the Store

By the end of 2011, 50 percent of the U.S. population is projected to own a smartphone, according to Nielsen.<sup>1</sup> Two-thirds will use their smartphones in retail stores to research products and prices online, predicts Gartner.<sup>2</sup>

The smartphone is driving a revolution in retailing: price transparency. A growing number of shoppers use their phones to compare prices and find better deals while they are shopping in stores. To maintain customer loyalty and improve the shopping experience in the smartphone age, the role of in-store mobility must evolve from enabling retail sales associates to engaging customers.

“Store chains are increasingly concerned about the ability of mobile-equipped shoppers to tilt the balance of power in retailing toward consumers—in part because their numbers are quickly rising,” writes the Wall Street Journal.<sup>3</sup> On Black Friday in 2009, consumers using mobile devices accounted for just 0.1 percent of visits to retail websites. On Black Friday in 2010, they accounted for 5.6 percent—a 50-fold increase, according to the Wall Street Journal.<sup>4</sup>

Consumers’ rapid adoption of smartphones and tablets, combined with innovative mobile applications, allow retailers to create myriad new ways to connect with customers when present inside the store. Shoppers can use concierge services to get product information. They can take advantage of a variety of personalized marketing offers and financial incentives offered by the retailer. Shoppers can use their mobile phones to buy a product while in the store if the item they want is out of stock, for instance.

Today, the role of the in-store Wi-Fi network is more important than ever. In-store smartphone applications designed to deliver an engaging customer experience demand a secure and high-performance Wi-Fi network, rather than cellular connectivity. Customer access inside the store must not open a backdoor to store systems and cardholder data environments. Network coverage must be robust and pervasive to handle a high density of users throughout the store. Networks must provide presence- and location-awareness to personalize messaging delivered on smartphones.

## THE GROWING ROLE OF MOBILITY IN RETAIL

Retailers use Wi-Fi in increasingly sophisticated ways. Many retailers first deployed Wi-Fi as part of efforts to automate store operations and reduce expenses. Wi-Fi-enabled barcode scanners from companies such as Motorola (Symbol) and Intermec allowed retailers to automate inventory management and create new operational efficiencies. Retailers sped up shipping and receiving, inventory counts, markups, markdowns and labeling and other tasks to realize labor savings and reduce stock-outs.

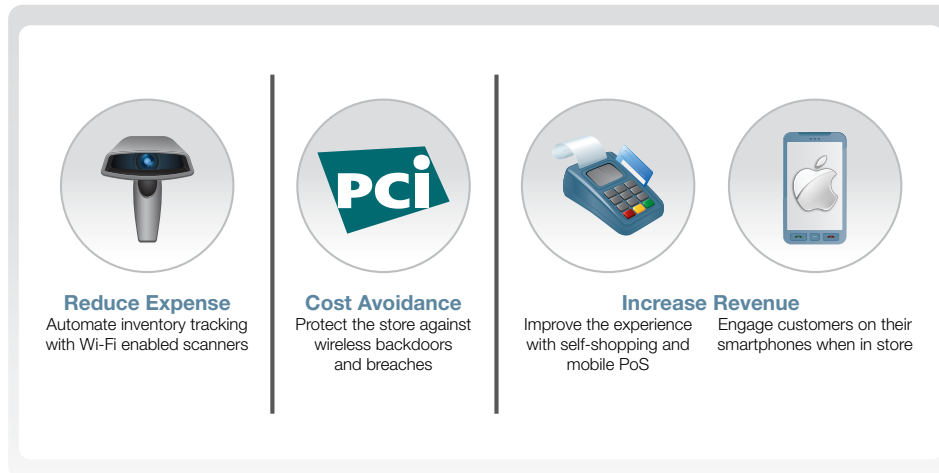
With an increase in affordability and sophistication, rugged mobile computers made their way to the hands and belts of store employees to simplify routine tasks such as inventory lookups, labor schedules and real-time voice communications.

Retailers then augmented their Wi-Fi implementations as part of Payment Card Industry Data Security Standards (PCI DSS) compliance. By protecting the store against wireless backdoors and breaches, retailers could avoid the significant financial cost and reputation damage that can come along with data theft. In response, retailers segmented their Wi-Fi to protect cardholder data.

Retailers have taken progressive steps with mobility solutions to make the shopping experience more pleasurable and drive more revenue. Mobile point-of-sale (POS) devices, for example, allow the store staff to check out customers anywhere in the store, which improves customer service and reduces customer wait time.

Self-shopping applications are another example where retailers offer shoppers the use of mobile handhelds while in the store. Shoppers use the retailer's handhelds to scan product barcodes before placing them into the cart. Shoppers also can get product information, learn about promotions and consult personalized shopping lists.

### The Retail Mobility Map



*Figure 1: Innovative retailers are looking to in-store mobile marketing to drive new levels of customer engagement—and capitalize on the revenue opportunity.*

### THE NEXT WAVE OF IN-STORE MOBILITY: SMARTPHONE APPS

"Retailer's success depends on their ability to provide the best possible in-store shopping experience to their best customers, who are increasingly using smartphones in-store for product and price comparison," said Andrew Borg, senior research analyst for Wireless and Mobility, Aberdeen Group.

A new wave of mobile applications allows smartphones and tablets to be used for in-store concierge, marketing and commerce services. Retailers can differentiate their customer engagement by giving mobile workers tablet-based applications or by creating powerful applications for customers' smartphones. These applications can be delivered over cellular networks or via in-store customer Wi-Fi portals. These applications designed for mobile workers and customers give retailers new opportunities to retain customers, cross-sell and up-sell products and services and improve customer satisfaction.

Retailers have started differentiating their service by giving their associates Apple iPads that be used to bring up product catalogs, product reviews and videos. Associates also can check inventory within or in nearby stores, and place orders online on behalf of their customers.

Other retailers have created concierge applications for the smartphone that allow shoppers to scan a product to bring up detailed product specifications, get independent reviews and videos, and give feedback or connect with social media. Shoppers can use mobile apps to "check in" when they arrive at a store, which presents retailers with new opportunities to reward loyal customers and their friends.

Retailers can use in-store marketing apps to present shoppers with financial incentives, such as rewards and discounts. Shoppers can also use mobile e-commerce apps to buy a product if it is out of stock in the brick-and-mortar store. Or shoppers can buy on their phone, and pick up their purchase in the store.

As in-store smartphone applications become more important to delivering an exceptional customer experience, forward-looking retailers are adding customer Wi-Fi portals in their stores. Customer Wi-Fi portals are a powerful way for retailers to capture customer intelligence through user registration. They can deliver targeted merchandise offers and advertising to shoppers. And the retailer can customize registration and home pages with its brand.

Wi-Fi has significant benefits over cellular networks. Wi-Fi provides better in-store coverage and higher capacity to stream product videos. It is also better suited to deliver presence and location intelligence to support context- and location-aware mobile marketing. Context- and location-aware coupons add a new dimension to in-store mobile marketing. Shoppers can also use in-store map and product navigation apps to quickly find the products they seek, which can significantly improve customer satisfaction.

Retailers are embracing mobile marketing strategies to improve the in-store shopping experience. In fact, adding Wi-Fi access in the next 24 months is a top priority for retailers, according to Aruba's "State of In-Store Mobility" survey.<sup>5</sup>

## CHANGING REQUIREMENTS FOR IN-STORE WI-FI

As retailers embrace customer-facing in-store mobile applications, it is driving the need for a powerful and intelligent Wi-Fi that can support their marketing efforts.

Retail Wi-Fi networks must support:

- **A variety of Wi-Fi clients.** The Wi-Fi must support a growing number and variety of Wi-Fi devices. The Wi-Fi network must support inventory management and associate enablement functions, which mean the network must accommodate a variety of application-specific mobile devices, such as Wi-Fi-enabled scanners and ruggedized mobile computers. The Wi-Fi must simultaneously support a broad range of shoppers' smartphones and tablets. Support for a broad range of mobile devices, rather than a few proprietary handhelds, is critical.

Unlike laptops, application-specific mobile devices have limited operating system sophistication and have a highly mobile use-case. Supporting these mobile devices can be challenging, because they do not support modern Wi-Fi security mechanisms. Therefore, the mobility infrastructure must support both new and old security mechanisms, such as Wi-Fi Protected Access/Wi-Fi Protected Access-2 (WPA/WPA2) as well as Wired Equivalent Privacy (WEP). Retailers should have the ability to segment legacy mobile devices, including scanners and handheld IP phones, for added security protection.

The battery life of mobile devices in retail is especially important. In particular, the Wi-Fi solution should support Multimedia Power Save (WMM Power Save), a Wi-Fi Alliance certification.

Shoppers and employees alike expect to be able to use their mobile devices with a continuous application or voice connection across the store and in the stockroom. The Wi-Fi should support seamless roaming within a single IP subnet or across subnets.

- **A high density of Wi-Fi clients.** With the introduction of customer-facing applications such as in-store mobile marketing, mobile POS and self-service kiosks, a retailer's Wi-Fi must support a greater number of mobile devices than when the network was used only by employees. The WLAN must provide broader coverage and minimize the interference that may result from having many mobile devices to deliver a reliable, robust user experience.

With a growing density of clients, it's also important for the Wi-Fi to automatically load balance across the individual access point radios. This will help provide a predictable user experience.

- **PCI compliance.** PCI is mandatory for any organization that accepts credit and debit cards, and it applies primarily to retailers, hospitals and universities. Merchants that accept credit and debit cards bear the burden of safeguarding customers' private information. PCI compliance has direct and indirect business benefits. First and foremost, a security breach has a negative impact on a merchant's brand name and consumer loyalty. Additionally, if retailers are out of compliance with PCI DSS standards, they are subject to fines from the merchant banks.

PCI DSS compliance requires the use of firewalls, encryption, authentication and wireless LAN intrusion detection (IDS) for all wireless LANs; some of these safeguards are also required even if the wireless LAN is not used to transmit cardholder data. Read Aruba's white paper "Security is in the Air" to learn more about PCI compliance.

- **Public Wi-Fi access.** To execute successfully on mobile marketing, the retailer must allow customers to access the store's Wi-Fi while using the same network for retail operations – while meeting PCI requirements. In short, a formerly private network must now support public Wi-Fi access. The ability to securely segment retailer's and consumer's traffic is essential to protect the store and the customer.
- **IP voice.** Many retailers have deployed voice over IP (VoIP) to take advantage of the productivity and cost savings benefits. When IP voice is a requirement, the in-store Wi-Fi network also must support quality of service (QoS) to ensure that voice and other latency-sensitive traffic has priority access to the network.
- **Low total cost of ownership (TCO).** As retailers modernize their Wi-Fi infrastructures to support mobile marketing and commerce, they have an opportunity to deploy a wireless platform that supports multiple services. Retailers can minimize the hardware and software needed in their stores, which reduces costs and simplifies IT operations. A multiservice platform allows retailers to more easily support video and other content-rich applications commonly used on smartphones and tablets.

## ARUBA'S WI-FI SOLUTION FOR IN-STORE MOBILE MARKETING

The Aruba Wi-Fi™ Solution for in-store mobile marketing, developed in partnership with Digby enables retailers to provide highly-personalized and differentiated customer interactions. The rapid spread of smartphone applications, combined with increasingly powerful and intelligent access networks enable retailers to connect customers with promotions to increase revenue and enhance customers' in-store experience.

The Aruba solution includes:

- **Secure and scalable in-store Wi-Fi.** Aruba's 802.11n Wi-Fi solutions include an ICSA-certified stateful firewall to protect retail networks from public access, and adaptive coverage management to ensure uninterrupted operation even when hundreds of customers connect at the same time in the same store. Per-user firewall policy enforcement allows QoS, bandwidth limits, and time-of-day and location restrictions based on the value of the customer to the retailer.
- **In-store customer Wi-Fi.** Aruba Amigopod software enables retailers to securely register customers and reliably deliver personalized access and targeted messages including special merchandise offers and advertisements. With Amigopod, retailers can provide time- and policy-based network access to customers and employees while greatly simplifying the complex task of managing large numbers of users. In addition to targeted marketing, retailers can interact with shoppers while in the store and gain feedback and other valuable insight.

Amigopod provides core visitor management functionality and enables users to securely connect with interactive, fully branded web portals. Retailers can create self-service portals so visitors can register and instantly connect to the Wi-Fi. Retailers can use Amigopod's plug-ins to create unique applications, such as a branded user interface, SMS messaging, or personalized advertising.

Capturing intelligence from or about the customer during registration or connection allows retailers to deliver personalized messages, such as welcome messages and customized promotions. Retailers can also use Amigopod's reporting capabilities to track the success of promotions and reveal visitor demographics, usage and movement.

- **Wi-Fi optimized smartphone applications.** Aruba partner and mobile commerce leader Digby enables retailers to offer a rich and personalized shopping experience to its customers with smartphone applications. Performance and location intelligence available through Aruba's Wi-Fi improve application responsiveness and increase the relevance of offers made to customers inside the store.

Digby integrates with back-end retail systems and the Aruba Wi-Fi to receive and enable live catalog information, product images, transactional information, social engagement and analytics in a secure, enterprise-grade environment. Consumers can also share and receive feedback on products through Facebook, Twitter and e-mail.

Digby provides retailers with analytics, such as traffic patterns, device patterns, application downloads, conversions and buying behavior, so they can measure the ROI of their marketing efforts and continuously improve the mobile experience.

- **Presence and location intelligence.** Aruba's 802.11n Wi-Fi provides real-time presence information to enable store-level message targeting. Aruba's partnership allows retailers to get granular, product- and area-level message targeting as well as in-store navigation capabilities. Using real-time location-aware applications, these services improve the shopping experience, increase revenue and strengthen brand awareness among customers who use mobile devices.

Retailers can offer in-store maps and directions, concierge services and location-aware promotions over the Aruba Wi-Fi. Micro-location also gives retailers insight into in-store shopper analytics. Retailers can identify shoppers as they enter the store, determine ROI for mobile campaigns, improve store layout and fine-tune customer segmentation models with a clear understanding of how shoppers move through a store.

## INSIDE ARUBA'S WI-FI SOLUTION ARCHITECTURE

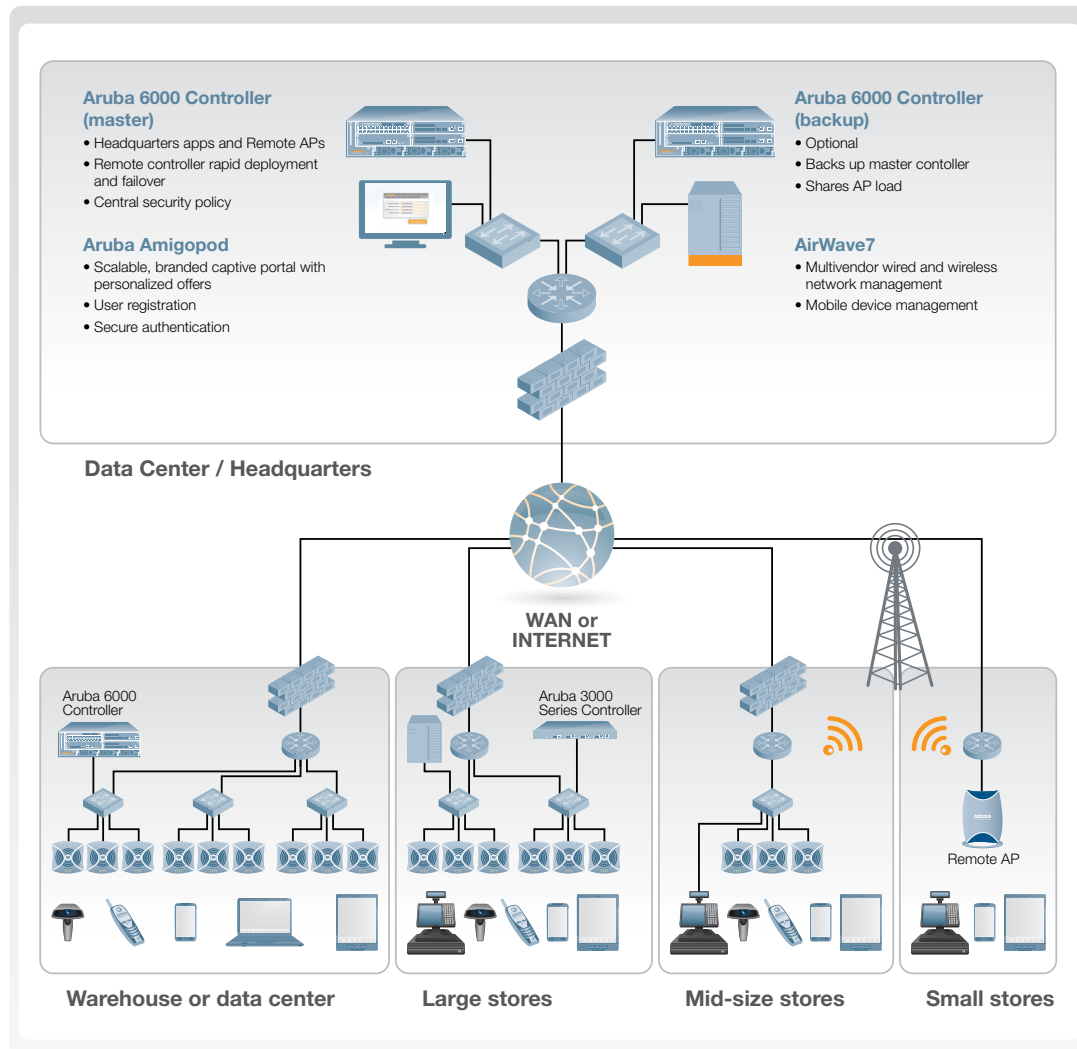
The Aruba enterprise Wi-Fi solution for in-store mobility provides secure mobility, improved application performance in mobile environments, greater ease of integration and deployment, and cost-effective scalability. Aruba takes a user- and application-centric approach to enterprise mobility, which increases business agility and delivers a lower total cost of ownership.

The Aruba solution consists of thin Access Points (APs) and Mobility Controllers as well as an optional AirWave Management Platform. APs connect to any Ethernet switch in the wiring closet and provide a wireless link to the devices.

The Mobility Controller handles all of the intelligence, including user authentication, RF monitoring, wireless intrusion prevention, policy enforcement, encryption, location services, and virtual private network (VPN) termination. The Mobility Controller can be configured as a standalone device or in a larger network as a member of a hierarchy of Mobility Controllers. In small and midsized networks, the Mobility Controller is the single point of configuration and management. In larger networks with more than one master controller, AirWave is the single point of control.

Amigopod integrates with the existing Aruba Wi-Fi to manage visitors to the network using RADIUS. Amigopod is a simple, centrally managed system. A family of appliances is available that are suitable for companies from small to large.

## One Network, Many Environments



*Figure 2: Retailers can leverage Aruba's multiservice Wi-Fi platform for in-store mobile marketing to establish and maintain direct communications with shoppers based on targeted promotions and the shoppers' interests and needs.*

Aruba delivers a best-in-class solution so retailers can meet their business goals. With Aruba, retailers can use the same Wi-Fi infrastructure for store operations as for customer engagement – with strong confidence in network performance and security.

Key advantages include:

- **Support for a broad range of mobile devices.** Aruba supports a broad range of Wi-Fi devices, including barcode scanners, Wi-Fi inventory tags, handheld IP phones, laptops, smartphones, tablets and other mobile devices. Hundreds of customers use Aruba Wi-Fi for barcode scanners from Honeywell, Intermec, Janam, Motorola, and Pision Teklogic.

Aruba supports the latest wireless encryption standards, such as WPA/WPA2 for applications and mobile POS applications that carry credit card data over the wireless. Aruba supports legacy encryption standards, such as WEP, and ensures that devices capable of supporting only WEP are adequately protected.

Users can increase the battery life of Wi-Fi devices and dual-mode handsets by three to five times by taking advantage of several Aruba capabilities. Aruba supports a full network-side implementation of Wi-Fi Multimedia Power Save (WMM Power Save), a Wi-Fi Alliance certification based on IEEE 802.11e Unscheduled Automatic Power Save Delivery (U-APSD).

- **Support for dense Wi-Fi client deployments.** 802.11n Wi-Fi networks from Aruba perform even when many mobile devices are used in a small space. Key to enabling this is Aruba's RFProtect Spectrum Analyzer, which provides unprecedented visibility into Wi-Fi and non-Wi-Fi sources of RF interference to ensure over-the-air QoS and to minimize traffic congestion.

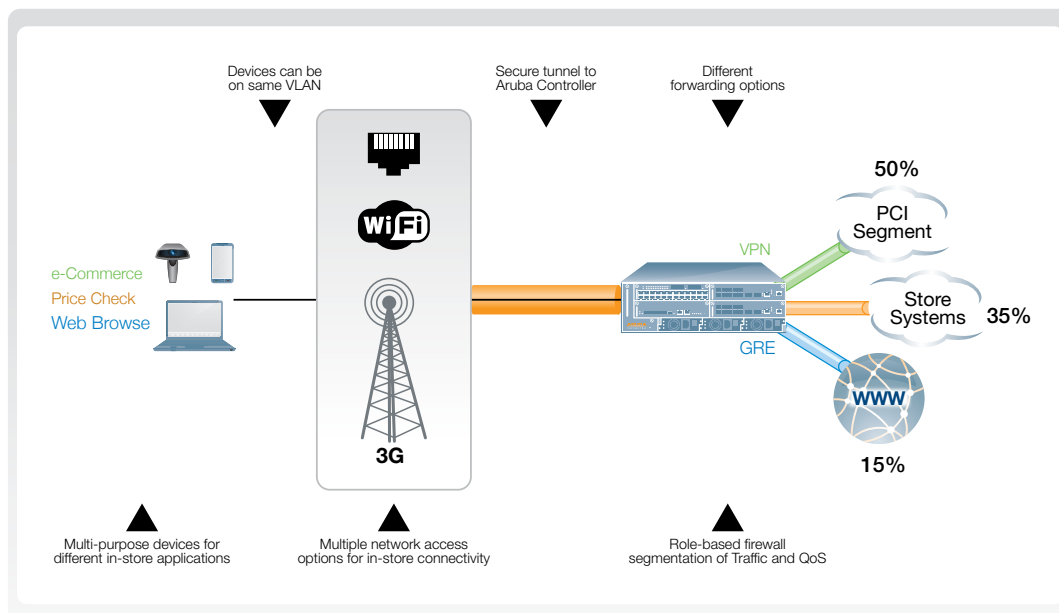
Working in conjunction with the RFProtect Spectrum Analyzer, Aruba's Adaptive Radio Management (ARM) optimizes Wi-Fi client behavior and automatically ensures that Aruba APs stay clear of interference. The result is a more reliable, higher performance Wi-Fi that supports dense mobile device environments.

Key Aruba ARM features include:

- Band steering actively guides 802.11 clients to the best available wireless channel. The result is better immunity from noise, fewer sources of interference, and more available channels – and ultimately better network performance for end-user applications.
  - Spectrum load balancing dynamically shifts Wi-Fi clients to available 802.11 channels instead of individual access point radios. This technique helps prevent degraded network performance due to oversubscription of 802.11 channels.
  - Co-channel interference mitigation across all access points and wireless clients that share the same 802.11 channel overcomes the challenges of densely populated deployments.
  - Airtime fairness gives equal opportunity for all Wi-Fi clients to transmit and receive when they are associated to the same access point radio, which is essential for dense client deployments. Airtime fairness is especially useful for uncontrolled device environments with mixed 802.11b, 802.11a, 802.11g and 802.11n clients.
- **Strong security to protect the store and achieve PCI compliance.** Aruba offers multiple levels of wireless LAN security to help retailers achieve PCI compliance, including PCI monitoring, wireless IDS and wireless IDS with role-based access control. Aruba's RFProtect Wireless Intrusion Protection prevents unauthorized access to private data and the network infrastructure by automatically scanning the air to detect and neutralize wireless threats.

While providing Wi-Fi client access, Aruba APs perform real-time wireless threat detection, attack prevention, policy enforcement and compliance reporting. IT can customize the security policies by criteria such as location, device or configuration.

### Role-based Architecture Delivers Agility



**Figure 3: Aruba's role-based architecture increases agility by allowing retailers to support both customer-owned and retail-owned mobile devices on the same infrastructure, with strong performance and security.**

In addition, Aruba’s stateful Policy Enforcement Firewall (PEF) provides secure segmentation between cardholder, store and public Wi-Fi traffic. Certified by ICSA Labs, the industry-recognized benchmark for firewalls, Aruba PEF prevents unauthorized traffic from bypassing access controls.

- **Support for voice and video.** Store employees can be confident that their IP phones will work over the wireless LAN. Aruba’s application-aware network architecture makes it possible to deliver high quality voice over IP (VoIP) to mobile workers – at a fraction of the cost. Aruba has enabled some of the world’s largest and most challenging deployments of VoIP over wireless LANs.

Aruba’s application-aware firewall automatically identifies and prioritizes the most common VoIP protocols, including Session Initiation Protocol (SIP) and Vocera, so the system can make the bandwidth reservations and quality of service prioritizations. Ultra-fast roaming technology with session persistence and complete standards support ensures uninterrupted voice communication both within a single IP domain as well as across IP domains.

- **Centrally administered.** Retail is unique in that there are hundreds or thousands of remote locations, and stores usually don’t have IT staff on-site. Instead, the network for the entire chain is managed from the company’s data center. An Aruba in-store mobility network scales to include many thousands of locations and is centrally managed.

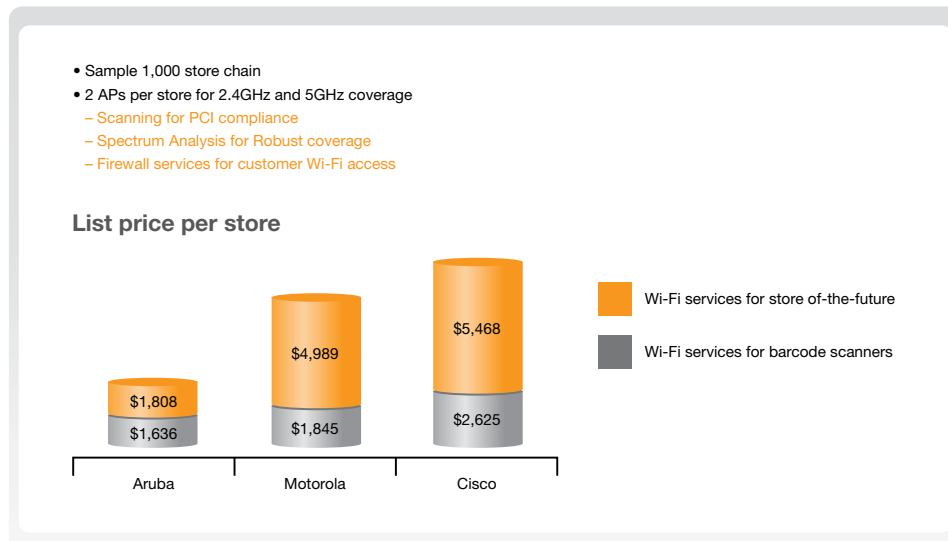
Aruba provides plug-and-play deployment tools that make it as simple as possible to install. Centralized configuration software makes it easy to roll out upgrades and changes to hardware platforms used in the retail stores. Centralized support and help-desk tools provide visibility into the store network, applications and devices. Centralized troubleshooting allows network engineering to quickly diagnose and fix problems without physically visiting the store.

- **Low total cost of ownership.** Cost is a critical factor for large retail chains, because a single IT purchase decision is propagated across multiple store locations. Aruba’s integrated capabilities for security, management and application control also keep operating costs low. Table 3 shows the results of Aruba’s roaming tests with iPad.

With Aruba, retailers have a single, common Wi-Fi infrastructure that supports in-store mobile marketing and other state-of-the-art applications while delivering a low TCO.

Aruba delivers a significantly lower TCO than its competitors. For example, Aruba costs up to three times less than leading competitors for a 1,000-store chain, assuming two APs per store that provide 2.4-GHz and 5-GHz Wi-Fi coverage.

### Significant TCO Savings



**Figure 4: Aruba delivers a low total cost of ownership. Integrated firewall services, wireless scanning and spectrum analysis are essential to support today’s retail operations, including in-store mobile marketing.**

Furthermore, capabilities such as spectrum analysis, Adaptive Radio Management, wireless intrusion protection, stateful Policy Enforcement Firewall, and role-based access controls are tightly integrated into the Aruba Wi-Fi solution, which further contribute to a low TCO.

## THE TIME IS RIGHT FOR IN-STORE MOBILE MARKETING

New mobile apps and websites are launching every month, and retailers that don't act swiftly may find themselves left behind. The demand for an in-store experience that takes advantage of a mobile web experience will only grow – especially with the Millennial generation. In-store mobile applications are an important part of a retailer's multichannel strategy, and choosing the right Wi-Fi infrastructure is critical. That's why retailers around the world depend on Aruba products to run their business and increase sales while lowering networking costs.

## ABOUT ARUBA NETWORKS

Aruba Networks is a leading provider of next-generation network access solutions for the mobile enterprise. The company's Mobile Virtual Enterprise (MOVE) architecture unifies wired and wireless network infrastructures into one seamless access solution for corporate headquarters, mobile business professionals, remote workers and guests. This unified approach to access networks dramatically improves productivity and lowers capital and operational costs.

Listed on the NASDAQ and Russell 2000® Index, Aruba is based in Sunnyvale, California, and has operations throughout the Americas, Europe, Middle East, and Asia Pacific regions. To learn more, visit Aruba at [www.arubanetworks.com](http://www.arubanetworks.com). For real-time news updates follow Aruba on [Twitter](#) and [Facebook](#).

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<sup>1</sup> Gartner, "Mobile Consumer Shopping Preferences, 2010: U.S.," December 2010

<sup>2</sup> Gartner, "Mobile Consumer Shopping Preferences, 2010: U.S.," December 2010

<sup>3</sup> "Phone Wielding Shoppers Strike Fear into the Hearts of Retailers," Wall Street Journal, December 15, 2010 <http://online.wsj.com/article/SB10001424052748704694004576019691769574496.html>

<sup>4</sup> "Phone Wielding Shoppers Strike Fear into the Hearts of Retailers," Wall Street Journal, December 15, 2010 <http://online.wsj.com/article/SB10001424052748704694004576019691769574496.html>

<sup>5</sup> Aruba Networks, "State of In-Store Mobility Survey," December 2010



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