

## **Enhanced Wi-Fi® Companion™: A Complete Wi-Fi Solution for Business Mobility**

By MICHELLE MAN

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### **ABSTRACT**

Businesses that want to deploy Pocket PCs or other Windows Mobile/CE based devices on their Wi-Fi networks will benefit from a solution that incorporates the latest data security and Wi-Fi innovations, CCX certification, and a user-friendly interface in a single, complete solution without third-party suppliers. Socket Mobile Enhanced Wi-Fi Companion (e-WFC) combines with Socket Mobile Wi-Fi hardware to provide a total hardware and software solution from a single source that is CCX 4.0 certified, features advanced business-level security, cutting-edge Wi-Fi features including fast roaming, as well as an award-winning user interface. Optimized for use with the Socket Mobile SoMo™ 650 handheld computer, e-WFC is part of a complete Socket Mobile business mobility solution that reduces integration, implementation, and support issues.

### **INTRODUCTION**

With business mobility on the rise, more companies are adding handheld computers to their Wi-Fi networks. Nurses and physicians are using them for instant access to electronic medical records, drug information, and laboratory reports. Retail stores are equipping merchandisers and customer service representatives with them for up-to-the-minute inventory data and mobile point of sale applications. Warehouses and distribution centers are combining Wi-Fi enabled handheld computers with bar code scanners or RFID readers for automated voice picking applications. Because of the great productivity benefits of combining wireless and mobile computing technologies, new business applications for Wi-Fi enabled handheld computers are being developed for many different industries.

Planning a business deployment of Wi-Fi enabled handheld computers requires many careful considerations. Although data security is the top priority for many CIOs and IT managers, other features are also important, such as proper selection of the mobile computer, overall system reliability, high-speed connections, energy efficiency, connection reliability, and ease of use, integration, and implementation. There are also Wi-Fi innovations that optimize specific types of business applications, such as fast roaming between access points and specific enhancements for voice or multimedia. Interoperability is also a key factor, because most organizations interested in deploying Wi-Fi enabled handheld computers already have some WLAN infrastructure in place.

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Although the Wi-Fi Alliance provides its own certification program that ensures a certain level of interoperability, many companies will want to go further with Cisco Compatible Extensions (CCX) certification from Cisco Systems, Inc. Today, about 65% of business WLAN infrastructure use equipment from Cisco, making CCX certification an important criterion for many organizations looking to extend their Wi-Fi networks to handheld computers. Even for companies that have not fully implemented Cisco protocols, CCX certified equipment is desirable to ease a future migration. As Wi-Fi technology has improved over the years, CCX certification requirements have also been updated for the latest innovations. For handheld computers, CCX 4.0 certification is ideal because it validates not only compatibility with Cisco infrastructure but also support for the latest Wi-Fi standards and Cisco technologies, including advances in security, mobility, performance, Quality of Service (QoS), and network management.

Therefore, as companies begin adding handheld computers to their Wi-Fi networks, CIOs and IT managers are seeking robust, business-class Wi-Fi connectivity from a handheld computer that includes the latest data security, CCX certification, as well as features to optimize Wi-Fi applications, ease deployment, and minimize support. Among these organizations, many are looking for Pocket PCs or other devices based on the Microsoft Windows Mobile/CE operating system, which comprise 62% of worldwide handheld shipments. Although Wi-Fi solutions for these devices have been available for several years, most of them have been geared towards consumer use. There exists a need in the marketplace for a more advanced offering for Windows Mobile/CE based devices that incorporates the latest Wi-Fi security and innovations and better meets the needs of business deployments.

#### **THE IMPORTANCE OF DATA SECURITY**

Every business has critical proprietary information that must be protected, ranging from confidential business deals and product designs to marketing plans and customer data. With the increasing use of Wi-Fi in the business world, CIOs and IT managers are struggling with how to capitalize on the productivity benefits of wireless connectivity while also keeping proprietary business intelligence in the right hands. No company wants to face a catastrophic data breach like that of discount retailer TJX, in which hackers invaded the Wi-Fi networks at two of its Marshall's chain stores and accessed more than 100 million credit and debit card numbers. The data breach, which may be the largest in U.S. retail history, is costing TJX an estimated \$1 billion in lawsuits, fines, and settlements.

Besides an organization's own interest in data security, there are also industry standards and government regulations that affect Wi-Fi security in business deployments. These include security protocols from credit card companies (Payment Card Industry Data Security Standard), privacy laws in healthcare (Heath Insurance Portability and Accountability Act) and finance (Gramm-Leach-Bliley Act), as well as federal codes that restrict how sensitive government information is communicated (Federal Information Processing Standards 140-2). Although not all of these industry standards and government regulations explicitly define Wi-Fi security protocols, they do call for safeguards in data communications and make organizations liable for breaches on their Wi-Fi networks.

Most organizations looking to deploy Wi-Fi enabled handheld computers already have some WLAN infrastructure in place, and many are using the latest Wi-Fi secu-

rity protocols to both protect proprietary data and conform to industry standards and government regulations. As a result, for CIOs and IT managers who are adding Windows Mobile/CE based devices to their Wi-Fi networks, having the same advanced, business-level Wi-Fi security already deployed on their corporate networks is often the very first and most critical criterion when selecting a solution.

### ENHANCING WI-FI SECURITY FOR WINDOWS MOBILE/CE

With most Windows Mobile/CE based devices now including a built-in Wi-Fi radio, the Microsoft operating system for handheld computers features its own software, known as Wireless Zero Config, which controls Wi-Fi hardware and enables users to configure and save WLAN settings through a WLAN profile editor. By default, Windows Mobile/CE based devices can only support the Wi-Fi security methods enabled by Wireless Zero Config.

Wireless Zero Config supports the following types of WLAN security and authentication:

- No encryption (no security)
- 40/64-bit and 128-bit WEP encryption with Open/Shared authentication
- WPA, WPA-PSK, WPA2 and WPA2-PSK with TKIP encryption
- 802.1x authentication with EAP-TLS or PEAP version 0 (PEAP-MSCHAP)

For most business implementations of Wi-Fi, security experts recommend combining WPA or WPA2 with AES-CCMP encryption and a form of EAP authentication. However, Wireless Zero Config does not support WPA or WPA2 with AES-CCMP and offers only two EAP types — EAP-TLS and PEAP version 0. There are several other EAP methods used to secure corporate networks, including PEAP version 1 (PEAP-GTC) and EAP-TTLS, which are non-proprietary EAP types required by the Wi-Fi Alliance for WPA or WPA2 certification. There are also Cisco's preferred EAP methods, LEAP and EAP-FAST, which are required for CCX certification. As a result, Windows Mobile/CE based devices that do not improve upon the default Wi-Fi security methods risk incompatibility with the roughly 65% of business WLAN infrastructure that is Cisco-driven.

Additionally, while Wireless Zero Config does provide basic Wi-Fi connection and configuration capability, many CIOs and IT managers want an application that offers greater ease of use, more detailed connection information, as well as other features such as power management and diagnostic/troubleshooting tools. Ease of WLAN configuration is important, because as WLAN security settings get more advanced, the configuration options and combinations also increase in complexity.

### TYPES OF SOLUTIONS

There are several third-party supplicants on the market today that are designed to enhance Wireless Zero Config with AES-CCMP support for WPA/WPA2 as well as additional EAP options. They do not attempt to improve the user experience of Wi-Fi networking, nor do they offer CCX compliance.

The ideal solution would not only provide a supplicant for WPA2 and additional EAP support, but also a better user application and CCX certification. With its own user application, this type of solution would completely replace Wireless Zero Config and provide a more user-friendly interface, as well as other tools and

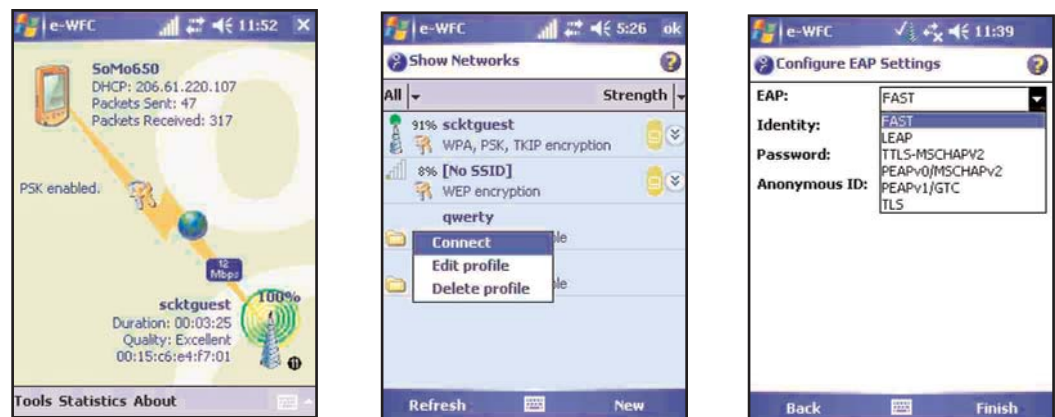
***Third-party supplicants do not attempt to improve the user experience of Wi-Fi networking, nor do they offer CCX compliance.***

features desirable for business deployments. It would also require less integration effort than solutions with third-party supplicants, with the same vendor providing both the supplicant and the user interface in a single application. In order to achieve CCX functionality, a solution must integrate the supplicant, a user application, and a special software driver needed for CCX certification. This creates many problems in field deployment, because the user must operate all of these pieces simultaneously.

### ENHANCED WI-FI COMPANION

For organizations looking to add Windows Mobile/CE based devices on their corporate network, Socket Mobile offers Enhanced Wi-Fi Companion (e-WFC) software, a Wi-Fi Alliance and CCX-certified solution that not only adds support for some of the latest developments in Wi-Fi security, but also features an award-winning, user-friendly application as well as recent innovations in Wi-Fi technology ideal for business applications.

Designed specifically for business deployments, e-WFC provides a significant improvement in data security when compared to the options supported by Wireless Zero Config (see chart on next page).



Additionally, e-WFC incorporates the look and feel of the award-winning Socket Mobile Wi-Fi Companion (WFC) software, which was released in 2005 and has won accolades for its graphical user interface, detailed connection information, automatic power save options, as well as useful troubleshooting and diagnostic tools for networking professionals. From a usability standpoint, the e-WFC interface improves upon WFC by including its own WLAN profile editor. The dynamic profile editor of e-WFC maximizes ease of WLAN configuration by automatically customizing fields and options based on the user's previous selections. All of these features make e-WFC a greatly superior product than other solutions in the marketplace simply in terms of usability.

The diagnostic and troubleshooting tools built into e-WFC are especially important for CIOs and IT staff who are concerned with the potential support problems of adding a new type of device to their corporate Wi-Fi networks. The e-WFC software includes a ping utility for verifying network connectivity and finding dead spots on a WLAN, a trace route utility for finding the source of connection delays, as well as user-friendly graphs and charts for viewing data rate distribution, signal quality, link quality, and a comprehensive range of IP, TCP, UDP, ICMP, and interface statistics.

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Feature	Wireless Zero Config (On non-SoMo devices)	Wi-Fi Companion (WFC) Pre-loaded on SoMo 650	Enhanced Wi-Fi Companion (e-WFC)
<b>Authentication/Encryption</b>			
Open/Shared Authentication	✓	✓	✓
40/64 bit encryption	✓	✓	✓
128 bit encryption	✓	✓	✓
WPA-PSK + TKIP	✓	✓	✓
WPA-PSK + AES-CCMP		✓	✓
WPA + TKIP	✓	✓	✓
WPA + AES-CCMP		✓	✓
WPA2-PSK + TKIP		✓	✓
WPA2-PSK + AES-CCMP		✓	✓
WPA2 + TKIP		✓	✓
WPA2 + AES-CCMP		✓	✓
<b>802.1x/Network Authentication</b>	✓ *	✓ *	✓
PEAP version 0 (PEAP-MSCHAP)	✓	✓	✓
EAP-TLS	✓	✓	✓
PEAP version 1 (PEAP-GTC)			✓
EAP-TTLS			✓
LEAP			✓
EAP-FAST			✓
<b>WMM (QoS) support</b>			✓
Power Management		✓	✓
Transmit Power Control			✓
Fast-Roaming using CCKM			✓
Roaming Threshold control		✓	✓
List of Networks		✓	✓
Information about the Associated AP (MAC Address)		✓	✓
AP Details (IP Address)			✓
Statistics		✓	✓
<b>Diagnostics Tools</b>		✓	✓
Trace route and Ping programs		✓	✓
Display of signal strength		✓	✓
<b>Certifications</b>			
Wi-Fi Alliance certified	N/A	✓	✓
CCX 4.0 certified			✓
<b>Profile Editor</b>	Microsoft profile editor is difficult to use and configure and shows little network/connection data.	Microsoft profile editor has limited functionality for network authentication.	Socket Mobile profile editor with all the features listed above.

\* For Wireless Zero Config and Wi-Fi Companion, there is only 802.1x support with PEAPv0 or EAP-TLS.

The e-WFC software is optimized for use with the Socket Mobile SoMo 650 handheld computer as part of a complete business mobility system. The SoMo 650 is a durable handheld computer that is easy to expand and ergonomically designed for maximum comfort and productivity. Built for business mobility, it includes high end features such true business-class *Bluetooth*<sup>®</sup> and Wi-Fi technologies, a fast 624 MHz processor, a large bright display, and plenty of program and storage memory. It is also pre-loaded with Socket Mobile software utilities for out-of-the-box deployment with a broad range of Socket Mobile data collection peripherals.



Only Wi-Fi hardware from Socket Mobile is compatible with e-WFC. Besides the SoMo 650, e-WFC is also compatible with Socket Mobile Go Wi-Fi! plug-in cards and modules for OEM device manufacturers. Socket Mobile is a one-stop source for both hardware and software, eliminating compatibility problems and reducing integration, deployment, and support issues. This is especially true when using e-WFC with the SoMo 650, because there are integrations issues with each Windows Mobile/CE based platform for OEM device manufacturers.

Different players in the market can incorporate e-WFC with Socket Mobile hardware into a Windows Mobile/CE based device. CIOs and IT managers can upgrade the standard WFC already pre-loaded in the SoMo 650 to e-WFC with a simple software install. Device manufacturers can embed e-WFC and incorporated either the Go Wi-Fi! P700 WLAN module or plug in a Go Wi-Fi! CompactFlash or Secure Digital WLAN card. Socket Mobile provides a site software license, professional integration services and post-sales support to help facilitate customer deployments.

Besides data security, usability, CCX certification, and a complete solution from a single vendor, e-WFC combines with Socket Mobile Wi-Fi hardware to provide many other benefits important for business deployments. These include:

- Fast roaming between access points in less than 100 ms with Cisco Centralized Key Management (CCKM). This enhances the connection quality when users roam from one access point to another, especially for Voice applications (VoIP), by minimizing delays, glitches or dropped connections. Fast roaming is crucial for many business deployments because it provides advanced reliability for WLAN connections and prevents loss of proprietary data in mission-critical applications.
- Battery Friendly<sup>®</sup> design engineered to use minimum power, enhanced with Automatic Power Save to further reduce the power usage and to maximize the battery life of your device. This is critical for battery-powered Windows Mobile/CE based devices, because using Wi-Fi without improvements in energy efficiency can quickly deplete battery power, leading to expensive downtime and lost data.
- Wi-Fi Multimedia (WMM), a standard for quality of service (QoS).
- Enhanced client and network management through multiple SSIDs and VLAN support on an AP and AP-specified transmit power at client.

***Fast roaming is crucial for many business deployments because it provides advanced reliability for WLAN connections and prevents loss of proprietary data in mission-critical applications.***

## CONCLUSION

For companies that want to add Windows Mobile/CE based devices to their Wi-Fi networks, Socket Mobile has the only complete solution on the market that offers advanced business-level Wi-Fi security, state-of-the-art Wi-Fi features, and CCX 4.0 certification with an easy to use, intuitive application that does not require third-party supplicants/software. The e-WFC software, combined with the Socket Mobile Wi-Fi hardware, enables businesses to securely and practically realize the productivity benefits of combining handheld computing and Wi-Fi technologies.

### For more information, please visit:

<http://www.socketmobile.com/products/software/enhanced-wi-fi-companion/>  
[http://www.cisco.com/web/partners/pr46/pr147/socket\\_p700.html](http://www.cisco.com/web/partners/pr46/pr147/socket_p700.html)

### Sources

- Gartner Dataquest, "Gartner Says Windows Mobile Devices Drove Worldwide PDA Market to 40 Percent Growth in First Quarter of 2007." May 22, 2007.
- "Cisco and Aruba Begin Clash of the WiFi Titans," *IT News*. November 8, 2007.



#### Sales Offices

#### Corporate Headquarters:

39700 Eureka Drive  
Newark, CA 94560  
USA

**Web:** [www.socketmobile.com](http://www.socketmobile.com)

**Phone:** +1-510-933-3000

#### USA & Canada Toll Free:

+1-800-552-3300

**Fax:** +1-510-933-3030

#### Online:

[www.socketmobile.com/contact](http://www.socketmobile.com/contact)

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