

The Wireless LAN and HP iPAQ Handheld Devices



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Overview

This document is designed to assist users in understanding wireless communication, how it works, and how to create and configure Wireless Local Area Network (WLAN) connections on HP iPAQ rx3000 series, h4100/4300 series, hx4700 series, h5400/h5500 series, h6300 series handheld devices.

HP iPAQ wireless products

HP currently offers integrated WLAN capability with the HP iPAQ rx3000 series, h4100 series, h4300 series, hx4700 series, h5400 series, h5500 series, and the h6300 series.

What is a WLAN?

This section includes the following topics:

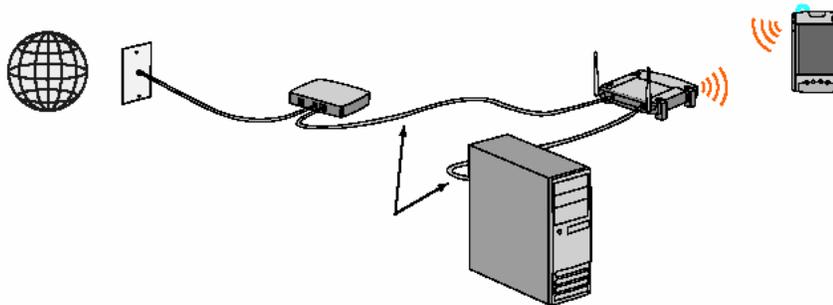
- [Overview](#)
- [Wireless fidelity](#)

Overview

A wireless network is a group of computers and associated devices that share a common wireless communication link over radio waves. A wireless network is enabled by a collection of wireless access points residing within a small geographic area, such as in an office building or wireless fidelity (Wi-Fi) public hotspot.

WLANs enable a variety of mobile transactions such as Internet and e-mail access, and sophisticated tasks such as allowing sales people to access customer records from customer locations. The signal strength of a WLAN can normally reach a maximum radius of 500 feet indoors and 1,000 feet outdoors; however, the area can be extended with antennas, transmitters and other access devices. Figure 1 illustrates a WLAN setup with an access point.

Figure 1. WLAN with access point



Note: Signal strength can be reduced by conditions such as wireless interference, obstructions (walls, for instance), and signal reflection. The radius listed represents the maximum distance an unenhanced WLAN signal can travel under prime operating conditions.

Wireless fidelity

Wi-Fi, also known as 802.11, is a communication standard created by the Institute of Electrical and Electronic Engineers (IEEE). The 802.11 standard defines the electrical and radio frequency components of a wireless Ethernet. This standard also defines an encryption algorithm (Wired Equivalent Privacy, or WEP) to secure the network. The Wi-Fi Alliance is the body that ensures compatibility and is responsible for issuing standard compliance tests and logos.

Wi-Fi hotspots

Wi-Fi hotspots are WLANs that use the IEEE 802.11 protocol to establish wireless connections for general public use. Offered to customers by a growing number of hotels, restaurants, airport lounges, coffee shops and other businesses, Wi-Fi hotspots enable users to access Internet resources, send and receive e-mail, use instant messaging, and perform similar tasks they would otherwise perform on their business or home PCs. Many Wi-Fi hotspots charge their customers a fee for this service.

Convenience and increased productivity make Wi-Fi hotspots attractive to users on the go, but hotspots can also increase the possibility of security risks. The security risks are manageable, however, if safety precautions are taken. For information about measures users can take to minimize security risks in WLAN connections, refer to the HP white paper entitled *secure wireless local area networks with hp mobile devices* located at http://www.hp.com/sbso/wireless/secure_wlan_mobile.pdf.

What's the difference between wireless and mobile?

A mobile device is a portable device. A desktop could be a mobile device if it could be easily carried around. A wireless device, such as the HP iPAQ rx3000, h4100, h4300, hx4700, h5400, h5500, or h6300 series handheld device, provides some type of network connectivity. A cell phone is wireless; a laptop or PDA can be wireless when using a wireless modem. Similarly, applications are wireless when they connect and exchange data with a network.

Common WLAN terms

Use the next few sections to become familiar with the following terms as you begin to use wireless technology. This section includes the following topics:

- [Access points](#)
- [Virtual private network](#)
- [Voice over IP](#)
- [Terminal Services client](#)
- [Subnet](#)

Access points

Access points connect wireless networks and enable the sending and receiving of data between wireless clients. It is the connection point for a network, most often a component that is hard wired into the main network. Access points are responsible for converting the wired network into a wireless one. An access point serves as a communication hub, a traffic controller, directing all the data on the network and allowing a user to communicate at maximum speed.

Wireless networks allow users to "roam" between access points, working in much the same way as cellular phones. More detailed information about roaming appears later in this document.

Virtual private network

A virtual private network (VPN) allows two or more private networks to be connected over a publicly accessed network. In a sense, VPNs are similar to WANs or a securely encrypted tunnel, but the key feature of VPNs is that they can use public networks like the Internet, rather than rely on expensive, privately leased lines. Additionally, VPNs have the same security and encryption features as private networks.

Voice over IP

Voice over Internet Protocol (VoIP) is the ability to make telephone calls and send faxes over IP-based data networks with a suitable quality of service and superior cost-benefit ratio.

Terminal Services client

The Terminal Services client establishes a session with the server. User keyboard and mouse activity is sent by way of a network to control the server session. Applications launched in the session use the resources (processor and memory, for example) on the server, and displayed output is resent to the user display screen. Multiple clients can connect to the server simultaneously.

Subnet

By definition, a subnet (short for subnetwork) is an identifiably separate part of an organization's network. Typically, a subnet can represent all the machines (computers, laptops, handheld devices, printers, etc.) at one geographic location, in one building, or on the same LAN. Having an organization's network divided into subnets allows it to be connected to the Internet with a single shared network address.

WLAN standards

IEEE wireless standards such as 802.11 have undergone many improvements and addendums since they were first defined. The following list offers a high-level description of each of the better known standards:

- 802.11, which operates in the 2.4-GHz frequency band and offers only 2 megabits per second (Mbit/s) of overall throughput, was the original implemented standard.
- 802.11b is the most widely used form of Wi-Fi today. The radio operates within the 2.4-GHz frequency band but allows a maximum data throughput of 11 Mbit/s.
- 802.11a is a short-range, but extremely high-speed, Wi-Fi network. This standard is not compatible with existing 802.11b networks. This high-speed Wi-Fi network operates in the 5-GHz frequency band and can transfer data at a maximum speed of 54 Mbit/s.
- 802.11g is compatible with existing 802.11b networks, but also enables higher speeds. Its maximum speed is 54 Mbit/s, but 802.11g operates in the 2.4-GHz frequency band.

Note: The 54-Mbit/s maximum speed of 802.11g is obtained only when the network contains other 802.11g-based devices. Users who mix 802.11b devices in that network will see a maximum throughput value of only 11 Mbit/s.

- The 802.1X standard defines the method of encapsulating Extensible Authentication Protocols (EAPs) over wired or wireless Ethernet networks. This standard does not define any specific security protocol, but is based on EAP types documented and ratified by the Internet Engineering Task Force (IETF).

What is roaming?

Roaming refers to the ability of a WLAN to switch between wireless access points to maintain a WLAN connection as a user travels from one location to another. This access point switching, referred to as roaming, occurs automatically and is normally transparent to the user.

Wireless connections roam from one access point to another when the detected signal strength weakens. A weak signal in an HP iPAQ triggers the handheld device to search for another signal to “jump” to. The new signal is chosen from a list of preferred networks configured by the Wi-Fi user interface in the device operating system.

Two basic roaming techniques are currently available: address transition roaming and location transition roaming.

Devices using the address transition roaming technique briefly break their network connection when roaming between (changing) access points. The HP iPAQ immediately renegotiates for a valid address. The user’s ability to communicate is virtually guaranteed, but sessions open at the time the network breaks will also disconnect. The address transition roaming technique is best suited to networks that have access points on different subnetworks with different address ranges. The HP iPAQ h5500 series supports this type of roaming.

The location transition roaming algorithm enables a handheld device to move seamlessly between access points without disconnecting from the network. Using this roaming algorithm, a given device will not change its address and devices will maintain sessions when roaming across access points on the same subnet. Most shipping Wi-Fi devices support this roaming technique.

However, HP iPAQ handheld devices with zero-configuration-based Microsoft Windows Pocket PC Operating Systems, allow WLAN connections to disconnect and reconnect when a new access point is found. HP iPAQ h4100, h4300, rx3000, hx4700, and h5400 series are affected by this anomaly.

HP supported authentication wireless protocols

This section includes the following topics:

- [Overview](#)
- [LEAP](#)
- [PEAP](#)
- [EAP-TLS](#)
- [WEP](#)

Overview

HP iPAQ h4100, h4300, h5400, h5500, hx4700, and h6300 series handheld devices currently support the following wireless authentication protocols:

- Lightweight Extensible Authentication Protocol (LEAP)
- Protected Extensible Authentication Protocol (PEAP)
- Transport Layer Security (TLS)
- Wired Equivalent Privacy (WEP)

HP iPAQ supported wireless authentication protocols

HP iPAQ series with either Microsoft Pocket PC 2003 ROM Upgrade or Microsoft Pocket PC 2002 Operating System

Protocol model	h5400 (PPC 2002)	h5400 (PPC 2003)	h5500	h4100	h4300	rx3000	hx4700	h6300
WEP 64*	√	√	√	√	√	√	√	√
WEP 128*	√	√	√	√	√	√	√	√
LEAP*	√	√	√	√	√	X	√	√
EAP-TLS*	X	√	√	√	√	√	√	√
PEAP*	X	√	√	√	√	√	√	√
WPA* **	X	X	√	√	√	√	√	√

*h5400 with Microsoft Widows Pocket PC 2003 ROM upgrade

**h5500 component of WPA supported with ROM, WLAN firmware, and driver updates

LEAP

Cisco Compatible Extensions (CCXs) are a collection of authentication protocol features that include some security enhancements. One part of this Cisco collection is LEAP. LEAP is not a true EAP type protocol, as such LEAP authentication is not supported in networks using WPA/WPA-PSK encryptions; support for LEAP is found only in Cisco access points and infrastructure. All HP iPAQ handheld devices that ship with Wi-Fi radios support LEAP. Another aspect of CCX is Cisco Key Integrity Protocol (CKIP), which is a Cisco proprietary implementation of temporal key support.

A LEAP-based network authenticates user credentials before allowing access to the network; inner and outer authentications are not required. While this does reduce the overall infrastructure load, there are some security concerns surrounding this implementation.

For additional information about the LEAP authentication protocol, refer to the Cisco web site: www.cisco.com.

PEAP

802.1X EAP type PEAP uses digital certificates for network server authentication and passwords for client authentication. PEAP requires an EAP user name, EAP password, and a Certificate of Authority (CA). Dynamic encryption keys are also used in this authentication type.

Microsoft, Cisco, and RSA Security created this EAP type to reduce the certificate requirements found in EAP-TLS. This EAP type uses a root server certificate in setting up the secure tunnel to the authentication server. This allows user credentials to then be obtained and transmitted to the authentication server. Unlike EAP-TLS, this protocol will authenticate the user, but not necessarily the device.

EAP-TLS

802.1X EAP type Transport Layer Security (EAP-TLS) ensures Internet privacy between communicating applications and their users. When a server and user communicate, TLS prevents a third party from eavesdropping or tampering with the transmissions. A TLS connection uses an encryption method. TLS allows the server and user to authenticate each other and to negotiate for an encryption algorithm and cryptographic keys before data is exchanged.

EAP-TLS utilizes a certificate pair for authentication. This EAP type was originally developed by Microsoft and is used as a core component for the other EAP types listed below as a first line authentication. This system uses a public/private key infrastructure to setup a secure conduit to exchange the encryption keys. The exchange is very similar to the exchange used in a secure web site (HTTPS). The disadvantage to this protocol is the requirement for extensive certificate management; this EAP type does not authenticate the user as much as it authenticates the device.

WEP

WEP encrypts data immediately before wireless transmissions are sent, and decrypts data it receives. WEP security is considered the first significant line of defense against casual eavesdroppers. If WEP uses a secret key, which is considered similar to a password, then the key must be available on all of the network's wireless devices.

Temporal Key Integrity Protocol (TKIP) technology improves WEP by using a per-packet key mechanism, in which the base key is modified for each packet sent over the network. The overall key length is extended to 256 bits for encryption.

Then and now—HP iPAQ wireless implementation

HP iPAQ handheld devices are designed to increase productivity by giving customers the ability to continue working, even when their work takes them away from the office. Whether meeting in an office on the other side of the company, across town at a customer site, at home working late, whatever the reason, HP produces wireless and mobile devices to help customers expand their working world.

Today, HP engineering works continuously to provide enhancements, new functionality, and evolving products that will keep customers on the cutting edge of the still emerging wireless technology.

A key component in enabling the HP wireless vision involves the process of roaming. Roaming is discussed in more detail in the next section, but it is important to mention here.

HP iPAQ 4000 and 5000 series handheld devices were originally designed to disconnect and reconnect during roaming between access points. While the design works flawlessly under address transition roaming, it causes interruption to applications under location transition roaming.

HP engineering has released a solution to the roaming issue, which will soon be available for download on the HP web site at www.hp.com. (On the HP homepage, click **Support & Troubleshooting, Handheld Devices**, and then **iPAQ Pocket PCs**; select the series, and then download the drivers and software).

Note: It is a good idea to periodically check the HP web site for ROM updates and SoftPaq releases. HP engineering is working on a number of enhancements, updates, and fixes in addition to the roaming issue.

ROM and driver updates

ROM updates often contain information that is more recent than that contained in the original ROM release or in the most recently updated version of the ROM (for example, one or more ROM updates could have already been released since the original ROM version). A ROM update can include driver updates to either enhance or correct driver performance, software updates, and more.

Updates are released in one of two download types: RAM or Execute in Place (XIP). XIP updates are permanent updates in the ROM.

ROM updates are language specific, but might not be intended for all customers. If a ROM update contains information that is not critical to the user, then the user may download it at a later date, or not at all.

Use one of the following methods to determine the most recent ROM release on an HP iPAQ handheld device:

- Perform a soft reset on the device. The ROM version appears on the bottom right-hand corner of the screen.
- On the **Start** menu, tap **Start > Settings > System** tab. Tap the **Asset Viewer** icon, and then tap the **+** sign next to **Version**. The ROM revision and revision date appear, along with operating system information.

rx3000 series

This section includes the following topics:

- [Turning on and off the WLAN](#)
- [Connecting to a network](#)
- [Manually entering new network settings](#)
- [Working with HP supported wireless authentication protocols](#)
- [Searching for networks to access](#)
- [Managing wireless networks](#)
- [Network settings](#)
- [VPN server connections](#)

Turning on and off the WLAN

Perform the following steps to turn on or off the WLAN on the rx3000:

1. From the **Today** screen, tap the wireless icon (📶), and then tap the **Wi-Fi** button. When Wi-Fi is on, the wireless LED (on the top left corner of your HP iPAQ) turns blue and the **Wi-Fi** button turns amber. Once you connect to a wireless network, the **Wi-Fi** button turns green.

Note: Before accessing your wireless network, you must turn on Wi-Fi. When the blue wireless LED is on and the arrows at the top of the screen show connected, your HP iPAQ is connected to the wireless network.

2. To turn off Wi-Fi, tap the **Wi-Fi** button again. When Wi-Fi is off, the wireless LED is no longer blue and the **Wi-Fi** button turns gray.

Battery saving tip: When you are not using Wi-Fi, turn it off. When Wi-Fi is on, be sure one of the power-saving modes is selected.

Connecting to a network

Perform the following steps to connect to a WLAN network using the rx3000:

1. If one or more networks are present, the **Network Indicator** icon (📶) appears in the Navigation bar. Tap the network you want to connect to, and then tap whether the network connects to the **Internet** (does not use proxy settings) or **Work** (uses proxy settings).

Note: To use iPAQ Mobile Media, you must select **Work** to use the wireless network.

2. If you are prompted for a network key, enter the key, and tap **Connect**.

Manually entering new network settings

A wireless network can be added either when the network is detected (when the **Network Indicator** icon displays in the Navigation bar) or manually by entering setting information.

To manually set up a wireless network connection:

1. Turn on Wi-Fi.
2. Tap the **iPAQ Wireless** icon.
3. From the **iPAQ Wireless** screen, tap the Wi-Fi **Settings** button. The **Configure Wireless Networks** screen displays.
4. Review the list of networks, and then tap your network name if it is present. (If one or more networks are present, the **Network Indicator** icon appears in the Navigation bar.)

Note: If your network name is not listed, you need to add it to the preferred network lists. If Wi-Fi is turned on, tap the **Settings** button then tap **Add New** from the **Configure Wireless Networks** list. Enter your network name, then choose to connect to **Work** or **Internet**.

Note: To use iPAQ Mobile Media, you must select **Work** to use the wireless network. For more information about the iPAQ Mobile Media features, refer to the *Special Features Guide*.

5. If network authentication or data encryption is required, then follow the instructions in the following section, "Working with HP supported wireless authentication protocols." If network authentication or data encryption is not required, then tap **OK** repeatedly until you return to the **Today** screen.

Working with HP supported wireless authentication protocols

Instructions for configuring an HP iPAQ with a high-security authentication protocol vary between product series and the selected protocol. Other affecting issues are ROM releases, operating systems, and protocol-specific requirements, to name a few.

The following instructions are intended as a roadmap to help you get started. Actual implementation may require additional steps, consultation with ISPs, network administrators, and implementation direction from third-party software companies such as Cisco Systems. Assistance may also be obtained from the HP web site (www.hp.com) and the Cisco Systems web site (www.cisco.com).

Perform the following steps to set up an HP supported authentication protocol on an HP iPAQ rx3000 Mobile Media Companion series handheld device:

6. After the wireless network has been added, then on the **Configure Wireless Network** screen, tap the **Network Key** tab. If in doubt about possible required authentication information, then contact the system administrator.
7. Select the type of network authentication to be used:
 - **Open**
 - **Shared**
 - **WPA**
 - **WPA-PSK**
8. Select the type of data encryption to be used:
 - For open or shared network authentication, only WEP data encryption is available. To enable WEP data encryption, select **WEP** from the **Data Encryption** drop-down list.
 - If WPA or WPA-PSK was selected in step 10, then TKIP and WEP are both available data encryption options. To enable data encryption, select the desired protocol from the **Data Encryption** drop-down list.

9. If a network key is provided by the network automatically, then tap the **The Key is provided for me automatically** checkbox. Otherwise, enter the network key in the **Network key** box.
10. If IEEE 802.1x is supported by the network environment, then tap the **802.1x** tab. On the **802.1x** tab, check the **Use IEEE 802.1x network access control** checkbox. Select the appropriate **EAP type** from the drop-down list. 802.1x provides an increased level of security. If unsure whether the network environment supports the 802.1x protocol, then contact the network administrator.
11. Tap **OK** twice to exit the **Configure Network Authentication** window and **Configure wireless networks** window.
12. Tap the **Select Networks** box on the Connections screen to open the **Network Management** window. Under **Programs that automatically connect to the Internet should connect using** tap the down arrow and select **My Work Network**. Tap **OK** three times to return to the **Today** screen.
13. Perform a soft reset of the HP iPAQ. When the wireless card associates with an access point, the **Logon Window** pop-up box appears. Select the appropriate keyboard and enter the user name and the password to be used. Leave the **domain** field blank, and tap the **Save Password** box.

Searching for networks to access

Networks that you have already configured are preferred networks and can be found in the **iPAQ Wireless screen > Settings > Wireless Networks** list box. You can choose whether to connect only to preferred networks or to have your HP iPAQ search for and connect to any available network (preferred or not).

To search for networks to access:

- From the **iPAQ Wireless** screen, tap **Settings > Wireless** tab.
- In the **Networks to access** box, tap the type of network you want to connect to (**All Available**, **Only access points**, or **Only computer-to-computer**).
- To connect only to networks that have already been configured, clear the **Automatically connect to non-preferred networks** checkbox.

Note: If you check the **Automatically connect to non-preferred networks** checkbox, your HP iPAQ detects any new networks and provides you the opportunity to configure them.

Managing wireless networks

In managing your wireless networks, sometimes it is necessary to change network settings. In the next sections, learn how to view, edit, and delete available wireless network settings.

Viewing or editing a network

To view or edit an existing or available wireless network:

1. Be sure Wi-Fi is on.
2. Tap the **iPAQ Wireless** icon.
3. From the **iPAQ Wireless** screen, tap **Settings > Wireless** tab.
4. In the **Configure Wireless Networks** box, tap the desired network name.
5. Edit the existing settings as necessary, and then tap **OK** to save the changes.

Deleting a network

To delete an existing or available wireless network:

1. Be sure Wi-Fi is on.
2. Tap the **iPAQ Wireless** icon.
3. From the **iPAQ Wireless** screen, tap **Settings > Wireless** tab.
4. In the **Configure Wireless Networks** box, tap and hold the network you want to delete.
5. Tap **Remove Settings**.

Monitoring signal strength and status

To view the signal strength between your HP iPAQ and an access point Wi-Fi connection:

1. Tap the **Connectivity** icon in the Navigation bar.
2. When the **Connectivity** box displays, you will be able to view the type of network the HP iPAQ is connected to (for example, **Work** or **Internet**) and an icon displaying the signal strength.
3. To exit the **Connectivity** box, tap the **Hide** button.

Note: The signal strength icon will not be displayed if a connection is not present.

Network settings

Use the next few sections to learn how to set up and change network configuration settings so your HP iPAQ can communicate with other networks.

Locating an IP address

To find the IP address the wireless network is using:

1. Be sure Wi-Fi is powered on.
2. Establish a Wi-Fi connection.
3. Tap the **iPAQ Wireless** icon.
4. From the **iPAQ Wireless** screen, tap the Wi-Fi **Settings** button > **Network Adapters** tab.
5. Tap the appropriate adapter to modify the settings. The IP address appears in the **IP address** box.

Changing TCP/IP settings

Note: Most ISPs and private networks now use dynamically assigned IP addresses. You will not need to change TCP/IP settings unless your ISP or private network does not use dynamically assigned IP addresses. If you are not sure, check with your network administrator.

To change TCP/IP settings:

1. Contact your ISP or network administrator to determine your IP address, subnet mask, and default gateway (if needed).
2. Be sure Wi-Fi is powered on.
3. Tap the **iPAQ Wireless** icon.
4. From the **iPAQ Wireless** screen, tap **Settings** > **Network Adapters** tab.
5. In the **My network card connects to** list box, tap either **The Internet** or **Work**.

Note: If you are connecting to your ISP at home, tap **The Internet**. If you are connecting to a private network, such as a corporate network at work, tap **Work**.

6. In the **Tap an adapter to modify settings** box, tap **HP iPAQ Wi-Fi Adapter**.
7. Tap the **IP Address** tab.
8. Tap **Use specific IP address** and enter the requested information.
9. Tap **OK** to save your settings.

Changing DNS and WINS settings

Note: Most ISPs and private networks now use dynamically assigned IP addresses. You will not need to change Domain Name System (DNS) and Windows Internet Naming Service (WINS) settings unless your ISP or private network does not use dynamically assigned IP addresses. If you are not sure, check with your network administrator.

Servers that require an assigned IP address may also require a way to map computer names to IP addresses. HP iPAQ rx3000 series devices support two name resolution options:

- DNS
- WINS

To change server settings:

1. Contact your ISP or network administrator to determine which name resolution to use, obtain the specific server address, and determine whether alternate addresses are available.

Note: An alternate address may enable you to connect when the primary server is unavailable.

2. Be sure the Wi-Fi is powered on.
3. Tap the **iPAQ Wireless** icon.
4. From the **iPAQ Wireless** screen, tap **Settings > Network Adapters** tab.
5. In the **My network card connects to** list box, tap either **The Internet** or **Work**.

Note: If you are connecting to your ISP at home, tap **The Internet**. If you are connecting to a private network such as a corporate network at work, you should tap **Work**.

6. In the **Tap an adapter to modify settings** box, tap **HP iPAQ Wi-Fi Adapter**.
7. Tap the **Name Servers** tab and enter the requested information.
8. Tap **OK** to save your settings.

Changing ISP settings

If you are connected to your ISP or private network during synchronization, your HP iPAQ should download proper proxy settings from your computer. If these settings are not on your computer or need to be changed, you will need to set them up manually. To set up proxy server settings:

1. Contact your ISP or network administrator for the proxy server name, server type, port, type of Socks protocol used, and your user name and password.
2. Be sure Wi-Fi is powered on.
3. Tap the **Connectivity** icon in the Navigation bar, and then **Settings > Tasks** tab.
4. Under **My Work Network**, tap **Set up my proxy server > Proxy Settings** tab.
5. Tap the **This network connects to the Internet** and **This network uses a proxy server to connect to the Internet** checkboxes.
6. In the **Proxy server** box, enter the proxy server name.
7. If you need to change port number or proxy server type settings, tap the **Advanced** button and change the desired settings.
8. Tap **OK**.

VPN server connections

Creating a VPN connection

A VPN connection enables you to securely connect to servers, such as a corporate network, via the Internet. To set up a VPN server connection:

1. Contact your network administrator for your user name, password, domain name, TCP/IP settings, and host name or IP address of the VPN server.
2. Tap the **Connectivity** icon in the Navigation bar, then tap **Settings > Tasks** tab on the **Connections** screen.
3. Under **My Work Network**, tap **Add a new VPN server connection**.
4. Follow the instructions on the **Make New Connection** screen.

Changing a VPN connection

To change/edit a VPN server connection:

1. Tap the **Connectivity** icon in the Navigation bar, and then **Settings > Tasks** tab on the **Connections** screen.
2. Under **My Work Network**, tap **Manage existing connections > VPN** tab.

3. Tap the VPN connection you want to change and then tap **Edit**, or tap **New** to add a new VPN connection.
4. Follow the instructions on the screen to complete the changes to your VPN server connections.

Starting a VPN connection

To start a connection through a VPN server:

1. Be sure Wi-Fi is powered on.
2. Select the VPN network by tapping the **Connectivity** icon located in the Navigation bar.

Your HP iPAQ will automatically begin connecting to the VPN.

h4100 and h4300 series

This section includes the following topics:

- [Turning on and off the WLAN](#)
- [Connecting to a network](#)
- [Manually entering new network settings](#)
- [Working with HP supported wireless authentication protocols](#)
- [Searching for networks to access](#)
- [Managing wireless networks](#)
- [Network settings](#)
- [VPN server connections](#)

Turning on and off the WLAN

Perform the following steps to set up a WLAN connection on an HP iPAQ Pocket PC h4100 or h4300 series handheld device:

1. On the **Today** screen, tap the **Connectivity** icon (✦ or ✧) in the Navigation bar at the top of the device or tap **Start** and then tap **iPAQ Wireless**.
2. If you tapped the **Connectivity** icon in the Navigation bar, then tap **Turn Wireless On** or **Turn off flight mode** when the **Connectivity** box appears. Or, tap **Start**, **iPAQ Wireless**, and then tap the **WLAN** icon; the **iPAQ Wireless** screen appears with the message, **Tap a button to turn an individual wireless feature ON/OFF**. The **WLAN** icon displays in orange (the “off” color); tap the **WLAN** icon to turn on the WLAN. The icon changes to green (the “on” color) and the WLAN indicator light flashes green.

Note: Even though the WLAN indicator flashes green (on), it does not necessarily mean a connection has been established.

Battery saving tip: Turn the WLAN off when it is not being used. When the WLAN is on, make sure one of the WLAN power saving modes is enabled. (Tap **Start** > **Settings** > **System** tab. On the **Settings** screen, tap the **Power** icon, the **Control** tab, and then tap **Auto** for the **WLAN Power save mode**).

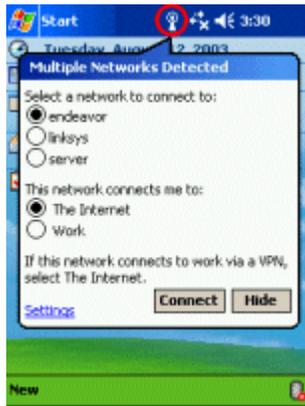
Note: The power save modes are not always supported by all access points and networks. If a connection cannot be made to a particular wireless network, then try turning off the **WLAN Power save mode**.

Connecting to a network

Perform the following steps to connect to a WLAN network:

1. If at least one network is present on the HP iPAQ, then the **Network Indicator** icon (📶) will appear in the Navigation bar. Tap the icon; when the **Multiple Networks Detected** pop-up box appears, tap the desired network.

Figure 2. The network indicator pop-up box



2. In the same pop-up box, under **This network connects me to**, tap **The Internet** (if the network connects to the Internet without using proxy settings) or **Work** (if the network uses proxy settings to connect). If doubt exists about whether the network uses proxy settings, then contact the system administrator.
3. If the display prompts for a **Network key (WEP)**, then enter the key and tap **Connect**. (If unsure about the network key, then contact the network administrator.)

Manually entering new network settings

A wireless network can be added either when the network is detected (the **Network Indicator** icon is showing in the Navigation bar) or manually by entering setting information. To manually add a wireless network, perform the following steps:

1. Turn on the WLAN.
2. Tap the **Connectivity** icon (📶 or 📶) at the top, tap **Settings > Advanced** tab, and then tap **Network Card**.
3. On the **Configure Wireless Networks** screen, tap the **Wireless** tab at the bottom.
4. Still on the **Configure Wireless Networks** screen, in the **Wireless networks** box, tap **Add New Settings**.
5. Tap the **General** tab at the bottom; in the **Network name** box, type the network name (SSID).

Note: If a network was detected in step 2, then the SSID is automatically entered and cannot be changed.

6. In the **Connects to** box, tap to select either **The Internet** (no proxy server is used), or **Work** (a proxy server is used).

7. If the network is an ad-hoc connection, then tap the **This is a device-to-computer (ad-hoc) connection** box.
8. If network authentication or data encryption is required, then follow the instructions in the following section, "Working with HP supported wireless authentication protocols." If network authentication or data encryption is not required, then tap **OK** repeatedly until you return to the **Today** screen.

Working with HP supported wireless authentication protocols

Instructions for configuring an HP iPAQ with a high-security authentication protocol vary between product series and the selected protocol. Other affecting issues are ROM releases, operating systems, and protocol-specific requirements, to name a few.

The following instructions are intended as a roadmap to help you get started. Actual implementation may require additional steps, consultation with ISPs, network administrators, and implementation direction from third-party software companies such as Cisco Systems. Assistance may also be obtained from the HP web site (www.hp.com) and the Cisco Systems web site (www.cisco.com).

The procedure for setting up an HP supported authentication protocol on an HP iPAQ Pocket PC h4100 or h4300 series handheld device varies depending on the ROM version on the device.

Note: HP iPAQ Pocket PC h4100 or h4300 series devices are not CCX compliant and Cisco Aironet Extension is not supported. The following instructions are for using HP iPAQ Pocket PC h4100 or h4300 series devices in a CISCO LEAP environment.

ROM version 1.10

Perform the following steps to begin setting up an HP supported authentication protocol on an HP iPAQ Pocket PC h4100 or h4300 series handheld device with ROM version 1.10:

1. After the wireless network has been added, then on the **Configure Wireless Network** screen, tap the **Network Key** tab. If in doubt about possible required authentication information, then contact the system administrator.
2. Select the type of network authentication to be used:
 - **Open**
 - **Shared**
 - **WPA**
 - **WPA-PSK**
3. Select the type of data encryption to be used:
 - For open or shared network authentication, only WEP data encryption is available. To enable WEP data encryption, select **WEP** from the **Data Encryption** drop-down list.
 - If WPA or WPA-PSK was selected in step 10, then TKIP and WEP are both available data encryption options. To enable data encryption, select the desired protocol from the **Data Encryption** drop-down list.
4. If a network key is provided by the network automatically, then tap the **The Key is provided for me automatically** checkbox. Otherwise, enter the network key in the **Network key** box.
5. If IEEE 802.1x is supported by the network environment, then tap the **802.1x** tab. On the **802.1x** tab, check the **Use IEEE 802.1x network access control** checkbox. Select the appropriate **EAP type** from the drop-down list. 802.1x provides an increased level of security. If unsure whether the network environment supports the 802.1x protocol, then contact the network administrator.
6. Tap **OK** twice to exit the **Configure Network Authentication** window and **Configure wireless networks** window.

7. Tap the **Select Networks** box to open the **Network Management** window. Under **Programs that automatically connect to the Internet should connect using** tap the down arrow and select **My Work Network**. Tap **OK** three times to return to the **Today** screen.
8. Perform a soft reset of the HP iPAQ. When the wireless card associates with an access point, the **Logon Window** pop-up box appears. Select the appropriate keyboard and enter the user name and the password to be used. Leave the **domain** field blank, and tap the **Save Password** box.

ROM version 1.00

Perform the following steps to begin setting up an HP supported authentication protocol on an HP iPAQ Pocket PC h4100 or h4300 series handheld device with ROM version 1.00:

1. After the wireless network has been added, then on the **Configure Wireless Network** screen, tap the **Authentication** tab.
2. To use data encryption, tap the **Data encryption (WEP Enabled)** checkbox. If in doubt about possible required authentication information, then contact the system administrator.
3. To use shared key authentication, tap the **Network Authentication (Shared mode)** checkbox.
4. If a network key is provided by the network automatically, then tap the **The Key is provided for me automatically** checkbox. Otherwise, enter the network key in the **Network key** box.
5. If IEEE 802.1x is supported by the network environment, then tap the **Enable network access using IEEE 802.1x** checkbox, and then select the appropriate authentication protocol (**TLS, PEAP**) from the drop-down list. 802.1x provides an increased level of security. If unsure whether the network environment supports the 802.1x protocol, then contact the network administrator.
6. Tap **OK** twice to exit the **Configure Network Authentication** window and **Configure wireless networks** window.
7. Tap the **Select Networks** box to open the **Network Management** window. Under **Programs that automatically connect to the Internet should connect using** tap the down arrow and select **My Work Network**. Tap **OK** three times to return to the **Today** screen.
8. Perform a soft reset of the HP iPAQ. When the wireless card associates with an access point, the **Logon Window** pop-up box appears. Select the appropriate keyboard and enter the user name and the password to be used. Leave the **domain** field blank, and tap the **Save Password** box.

Searching for networks to access

Networks that have already been configured (preferred networks) are listed in the **Wireless Networks** box on the **Configure Wireless Networks** screen. You can choose to connect only to preferred networks or have the HP iPAQ search for and connect to any available network.

Perform the following steps to search for available networks:

1. Tap the **Connectivity** icon in the Navigation bar and then tap **Settings** (or, from the **Today** screen, tap **Start > Settings > Connections** tab, and the **Connections** icon). Tap the **Advanced** tab, **Network Card**, and the **Wireless** tab.
2. In the **Networks to access** box, tap the type of network desired (**All Available**, **Only access points**, or **Only computer-to-computer**).
3. To restrict the search to networks that have already been configured, uncheck the **Automatically connect to non-preferred networks** checkbox.

Note: If the **Automatically connect to non-preferred networks** checkbox is checked, then the HP iPAQ will detect any new networks and provide the opportunity to configure them.

4. Tap **OK** repeatedly until you return to the **Today** screen.

Managing wireless networks

Viewing or editing a network

To view or edit an existing or available wireless network, perform the following steps:

1. Turn on the WLAN.
2. Tap the **Connectivity** icon in the Navigation bar, tap **Settings > Advanced** tab > **Network Card**, and then select the **Wireless** tab. In the **Wireless networks** box, tap name of the desired network to review or edit. Or on the **Start** screen, tap **Settings > Connections** tab > **Connections** icon > **Advanced > Network Card > Wireless** tab. Tap the network desired to review or edit.
3. If edits are made to the existing settings, then tap **OK** to save the new settings.

Deleting a network

To delete a wireless network, perform the following steps:

1. Turn on the WLAN.
2. Tap the **Connectivity** icon in the Navigation bar.
3. In the **Connectivity** pop-up box, tap **Settings**, the **Advanced** tab, **Network Card**, and then the **Wireless** tab.
4. In the **Wireless networks** box tap the name of the desired network to delete, and hold down the stylus for a few seconds until the **Connect/Remove Settings** drop-down box appears. Tap **Remove Settings**. Or on the **Start** menu tap **Settings**, the **Connections** tab, the **Connections** icon, the **Advanced** tab, and then **Network Card**. Tap the **Wireless** tab, highlight the desired connection to delete, and hold the stylus down a few seconds until the drop-down box appears.
5. Tap **Remove Settings**.

Monitoring signal strength and status

Perform the following steps to view the signal strength between the HP iPAQ Pocket PC h4100 or h4300 series handheld device and the access point WLAN connection:

Note: The signal strength icon will only display when a connection is present.

1. Tap the **Connectivity** icon (☎ or ☎x) in the Navigation bar. The **Connectivity** box displays the type of network the HP iPAQ is connected to (**Work** or **Internet**). Displayed next to the network type (either **Internet** or **Work**) is the field **Wireless Card**, followed by vertical green bars. Four bars indicate the strongest signal strength.

Figure 3. The WLAN signal strength indicator



2. To make changes to the connection, tap **Settings**.
3. To exit the **Connectivity** box, tap the **Hide** button.

Network settings

Locating an IP address

Perform the following steps to identify the IP address of a wireless network on an HP iPAQ Pocket PC h4100 or h4300 series handheld device:

1. Turn on the WLAN.
2. Establish a WLAN connection.
3. Tap the **Connectivity** icon > **Settings** > **Advanced** tab > **Network Card**, and then the **Network Adapters** tab.
4. Tap the appropriate adapter in the **Tap an adapter to modify settings** box.
5. When the **iPAQ WLAN Wireless Adapter** screen appears, tap **Use server-assigned IP address**. The IP address displays in the **IP address** box.

Figure 4. The IP address display screen



Changing TCP/IP settings

Note: Most ISPs and private networks use dynamically assigned IP addresses. Unless the ISP or private network does not use dynamically assigned IP addresses, the TCP/IP settings require no change. If unsure about TCP/IP settings using dynamically assigned IP addresses, then contact the network administrator.

Perform the following steps to change the TCP/IP settings on an HP iPAQ Pocket PC h4100 or h4300 series handheld device:

1. If the IP address, subnet mask, and default gateway are not known, then contact the system administrator.
2. Turn on the WLAN.
3. Tap the **Connectivity** icon > **Settings** > **Advanced** tab > **Network Card**. On the **Configure Wireless Networks** screen, tap the **Network Adapters** tab. Or, on the **Today** screen, tap **Start** > **Settings** > **Connections** tab, and then the **Connections** icon; tap the **Advanced** tab, **Network Card**, and then the **Network Adapters** tab.
4. On the **Configure Network Adapters** screen, in the **My network card connects to** drop-down box, tap either **The Internet** (the network uses no proxy server) or **Work** (network uses a proxy server).

Note: If connecting to the ISP at home, then tap **The Internet**. If connecting to a private network such as a corporate network, then tap **Work**.

5. In the **Tap an adapter to modify settings** box, tap **iPAQ WLAN Wireless Adapter**.
6. Tap the **IP Address** tab.
7. Tap **Use specific IP address**, and then enter the appropriate information.
8. Tap **OK** to save the settings.

Changing DNS and WINS settings

Servers that require an assigned IP address may also require a way to map computer names to IP addresses. The HP iPAQ Pocket PC h4100 and h4300 series handheld devices support two name resolution options:

- DNS
- WINS

Perform the following steps to change the server settings on HP iPAQ Pocket PC h4100 and h4300 series handheld devices:

1. Contact the ISP or network administrator to:
 - Determine the correct name resolution.
 - Obtain the specific server IP address.
 - Determine if alternate addresses are available.

Note: An alternate address may be enabled to establish a connection when the primary server is unavailable.

2. Turn on the WLAN.
3. Tap the **Connectivity** icon > **Settings** > **Advanced** tab > **Network Card** > **Network Adapters** tab.
4. In the **My network card connects to** drop-down box, tap either **The Internet** (no proxy server is used) or **Work** (proxy server is used).

Note: If connecting to the ISP at home, then tap **The Internet**. If connecting to a private network such as a corporate network at work, then tap **Work**.

5. In the **Tap an adapter to modify settings** box, tap **iPAQ WLAN Wireless Adapter**.
6. Tap the **Name Servers** tab, and enter the appropriate information.
7. Tap **OK** to save the new settings.

Configuring ISP settings

To add, edit, or delete the ISP settings on an HP iPAQ h4100 or h4300 series handheld device, perform the following steps:

To add a new modem connection:

1. Tap **Start** > **Settings** > **Connections** tab > the **Connections** icon > **Advanced** tab.
2. In the **Connections** screen, tap **Select Networks**. Networks are groups of settings used by programs to automatically connect to an ISP or private network.
3. On the **Network Management** screen, select **My Work Network** from one of the drop-down lists and then tap the **New** box beneath the connection.
4. On the **General** tab, enter a name for the settings.
5. Tap the **Modem** tab
6. Tap **New**.
7. On the **Make a New Connection** screen, enter a name for the connection in the **Enter a name for the connection** box.
8. Select the desired modem in the **Select a modem** drop-down box.
9. Tap **Next**.
10. On the **My Connection** screen, enter the appropriate country code (**1** for the U.S.), area code, and telephone number to be dialed for the connection; tap **Next**.

11. Type the desired user name and password for the connection.
12. Type the domain, if a domain was provided by the ISP or network administrator.
13. Tap **Finish**.

To change an existing connection:

1. Tap the **Connectivity** icon, and then tap **Settings**.
2. On the **Connections** screen, tap **Manage existing connections**.
3. To change the connection name, tap **Edit**, and type the new name.

To delete an existing connection:

1. Tap the **Connectivity** icon, and then tap **Settings**.
2. On the **Connections** screen, tap **Manage existing connections**.
3. Locate the connection in the **Name** box and tap the name, holding the stylus in place for a few seconds until the **Delete/Connect** box appears. Tap **Delete** to delete the connection.

To establish a WLAN connection using the modem connection just added or changed:

1. Tap the **Connectivity** icon, and then tap **Settings**.
2. On the **Connections** screen, tap **Manage existing connections**.
3. Locate the connection in the **Name** box and tap the name, holding the stylus in place for a few seconds until a **Delete/Connect** box appears. Tap **Connect** to complete the connection.

VPN server connections

Creating a VPN connection

A VPN connection provides a secure connection to servers, such as a corporate network, via the Internet. If the name, password, domain name, TCP/IP settings, and host name or IP address of the VPN server are not known, then contact the network administrator. Perform the following steps to set up a VPN server connection:

Note: At this point, you may use the **New Connection** wizard to set up a VPN connection, or continue with the steps below. The **New Connection** wizard provides online **Help** and is available at any time in the VPN server connection setup by tapping the keyboard question mark (?).

1. Turn on the WLAN.
2. On the **Today** screen, tap **Start > Settings > Connections** tab > **Connections > Tasks** tab.
3. Under **My Work Network**, tap **Add a new VPN server connection**.
4. On the **Make New Connection** screen, enter a name for the connection in the **Name** box. Enter the appropriate information provided by the network administrator in the **Host name/IP** box.
5. Tap the appropriate VPN type received from the network administrator and then tap **Next**.
6. On the **My VPN** screen, tap either **A certificate on this device** or **A pre-shared key**. If you tapped **A pre-shared key**, enter the key number in the box.
7. On the **My VPN** screen, enter a user name, password, and domain provided by the network administrator.
8. Tap **Finish**.
9. Follow the instructions in the **New Connection** wizard.

Note: For online **Help** for any screen in the **New Connection** wizard or while changing settings, tap the question mark (?).

Changing a VPN connection

Perform the following steps to make changes to VPN server connections on an HP iPAQ Pocket PC h4100 or h4300 series handheld device:

1. Turn on the WLAN.
2. On the **Today** screen, tap **Start, Settings**, the **Connections** tab, the **Connections** icon, and then the **Tasks** tab.
3. On the **Connections** screen, under **My Work Network**, tap **Manage existing connections**.
4. Tap the **VPN** tab.
5. Tap the desired VPN connection to change and then tap **Edit**.
6. On the **My VPN** screen, enter a name for the connection in the **Name** box (for example, a company name).
7. Still on the **My VPN** screen, enter the VPN server name or IP address in the **Host name/IP** box.
8. Next to **VPN type** tap the authentication type desired (**IPSec/L2TP** or **PPTP**). If unsure which option to choose, contact the network administrator.
9. Tap **Next**.
10. If **IPSec/L2TP** was chosen in step 8, then tap the appropriate authentication type. If you selected **A pre-shared key**, then enter the key provided by the network administrator and then tap **Next**.

Note: If PPTP was selected in the previous screen, then skip the following step.

11. Enter the user name, password, and domain name provided by the network administrator. If a domain name was not provided, then a connection may be made without entering one.
12. To change advanced settings, tap the **Advanced** button. Advanced settings should be changed only if one of the following situations exists:
 - The server to which the connection is made does not use dynamically assigned IP addresses, so the TCP/IP settings must be entered.
 - The DNS or WINS settings on the server must be changed.
13. Tap **Finish**.

Starting a VPN connection

If an HP iPAQ Pocket PC h4100 or h4300 series handheld device is connected to the ISP or private network during synchronization, then the proper settings from the host computer will be downloaded. If the host computer does not have the proper settings, or if the settings must be changed, then manual setup will be required. To set up proxy server settings, perform the following steps:

1. Contact the ISP or network administrator to obtain the following:
 - Proxy server name
 - Server type
 - Port
 - Type of Socks protocol used, and the user name and password
2. Turn on the WLAN.
3. On the **Today** screen, tap **Start > Settings > Connections** tab > **Connections** icon > **Tasks** tab.
4. On the **Connections** screen under **My Work Network**, tap **Edit my proxy server**, and then tap the **Proxy Settings** tab.
5. Tap the **This network connects to the Internet** and **This network uses a proxy server to connect to the Internet** checkboxes.
6. In the **Proxy server** box, enter the proxy server name received from the network administrator. If the port number or proxy server type settings do not require changes, tap **OK** and skip step 7.
7. If port number or proxy server type settings must be changed, then tap **Advanced** and make the necessary settings changes. Tap **OK**.

hx4700 series

This section includes the following topics:

- [Turning on and off the WLAN](#)
- [Connecting to a network](#)
- [Manually entering new network settings](#)
- [Working with HP supported wireless authentication protocols](#)
- [Searching for networks to access](#)
- [Managing wireless networks](#)
- [Network settings](#)
- [VPN server connections](#)

Turning on and off the WLAN

Perform the following steps to turn on or off the WLAN:

1. From the **Today** screen, tap the **iPAQ Wireless** icon () in the command bar located at the bottom of the screen.
2. Tap the **Wi-Fi** button on the **iPAQ Wireless** screen. When Wi-Fi is powered on, the **Wi-Fi** icon on the **iPAQ Wireless** screen turns from gray to amber (and then to green when connected to an access point) and the Wi-Fi LED, located on the top left corner of the unit, is solid blue indicating Wi-Fi or Bluetooth is on.

Note: Even though the indicator is blue to indicate Wi-Fi is turned on, it does not necessarily mean a connection has been established with another device or access point.

If Wi-Fi is off, the **Wi-Fi** icon turns from amber or green to gray.

Battery saving tip: Turn Wi-Fi off when you are not using it.

Connecting to a network

Perform the following steps to connect to a WLAN:

1. If one or more broadcast networks are present, the **Network Indicator** icon appears in the navigation bar. Tap the network you want to connect to, then tap whether the network connects to **The Internet** (does not use proxy settings) or **Work** (uses proxy settings).
2. If you are prompted for a network key, enter it. If you are not sure, contact your network administrator.
3. Tap **Connect**.

Manually entering new network settings

A wireless network can be added either when the network is detected (the **Network Indicator** icon is showing in the Navigation bar) or manually by entering setting information. To manually add a wireless network:

1. From the **Today** screen, tap the **iPAQ Wireless** icon in the Command bar at the bottom of the screen.
2. Be sure Wi-Fi is powered on, and tap **Settings**.
3. On the **Wireless** tab, select the network name (or tap **Add New** to enter a new name) you want to use to either connect to **The Internet** (does not use proxy settings) or to **Work** (uses proxy settings).

The next step is to configure your wireless network.

Note: If a network was detected in step 3, the SSID of that network is automatically entered and cannot be changed. Skip the next step.

4. Enter an SSID into the **Network name** box.
5. In the **Connects to** box, select where your network connects to (**The Internet** or **Work**).
6. If you want to connect to an ad-hoc connection, tap the **This is a device-to-device (ad-hoc) connection** checkbox.
7. If network authentication or data encryption is required, then follow the instructions in the following section, "Working with HP supported wireless authentication protocols." If network authentication or data encryption is not required, then tap **OK** repeatedly until you return to the **Today** screen.

Working with HP supported wireless authentication protocols

Instructions for configuring an HP iPAQ handheld device with a high-security authentication protocol vary between product series and the selected protocol. Other affecting issues are ROM releases, operating systems, and protocol-specific requirements, to name a few.

The following instructions are intended as a roadmap to help you get started. Actual implementation may require additional steps, consultation with ISPs, network administrators, and implementation direction from third-party software companies such as Cisco Systems. Assistance may also be obtained from the HP web site (www.hp.com) and the Cisco Systems web site (www.cisco.com).

Perform the following steps to set up an HP supported authentication protocol on an HP iPAQ Pocket PC hx4700 series handheld device:

1. After the wireless network has been added, then on the **Configure Wireless Network** screen, tap the **Network Key** tab. If in doubt about possible required authentication information, then contact the system administrator.

Note: To determine whether authentication information is needed, see your network administrator.

2. Select the type of network authentication to be used:
 - **Open**
 - **Shared**
 - **WPA**
 - **WPA-PSK**
3. Select the type of data encryption to be used:
 - For open or shared network authentication, only WEP data encryption is available. To enable WEP data encryption, select **WEP** from the **Data Encryption** drop-down list.
 - If WPA or WPA-PSK was selected in step 10, then TKIP and WEP are both available data encryption options. To enable data encryption, select the desired protocol from the **Data Encryption** drop-down list.
4. If a network key is provided by the network automatically, then tap the **The Key is provided for me automatically** checkbox. Otherwise, enter the network key in the **Network key** box, and select the **Key index** if necessary.
5. If IEEE 802.1x is supported by the network environment, then tap the **802.1x** tab. On the **802.1x** tab, check the **Use IEEE 802.1x network access control** checkbox. Select the appropriate **EAP type** from the drop-down list. 802.1x provides an increased level of security. If unsure whether the network environment supports the 802.1x protocol, then contact the network administrator.
6. Tap **OK** repeatedly until you return to the **Today** screen.

7. Tap the **Connectivity** icon > **Settings** > **Advanced** tab > **Select Networks** box to open the **Network Management** window.
8. Under **Programs that automatically connect to the Internet should connect using**, tap the down arrow and select your work network.
9. Tap **OK** repeatedly to return to the **Today** screen.
10. Perform a soft reset of the HP iPAQ. When the wireless card associates with an access point, the **Logon Window** pop-up box appears. Select the appropriate keyboard and enter the user name and the password to be used. Leave the **domain** field blank, and tap the **Save Password** box.

Searching for networks to access

Networks that you have already configured are preferred networks and can be found on the **iPAQ Wireless** screen by tapping the **iPAQ Wireless** icon > **Wi-Fi Settings**. You can choose whether to connect only to preferred networks or to have your HP iPAQ search for and connect to any available network (preferred or not).

1. Be sure Wi-Fi is powered on.
2. From the **iPAQ Wireless** screen, tap the **Wi-Fi Settings** button > **Wireless** tab.
3. In the **Networks to access** box, tap the type of network you want to connect to (**All Available**, **Only access points**, or **Only computer-to-computer**).
4. To connect only to networks that have already been configured, clear the **Automatically connect to non-preferred networks** checkbox.

Note: If the **Automatically connect to non-preferred networks** checkbox is checked, then the HP iPAQ will detect any new networks and provide the opportunity to configure them.

Managing wireless networks

In managing your wireless networks, sometimes it is necessary to change network settings. In the next two sections, learn how to view, edit, and delete available wireless network settings.

Viewing or editing a network

To view or edit an existing or available wireless network:

1. Be sure Wi-Fi is powered on.
2. From the **iPAQ Wireless** screen, tap **Wi-Fi Settings** > **Wireless** tab.
3. In the wireless networks list box, tap the desired network name.
4. Edit the existing settings as necessary, and then tap **OK** to save the changes.

Deleting a network

To delete an existing or available wireless network:

1. Be sure Wi-Fi is powered on.
2. From the **iPAQ Wireless** screen, tap **Wi-Fi Settings** > **Wireless** tab.
3. In the wireless networks list box, tap and hold the network you want to delete.
4. Tap **Remove Settings**.

Monitoring signal strength and status

To view the signal strength between your HP iPAQ and an access point Wi-Fi connection:

1. Tap the **Connectivity** icon in the Navigation bar.
2. When the **Connectivity** box displays, you will be able to view the type of network the HP iPAQ is connected to (for example, **Work** or **The Internet**) and an icon displaying the signal strength.

Note: The signal strength icon will not be displayed if a connection is not present.

3. To make changes to the connection settings, tap **Settings**.
4. To exit the **Connectivity** box, tap the **Hide** button.

Network settings

Locating an IP address

To find the IP address the wireless network is using:

1. Be sure Wi-Fi is powered on.
2. Tap the **iPAQ Wireless** icon.
3. From the **iPAQ Wireless** screen, tap the Wi-Fi **Settings** button > **Wireless** tab.
4. Tap and hold the network you want to connect to and tap **Connect**. If you have already connected to a network, skip to step 5.
5. From the **Configure Wireless Networks** screen, select the **Network Adapters** tab.
6. Tap the HP iPAQ Wi-Fi Wireless adapter. The IP address displays in the **IP address** box.

Changing TCP/IP settings

Note: Most ISPs and private networks now use dynamically assigned IP addresses. You will not need to change TCP/IP settings unless your ISP or private network does not use dynamically assigned IP addresses. If you are not sure, check with your network administrator.

To change TCP/IP Settings:

1. Contact your ISP or network administrator to determine your IP address, subnet mask, and default gateway (if needed).
2. Be sure Wi-Fi is powered on.
3. From the **iPAQ Wireless** screen, tap Wi-Fi **Settings** > **Network Adapters** tab.
4. In the **My network card connects to** list box, select either **The Internet** or **Work**.

Note: If you are connecting to your ISP at home, select **The Internet**. If you are connecting to a private network, such as a corporate network at work, select **Work**.

5. In the **Tap an adapter to modify settings** box, tap **HP iPAQ Wi-Fi Wireless Adapter**.
6. Tap the **IP Address** tab.
7. Tap **Use specific IP address** and enter the requested information.
8. Tap **OK** to save your settings.

Changing DNS and WINS settings

Note: Most ISPs and private networks now use dynamically assigned IP addresses. You will not need to change Domain Name System (DNS) and Windows Internet Naming Service (WINS) settings unless your ISP or private network does not use dynamically assigned IP addresses. If you are not sure, check with your network administrator.

Servers that require an assigned IP address may also require a way to map computer names to IP addresses. Your HP iPAQ supports two name resolution options:

- DNS
- WINS

To change server settings:

1. Contact your ISP or network administrator to determine which name resolution to use, obtain the specific server address, and determine whether alternate addresses are available.

Note: An alternate address may enable you to connect when the primary server is unavailable.

2. Be sure Wi-Fi is powered on.
3. From the **iPAQ Wireless** screen, tap **Wi-Fi Settings > Network Adapters** tab.
4. In the **My network card connects to** list box, select either **The Internet** or **Work**.

Note: If you are connecting to your ISP at home, select **The Internet**. If you are connecting to a private network such as a corporate network at work, you should select **Work**.

5. In the **Tap an adapter to modify settings** box, tap **HP iPAQ Wi-Fi Wireless Adapter**.
6. Tap the **Name Servers** tab and enter the requested information.
7. Tap **OK** to save your settings.

Changing ISP settings

If you are connected to your ISP or private network during synchronization, your HP iPAQ should download proper proxy settings from your computer. If these settings are not on your computer or need to be changed, you will need to set them up manually. To set up proxy server settings:

1. Contact your ISP or network administrator for the proxy server name, server type, port, type of Socks protocol used, and your user name and password.
2. Be sure Wi-Fi is powered on.
3. Tap the **Connectivity** icon in the Navigation bar, and then tap **Settings > Tasks** tab.
4. Under your work network, tap **Set up my proxy server > Proxy Settings** tab.
5. Tap the **This network connects to the Internet** and **This network uses a proxy server to connect to the Internet** checkboxes.
6. In the **Proxy server** box, enter the proxy server name.
7. If you need to change port number or proxy server type settings, tap the **Advanced** button and change the desired settings.
8. Tap **OK** twice to return to the **Today** screen.

VPN server connections

Creating a VPN connection

A VPN connection enables you to securely connect to servers, such as a corporate network, via the Internet. To set up a VPN server connection:

1. Contact your network administrator for your user name, password, domain name, TCP/IP settings, and host name or IP address of the VPN server.
2. Tap the **Connectivity** icon in the Navigation bar, and then tap **Settings > Tasks** tab on the **Connections** screen.
3. Under your work network, tap **Add a new VPN server connection**.
4. In the **Name** box of the **Make New Connection** screen, enter name for the connection (for example, your company's name).
5. In the **Host name/IP** box, enter the VPN server name or IP address.
6. Next to **VPN type**, tap the type of authentication to use with your device (**IPSec/L2TP** or **PPTP**). If you aren't sure which option to choose, ask your network administrator.
7. Tap **Next**.
8. If you selected **IPSec/L2TP** on the previous screen, select the type of authentication. If you are using **A pre-shared key**, enter the key provided by your network administrator, and then tap **Next**.

Note: If you selected **PPTP** in the previous screen, this step is skipped.

9. Enter the user name, password, and domain name provided by your network administrator.

Note: If a domain name was not provided, you may be able to connect without entering one.

10. Tap the **Finish** button.

Note: For online **Help** for any screen in the **New Connection** wizard or while changing settings, tap the **?**.

Changing a VPN connection

1. Be sure Wi-Fi is powered on.
 2. Tap the **Connectivity** icon in the Navigation bar, and then **Settings > Tasks** tab.
 3. Under your work network, tap **Manage existing connections > VPN** tab.
 4. Select the VPN connection you want to change, and then tap **Edit**.
 5. In the **Name** box, enter new name for the connection (for example, your company's name).
 6. In the **Host name/IP** box, enter the VPN server name or IP address.
 7. Next to **VPN type**, tap the type of authentication to use with your device (**IPSec/L2TP** or **PPTP**). If you aren't sure which option to choose, ask your network administrator.
 8. Tap **Next**.
 9. If you selected **IPSec/L2TP** on the previous screen, tap the type of authentication. If you are using **A pre-shared key**, enter the key provided by your network administrator, and then tap **Next**.
-

Note: If you selected **PPTP** in the previous screen, this step is skipped.

10. Enter the user name, password, and domain name provided by your network administrator.

Note: If a domain name was not provided, you may be able to connect without entering one.

11. To change advanced settings, tap the **Advanced** button, and tap **OK** after you have changed the settings.

Note: You will not need to change advanced settings unless the server to which you are connecting does not use dynamically assigned IP addresses and you need to enter your TCP/IP settings or you need to change server DNS or WINS settings.

12. Tap the **Finish** button to save the changes.

Starting a VPN connection

To start a connection through a VPN server, be sure Wi-Fi is powered on and connected, tap the **Connectivity** icon in the Navigation bar, and then select the VPN network.

h5400 series with Microsoft Pocket PC 2002

This section includes the following topics:

- [Turning on and off the WLAN](#)
- [Connecting to a network](#)
- [Manually entering new network settings](#)
- [Working with HP supported wireless authentication protocols](#)
- [Searching for networks to access](#)
- [Managing wireless networks](#)
- [Network settings](#)

Turning on and off the WLAN

Perform the following steps to turn on or off the WLAN:

1. On the **Today** screen, tap **Start > iPAQ Wireless**.
2. On the **iPAQ Wireless** screen, tap the **Wireless Control** icon.
3. When the **Wireless Control** screen appears, tap the **WLAN** icon. The **WLAN** icon displays in orange (off); tap the **WLAN** icon to turn on the WLAN. The icon changes to green (on) and the WLAN indicator light flashes.

Note: Even though the WLAN indicator flashes, it does not necessarily mean a connection has been established. If the indicator is flashing green, then the WLAN is on and connected. If the indicator is flashing amber, the WLAN is on but not connected.

Battery saving tip: Turn off the WLAN when you are not using it.

Connecting to a network

Perform the following steps to connect to a WLAN network:

1. On the **Today** screen, tap **Start > Settings > Connections** tab > **Connections** icon.
2. Select a connection from one of the drop-down lists.
 - If the network connects to the Internet without using proxy settings, on the **Connections** screen, select **Internet Settings** or another network from the drop-down list in the box next to the globe/handheld device icon.
 - If the network connects using proxy settings, on the **Connections** screen, tap the **Work Settings** or another network from the drop-down list in the box next to the network/handheld device icon.
3. Tap the **Connect** box beneath the connection.

Note: If in doubt about whether the network uses proxy settings, or if the display prompts for a WEP, then contact the system administrator.

Manually entering new network settings

To manually add settings to a wireless network on the h5400 series with Microsoft Pocket PC 2002, perform the following steps:

1. Be sure WLAN is on.
2. On the **Today** screen, tap **Start > iPAQ Wireless > iPAQ WLAN**.
3. On the **iPAQ WLAN** screen, tap **New** to create a new profile.
4. Configure your profile:
 - A. Enter a name for the profile.
 - B. Enter an **SSID** (network name).
 - C. Select whether to use power management.
 - D. Select whether the network connection is an infrastructure or ad-hoc connection. Use infrastructure to connect to a wired network via a wireless access point. Use ad-hoc for peer-to-peer communications.
 - E. If necessary, select a channel from the drop-down list. You do not need to specify a channel if you are using an infrastructure network. It will use the same channel as the access point. Otherwise, set the frequency that corresponds to your country's regulatory commission's range and the 802.11(b) standard.
 - F. If necessary, select a transmit rate from the drop-down list. This is the wireless data transmission speed.
5. Tap **Next**.

6. If necessary, enter the appropriate information to use a specific IP address.
7. Tap **Next**.
8. If data encryption is required, follow the instruction in the following section, "Working with HP supported wireless authentication protocols. Otherwise, tap **Next** one more time and then tap **Finish**.
9. Tap **OK** to close the **iPAQ WLAN** screen.

Working with HP supported wireless authentication protocols

Instructions for configuring an HP iPAQ handheld device with a high-security authentication protocol vary between product series and the selected protocol. Other affecting issues are ROM releases, operating systems, and protocol-specific requirements, to name a few.

The following instructions are intended as a roadmap to help you get started. Actual implementation may require additional steps, consultation with ISPs, network administrators, and implementation direction from third-party software companies such as Cisco Systems. Assistance may also be obtained from the HP web site (www.hp.com) and the Cisco Systems web site (www.cisco.com).

Perform the following steps to set up an HP supported authentication protocol on an HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2002 handheld device:

1. Follow steps 1 through 7 in the preceding section, "Manually entering new network settings."
2. Select either **64-bit** or **128-bit** encryption from the **Wireless Encryption (WEP)** drop-down list.
3. Select whether the keys are alphanumeric or hexadecimal.
4. Enter the key in the appropriate field.
5. Select the key number from the drop-down list.
6. Tap **Finish**.

Searching for networks to access

You can search for access points within your coverage area and establish a link, once located.

Searching for access points

Perform the following steps to locate an access point:

1. On the **Today** screen, tap **Start > iPAQ Wireless > iPAQ WLAN**, or tap the **iPAQ WLAN** icon in the lower right corner of the **Today** screen.
2. Tap the **Status** button.
3. Tap the **Advanced** button.
4. Tap the **Rescan** button to begin the search.
5. Tap **OK** to close the window.

Linking to an access point

Perform the following steps to link to an access point:

1. On the **Today** screen, tap **Start > iPAQ Wireless > iPAQ WLAN**, or tap the **iPAQ WLAN** icon in the lower right corner of the **Today** screen.
2. Tap the **Status** button.
3. Tap the **Advanced** button.
4. Select a site from the **Access Point ID** drop-down list.
5. Tap **OK**.

Managing wireless networks

Viewing or editing a network

To view or edit an existing or available wireless network, perform the following steps:

1. On the **Today** screen, tap **Start > iPAQ Wireless > iPAQ WLAN**, or tap the **iPAQ WLAN** icon in the lower right corner of the Today screen.
2. Tap **Setup**.
3. Select an existing profile from the **Profile** drop-down list.
4. Tap the **Edit** button.
5. Make the desired changes to the profile.
6. Tap **OK** to save the changes.

Deleting a network

To delete a wireless network, perform the following steps to delete the profile:

1. On the **Today** screen, tap **Start > iPAQ Wireless > iPAQ WLAN**, or tap the **iPAQ WLAN** icon in the lower right corner of the **Today** screen.
2. Tap **Setup**.
3. Select an existing profile from the **Profile** drop-down list.
4. Tap the **Delete** button.
5. Tap **Yes** to confirm.

Monitoring signal strength and status

Perform the steps in either of the following scenarios to view the signal strength between the HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2002 handheld device and the access point WLAN connection:

Note: The signal strength icon will only display when a connection is present.

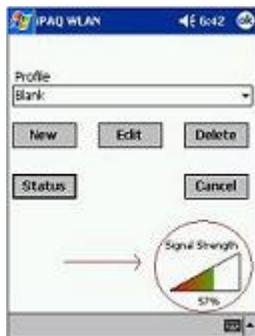
1. On the **Today** screen, tap **Start > iPAQ Wireless > iPAQ WLAN**.

– or –

1. On the **Today** screen, tap the **iPAQ WLAN** icon at the bottom right-hand corner of the screen.
2. Tap **Setup** in the pop-up box that appears.

The signal strength appears in a triangular icon at the bottom right-hand corner of the screen. The signal strength displays as a percentage beneath the icon and as a colored area within the icon. A green color indicates the stronger connection signal.

Figure 5. The WLAN signal strength indicator for the HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2002



Network settings

Locating an IP address

Perform the following steps to identify the IP address of a wireless network:

1. Turn on the WLAN.
2. Establish a WLAN connection.
3. On the **Today** screen, tap **Start > iPAQ Wireless > iPAQ WLAN**.
4. Select the profile for the connection for which the IP address is desired from the **Profile** drop-down list.
5. Tap the **Status** button.
6. Tap **OK** to close the window.

Changing TCP/IP settings

Note: Most ISPs and private networks use dynamically assigned IP addresses. Unless the ISP or private network does not use dynamically assigned IP addresses, the TCP/IP settings require no change. If unsure whether the TCP/IP settings use dynamically assigned IP addresses then contact the network administrator.

Perform the following steps to change the TCP/IP settings on the HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2002 handheld device:

1. Turn on the WLAN.
2. On the **Today** screen, tap **Start > iPAQ Wireless > iPAQ WLAN**.
3. Select the desired profile from the **Profile** drop-down list.
4. Tap the **Edit** button.
5. Tap **Next**.
6. Select **Use specific IP address**
7. Enter the appropriate information.
8. Tap **Next**.
9. Tap **Finish**.
10. Tap **OK** to close the window.

Changing DNS and WINS settings

Servers that require an assigned IP address may also require a way to map computer names to IP addresses. The HP iPAQ Pocket PC h5400 series handheld devices support two name resolution options:

- DNS
- WINS

Perform the following steps to change the server settings on HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2002 handheld devices:

1. Contact the ISP or network administrator to:
 - Determine the correct name resolution
 - Obtain the specific server IP address
 - Determine if alternate addresses are available
2. Turn on the WLAN.
3. On the **Today** screen, tap **Start > iPAQ Wireless > iPAQ WLAN**.
4. Select the desired profile from the **Profile** drop-down list.
5. Tap the **Edit** button.
6. Tap **Next**.
7. Select **Use specific IP address**
8. Enter the appropriate information.
9. Tap **Next**.
10. Tap **Finish**.
11. Tap **OK** to close the window.

h5400 series with Microsoft Pocket PC 2003 ROM upgrade

This section includes the following topics:

- [Turning on and off the WLAN](#)
- [Connecting to a network](#)
- [Manually entering new network settings](#)
- [Working with HP supported wireless authentication protocols](#)
- [Searching for networks to access](#)
- [Managing wireless networks](#)
- [Network settings](#)
- [VPN server connections](#)

Turning on and off the WLAN

Perform the following steps to turn on or off the WLAN:

1. On the **Today** screen, tap **Start > iPAQ Wireless**.
2. On the **iPAQ Wireless** screen, tap the **Wireless Control** icon.
3. When the **Wireless Control** screen appears, tap the **WLAN** icon. The **WLAN** icon displays in orange (off); tap the **WLAN** icon to turn on the WLAN. The icon changes to green (on) and the WLAN indicator light flashes orange.

Note: Even though the WLAN indicator flashes green (on) it does not necessarily mean a connection has been established.

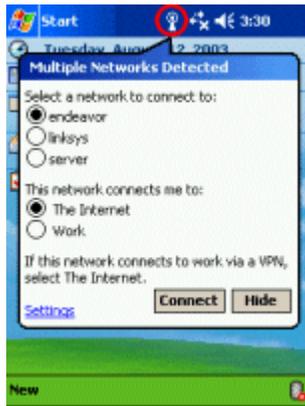
Battery saving tip: Turn off the WLAN when you are not using it.

Connecting to a network

Perform the following steps to connect to a WLAN network:

1. If at least one network is present on the HP iPAQ, then the network indicator icon (📶) will appear in the Navigation bar. Tap the icon; when the **Multiple Networks Detected** pop-up box appears, tap the desired network.

Figure 6. Network indicator pop-up box



2. In the same pop-up box under **This network connects me to** tap the **Internet** button (if the network connects to the Internet without using proxy settings) or the **Work** button (if the network uses proxy settings). If doubt exists about the whether the network uses proxy settings, then contact the system administrator.
3. If the display prompts for a network key, then enter the key and tap **Connect**. (If there are any questions about the network key, then contact the network administrator.)

Manually entering new network settings

To manually add settings to a wireless network on the h5400 series with Microsoft Pocket PC 2003, perform the following steps:

1. Turn the WLAN on (see instructions under “Turning on and off the WLAN”).
2. Tap the **Connectivity** icon (* or *x) at the top, tap **Settings**, tap the **Advanced** tab, and then tap **Network Card**.
3. On the **Configure Wireless Networks** screen, tap the **Wireless** tab at the bottom.
4. Still on the **Configure Wireless Networks** screen, in the **Wireless networks** box tap **Add New Settings**.
5. Tap the **General** tab at the bottom; in the **Network name** box, type the network name (SSID).

Note: If a network was detected in step 2, then the SSID is automatically entered and cannot be changed.

6. In the **Connects to** box, select either **The Internet** (no proxy server is used) or **Work** (a proxy server is used).
7. If the network is an ad-hoc connection, then tap the **This is a device-to-computer (ad-hoc) connection** box.
8. If network authentication or data encryption is required, then follow the instructions in the following section, “Working with HP supported wireless authentication protocols.” If network authentication or data encryption is not required, then tap **OK** repeatedly until you return to the **Today** screen.

Working with HP supported wireless authentication protocols

Instructions for configuring an HP iPAQ handheld device with a high-security authentication protocol vary between product series and the selected protocol. Other affecting issues are ROM releases, operating systems, and protocol-specific requirements, to name a few.

The following instructions are intended as a roadmap to help you get started. Actual implementation may require additional steps, consultation with ISPs, network administrators, and implementation direction from third-party software companies such as Cisco Systems. Assistance may also be obtained from the HP web site (www.hp.com) and the Cisco Systems web site (www.cisco.com).

Perform the following steps to set up an HP supported authentication protocol on an HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2003 ROM upgrade handheld device:

1. After the wireless network has been added, then on the **Configure Wireless Networks** box, highlight the appropriate default setting or create a new setting, and then tap the **Authentication** tab.

Note: The HP iPAQ Pocket PC h5400 series handheld device has one of two ROM releases. The setup steps are identical for both ROM releases; however, the **Configure Wireless Networks** screen may differ slightly.

2. Select the type of network authentication to be used:
 - For data encryption, tap the **Data encryption (WEP Enabled)** checkbox.
 - To use shared key authentication, tap the **Network Authentication (Shared mode)** checkbox. Enter the network key in the **Network Key** box.
 - If a network key is provided by the network automatically, then tap the **The Key is provided for me automatically** checkbox.
 - If IEEE 802.1x is supported by the network environment, then tap the **Enable network access using IEEE 802.1x** checkbox and then tap the appropriate authentication protocol (**TLS**, **PEAP**, **LEAP**). 802.1x provides an increased level of security. If unsure whether the network environment supports the 802.1x protocol, then contact the network administrator.
3. Tap **OK** twice to exit the **Configure Network Authentication** window and **Configure Wireless Networks** window.
4. Tap the **Select Networks** box to open the **Network Management** window. Under **Programs that automatically connect to the Internet should connect using**, tap the down arrow and select **My Work Network**. Tap **OK** three times to return to the **Today** screen.
5. Perform a soft reset of the HP iPAQ. When the wireless card associates with an access point, the **Logon Window** pop-up box appears. Select the appropriate keyboard and enter the user name and the password to be used. Leave the **domain** field blank, and tap the **Save Password** box.

Searching for networks to access

Networks that have already been configured (preferred networks) are listed in the **Wireless Networks** box on the **Configure Wireless Networks** screen. You can choose to connect only to preferred networks or have the HP iPAQ search for and connect to any available network.

Perform the following steps to search for available networks:

1. Tap the **Connectivity** icon in the Navigation bar; or from the **Today** screen, tap **Start > Settings > Connections** tab > **Connections** icon. Tap the **Advanced** tab > **Network Card > Wireless** tab.
2. In the **Networks to access** box, tap the type of network desired (**All Available**, **Only access points**, or **Only computer-to-computer**).
3. To restrict the search to networks that have already been configured, uncheck the **Automatically connect to non-preferred networks** checkbox.

Note: If the **Automatically connect to non-preferred networks** checkbox is checked, then the HP iPAQ will detect any new networks and provide the opportunity to configure them.

Managing wireless networks

Viewing or editing a network

To view or edit an existing or available wireless network, perform the following steps:

1. Turn on the WLAN.
2. In the **Connectivity** pop-up box, tap **Settings > Advanced** tab > **Network Card > Wireless** tab. In the **Wireless networks** box, tap name of the desired network to review or edit. Or on the **Today** screen tap **Settings > Connections** tab > **Connections** icon > **Advanced > Network Card**. Tap the network desired to review or edit.
3. If edits are made to the existing settings, then tap **OK** to save the new settings.

Deleting a network

To delete a wireless network, perform the following steps:

1. Turn on the WLAN.
2. In the **Connectivity** pop-up box, tap **Settings > Advanced** tab > **Network Card > Wireless** tab.
3. In the **Wireless networks** box tap the name of the desired network, holding down the stylus for a few seconds until the **Connect/Remove Settings** drop-down box appears. Tap **Remove Settings**. Or on the **Today** screen tap **Settings > Connections** tab > **Connections** icon > **Advanced > Network Card**. Give the connection a name; tap the **Wireless** tab, highlight the desired connection to delete, and hold the stylus down a few seconds until the drop-down box appears.
4. Tap **Remove Settings**.

Monitoring signal strength and status

Perform the following steps to view the signal strength between the HP iPAQ Pocket PC h5400 series Microsoft Pocket PC 2003 ROM upgrade handheld device and the access point WLAN connection:

Note: The signal strength icon will only display when a connection is present.

1. Tap the **Connectivity** icon (* or *) in the **Start** bar. The **Connectivity** box displays the type of network the HP iPAQ is connected to (**Work** or **Internet**). Displayed next to the network type (either **Internet** or **Work**) is the **Wireless Card** field, followed by some vertical green bars. Four bars display the strongest connection signal.

Figure 7. The WLAN signal strength indicator for the HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2003 ROM upgrade



2. To make changes to the connection, tap **Settings**.
3. To exit the **Connectivity** box, tap the **Hide** button.

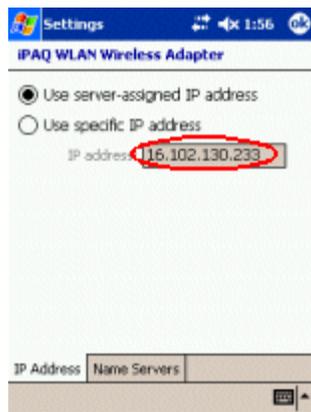
Network settings

Locating an IP address

Perform the following steps to identify the IP address of a wireless network:

1. Turn on the WLAN.
2. Tap the **Connectivity** icon > **Settings** and then tap the desired network to establish a connection.
3. Tap the **Connections** icon > **Advanced** > **Network Card** > **Network Adapters** tab.
4. Tap the appropriate adapter in the **Tap an adapter to modify settings** box.
5. When the **iPAQ Wireless Adapter** screen appears, tap **Use server-assigned IP address**. The IP address displays in the IP address box.

Figure 8. The IP address display screen



Changing TCP/IP settings

Note: Most ISPs and private networks use dynamically assigned IP addresses. Unless the ISP or private network does not use dynamically assigned IP addresses, the TCP/IP settings require no change. If unsure whether the TCP/IP settings use dynamically assigned IP addresses, and then contact the network administrator.

Perform the following steps to change the TCP/IP settings on the HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2003 ROM upgrade handheld device:

1. If the IP address, subnet mask, or default gateway are not known, then contact the system administrator.
2. Turn on the WLAN.
3. Tap the **Connectivity** icon > **Settings** > **Advanced** tab > **Network Card**. On the **Configure Wireless Networks** screen, tap **Network Adapters**. Or, on the **Today** screen, tap **Start** > **Settings** > **Connection** tab > **Connections** icon > **Advanced** tab > **Network Card** > **Network Adapters** tab.
4. On the **Configure Wireless Networks** screen, tap the **Network Adapters** tab.
5. Still on the **Configure Wireless Networks** screen, tap either **The Internet** (the network uses no proxy server) or **Work** (network uses a proxy server) in the **My network card connects to** drop-down box.

Note: If connecting to the ISP at home, then tap **The Internet**. If connecting to a private network such as a corporate network, then tap **Work**.

6. In the **Tap an adapter to modify settings** box, tap **iPAQ WLAN Wireless Adapter**.
7. Tap the **IP Address** tab.
8. Tap **Use specific IP address** and then enter the appropriate information.
9. Tap **OK** to save the settings.

Changing DNS and WINS settings

Servers that require an assigned IP address may also require a way to map computer names to IP addresses. The HP iPAQ Pocket PC h5400 series handheld devices support two name resolution options:

- DNS
- WINS

Perform the following steps to change the server settings on HP iPAQ Pocket PC h5400 series with Microsoft Pocket PC 2003 ROM upgrade handheld devices:

1. Contact the ISP or network administrator to:
 - Determine the correct name resolution
 - Obtain the specific server IP address
 - Determine if alternate addresses are available

Note: An alternate address may be enabled to establish a connection when the primary server is unavailable.

2. Turn on the WLAN.
3. On the **Today** screen, tap **Start > Settings > Connections** tab > **Connections** icon.
4. On the **Connections** screen, tap the **Advanced** tab > **Network Card > Network Adapters** tab.
5. In the **My network card connects to** drop-down box, tap either **The Internet** (no proxy server is used) or **Work** (proxy server is used).

Note: If connecting to the ISP at home, then tap **The Internet**. If connecting to a private network such as a corporate network at work, then tap **Work**.

6. In the **Tap an adapter to modify settings** box, tap **iPAQ WLAN Wireless Adapter**.
7. Tap the **Name Servers** tab and enter the appropriate information.
8. Tap **OK** to save the new settings.

Changing ISP settings

To add, edit, or delete the ISP settings on an HP iPAQ h5400 series with Microsoft Pocket PC 2003 ROM upgrade handheld device, perform the following steps:

1. On the **Today** screen, tap **Start > Settings > Connections** tab > **Connections** icon.
2. Under **My ISP**, tap **Add a new modem connection** to establish a new modem connection or **Manage existing connections** if changes to an existing connection are desired.

To add a new modem connection:

1. On the **Make New Connection** screen, give the connection a name by entering the name in the **Enter a name for the connection** box.
2. Select the desired modem in the **Select a modem** drop-down box.
3. Tap **Next**.
4. On the **My Connection** screen, enter the appropriate country code (**1** for the U.S.), area code, and telephone number to be dialed for the connection; tap **Next**.
5. Type the desired user name and password for the connection.
6. Type the domain, if a domain was provided by the ISP or network administrator.
7. Tap **Finish**.

To change an existing connection:

1. On the **Connections** screen, tap **Manage existing connections**.
2. To change the connection name, tap **text**, tap **Edit**, and type the new name.

To delete an existing connection:

1. On the **Connections** screen, tap **Manage existing connections**.
2. Locate the connection in the **Name** box and tap the name, holding the stylus in place for a couple of seconds until a **Delete/Connect** box appears. Tap **Delete** to delete the connection.

To establish a WLAN connection using the modem connection just added or changed:

1. On the **Connections** screen, tap **Manage existing connections**.
2. Locate the connection in the **Name** box and tap the name, holding the stylus in place for a couple of seconds until the **Delete/Connect** box appears. Tap **Connect** to complete the connection.

VPN server connections

Creating a VPN connection

A VPN connection provides a secure connection to servers, such as a corporate network, via the Internet. If the name, password, domain name, TCP/IP settings, and host name or IP address of the VPN server are not known, then contact the network administrator. Perform the following steps to set up a VPN server connection:

Note: At this point, you may use the **New Connection** wizard to set up a VPN connection, or continue with the steps below. The **New Connection** wizard provides online **Help** and is available at any time in the VPN server connection setup by tapping the keyboard question mark (?).

1. Turn on the WLAN.
2. On the **Today** screen, tap **Start > Settings > Connections** tab > **Connections > Tasks** tab.
3. Under **My Work Network**, tap **Add a new VPN server connection**.
4. On the **Make New Connection** screen, enter a name for the connection in the **Name** box. Enter the appropriate information provided by the network administrator in the **Host name/IP** box.
5. Tap the appropriate VPN type received from the network administrator and then tap **Next**.
6. On the **My VPN** screen, tap either **A certificate on this device** or **A pre-shared key**. If you tapped **A pre-shared key**, enter the key number in the box.
7. On the **My VPN** screen, enter a user name, password, and domain provided by the network administrator.
8. Tap **Finish**.
9. Follow the instructions in the **New Connection** wizard.

Note: For online **Help** for any screen in the **New Connection** wizard or while changing settings, tap the question mark (?).

Changing a VPN connection

Perform the following steps to make changes to VPN server connections on an HP iPAQ Pocket PC h5400 series handheld device:

1. Turn on the WLAN.
2. On the **Today** screen, tap **Start > Settings > Connections** tab > **Connections** icon > **Tasks** tab.
3. On the **Connections** screen under **My Work Network**, tap **Manage existing connections**.
4. Tap the **VPN** tab.
5. Tap the desired VPN connection to change and then tap **Edit**.
6. On the **My VPN** screen, enter a name for the connection in the **Name** box (for example, a company name).
7. Still on the **My VPN** screen, enter the VPN server name or IP address in the **Host name/IP** box.
8. Next to **VPN type** tap the authentication type desired (**IPSec/L2TP** or **PPTP**). If unsure which option to choose, contact the network administrator.
9. Tap **Next**.
10. If you chose **IPSec/L2TP** in step 8, then tap the appropriate authentication type. If you selected **A pre-shared key**, then enter the key provided by the network administrator and tap **Next**.

Note: If you selected **PPTP** in the previous screen, then skip the following step.

11. Enter the user name, password, and domain name provided by the network administrator. If a domain name was not provided, then a connection may be made without entering one.
12. To change advanced settings, tap the **Advanced** button. Advanced settings should be changed only if one of the following situations exists:
 - The server to which the connection is made does not use dynamically assigned IP addresses, so the TCP/IP settings must be entered.
 - The DNS or WINS settings on the server must be changed.
13. Tap **Finish**.

Starting a VPN connection

If an HP iPAQ Pocket PC h5400 series handheld device is connected to the ISP or private network during synchronization, then the proper settings from the host computer will be downloaded. If the host computer does not have the proper settings, or if the settings must be changed, then manual setup will be required. To set up proxy server settings, perform the following steps:

1. Contact the ISP or network administrator to obtain the following:
 - Proxy server name
 - Server type
 - Port
 - Type of Socks protocol used, and the user name and password
2. Turn on the WLAN.
3. On the **Today** screen, tap **Start > Settings > Connections** tab > **Connections** icon > **Tasks** tab.
4. On the **Connections** screen, under **My Work Network**, tap **Edit my proxy server**, and then the **Proxy Settings** tab.
5. Tap the **This network connects to the Internet** and **This network uses a proxy server to connect to the Internet** checkboxes.
6. In the **Proxy server** box, enter the proxy server name received from the network administrator. Tap **OK** if the port number or proxy server type settings do not require changes, and skip step 7.
7. If port number or proxy server type settings must be changed, then tap **Advanced** and make the necessary settings changes. Tap **OK**.

h5500 series

This section includes the following topics:

- [Turning on and off the WLAN](#)
- [Connecting to a network](#)
- [Manually entering new network settings](#)
- [Working with HP supported wireless authentication protocols](#)
- [Searching for networks to access](#)
- [Managing wireless networks](#)
- [Network settings](#)
- [VPN server connections](#)

Turning on and off the WLAN

Perform the following steps to turn on or off the WLAN:

1. On the **Today** screen, tap **Start > iPAQ Wireless**.
2. When the **Wireless Control** screen appears, tap the **WLAN** icon. The **WLAN** icon displays in orange (off); tap the **WLAN** icon to turn on the WLAN. The icon changes to green (on) and the WLAN indicator light flashes orange.

Note: Even though the WLAN indicator flashes orange (on), it does not necessarily mean a connection has been established. If the WLAN indicator flashes green, then a connection has been established.

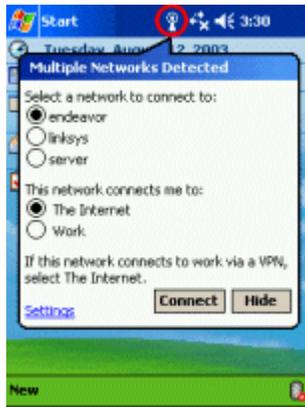
Battery saving tip: Turn off the WLAN when it is not in use. (Tap **Start > Settings > System** tab > **Power** icon or on the **Power** screen, tap the **Main** tab and change the power settings as desired.)

Connecting to a network

Perform the following steps to connect to a WLAN network:

1. If at least one network is present on the HP iPAQ, then the Network Indicator icon (📶) will appear in the Navigation bar. Tap the icon; when the **Multiple Networks Detected** pop-up box appears, tap the desired network.

Figure 9. The network indicator pop-up box



2. In the same pop-up box under **This network connects me to** tap the **Internet** button (if the network connects to the Internet without using proxy settings) or the **Work** button (if the network uses proxy settings). If doubt exists about the whether the network uses proxy settings, then contact the system administrator.
3. If the display prompts for a network key (WEP), then enter the key and tap **Connect**. (If you have any questions about the network key, then contact the network administrator.)

Manually entering new network settings

To manually add settings to a wireless network on the h5500 series, perform the following steps:

1. Turn the WLAN on (see instructions in “Turning on and off the WLAN”).
2. Tap **Start > Settings > Connections** tab > **Connections** icon > **Advanced** tab > **Network Card**.
3. On the **Configure Wireless Networks** screen, tap the **Wireless** tab at the bottom.
4. Still on the **Configure Wireless Networks** screen, in the **Wireless networks** box, tap **Add New Settings**.

5. Tap the **General** tab at the bottom; in the **Network name** box, type the network name (SSID).

Note: If a network was detected in step 2, then the SSID is automatically entered and cannot be changed.

6. In the **Connects to** box, tap to select either **The Internet** (no proxy server is used), or **Work** (a proxy server is used).
7. If the network is an ad-hoc connection, then tap the **This is a device-to-computer (ad-hoc) connection** box.
8. If network authentication or data encryption is required, then follow the instructions in the following section, "Working with HP supported wireless authentication protocols." If network authentication or data encryption is not required, then tap **OK** repeatedly until you return to the **Today** screen.

Working with HP supported wireless authentication protocols

Instructions for configuring an HP iPAQ handheld device with a high-security authentication protocol vary between product series and the selected protocol. Other affecting issues are ROM releases, operating systems, and protocol-specific requirements, to name a few.

The following instructions are intended as a roadmap to help you get started. Actual implementation may require additional steps, consultation with ISPs, network administrators, and implementation direction from third-party software companies such as Cisco Systems. Assistance may also be obtained from the HP web site (www.hp.com) and the Cisco Systems web site (www.cisco.com).

Perform the following steps to set up an HP supported authentication protocol on an HP iPAQ Pocket PC h5500 series handheld device:

1. After the wireless network has been added, then on the **Configure Wireless Networks** box, highlight the appropriate default setting or create a new setting, and then tap the **Network Key** tab.

Note: The HP iPAQ Pocket PC h5500 series handheld device has one of two ROM releases. The setup steps are identical for both ROM releases; however, the **Configure Wireless Networks** screen may differ slightly.

2. Select the type of network authentication to be used:
 - **Open**
 - **Shared**
 - **WPA**
 - **WPA-PSK**
3. Select the type of data encryption to be used:
 - For open or shared network authentication, only WEP data encryption is available. To enable WEP data encryption, select **WEP** from the **Data Encryption** drop-down list.
 - If WPA or WPA-PSK was selected in step 10, then TKIP and WEP are both available data encryption options. To enable data encryption, select the desired protocol from the **Data Encryption** drop-down list.
4. If a network key is provided by the network automatically, then tap the **The Key is provided for me automatically** checkbox. Otherwise, enter the network key in the **Network key** box.
5. If IEEE 802.1x is supported by the network environment, then tap the **802.1x** tab. On the **802.1x** tab, and select the appropriate authentication protocol from the drop-down list. 802.1x provides an increased level of security. If unsure whether the network environment supports the 802.1x protocol, then contact the network administrator.
6. Tap **OK** twice to exit the **Configure Network Authentication** window and **Configure wireless networks** window.

7. Tap the **Select Networks** box to open the **Network Management** window. Under **Programs that automatically connect to the Internet should connect using**, tap the down arrow and select **My Work Network**. Tap **OK** three times to return to the **Today** screen.
8. Perform a soft reset of the HP iPAQ. When the wireless card associates with an access point, the **Logon Window** pop-up box appears. Select the appropriate keyboard and enter the user name and the password to be used. Leave the **domain** field blank, and tap the **Save Password** box.

Searching for networks to access

Networks that have already been configured (preferred networks) are listed in the **Wireless Networks** box on the **Configure Wireless Networks** screen. You can choose to connect only to preferred networks or have the HP iPAQ search for and connect to any available network.

Perform the following steps to search for available networks:

1. From the **Today** screen, tap **Start > Settings > Connections** tab > **Connections** icon. Tap the **Advanced** tab > **Network Card > Wireless** tab.
2. In the **Networks to access** box, tap the type of network desired (**All Available**, **Only access points**, or **Only computer-to-computer**).
3. To restrict the search to networks that have already been configured, uncheck the **Automatically connect to non-preferred networks** checkbox.

Note: If the **Automatically connect to non-preferred networks** checkbox is checked, then the HP iPAQ will detect any new networks and provide the opportunity to configure them.

Managing wireless networks

Viewing or editing a network

1. Turn on the WLAN.
2. Tap **Start > Settings > Connections** tab > **Connections** icon > **Advanced** tab > **Network Card**.
3. In the **Configure Wireless Networks** box, tap the name of the desired network to review or edit.
4. If edits are made to the existing settings, then tap **OK** to save the new settings.

Deleting a network

To delete a wireless network, perform the following steps:

1. Turn on the WLAN.
2. Tap **Start > Settings > Connections** tab > **Connections** icon > **Advanced** tab > **Network Card**.
3. In the **Configure Wireless Networks** box tap the name of the desired network to delete, and hold down the stylus for a few seconds until the **Connect/Remove Settings** drop-down box appears.
4. Tap **Remove Settings**.

Monitoring signal strength and status

Perform the following steps to view the signal strength between the HP iPAQ Pocket PC h5500 series handheld device and the access point WLAN connection:

1. Tap the **Connectivity** icon (📶 or 📶) in the Navigation bar.
2. The **Connectivity** box displays the type of network the HP iPAQ is connected to (**Work** or **Internet**). Displayed next to the network type (either **Internet** or **Work**) is the field **Wireless Card**, followed by some vertical green bars. Four bars display the strongest connection signal.

Note: The signal strength icon will only display when a connection is present.

Figure 10. WLAN signal strength indicator



3. To make changes to the connection, tap **Settings**.
4. To exit the **Connectivity** box, tap the **Hide** button.

Network settings

Locating an IP address

Perform the following steps to identify the IP address of a wireless network on an HP iPAQ Pocket PC h5500 series handheld device:

1. Turn on the WLAN.
2. Tap **Start > Settings > Connections** tab > **Connections** icon > **Advanced** tab > **Network Card**.
3. Tap the appropriate adapter in the **Tap an adapter to modify settings** box.
4. When the **iPAQ USB Wireless Adapter** screen appears, tap **Use server-assigned IP address**. The IP address displays in the IP address box.

Changing TCP/IP settings

Note: Most ISPs and private networks use dynamically assigned IP addresses. Unless the ISP or private network does not use dynamically assigned IP addresses, the TCP/IP settings require no change. If unsure whether the TCP/IP settings use dynamically assigned IP addresses then contact the network administrator.

Perform the following steps to change the TCP/IP settings on an HP iPAQ Pocket PC h5500 series handheld device:

1. If the IP address, subnet mask, or default gateway are not known, then contact the system administrator.
2. Turn on the WLAN.
3. Tap **Start > Settings > Connections** tab > **Connections** icon > **Advanced** tab > **Network Card**.
4. On the **Configure Wireless Networks** screen, tap the **Network Adapters** tab.
5. On the **Configure Network Adapters** screen, select either **The Internet** (the network uses no proxy server) or **Work** (network uses a proxy server) in the **My network card connects to** drop-down box.

Note: If connecting to the ISP at home, then select **The Internet**. If connecting to a private network such as a corporate network, then select **Work**.

6. In the **Tap an adapter to modify settings** box, tap **iPAQ USB Wireless Adapter**.
7. Tap the **IP Address** tab.
8. Tap **Use specific IP address** and then enter the appropriate information.
9. Tap **OK** to save the settings.

Changing DNS and WINS settings

Servers that require an assigned IP address may also require a way to map computer names to IP addresses. The HP iPAQ Pocket PC h5500 series handheld devices support two name resolution options:

- DNS
- WINS

Perform the following steps to change the server settings on HP iPAQ Pocket PC h5500 series handheld devices:

1. Contact the ISP or network administrator to:
 - Determine the correct name resolution
 - Obtain the specific server IP address
 - Determine if alternate addresses are available

Note: An alternate address may be enabled to establish a connection in which the primary server is unavailable.

2. Turn on the WLAN.
3. Tap **Start > Settings > Connections** tab > **Connections** icon > **Advanced** tab > **Network Card > Network Adapters** tab.
4. In the **My network card connects to** drop-down box, select either **The Internet** (no proxy server is used) or **Work** (proxy server is used).

Note: If connecting to the ISP at home, then select **The Internet**. If connecting to a private network such as a corporate network at work, then select **Work**.

5. In the **Tap an adapter to modify settings** box, tap **iPAQ USB Wireless Adapter**.
6. Tap the **Name Servers** tab and enter the appropriate information.

Changing ISP settings

To add, edit, or delete the ISP settings on an HP iPAQ h5500 series handheld device, perform the following steps:

1. Tap **Start > Settings > Connections** tab > **Connections** icon.
2. Under your ISP connection, tap **Add a new modem connection** to establish a new modem connection or **Manage existing connections** if changes to an existing connection are desired.

To add a new modem connection:

1. On the **Make New Connection** screen, give the connection a name by entering the name in the **Enter a name for the connection** box.
2. Select the desired modem in the **Select a modem** drop-down box.
3. Tap **Next**.
4. On the **text** screen, enter the appropriate country code (**1** for the U.S.), area code, and telephone number to be dialed for the connection; tap **Next**.
5. Type the desired user name for the connection.
6. Type the desired password for the connection.
7. Type the domain, if a domain was provided by the ISP or network administrator.
8. Tap **Finish**.

To change an existing connection:

1. Tap the **Connectivity** icon > **Settings > Tasks** tab.
2. On the **Connections** screen, tap **Manage existing connections**.
3. To change the connection name, tap **Edit** and type the new name.

To delete an existing connection:

1. Tap the **Connectivity** icon > **Settings** > **Tasks** tab.
2. On the **Connections** screen, tap **Manage existing connections**.
3. Locate the connection in the **Name** box and tap and hold the stylus in place for a few seconds until the **Delete/Connect** box appears.
4. Tap **Delete** to delete the connection.

To establish a WLAN connection using the modem connection just added or changed:

1. Tap the **Connectivity** icon > **Settings** > **Tasks** tab.
2. On the **Connections** screen, tap **Manage existing connections**.
3. Locate the connection in the **Name** box and tap and hold the stylus in place for a few seconds until the **Delete/Connect** box appears.
4. Tap **Connect** to complete the connection.

VPN server connections

Creating a VPN connection

A VPN connection provides a secure connection to servers, such as a corporate network, via the Internet. If the name, password, domain name, TCP/IP settings, and host name or IP address of the VPN server are not known, then contact the network administrator. Perform the following steps to set up a VPN server connection:

Note: At this point, you may use the **New Connection** wizard to set up a VPN connection, or continue with the steps below. The **New Connection** wizard provides online **Help** and is available at any time in the VPN server connection setup by tapping the keyboard question mark (?).

1. Turn on the WLAN.
2. On the **Today** screen, tap **Start, Settings**, the **Connections** tab, the **Connections** icon, and the **Tasks** tab.
3. Under **My Work Network**, tap **Add a new VPN server connection**.
4. On the **Make New Connection** screen, enter a name for the connection in the **Name** box. Enter the appropriate information provided by the network administrator in the **Host name/IP** box.
5. Tap the appropriate VPN type received from the network administrator and then tap **Next**.
6. On VPN connection screen, enter a user name, password, and domain provided by the network administrator.
7. Tap **Finish**.

Note: For online **Help** for any screen in the **New Connection** wizard or while changing settings, tap the question mark (?).

Changing a VPN connection

Perform the following steps to make changes to VPN server connections on an HP iPAQ Pocket PC h5500 series handheld device:

1. Turn on the WLAN.
2. On the **Today** screen, tap **Start, Settings**, the **Connections** tab, the **Connections** icon, and then tap the **Tasks** tab.
3. On the **Connections** screen, under **My Work Network**, tap **Edit my VPN server**.
4. Tap the desired VPN connection to change and then tap **Edit**.
5. On the VPN connection screen, enter a name for the connection in the **Name** box (for example, a company name).
6. Still on the VPN connection screen, enter the VPN server name or IP address in the **Host name/IP** box.
7. Next to **VPN type** tap the authentication type desired (**IPSec/L2TP** or **PPTP**). If unsure which option to choose, contact the network administrator.

8. Tap **Next**.
9. Enter the user name, password, and domain name provided by the network administrator. If a domain name was not provided, then a connection may be made without entering one.
10. To change advanced settings, tap the **Advanced** button. Advanced settings should be changed only if one of the following situations exists:
 - The server to which the connection is made does not use dynamically assigned IP addresses, so the TCP/IP settings must be entered.
 - The DNS or WINS settings on the server must be changed.
11. Tap **Finish**.

Starting a VPN connection

If an HP iPAQ Pocket PC h5500 series handheld device is connected to the ISP or private network during synchronization, then the proper settings from the host computer will be downloaded. If the host computer does not have the proper settings, or if the settings must be changed, then manual setup will be required. To set up proxy server settings, perform the following steps:

1. Contact the ISP or network administrator to obtain the following:
 - Proxy server name
 - Server type
 - Port
 - Type of Socks protocol used, and the user name and password
2. Turn on the WLAN.
3. On the **Today** screen, tap **Start**, **Settings**, the **Connections** tab, the **Connections** icon, and then the **Tasks** tab.
4. On the **Connections** screen, under **My Work Network**, tap **Set up my proxy server**.
5. Tap the **This network connects to the Internet** and **This network uses a proxy server to connect to the Internet** checkboxes.
6. In the **Proxy server** box, enter the proxy server name received from the network administrator. Tap **OK** if the port number or proxy server type settings do not require changes, and skip step 7.
7. If port number or proxy server type settings must be changed, then tap **Advanced** and make the necessary settings changes. Tap **OK**.

h6300 series

This section includes the following topics:

- [Turning on and off the WLAN](#)
- [Connecting to a network](#)
- [Manually entering new network settings](#)
- [Working with HP supported wireless authentication protocols](#)
- [Searching for networks to access](#)
- [Managing wireless networks](#)
- [Network settings](#)
- [VPN server connections](#)

Turning on and off the WLAN

Perform the following steps to turn on or off the WLAN:

1. To turn Wi-Fi on or off from the **Today** screen, tap the iPAQ Wireless icon (📶) in the command bar, and then tap the **Wi-Fi** icon. If Wi-Fi is powered on, the **Wi-Fi** icon background turns from gray to amber to green, and the Wi-Fi LED (located to the left of the power button) blinks green to indicate Wi-Fi is on.

Note: A blinking amber Wi-Fi LED indicates Wi-Fi is on but not connected, and a blinking green Wi-Fi LED indicates Wi-Fi is on and associated with another device.

Even though the Wi-Fi LED flashes to indicate Wi-Fi is turned on, it does not necessarily mean a connection has been established with another device or access point.

Alternatively, you can use the **Connectivity** icon in the Navigation bar to turn Wi-Fi on and off:

1. Tap the **Connectivity** icon in the Navigation bar.
2. When the **Connectivity** box displays, select either **Turn on Wi-Fi** or **Turn off Wi-Fi** to complete the action.

Battery saving tip: Turn Wi-Fi off when you are not using it.

Connecting to a network

Perform the following steps to connect to a WLAN network:

1. If one or more networks are present, the Network Indicator icon (📶) appears in the Navigation bar. Tap the network you want to connect to, and then tap whether the network connects to the **Internet** (does not use proxy settings) or **Work** (uses proxy settings).
2. If you are prompted for a network key, enter it and tap **Connect**. If you are not sure, contact your network administrator.

Manually entering new network settings

A wireless network can be added manually, if desired. To manually add a wireless network, perform the following steps:

1. Be sure Wi-Fi is powered on.
2. Tap **Start > Settings > Connections** tab > **Connections** icon > **Advanced** tab > **Network Card > Wireless** tab.
3. Tap **Add New** on the **Configure Wireless Networks** screen.
4. Tap the **General** tab and enter a network name (SSID).

Note: If a network was detected in step 2, then the SSID automatically populates the **Network name** field and cannot be changed.

5. In the **Connects to** box, select the desired location to connect to (**The Internet** or **Work**).
6. If an ad-hoc connection is desired, then tap the **This is a device-to-computer (ad-hoc) connection** box.
7. If network authentication or data encryption is required, then follow the instructions in the following section, "Working with HP supported wireless authentication protocols." If network authentication or data encryption is not required, then tap **OK** repeatedly until you return to the **Today** screen.

Working with HP supported wireless authentication protocols

Instructions for configuring an HP iPAQ handheld device with a high-security authentication protocol vary between product series and the selected protocol. Other affecting issues are ROM releases, operating systems, and protocol-specific requirements, to name a few.

The following instructions are intended as a roadmap to help you get started. Actual implementation may require additional steps, consultation with ISPs, network administrators, and implementation direction from third-party software companies such as Cisco Systems. Assistance may also be obtained from the HP web site (www.hp.com) and the Cisco Systems web site (www.cisco.com).

Determining support for authentication protocols

Table 1 describes Cisco proprietary features that are officially supported by HP, features that are not supported but do not affect connectivity, and features that are neither supported nor compatible with the device.

Note: This device is not CCX certified, and some compatibility features required by CCX certification might not be available. Differences in functionality among non-CCX wireless devices with CCX certification features enabled should be expected.

Table 1: Cisco proprietary features that are officially supported, non-supported, or incompatible with the h6300 series.

Officially supported features	Non-supported/compatible features	Incompatible features
Non-EAP: <ul style="list-style-type: none">• Open+WEP• Shared+WEP• WPA-PSK (TKIP only)• ad-hoc	"Optional" Cisco Client Key Management (CCKM)	LEAP with WPA+TKIP
EAP: LEAP with Open+WEP LEAP is included in the WZC drop-down list of EAP types, even though it has been configured in a separate applet on previous handhelds.	WPA Migration Mode (Open+WEP only)	"Mandatory" Cisco client Key Management (CCKM)
PEAP with WPA+TKIP	Virtual Local Area Networks (VLANs)	Advanced Encryption Standard (AES) (or any cipher other than WEP and TKIP)
PEAP with Open+WEP	CKIP and CMIC	WPA+TKIP (if WPA Migration Mode enabled on Access Point)
TTLS/Smartcard	Wi-Fi Multimedia (WMM)	WPA+WEP configuration in WZC client (only WPA+TKIP is supported).

Note: There are currently no plans to add support for EAP-Fast (Cisco LEAP successor) support.

Setting up HP supported authentication protocols

Perform the following steps to set up an HP supported authentication protocol on an HP iPAQ Pocket PC h6300 series handheld device:

1. After the wireless network has been added, then on the **Configure Wireless Networks** box, highlight the appropriate default setting or create a new setting, and then tap the **Network Key** tab.
2. Select the type of network authentication to be used:
 - **Open**
 - **Shared**
 - **WPA**
 - **WPA-PSK**
3. Select the type of data encryption to be used:
 - For open or shared network authentication, only WEP data encryption is available. To enable WEP data encryption, select **WEP** from the **Data Encryption** drop-down list.
 - If WPA or WPA-PSK was selected in step 2, then TKIP and WEP are both available data encryption options. To enable data encryption, select TKIP from the **Data Encryption** drop-down list.
4. If a network key is provided by the network automatically, then tap the **The Key is provided for me automatically** checkbox. Otherwise, enter the network key in the **Network key** box.
5. If IEEE 802.1x is supported by the network environment, then check the Use IEEE 802.1x network access control checkbox. 802.1x provides an increased level of security. If unsure whether the network environment supports the 802.1x protocol, then contact the network administrator.
6. Tap **OK** twice to exit the **Configure Network Authentication** window and **Configure Wireless Networks** window.
7. Tap the **Select Networks** box to open the **Network Management** window. Under **Programs that automatically connect to the Internet should connect using**, tap the down arrow and select **My Work Network**. Tap **OK** three times to return to the **Today** screen.
8. Perform a soft reset of the HP iPAQ. When the wireless card associates with an access point, the **Logon Window** pop-up box appears. Select the appropriate keyboard and enter the user name and the password to be used. Leave the **domain** field blank, and tap the **Save Password** box.

Connectivity Issues with non-supported features for h6300 series

Note: While the h6300 series is running on battery power, ping time might be slower than expected because of an automatic power management feature that increases ping time when WLAN is idle.

If you have enabled non-supported features, you might experience some limitations in connectivity:

- **WPA Migration Mode (WPAMM)**—an access point setting that enables both WPA and non-WPA clients (Open+WEP) to associate to an access point using the same Service Set Identifier (SSID). The h6300 series will connect if manually configured for Open+WEP and WPAMM is enabled.
- **VLANs**—Properly-configured VLANs do not seem to affect connectivity in most cases; however, VLAN implementation can be complex, depending on the underlying infrastructure. When troubleshooting authentication and connectivity problems, HP recommends first testing the h6300 at an access point outside the VLAN environment.
- **CKIP and CMIC**—are proprietary Cisco implementations of Temporary Key Integrity Protocol (TKIP) and Message Integrity Check (MIC). In this environment, h6300 may operate under certain conditions where Open+WEP and LEAP are configured in the Microsoft Wireless Zero Configuration wizard. However, functionality is not supported by Microsoft and HP does not recommend this configuration.

- **Wi-Fi Multimedia (WMM)**—Beginning with versions IOS 12.3.x.x, Cisco included support for WMM, a subset of the draft 802.11e standard for QoS. WMM is enabled by default as part of the Quality of Service (QoS) configuration. This feature allows access points to tag and prioritize multimedia streaming, VoIP, and other traffic that requires low latency connections. Connectivity issues may occur with WPA+TKP on access points with WMM enabled, including:
 - When connecting, WZC immediately transitions from “connecting” to “available.” Drop-down menus in the Pocket WZC do not automatically populate with “WPA” or “TKIP,” but rather have “Open+WEP” preconfigured.
 - Handhelds that have successfully connected on previous occasions may stop after the IOS on the access point has been upgraded.
 - If debug logs have been enabled, the error “Client X failed: WPAIE not found and required” might appear in the access point log files.
 - Similar symptoms may also occur when WPA-PSK is configured. If these issues are present, disable WMM to see if connectivity improves.

If these issues are present, disable WMM to see if connectivity improves.

To disable WMM:

1. From the Cisco web-based browser, select **Services > QoS > Advanced tab > WiFi MultiMedia (WMM)**.
2. Clear all radio interface checkboxes for WiFi Multimedia and save changes.
3. From a console/telnet session, configure (for each interface) “ap(config-if)#no dot11 qos mode wmm” if no QoS features are required used.

Searching for networks to access

Networks that you have already configured are preferred networks and are listed in **Wireless Networks**. You can choose whether to connect only to preferred networks or to have your HP iPAQ search for and connect to any available network (preferred or not).

1. Be sure Wi-Fi is powered on.
2. Tap **Start > Settings > Connections tab > Connections icon > Advanced tab > Network Card button > Wireless tab**.
3. In the **Networks to access** box, tap the type of network you want to connect to (**All Available**, **Only access points**, or **Only computer-to-computer**).
4. To connect only to networks that have already been configured, clear the **Automatically connect to non-preferred networks** checkbox.

Note: If the **Automatically connect to non-preferred networks** checkbox is checked, then the HP iPAQ will detect any new networks and provide the opportunity to configure them.

Managing wireless networks

Viewing or editing a network

To view or edit a wireless network, perform the following steps:

1. Turn on the WLAN.
2. Tap the **Connectivity** icon.
3. In the **Connectivity** pop-up box, tap **Settings > Connections tab > Connections icon > Advanced tab > Network Card > Wireless tab**. In the **Configure Wireless Networks** box, tap name of the desired network to review or edit.
4. If edits are made to the existing settings, then tap **OK** to save the new settings.

Deleting a network

To delete a wireless network, perform the following steps:

1. Turn on the WLAN.
2. Tap the **Connectivity** icon.
3. In the **Connectivity** pop-up box, tap **Settings > Connections** tab > **Connections** icon > **Advanced** tab > **Network Card > Wireless** tab.
4. In the **Configure Wireless Networks** box, tap the name of the desired network to delete, and hold down the stylus for a few seconds until the **Connect/Remove Settings** drop-down box appears. Tap **Remove Settings**.

Monitoring signal strength and status

To view the signal strength between your HP iPAQ and Wi-Fi access point connections:

1. Tap the **Connectivity** icon in the navigation bar.
2. When the drop-down **Connectivity** box displays, you are able to view the name (SSID) of the network the HP iPAQ is connected to and an icon displaying the signal strength.

Note: The signal strength icon will not be displayed if a connection is not present.

Figure 11. Signal strength indicator



Network settings

Locating an IP address

To find the IP address the wireless network is using:

1. Be sure Wi-Fi is powered on.
2. Connect to the appropriate network.
3. From the **Start** menu, tap **Settings > Connections** tab > **Connections** icon > **Advanced** tab > **Network Card** button > **Network Adapters** tab.
4. Tap the appropriate adapter to modify the settings. The IP address appears in the **IP Address** box.

Figure 12. Locating an IP address



Changing TCP/IP settings

Note: Most ISPs and private networks now use dynamically assigned IP addresses. You will not need to change TCP/IP settings unless your ISP or private network does not use dynamically assigned IP addresses. If you are not sure, check with your network administrator.

To change TCP/IP Settings:

1. Contact your ISP or network administrator to determine your IP address, subnet mask, and default gateway (if needed).
2. Be sure Wi-Fi is powered on.
3. From the **Start** menu, tap **Settings > Connections** tab > **Connections** icon > **Advanced** tab > **Network Card** button > **Network Adapters** tab.
4. In the **My network card connects to** drop-down box, select either **The Internet** or **Work**.

Note: If you are connecting to your ISP at home, select **The Internet**. If you are connecting to a private network such as a corporate network at work, you should select **Work**.

5. In the **Tap an adapter to modify settings** box, tap **iPAQ Wi-Fi Wireless Adapter**.
6. Tap the **IP Address** tab.
7. Tap **Use specific IP address** and enter the requested information.
8. Tap **OK** to save your settings.

Changing DNS and WINS settings

Note: Most ISPs and private networks now use dynamically assigned IP addresses. You will not need to change DNS and WINS settings unless your ISP or private network does not use dynamically assigned IP addresses. If you are not sure, check with your network administrator.

Servers that require an assigned IP address may also require a way to map computer names to IP addresses. Your HP iPAQ supports two name resolution options:

- DNS
- WINS

To change server settings:

1. Contact your ISP or network administrator to determine which name resolution to use, obtain the specific server address, and determine whether alternate addresses are available.

Note: An alternate address may enable you to connect when the primary server is unavailable.

2. Be sure Wi-Fi is powered on.

3. From the **Start** menu, tap **Settings** > **Connections** tab > **Connections** icon > **Advanced** tab > **Network Card** button > **Network Adapters** tab.
4. In the **My network card connects to** drop-down box, select either **The Internet** or **Work**.

Note: If you are connecting to your ISP at home, select **The Internet**. If you are connecting to a private network such as a corporate network at work, you should select **Work**. If a proxy server is required, you must select **Work**.

5. In the **Tap an adapter to modify settings** box, tap **iPAQ Wi-Fi Wireless Adapter**.
6. Tap the **Name Servers** tab and enter the requested information.
7. Tap **OK** to save your settings.

Changing ISP settings

To add, edit, or delete the ISP settings on an HP iPAQ h6300 series handheld device, perform the following steps:

To add a new modem connection:

1. Tap **Start**, **Settings**, the **Connections** tab, and then the **Connections** icon.
2. Under your ISP tap **Add a new modem connection** to establish a new modem connection.
3. On the **Make New Connection** screen, give the connection a name by entering the name in the **Enter a name for the connection** box.
4. Select the desired modem in the **Select a modem** drop-down box.
5. Tap **Next**.
6. On the **text** screen, enter the appropriate country code (**1** for the U.S.), area code, and telephone number to be dialed for the connection; tap **Next**.
7. Type the desired user name and password for the connection.
8. Type the domain, if a domain was provided by the ISP or network administrator
9. Tap **Finish**.

To change an existing connection:

1. Tap **Start**, **Settings**, the **Connections** tab, and then the **Connections** icon.
2. On the **Connections** screen, tap **Manage existing connections**.
3. To change the connection name, tap **Next**, tap **Edit**, and type the new name.

To delete an existing connection:

1. Tap **Start**, **Settings**, the **Connections** tab, and then the **Connections** icon.
2. On the **Connections** screen, tap **Manage existing connections**.
3. Locate the connection in the **Name** box and tap it. Hold the stylus in place for a few seconds until the **Delete/Connect** box appears.
4. Tap **Delete** to delete the connection.

To establish a WLAN connection using the modem connection just added or changed:

1. Tap **Start**, **Settings**, the **Connections** tab, and then the **Connections** icon.
2. On the **Connections** screen, tap **Manage existing connections**.
3. Locate the connection in the **Name** box and tap the name, holding the stylus in place for a few seconds until the **Delete/Connect** box appears. Tap **Connect** to complete the connection.

VPN server connections

Creating a VPN connection

A VPN connection enables you to securely connect to a private or a corporate network, via the Internet. To set up a VPN server connection:

1. Contact your network administrator for your user name, password, domain name, TCP/IP settings, and host name or IP address of the VPN server.
2. Be sure Wi-Fi is powered on.
3. From the **Start** menu, tap **Settings > Connections** tab > **Connections** icon > **Tasks** tab.
4. Under **My Work Network**, tap **Add a new VPN server connection**.
5. Follow the instructions in the **New Connection** wizard.

Note: For online **Help** for any screen in the **New Connection** wizard or while changing settings, tap the **?**.

Changing a VPN connection

1. Be sure Wi-Fi is powered on.
2. From the **Start** menu, tap **Settings > Connections** tab > **Connections** icon > **Tasks** tab.
3. Under **My Work Network**, tap **Manage existing connections > VPN** tab.
4. Tap the VPN connection you want to change, then tap **Settings**.
5. In the **Name** box, enter a name for the connection (for example, your company's name).
6. In the **Host name/IP** box, enter the VPN server name or IP address.
7. Next to **VPN type**, tap the type of authentication to use with your device (**IPSec/L2TP** or **PPTP**). If you aren't sure which option to choose, ask your network administrator.
8. Tap **Next**.

Note: If you selected **PPTP** in the previous screen, then skip the following step.

9. If you selected **IPSec/L2TP** on the previous screen, tap the type of authentication. If you selected **A pre-shared key**, enter the key provided by your network administrator, then tap **Next**.
10. Enter the user name, password, and domain name provided by your network administrator.

Note: If a domain name was not provided, you may be able to connect without entering one.

11. To change advanced settings, tap the **Advanced** button.

Note: You will not need to change advanced settings unless the server to which you are connecting does not use dynamically assigned IP addresses and you need to enter your TCP/IP settings or you need to change server DNS or WINS settings.

12. Tap the **Finish** button.

Starting a VPN connection

To start a connection through a VPN server, be sure Wi-Fi is powered on, and then select the VPN network. Your HP iPAQ will automatically begin connecting.

Typical WLAN setup and installation scenarios

Updating the HP iPAQ while connected to a desktop computer

IMPORTANT: To prevent file corruption, keep the HP iPAQ connected to the power adapter during the installation process.

1. Ensure that the HP iPAQ is docked and connected to a desktop computer running Microsoft® ActiveSync® v3.7 or later.
2. Apply A/C power to the HP iPAQ (plug in the HP iPAQ to an electrical outlet).
3. Launch the SoftPaq update.

Note: SoftPaqs can be found on the HP Business Support Center web site at www.hp.com.

4. Follow the onscreen instructions and dialog boxes.
5. Undock the HP iPAQ and perform a soft reset to complete the update.

The HP lab setup

Following is a partial list of the configurations that HP has tested with the wireless HP iPAQ handheld devices. Tested products varied in their firmware types and versions.

EAP-TLS

HP WL510 Wireless Enterprise Access Point

Microsoft Windows 2003 Server Operating System

LEAP

Cisco 1200 Series IOS and Vx-Works

Cisco Access Control Server 3.0

Microsoft Windows 2000 Server Operating System

PEAP

Cisco 1200 Series Internet Operating System (IOS)

Windows 2003 Server Operating System

Performance (Throughput)

Cisco Aironet 1200 Series Access Point

NetIQ Chariot Software

WEP

Cisco Aironet 1200 Series Access Point with IOS firmware and Cisco Aironet 1200 Series Access Point with Vx-Works firmware

HP WL410 Wireless SMB Access Point

HP WL510 Wireless Enterprise Access Point

RoamAbout Access Point (64-bit WEP)

Linksys, NetGear, and D-Link Systems home routers

HP WL400

WPA

Cisco Aironet 1200 Series Access Point with IOS firmware

Linksys WRT54G Wireless-G Broadband Router

HP WL420 ProCurve Wireless Access Point

Troubleshooting problems

Following are some troubleshooting tips to try if the WLAN connection does not work:

- If the WLAN connection does not work with the chosen wireless network, try turning off the WLAN **Power Save** modes. If the access point is configured for WAP or WPS-PSK, use the hidden configure level command “dot11 wpa handshake timeout” to increase the timeout between sending the WPA key packets from the default value (100 ms) to a value between 101 and 200 ms.
- Check the access point settings—ensure that the security setting allows third-party or non-Cisco devices to associate and authenticate on the network.
- If a Cisco LEAP access point is being used and the WLAN connection does not work, check to make sure of the following:
 - The latest version of Vx-Works operating system or IOS is installed on the access points.
 - The latest version of ACS is installed on the server.

For more information

For additional help setting up a WLAN connection, problem troubleshooting, and specific information about an HP iPAQ, visit the HP web site at www.hp.com. (On the homepage, click **Support & Troubleshooting, Handheld Devices, iPAQ Pocket PCs**, and select the appropriate series; select the appropriate model, and then click **using the wireless LAN**).

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