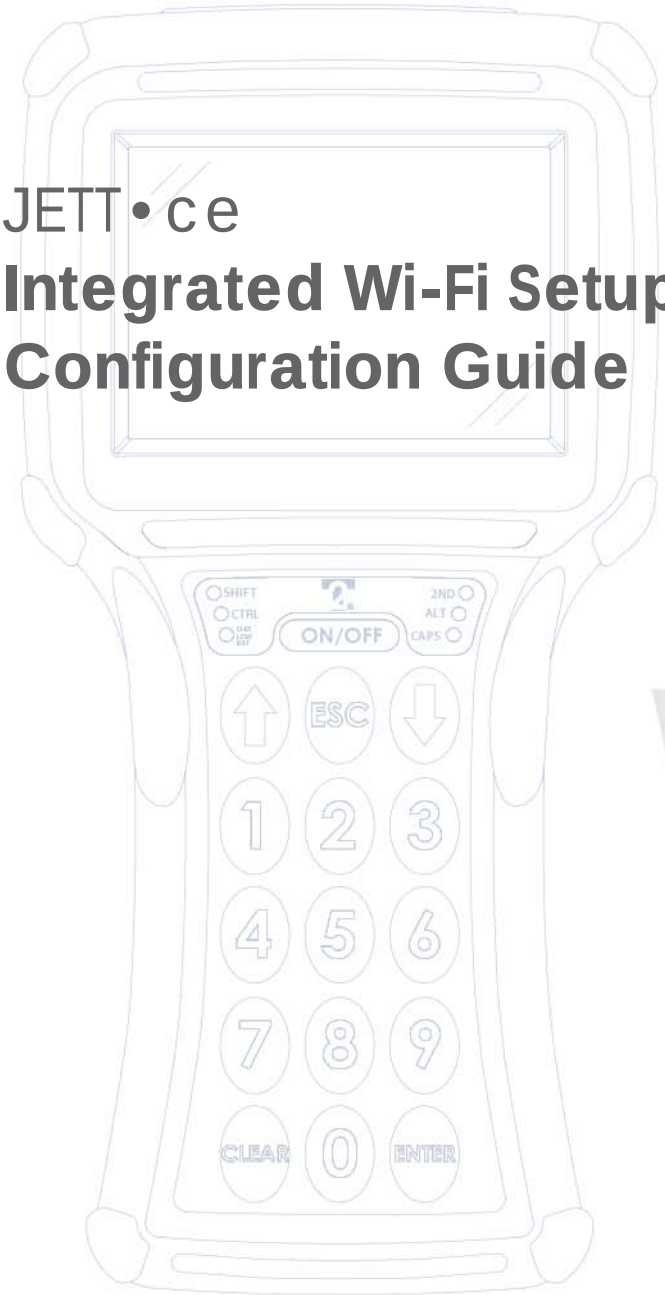
JETT•ce

Integrated Wi-Fi Setup and Configuration Guide



Wi-Fi

www.2T.com

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JETT•ce Integrated Wi-Fi Setup and Configuration Guide

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Changes and Addendum

Since Two Technologies is continuously improving the functionality and quality of its products, certain information may not be included at the time of release of the printed manual. When this occurs, changed material may be provided as separate sheets included with this manual or separately in the form of a change package.

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Safety and Usage Tips

JETT•ce units with integrated wireless LAN contain a wireless radio transmitter and receiver. When in operation, the JETT•ce communicates with 802.11b-equipped devices by receiving and transmitting radio frequency (RF) magnetic fields in the frequency range 2.4 to 2.5 GHz. The maximum output power of the radio transmitter is 100 Mw.

Radio Frequency Exposure

The Wireless LAN card installed in the JETT•ce is designed to be in compliance with the RF exposure limits set by national authorities and international health agencies when installed or used separately from other antennas or radio transmitters.

Operation of this device excludes body-worn holsters, belt clips, or similar operating configurations, as described in the FCC filing.

Driving

RF energy may affect some electronic systems in motor vehicles, such as car stereo, safety equipment, etc. Check with your vehicle manufacturer's representative to be sure that your JETT•ce with integrated wireless LAN will not affect the electronic system in your vehicle.

Aircraft

- Disable the wireless radio in your JETT•ce before boarding any aircraft.
- To prevent interference with communications systems, do not enable wireless radio while the plane is in the air.
- Do not use it on the ground without permission from the crew.

FCC Compliance

The internal 802.11b WLAN card installed in this device complies with Part 15 of the FCC rules (Manufacturer: Socket Communication, Inc., FCC ID: IXMCF-B-AG-01).

Operation is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The internal WLAN card is also ETS 300 328 and ETS 300 826 compliant. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. Where as operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user may try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna of the radio or television.
- Increase the distance separating the equipment and the receiver.
- Connect the equipment to an outlet on a different branch circuit than that of the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

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Chapter 1: **Overview**

About this Manual

Intended as a companion guide to the JETT•ce Technical Reference Manual, this document describes the configuration and setup of the integrated Wireless LAN option for the JETT•ce.

Unless otherwise stated, the operational characteristics described herein correspond to factory default configurations and settings as shipped from Two Technologies. Wherever used herein, the term "JETT•ce" applies to all models (except as noted).

It is beyond the scope of this manual to provide operating system tutorials or information about commercial or customized JETT•ce application programs and connected equipment. This information should be available in the manuals that accompany those products.

Related Documents

- JETT•ce Technical Reference Manual, Document Number: MAN0334
- JETT•ce Integrated Bluetooth Setup and Configuration Guide, Document Number: MAN0341
- JETT•RFID Technical Reference Manual, Document Number: MAN0339

About the JETT•ce

With its modern, ergonomic appearance and design, the JETT•ce is the most recent addition to Two Technologies' series of rugged hand held computers for industrial and commercial use. Its quick mount connector system allows easy insertion and removal in cradle or vehicle mounts.

The JETT•ce features a powerful Windows CE .NET operating system, the Intel XScale processor and a wide selection of compatible peripherals (ARM Technology processor architecture). It supports a wide variety of removable peripheral devices, such as wireless LANs, modems, bar code readers, cameras and Bluetooth.

About Two Technologies

Two Technologies has been producing rugged hand held/panel mount terminals and computers for over fifteen years. By implementing state of the art design and manufacturing techniques, we revolutionized hand held terminals and computers inside and out. Today, Two Technologies offers over a dozen cost-effective solutions serving virtually every market worldwide.

About the Integrated Wireless LAN Option

With the Integrated Wireless LAN (I-WLAN) option installed, you can connect the JETT•ce to enterprise and public Wi-Fi LAN systems to access the Internet, email and corporate servers.

For 802.11 networks, the I-WLAN supports Open or Shared authentication using 40, 64 or 128-bit Wired Equivalent Privacy (WEP) encryption keys. These key can be statically associated or dynamically created depending on the authentication type.

The I-WLAN also supports with networks that use 802.1X authentication with Extensible Authentication Protocol-Transport Level Security (EAP-TLS) or Protected EAP (PEAP).

EAP-TLS and PEAP provide authenticated access to 802.11 wireless networks and minimize wireless network security risks by providing user and computer identification, centralized authentication and encryption services based on the Wired Equivalent Privacy (WEP) algorithm.

***Note**: The I-WLAN only supports long radio preambles (headers). It will not connect to other access points or other WLAN radios that are use short preambles. If you cannot connect to your access point, please check the configuration to ensure it is set for long preamble.*

About the I-WLAN Software

Installed on the JETT•ce as part of the Windows CE .NET operating system, The I-WLAN software consists of two components: Wireless Network Connection tools and Client tools.

The Network connection tools enable you setup, configure and connect to a WLAN, while the Client tools perform a variety of utility functions, such as power management and network troubleshooting

Whenever you turn on the JETT•ce, it will automatically start searching for any wireless network advertising its SSID (network name). While searching for wireless networks, the JETT•ce will display the following icons in the system tray to indicate the wireless connection status and the connectivity quality.

Connection Status Icons

The following icons will appear in the system tray to indicate the wireless connection status. Double tap the icon to access the Wireless Network Connection tools.

Icon	*Status*
	Connected to WLAN
	Disconnected from WLAN

Connectivity Quality Icons

The following icons will appear in the system tray to indicate the connectivity quality. Tap the icon to access the WLAN Client tools.

Icon	*Status*
	Excellent connectivity
	Good connectivity
	Marginal connectivity
	Poor connectivity
	No connectivity
	No quality information available

Chapter 2: 802.11 Configuration

802.11 Configuration Requirements

Before you start, find out what security settings you need to connect to your WLAN network. If applicable, consult with the network administrator. The necessary settings may include one or more of the following:

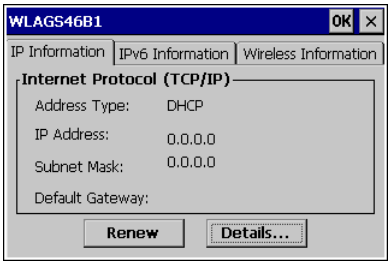
- Wireless network name (SSID)
- WEP key, WEP key format (Hex or ASCII) and Key Index number
- Use of DHCP or Static IP to assign IP addresses

***Note**: If using static IP addresses, you must assign the addresses through the WLAGS46B1 Network and Dial-up Connections dialog via the Settings menu.*

802.11 Configuration Setup

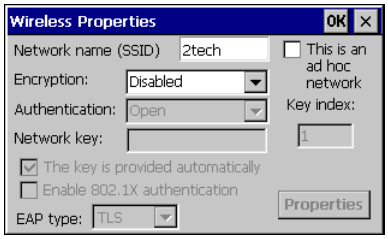
To configure the JETT•ce to connect to an 802.11 wireless network:

1. In the Status Bar, double-tap the Connection Status icon to access the Network Connection (WLASGS46B1) dialog box.

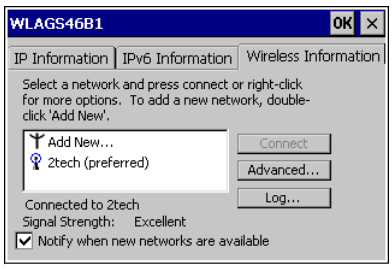


2. Select the **Wireless Information** tab.

3. Double-tap the **SSID** (name is case-sensitive). If the name does not appear, double-tap **Add New**. In either case the Wireless Properties dialog box appears.

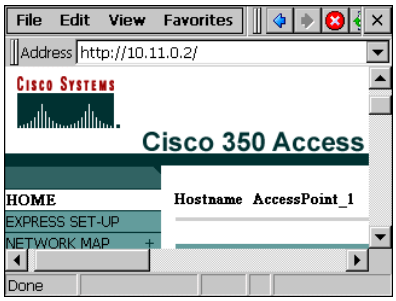


4. If needed, enter the **Network name or SSID** (case sensitive).
5. If using Open authentication without WEP encryption, select **Disabled** as the Encryption type.
6. If using Open or Shared authentication with WEP encryption:
   - Select the appropriate authentication type: **Open** or **Shared**.
   - Select **WEP** as the Encryption type
   - Clear the **Key is provided to me automatically** box.
   - Enter the WEP key. For 40/64-bit keys, use either 10 hex digits or 5 ASCII characters. For 128-bit keys, use either 26 hex digits or 13 ASCII characters.
   - Enter the **Key index** number.
   - Clear the **Enable 802.1X authentication** box.
7. Tap **Ok** to exit the Wireless Properties dialog box. The Wireless Information dialog box reappears. The JETT•ce will then begin to scan for the selected network and attempt to make a connection.
8. If the connection was successful, the icon for the selected network will appear with a blue halo.



9. Tap Connect to **Ok** to exit the WLASGS46B1 dialog box.

To verify that you have a successful network connection, launch Internet Explorer and type in the AP's IP address. The AP's Summary Status page should appear.



Chapter 3: 802.1X Configuration

802.1X Configuration Requirements

This section describes how to install the certificates on the JETT•ce required for PEAP or EAP-TLS authentication, as well as configure and connect the JETT•ce to a 802.1X network.

Before you start, find out what security settings you need to connect to your WLAN network. If applicable, consult with the network administrator. The necessary settings may include one or more of the following:

- Wireless network name (SSID)
- Authentication type, user name and password
- Use of either DHCP or Static IP to assign IP addresses
- Authentication permission restrictions (e.g., domain administrators only)
- A copy of the root certificate from a Trusted Root Authority (no intermediary authority)

***Note**: If using static IP addresses, you must assign the addresses through the WLAGS46B1 Network and Dial-up Connections dialog via the Settings menu.*

Installing Certificates

Before you can connect to an 802.1X network, you will need to install the Root CA certificate of your network CA into the Trusted Root CA store on the JETT•ce. To do this, you or your network administrator must export the certificate from the CA and make it available for installation on the JETT•ce using an ActiveSync connection ors a copying it from a Compact Flash card.

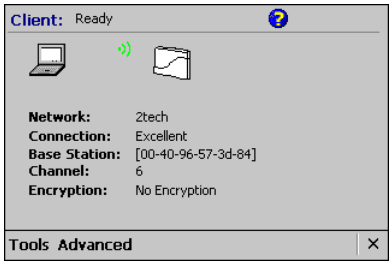
If your network uses EAP-TLS authentication, you also need to install a user (client) certificate.

Installing Root Certificates

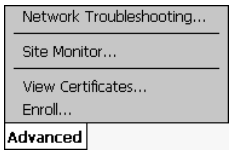
To install root certificates on the JETT•ce:

1. Using either an ActiveSync connection or Compact Flash card, copy the root certificate into the My Documents folder on the JETT•ce.
2. On the JETT•ce, tap the Connectivity Quality icon that appears in the system tray.

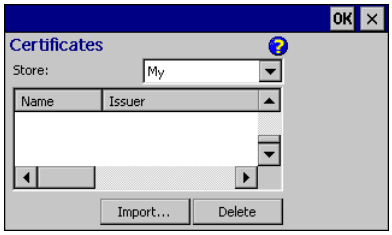
3. The WLAN Client Tools dialog box appears.



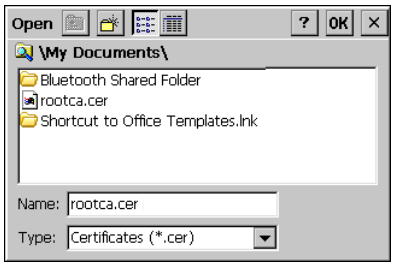
4. Tap **Advanced** then **View Certificates…**



5. The Certificate Enrollment wizard appears.



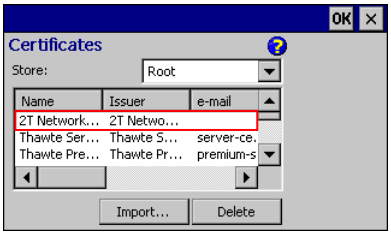
6. Tap **Import…** The Open dialog box appears.



7. Navigate to the My Documents folder, select the root certificate and tap **OK**. The JETT•ce will then prompt you to add the certificate to the Root Store.

8. Tap **Yes** to continue. A confirmation message will then appear and indicate the addition of the certificate to the Root certificate store.

9. Tap **OK** to return to the Certificate Enrollment wizard. Select **Root** from the Store drop-down list to verify the addition. The new certificate should now appear.



10. Tap **OK** to exit.

Installing User (Client) Certificates

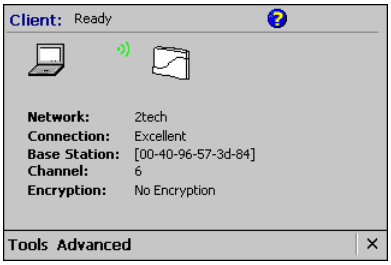
If you are connection the JETT•ce to a 8021.X network that uses EAP-TLS authentication, you will need to install a user (client) certificate via an ActiveSync connection between the JETT•ce and the Certification Authority server.

***Note**: Before starting this procedure you should maximize the desktop area of the JETT•ce by selecting the Taskbar and Start Menu Properties from the Start menu and clearing the **Always on top** check box.*

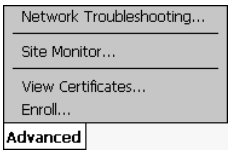
To install a user (client) certificate for EAP-TLS authentication:

1. Establish an ActiveSync connection between the JETT•ce and the Certification Authority server.
2. On the JETT•ce, tap the Connectivity Quality icon that appears in the system tray.

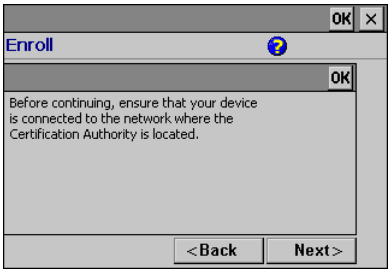
3. The WLAN Client Tools dialog box appears.



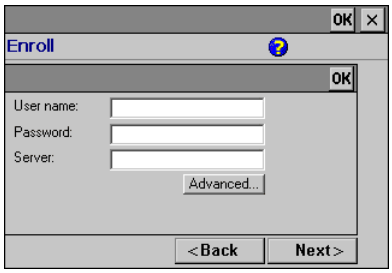
4. Tap **Advanced** then **Enroll...**



5. The Certificate Enrollment wizard appears.



6. Tap **Next**.



7. Enter the User name, Password and Server name, and then tap **Next**. When entering your user name use the format: domain\username. The JETT•ce will then request the certificate from the Certificate Authority server.

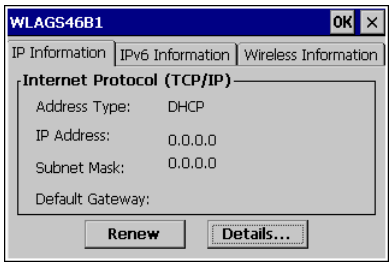
8. After the JETT•ce indicates the successful receipt of the certificate, tap **Finish** to complete the process and exit the wizard.

9. Disconnect the Active Sync connection. You are now ready to connect to the network.

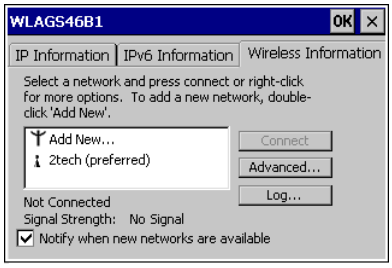
802.1X Configuration Setup

To configure the JETT•ce to connect to an 802.1X wireless network:

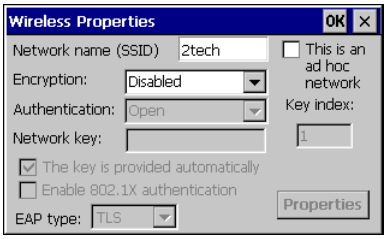
1. In the Status Bar, double-tap the WLAN icon to access the WLASGS46B1 dialog box.



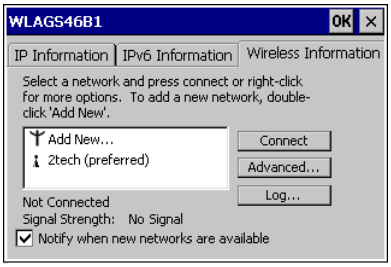
2. Select the **Wireless Information** tab.



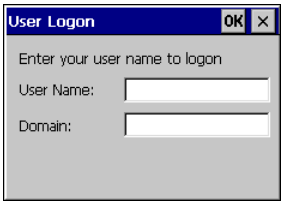
3. Double-tap the **SSID** (name is case-sensitive). If the name does not appear, double-tap **Add New**. In either case the Wireless Properties dialog box appears.



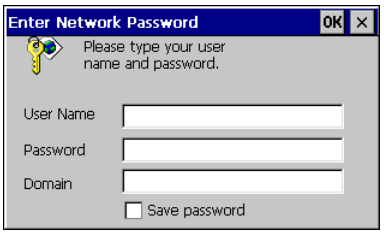
4. Select **WEP** as the Encryption type.
5. Select **Open** as the Authentication type.
6. Check the **Key is provided to me automatically** box.
7. Check the **Enable 802.1X authentication box**.
8. Select the EAP type: **TLS** or **PEAP**.
9. Tap **Ok** to exit the Wireless Properties dialog box and return to the WLASGS46B1 dialog box



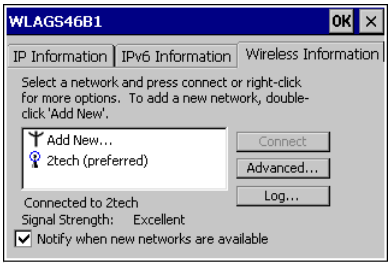
10. Select the network name and tap **Connect**. While attempting authentication, the JETT•ce and display a User Logon dialog box.
    - For **TLS** authentication, enter the user name and domain, and then tap **OK**.



    - For **PEAP** authentication, enter the user name, password and domain, and then tap **OK**.

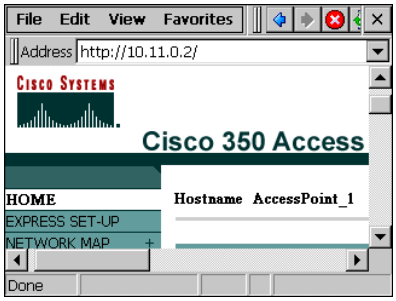


11. If the connection was successful, the icon for the selected network will appear with a blue halo.



12. Tap Connect to **Ok** to exit the WLASGS46B1 dialog box.

To verify that you have a successful network connection, launch Internet Explorer and type in the AP's IP address. The AP's Summary Status page should appear.



Chapter 4: **WLAN Client Tools**

About the WLAN Client Tools

The WLAN Client Tools is a set of utility functions that enable you to perform the following tasks:

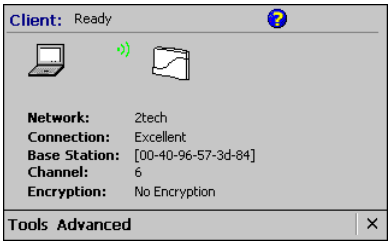
- Enabling/disabling the radio
- Power Management
- Suspension of WLAN while connected
- Create and view the log file
- Display Version information

In addition, a set of advanced tools enables you to perform network troubleshooting, monitor site activity and manage certificates (discussed previously).

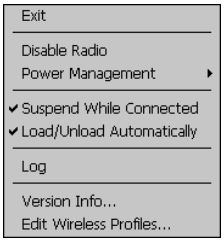
To access the standard WLAN Client Tools:

13. Tap the Connectivity Quality icon to display the WLAN Client Tools dialog box.

14. The WLAN Client Tools dialog box appears.



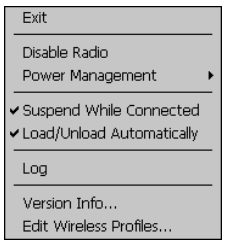
15. Tap **Tools** to display the standard WLAN Client Tools menu.



Enable/Disable Radio

If needed, you can enable or disable the radio as follows:

1. Access the standard WLAN Client Tools menu.

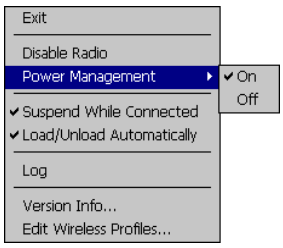


2. If enabled, check **Disable Radio** to turn off the radio. If disabled, check **Enable Radio** to turn on the radio.

Power Management

For energy efficiency, you can enable the card's power management option.

1. Access the standard WLAN Client Tools menu.

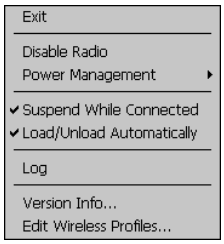


2. Select **Power Management** and then select either **On** to enable power management or **Off** to disable power management.

Suspend While Connected

To optimize battery life, you can allow the JETT•ce to suspend according to its power settings whenever the WLAN card is connected and there is no data traffic. However, if the JETT•ce suspends while connected to the WLAN, the connection will be dropped.

1. Access the standard WLAN Client Tools menu.



2. Clear **Suspend While Connected** to run the integrated wireless option continuously.

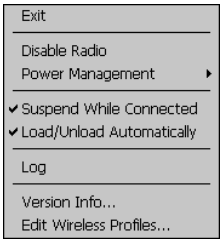
   Check **Suspend While Connected** to allow the JETT•ce to suspend according to its power settings whenever the WLAN card is connected and there is no data traffic.

3. In either case, a message will prompt you to reset the JETT•ce. Tap OK to continue.

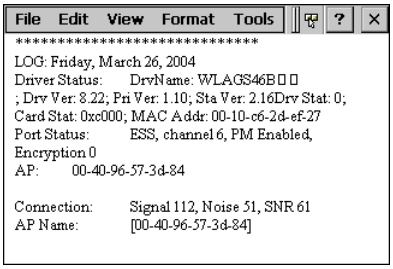
Log File

To help troubleshoot connection problems, you can view the connection log. This log is a snapshot of a connection at the time you enable the log.

1. Access the standard WLAN Client Tools menu.



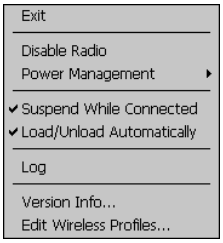
2. Tap **Log**.
3. When a confirmation message appears, tap **OK** to clear the message.
4. Open **My Computer** and double-tap **wireless.txt** to view the log in Pocket Word.



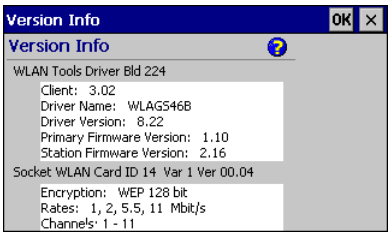
Version Info

To view version information about the integrated wireless option:

5. Access the standard WLAN Client Tools menu.



6. Check **Version Info.** The Version Info window will appear.



7. Tap **OK**.

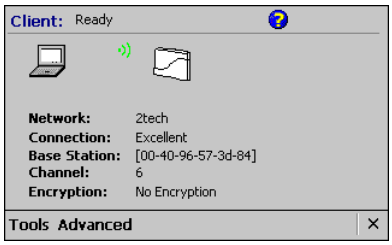
Advanced Client Tools

The advanced Client Tool enables you to perform network troubleshooting, monitor site activity and manage certificates (discussed previously).

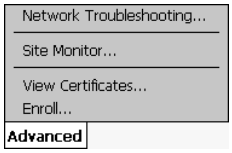
To access the advance WLAN Client Tools:

1. Tap the Connectivity Quality icon to display the WLAN Client Tools dialog box.

2. The WLAN Client Tools dialog box appears.



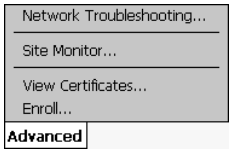
3. Tap **Advanced** to display the Advanced Tools menu.



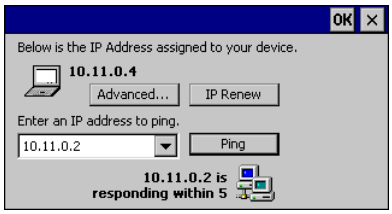
Network Troubleshooting

To perform network troubleshooting:

1. Access the Advanced Tools menu.

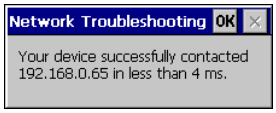


2. Tap **Network Troubleshooting**. The Network Troubleshooting dialog box will appear, displaying the IP address assigned to your JETT•ce.

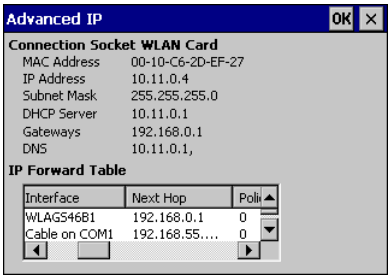


Note: If you have an ActiveSync, connection to your host PC, two IP addresses will appear.

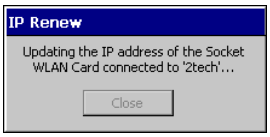
3. To test network connectivity, select or enter the IP address of the target device, and then tap **Ping**. A pop-up message will display the results.



4. To view Advanced IP information, tap **Advanced**.



5. Use the scroll bars to review the data at the bottom of the screen.
6. After reviewing the data, tap **OK** to return to the Network Troubleshooting dialog box.
7. To request a new IP Address, tap **IP Renew**.

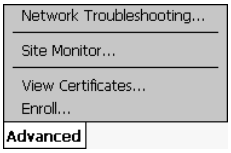


8. If updated, the Network Troubleshooting screen should display a new IP address.
9. Tap **Close** to return to the Network Troubleshooting dialog box.
10. Tap **OK** to exit the Network Troubleshooting screen.

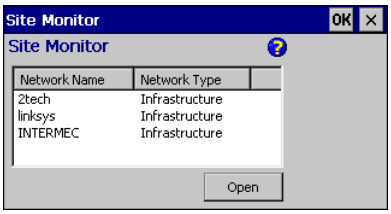
Site Monitor

Use the Site Monitor option to check the signal qualities of WLAN networks within range.

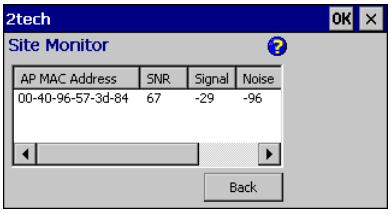
1. Access the Advanced Tools menu.



2. Tap **Site Monitor**. The Site Monitor dialog box will appear and list any WLAN networks detected in range.



3. To view information about a network, tap the network name. A screen will appear reporting the MAC address, SNR (Signal-to-Noise Ratio), Signal, and Noise of the WLAN network.



4. Tap **Back** to return to the previous screen
5. Tap **OK** to exit the Site Monitor screen.

Chapter 5: **ActiveSync**

Introduction

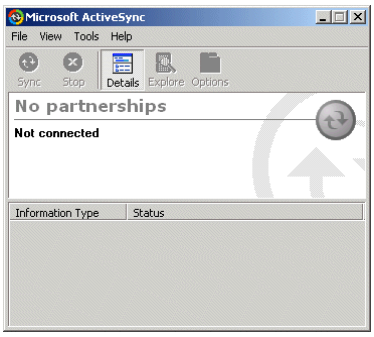
ActiveSync is a desktop utility program (available as a free download from Microsoft) that allows you to synchronize certain types of information between a PC and the JETT•ce. You can also use ActiveSync to transfer files and install programs on the JETT•ce.

Setting up a Partnership

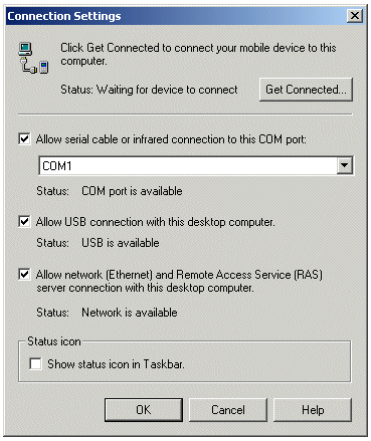
In order to make a wireless ActiveSync connection, you must first create a partnership using a serial connection.

To setup a partnership between the JETT•ce and the PC:

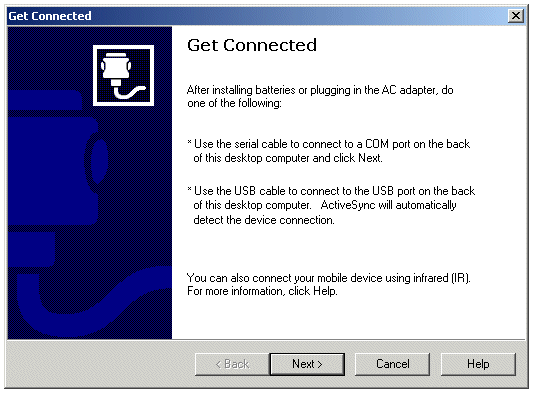
1. Connect an interface cable to the JETT•ce's RS-232 port and an available COM port on the PC.
2. On the JETT•ce, open the **Control Panel**, select **PC Connection** and ensure that it is set to "**PC-115**."
3. On the PC, start **ActiveSync**.



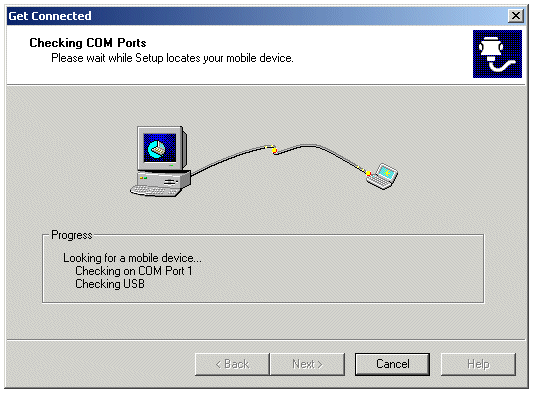
4. From the **File** menu, select **Connection Settings**. The Connection Settings dialog box opens.



5. Ensure that you allow a serial cable connection to the available COM port (for example COM1), then click **Get Connected**. The Get Connected wizard opens.

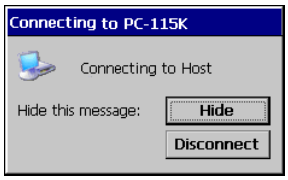


6. Click **Next**. ActiveSync will then attempt to connect to the JETT•ce.

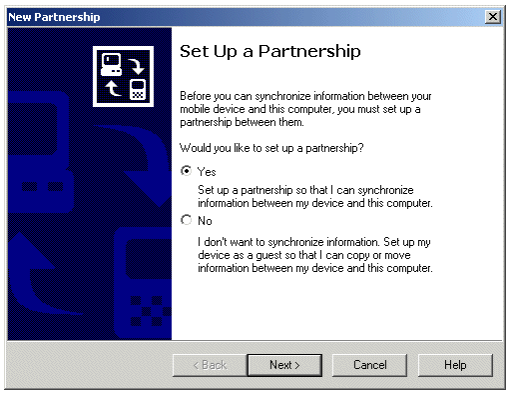


7. On the JETT•ce desktop, tap **PC Link**.

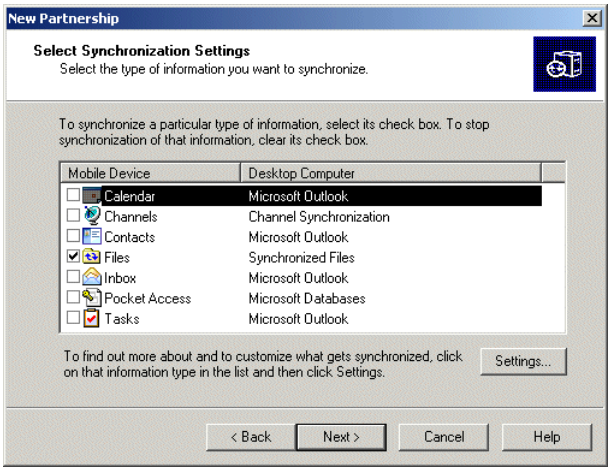
The following message box appears:



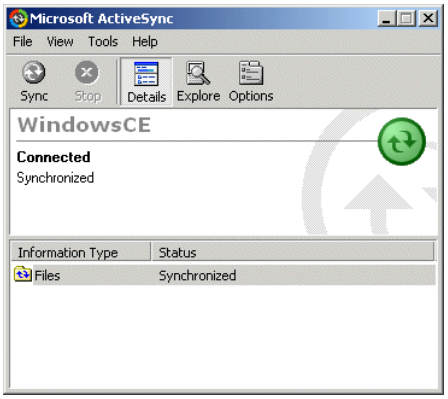
8. If ActiveSync successfully establishes communications, the ActiveSync dialog will briefly reappear on the PC and start the New Partnership dialog wizard.



9. On the New Partnership dialog box, select **Yes**, click **Next** and make your partnership and synchronization selections. In order to synchronize files, you must enable the **Files** settings.



10. After you complete the wizard, the ActiveSync dialog box will reappear as follows:



Setting up your Network Connection

In order to setup a network connection, the WLAN card in your PC must be setup to use "Internet Protocol (TCP/IP)."

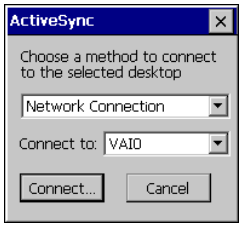
If you are manually specifying an IP address, make sure that you are using NetBIOS over TCP/IP. If you are you using a DHCP router or server to assign IP addresses automatically, make sure you are using NetBIOS over TCP/IP.

For more information about your PC network connection settings or setting up your PC to use a TCP/IP network connection, consult your system administrator or refer to Windows on-line help.

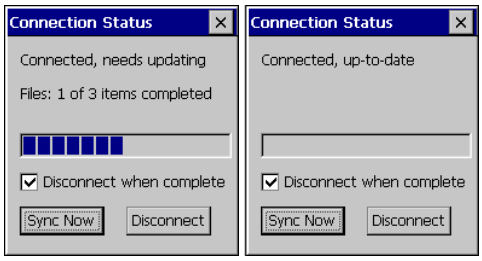
Making a Remote PC Link

To make a remote PC link:

1. Make a network connection.
2. On the JETT•ce desktop, Tap **Start** and select **Programs > Communications > PC Link Remote**. The ActiveSync dialog box opens.



3. From the **Connect to** drop down list, select the name of the PC you are linking. The JETT•ce will then attempt to establish a connection, automatically update any out-of-date items and synchronize with your desktop folder.



4. Tap **Sync Now** to update your folders manually.
5. Tap **Disconnect** to terminate the connection.

Appendix A: **Specifications**

Power Consumption (3.3 V Supply)

- Idle (listening): <20 mA
- Transmission: 265 mA

Standards Conformance

- IEEE 802.11b High Rate, Direct Sequence Spread Spectrum (DSSS)

Output Power

- 40 mW maximum

Data Rate

- 11 Mbps with Dynamic Rate Scaling to 5.5, 2, and 1 Mbps to optimize range and throughput

Frequency Range

- U.S., Europe, and Japan product covering 2.4-2.5 GHz, programmable for different country regulations

Range

- Approximately 300 feet (typical office environment)

Access Protocol

- Carrier Sense Multiple Access with Collision Avoidance Protocol (CSMA/CA)

Security Encryption/Authentication Hardware Support t

- 40-bit and 128-bit WEP data encryption
- 802.1X with EAP-TLS or PEAP

Certification/Compliance

- FCC: Part 15, Class B
- ETS 300 328
- ETS 300 826

TX Maximum Radiated EIRP

- U.S.: FCC Part 15.247
- Europe: ETS 300 328
- Canada: IC RSS210

TX Out-of-Band Emissions

- U.S.: FCC Part 15.247, 15.205, 15.209
- Europe: ETS 300 328

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