

TOOL OPERATING MANUAL

**Using the 261-3363 Wireless Communication
Adapter**

SMCS: 1900

Important Safety Information



Think Safety

Most accidents that involve product operation, maintenance, and repair are caused by failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs. A person must be alert to potential hazards. This person should also have the necessary training, skills, and tools to perform these functions properly.

Improper operation, lubrication, maintenance, or repair of this product can be dangerous and could result in injury or death.

Do not operate or perform any lubrication, maintenance, or repair on this product until you have read and understood the operation, lubrication, maintenance, and repair information.

Safety precautions and warnings are provided in this manual and on the product. If these hazard warnings are not heeded, bodily injury or death could occur to you or to other persons.

The hazards are identified by the “Safety Alert Symbol” and followed by a “Signal Word” such as “DANGER”, “WARNING”, or “CAUTION”. The Safety Alert “WARNING” label is shown below.

▲ WARNING

The meaning of this safety alert symbol is as follows:

Attention! Become Alert! Your Safety is Involved.

The message that appears under the warning explains the hazard and can be either written or pictorially presented.

Operations that may cause product damage are identified by “NOTICE” labels on the product and in this publication.

Caterpillar cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this publication and on the product are, therefore, not all inclusive. If a tool, procedure, work method, or operating technique that is not specifically recommended by Caterpillar is not used, you must satisfy yourself that it is safe for you and for others. You should also ensure that the product will not be damaged or be made unsafe by the operation, lubrication, maintenance or repair procedures that you choose.

The information, specifications, and illustrations in this publication are on the basis of information that was available at the time that the publication was written. The specifications, torques, pressures, measurements, adjustments, illustrations, and other items can change at any time. These changes can affect the service that is given to the product. Obtain the complete and most current information before you start any job.

▲ WARNING

When replacement parts are required for this product, Caterpillar recommends using Caterpillar replacement parts or parts with equivalent specifications including, but not limited to, physical dimensions, type, strength, and material.

Failure to heed this warning can lead to premature failures, product damage, personal injury, or death.

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Contact Information

The IP address is printed on each Wireless Communication Adapter. If the factory default IP Address on the Wireless Communication Adapter has been changed, or for any other software issues, contact Product Support:

Illinois - (800) 541-8665

Outside Illinois - (800) 542-8665

Canada - (800) 523-8665

Fax: 1-309-494-1475

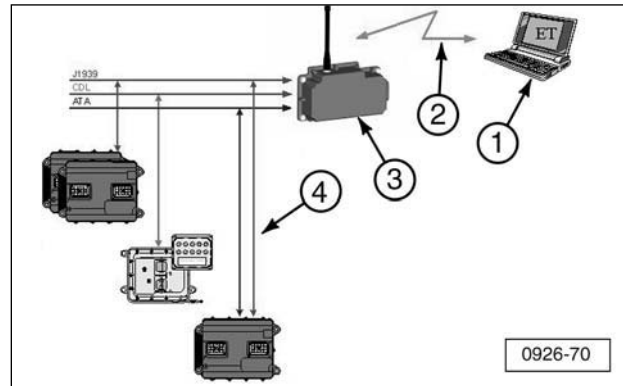
CSTG_Hotline@cat.com

System Overview

Product Description

The 261-3363 Wireless Communication Adapter (WCA) is a service tool for remotely monitoring machine or engine operation using CatET and an 802.11 enabled PC. The group consists of a portable hardware adapter and a software program designed to run under Microsoft Windows (XP, 2000, ME, or 98). It will allow a laptop computer (PC) to aid in the monitoring of ECM communication (3) on J1939/11 high speed data link, CAT DataLink, and J1708 (ATA) vehicle networks. Communication between the Wireless Communication Adapter (2) and the PC with CatET (1) is transmitted through an 802.11b wireless network.

The 261-3363 Wireless Communication Adapter is available as a group that contains all the necessary cables and software required for using the Wireless Communication Adapter on Caterpillar products. Replacement parts can also be purchased separately. For a list of the parts contained in the group, refer to the Parts List section.



1. Laptop computer with Cat Electronic Technician (CatET).
2. 802.11b wireless network.
3. Wireless Communication Adapter.
4. ECM.

Wireless Communication Adapter

The Wireless Communication Adapter module combines the functionality of a Communication Adapter with an 802.11b radio. The module is mounted to the machine with magnetic mounts and connects to the on-board data links (CAT Data Link, J1939 and ATA) through a Data Link Harness. The module translates the data link traffic into messages that are communicated via the 802.11b Wireless Network to the 802.11b Enabled PC running Caterpillar ET.

Data Link Harness

The Data Link Harness connects the Wireless Communication Adapter to the diagnostic port on the radio. Note that the harness length must **not** be extended, as functionality will be lost.

802.11b Enabled PC

Caterpillar Electronic Technician is used on a PC to display information about the machine. An 802.11 network card is required for the PC to communicate with the Wireless Communication Adapter.

Network Interface

The Wireless Communication Adapter system relies on an 802.11b radio network. The radio network is configured to operate in Ad Hoc mode (Channel 11) and utilizes an IP Address Range in Private Address space (172.23.x.x) by default but can be changed as needed based on the site-specific network requirements. WEP (Wired Equivalent Privacy) is enabled with a default static WEP key. This too can be configured based on local requirements. For information regarding the modification of settings for the Wireless Communication Adapter, refer to the Contact Information section at the front of this manual. Contact your local Network Administrator for more information and assistance in changing and documenting these settings.

Parts List

The 261-3363 Wireless Communication Adapter Group consists of:

Part Number	Description
239-9955	Wireless Communication Adapter
259-3183	Data Link Cable
261-4867	802.11b PC Card and Software CD
262-7732	Magnetic Feet (4 required)
261-3381	Foam Insert (for carrying case)
6V-3072	Carrying Case
154-6315	Machine Screw (4 required)
8T-0328	Washer (4 required)
6D-5801	Locknut (4 required)
NEHS0926	Tool Operating Manual

Optional Accessories

Part Number	Description
250-2349	Wireless Communication Adapter Antenna (Service Replacement)
261-4871	PCMCIA Card Range Extender Antenna (Optional Accessory)

System Requirements

To successfully operate the Wireless Communication Adapter, the following PC hardware and software is required:

Recommended PC Configuration

- 128 MB of RAM
- CD-ROM drive
- IBM® PC compatible with Pentium III 450 MHz processor or greater

Minimum Software Requirements

- Microsoft® Windows™ XP, 2000, ME, or 98

Network Requirements

- 802.11b Wireless Network
- Ad Hoc Mode / Channel 11
- WEP Encryption – 128-Bit Static Key
- 172.23.x.x Private Addressing Range
- IP Address / Subnet and WEP key configurable

Specifications

Description	Specification
Operating Voltage	9V DC – 32V DC, 3.6 watts typical, 4 watts maximum
Operating Temperature	-40°C to +70°C (-40°F to +158°F)
Overall Size (without magnets)	213.9 x 119.9 x 45.2 mm (8.42 x 4.72 x 1.78 in)
Weight (without magnets)	472 g (1.04 lb)
Vehicle Protocols Supported:	Cat Data Link (CDL) ATA (SAE J1708) SAE J1939
Wireless Communication	TCP/IP over 802.11b (11 Mb)
Wireless Communication Range (line of site)	
Standard Configuration	152 M (500 ft.)
With PCMCIA Card Range Extender Antenna (optional)	244 M (800 ft.)

NOTE: All specifications are subject to change without notice.

Operating Instructions

The Wireless Communication Adapter connects between the service connector on the Caterpillar product being tested and a laptop computer (PC) through an 802.11b Wireless Network.

If the service connector is powered when the Wireless Communication Adapter is connected to the data link, the green POWER light on the Wireless Communication Adapter will glow.

When power is first applied, the Wireless Communication Adapter performs a diagnostic test by turning on all three of the lights at the same time.

Before using the Wireless Communication Adapter hardware and software, complete the steps below to ensure that the system will operate properly, effectively, and without error.

To operate the Wireless Communication Adapter, complete the steps listed below:

1. Review the "System Requirements" section (especially Network requirements) with the Network Administrator to ensure that the Wireless Communication Adapter does not interfere with any other software or hardware applications.
2. Install the communication software using the correct installation procedure contained in this manual for the operating software being used on the PC.
3. Configure the Caterpillar Electronic Technician (CatET) for the Wireless Communication Adapter.
4. Read the "Using the Wireless Communication Adapter" section in this manual.

Software Installation

The installation of the software to operate the Wireless Communication Adapter depends on the operating system of the computer. This section of the manual contains two separate software installation procedures, depending on the operating system. The first procedure covers the software installation onto computers operating under the Windows XP operating software. The second section covers the Windows 2000 operating system. The installation procedures for Windows ME and 98 can be found on the Caterpillar Dealer web site.

NOTE: Please review documentation that is provided by the supplier of the Wireless LAN PC Card (ORINOCO / Proxim) regarding Software License Agreement and Regulatory Information. This can be found on the Software Installation CD by selecting "Find Information" at the "What do you want to do?" screen.

Windows XP Operating System

In order for Cat Electronic Technician (CatET) to operate in a wireless mode, the laptop and CatET must both be configured. This section provides step-by-step instructions for installing and configuring the wireless PC Card installed in the laptop computer. Refer to the section “Configure Cat Electronic Technician for the Wireless Communication Adapter” for step-by-step instructions for configuring the CatET to communicate through the Wireless Communication Adapter (WCA).

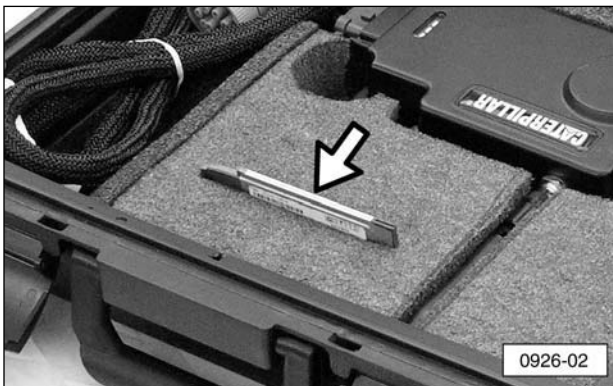
Required Hardware and Software

In addition to these instructions, you will need four items in order to successfully complete the installation and configuration:

1. A laptop with a CD drive (refer to the “System Requirements” section in this manual for additional information).



2. A “Proxim PC Card” and software CD (part of the tool group).



3. Wireless Communication Adapter.



4. CatET Version 2004B or greater software.

NOTE: Before installing the Wireless Communication Adapter on the machine, record the IP address which is printed on the lower left-hand side of the adapter. The IP address contains four sets of numbers separated by decimal points (172.23.1.31 for example).



Software Installation

Before starting the software installation process, make sure Wireless Communication Adapter (1) is connected to the machine with wiring harness (2) provided in the tool group.



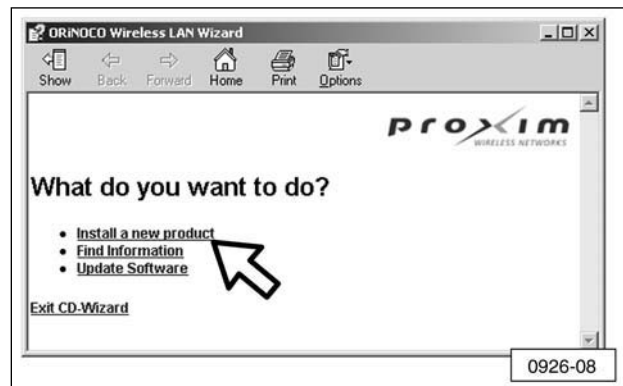
A green light in the display signifies that the unit is correctly connected and receiving power from the machine.



1. Insert the Proxim Software & Documentation CD into the laptop and the Wireless LAN Wizard will begin to run. If the CD-Wizard does not start automatically:
 - a. Click the "Start" button on the Windows task bar and select "Run".
 - b. Type "d:\exsetup.exe" and click "OK" (where d:\ represents the drive letter of your CD-ROM drive).



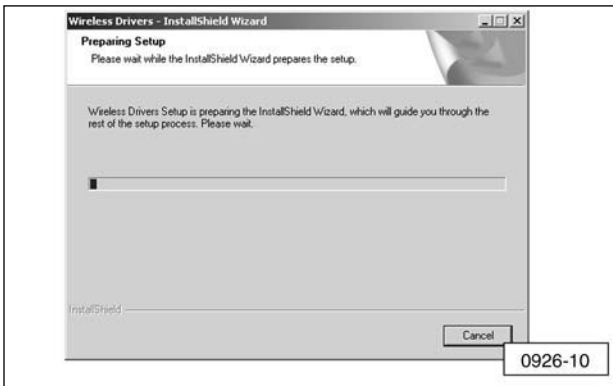
2. When the "What do you want to do?" screen appears, click on "Install a new product".



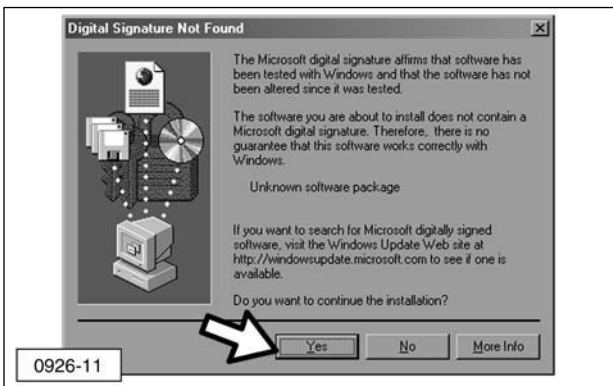
- When the “Setup Overview for Windows XP” screen appears, click on “Install Driver and Client Manager”.



NOTE: The “Wireless Drivers - InstallShield Wizard” appears and shows the progress of the installation process. This process may take several seconds.

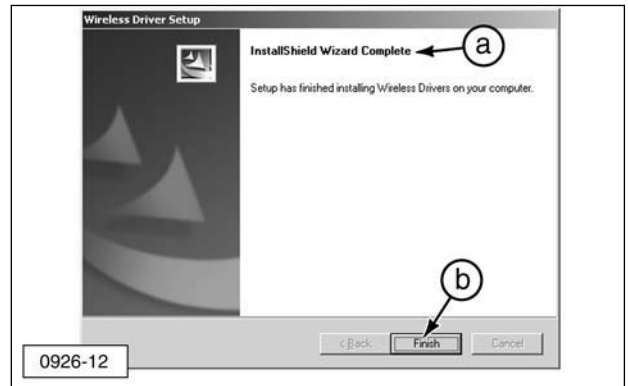


NOTE: The “Digital Signature Not Found” screen may display at this time. If this screen does display, click “Yes”.



- The “Wireless Driver Setup” screen will appear:

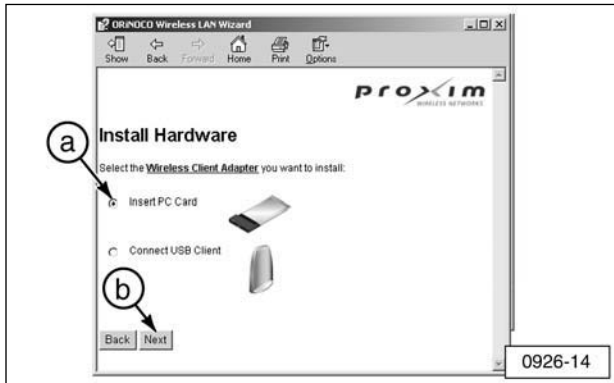
- Check the message “InstallShield Wizard Complete” to confirm the completion of the installation.
- Click “Finish”.



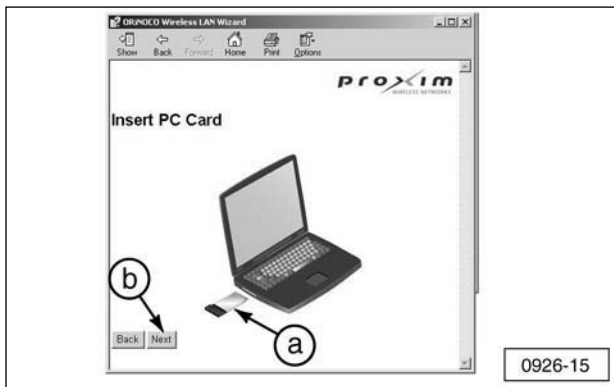
- The “Setup Overview for Windows XP” screen appears again. Click “Install Hardware”.



6. When the “Install Hardware” screen appears:
 - a. Verify that the “Insert PC Card” option is selected.
 - b. Click “Next”.



7. When the “Insert PC Card” screen appears:
 - a. Insert the PC Card into the appropriate card slot in the laptop.



- b. Click “Next”.

NOTE: A “Found New Hardware” window should appear in the lower right-hand corner of the computer indicating the PC Card has been successfully installed. If this window does not appear, proceed to Step 10.

8. Close the “Setup Overview for Windows XP” screen.



9. If the “Client Manager” icon is visible in the Windows Task Bar, proceed to Step 11.



10. If the computer does not recognize the PC Card or if the Client Manager icon is not visible, restart the computer with the PC Card inserted.



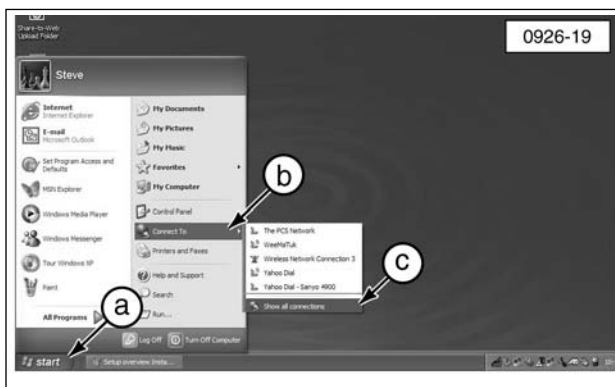
To manually start the Client Manager:

- a. Click "Start" on the Windows taskbar.
- b. Point to "Programs".
- c. Point to "Wireless".
- d. Click "Client Manager".
- d. The "Client Manager" icon should now appear in the Windows taskbar.



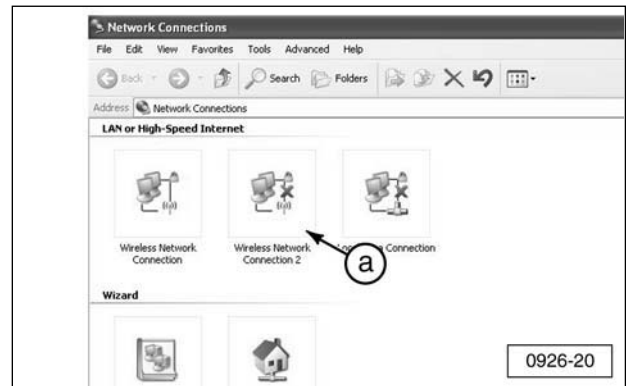
11. Access the "Network Connections" screen:

- a. Click "Start" on the Windows taskbar.
- b. Click "Connect To".
- c. Click "Show all connections".

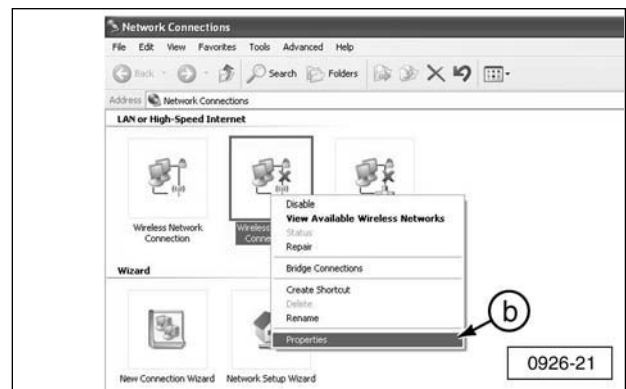


12. When the "Network Connections" screen appears:

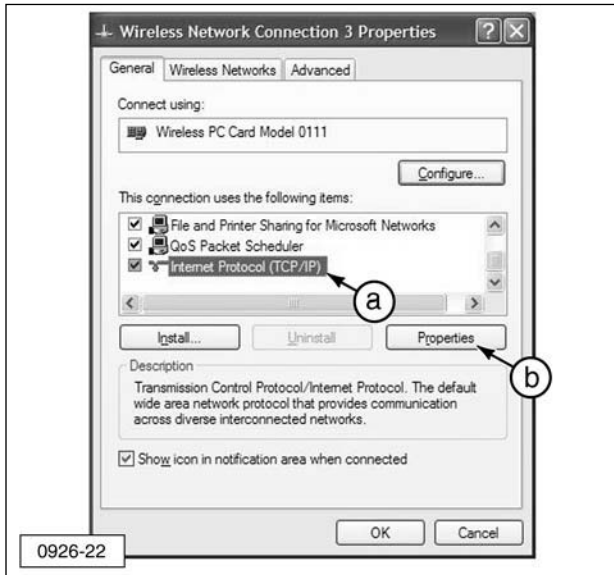
- a. Right-click on the "Wireless Network Connection" icon. This icon is for the "Wireless PC Card Model 0111".



- b. Select "Properties".



13. When the “Wireless Network Connection Properties” screen appears:
 - a. Scroll down and click on “Internet Protocol (TCP/IP)”.
 - b. Click “Properties”.

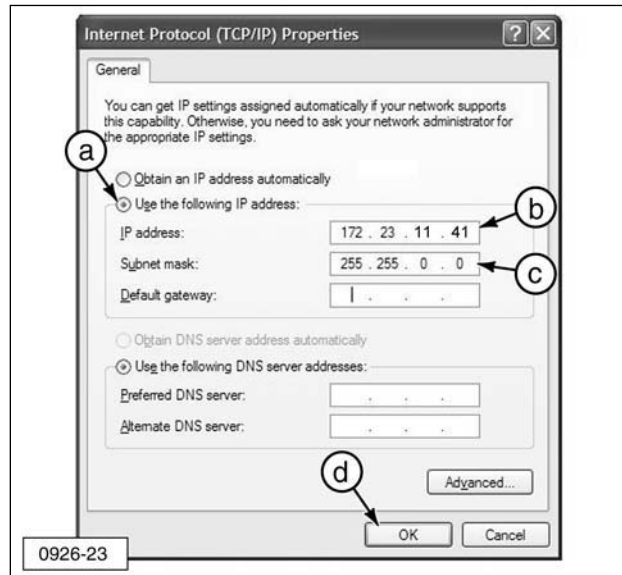


NOTE: Your laptop may not have as many components as listed in the illustration.

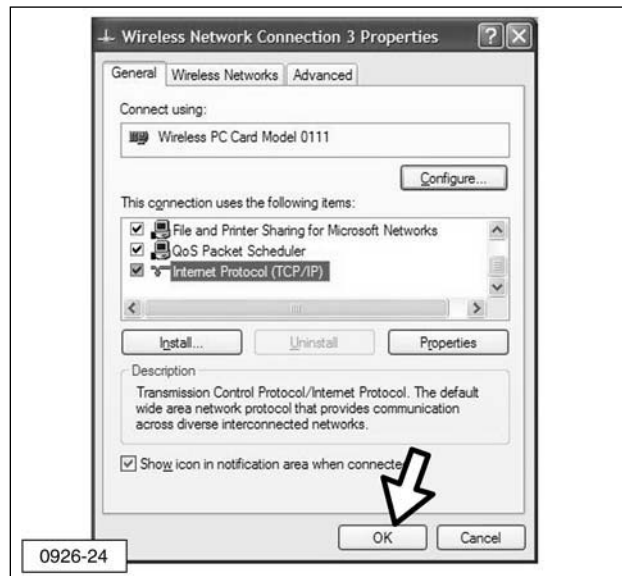
14. Alter and record the IP Address number by adding 10 to the third and fourth sets of numbers of the IP address. For example, if the number on the adapter is 172.23.1.31, the new number would be 172.23.11.41.

NOTE: The **first and second** sets of numbers of the IP Address will always be 172 and 23. The **third and fourth** sets of numbers in the IP address must not be the same as any other IP address in the local area network (LAN) or other Wireless Communication Adapters. Also, the numbers **0 and 255** cannot be used for the third and fourth set of numbers. It is highly recommended that the Network Administrator manage all IP Addresses of Wireless Communication Adapter modules and PC's configured for use with Wireless Communication Adapters.

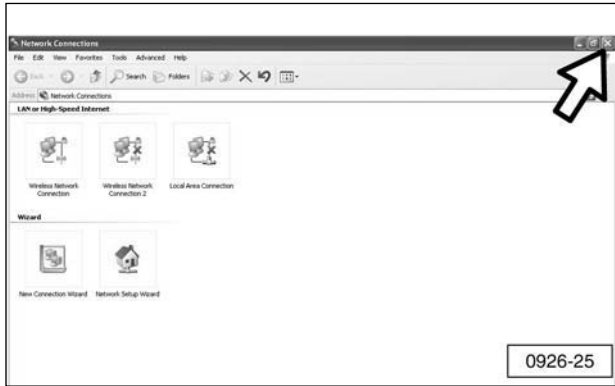
15. When the “Internet Protocol (TCP/IP) Properties” screen appears:
 - a. Select “Use the following IP address:”.



- b. Enter the altered IP Address number from Step 14.
- c. Verify that the “Subnet mask:” is 255.255.0.0.
- d. Click “OK”.
16. When the “Wireless Network Connection Properties” screen appears, click “OK”.



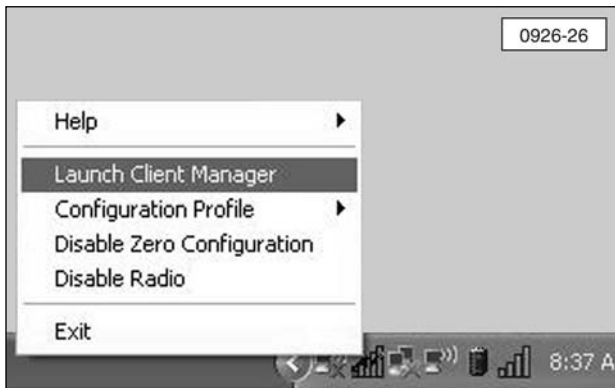
17. Close the “Network Connections” screen.



18. Right-click on the “Client Manager” icon on the Windows taskbar.

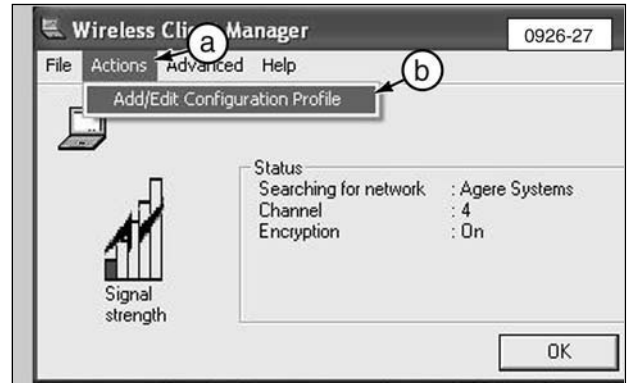


19. Click “Launch Client Manager”.

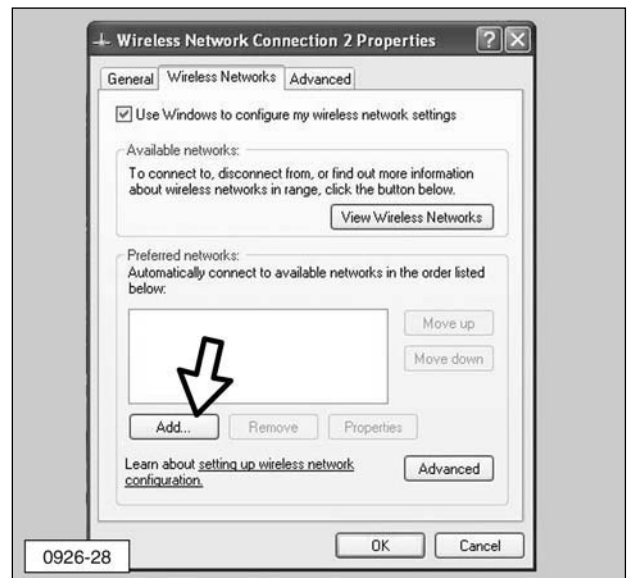


20. Edit the configuration profile:

- a. Click “Actions”.
- b. Click “Add/Edit Configuration Profile”.



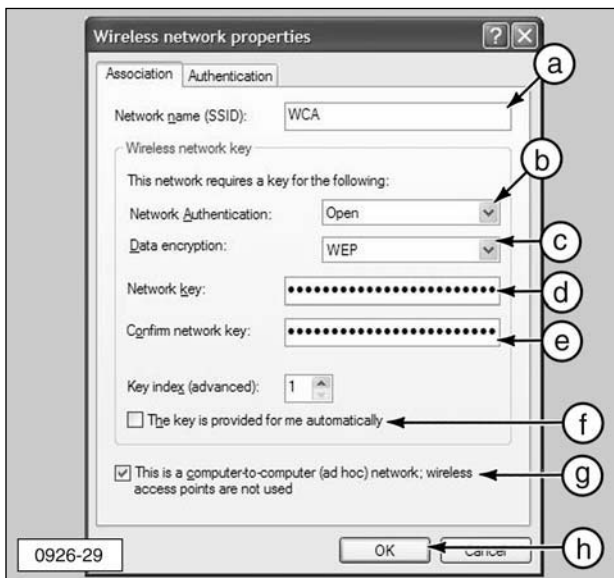
21. When the “Wireless Network Connection Properties” screen appears, click on “Add.”



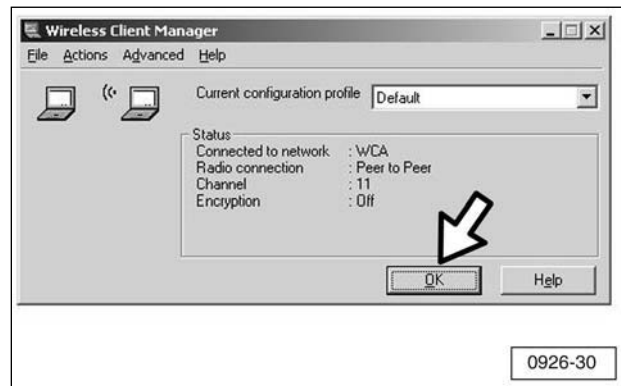
22. When the “Wireless network properties” screen appears:
- Type “WCA” (all capital letters) into the “Network name (SSID):” section.
 - Select “Open” from the “Network Authentication:” pull down menu.
 - Select “WEP” from the “Data encryption:” pull down menu.
 - Type in the “key” (number) **35373c57222750362a334c6a71** into the “Network key:” section. Refer to Step 22f if you are unable to type in the number.
 - Retype the number in the “Confirm network key” section.

NOTE: If the factory default IP Address on the Wireless Communication Adapter has been changed, refer to the Contact Information section at the front of this manual.

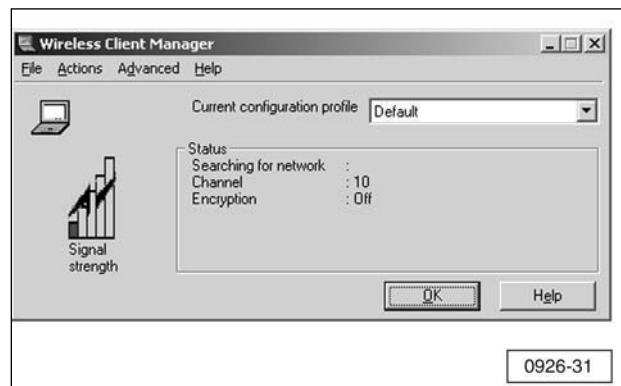
- If you are unable to type the “key” (number) into the box, uncheck the “The key is provided for me automatically” box.
- Check the “This is a computer-to-computer (ad-hoc) network; wireless access points are not used” box.
- Click “OK”.



23. The “Wireless Client Manager” screen should display as shown (graphic of the two computers communicating), if the PC Card is working properly. Click “OK” and proceed to Step 25.

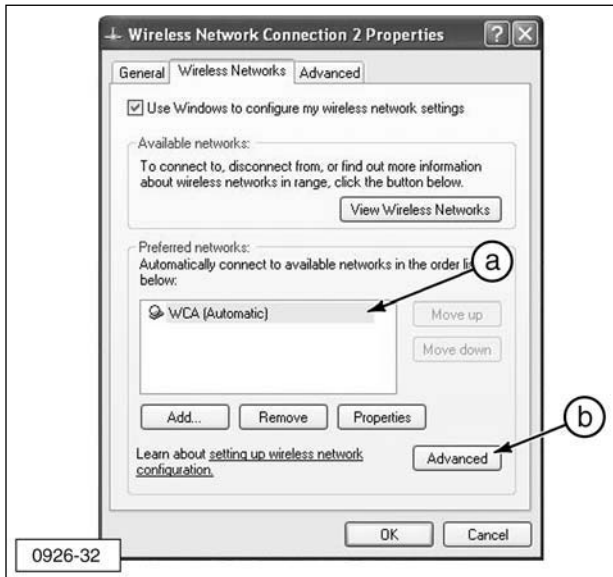


24. If the “Wireless Client Manager” screen displays as shown, there is no network present for communication. Make sure the Wireless Communication Adapter and harness are connected properly.

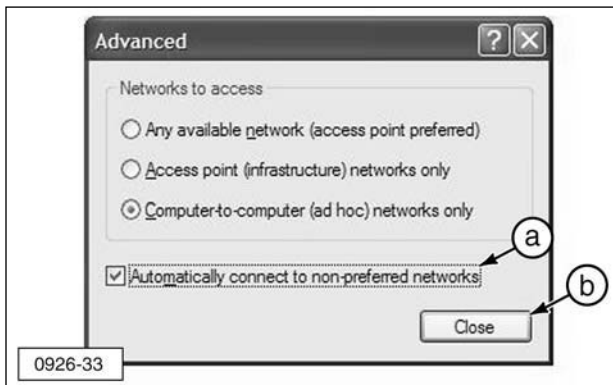


- NOTE:** If the screen (graphic of the two computers communicating) still does not appear, stop the installation and refer to the Contact Information section at the front of this manual.

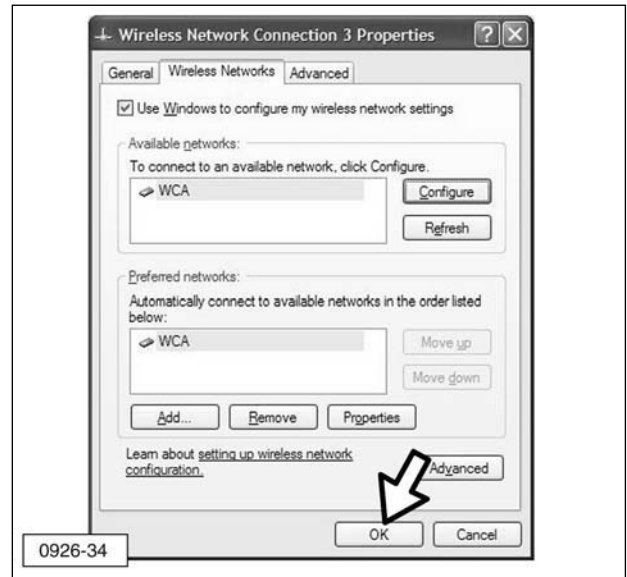
25. When the “Wireless Network Connection Properties” screen appears:
 - a. “WCA” (automatic) should appear in the “Preferred networks:” display. If not, repeat Step 22.
 - b. If “WCA” does appear in the “Preferred networks:” display, click “Advanced”.



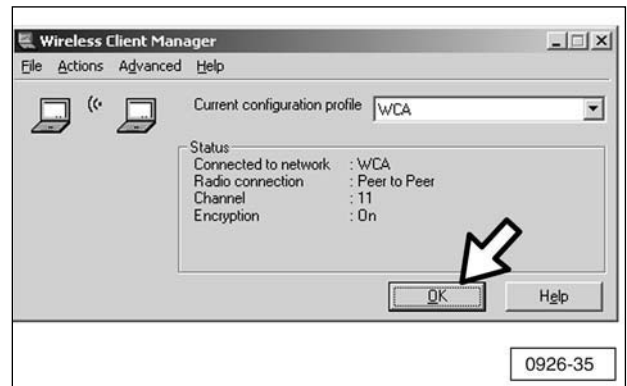
26. When the “Advanced” screen appears:
 - a. Check the “Automatically connect to non-preferred networks” box.
 - b. Click “Close”.



27. Click “OK” on the “Wireless Network Connection Properties” screen.



28. The “Wireless Client Manager” screen will display. Click “OK”.



29. Remove the Proxim Software & Documentation CD.



30. Congratulations, the installation of the PC Card is complete. Proceed to the Configure Cat Electronic Technician (CatET) for the Wireless Communication Adapter section in this manual.

Windows 2000 Operating System

In order for Cat Electronic Technician (CatET) to operate in a wireless mode, the laptop and CatET must both be configured. This section provides step-by-step instructions for installing and configuring the wireless PC Card installed in the personal computer. Refer to the section “Configure Cat Electronic Technician for the Wireless Communication Adapter” for step-by-step instructions for configuring the CatET to communicate through the Wireless Communication Adapter (WCA).

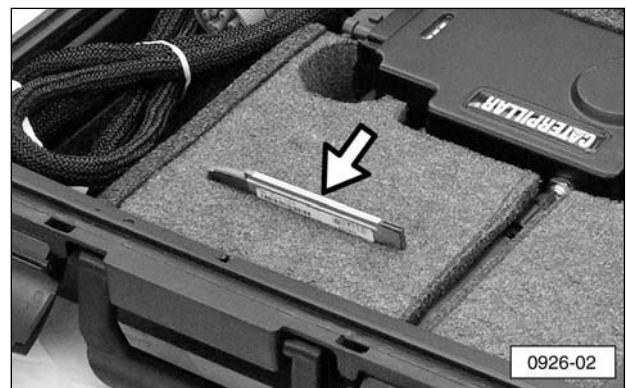
Required Hardware and Software

In addition to these instructions, you will need four items in order to successfully complete the installation and configuration.

1. A laptop with a CD drive (refer to the “System Requirements” section in this manual for additional information).



2. A “Proxim PC Card” and software CD (part of the tool group).



3. Wireless Communication Adapter.



4. CatET Version 2004B or greater software.

NOTE: Before installing the Wireless Communication Adapter on the machine, record the IP address which is printed on the lower left-hand side of the adapter. The IP address contains four sets of numbers separated by decimal points (172.23.1.31 for example).



Software Installation

Before starting the software installation process, make sure Wireless Communication Adapter (1) is connected to the machine with wiring harness (2) provided in the tool group.



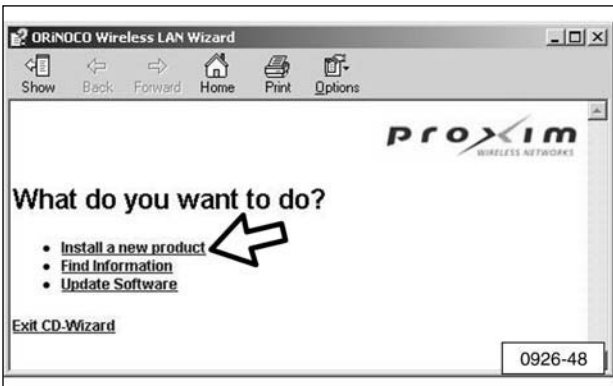
A green light in the display signifies that the unit is correctly connected and receiving power from the machine.



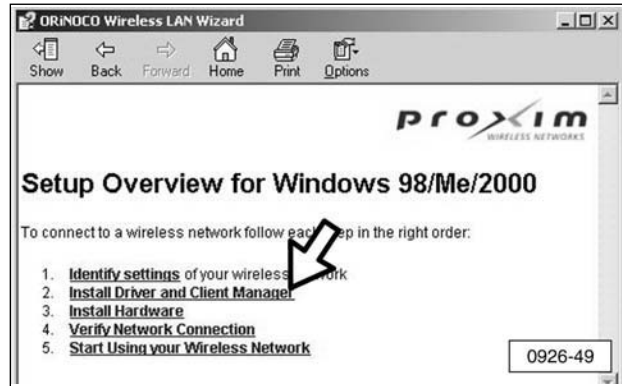
1. Insert the Proxim Software & Documentation CD into the laptop and the Wireless LAN Wizard will begin to run. If the CD-Wizard does not start automatically:
 - a. Click the “Start” button on the Windows task bar and select “Run”.
 - b. Type “d:\exsetup.exe” and click “OK” (where d:\ represents the drive letter of your CD-ROM drive).



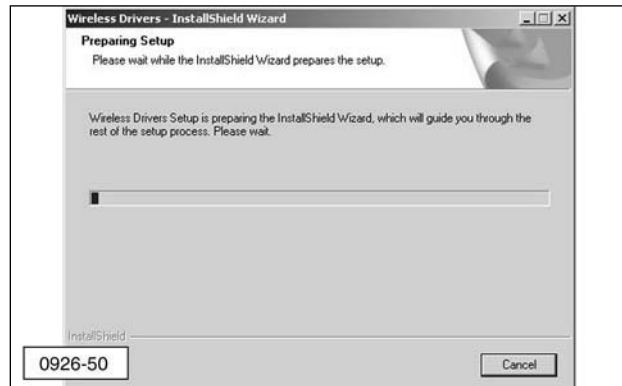
2. When the “What do you want to do?” screen appears, click on “Install a new product”.



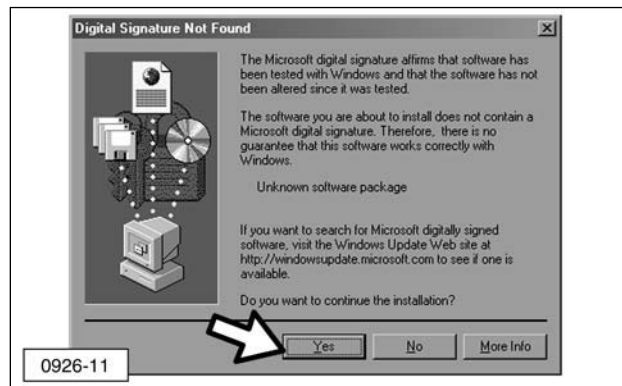
3. When the “Setup Overview for Windows 98/Me/2000” screen appears, click on “Install Driver and Client Manager”.



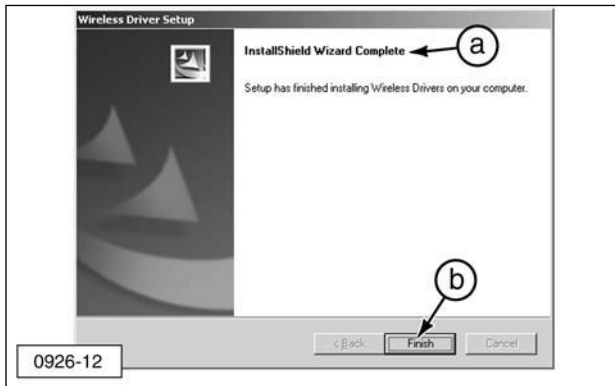
NOTE: The “Wireless Drivers - InstallShield Wizard” appears and shows the progress of the installation process. This process may take several seconds.



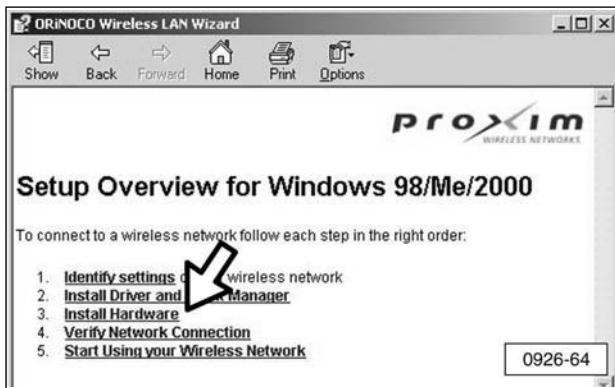
NOTE: The “Digital Signature Not Found” screen may display at this time. If this screen does display, click “Yes”.



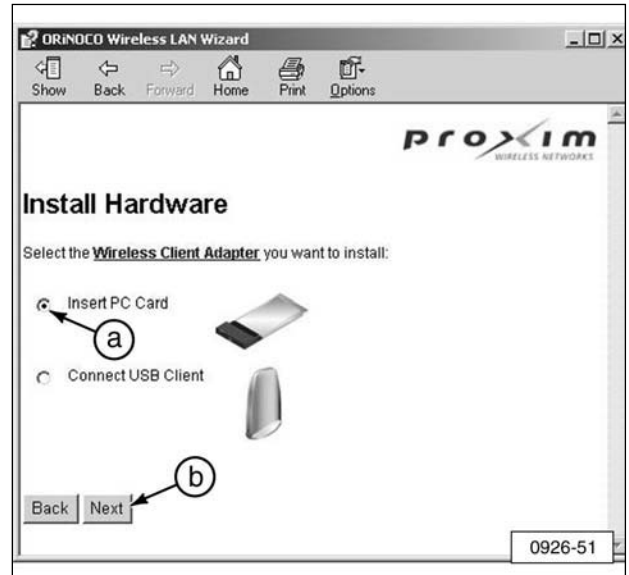
4. The “Wireless Driver Setup” screen will appear:
 - a. Check the message “InstallShield Wizard Complete” to confirm the completion of the installation.
 - b. Click “Finish”.



5. The “Setup Overview for Windows 98/Me/2000” screen appears again. Click “Install Hardware”.



6. When the “Install Hardware” screen appears:
 - a. Verify that the “Insert PC Card” option is selected.
 - b. Click “Next”.



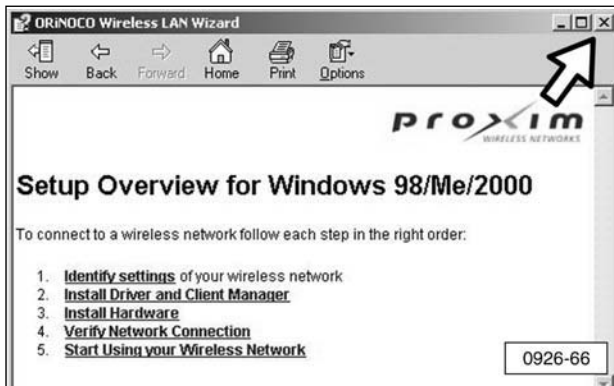
7. When the “Insert PC Card” screen appears:
 - a. Insert the PC Card into the appropriate card slot in the laptop computer.



- b. Click “Next”.

NOTE: A “Found New Hardware” window should appear in the lower right-hand corner of the computer indicating the PC Card has been successfully installed. If this window does not appear, proceed to Step 10.

8. Close the “Setup Overview for Windows 98/ME/2000” screen.



9. Restart the computer with the PC Card inserted.



10. If the “Client Manager” icon is visible in the Windows Task Bar, proceed to Step 11. If the icon is not visible, open the program using the steps below.



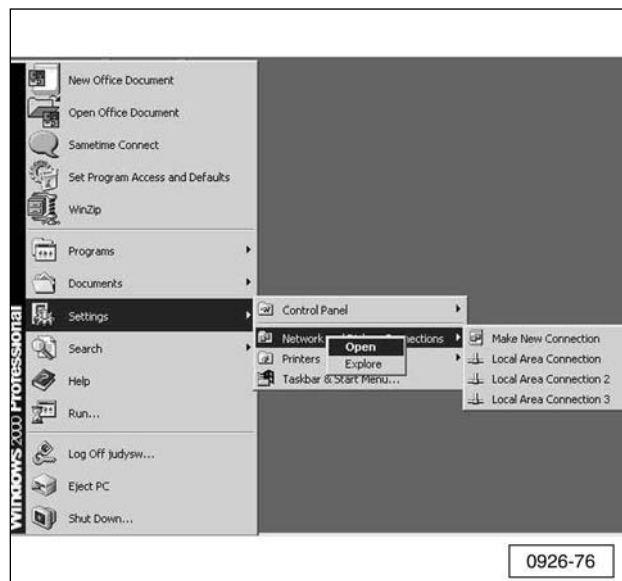
To manually start the Client Manager:

- a. Click “Start” on the Windows taskbar.
- b. Point to “Programs”.
- c. Point to “Wireless”.
- d. Click “Client Manager”.
- e. The “Client Manager” icon should now appear in the Windows taskbar.

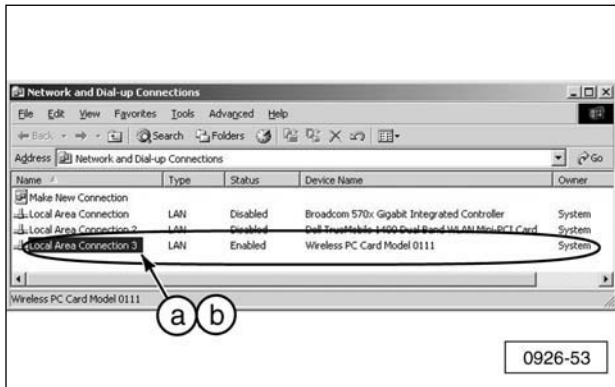


11. Access the “Network Connections” screen:

- a. Click “Start” on the Windows taskbar.
- b. Point to “Settings”.
- c. Right-click on “Network and Dial-up Connections”.
- d. Click “Open”.



12. When the “Network and Dial-up Connections” screen appears:
 - a. Right-click on the “Local Area Connection” option that has a device name of “Wireless PC Card Model 0111”.
 - b. Click “Properties”.



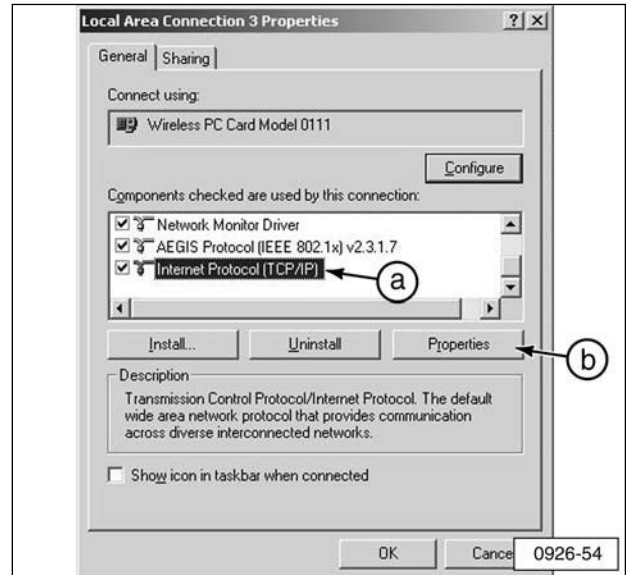
NOTE: If the screen does not display in the “Details” view as shown, click on the Views icon and click “Details”.

13. Alter and record the IP Address number by adding 10 to the third and fourth sets of numbers of the IP address. For example, if the number on the adapter is 172.23.1.31, the new number would be 172.23.11.41.

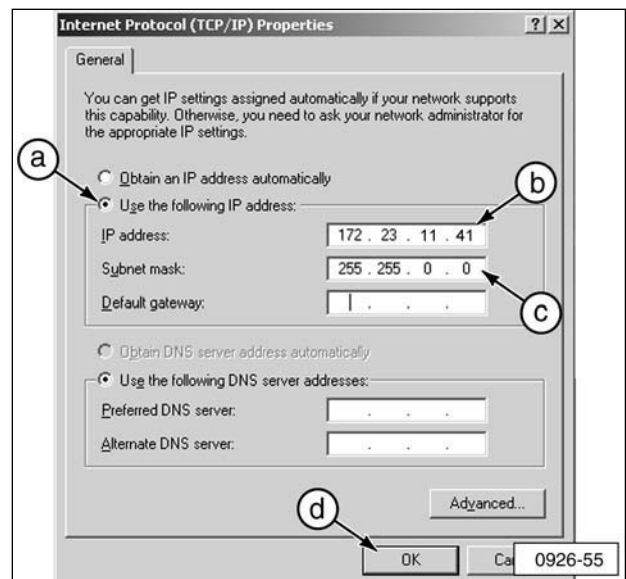
NOTE: The **first and second** sets of numbers of the IP Address will always be 172 and 23. The **third and fourth** sets of numbers in the IP address must not be the same as any other IP address in the local area network (LAN) or other Wireless Communication Adapters. Also, the numbers **0 and 255** cannot be used for the third and fourth set of numbers. It is highly recommended that the Network Administrator manage all IP Addresses of Wireless Communication Adapter modules and PC's configured for use with Wireless Communication Adapters.

NOTE: If the factory default IP Address on the Wireless Communication Adapter has been changed, refer to the Contact Information section at the front of this manual.

14. When the “Local Area Connection Properties” screen appears:
 - a. Scroll down and click on “Internet Protocol (TCP/IP)” option.
 - b. Click “Properties”.

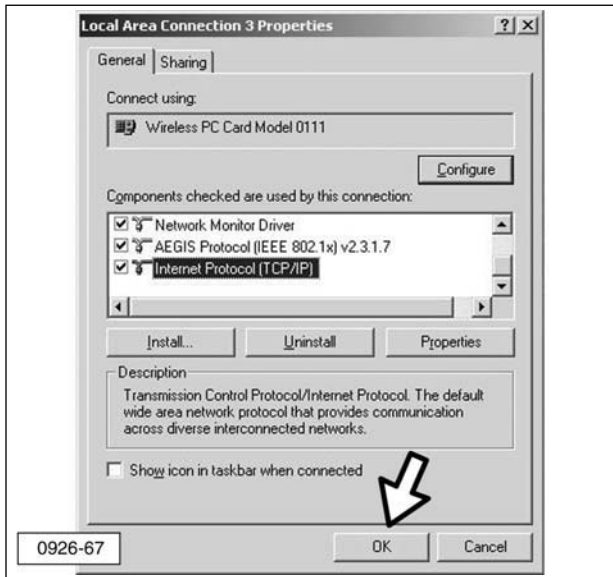


15. When the “Internet Protocol (TCP/IP) Properties” screen appears:
 - a. Select “Use the following IP address:”.

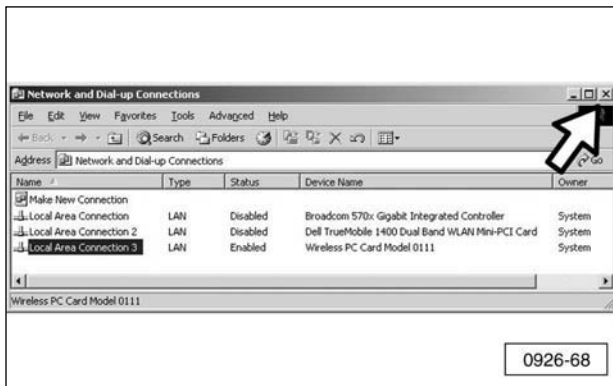


- b. Enter the altered IP Address number from Step 13.
- c. Verify that the “Subnet mask:” is 255.255.0.0.
- d. Click “OK”.

16. When the “Local Area Connection Properties” screen appears, click “OK”.



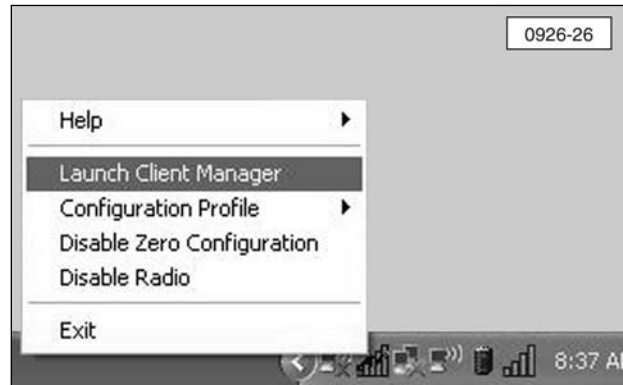
17. Close the “Network and Dial-up Connections” screen.



18. Right click on the “Client Manager” icon on the Windows taskbar.

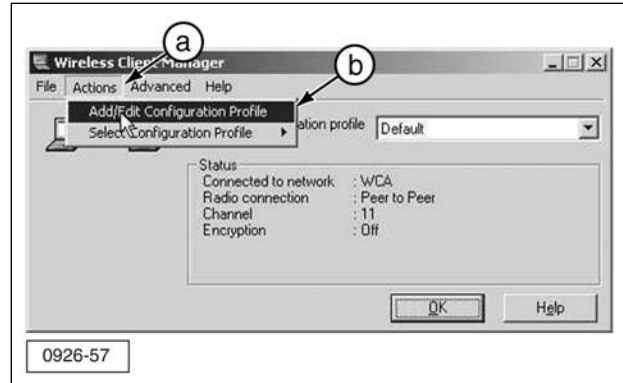


19. Click “Launch Client Manager”.

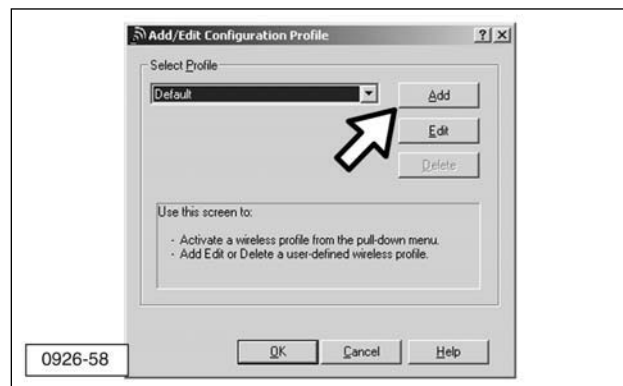


20. Edit the configuration profile:

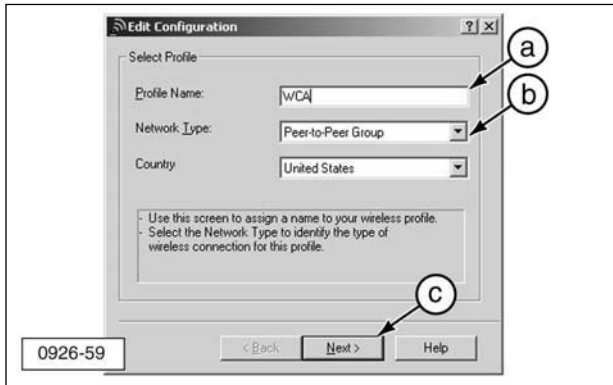
- a. Click “Actions”.
- b. Click “Add/Edit Configuration Profile”.



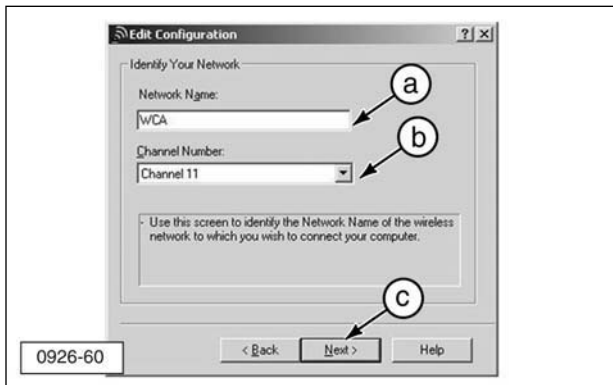
21. When the “Add/Edit Configuration Profile” screen appears, click on “Add”.



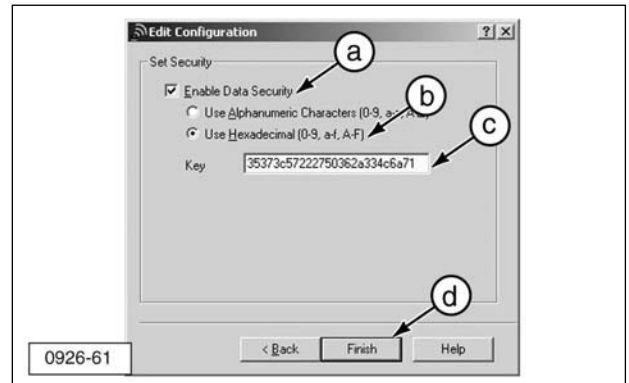
22. When the “Edit Configuration” screen appears:
 - a. Type any name/identifier into “Profile Name” area.
 - b. Select “Peer-to-Peer Group” from the “Network Type” pull down menu.
 - c. Click “Next”.



23. A second “Edit Configuration” screen will appear:
 - a. Type “WCA” in “Network Name:”.
 - b. Select “Channel 11” from the “Channel Number” pull-down menu.
 - c. Click “Next”.

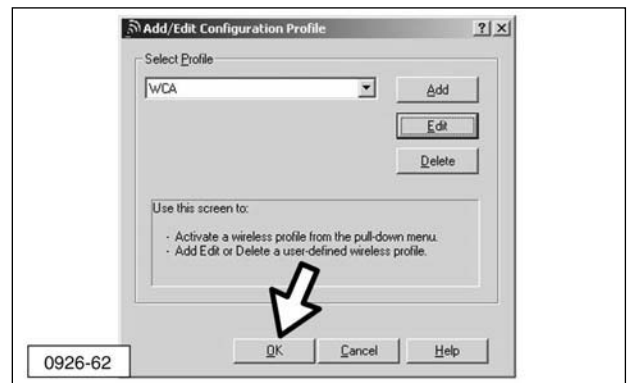


24. A third “Edit Configuration” screen will appear:
 - a. Select “Enable Data Security”.
 - b. Select “Use Hexadecimal”.
 - c. Type in the “Key” (number) **35373c57222750362a334c6a71** into the “Key” section.
 - d. Click “Finish”.

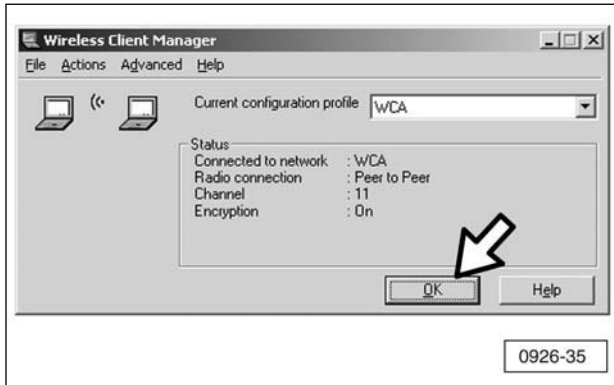


NOTE: If the factory default IP Address on the Wireless Communication Adapter has been changed, refer to the Contact Information section at the front of this manual.

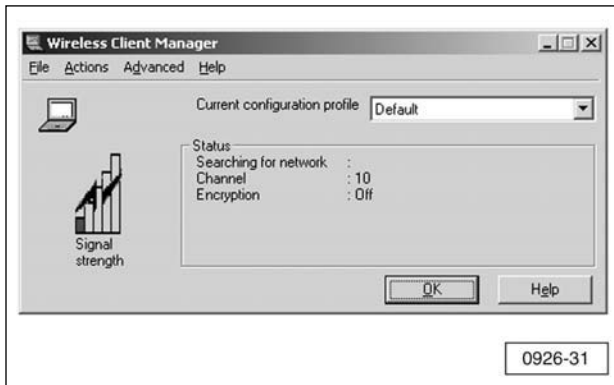
25. A fourth “Add/Edit Configuration Profile” screen will appear. Click “OK”.



26. The “Wireless Client Manager” screen should display as shown (graphic of the two computers communicating), if the PC Card is working properly. Click “OK”.

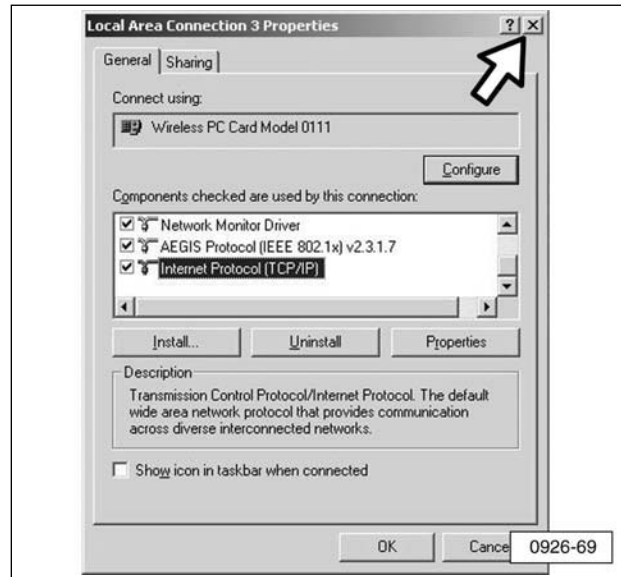


27. If the “Wireless Client Manager” screen displays as shown, there is no network present for communication. Make sure the Wireless Communication Adapter and harness are connected properly.



NOTE: If the screen (graphic of the two computers communicating) still does not appear, stop the installation and refer to the Contact Information section at the front of this manual.

28. Close the “Local Area Connection Properties” screen.



29. Remove the Proxim Software & Documentation CD.



30. Congratulations, the installation of the PC Card is complete. Proceed to the “Configure Cat Electronic Technician (CatET) for the Wireless Communication Adapter” section in this manual.

Configure Cat Electronic Technician for the Wireless Communication Adapter

1. Open CatET.

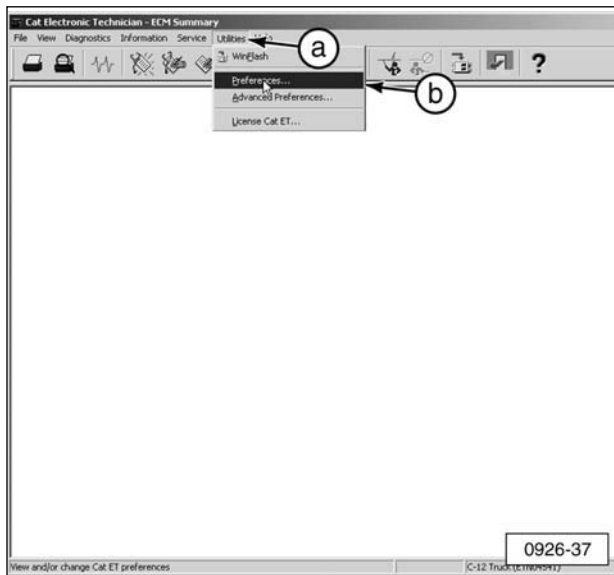
NOTE: The minimum version of CatET software is 2004B or greater.

2. The “Cat Electronic Technician” screen should appear on all new installations. Click “Stop Connect”.



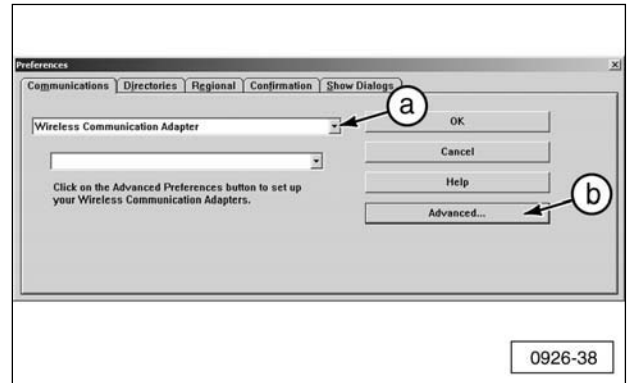
3. From the “Cat Electronic Technician” screen:

- a. Click “Utilities”.
- b. Then “Preferences”.

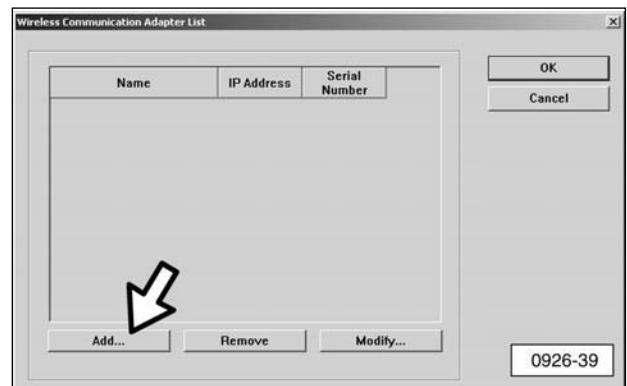


4. From the “Preferences” screen:

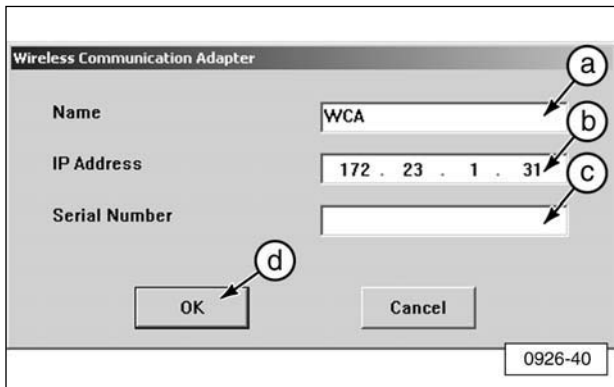
- a. Select the “Wireless Communication Adapter” option from the pull-down menu.
- b. Click “Advanced”.



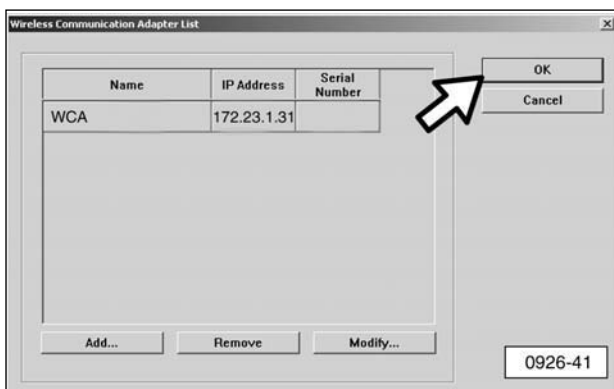
5. When the the “Wireless Communication Adapter List” screen appears, click “Add”.



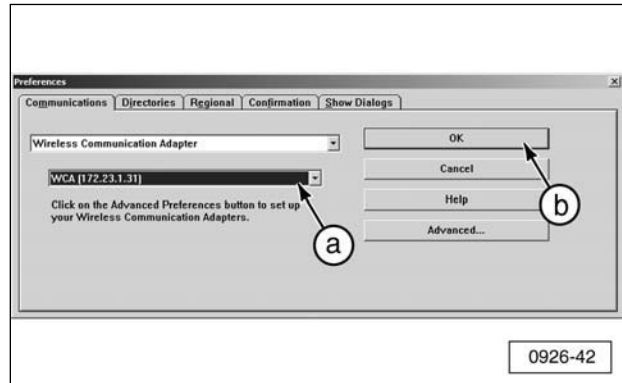
6. When the “Wireless Communication Adapter” screen appears:
 - a. Type “WCA” (in all capital letters) in “Name” (or a more descriptive name as desired).
 - b. Type the IP Address for the Wireless Communication Adapter in the “IP Address” field. (Note: This IP address comes from the label on the wireless communication adapter. It must be entered exactly as printed on the label).
 - c. Enter “Serial Number” of Wireless Communication Adapter if desired (optional).
 - d. Click “OK”.



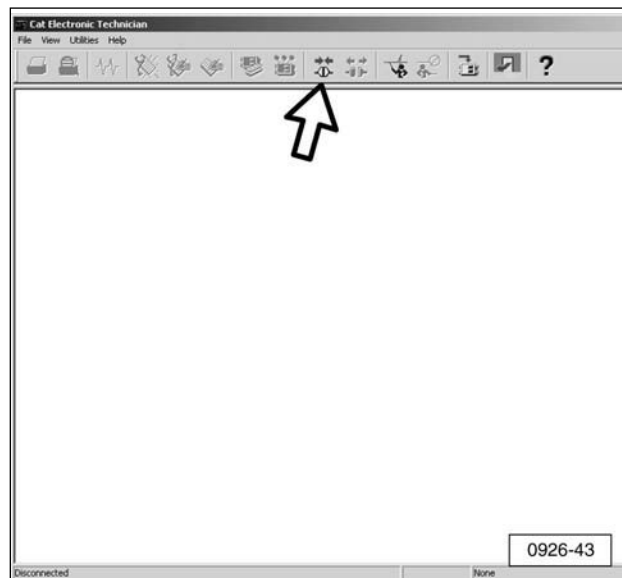
7. Make sure the “Wireless Communication Adapter List” appears with the information just entered, then click “OK”.



8. When the “Preferences” screen appears:
 - a. Select the name and IP address for Wireless Communication Adapter from the pull-down lists.
 - b. Click “OK”.



9. When the main “CatET” screen appears, click the “Connect” icon.



10. When the “Wireless Communication Adapter Selection” screen appears:
 - a. Make sure the WCA with the correct IP address is in the “Wireless Communication Adapter” field.
 - b. Click “OK”.

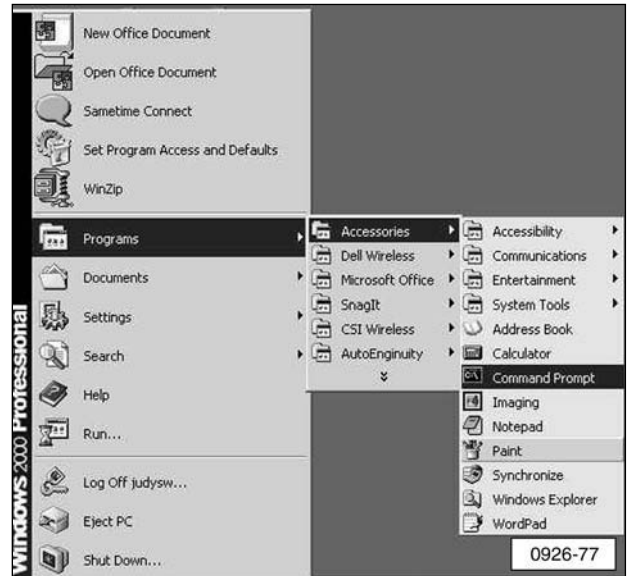


11. The following screen should display if the Wireless Communication Adapter is working correctly. The Wireless Communication Adapter is now installed and ready to communicate with the laptop computer.

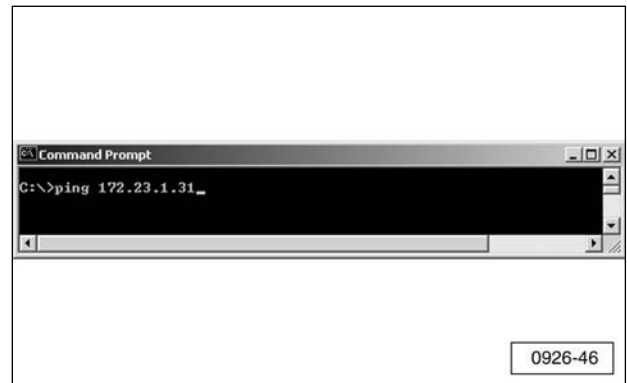


NOTE: If this screen does not display, go to the next step.

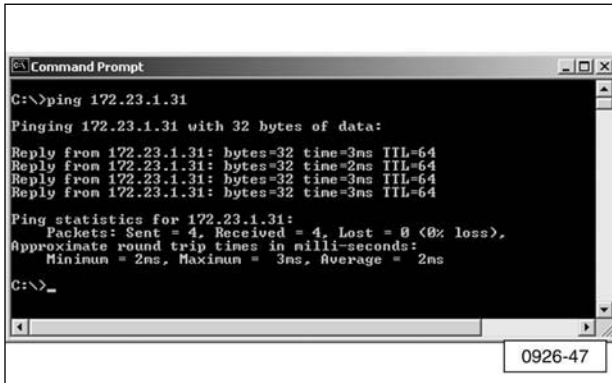
12. Test to make sure the wireless networks are communicating.
 - a. Click on the “Start” button in the Windows taskbar.
 - b. Point to “Programs”.
 - c. Point to “Accessories”.
 - d. Click on “Command Prompt”.



13. The “Command Prompt” window will display.
 - a. Type “ping 172.23.1.31” (the IP address on the Wireless Communication Adapter).
 - b. Press “Enter” key on the keyboard.



14. In response, “Reply from 172.23.1.31” messages should display. The IP number should match the IP address printed on the Wireless Communication Adapter.



```
Command Prompt
C:\>ping 172.23.1.31
Pinging 172.23.1.31 with 32 bytes of data:
Reply from 172.23.1.31: bytes=32 time=3ms TTL=64
Reply from 172.23.1.31: bytes=32 time=2ms TTL=64
Reply from 172.23.1.31: bytes=32 time=3ms TTL=64
Ping statistics for 172.23.1.31:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 3ms, Average = 2ms
C:\>_
```

15. If the “Reply from” messages do not display, repeat the entire installation procedure. If the “Reply from” messages still do not appear, refer to the Contact Information at the front of this manual.
16. If the “Reply from” screen is displayed as shown above, go to Step 1 of this procedure (Configure Cat Electronic Technician for the Wireless Communication Adapter) and verify the IP address of the Communication Adapter you are trying to connect is correct in CatET. If communication still does not occur, refer to the Contact Information at the front of this manual.

Using the Wireless Communication Adapter

When using the Wireless Communication Adapter to do remote monitoring of machines, there are several factors that can have a significant affect on overall performance of the system.

1. Location of the Wireless Communication Adapter on the machine.
2. Location of the PC that will be communicating with the Wireless Communication Adapter.
3. Obstacles in the Line-of-Sight between the PC and the Wireless Communication Adapter.
4. Weather conditions.

The Wireless Communication Adapter should be located as high up on the machine as possible, preferably with the antenna at the highest point of the machine and adjusted to point up into the air. Since the Wireless Communication Adapter relies on Line-of-Sight for effective communications, it is important to place the device in a location that can be easily seen from the location of the PC that will be monitoring it.

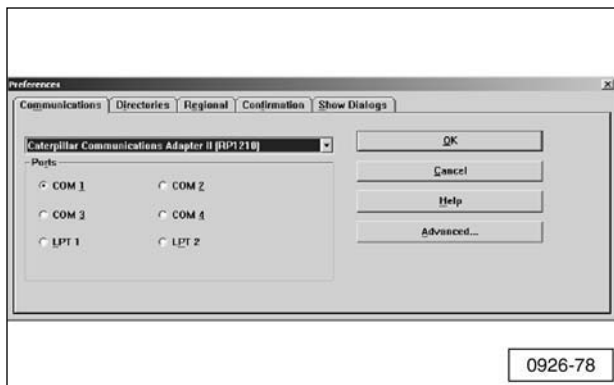
The location of the PC used to monitor the machine is just as important. If the PC is sitting on the seat of the service truck, it will be much less effective in communicating with the Wireless Communication Adapter than it would be if it were outside the vehicle in “Line-of-Site” of the machine. An optional Range Extender Antenna (see Optional Accessories) will provide extended range and permit the PC to be operated where it is not in Line-of-Sight of the Wireless Communication Adapter, as long as the Range Extender Antenna can see the device from its location.

Obstacles in the Line-of-Sight between the PC and the Wireless Communication Adapter can have a significant affect on the range of the system. Obstacles may include hills, buildings, or even the machine being monitored. If the machine being monitored drives over a hill, radio communication with the PC will likely stop until the machine is visible. Operating the machine with buildings or other machines in the Line-of-Sight will likely deliver similar reduction or loss of radio communication. The machine itself can also be an obstacle if the Wireless Communication Adapter is placed on the right side of the machine and the PC that is monitoring the machine is on the left. In some cases, while communication is not completely lost, the range of the system will be significantly reduced.

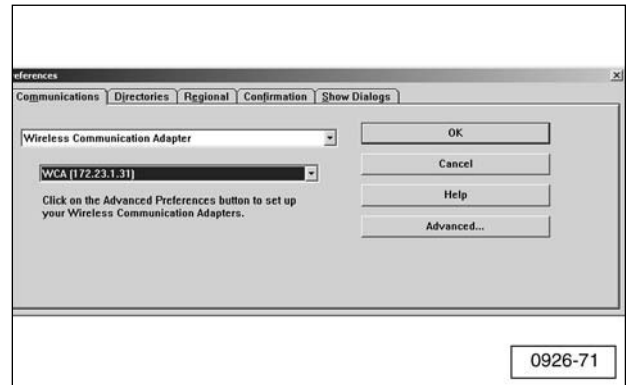
Another factor that can reduce the range of the Wireless Communication Adapter system is weather. Range of the system is best on clear, dry days. Rain and fog will reduce the range of the system, but will not keep the system from operating.

It is important to follow these guidelines in order to achieve the best possible results when using the Wireless Communication Adapter.

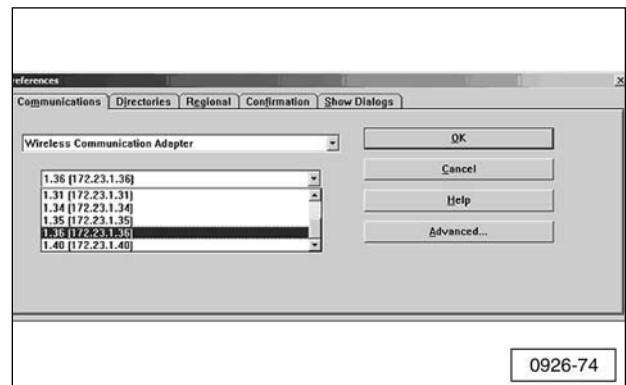
1. Start CatET and click on “Utilities”, then “Preferences” on the menu bar to select the type of Communication Adapter to be used. This will bring up the following screen.



2. Click on the down arrow to select the Communication Adapter type. From the list that is displayed, select “Wireless Communication Adapter”. When this selection is made, a second select list will be displayed that allows the user to select the Wireless Communication Adapter that is to be used.



3. If a site has multiple Wireless Communication Adapter modules, they can be added through the “Advanced” button of this menu. The following screen shows a window that displays several Wireless Communication Adapters that have been configured.



4. Select the appropriate interface and click on "OK". Click on the "Connect" icon to attempt a connection to the selected Wireless Communication Adapter. CatET will display the following window asking you to verify the selected Wireless Communication Adapter. If correct, click on "OK" and CatET will attempt a connection. If it is not correct, click on the down arrow of the Wireless Communication Adapter and select the correct adapter.

NOTE: The following screen is also displayed upon CatET startup when the last selected Communication Adapter was Wireless Communication Adapter.



5. Once the Wireless Communication Adapter has been selected as the type of Communication Adapter to be used (Utilities/Preferences), CatET will try to connect using Wireless Communication Adapter on startup of the application. In order to select a different Communication Adapter, it is necessary for the user to "Stop Connect" (or let the connection time out) and click on "Utilities" then "Preferences". Click on the desired Communication Adapter and click on "OK".

Troubleshooting

General Troubleshooting Information

Many of the problems that can prevent correct operation of the Wireless Communication Adapter are related to Wireless Networking issues. Some of these problems are related to initial configuration of the 802.11b Enabled PC while others are related to issues that may be seen as part of typical operation during use of the product. The following section outlines some of the error messages that are related to the Wireless Communication Adapter, what can cause these messages, and how to isolate and correct the problems.

Service Tools

There are no special service tools required other than the tools that are included as part of the Windows operating system or those that are installed as part of the Wireless Communication Adapter software installation process. The tools used are: Windows Internet Explorer, Windows Command Prompt, and Proxim Wireless Client Manager.

Diagnostic Procedures

Most problems are found when the Service Technician runs Caterpillar Electronic Technician (CatET) and attempts to connect to a particular Wireless Communication Adapter. If there are problems establishing this connection, CatET will provide an error message indicating the type of problem that was encountered. This section describes specific error messages related to the Wireless Communication Adapter, possible causes, and how to isolate the source of the problem.

Troubleshooting with Error Codes

Error #142

Problem - The interface hardware is not connected.

Solution - Connect the hardware.

Error #142

Problem - This error code indicates that the interface hardware is not responding. This is an error code that applies primarily to the "Wired" Communication Adapters that connect to the Serial or USB ports of the Service Tool Computer.

Solution - In CatET, click on "Utilities", then click on "Preferences". Make sure that the Wireless Communication Adapter is selected as the type of Communication Adapter being used.

Error #901

Problem – Check Wireless Communication Adapter Address and Power – Connection Timed Out.

Cause

1. Incorrect Wireless Communication Adapter Selected.
2. Selected Wireless Communication Adapter not powered.
3. Selected Wireless Communication Adapter out of range.
4. 802.11b radio disabled in Wireless Client Manager.
5. Incorrect WEP Encryption Key (configuration).

Solution

1. Check the IP Address on the label of the Wireless Communication Adapter that you are trying to connect to and ensure that the correct IP Address is selected on the CatET Wireless Communication Adapter Selection screen.

2. Ensure the Wireless Communication Adapter is powered up (green LED ON) and in range of the 802.11b Enabled PC.
3. Re-check the connection with CatET. If communication is established, troubleshooting is complete. If not, continue to Step 4.
4. The radio may be disabled in the Wireless Client Manager. To check this, open the Wireless Client Manager by clicking on "Start", then "Programs", then "Wireless", then "Client Manager". In the Wireless Client Manager, click on "File" on the menu bar. If the first entry is "Enable Radio", then the radio is currently disabled. Click on "Enable Radio" to re-enable the 802.11b radio functionality.
5. Re-check the connection with CatET. If communication is established, troubleshooting is complete. If not, continue to Step 6.
6. If this PC has never successfully communicated with a Wireless Communication Adapter, it is likely a configuration issue involving the WEP Encryption Key in the 802.11b Enabled PC. Refer to installation documents to verify the configuration settings of the 802.11b Enabled PC.
7. Re-check the connection with CatET. If communication is established, troubleshooting is complete. If not, refer to the Contact Information at the front of this manual.

Error #902

Problem – Check PC Wireless Adapter Address Setup – No Route to Host (10065)

Cause

1. 802.11b Wireless Network Interface Card is not installed.
2. Windows Network Interface (for 802.11b card) is disabled
3. Windows Network Interface definition (for 802.11b card) is incorrect (configuration)

Solution

1. Verify the 802.11b card is installed in (plugged into) the computer. If not, install the card. If it is installed correctly, continue to Step 2.

2. Verify the 802.11b drivers have been installed. To do this, open the Wireless Client Manager by Clicking on “Start”, then “Programs”, then “Wireless”, then “Client Manager”. In the Wireless Client Manager, click on “Advanced” on the menu bar, then click on “Card Diagnostics”. All “Self Test” results should indicate “OK” if driver is installed correctly. If driver is not installed correctly, repeat installation procedure for the 802.11b PC card. If the driver is installed correctly, continue to Step 3.
3. Verify the “Windows Network Interface” is enabled. To do this, click on “Start”, “Settings”, then right-click on “Network and Dial-Up Connections” and click on “Open”. Right-click on the “Local Area Connection” that corresponds to the device “Wireless PC Card Model 0111”. If the status is “Disabled”, click on “Enable” to enable the Network Interface Card for the Wireless Communication Adapter.
4. Re-check the connection with CatET. If communication is established, troubleshooting is complete. If not, continue to Step 5.
5. Verify the Network Configuration settings on the 802.11b Enabled PC are correct. Refer to the installation procedure for the 802.11b PC card and verify that the IP Address and Subnet Mask settings are correct.
6. Re-check the connection with CatET. If communication is established, troubleshooting is complete. If not, refer to the Contact Information section at the front of this manual.

Troubleshooting Symptoms

Symptom

One or more network applications don't work when wireless card is enabled.

Possible Cause

If a network application uses an IP Address that resides in the address range reserved for Wireless Communication Adapter, Windows will try to “route” messages intended for that network application across the wireless network. Communications with that network application will fail whenever the card is enabled.

Solution

To verify whether or not this is the cause of the problem, disable your 802.11b card and see if the network application problem still exists. Disable the card by:

1. Click on “Start”, “Settings”.
2. Right-click on “Network and Dial-Up Connections”.
3. Click on “Open”.
4. Right-click on the “Local Area Connection” that corresponds to the device “Wireless PC Card Model 0111”.
5. Click on “Disable” to disable the Network Interface Card for the Wireless Communication Adapter. If the network application starts working again, check with the Network Administrator to consider possible IP Address changes (of the Wireless Communication Adapter) to resolve the conflict.

For information on service tools or shop supplies, contact Dealer Service Tools on:

Dealer Service Tools
501 S.W. Jefferson
Peoria, IL U.S.A. 61630-2125
U.S.A.: 1-800-542-8665
Illinois: 1-800-541-8665
Canada: 1-800-523-8665
World: 1-309-675-6277
Fax: 1-309-494-1475
CSTG_Hotline@cat.com

Wireless Communication Adapter Regulatory Information

Interference Statement

FCC ID: PQMWCA1

IC: 4071A-WCA1

This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. Operation is subject to the following two 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.

Warning: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The term "IC:" before the radio certification number only signifies that Industry Canada technical specifications were met.

Other Information

The device and its antenna and must not be co-located or operating in conjunction with any other antenna or transmitter.

When this device is installed either as a fixed-mount or mobile application there is a minimum required separation distance of 20 cm from users.