Exhibit E..... User's Manual

InstantWave Wireless LAN
ISA/PCI/PC Card

User's Guide

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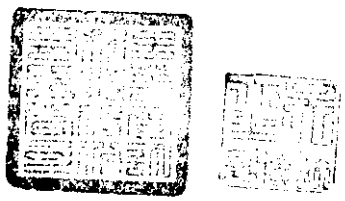

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FCC WARNING

This equipment generates and uses radio frequency energy, and, if not installed and used in accordance with the installation guide, may cause interference to radio and television reception, which can be determined by turning the equipment on and off. This equipment has been tested and found to comply with part 15 of the FCC rules.

THIS DEVICE COMPLIES WITH PART 15OF THE FCCRUT.
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.

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

FCC INFORMATION

The Federal Communication Commission Radio Frequency Interference Statement includes the following paragraph:

The equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate frequency energy and, if not installed and used in a accordance with the instruction, may cause harmful interference to radio communication. However, there is no grantee that interference will not occur in a particular installation. 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 is encouraged to try to correct the interference by one or more of the following measures:

--Reorient or relocate the receiving antenna.

--Increase the separation between the equipment and receiver.

--Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

--Consult the dealer on or an experienced radio/TV technician for help.

The user should not modify or change this equipment without written approval from NDC Communication, Inc. Modification could not void authority to use this equipment.

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Packing List

The package contents vary depending on whether you have purchased the PnP ISA/PCI Card, or the PC Card version:

The PnP ISA/PCI Card package should contain the following items:

- One PnP ISA/PCI/PC Card
- One Antenna
- One Windows Driver Diskette
- One Windows Utility Diskette
- One DOS ODI Driver/Utility Diskette
- This User's Guide

The PC Card package should contain the following items:

- One PC Card
- One Windows Driver Diskette
- One Windows Utility Diskette
- One DOS ODI Driver/Utility Diskette
- This User's Guide

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Introduction

Congratulations on choosing an InstantWave wireless networking family product. InstantWave is one of the first IEEE 802.11 standard compliant products in the industry and was designed with a *"Maximizing the convenience of networking"* philosophy in mind. You will find InstantWave very easy to use and configure.

The guide gives comprehensive instructions on installing and using the InstantWave Plug-&-Play (PnP) ISA/PCI and PC Cards, and also explains how to install and use the InstantWave Utility Program.

InstantWave Family

The InstantWave ISA/PCI and PC Card are part of the InstantWave family of easy to use high performance wireless communication products. The family products include:

- InstantWave ISA/PCI card (NW620/NW630)
- InstantWave PC card (NW610)
- InstantWave Access Point (NW660)

System Requirements

Hardware Platform

A station must be an Intel type PC with an ISA/PCI bus or PCMCIA interface. The minimum system configuration is the same as that required to run MS Windows (Windows 95, 98, NT 4.0).

Software Environment

The stations operate in conjunction with most of the MS Windows (Windows 95, 98, NT 4.0), Novell NetWare series, or MS DOS operating systems.

Glossary

Wireless Network

In the IEEE 802.11 definition, a wireless network is classified as an Ad-Hoc Network or an Infrastructure network.

Ad-Hoc Network

An Ad-Hoc network is formed by a number of wireless Stations (without an Access Point) communicating via radio waves. For the user, the shared resources on the wireless network appear exactly as they would on a regular wired network. The wireless operation of the network is totally transparent. **Figure 1** depicts a typical Ad-Hoc Network scenario.

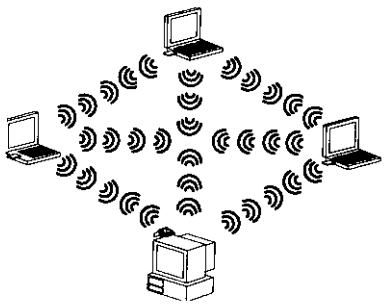


Figure 1. An Ad-Hoc Network

Infrastructure Network

An infrastructure network is formed by several stations and one Access Point (AP), with the stations within a set distance from the AP. **Figure 2** depicts a typical Infrastructure Network topology.

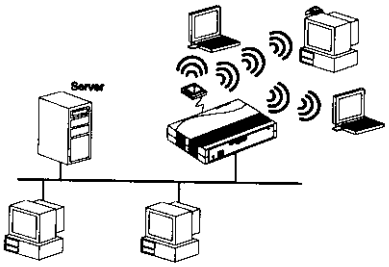


Figure 2. An Infrastructure Network

Group ID/BSSID

A Group ID (the 802.11 standard uses the term BSSID) is the ID of a wireless cell. A wireless cell is usually made up of stations in an area that the radio signal can comfortably cover. In other words, any wireless station in the cell can communicate with any other within reach of the radio signal (see **Figure 3**).

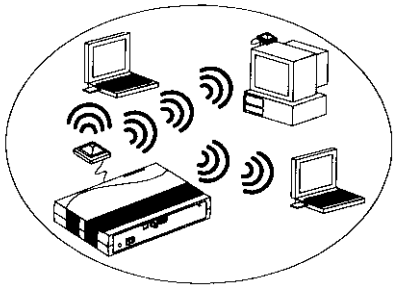


Figure 3. A Wireless Cell (Group)

Domain Name/ESSID

A domain is usually defined by the network administrator as a segment/subnet of a large network and may be made up of overlapping wireless cells. Wireless nodes can roam freely within the same domain without disconnecting from the network. **Figure 4** depicts a common wireless network setup.

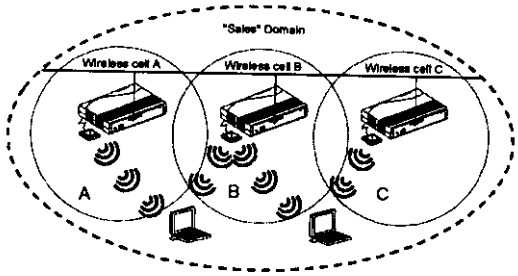


Figure 4. Roaming in the Same Domain

Roaming

The convenience of a mobile PC is the ability to move freely. The concept is similar to that of a cellular phone moving from one base station to another. InstantWave offers built-in high performance seamless roaming capabilities.

Carrier Set

InstantWave products use the unlicensed ISM (Industrial, Scientific, Medical) band to communicate through radio waves. Different countries offer different radio frequencies to be used as the ISM band. There are four frequency bands defined by 802.11: Japan (2.471GHz – 2.497 GHz), USA, Canada and Europe (2.4 GHz – 2.4835 GHz), Spain (2.445 GHz – 2.475 GHz), France (2.4465 GHz – 2.4835 GHz). If a user wants to use InstantWave in a country not listed above, he/she needs to check with their government regulating body to find the correct frequency band to use. All InstantWave products are supplied preset to the country of sale's frequency band.

Access Point

An Access Point (AP) provides a transparent bridged connection between a wired network and a wireless network and allows wireless stations to communicate with devices attached to a wired network.

It manages the flow of data packets from the wired LAN to the Wireless LAN and vice versa.

Getting Started

Overview

This section explains how to quickly setup a wireless station.

Hardware Installation

ISA/PCI Card Installation

To install the ISA/PCI InstantWave card into a computer, simply follow these steps:

step1. Turn off the power to your computer and all peripherals and unplug the power cord from the wall socket.

step2. Remove the computer's cover (**Figure 5**).

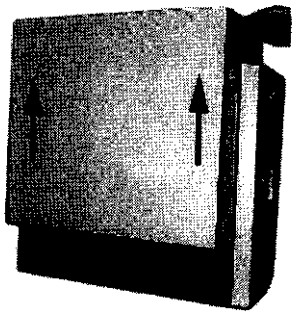


Figure 5. Removing the Computer Cover

step3. Select a free ISA/PCI Bus expansion slot and remove the slot cover.

step4. Carefully install the card in the expansion slot by firmly pressing until the card is snugly seated. Be sure the card is fully home. Fasten the retaining bracket with the screw from the slot cover (**Figure 6**).

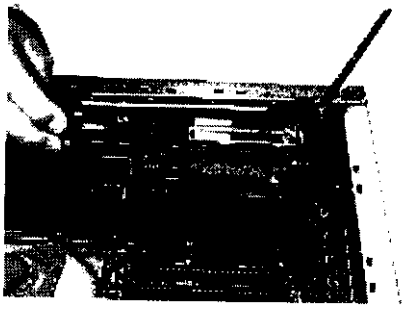


Figure 6. Inserting the Card

step5. Replace the computer cover (**Figure 7**) and reconnect the previously disconnected cables.

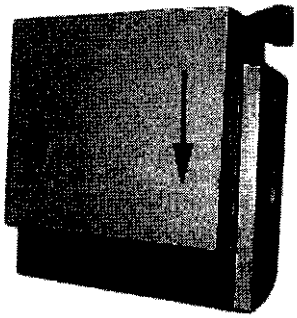


Figure 7. Replacing the Computer Cover

step6. Screw the antenna into the InstantWave card (**Figure 8**).

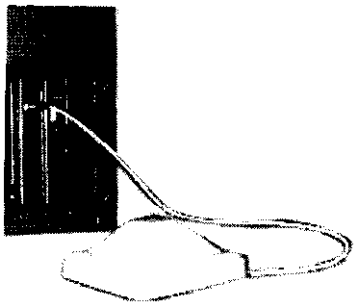


Figure 8. Connecting the Adapter Card Antenna

step7. Repeat the above procedure to fit an InstantWave card into each of the other computers to be networked.

PC Card Installation

The PC card fits into a Type II or Type III PCMCIA slot. The antenna is encased in a plastic case, in line with the main body of the PC card, such that it extends outside the PCMCIA slot when the card is inserted. The slot must allow for a card extension of upto 30mm as specified in the PC Card specifications.

step1. Insert the PC card into the type II slot of the computer. Insert the card with the 68-pin connector facing the slot and the label facing up (**Figure 9**).

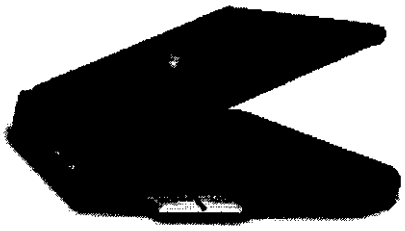


Figure 9. Inserting the PC Card

step2. Repeat the above procedure for each of the other computers to be networked.

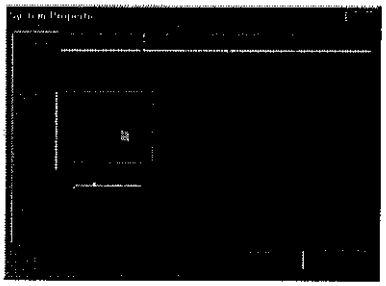
LEDs

The ISA/PCI adapter and the PC Card each have two LEDs. Both will blink when the adapter is initialized. In normal use the green LED blinks when the adapter transmits data, and the orange LED blinks on data reception.

Driver Installation in Windows 95

As the installation method for the Windows 95 versions is slightly different you should begin by identifying your version.

Right click ***My Computer*** and click ***Properties***. The *System Properties* screen will open (see **Figure 10**).



Check the version number

Figure 10. System Properties

On the *General* card you will find the Windows 95 version number:

- If the version number is 4.00.950 or 4.00.950a you are running the original version of Windows 95. (Follow procedure A below)
- For version 4.00.950 B or later, go to Procedure B on page 10.

Procedure A

(For Windows 95 versions 4.00.950 and 4.00.950a)

step1. Turn on the power and start Windows 95.

step2. Windows 95 will detect the adapter and the *New Hardware Found* dialog box will open (**Figure 11**).

Figure 11. New Hardware Found

step3. Choose "Driver from disk provided by hardware manufacturer" and click ***OK***. The *Install From Disk* dialog box will open (**Figure 12**).

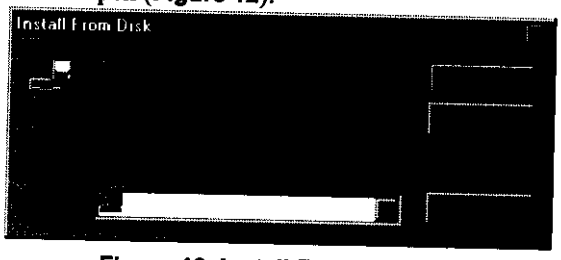


Figure 12. Install From Disk

step4. Insert the Windows driver diskette into drive A: (or B:). The driver is in the root directory of the driver diskette. Type **A:\ (or B:\)** and click ***OK***. The system will copy the driver files to the Windows 95 system.

step5. Follow steps 5 to 14 as described in the next procedure (Procedure B).

Procedure B

(For Windows 95 4.00.950 B and 4.00.950 C)

step1. Turn on the power and start Windows 95.

step2. Windows 95 will detect the adapter and the *Update Device Driver Wizard* dialog box will open (**Figure 13**).

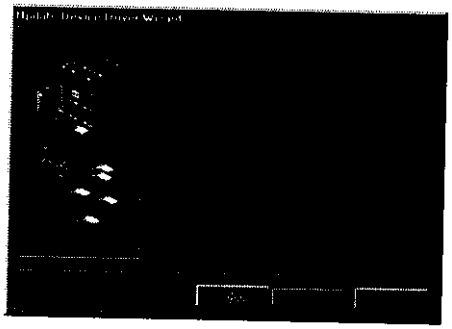


Figure 13. Update Device Driver Wizard-1

step3. Insert the windows driver diskette into drive A: (or B:) and then click ***Next***.

step4. The *Update Device Driver Wizard* will indicate that Windows 95 found the driver in the root directory of the floppy diskette. Click ***Finish***

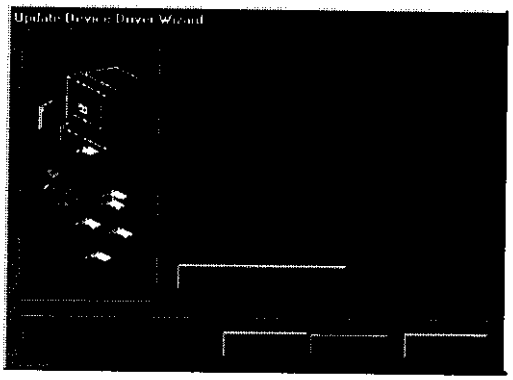


Figure 14 Update Device Driver Wizard-2

step5. The installer is going to copy the driver files into system. There is a known problem with the Windows 95 OSR2 device installer. The installer may default to the wrong source location. Typically, the installer source path defaults to the Windows installation location. The user should manually redirect the installer to the correct source location. Following dialogs will be displayed. Click ***OK***.

Figure 15 Update Device Driver Wizard-3

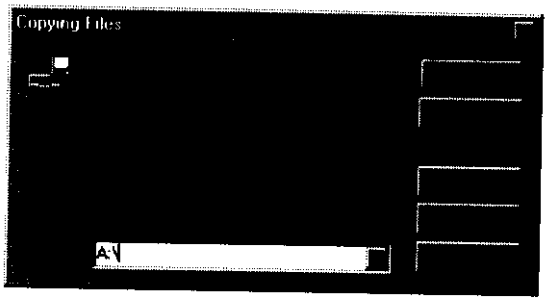


Figure 16 Update Device Driver Wizard-4

step6. After the driver files have been copied, the setup will ask you to insert the 'InstantWave Utility Setup Diskette'.

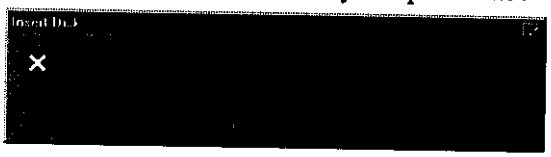


Figure 17 Insert Utility Diskette

step7. After the InstantWave Utility files have been copied, the Network Identification dialog box will open. Enter a unique computer name and the Domain Name (ESSID) of the network to which the wireless adapter will connect.

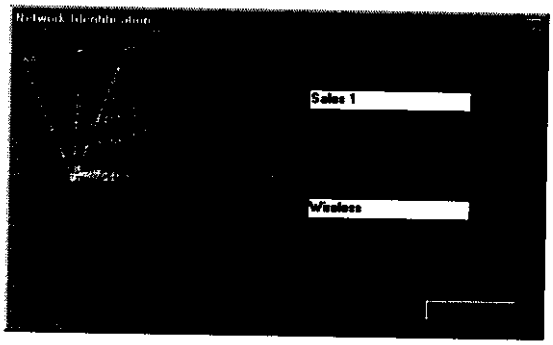


Figure 18. Enter a Computer Name and Domain Name

step8. Click *Next*. The Network Properties dialog box will open. Enter the Network Type and Carrier Set. If the station is connected to an Access Point, Infrastructure mode must be specified. Select Ad Hoc mode to make a peer to peer connection to other wireless stations. If the country of operation is different from the country in which the product was purchased, the user can change the carrier set. All wireless stations and Access Points must use the same Carrier Set in order to communicate.

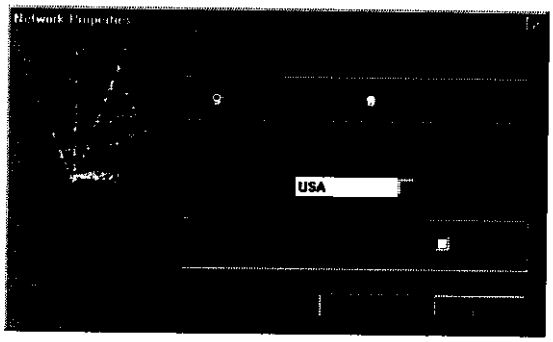


Figure 19. Enter Network Type, Carrier Set, Security

Security can be enabled to restrict unauthorized access. When security is enabled a Security ID is requested. The longest string for the Security ID is eight characters. All the wireless devices must have the same Security ID in order to communicate with each other. Click ***Finish***.

step11. Depending on your current installation of Windows 95, the setup program may ask you to insert the Windows 95 CD-ROM

step12. The *System Settings Change* dialog box will ask you if you want to restart your computer. Remove the floppy disk from the floppy drive and then choose ***Yes***.

step13. After rebooting, the system will automatically install the InstantWave Utility program and execute it. The user can monitor the wireless LAN's status and configure the adapter's properties via this utility program.

step14. If the TCP/IP protocol is required (necessary for Internet access), the user can add this protocol via "Control Panel", "Network", and "Configuration".

That completes the hardware and driver installation.

Uninstalling the Adapter from Windows 95

You may need to uninstall your adapter for the following reasons:

1. The installation fails or is interrupted by unknown factors. If this happens the InstantWave Adapter will be marked with an exclamation mark "!" in Device Manager. Uninstall the adapter using one of the methods described below and then restart your computer. The Windows 95 plug and play function will detect the adapter again.
2. You want to remove the device.

The uninstallation process is as follows:

Method 1.

To completely remove the adapter and driver from your system you will need to physically remove the adapter (with the system powered off). The removal procedure is the reverse of the Hardware Installation procedure on page 6. Restart the computer and then proceed as follows:

step1. Double-click ***My Computer***, double-click ***Control Panel.***

step2. Double-click the ***Network*** icon to open the *Network* window.

step3. Select the InstantWave adapter from the network component list and click the ***Remove*** button. Then click ***OK*** to reboot the PC.

Method 2.

To completely remove the adapter and driver from your system you will need to physically remove the adapter (with the system powered off). The removal procedure is the reverse of the Hardware Installation procedure on page 6. Restart the computer and then proceed as follows:

step1. Double-click ***My Computer***, then double-click ***Control Panel***.

step2. In *Control Panel* double-click the ***System*** icon to open the *System Properties* window. Select the *Device Manager* card.

step3. Double-click ***Network adapters***, or click the "+" symbol to the left of *Network adapters*.

step4. Select the InstantWave Adapter and click the ***Remove*** button. Confirm the device removal and click ***OK*** to reboot the PC.

Driver Installation/Uninstallation in Windows 98

Driver installation and uninstallation in Windows 98 is basically the same as that of Windows 95 OSR2. Complete the following procedure to install the driver program for Windows 98.

step1. Turn on the power and start Windows 98.

step2. Windows 98 will detect the adapter and the *Add New Hardware Wizard* dialog box will open (**Figure 20**).

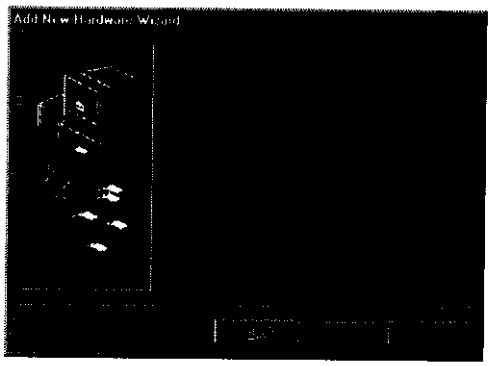


Figure 20. Add New Hardware Wizard-1

step3. Click ***Next*** to continue the installation.

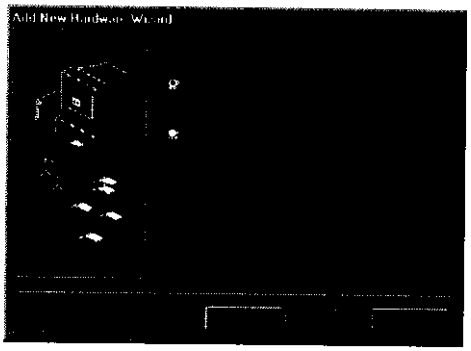


Figure 21. Add New Hardware Wizard-2

step4. Select *Search for the best driver for your device.* Click ***Next*** to open the following dialog.

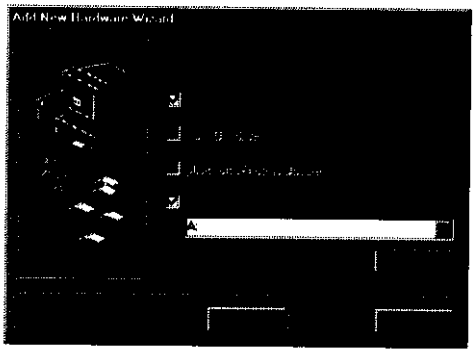


Figure 22. Add New Hardware Wizard-3

step5. Insert the InstantWave driver diskette into drive A: (or B:) and then click ***Next.***

step6. The *Add New Hardware Wizard* will indicate that Windows 98 found the driver in the root directory of the floppy diskette (Figure 23). Click ***Next***

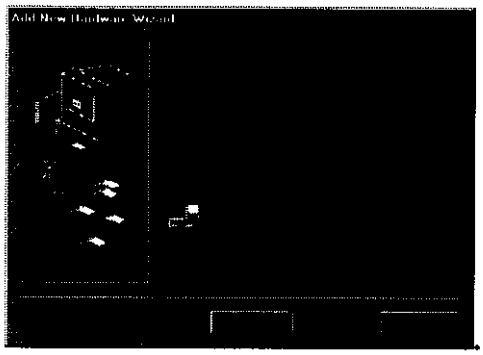


Figure 23. Add New Hardware Wizard-4

step7. Follow step 5 to 14 as described in the **Procedure B**

The default Network protocol for windows 98 is TCP/IP. If other network protocols are required they can be added via "Control Panel", "Network".

Driver Installation in Windows NT 4.0

Important: *Before installing the driver in Windows NT 4.0 check that PnP and PCI settings in the computer's BIOS are set to* ***NO*** *for* ***"PnP OS Installed"****.*

step1. Double-click ***My Computer***, double-click ***Control Panel.***

step2. Double-click the ***Network*** icon to open the *Network* window. Select the *Adapters* card.

step3. Click ***Add***. The *Select Network Adapter* dialog box will open

step4. Click ***Have Disk.***

step5. Insert the windows driver diskette into drive a (or b:) and then type **a:\winnt** (or **b:\winnt**).

step6. Click ***OK***. The *Select OEM Option* dialog box will open.

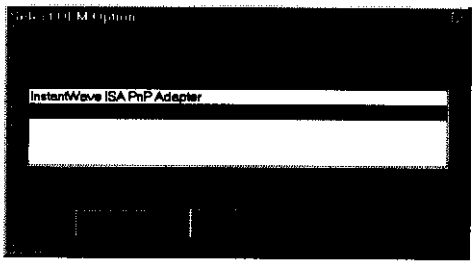


Figure 24. Select Adapter Type

step7. Select the correct adapter and click ***OK.*** If PC Card is selected, the dialog box for setting the I/O address and Interrupt number will be shown. Users can specify a different I/O address and Interrupt number for this adapter whenever there is a conflict with an existing card in the computer.

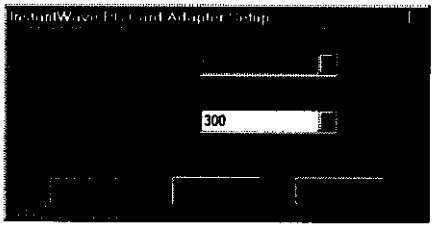


Figure 25. Enter Interrupt Number and I/O Address

step8. Click ***OK.*** The Network Properties dialog box will open. Enter the Network Type and Carrier Set. If the station is connected to an Access Point, Infrastructure mode must be specified. Select Ad Hoc mode to make a peer to peer connection to other wireless stations. If the country of operation is different from the country in which the product was purchased, the user can change the carrier set. All wireless stations and Access Points must use the same Carrier Set in order to communicate.

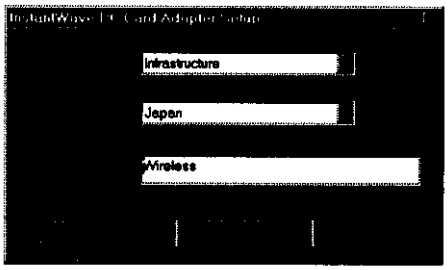


Figure 26. Set Network type and carrier set

step9. Click ***OK***. The *Roaming Switch* dialog box is shown. When Roaming is enabled, the station is allowed to roam to another Access Point under the same Domain Name whenever the radio siganl quality of the currently connected AP is below the acceptable level.

Figure 27. Set Roaming Switch

step10. Click ***OK*** to open the security dialog box.

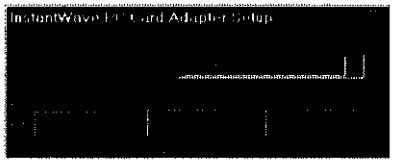


Figure 28. Set Security

step11. Security is enabled to restrict unauthorized access. When security is enabled a Security ID is requested. The longest string for the Security ID is eight characters. All the wireless devices must have the same Security ID in order to communicate with each other.

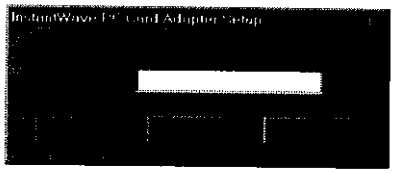


Figure 29. Enter Security ID

step12. Enter a password and click ***OK.*** Windows NT will begin copying files.

step13. The *InstantWave Adapter* will now be shown on the *Adapters* card in the *Network* configuration box. Click ***Close.***

step14. If the user needs to bind the adapter to TCP/IP, then the TCP/IP properties must be added.

step15. The *System Settings Change* dialog box will ask you if you want to restart the computer. Remove the floppy disk from the floppy drive and click ***Yes*** to complete the installation.

step16. Owing to Windows NT constraints, the Windows Utility Program will not be automatically installed. The user needs to install this program by following the procedure described in The InstantWave Utility Program, page 22.

Uninstalling the Adapter from Windows NT 4.0

step1. Double-click ***My Computer***, double-click ***Control Panel.***

step2. Double-click ***Network*** and open the *Adapters* Card.

step3. Select the InstantWave adapter, and click ***Remove***.

The InstantWave Utility Program

Overview

The InstantWave Utility program is a windows-based application that allows users to monitor and configure the wireless network. The program includes a "Net-Watcher" function which allows users to determine the best location to place the InstantWave products, or to diagnose the wireless network for problems.

The utility program allows users to configure the wireless network type (Ad-Hoc or Infrastructure), Domain name (segmented networks), and set the Roaming capability (on/off). The *Net-Watcher* tool allows users to view existing groups (Group ID/BSSID. See an explanation of this term on page 3) of wireless cells in a Domain. It also provides the option to 'join' a particular Group in the network.

Tools are also provided for viewing the network in terms of radio signal quality, and for monitoring the station data throughput.

InstantWave Utility Installation

Insert the InstantWave Utility program setup disk into drive A:

step1. From the ***Start*** menu, select ***Run***, and type **"A:\UTILITY\SETUP.EXE"**.

step2. Click the ***OK*** button to start the setup program. The InstantWave setup screen will appear. After reading the installation description, click the *Next* button to advance to the *Choose Destination Location* dialog box.

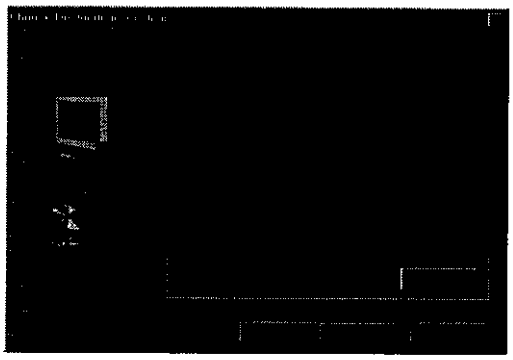


Figure 30. Choose Destination Location

step3. From the *Choose Destination Location* dialog box copy the program files to the default location, "C:\ProgramFiles\InstantWave\", or click ***Browse*** to choose another location. Then click ***Next***. You can stop the process anytime by clicking ***Cancel.***

step4. The setup program will copy the necessary files into the specified directory. File copying progress will be displayed in the InstantWave utility setup screen

step5. Click ***Finish*** to complete the installation.

Using the InstantWave Utility Program

The following section explains how to use the InstantWave Utility.

step1. First click the ***Start*** button on the taskbar.

step2. Go to *Programs* and *InstantWave Utilities*. The Station Utility tools will be shown ().

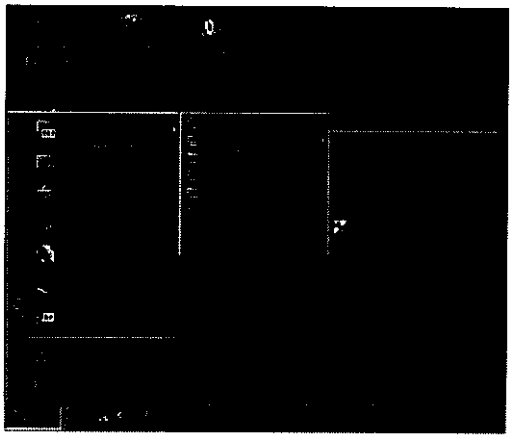


Figure 31. InstantWave Utility

step3. Click ***Tool Bar*** and the task icons will appear in the upper right corner of the screen, offering fast access to the utility functions. Click the icon for the task you wish to perform.

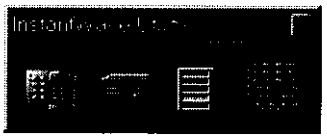


Figure 32. Tool bar

The functions provided by the utility program are, reading from left to right:

- Adapter Properties
- Network Watcher
- Signal Quality Indicator
- Throughput Monitor

step4. Right-click the InstantWave Utility toolbar. Four functions are provided:

- **Move** is used to move the toolbar to a suitable screen position
- **Close** is used to close the ***Toolbar***

- **Preferences** allows you to customize utility settings
- **About** provides product information

step5. Click ***Preferences***. The Preferences dialogue box will be shown (**Figure 33**).

- *Launch InstantWave Utility on startup* automatically starts the utility at each system boot

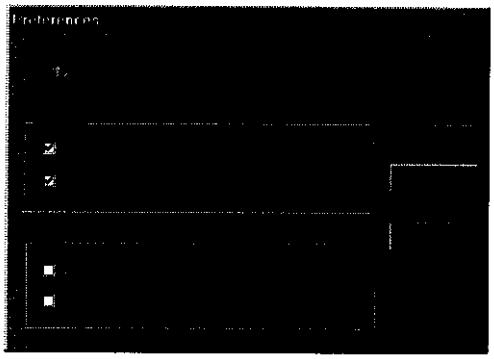


Figure 33. Preferences

- *Show Icon on the taskbar* displays an icon on the taskbar

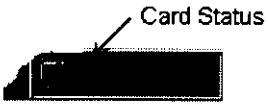


Figure 34. Lamp Icon

- The color of the icon indicates the wireless adapter card's current status:

Color	Status
Black	The wireless adapter or the driver is not working properly
Red	Poor signal quality
Yellow	Acceptable signal quality
Green	Good signal quality

- *Pop up message dialog* is used to display a warning message in case of abnormal conditions.
- *Play sound* is used to generate an alert sound in case of abnormal conditions.

Right-click on the icon to open a popup menu for fast access the utility programs, Preferences, and Help.

Adapter Properties

There are two ways to access Adapter Properties. One is by clicking **Start/Programs/InstantWave Utility/Adapter Properties**. The other is by clicking the *Adapter Properties* icon on the InstantWave Utility's tool bar. Adapter Properties allows the user to view the adapter properties, and to change the wireless configuration of the Station.

Configuration

Configuration displays, and allows you to modify, some important parameters of the InstantWave adapter. All parameter changes are saved and are referred to by the InstantWave driver when the system boots. Therefore, most of the parameter changes require a system reboot to make them effective. Changes to *Enable Roaming* do not require a system reboot. The configuration tab is shown below (Figure 35).

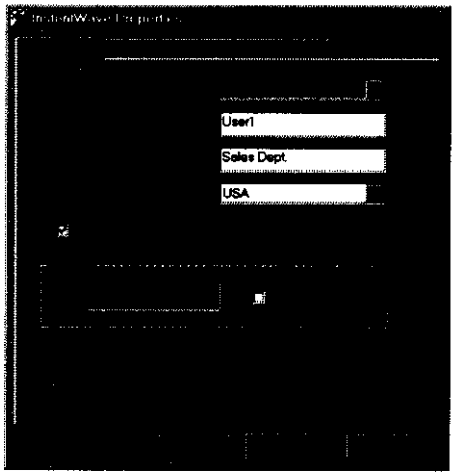


Figure 35. Configuration

- ***Network Type*** - The 802.11 Wireless Specifications allow for two types of network, *Infrastructure* or *Ad-Hoc* (see the Glossary on page 2) *Infrastructure* is used when networking with an Access Point. The default setting is *Infrastructure.*
- ***Computer Name*** – The must be the same name as entered in *Control Panel, Network, Identification.*
- ***Domain Name*** - Stations and APs in the same group must use the same domain name. This field is defined in the 802.11 Wireless Standard as ESSID (Extended Service Set ID). Having the same Domain Name allows all wireless nodes in the same Domain (or Cell) to communicate with each other. The default setting is *Wireless.*
- ***Carrier Set*** - This is preset to the U.S.A., Canada, Europe, Spain, France, or Japan depending on where the product is sold. The parameter shown indicates which Radio Frequency (RF) 802.11 specification is currently in use in the adapter.
- ***Enable Roaming*** - Roaming can be turned on or off. When roaming is enabled, the station is allowed to roam to another Access Point in the same Domain Name when the radio signal quality of the currently connected AP is below the acceptable level.
- ***Security Setting*** – Security can be turned on to restrict unauthorized access. When the Security is enabled a Security ID is requested. The longest string for the Security ID is eight characters. All the wireless devices must have the same Security ID in order to communicate amongst each other.

Click ***OK*** to close the window. A pop-up screen will ask if you wish to reboot your computer to make the changes effective. Click ***Yes***

Adapter Properties Advanced Information

Click the *Advanced Information* tab to view the Adapter Properties (**Figure 36**).

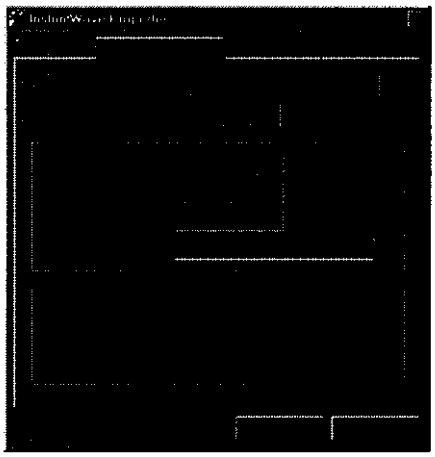


Figure 36. Wireless Adapter Properties

The window is divided into three sections as described below:

- ***Basic Information*** - This section contains the manufacturer's name and the InstantWave MAC firmware version number. The information is read from the MAC firmware of the InstantWave card.
- ***Hardware Configuration Information*** - Shows the adapter bus type, IO address, IRQ number, and the station MAC address.
- ***Adapter Status*** – Display the adapter's working status.

Troubleshooting Diagnostic Program

Should a problem be encountered using the wireless Adapter that cannot be resolved using the 'Troubleshooting' section of this manual, click the *Troubleshooting* tab. A diagnosis program will run and report the message. The user can send the diagnostic message together with a description of the symptoms to NDC's technical support via Email.

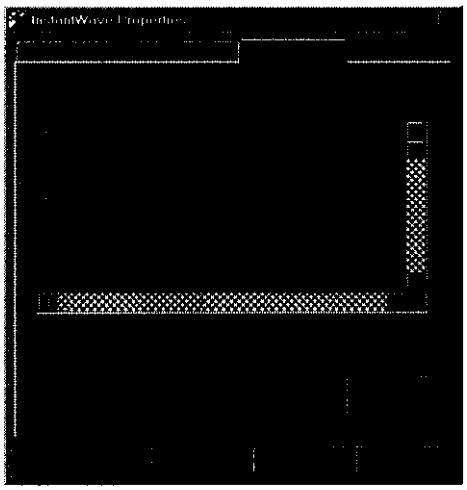


Figure 37. Troubleshooting

Network Watcher (Site Survey Infrastructure)

On an Infrastructure network, *Network Watcher* scans for all existing wireless cells in range and display the AP names, the MAC address, the Domain Name, the Signal Strength, the number of stations currently connected to each AP, and the connection status. When *Network Watcher* is run, the program first reads and displays information stored in the database. The signal strength entry shows either Green (strong signal), or Yellow (average signal). The information is not dynamically updated. To refresh the data click the ***Scan*** button. *Network Watcher* also gives users the option of selecting an Access Point to join with manually.

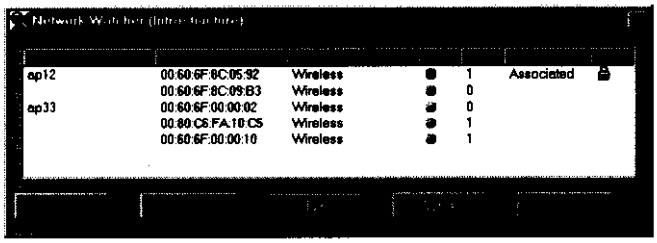


Figure 38. Site Survey (Infrastructure)

Scan

Click ***Scan*** to obtain and display updated data. You may need to wait a short time depending on the number of wireless cell replies received.

Join

Selecting one of the APs from the list will enable the ***Join*** command. The ***Join*** command allows you to manually connect to a specific AP.

If joining cannot be accomplished within 20 seconds (possibly due to an AP that has gone off the air since the data was last refreshed, to RF interference, or a busy AP), the operation will fail. If this happens, you may try joining with the same AP again, or select another AP to join.

Network Watcher (Site Survey Ad-Hoc)

On an Ad-Hoc network, *Network Watcher* displays all the wireless nodes (with their Computer Name and MAC ID) that are currently connected in the same Group as this station. The inactive timer counts the period that there is no traffic between it and the other connected stations.

Figure 39. Site Survey (Ad-Hoc)

Refresh

Click ***Refresh*** to obtain and display updated data. You may need to wait a short time depending on the number of replies received.

Monitor RF Signal Quality

Monitor RF Signal Quality dynamically displays the present radio signal quality. The quality level is shown in color. Green means the signal is good, Yellow indicates the signal is fair, Red denotes the signal is poor. When the signal color reaches the yellow to red border, the station will start to roam if roaming is enabled.

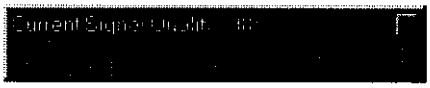


Figure 40. Monitor RF Signal Quality

View Station Throughput

This item enables users to monitor the throughput (transmitted and received bytes) of the wireless station (**Figure 41**).

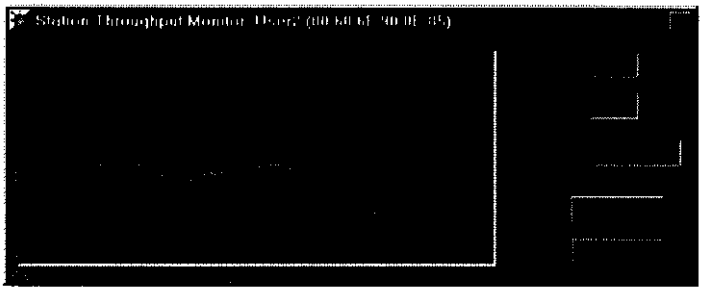


Figure 41. View Station Throughput

The graph shows the amount of transmitted/received bytes from/to this station.

Uninstalling the Utility Program

Should you wish to uninstall the InstantWave Utility program:

step1. Click ***Control Panel.***

step2. Click ***Add/Remove Programs*** and select InstantWave Utility.

step3. Click the ***Remove*** button.

Or by clicking **Start/Programs/InstantWave Utility/Uninstall InstantWave Utility**

DOS ODI Driver Installation

NDC also provides MS-DOS ODI driver support for the NDC InstantWave Adapters. Check that the following items are present prior to the ODI driver installation:

- NDC's InstantWave ISA/PCI or PC Card
- The ODI Driver Disk labeled "InstantWave ODI Drivers Utility"

Installation Procedure

Install the InstantWave Adapter into the PC as detailed in Hardware Installation, on page 6.

step1. Boot the PC to an MS-DOS environment.

step2. Insert the ODI driver disk into the A drive and type " a:\install.exe". A dialog box is shown for selecting either the ODI utility or DOS utility. The ODI utility is a complete program for installing the ODI driver. The DOS utility is a subset of the ODI utility for setting up an Interrupt number and I/O address.

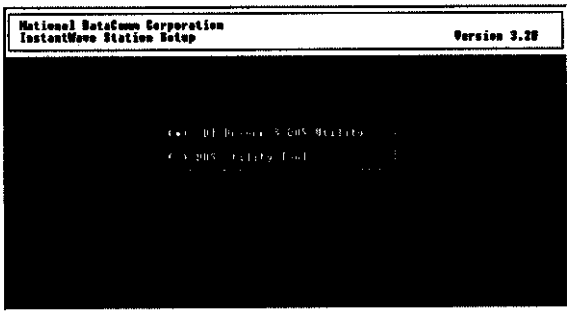


Figure 42. Select the ODI utility or the DOS Utility

step3. Click *Next*. The *Custom Installation* screen will open.

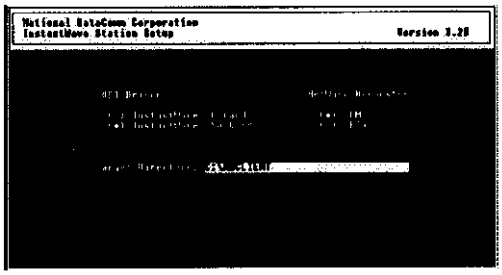


Figure 43. Custom Installation

ODI Driver section

In the ODI Driver section, select the adapter type you wish to install.

NetWare Requester section

Novell provides two types of requesters, a VLM requester and a NETX requester. Only NetWare 4.x and above support the VLM requester.

Target Directory

A Target Directory must be entered. If the field is empty, the program will flag the user with a pop-up error window. The default target directory is "C:\NWCLIENT". The setup files will be copied to the target directory during the installation.

step4. Once the setup options have been selected, press the *Next* button. The *Configuration* screen (**Figure 44**) will open.

Figure 44. Configuration

The *Configuration* screen provides options for modifying the InstantWave cards' wireless network options.
Users can also perform hardware diagnostics here by clicking the "Diagnose" button. When the Diagnosis is performed, it checks through the hardware (**Figure 45**) and presents a report (**Figure 46**).

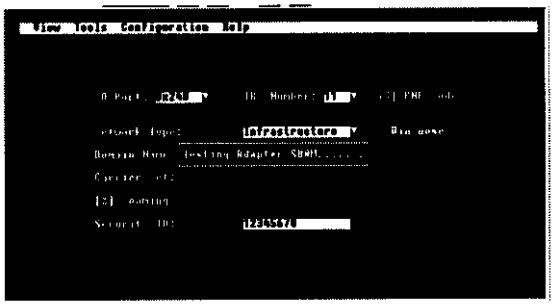


Figure 45. Diagnosing Hardware

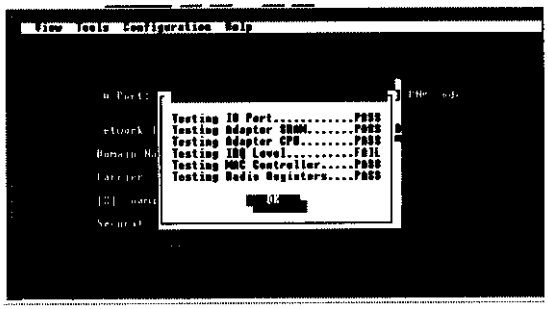


Figure 46. Diagnosis Report

step5. Click the ***OK*** button to close the *On-Board Diagnosis* screen and click ***OK*** on the *Configuration* screen to complete the setup/configuration change. The Configuration program will then write out the adapter options to the NET.CFG file, and create a startup batch file called STARTNET.BAT. Before closing, the program will prompt the user to restart the PC (**Figure 47**).

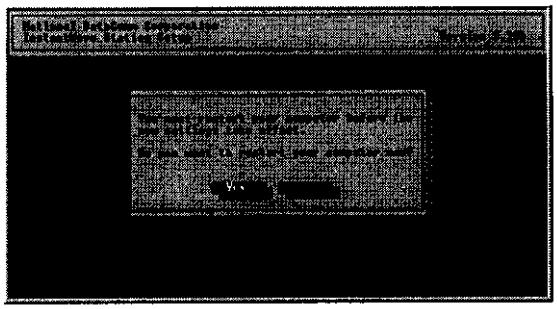


Figure 47. Restart Computer

Click *Yes* to restart the PC. Once the PC is rebooted, type 'StartNet.BAT' to load the ODI driver into DOS Memory. The Tx/Rx LEDs will blink, indicating the InstantWave adapter is being enabled.

Software Upgrade Procedures

Windows NDIS Driver Upgrade

Follow the instructions below to install a new NDIS ISA/PCI/PC Card driver release.

step1. In Control Panel, click the ***Network*** icon, then highlight the InstantWave adapter driver entry

step2. Click the ***Remove*** button to remove the old InstantWave adapter driver

step3. Click ***Close.*** The system will ask you to reboot the PC. Click *Yes* to restart the PC

step4. The Windows 95 PnP device manager will recognize the wireless adapter again. Specify the new NDIS driver here while going through the InstantWave adapter installation

step5. Reboot the PC again when Windows 95 asks if you want to reboot now

InstantWave Utility Upgrade

step1. Click ***Control Panel.*** Click ***Add/Remove Programs***, and remove the old "InstantWave Utility" from the program list.

step2. Follow the InstantWave Utility Installation procedure on page 22 to install the new InstantWave Utility

DOS ODI Driver Upgrade

step1. Boot to an MS-DOS environment

step2. Comment out the "STARTNET.BAT" statement in the AUTOEXEC.BAT file. This will disable the ODI driver from being started during the next PC restart

step3. Reboot the computer by pressing the "RESET" button on the computer

step4. Go through the DOS ODI installation procedure on (page 32) again to install the updated ODI driver

step5. Run the STARTNET.BAT command to bring up the networking functions

step6. Re-insert the "STARTNET.BAT" statement to the AUTOEXEC.BAT file

Troubleshooting
Windows 95/98
Installation Problems
Windows could not find the adapter

- The adapter is not properly inserted in the slot

    1. Power off the computer
    2. Remove and reinsert the wireless adapter
    3. Reboot the computer and re-install the adapter driver

- A previous adapter installation was aborted by the user, or by Windows

    1. Check Control Panel/System/Device Manager/?-Unknown Devices for a Wireless adapter entry
    2. If an entry exists, delete it from the list, and exit the /Control Panel/System folder
    3. Reboot the computer and re-install the adapter driver

The InstantWave adapter driver cannot be started. Windows displayed a driver startup problem message window

- IRQ conflict with other device

    1. Open the /Control Panel/System/Device Manager/Network Adapters menu. You will see an exclamation sign displayed on the wireless adapter icon
    2. Highlight the wireless LAN adapter entry, and click on the ***Properties*** button to show its properties
    3. Select the 'Resources' tab, and you will see a device conflict message displayed in the "Conflicting device list"
    4. Uncheck 'Use automatic settings', and click on the 'Change Setting' button

5. Select a new IRQ value. When the 'Conflicting device list' confirms there are no conflicts, click ***OK*** to close the windows
6. Reboot the computer

There are more than one wireless adapter entries shown in the Control Panel/Network folder. You do not know which one is the current one

- A previously installed wireless adapter entry for a different card was not removed
    1. Remove both wireless LAN adapter entries from the Network window
    2. Reboot the PC to re-install the wireless adapter

Windows NT 4.0

Installation Problems

Windows NT 4.0 could not find the adapter

- The adapter is not properly inserted in the slot
    1. Power off the computer
    2. Remove and reinsert the wireless adapter
    3. Reboot the computer and re-install the adapter driver

- A previous adapter installation was aborted by the user, or by Windows NT 4.0
    1. Check Control Panel/Network/Adapters to display adapter entries
    2. If an InstantWave adapter entry exists, delete it from the list, and exit the /Control Panel/System folder
    3. Reboot the computer and re-install the adapter driver

The InstantWave adapter driver cannot be started and the adapter LEDs are not flashing

- More than one driver is present in the Network setup folder
    1. Click Control Panel/Network/Adapters
    2. If there is more than one entry for the same InstantWave adapter, remove them all
    3. Reboot Windows NT
    4. Reinstall the InstantWave adapter driver

DOS ODI

Installation Problems

ODI could not find the adapter

- The adapter is not properly inserted in the slot
    1. Power off the computer
    2. Remove and reinsert the wireless adapter
    3. Reboot the computer and re-install the adapter driver

The InstantWave adapter driver cannot be started and the adapter LEDs are not flashing

- ODI regulator could not be loaded during PC bootup
- IO port or IRQ conflict with another device
    1. Run the DOS Utility program, util.exe (usually in the c:/nwclient directory)
    2. Go to the configuration menu
    3. Select a new IO port or IRQ that does not conflict with other devices
    4. Exit the Utility program and reboot the PC

- ODI regulator could not be loaded during PC bootup
    1. Use a text editor to open the autoexec.bat file
    2. Insert a line c:\nwclient\startnet.bat
    3. Save the file and exit the editor
    4. Reboot the PC

General

Utility Error Messages

'Cannot find the Wireless adapter'

- The Wireless adapter driver is installed, but the wireless adapter is not in the computer slot

  If you are using the wireless PC card, you will only need to re-insert the PC card to the PCMCIA slot to re-enable the driver. However, if you are using the ISA/PCI adapter, you will need to power down the PC and plug in the ISA/PCI card, then reboot the computer

'Adapter is not responding'

- The card is in the system. The wireless adapter driver is not functioning

  Follow the Installation Problems section of the troubleshooting guide to resolve driver startup problem

- The green PC feature is setup to cut the system power to the adapter slot when it is in 'PC Sleep' mode. The Windows Utility will temporarily lose contact with the adapter during 'Sleep mode'

  Re-starting the Windows Utility after the PC is out of Sleep mode will bring back the adapter. The long-term solution to this problem is to disable (through the PC BIOS) the PC Sleep function

Operational Problems

The Wireless adapter appears to be functioning. The Tx/Rx LEDs are flashing. However, no network PC can be found in the Infrastructure Wireless Network mode

- The PC has been set to use a different wireless domain name (ESSID) than the AP's

  1. Click Control Panel/Network

2. Highlight the Wireless LAN adapter entry and click ***Properties***
3. Click the 'Advanced' tab to open the device configuration menu
4. Select the 'Domain (ESSID)' entry and input the correct domain name. The name should be the same as the AP's domain name (ESSID).
5. Close all windows and reboot the computer

- Station is having difficulties finding an AP to join
    1. Use Site Survey to scan for all APs in the same wireless domain
    2. Select the first AP that has its signal quality displayed in green, and join to it
    3. If all the APs' signal quality is yellow, or no AP is in the list, you may be too far away from any AP to be associated. Move closer to the AP

- You have only one AP, and the PC is not placed too far from it, but the PC still has difficulties finding the AP
    1. Check that the antennas are properly connected to the AP and the station
    2. Make sure that the AP is powered on and working
    3. Use Site Survey to find and join with the AP

Radio signal quality indicates Yellow or Red whilst in Infrastructure Wireless network mode

- The connected AP is too far away
    1. Use *Site Survey* to find an AP with a stronger signal
    2. Move your PC closer to the connected AP

- The adapter antenna is not connected, or its signal path is blocked by metal casing, e.g. metal filing cabinets
    1. Make sure the antenna is firmly screwed in
    2. Arrange the antenna position to get the best radio signal quality

Transmission or reception throughput is low during network file accessing

- Many stations are connected to the same group and heavily utilizing the network

    1. On an Infrastructure wireless network, use Site Survey to find, and connect to, a different AP with only a few PC connections
    2. In an Ad-Hoc environment, form your own wireless group with a different wireless domain name to start a different channel hopping pattern

Ad-Hoc stations can't join each other

- Two stations started at the same time

    Reboot one station

- Different Domain Name (ESSID)

    Change the ESSID, using the InstantWave utility program, to match that of the other stations on the Ad-hoc network
    OR
    Go to *Control Panel/Network/InstantWaveAdapter /Properties/Advanced/ESSID*, and change it there

How to Reach Our Technical Support

If you are having a problem using an NDC product and cannot resolve it, please note the following information and contact NDC Technical Support:

- What were you doing when the error occurred?
- What error messages did you see?
- Can you reproduce the problem?
- What is the serial number of your product?

Send the description with the output of the Troubleshooting Diagnostic Program (see page 28) to one of the following addresses:

NDC Technical Support is available via e-mail at:

support@ndclan.com (US only)
techsupt@ndc.com.tw (Europe and Asia Pacific)

For other information about NDC, please visit us at:

www.ndclan.com
www.sohoware.com

EC DECLARATION OF CONFORMITY

For the following equipment:

Product Name: : **InstantWave Wireless ISA/PCI/PC Card**

Model Number: : **NW610A (PC Card)**
NW620A (ISA Card)
NW630A (PCI Card)

Produced by:

Manufacturer Name : **NATIONAL DATACOMM CORPORATION**

Manufacturer Address : **2F, NO. 28, INDUSTRY EAST 9TH ROAD**
SCIENCE PARK, HSINCHU, TAIWAN, R.O.C.

is hereby confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility (89/ 336/ EEC). The product meets or exceeds the following EMC standards:

Europe:

ETS 300-328, ETS 300-339

France:

SP/DGPT/ATAS/23, ETS 300-328, ETS 300-339

The manufacturer/importer is responsible for this declaration:

Company Name : **NDC (EUROPE) CO., LTD**

Company Address : **1, EARLSFORT CENTRE, HATCH STREET, DUBLIN 2, IRELAND**

Person authorized to make this declaration:

Name : **CHIN-TU WU**

Position/Title : **MANAGING DIRECTOR**

Date _____ Legal Signature _____

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