Encryption

On the Encryption screen, show in Fig 4-5, you can set the level of security with which you will be using the WLAN PC Card.

Under the drop-down box, you can choose to have WEP encryption **Disabled**, **64-Bit**, or **128-Bit** Wired Equivalent Privacy (WEP) is an encryption scheme use to protect wireless data communication. If you decide to use encryption, you can choose any of the available WEP keys (1 to 4). You also have option to select the WEP mode (Mandatory/optional). If you select "Mandatory", then not only WEP will be used, but also any other station needs to use WEP encryption in order to establish a communication with your station. This requirement is in line with the IEEE 802.11b standard. If, on the other hand, you choose "Option", then your station can communication with every other station regardless if they use WEP or not. The Disabled setting prevents the sharing of data with other computers on the WEP network. When Enable encryption for the WEP Key entry, enter the hexadecimal number (the letters **"A"** through **"F"** and the numbers **"0"** through **"9"**) set by the other wireless WEP settings; these settings must be identical to the WEP encryption on all points in your wireless network in order to network to your WLAN PC Card. The security keys are four 10 digit key for the **64-Bit** WEP setting and four 26 digit key for the **128-Bit** WEP setting.

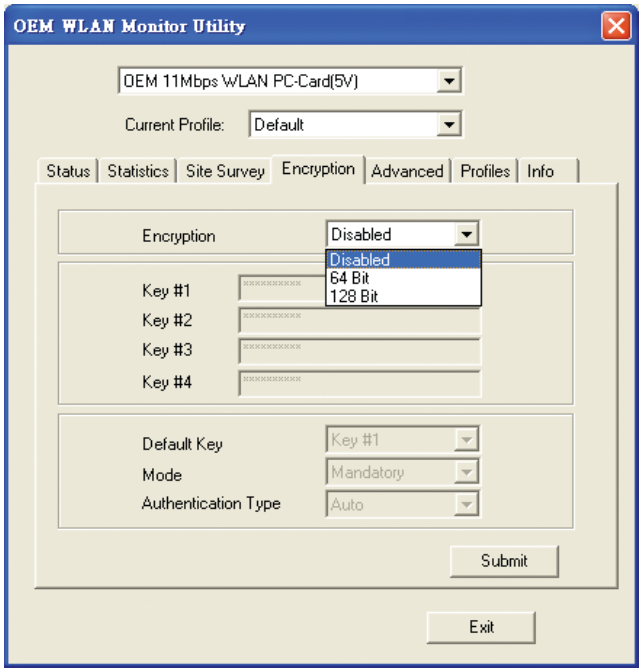

Fig 4-5

NOTE: The WEP Key Entry must match the Key on all other devices on the wireless network or this device will be unable to transmit or receive data.

For **Authentication Type**, you may choose between **Open System** or **Shared Key**.

Shared Key is when both the sender and recipient share a secret key. Both units this key for an extended length of time, sometimes indefinitely. Any eavesdropper that discovers the key may decipher all packets unit the key is changed.

Open System the default setting, is when the sender and the recipient do not share a secret key. Each party generates its own key-pair and asks the receiver to accept the (usually randomly) generated key. Once accepted, this key is use for short time only: then a new key is generated and agrees upon.

Advanced

The Advanced screen (Fig 4-6) allows you to set **Fragmentation Threshold**, the **RTS/CTS Threshold**, and the **Preamble Type**. The **Fragmentation Threshold Value** indicates how much of the network resources is devoted to recovering packet errors. The value should remain at its default setting of 2,346. If you experience high packet error rates, you can decrease this value but it will likely decrease overall network performance. Only minor modifications of this value are recommended.

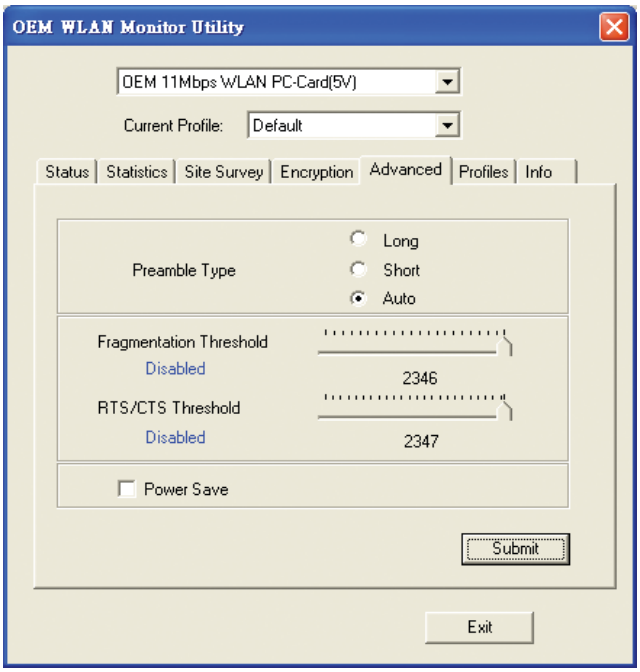

Fig 4-6

The RTS Threshold Value should remain at its default setting of 2,347. A preamble is a signal used to synchronize the transmission timing between two or more systems. A series of transmission pulses is sent before the data to indicate that “someone is about transmit data.” this ensures that systems receive the information correctly when the data transmission stars.

The **Preamble Type** should be set to **Short** (if the network environment is “noisy”) or **Long** (if the environment is “clear”) Click Submit to complete the configuration.

Profiles

The Profiles screen (Fig 4-7) allows you can manage the profiles that you have created for the wireless network at home, office and in public places. You can create **New** file for **Save** a profile or **Delete** and **Rename** the profiles.

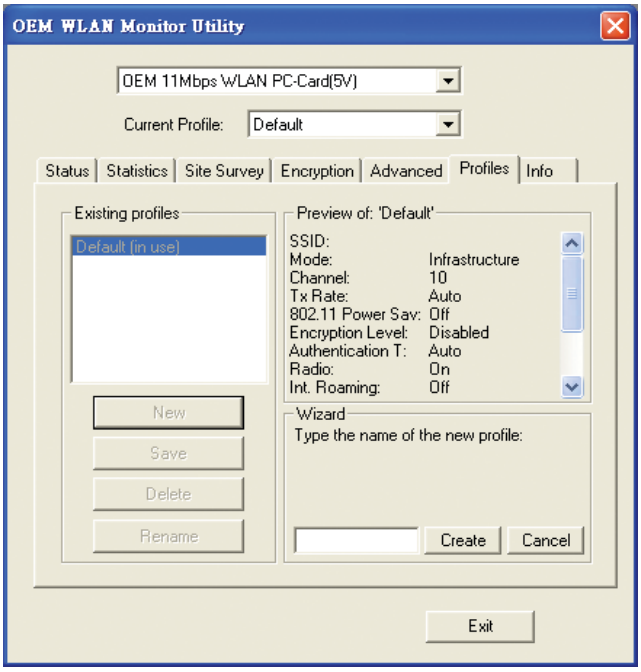

Fig 4-7

About

The About screen (Fig 4-8) shown the release information for the Driver Version, Firmware Version, Application Version, and MAC Address. User the “Exit” button in order to exit the application.

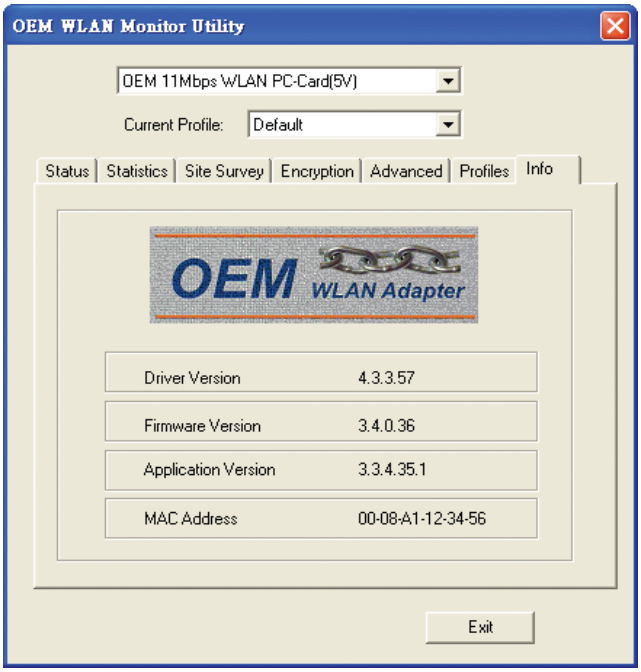

Fig 4-8

How to Uninstall the configuration & Monitor Utility

In order to uninstall the Configuration & Monitor Utility from Windows 9X/ME/2000/XP, you can RUN Setup utility again then you will see Fig 4-9 then step by step remove all installed components.

It is recommended to stop the WLAN adapter and “Exit” the application prior to staring the uninstallation procedure.

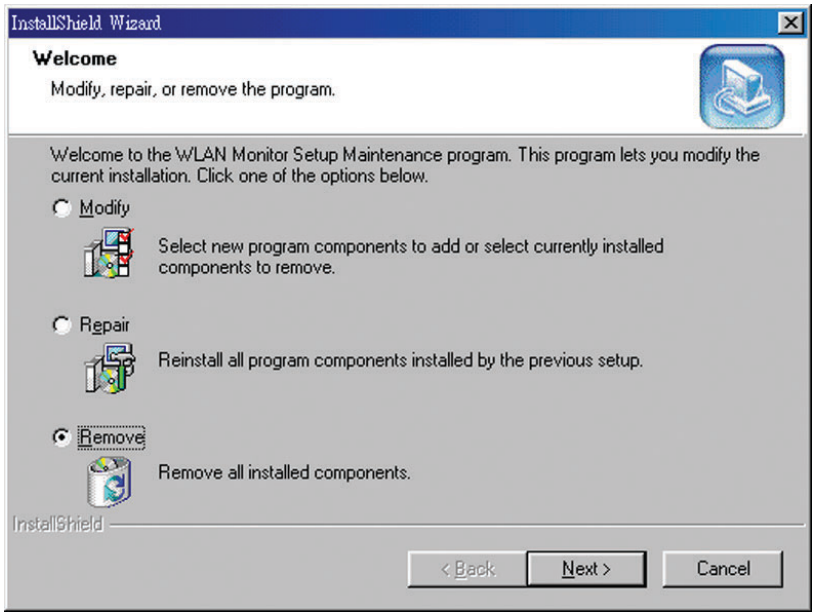

Fig 4-9

Chapter 5: Installation Procedure Under Windows NT 4.0

Use the procedures described in this section to install and configure the WLAN adapter under MS Windows NT 4.0.

About Windows NT 4.0

Although Windows NT 4.0 are similar in appearance wit Windows 95/98/ME, and Windows 2000, they have different philosophy when installing a new hardware.

Throughout this section it is assumed that you have basic working knowledge of Windows NT 4.0 and how to install new network cards on them. However, in this paragraph, some specific features of Windows NT 4.0 are briefly explained.

Unlike Windows 95/98/ME, and Windows 2000. Windows NT 4.0 do not support the “Plug & Play” and “Hot Swapping” features.

In Windows NT 4.0 you need to inform the operating system about the existence of the new card in order to star installing the driver. Also, if you want to swap cards, you need to restart the PC in order to recognize the card.

Another difference between Windows 95/98/ME and Windows NT 4.0 is how these operating systems handle the “User Profiles” feature. Windows 2000 handle “User Profiles” in the same way as Windows NT 4.0.

In Windows 95/98/ME, the “User Profiles” are use only in order to customize the appearance of the desktop between the different users. However, in Windows NT 4.0, “User Profiles” play the role of accounts and are associated with certain privileges on the machine. Therefore, we have different “User Profiles” (and privileges) for simple users, power users, and administrators. The privilege settings for each user are set in the “User Manager” program of Windows NT 4.0.

NOTE: In order to be able to install the WLAN adapter on to your PC running under Windows NT 4.0, you will need to log on as “Administrator”. Also to have at least NT Service Pack 4 installed.

Installing the Driver

First of all, in order to obtain the necessary privileges for the driver installation, you need to log on as Administrator to Windows NT 4.0.

Since Windows NT 4.0 do not support “Plug & Play”, you must enable the detection of PC cards by the operating system by following the following procedure:

1. Click Start ▶Settings▶Control Panel.
2. Double click the “Network” icon.

3. In the “Network” settings window you will be prompted to install Windows NT Networking in case no network has been installed yet. Click “Yes” and follow the instruction on the screen. If networking had been already installed, you will see a dialog with several tabs. In the “Adapters” tab click the “Add” button. Windows NT Networking Setup will determine the type of network adapter card that you are going to use. (Fig 5-1).

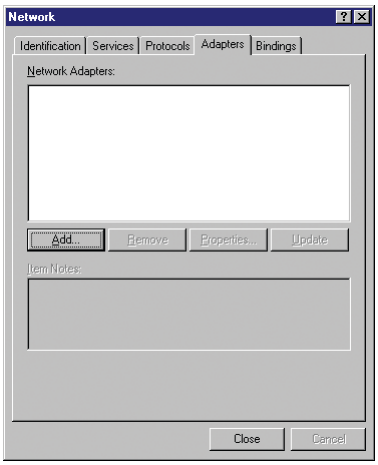

Fig 5-1

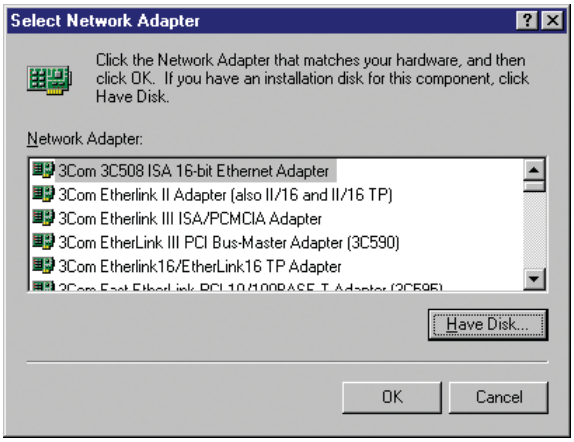

Fig 5-2

4. Click “Have Disk” (Fig 5-2), Select **D: \ WLAN USB&PCMCIA\NT4 driver\Rev E** (where D: is the letter of your CD-ROM drive). (Fig 5-3).

5. Select Adapter and Click “OK” (Fig 5-4).

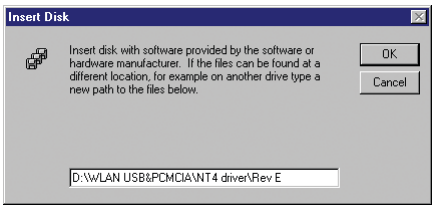

Fig 5-3

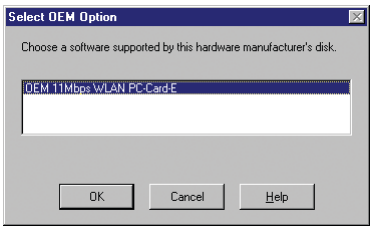

Fig 5-4

6. Next Windows will start copying the files. In case there is a version conflict between one or more of the files being copied and files in your system, you should normally keep the latest version.

6. During the installation, a dialog box appears asking for the I/O base and IRQ resource information. In order to find out which values to use, go to Start ▶Programs▶Administrative Tools ▶Windows NT Diagnostics▶select the “Resources” tab ▶press the “IRQ” button. Select one free IRQ from the list. Next, press the button “I/O Port” and choose an 0x20 free I/O space. Add these values into the dialog box. If at any point after the installation you want to change these values, go to the Control Panel▶Network, select the Adapters tab, press the Properties button, and fill in the new values.(Fig 5-5).

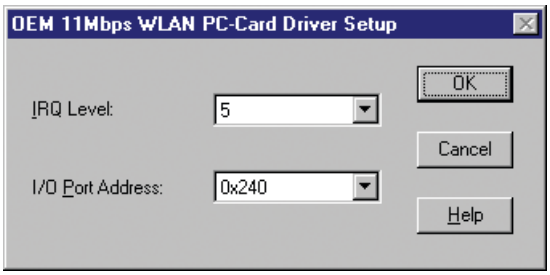

Fig 5-5

7. Finally, when the installation has been completed, (Fig 5-6). you will need to restart your computer.

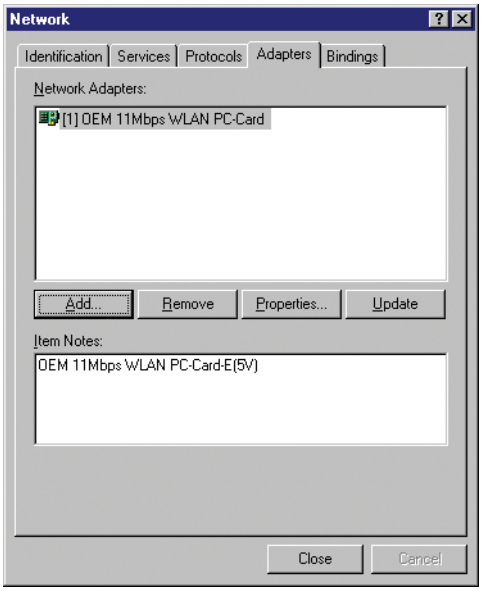

Fig 5-6

NOTE: If the card is not working properly, after a restart procedure, you should make sure that your system has free resources ever it may shows them as being available.

Configuration / Uninstall

In order to configure the card, please use the Configuration and Monitor Utility described in a different section of this document. This application lies on the system tray of your machine, as long as the card is inserted into your system, and permits you to change the parameters of the card “on the fly”.

To uninstall the WLAN adapter from Windows NT 4.0. you must double click on the “Network” option in the “Control Panel” (Start ▶Settings▶Control Panel). Select the “OEM 11 Mbps WLAN PC-Card” card from the list and press the “Remove” button.

Chapter 6: Installation Procedure Under Windows XP

Use the procedures described in this section to install and configure the WLAN adapter under MS Windows XP

About Windows XP

Throughout this section it is assumed that you have a basic working knowledge of WinXP. However, in this paragraph, some specific feature of WinXP are briefly explained.

WinXP operating system supports the “Plug & Play” feature. That means that once you insert the WLAN adapter into your PC for the very first time, the operating system will detect the card and automatically install the driver.

Furthermore WinXP supports “Hot Swapping”. with this feature, you can remove and reinsert the card whenever you want.

Installing the Driver / Utility

The following selection please check **Chapter 3** to setup your WLAN adapter

Configuration Under WinXP

There are two ways to configure WLAN Adapter. One is OEM WLAN Monitor Utility; the other one is Windows Wireless Network Configuration.

Use Windows Wireless Network Configuration: Please follow the steps to Enable

Select an **View Available Wireless Networks** (Fig 6-1) and click **Advanced** button (Fig 6-2).

Make sure “Use Windows to configure my wireless network settings” is checked and click OK (Fig 6-3). Otherwise unckeck for using **OEM WLAN Monitor Utility** to setup WLAN (Fig 6-4).

Fig 6-1

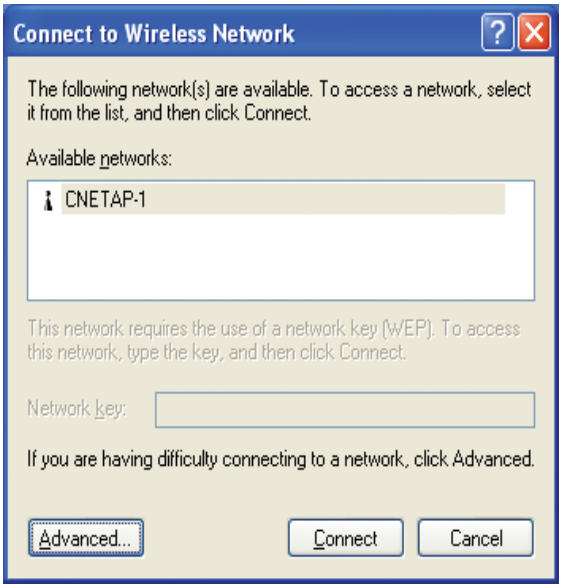

Fig 6-2

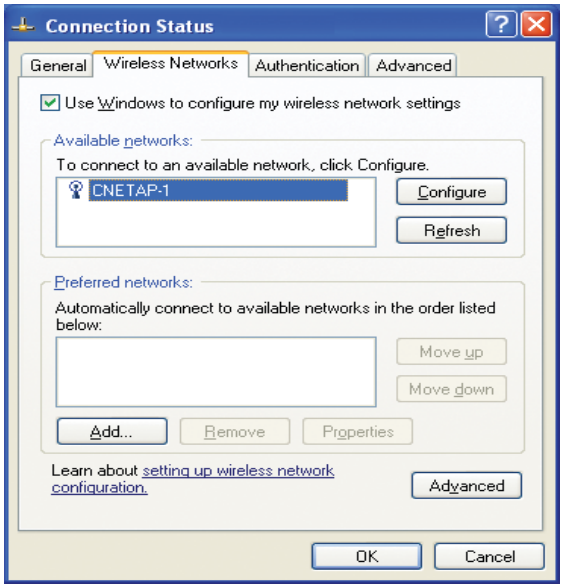

Fig 6-3

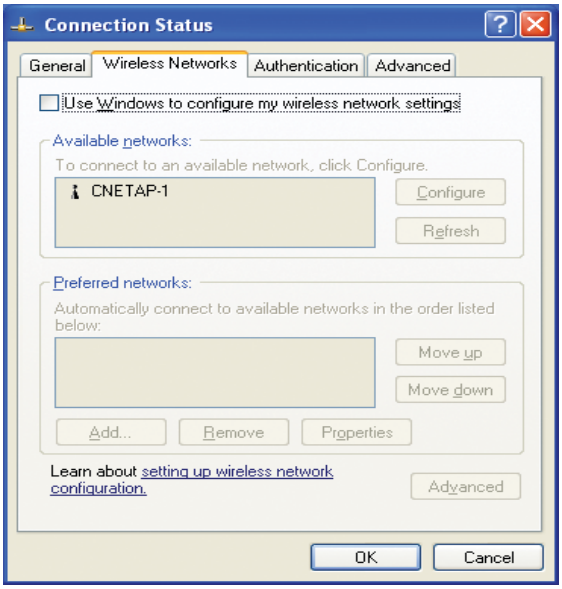

Fig 6-4

In order to configure the card, please use the WinXP build-in Application.

Uninstall Procedure Under WinXP

In order to uninstall the WLAN adapter from WinXP, you must right click on the “Properties” option under “My computer” icon. Then, under the “Hardware” tab, select the “Device Manager” and expand the “Network Adapters”. After you right click on the “OEM 11 Mbps WLAN PC-Card” option, press “Uninstall”. Finally, on the “Confirm Device Removal” window, select “OK”.

Appendix A: Troubleshooting

Adapter Installation Problems

If your computer can not find the WLAN PC card or the network driver doesn't install correctly, check the following:

- ❑ Make sure the adapter is securely seated in the PCMCIA slot. When you insert the wireless adapter into the notebook's slot, a beep should be heard if the adapter is properly inserted. Check for any hardware problems, such as physical damage to the card's connector.
- ❑ Try the card in another PCMCIA slot. If this also fails, test your computer with another WLAN PC Card that is known to operate correctly.
- ❑ When operating under Windows NT, make sure a PCMCIA slot and socket services driver is installed in your computer. Also check for resource conflicts using the Windows NT Diagnostics utility.
- ❑ Make sure your computer is using the latest BIOS.
- ❑ If there are other network adapters in the computer, they may be causing conflict. Remove all other adapters from the computer and test the wireless adapter separately.
- ❑ Check for a defective computer or PCMCIA slot by trying the adapter in another computer that is known to operate correctly.

Network Connection Problems

If the LED on the PC Card does not light, or if you can not access any network resources from the computer. Check the following:

- ❑ Make sure the correct software driver is installed for your operating system. If necessary, try reinstalling the driver.
- ❑ Make sure the computer and other network devices are receiving power.
- ❑ The Access Point you want to attach to may be defective. Try using another Access Point.
- ❑ If you can not access a Windows or NetWare service on the network, check that you have enabled and configured the service correctly. If you can not connect to particular server, be sure that you have access rights and a valid ID and password.
- ❑ If you can not access the Internet, be sure you have configured your system for TCP/IP.
- ❑ If your wireless station can not communicate with a computer in the Ethernet LAN when configured for Infrastructure mode, Check the following:
  - ☒ Make sure the Access Point that the station linked is power on.
  - ☒ If you still can not connect, change the Access Point to another radio channel.
  - ☒ make sure the BSS ID is the same as the Access Point for a station with roaming disabled, or the SSID is the same as the Access Point for station with roaming enabled.
  - ☒ Ensure that the station is configured with the same security options as the Access Point.

Appendix B: Glossary

Access Point- An internetworking device that seamlessly connects wired and wireless networks together.

Ad-Hoc- An Ad-Hoc wireless LAN is a group of computers each with wireless adapters, connected as an independent wireless LAN.

Backbone- The part of a network that connects most of the systems and networks together and handles the most data. The core infrastructure of a network, the portion of the network that transports information from one central location to another central location. The information in then off-loaded onto a local system.

Bit- A binary digit. The value - 0 or 1 used in the binary numbering system. Also, the smallest form of data.

BSS- Stands for **B**asic **S**ervice **S**et. An Access Point associated with several stations.

Domain- A subnetwork comprised of a group of clients and servers under the control of one security database. Dividing LANs into domains improves perfor -mance and security.

DSSS- Direct Sequence Spread Spectrum is very widely known and the most used of the spread spectrum types, owing most of its popularity to its ease of implementation and high data rates.

Encryption- A security method that applies a specific algorithm to data in order to alter the data's appearance and prevent other devices from reading the information

ESS- Stands for Extended Service Set. More than one BSS can be configured as an Extended Service Set. An ESS basically a roaming domain.

Ethernet- A popular local area data communications network, originally developed by Xerox Corp., which accepts transmission from computers and terminals. Ethernet operates on 10 Mbps baseband transmission over shielded coaxial cable or over shielded twisted pair telephone wire.

Firmware- Code that is written onto read-only memory (ROM) or programmable read-only memory (PROM). Once firmware has been written onto the ROM or PROM, it is retained even when the device is turned off.

Fragmentation- Breaking a packet into smaller units when transmitting over a network medium that cannot support the original size of the packet.

Infrastructure- An integrated wireless and wired LAN is called an infrastructure configuration.

IRQ- Interrupt ReQuest, A hardware interrupt on a PC. There are 16 IRQ lines used to signal the CPU that peripheral event has started or terminated. In most cases, two devices cannot use the same line.

PCMCIA- Personal Computer Memory Card International Association, which develops standards for PC cards, formerly known as PCMCIA cards, are available in three types which are about the same length and width as credit cards, but range in thickness from 3.3mm(Type I), 5.0mm(Type II), to 10.5mm(Type III). These cards can be used for many functions, including memory storage, as landline modems and as wireless LAN.

Roaming- A function that allow one to travel with a mobile end system (wireless LAN mobile station, for example) through the territory of domain(an ESS, for example) while continuously connecting to the infrastructure.

RTS- Request to Send, An RS-232 signal sent from the transmitting station to the receiving station requesting permission to transmit.

Throughput- The amount of data moved successfully from one place to another in a given time period.

Tx Rate- Transmission Rate.

WEP- Wired Equivalent Privacy, A data privacy mechanism based on a 64-bit or 128-bit shared key algorithm, as described in IEEE 802.11 standard.

Appendix C: Specifications

Radio:	Complies with IEEE 802.11b
Frequency Band:	2400 ~ 2483.5MHz (for US, Canada, and ETSI) 2400 ~ 2497MHz (for Japan)
Modulation TYPE:	CCK,BPSK,QPSK
Operating Channels:	IEEE 802.11b compliant 11 channels (US, Canada) 13 channels (ETSI) 14 channels (Japan)
Radio Technology:	Direct Sequence Spread Spectrum
Data Rate:	1 / 2 / 5.5 / 11 Mbps
Output Power:	> +15dBm, 10mW/MHz for Japan
Receive sensitivity:	Min. -80dBm for 11Mbps (@BER $10E^{-5}$)Min. -84dBm for 5.5/2/1 Mbps (@BER $10E^{-5}$)
Antenna Type:	Build-in diversity chip antenna, or MMCX connector for External antenna (Short Card)
Current Consumption:	3.3 V or 5V, Tx mode 450 mA (Max.) Rx mode 250 mA (Max.)
Package :	PCMCIA Type II
Certification:	Radio: EU: ETS 300 328; USA: FCC Part 15C Taiwan: DGT EMC: EU ETS 300 826; USA: FCC Part 15B Safety: EN60950
Driver :	Windows 95/98/NT/2000/XP/Linux(Kernel 2.4 above)