

WN3501A

Wireless LAN USB Adapter

USER MANUAL

Version 1.0

Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

This 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 radio frequency energy. If this equipment is not installed and used in accordance with the manufacturer's instructions, it may cause harmful interference to radio communications. However, there is no guarantee 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 to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Manufacturer's Disclaimer Statement

The information in this document is subject to change without notice and does not represent a commitment on the part of the vendor. No warranty or representation, either expressed or implied, is made with respect to the quality, accuracy or fitness for any particular purpose of this document. The manufacturer reserves the right to make changes to the content of this document and/or the products associated with it at any time without obligation to notify any person or organization of such changes. In no event will the manufacturer be liable for direct, indirect, special, incidental or consequential damages arising out of the use or inability to use this product or documentation, even if advised of the possibility of such damages. This document contains materials protected by copyright. All rights are reserved. No part of this manual may be reproduced or transmitted in any form, by any means or for any purpose without expressed written consent of its authors. Product names appearing in this document are mentioned for identification purposes only. All trademarks, product names or brand names appearing in this document are registered property of their respective owners.

This device requires a radio license, unless it (including antenna) is installed totally inside a building. (User must obtain this license from Industry Canada).

"To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication."

Printed in Taiwan

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Chapter 1 About the WL11000 PCMCIA / PCI Card /WN3501A USB Adapter

The WL11000 IEEE 802.11 PCMCIA / PCI Card and WN3501A is compatible with any standard, notebook computer Type II or Type III PCMCIA slot / PCI slot / USB port. As a Plug-and-Play device, Windows 95/98 /2000 will automatically recognize the WL11000 PCMCIA / PCI card and USB adapter and initiate the installation process. Upon successful installation, the WL11000 PCMCIA / PCI card and WN3501A USB adapter will communicate seamlessly with other WL11000 wireless home and office networking products.

1-1 FEATURES

1. Supports up to 11 Mbps data rate: T-1 line alternative/replacement that dramatically cuts costs.
2. Working range up to 800 ft. in an open environment enhances mobility.
3. Supports point-to-point and point-to-multipoint access provides increased flexibility.
4. Seamless connectivity to wired Ethernet and PC network LAN's offers quick, trouble-free integration with existing networks.
5. Robust Direct Sequence Spread Spectrum (DSSS) technology provides secure, interference-resistant wireless connection.
6. Wireless connections eliminate the hassle and cost of cabling.
7. Supports a wide range of LAN (Local Area Network) Network Operating Systems (NOS) including Windows[®] 98 and Windows NT[™]
8. Easy Plug and Play installation
9. Omni - directional antenna included
10. Greater flexibility to locate or move networked PC's

1-2 APPLICATIONS

WL11000 and WN3501A products offer a fast, reliable, cost-effective solution for wireless client access to the network the following applications and environments:

- Remote access to corporate network information
- E-mail, file transfer and terminal emulation
- Difficult-to-wire environments
- Historic or older buildings
- Buildings with asbestos insulation
- Open areas where wiring is difficult to employ
- Frequently changing environments
- Retailers, manufacturers or other organizations that frequently rearrange the workplace or relocate
- Temporary LANs for special projects or peak time usage

- Trade shows, exhibitions and construction sites that employ temporary networks. Retailers, airline and shipping companies that need additional workstations for a peak period and Auditors that require workgroups at customer sites.
- Access to database for mobile workers
- Medical, Technical and Retail specialists that require roaming access to a database or other network resources.
- SOHO (Small Office and Home Office) users
- Perfect for users that need a small, easy-to-install network that deploys rapidly.
- Inter-building connection
- Wireless building-to-building networks are quickly and easily installed, require no monthly lease fees, and provide the flexibility to reconfigure easily.

1-3 PRODUCT KIT

The WL11000 product kit includes the following items. Ensure that the items in the following list have been included. If any of the listed items are missing, please contact your local dealer.

- 1 X WL11000 PCMCIA Type II Adapter or PCI Adapter or USB adapter
- 1 X Driver
- 1 X User Manual & Utility CD pack

Chapter 2 Network Configuration and Planning

The WL11000 and WN3501A supports legacy Ethernet LAN network configuration options as defined by the IEEE 802 standards committee.

The WL11000 can be configured as:

- Ad-Hoc for departmental or SOHO LANs
- Infrastructure for enterprise LANs
- LAN-Interconnection for point-to-point link as a campus backbone

2-1 NETWORK TOPOLOGY

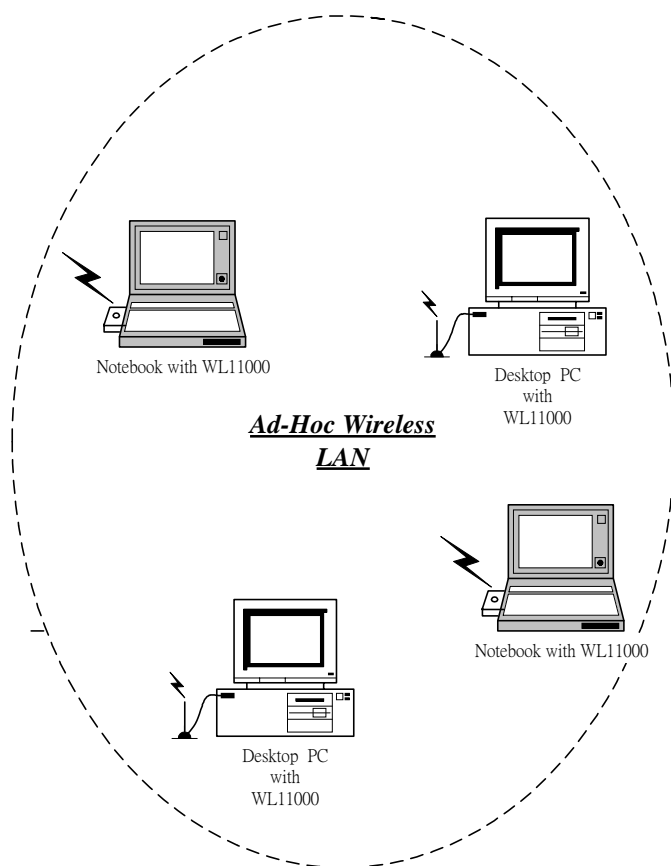


Fig. 1 - Ad-Hoc Wireless LAN

An Ad-Hoc wireless LAN is a group of computers, each equipped with one WL11000 / WN3501A adapter, connected as an independent wireless LAN. Computers in a specific Ad-Hoc wireless LAN must be configured to share the same radio channel.

Ad-Hoc wireless LAN configurations are appropriate for branch level departments or SOHO operations.

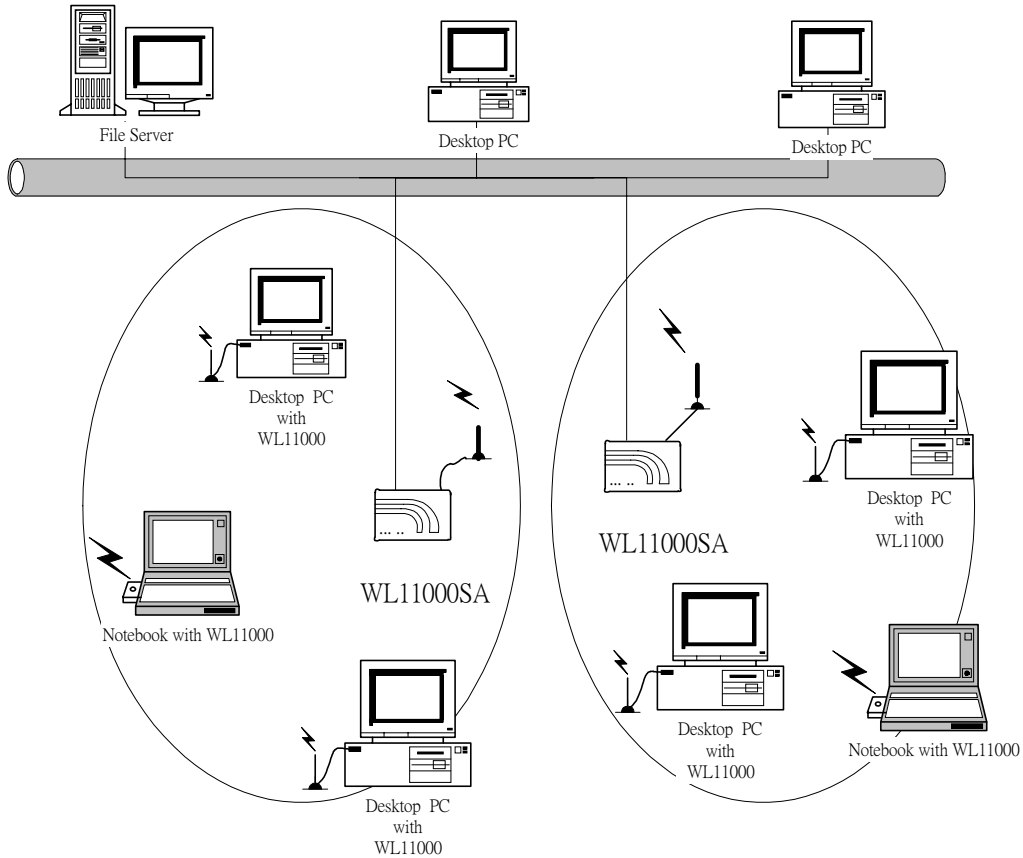


Fig. 2 - Infrastructure Wireless LAN Configuration

The WL11000 / WN3501A provides access to a wired LAN for wireless workstations. An integrated wireless and wired LAN is called an Infrastructure configuration. A group of WL11000/ WN3501 PC users and an Access Point compose a Basic Service Set (BSS). Each WL11000/ WN3501 PC in a BSS can talk to any computer in the wired LAN infrastructure via the Access Point.

An Infrastructure configuration extends the accessibility of a WL11000/ WN3501 equipped PC to a wired LAN, and doubles the effective wireless transmission range for 2 WL11000/ WN3501 PCs. Since the Access Point is able to forward data within its BSS, the effective transmission range in an infrastructure LAN is **doubled**.

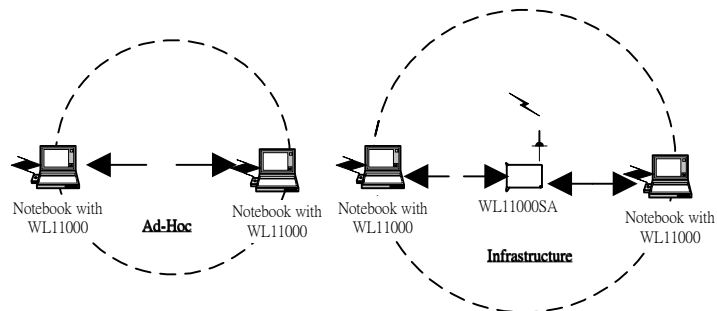


Fig. 3 - The effective Transmission Range

The use of a unique ID in a BSS is essential. All WL11000/ WN3501 equipped PCs configured without roaming options in an independent BSS must be configured with a BSS ID corresponding to the WL11000SA used in the BSS. Check your WL11000SA for its BSS ID or use the Access Point Browser Utility program to determine the BSS ID.

The Infrastructure Wireless LAN configuration is appropriate for enterprise-scale wireless access to a central database, or as a wireless application for mobile users.

A point-to-point LAN configuration is possible when two access points are linked with an optional directional antenna (the directional antenna is an optional accessory, please contact your dealer for information). The optional directional antenna makes LAN-Interconnection to a wireless backbone between buildings possible.

2-2 ROAMING

Infrastructure mode also supports roaming capabilities for mobile users. More than one BSS can be configured as an Extended Service Set (ESS). The continuous network allows users to roam freely within an ESS. All WL11000/ WN3501 PCs and WL11000SAs within one ESS must be configured with the same ESS ID and use the same radio channel.

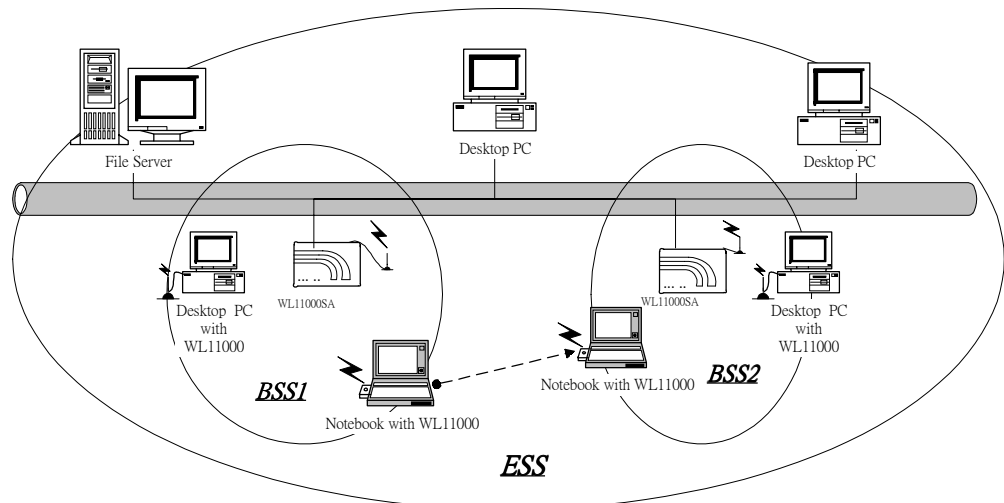


Fig. 4 - Roaming in an Extended Service Set (ESS)

Before enabling an ESS with roaming capability, choosing a feasible radio channel and optimum Access Point position is recommended. Proper Access Point positioning combined with a clear radio signal will greatly enhance performance.

Chapter 3 Adapter Installation and Configuration – Windows® 98 / NT / 2000

3-1 SYSTEM REQUIREMENTS

In order to install and use the WL11000 PCMCIA card your PC system must meet the following requirements:

- A PCMCIA Type II or Type III slot
- PCMCIA revision 2.10 compliant card and socket services
- Windows® 98 (with the Windows® CD, for use during installation)
- 500 Kbytes free disk space for utility and driver installation

3-2 INSERTING THE ADAPTER

To insert the WL11000 Network Adapter into a notebook computer, do the following:

1. Locate an available Type II or Type III PCMCIA slot / PCI slot.
2. With the PCMCIA adapter's 68-pin / PCI Adapter's 120-pin connector facing the PCMCIA slot / PCI slot and the "WL11000PCMCIA" label facing up slide the PCMCIA adapter completely into the PCMCIA slot , the PCI Adapter completely into the PCI slot.

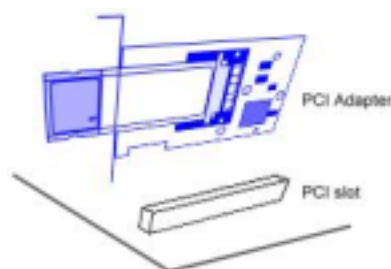
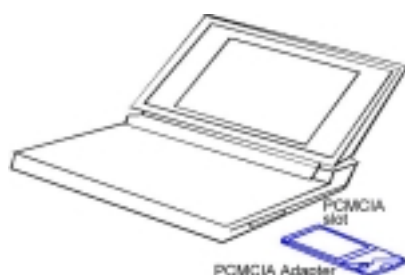


Fig. 5.1 Insert the PCMCIA Adapter into Notebook Fig. 5.2 Insert the PCI Adapter into PC

After properly inserting the Network Adapter into your notebook, continue with the WL11000/ WN3501 driver and PRISM Configuration Utility installation.

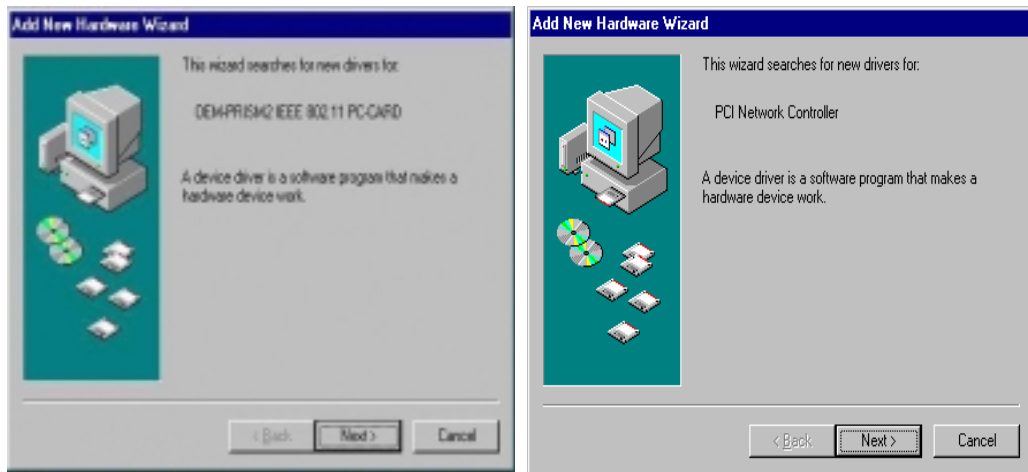
NOTE: The PCMCIA slot allows "hot swap" of PCMCIA adapter. You may insert or remove the WL11000 / PCMCIA adapter from the slot anytime, even when the power of your computer is on.

NOTE: Windows® 98 requires that the Network card and socket services must be compliant with the PCMCIA revision 2.10 specification. Please check the documentation of the PCMCIA driver before installing the WL 11000 PCMCIA adapter.

3-3.1 WL11000/ WN3501 DRIVER INSTALLATION -WINDOWS® 98

Note: Before proceeding, have the Windows® 98 CD ready, as it will be required during the software installation process.

1. Insert the WL11000 PCMCIA / PCI adapter into a standard Type II or Type III PCMCIA card slot / PCI slot, as described in the preceding section.
2. Windows® 98 will automatically detect the WL11000 and prompt you to install the necessary driver. Click "Next" to begin the installation.

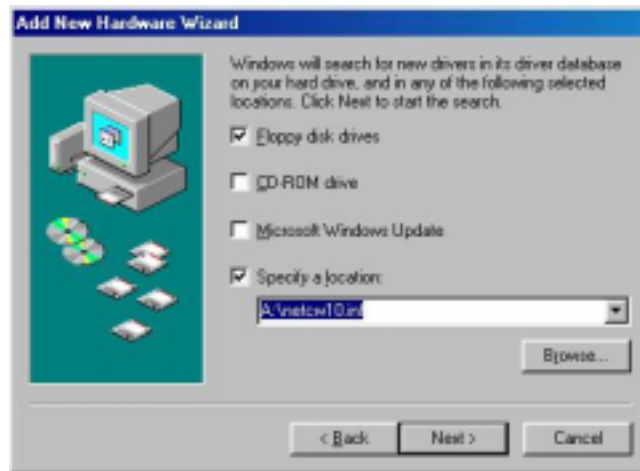


(PCMCIA Adapter is left-hand side ; PCI Adapter is right-hand side)

3. Check "Search for the best driver..." click "Next".



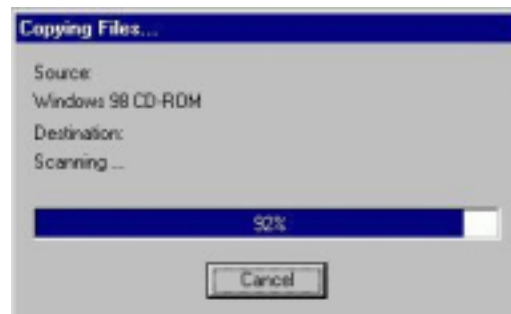
4. Check "Floppy disk drives", click "Next". Windows® 98 will automatically find the file.



5. Windows® 98 will then acknowledge that it has found the appropriate driver, click "Next"



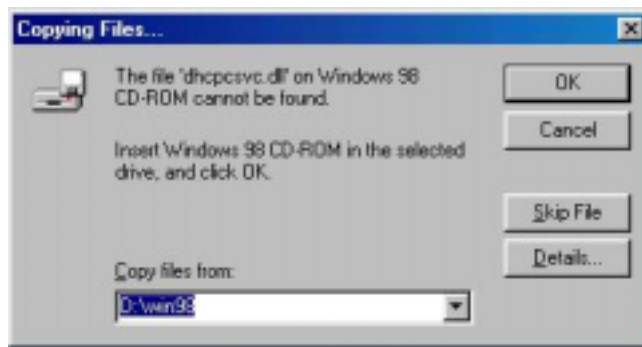
Windows® 98 will now install the driver



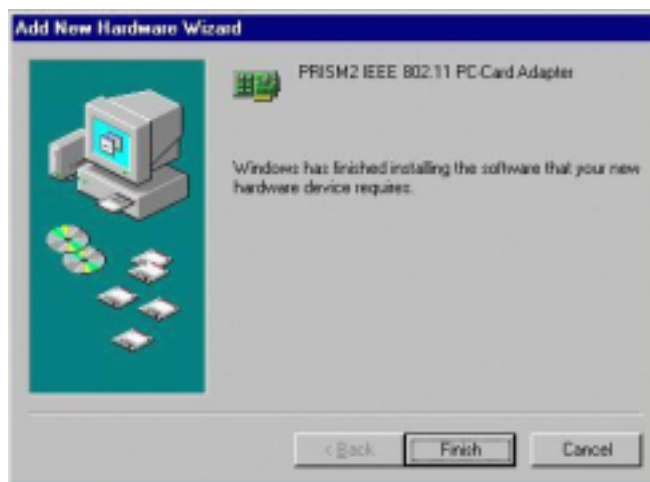
As the driver files are being copied to the appropriate location, you will be prompted to insert the Windows® 98 CD.

6. Insert the Windows® 98 CD. Select "D:\win98" from the drop down list (where "D" represents the CD-ROM drive), click "OK"

NOTE: You must insert the Windows® 98 CD as the driver installation requires special files that will not be available even if you have stored a copy of Windows® 98 on your hard drive.



7. After Windows® 98 has finished installing the appropriate files click "Finish"



8. You will be prompted to restart your computer, click "YES" to complete the installation.



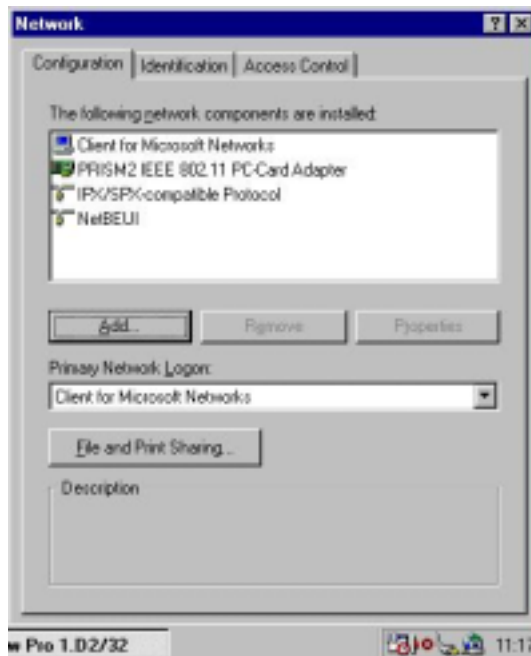
3-3.2 ADAPTER CONFIGURATION – WINDOWS® 98

After successful installation of the WL11000 and its driver, continue the installation process by configuring the WL11000 adapter properties. To configure the WL11000 Adapter complete the following steps :

1. From the Control Panel, double-click the "Network" icon



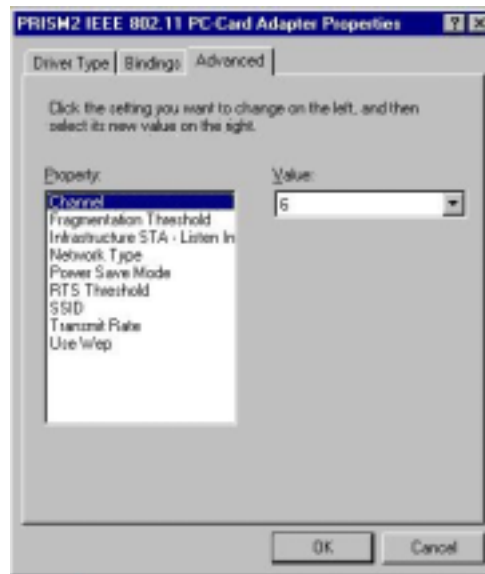
2. Select "PRISM2IEEE 802.11 PC Card Adapter" from the list and press the "Properties" button.



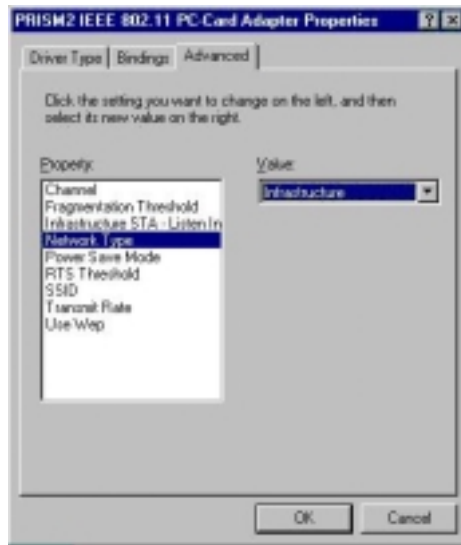
- From the "Properties" menu select the "Advanced" tab.



- Select "Channel" from the list, and choose a "Value" from the drop down list. FCC regulations require a "Value" between 1 and 11.



5. Select "Network Type", and choose "Infrastructure" or "Ad-Hoc" as the "Value".



Note: "Infrastructure" mode allows a wireless adapter to communicate with a wired network, while "Ad-Hoc" mode allows wireless-to-wireless communication. Consult your System Administrator for information about your network communication type. For more information about Infrastructure and Ad-Hoc networks, see Chapter 2 of this manual

6. Select "Power Save Mode" and choose a "Value".



NOTE: To allow uninterrupted data communication, choose "Disabled" as the "Value". Choosing "Enabled" allows your notebook to enter "sleep" mode, however, this will interrupt data communication. Consult your System Administrator to find out the best setting for your network type. For more information about Power Save Mode, see the chapter entitled "PRISM Configuration Utility" in this manual.

7. Select "Power Save Mode" and choose a "Value".



NOTE: To allow uninterrupted data communication, choose "Disabled" as the "Value". Choosing "Enabled" allows your notebook to enter "sleep" mode, however, this will interrupt data communication. Consult your System Administrator to find out the best setting for your network type. For more information about Power Save Mode, see the chapter entitled "PRISM Configuration Utility" in this manual.

8. Select "SSID"; enter a "Value" of "PRISM2".



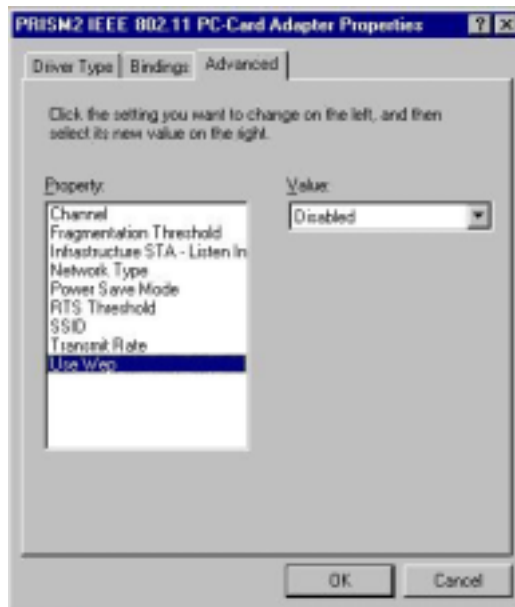
NOTE: The SSID can have any value, but should have the same value as the Access Point (AP). In Ad-Hoc mode, all clients should share the same SSID.

9. Select "Transmit Rate", and choose a "Value".



NOTE: Fixed 11 Mb/s is the preferred "Value" for environments where the client has line of sight access and is a short distance away from the AP. Fully Auto is the recommended setting for clients that are farther away from the AP and where there may be interference between the client and the AP.

10. Select "Use Wep", and choose a "Value".



NOTE: Wired Equivalent Privacy (Wep) is an encryption scheme used to protect wireless data communication. Selecting "Disabled" will prevent you from sharing data with other computers if your network uses Wep. If your network is Wep enabled, you must choose "64bit" or "128bit". Consult your System Administrator for more information about your network type. For more information about Wep, see the chapter entitled "PRISM Configuration Utility" in this manual.

11. After the configuring the "Properties", click "OK" and continue with the Protocol Installation, described in the following section.

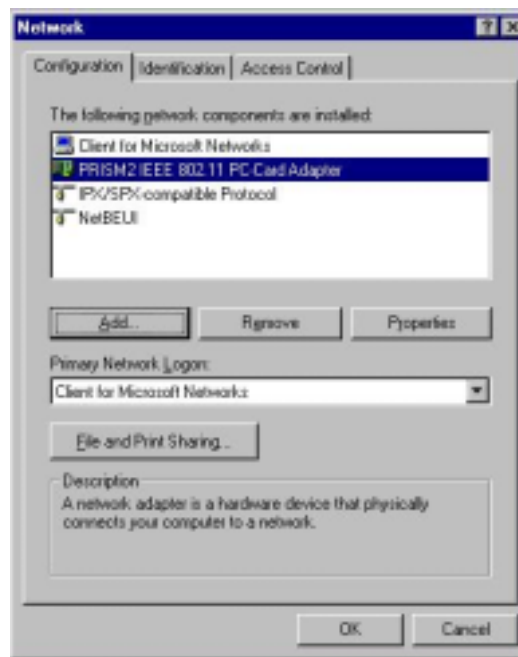
3-3.3 PROTOCOL INSTALLATION – WINDOWS® 98

Before continuing with the Protocol installation consult your System Administrator for details about your specific network. To install network protocols complete the following steps.

1. From the "Control Panel" double-click the "Network" icon.



2. Select "PRISM2 IEEE 902.11 PC Card Adapter" and click "Add".



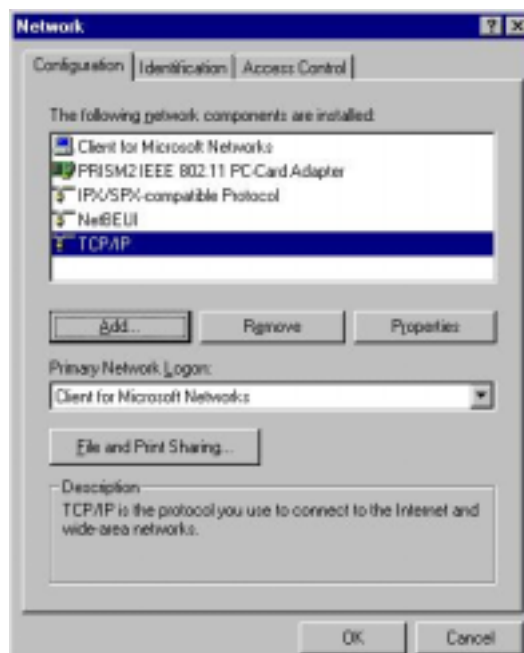
3. Highlight "Protocol" and click "Add"



4. Select "Microsoft" from the list of "Manufacturers" and "TCP/IP" from the list of "Network Protocols", click "OK"



5. Select "TCP/IP " and click "Properties".



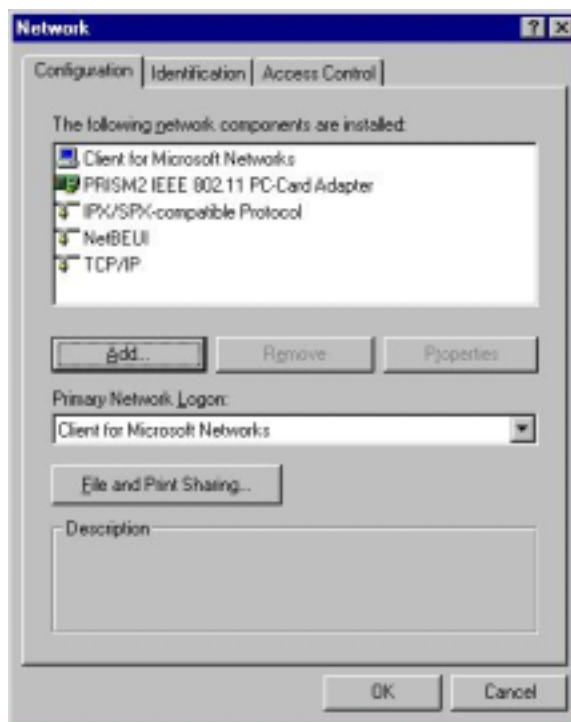
Repeat step 2 – 5 to install other protocols such as NetBeui or IPX/SPX.

NOTE: The following steps apply to DHCP servers. Consult your system administrator for specific information regarding your server type, and for help in specifying an IP address if you do not use a DHCP server and must manually enter the IP address and DNS number.

6. Check "Obtain an IP address..." and click "OK". If you are using a DHCP server the IP address will be entered automatically.



7. From the Network menu highlight "Client for Microsoft Networks", and click "File and Print Sharing".



8. Check both boxes and click "OK".



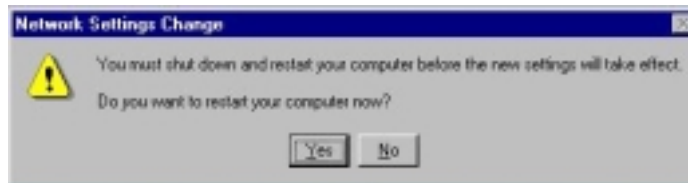
9. Enter a "Computer name", "Workgroup" and "Computer Description", click "OK"



10. Enter a "Computer name", "Workgroup" and "Computer Description", click "OK"



11. You will be prompted to restart your computer, click "Yes" to complete the installation.



Note: Please see the trouble shooting if you encounter some problem while installing the PC-Card or your PC-Card is non-functional.

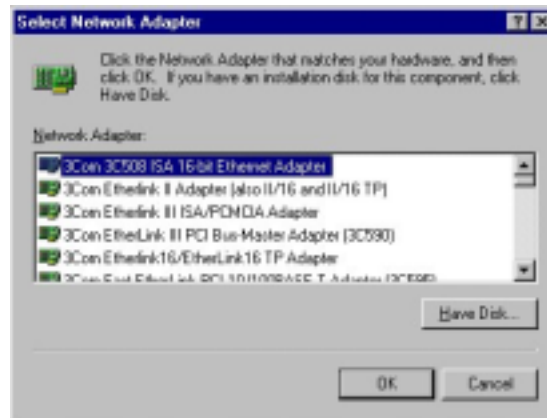
3-4 WL11000/ WN3501 SETUP FOR WINDOWS® NT 4.0

Login as Administrator

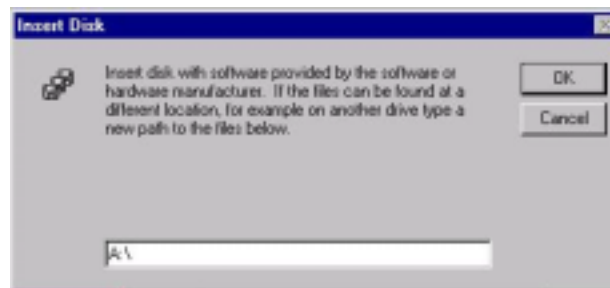
1. From the desktop, select "Control Panel", double-click "Network", click "Adapters", click "Add"



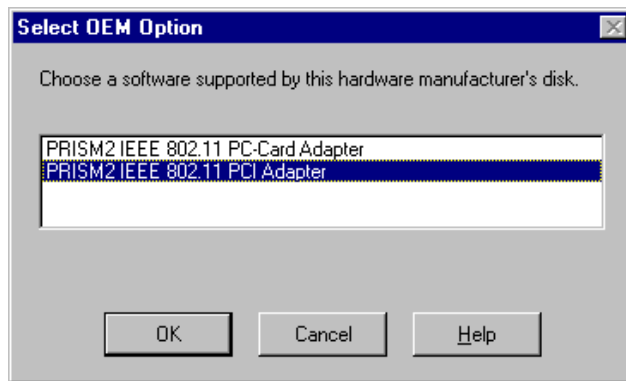
2. Click "Have Disk"



3. Insert the WL11000 disk; Windows NT will manually enter the path to the driver click "OK".

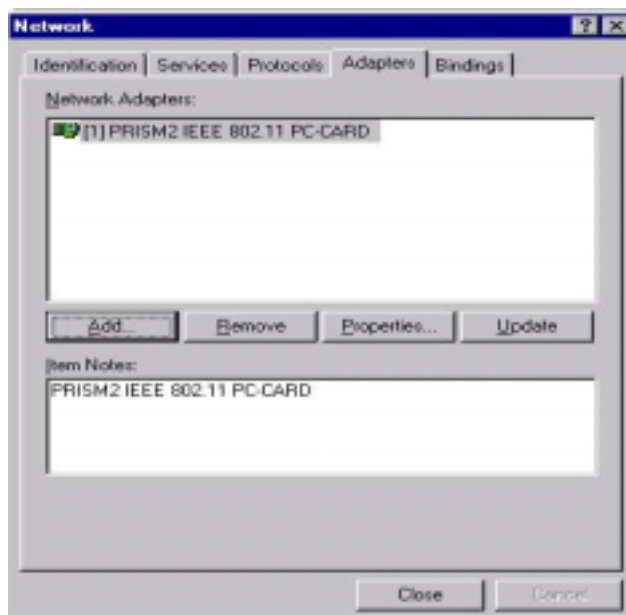


4. Select your adapter from the list , click "OK".

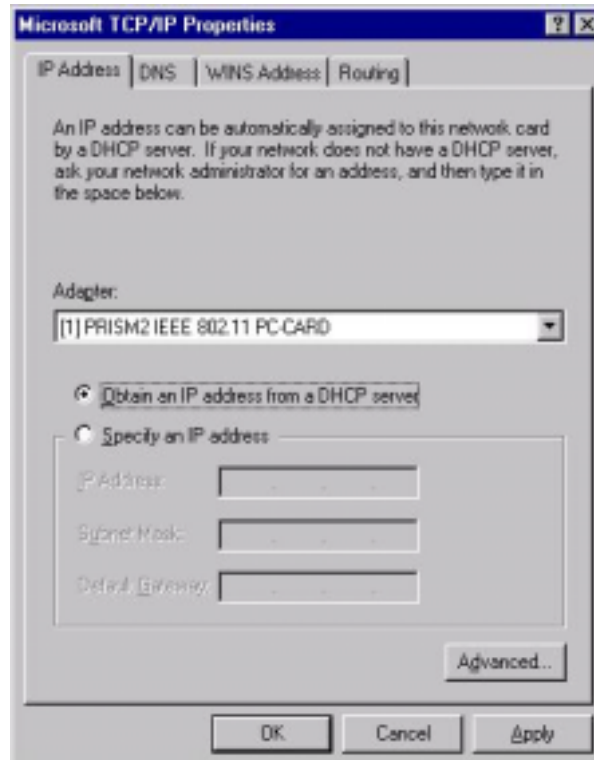


Note: You may needs Windows® NT CD during this setup for NT 4.0 .

5. Click "Close" from the "Network" dialog, Windows NT will auto-bind the new adapter with any network protocols already installed on the system.



6. After the auto-binding procedure is complete, select "Properties" from the "Network" dialog. At this point you may choose to manually specify an IP address, or automatically obtain an IP address if you are using a DHCP server. Consult your Systems Administrator for information about your server type, IP address settings and DNS number.



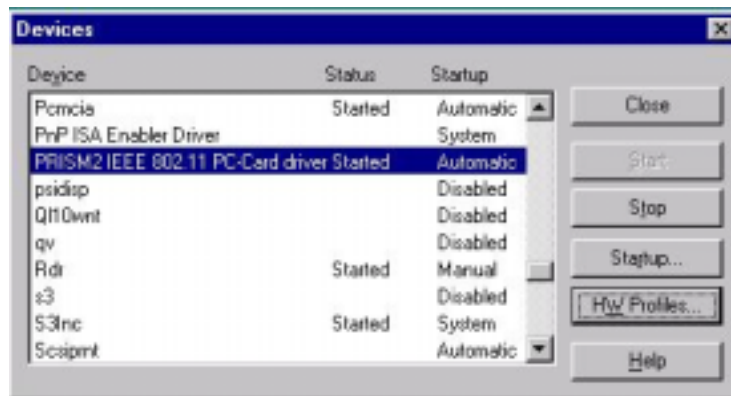
7. After the settings configuration is complete, confirm that the "Computer Name" and "Workgroup" designations are correct, and click "OK".



8. You will be prompted to restart your computer, click yes to complete the installation



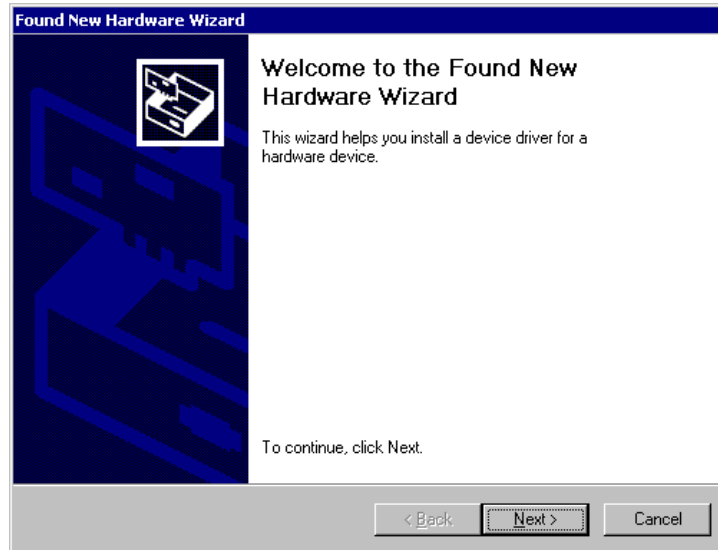
9. Upon restart, open the "Devices" menu from the "Control Panel", to confirm that the driver installation was successful. Your adapters driver should now be listed in the "Devices" menu. If your device is PCMCIA Adapter , you should start "Pcmcia" first (Hint : select "Pcmcia" , click "Startup...", choice "Automatic" then click "Start")



Note: Suppose the Adapter configuration and Protocol installation of yours are ok , because it is almost as same as the way that we interpret for Windows® 98 before.

3-5 WL11000/ WN3501 SETUP FOR WINDOWS® 2000

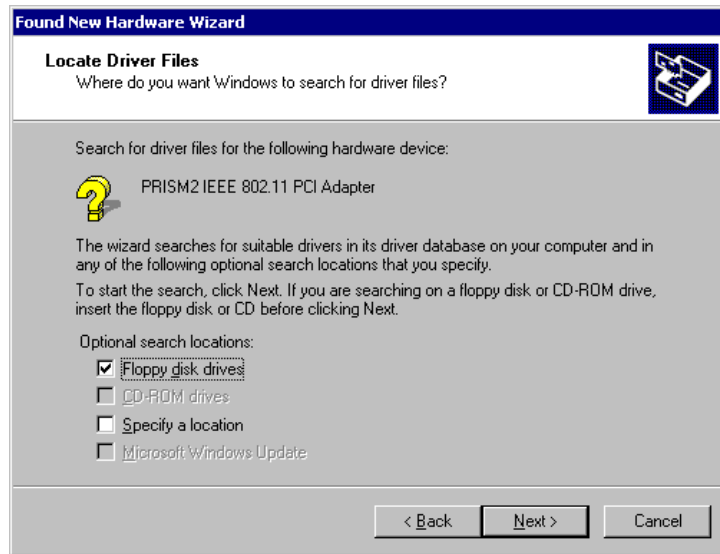
1. Insert the WL11000 PCMCIA / PCI adapter into a standard Type II or Type III PCMCIA card slot / PCI slot, as described in the preceding section.
2. Windows® 2000 will automatically detect the WL11000 and prompt you to install the necessary driver. Click "Next" to begin the installation.



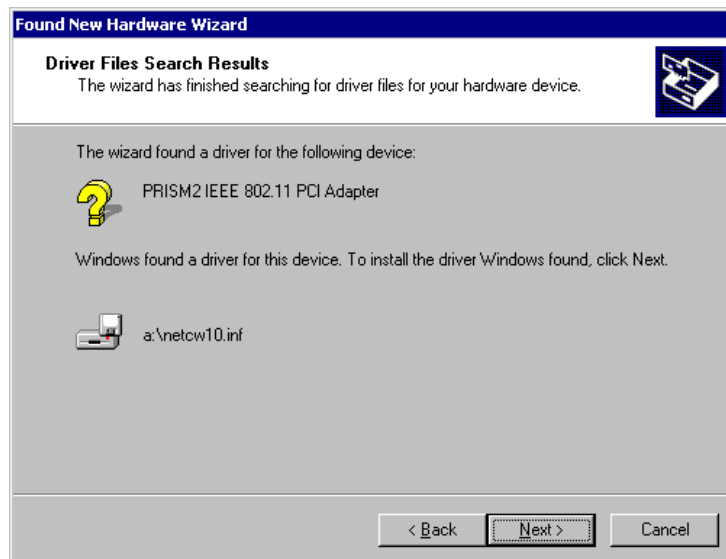
3. Check "search for the best driver..." , click "Next".



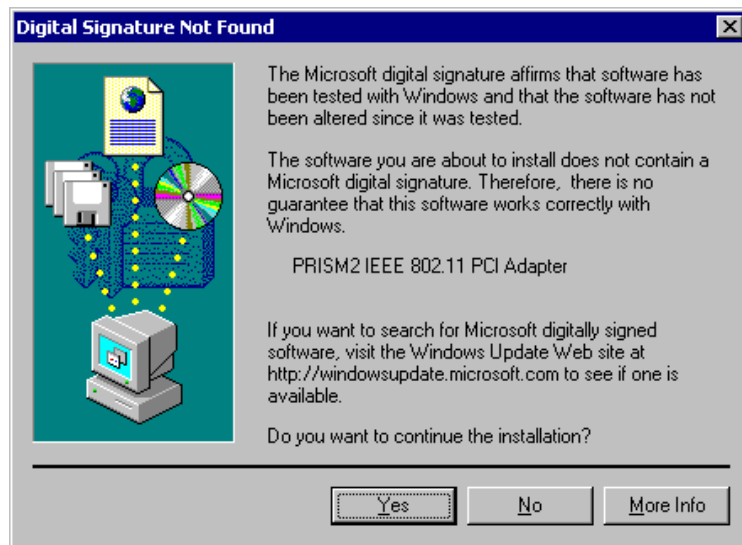
4. Check "floppy disk drivers" , click "Next". Windows® 2000 will automatically find the file.



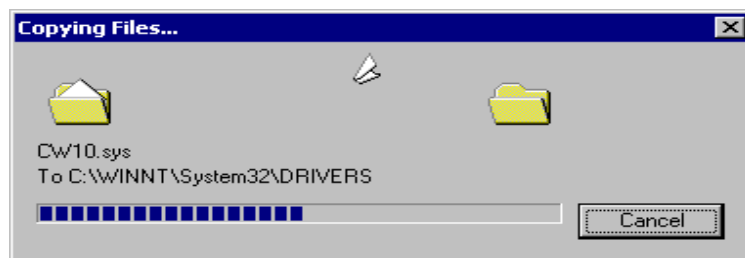
5. Windows® 2000 will then acknowledge that it has found the appropriate driver, click "Next".



- Click "Yes" to continue the installation.



Windows® 2000 will now install the driver.



- After Windows® 2000 has finished installing the appropriate files click "Finish"



Note: Suppose the Adapter configuration and Protocol installation of yours are ok , because it is almost as same as the way that we interpret for Windows® 98 before.

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 core infrastructure of a network, the portion of the network that transports information from one central location to another central location. The information is then off-loaded onto a local system.

Base Station - In mobile telecommunication, a base station is the central radio transmitter/ receiver that maintains communication with the mobile radio telephone sets within range. In cellular and personal communications applications, each cell or microcell has its own base station; each base station in turn is interconnected with other cells' base.

BSS - Stands for "Basic Service Set." An Access Point associated with several wireless stations.

ESS - Stands for "Extended Service Set." More than one BSS can be configured as an Extended Service Set. An ESS is 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.

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

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 3.3 mm (Type I) to 5.0 mm (Type II) to 10.5 mm (Type III). These cards can be used for many functions, including memory storage, as landline modems and as wireless LAN.

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

RTS Threshold - Transmitters contending for the medium may not hear each other. RTS/CTS mechanism can solve this "Hidden Node Problem".

Product Specifications for WL 11000/WN3501A :

Radio:	Complies with IEEE 802.11
Frequency Band:	2400 ~ 2483.5MHz (for US, Canada, and ETSI 2400 ~ 2497MHz (for Japan)
Modulation TYPE:	CCK,BPSK,QPSK
Operating Channels:	IEEE 802.11 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
Receive sensitivity:	Min. -76dBm for 11Mbps; Min. -80dBm for 5.5/2/1 Mbps ;(@BER 10E-5)
Antenna Type:	Dual dipole antenna
Current Consumption :	5 V , Tx mode 450 m A (Max.) ; Rx mode 230 m A (Max.)
Certification:	FCC Part 15 ETSI 300.328 ARIB STD33 & T66
Driver :	Windows 98/2000