Accton

Making Partnership Work

Wireless USB Adapter
WN3501C
Quick Installation Guide

Accton

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Wireless USB Adapter

11 Mbps Wireless Network Adapter

Accton

WN3501C
E032002R01
150417-102

Compliances

FCC - Class B

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 and, if not installed and used in accordance with instructions, may cause harmful interference to radio communications. However, there is no guarantee that the 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 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 or an experienced radio/TV technician for help

Note: In order to maintain compliance with the limits for a Class B digital device, SMC requires that you use a quality interface cable when connecting to this device. Changes or modifications not expressly approved by SMC could void the user's authority to operate this equipment.

Attach unshielded twisted-pair cable (UTP) to the RJ-45 port and shielded USB cable to the USB port.

Industry Canada - Class B

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of Industry Canada.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matérial brouilleur: "Appareils Numériques," NMB-003 édictée par l'Industrie.

EC Conformance Declaration - Class B

SMC contact for these products in Europe is:

SMC Networks Europe,
Edificio Conata II,
Calle Fructuós Gelabert 6-8, 2º, 4ª,
08970 - Sant Joan Despí,
Barcelona, Spain.

This information technology equipment complies with the requirements of the Council Directive 89/336/EEC on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility and 73/23/EEC for electrical equipment used within certain voltage limits and the Amendment Directive 93/68/EEC. For the evaluation of the compliance with these Directives, the following standards were applied:

RFI Emission:
- Limit class B according to EN 55022:1998
- Limit class B for harmonic current emission according to EN 61000-3-2/1995
- Limitation of voltage fluctuation and flicker in low-voltage supply system according to EN 61000-3-3/1995

Immunity:
- Product family standard according to EN 55024:1998
- Electrostatic Discharge according to EN 61000-4-2:1995 (Contact Discharge: ±4 kV, Air Discharge: ±8 kV)
- Radio-frequency electromagnetic field according to EN 61000-4-3:1996 (80 - 1000 MHz with 1 kHz AM 80% Modulation: 3 V/m)
- Electrical fast transient/burst according to EN 61000-4-4:1995 (AC/DC power supply: ±1 kV, Data/Signal lines: ±0.5 kV)
- Surge immunity test according to EN 61000-4-5:1995 (AC/DC Line to Line: ±1 kV, AC/DC Line to Earth: ±2 kV)
- Immunity to conducted disturbances, Induced by radio-frequency fields: EN 61000-4-6:1996 (0.15 - 80 MHz with 1 kHz AM 80% Modulation: 3 V/m)
- Power frequency magnetic field immunity test according to EN 61000-4-8:1993 (1 A/m at frequency 50 Hz)
- Voltage dips, short interruptions and voltage variations immunity test according to EN 61000-4-11:1994 (>95% Reduction @10 ms, 30% Reduction @500 ms, >95% Reduction @5000 ms)

LVD:
- EN 60950 (A1/1992; A2/1993; A3/1993; A4/1995; A11/1997)

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WN3501C Wireless USB Adapter

Introduction

Accton's WN3501C Wireless USB Adapter is an 11 Mbps wireless network adapter that seamlessly integrates with existing Ethernet networks to support applications such as mobile users or temporary conferences. This solution offers fast, reliable wireless connectivity with considerable cost savings over wired LANs (which include long-term maintenance overhead for cabling.) Just plug wireless adapters into your desktop PCs and start networking.

Using this adapter in conjunction with an Accton Wireless Access Point or Wireless Access Point/Bridge, you can create an instant network that integrates seamlessly with 10 Mbps Ethernet LANs. Moreover, moving or exanding your network is as easy as moving or installing additional Wireless AP/Bridges – no wires!

System Requirements

Before you install the Wireless USB Adapter, check your system meets the following requirements:

- An available USB port.
- Windows 98/Me/2000/XP (have the Windows installation CD-ROM ready for use during driver installation.)
- A minimum of 1 MB of free disk space for installing the driver and utility program.

Another IEEE 802.11b compliant device installed in your network, such as a Wireless Access Point, or another PC with a wireless adapter.

Package Checklist

The Wireless USB Adapter package includes:

- 1 Wireless USB Adapter with internal dual dipole antennas (WN3501C)
- 1 Driver diskette
- 1 Utility diskette
- 1 USB cable
- 1 Fastening clip
- 3 Peices of Velcro
- 2 Magnets
- This User Guide

Please complete the warranty registration card and return to Accton, or register online at: **register.acctontech.com**.

Inform your dealer if there are any incorrect, missing, or damaged parts. If possible, retain the carton, including the original packing materials. Use them again to repack the product in case there is a need to return it for repair.

Applications

Wireless products offer fast, reliable, cost-effective network access for wireless clients in applications such as:

- **Remote access to corporate network information**
  E-mail, file transfer, and terminal emulation

- **Difficult-to-wire environments**
  Historic or old buildings, asbestos installations, and open areas where wiring is difficult to employ

- **Frequently changing environments**
  Retailers, manufacturers, and banks who frequently rearrange the workplace and change location

- **Temporary LANs for special projects or peak time**
  Trade shows, exhibitions, and construction sites that need to setup for a short time period. Retailers, airline, and shipping companies who need additional workstations for peak periods. Auditors who require workgroups at customer sites

- **Access to databases for mobile workers**
  Doctors, nurses, retailers, white-collar workers who need access to databases while being mobile in a hospital, retail store, office, campus etc.

- **SOHO users**
  SOHO (Small Office Home Office) users who need quick and easy installation of a small computer network

Hardware Description

Accton's Wireless USB Adapter supports an 11 Mbps half-duplex connection to Ethernet networks. The adapter is fully compliant with 2.4 GHz DSSS CSMA/CA wireless networking as defined in IEEE 802.11b. It can be installed in any notebook or desktop with a USB port. Support is provided for Windows 98/Me/2000/XP.

LED Indicator

The Wireless USB adapter includes an LED indicator, as described in the following table.

Status	Description
On	Power is being supplied to the adapter.
Flashing	Adapter is receiving or transmitting data via a wireless connection.

Multi-choice Mounting Clip

The WN3501C USB adapter is supplied with a multi-choice mounting clip.
Magnets and velcro may also be attached to the clip for mounting in a variety of locations.

Hardware Installation

Attaching the Clip (Optional)

1. Slide the open end of the clip under the two lips (at the USB port end) in the square slot at the rear of the WN3501C.

2. Press the two lugs into the slots until they click into place.

3. To remove the clip, push in one of the lugs and pull the clip away from the WN3501C body. The other lug should slip free.

Attaching the Magnets (Optional)

1. Peel the protective paper off the magnets and place the sticky side of the magnets into the circular holes at the rear of the clip.

2. Press firmly.

    Warning: Sticking magnets to a notebook screen will damage the screen.

Attaching the Velcro (Optional)

1. Peel the protective paper off the Velcro circles and firmly press the circles into the circular holes at the rear of the clip.

2. Temporarily hold the WN3501C in the desired location and check the signal quality is acceptable. Peel the protective paper off the Velcro strip and stick the strip in the chosen location.

Attaching the USB Cable

1. Select an available USB port on the PC.

2. Carefully insert the USB cable's Type-A plug (i.e., the flat plug) into the USB port and press until it is firmly seated in the port. Insert the other end of the cable into the WN3501C.

    Warning: The plugs will only go into their respective slots one way. If the plugs do not comfortably enter the slots, turn them around and try again.

Driver Installation

The diskette labeled "Driver Diskette," that comes with the package contains the software drivers for the Wireless USB adapter. Backup your driver diskette and use the copy as the working diskette to protect the original from accidental damage. New or updated drivers can be downloaded from Accton's web site at:

http://www.acctontech.com

For installation in Windows 98/Me see the following page. For Windows 2000 see "Windows 2000 Driver Installation" on page 16, and for Windows XP see "Windows XP Driver Installation" on page 19.

Windows 98/Me Driver Installation

1. Windows 98/Me will automatically detect the new hardware and prompt you to install the driver.

2. Click *Next*.

3. Check "Floppy disk drives". Insert the floppy disk labeled "Driver" into the floppy disk drive and click *Next*.


4. Click *Next* to copy files from the floppy disk. Windows 98 may ask you for the Windows 98 CD-ROM. If so, insert the disk and click *OK*.

5. Click *Finish* to complete the driver installation. You may be asked to restart the computer. Click *Yes*.

The configuration utility allows you to make various settings and to monitor the performance of the Wireless USB adapter. To install the utility see "Installing the Utility in Windows 98, Me, and 2000" on page 22.

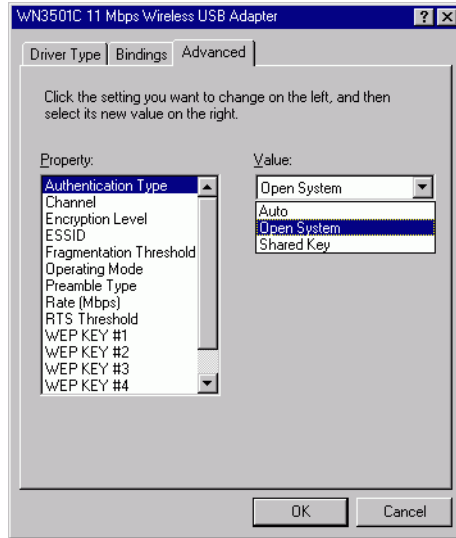For Windows XP see "Using the Windows XP Configuration Tool" on page 27.

Setting Wireless Properties

1. Click *Start/Settings/Control Panel*. Double-click the *Network* icon.
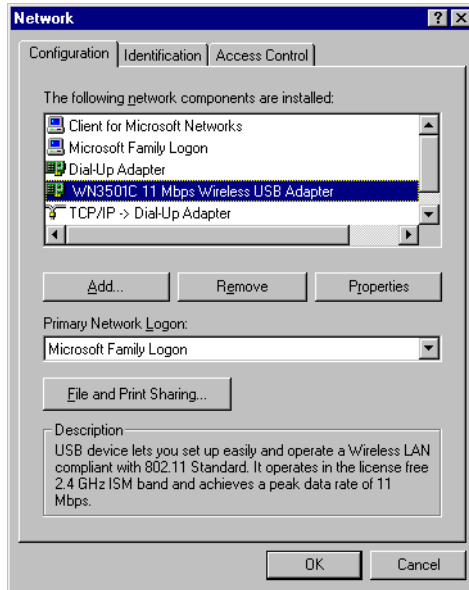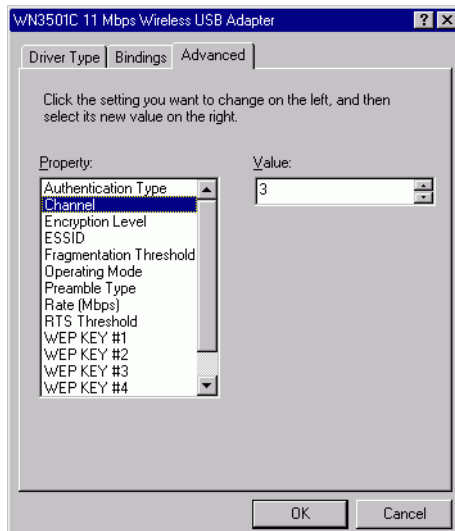

2. On the Configuration tab, double-click the WN3501C adapter.

3. On the Advanced tab you will find a list of properties.



4. To communicate with Accton 11 Mbps Wireless devices, set the "Authentication Type" to "Shared Key." Products from some other vendors may use the setting "Open System." Use the same setting as the other devices in your network.


5. Set the "Channel" to the same radio channel as that used by the other wireless clients in your group. However, if you are connecting to a network via an access

point, the adapter will automatically set the channel to the same as that used by the access point..
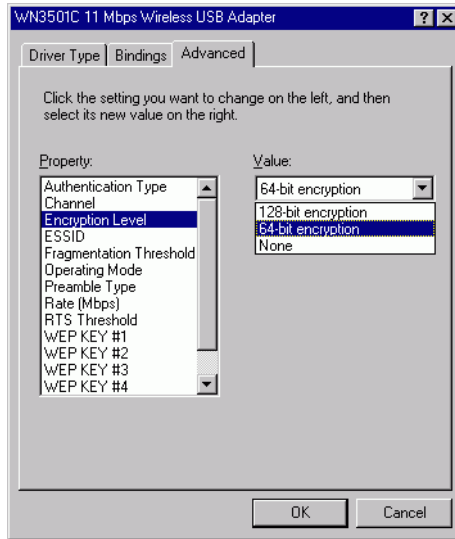

6. Wired Equivalent Privacy (WEP) is implemented in the adapter to prevent unauthorized access. For more secure data transmissions, set encryption to "128-bit" or "64-bit". The 128-bit setting gives a higher level of security. The setting must be the same for all clients in your wireless network (Default:

Disabled). To completely configure WEP, you must use the Configuration Utility. (see "Encryption" on page 25).
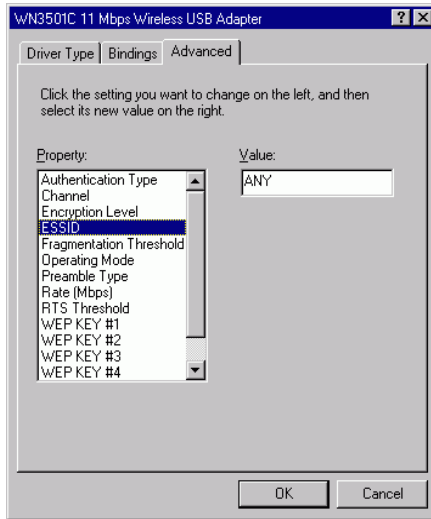
7. Set the "ESSID" identifier to the same as that used by the ad hoc workgroup or access point to which you want to connect (the WN3501C Access Point default is WLAN). If you will be roaming among multiple access points with different BSS IDs, a value of "ANY" will allow connection to any SSID.
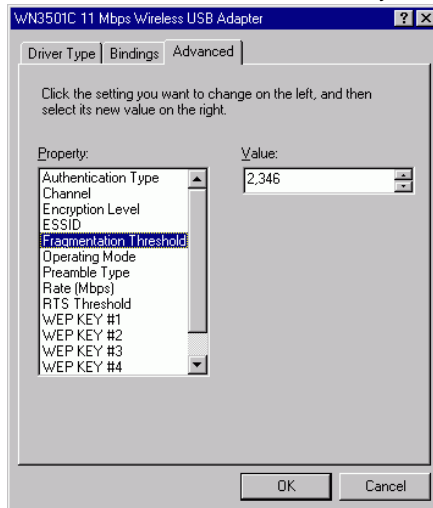
8. Set the "Fragmentation Threshold," (The default 2,346 means "Disabled") see "Terminology" on page 38 for a description of "Fragmentation Threshold."
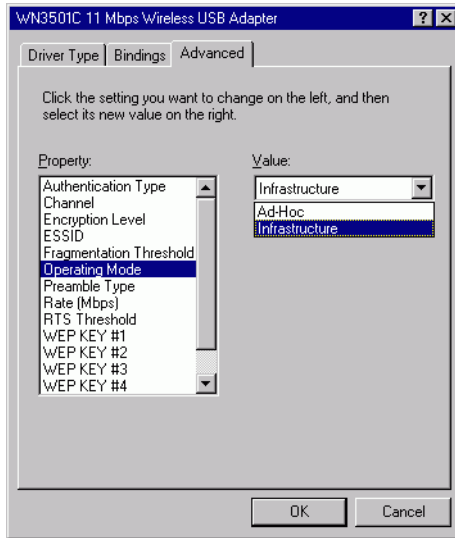
9. Set the "Operating Mode" to "802.11 Ad Hoc" or "Infrastructure" depending on the type of network to which you want to connect (see "Terminology" on page 38.)
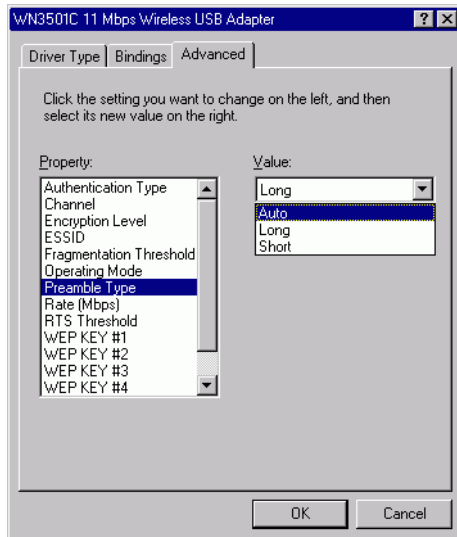
10. "Preamble Type" offers a dropdown list with three options: Auto, Long, or Short (see "Terminology" on page 38 for an explanation of "Preamble Type.")

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If you aren't sure whether all the Clients and Access point radios in your wireless network support the Short RF preamble, then leave this setting on "Auto" (Default).
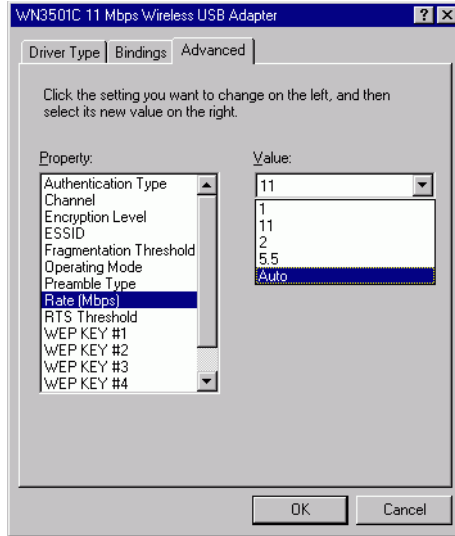
11. "Rate (Mbps)" is the data transmission/reception rate setting. It can be set to Auto, 1 Mbps, 2 Mbps, 5.5 Mbps, 11 Mbps. Usually this should be set to Auto. In a radio frequency hostile environment, a lower rate can provide more stable transmission quality.
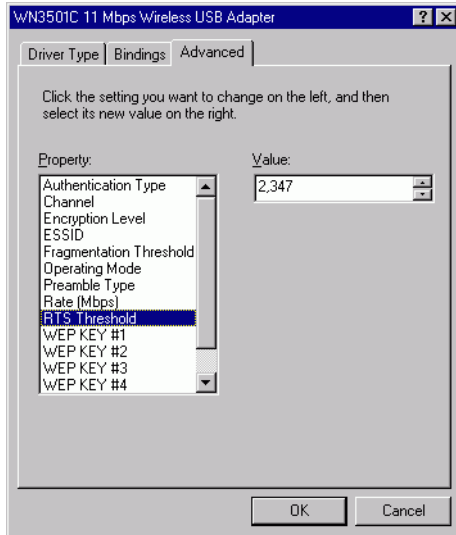
12. Set the "RTS Threshold" to the same as that used by other devices in your network (the default 2,347 means "Disabled," see "Terminology" on page 38 for a description of "RTS Threshold.)"
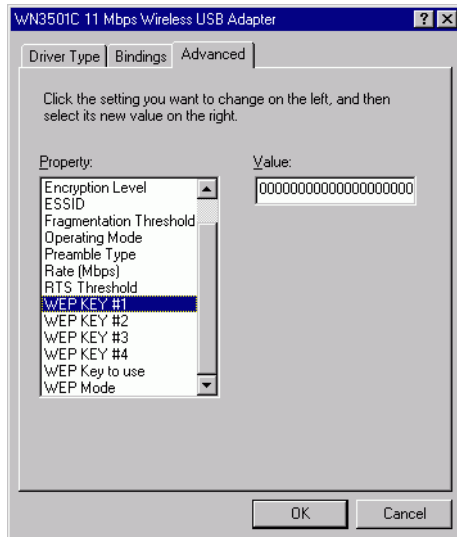
The WEP encryption implemented in Accton's Wireless USB adapter is based on the RC4 encryption algorithm. The security keys are four 10 digit keys for the 64-bit WEP

setting, and one 26-digit key for the 128-bit WEP setting.
WEP must be set in the configuration utility and all changes can be made there (see
"Using the Wireless LAN Utility in Windows 98, Me, and 2000" on page 22, or see
"Using the Windows XP Configuration Tool" on page 27 for details).
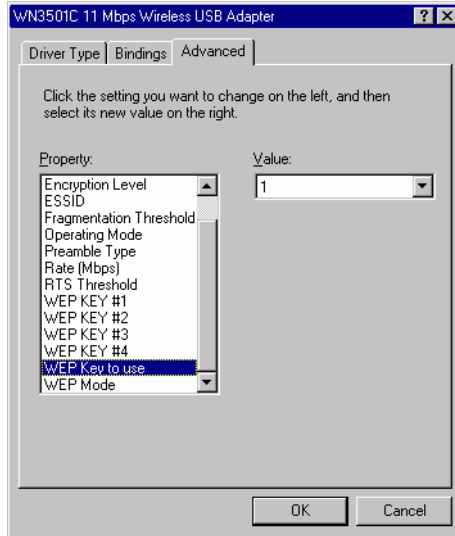
13. Shows the key that will be used (1~4) for encryption.
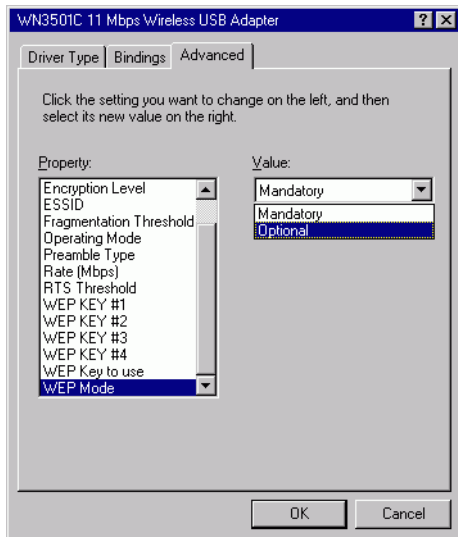
14. WEP Mode allows you to permit only connections to other devices that use WEP encryption. Choose Optional if you will connect to computers not using WEP.

15. Click *OK* to return to the Network box

16. Insert the Windows 98/Me CD-ROM and click *OK*. Windows will begin copying required files to your system. Click *Finish* and restart your computer.

17. If you want to add more protocols after installation, go to the control panel and double-click *Network*.

18. On the "Configuration" tab, click *Add*. Double-click *Protocol* and add the network protocols you wish to use.
If you install TCP/IP, be sure to set the appropriate Gateway, DNS Server, and Domain for your network.
If you install an IPX/SPX compatible protocol, then you also need to install the Client for NetWare Networks.
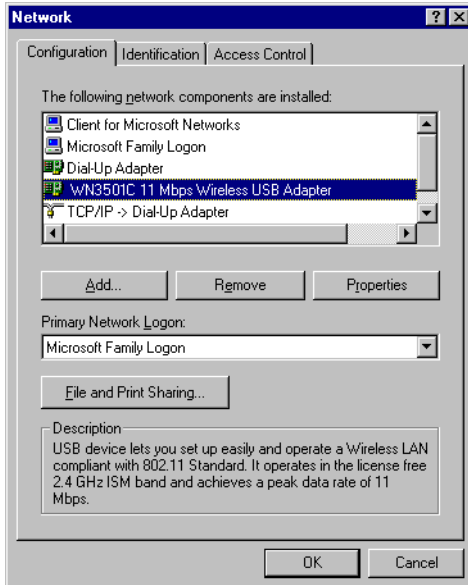
19. Click *File and Print Sharing* to share files or printers.

20. Click on the *Identification* tab in the Network dialog box, and specify your computer name and network workgroup.

Click *OK* in the Network dialog box and the system will restart your computer.

Windows 2000 Driver Installation

1. Windows 2000 will automatically detect the new hardware and prompt you to

install the driver. Click *Next* to find the driver.

2. Insert the floppy disk labeled "Driver" diskette, check "Floppy disk drives," and click *Next*.
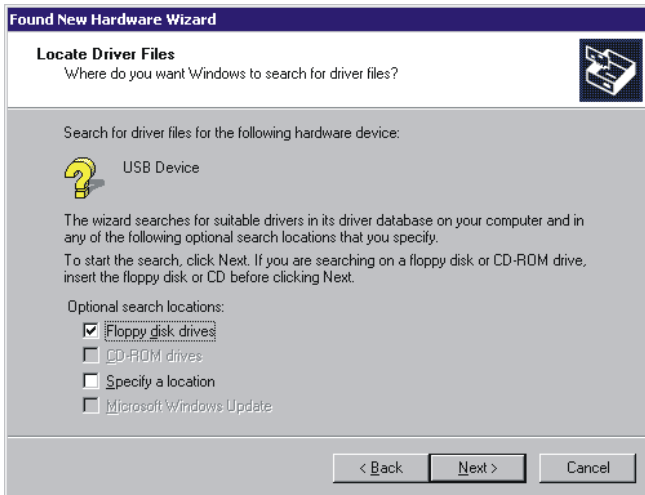
3. Click *Next* to copy files from the floppy disk.
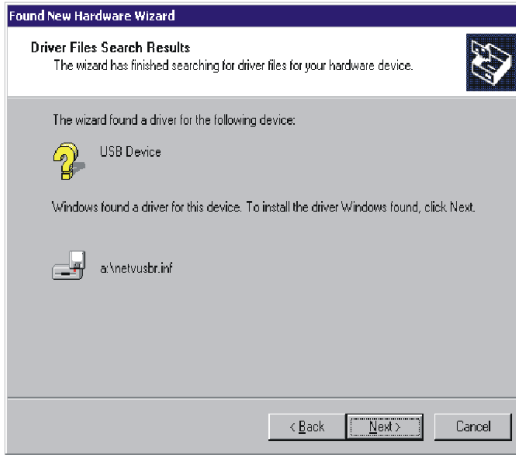
4. The Digital Signature Not Found screen will open. Though our software is compatible with Windows 2000, it has not been tested by Microsoft. Click *Yes* to continue with the installation.
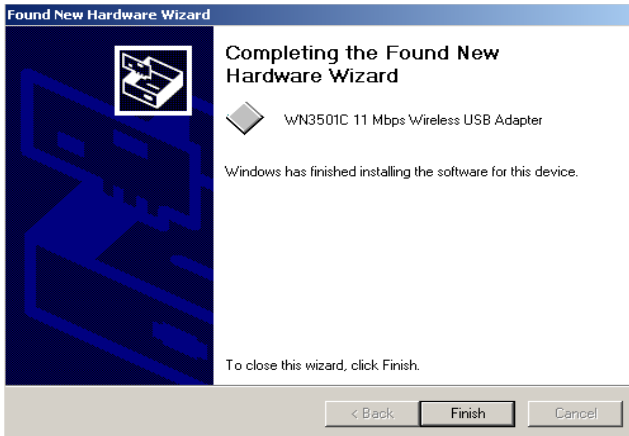
5. Click *Finish* to complete the driver installation. If you are asked to restart the computer, click *Yes*.

Windows XP Driver Installation

1. Windows 2000 will automatically detect the new hardware and prompt you to install the driver. Check "Install from a list or specific location (Advanced)" and click *Next*.
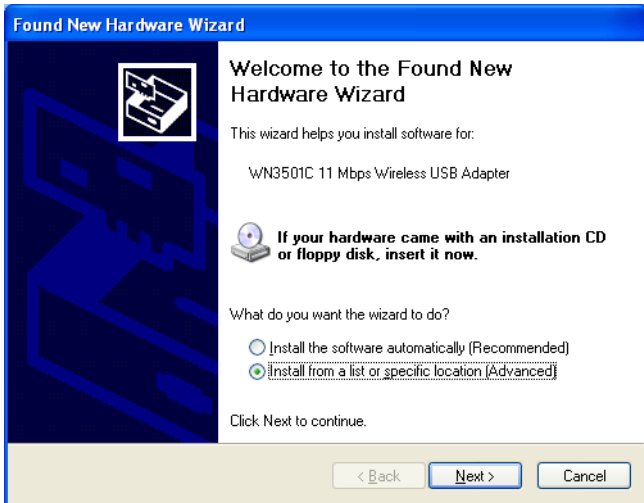
2. Check "Don't search. I will choose the driver to install". The "Select Network Adapter" screen will open. Click *Have Disk* and the "Install From Disk" screen will open.
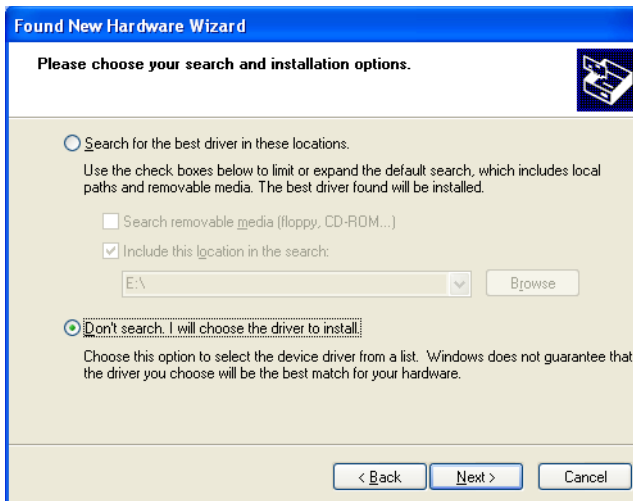
3.   Type *A:\xp* and click *OK*
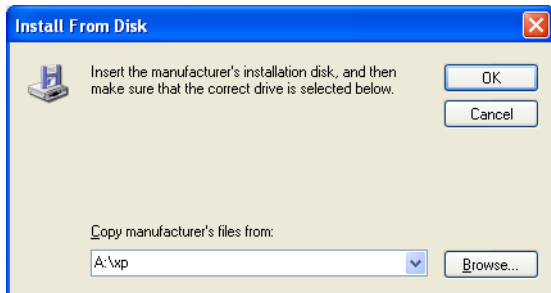
4.   Windows XP will find the WN3501C Wireless USB Adapter. Click *Next*.
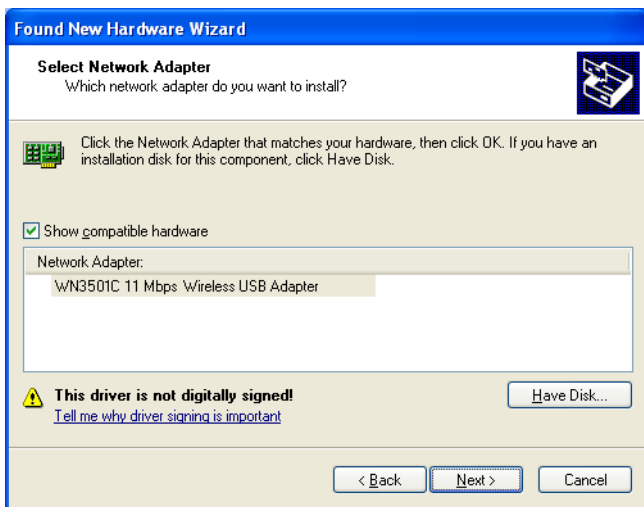
5. Though the software is fully compatible with Windows XP, it has not yet been Logo tested by Microsoft. On the Hardware Installation screen click *Continue Anyway*.
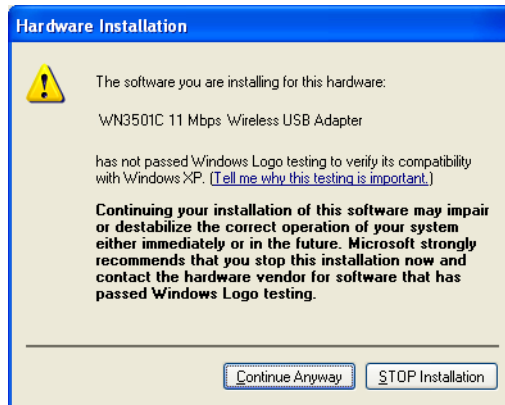
6. After the software has been installed, click *Finish* to complete the driver installation.

Configuration and Diagnostics

For Windows 98, Me, and 2000, Accton's Wireless USB Adapter provides optional management software for quick network configuration and easy diagnostics.

For Windows XP, use the built-in wirelesss configuration tool (Go to see "Using the Windows XP Configuration Tool" on page 27.)

Installing the Utility in Windows 98, Me, and 2000

To install the utility software:

1. Insert the "Utility" diskette in your PC's floppy drive (A:).

2. Click *Start/Run...* from the Windows "Start" menu bar.

3. Enter *A:\Setup.exe* and click *OK*.

4. Follow the on-screen instructions to finish the installation.

Using the Wireless LAN Utility in Windows 98, Me, and 2000

Once the installation is complete, the configuration utility can be accessed by selecting the " Wireless USB Utility" icon from the "Wireless USB" folder.
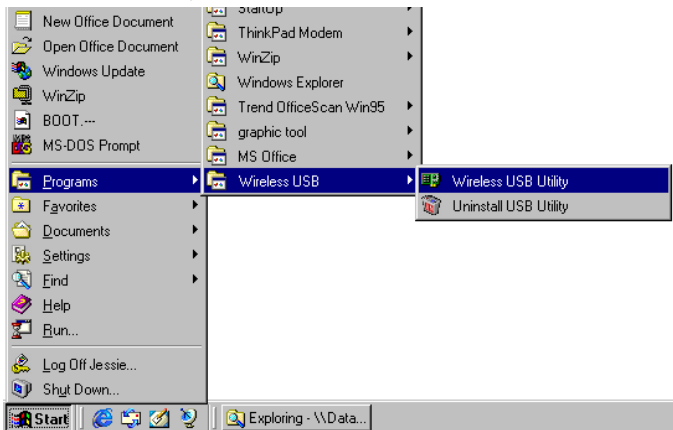
A quick launch icon will appear in the lower right-hand corner of the task bar.
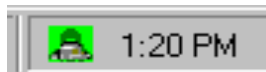
Double-clicking the icon will open the Wireless USB Utility program, providing quick

access to the adapter settings

The configuration utility includes the following tools:

Monitor – Allows you to monitor network status and configure wireless adapter parameters.

Statistics – Shows wireless adapter statistics.

Site Survey – Scans/Shows all the access points in range.

Encryption – Provides WEP security control.

Advanced – Allows you to configure the advanced settings.

Version – Shows the version information.

Monitor

When you open the wireless USB utility, the information window for the WN3501C is shown as in the figure below. The "Monitor" page shows the network status of the wireless adapter.
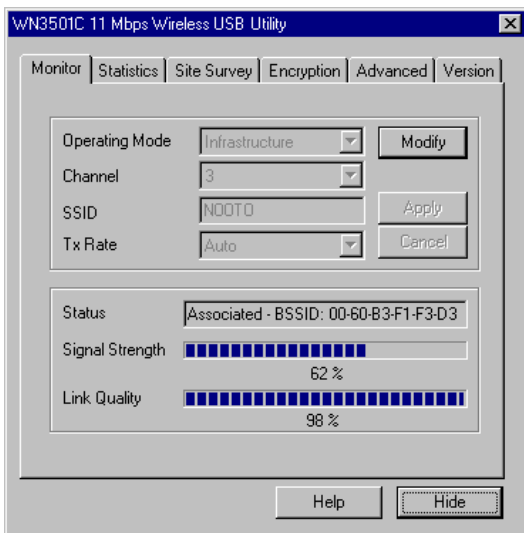
Click *Modify* to configure the "Operating Mode," "Channel," "SSID" and "Tx Rate." After configuration, click *Apply* to save the changes.

Operating Mode – Set the station operation mode to "802.11 Ad Hoc" for network configurations that do not have an access point, or to "Infrastructure" for configurations with an access point ("Infrastructure" is the default setting.)

Channel – If you are setting up an ad hoc wireless LAN (see page 30), set the channel number to the same radio channel as that used by the other wireless clients in your group. However, if you are connecting to a network via an access point, then

the channel is automatically set to the channel of the access point to which the adapter connects.

Note: The "Channel" can only be set when the "Operating Mode" is "802.11 Ad Hoc."

SSID – Input an SSID string for the wireless network to which you want to connect ("ANY" is the default setting). If you will be roaming among multiple access points with different BSSIDs, a value of "ANY" will allow connection to any SSID.

Tx Rate – Indicates the data transmission rate (Default: Fully Automatic). Select an appropriate transmission speed. Lower speeds will give better range (see "WN3501C Wireless USB Adapter Maximum Distance Table" on page 35.

Statistics

The Statistics screen displays "Data Frames" and "Management Frames." (see "Terminology" on page 38 for a description of these terms).
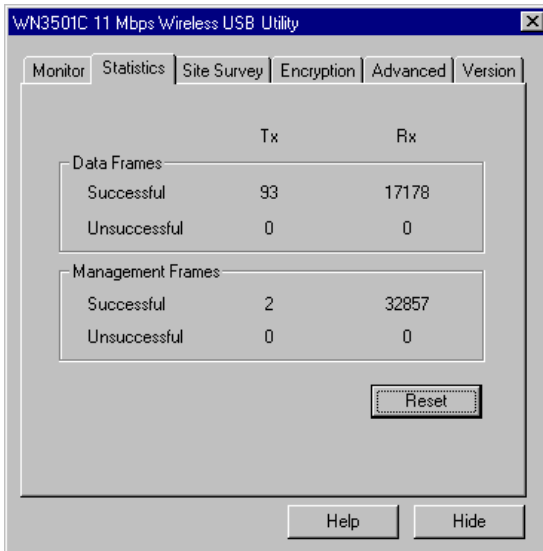
Site Survey

The Site Survey screen displays all access points in the wireless LAN. You can choose one of them to connect to by double-clicking on an entry.
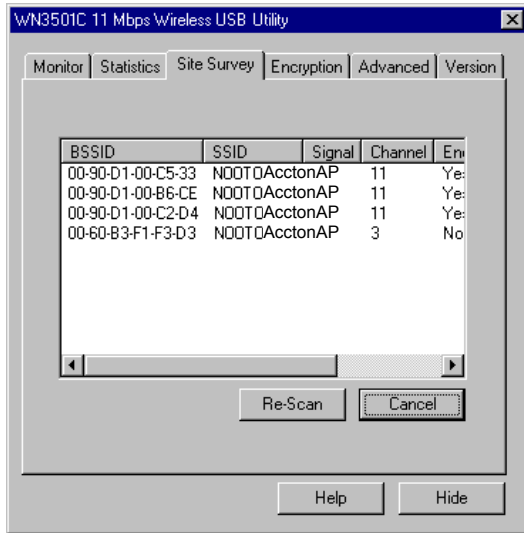
Encryption

Encryption – Wired Equivalent Privacy (WEP) is implemented in the adapter to prevent unauthorized access. For more secure data transmissions, set encryption to "128-bit" or "64-bit". The 128-bit setting gives a higher level of security. The setting must be the same for all clients in your wireless network (Default: Disabled).

The WEP encryption implemented in Accton's Wireless USB adapter is based on the RC4 encryption algorithm. The security keys are four 10 digit keys for the 64-bit WEP

setting, and one 26-digit key for the 128-bit WEP setting.
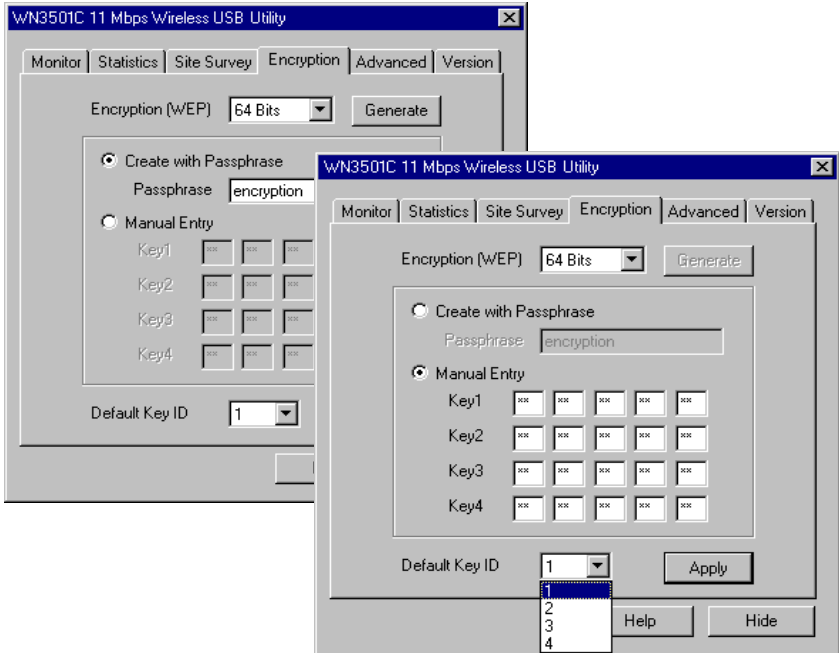
Create with Passphrase – Security keys for WEP encryption are generated from a passphrase string, so you must use the same passphrase on all the other stations in your network.

Manual Entry – Manual Entry allows you to manually enter key elements.

Default Key ID – Choose the Key ID that has the encryption string you prefer. If you are using a key generated from a passphrase, you must use the same passphrase and key on each station.

To use the WEP function, complete the following steps:

1. Select "128-bit" or "64-bit" in the "Encryption" field.

2. Check "Create with Passphrase," type a string in the Passphrase field, and click *Generate*.

3. Select the key, and click *Apply*.

    Note: A Passphrase string can consist of up to 32 alphanumeric characters.

    Or

1. Check "Manual Entry" and enter text into one of the key fields. Keys may be entered as regular text or be in hexadecimal numerals (0~9, A~F).

2. Click *Apply.*

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Advanced

Use this screen to set values for the "Fragmentation Threshold" (Default: 2346 means Disabled), and "RTS/CTS Threshold" (Default: 2347 means Disabled). see "Terminology" on page 38 for a description of these terms.
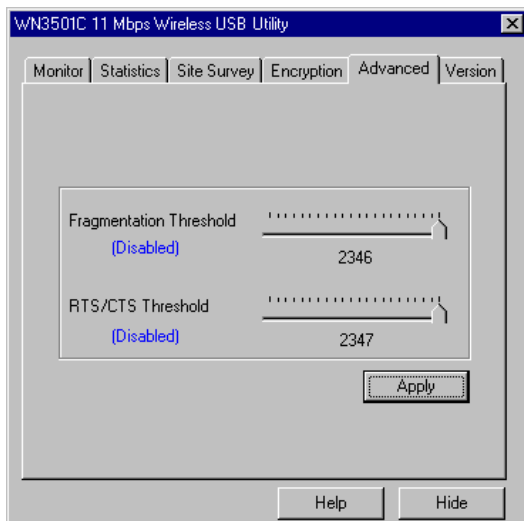
Version

This screen displays the driver, firmware, and utility version numbers.

Using the Windows XP Configuration Tool

Basic Settings

1. Right-click the network connection icon on the toolbar.

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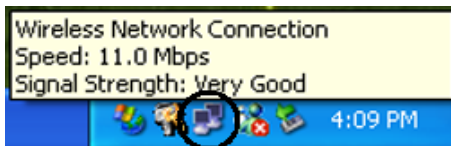
2. Click *Status*. The Wireless Network Connection Status box will open.
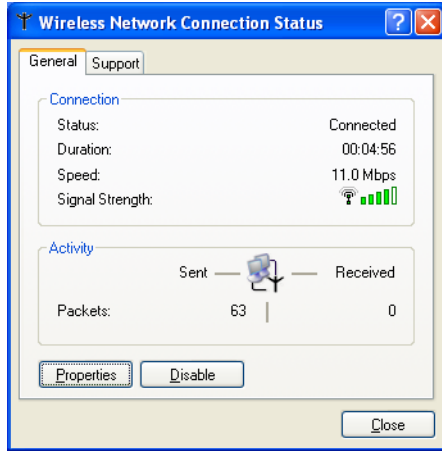
3. Click *Properties*. The Wireless Network Connection Properties box will open. Click the *Wireless Networks* tab.
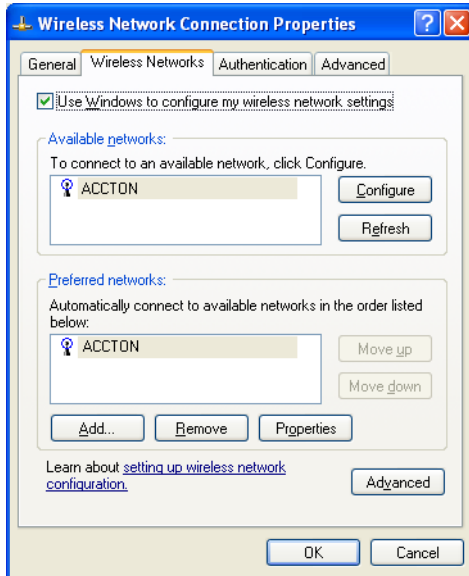
4. In the lower section of the screen, click *Learn about setting up wireless network configuration* and complete the wireless configuration according to the Help and Support Center instructions.

Advanced Settings

Click the "General" tab (see the screen above). In the "Connect using" field, make sure that the adapter shown is the WN3501C Wireless USB Adapter.

1. Click *Configure*. Click the "Advanced" tab.
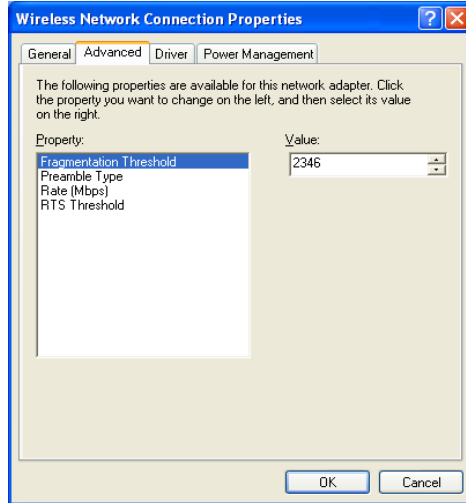
2. Set the "Fragmentation Threshold" (the default 2,346 means "Disabled"). see "Terminology" on page 38 for a description of "Fragmentation Threshold."

3. "Preamble Type" offers a dropdown list with three options: Auto, Long, or Short. see "Terminology" on page 38 for an explanation of "Preamble Type." If you aren't sure whether all the Clients and Access point radios in your wireless network support the Short RF preamble, then leave this setting on "Auto" (Default).

4. "Rate (Mbps)" is the data transmission/reception rate setting. It can be set to Auto, 1 Mbps, 2 Mbps, 5.5 Mbps, or 11 Mbps. Usually this should be set to Auto. In a radio frequency hostile environment, a lower rate can provide more stable transmission quality.

5. Set the "RTS Threshold" (the default 2,347 means "Disabled") to the same as that used by other devices in your network (see "Terminology" on page 38 for a description of "RTS Threshold)."

Network Configuration and Planning

Accton's Wireless Solution supports a stand-alone wireless network configuration, as well as an integrated configuration with 10 Mbps Ethernet LANs. For a list of the maximum distances between the AP/Bridge and wireless clients, refer to page 35.

The WN3501C USB adapter can be configured as:

• Ad hoc – for small departmental or SOHO LANs
• Infrastructure – for enterprise LANs

Network Topologies

Ad Hoc Wireless LAN

An ad hoc wireless LAN consists of a group of computers, each equipped with a wireless adapter, connected via radio signals as an independent wireless LAN. Computers in a specific ad hoc wireless LAN must be configured to the same radio channel.

An ad hoc wireless LAN can be used for a small branch office or SOHO operation.

Ad-hoc Wireless LAN

Notebook with
Wireless USB Adapter

Notebook with
Wireless PC Card

PC with Wireless
PCI Adapter
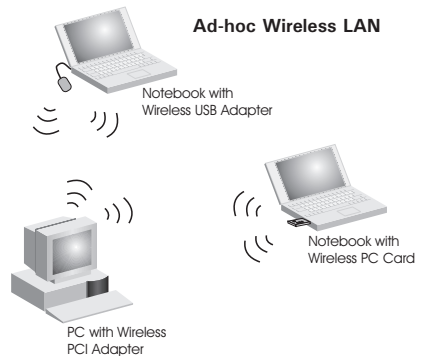
Infrastructure Wireless LAN

The WN3501C can also provide access to a wired LAN for wireless workstations. An integrated wired and wireless LAN is called an Infrastructure configuration. A Basic Service Set (BSS) consists of a group of wireless PC users, and an access point that is directly connected to the wired LAN. Each wireless PC in this BSS can talk to any computer in its wireless group via a radio link, or access other computers or network resources in the wired LAN infrastructure via the access point.

The infrastructure configuration not only extends the accessibility of wireless PCs to the wired LAN, but also increases the effective wireless transmission range for wireless PCs by passing their signal through one or more access points.

A wireless infrastructure can be used for access to a central database, or for connection between mobile workers, as shown in the following figure.
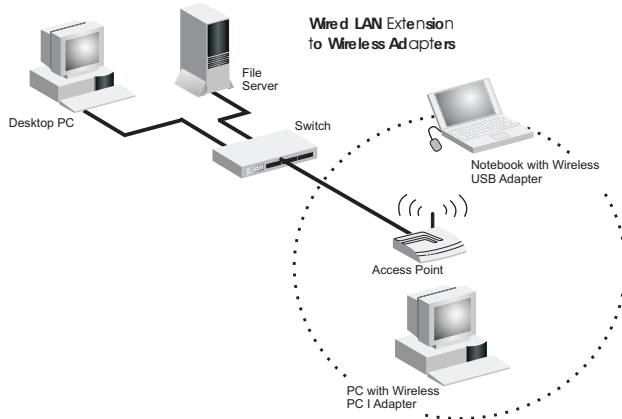
Setting the Communication Domain

Stationary Wireless PCs

The Basic Service Set (BSS) is the communication domain for each access point. For wireless PCs that do not need to support roaming, set the domain identifier (SSID) for the wireless adapter to the BSS ID of the access point to which you want to connect. Check with your administrator for the BSS ID of the access point to which he wants you to connect.

Roaming Wireless PCs

A infrastructure network also supports roaming for mobile workers. More than one access point may be configured with the same SSID to create an Extended Service Set (ESS). By placing the access points so that a continuous coverage area is created, wireless users within this ESS can roam freely. All Accton Wireless adapters

and EZ Connect Wireless Access Points within a specific ESS must be configured with the same SSID.
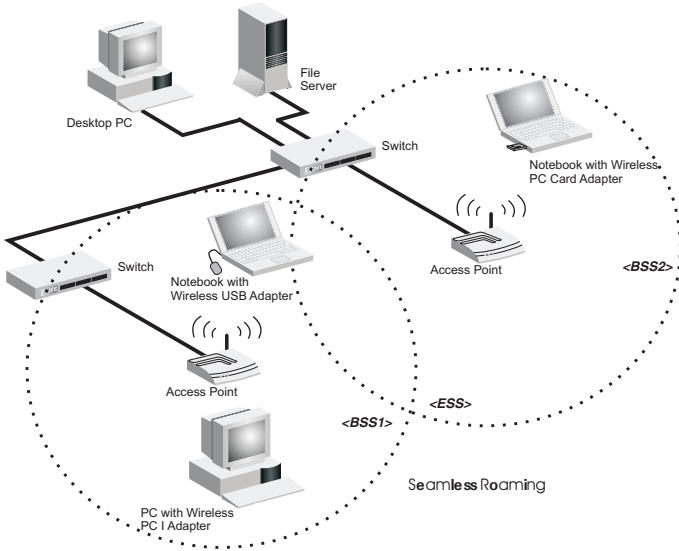
Before setting up an ESS for roaming, choose a location for the access points that maximizes performance (refer to see "Using the Wireless LAN Utility in Windows 98, Me, and 2000" on page 22 for information on using the "Monitor" and "Site Survey" tools.)

Troubleshooting

USB Adapter Installation Problems

If your computer cannot find the Wireless USB Adapter or the network driver does not install correctly, check the following items:

• Make sure the adapter is connected to the USB port. Check for any hardware problems, such as physical damage to the adapter's connector.

• Try the adapter in another USB port. If this also fails, try using another WN3501C wireless adapter that is known to operate correctly.

• Make sure your computer is using the latest BIOS.

• If there are other network adapters in the computer, they may cause conflicts. Disable or remove the other adapters from the computer and test the wireless adapter separately.

• Check for a defective computer or USB port by trying the adapter in another computer that is known to operate correctly.

• If there are still difficulties, remove the wireless adapter. Delete the file "Vnetusbr.sys" from:

> c:\windows\system (in Windows 98/Me)
>
> c:\winnt\system32\drivers (in Windows 2000)
>
> c:\windows\system32\drivers (in Windows XP)

Click *Start/Settings/Control Panel*. Delete the adapter from the network configuration menu. Restart the PC and reinstall the adapter.

Network Connection Problems

If the LED on the USB adapter is not lit, or if you cannot access network resources from the computer, check the following:

• Make sure the correct software driver is installed. Try reinstalling the driver.

• Make sure the computer and other network devices are receiving power.

• The access point you want to connect to may not be functioning correctly. Try using another access point.

• If you cannot access a Windows or NetWare service on the network, check that you have enabled and configured the service correctly. If you cannot connect to a particular server, be sure that you have access rights and a valid ID and password.

• If you cannot access the Internet, be sure you have configured your system for TCP/IP.

If your wireless station cannot communicate with a computer on the Ethernet LAN when configured for Infrastructure mode, check the following:

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- Make sure the access point that the station is associated with is powered on.
- Check that the wireless settings (i.e., WEP, SSID, Channel) match the access point or other stations to which you are attempting to connect.
- If you still cannot connect, change the access point and all the stations within the BSS to another radio channel.

WN3501C Wireless USB Adapter Maximum Distance Table

Important Notice – Maximum distances posted below are actual tested distance thresholds. However, there are many variables such as barrier composition and construction, as well as local environmental interference that may impact your actual distances and cause you to experience distance thresholds far lower than those posted below. If you have any questions or comments regarding the features or performance of this product, or if you would like information regarding our full line of wireless products, visit us on the web at www.acctontech.com, or call us toll-free at xxx. Accton Technology stands behind every product sold with a 30-day satisfaction guarantee and a limited-lifetime warranty.

WN3501C Wireless USB Adapter Maximum Distance Table				
	Speed and Distance Ranges			
Environmental Condition	11 Mbps	5.5 Mbps	2 Mbps	1 Mbps
Open Environment: A line-of-sight environment with no interference or obstruction between the Access Point and users.	130 m (427 ft)	150 m (492 ft)	165 m (541 ft)	175 m (574 ft)
Semi-Open Environment: An environment with no major obstructions such as walls or privacy cubicles between the Access Point and users.	50 m (164 ft)	70 m (230 ft)	90 m (295 ft)	120 m (394 ft)
Closed Environment: A typical office or home environment with floor to ceiling obstructions between the Access Point and users.	25 m (82 ft)	30 m (98 ft)	33 m (108 ft)	35 m (115 ft)

Specifications

Functional Criteria

Data Rate: 1, 2, 5.5, 11 Mbps, Auto

Transmission Mode: Half duplex

Network Connection: IEEE 802.11b wireless

Operating Range:

   Max distance at 11 Mbps: 130 m (427 ft)

   Max distance at 5.5 Mbps: 150 m (492 ft)

   Max distance at 2 Mbps: 165 m (541 ft)

   Max distance at 1 Mbps: 175m (574 ft)

Security:

   64/128-bit WEP Encryption

   WEP Key: Input any text or hexadecimal (complies with Intersil)

Driver: NDIS for Windows 98, Me, 2000, XP, Linux

Radio Signal

Signal Type: Direct Sequence Spread-Spectrum (DSSS)

Operating Frequency:

   USA, Canada, Europe (ETSI): 2400~2483.5 GHz

   Japan: 2400~2497 GHz

Sensitivity: -82 dBm

Modulation: 1/2/5.5/11 Mbps: BPSK/QPSK/CCK

Output Power: >+15 dBm (minimum), Typical +17 dBm

Physical Characteristics

Temperature:

   Operating: 0 to 55 °C (32 to 131 °F)

   Storage: -10 to 70 °C, (14 to 158 °F)

Humidity: 65 to 75% non-condensing

Antenna: Internal

LED: Single Dual-color Indicator (power/activity)

Host Interface: USB Type B connector, requires shielded USB cable, 90 ohm, 5 m (16.4 ft) max.

Standards Conformance /

   EEE 802.11b

USB specification revision 1.1

Compliances

FCC Class B

ETSI 300.328, 300.826

ARIB STD33, T66

EN60601

EN61000-3-2/3

EN 61000-4-2/3/4/5/6/8/11

CISPR 22 Class B

Software

NDIS Driver

Windows 98

Windows Me

Windows 2000

Windows XP

NDIS Utility

Windows 98

Windows Me

Windows 2000

Windows XP uses built-in wireless configuration utility

Terminology

The following is a list of terminology used in this document.

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

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

BSS – BSS stands for "Basic Service Set." It is an access point and all the LAN PCs that are associated with it.

CSMA/CA – Carrier Sense Multiple Access with Collision Avoidance.

Data Frame – Packets transmitted/received by the device that carry data (see **Management Frame** on the next page.

ESS – ESS (ESS-ID, SSID) stands for "Extended Service Set." More than one BSS is configured to become an Extended Service Set. LAN mobile users can roam between different BSSs in an ESS (ESS-ID, SSID).

Ethernet – A popular local area data communications network, which accepts transmissions from computers and terminals. Ethernet operates on a 10 Mbps baseband transmission rate, using shielded coaxial cable or twisted-pair cable.

Fragmentation Threshold – In the 802.11 Standard, the MAC Layer may fragment and reassemble directed MSDUs or MMPDUs. The fragmentation and defragmentation mechanisms allow for fragment re-transmission.

Preamble Type – Some Access Points and Client card drivers have a radio setting for "Short" RF Preamble. If all the Clients and Access points in your wireless network have this feature, then enabling it can boost your throughput. However, if a radio does not support this feature, then it will not be able to communicate with any other radios that have this set to "Short".

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

Management Frame – Control frame for establishing a link between an access point and a client station. It includes Beacon, Probe, Authentication, and Association frames.

MSDUs – MAC Service Data Units.

MMPDUs – MAC Management Protocol Data Units.

Roaming – A wireless LAN mobile user moves around an ESS and maintains a continuous connection to the Infrastructure network.

RTS Threshold – Transmitters contending for the medium may not be aware of each

other. RTS/CTS mechanism can solve this "Hidden Node Problem." If the packet size is smaller than the preset RTS Threshold size, the RTS/CTS mechanism will NOT be enabled.

USB – The Universal Serial Bus allows complete Plug and Play connection of peripheral devices to a computer.

WEP – "Wired Equivalent Privacy" is based on the use of keys and the popular RC4 encryption algorithm. Wireless devices without a valid WEP key are excluded from network traffic.

Warranty

Accton warrants to the original owner that the product delivered in this package will be free from defects in material and workmanship for a period of three (3) years from the date of purchase from Accton or its Authorized reseller. For the warranty to apply, you must register your purchase by returning the registration card indicating the date of purchase and including proof of purchase. There will be a minimal charge to replace consumable components, such as fuses, power transformers, and mechanical cooling devices. The warranty does not cover the product if it is damaged in the process of being installed. Accton recommends that you have the company from whom you purchased this product install it.

THE ABOVE WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY ARISING OUT OF ANY PROPOSAL, SPECIFICATION OR SAMPLE. ACCTON SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. ACCTON NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY OTHER LIABILITY.

Federal Communication Commission Interference Statement

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 and, if not installed and used in accordance with the instructions, 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 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 or an experienced radio/TV technician for help.

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices) any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. 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.

IMPORTANT NOTE:

Caution: 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 & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device is not designed for body worn application.

The MPE requirement specified in FCC rule part 1.1310 has been fulfilled.

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