IEEE 802.11b 11Mbps Wireless LAN USB Card

User's Guide

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Introduction

The Wireless LAN USB Card is a Direct-Sequence Spread Spectrum (DSSS) products. DSSS is a spread spectrum network operating between 2.4 and 2.5 GHz. Spread spectrum communication provides a high-capacity network within large or small environments. DSSS products provide a high-capacity network using multiple access points within large or small environments.

Based on IEEE 802.11b, Wireless LAN products can perform at speeds of up to 11 Mbps. This technology works by using multiple frequencies in the 2.4 GHz range utilizing Direct Sequence Spread Spectrum (DSSS) technology.

Designed to cover distances of up to 100 meters indoors and 300 meters outdoors, Wireless LAN (WLAN) technology lets you access your network from anywhere within this radius. The range of WLAN is limited by the number of walls, ceilings, floors, or other objects the wireless signals must pass through. Typical ranges vary depending upon the types of materials and background RF noise in the WLAN area.

WLAN products offer the following network features:

- WLAN bridging architecture allows communication between wired network devices and mobile devices.
- WLAN products support the IEEE 802.11b and WiFi specifications. This open architecture allows WLAN devices to communicate with wireless devices from

other manufacturers that conform to the same specifications.

- WLAN products allows mobile devices to roam throughout large facilities while remaining connected to the network.
- WLAN products allow establishment of ad-hoc wireless workgroup networks.
- WLAN products are protocol-independent, allowing mobile devices to communicate with a wide range of servers, hosts and systems.

About the Wireless LAN USB Card

The Wireless LAN USB Card allows USB equipped host systems to configure, connect to and establish a wireless network. The Wireless LAN USB Card is fully compliant with the USB version 1.1 standard.

Features Include:

- IEEE 802.11b compatibility providing wireless Ethernet connectivity at speeds of up to 11 Mbps.
- Dynamic scaling of the connection speed between 11, 5.5, 2, and 1 Mbps to match the wireless network conditions.
- Automatic data rate switching providing maximum reliability, throughput and connectivity.
- Supports wireless data encryption with 64-bit and 128-bit WEP standard for security.
- Dual ceramic antennas for antenna diversity to reduce multi-path interference.
- PCMCIA type II form factor.
- Support for Windows 95, 98, NT4.0, 2000, ME, and XP.
- Simple setup and easy-to-use diagnostic utilities.

- FCC Part 15.247 (US), ETS 300 328 (Europe), ARIB STD-T66 and RCR STD-33A (Japan) compliant.
- Multiple operating mode options for access point or peer-to-peer associations.
- Low-power operation.
- In ESS (Infrastructure or 802.11 Station) mode, the USB Card connects to an access point (AP). In ESS mode, the USB Card can roam freely between access point cells in the network or transmit and receive across subnets. MUs appear as network nodes to other devices in the network. ESS is the default mode for the adapter.
- Use the IBSS (802.11 Ad Hoc) mode to form peer-to-peer networks without access points. Use IBSS to create networks where needed within established cells. The MU starting the IBSS network (the first Wireless LAN USB Card transmitting a beacon) determines the channel and data rate used for the other adapters in the IBSS network.

Wireless LAN Basics

In order to set up and use your Wireless LAN USB Card, you should have some basic understanding of WLAN Technology and the various functions of the device.

A wireless is a cellular computer network that uses radio signals to establish network links.

Wireless LANs support the same network applications that are used on wired Ethernet LANs. Wireless LAN USB Cards can be used on laptop and desktop systems and support the same protocols as Ethernet adapters. For most users, there is no noticeable functional difference between a wired Ethernet desktop computer and a WLAN workstation other than the added benefit of being able to roam within the WLAN.

A Wireless LAN (WLAN) Access Point provides a link between the WLAN and the wired Ethernet network and its resources. Servers, network printers, and Internet connections can be accessed from Wireless workstations through a WLAN Access Point.

Radio Transmission

WLAN devices use electromagnetic waves within a broad, unlicensed range of the radio spectrum to transmit and receive signals. When a wireless access point is present, it becomes a base station for the WLAN nodes in its broadcast range. WLAN nodes transmit digital data using Frequency Modulation (FM) radio signals. WLAN devices generate a carrier wave and modulate this signal using various techniques. In this way, digital data can then be superimposed onto the carrier signal. The radio signal carries data to wireless-capable devices within its range. The antennas of wireless-equipped devices transmit and receive the signal. The transmission method used by WLAN devices is called Direct Sequence Spread Spectrum (DSSS) and operates in a range of the radio spectrum between 2.4 and 2.5 GHz.

Signal Range

WLAN devices are designed to operate over a radius of 100 meters indoors and 300 meters outdoors. Obstructions such as walls, ceilings, floors, office equipment, and furniture can reduce this range. WLAN Access Points act as bridges between WLAN cells and can extend the total range of a WLAN. Adding WLAN Access Points to areas of the WLAN where the signal is inadequate can increase the signal strength in that area.

In an average American 4-bedroom home, range should not be a problem.

Network Topology

The IEEE 802.11 standard supports three basic topologies for WLANs – the Independent Basic Service Set (IBSS), the Basic Service Set (BSS), and the Extended Service Set (ESS). WLAN components can be used to extend, enhance or entirely replace existing Ethernet infrastructure. The Wireless LAN USB Card can accommodate any of these WLAN topologies.

IBSS

An Independent Basic Service Set or Ad Hoc network consists of two or more wireless stations that communicate directly, peer-to-peer, without the services of a wireless access point. An example of an Ad Hoc or IBSS network would be a group of wireless-equipped laptop computers at a trade show set up to share information. In this arrangement, one of the WLAN units is elected to act as a controller or base station, similar to the function of a wireless access point except there is no connection to a wired Ethernet LAN. Ad Hoc networks are very easy to set up and require minimal involvement by network administrators or IT personnel.

BSS

In a Basic Service Set network, a wireless access point performs multiple tasks – it is a base station and a network access controller for the wireless stations in the WLAN. The access point can also provide a connection to a wired Ethernet LAN for the BSS member stations. An example of a BSS might be a business meeting conducted in a room with only a single Ethernet port available. Each participant has a wireless laptop computer and requires simultaneous access to a data server on the Ethernet LAN. A wireless access point provides the connection to the Ethernet LAN and acts as the network control station for the BSS network members.

In a BSS network, the wireless access point performs functions similar to an Ethernet switch. The access point controls network access and maintains a dynamically updated list of all the members of the BSS. Wireless stations in the BSS are identified by their MAC Addresses.

ESS

An Extended Service Set is a series of two or more basic service sets (BSSs) networked on an Ethernet LAN. Each access point provides connections to the Ethernet LAN for their respective BSS members.

Each BSS member is identified by a unique number, the BSSID (actually the MAC address of the access point). Wireless stations (such as a laptop computer with a Wireless LAN USB Card installed) on an ESS network automatically select the access point or BSS that can serve them best (has the best signal). If no access point can be found, the device will scan for a usable access point.

An ESS network can be set up so that wireless stations can roam anywhere within the range of the access points and still maintain links to both the WLAN and the Ethernet LAN. In this case, each station shares a common ESS. The ESS network is identified by an ESSID that is known and used by all of the stations in the ESS network.

Wireless access points can also be used to segment a wireless network. Under such circumstances, more than one ESS might be used. Two or more separate ESSs can occupy the same physical space. Each station on a WLAN can use only one ESS – and thus only one ESSID.

Wireless LAN USB Card Operating Modes

The Wireless LAN Monitor Utility is installed at the same time as the WLAN USB Windows driver. Use the Wireless LAN Monitor Utility to select the operational mode for, and to generally monitor and configure, the Wireless LAN USB Card.

The Wireless LAN USB Card supports the following operational modes:

- In **Infrastructure (ESS** or **802.11 Station)** mode, the adapter connects to an access point (AP). In ESS mode, the adapter can roam freely between access point cells in the network or transmit and receive across subnets. MUs appear as network nodes to other devices in the network. ESS is the default mode for the adapter.
- Use the **Ad Hoc (IBSS)** mode to form peer-to-peer networks without access points. Use 802.11 Ad Hoc to create networks where needed within established cells. The MU starting the IBSS network (the first Wireless LAN USB Card transmitting a beacon) determines the channel and data rate used for the other adapters in the IBSS network.

11 Mbps Operation

The Wireless LAN USB Card supports a maximum 11 Mbps data transfer rate. When the adapter's Tx Rate is set to Auto, the adapter automatically shifts to a 5.5, 2 or 1 Mbps data rate when unable to maintain a high quality connection at 11 Mbps. When the Wireless LAN USB Card detects improved signal strength, it shifts to an increased data rate, up to the maximum 11Mbps.

The following factors can dynamically alter the data rate:

- signal strength between the access point and USB Card
- the ratio of good transmitted packets to attempted transmitted packets that fall below a threshold
- the adapter finds a higher transmit rate with another AP or it encounters an unspecified data rate.

Note: An 11 Mbps data transfer rate should only be anticipated in coverage areas where the Scan tool (part of the Wireless LAN Monitor Utility) has been used to determine the strength and quality of the signal between the adapter and an access point. Physical obstructions and numerous devices operating in close proximity to one another negatively impact the ability to maintain an 11 Mbps access point association.

Wireless LAN USB Card LED Descriptions

The Wireless LAN USB Card's LED illuminates during connection or data transfer to indicate that the adapter is functioning and is connected to an Access Point (Infrastructure mode), or a Peer (Ad hoc mode).

The Wireless LAN USB Card has an additional LED that flashes when activity is detected on the wireless link.

2

Hardware Installation

The physical installation for the Wireless LAN USB Card amounts to simply plugging the unit's USB cable into an available USB port on a USB enabled computer. The Wireless LAN USB Card should then be located such that the minimum number of obstructions such as walls, floors, ceilings, and office equipment are between it and the nearest access point.

Preparation

Before beginning the installation, verify the hardware package contains the Wireless LAN USB Card. Keep the serial number in a safe place. The Support Center uses this information to reference warranty and service contract information.

Note: Verify the model indicated on the adapter and packaging before use. Contact the Support Center if an item is missing or not functioning.

Installing the Wireless LAN USB Card

The Wireless LAN USB Card installation requires:

- a computer with an available USB port.
- a CDROM drive or internet access.

- an available interrupt (IRQ).
- an available I/O port address.

Avoid exposing the Wireless LAN USB Card liquids or abrasive materials.

3

Installing and Configuring

Installing the WLAN Driver in Windows 98

The Wireless LAN USB Card Windows driver ships with the Wireless LAN Monitor Utility. The utility is installed at the same time as the Windows USB driver.

Install the Wireless LAN USB driver from the Wireless LAN USB Card Installation CD and download the driver and Wireless LAN Monitor Utility. Once downloaded, extract the files to the computer hard drive.

Before installing the Wireless LAN USB Card Windows driver:

- Verify the Wireless LAN USB Card is physically installed in your computer.
- Obtain the Wireless LAN USB Card Installation CD.

To install the Wireless LAN USB Card driver in Windows 98:

1. Insert the adapter's USB cable into an available USB port on the computer.

3. Insert the Wireless LAN USB Card Installation CD, if it is being used in the installation.

   When Windows ME recognizes the adapter, the Add New Hardware Wizard dialog box appears.

4. Select the Specify the location of the driver checkbox. Click Next.

5. Select the Search for best driver for your device checkbox, and select the Specify a location checkbox.

   The driver is auto located.

6. Click Next when the Add New Hardware Wizard displays the location of the driver files.

   The Add New Hardware Wizard dialog box displays stating the required software has been installed.

8. Click Finish.

9. When prompted, restart the computer.

Removing a Wireless LAN Driver in Windows 98

To remove an existing Wireless LAN driver in Windows 98:

1. Click Start, select Settings and Control Panel.

2. Click on the Network icon.

   The Network dialog box displays.

3. Highlight the Wireless LAN USB Card.

4. Select Remove.

5. Click OK to remove the driver files from the Windows 98 hardware profile.

6. Click Close to close the Network dialog box.

Installing the Windows ME Driver

The Wireless LAN USB Card Windows driver ships with the Wireless LAN Monitor Utility. Use this utility to view and edit Wireless LAN Card settings.

Install the Wireless LAN USB driver from the Wireless LAN USB Card Installation CD and download the driver and Wireless LAN Monitor Utility. Once downloaded, extract the files to the computer hard drive.

Before installing the Wireless LAN USB Card Windows driver:

- Verify the Wireless LAN USB Card is physically installed in your computer.
- Obtain the Wireless LAN USB Card Installation CD.

To install the driver in Windows ME:

1. Insert the adapter's USB cable into an available USB port on the computer.
3. Insert the Wireless LAN USB Card Installation CD, if it is being used in the installation.

   When Windows ME recognizes the adapter, the Add New Hardware Wizard dialog box appears.
4. Select the Specify the location of the driver checkbox. Click Next.
5. Select the Search for best driver for your device checkbox, and select the Specify a location checkbox.

   The driver is auto located.

6. Click Next when the Add New Hardware Wizard displays the location of the driver files.

   The Add New Hardware Wizard dialog box displays stating the required software has been installed.

8. Click Finish.

9. When prompted, restart the computer.

Removing a Wireless LAN Driver in Windows ME

To remove an existing Wireless LAN driver in Windows ME:

1. Click Start, select Settings and Control Panel.

2. Double-click on the Network icon.

   The Network dialog box displays.

3. Select the Wireless LAN USB Card.

4. Select Remove.

   The driver files are permanently removed from the Windows ME hardware profile. Click OK.

Installing the Driver in Windows 2000

The Wireless LAN USB Card Windows driver ships with the Wireless LAN Monitor Utility. Use this utility to view and edit Wireless LAN Card settings.

Install the Wireless LAN USB driver from the Wireless LAN USB Card Installation CD and download the driver and Wireless LAN Monitor Utility. Once downloaded, extract the files to the computer hard drive.

Before installing the Wireless LAN Windows driver:

- Verify the Wireless LAN USB Card is physically installed in your computer.
- Obtain the Wireless LAN USB Card Installation CD.

To install the Wireless LAN driver in Windows 2000:

1. Insert the adapter's USB cable into an available USB port on the computer.

3. Insert the Wireless LAN USB Card Installation CD, if it is being used in the installation.

   When Windows ME recognizes the adapter, the Add New Hardware Wizard dialog box appears.

4. Select the Specify the location of the driver checkbox. Click Next.

5. Select the Search for best driver for your device checkbox, and select the Specify a location checkbox.

   The driver is auto located.

6. Click Next when the Add New Hardware Wizard displays the location of the driver files.

   Note: The Microsoft Digital Signature Not Found dialog box could appear at this point in the installation. A Microsoft digital signature is not required for the driver installation. Click Yes to continue.

   A progress bar displays showing the progress of the driver file download.

   The Add New Hardware Wizard dialog box displays stating the required software has been installed.

8. Click Finish.

Updating a Wireless LAN Driver in Windows 2000

To update an existing Wireless LAN driver in Windows 2000:

1. Click Start, select Settings and Control Panel.
2. Double-click on the System icon and select the Hardware tab.
3. Click on the Device Manager button.
4. Double-click on Network Adapters.
5. Right-click on the Wireless LAN USB Card.
6. Select Properties.

   The Wilress LAN USB Card Properties dialog box displays.
7. Select the Driver tab.
8. Click on the Update Driver button.

   The Upgrade Device Driver Wizard displays. Click Next.
9. Select the Search for a suitable driver for my device checkbox.

   Click Next.
10. Specify the location of the driver files in the Optional search

    locations field. Click Next.
11. Click Next when Windows locates the driver files.

Note: The Microsoft Digital Signature Not Found dialog box could appear at this point in the driver update. A Microsoft digital signature is not required for the driver update. Click Yes to continue.

A progress bar displays showing the progress of the driver file update.

The Upgrade Device Driver Wizard dialog box displays again stating Windows has finished installing the software required for this device.

13. Click Finish.

Verifying the Firmware Version

Verify the adapter firmware is the most recent version to ensure optimal functionality. In Windows 98, ME, and 2000 Wireless LAN USB Card uses the Wireless Monitor Utility to view driver and firmware revision data. The Wireless Monitor Utility System page allows users to verify driver firmware version data.

4

Wireless LAN Card Utility

The Wireless LAN Card Utility is used to configure and monitor the Wireless LAN USB Card for all Windows operating systems. If functions in the same way for Windows Me, 98se, and 2000.

The Wireless LAN Card Utility is installed from the Wireless LAN USB Card installation CD.

To install the Wireless LAN Card Utility, open the CD or folder containing the Setup program and double-click Setup.exe.

1. Setup will decompress the necessary files and open an installation Wizard.

Note: If Setup.exe detects that the Wireless LAN Monitor Utility has been previously installed, it will prompt you to uninstall or completely remove the previous installation rather than re-install the utility. Removing a previous installation of the Wireless LAN Monitor Utility will not prevent you from re-installing the utility later.

2. The InstallShield Wizard will then appear. Click Next.

3. The Choose Destination Location menu appears. Click Next to accept the default installation location or Browse to select an alternate installation location.

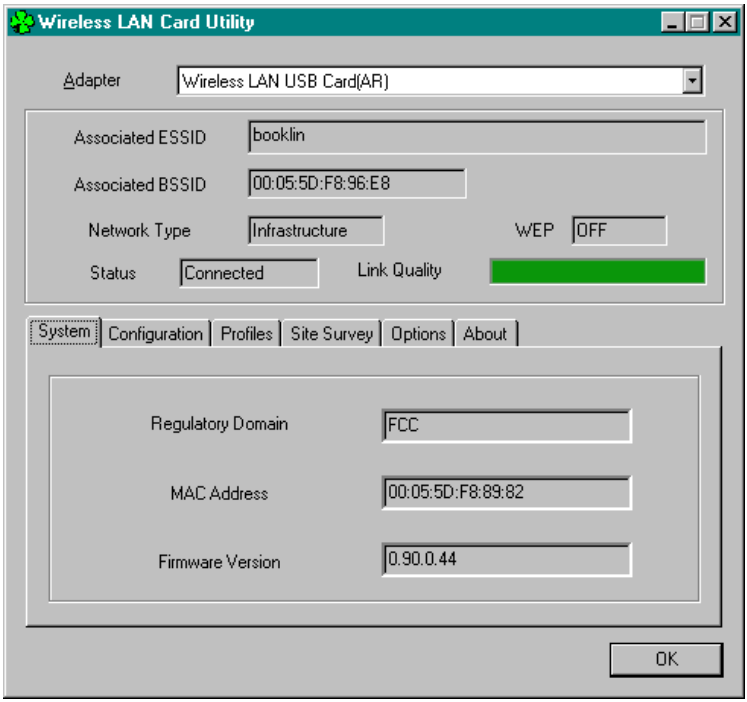
4. The Select Program Folder menu appears. Click Next to accept the default folder name or enter a name in the *Program Folders: field*.

5. Setup will then install the Wireless LAN Monitor Utility to the selected location.

6. When Setup is finished, the InstallShield Wizard Complete screen prompts you to restart your computer to complete the installation.

When your computer restarts, the *Wireless LAN Card Utility 2.0* is available by clicking Start, selecting Wireless LAN, and then *Config Utility*. The following screen appears:

System



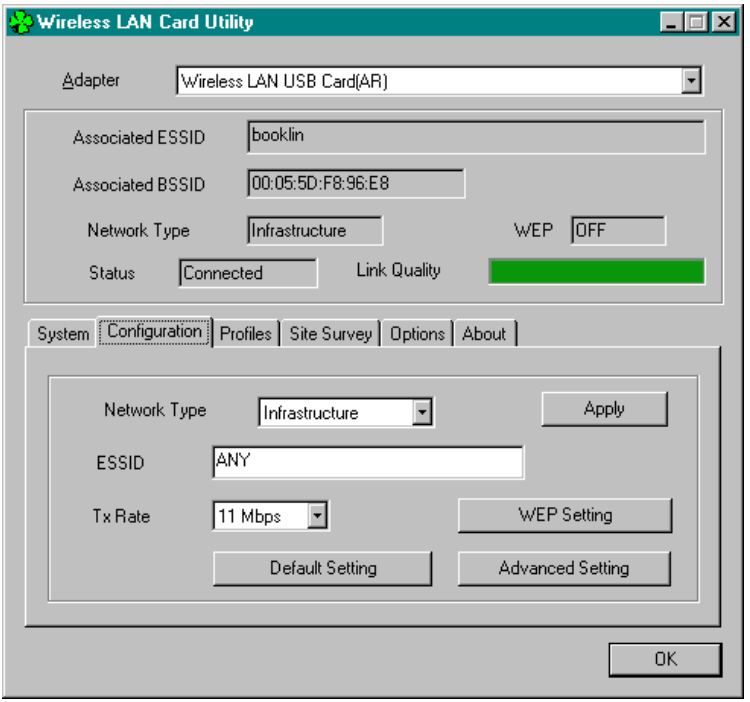
The *Adapter* is displayed at the top. If more than one is installed on the computer, one of the installed adapters can be chosen using the pull-down menu at the right of the *Adapter* field.

Adapter	Displays the currently chosen adapter.
Associated ESSID	Displays the ESSID associated with the link between the Wireless USB

	and the Wireless Access Point.
Associated BSSID	Displays the BSSID (MAC Address) associated with the link between the Wireless USB and the Wireless Access Point.
Network Type	Displays the type of network connection for this link. Can be *Infrastructure* – for a link to a Wireless Access Point, or *802.11 Ad Hoc* – for a link to another computer with a Wireless LAN USB Card.
WEP	Displays the status of the Wired Equivalent Privacy (WEP) encryption in use on the link.
MAC Address	Displays the MAC address of the Wireless LAN USB Card
Status	Displays Associated when the Wireless LAN USB Card has established a wireless link with an access point. In addition, the MAC address of the associated access point is displayed.
Link Quality	Displays the signal strength in terms of relative percentage – 100 being the highest and 0 being the lowest.

Regulatory Domain	This field displays the type of regulatory regimen in use for the link. There are 14 channels available for communication with a Wireless Access Point, but there may be restrictions on which channels can be used in some countries. In the US and Canada, only channels 1 – 11 are authorized for use by the IC and the FCC. Other regions may have different regulations.
MAC Address	Displays the MAC address of the Wireless LAN USB Card.
Firmware Version	Displays the version number of the firmware in the Wireless LAN USB Card. This information can be helpful in debugging.

Configuration



Network Type	You can use the drop-down menu to select the type of network link for your Wireless LAN USB Card. You can choose *Infrastructure* or *802.11 Ad Hoc* network types. Click the *Apply* button to make the selection current.

ESSID	You can specify an ESSID for use in establishing a link with an Access Point or another computer equipped with a Wireless LAN USB Card. Entering *"ANY"* will allow a link with an Access Point or another Wireless LAN USB Card equipped computer regardless of the ESSID in use by the remote end of the Wireless link.
Tx Rate	This field allows the selection of the rate at which data is transmitted by the Wireless LAN USB Card. By default, the Wireless LAN USB Card is set to Auto – allowing the Wireless LAN USB Card to adaptively set the Tx rate to the highest possible rate for the given WLAN conditions. The Tx rate can also be set to 1, 2, 5.5, or 11 Mbps. For most networks, Auto will be the best choice.

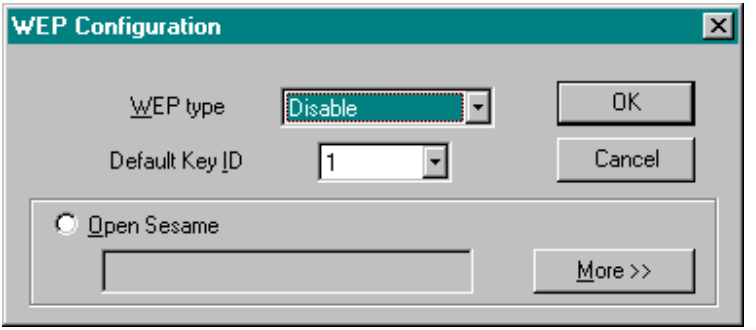
Encryption - WEP Setting

Additional security can be gained by using the Wired Equivalent Privacy (WEP) encryption. WEP encrypts each packet transmitted from the Wireless USB Card using one of the keys entered in the WEP encryption key field. The

Wireless Access Point or Wireless LAN USB Card will accept only encrypted frames that it can decrypt correctly. Packet decryption can only be accomplished if the receiver uses the same key as the transmitter.

To access the WEP Configuration menu, click the *WEP Setting* button. The following menu appears:

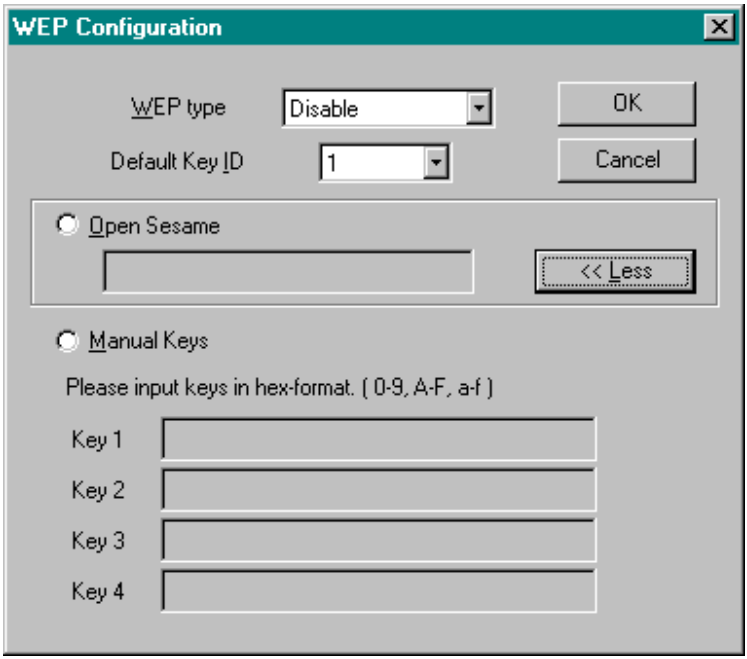
The WEP keys configured for your Wireless LAN USB Card must be the same as the WEP keys configured for its Access Point or Ad Hoc remote link.



WEP Type	Enables or Disables the use of WEP for the wireless link. The default is disabled. Enabling WEP is accomplished by selecting *64-bit* or *128-bit* encryption.
Default Key ID	Allows the selection of any one of up to 4 WEP keys entered in the More menu below.
Open Sesame	Allows the entry of an alpha-numeric or text string that will be used to create 4

	WEP keys. These keys can then be used for WEP encryption. To use *Open Sesame*, click the click box to the left of the *Open Sesame* field.

Pressing the *More>>* button will display the following screen:



WEP keys can be manually entered. To enter WEP keys manually, highlight one of the four key entry fields, and type the key. Click the Submit button to authenticate and begin using the key.

WEP keys are hexadecimal values. Valid entries are in hexadecimal format – digits 0 through 9, and letters A through F.

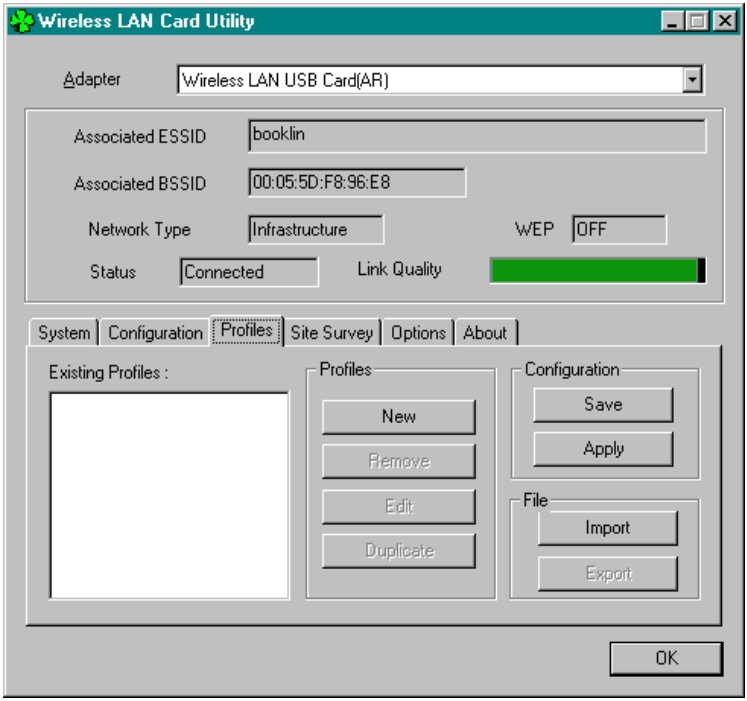
Remember that the exact same key must be used by the Wireless LAN USB Card and the Wireless Access Point for WEP to function

Manual Keys	Allows you to enter up to 4 hexadecimal WEP keys for use in WEP encryption.
Key #1, 2, 3, 4	Allows the entry of 64 or 128-bit alphanumeric keys for encryption.

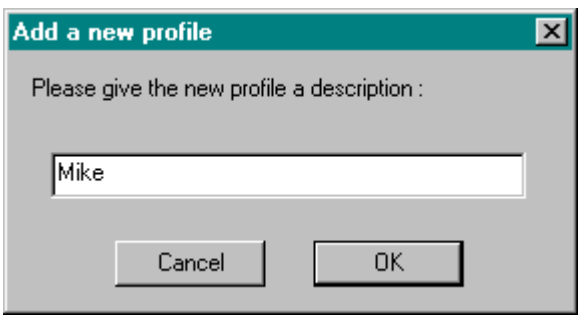
Profiles

The Wireless LAN Card Utility allows you to create different profiles for use with different Wireless LANs or in different areas within the same Wireless LAN.

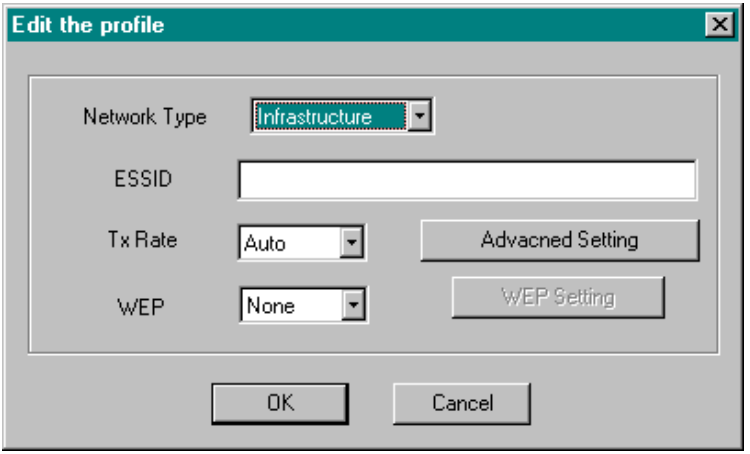
Click the *Profiles* tab to display the following screen:



Click the *New* button to create a new profile. The following screen will be displayed:



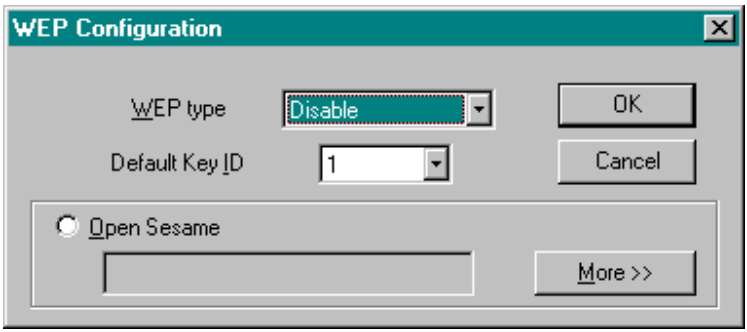
Enter a name for the new profile and click the *OK* button to open the *Edit the profile* screen shown below:



Network Type	Displays the type of network connection for this link. Can be *Infrastructure* – for a link to a Wireless Access Point, or *802.11 Ad Hoc* – for a link to another computer with a Wireless LAN USB card.
ESSID	You can specify an ESSID for use in establishing a link with an Access Point or another computer equipped with a Wireless LAN USB Card. Entering "*ANY*" will allow a link with an Access Point or another Wireless LAN USB Card equipped computer regardless of the ESSID in use by the remote end of the Wireless link.
Tx Rate	This field allows the selection of the rate at which

	data is transmitted by the Wireless LAN USB Card. By default, the Wireless LAN USB Card is set to Auto – allowing the Wireless LAN USB Card to adaptively set the Tx rate to the highest possible rate for the given WLAN conditions. The Tx rate can also be set to 1, 2, 5.5, or 11 Mbps. For most networks, Auto will be the best choice.
WEP	Enables or Disables the use of WEP for the wireless link. The default is disabled. Enabling WEP is accomplished by selecting *64-bit* or *128-bit* encryption.

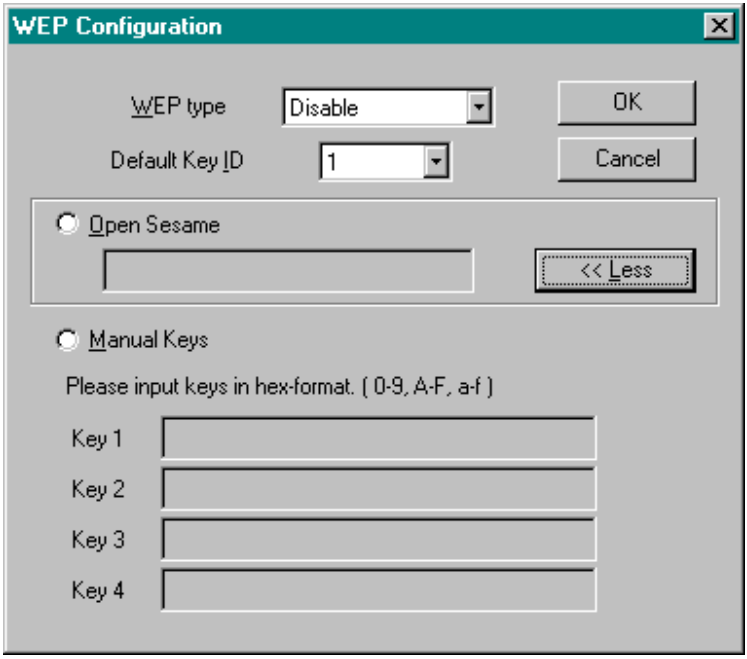
If WEP is enabled, clicking on the *WEP Setting* button will open the *WEP Configuration* screen – as shown below:



WEP Type	Enables or Disables the use of WEP for the wireless link. The default is disabled.

	Enabling WEP is accomplished by selecting *64-bit* or *128-bit* encryption.
Default Key ID	Allows the selection of any one of up to 4 WEP keys entered in the More menu below.
Open Sesame	Allows the entry of an alpha-numeric or text string that will be used to create 4 WEP keys. These keys can then be used for WEP encryption. To use *Open Sesame*, click the click box to the left of the *Open Sesame* field.

Pressing the *More>>* button will display the following screen:

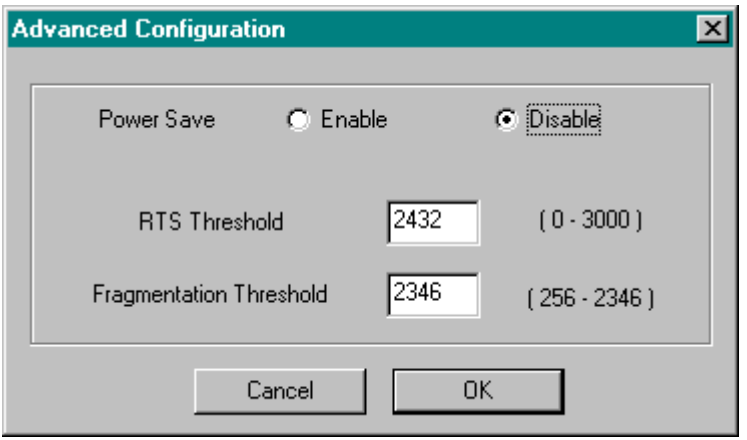


WEP keys are hexadecimal values. Valid entries are in hexadecimal format – digits 0 through 9, and letters A through F.

Remember that the exact same key must be used by the Wireless LAN USB Card and the Wireless Access Point for WEP to function

Manual Keys	Allows you to enter up to 4 hexadecimal WEP keys for use in WEP encryption.
Key #1, 2, 3, 4	Allows the entry of 64 or 128-bit alphanumeric keys for encryption.

Click the *Advanced Setting* button to display the *Advanced Configuration* screen – as shown below:



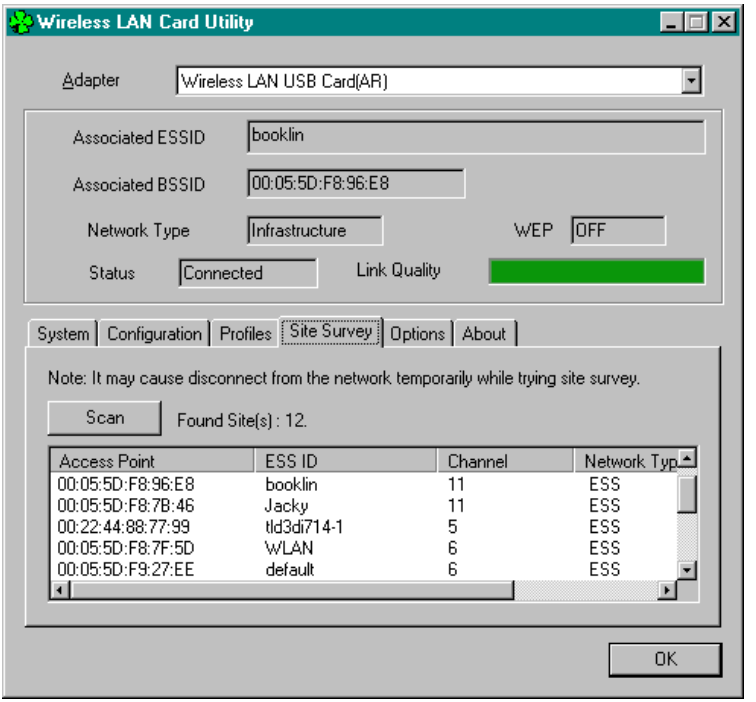
Power Save	This field *Enables* or *Disables* the power saving operation mode.
RTS/CTS Threshold	This defines a threshold for the number of packets that can be received before the Wireless LAN USB Card will issue a Request To Send (RTS) packet. The RTS packet is used to avoid data collisions on the WLAN. There are some tradeoffs to consider when setting this parameter. A small RTS threshold will cause RTS packets to be sent more often, consuming bandwidth, and reducing the apparent throughput of the WLAN. The more often RTS

	packets are sent, however, the quicker the WLAN can recover from interference or data collisions. Refer to the IEEE 802.11b standard for more information on the RTS/CTS mechanism. The default value is 2432 packets.
Fragmentation Threshold	This defines a threshold above for packet size. If a packet is larger, in octets, than the threshold, the packet will be split up, or fragmented, prior to being transmitted. Once a packet is fragmented, if a portion of the original packet is corrupted in transit, only the corrupted portion needs to be retransmitted. Throughput is generally lower for fragmented packets, however, because the packet header overhead consumes RF bandwidth. The default is 2346 octets.

Scanning for Access Points - Site Survey

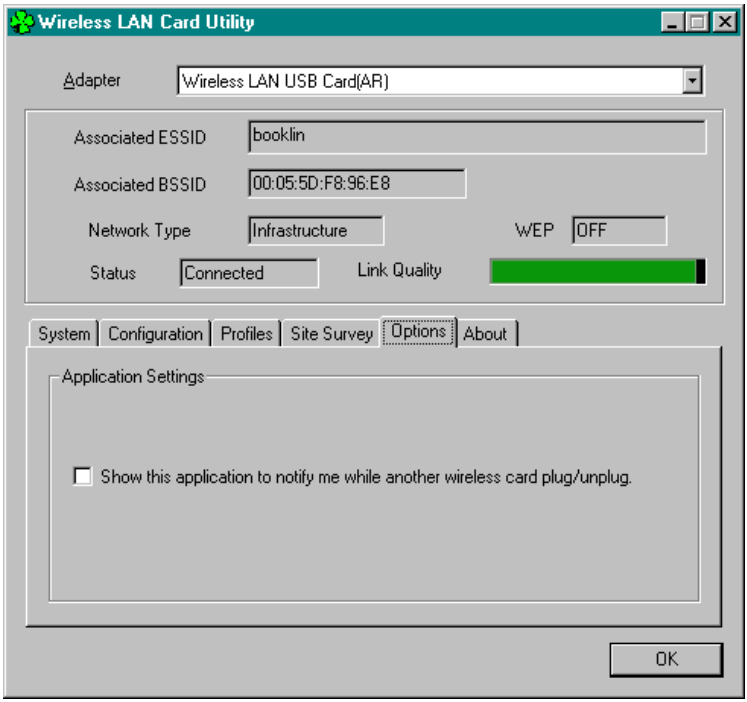
The Wireless LAN Monitor Utility allows you to scan the immediate area (up to 100 meters indoors or 300 meters outdoors) for WLAN Access Points. To find other Wireless Access Points, click the Re-Scan button. This will allow the

Wireless LAN Monitor Utility to scan for any Wireless Access Point that may be in range. Click the *Scan* button to initiate a scan. The results of the scan are presented as shown below:



Options

Click the *Options* tab to open the following menu:

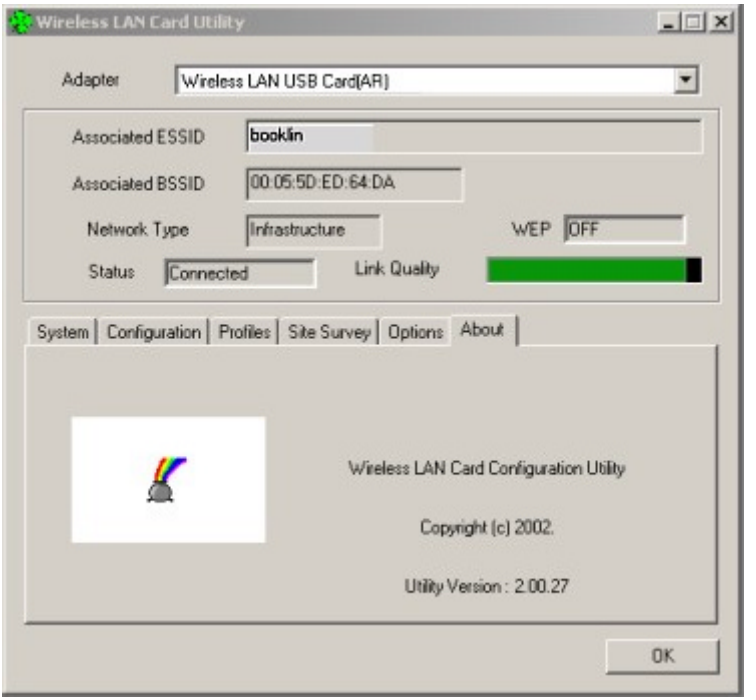


Click the *Show this application to notify me while another wireless card plug/unplug* click box if you want to enable the Wireless LAN Card Utility to notify you of changes in the WLAN link.

Click *OK* to make the settings current.

About

The release version of the Wireless LAN Monitor Utility is displayed under the *About* tab.



A

Wireless LAN USB Card Specification

Wireless LAN USB Card	
Dimensions (less antenna)	3.3 inches x 2.1 in. x 0.2 inches (85 mm x 54 mm x 5 mm
Weight (with antenna)	1.6 oz (45.36 g)
Operating temperature	32 to 130 °F (0 to 55 °C)
Storage temperature	-15 to 170 °F (-10 to 75 °C)
Humidity 95%	95% maximum non condensing
Radio Technology	IEEE 802.11b Direct Sequence Spread Spectrum
Modulation Schemes	DQPSK, DBPSK, and CCK
Channels Available	11 channels (United States) 13 channels (Europe) 14 channels (Japan)
Data Rate	11 Mbps with fall-back rates of 5.5, 2. and 1 Mbps

Media Access Protocol	CSMA/CA with ACK
RF Power	16 dBm
Antenna Gain	0 dBi
Antenna Type	Integrated dual diversity
Operating Volatage	5 VDC
Interface	USB 1.1
Range Coverage	Indoor: 35 – 100 meters Outdoor: 100 – 300 meters
LED Indicator	Power and Link Status LEDs

C

Troubleshooting

Windows 95/98 Troubleshooting Tips

Use the tools provided by Windows 95/98 and LAN analyzers (FTP Software NETXRAY, Novell LAN analyzer) to diagnose problems. Some common problems exhibited when the Wireless LAN USB Card has not been properly installed include:

- Windows 95/98 does not recognize the Wireless LAN USB Card when installed.
    - Verify that Windows 95/98 Wireless Lan USB support is installed.
    - Verify the computer has a Plug and Play BIOS.
- The driver fails to load.
    - A resource conflict could exist. Use the Device Manager to resolve resource conflicts. Select the System applet from the Control Panel. Select the Device Manager tab.
- The workstation cannot associate to the Wireless access point.
    - Verify the adapter ESSID matches the ESSID of the AP. Refer to the *Configuration* section of this document for details.
- Degraded performance from the Wireless LAN USB Card.

- Verify a secure antenna connection on the adapter.

- Network drive mappings disappear when the laptop suspends or the adapter is removed then reinserted. Windows 95/98 does not restore Netware network drive mappings under these conditions.
  - Log out and log in again, or restart the machine to restore the connections.

- Nonfunctioning Wireless LAN USB Card LEDs.
  - Verify the *Card Type* parameter is set correctly.
  - *Verify that the adapter ESSID matches the ESSID of the AP.*

- An adapter associates with an access point, but Plus Pack utilities fail to discover the access point or work improperly.
  - The Plus Pack utilities are closely integrated with the driver software. Investigate for system resource conflicts and reload or reconfigure driver software as needed.

Windows 2000 Troubleshooting Tips

Use the tools provided by Windows 2000 to diagnose problems.

- The workstation cannot associate to the Wireless access point.
    - Verify the ESSID matches the ESSID of the AP. Refer to the *Configuration* section of this document for details.
- Degraded performance from the Wireless LAN USB Card.
    - Verify a secure antenna connection on the Wireless LAN USB Card.
    - Verify the antenna remain attached to the Wireless LAN USB Card if an external antenna is used.
- Nonfunctioning Wireless LAN USB Card LEDs.
    - Verify the *Card Type* parameter is set correctly.
    - Verify that the adapter ESSID matches the ESSID of the AP.

D

Customer Support

We provide our customers with prompt and accurate customer support. Use the Support Center as the primary contact for any technical problem, question or support issue involving this product.

If the Customer Support specialists cannot solve a problem, access to all technical disciplines within available for further assistance and support. Customer Support responds to calls by email, telephone or fax within the time limits set forth in individual contractual agreements.

When contacting Customer Support, please provide the following information:

- serial number of unit
- model number or product name
- software type and version number.