

802.11b Wireless PCI Card

User Manual

REGULATORY STATEMENTS

FCC Certification

The United States Federal Communication Commission (FCC) and the Canadian Department of Communications have established certain rules governing the use of electronic equipment.

Part15, Class B

This model 802.11b Wireless PCI Card (WP2000) must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

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

- 1) This device may not cause harmful interface, and
- 2) This device must accept any interface received, including interface 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, 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 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 distance between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Warning: Changes or modifications not expressly approved by party responsible for compliance could void the user the user authority to operate the equipment.



CAUTION:

1)To comply with FCC RF exposure compliance requirements, a separation distance of at least 20cm must be maintained between the antenna of this device and all persons.

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

Technical Support

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Introduction

A wireless LAN links network users to LAN services without the use of a cabled connection to attach them to the network infrastructure and gives mobile workers the freedom to stay connected to the network while roaming around a building or multiple buildings, maintaining access to the Internet, e-mail, networked applications, and print services.

The 802.11b Wireless PCI Card is a powerful 32bit PCI Card that install quickly and easily into Desktop PC for your wireless network applications and based on the IEEE 802.11b standard offering a data rate of 11Mbps in a wireless LAN environment. It is a high-speed wireless network card that plugs into your desktop PC and accesses to the LAN or peer-to-peer networking easily without wires or cables. Once connected with other networked PC's, it allows you to share hard disk drives, DVD drives, CD drives, printers, and the likes. It also provides shared access to a modem for Internet access.

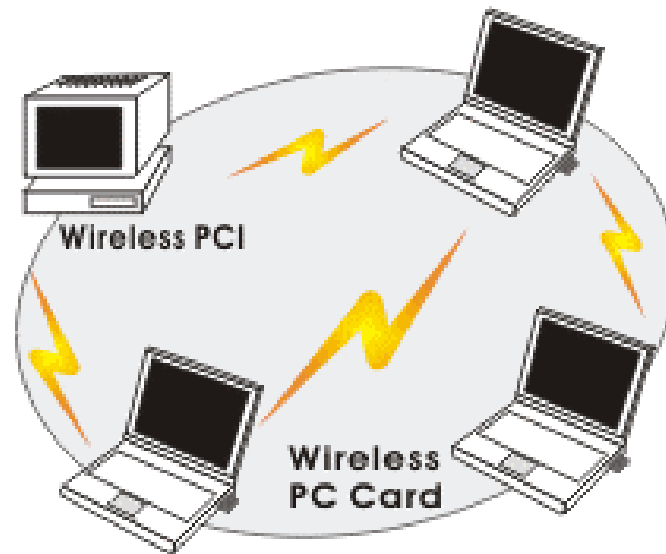
Features

- Compliant with IEEE 802.11b standard for 2.4GHz Wireless LAN
- Compliant with PCI Standard
- Works with all existing network infrastructure.
- Compatible with specific wireless products and services
- Capable of up to 128-Bit WEP Encryption Protocol
- Freedom to roam while staying connected
- 11 Mbps High-Speed Transfer Rate
- Rich diagnostic LED indicators.
- Lower power consumption
- Easy to install and configure

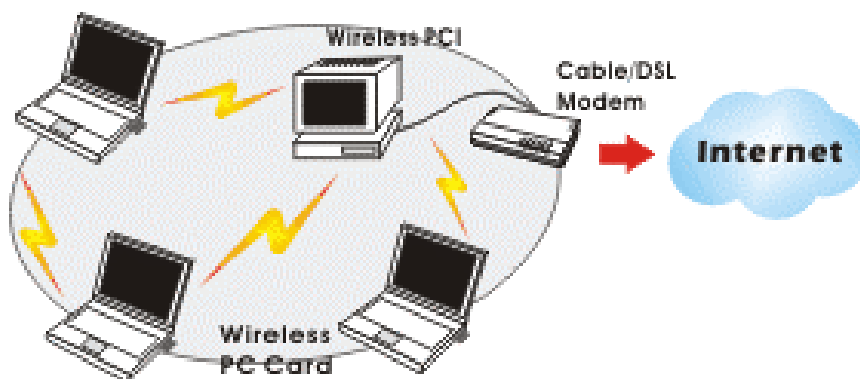
Wireless Network Options

The Peer-to-Peer Network

This network installation lets you set a small wireless workgroup easily and quickly. Equipped with wireless PCI or wireless PC Cards, you can share files and printers between each PC and laptop.

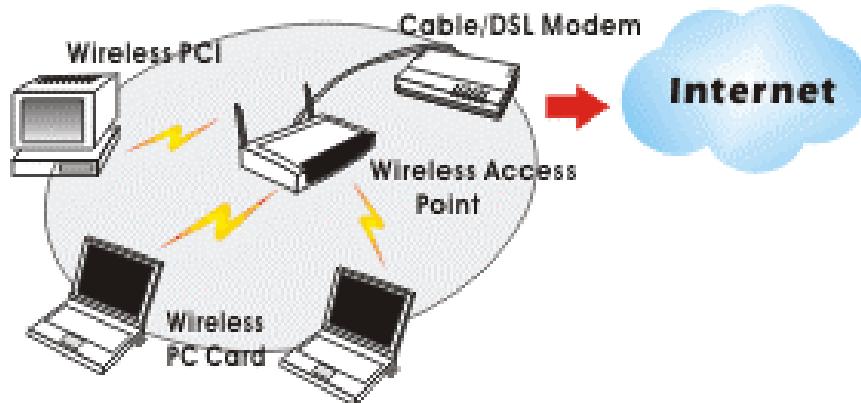


Or you can use one computer as an Internet Server to connect to a wired global network and share files and information with other PCs via a wireless LAN.



The Access Point Network

The network installation allows you to share files, printers, and Internet access much more conveniently. With wireless PCI Cards, you can connect wireless LAN to a wired global network via an **Access Point**.



LED Indicators

Link: Green (On/Off)

Glow – linking to an Access Point or Peer-to-Peer mode.

Act: Green (Blink)

Blink – Transmitting/receiving wireless data.

Install the Utility

Precaution: Installing the Adapter's utility before installing the device is highly recommended for saving your time.

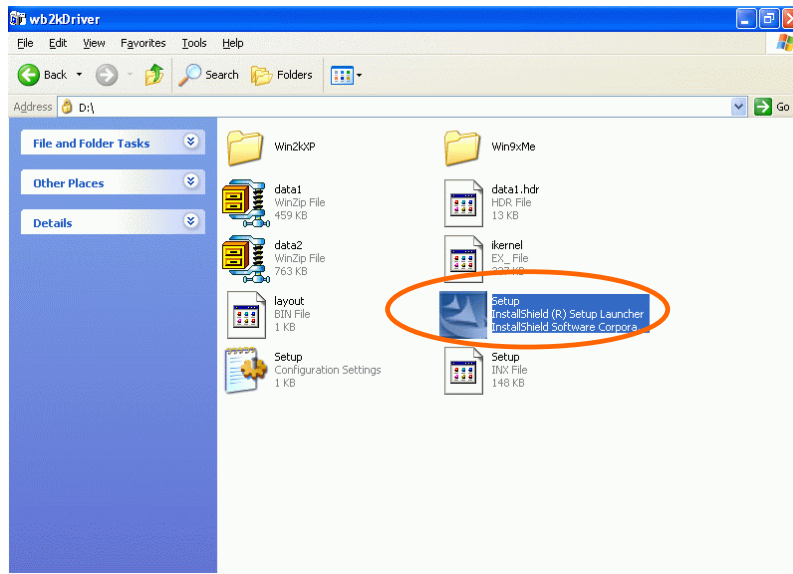
Precaution for Windows XP users:

There are two options for you to choose:

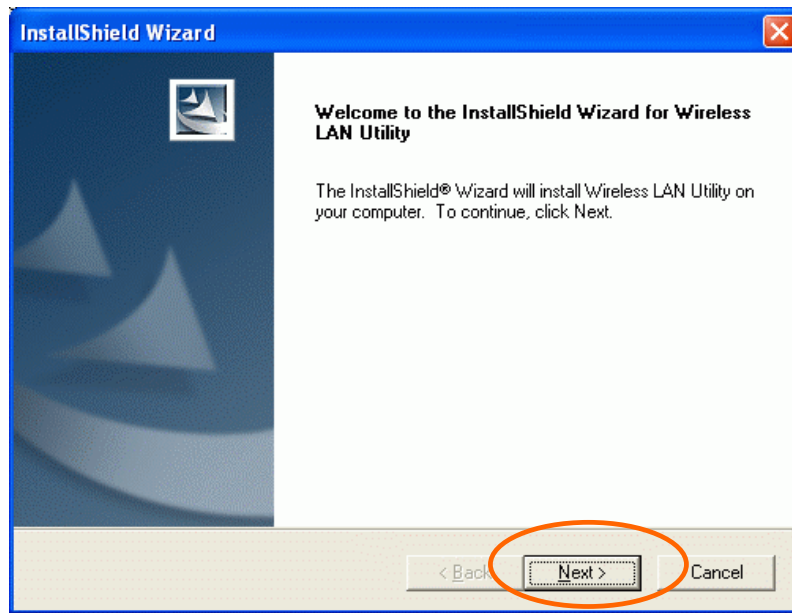
① Follow below instructions to install the utility.

② Skip this section. Go to [Install the Device – Manually - In Windows XP](#) section to install the device, and then you can use the built-in utility in Windows XP.

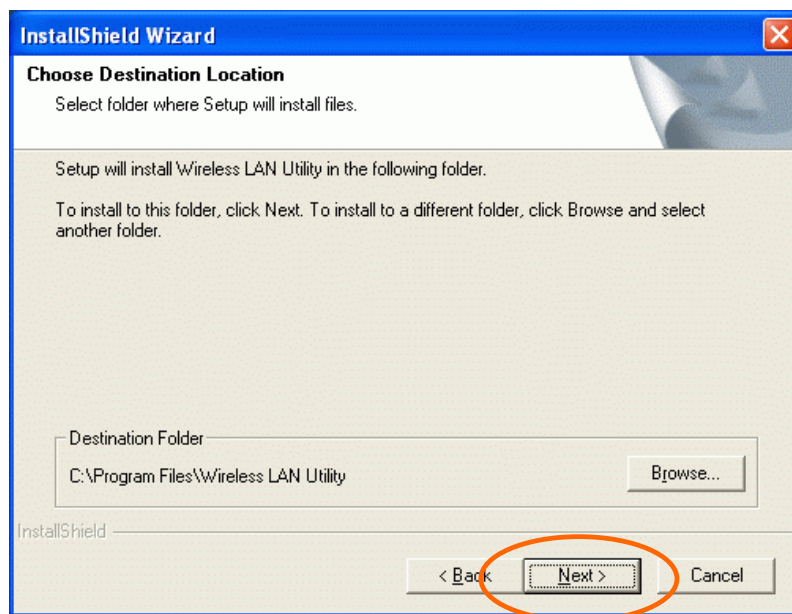
1. Insert the **Setup Utility CD-ROM** into the CD-ROM drive and double click on **Setup.exe** to install the **Wireless LAN Utility**.



2. When the Welcome screen appears, click **Next** to continue.



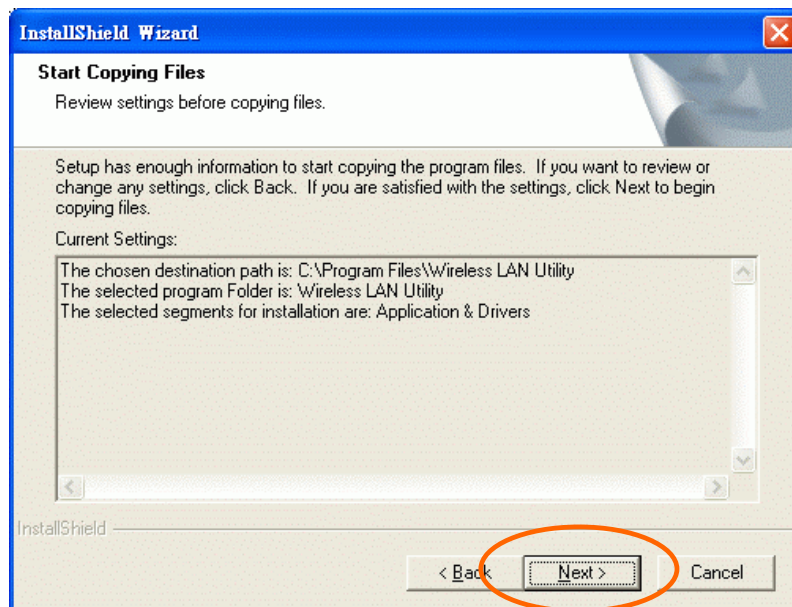
3. The **Choose Destination Location** screen will show you the default destination chosen by the utility. Click **Next** to continue.



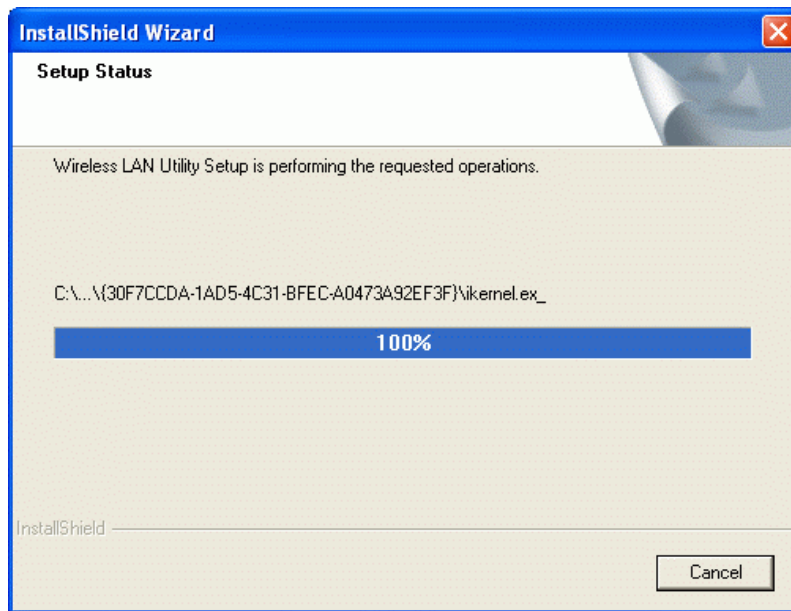
4. Follow the instruction to select the program folder. Click **Next** to continue.



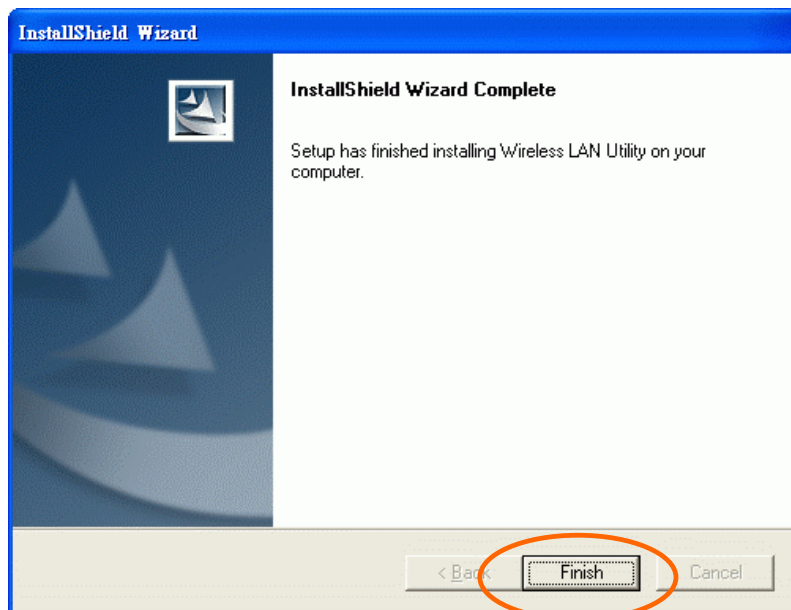
5. In **Start Copying Files**, click **Next** to continue.



6. In **Setup Status**, the InstallShield Wizard will begin copying the files.



7. Click **Finish**.



Install the Device

Automatically

Once the Application setup in Install the Utility section has been completed, follow below steps to install the device.

1. Before installing the device, make sure the computer is turned off.
2. Remove the expansion slot cover from the computer.
3. Carefully slide the wireless PCI card into an available PCI slot, push it evenly and firmly and ensure it is screwed securely in place using the mounting screw.

Once the device has been connected to your computer, Windows will detect the new hardware and then automatically copy all of the files needed for networking.

For Windows 98 users: As you perform the installation, have your system operating CD-ROM at hand. You may be asked to insert the OS CD-ROM for the system to download a specific driver.

For Windows 2000 users: When **Digital Signature Not Found** screen appears, click **Yes** to continue.

For Windows XP users:

1. Select **Install the software automatically (Recommended)** and click **Next**.
2. Click **Continue Anyway**.
3. Click **Finish** to complete the installation.

Manually

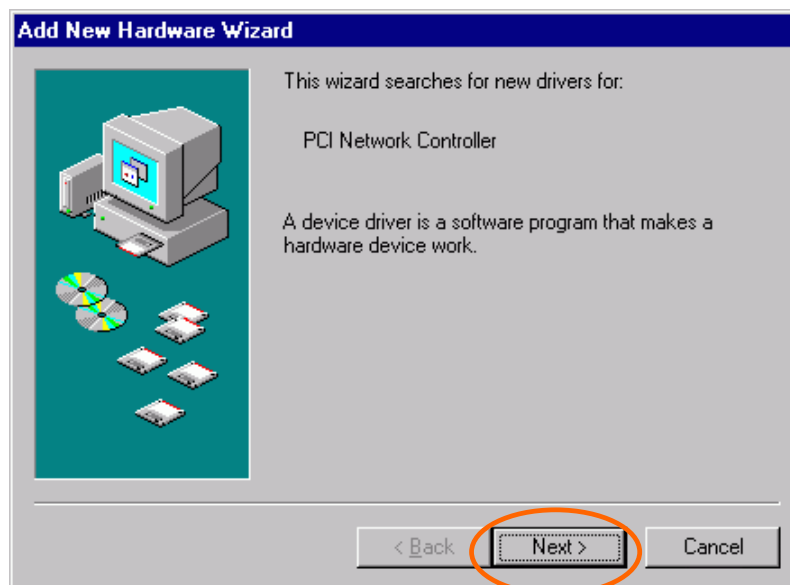
If you want to install the device before installing the utility, please follow below sections.

1. Before installing the device, make sure the computer is turned off.
2. Remove the expansion slot cover from the computer.
3. Carefully slide the wireless PCI card into an available PCI slot, push it evenly and firmly and ensure it is screwed securely in place using the mounting screw.

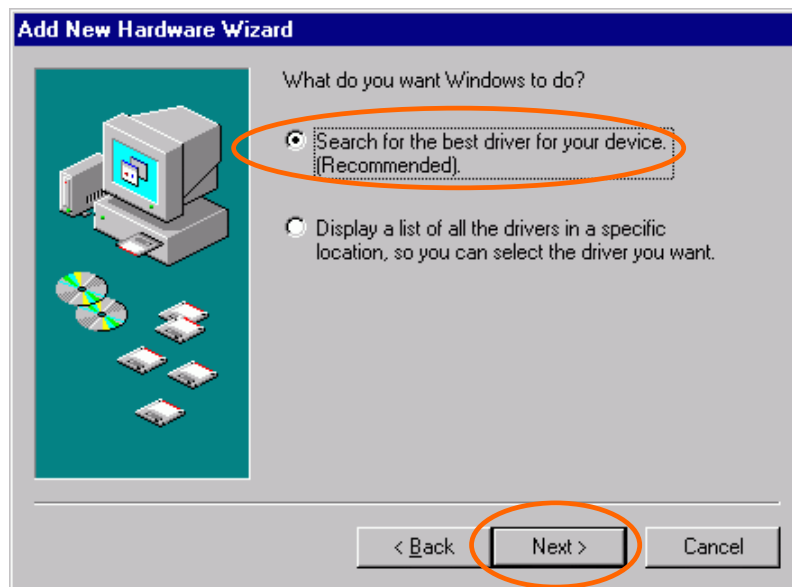
Once the device has been connected to your computer, Windows will detect the new hardware automatically.

In Windows 98

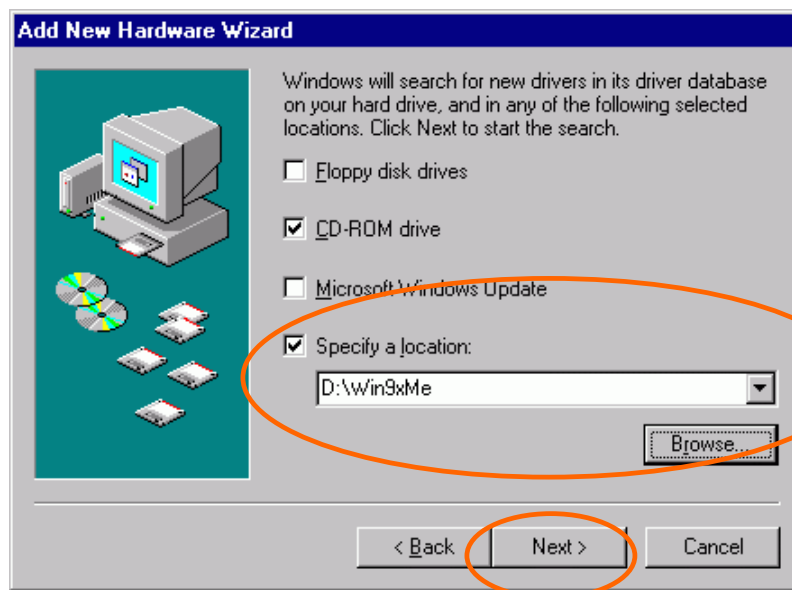
1. In **Add New Hardware Wizard**, click **Next**.



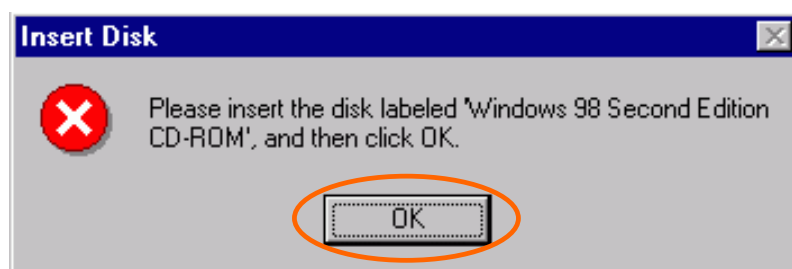
2. Select **Search for the best driver for your device (Recommended)**. Click **Next**.

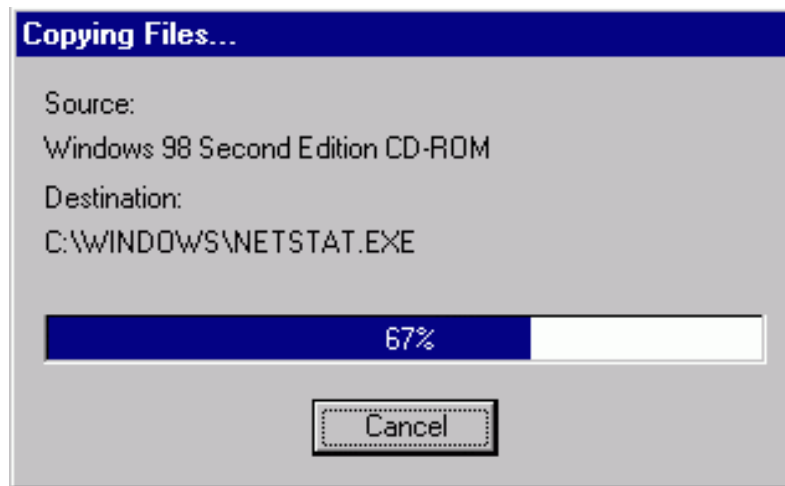


3. Insert the device driver CD-ROM into the CD-ROM drive. Select **CD-ROM** and **Specify a location:** and click **Browse** to provide the appropriate path (e.g. **D:\Win9xMe**). Click **Next**.



4. Click **Next**, Windows will copy all the necessary files to your system.
5. Insert **Windows 98** CD-ROM, and then click **OK**.





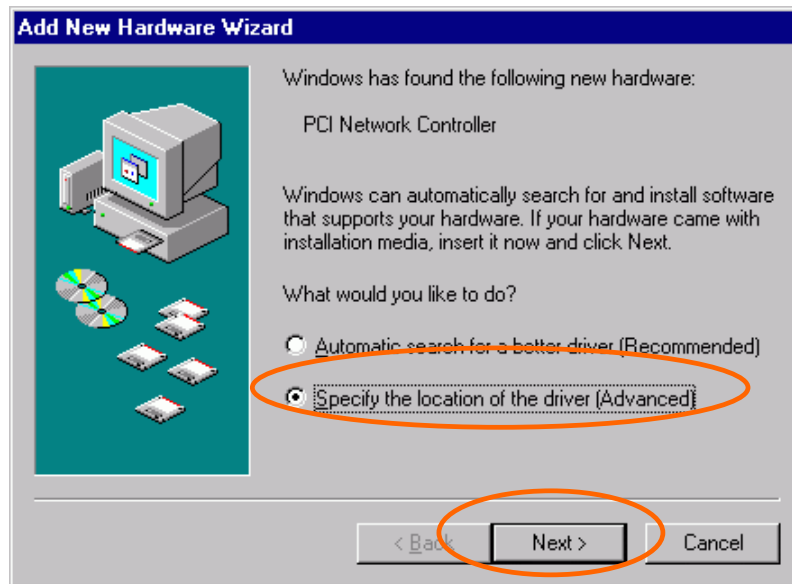
6. Click **Finish** to complete the installation.



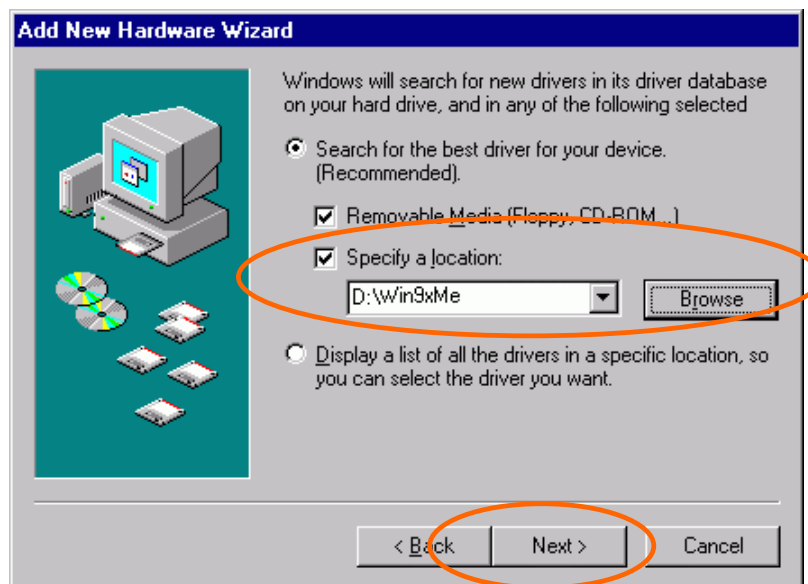
7. When Windows prompts you to restart your computer, click **Yes**.

In Windows ME

1. Select **Specify the location of the driver (Advanced)**, click **Next**.



2. Insert the device driver CD-ROM into the CD-ROM drive. Select **Search for the best driver for your device (Recommended)** and click **Browse** to provide the appropriate path (e.g. **D:\Win9xMe**). Click **Next**.



3. Click **Next**, Windows will copy all the necessary files to your system.



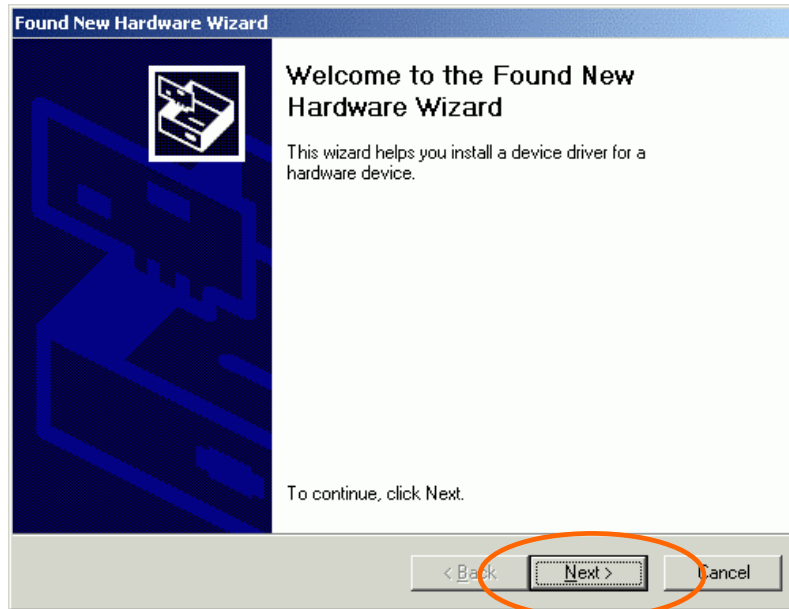
4. Click **Finish** to complete the installation.



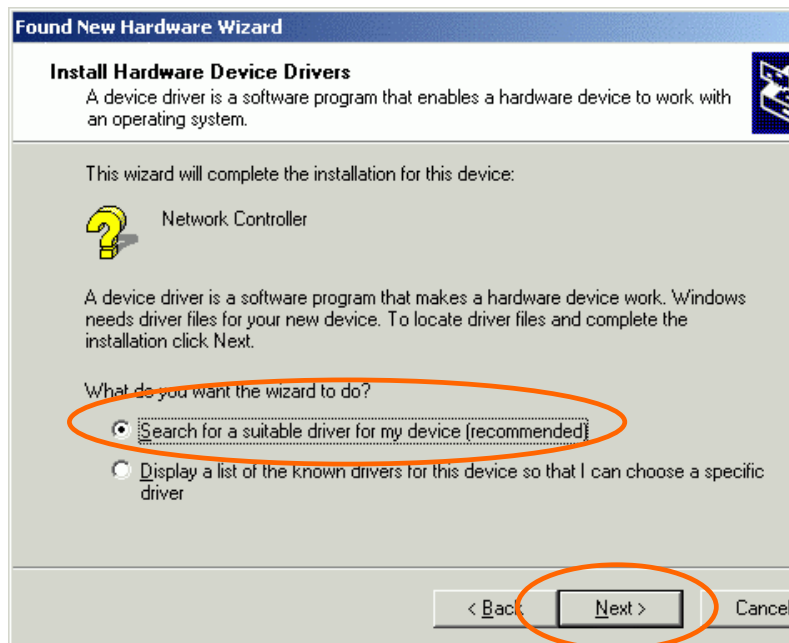
5. When Windows prompts you to restart your computer, click **Yes**.

In Windows 2000

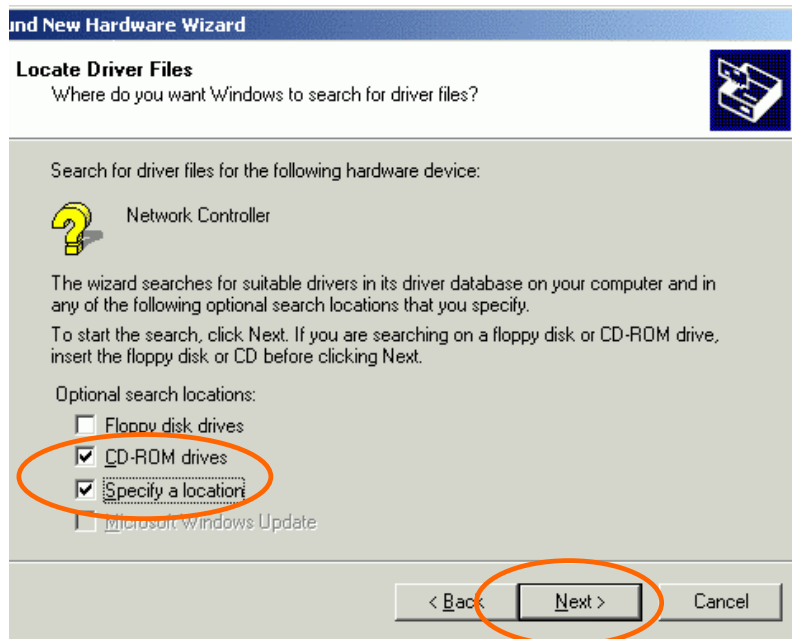
1. In **Found New Hardware Wizard**, click **Next**.



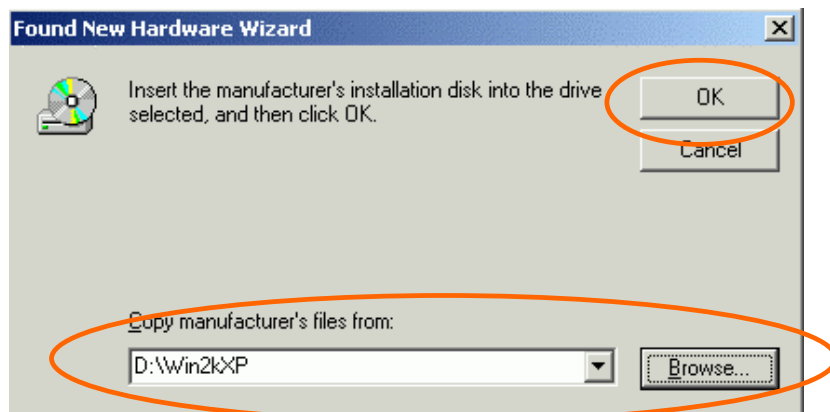
2. In **Install Hardware Device Drivers**, select **Search for a suitable driver for my device (recommended)**, click **Next**.



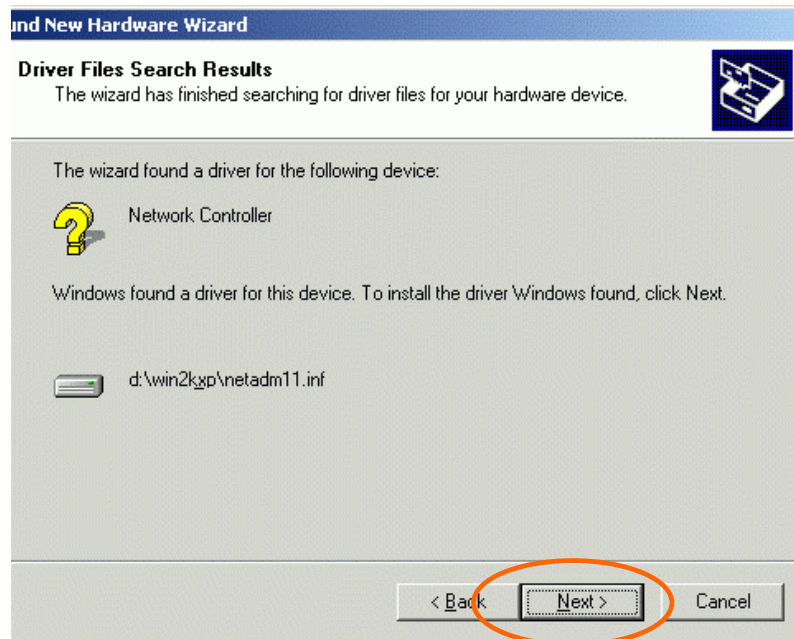
3. Insert the device driver CD-ROM into the CD-ROM drive. Select **CD-ROM drivers** and **Specify a location**, click **Next**.



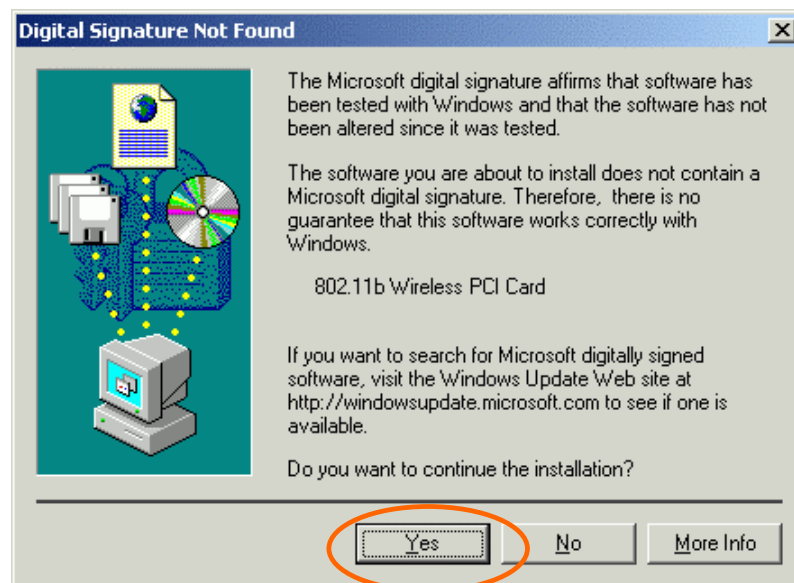
4. Click **Browse** to provide the appropriate path (e.g. **D:\Win2kXP**). Click **OK**.



5. Click **Next**, Windows will copy all the necessary files to your system.



6. In **Digital Signature Not Found** window, click **Yes** to continue.



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

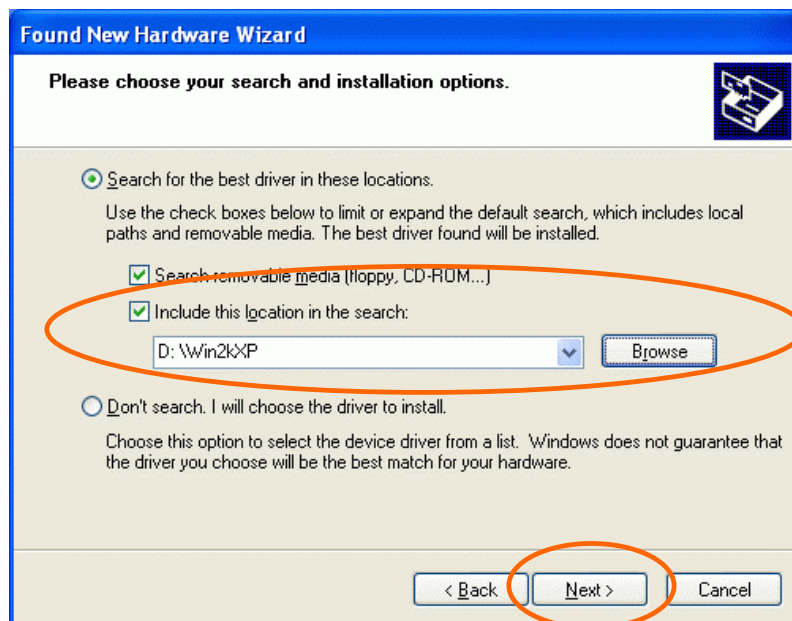
8. Restart your computer.

In Windows XP

1. Once the device is well connected to your computer, Windows XP will automatically detect the new device. Select **Install from a list or specific location (Advanced)** and click **Next**.



2. Insert the device driver **CD-ROM** into the CD-ROM drive. Select **Include this location in the search:** and click **Browse** to provide the appropriate path (e.g. **D:\Win2kXP**). Click **Next**.



3. Click **Continue Anyway** to proceed. Windows will copy all the necessary files to your system.

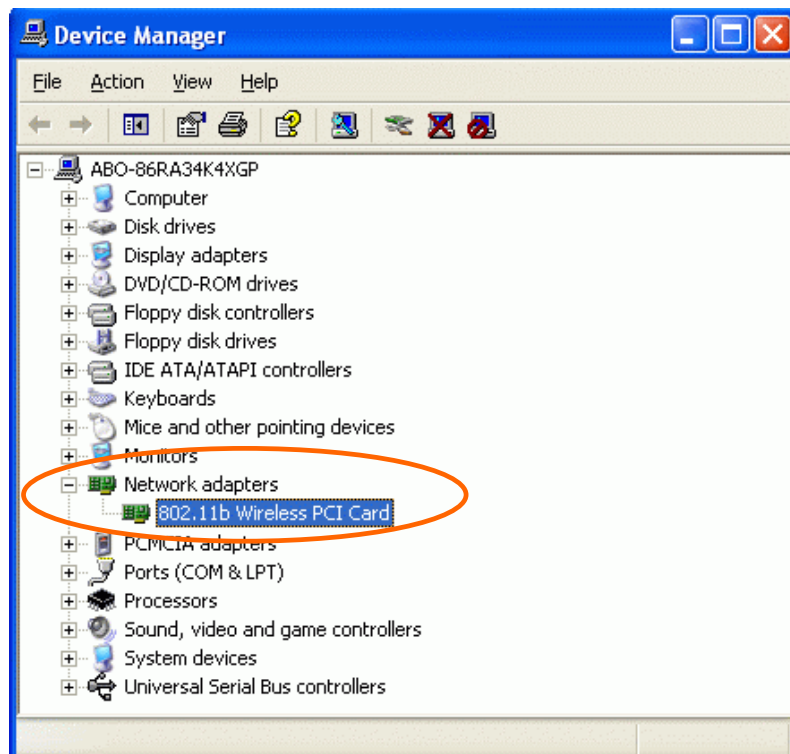


4. Click **Finish** to complete the installation.



Verify

To verify if the device exists in your computer and is enabled, go to **Start → Settings → Control Panel → System (→ Hardware) → Device Manager**. Expand the **Network adapters** category. If the **802.11b Wireless PCI Card** is listed here, it means that your device is properly installed and enabled.

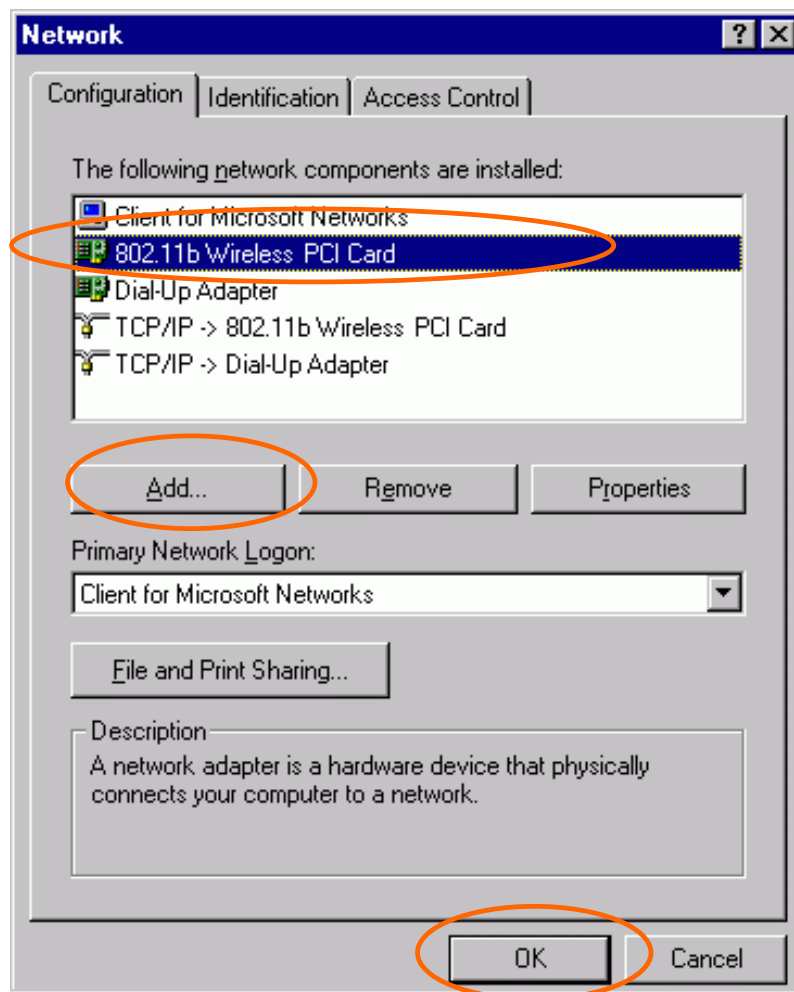


Network Connection

Once the driver has been installed, you must make some changes to your network settings.

In Windows 98/ME

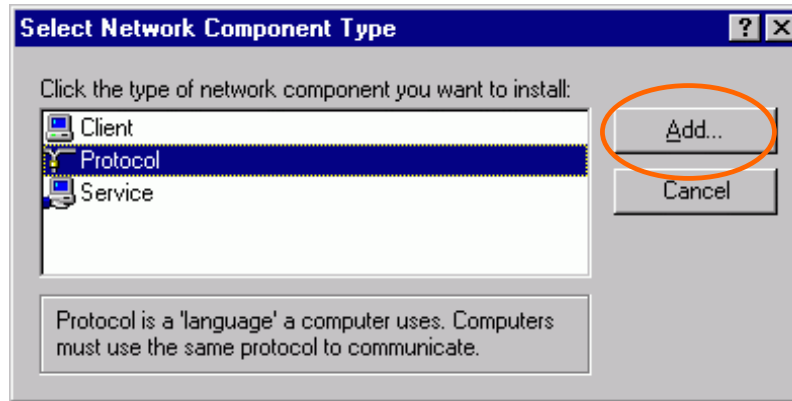
1. Go to **Start → Settings → Control Panel → Network**.
2. Make sure that you have all the following components installed.



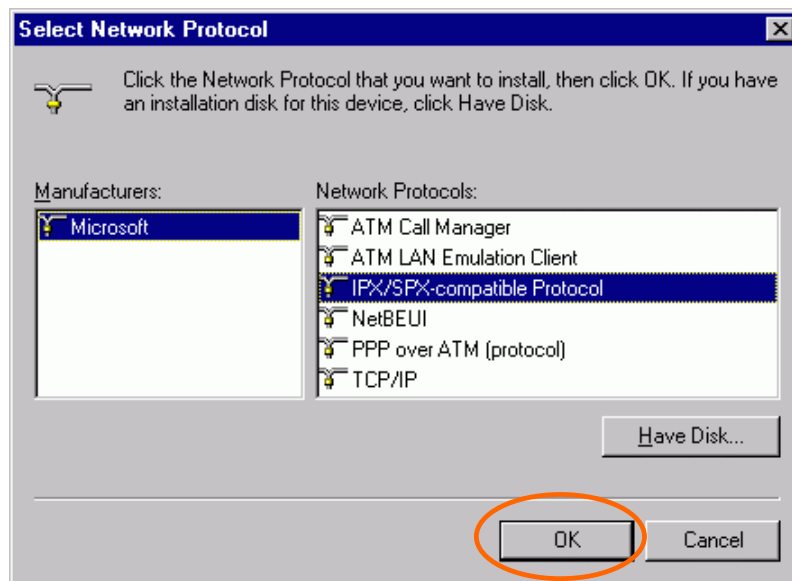
- **802.11b Wireless PCI Card**
- **IPX/SPX-compatible Protocol**
- **NetBEUI**
- **TCP/IP**

If any components are missing, click on the **Add** button to add them in. All the protocols and clients required and listed above are provided by Microsoft.

3. After clicking **Add**, highlight the component you need, click **Add**.

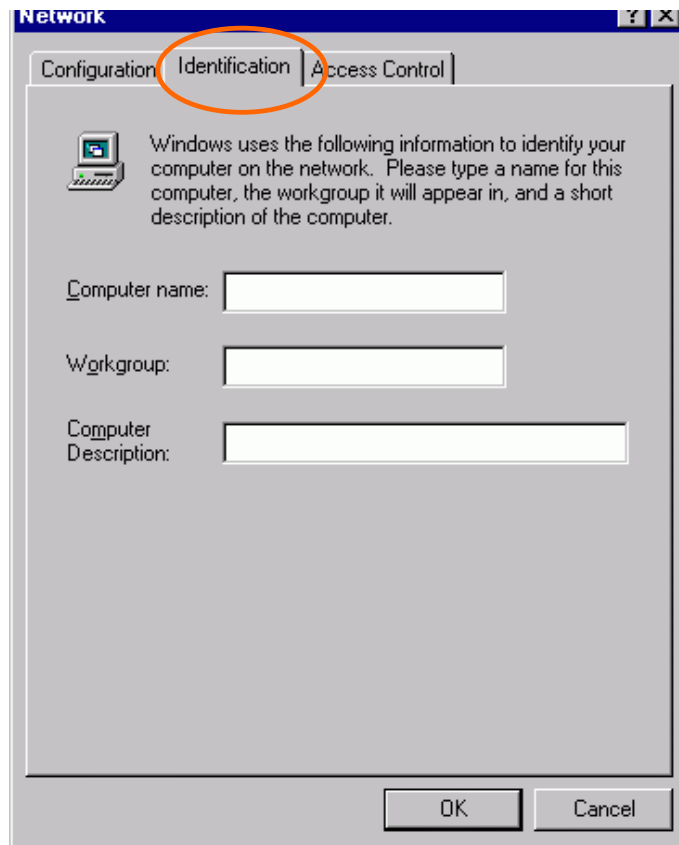


4. Highlight **Microsoft**, and then double click on the item you want to add. Click **OK**.

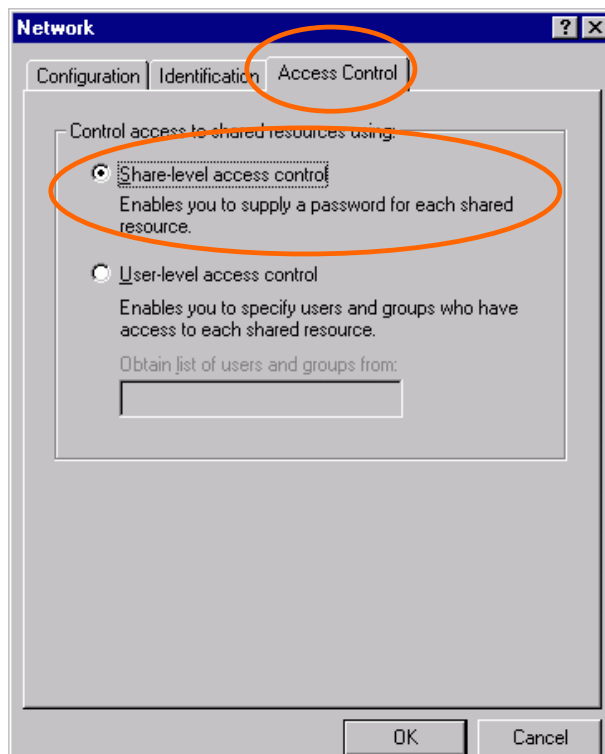


5. For making your computer visible on the network, enable the **File and Print Sharing**.

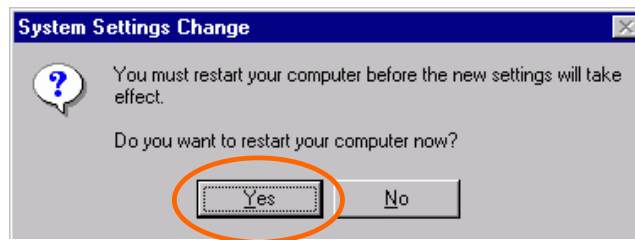
6. Click the **Identification** tab. Make up a name that is unique from the other computers' names on the network. Type the name of your workgroup, which should be the same used by all of the other PCs on the network.



7. Click the **Access Control** tab. Make sure that “**Share-level access control**” is selected. If connecting to a Netware server, share level can be set to “**User-level access control.**”



8. When finished, restart your computer to activate the new device.



9. Once the computer has restarted and Windows has booted up, a **Logon** window will appear and require you to enter a username and password. Make up a username and password and click **OK**. Do not click the **Cancel** button, or you won't be able to log onto the network.
10. Double-click the **Network Neighborhood** icon on the windows desktop, and you should see the names of the other PCs on the network.

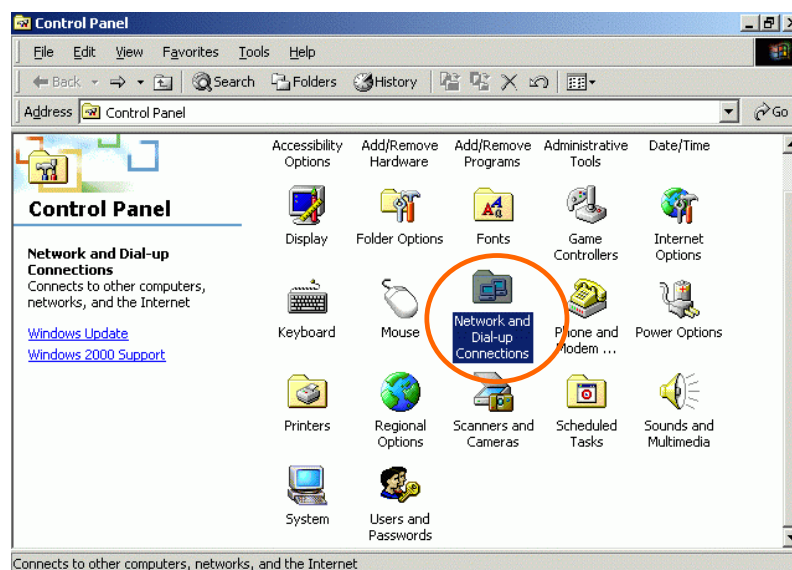
In Windows 2000/XP

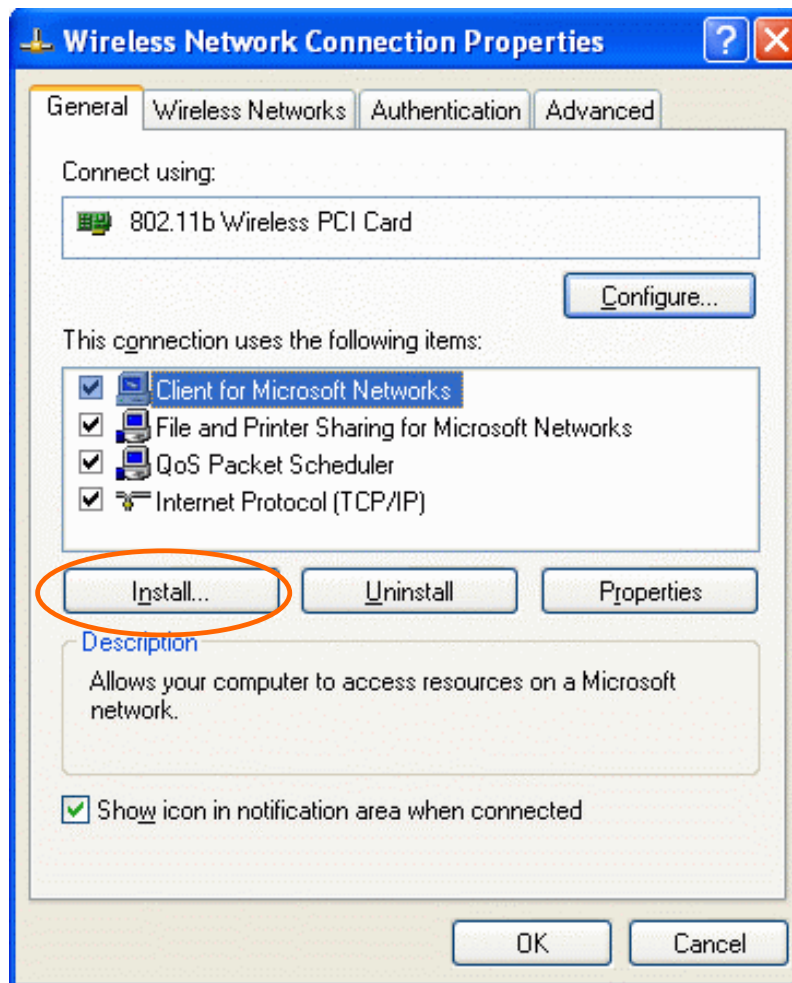
1. (In **Windows 2000**)

Go to **Start** → **Settings** → **Control Panel** → **Network and Dial-up Connections** → **Local Area Connection** → **Properties**.

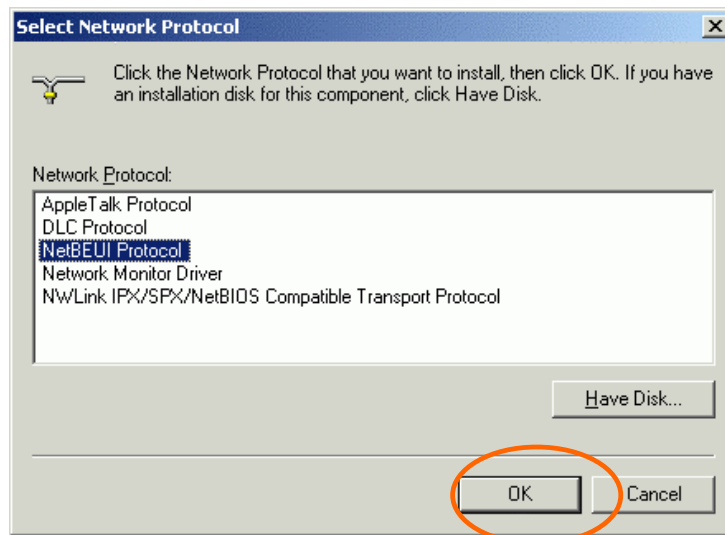
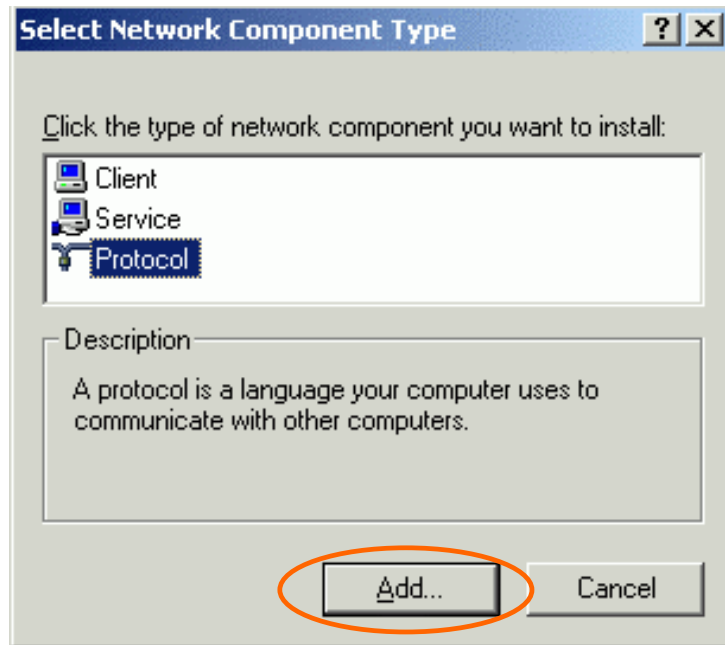
(In **Windows XP**)

Go to **Start** → **Control Panel** → **Network Connections** → **Wireless Network Connection Enabled 802.11b Wireless PCI Card** → **Properties**.





2. Make sure that you have all the following components installed.
 - **Client for Microsoft Networks**
 - **NWLink NetBIOS**
 - **NWLink IPX/SPX/NetBIOS Compatible Transport Protocol**
 - **Internet Protocol (TCP/IP)**
3. If any components are missing, click on the **Install...** button to select the **Client/Service/Protocol** required. After selecting the component you need, click **Add...** to add it in.



4. For making your computer visible on the network, make sure you have installed **File and Printer Sharing for Microsoft Networks**.
5. When finished, you must restart your computer to complete the installation.

Configuration

Note: For Windows XP users, you have two options to configure the Wireless settings:

1) Use Manufacturer's Configuration Utility

Please go to Step 4 of **Use Windows XP's Wireless Configuration Utility** section to disable the Windows XP's wireless configuration.

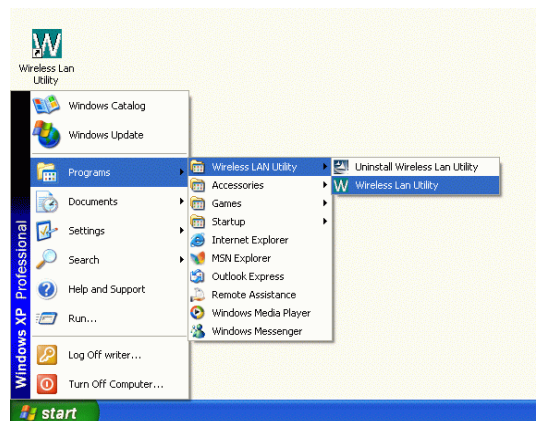
2) **Use Windows XP's Wireless Configuration.** Please go to Use Windows XP's Wireless Configuration Utility section to use the configuration.

Use Manufacturer's Configuration Utility

After installing the Wireless PCI Card's driver successfully, the **Network Status** icon will appear in the task bar. You can open it by double-clicking the icon.

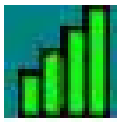
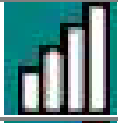
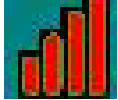


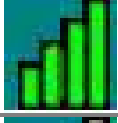
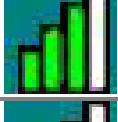
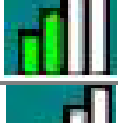

If the icon doesn't appear automatically, go to **Start → Programs → Wireless LAN Utility → Wireless LAN Utility**, it will appear in the task bar.

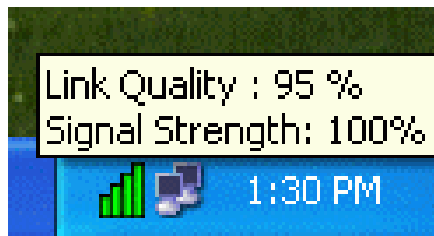


Network Status Icon

The Status Icon

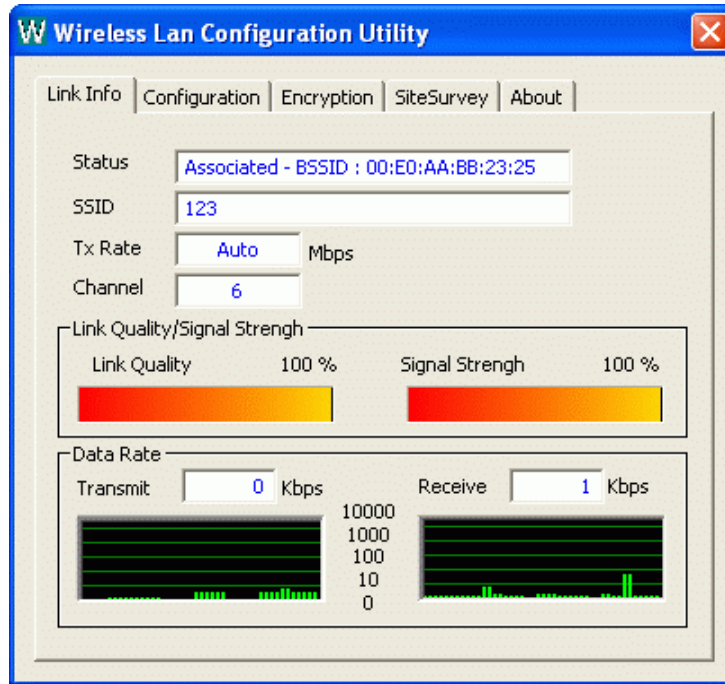
Icon	Link Status
	Access Point mode. (Green) (Please refer to below table for the exact link quality)
	Peer-to-Peer mode. (White)
	No connection. (Red)

Icon	Signal Strength
	Excellent link quality.
	Good link quality.
	Fair link quality.
	Poor link quality.



Link Info

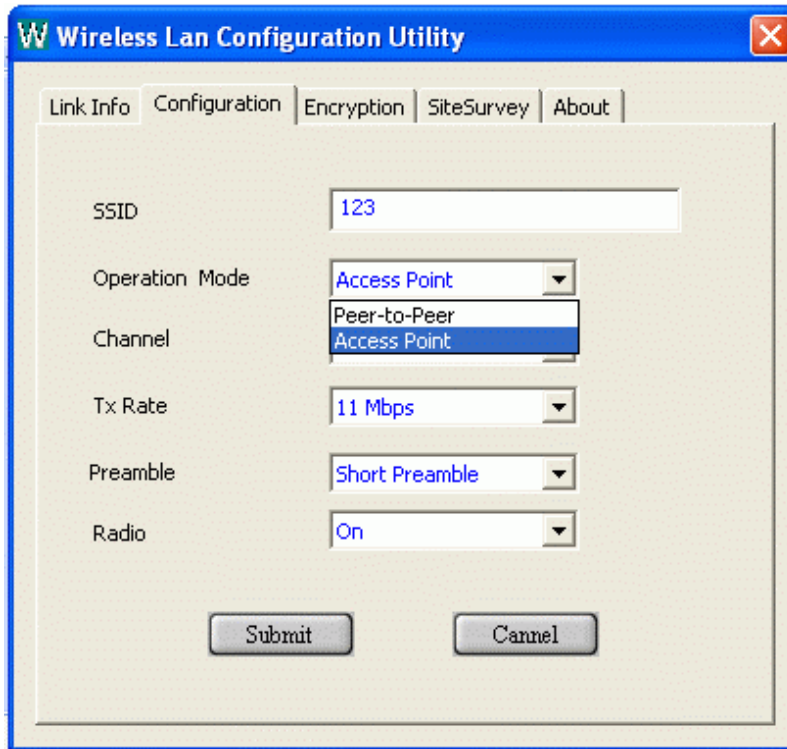
The **Link Info** tab will display the current status of the Wireless Network Adapter.



Item	Description
Status	It displays the information about the status of the communication (the BSSID of the Access Point to which the card is associated).
SSID	The SSID is the unique name shared among all points in your wireless network. The name must be identical for all devices and points attempting to connect to the same network. It shows the current SSID setting of the Wireless Network Adapter.
Tx Rate	It shows the current transfer rate. (1, 2, 5.5, or 11Mbps or Auto)
Channel	It shows the selected channel that is currently used. (There are 14 channels available, depends on the country.)
Link Quality	It displays the link quality of the connection between the Wireless Network Adapter and the Access Point it connects.
Signal Strength	It displays the signal strength of the connection between the Wireless Network Adapter and the Access Point it connects.
Data Rate	It displays the current transmitting and receiving rate.

Configuration

You can change advanced configuration settings, such as the **SSID**, **Operation Mode**, **Tx Rate** and **Preamble Type**.

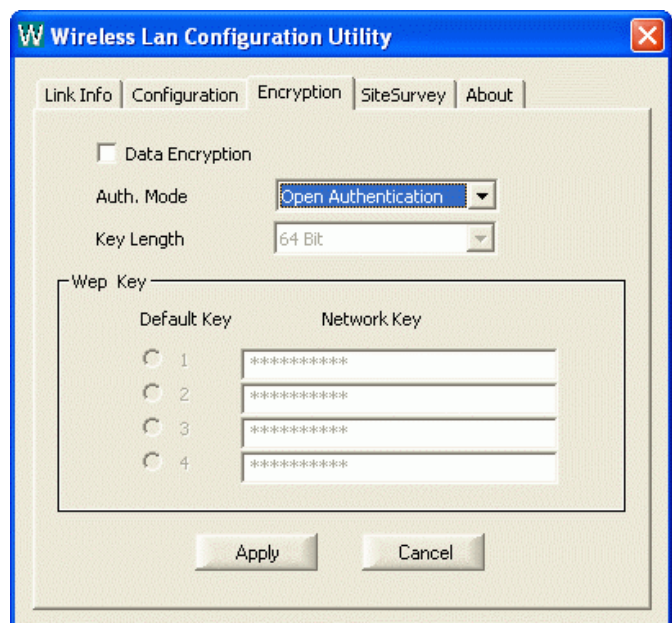
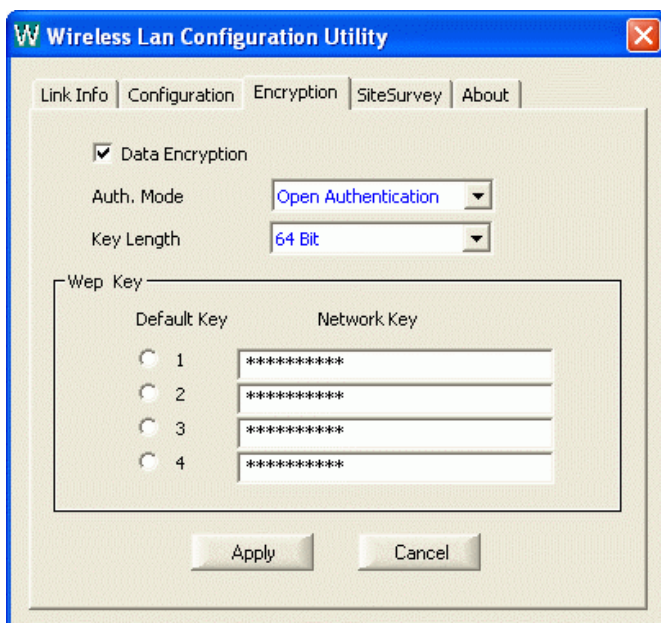


Item	Description
SSID	SSID is the unique name shared among all points in your wireless network. It must be identical for all points in the network. It is case-sensitive and must not exceed 32 characters. Make sure that all points in the network are set the same.
Operating Mode	It displays the current operating mode. (Access Point or Peer-to -Peer).
Channel	Select the appropriate channel from the list provided to correspond with your network settings. All devices in the wireless LAN must be configured to share the same radio channel in order to work correctly. (There are 14 channels available, depends on the country.)
Tx Rate	Select (1 , 2 , 5.5 , or 11Mbps or Auto) from the pull-down list to change the current transfer rate.

Item	Description
<p>Preamble</p> <p><input checked="" type="radio"/> Auto</p> <p><input checked="" type="radio"/> Long Preamble</p> <p><input checked="" type="radio"/> Short Preamble</p>	<p>A preamble is a signal used in wireless environment to synchronize the transmitting timing including Synchronization and Start frame delimiter. (Note: If you want to change the Preamble type into Long or Short, please check the setting of AP. Some Access Points do not support Auto Preamble.)</p> <p>Select Auto for the Network adapter to select the Preamble type automatically depending on the Access Point Preamble type.</p> <p>If in a "noisy" network environment, the Preamble Type should be set to Long Preamble.</p> <p>The Short Preamble is intended for applications where minimum overhead and maximum performance is desired. If in a "noisy" network environment, the performance would be decreased.</p>
Radio	Select On/Off from the pull-down list to enable/disable the Radio Module function of the Wireless Network Adapter.

Encryption

WEP (Wired Equivalent Privacy) encryption can be used to ensure the security of your wireless network.

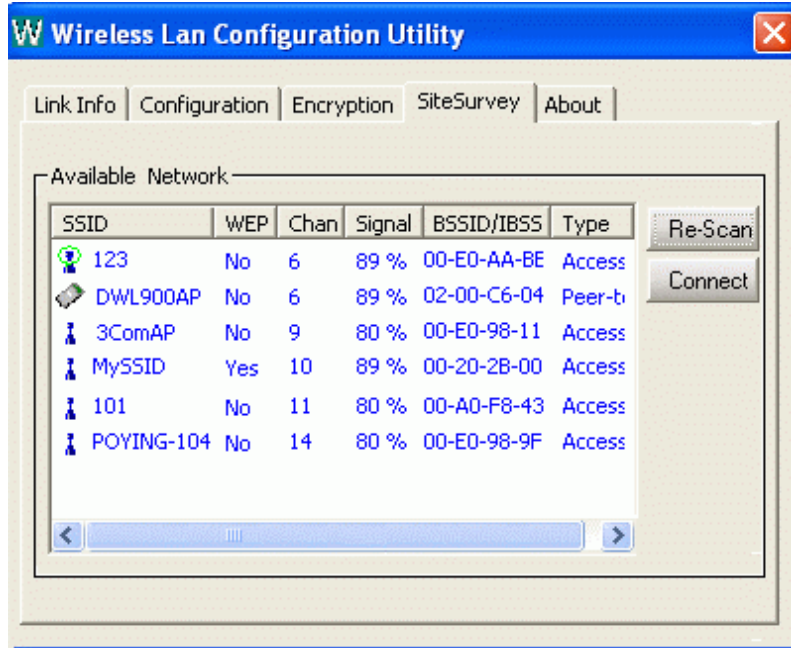




Item	Description
Data Encryption	WEP is a data privacy mechanism based on a 64 Bit/128 Bit shared key algorithm. Check this box to enable WEP encryption.
Auth. Mode Open Authentication Shared Authentication Auto	<p>The authentication mode defines configuration options for the sharing of wireless networks to verify identity and access privileges of roaming wireless network cards.</p> <p>You may choose between Open Authentication, Shared Authentication, and Auto.</p> <p>If the Access Point is using "Open Authentication", then the wireless adapter will need to be set to the same authentication mode.</p> <p>Shared Authentication is when both the sender and the recipient share a secret key.</p> <p>Select Auto for the network adapter to select the Authentication mode automatically depending on the Access Point Authentication mode.</p>
Key Length	64 Bit or 128 Bit .
WEP Key <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4	<p>This setting is the configuration key used in accessing the wireless network via WEP encryption.</p> <p>Fill in the appropriate value/phrase.</p>
Apply	Click Apply to save the changes.
Cancel	Click Cancel to exit the application.

Note: You must use the same value/phrase or WEP key settings for all wireless computers in order for the wireless network to function well

Site Survey

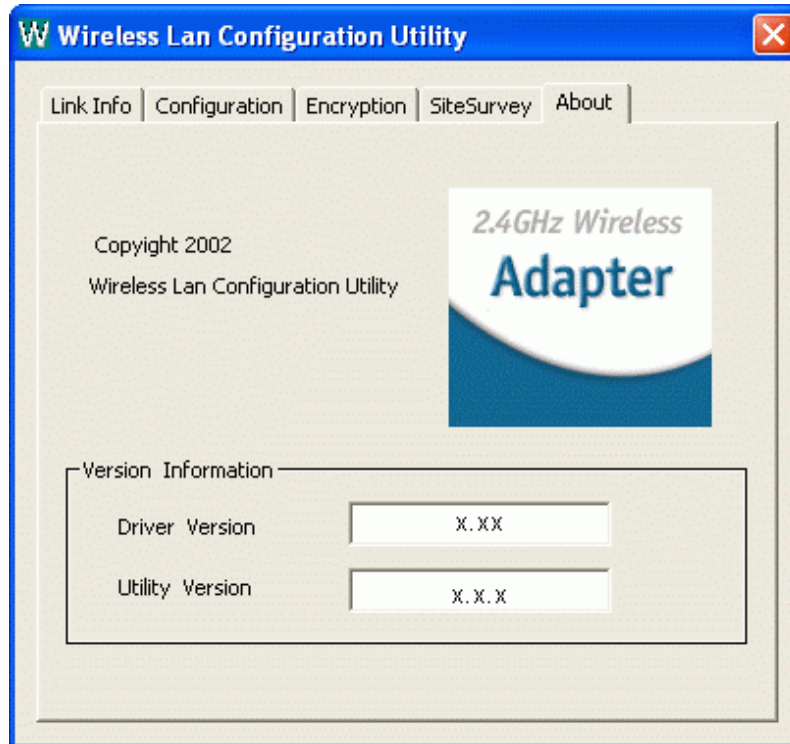
The **Site Survey** tab shows all the available Access Points and their features.



Item	Description
SSID	It displays the current SSID setting of the Wireless Network Adapter.
WEP	It displays the status of WEP Encryption.
Channel	It displays the selected channel that is currently used.
Signal	It displays the signal strength of the connection between the Wireless Network Adapter and the Access Point it connects.
BSSID/IBSSID	A set of wireless stations is referred to as a Basic Service Set (BSS). Computers in a BSS must be configured with the same BSS ID.
Type	It displays the type of Basic Service Set. ( Access Point or  Peer-to-Peer)
Re-Scan	Search for all available networks. Clicking on the button, the device will start to rescan and list all available sites.
Connect	Select one from the list to connect.

About

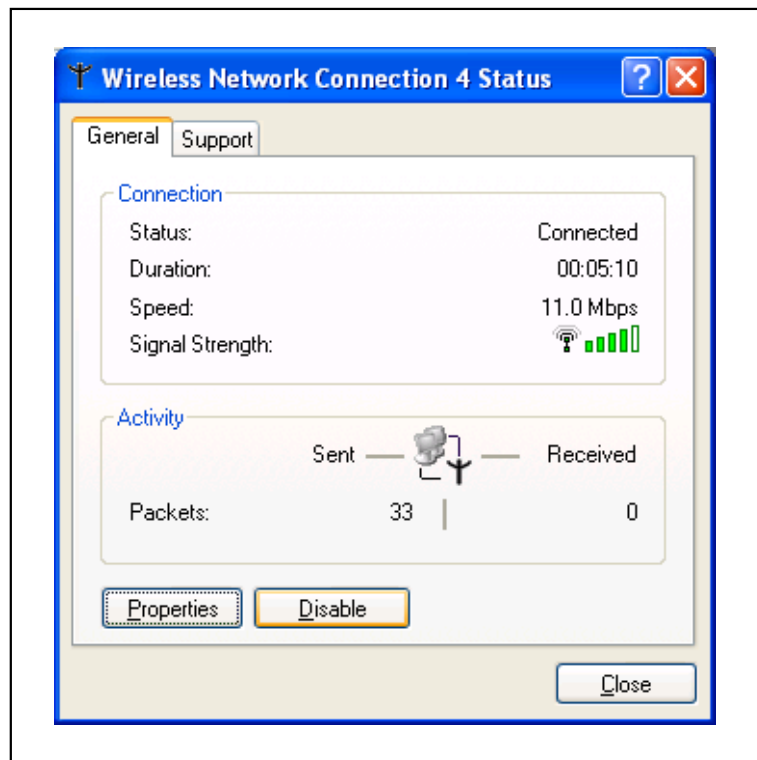
You can view basic information about the Utility like the **Driver** and **Utility** Version.



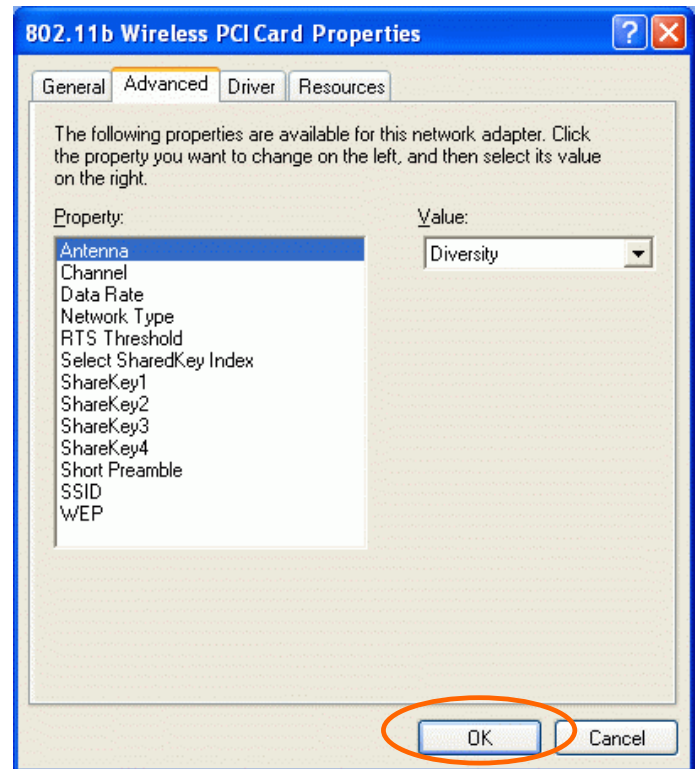
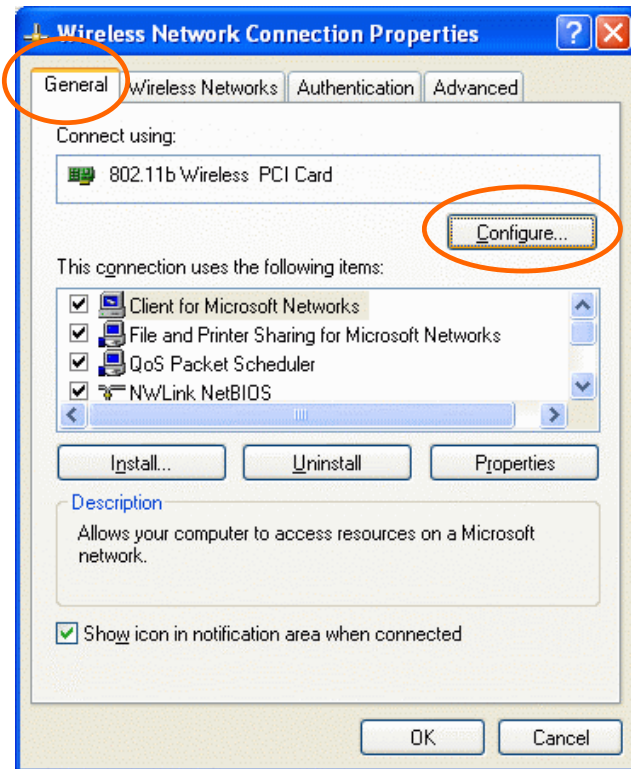
Use Windows XP's Wireless Configuration Utility

1. Go to **Start** → **Control Panel** → **Network Connections**.
2. In **Network Connections** window, right-click the **Wireless Network Connections** icon, and select **Properties**.

Note: Double-click the **Wireless Network Connection** icon and you can see the status of the Wireless PCI Card as described below.



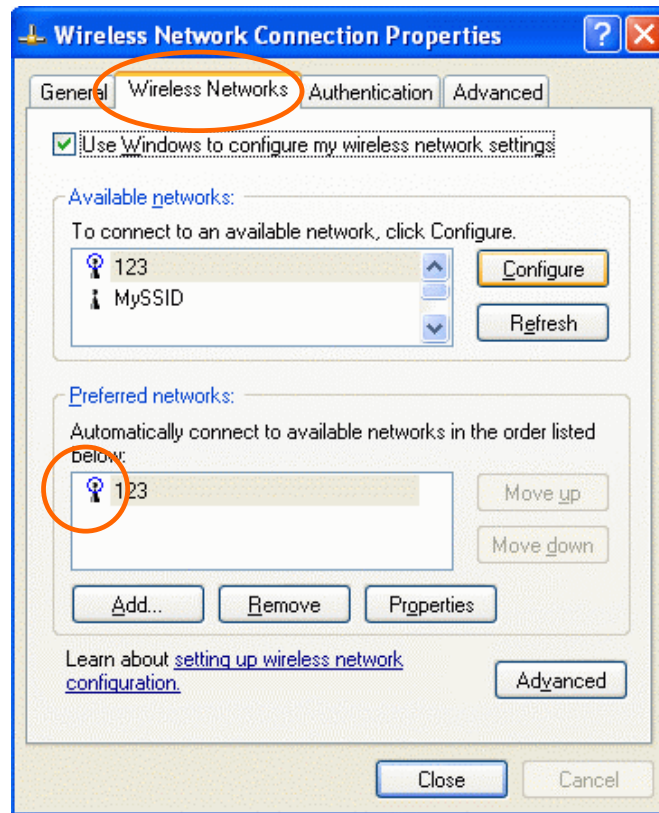
3. In **Wireless Network Connection Properties** window, select the **General** tab. Click **Configure** to enable Windows configuration.



Property	Description
Antenna	(Diversity, Antenna A or Antenna B): These settings determine which antenna will be used to transmit or receive.
Channel	Select the appropriate channel from the list provided to correspond with your network settings. All devices in the wireless LAN must be configured to share the same radio channel in order to work correctly. (There are 14 channels available, depends on the country.)
Data Rate	Select (1, 2, 5.5, or 11Mbps or Auto) from the pull-down list to change the current transfer rate.
Network Type	Select the appropriate Network Type from 802.11 AdHoc Mode (Active) , 802.11 AdHoc Mode (Passive) or Infrastructure . In AdHoc mode, Active mode is recommended since it can generate/pass beacon packets automatically.
Preamble	A preamble is a signal used in wireless environment to synchronize the transmitting timing including Synchronization and Start frame delimiter. (Note: Please check the setting of AP first.)

Ⓒ Auto	Select Auto for the Network adapter to select the Preamble type automatically depending on the Access Point Preamble type.
Ⓒ Long Preamble	If in a "noisy" network environment, the Preamble Type should be set to Long Preamble .
Ⓒ Short Preamble	The Short Preamble is intended for applications where minimum overhead and maximum performance is desired. If in a "noisy" network environment, the performance would be decreased.
RTS Threshold	This value should remain at its default setting of 2347 . Should you encounter inconsistent data flow, only minor modifications of this value are recommended.
Select SharedKey Index	Select from 1, 2, 3, 4 or No selection .
Sharekey1 Sharekey2 Sharekey3 Sharekey4	This setting is the configuration key used in accessing the wireless network via WEP encryption. Fill in the appropriate value/phrase.
SSID	SSID is the unique name shared among all points in your wireless network. It must be identical for all points in the network. It is case-sensitive and must not exceed 32 characters. Make sure that all points in the network are set the same.
WEP	WEP is a data privacy mechanism based on a 64 Bit/128 Bit shared key algorithm. Select WEP key 128bit or WEP key 64bit to enable WEP encryption.

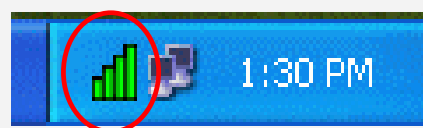
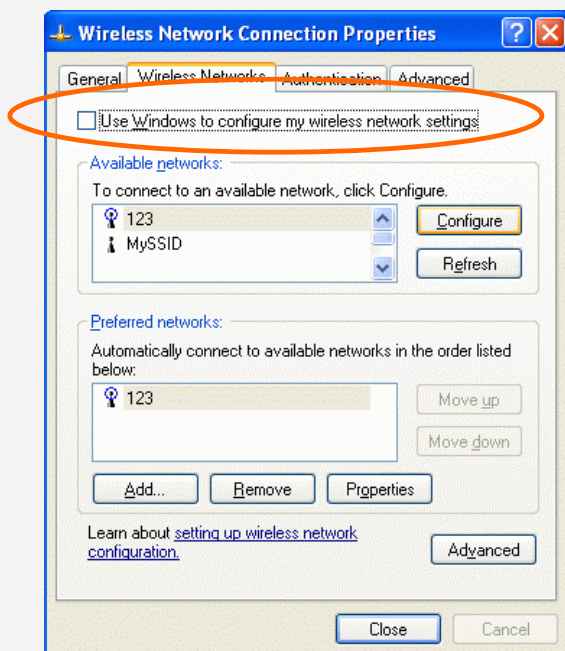
4. In **Wireless Network Connection Properties** window, select the **Wireless Networks** tab.



☐ Use Windows to configure...

* Use Manufacturer's Configuration Utility

Note: If you want to use the manufacturer's configuration utility to configure the wireless settings. Make sure the check box is **NOT** enabled (please refer to below figure), and then the Network Status icon will appear in the taskbar. You can open it by double-clicking the icon.



* Use Windows to configure

Note: Right-click the Network Status icon in the taskbar, click **Disable Utility**. The Network Status icon in the taskbar will disappear, and then you can use Windows to configure the wireless settings.

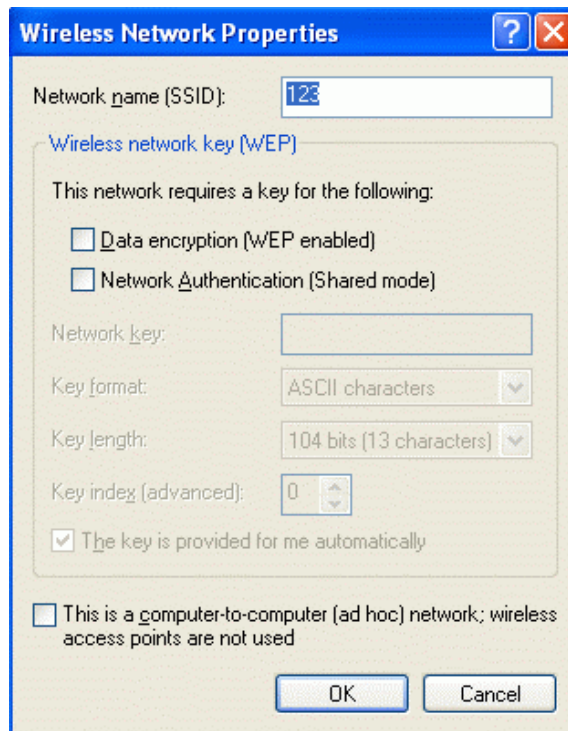


Available networks

Displays all available networks.

Configure

Click the button to set up a new network or WEP configuration as illustrated as below.



Refresh

Click the button to refresh and search for all available networks.

Preferred networks

From available network(s) listed above, you can select preferred one(s) in an order that you can arrange.

The marked one is the currently used network.

Move up

Move the selected network forward one position.

Move down

Move the selected network back one position

Add...

Click the button and the **Wireless Network Properties** window will appear. In the **Network name** field, enter your desired network name listed in the above **Available networks** box, and click **OK**.

*Note: The new settings will be active only after you click on **OK** in the **Wireless Network Connection Properties** window.*

Remove

Highlight the unwanted network listed in the **Preferred networks** box, and click the button to remove it.

Properties

Highlight the network listed in the above **Preferred networks** box, and click the button to display its properties.

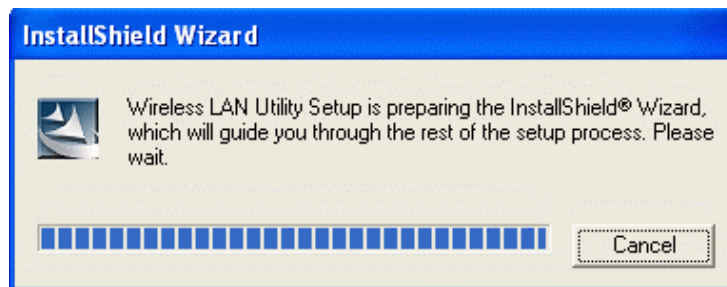
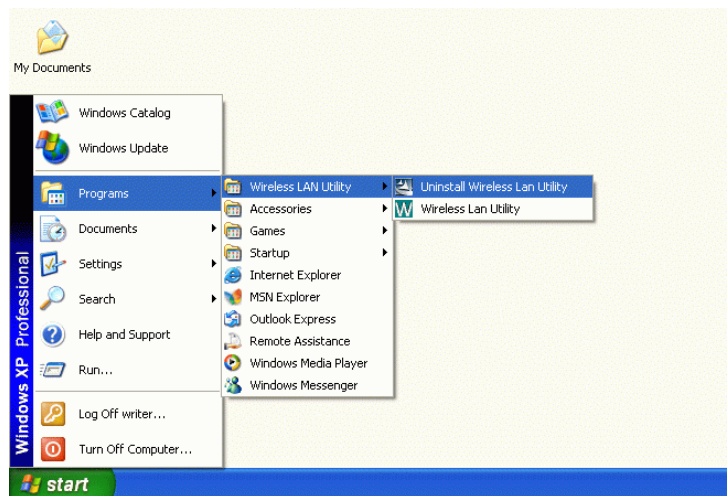
Once network configuration is done, make sure to click **OK**. The new parameters will be saved and active only after doing so.

Uninstallation

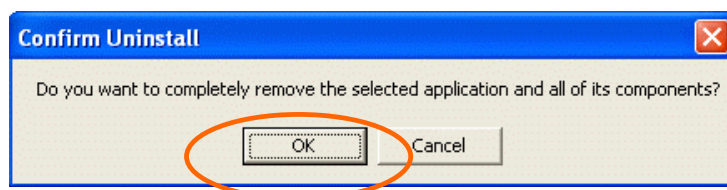
In case you need to uninstall the Utility or device, please refer to below sections.

Uninstall the Manufacturer's Configuration Utility

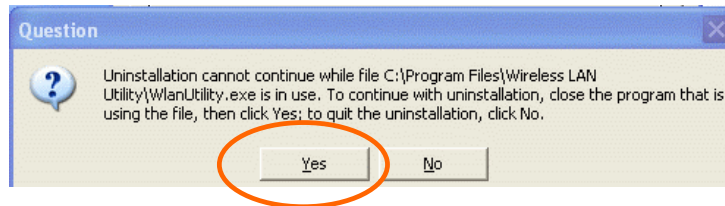
1. Go to **Start** → **Programs** → **Wireless LAN Utility** → **Uninstall Wireless LAN Utility**.



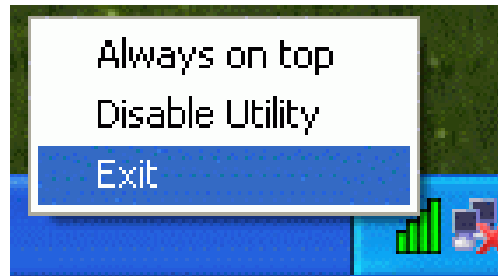
2. Click **OK** to continue.



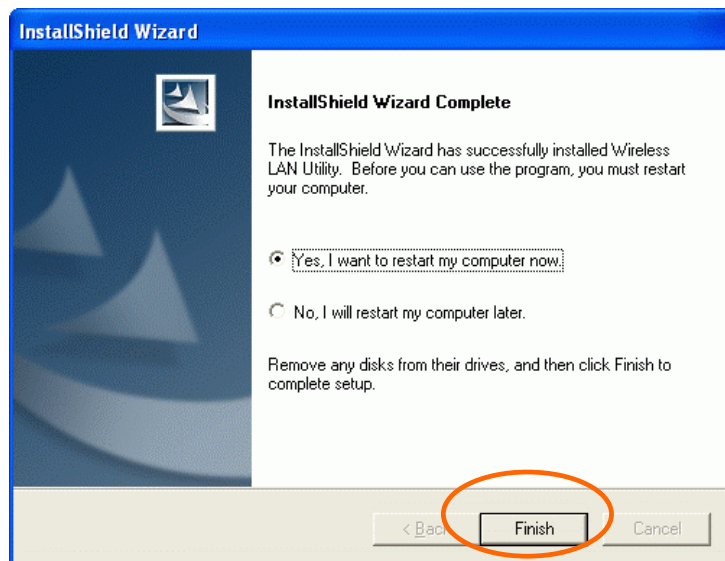
3. **This step is only for Windows XP users:**
Make sure the Wireless LAN Utility is closed prior to clicking **Yes**.



(To close the Wireless LAN Utility: right-click the Network Status icon in the taskbar, and then click **Exit**.)

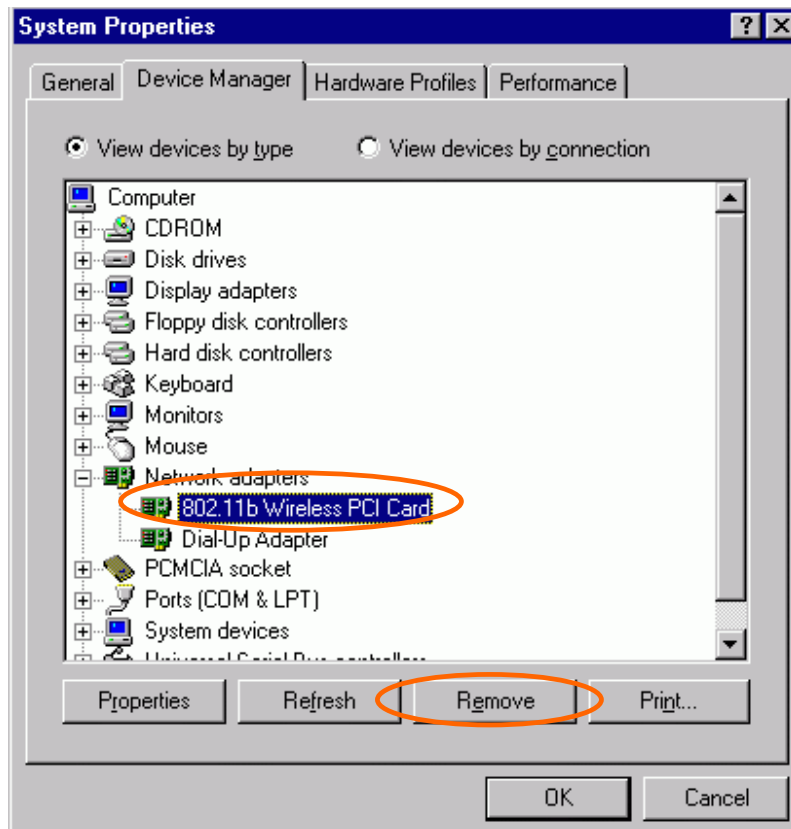


4. Select **Yes, I want to restart my computer now**, and then click **Finish** to complete the uninstalled procedure.

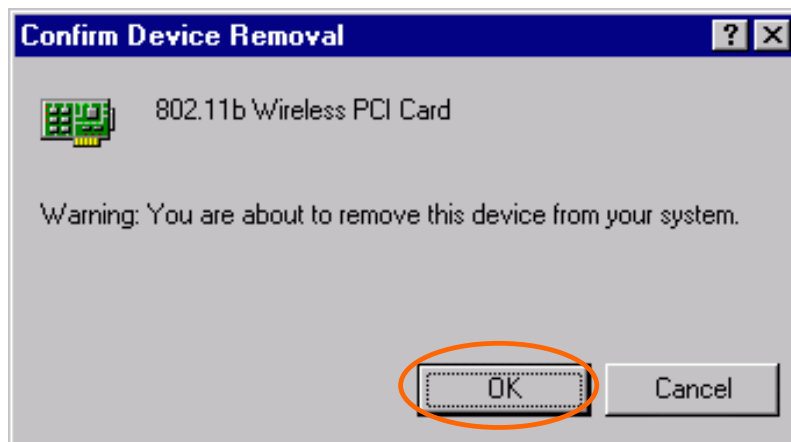


Uninstall the device

1. Right-click **My Computer** → **Properties** → **Hardware** → **Device Manager**.
2. Right-click **802.11b Wireless PCI Card** then click **Uninstall** (or **Remove**).



3. Click **OK**.



4. The system will prompt you to restart your computer. Click **Yes**.

Specifications

Standard	IEEE 802.11b, Wi-Fi compliant
Host Interface	PCI 2.2
Antenna	Dipole Antenna
LED Indicators	<ul style="list-style-type: none"> ▪ LINK: Green (ON) ▪ ACT: Green (Blink)
Frequency Range	2.412GHz-2.4835GHz
Number of Selectable Channels	<ul style="list-style-type: none"> ▪ USA, Canada: 11 channels ▪ Europe: 13 channels ▪ Japan: 14 channels
Data rate	1/2/5.5/11 Mbps
Modulation Technique	Direct Sequence Spread Spectrum (CCK, DQPSK, DBPSK)
Security	0/64/128 bit WEP
Bit Error rate	Better than 10^{-5}
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
Power Requirement	<p>Operating Voltage: 5V</p> <ul style="list-style-type: none"> ▪ TX consumption: 430mA (Max) ▪ RX consumption: 300mA (Max) ▪ Sleep Mode: 25mA
Physical Specifications	<ul style="list-style-type: none"> ▪ Weight: 50g ▪ Dimension: 119.9 (L) x 46.7(W) mm
Environment Specifications	<ul style="list-style-type: none"> ▪ Operating Temperature: 0~65 °C ambient temperature ▪ Storage Temperature: -20~75 °C ambient temperature ▪ Operating humidity: 95% maximum (non-condensing) ▪ Storage humidity: 95% maximum (non-condensing)

Supported OS	<ul style="list-style-type: none">▪ Windows 98▪ Windows ME▪ Windows 2000▪ Windows XP
EMC Certification	<ul style="list-style-type: none">▪ FCC Part 15 in US▪ EN300328 and EN300826 (EN301489-17) in Europe