Wireless 11g MiniPCI Card (for OEMs use only)

User's Guide

FCC Caution

1. The 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.
2. FCC RF Radiation Exposure Statement: The equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.
3. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
4. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

Trademarks

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Revision History

Revision	History	Date
V 2.0	First Release	February 2004

Important Safety Precautions

Always read and follow these basic safety precautions carefully when handling any piece of electronic component.

1. Keep this *User's Guide* for future reference.
2. Keep this equipment away from humidity.
3. Lay this equipment on a reliable flat surface before setting it up.
4. The openings on the enclosure are for air convection hence protects the equipment from overheating.
5. All cautions and warnings on the equipment should be noted.
6. Never pour any liquid into the opening that could damage or cause electrical shock.
7. If any of the following situations arises, get the equipment checked by a service personnel:
   - Liquid has penetrated into the equipment
   - The equipment has been exposed to moisture
   - The equipment has not work well or you can not get it work according to User's Manual
   - The equipment has dropped and damaged
   - If the equipment has obvious sign of breakage
8. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60^{O}C OR BELOW -20^{O}C, IT MAY DAMAGE THE EQUIPMENT.

How to Use This Guide

This User's Guide provides instructions and illustrations on how to install and use your Wireless 11g MiniPCI Card.

- Chapter 1, **Introduction**, provides a general information on the product you bought, including its application, specification, and requirements.
- Chapter 2, **Hardware Installation**, tells you how to install the product into your system.
- Chapter 3, **Software Installation**, guides you through the installation of the product's driver and utility.
- Chapter 4, **Wireless Network Utility**, describes the Wireless Network Utility that lets you configure your product to connect the network quickly and easily.
- Chapter 5, **Networking Basic**, helps you to build your network and share resources over the network.

Please note that the setting diagrams or values in this guide are **FOR YOUR REFERENCE ONLY**. The actual settings and values depend on your system and network. If you are not sure about these information, please ask your network administrator or MIS staff for help.

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Introduction

>>> 1.1 Wireless 11g MiniPCI Card

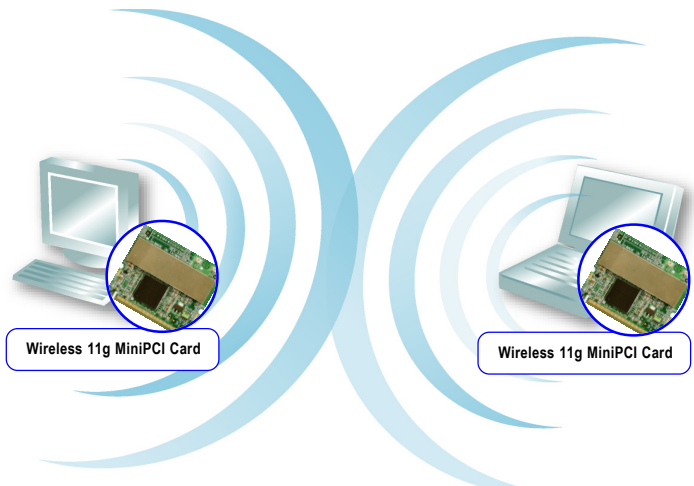
Compliant with IEEE802.11g, the **Wireless 11g MiniPCI Card** is a high-efficiency wireless adapter for wireless networking at home, in office or in public places. The data rate can be up to 54 Mbps and auto-negotiated to 48, 36, 24, 18, 12, 9, 6Mbps (IEEE 802.11g), or 11, 5.5, 2, 1Mbps (IEEE802.11b).

With the wireless LAN adapter, you can roam between conference room and office without being disconnected the LAN cables; in addition, sharing files and printers can be easy tasks.

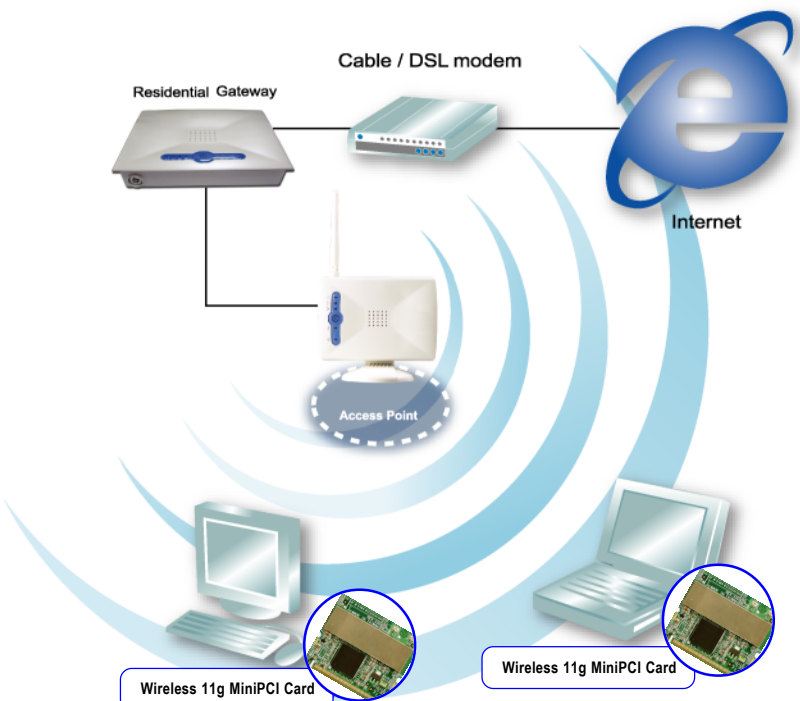
The wireless LAN adapter is available to Microsoft Windows operating systems (Windows® XP/2000/ME/98SE) and can be integrated into networking with either **Ad-hoc mode** (computer-to-computer, without an Access Point) or **Infrastructure mode** (computer-to-access point, an Access Point is required).

>>> 1.2 How Wireless LAN Adapter Works

- **Ad-hoc Mode :** An Ad-hoc network is a local area network or other small network, especially one with wireless or temporary plug-in connections, in which some of the network devices are part of the network only for the duration of a communications session. Users in the network can share files, print to a shared printer, and access the Internet with a shared modem. In this kind of network, new devices can be quickly added; however, users can only communicate with other wireless LAN computers that are in this wireless LAN workgroup, and are within range.



- **Infrastructure Mode :** The difference between Infrastructure network and Ad-hoc network is that the former one includes an Access Point. In an Infrastructure network, the Access Point can manage the bandwidth to maximize bandwidth utilization. Additionally, the Access Point enables users on a wireless LAN to access an existing wired network, allowing wireless users to take advantage of the wired networks resources, such as Internet, email, file transfer, and printer sharing. The scale and range of the Infrastructure networking are larger and wider than that of the Ad-hoc networking.

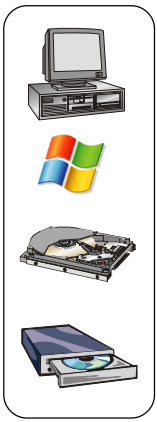


>>> 1.3 Specifications

Form Factor	32-bit Type IIIA
Operation voltage	3.3V
Standard	- IEEE 802.11g/b - WECA Wi-Fi - WHQL (Windows XP/2000)
Frequency Range	2.4GHz to 2.4835GHz
Data Rate and Modulation Types	IEEE 802.11b (Auto-Fallback): - CCK @ 5.5 and 11 Mbps - DQPSK @ 2 Mbps - DBPSK @ 1 Mbps IEEE 802.11g (Auto-Fallback): - OFDM @ 54, 48, 36, 24, 18, 12, 9, 6 Mbps
Operating Channels	- US and Canada: 11 channels; - Europe: 13 channels
Media Access Protocol	Direct Sequence Spread Spectrum (DSSS) with ACK; Half-Duplex
Security / Encryption	- 64-/128-bit WEP - AES-CCM Authentication mode - WPA support
Range	Up to 500 m

Transmitter Output Power	14±1 dBm
Operating system	Microsoft® Windows® 98SE/ ME/2000/XP
Environmental	- Operating Temperature: 0 ~ 55°C - Operating Humidity: 10 ~ 90%, non-condensing
EMI Compliance	FCC, CE, Wi-Fi
Dimensions (WxDxH)	50.8 x 59.6 x 3.5 mm
Weight	15 g

>>> 1.4 System Requirements



Before installing the wireless LAN adapter, your PC should meet the following items:

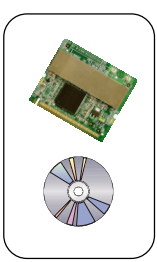
- One desktop/notebook PC with an available MiniPCI slot.

- Windows® 98SE/ME/2000/XP operating system.

- Minimum 5MB free disk space for installing the driver and utilities.

- One CD-ROM drive, double speed or higher.

>>> 1.5 Package Contents



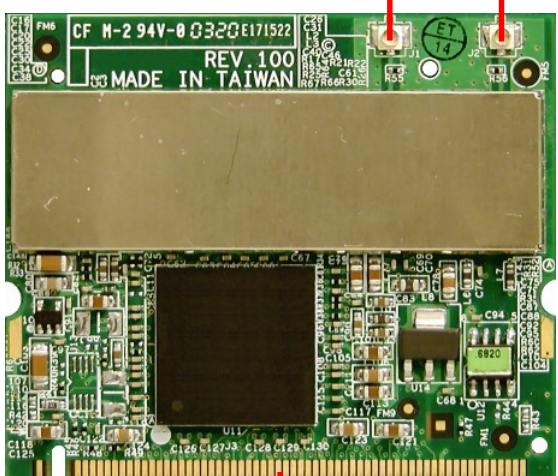
Unpack the package and check all the items carefully. If any item contained is damaged or missing, please contact your local dealer as soon as possible. Also, keep the box and packing materials in case you need to ship the unit in the future. The package should contain the following items:

- One Wireless 11g MiniPCI Card.

- One Installation CD-ROM including drivers, utilities, and the manual files.

>>> 1.6 Product View

External antenna connectors
Connect to external antennas for enhanced data transmission and reception. The external antennas are well designed on the desktop or notebook computers.



Golden Finger

2 Hardware Installation

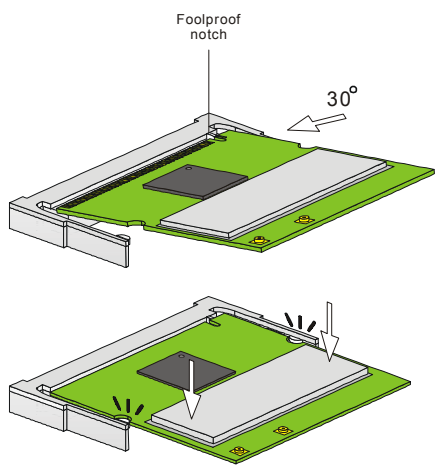
The following diagrams provide you a basic installation for your wireless LAN adapter, including how to install and remove the MiniPCI card. The instruction below is suitable for most computers with MiniPCI slot. For more information about the MiniPCI module, please refer to your computer's manual.

>>> 2.1 Installing the Wireless LAN Adapter

1. Locate the MiniPCI slot on the mainboard.

2. Place the MP54G over the MiniPCI slot (at an angle of 30 degrees). Then, gently insert it into the slot until the golden finger of the card gets fully inserted.

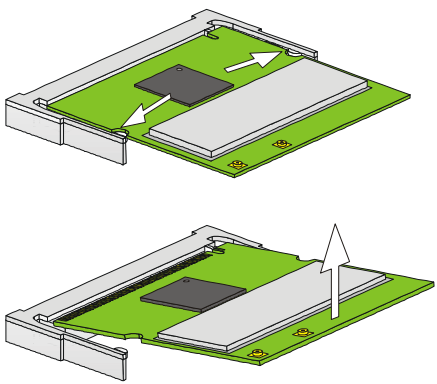
3. Press down the card, and the retaining clips (on two sides of the slot) will lock onto the notches of the card.



>>> 2.2 Removing the Wireless LAN Adapter

1. Locate the MiniPCI slot with MP54G installed.

2. Press the retaining clips outwards, and the card should bound upwards slightly after being released from the slot.
3. Remove the card from the MiniPCI slot carefully.



3 Software Installation

This chapter describes the procedures of installing the driver and utility. Follow the instruction step by step to finish the installation. If you use Windows® 98SE/ME, please prepare the Windows® Setup CD at hand before installing the driver; because the system will ask you to insert the Setup CD to copy files during the installation.

Please **NOTE** that the wireless LAN adapter should be installed into your computer before installing the driver and utility. Then, the operating system will detect a new device and start to configure the new device. Click ***Cancel*** here to start installation from the InstallShield Wizard.

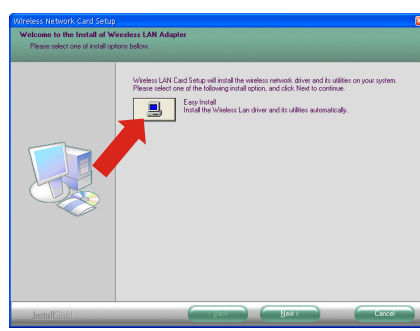
Tip: *The wireless LAN adapter should be installed into your PC before installing the driver and utility.*

Step 1. Insert the software CD into your CD-ROM drive, and the Setup program should launch automatically.

If the Autorun program doesn't launch automatically, click **Start** at the taskbar and select **Run...**. Type ***E:\setup.exe*** (where ***E*** is your CD-drive) in the Open box and click ***OK*** to launch the Setup program manually.

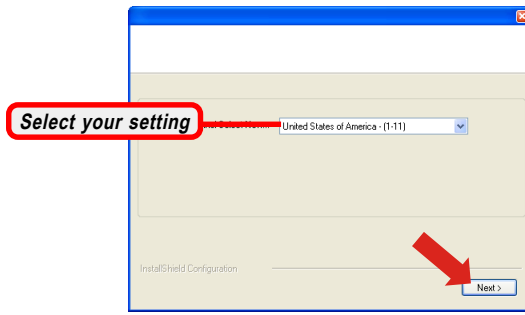
The main screen of Setup program will appear as below. Click the **Install Software** button.

Step 2. The Setup screen of InstallShield Wizard appears. Click the **Easy Install** button.

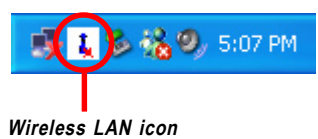


Step 3. The Setup program will copy the required files to the system. Please wait...

When completed, the following screen appears, allowing you to select the channel setting. Select your setting and click ***Next***.



Step 4. Click ***Finish*** when the installation is completed. The **Wireless LAN** icon will appear in the status area.

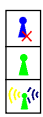


4 Wireless Network Utility

After installing the driver, the wireless LAN adapter provides a convenient and powerful utility that allows you to set up, configure, and know your networking status easily and clearly.

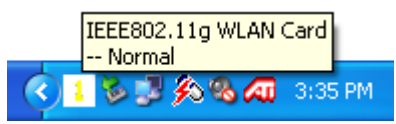
>>> 4.1 Introduction

The Wireless LAN icon

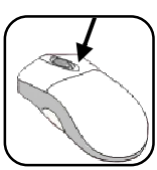


- Not connected to the network.
- Connected to the network.
- Receiving/transmitting data from/to the network.

When you move the mouse over the icon, it shows the current connection information.



Right-clicking the icon will bring up a sub-menu containing more settings:



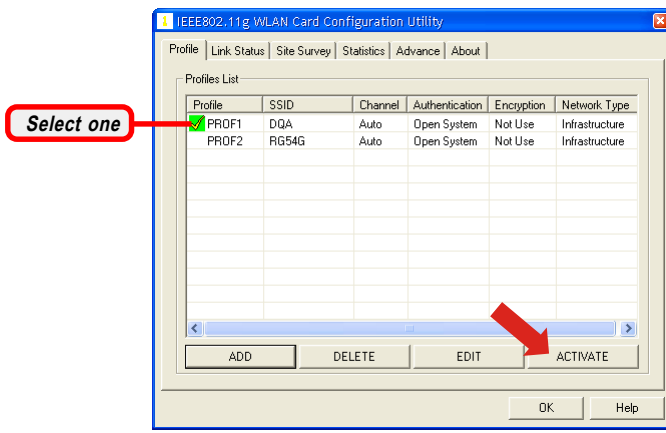
Launch Config Utilities
Select this item to launch the utility.

Exit
Close the program.

Double-click the Wireless LAN icon (or right-click and then select **Launch Config Utilities**) to launch the Configuration Utility.

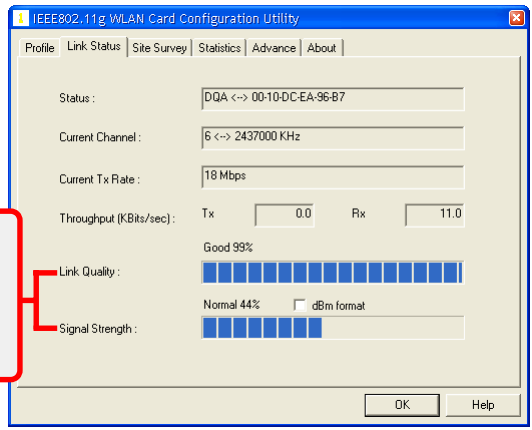
4.2.1 Profile

you can setup the profile for available networks under the **Site Survey** tab. After setting the profile, you can easily connect to the network by clicking the **ACTIVATE** button.



4.2.2 Link Status

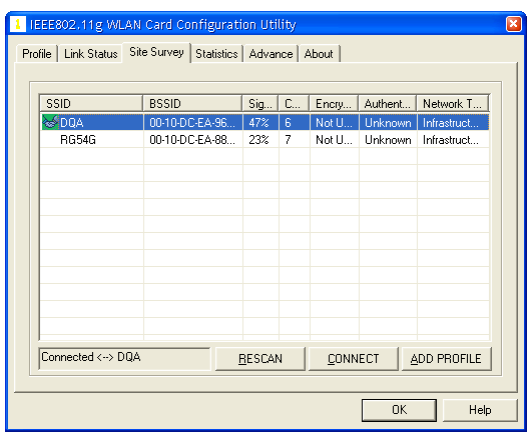
You can monitor the network status in this tab, including the connection status, channel, rate, link quality, and signal strength.



Signal Strength:
shows the received signal strength level.
Link Quality:
shows the measured signal level and connection status.

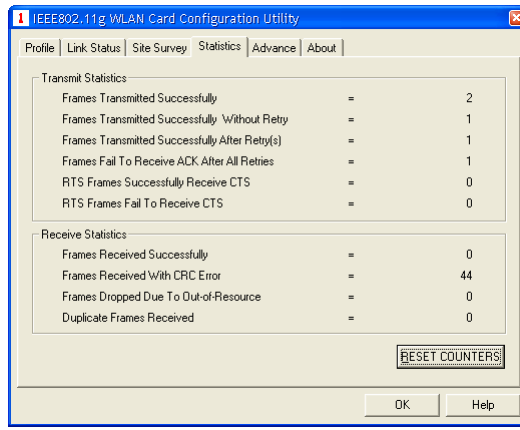
4.2.3 Site Survey

In this tab, click **RESCAN** to search the available networks. Click **CONNECT** to build connection to the selected network. The **ADD PROFILE** button allows you to setup a profile for selected network.



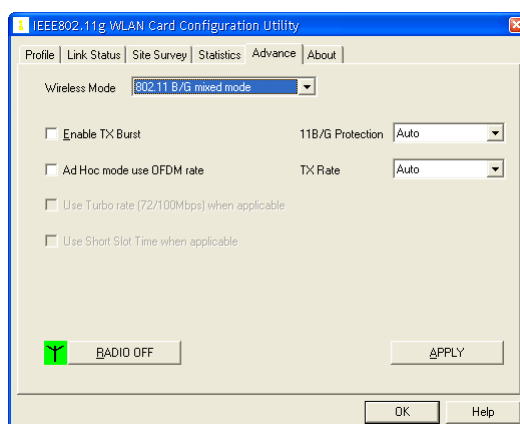
4.2.4 Statistics

This tab contains the information of Transmit Statistics and Receive Statistics. Click the **RESET COUNTERS** to refresh the results.



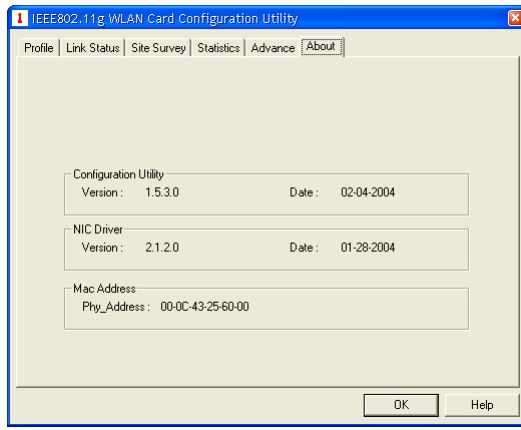
4.2.5 Advance

You can configure the advanced settings in this tab, such as selecting the wireless mod and turning on/off radio.



4.2.6 About

In this tab, you can get some information about the wireless LAN adapter.



5 Networking Basics

This chapter describes how to prepare for connection to network and some basic outline of networking basics, including sharing files, printing from a computer on the network, or accessing the Internet on multiple computers with one connection.

>>> 5.1 Checking the Network Elements

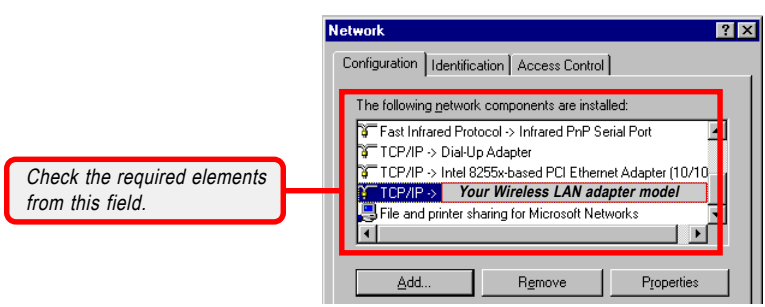
The following elements are required for all computers if you want to connect to a network:

- Client for Microsoft Network
- TCP/IP
- File and printer sharing for Microsoft Networks

To check the required elements are installed in the system, you can:

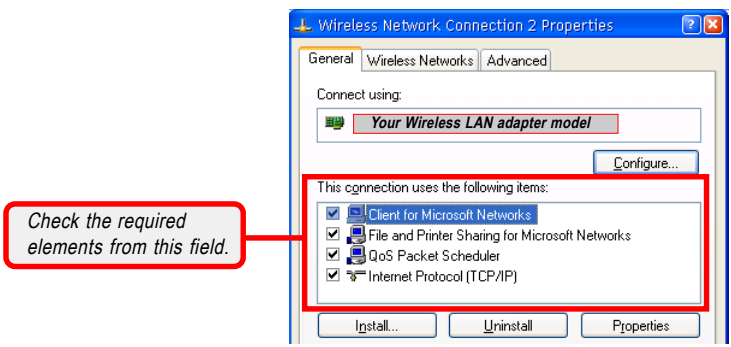
- **Under Windows 98SE/ME**

  1. Click **Start** and choose **Settings**; then, click **Control Panel** to open the **Control Panel** window.
  2. Double-click the **Network** icon.
  3. The **Network** window appears to show the current network settings of the system.



Under Windows 2000/XP

1. Click **Start** and choose **Control Panel** to open the **Control Panel** window.
2. Double-click the **Network Connection** icon to open the **Network Connection** window.
3. Right-click the **Wireless Network Connection** icon and click **Properties** from the shortcut menu.
4. The **Wireless Network Connection Properties** window appears to show the current network settings of the system.

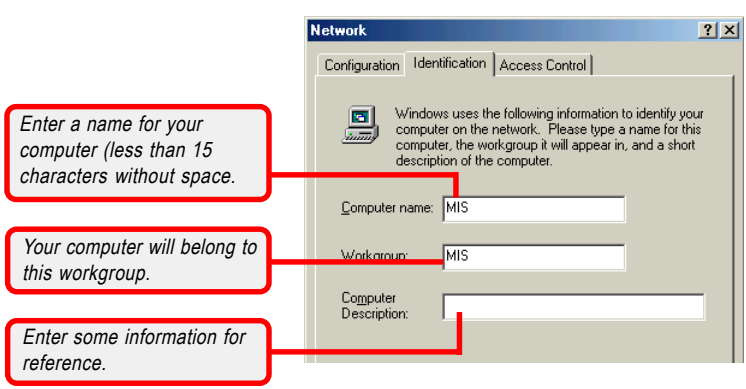


>>> 5.2 Computer Identification

Please verify that each computer has a unique name and common workgroup name, if you had previously given your Windows 98SE/ME/2000/XP computers names.

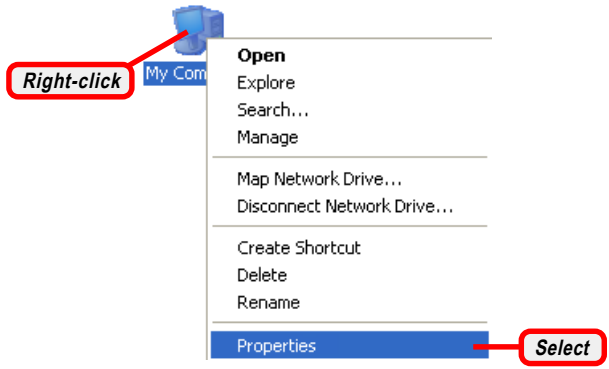
- **Under Windows 98SE/ME**

1. Open the **Network** window as described in previous section, and choose **Identification** tab.
2. Type a name for the computer In the **Computer name** box. This will be the name of this computer used by other computers on your network to communicate with. Please **NOTE** that each computer's name must be unique on a particular network to avoid confusion.
3. Type the workgroup name that the computer will belong to in the **Workgroup** box. All the computers on your network should have an identical Workgroup name.
4. The **Computer Description** box is optional. You may enter a description that helps to identify this computer on your network. Then, click ***OK***.
5. Repeat the procedure above for each computer on your network to ensure that they all have unique Computer Name and identical Workgroup.

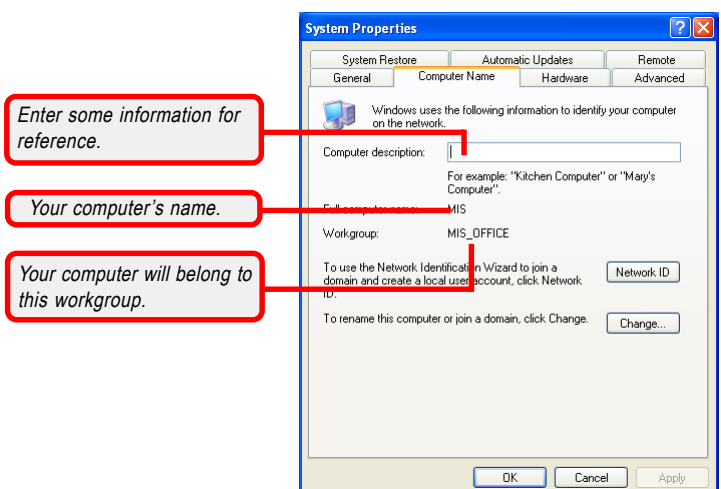


- **Under Windows 2000/XP**

  1. Right-click **My Computer** icon on your Windows desktop, and click ***Properties*** from the shortcut menu.

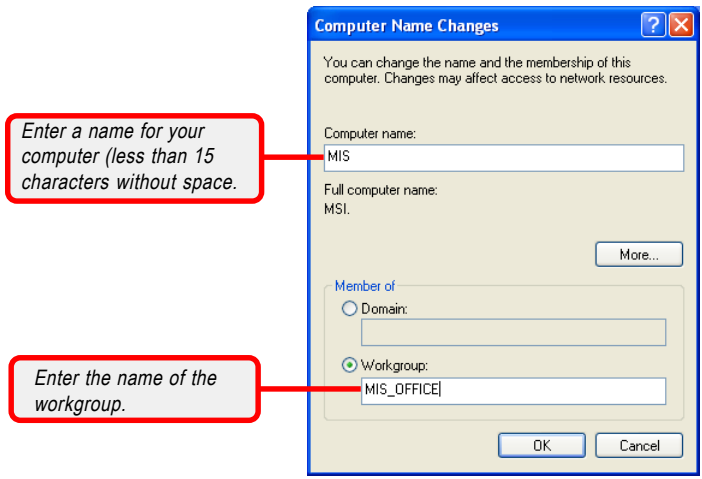


  2. The **System Properties** window appears; choose **Computer Name** tab.



3. To rename the computer and join a workgroup/ domain, click ***Change***.

4. The **Computer Name Changes** window appears as below. Enter a **Computer Name**, select Workgroup and enter the name of your workgroup. Please **NOTE** that each computer's name must be unique on a particular network to avoid confusion.



5. Click ***OK*** to save changes.

>>> 5.3 Configuring a Dynamic/Fixed IP Address

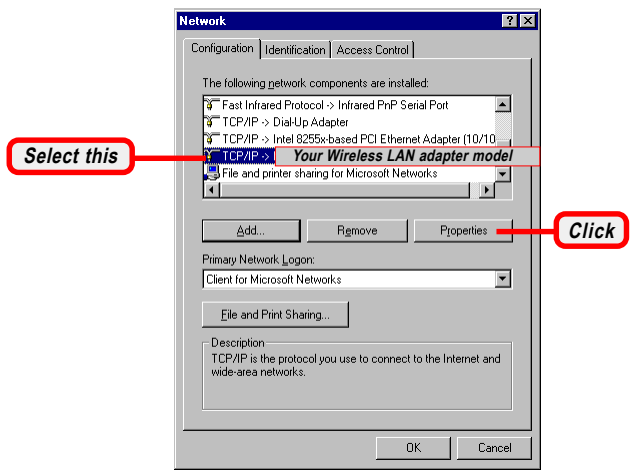
When the drivers are installed, the default setting here is set to obtain IP dynamically through a DHCP server. If you want to change the settings, please follow the steps below:

- **Under Windows 98SE/ME**

  1. Go to **Start -> Settings -> Control Panel**.

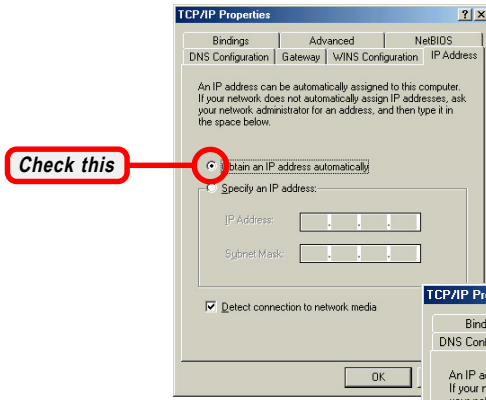
  2. Double-click the **Network** icon.

  3. The Network window appears as below. Select **TCP/IP ->** (your Wireless LAN adapter model), and click ***Properties*** to bring up the **TCP/IP Properties** window.

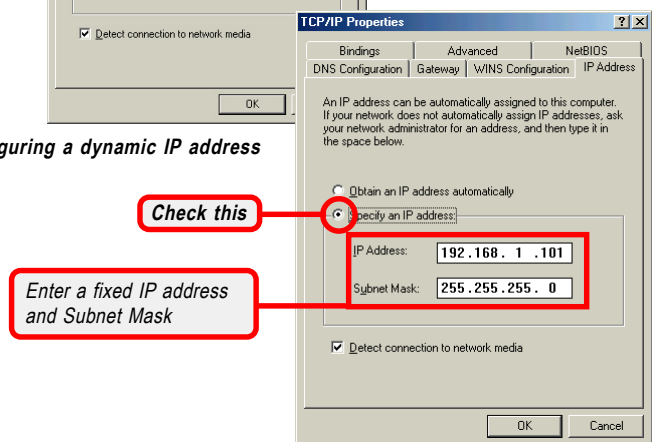


  4.a To configure a dynamic IP address, choose **IP Address** tab and check the **Obtain an IP Address Automatically** option.

  4.b To configure a fixed IP address, choose **IP Address** tab and check the **Specify an IP Address** option. Then, enter an IP address into the empty field. Suggested IP Address Range is ***192.168.1.1*** to ***192.168.1.253***, and suggested Subnet Mask is ***255.255.255.0***.



4.a Configuring a dynamic IP address

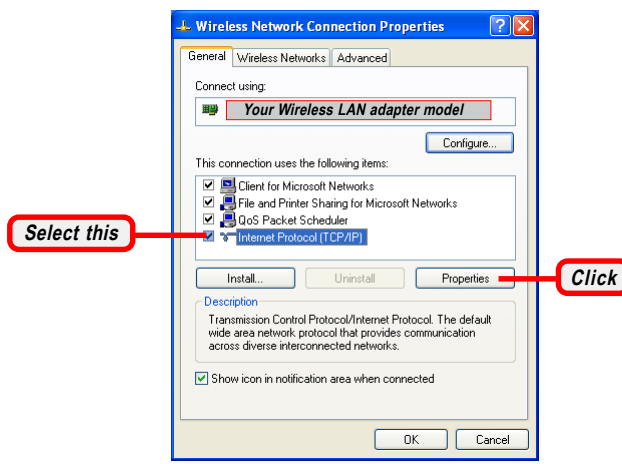


4.b Configuring a fixed IP address

5. Click ***OK***. Then, click ***Yes*** when prompted to reboot the computer.

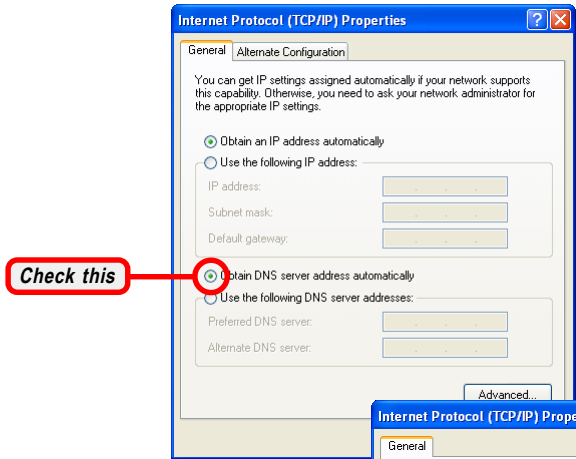
Under Windows 2000/XP

1. Click **Start** and choose **Control Panel** to open the **Control Panel** window.
2. Double-click the **Network Connection** icon to open the **Network Connection** window.
3. Right-click the **IEEE802.11g Wireless MiniPCI Adapter** icon and click ***Properties*** from the shortcut menu.
4. When the **Wireless Network Connection Properties** window appears, choose **General** tab and select **Internet Protocol [TCP/IP]**, and click ***Properties*** to bring up the **Internet Protocol [TCP/IP] Properties** window.

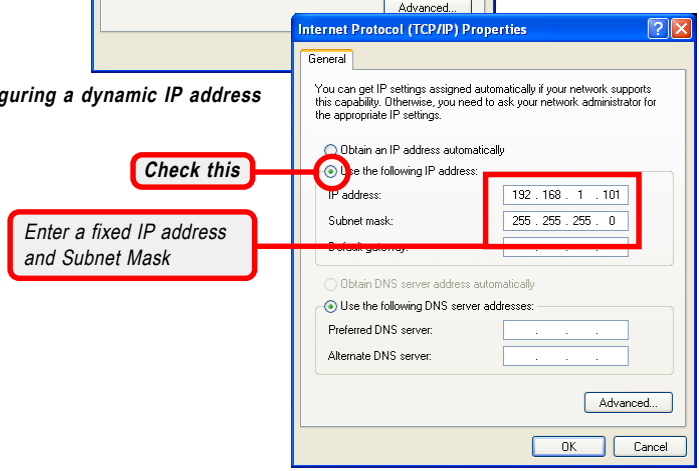


5.*a* To configure a dynamic IP address, check the **Obtain an IP Address Automatically** option.

5.*b* To configure a fixed IP address, check the **Use the following IP address** option. Then, enter an IP address into the empty field. Suggested IP Address Range is ***192.168.1.1*** to ***192.168.1.253***, and suggested Subnet Mask is ***255.255.255.0***.



5.a Configuring a dynamic IP address



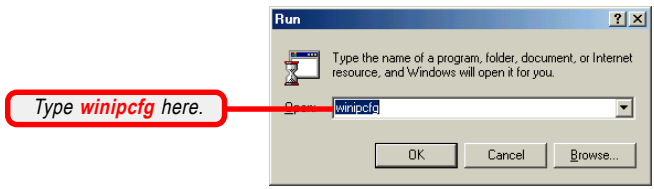
5.b Configuring a fixed IP address

6. Click ***OK*** to complete the configuration.

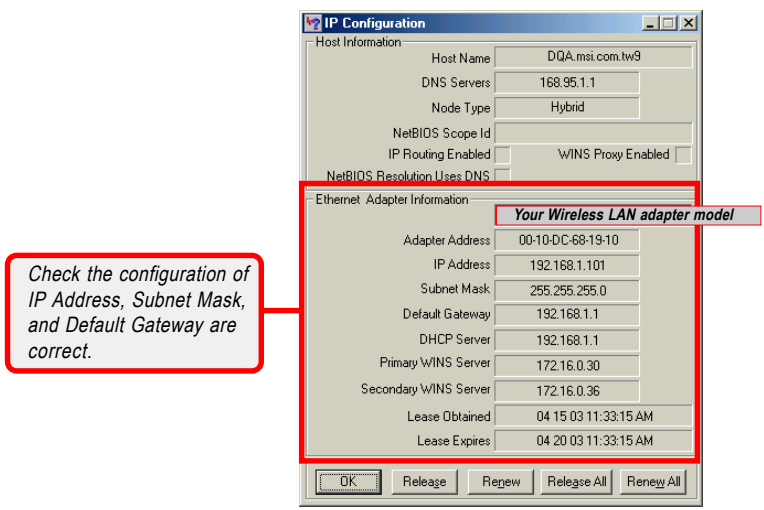
>>> 5.4 Checking TCP/IP Address

Under Windows 98SE/ME

1. Go to **Start -> Run...**.
2. Type ***winipcfg*** in the Open box and click ***OK***.

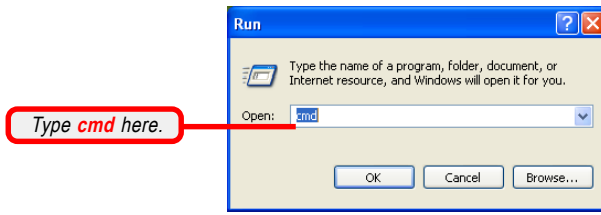


3. The **IP Configuration** screen will appear, click ***More Info*** to bring up a screen containing detail information of your wireless network adapter.

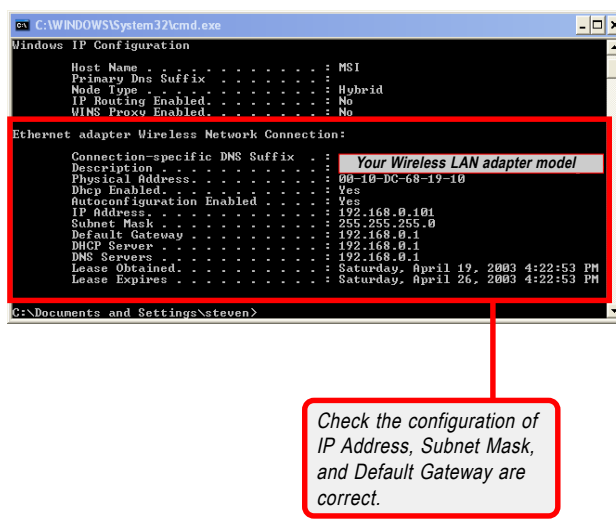


Under Windows 2000/XP

1. Go to **Start -> Run...**.
2. Type ***cmd*** in the Open box and click ***OK***.

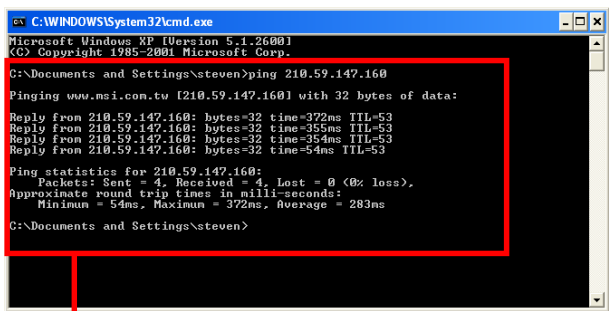


3. A DOS prompt window appears. Type ***ipconfig/all*** and press [**Enter**] to display IP information.



>>> 5.5 Checking Connection by Pinging

1. Go to **Start -> Run...**.
2. Type ***command*** (Windows 98SE/ME) or ***cmd*** (Windows 2000/XP) in the Open box and click ***OK***.
3. A DOS prompt window appears. Type ***ping 210.59.147.160*** (or any URL address), which is the IP address of the Gateway in this case, and press [**Enter**].

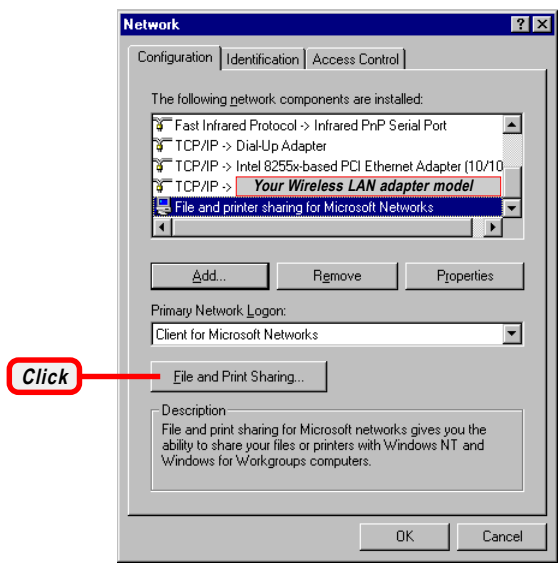


You will get reply if the pinging is successful.

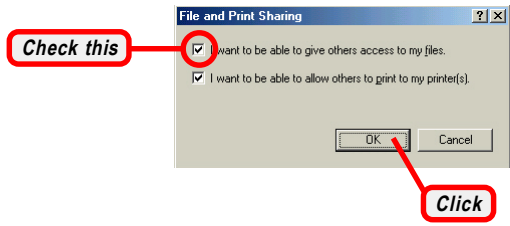
>>> 5.6 Sharing Files

You may now open and save files on other computers once your computers are connected together on a network. You will also be able to specify particular folders or disk drives to share and even password to protect them. Please verify that each computer has a unique name and common workgroup name, if you had previously given your Windows® 98SE/ME/2000/XP computers names. Follow the steps below to share specific files and folders with other computers on your network.

1. On your Windows desktop, right-click **My Network Place** icon and select ***Properties*** from the shortcut menu.
2. You will configure your computers network settings in this dialog. It is also available through the **Network** icon in the **Control Panel**.
3. Click the **File and Print Sharing** option.



4. Select the **I want to be able to give others access to my files** option, and click ***OK***.



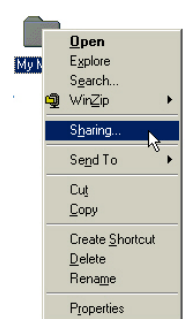
5. Click ***OK*** in the Network dialog box.

6. Provide the Windows Setup CD or direct the path to the proper location of the installation files if prompted. Then, reboot if prompted.

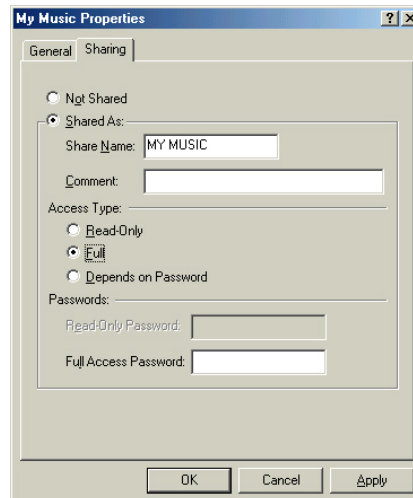
7. Now you can identify a particular folder or disk drive to share, which means you can share a folder that both you and your family member/colleague needs to access occasionally. You can also share your CD-ROM drive for others to use if your other computers do not have one. Both of these processes are the same. Only the disk drives and folders that you specifically identify as shared will be accessible to other computers on your network.

8. Locate the disk drive or folder you want to share in Windows Explore or My Computer icon on your desktop.

9. Right-click the disk drive or folder and select **Sharing**.



10. Select the ***Share As*** option to set the parameters for sharing this particular disk drive or folder.



Share Name
This is used to identify the disk drive or folder you are sharing to other computers in the network, which can be helpful as more resources in your network for others.

Comment
This field is optional, which can be used to further describe the disk drive or folder for others in the network.

Access Type
This option allows you to designate how much someone else can do with this shared disk drive or folder. Setting options are:

- ***Read-Only:*** *only allows others to look at or open the files in the disk drive or folder.*
- ***Full:*** *allows others to read, write, open, save, copy, move, and even delete files.*
- ***Depends on Password:*** *gives other computers access conditional on the password they provide.*

Password
This option allows you to apply a level of security to your shared disk drive and folder. Any other computer (user) will be asked to enter the password you set here before accessing the disk drive or folder. Two passwords are used to give two levels of security (or access) to others in the network using the ***Depends on Password*** setting. Leaving the Password boxes empty will give everyone in the network access to the disk drive or folder.

11. Click ***OK*** to continue. You will be prompted to type the password(s) you provided for verification. Type the password(s) just as you typed them again.

12. Now you may access this disk drive or folder from another computer in your network. You may do so by double-clicking the **My Network Place** icon on your Windows desktop or inside Windows Explorer.

13. Navigate to the computer with the shared disk drive or folder (recognized by the Computer Name you provided), and double-click it. If you specified a password when sharing this disk drive or folder, you will be asked for the password.

14. You can access a disk drive of folder shared over the network from most Windows 98SE/ME/2000/XP applications. you can map these disk drives and folders to a drive letter on another computer to make this process easier. For example, on a computer where you are accessing a shared folder from another computer, inside Windows Explorer right-click and select the **Map Network Drive** option. Now you are able to assign an available drive letter. Checking the **Reconnect at logon** option allows Windows to map this network drive each time when you start your computer.