

TEW-310APB

TEW-310APBX

2.4 GHz Wireless Access Point + Bridge

User's Guide

Rev. 11222002

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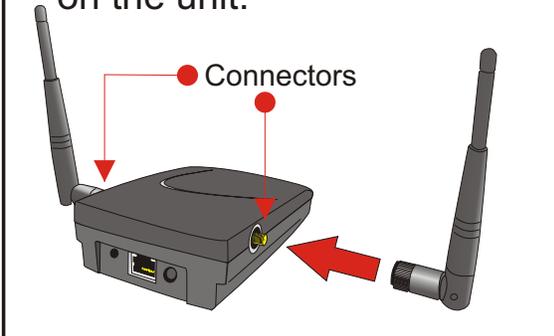
NOTE

Note: TEW-310APBX functions just like TEW-310APB and the configuration procedures are the same as the TEW-310APB. The only difference between the two models is the TEW-310APBX comes with 2 detachable antennas. Below is the antenna installation instruction.

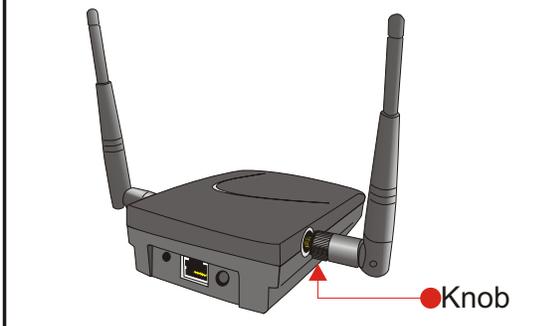
1 Locate the two antennas inside the box.



2 Locate antenna connectors on the unit.



3 Screw in antenna by turning the knob clockwise.



4 The antenna should fit securely in place.



Replacing the antenna with high gain antenna

You can also replace one of the antennas with a higher gain TRENDnet antenna (4dBi Indoor Omni Directional, 6dBi Indoor Patch Directional, or 14dBi Outdoor Directional). At default, both antennas are transmitting/receiving data. When installing the high gain antenna, you can choose to install it on either the left or right antenna position. After that, go to the Access Point's configuration page, select "Advanced Settings", and at the bottom of the page, select the desired antenna position.

1. Package Contents



Fig. 1.1
TEW-310APB



Fig. 1.2
TEW-310APBX

Contents

- **TEW-310APB/TEW-310APBX** Enhanced 2.4GHz Wireless Access Point
- 2 Detachable Antennas (TEW-310APBX only)
- Power Supply 5V DC, 2.0A
- Manual on CD
- Quick Installation Guide
- Ethernet Cable

Note: Using a power supply with a different voltage rating than the one included with the TEW-310APB will cause damage and void the warranty for
If any of the above items are missing, please contact your reseller.

System Requirements

- Computer with Windows, Macintosh, or Linux-based operating system with an installed Ethernet adapter
- Internet Explorer or Netscape Navigator version 4.0 or above, with JavaScript enabled

2. Introduction

TEW-310APB Wireless Access Point is an enhanced 802.11b high-performance, wireless access point. It is an ideal way to extend the reach and number of computers connected to your wireless network.

Unlike most 802.11b access points, the TEW-310APB is capable of data transfer speeds up to 22 Mbps (compared to the standard 11 Mbps) when used with other TRENDnet products such as the TEW-301PC PCMCIA CardBus Adapter and TEW-303PI Wireless PCI Adapter.

After completing the steps outlined in the *Quick Installation Guide* (included in your package) you will have the ability to share information and resources, such as files and printers, and enjoy the freedom that wireless networking delivers.

The TEW-310APB is compatible with most popular operating systems, including Macintosh, Linux and Windows, and can be integrated into a large network. This Manual is designed to help you connect the Access Point and the TRENDnet 2.4GHz Wireless Adapters into a network in Infrastructure mode. *Please take a look at the **Getting Started** section in this manual to see an example of an Infrastructure network using the TEW-310APB.*

This manual provides a quick introduction to wireless technology and its application as it relates to networking. Please take a moment to read through this manual and get acquainted with wireless technology.

Connections

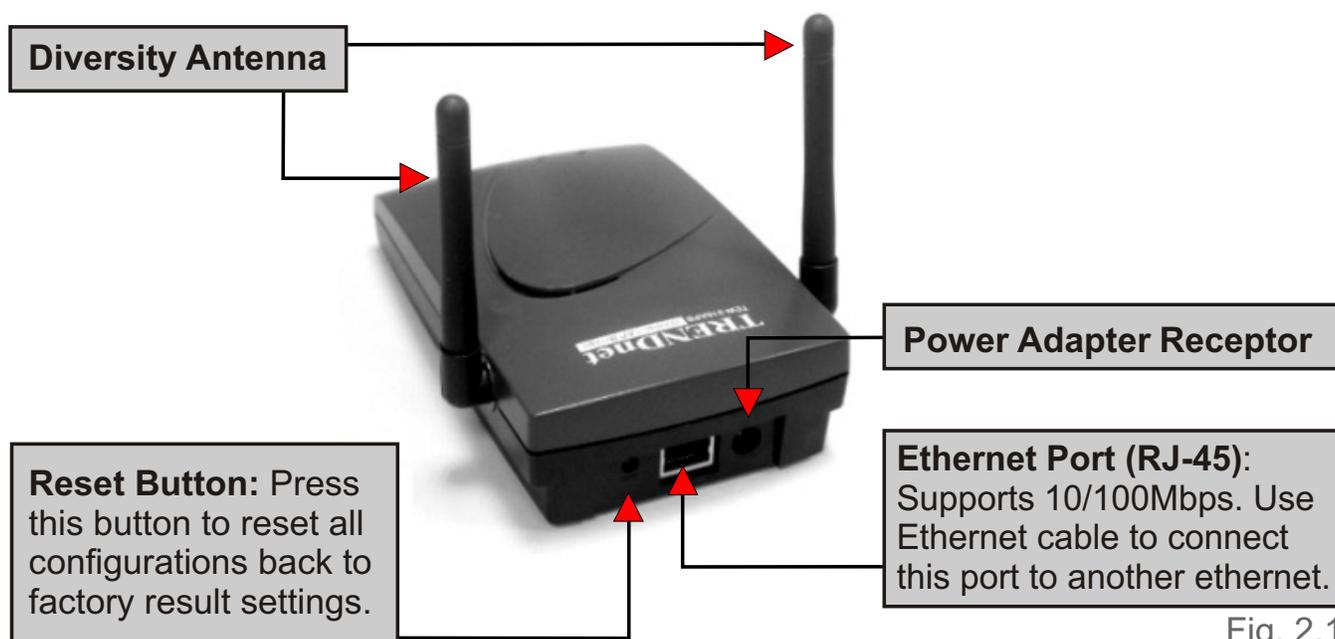


Fig. 2.1

Features and Benefits

- Up to 2X Faster than regular 802.11b Products - high-speed wireless data transfer rates up to 22Mbps. With twice the data rate and capacity, the TEW-310APB delivers media rich content such as digital images, videos, and MP3 files much faster than standard 802.11b networks
- Fully 802.11b Compatible Fully compatible with the IEEE 802.11b standard and interoperable with all existing 802.11b compliant devices
- Improved Performance Up to 20% faster data transfer rates on standard 802.11b networks
- Stronger Network Security with 256-bit WEP Encryption Supports 64/128/256-bit WEP encryption for higher level of security for your data and wireless communication than encryption found in existing 802.11b products
- Built-in DHCP Server If enabled, it will automatically assign IP addresses to wireless clients in a temporary network.
- Web-based interface for Managing and Configuring Easy-to-use interface independent of the operating system
- 4 Different Operation Modes Capable of operating in one of four different operation modes to meet your wireless networking requirements: Access Point, AP-to-AP Bridging, AP-to-Multipoint Bridging, and Wireless Client.

LED Indicators

LED stands for **L**ight-**E**mitting-**D**iode. The TEW-310APB has three LEDs:



Fig. 2.2

Power - Solid red light indicates receiving power

TX/RX (Wireless Network) - Solid green light indicates wireless connection enabled, blinking green indicates wireless network activity

Link (Ethernet Port) - Solid green light indicates good Ethernet connection on the RJ-45 port, blinking green indicates Ethernet port activity

3. Wireless Basics

TRENDware wireless products are based on industry standards to provide easy-to-use and compatible high-speed wireless connectivity within your home, business or wherever a wireless network is available. Strictly adhering to the IEEE standard, the TRENDware wireless family of products will allow you to access the data you want, when and where you want it. No longer will you be limited to one location or forced to run new wiring through your home or office. You will be able to enjoy the freedom that wireless networking delivers.

A wireless local area network (WLAN) is a cellular computer network that transmits and receives data with radio signals instead of wires. Wireless LANs are used increasingly in both home and office environments, and public areas such as airports, coffee shops and universities. Innovative ways to utilize WLAN technology are helping people to work and communicate more efficiently. Increased mobility with the absence of cabling and other fixed infrastructure have proven to be beneficial for many users.

Wireless users can use the same applications they use on a wired network. Wireless adapter cards used on laptop and desktop systems, support the same protocols as Ethernet adapter cards. For most users, there is no noticeable functional difference between a wired Ethernet desktop computer and a wireless computer equipped with a wireless adapter other than the added benefit of the ability to roam within a wireless-cell. Under many circumstances, it may be desirable for mobile network devices to link to a conventional Ethernet LAN in order to use servers, printers or an Internet connection supplied through the wired LAN. A Wireless Access Point (AP) is a device used to provide this link.

People use wireless LAN technology for many different purposes.

- **Mobility** - Productivity increases when people have access to data in any location within the operating range of the WLAN. Management decisions based on real-time information can significantly improve worker efficiency.
- **Low Implementation Costs** WLANs (Wireless Local Area Networks) are easy to set up, manage, change and relocate. Networks that frequently change, both physically and logically, can benefit from WLANs ease of implementation. WLANs can operate in locations where installation of wiring may be impractical.
- **Installation Speed and Simplicity** - Installing a wireless LAN system can be fast and easy and can eliminate the need to install cable through walls and ceilings.

- **Network Expansion** - Wireless technology allows the network to go where wires cannot go.
- **Reduced Cost-of-Ownership** - While the initial investment required for Wireless LAN hardware might be higher than the cost of wired LAN hardware, overall installation expenses and life-cycle costs will be significantly lower. Long-term cost benefits are greatest in dynamic environments requiring frequent moves, adds, and changes.
- **Scalability** - Wireless Local Area Networks (WLANs) can be configured in a variety of topologies to meet the needs of specific applications and installations. Configurations are easily changed and range from peer-to-peer networks suitable for a small number of users to full infrastructure networks of thousands of users that allow roaming over a broad area.

TRENDware Wireless Family of LAN products include:

- 2.4GHz Wireless LAN PCI Network Adapter (**TEW-301PC**)
- 2.4GHz Wireless LAN CompactFlash Network Adapter (**TEW-302CF**)
- 2.4GHz Wireless LAN PCI Adapter (**TEW-303PI**)
- 2.4GHz Wireless LAN USB Network Adapter (**TEW-304UB**)
- Wireless Access Point + Wireless Bridge (**TEW-310APB**)
- Wireless Internet Router/Access Point (**TEW-311BRP**)

Standards - Based Technology

The IEEE802.11b standard-based technology assures that the TRENDware Products are interoperable with existing compatible 2.4GHz wireless technology. This means you will be able to transfer large files quickly or even watch a movie in MPEG format over your network without noticeable delays. The technology works by using multiple frequencies in the 2.4GHz range at speeds up to 22Mbps. TRENDware products will automatically sense the best possible connection speed to ensure the greatest speed and range possible with the technology.

Installation Considerations

Designed to go up to 1,312 feet (400 meters) outdoors and up to 328 feet (100 meters) indoors, the TRENDware TEW-310APB lets you access your network with your laptop computer from virtually anywhere. Keep in mind, However, that the number, thickness, and location of walls, ceilings or other

objects that the wireless signal must pass thru may limit range. Typical ranges vary depending on the types of materials and any background RF (radio frequency) noise in your home or business. The key to maximizing range is to follow these basic guidelines:

1. Keep the number of walls and ceilings between the wireless Access Point and your receiving device to a minimum - Each wall or ceiling can reduce your TRENDnet Wireless product's range from 3-90 feet (1-30 meters.) Position your Access Points, Internet Routers, and computers so that the number of walls or ceilings is minimized.
2. Be aware of the direct line between Access Points, Internet Routers, and computers. A wall that is 1.5 feet thick (.5 meters), at a 45-degree angle appears to be almost 3 feet (1 meter) thick. At a 2-degree angle it looks over 42 feet (14 meters) thick! Try to make sure that the Access Points and Adapters are positioned so that the signal will travel straight through a wall or ceiling for better reception.
3. Building Materials make a difference - A solid metal door or aluminum studs may have a negative effect on range. Try to position Access Points, and computers with wireless adapters so that the signal passes through drywall or open doorways and not other materials.
4. Make sure that the device's antenna is positioned for best reception by using the software signal strength tools included with your product.
5. Keep your product away (at least 3-6 feet or 1-2 meters) from electrical devices or appliances that may generate extreme RF noise.

For the average home, signal range should not be an issue. If you experience low or no signal strength in areas of your home that you wish to access, consider positioning the Access Point in a location directly between the computers with wireless adapters. Additional Access Points can be connected to provide better coverage in rooms where the signal does not appear as strong as desired.

Using radio frequency (RF) technology, WLANs (Wireless Local Area Networks) transmit and receive data over the air, minimizing the need for wired connections. Thus, WLANs combine data connectivity with user mobility, and, through simplified configuration, enable movable LANs.

4. Getting Started

Right out of the box, with its default settings, the TEW-310APB will automatically connect with other TRENDnet products.

For the price of a single IP Address from your Broadband Internet Service provider you can share the Internet with all the computers on your local network, without sacrificing speed or security, using TRENDware networking products.

IP ADDRESS

Please note: If you have a DHCP-capable router, please configure the TEW-310APB to disable its DHCP Server and enable its DHCP Client

If you need to assign IP Addresses to the computers on the network, please remember that the **IP Address for each computer must be in the same IP Address range as all the computers in the network**, and the Subnet mask must be exactly the same for all the computers in the network.

For example: If the first computer is assigned an IP Address of 192.168.0.2 with a Subnet Mask of 255.255.255.0, then the second computer can be assigned an IP Address of 192.168.0.3 with a Subnet Mask of 255.255.255.0, etc.

IMPORTANT: If computers or other devices are assigned the same IP Address, one or more of the devices may not be visible on the network.

An **Infrastructure** network contains an Access Point. The **Infrastructure Network** example shown on the below contains the following TRENDnet network devices:

- Wireless Access Point (**TEW-310APB**) (*DHCP enabled at default*)
- Ethernet Broadband Router (**TW100-S4W1CA**) (*DHCP enabled at default*)
- Notebook computer with a wireless adapter (**TEW-301PC**)
- Desktop computer with a wireless adapter (**TEW-303PI**)
- Cable modem or DSL Modem

DHCP stands for *Dynamic Host Configuration Protocol*. It is a protocol for assigning dynamic IP addresses “automatically”. With a DHCP-capable gateway/router, there is no need to manually assign an IP address to each computer in the network.

Setting Up an Infrastructure Network

Please remember that **TRENDware** wireless devices are pre-configured to connect together, right out of the box, with the default settings.

- 1 You will need a broadband Internet access (Cable/DSL) subscription.
- 2 Consult with your Cable/DSL provider for proper installation of the modem.
- 3 Configure **TEW-310APB**. Refer to the **Quick Installation Guide** for setting up the Access Point.
Note: If you already have a DHCP server (e.g. Internet Router) on the network, please disable the DHCP Server function on the TEW-310APB.
- 4 If you are connecting a desktop computer in your network, you can install the **TRENDnet TEW-303PI** wireless PCI adapter into an available PCI slot. See the **Quick Installation Guide** included with the TEW-303PI
- 5 If you are connecting a Notebook computer in the network, install the drivers for the TEW-301PC wireless CardBus adapter into the laptop computer. See the **Quick Installation Guide** included with TEW-301PI for installation instructions.
- 6 After the configuration, connect the Access Point to your network. If you have an Internet Router, connect it to the cable/DSL

Please refer to the following sections of this manual for additional information about setting up a network:

Networking Basics- learn how to check your IP Address; share printers and files.

Using the Configuration Utility- learn the settings you must use on each computer in your network for successful communication.

Troubleshooting learn how to check for the proper installation of the network adapters' drivers and other tips for troubleshooting the network.

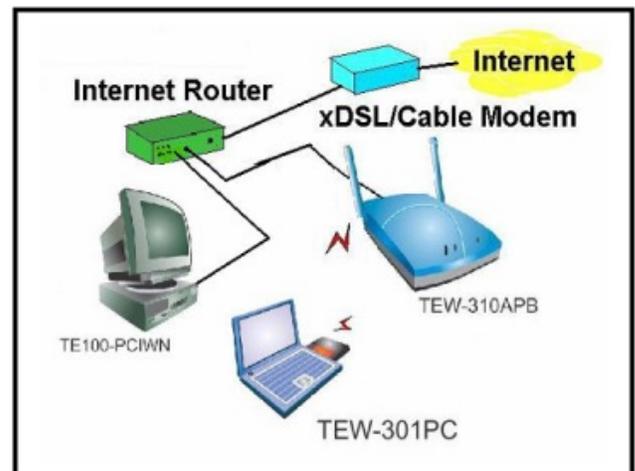


Fig. 4.1

5. Using the Configuration Menu

The **Configuration Menu** for the TEW-310APB is web-based. When using the configuration program, please consider the following:

- You will need a JavaScript-enabled web-browser such as the Internet Explorer 4.0 or higher, or the Netscape Navigator 4.0 or higher.
- The computer that you are using for initial configuration must setup to receive IP address from DHCP server (or have an IP Address within the same range as the IP Address of the TEW-310APB). The TEW-310APB has a default IP Address of 192.168.1.1 with subnet mask 255.255.255.0 and DHCP Server function enabled.
- If you are using an Internet router with its DHCP server enabled, please do not connect the TEW-310APB to the network. You will need to configure the TEW-310APB, disable its DHCP Server and enable the DHCP Client.
- If you have static IP address for each network device, please prepare a computer with DHCP client enabled and use this computer to configure the TEW-310APB's IP address to fit your network.

Factory Default Setting for the TEW-310APB

ESSID	default
Channel	1
WEP	disabled
User Name	admin
Password	admin
IP Address	192.168.1.1
DHCP Server	enabled
DHCP Client	disabled

Configuration Menu

Whenever you want to configure your network or the TEW-310APB, you can access the Configuration Utility by opening the web-browser and typing in the IP Address of the TEW-310APB. The TEW-310APB default IP Address is shown in Fig 5.1.

- Open the web browser
- Type in the **IP Address** of the Access Point
(default http://**192.168.1.1**)



Fig. 5.1

(The IP Address shown in the example above is the default setting. Use this IP address when connecting to a network consisting of other TRENDnet devices set to their default settings. If you have changed the IP Address of the TEW-310APB to conform to a network other than one with TRENDnet devices, at their default setting, then input that IP Address in the web browser, instead of the default IP Address shown.)

- Type **admin** in the **User Name** field
- Type in **admin** in the **Password** field
- Click **OK**



Fig. 5.2

Status Screen with Menu Bar

The Configuration window will appear. Here the **Status** tab is displayed. Click on **View Log** to see the wireless clients connection history.

First Page - displays the first page of the Log

Last Page - displays the last page of the Log

Previous - moves back one log page

Next - moves forward one log page

Clear - clears the log completely

Refresh - updates the log with the latest information

If you wish to change the default settings, click on **Basic Setting** on the menu bar.

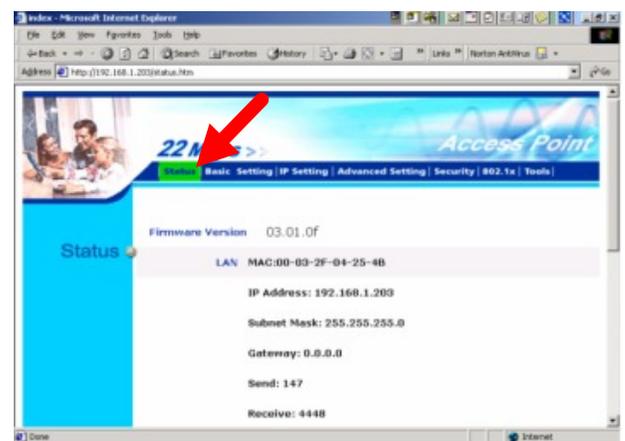


Fig. 5.3

Basic Settings

you can make changes to the following items:

- AP name
- SSID
- Channel
- WEP Key
- Mode

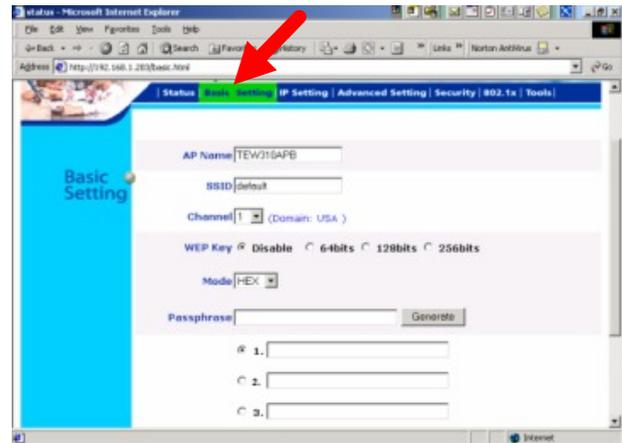


Fig. 5.4

AP Name: You may choose to rename your Access Point, especially if you have more than one Access Point on your network.

SSID: (Service Set Identifier) “default” is the factory setting. The SSID is a unique name that identifies a network. All devices on a network must share the same SSID name in order to communicate on the network. If you choose to change the SSID from the default setting, input your new SSID name in this field. The SSID can be up to 32 characters in length.

Channel: Channel 1 is the default channel. Input a new number if you want to change the default setting. All devices on the network must be set to the same channel to communicate on the network.

WEP Encryption: Select **64-bit, 128-bit, or 256-bit** to use **WEP (Wired Equivalent Privacy)** on the network. All devices on the network, and the Access Point, must share the same level WEP, and they must share the same WEP key.

Mode: The WEP key is generated from **ASCII** or **HEX** (Hexadecimal) entries that are either 64, 128, or 256 bit in length. Select **HEX** for entering HEX numbers 0 ~ 9 and alphabet A ~ F. Or select **ASCII** for entering any ASCII characters. The number of characters that you can enter is depending on the level of WEP Key. The higher the WEP key level, the more characters you need to enter for the keys. For 64-bit key, you need to enter 10 HEX or 5 ASCII characters. 128-bit requires 26 HEX or 13 ASCII characters. 256-bit WEP key needs 58 HEX or 29 ASCII characters.

Hexadecimal digits consist of the numbers 0-9 and the letters A-F
ASCII (American Standard Code for Information Interchange) is a code for representing English letters as numbers from 0-127

Click **Apply** if you have made any changes or additions.
Click **Cancel** to discard the changes.

IP Settings

Click on this tab to change device's IP Addresses.
The default IP Address is 192.168.1.1

LAN IP: If you have a DHCP Server, such as an Internet Router, on the network, click **Obtain IP Automatically**. Or you can manually enter the **IP address**, **Subnet Mask**, and **Gateway** by clicking **Fixed IP**.

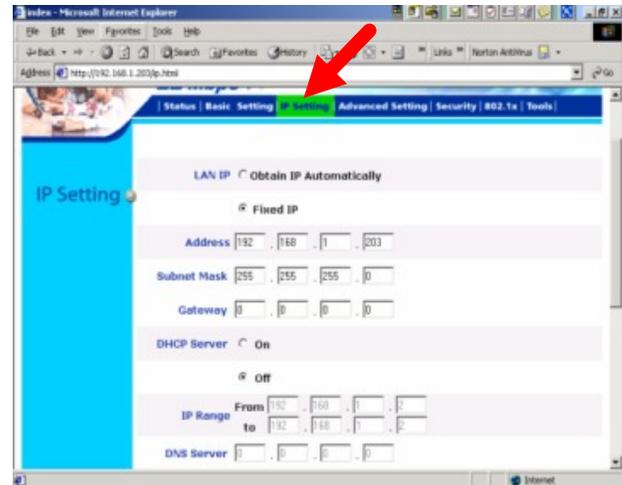


Fig. 5.5

If the Access Point's LAN IP range is different from the configuration computer's IP range, the computer will not be able to enter the configuration menu using web browser.

DHCP Server: Available only when **LAN IP** is **Fixed IP**. Click **On** to enable the TEW-310APB to assign IP addresses to computers on the network. Click **Off** to disable this feature.

IP Range: IP address range that the device will distribute (e.g. **From** 192.168.1.2 **To** 192.168.1.100). Available when **DHCP Server** is **On**.

Advanced Settings

AP Mode

There are 4 modes available.

AP: Access Point mode. Bridge wireless clients to wired Ethernet network.

AP Client: Acts as a wireless client and connects to a remote Access Point. This is used to convert an Ethernet device to Wireless Client.

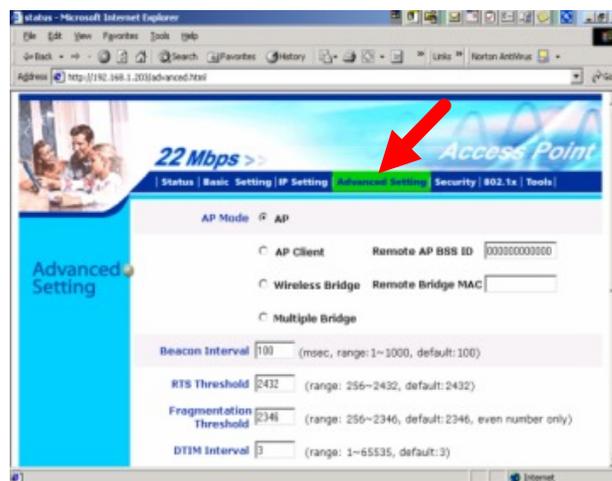


Fig. 5.6

You must enter the **remote AP's MAC address** in the **Remote AP BSS ID**. It is best to use another TEW-310APB as the Remote AP, please find AP's **LAN MAC address** in the **Status** page and enter it here.

(Note: When the device is set to AP Client mode, it no longer accepts connection from any wireless clients.)

MAC Address (Media Access Control Address): A unique hardware address that identifies a device on a network. It is assigned at the factory and cannot be changed. Usually you will find this address on a sticker on the device or on the packaging.

Wireless Bridge: Bridges two wired Ethernet networks together wirelessly using two TEW-310APB. You must enter the **Remote Bridge AP's MAC address** in the **Remote Bridge MAC**. It is best to use another TEW-310APB as the Remote Bridge AP, please find AP's **LAN MAC address** in the **Status** page and enter it in **Remote Bridge MAC**.

(Note: When the device is set to Wireless Bridge or Multiple Bridge mode, it no longer accepts connections from any wireless clients.)

Multiple Bridge: Bridges multiple wired Ethernet networks together using multiple AP. All AP must have the same **ESSID** and **Channel** number. It is best to use TEW-310APB as the Bridging AP. Although there is no limit on the numbers of AP you can bridge together, please keep in mind that all AP share the 11Mbps wireless bandwidth. In Multiple Bridge environment, you could also limit certain APs' bandwidth by setting their **Supported Rate** to lower number (e.g. 1~2Mbps).

Beacon Interval: Beacons are packets sent by an Access Point to synchronize a wireless network. Specify a Beacon interval value. Default (100) is recommended.

RTS Threshold: This value should remain at its default setting of 2,432. If you encounter inconsistent data flow, only minor modifications to the value range between 256 and 2,432 are recommended.

Fragmentation: This value should remain at its default setting of 2,346. If you experience a high packet error rate, you may slightly increase your Fragmentation Threshold within the value range of 256 to 2,346. Setting the Fragmentation Threshold too low may result in poor performance.

DTIM Interval (Beacon Rate): (Delivery Traffic Indication Message) Enter a value between 1 and 16384 for the Delivery Traffic Indication Message (DTIM.) A DTIM is a countdown informing clients of the next window for listening to broadcast and multicast messages.

*(Note: You could modify Beacon Interval, RTS Threshold, Fragmentation, and DTIM Interval to fine-tune your wireless network, however, this takes many **trial and error** and we recommend keeping them in their default values.)*

Authentication Type:

Open System: communicates the key across the network

Shared Key: devices must have identical WEP settings to communicate

Both automatically adjusts to the Authentication mode of the wireless client

All wireless devices must have the same Authentication Type. The default setting is **Both**.

Preamble: The preamble defines the length of the CRC block for communication between the Access Point and roaming Network Card. Please select the appropriate preamble type and click the **Apply** button to save the settings. *(Note: High network traffic areas should use the shorter preamble type. All wireless devices in the same network need to have the same preamble setting.)*

Basic Rate and **Supported Rate:** Select the desired bandwidth for the wireless device. The **Basic Rate** is for factory trouble shooting purpose and it will not affect the device's performance. **Supported Rate** is the true bandwidth of the device. When the wireless signal is strong, set it at **1-2-5.11-22(Mbps)** to have the highest performance. When the signal is weak, select **1-2(Mbps)** to reduce transmission error.

Antenna Selection: Select which antenna you will use to receive data. The default setting is **Diversity** (uses **both antennas** to receive data which help overcome multi-path distortion).

Click **Apply** if you have made any changes or additions.
Click **Cancel** to discard the changes.

Security

Password: Change the login User Name and Password in this screen.

Administrator ID: This is the login **User Name** for the browser configuration. Default is **admin**, you can enter a name with up to 15 characters.

AP Password New: Enter the new password (up to 15 characters).

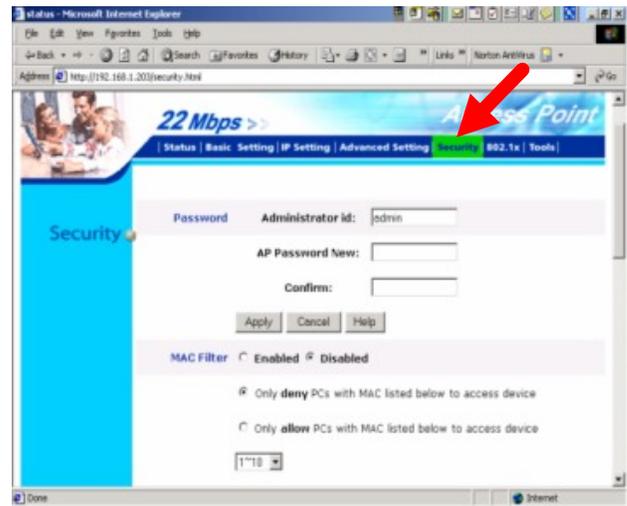


Fig. 5.7

Confirm: Enter the new password again.

Click **Apply** to save the new User Name and Password.

Click **Cancel** to discard the changes.

MAC Filter: Use MAC Filters to **allow** or **deny** wireless connection to the TEW-310APB. Select **Enable** to activate the filter, select **Disable** (default) to disable this feature.

Select **Only deny PCs with the MAC listed below to access the device** or select **Only allow PCs with the MAC listed below to access the device** and enter the **MAC Address** of the selected computers into the fields below.

You could enter up to 50 MAC address entries, but only 10 entries are displayed. Please click on the 1~10 pull-down arrow and select the next 10 entries (21~30, 31~40, and 41~50).

Click **Apply** to save the settings.

Click **Cancel** to discard the changes.

802.1X

802.1X Authentication protocol. This protocol is not available with the first released firmware. Please check TRENDware web site (www.trendware.com) for updated firmware that supports 802.1X protocol.

Tools

Backup Settings: The current device settings can be saved as a file onto the local hard drive by clicking **Backup** and then follow the instructions on the screen to save the configuration file to desired

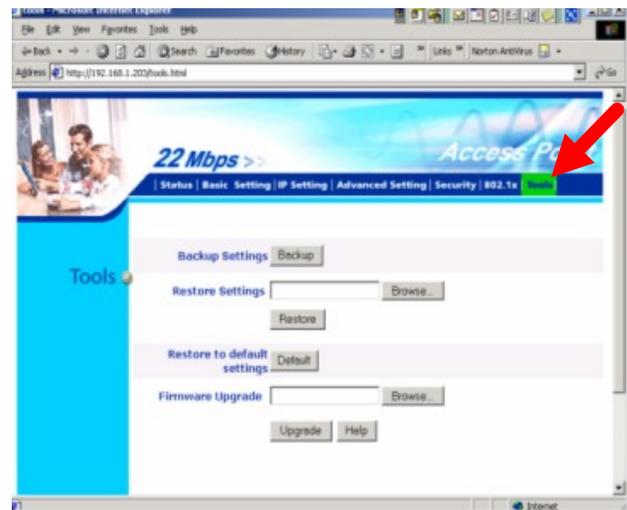


Fig. 5.8

Restore Settings: The saved settings can be loaded back on the TEW-310APB by entering the correct path or clicking **Browse** and locate the correct saved file location. When you have selected the settings file, click **Restore** to load the settings.

Restore to default settings: Click **Default** to return all settings back to **Factory Default Settings**.

Firmware Upgrade: Upgrade the firmware for the Access Point. Please visit TRENDware web site www.trendware.com, select **Download**, and download the new firmware for TEW-310APB. After you have downloaded a firmware upgrade to your local drive, click **Browse**, select the firmware file, and click **Upgrade** to perform the firmware upgrade. After that, go to **Status** page and verify the new firmware version.

(Note: Please do not interrupt the firmware upgrade process.)

6. Troubleshooting

Based on Windows XP Operating System

This chapter provides solutions to problems that can occur during the installation and operation of the TEW-310APB Wireless Access Point. We cover various aspects of the network setup, including the network adapters. Please read the following if you are having problems.

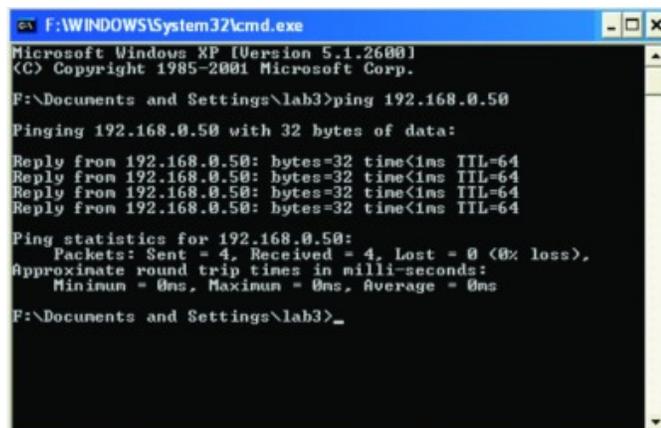
Note: It is recommended that you use an Ethernet connection to configure the TEW-310APB Access Point.

1.The computer used to configure the TEW-310APB cannot access the Configuration menu.

- Check that the **Ethernet LED** on the TEW-310APB is **ON**. If the **LED** is not **ON**, check that the cable for the Ethernet connection is securely inserted.
- Check that the Ethernet Adapter is working properly. Please **Check that the drivers for the network adapters are installed properly**
- Check that the **IP Address** is in the same range and subnet as the TEW-310APB. Please see **Checking the IP Address in Windows XP** in the **Networking Basics** section of this manual.

Note: The IP Address of the TEW-310APB is 192.168.1.1. All the computers on the network must have a unique IP Address in the same range, e.g., 192.168.1.x. Any computers that have identical IP Addresses will not be visible on the network. They must all have the same subnet mask, e.g., 255.255.255.0

- Do a **Ping test** to make sure that the TEW-310APB is responding. Go to **Start>Run>Type Command>Type ping 192.168.1.1**. A successful ping will show four replies.



```
F:\WINDOWS\System32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

F:\Documents and Settings\lab3>ping 192.168.0.50

Pinging 192.168.0.50 with 32 bytes of data:

Reply from 192.168.0.50: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.0.50:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

F:\Documents and Settings\lab3>_
```

Fig. 6.1

2. The wireless client cannot access the Internet in the Infrastructure mode.

- Make sure the wireless client is associated and joined with the correct Access Point. To check this connection: **Right-click** on the **Local Area Connection icon** in the taskbar > select **View Available Wireless Networks**. The **Connect to Wireless Network** screen will appear. Please make sure you have selected the correct available network, as shown in the illustrations below.

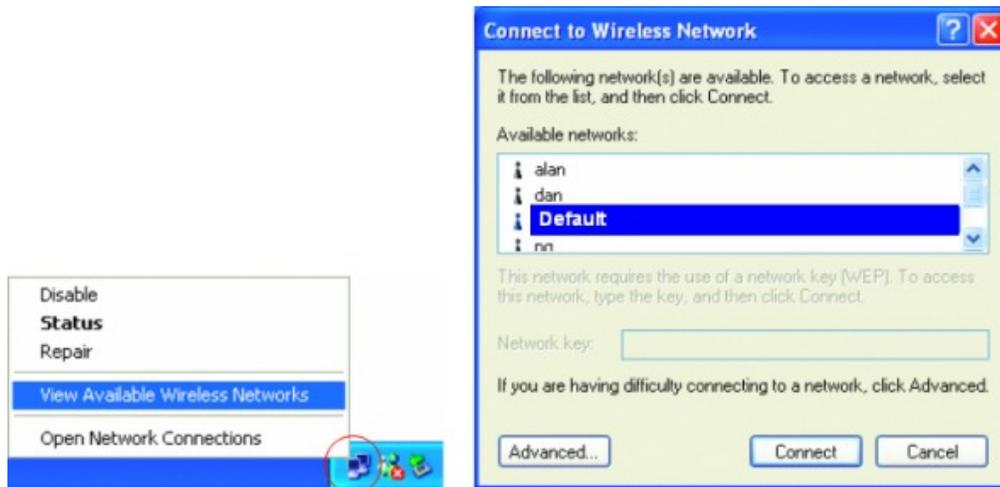


Fig. 6.2

You could also check the associated Access Point by using your Wireless Adapter's Utility program.

- Check that the **IP Address** assigned to the wireless adapter is within the same **IP Address range** as the access point and gateway. *Since the TEW-310APB has an IP Address of 192.168.1.1, wireless adapters must have an IP Address in the same range, e.g., 192.168.1.x. Each device must have a unique IP Address; no two devices may have the same IP Address. The subnet mask must be the same for all the computers on the network.)* To check the **IP Address** assigned to the wireless adapter, **double-click** on the **Local Area Connection icon** in the taskbar > select the **Support tab** and the **IP Address** will be displayed. (Please refer to **Checking the IP Address** in the **Networking Basics** section of this manual.)
- If it is necessary to assign a **Static IP Address** to the wireless adapter, please refer to the appropriate section in **Networking Basics**. If you are entering a **DNS Server address** you must also enter the **Default Gateway Address**.

3. Check that the drivers for the network adapters are installed properly.

You may be using different network adapters than those illustrated here, but this procedure will remain the same, regardless of the type of network adapters you are using.

- Go to **Start**
- Right-click on **My Computer**
- Click **Properties**
(If the “My computer” icon is on your desktop, you can simply right click on it and click on “Properties”)

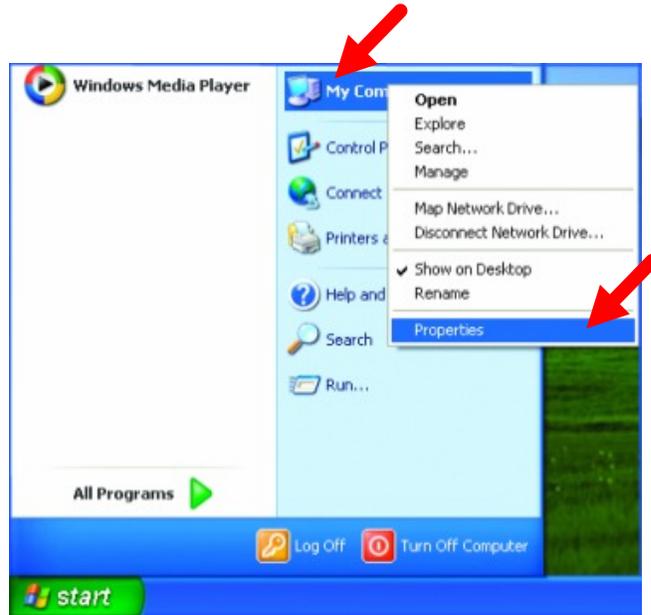


Fig. 6.3

- Select the **Hardware Tab**
- Click **Device Manager**

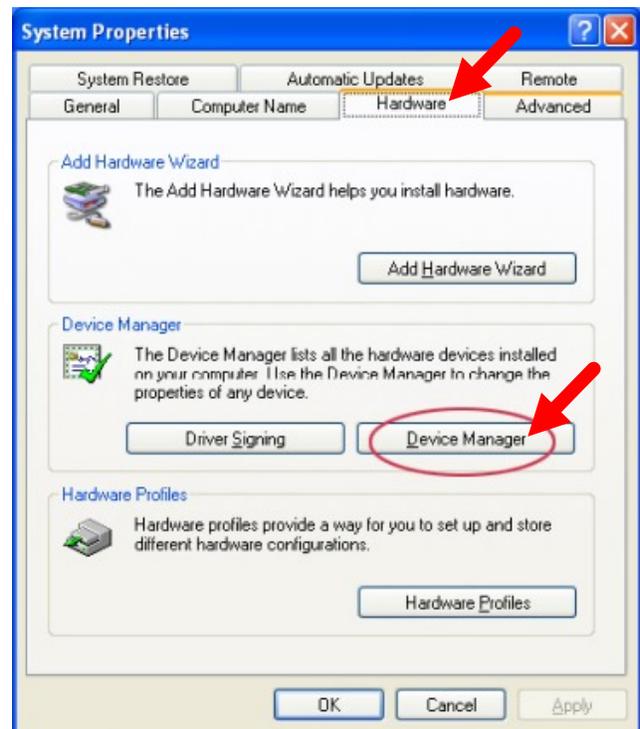


Fig. 6.4

- Double-click on **Network Adapters**
- Right-click on **22M Wireless Cardbus Adapter**
- Select **Properties** to check that the drivers are installed properly.

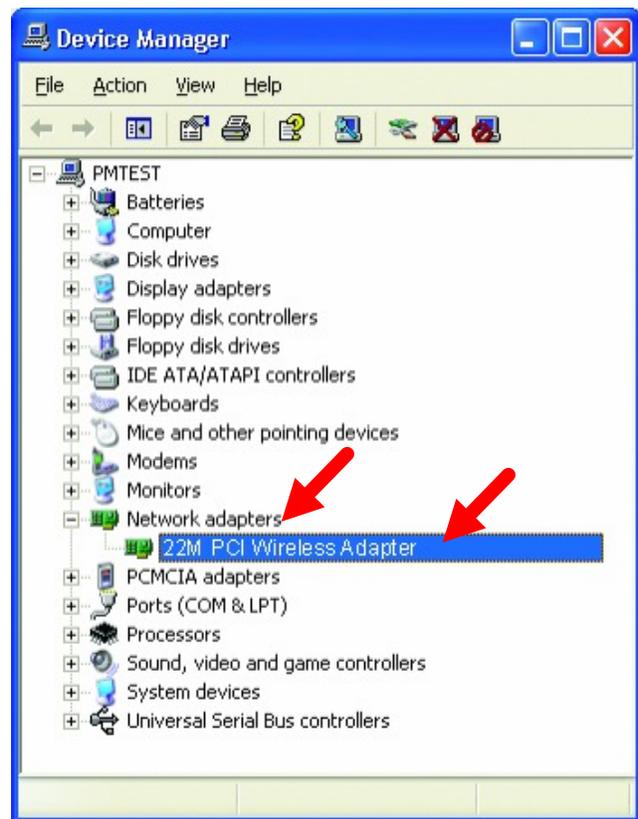


Fig. 6.5

- Look under **Device Status** and check that the device is working properly.
- Click **OK** to close this window.

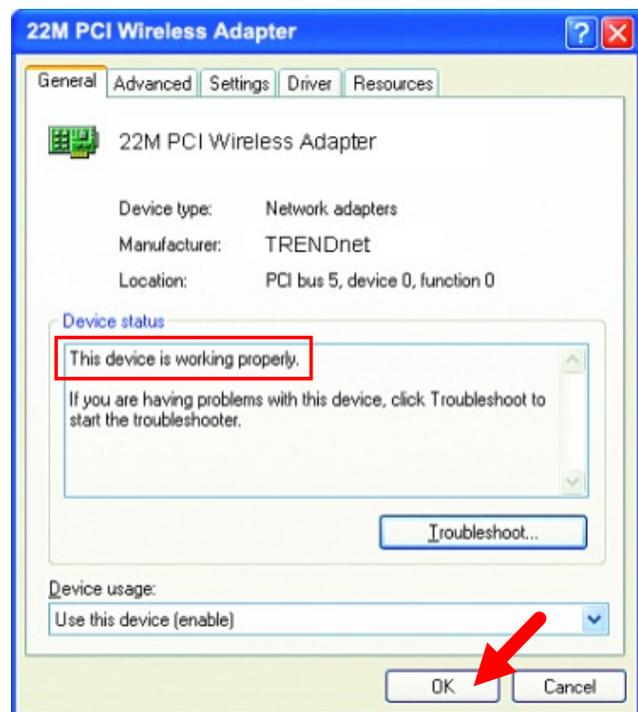


Fig. 6.6

4. Resetting the TEW-310APB to Factory Default Settings

After you have tried other methods for troubleshooting your network, you may choose to **Reset** the TEW-310APB to the factory default settings. Remember that TRENDnet wireless products network together, out of the box, at the factory default settings.

To hard-reset the TRENDnet TEW-310APB to Factory Default Settings, please do the following:

- Locate the **Reset** button on the back of the TEW-310APB (next to the Ethernet port).
- Use a paper clip to press the **Reset** button.
- Hold for about 5 seconds and then release
- After the TEW-310APB reboots (this may take a minute) it will be reset to the factory **Default** settings.

7. Networking Basics

Using the Network Setup Wizard in Windows XP

In this section you will learn how to establish a network at home or work, using **Microsoft Windows XP**.

Go to **Start > Control Panel > Network Connections**
Select **Set up a home or small office network**



Fig. 7.1

When this screen appears, click **Next**.

Please follow all the instructions in this window:

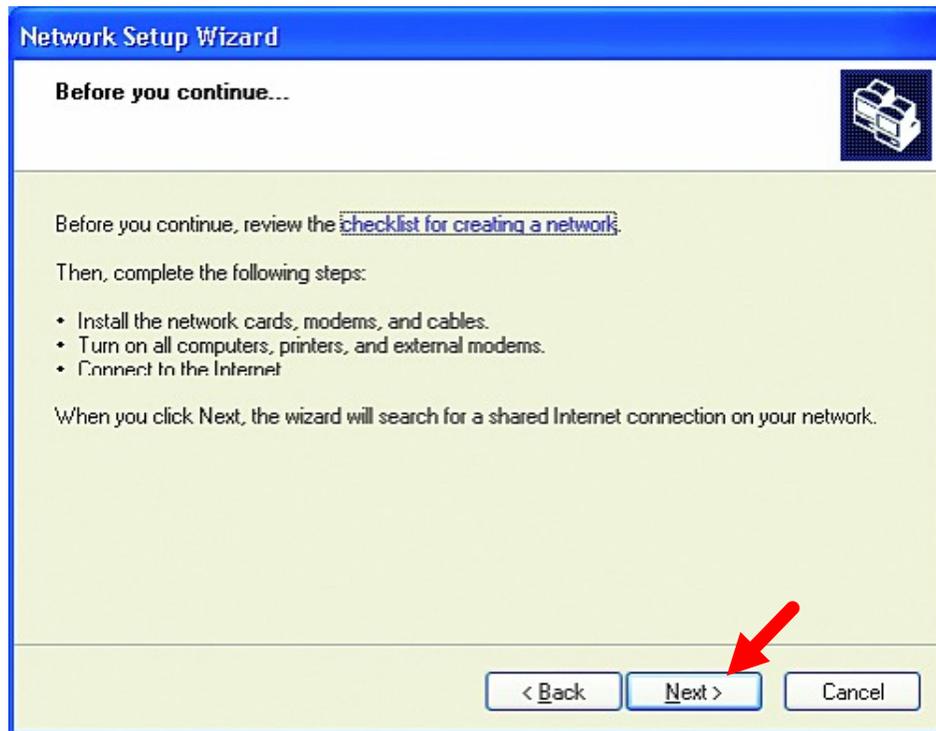


Fig. 7.2

Click **Next**

In the following window, select the best description of your computer. If your computer connects to the Internet through a gateway/router, select the second option as shown.

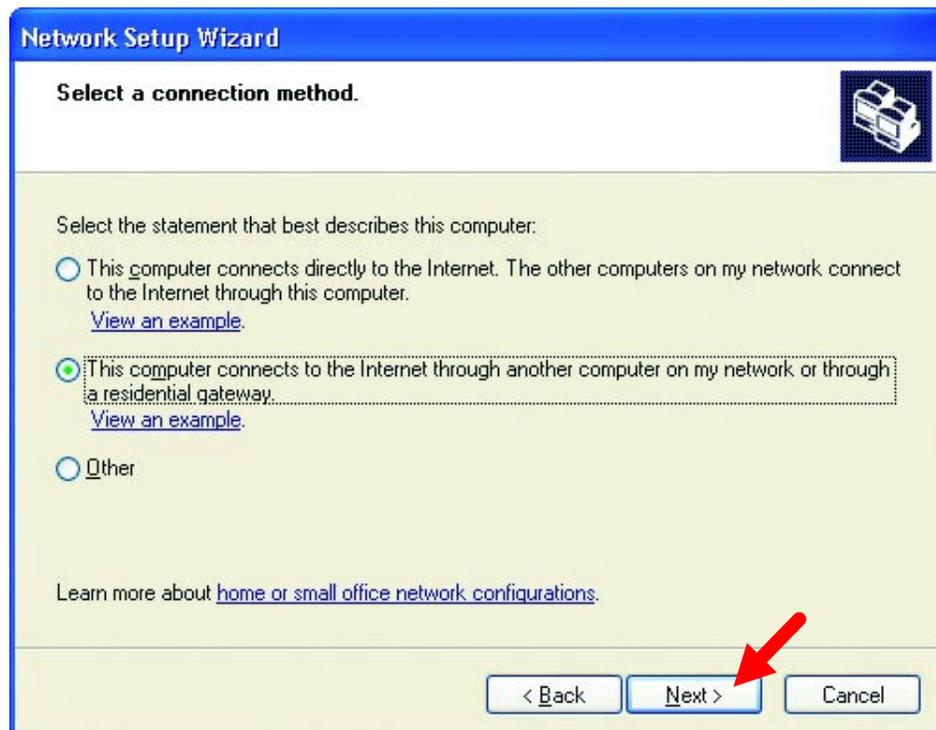


Fig. 7.3

Click **Next**

Enter a **Computer description** and a **Computer name**.

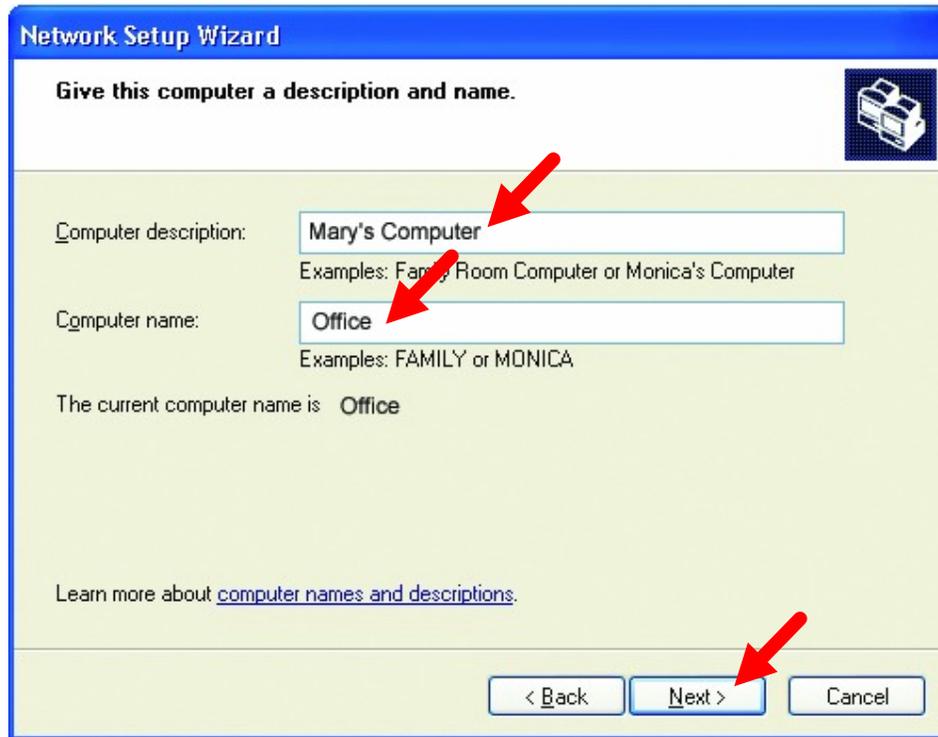


Fig. 7.4

Click **Next**

(**Note:** Each computer should have a unique Computer name)

Enter a **Workgroup** name. All computers on your network should have the same **Workgroup** name.

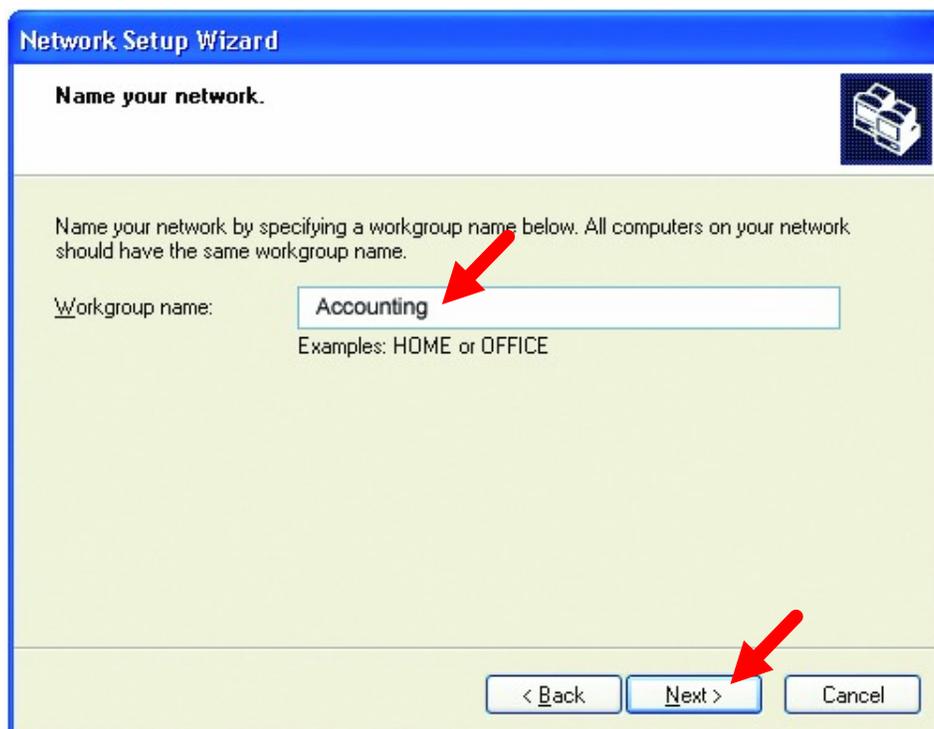


Fig. 7.5

Click **Next**

Please wait while the wizard applies the changes.

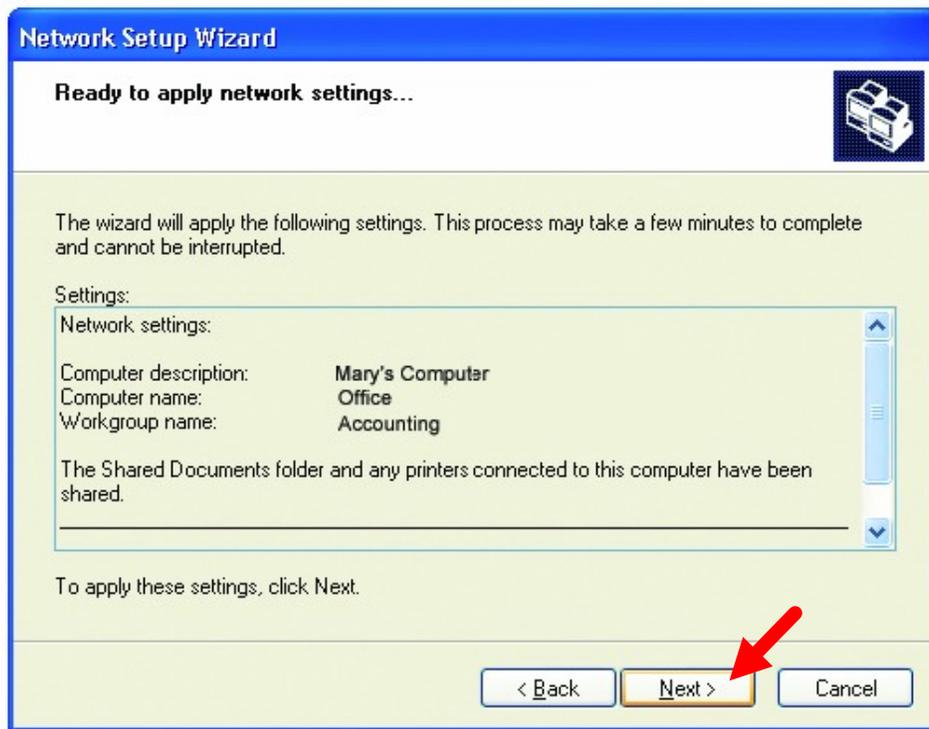


Fig. 7.6

When the changes are complete, click **Next**.

Please wait while the wizard configures the computer.
This may take a few minutes.



Fig. 7.7

In the window below, select the best option. In this example, **Create a Network Setup Disk** has been selected. You will run this disk on each of the computers on your network. Click **Next**.

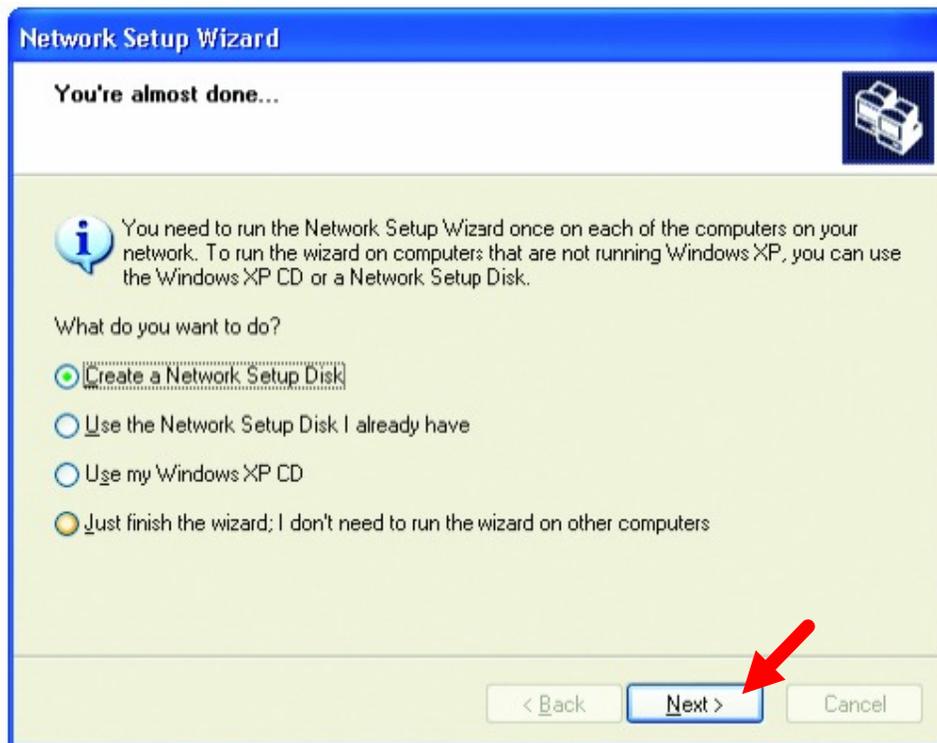


Fig. 7.8

Insert a disk into the Floppy Disk Drive, in this case drive **A:**



Fig. 7.9

Format the disk if you wish, and click **Next**.

Please wait while the wizard copies the files.



Fig. 7.10

Please read the information under **Here's how** in the screen below. After you complete the **Network Setup Wizard** you will use the **Network Setup Disk** to run the **Network Setup Wizard** once on each of the computers on your network. To continue, click **Next**

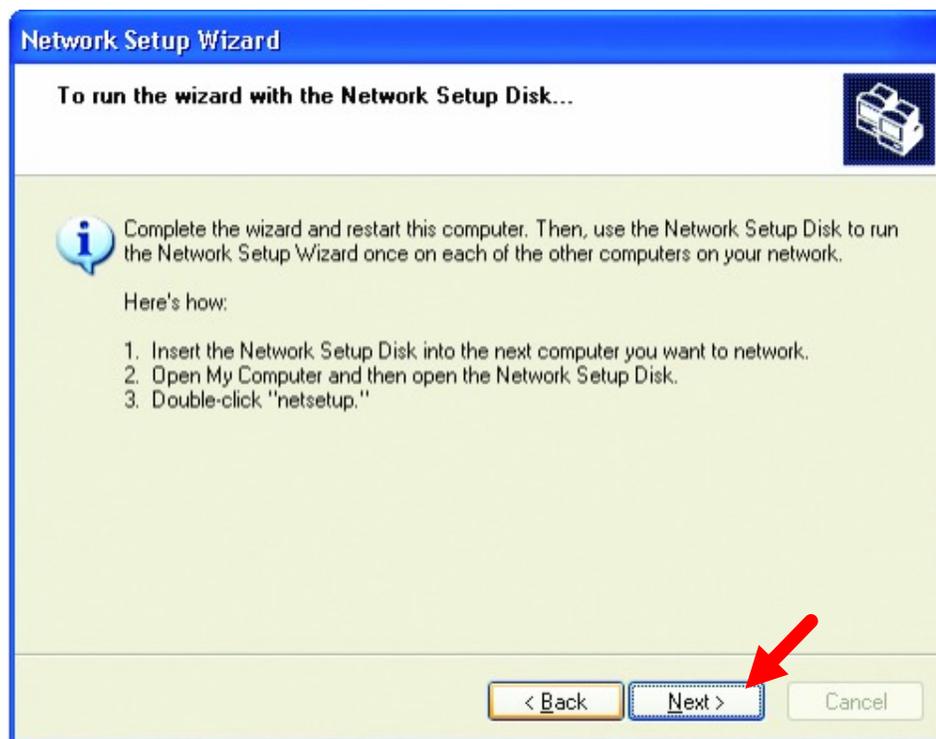


Fig. 7.11

Please read the information on this screen, then click **Finish** to complete the **Network Setup Wizard**.



Fig. 7.12

The new settings will take effect when you restart the computer. Click **Yes** to restart the computer.



Fig. 7.13

You have completed configuring this computer. Next, you will need to run the **Network Setup Disk** on all the other computers on your network. After running the **Network Setup Disk** on all your computers, your new wireless network will be ready to use.

Naming your Computer

To name your computer, please follow these directions:

In **Windows XP**:

- Click **Start** (in the lower left corner of the screen)
- Right-click on **My Computer**
- Click **Properties**

(If the “My computer” icon is on your desktop, you can simply right click on it and click on “Properties”)



Fig. 7.14

- Select the **Computer Name** Tab in the **System Properties** window.

*You may enter a **Computer description** if you wish; this field is optional.*

To rename the computer or join a domain,

- Click **Change**

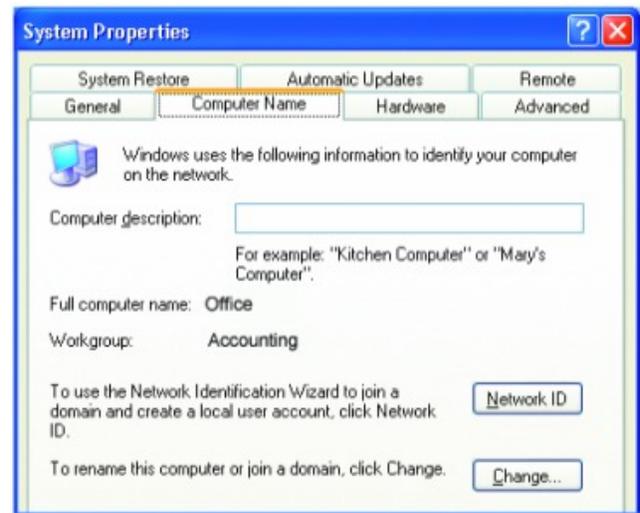


Fig. 7.15

- In this window, enter the **Computer name**.
- Select **Workgroup** and enter the name of the **Workgroup**.
- All computers on your network must have the same **Workgroup** name.
- Click **OK**

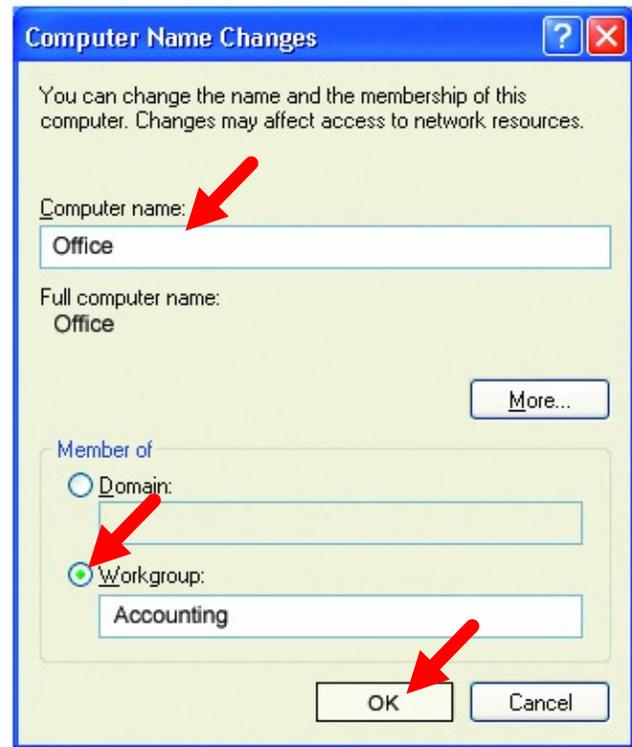


Fig. 7.16

Checking the IP Address in Windows XP/2000

Go to Start > All Programs > Accessories > Command Prompt



Fig. 7.17

Type **Command** and click **OK**



Fig. 7.18

Type **ipconfig /all** and hit **Enter** at the prompt. All the configuration settings are displayed as shown below.

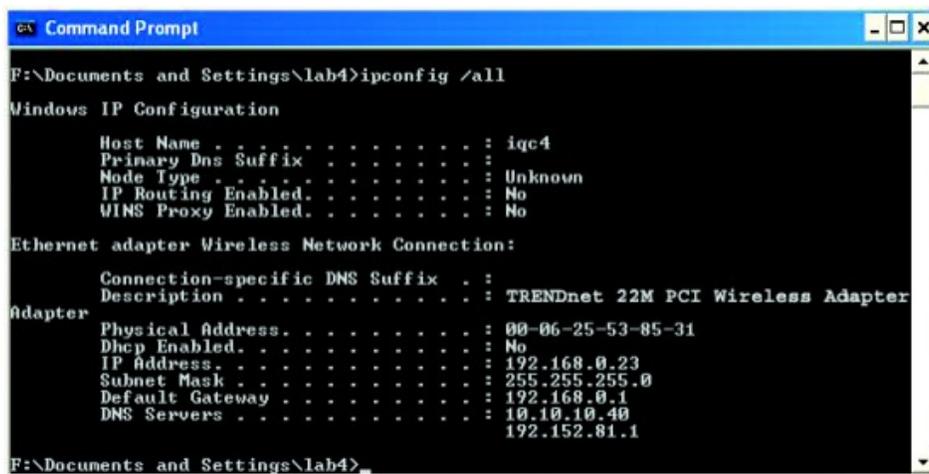


Fig. 7.19

Type **ipconfig /renew** at the prompt to get a new IP Address, shown below.

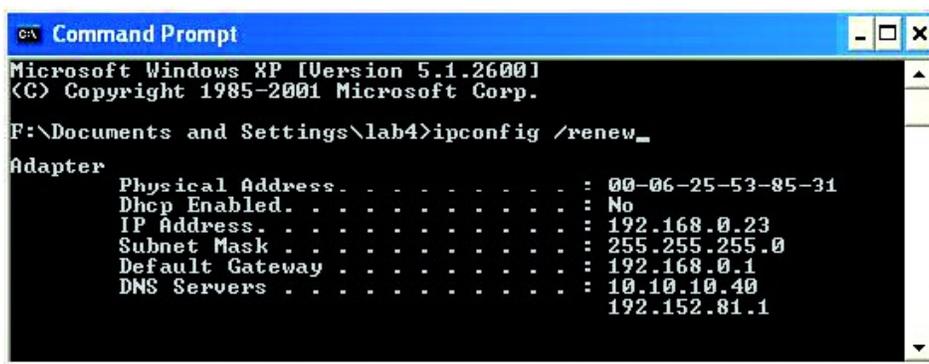


Fig. 7.20

(Windows 98/ME users: go to Start > Run. Type Command. Type winipcfg at the prompt. Click Release and Renew to obtain a new IP Address.)

Assigning a Static IP Address

Note: Residential Gateways/Internet Routers will automatically assign IP Addresses to the computers on the network, using DHCP (Dynamic Host Configuration Protocol) technology. If you are using a DHCP-capable Gateway/Router you will not need to assign Static IPAddresses, however, you need to set the TCP/IP protocol to automatically obtain IP.

If you are not using a DHCP capable Gateway/Router, or you need to assign a Static IPAddress, please follow these instructions:

- Go to **Start**
- Double-click on **Control Panel**

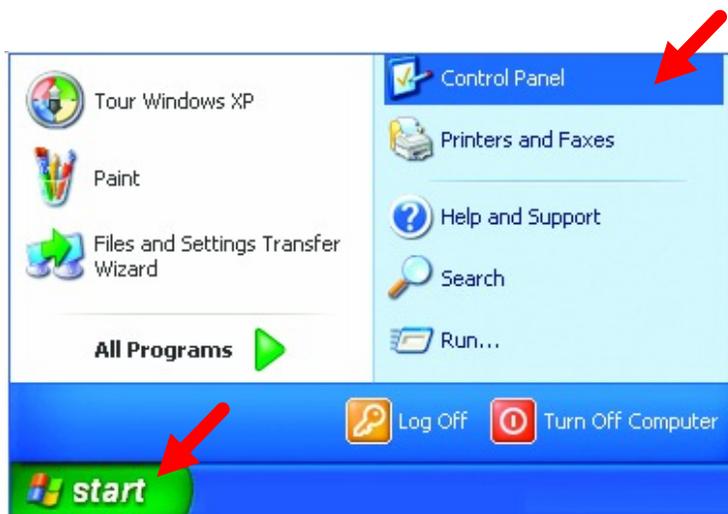


Fig. 7.21

- Double-click on **Network Connections**

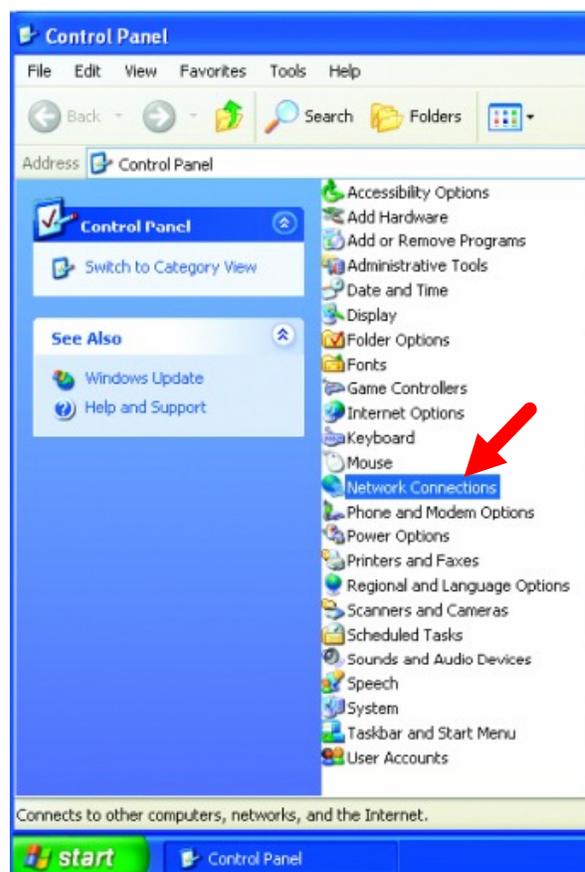


Fig. 7.22

- Right-click on **Local Area Connections**.
- Click **Properties**

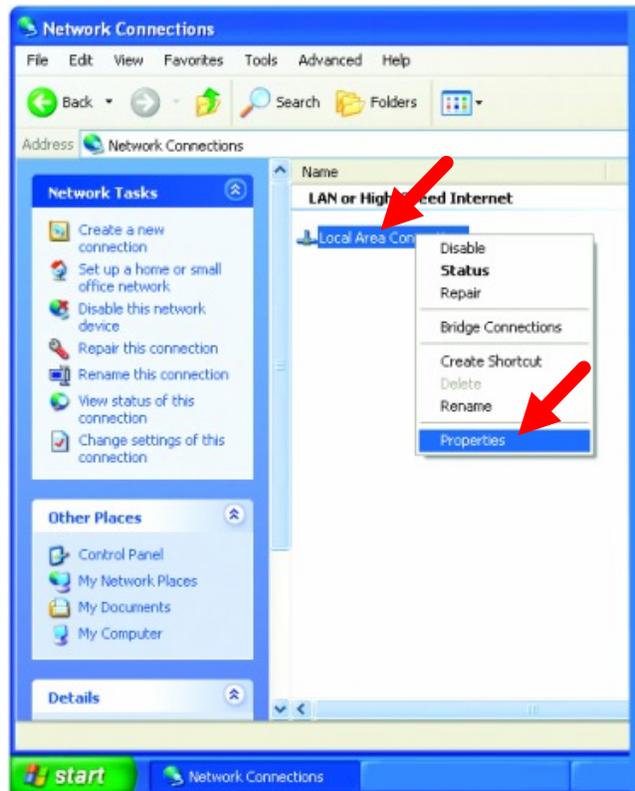


Fig. 7.23

- Highlight **Internet Protocol (TCP/IP)**
- Click **Properties**

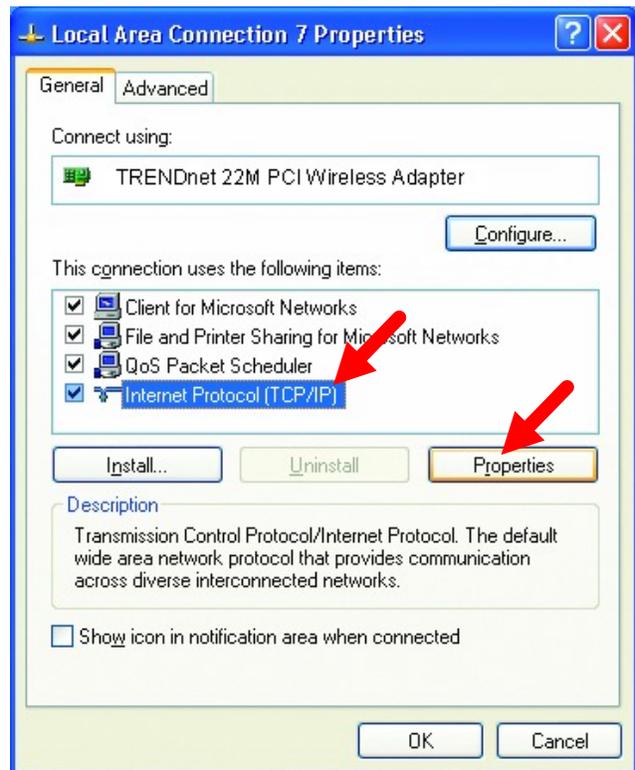


Fig. 7.24

- **Select Use the following IP address** in the **Internet Protocol (TCP/IP) Properties** window,
- **Input your IP address and subnet mask.** (The IP Addresses on your network must be within the same range. For example, if one computer has an IP Address of 192.168.0.2, the other computers should have IP Addresses that are between 192.168.0.3 and 192.168.0.254. No two computers can have the same IP Address. The subnet mask must be the same for all the computers on the network.)
- Input your **DNS server address only if you plan to use the Internet.** (Note: If you are entering a DNS server address, you must also enter the IP Address of the Default Gateway.)

The DNS server information will be provided by your ISP (Internet Service Provider.)

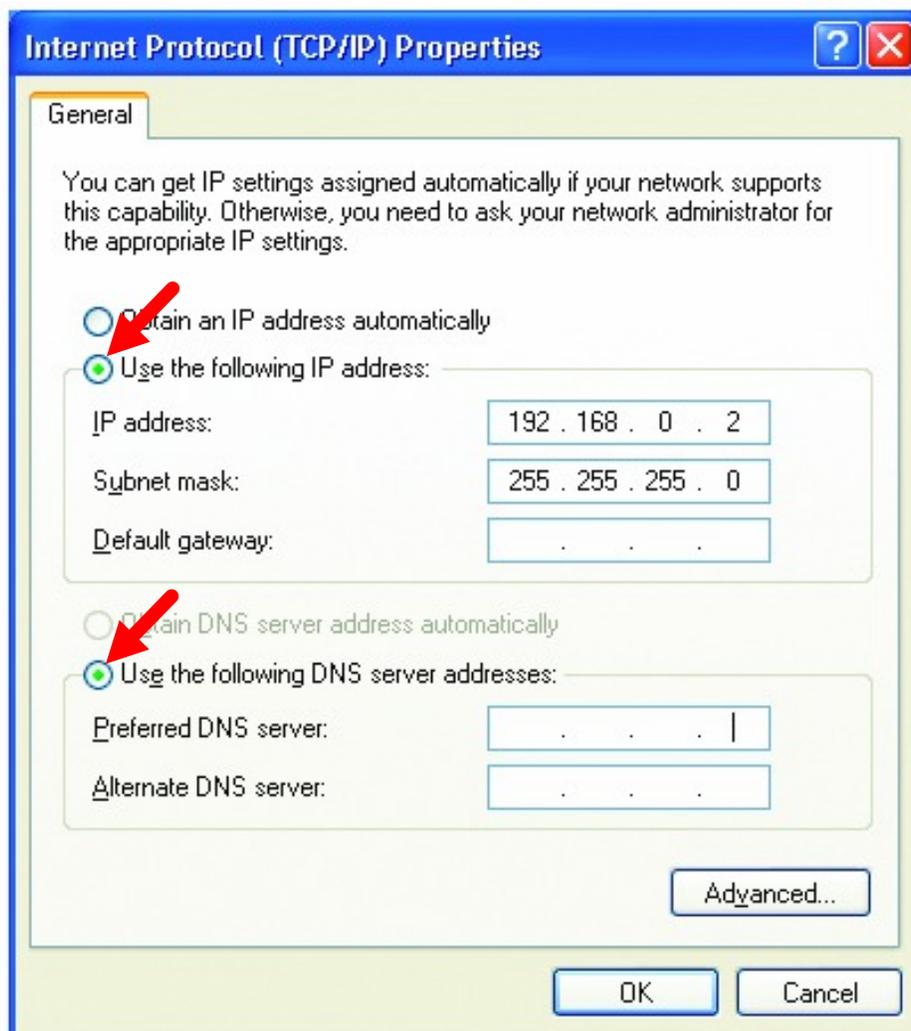


Fig. 7.25

- **Click OK**
You have completed the assignment of a Static IP Address.

Connecting to a Wireless Network in Windows XP

To be able to connect to a wireless network, make sure the proper network settings are configured for TEW-303PI.

- Go to **Start** > right-click on **My Network Places** >
- Select **Properties** > double-click on the **Wireless Network Connection** associated with the 22M wireless Adapter >
- Select **Properties** > select **Internet Protocol (TCP/IP)** > click **Properties**

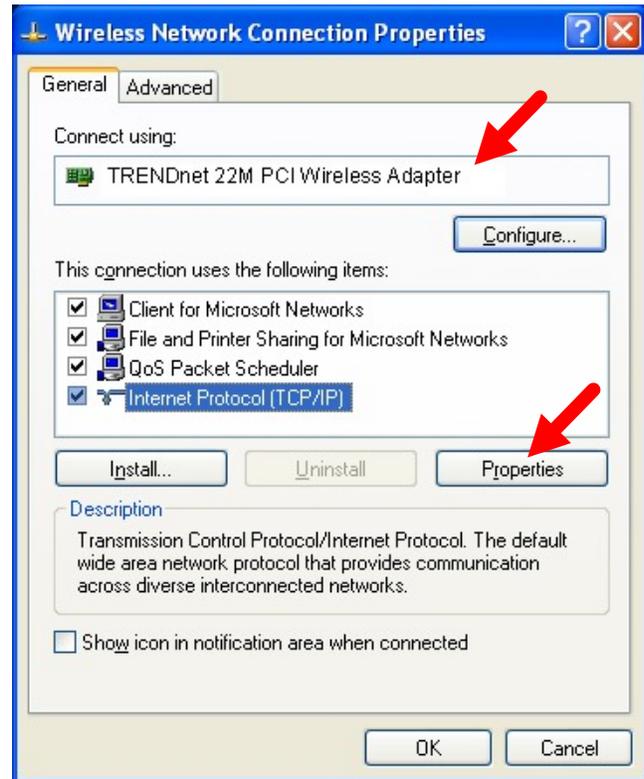


Fig. 7.26

Connecting to a Wireless Network with a Wireless Router or an Access Point using a DHCP server in Windows XP.

- Select **Obtain an IP address automatically** - if the Wireless Router or Access Point has DHCP server enabled
- Select **Obtain DNS server address automatically**.
- Click **OK**

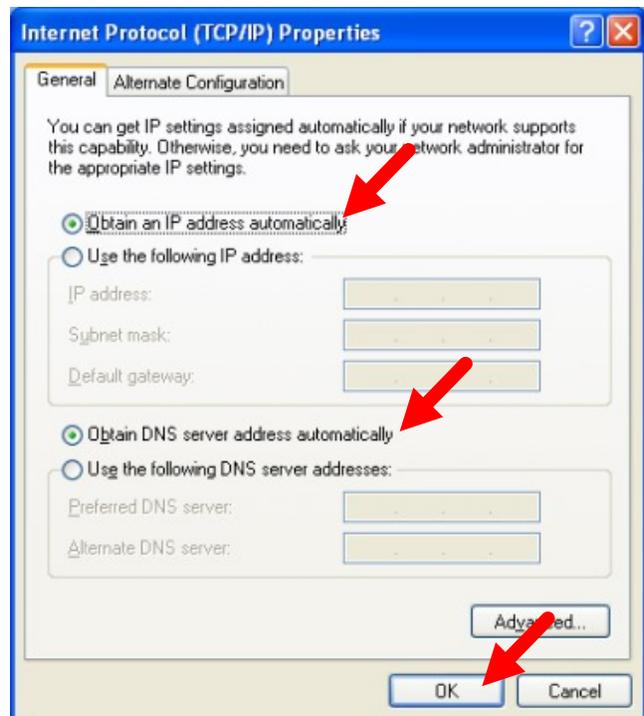


Fig. 7.27

Connecting to a Wireless Network with a Wireless Router or an Access Point using a static IP address in Windows XP.

Select **Use the following IP address** - if the Wireless Router or Access Point **does not** have a DHCP server enabled.

- Input a static IP address within the same range as the Wireless Router or Access Point.
- **IP address:** 192.168.0.51
- **Subnet mask:** 255.255.255.0
- **Default Gateway:** Enter the LAN IP address of the Wireless Router
- Select **Use the following DNS server address**. Enter the ISP provided DNS addresses.
- Click **OK**

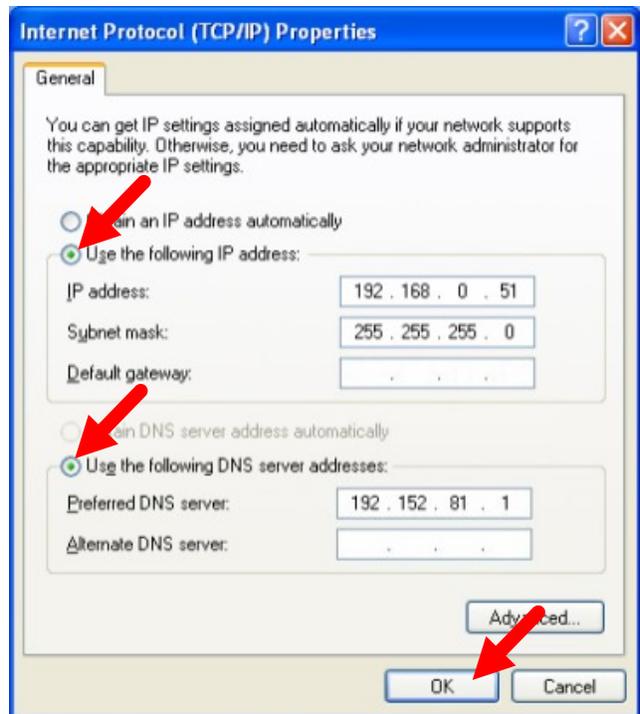


Fig. 7.28

Connecting to a Wireless Network in Windows 2000

- Go to **Start > Settings > Network and Dial-up Connections > Double click on the Local Area Connection associated with the 22M Wireless Adapter > select Properties > select Internet Protocol (TCP/IP) > click Properties**

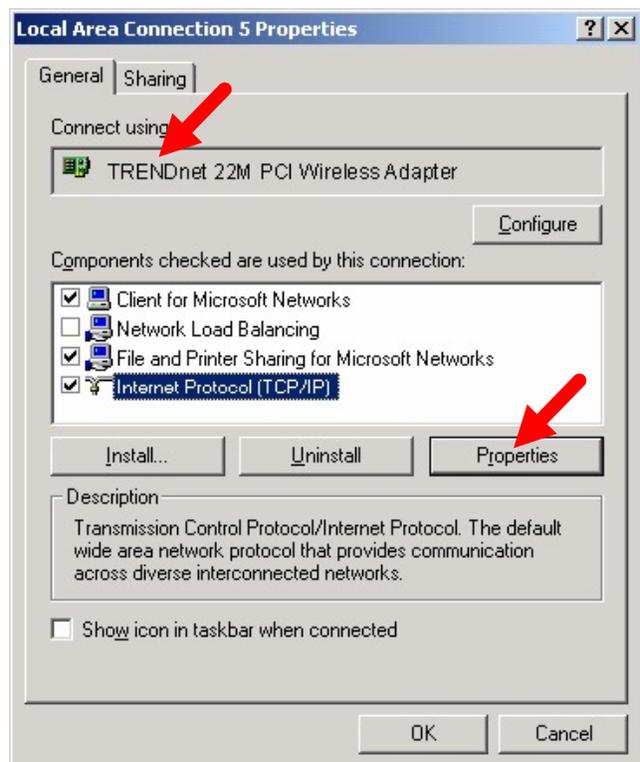


Fig. 7.29

Connecting to a Wireless Network with a Wireless Router or an Access Point using a DHCP server in Windows 2000.

- Select **Obtain an IP address automatically.**
- Select **Obtain DNS server address automatically.**
- Click **OK**

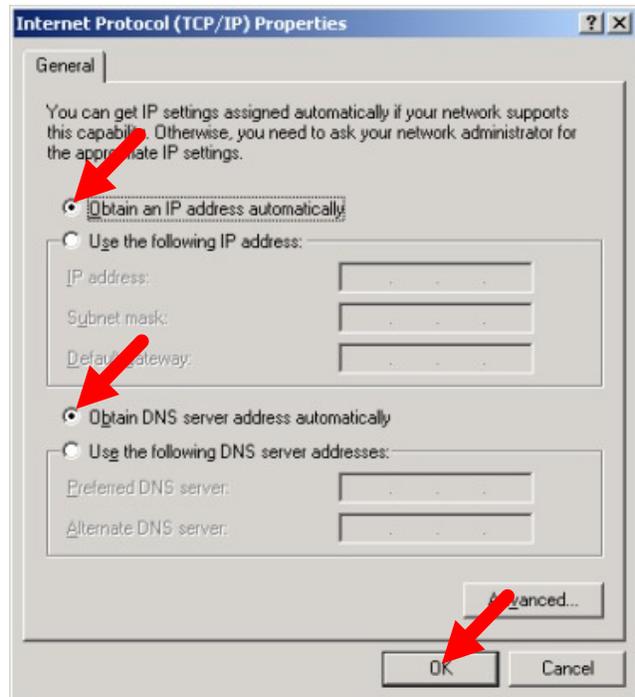


Fig. 7.30

Connecting to a Wireless Network with a Wireless Router or an Access Point using static IP address in Windows 2000.

- Select **Use the following IP address**
- Input a static IP Address within the same IP Address range as the wireless router or the access point.
- **IP address:** 192.168.0.51
- **Subnet mask:** 255.255.255.0
- **Default Gateway:** Enter the LAN IP address of the Wireless Router
- Select **Use the following DNS server address.** Leave this section blank.

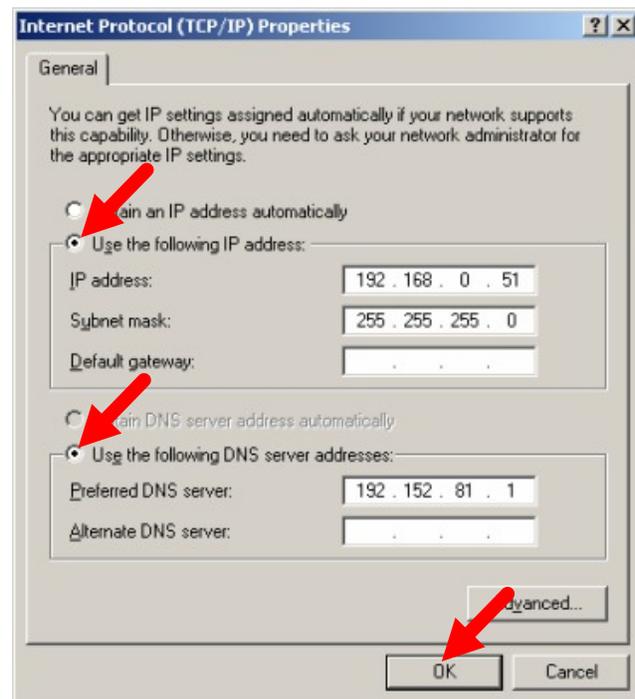


Fig. 7.31

- Click **OK**

Connecting to a Wireless Network in Windows Me and 98

- Go to **Start > Settings > Control Panel** > Double-click on the **Network** associated with the 22M Wireless Adapter > click **Properties** > select **Internet Protocol (TCP/IP)** > click **Properties**

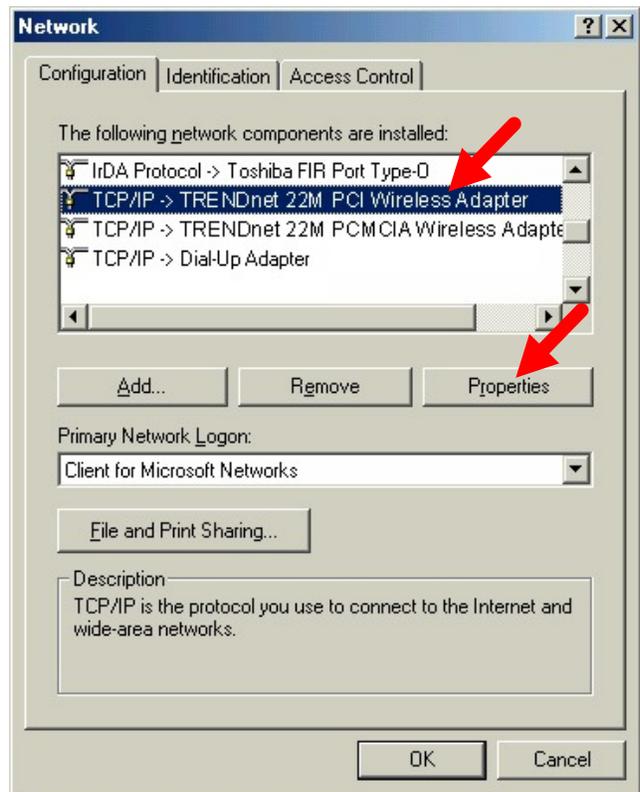


Fig. 7.32

Connecting to a Wireless Network with a Wireless Router or an Access Point using a DHCP server in Windows Me and 98.

- Select the **IP Address** tab. Then, select **Obtain an IP address automatically**.
- Select **Detect connection to network media**.
- Click **OK**

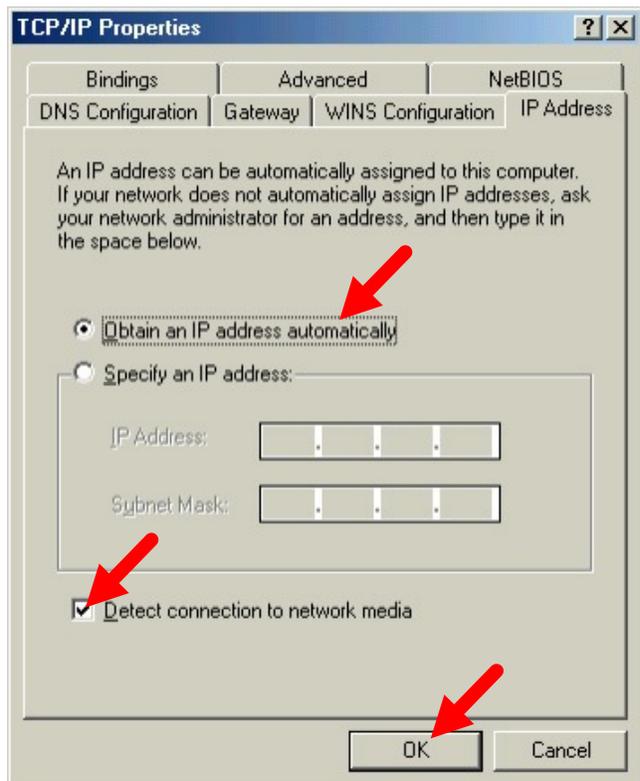


Fig. 7.33

Connecting to a Wireless Network with a Wireless Router or Access Point using a static IP address in Windows Me or Windows 98.

- Select **Specify an IP address**.
- Input a static IP address within the same IP Address range as the wireless router or access point.
- **IP address:** 192.168.0.51
- **Subnet mask:** 255.255.255.0
- **Default Gateway:** Enter the LAN IP address of the Wireless Router
- Select **Detect connection to network media**.

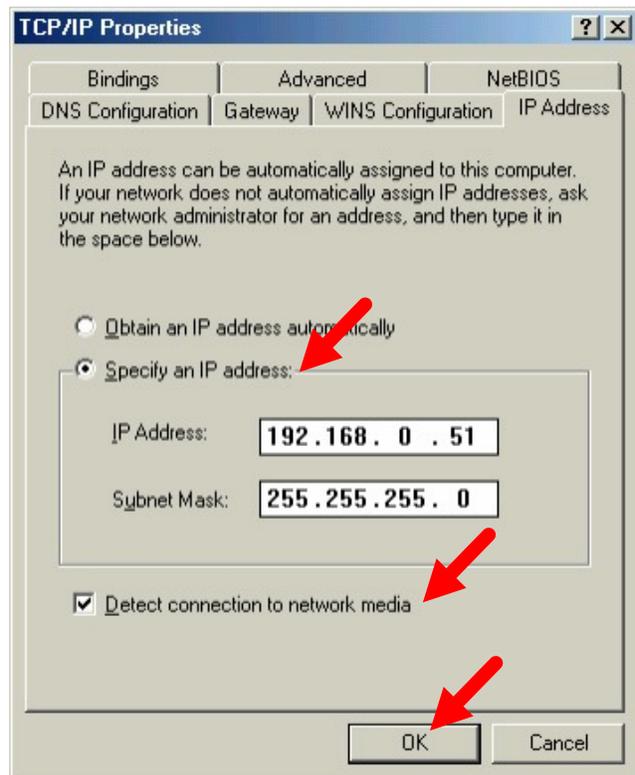


Fig. 7.34

Checking the Wireless Connection by Pinging

For Windows XP and 2000:

- Go to **Start > Run > type cmd**. A window similar to *Fig. 7.35* will appear.
- Type **ping xxx.xxx.xxx.xxx** and hit **Enter**, where **xxx** is the **IP address** of the Wireless Router or Access Point.
- A good wireless connection will show four replies from the wireless router or access point, as shown.
- Click **OK**

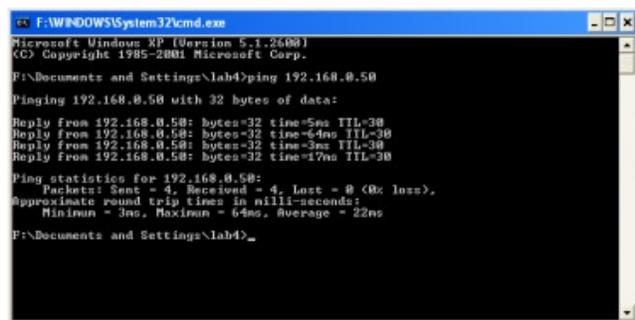


Fig. 7.35

For Windows Me and 98:

- Go to **Start > Run > type command**. A window similar to Fig. 7.36 will appear. Type **ping xxx.xxx.xxx.xxx**, where **xxx** is the **IP address** of the Wireless Router or Access Point. A good wireless connection will show four replies from the wireless router or access point, as shown.

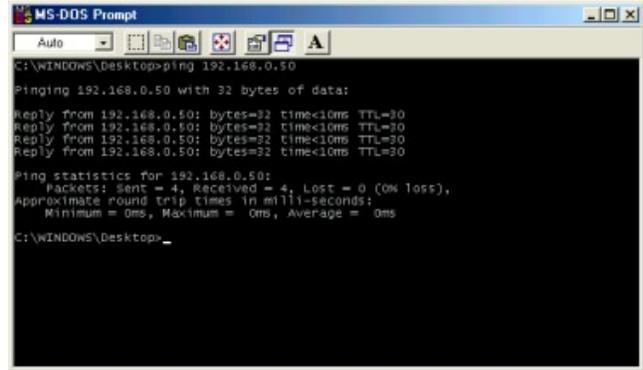


Fig. 7.36

File and Printer Sharing

For help with other tasks in home or small office networking, see **Using the Shared Documents** folder and **Sharing files and folders** in the **Help and Support Center** in Microsoft Windows XP.

8. Technical Specifications

Standards

- IEEE 802.11b
- IEEE 802.3
- IEEE 802.3u

Ports

- (1) 10/100Base-T Ethernet, RJ-45 (UTP)
- (1) Power 5V DC, 2.0A

Network Management

- Web-Based browser with JavaScript

Frequency Range

- 2.4 ~ 2.4835 GHz, Direct Sequence Spread Spectrum (DSSS)

Data Rates (Mbps : Channel)

- 22 : PBCC
- 11 : PBCC/CCK
- 5.5 : PBCC/CCK
- 2 : Barker
- 1 : Barker

Data Security

- 64, 128, 256-bit WEP (Wired Equivalent Privacy) Encryption
- Access Control List

Diagnostic LED

- Power
- Link
- TX/RX

Antenna Type

- Diversity

Range

- Indoors up to 328 feet (100 meters)
- Outdoors up to 1,312 feet (400 meters)

Dimensions

- 140 x 113 x 38 mm (5.51 x 4.45 x 1.50 inches) (antenna folded)
- 140 x 113 x 108 mm (5.51 x 4.45 x 4.25 inches) (antenna fully erected)

Weight

- 213 grams (7.5 Oz.)

Temperature

- Operating: -10°C to 55°C (14°F to 131°F)
- Storing: -20°C to 65°C (-4°F to 149°F)

Humidity:

- 5%-95%, non-condensing

Emissions:

- FCC part 15b
- UL1950-3

9. Contacting Technical Support

You can find the most recent software and user documentation on the TRENDware website www.trendware.com.

TRENDware provides free technical support for customers within the United States for the duration of the warranty period on this product.

U.S. customers can contact TRENDware technical support through our web site, by e-mail, or by phone.

TRENDware Technical Support over the Telephone:

Tel: +1-310-891-1100

TRENDware Technical Support E-mailAddress:

E-mail: support@trendware.com

When contacting technical support, please provide the following information:

- *Serial number of the unit*
- *Model number or product name*
- *Software type and version number*