D-Link® *Air* WCB-B13

2.4 GHz Wireless Cardbus Adapter

Manual

D-Link®

Building Networks for People

Contents

1. Package Contents

Contents of Package:

- **D-Link *Air* WCB-B13** 2.4GHz Wireless Cardbus Adapter

- Manual, QIG, and Drivers on CD

- Printed Quick Installation Guide

If any of the above items are missing, please contact your reseller.

System Requirements:

- A laptop computer with an available 32-bit Cardbus PC Card slot

- Windows XP, Windows 2000, Windows Me, or Windows 98SE

- Cardbus Controller, properly installed and working

- At least 32 MB of memory and a 300 MHz processor

- An 802.11b Access Poin

2. Introduction

The D-Link *Air* WCB-B13 Wireless Cardbus Adapter is an 802.11b wireless adapter that supports high-speed wireless networking at home, at work or in public places.

The WCB-B13 is compatible with existing 802.11b devices such as the D-Link *Air* and *Air*Plus family of products including the DWL-520 and DWL-520+ Wireless PCI Adapters, the DI-614+ Wireless Router, DWL-900AP+ Wireless Access Point and the DWL-120 Wireless USB Adapter.

The WCB-B13 is an ideal way to connect your laptop computer to a Wireless Local Area Network (WLAN.) After completing the steps outlined in the *Quick Installation Guide* (included in the package) you will have the ability to share information and resources, such as files and printers, and take full advantage of a "connected" environment for work or play!

The WCB-B13 includes software drivers for the most popular Microsoft Windows operating systems (Windows XP, Windows 2000, Windows Me, Windows 98SE) and can be integrated into a larger network, running, in either Ad Hoc mode (without an Access Point) or Infrastructure mode (with an Access Point.) *Please take a look at our **Getting Started** section in this manual to see examples of typical network setups using the WCB-B13 in both Infrastructure and Ad-Hoc modes.*

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

Product Features

- Provides high-speed wireless connection up to 11Mbps

- Operates in the 2.4GHz frequency range

- Maximum reliability, throughput and connectivity with automatic data rate switching

- Supports Wired Equivalent Privacy (WEP) data encryption at 64 or 128-bit encryption

- Supports infrastructure networks via an Access Point and peer-to-peer communication in ad-hoc mode

- Built-in dual diversity antenna for reduced interference in a multi-path environment

- 32-bit Cardbus Performance

- User-friendly configuration and diagnostic utilities

LEDs

LED stands for **L**ight-**E**mitting **D**iode. The WCB-B13 has two LEDs:

- **Link** - **Green** LED lights **on** steady to indicate a proper connection   to the network.

- **Activity** - **Amber** LED flashes to indicate **activity** on the network.
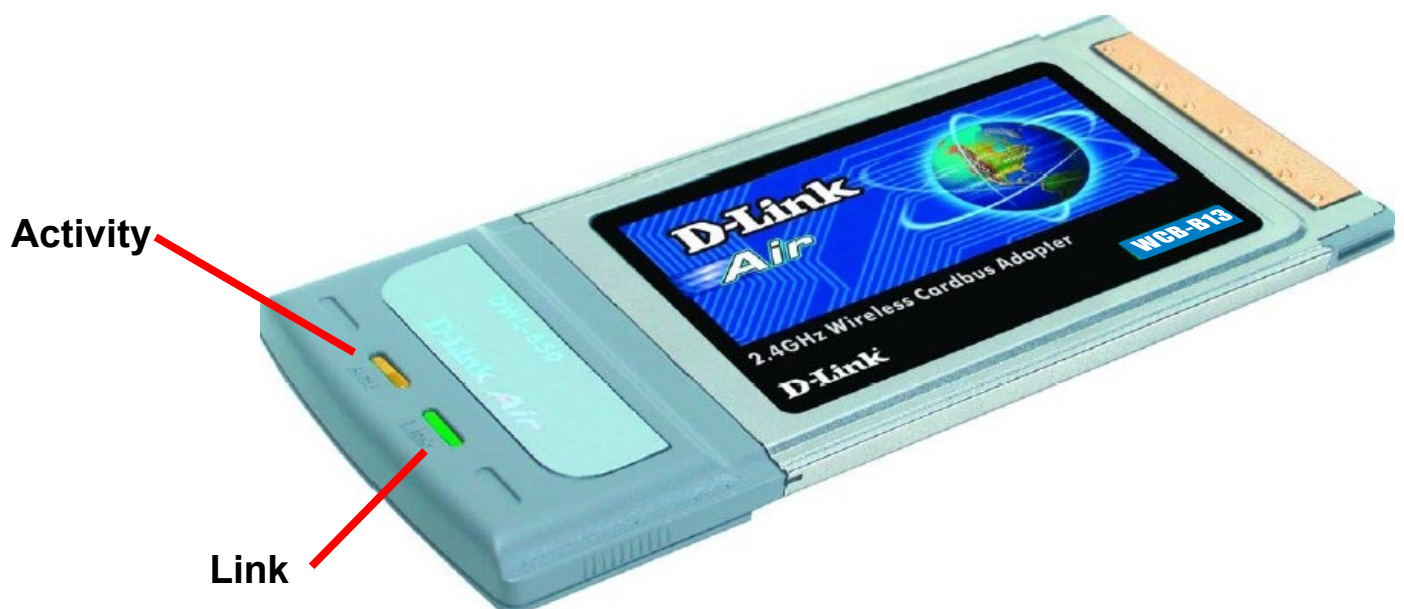
3.   Wireless Basics

D-Link *Air* wireless products are based on industry standards to provide easy-to-use and compatible high-speed wireless connectivity within your home, business or public access wireless networks. Strictly adhering to the IEEE 802.11b and other standards, the D-Link wireless products will allow you to access the data you want, when and where you want it. 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 and 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.

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 pull cable through walls and ceilings.

Network Expansion - Wireless technology allows the network to go where wires cannot.

Scalability - Wireless Local Area Networks (WLANs) can be configured in a variety of topologies to meet the needs of specific applications or

Wireless Basics

existing infrastructures. Configurations are easily changed and range from peer-to-peer networks suitable for a small number of users to larger infrastructure networks to accommodate hundreds or thousands of users, depending on the number of wireless devices deployed.

The WCB-B13 is compatible with the D-Link Air and AirPlus 802.11b family of products which include:

◆ 2.4GHz Wireless PCI cards used with desktop computers (DWL-520, DWL-520+)

◆ Wireless Routers (DI-614+, DI-714P+)

◆ Wireless Access Points (DWL-900AP, DWL-900AP+)

Standards - Based Technology
Based on the 802.11b standard, the WCB-B13 is also interoperable with existing compatible 2.4GHz wireless technology with data transfer speeds of up to 11Mbps.

Installation Considerations
The D-Link *Air* WCB-B13 lets you access a wireless 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 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 WCB-B13 and other network devices to a minimum - each wall or ceiling can reduce your D-Link *Air* Wireless product's range from 3-90 feet (1-30 meters.) Position your receiving devices so that the number of walls or ceilings is minimized.

2. Be aware of the direct line between network devices. 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 devices are positioned so that the signal will travel straight through a wall or ceiling for better reception.

Wireless Basics

3. Building Materials make a difference - a solid metal door or aluminum studs may have a negative effect on range. Try to position wireless devices, and computers with wireless adapters so that the signal passes through drywall or open doorways and not other materials.

4. Keep your product away (at least 3-6 feet or 1-2 meters) from electrical devices or appliances that generate RF noise.

4. Getting Started

With its default settings, the WCB-B13, when activated, will automatically connect with other D-Link *Air* or *Air*Plus products, right out of the box.

There are basically two modes of networking:

Infrastructure – using an Access Point, such as the DWL-6000AP

Ad-Hoc – directly connecting to another computer, for peer-to-peer communication, using wireless network adapters on each computer, such as two or more WCB-B13 cardbus adapters.

On the following pages we will show you an example of an **Infrastructure Network** and an **Ad-Hoc Network**.

An **Infrastructure** network contains an Access Point. The **Infrastructure Network** example shown on the following page contains the following D-Link network devices:

A wireless Broadband Router – i.e., **D-Link *Air*Plus DI-614+**

A laptop computer with a wireless network adapter – i.e., **D-Link *Air* WCB-B13**

A desktop computer with an Ethernet adapter – i.e., **(D-Link DFE-530TX+)**

A Cable modem – i.e., **D-Link DCM-200**

DHCP stands for Dynamic Host Configuration Protocol. It is a protocol for assigning IP addresses "automatically." With a DHCP-capable gateway/router, there is no need to manually assign an IP address.

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

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

Using the Configuration Utility- *learn the settings for the WCB-B13, using the web-based interface.*

Troubleshooting – *learn how to check for common installation issues and other tips for troubleshooting.*

Getting Started

Setting Up an Infrastructure Network
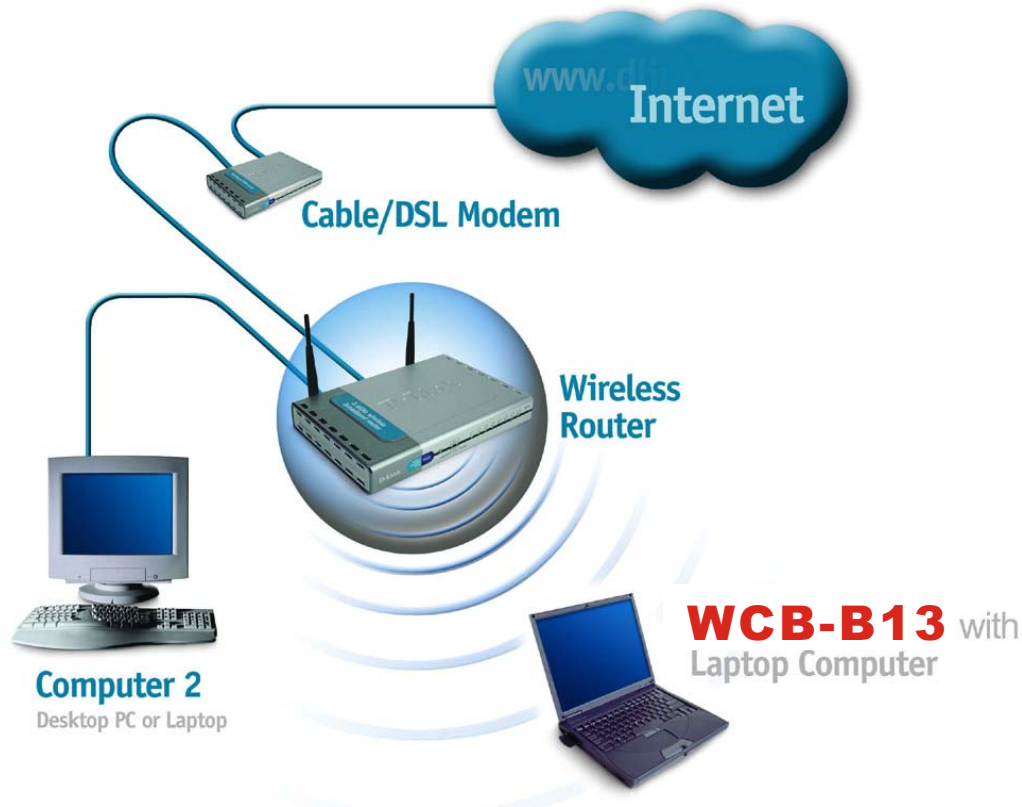
*Please remember that **D-Link Air** wireless devices are pre-configured to connect together, right out of the box, with their default settings.*

For a typical wireless setup at home (as shown above), please do the following:

①   You will need broadband Internet access (a Cable or DSL-subscriber line into your home or office)

②   Consult with your Cable or DSL provider for proper installation of the modem.

③   Connect the Cable or DSL modem to your Broadband router (such as the **D-Link DI-614+**.) *See the **Quick Installation Guide** included with the router.*

④   If an Ethernet port is available on the router, connect a computer that is equipped with an Ethernet Network adapter (such as the **DFE-530TX+**) to the router.

⑤   Install the drivers for the wireless network adapter (such as the **D-Link *Air* WCB-B13**) into the laptop computer. *See the **Quick Installation Guide** included with the WCB-B13.*

Getting Started
Setting up a Wireless Ad Hoc Network

① Install a network adapter into one computer. In the example above, the **D-Link** *Air* **DWL-120** USB Wireless Network adapter is installed. You can also install the **DWL-520** Wireless PCI Adapter in the desktop computer. *See the **Quick Installation Guide** included with the product for installation instructions*.

② Install the **WCB-B13** into a laptop computer. *See the **Quick Installation Guide** included with the product*.

③ Set the wireless configuration for the adapters to Ad-Hoc mode, set the adapters to the same channel, and assign an IP Address to each computer on the Ad-Hoc network. (See Box below)

IP Address

When assigning 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.

5. Using the Configuration Utility

If you want to alter the default settings or optimize the performance of the WCB-B13, D-Link has included a configuration utility to do so.

> *Note:With its default settings, the WCB-B13 will associate with D-Link Air / AirPlus products such as the DI-614+ (a wireless router), and the DWL-520 (a wireless PCI adapter), right out of the box.*

Before you use the configuration utility for the WCB-B13, you must install the drivers and the configuration utility by inserting the CD-ROM that came with the WCB-B13. (Please see the *Quick Installation Guide* that came with the product.)   After you have completed this installation and restarted your computer, you can access the Configuration Utility at any time by clicking on the icon in your taskbar at the bottom right corner of your PC's screen.

- Double-click on the **Configuration Utility icon** shown on the right.

Note: If the utility icon does not appear, double-click on the shortcut icon that has been created on your desktop workspace (shown here).

After double-clicking on the icon, the D-Link Air WCB-B13 Utility window will appear as shown on the following page.

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Configuration Utility

Link Info

After clicking on the Configuration Utility icon, the **Link Info** screen will display the following:
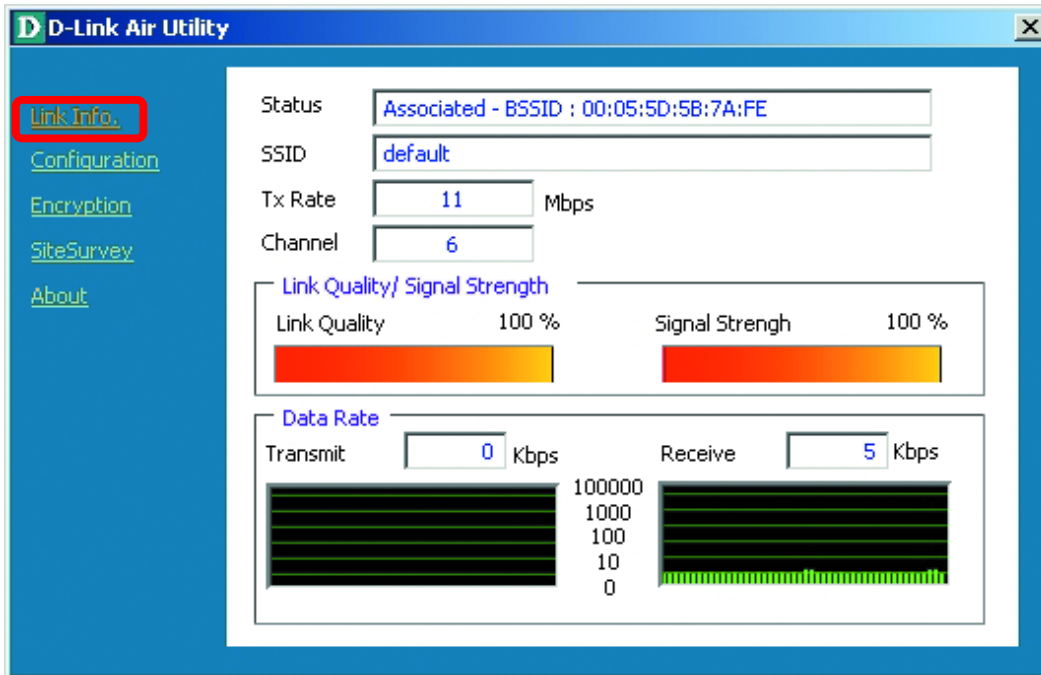
Status: Displays the MAC Address of the Access Point that is associated with the WCB-B13.

SSID: The Service Set Identifier is the name assigned to the wireless network. The factory SSID setting is set to **default**.

TxRate: The factory setting is set to 11 Mbps; however, TxRate settings are automatically determined by the WCB-B13 depending on the distance from the access point.

Channel: Displays the channel information. By default, the channel is set to 6 and selection is automatically determined by the WCB-B13.

Link Quality / Signal Strength: Displays the Link Quality for the WCB-B13 wireless connection to the access point. The Signal Strength represents the wireless signal between the access point and the WCB-B13. The percentage coincides with the graphical bar.

Data Rate: Displays the statistics of data transmitted and received.

13

Configuration Utility

Configuration

This Configuration screen displays the default settings for the WCB-B13.

D-Link Air Utility

Link Info.
Configuration
Encryption
SiteSurvey
About

SSID: default
Wireless Mode: Infrastructure
Channel: 6
Tx Rate: Auto
Preamble: Auto

Apply   Cancel
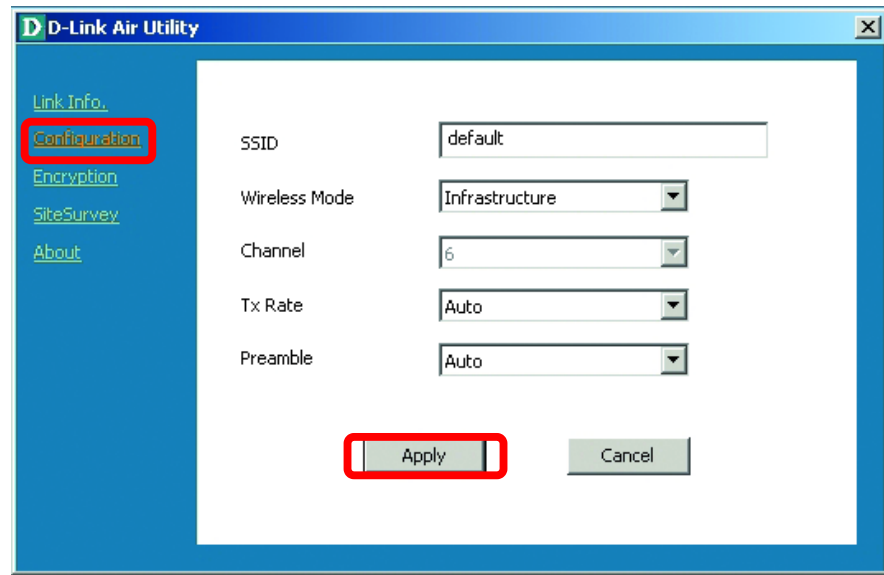
To communicate on the network all devices must have the same settings for the following properties:

SSID - (Service Set Identifier) is a name that identifies a wireless network. Access Points and wireless clients attempting to connect to a specific WLAN (Wireless Local Area Network) must use the same SSID. The default setting is **default**.

Wireless Mode - Click on the pull-down menu; select from the following options:

> **Infrastructure** - connecting the WLAN using an Access Point such as the DWL-6000AP. (The **default** setting.)

> **Ad-Hoc –** wireless mode used when connecting directly to a computer equipped with a wireless adapter such as the D-Link *Air* DWL-520 Wireless PCI adapter in a peer-to-peer environment.

Channel – The **default** channel setting is channel 6. However, the WCB-B13 will automatically select the channel to match the channel setting for the selected Access Point. In Ad Hoc mode, the channel must be manually set to the same channel for each wireless adapter.

TX Rate - Select the transmission rate on the network. **Auto** is the **default** setting.

Preamble - Select **Long** or **Short Preamble.** The Preamble defines the length of the CRC block (Cyclic Redundancy Check is a common technique for detecting data transmission errors) for communication between the Access Point and the roaming wireless Network adapters. **Auto** is the **default** setting*. Note: High network traffic areas should use the shorter preamble type.*

*If any changes are made to the configuration of the wireless adapter, click **Apply** to save the changes.*

Configuration Utility

Encryption
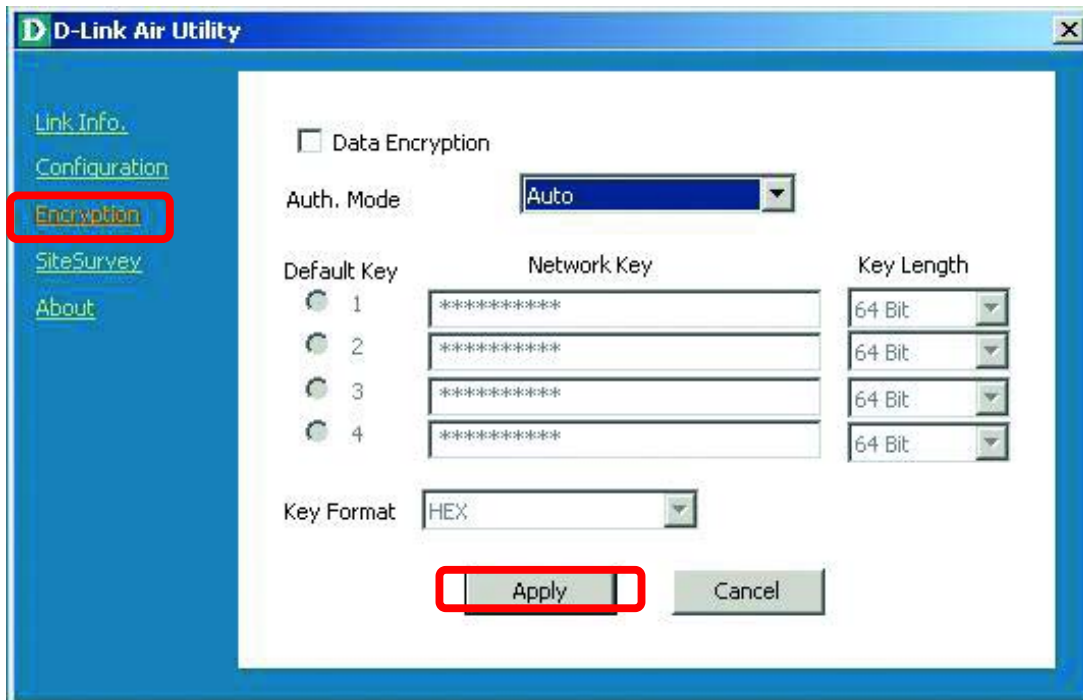
Please note that all devices must share the same Encryption settings to communicate on the network.

Data Encryption – enable Encryption by clicking on the box. The WCB-B13 has Encryption disabled as the default setting.

Authorization mode – choose one of the following modes:

Open Authentication – communicates the key across the network

Shared Authentication – allows communication only with other devices with identical WEP settings

Auto – will automatically adjust to the Authentication mode of the wireless client

Network Key – enter a key in either ASCII (e.g., a word) or hexadecimal format

Key Format - ASCII or Hexadecimal

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

Key Length - select the key length, either 64 or 128 bit

Default Key – select the key you wish to use for Encryption

Click **Apply** to save the changes.

Configuration Utility

Site Survey
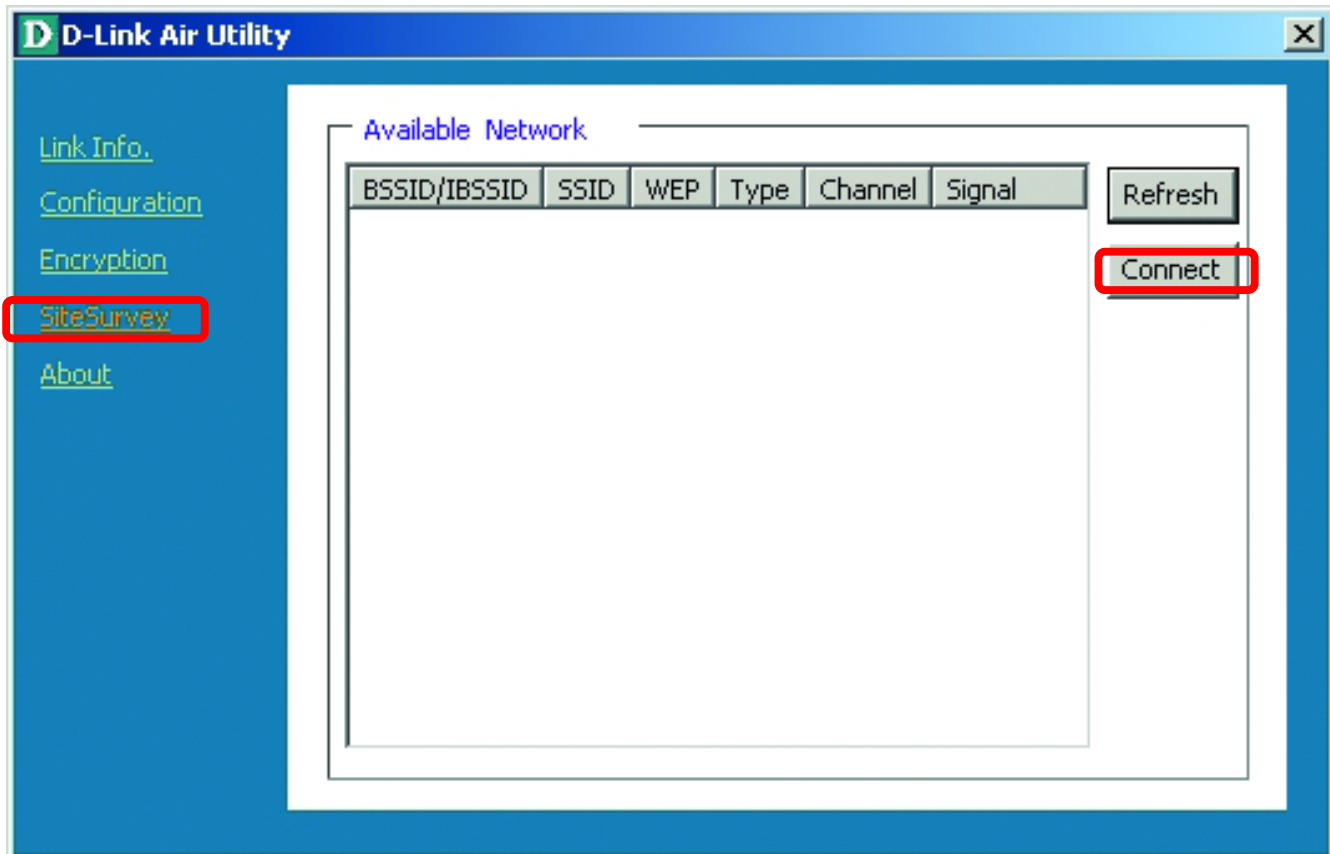
Available Network

The window displays the **Available Networks.** Scroll up and down the list and highlight the network to which you wish to connect. Click on the **Connect** button.

Configuration Utility

About

The **ABOUT** screen gives you information about the **Firmware** and **Utility Versions** of the WCB-B13.
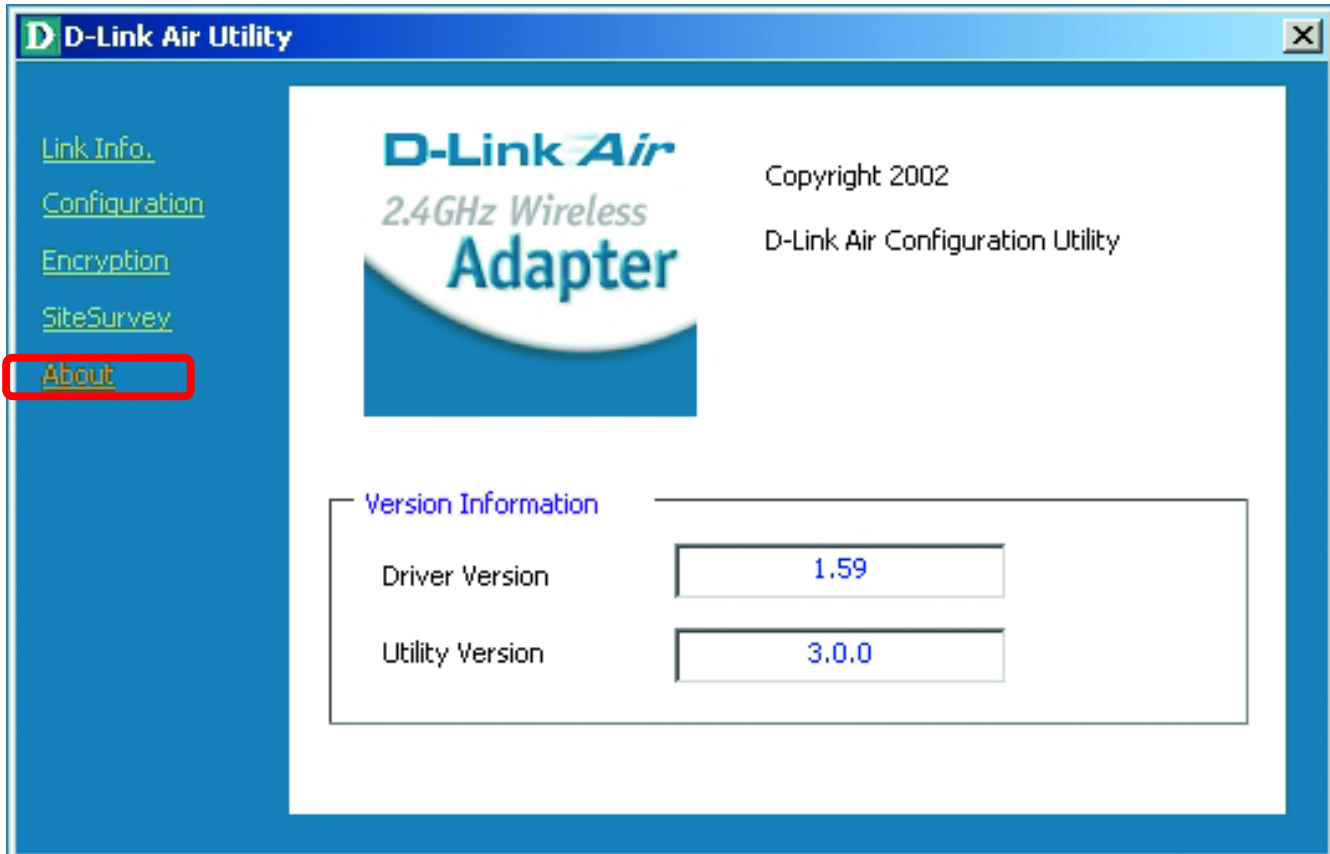
6.   Troubleshooting

This chapter provides solutions to problems that can occur during the installation and operation of the WCB-B13 Wireless Adapter.   Read the following descriptions if you are having problems. *(The examples below are illustrated in Windows XP. If you have another operating system, these solutions will still apply although the appearance on your computer screen may differ.)*

1. Checking the Installation of the Drivers for the Wireless Adapter

- Go to **Start**

- Right-click on **My Computer**

- Click **Properties**
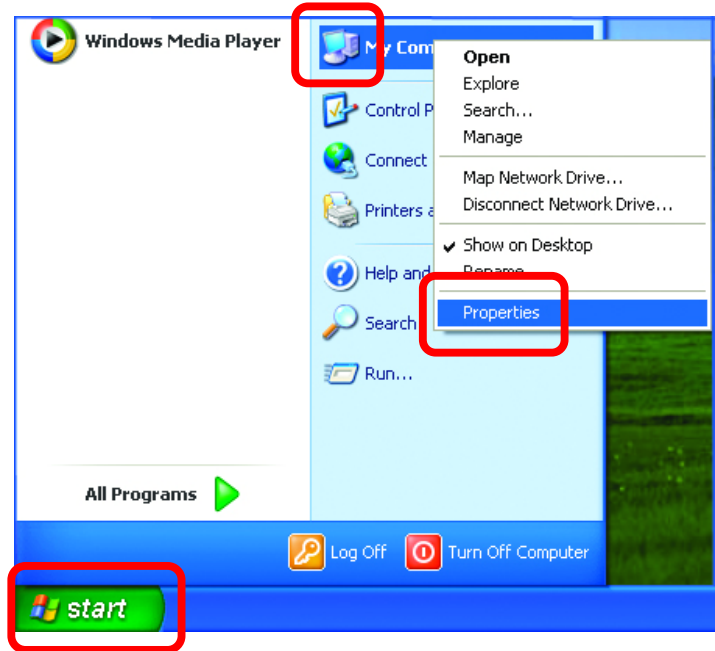
- Select the **Hardware Tab**

- Click **Device Manager**
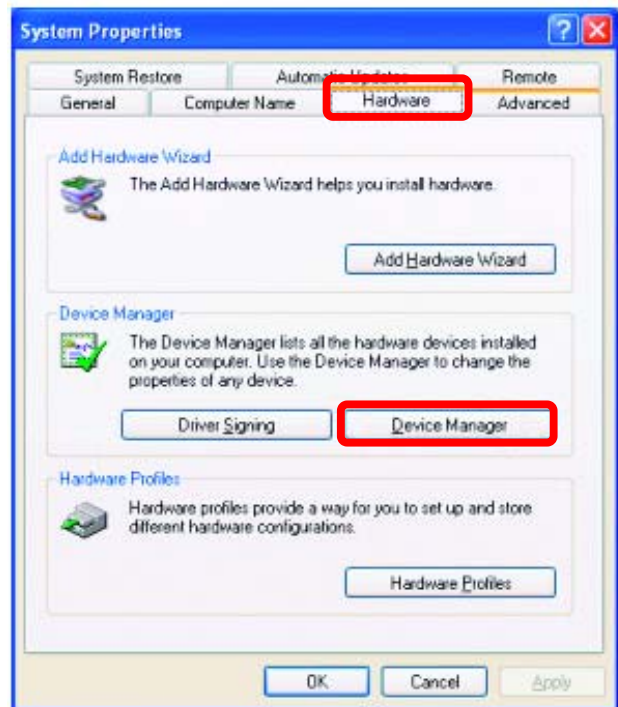
Troubleshooting

- Double-click on **Network Adapters**

- Right-click on **D-Link** *Air* **WCB-B13 Wireless Adapter**

- Select **Properties** to check that the drivers are installed properly.
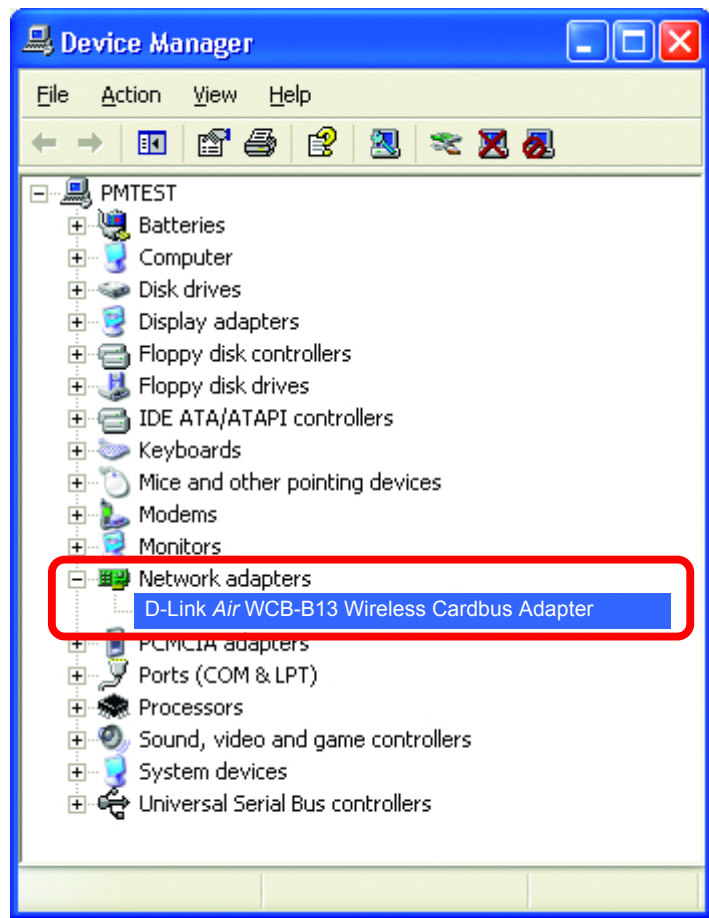
- Look under **Device Status** to check that the device is working properly.
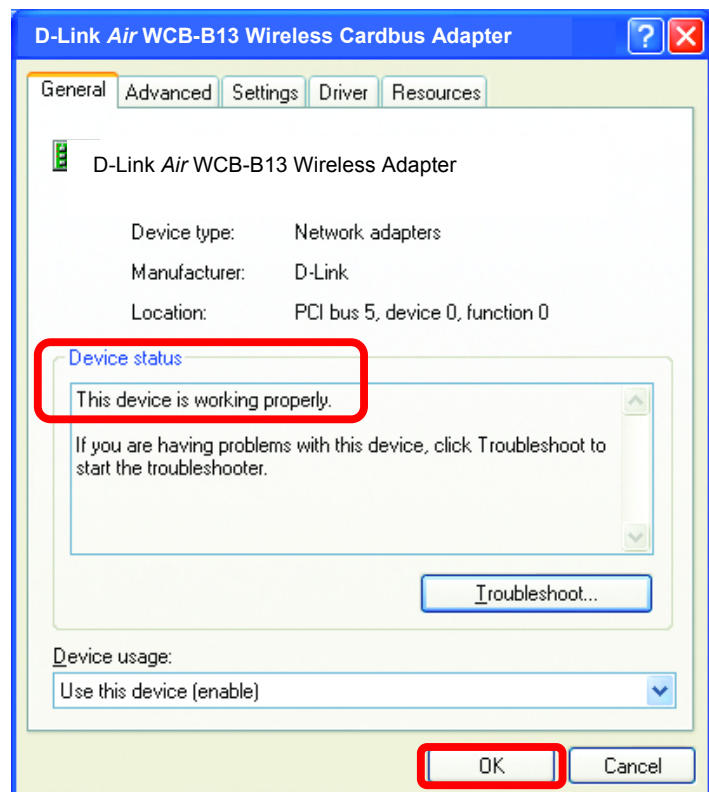
- Click **OK**

Troubleshooting

2. **I cannot connect to the access point or the wireless router.**

   - Make sure that the SSID on the WCB-B13 Cardbus adapter is exactly the same as the SSID on the Access Point or wireless router.

3. **The WCB-B13 Power and Link lights are not on.**

   - Check to see if the WCB-B13 Cardbus adapter is firmly inserted into a PC Cardbus slot.

4. **I forgot my Encryption key.**

   - Reset the Access Point to its factory default settings and restore the WCB-B13 Wireless Cardbus Adapter to the factory default settings. (The default settings are listed in Ch.5: **Using the Configuration Utility** in this manual.)

5. **The computer does not recognize the WCB-B13 Wireless Adapter.**

   - Make sure that the WCB-B13 Wireless Adapter is properly seated in the computer's Cardbus slot.

   - If Windows does not detect the hardware upon insertion of the adapter, make sure to completely remove drivers that were previously loaded. To remove the drivers, do the following:

     A. Under **Tools**> select **Folder Options**…> select **View** > under **Hidden files and folders** > select **Show hidden files and folders**

     B. Uncheck **Hide extension for known file types** > click on Apply

     C. Search for the files **TIACXLN.INF** and **TIACXLN.SYS**. Remove these files from the **INF** and **SYSTEM32** (DRIVERS) folders in the Windows directory. Note: Windows XP and Windows 2000 will rename **.inf** files that have not received WHQL certification into **oem.inf** files (e.g., **oem1.inf.)**

6. **The computer with the WCB-B13 installed is unable to connect to the wireless network.**

   - Check that the LED indicators for the broadband modem are indicating normal activity. If not, there may be a problem with the broadband connection.

Troubleshooting

- Check that the LED indicators on the wireless router are functioning properly. If not, check that the AC power and Ethernet cables are firmly connected.

- Check that the IP Address, subnet mask, gateway, and DNS settings are correctly entered for the network

- In **Infrastructure** mode, make sure the same **Service Set Identifier (SSID)** is specified on the settings for the wireless clients and access points. The **SSID** factory default setting for the D-Link *Air* products is **default.** (Double-click on the WLAN icon in the taskbar. The **Link Info** screen will display the SSID setting.)

- In **Ad-Hoc** mode, both wireless clients will need to have the same **SSID**. Please note that it might be necessary to set up one client to establish a **BSS (Basic Service Set)** and wait briefly before setting up other clients. This prevents several clients from trying to establish a **BSS** at the same time, which can result in multiple singular **BSSs** being established, rather than a single **BSS** with multiple clients associated to it.

- Check that the **Network Connection** for the wireless client is configured properly. Select **AP (Infrastructure)** when connecting to an access point and select **Ad-Hoc mode** when connecting without an access point. Double-click on the **WLAN icon** in the taskbar > click on **Configuration** to change the settings for the wireless adapter.

- If **Security** is enabled, make sure that the correct encryption keys are entered on both the WCB-B13 and the access point. Double-click on the **WLAN** icon in the taskbar > click **Encryption**. Check to see that the key selected is set to the same key as other devices on the network.

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.**

Note: Please refer to websites such as http://www.homenethelp.com and http://www.microsoft.com/windows2000 for information about networking computers using Windows 2000, Me or 98SE.

Go to **Start** > **Control Panel** > **Network Connections**
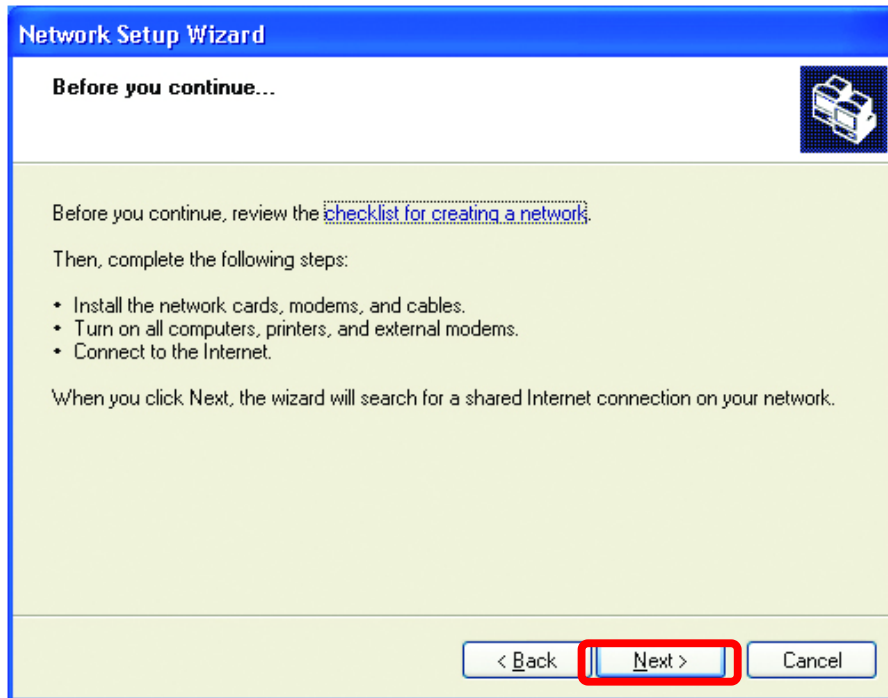Select **Set up a home or small office network**
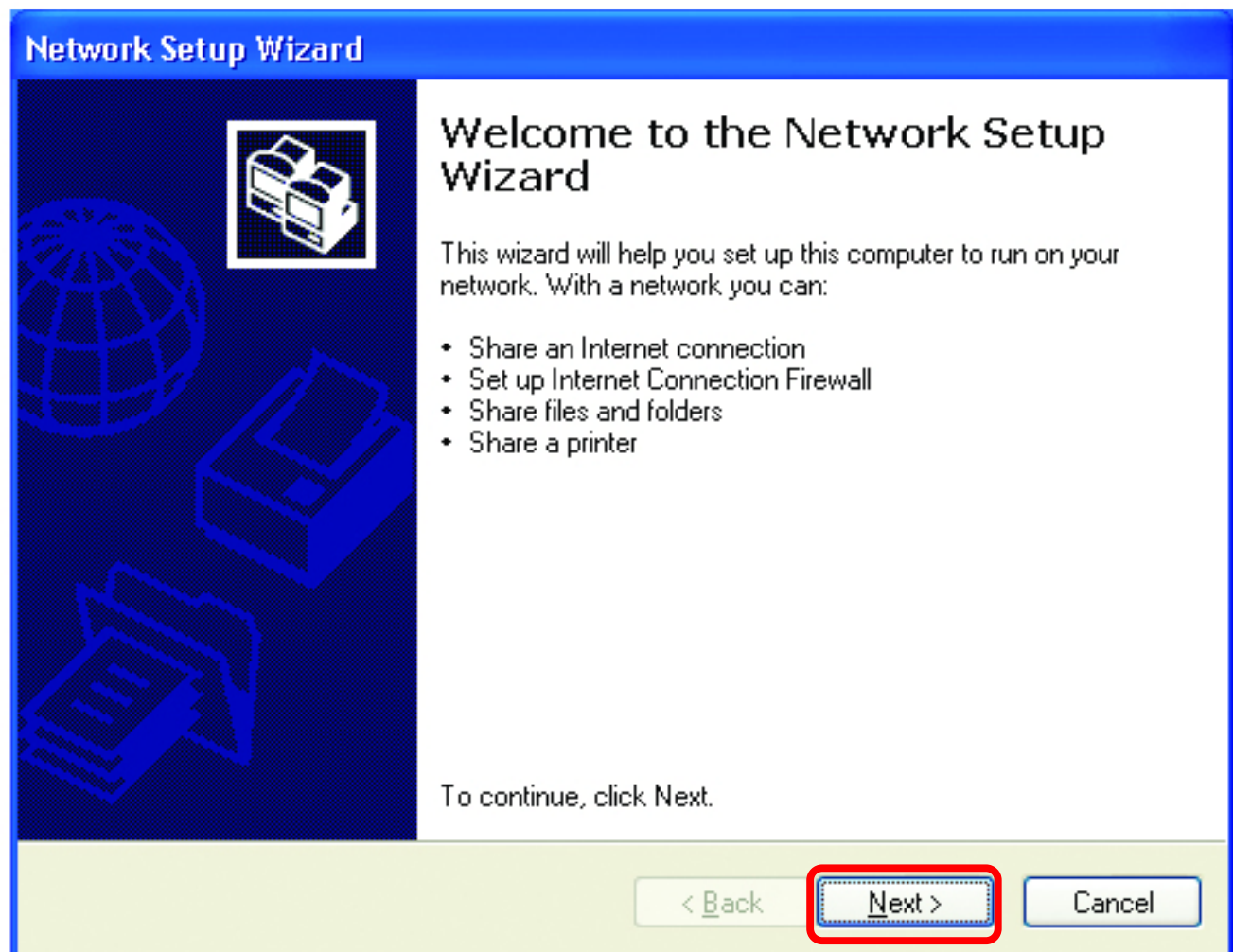
When this screen appears, click **Next.**

Networking Basics
Using the Network Setup Wizard in Windows XP

Please follow all the instructions in this window:

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.
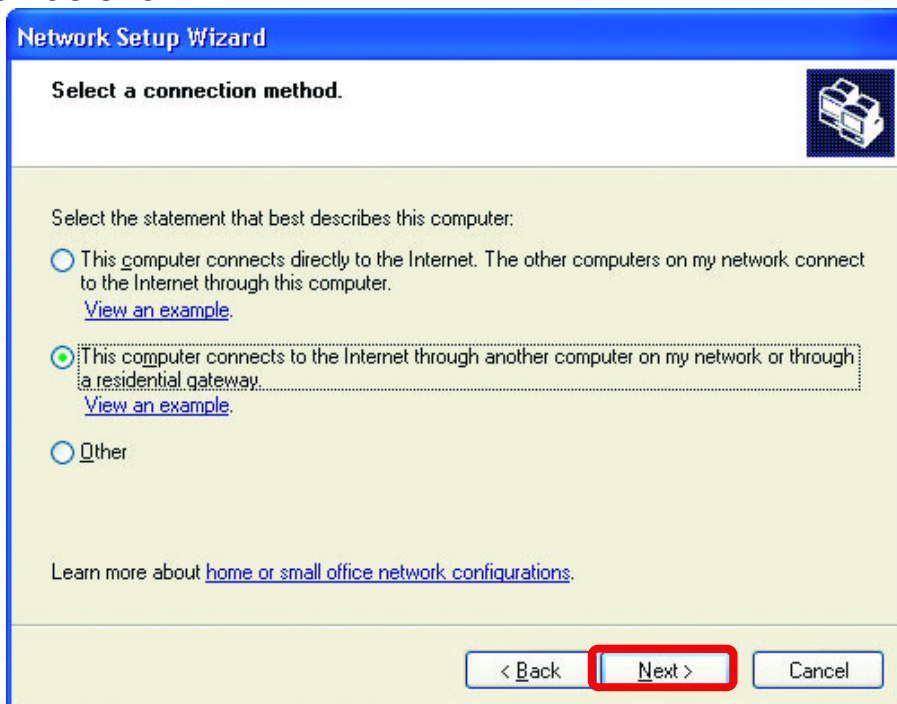
Click **Next**

Networking Basics

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

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

Click **Next**

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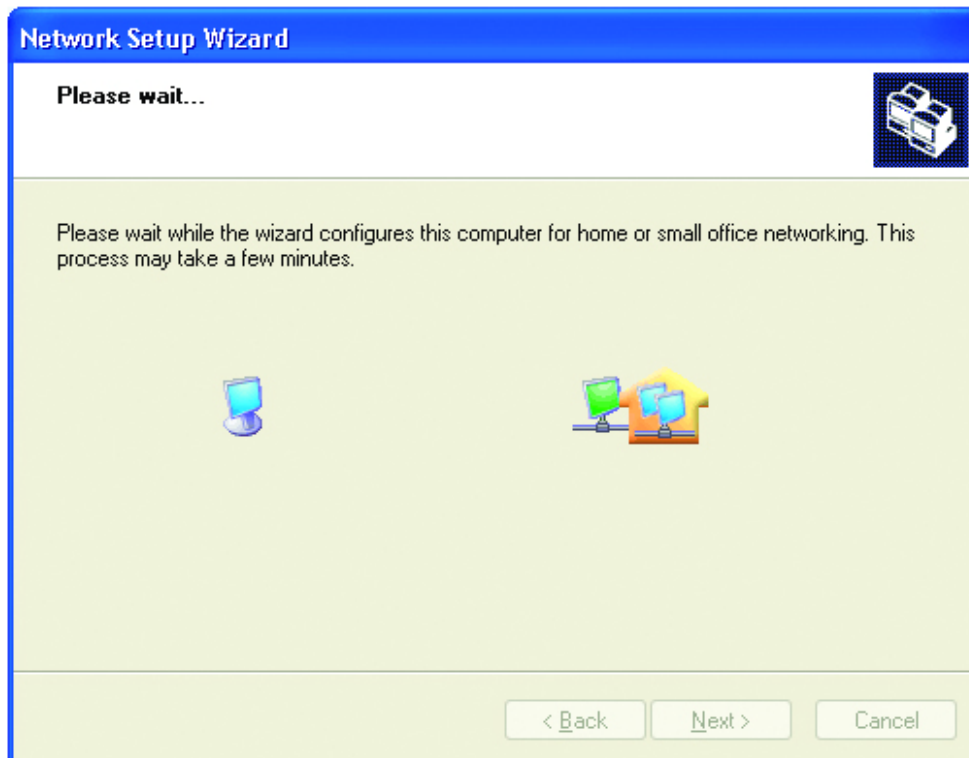

Click **Next**

Networking Basics

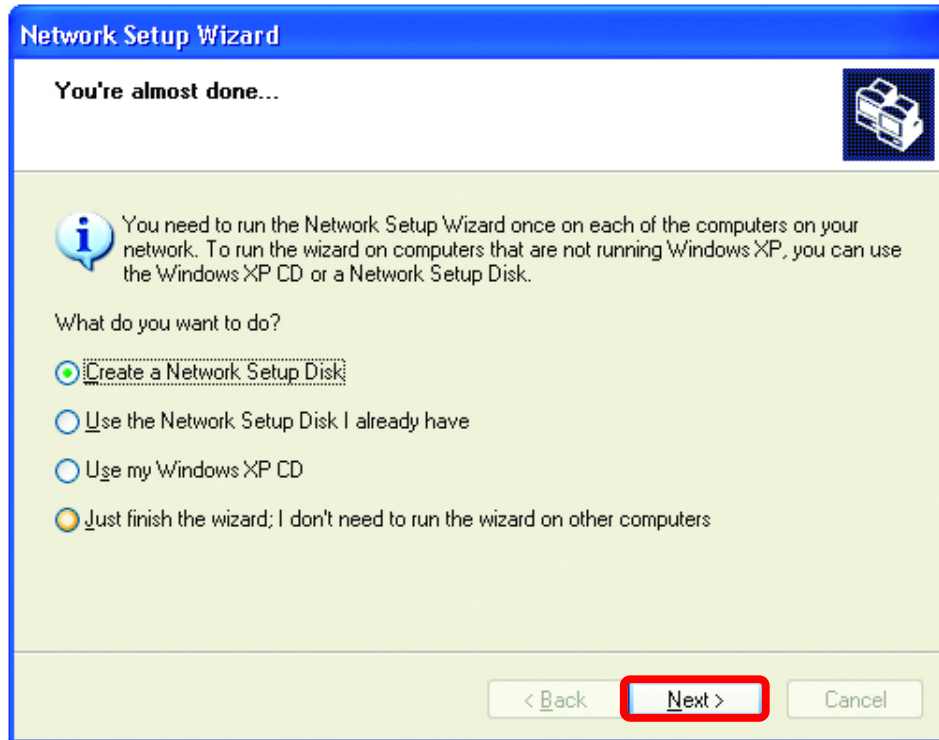Please wait while the wizard applies the changes.
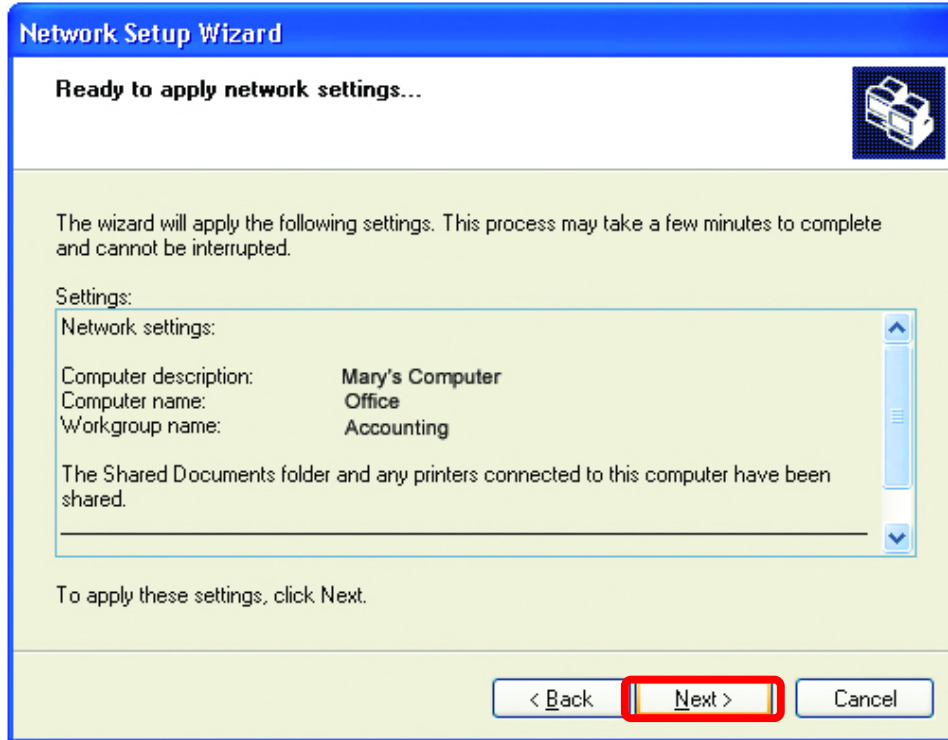
When the changes are complete, click **Next**.

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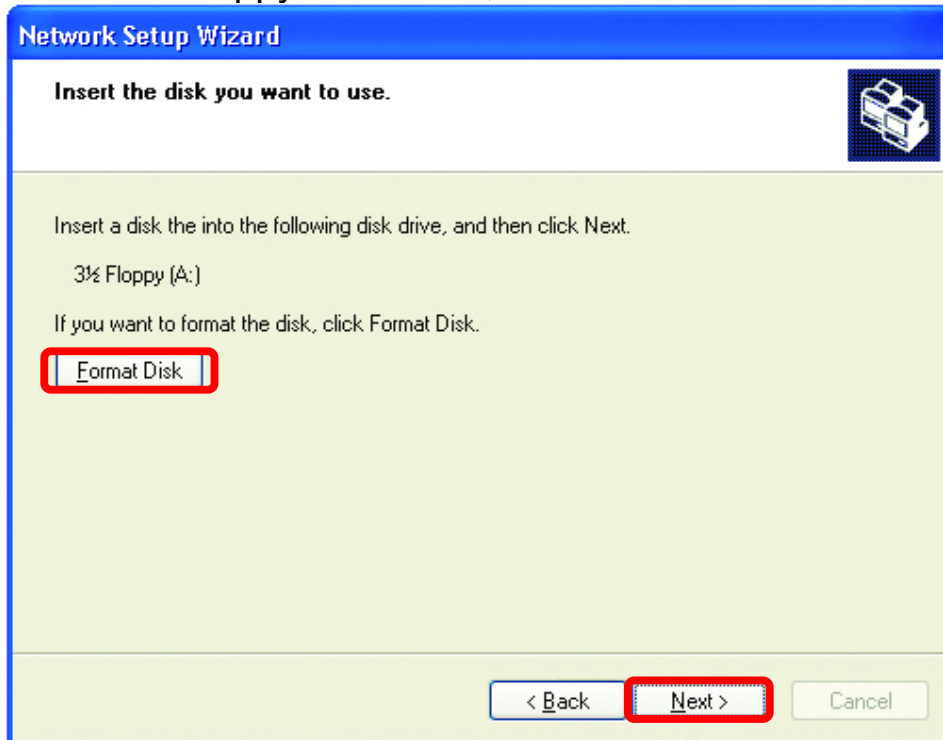This may take a few minutes.

Networking Basics

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**.

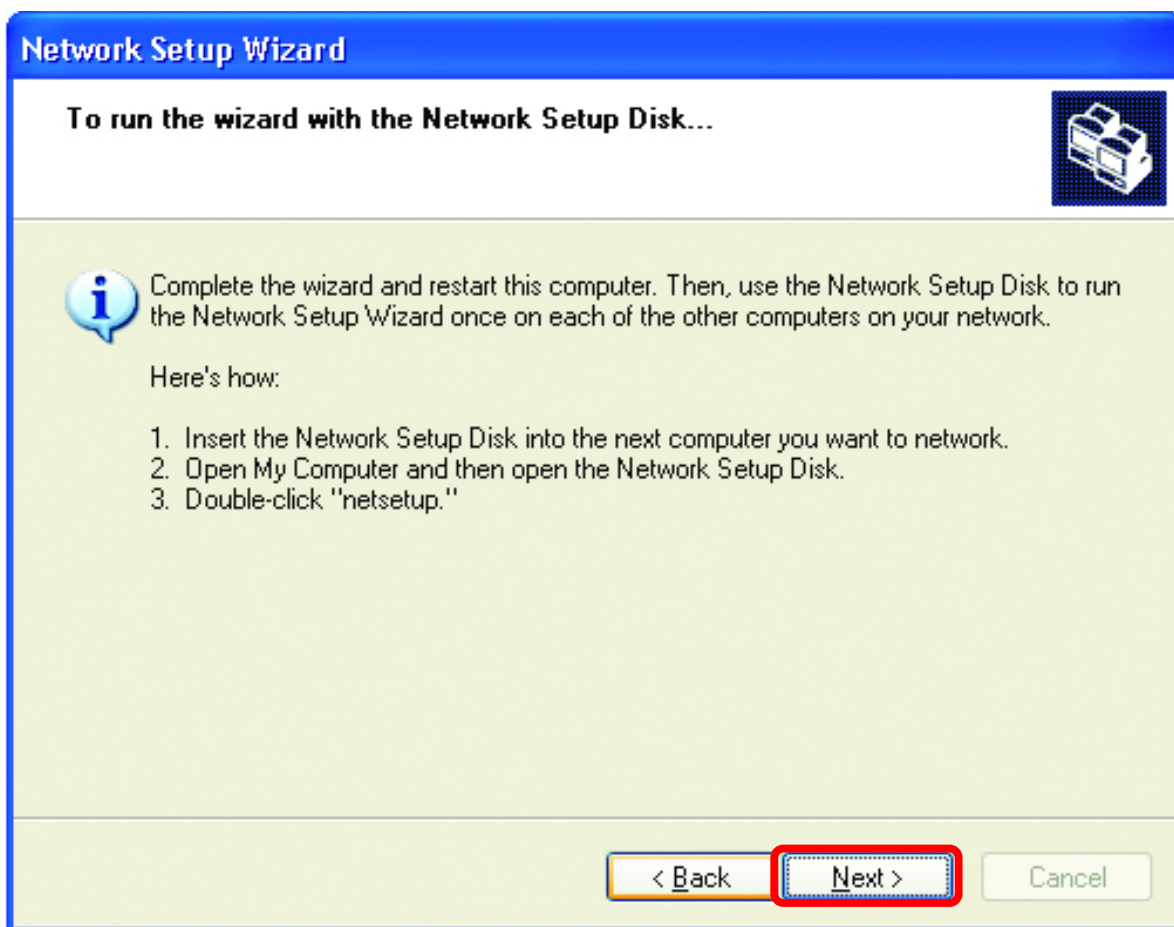Insert a disk into the Floppy Disk Drive, in this case drive **A:**

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

Networking Basics

Please wait while the wizard copies the files.

Copying...

Please wait while the wizard copies files...

Cancel

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**

Network Setup Wizard

To run the wizard with the Network Setup Disk...

Complete the wizard and restart this computer. Then, use the Network Setup Disk to run the Network Setup Wizard once on each of the other computers on your network.

Here's how:

1. Insert the Network Setup Disk into the next computer you want to network.
2. Open My Computer and then open the Network Setup Disk.
3. Double-click "netsetup."
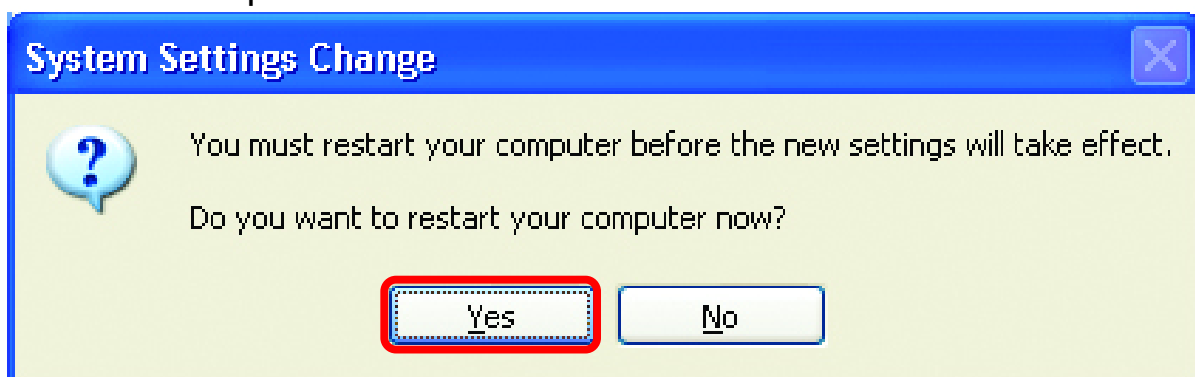
< Back   Next >   Cancel

Networking Basics

Please read the information on this screen, then click **Finish** to complete the **Network Setup Wizard**.
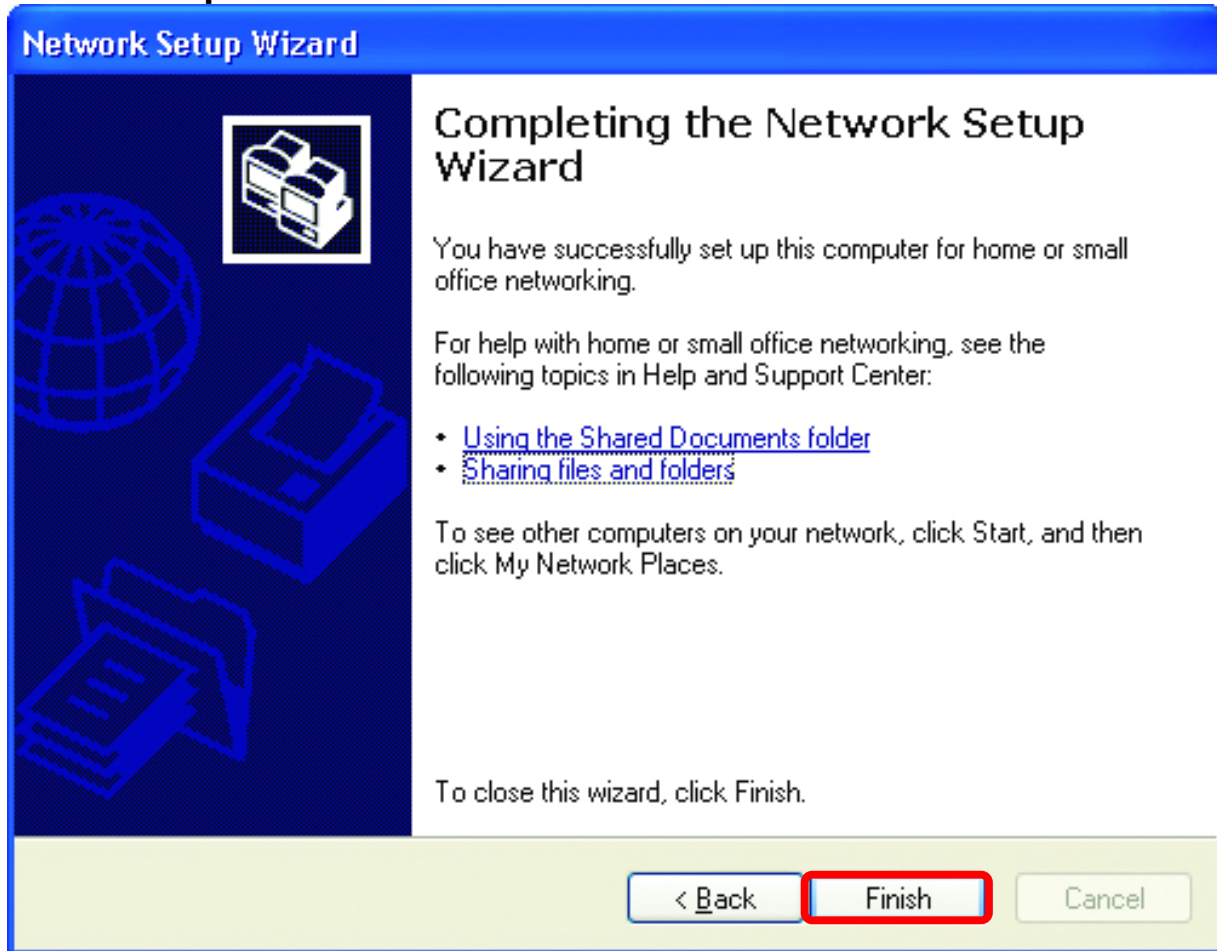
The new settings will take effect when you restart the computer. Click **Yes** to restart the computer.

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.
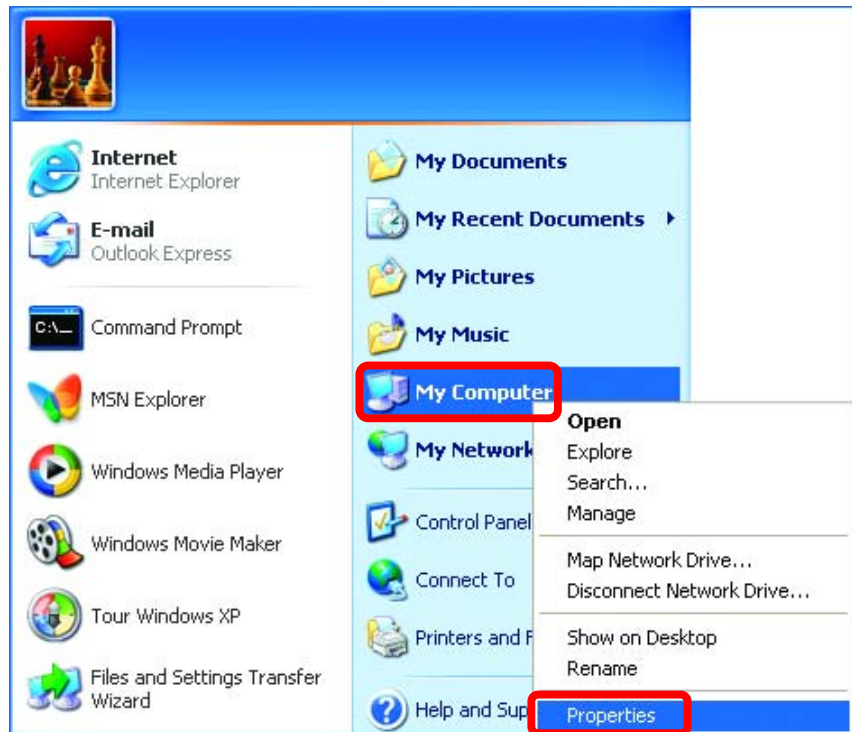
Networking Basics
Naming your Computer

To name your computer, please follow these directions:

In **Windows XP**:

- Click **Start** (in the lower left corner of the screen)

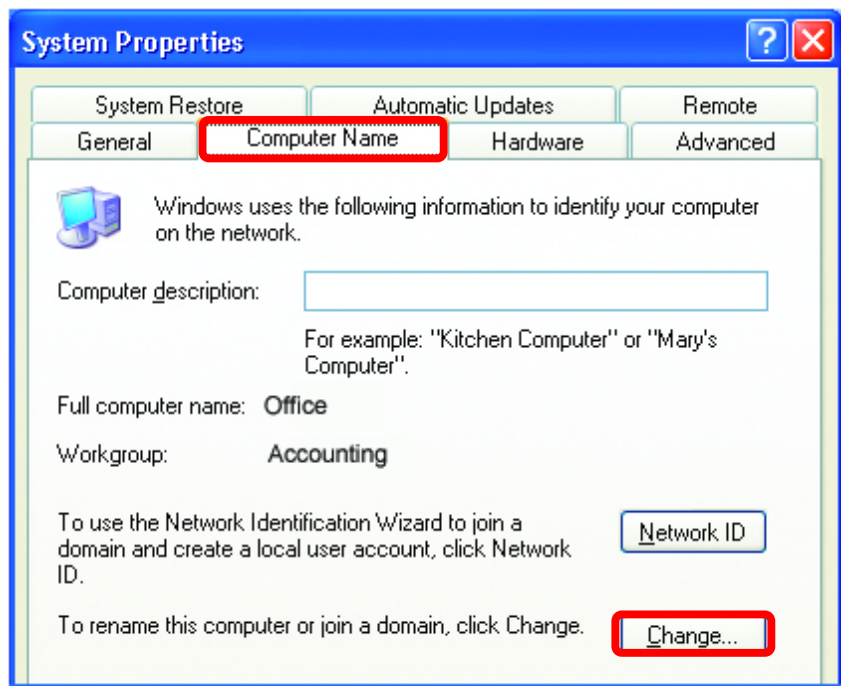- Right-click on **My Computer**

- Select **Properties** and **click**

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

You may enter a Computer description if you wish; this field is optional.
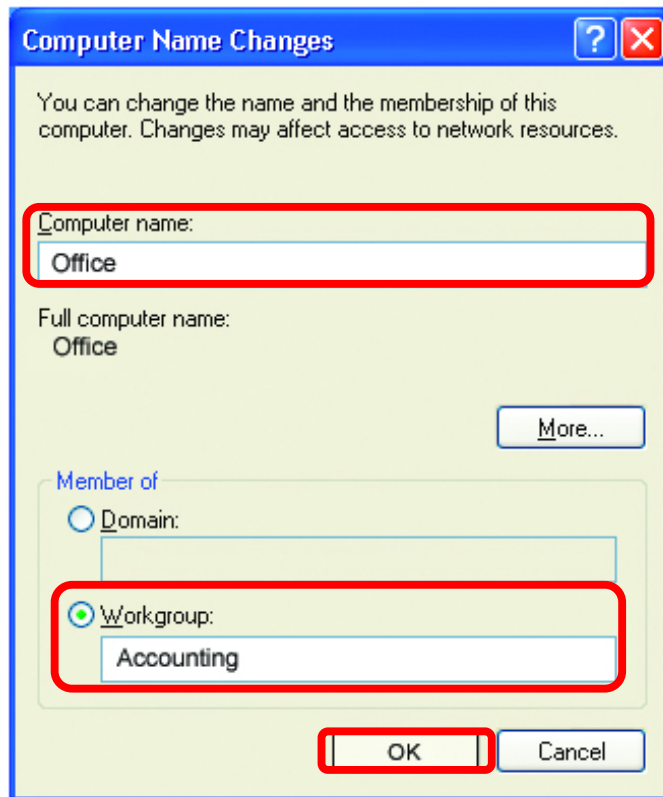
To rename the computer or join a domain,
- Click **Change**

Networking Basics
Naming your Computer

- 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**

Checking the IP Address in Windows XP/2000

Go to Start > All Programs > Accessories > Command Prompt