D-Link® *Air* DWL-510

2.4 GHz Wireless PCI Adapter

Manual

D-Link®

Building Networks for People

Contents

1. Package Contents

Contents of Package:

- **D-Link** *Air* **DWL-510** 2.4GHz Wireless PCI 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 PC computer with an available 32-bit PCI slot
- Windows XP, Windows 2000, Windows Me, or Windows 98SE
- At least 32 MB of memory and a 300 MHz processor
- An 802.11b Access Point (e.g., DWL-1000AP for **Infrastructure Mode**) or another 802.11b wireless adapter (e.g., DWL-650 for **Ad-Hoc mode**.)

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2. Introduction

The D-Link *Air* DWL-510 Wireless Cardbus Adapter is an 802.11b wireless adapter that supports high-speed wireless networking at home, at work or in public places.

The DWL-510 is compatible with existing 802.11b devices such as the D-Link *Air* and *Air*Plus family of products including the DWL-650 Wireless Cardbus Adapters, the DI-614+ Wireless Router, DWL-900AP+ Wireless Access Point and the DWL-120 Wireless USB Adapter.

The DWL-510 is an ideal way to connect your 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 DWL-510 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 DWL-510 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 & Benefits

- Provides a simple and inexpensive way to connect your desktop computer to a wireless network at home, or at the office

- Wi-Fi compatible

- Fully compliant with the 802.11b standard and interoperable with all existing 802.11b-compliant devices

- Quick and Easy Installation- The DWL-510 installs quickly and easily to a standard PCI 2.2 slot in a desktop computer. By following the simple steps outlined in the Quick Installation Guide, you can connect to an available wireless network in a matter of seconds

- High Performance 32-bit PCI- The high capacity PCI interface utilized by the DWL-510 ensures optimal performance in transmitting a wireless signal within the desktop computer. By utilizing a standard PCI 2.2 interface, the DWL-510 ensures a wide range of compatibility with motherboards used by PC manufacturers

- 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

- Provides a measure of security for the information transmitted over a wireless network with high data encryption at 64 or 128-bit WEP.

- Supports infrastructure networks via an access point and peer-to-peer communication in ad-hoc mode

- 32-bit PCI performance

- User-friendly configuration and diagnostic utilities

LEDs

LED stands for **L**ight-**E**mitting **D**iode. The DWL-510 has a LED functioning in two ways, Link and Activity:

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

- **Activity** - **Green** 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 DWL-510 is compatible with the D-Link Air and AirPlus 802.11b family of products which include:

- ◆ 2.4GHz Wireless Cardbus used with laptop computers (DWL-650)
- ◆ Wireless Routers (DI-614+, DI-714P+)
- ◆ Wireless Access Points (DWL-900AP, DWL-900AP+)

Standards - Based Technology
Based on the 802.11b standard, the DWL-510 is also interoperable with existing compatible 2.4GHz wireless technology with data transfer speeds of up to 11Mbps.

Installation Considerations
The D-Link *Air* DWL-510 lets you access a wireless network with your 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 DWL-510 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.

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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 DWL-510, 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 DWL-510 PCI 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 computer with a wireless network adapter –
i.e., **D-Link *Air* DWL-510**

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 DWL-510, using the Configuration Program Utility.

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

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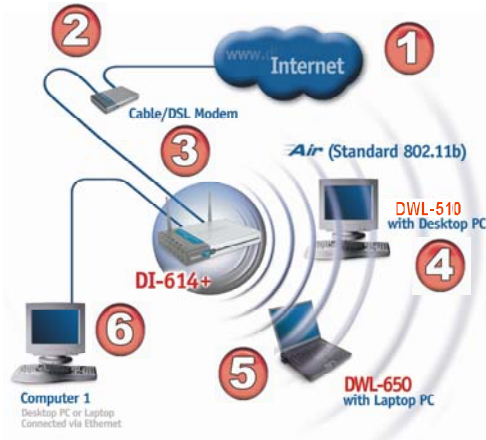
*Please remember that **D-Link Air** wireless devices are pre-configured to connect together, right out of the box, with their default settings.*

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 Install the **D-Link Air DWL-510** wireless PCI adapter into an available PCI slot on your desktop computer

5 Install the drivers for the wireless network adapter (such as the **D-Link *Air* DWL-650**) into the laptop computer. *See the **Quick Installation Guide** included with the DWL-650.*

6 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.

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Getting Started

Setting up a Wireless Ad Hoc Network

① Install a network adapter into one computer. In the example above, the **DWL-510** Wireless PCI Adapter in the desktop computer is installed. *See the **Quick Installation Guide** included with the product for installation instructions*.

② Install the **DWL-650** 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.

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5. Using the Configuration Utility

If you want to alter the default settings or optimize the performance of the DWL-510, D-Link has included a configuration utility to do so.

> *Note: With its default settings, the DWL-510 will associate with D-Link Air / Air*Plus *products such as the DI-614+ (a wireless router), and the DWL-650 (a wireless Cardbus adapter), right out of the box.*

Before you use the configuration utility for the DWL-510, you must install the drivers and the configuration utility by inserting the CD-ROM that came with the DWL-510. (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 *DWL-510 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:
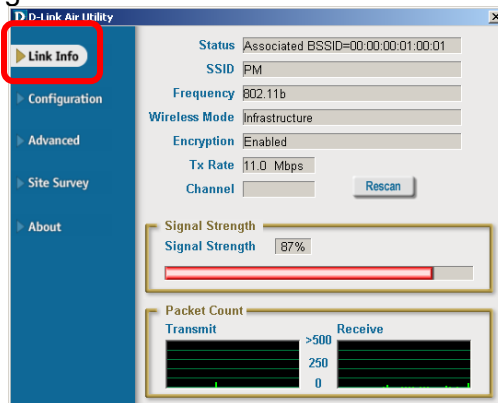
Status: Displays the MAC Address of the Access Point that is associated with the DWL-510.

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

Frequency: Display the frequency of the Access Point that is associated with the DWL-510.

Wireless Mode: Display wireless mode using infrastructure or Ad-Hoc mode.

Encryption: Display the encryption with the connected wireless device is enable or disable.

TxRate: The factory setting is set to 11 Mbps; however, TxRate settings are automatically determined by the DWL-510 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 DWL-510.

Signal Strength: Displays the Signal Strength represents the wireless signal between the access point and the DWL-510. The percentage coincides with the graphical bar.

Packet Count: Displays the statistics of data transmitted and received.

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Configuration Utility

Configuration

> This Configuration screen displays the default settings for the DWL-510.
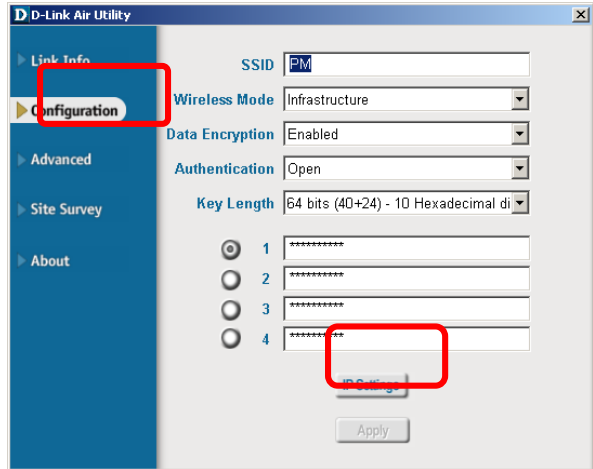
To communicate on the network all devices must have the same settings for the following properties:

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. (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-650 Wireless Cardbus adapter in a peer-to-peer environment.

Data Encryption- Enable Encryption by choosing the enable on the box. The DWL-510 has Encryption disabled as the default setting.

Authentication– Click on the pull-down menu; select from the following options:

Open Authentication- communicates the key across the network

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

Key Length - Select the key length, either 64 or 128 bit using a key in either ASCII code for representing English letters as numbers from 0-127 (e.g., a word) or hexadecimal digits consist of the number 0-9 and the letters A-F.

*Click **Apply** to save any changes made to the configuration of the wireless adapter.*

> ⚠️ **If you enable WEP encryption make sure to enable the WEP encryption on all the devices in your network.**

Configuration Utility

IP Setting

Assigning a Static IP Address

- **Select Use the following IP address**
  In the **Internet Protocol (TCP/IP) Properties** window,

- **Inpu**t 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 computes 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.)

Configuration Utility

Site Survey
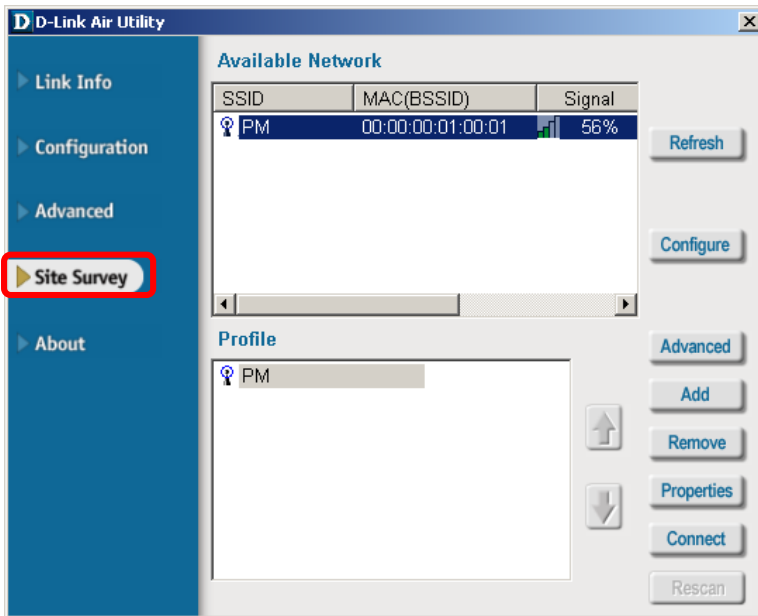
Available Network

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.

Refresh-   Click **Refresh** to get the most current network information

Configure-   Click to configure the settings of the network.

Advanced-

Add-   Click **Add** to create a new profile to add to the list of available networks. Please see the next page for details on configuring the new profile

Remove-   Highlight a profile and click **Remove** to delete it from the list

Properties-   Highlight a profile and click **Properties** to see the configuration settings of the highlighted network

Connect-   Highlight a network and click **Connect** to connect to that network

Rescan-   Click to scan the entire wireless network.

Configuration Utility

Site Survey > Add

SSID (Service Set Identifier)-
Enter an SSID name (up to 32 characters in length) The SSID is a unique name that identifies a network. All the devices in a network must share the same SSID name in order to communicate.

Wireless Mode-
Select Ad-Hoc or Infrastructure mode. Infrastructure indicates that there is an access point in the network. An Ad-Hoc network consists of direct peer-to-peer communication, with no access point in the network.

Data Encryption-
Select this box to enable data encryption

Authentication Mode-
Choose one of the following modes: **Open-**communicates the key across the network; **Shared-** allows communication only with other devices with identical WEP settings; **Auto-** automatically adjusts to the Authentication mode of the network.

Key-
After inputting up to four Network keys, click on the key that you wish to use

Network Key-
Enter a key corresponding to the format you selected in the Key Format field

Key Length-
64 or 128 bit key length using ASCII or Hexadecimal key format

> **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

Configuration Utility

About
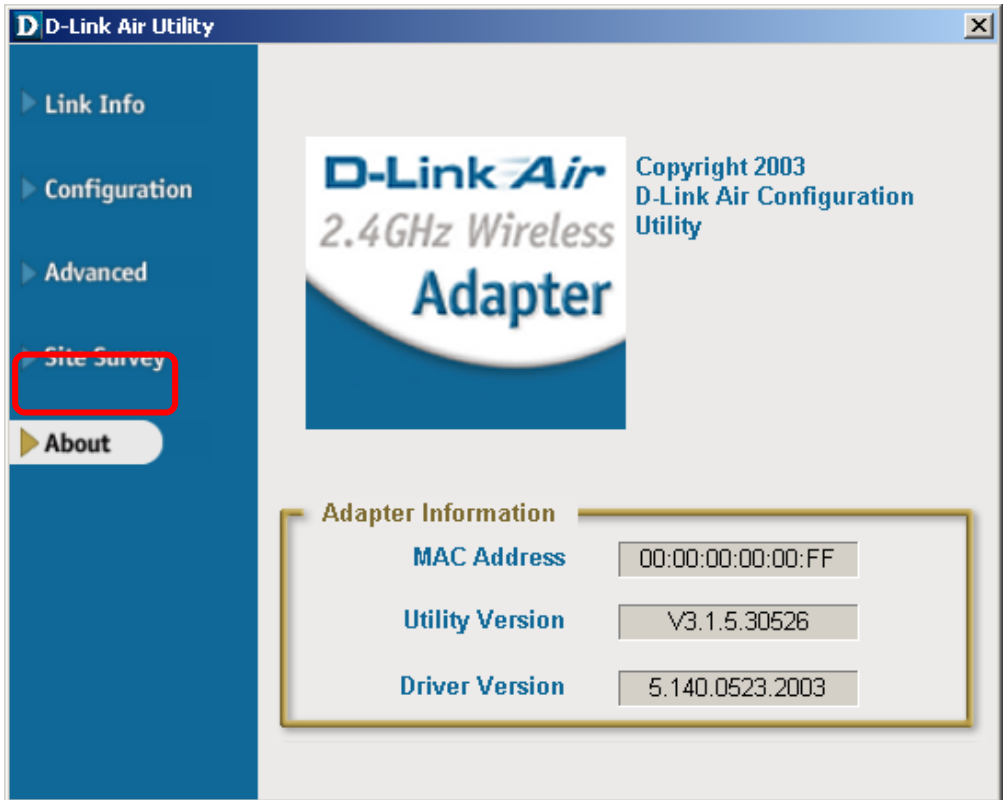
The **ABOUT** screen gives you information about the **MAC Address, Firmware** and **Utility Versions** of the DWL-510.

6.   Troubleshooting

This chapter provides solutions to problems that can occur during the installation and operation of the DWL-510 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**
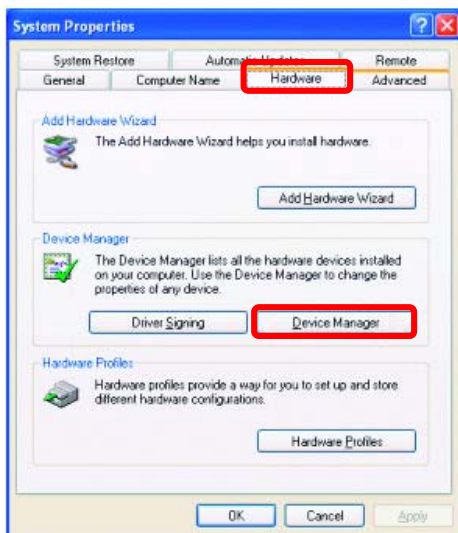
Troubleshooting

- Double-click on **Network Adapters**

- Right-click on **D-Link** *Air* **DWL-510 Wireless PCI Adapter**

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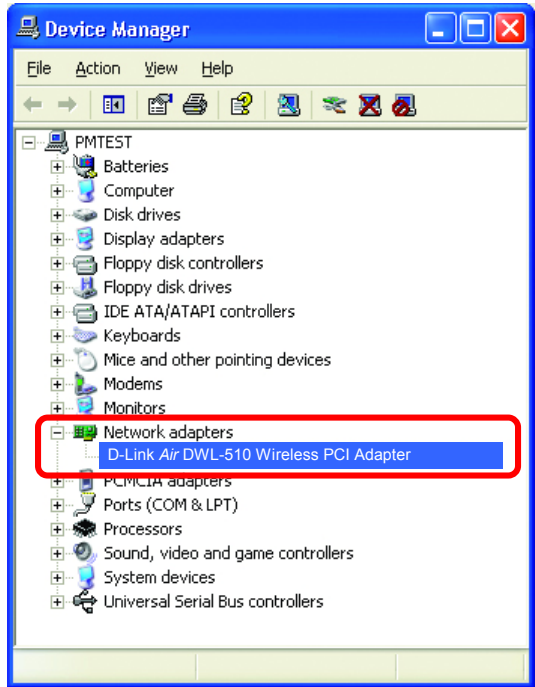
- Look under **Device Status** to check that the device is working properly.
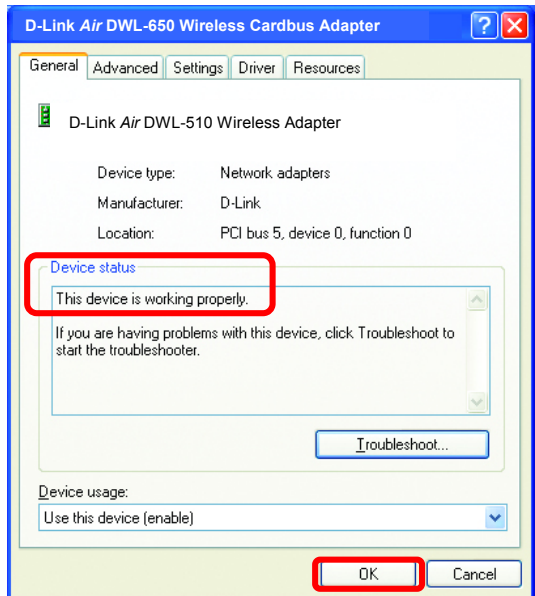
- Click **OK**

Troubleshooting

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

- Make sure that the SSID on the DWL-510 PCI adapter is exactly the same as the SSID on the Access Point or wireless router.

3. The DWL-510 Link lights are not on.

- Check to see if the DWL-510 PCI adapter is firmly inserted into a PC PCI slot.

4. The computer does not recognize the DWL-510 Wireless Adapter.

- Make sure that the DWL-510 Wireless Adapter is properly seated in the computer's PCI 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 **NETR33X.INF** and **NETR33X.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.)**

5. The computer with the DWL-510 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 DWL-510 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**
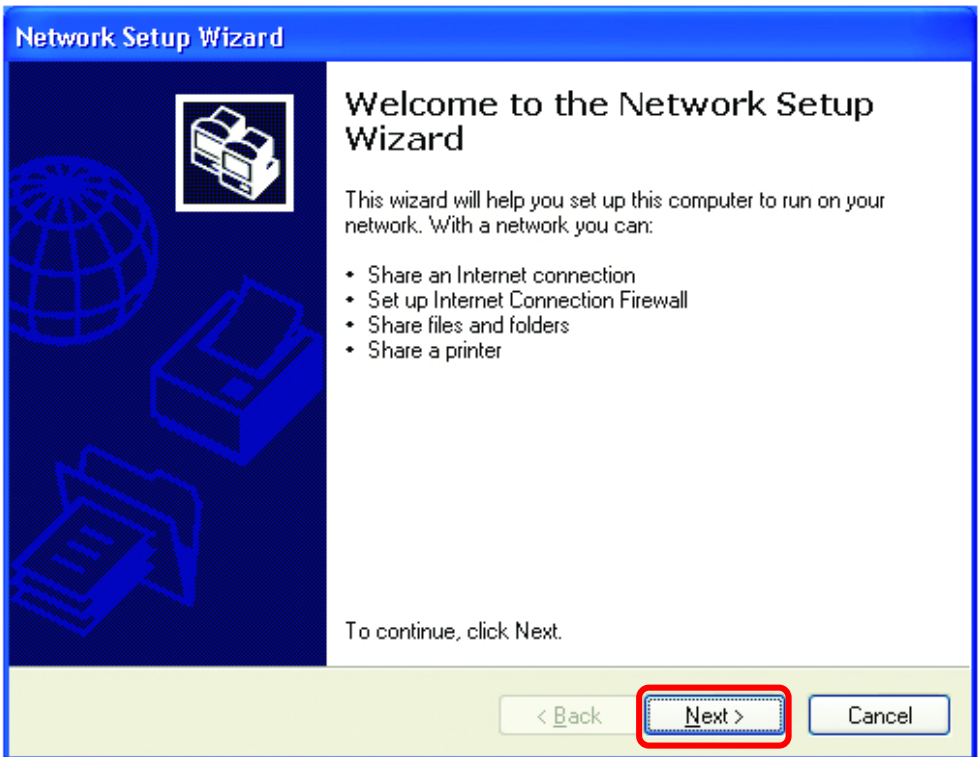
When this screen appears, click **Next.**

Networking Basics
Using the Network Setup Wizard in Windows XP

Please follow all the instructions in this window:
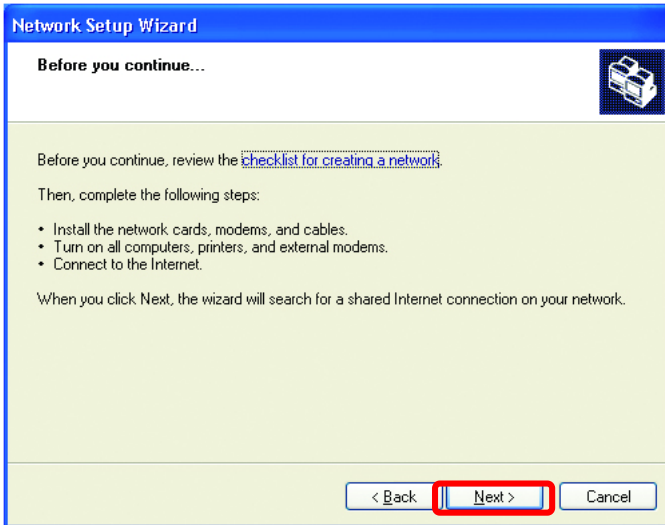
Click **Next**
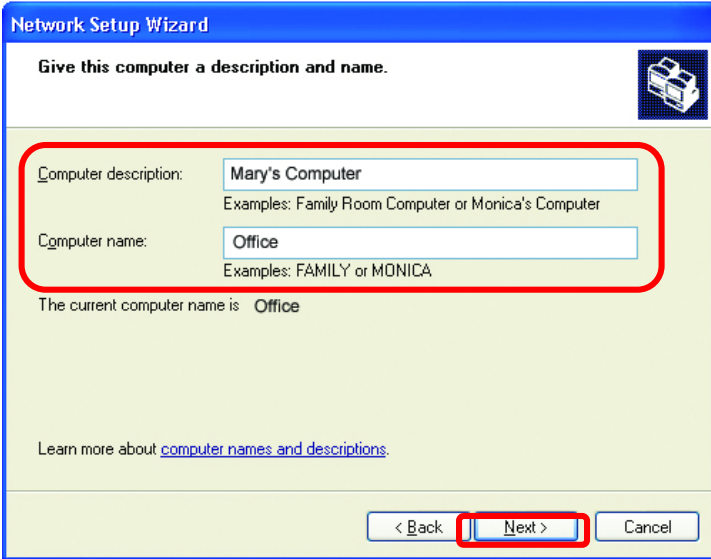
In the following window, select the best description of your computer. If your computer connects to the Internet through a gateway/router, select the second option as shown.
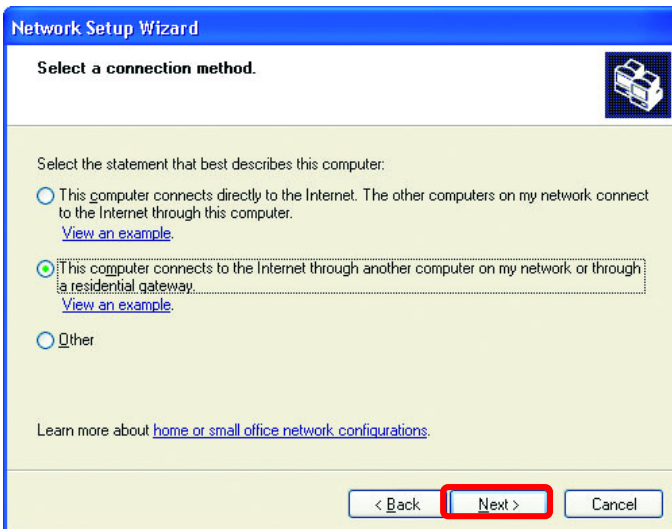
Click **Next**

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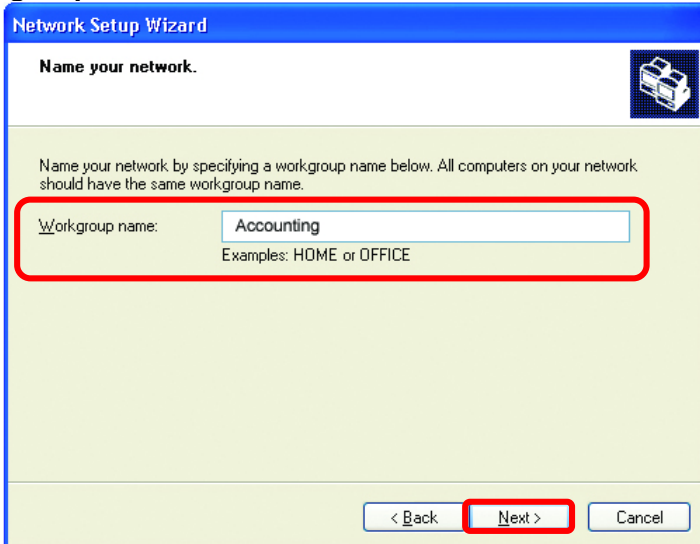
Enter a **Computer description** and a **Computer name.**

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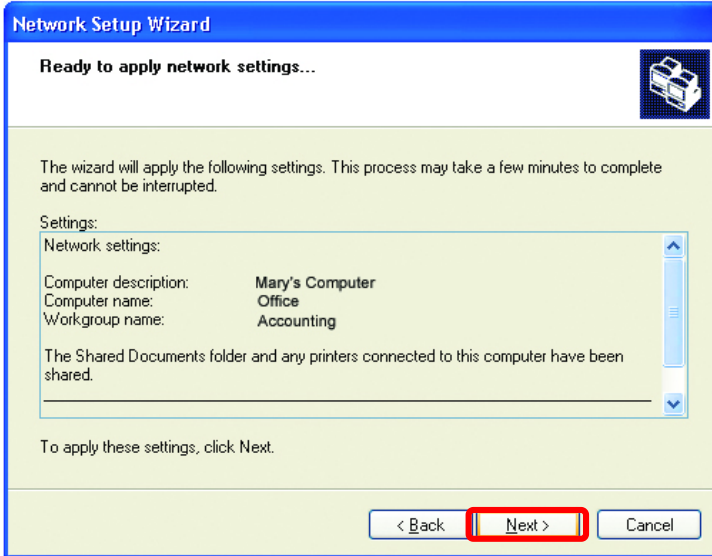
When the changes are complete, click **Next**.

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

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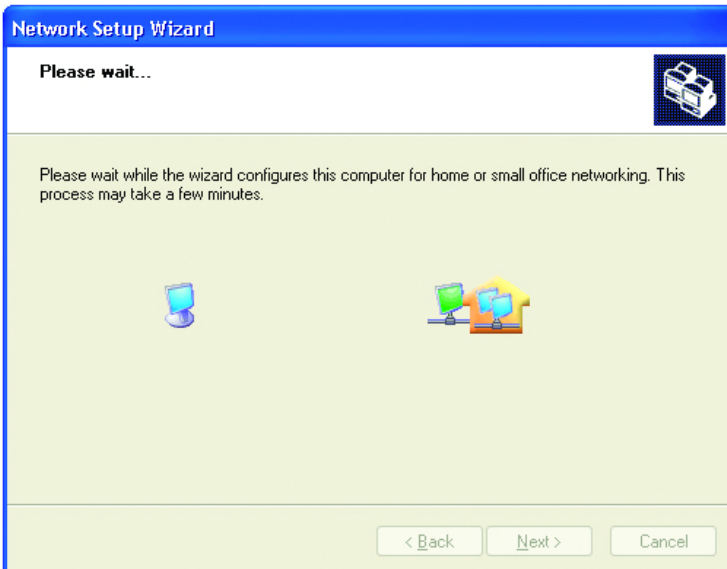
Networking Basics

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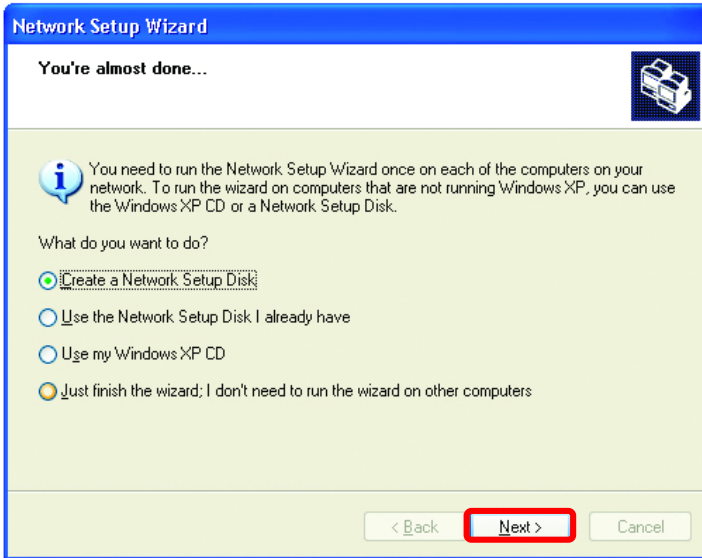
Insert a disk into the Floppy Disk Drive, in this case drive **A:**

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

Networking Basics

Please wait while the wizard copies the files.

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**
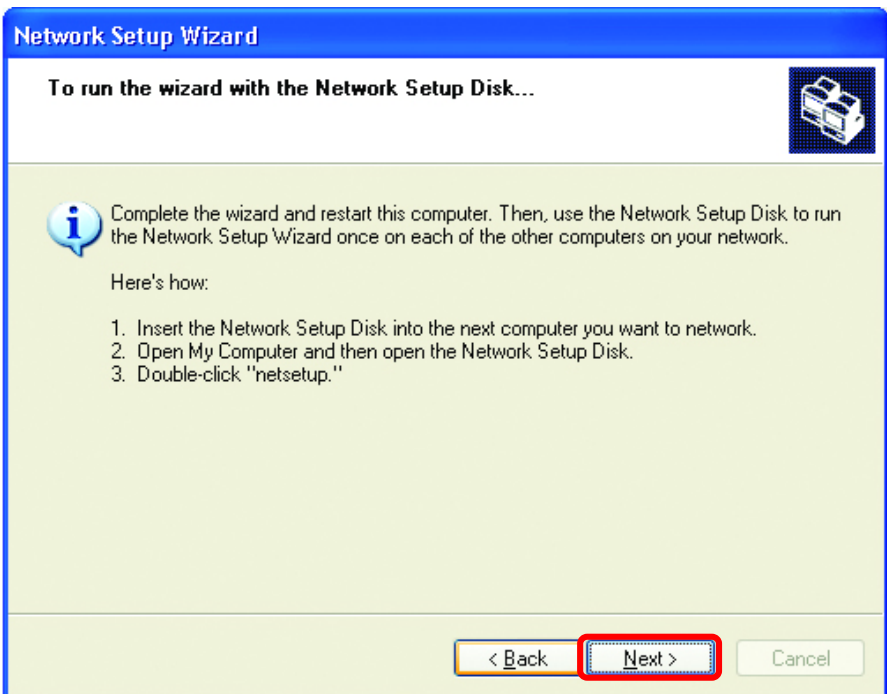
Networking Basics

Please read the information on this screen, and then click **Finish** to complete the **Network Setup Wizard**.
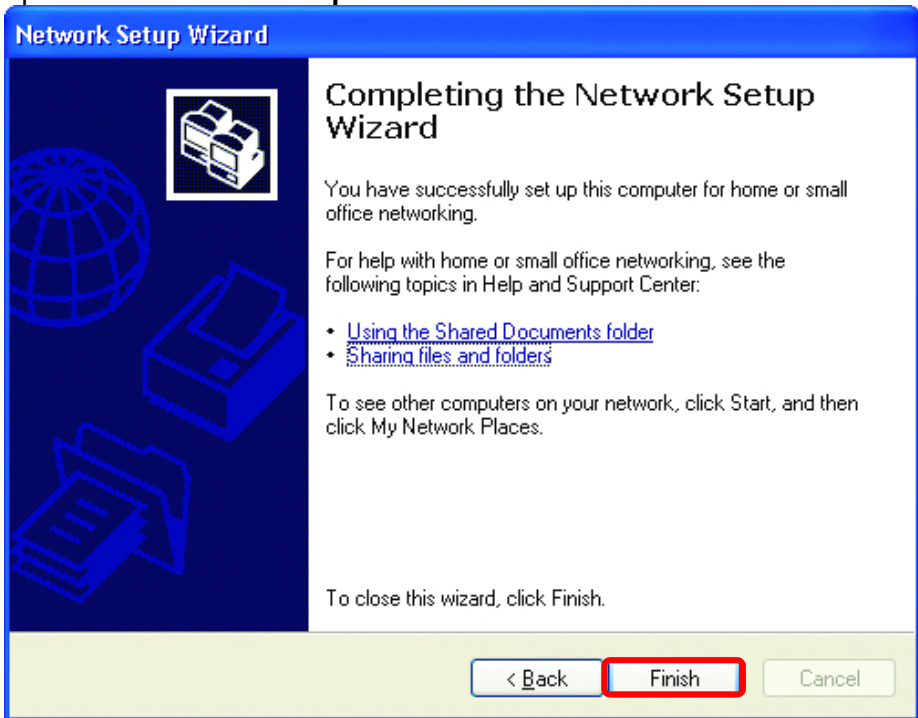
The new settings will take effect when you restart the computer. Click **Yes** to restart the computer.
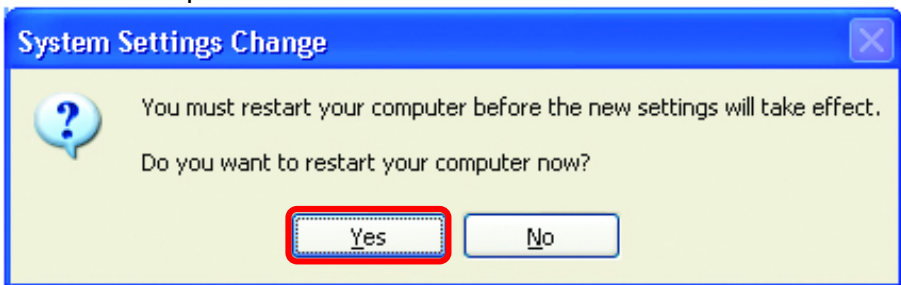
You have completed configuring this computer. Next, you will need to run the **Network Setup Disk** on all the other computers on your network. After running the **Network Setup Disk** on all your computers, your new wireless network will be ready to use.

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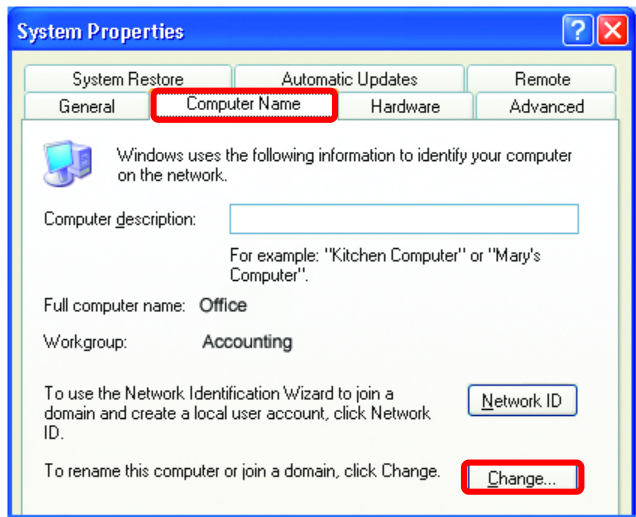
- Select **Properties** and **click**

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

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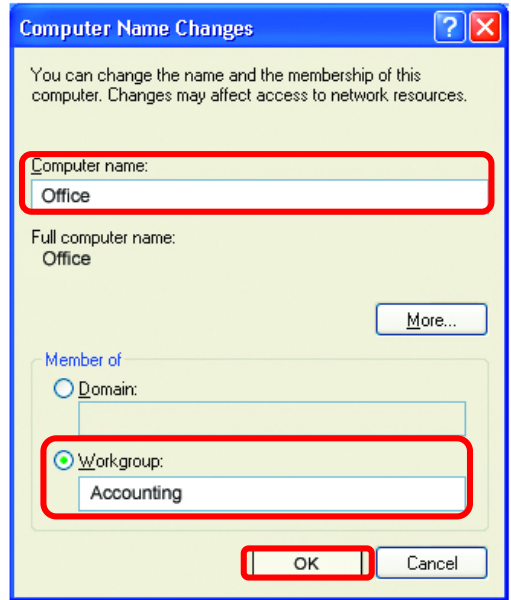
To rename the computer or join a domain,
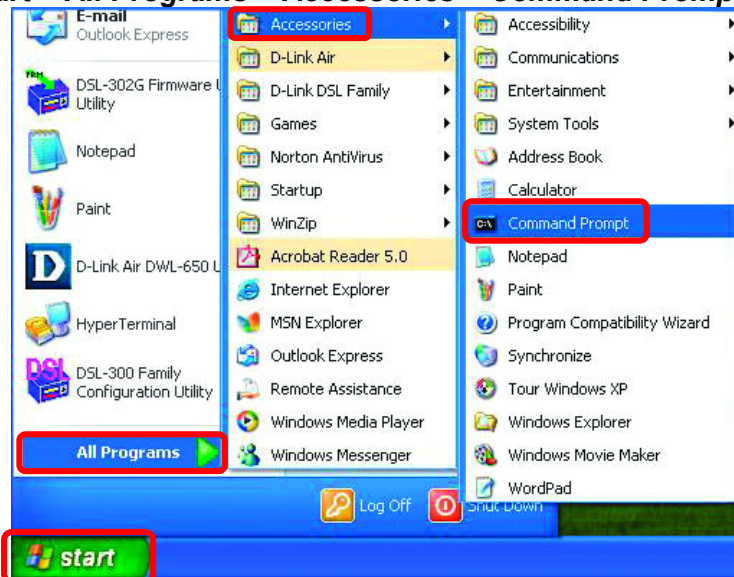- Click **Change**

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.

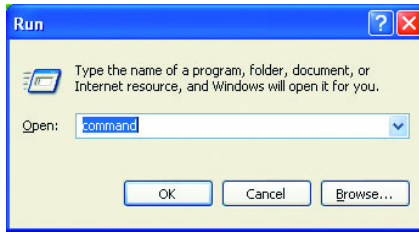- Click **OK**

Checking the IP Address in Windows XP/2000

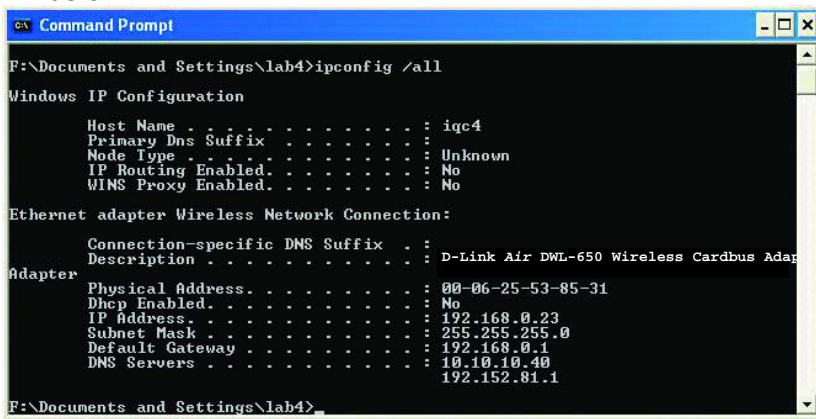### *Go to Start > All Programs > Accessories > Command Prompt*

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Networking   Basics
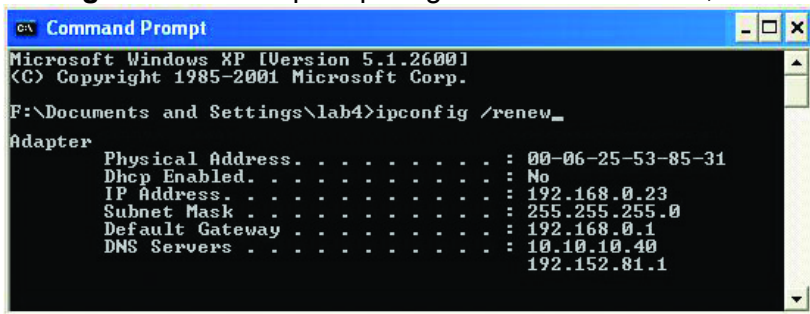## *Checking the IP Address in Windows XP/2000*

Type **Command**

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

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

(**Windows 98SE/Me users:** go to **Start** > **Run**. Type **Command**. Type **winipcfg** at the prompt. Click **Release and Renew** to obtain a new IP Address.)
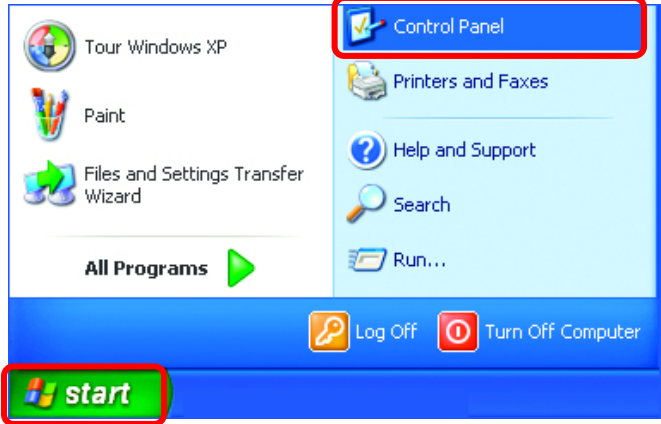
Networking Basics
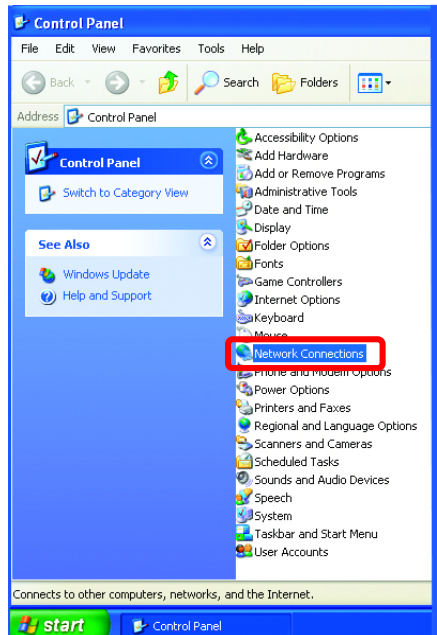## *Assigning a Static IP Address*

Note: Residential Gateways/Broadband 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 IP Addresses.

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

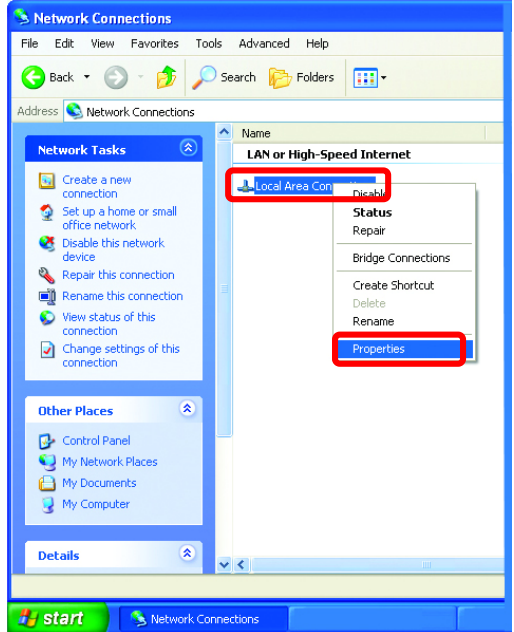- Go to **Start**

- Double-click on **Control Panel**
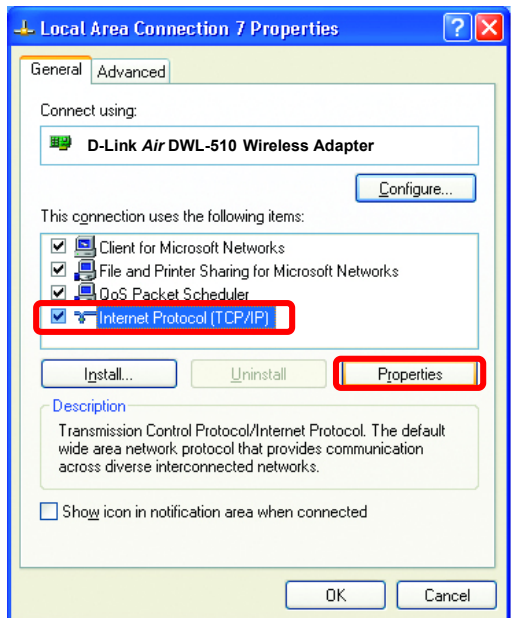
- Double-click on **Network Connections**

Networking Basics
Assigning a Static IP Address

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

- Click **Properties**

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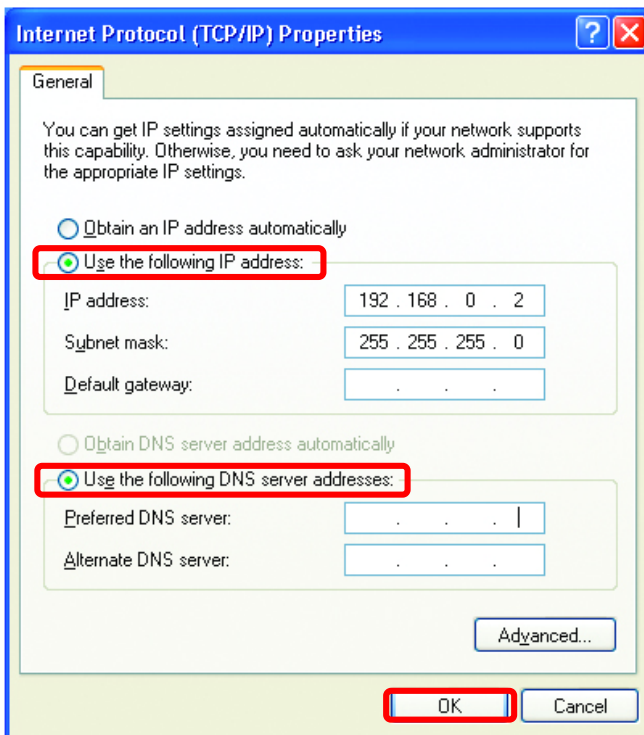
- Click **Properties**

Networking Basics
Assigning a Static IP Address

- **Select Use the following IP address**
  in the **Internet Protocol (TCP/IP) Properties** window,

- **Inpu**t 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 computes 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.)**

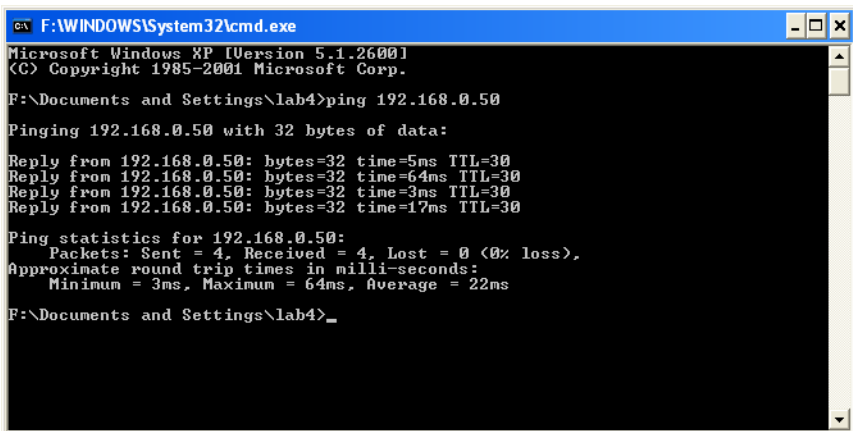*The DNS server information will be provided by your ISP (Internet Service Provider.)*

- Click **OK**

You have completed the assignment of a Static IP Address. *(You do not need to assign a Static IP Address if you have a DHCP-capable Gateway/Router.)*

Networking Basics
Checking the Wireless Connection by Pinging

For Windows XP and 2000:

```
F:\WINDOWS\System32\cmd.exe

Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

F:\Documents and Settings\lab4>ping 192.168.0.50

Pinging 192.168.0.50 with 32 bytes of data:

Reply from 192.168.0.50: bytes=32 time=5ms TTL=30
Reply from 192.168.0.50: bytes=32 time=64ms TTL=30
Reply from 192.168.0.50: bytes=32 time=3ms TTL=30
Reply from 192.168.0.50: bytes=32 time=17ms TTL=30

Ping statistics for 192.168.0.50:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 64ms, Average = 22ms

F:\Documents and Settings\lab4>
```

Go to **Start** > **Run** > type **cmd**. A window similar to this 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.

For Windows Me and 98SE:

```
MS-DOS Prompt

C:\WINDOWS\Desktop>ping 192.168.0.50

Pinging 192.168.0.50 with 32 bytes of data:

Reply from 192.168.0.50: bytes=32 time<10ms TTL=30
Reply from 192.168.0.50: bytes=32 time<10ms TTL=30
Reply from 192.168.0.50: bytes=32 time<10ms TTL=30
Reply from 192.168.0.50: bytes=32 time<10ms TTL=30

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

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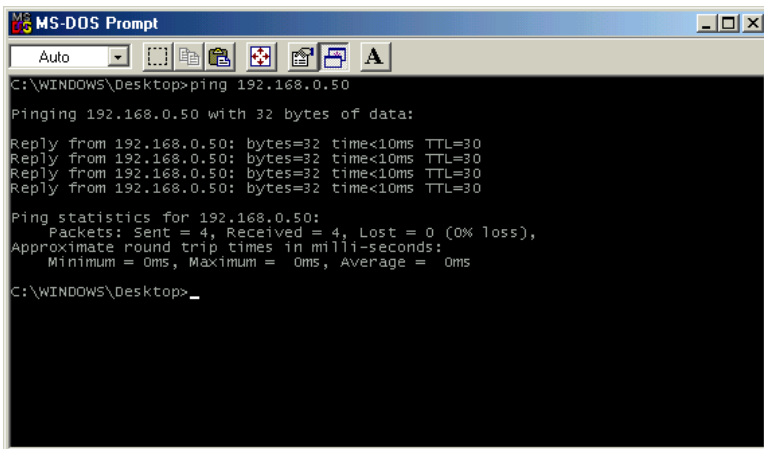
Go to **Start** > **Run** > type **command**.   A window similar to this will appear.
Type **ping xxx.xxx.xxx.xxx**, where **xxx** is the **IP address** of the Wireless Router or Access Point. A good wireless connection will show four replies from the wireless router or access point, as shown.

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Networking Basics
Adding and Sharing Printers in Windows XP

After you have run the **Network Setup Wizard** on all the computers in your network (please see the **Network Setup Wizard** section at the beginning of **Networking Basics**) you can use the **Add Printer Wizard** to add or share a printer on your network.

Whether you want to add a **local printer** (a printer connected directly to one computer) share an **LPR printer** (a printer connected to a print server) or share a **network printer** (a printer connected to your network through a Gateway/Router) use the **Add Printer Wizard**. Please follow the directions below:

First, make sure that you have run the <u>Network Setup Wizard</u> on all of the computers on your network.

We will show you 3 ways to use the **Add Printer Wizard**

<ol style="color:red">
Adding a local printer
Sharing a network printer
Sharing an LPR printer

1. Adding a local printer
(A printer connected directly to a computer)

A printer that is not shared on the network and is connected directly to one computer is called a **local printer**. If you do not need to share your printer on a network, follow these directions to add the printer to one computer.
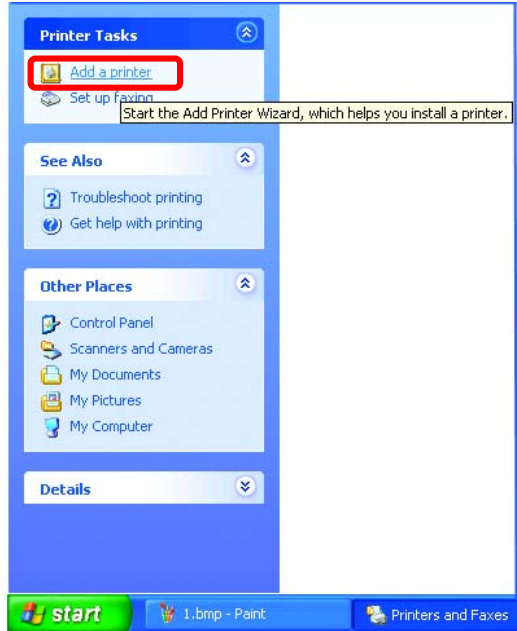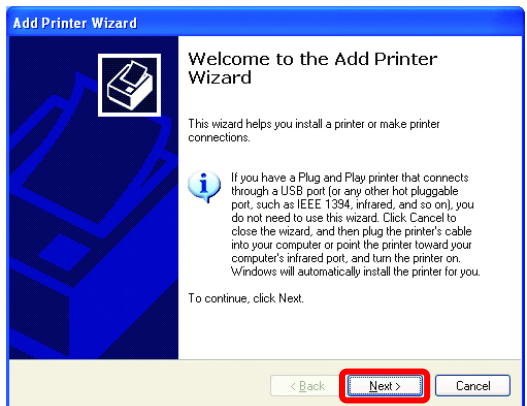
- Go to **Start**> **Printers and Faxes**

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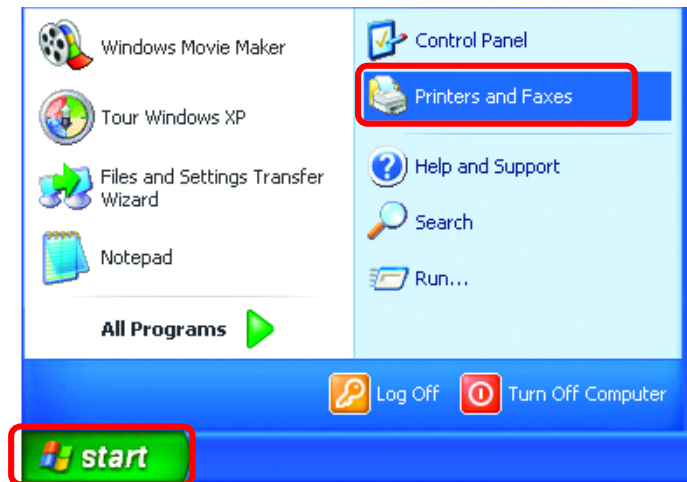
Networking Basics
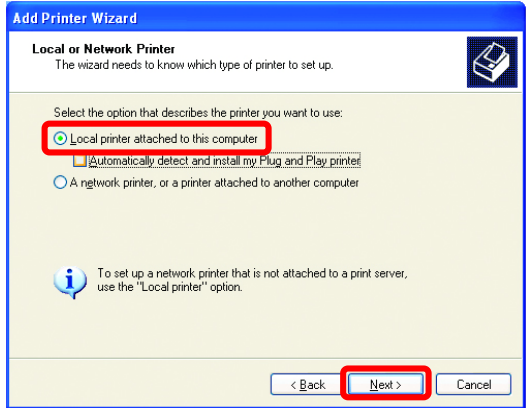### *Adding a local printer*

- Click on **Add a printer**

- Click **Next**

Networking Basics
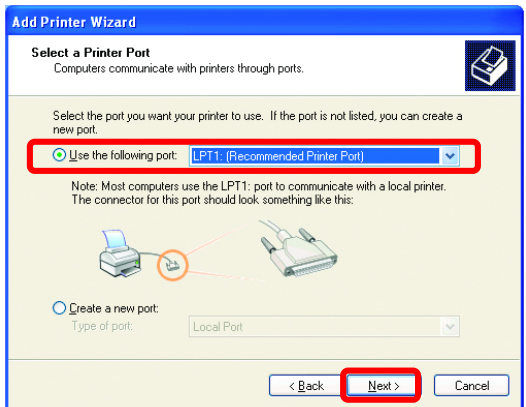### *Adding a local printer*

- Select **Local printer attached to this computer**

- *(Deselect **Automatically detect and install my Plug and Play printer** if it has been selected.)*

- Click **Next**

- Select **Use the following port:**

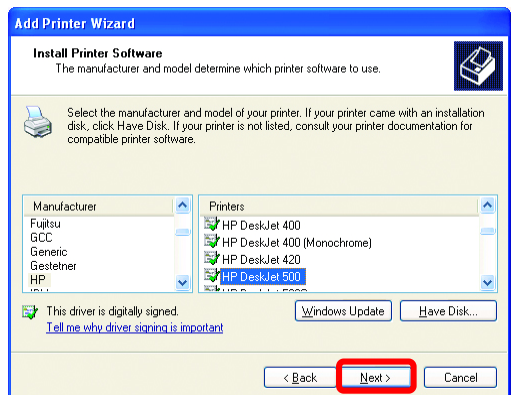- From the pull-down menu **select the correct port** for your printer

(Most computers use the LPT1: port, as shown in the illustration.)

- Click **Next**

- Select and highlight the correct driver for your printer.

- Click **Next**

*(If the correct driver is not displayed, insert the CD or floppy disk that came with your printer and click **Have Disk**.)*

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Networking Basics
Adding a local printer

- At this screen, you can change the name of the printer (optional.)

- Click **Next**
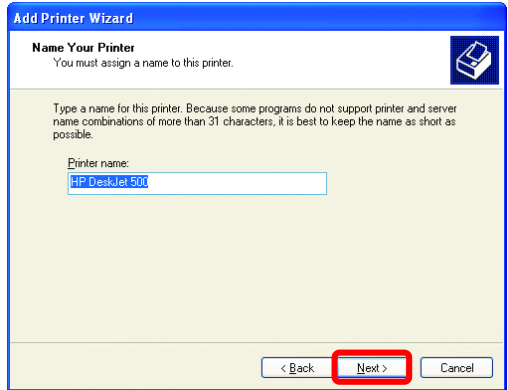
- Select **Yes**, to print a test page. A successful printing will confirm that you have chosen the correct driver.

- Click **Next**

  This screen gives you information about your printer.

  Click **Finish**

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Adding a local printer

When the test page has printed,

HP DeskJet 500

A test page is now being sent to the printer. Depending on the speed of your printer, it may take a minute or two before the page is printed.
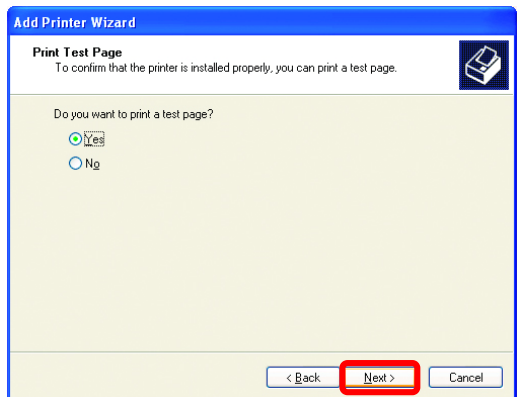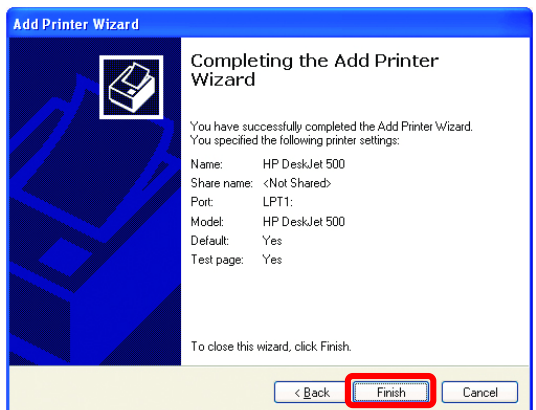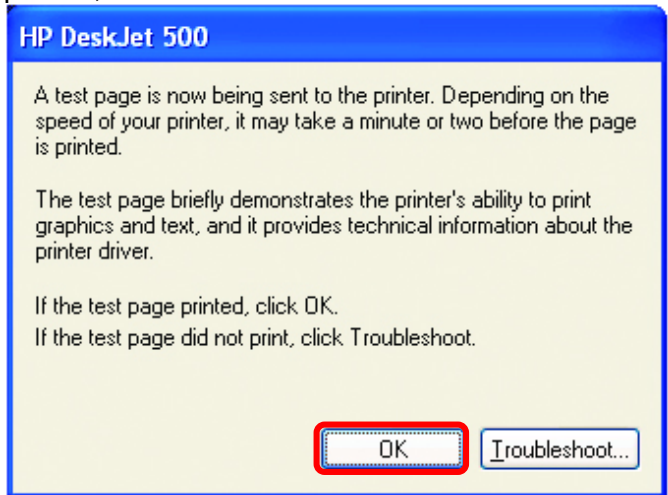
The test page briefly demonstrates the printer's ability to print graphics and text, and it provides technical information about the printer driver.

If the test page printed, click OK.
If the test page did not print, click Troubleshoot.

OK   Troubleshoot...

Click **OK**

Printer Tasks
- Add a printer
- See what's printing
- Select printing preferences
- Pause printing
- Share this printer
- Rename this printer
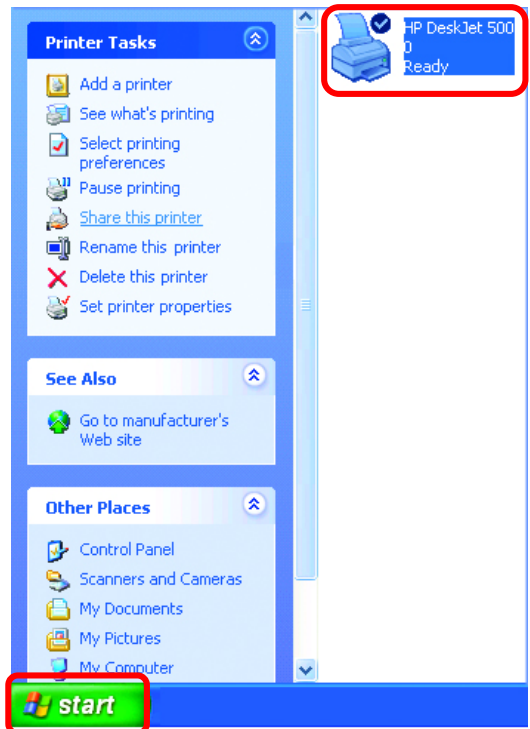- Delete this printer
- Set printer properties

HP DeskJet 500 0 Ready

- Go to **Start**> **Printers and Faxes**

A successful installation will display the printer icon as shown at right.

You have successfully added a local printer.

See Also
- Go to manufacturer's Web site

Other Places
- Control Panel
- Scanners and Cameras
- My Documents
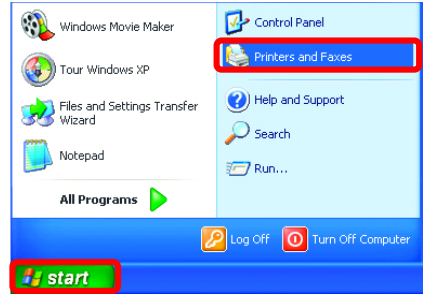- My Pictures
- My Computer

start

Networking Basics
2. Sharing a network printer

After you have run the **Network Setup Wizard** on all the computers on your network, you can run the **Add Printer Wizard** on all the computers on your network. Please follow these directions to use the **Add Printer Wizard** to share the printer on your network:

- Go to **Start**>
  Printers and Faxes

- Click on
  Add a Printer

- Click **Next**

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433Download from Www.Somanuals.com. All Manuals Search And Download.
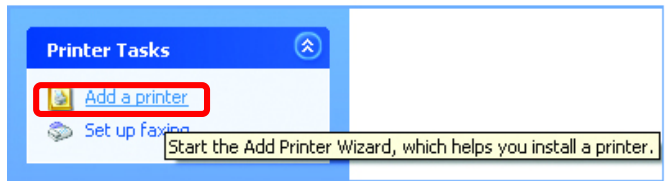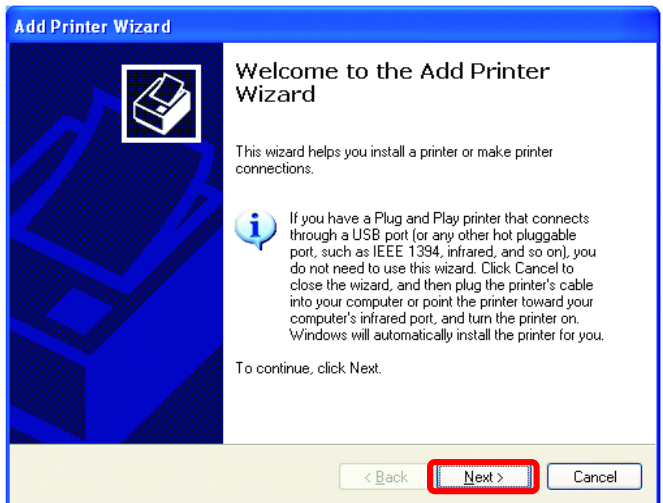
Networking Basics
Sharing a network printer
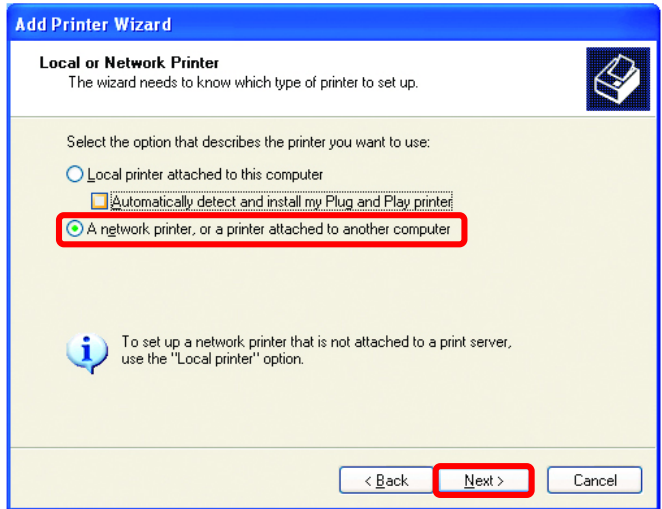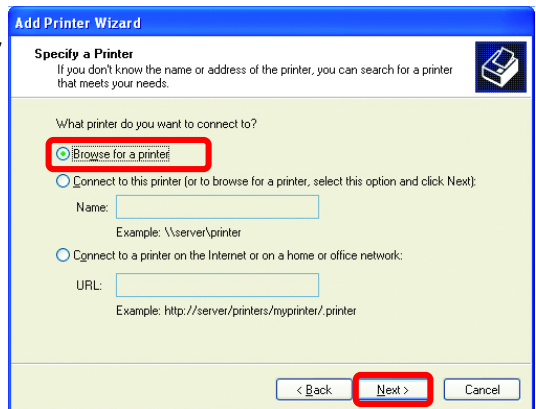
- Select **Network Printer**

- Click **Next**

- Select **Browse for a printer**

- Click **Next**

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Networking Basics
Sharing a network printer

- Select the printer you would like to share.
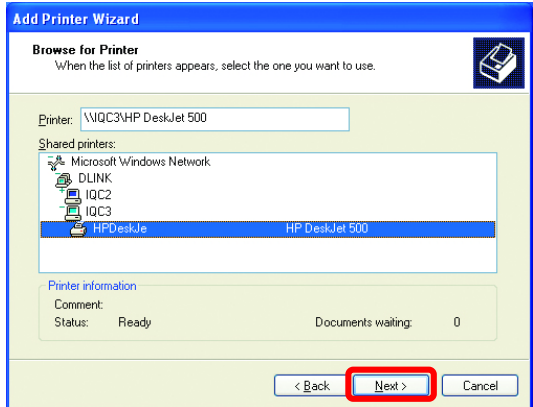
- Click **Next**
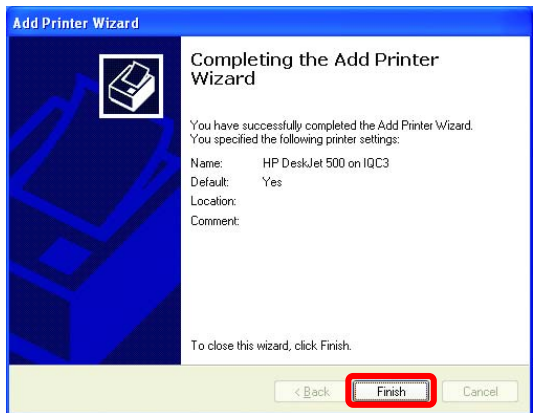
- Click **Finish**

To check for proper installation:

- Go to **Start**>
  Printers and Faxes

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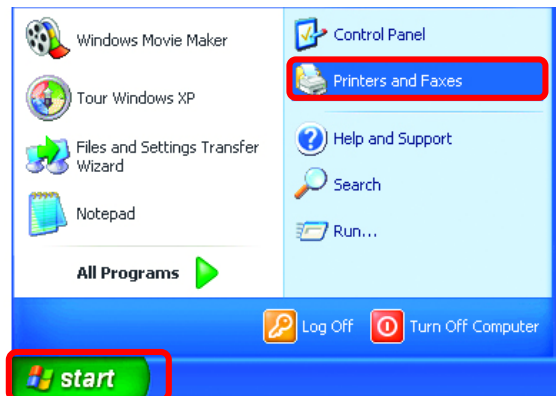
Networking Basics
Sharing a network printer

The printer icon will appear at right, indicating proper installation.

You have completed adding the printer.

To share this printer on your network:
- Remember the **printer name**
- Run the **Add Printer Wizard** on all the computers on your network.
- Make sure you have already run the **Network Setup Wizard** on all the network computers.

After you run the **Add Printer Wizard** on all the computers in the network, you can share the printer.
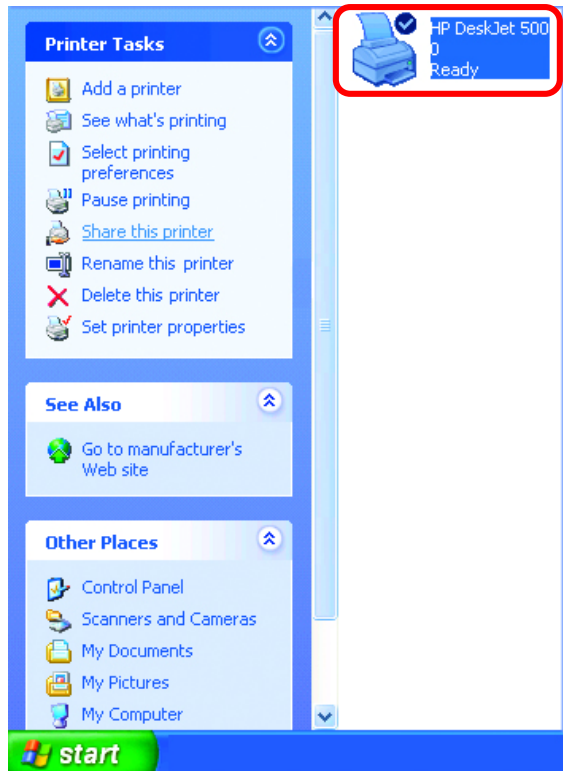
Networking Basics
3. Sharing an LPR printer

*To share an **LPR printer** (using a print server) you will need a Print Server such as the **DP-101P+.** Please make sure that you have run the **Network Setup Wizard** on all the computers on your network. To share an **LPR printer**, please follow these directions:*

- Go to **Start**>
  **Printers
  and Faxes**

- Click on
  Add a Printer

The screen to the
right will display.

- Click **Next**
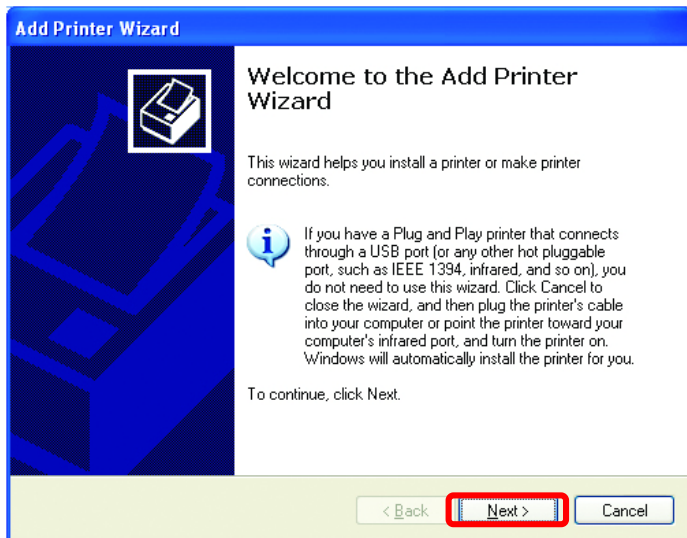
- Select
  **Local
  Printer**

- Click **Next**
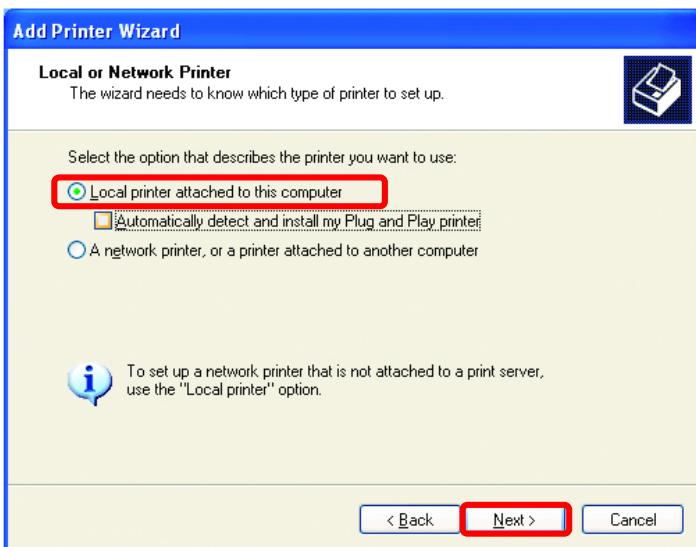
Networking Basics
Sharing an LPR printer

- Select **Create a new port**

- From the pull-down menu, select **Standard TCP/IP Port**, as shown.
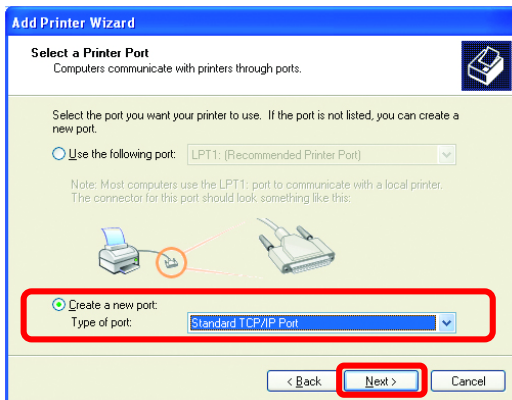
- Click **Next**

- Please read the instructions on this screen.
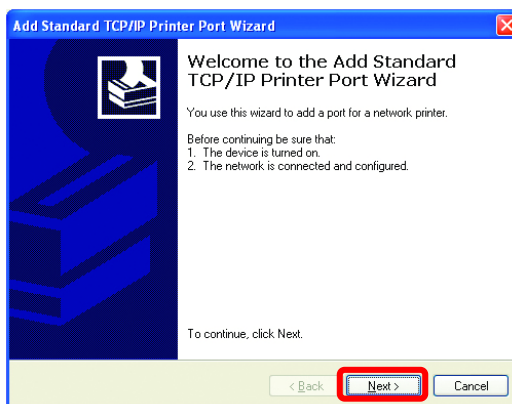
- Click **Next**

- Enter the **Printer IP Address** and the **Port Name**, as shown.

- Click **Next**

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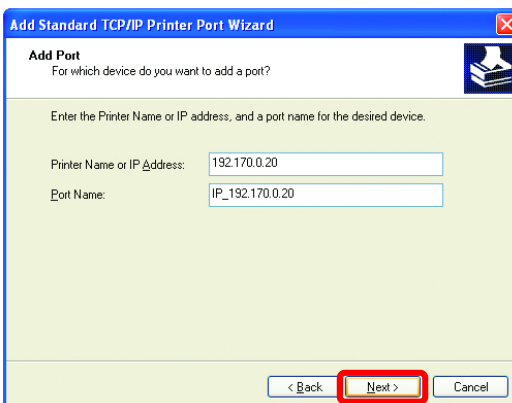
Networking Basics
Sharing an LPR printer

- In this screen, select **Custom.**
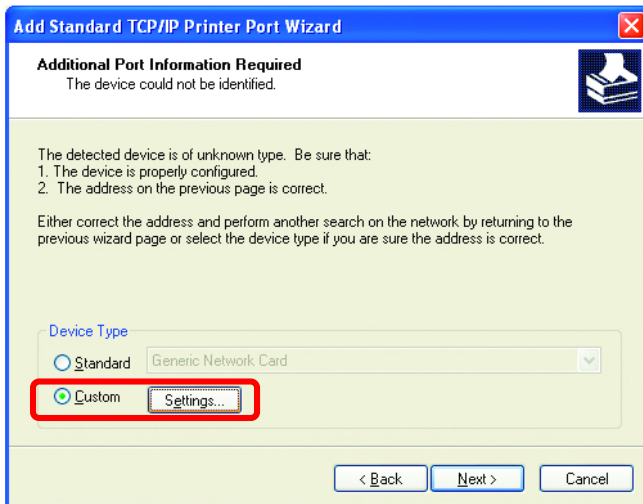
- Click **Settings**

- Enter the **Port Name** and the **Printer Name** or **IP Address**.
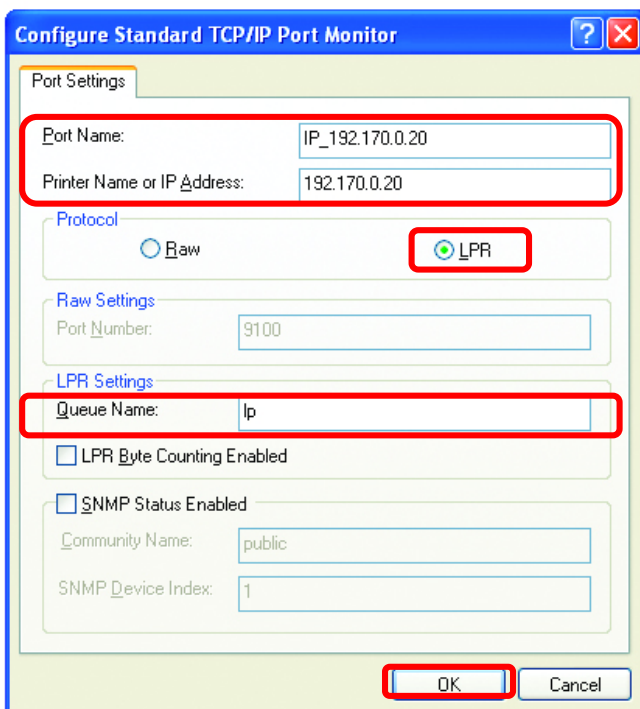
- Select **LPR**

- Enter a **Queue Name.** If there is more than one port on the print server, you must name the **Queue**.

- Click **OK**

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Networking Basics
Sharing an LPR printer

- This screen will show you information about your printer.

- Click **Finish**

- Select the printer you are adding from the list of **Printers**.

- Insert the printer driver disk that came with your printer.

- Click **Have Disk**
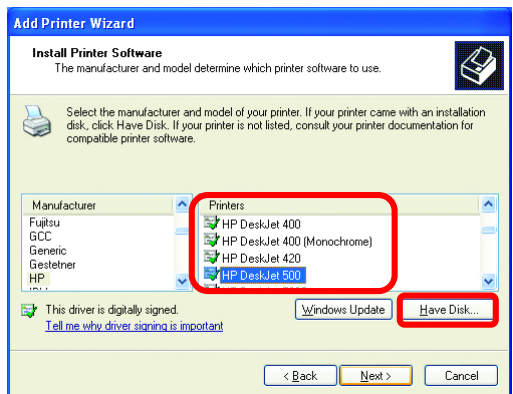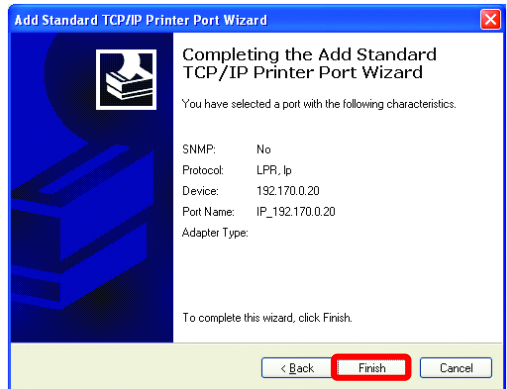
If the printer driver is already installed,

- Select **Keep existing driver**

- Click **Next**
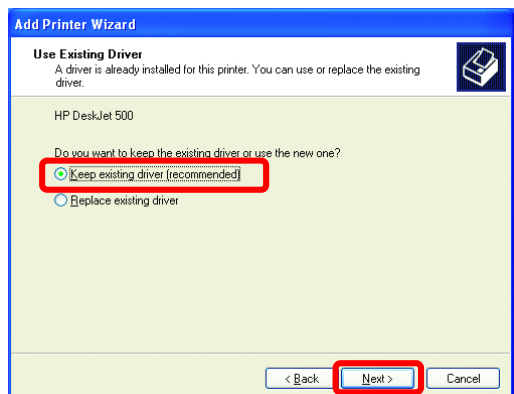
Networking Basics
Sharing an LPR printer

- You can rename your printer if you choose. It is optional.

Please remember the name of your printer. You will need this information when you use the ***Add Printer Wizard*** *on the other computers on your network.*

- Click **Next**

- Select **Yes**, to print a test page.

- Click **Next**

This screen will display information about your printer.

- Click **Finish** to complete the addition of the printer.
- Please run the Add Printer Wizard on all the computers on your network in order to share the printer.
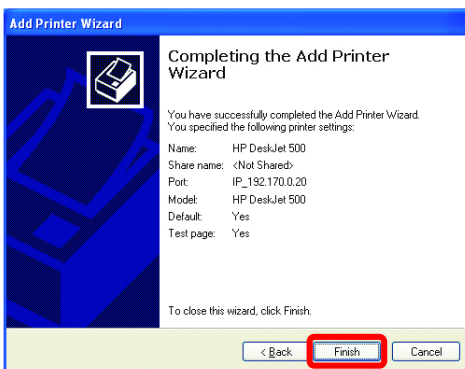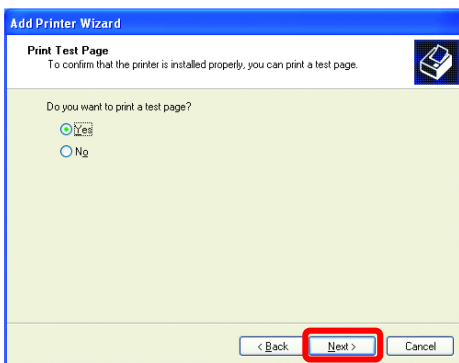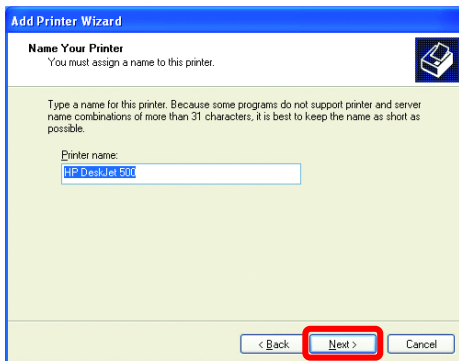
*Note: You must run the **Network Setup Wizard** on all the computers on your network before you run the **Add Printer Wizard**.*

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Other Tasks

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
- WiFi Certified

Adapter Type:
- 32-bit PCI slot

System Requirements:
- PC Computer with 32-bit PCI Slot

Supported Operating Systems:
- Windows XP (WHQL)
- Windows 2000
- Windows Me
- Windows 98SE

Data Security:
- 64 or 128-bit WEP (Wired Equivalent Privacy) Encryption

Data Rate: Mbps/channel
- 11 : CCK
- 5.5 : CCK
- 2 : QPSK
- 1 : BPSK

Key Management:
- Automatic Dynamic Key Allocation (ADKA) through public key

Range:
- Indoors – up to 328 feet (100 meters)

Diagnostic LED:
- Link – solid green light indicates a connection to the network
- Activity – green light indicates Activity on the network

Power Specifications:
- Operating Voltage: 3.3V and 5V

Network Architecture:
- Supports Ad-Hoc Mode (Peer-to-Peer without Access Point) or Infrastructure Mode (Communications to wired networks via Access Points with Roaming)

Antenna:
- Dipole with detachable reverse SMA connector

Frequency Range:
- 2.4 – 2.4835 GHz, Direct Sequence Spread Spectrum (DSSS)

Operating Channels:
- 1-11 United States (FCC)
- 1-11 Canada (DOC)
- 1-14 Japan (MKK)
- 1-13 Europe (Except Spain and France) (ETSI)

Physical Dimensions:
- L = 4.75 inches (120 mm)
- W = 2.28 inches (58 mm)
- H = .6 inches (2 mm)

Temperature:
- Operating Temperature: 14ºF to 131ºF (-10°C to 55°C)
- Storage Temperature: -4ºF to 167ºF (-20°C to 75°C)

Humidity:
- Maximum up to 95% Non-condensing

Emissions:
- FCC
- CE

Safety:
- UL

9. Contacting Technical Support

You can find the most recent software and user documentation on the D-Link website.

D-Link 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 D-Link technical support through our web site, or by phone.

D-Link Technical Support over the Telephone:
(877) 453-5465
24 hours a day, seven days a week.

D-Link Technical Support over the Internet:
http://support.dlink.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*

10. Warranty and Registration

Subject to the terms and conditions set forth herein, D-Link Systems, Inc. ("D-Link") provides this Limited warranty for its product only to the person or entity that originally purchased the product from:

- D-Link or its authorized reseller or distributor and
- Products purchased and delivered within the fifty states of the United States, the District of Columbia, U.S. Possessions or Protectorates, U.S. Military Installations, addresses with an APO or FPO.

Limited Warranty: D-Link warrants that the hardware portion of the D-Link products described below will be free from material defects in workmanship and materials from the date of original retail purchase of the product, for the period set forth below applicable to the product type ("Warranty Period"), except as otherwise stated herein.

1-Year Limited Warranty for the Product(s) is defined as follows:

- Hardware (excluding power supplies and fans) One (1) Year
- Power Supplies and Fans One (1) Year
- Spare parts and spare kits Ninety (90) days

D-Link's sole obligation shall be to repair or replace the defective Hardware during the Warranty Period at no charge to the original owner or to refund at D-Link's sole discretion. Such repair or replacement will be rendered by D-Link at an Authorized D-Link Service Office. The replacement Hardware need not be new or have an identical make, model or part. D-Link may in its sole discretion replace the defective Hardware (or any part thereof) with any reconditioned product that D-Link reasonably determines is substantially equivalent (or superior) in all material respects to the defective Hardware. Repaired or replacement Hardware will be warranted for the remainder of the original Warranty Period from the date of original retail purchase. If a material defect is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to repair or replace the defective Hardware, the price paid by the original purchaser for the defective Hardware will be refunded by D-Link upon return to D-Link of the defective Hardware. All Hardware (or part thereof) that is replaced by D-Link, or for which the purchase price is refunded, shall become the property of D-Link upon replacement or refund.

Limited Software Warranty: D-Link warrants that the software portion of the product ("Software") will substantially conform to D-Link's then current functional specifications for the Software, as set forth in the applicable documentation, from the date of original retail purchase of the Software for a period of ninety (90) days ("Warranty Period"), provided that the Software is properly installed on approved hardware and operated as contemplated in its documentation. D-Link further warrants that, during the Warranty Period, the magnetic media on which D-Link delivers the Software will be free of physical defects. D-Link's sole obligation shall be to replace the non-conforming Software (or defective media) with software that substantially conforms to D-Link's functional specifications for the Software or to refund at D-Link's sole discretion. Except as otherwise agreed by D-Link in writing, the replacement Software is provided only to the original licensee, and is subject to the terms and conditions of the license granted by D-Link for the Software. Software will be warranted for the remainder of the original Warranty Period from the date or original retail purchase. If a material non-conformance is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to replace the non-conforming Software, the price paid by the original licensee for the non-conforming Software will be refunded by D-Link; provided that the non-conforming Software (and all copies thereof) is first returned to D-Link. The license granted respecting any Software for which a refund is given automatically terminates.

Non-Applicability of Warranty: The Limited Warranty provided hereunder for hardware and software of D-Link's products will not be applied to and does not cover any refurbished product and any product purchased through the inventory clearance or liquidation sale or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product and in that case, the product is being sold "As-Is" without any warranty whatsoever including, without limitation, the Limited Warranty as described herein, notwithstanding anything stated herein to the contrary.

Submitting A Claim: The customer shall return the product to the original purchase point based on its return policy. In case the return policy period has expired and the product is within warranty, the customer shall submit a claim to D-Link as outlined below:

- The customer must submit with the product as part of the claim a written description of the Hardware defect or Software nonconformance in sufficient detail to allow D-Link to confirm the same.

- The original product owner must obtain a Return Material Authorization ("RMA") number from the Authorized D-Link Service Office and, if requested, provide written proof of purchase of the product (such as a copy of the dated purchase invoice for the product) before the warranty service is provided.

- After an RMA number is issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be prominently marked on the outside of the package. Do not include any manuals or accessories in the shipping package. D-Link will only replace the defective portion of the Product and will not ship back any accessories.

- The customer is responsible for all in-bound shipping charges to D-Link. No Cash on Delivery ("COD") is allowed. Products sent COD will either be rejected by D-Link or become the property of D-Link. Products shall be fully insured by the customer and shipped to **D-Link Systems, Inc., 53 Discovery Drive, Irvine, CA 92618**. D-Link will not be held responsible for any packages that are lost in transit to D-Link. The repaired or replaced packages will be shipped to the customer via UPS Ground or any common carrier selected by D-Link, with shipping charges prepaid. Expedited shipping is available if shipping charges are prepaid by the customer and upon request.

D-Link may reject or return any product that is not packaged and shipped in strict compliance with the foregoing requirements, or for which an RMA number is not visible from the outside of the package. The product owner agrees to pay D-Link's reasonable handling and return shipping charges for any product that is not packaged and shipped in accordance with the foregoing requirements, or that is determined by D-Link not to be defective or non-conforming.

What Is Not Covered: This limited warranty provided by D-Link does not cover: Products, if in D-Link's judgment, have been subjected to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed; Initial installation, installation and removal of the product for repair, and shipping costs; Operational adjustments covered in the operating manual for the product, and normal maintenance; Damage that occurs in shipment, due to act of God, failures due to power surge, and cosmetic damage; Any hardware, software, firmware or other products or services provided by anyone other than D-Link; Products that have been purchased from inventory clearance or liquidation sales or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product. Repair by anyone other than D-Link or an Authorized D-Link Service Office will void this Warranty.

Disclaimer of Other Warranties: EXCEPT FOR THE LIMITED WARRANTY SPECIFIED HEREIN, THE PRODUCT IS PROVIDED "AS-IS" WITHOUT ANY WARRANTY OF ANY KIND WHATSOEVER INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. IF ANY IMPLIED WARRANTY CANNOT BE DISCLAIMED IN ANY TERRITORY WHERE A PRODUCT IS SOLD, THE DURATION OF SUCH IMPLIED WARRANTY SHALL BE LIMITED TO NINETY (90) DAYS. EXCEPT AS EXPRESSLY COVERED UNDER THE LIMITED WARRANTY PROVIDED HEREIN, THE ENTIRE RISK AS TO THE QUALITY, SELECTION AND PERFORMANCE OF THE PRODUCT IS WITH THE PURCHASER OF THE PRODUCT.

Limitation of Liability: TO THE MAXIMUM EXTENT PERMITTED BY LAW, D-LINK IS NOT LIABLE UNDER ANY CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER LEGAL OR EQUITABLE THEORY FOR ANY LOSS OF USE OF THE PRODUCT, INCONVENIENCE OR DAMAGES OF ANY CHARACTER, WHETHER DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF GOODWILL, LOSS OF REVENUE OR PROFIT, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, FAILURE OF OTHER EQUIPMENT OR COMPUTER PROGRAMS TO WHICH D-LINK'S PRODUCT IS CONNECTED WITH, LOSS OF INFORMATION OR DATA CONTAINED IN, STORED ON, OR INTEGRATED WITH ANY PRODUCT RETURNED TO D-LINK FOR WARRANTY SERVICE) RESULTING FROM THE USE OF THE PRODUCT, RELATING TO WARRANTY SERVICE, OR ARISING OUT OF ANY BREACH OF THIS LIMITED WARRANTY, EVEN IF D-LINK HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE SOLE REMEDY FOR A BREACH OF THE FOREGOING LIMITED WARRANTY IS REPAIR, REPLACEMENT OR REFUND OF THE DEFECTIVE OR NON-CONFORMING PRODUCT. THE MAXIMUM LIABILITY OF D-LINK UNDER THIS WARRANTY IS LIMITED TO THE PURCHASE PRICE OF THE PRODUCT COVERED BY THE WARRANTY. THE FOREGOING EXPRESS WRITTEN WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ANY OTHER WARRANTIES OR REMEDIES, EXPRESS, IMPLIED OR STATUTORY

Governing Law: This Limited Warranty shall be governed by the laws of the State of California. Some states do not allow exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the foregoing limitations and exclusions may not apply. This limited warranty provides specific legal rights and the product owner may also have other rights which vary from state to state.

CE Mark Warning: This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

FCC Statement: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This 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.

IMPORTANT NOTE:
FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of eight inches (20cm) between the radiator and your body.

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

Register your D-Link product online at **http://support.dlink.com/register/**

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