

D-LINK *AirPro* DWL-AB520

**2.4GHz / 5GHz Multimode
Wireless PCI Adapter**

Manual

(09/06/2002)

D-Link

Building Networks for People

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Package Contents



Contents of Package:

- **D-Link AirPro DWL-AB520**
2.4 GHz / 5GHz Multimode Wireless PCI Adapter
- Manual and Warranty on CD
- Quick Installation Guide

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

System Requirements:

- A 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 **802.11a/802.11b** Multimode Access Point (e.g., DWL-6000AP or DI-764), or an **802.11a** Access Point (e.g., DWL-5000AP for **Infrastructure Mode**), or an **802.11b** Access Point (e.g., DWL-900AP+), or an **802.11a** wireless adapter (e.g., DWL-A650 for laptops or DWL-A520 for **Ad-Hoc mode**), or an **802.11b** wireless adapter (e.g., DWL-650+.)

Introduction

D-Link introduces the integrated multimode 802.11a/802.11b wireless PCI Adapter, as part of the high performance D-Link *AirPro* series of wireless networking products.

Featuring a breakthrough all-in-one multimode design, the new D-Link *AirPro* DWL-AB520 Multimode Wireless PCI Adapter is a next generation PCI Adapter that simultaneously serves both 802.11a wireless networks at 54 Mbps (72 Mbps in proprietary *Turbo mode**) and 802.11b wireless networks at 11Mbps.

The D-Link *AirPro* DWL-AB520 delivers the fastest IEEE standards-based wireless technology in the industry and is interoperable with other 802.11a and 802.11b wireless devices.

After completing the steps outlined in the *Quick Installation Guide* (included in your package) not only will you have the ability to share information and resources, but you will also be able to enjoy the freedom that wireless networking delivers, at speeds capable of handling large data files or video streams.

*When used with other D-Link *AirPro* products.

Features

- Fully compatible with the 802.11a standard to provide an optimal wireless 54Mbps data rate (provides a 72Mbps data rate in proprietary Turbo Mode).
- Fully compatible with the 802.11b standard to provide an optimal wireless data rate of 11Mbps.
- Dynamic data rate scaling at 6, 9, 12, 18, 24, 36, 48, 54 for 802.11a
- Dynamic data rate scaling at 1, 2, 5.5, and 11Mbps for 802.11b
- Maximum reliability, throughput and connectivity with automatic data rate switching
- Supports wireless data encryption with 64-bit WEP, 128-bit WEP and 152-bit WEP with Dynamic Keying for more secure networking.
- Provides an extended omni-directional antenna with 2 ~ 4dBi
- Supports PCI Local Bus 2.2 standard
- User-friendly configuration and diagnostic utilities

LEDS

LED stands for **L**ight-**E**mitting **D**iode. The **DWL-AB520** has the following LEDs as shown below:

LED	LED Activity
Power	A steady light indicates a connection to a power source
Activity	A solid light indicates that the DWL-AB520 is ready

Wireless Basics

D-Link 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 standard, the D-Link wireless family of products will allow you to securely 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 Router is a device used to provide this link.

Wireless Basics (*continued*)

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 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.

Wireless Basics *(continued)*

The DWL-AB520 is compatible with other **D-Link AirPro 802.11a** products, which include:

- ◆ 5GHz Wireless Cardbus Adapters used with laptop computers (DWL-A650)
- ◆ 5GHz Multimode Wireless Broadband Routers computers (DI-764, and DI-754)
- ◆ 5GHz Wireless Access Points (DWL-5000AP, DWL-6000AP)

The DWL-AB520 is also compatible with **D-Link Air** and **AirPlus 802.11b** wireless products, which include:

- ◆ 2.4GHz Wireless Cardbus Adapters used with laptop computers (DWL-650, DWL-650+)
- ◆ 2.4GHz Wireless PCI cards used with desktop computers (DWL-520, DWL-520+)
- ◆ Enhanced 2.4GHz Wireless Access Point (DWL-900AP+)
- ◆ Enhanced 2.4GHz Wireless Broadband Router (DI-614+)

Standards-Based Technology

The versatile DWL-AB520 Wireless Multimode PCI Adapter integrates both 802.11a and 802.11b standards into a single unit.

The IEEE **802.11a** standard designates that devices may operate at an optimal data rate of 54 Mbps (72 Mbps in proprietary *Turbo* mode.) This means that in most environments, within the specified range of this device, you will be able to transfer large files quickly or even watch a movie in MPEG format over your network without noticeable delays. This technology works by transmitting high-speed digital data over a radio wave utilizing **OFDM (Orthogonal Frequency Division Multiplexing)** technology. **OFDM** works by splitting the radio signal into multiple smaller sub-signals that are then transmitted simultaneously at different frequencies to the receiver. **OFDM** reduces the amount of **crossstalk** (interference) in signal transmissions. D-Link *AirPro* 802.11a products will automatically sense the best possible connection speed to ensure the greatest speed and range possible.

Based on the IEEE **802.11b** standard, the DWL-AB520 is also interoperable with existing compatible 2.4GHz wireless technology with data transfer speeds of up to 11Mbps.

Wireless Basics (continued)

Installation Considerations

The D-Link *AirPro* DWL-AB520 lets you access your network, using a wireless connection, from virtually anywhere. Keep in mind, however, that the number, thickness and location of walls, ceilings, or other objects that the wireless signals must pass through, may limit the 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 wireless range is to follow these basic guidelines:

1. Keep the number of walls and ceilings between the DWL-AB520 and other network devices to a minimum - each wall or ceiling can reduce your D-Link *AirPro* 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.
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.

Getting Started

With its default settings, the DWL-AB520 will connect with other D-Link *AirPro* products, right out of the box.

There are basically two modes of networking:

Infrastructure – using an Access Point, such as the DWL-900AP+, DWL-5000AP or 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-AB520 wireless network 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 or Router. The **Infrastructure Network** example shown on the following page contains the following D-Link network devices (your existing network may be comprised of other devices):

A wireless Router - **D-Link *AirPro* DI-764**

A laptop computer with a wireless adapter -
D-Link *AirPro* DWL-A650 or *AirPlus* DWL-650+

A desktop computer with a wireless adapter -
D-Link *AirPro* DWL-AB520

A Cable modem - **D-Link DCM-200**

Getting Started

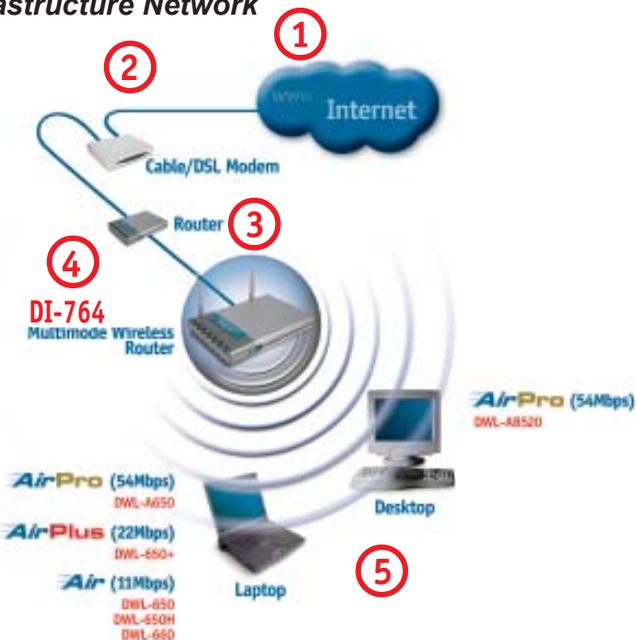
Setting up a Wireless Infrastructure Network

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 Menu - learn the settings for the DWL-AB520, using the web-based interface.

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



Please remember that **D-Link AirPro** 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 (see the *Quick Installation Guide* included with your router.)
- 4** Install the D-Link AirPro DWL-AB520 wireless PCI adapter into an available PCI slot on your desktop computer. (See the *Quick Installation Guide* included with the DWL-AB520.)
- 5** If you are connecting a laptop computer to your network, install the drivers for the wireless cardbus adapter (e.g., D-Link AirPro DWL-A650, DWL-650+ or the DWL-650) into a laptop computer. (See the *Quick Installation Guide* included with the DWL-A650, DWL-650+, or DWL-650.)

Getting Started

Setting up a Wireless Ad Hoc Network



- 1** Install the **D-Link AirPro DWL-AB520** Wireless Network adapter into the desktop computer. *See the **Quick Installation Guide** included with the product for installation instructions.*
- 2** Install a wireless network adapter into the laptop computer. In the example above the **DWL-A650**, **DWL-650+** or **DWL-650** may be installed 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.

Using the Configuration Utility

If you want to alter the default settings or optimize the performance of the DWL-AB520, D-Link has included a configuration utility to do so.

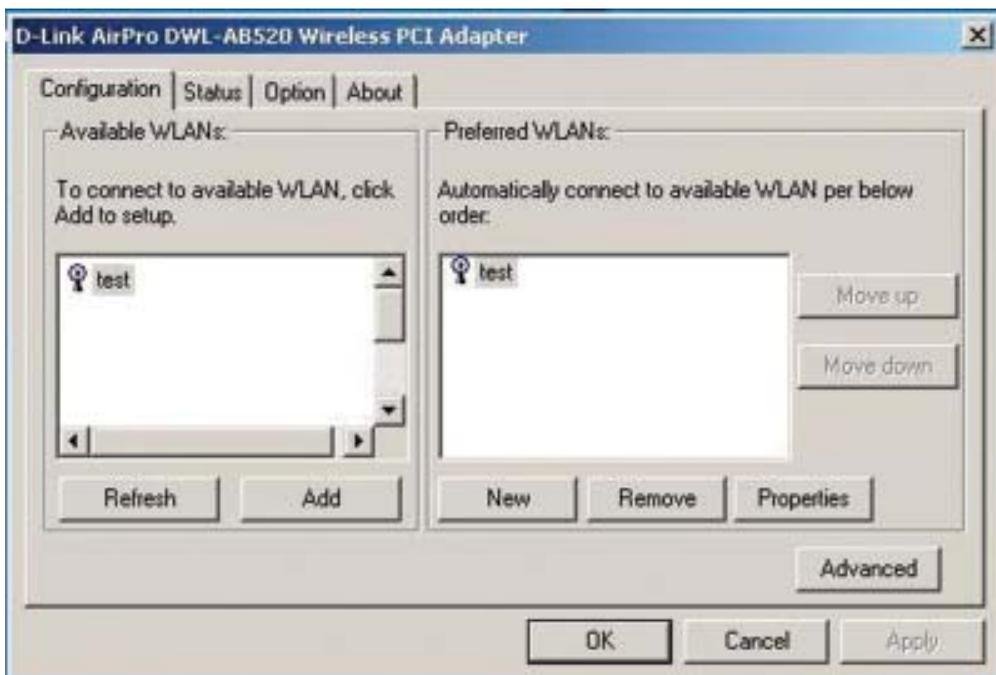
Note: With its default settings, the DWL-AB520 will associate with D-Link Air/AirPro products such as the DI-764 (a wireless router), and the DWL-A650 (a wireless adapter for laptops), right out of the box.

Before you use the configuration utility for the DWL-AB520, you must install the drivers and the configuration utility by inserting the CD-ROM that came with the DWL-AB520. (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.

After double-clicking on the icon in the taskbar (shown at right), the following Configuration Utility window will appear:



Configuration

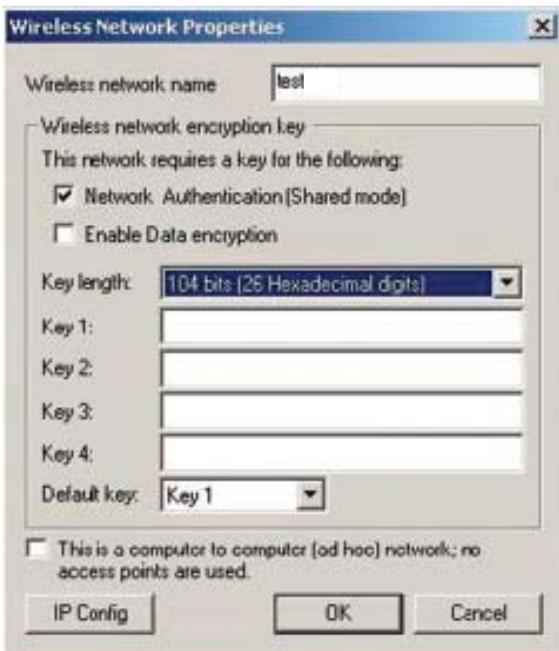


Using the Configuration Utility

Configuration (*continued*)

- Refresh-** click **Refresh** to display the current networks available
- Add-** highlight the network to which you wish to connect and click **Add**
- New-** click **New** to connect to the Preferred WLAN
- Remove-** click **Remove** to eliminate the highlighted network
- Move up-** click **Move up** to move the network up higher in the list
- Move down-** click **Move down** to move the network lower in the list
- Properties-** click **Properties** to configure the highlighted network and the screen below will appear

Configuration>Properties



Using the Configuration Utility

Configuration>Advanced



Click on **Advanced** in the **Configuration** window to select the type of WLAN (Wireless Local Area Network) to which you wish to connect. Select from the following options in the **Advanced** pop-up window:

WLAN type to connect

Infrastructure and ad-hoc network-

choose this option to connect to both **Infrastructure** and **Ad-Hoc** networks

Infrastructure network only-

choose this option to connect to **Infrastructure** networks only (networks with an Access Point like the DI-764)

Ad-hoc network only-

choose this option to connect directly to another ethernet adapter equipped computer

Automatically connect to non-preferred networks-

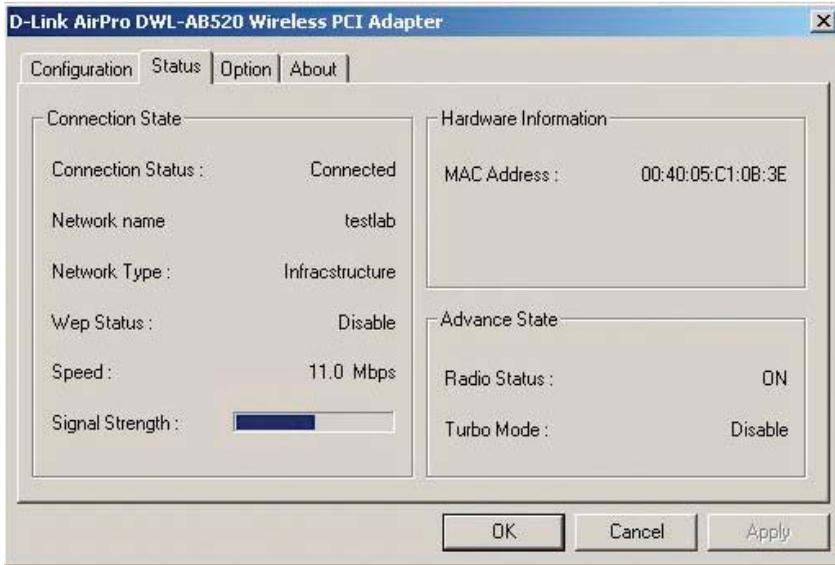
choose this option to connect to any available network. (This option could result in a security risk.)

Close-

click **Close** to save the changes.

Using the Configuration Utility

Status



If you enable **WEP encryption** or **Turbo Mode** make sure to enable WEP encryption and Turbo Mode on all the devices in your network.

The Status screen displays the current properties of the DWL-AB520.

Connection Status- indicates the connection status: either connected or disconnected.

Network Name- displays the network name that you have input

Network Type- indicates either **Infrastructure**, **Ad-Hoc** or **Infrastructure and Ad-Hoc**

WEP Status- either **Enable** or **Disable**

WEP stands for Wired Equivalent Privacy. It is a security protocol for Wireless Local Area Networks

Speed- indicates data rate speed

Signal Strength- displays the signal strength

MAC Address- *Media Access Control* address is a unique hardware address that identifies the DWL-AB520 on the network

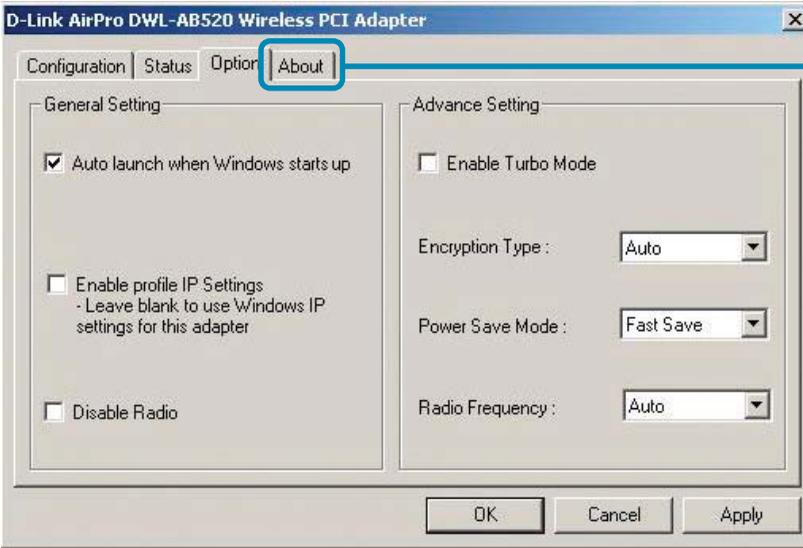
Radio Status- **ON** or **OFF**

Turbo Mode- **Enable** or **Disable**. **Disable** is the default setting

Click OK or Apply- click **Apply** to save the changes

Using the Configuration Utility

Option



General Setting

Auto Launch when Windows starts up-

automatically enables the adapter when Windows starts up. By default this option is selected.

Advance Setting

Enable Turbo Mode-

disable is the default setting. Make sure all devices in your network have identical settings for Turbo mode

Encryption Type-

select from **Auto**, **WEP** or **AES**

Power Save Mode-

select from **Fast Save**, **Max. Save** or **Disable**. Default is **Fast Save**.

Radio Frequency-

select from **802.11b - 2.4GHz**, **802.11a - 5GHz** or **Auto**. Default is **Auto**.

Click OK or Apply-

click **Apply** to save the changes; click **OK** to close the utility

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.

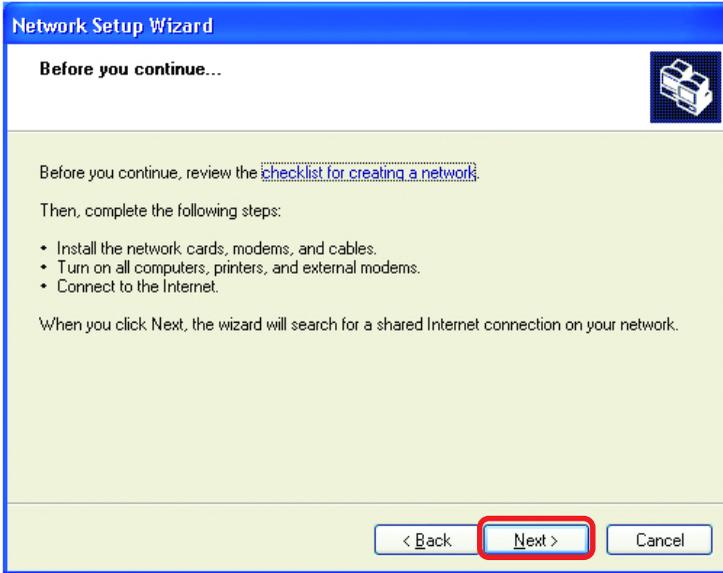
Go to **Start>Control Panel>Network Connections**
Select **Set up a home or small office network**



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

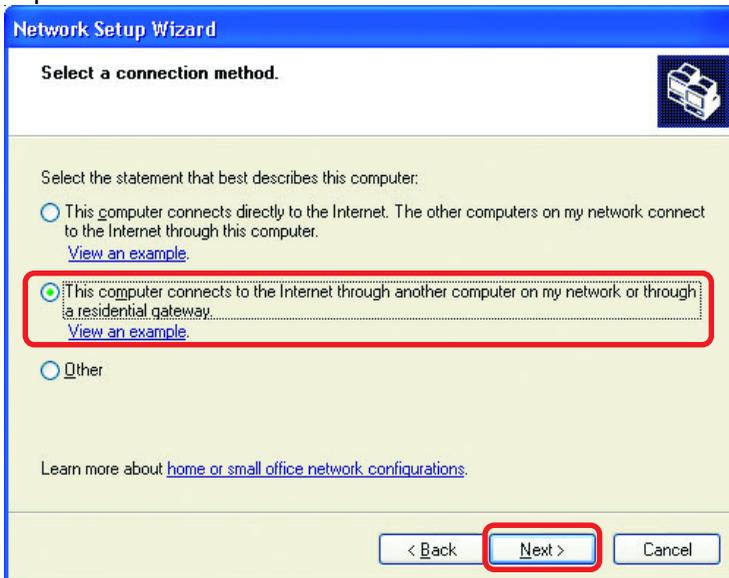
Networking Basics

Please follow all the instructions in this window:



Click **Next**

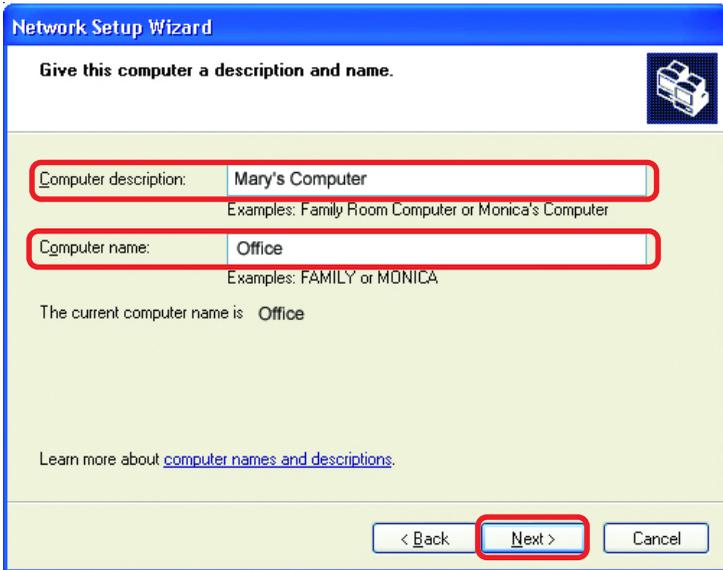
In the following window, select the best description of your computer. If your computer connects to the internet through a gateway/router, select the second option as shown.



Click **Next**

Networking Basics

Enter a **Computer description** and a **Computer name** (optional.)



The screenshot shows the 'Network Setup Wizard' dialog box with the title 'Give this computer a description and name.' The 'Computer description' field contains 'Mary's Computer' and the 'Computer name' field contains 'Office'. Both fields are highlighted with red rectangles. Below the fields are examples and a 'Next >' button, also highlighted with a red rectangle.

Network Setup Wizard

Give this computer a description and name.

Computer description:
Examples: Family Room Computer or Monica's Computer

Computer name:
Examples: FAMILY or MONICA

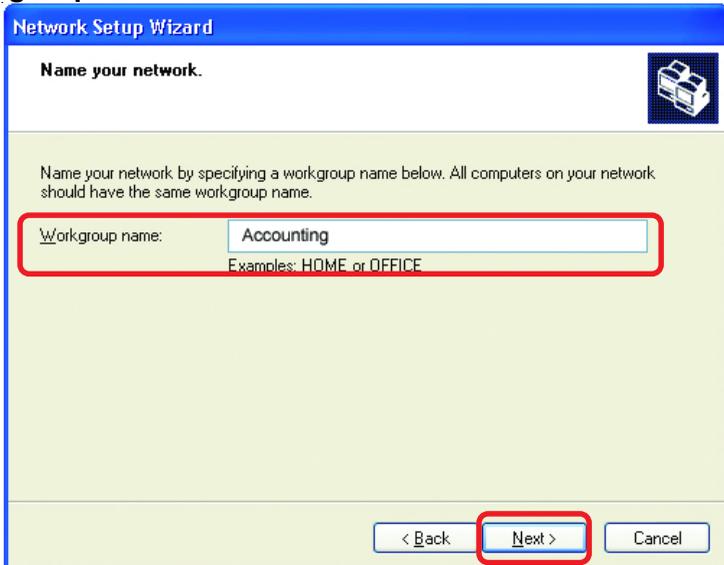
The current computer name is: Office

Learn more about [computer names and descriptions](#).

< Back **Next >** Cancel

Click **Next**

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



The screenshot shows the 'Network Setup Wizard' dialog box with the title 'Name your network.' The 'Workgroup name' field contains 'Accounting' and is highlighted with a red rectangle. Below the field are examples and a 'Next >' button, also highlighted with a red rectangle.

Network Setup Wizard

Name your network.

Name your network by specifying a workgroup name below. All computers on your network should have the same workgroup name.

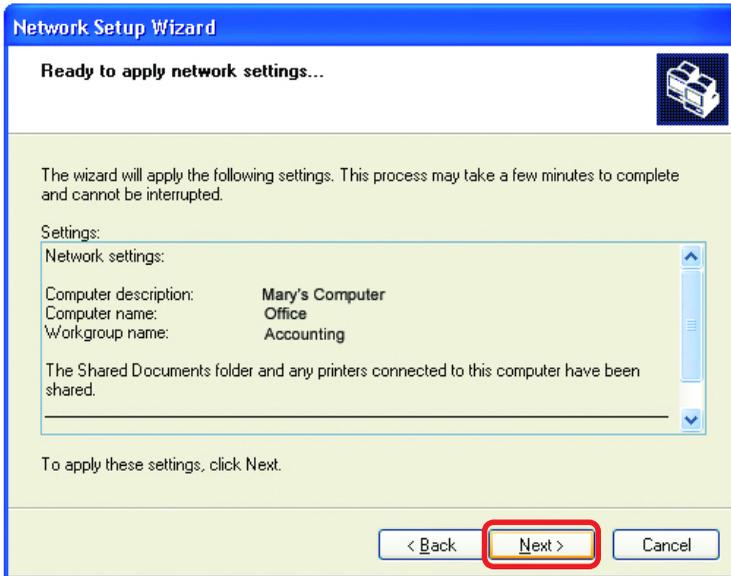
Workgroup name:
Examples: HOME or OFFICE

< Back **Next >** Cancel

Click **Next**

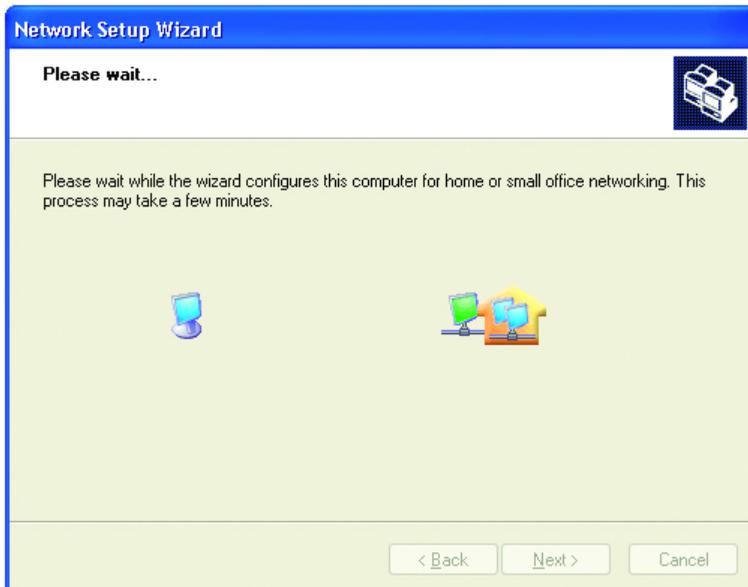
Networking Basics

Please wait while the **Network Setup Wizard** applies the changes.



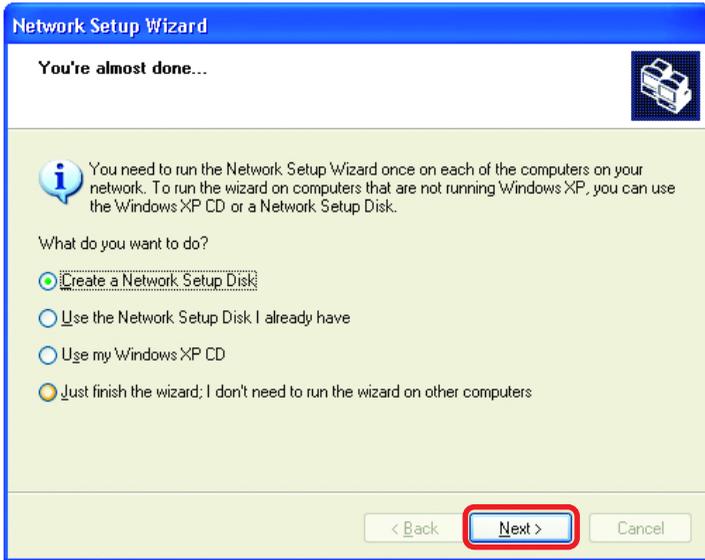
When the changes are complete, click **Next**.

Please wait while the **Network Setup Wizard** configures the computer. This may take a few minutes.



Networking Basics

In the window below, select the option that fits your needs. 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**.



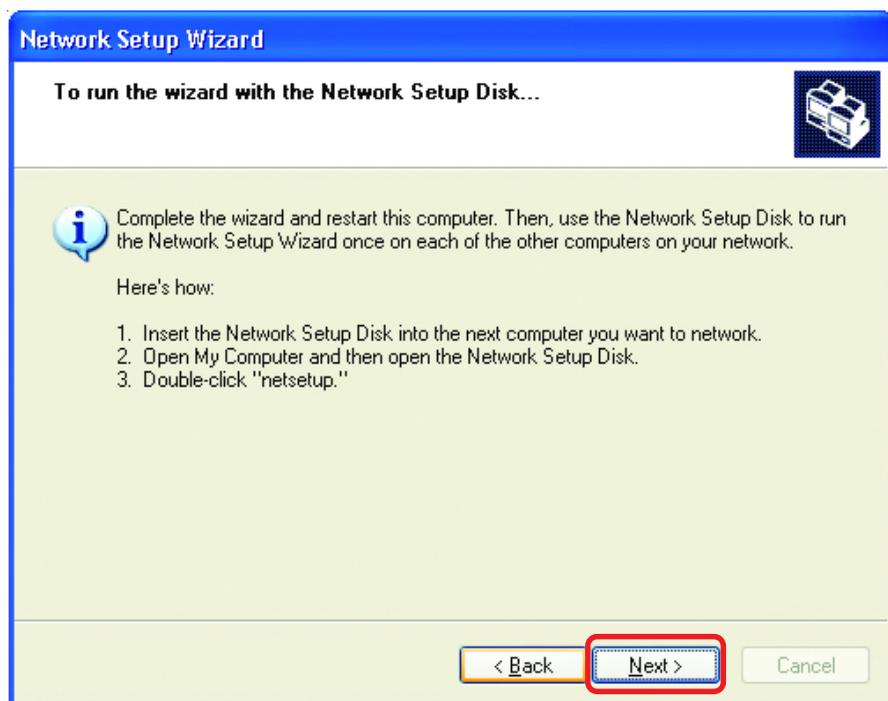
Insert a disk into the Floppy Disk Drive, in this case drive **A**.



Networking Basics

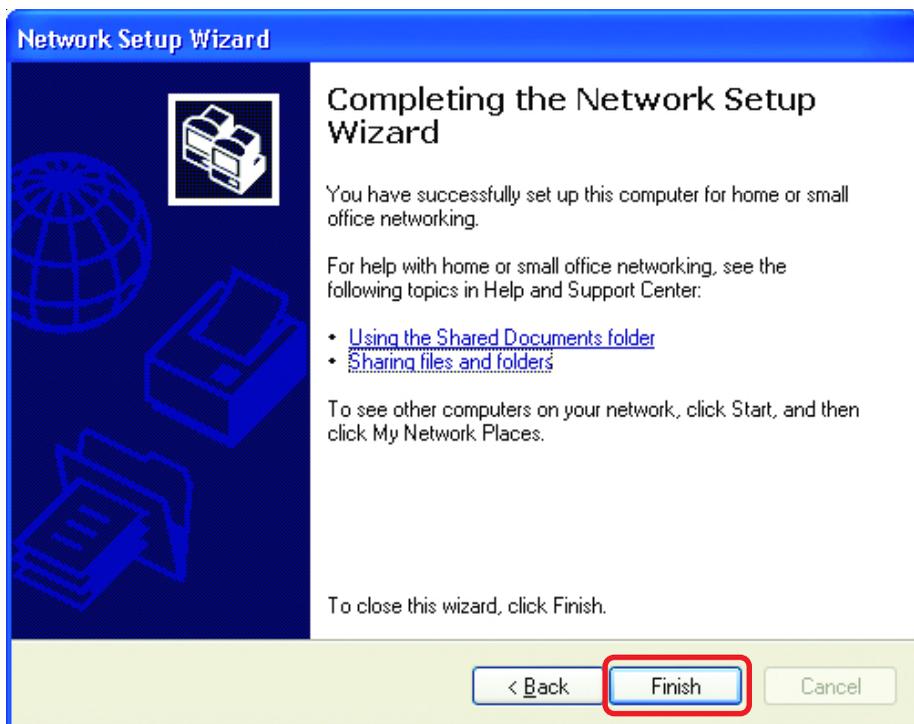


Please read the information under **Here's how** in the screen below. After you complete the **Network Setup Wizard** you will use the **Network Setup Disk** to run the **Network Setup Wizard** once on each of the computers on your network. To continue click **Next**.



Networking Basics

Please read the information on this screen, 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.



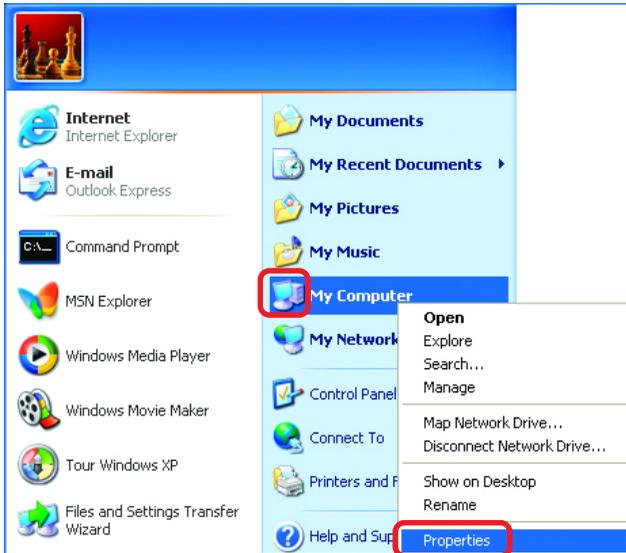
You have completed configuring this computer. Next, you will need to run the **Network Setup Disk** on all the other computers on your network. After running the **Network Setup Disk** on all your computers, your new wireless network will be ready to use.

Networking Basics

Naming your Computer

To name your computer, please follow these directions: In **Windows XP**:

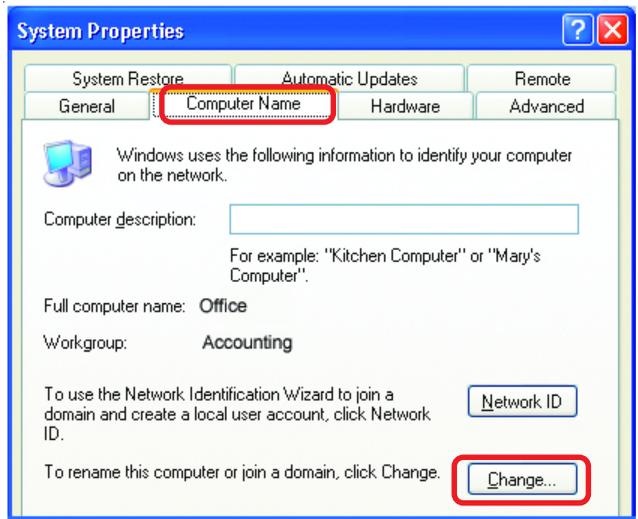
- Click **Start** (in the lower left corner of the screen)
- **Right-click on My Computer**
- Select **Properties** and click



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

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

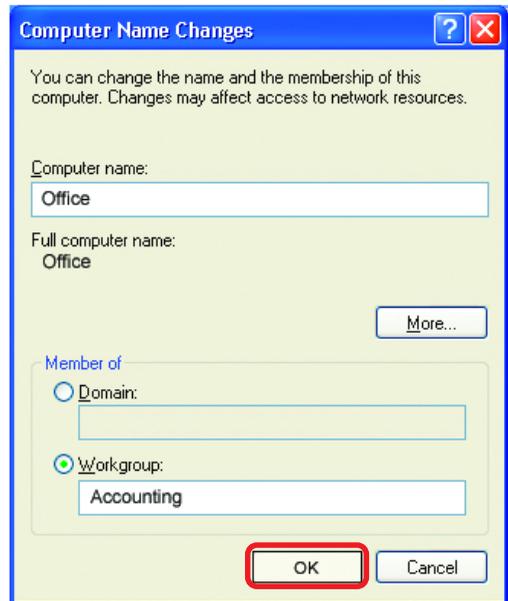
- To rename the computer and join a domain, Click **Change**.



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

The wireless adapter-equipped computers in your network must be in the same IP Address range (see Getting Started in this manual for a definition of IP Address Range.) To check on the IP Address of the adapter, please do the following:

- Right-click on the **Local Area Connection icon** in the task bar
- Click on **Status**



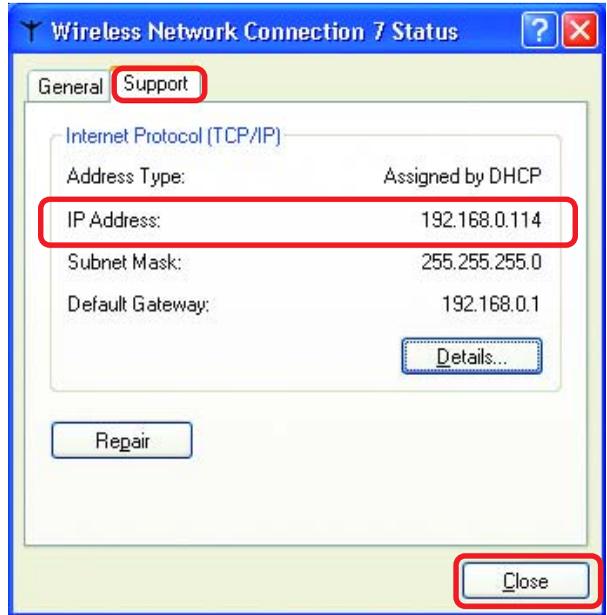
Networking Basics

Checking the IP Address in Windows XP

This window will appear.

- Click the **Support** tab

- Click **Close**



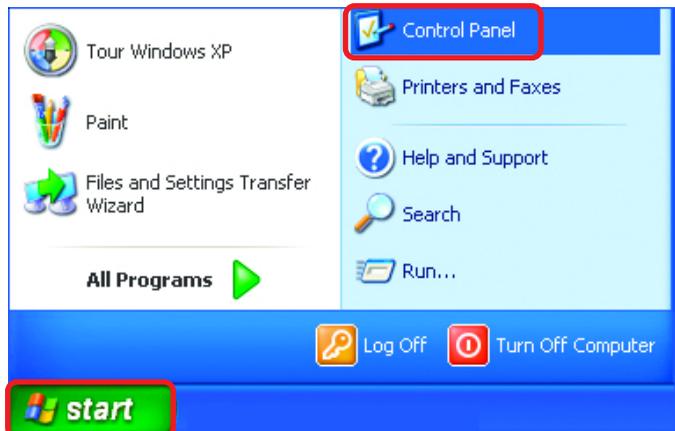
Assigning a Static IP Address in Windows XP/2000

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**

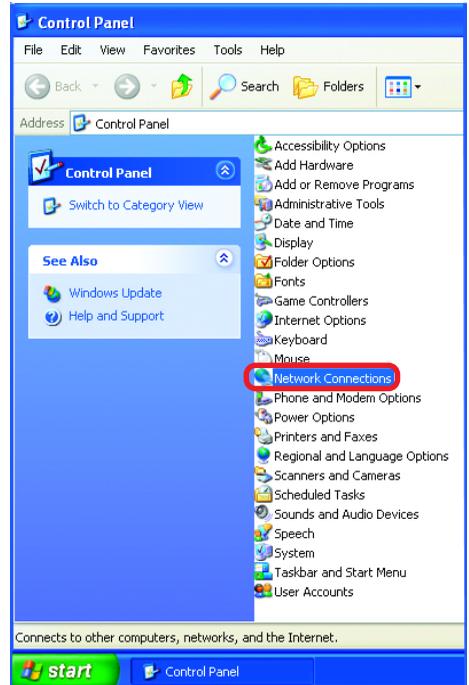
- Double-click on **Control Panel**



Networking Basics

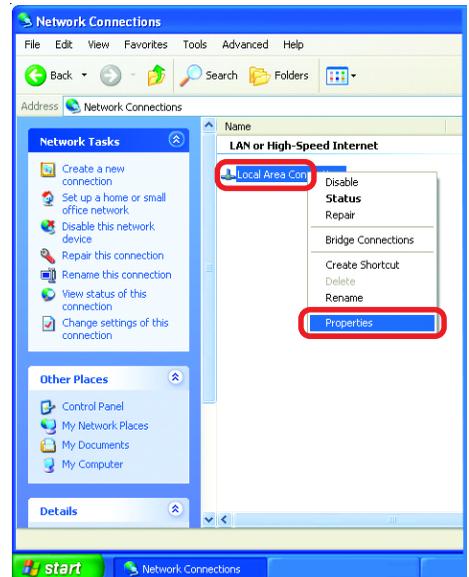
Assigning a Static IP Address in Windows XP/2000

- Double-click on **Network Connections**



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

- Double-click on **Properties**



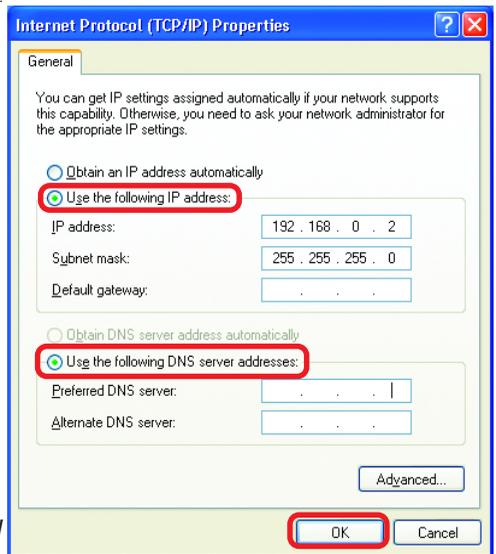
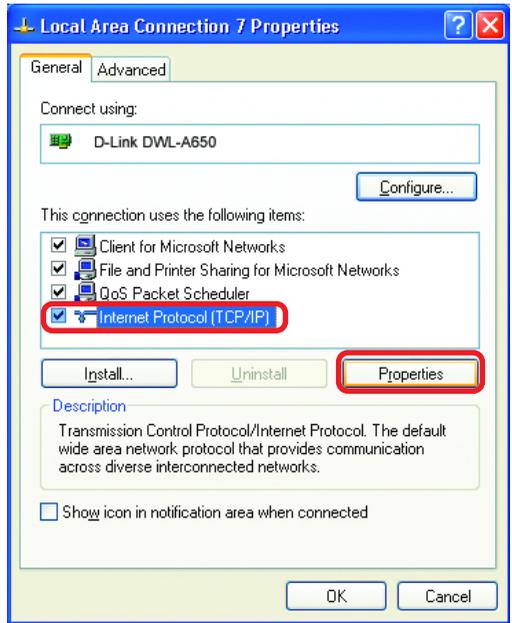
Networking Basics

Assigning a Static IP Address in Windows XP/2000

- Click on **Internet Protocol (TCP/IP)**
- Click **Properties**
- Input your **IP address and subnet mask**. (The IP Addresses on your network must be within the same range. For example, if one computer has an IP Address of 192.168.0.2, the other computers should have IP Addresses that are sequential, like 192.168.0.3 and 192.168.0.4. The subnet mask must be the same for all the computers on the network.)
- Input your **DNS server addresses**. (Note: If you are entering a DNS server, you must enter the IP Address of the Default Gateway.)

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

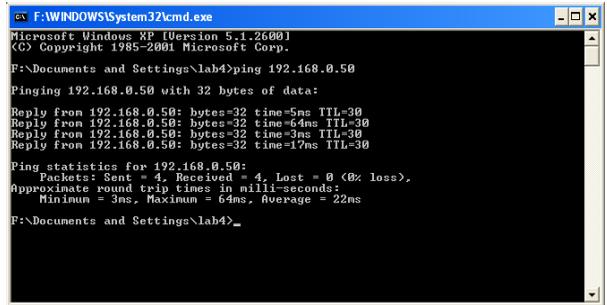
- Click **OK**



Networking Basics

Checking the Wireless Connection by Pinging in Windows XP and 2000

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



```
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:

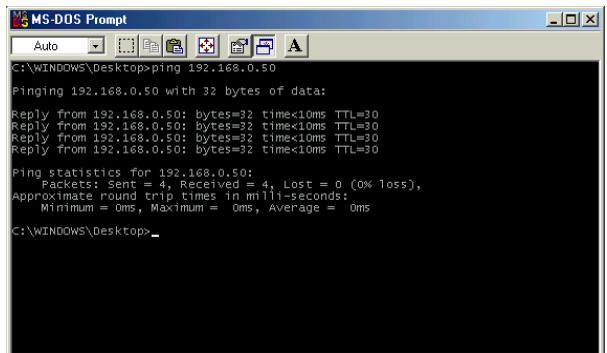
Reply from 192.168.0.50: bytes=32 time=5ms TTL=30
Reply from 192.168.0.50: bytes=32 time=64ms TTL=30
Reply from 192.168.0.50: bytes=32 time=3ms TTL=30
Reply from 192.168.0.50: bytes=32 time=17ms TTL=30

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>
```

Checking the Wireless Connection by Pinging in Windows Me and 98

- 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.



```
MS-DOS Prompt
Auto
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

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>
```

Troubleshooting

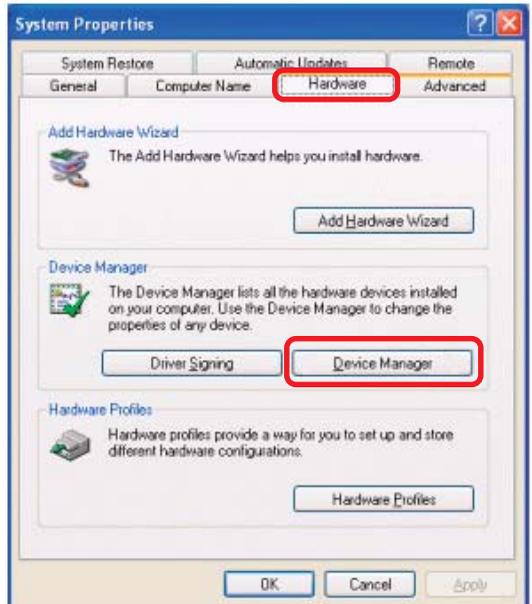
This chapter provides solutions to problems that can occur during the installation and operation of the DWL-AB520. Read the following descriptions if you are having problems. (The examples below are illustrated in Windows XP. If you have another operating system, these solutions will still apply although the appearance on your computer screen may differ.)

1. Check that the drivers for the DWL-AB520 are installed properly.

- Go to Start > My Computer > Properties



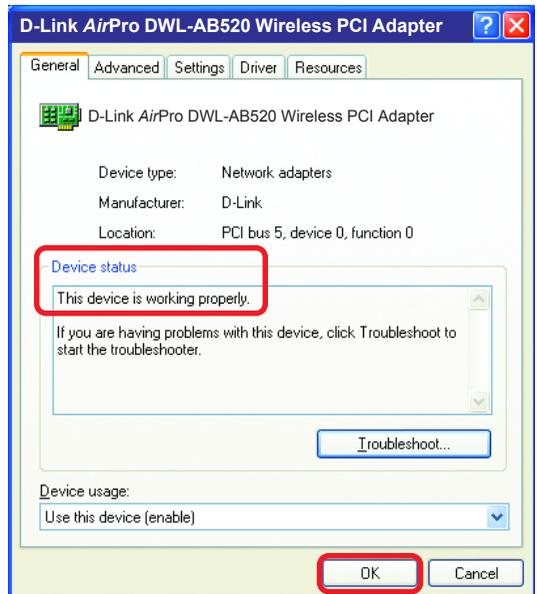
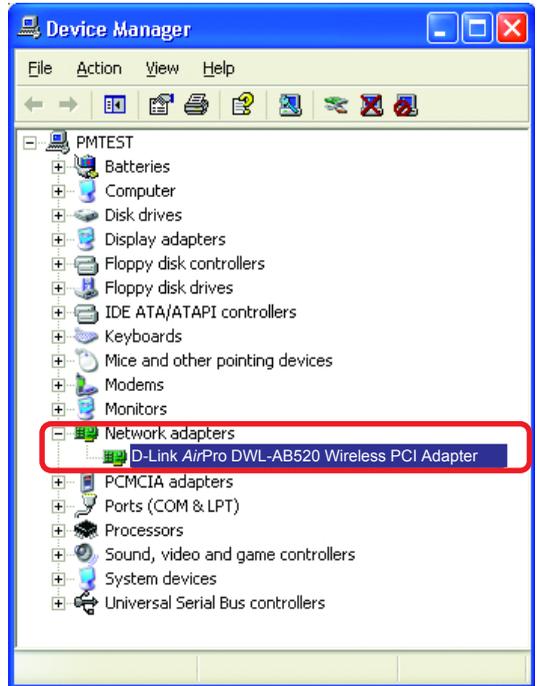
- Select the Hardware Tab



- Click Device Manager

Troubleshooting

- Double-click on **Network Adapters**
- Right-click on **D-Link AirPro DWL-AB520 Wireless Cardbus 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. What variables may cause my wireless products to lose reception?

D-Link products let you access your network from virtually anywhere you want. However, the positioning of the products within your environment will affect the wireless range. Please refer to **Installation Considerations** in the **Wireless Basics** section of this manual for further information about the most advantageous placement of your D-Link wireless products.

3. Why does my wireless connection keep dropping?

- Antenna Orientation- Try different antenna orientations for the DWL-AB520. Try to keep the antenna at least 6 inches away from the wall or other objects.
- If you are using 2.4GHz cordless phones, X-10 equipment or other home security systems, ceiling fans, and lights, your wireless connection will degrade dramatically or drop altogether. Try changing the Channel on your Router, Access Point and Wireless adapter to a different Channel to avoid interference.
- Keep your product away (at least 3-6 feet) from electrical devices that generate RF noise, like microwaves, Monitors, electric motors, etc.

4. Why can't I get a wireless connection?

If you have enabled Encryption on the DWL-AB520, you must also enable encryption on all wireless devices in the network in order to establish a wireless connection.

- For 802.11a, the Encryption settings are: 64, 128 or 152 bit. Make sure that the encryption bit level is the same on the Router (if you have an infrastructure network) and the DWL-AB520.
- For 802.11b, the Encryption settings are: 64, 128, or 256 bit. Make sure that the encryption bit level is the same on the Router and the DWL-AB520.
- Make sure that the SSID on the Router (if you have one in your network) and the DWL-AB520 are exactly the same. If they are not, wireless connection will not be established. Please note that there are two separate SSIDs for 802.11a and 802.11b. The default SSID for both 802.11a and 802.11b is **default**.

Technical Specifications

Standards

- IEEE 802.11b
- IEEE 802.11a

Diagnostic LED

- Power
- Network

Temperature

- Operating: 0°C to 55°C (32°F to 131°F)
- Storing: -20°C to 75°C (-4°F to 167°F)

Humidity:

- 10%-90%, non-condensing

Antenna Type:

- Omni-directional dipole antenna with 2~4dB

Operating Voltage:

- 3.3VDC +/-10%

MTBF:

- Mean time between failure >30,000 hours

Emissions:

- FCC part 15b

Physical Dimensions:

- L = 6.6 inches
- W = 4.2 inches
- H = 1.6 inches

Technical Specifications

802.11a Specifications

Standard:

- IEEE 802.11a

Data Rates:

- 6, 9, 12, 18, 24, 36, 48, 54 (72 Mbps in Turbo mode)

Encryption:

- Supports 64-bit, 128-bit, and 152-bit WEP encryption with Dynamic keying

Available Channels:

- 12 non-overlapping channels for North America

Frequency Range:

- 5.150 – 5.350 and 5.725 ~ 5.825 GHz

Modulation Technology:

- Orthogonal Frequency Division Multiplexing (OFDM)

Media Access Protocol:

- CSMA/CA with ACK

Modulation Techniques:

- BPSK
- QPSK
- 16 QAM
- 64 QAM

Transmitter Output Power:

- +13 ~ 14dBm at 54Mbps

Receiver Sensitivity:

- -66dBm at 54Mbps

802.11b Specifications

Standard:

- IEEE 802.11b

Data Rates:

- 1, 2, 5.5, 11Mbps (with Automatic Fallback)

Available Channels:

- Eleven channels for North America. Three non-overlapping.

Technical Specifications

802.11b Specifications

Encryption:

- Supports 64-bit, 128-bit, and 256-bit WEP encryption

Frequency Range:

- 2.4 – 2.497 GHz

Modulation Techniques:

- DQPSK
- DBPSK
- DSSS
- CCK

Media Access Protocol:

- CSMA/CA with ACK

Transmitter Output Power:

- +18dBm at 11,5.5,2 and 1 Mbps

Receiver Sensitivity:

- -84dBm for 11Mbps @ 8% PER

Wichtige Sicherheitshinweise

1. Bitte lesen Sie sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den spätern Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen.
Verwenden Sie keine Flüssig- oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Um eine Beschädigung des Gerätes zu vermeiden sollten Sie nur Zubehörteile verwenden, die vom Hersteller zugelassen sind.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sichern Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen. Verwenden Sie nur sichere Standorte und beachten Sie die Aufstellhinweise des Herstellers.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor Ü berhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
9. Die Netzanschlußsteckdose muß aus Gründen der elektrischen Sicherheit einen Schutzleiterkontakt haben.
10. Verlegen Sie die Netzanschlußleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
11. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
12. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Ü berspannung eine Beschädigung vermieden.
13. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. Elektrischen Schlag auslösen.
14. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von autorisiertem Servicepersonal geöffnet werden.
15. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
 - a - Netzkabel oder Netzstecker sind beschädigt.
 - b - Flüssigkeit ist in das Gerät eingedrungen.
 - c - Das Gerät war Feuchtigkeit ausgesetzt.
 - d - Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
 - e - Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
 - f - Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
16. Bei Reparaturen dürfen nur Originalersatzteile bzw. den Originalteilen entsprechende Teile verwendet werden. Der Einsatz von ungeeigneten Ersatzteilen kann eine weitere Beschädigung hervorrufen.

17. Wenden Sie sich mit allen Fragen die Service und Reparatur betreffen an Ihren Servicepartner. Somit stellen Sie die Betriebssicherheit des Gerätes sicher.

Limited Warranty

Hardware:

D-Link warrants its hardware products to be free from defects in workmanship and materials, under normal use and service, for the following periods measured from date of purchase from D-Link or its Authorized Reseller:

<u>Period</u>	<u>Product Type</u>	<u>Warranty</u>
	Complete products	One year
	Spare parts and spare kits	90
days		

The one-year period of warranty on complete products applies on condition that the product's Registration Card is filled out and returned to a D-Link office within ninety (90) days of purchase. A list of D-Link offices is provided at the back of this manual, together with a copy of the Registration Card. Failing such timely registration of purchase, the warranty period shall be limited to 90 days.

If the product proves defective within the applicable warranty period, D-Link will provide repair or replacement of the product. D-Link shall have the sole discretion whether to repair or replace, and replacement product may be new or reconditioned. Replacement product shall be of equivalent or better specifications, relative to the defective product, but need not be identical. Any product or part repaired by D-Link pursuant to this warranty shall have a warranty period of not less than 90 days, from date of such repair, irrespective of any earlier expiration of original warranty period. When D-Link provides replacement, then the defective product becomes the property of D-Link.

Warranty service may be obtained by contacting a D-Link office within the applicable warranty period, and requesting a Return Material Authorization (RMA) number. If a Registration Card for the product in question has not been returned to D-Link, then a proof of purchase (such as a copy of the dated purchase invoice) must be provided. If Purchaser's circumstances require special handling of warranty correction, then at the time of requesting RMA number, Purchaser may also propose special procedure as may be suitable to the case.

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. The package must be mailed or otherwise shipped to D-Link with all costs of mailing/shipping/insurance prepaid; D-Link will ordinarily reimburse Purchaser for mailing/shipping/insurance expenses incurred for return of defective product in accordance with this warranty. D-Link shall never be responsible for any software, firmware, information, or memory data of Purchaser contained in, stored on, or integrated with any product returned to D-Link pursuant to this warranty.

Any package returned to D-Link without an RMA number will be rejected and shipped back to Purchaser at Purchaser's expense, and D-Link reserves the right in such a case to levy a reasonable handling charge in addition mailing or shipping costs.

Software:

Warranty service for software products may be obtained by contacting a D-Link office within the applicable warranty period. A list of D-Link offices is provided at the back of this manual, together with a copy of the Registration Card. If a Registration Card for the product in question has not been returned to a D-Link office, then a proof of purchase (such as a copy of the dated purchase invoice) must be provided when requesting warranty service. The term "purchase" in this software warranty refers to the purchase transaction and resulting licence to use such software.

D-Link warrants that its software products will perform in substantial conformance with the applicable product documentation provided by D-Link with such software product, for a period of ninety (90) days from the date of purchase from D-Link or its Authorized Reseller. D-Link warrants the magnetic media, on which D-Link provides its software product, against failure during the same warranty period. This warranty applies to purchased software, and to replacement software provided by D-Link pursuant to this warranty, but shall not apply to any update or replacement which may be provided for download via the Internet, or to any update which may otherwise be provided free of charge.

D-Link's sole obligation under this software warranty shall be to replace any defective software product with product which substantially conforms to D-Link's applicable product documentation. Purchaser assumes responsibility for the selection of appropriate application and system/platform software and associated reference materials. D-Link makes no warranty that its software products will work in combination with any hardware, or any application or system/platform software product provided by any third party, excepting only such products as are expressly represented, in D-Link's applicable product documentation as being compatible. D-Link's obligation under this warranty shall be a reasonable effort to provide compatibility, but D-Link shall have no obligation to provide compatibility when there is fault in the third-party hardware or software. D-Link makes no warranty that operation of its software products will be uninterrupted or absolutely error-free, and no warranty that all defects in the software product, within or without the scope of D-Link's applicable product documentation, will be corrected.

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LIMITATION OF LIABILITY

IN NO EVENT WILL D-LINK BE LIABLE FOR ANY DAMAGES, INCLUDING LOSS OF DATA, LOSS OF PROFITS, COST OF COVER OR OTHER INCIDENTAL, CONSEQUENTIAL OR INDIRECT DAMAGES ARISING OUT OF THE INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE OR INTERRUPTION OF A D-LINK PRODUCT, HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY. THIS LIMITATION WILL APPLY EVEN IF D-LINK HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

IF YOU PURCHASED A D-LINK PRODUCT IN THE UNITED STATES, SOME STATES DO NOT ALLOW THE LIMITATION OR EXCLUSION OF LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

D-Link Offices for Registration and Warranty Service

The product's Registration Card, provided at the back of this manual, must be sent to a D-Link office. To obtain an RMA number for warranty service as to a hardware product, or to obtain warranty service as to a software product, contact the D-Link office nearest you. An addresses/telephone/fax list of D-Link offices is provided in the back of this manual.

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FCC Warning

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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.

CE Mark Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Warnung!

Dies ist ein Produkt der Klasse A. Im Wohnbereich kann dieses Produkt Funkstörungen verursachen. In diesem Fall kann vom Benutzer verlangt werden, angemessene Massnahmen zu ergreifen.

Precaución!

Este es un producto de Clase A. En un entorno doméstico, puede causar interferencias de radio, en cuyo caso, puede requerirse al usuario para que adopte las medidas adecuadas.

Attention!

Ceci est un produit de classe A. Dans un environnement domestique, ce produit pourrait causer des interférences

radio, auquel cas l'utilisateur devrait prendre les mesures adéquates.

Attenzione!

Il presente prodotto appartiene alla classe A. Se utilizzato in ambiente domestico il prodotto può causare interferenze radio, nel cui caso è possibile che l'utente debba assumere provvedimenti adeguati.

BSMI Warning

警告使用者
這是甲類的資訊產品,在居住的環境中使用時,可能會造成射頻干擾,在這種情況下使用者會被要求採取某些適當的對策。

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