D-Link *Air*Pro™
DWL-6000AP
2.4 GHz / 5 GHz Multimode

Wireless Access Point

Manual

D-Link®

Building Networks for People

Contents

Package Contents

Contents of Package:

- **D-Link *Air*Pro DWL-6000AP**   2.4GHz/ 5GHz Multimode Wireless Access Point

- Power Adapter – 5V DC, 2.5A

- Manual on CD

- Quick Installation Guide

- Ethernet Cable

Note: Using a power supply with a different voltage rating than the one included with the DWL-6000AP will cause damage and void the warranty for this product.

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

System Requirements For Configuration:

- Computer with Windows, Macintosh, or Linux-based operating system with an installed Ethernet adapter

- Internet Explorer or Netscape Navigator version 4.0 or above, with JavaScript enabled

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Introduction

The new D-Link *Air*Pro DWL-6000AP Multimode Wireless Access Point is a multimode access point that simultaneously serves both 802.11a wireless connectivity at up to 54 Mbps (108 Mbps in *Turbo mode**) and 802.11b wireless connectivity at up to 11Mbps (22 Mbps with D-Link *Air*Plus products*.)*

In addition to identifying and communicating with other 802.11a and 802.11b wireless devices, the D-Link *Air*Pro DWL-6000AP access point also builds a bridge between wireless and wired network segments with its integrated 10/100 Ethernet port. The multimode access point will automatically obtain an IP address and forward additional IP addresses to multiple clients for a seamless Ethernet network connection and shared Internet access.

Armed with powerful management and security capabilities, the D-Link *Air* Pro DWL-6000AP has an intuitive and secure web-based interface that is powered by an embedded web server. You can also manage your network with the AP Manager which is available on the CD that is included in your package. Advanced security is offered 802.1x support.

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 a video stream.

*When used with other D-Link *Air*Pro products.

*Maximum wireless signal rate based on IEEE Standard 802.11b specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead lower actual data throughput rate.

The DWL-6000AP is compatible with most popular operating systems, including Macintosh, Linux and Windows, and can be easily integrated into a large network. This Manual is designed to help you connect the Access Point with the D-Link 2.4GHz *Air*Plus or 5GHz *Air*Pro Wireless Adapters into an existing network. *Please take a look at the* **Getting Started** *section in this manual to see an example of an Infrastructure network using the DWL-6000AP.*

Connections

Reset

MDI RJ-45 Ethernet Port   Power Receptor
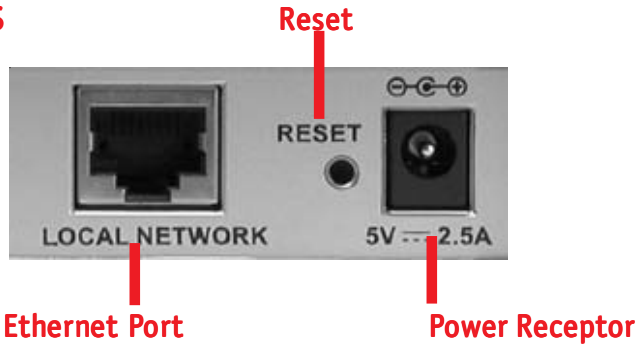
- **Straight-Through** cable is required when connecting to a router or switch
- **Cross-Over** cable is required when connecting directly to an ethernet adapter on a computer

Features & Benefits

- Supports 802.1x Authentication when used with EAP-MD5 or EAP-TLS

- Supports Data Transfer Rates of up to 108 Mbps at 5GHz in Turbo mode

- Supports Data Transfer Rates of up to 22 Mbps at 2.4GHz with D-Link *Air*Plus products

- Wireless Range of up to 900 feet*

- Fully 802.11a and 802.11b compatible

- Supports up to 256-bit WEP Encryption at 2.4GHz and up to 152-bit with Enhanced Dynamic Keying at 5 GHz

- Less Interference with a total of Eleven Non-Overlapping Channels

- Utilizes Direct Sequence Spread Spectrum (DSSS) and Packet Binary Convolutional Code (PBCC) at 2.4GHz

- Utilizes Orthogonal Frequency Division Multiplexing (OFDM) at 5GHz

Architectural and environmental factors may adversely affect range.

- Supports easy firmware upgrade

- AP Manager on the Installation CD
  - Supports AP Discover and easy IP Configuration
  - Bulk Firmware upgrade
  - Bulk device setting (WEP key, ACL, MD5 Database and others)

- Supports D-View and Open View for Enterprise application

- Supports Telnet Configuration

- MAC layer ACL (Access Control List) allows 16 MAC entries

- Enable/Disable SSID Broadcast

- PSPF-(Public Switch Packet Filter) - segregates the wireless segment from the LAN

- Supports TPC and DFS function for worldwide operations

- Internal Station Connection Option - segregates the 802.11a segment from the 802.11b segment

- 3 methods of network configuration: Web-based management, APManager (available on the Installation CD that came with your purchase), and Telnet.

- 3 Year Warranty (USA only)

LEDS

LED stands for **L**ight-**E**mitting **D**iode. The **DWL-6000AP Wireless Access Point** has 5 **Green** LEDs as shown below:

LED	LED Activity
Power	A steady light indicates a connection to a power source
10M Link/Act	A steady light indicates connection on the Ethernet port, at 10Mbps; a blinking light indicates activity
100M Link/Act	A steady light indicates a connection on the Ethernet port, at 100Mbps; a blinking light indicates activity
11a WLAN	A blinking light indicates activity on the 802.11a wireless network
11b WLAN	A blinking light indicates activity on the 802.11b wireless network

Wireless Basics

D-Link *Air*Pro 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 *Air*Pro 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

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Wireless Basics

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 go.

Scalability – Wireless Local Area Networks (WLANs) can be configured in a variety of topologies to meet the needs of specific applications and installations. Configurations are easily changed and range from peer-to-peer networks suitable for a small number of users to full infrastructure networks of thousands of users that allow roaming over a broad area.

Wireless Basics

*The DWL-6000AP is compatible with the **D-Link Air**Pro 802.11a family of products, which include*:

- ♦ 5GHz Wireless Cardbus Adapters used with laptop computers (D-Link DWL-A650)

- ♦ 5GHz Wireless PCI Adapters used with desktop computers (D-Link DWL-A520)

*The DWL-6000AP is also compatible with the **D-Link Air**Plus 802.11b Wireless Family of LAN products, which include*:

- ♦ Enhanced 2.4GHz Wireless Cardbus Adapters used with laptop computers (D-Link DWL-650+)

- ♦ Enhanced 2.4GHz Wireless PCI cards used with desktop computers (D-Link DWL-520+)

Standards-Based Technology

The versatile DWL-6000AP Multimode Wireless Access Point integrates both 802.11a and 802.11b standards into a single unit.

The IEEE **802.11a** standard designates that devices operate at an optimal data rate of 54 Mbps (108Mbps in proprietary *Turbo* mode.) This means you will be able to transfer large files quickly or even watch a movie in MPEG format over your network without noticeable delays. This technology works by transmitting high-speed digital data over a radio wave utilizing **OFDM** (**O**rthogonal **F**requency **D**ivision **M**ultiplexing) 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 **crosstalk** (interference) in signal transmissions. D-Link *AirPro* 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-6000AP is also interoperable with existing compatible 2.4GHz wireless technology with data transfer speeds of up to 22Mbps (with D-Link *Air*Plus Family of Wireless devices,) as well as standard 802.11b technology (with D-Link *Air* Family of Wireless devices), with speeds of up to 11Mbps.

Supports 802.1x Authentication to prevent breeches in security. In conjunction with EAP software, 802.1x Authentication verifies client identity through a Radius Server to prevent unknown clients from accessing the network. 9

Wireless Basics

Installation Considerations

Designed to go up to 328 feet (100 meters) indoors, D-Link *Air*Pro DWL-6000AP 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-6000AP and your receiving device (e.g., the DWL-A650) to a minimum - each wall or ceiling can reduce your D-Link *Air*Pro Wireless product's range from 3-90 feet (1-30 meters.) Position your Access Points, Residential Gateways, and computers so that the number of walls or ceilings is minimized.

2. Be aware of the direct line between Access Points, Residential Gateways (routers) and computers. A wall that is 1.5 feet thick (.5 meters), at a 45-degree angle appears to be almost 3 feet (1 meter) thick. At a 2-degree angle it looks over 42 feet (14 meters) thick! Try to make sure that the Access Points and adapters are positioned so that the signal will travel straight through a wall or ceiling for better reception.

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

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

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

Getting Started

*Right out of the box, with its default sett[...]
automatically connect with other D-Link[...]*

IP ADDRESS

Note: If you are using a DHCP-capable router in your network setup, such as the DI-604, you will not need to assign a static IP Address.

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

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

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

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

A wireless Access Point - **D-Link *Air*Pro DWL-6000AP**
An Ethernet Broadband Router - **D-Link DI-604**
A laptop computer with a wireless adapter - **D-Link *Air*Pro DWL-A650**
A desktop computer with a wireless adapter - **D-Link *Air*Pro DWL-A520**
A Cable modem - **D-Link DCM-200**

Getting Started

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-6000AP, using the web-based interface.

Troubleshooting - learn how to check for common installation issues and other tips for troubleshooting.
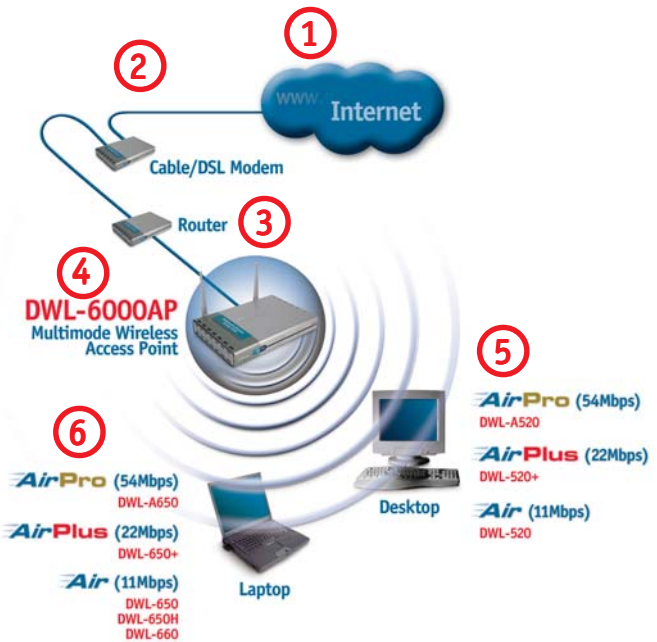
*Please remember that **D-Link AirPro** wireless devices are pre-configured to connect together, right out of the box, with the default settings.*

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

You will need a broadband Internet access (Cable/DSL) subscription

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

3 Connect the modem to an Ethernet broadband router such as the **DI-604** (*see the Quick Installation Guide included with the DI-604.*)

4 Connect the router to the D-Link *Air*Pro DWL-6000AP (*see the Quick Installation Guide included with the DWL-6000AP.*)

5 If you are connecting a desktop computer in your network, you can install the D-Link *Air*Pro DWL-A520 wireless PCI adapter into an available PCI slot. (See the Quick Installation Guide included with the DWL-A520.)

6 Install the drivers for the wireless cardbus adapter (**D-Link *Air*Pro DWL-A650**) into the laptop computer (*see the Quick Installation Guide included with DWL-A650.*)

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Using the Configuration Menu

The **Configuration Menu** for the DWL-6000AP is web-based. The DWL-6000AP can be set up using any current web browser, i.e., Internet Explorer 5.5 (or newer), or Netscape Navigator 4x (or newer).

The computer that you are using for initial configuration must have an IP Address within the same range as the IP Address of the DWL-6000AP. The DWL-6000AP has a default IP Address of 192.168.0.50 with subnet mask 255.255.255.0

If you are **not** using a D-Link router in your network, you **will** need to assign a Static IP Address to the computer that you are using to configure the DWL-6000AP, within the IP Address Range of the DWL-6000AP. For instance, you can assign a static IP address of **192.168.0.2** with subnet mask of **255.255.255.0** (Please see **Networking Basics** in this manual for information on **Assigning a Static IP Address**.)

Factory Default Settings for the DWL-6000AP

SSID for 802.11a and 802.11b	default
Channel	36, 6
WEP	disabled
User Name	admin (lower case)
Password	(no password, leave field blank)
IP Address	192.168.0.50

Using the Configuration Menu

*(During configuration, please always remember to click **Apply** to save the changes.)*
Whenever you want to configure your network or the DWL-6000AP, you can access the Configuration Menu by opening the web-browser and typing in the IP Address of the DWL-6000AP. The DWL-6000AP default IP Address is shown below:

- ■ Open the web browser
- ■ Type in the **IP Address** of the Access Point
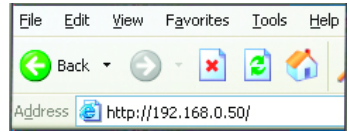
Note: if you have changed the default IP Address assigned to the DWL-6000AP, make sure to enter the correct IP Address.

- ■ Type **admin** (lower case) in the **User Name** field
- ■ Leave the **Password** blank
- ■ Click **Next**

Home > Wizard

The **Home>Wizard** screen will appear. Please refer to the *Quick Installation Guide* for more information regarding the Setup Wizard.
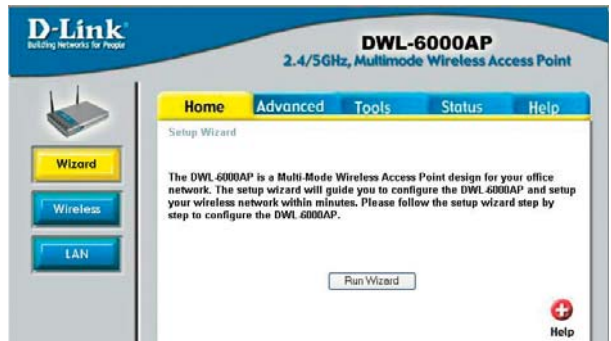
Home > Wireless

Here the **Home> Wireless** tab is displayed. If you wish to change the default settings, you can make changes to these items, as shown on the following page.

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Using the Configuration Menu
Home > Wireless *(continued)*

Wireless Band: Choose 802.11a or 802.11b. In the illustration shown, 802.11a is selected .

SSID: (**Service Set Identifier**) **"default" is the default setting for both 802.11a and 802.11b.** The SSID is a unique name that identifies a network. All devices on a network must share the same SSID name in order to communicate on the network. If you choose to change the SSID from the default setting, input your new SSID name in this field. The SSID can be up to 32 characters in length.
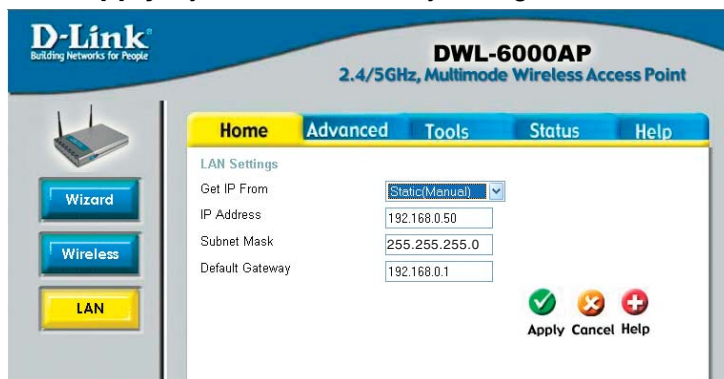
SSID Broadcast: **"enable" is the default setting.** The SSID Broadcast "broadcasts" the SSID over the network, making connection easier, although this may raise security concerns.

Channel: **Channel 36 is the default channel for 802.11a. Channel 6 is the default channel for 802.11b**. Select a different channel if you want to change the default setting. All devices on the network must be set to the same channel to communicate on the network. *(Current wireless network adapters will automatically scan for the channel to establish connection with the access point.)*

Radio Frequency: the radio frequency (which corresponds to the wireless band selected) appears in this "read-only" field.

Click **Help** at any time for more information.
Click **Apply** if you have made any changes or additions.

This window displays the default settings of the DWL-6000AP. The default IP Address is 192.168.0.50. If you select **Dynamic IP Address**, you will obtain a dynamic IP Address from a DHCP server on your network.
(Note: you will need to use the AP Manager to determine the IP Address dynamically assigned to the Access Point.)
The **Subnet Mask** is 255.255.255.0. Input the IP Address of the **Default Gateway** (the router on your network.)
Click **Apply** if you have made any changes.   15
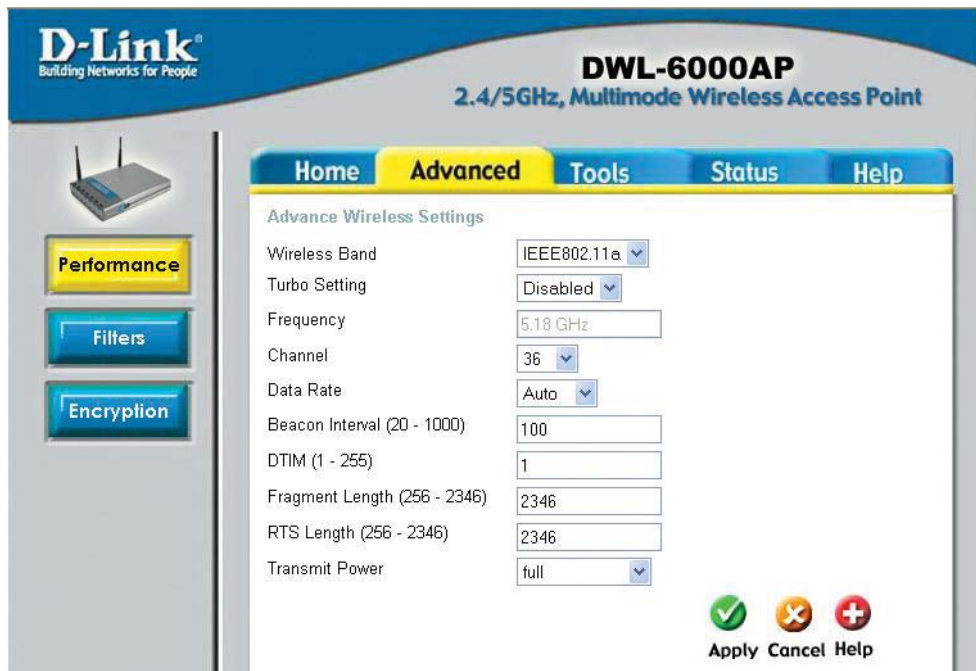
Using the Configuration Menu

Advanced > Performance

*The **default** Performance settings are shown in the illustration above.*

Wireless Band: Select **802.11a** (up to 108 Mbps speed in turbo mode in the 5GHz range) or **802.11b** (up to 22 Mbps speed with AirPlus adapters.)

Turbo Setting: Select **Enabled** or **Disabled.** The **default** setting is **Disabled** for 802.11a. 802.11b does not have the Turbo mode option.

Frequency: The frequency range will be displayed.

Channel: The default channel for 802.11a is **36.**
The default channel for 802.11b is **6.**

Data Rate: Select the transmission rate for the network

Beacon Interval: Beacons are packets sent by an Access Point to synchronize a wireless network. Specify a Beacon interval value (20-1000.) Default (100) is recommended.

DTIM: (**D**elivery **T**raffic **I**ndication **M**essage) Enter a value between 1 and 255 for the Delivery Traffic Indication Message (DTIM.) A DTIM is a countdown informing clients of the next window for listening to broadcast and multicast messages.

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Using the Configuration Menu

Fragment Length: This value should remain at its default setting of 2346. If you experience a high packet error rate, you may slightly increase your Fragmentation Threshold within the value range of 256 to 2346. Setting the Fragmentation Threshold too low may result in poor performance.

RTS Length: This value should remain at its default setting of 2346. If you encounter inconsistent data flow, only minor modifications to the value range between 256 and 2346 are recommended.

RTS Length: This value should remain at its default setting of 2346. If you encounter inconsistent data flow, only minor modifications to the value range between 256 and 2346 are recommended.

Transmit Power: Choose *Full, 1/2, 1/8, or minimum* Power. You may wish to limit the distance of the signal for security purposes.

Advanced > Filters > Wireless Access Settings

Select the **Wireless Band** (802.11a or 802.11b)

At the **Access Control** pull-down menu, select **Disabled** (the default setting,) **Accept** or **Reject.**

Input up to 16 MAC Addresses in the **Access Control List.** The devices with the input MAC Addresses will be accepted or rejected from the selected wireless band.

> **MAC Address** (**M**edia **A**ccess **C**ontrol Address)
> A unique hardware address that identifies a device on a network. It is assigned at the factory and cannot be changed. Usually you will find this address on a sticker on the device or on the packaging. *(Please use the following format when entering the MAC address- xx:xx:xx:xx:xx:xx)*

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Using the Configuration Menu

Advanced > Filters > WLAN Partition

Wireless Band: Select 802.11a or 802.11b

Internal Station Connection: Click on **Enabled*** to enable communication between the 802.11a and 802.11b bands on your dual-band network. Deselect this box to disallow communication between the two bands on your network. *(*You will also need to check **Enabled** at the **Internal Station Connection Between 802.11a and 802.11b** box in this screen, in order for this communication to be successful.)*

Ethernet to WLAN Access: Click on **Enabled** to enable communication between the wireless segment and the Ethernet segment on your network. Deselect this box to disallow communication between the wireless segment and the Ethernet segment.

Internal Station Connection Between 802.11a and 802.11b: Click on **Connection Enabled*** to allow communication between these two segments of the wireless network. *(*You will also need to check **Enabled** at the **Internal Station Connection** box in this screen, in order for this communication to be succe*ssful.)

Click Apply to make the changes effective.

Using the Configuration Menu

Advanced > Encryption

Wireless Band: Select 802.11a or 802.11b

Authentication: Select from one of the following:

- **Open System:** the DWL-6000AP will be visible to all devices on the network. **Open System** is the **default** setting.
- **Shared Key:** in order to access the DWL-6000AP on the network, the device must be listed in the **Access Control List**
- **Shared Key/Open System:** click here to select both options
- **802.1x:** click here to select 802.1x authentication

> **802.1x -** is the first line of defense against network intrusion. In the authentication process the Radius Server verifies the identity of the client attempting to connect to the network. Unfamiliar clients will be denied access. **EAP**(Extensible Authentication Protocol) is available through the Windows XP Operating System. You will need to use the same type of EAP protocol on all the devices in your network when using the 802.1x feature.

WEP Key Type: Select **HEX** (Hexadecimal) or **ASCII**

WEP: Select **Enabled** or **Disabled** (the **default** setting is **Disabled**)

> **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

WEP Key Size: Select **64, 128 or 256 bit for 802.11b; 64, 128, 152 bit for 802.11a**

Valid Key: Select the key that you will use from one of the four keys in the Key Table.

Key Table: Input up to 4 keys using the format that you have selected in *Wep Key Type*.

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Using the Configuration Menu

Tools > Admin

If you wish, you can change your password here. Keep a copy of your password in a safe place. Click **Help** at any time if you need assistance. Click **Apply** if you have made any changes.

Tools > System

If you have made changes to the configuration settings, click **Restart** in this window to apply the changes.
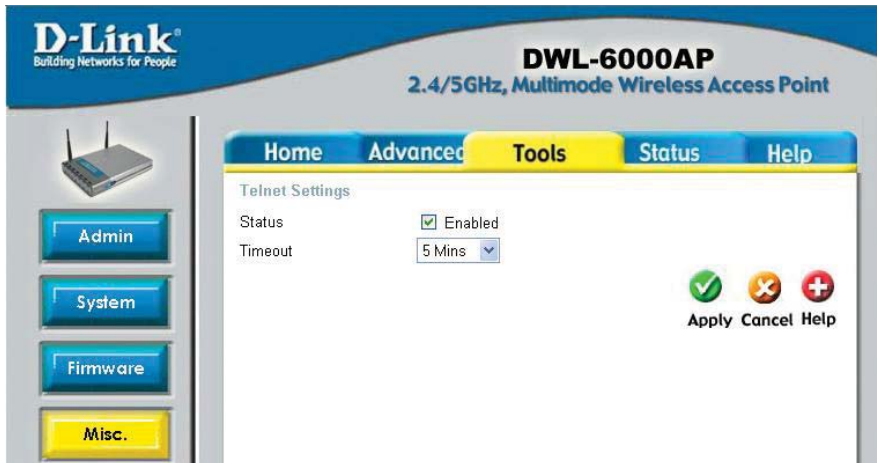Click **Restore**, if you would like to return the DWL-6000AP to its factory default settings.

Using the Configuration Menu

Tools > Firmware
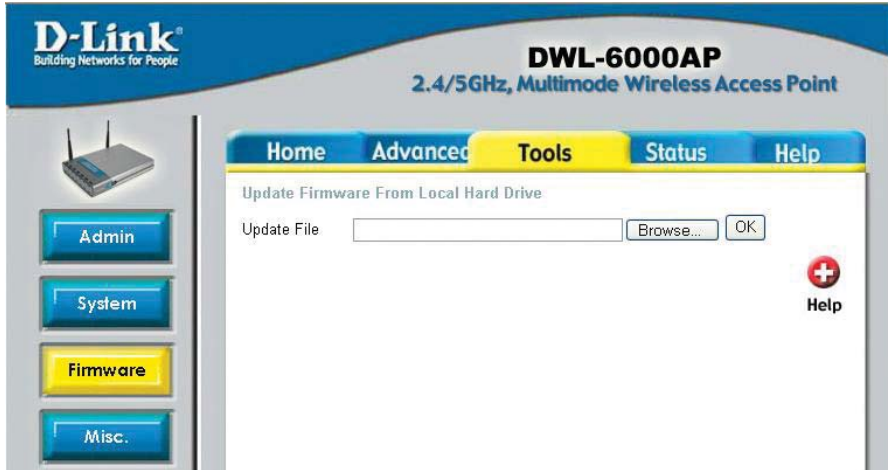
Click Browse: select the updated firmware file that you downloaded from support.dlink.com
Click OK: after you have selected the file, click OK

Tools > Misc

Telnet Settings
Status: Select **Enabled** or **Disabled**
Timeout: Select the *Timeout* period after which your Telnet session will log off.
Apply: Click Apply for changes to take effect

> **Telnet -** you can manage your network remotely using this DOS-based program.

Using the Configuration Menu

Run TFTP Program

*To run the **D-Link TFTP program**, insert the DWL-6000AP CD-ROM, and click on **Run TFTP Program**. Or go to Start > Run > and type **d:\tftpd.exe** (where "d:\" refers to the CD-ROM drive on the computer.) **(Note: The TFTP program must be running to upload the firmware.)**
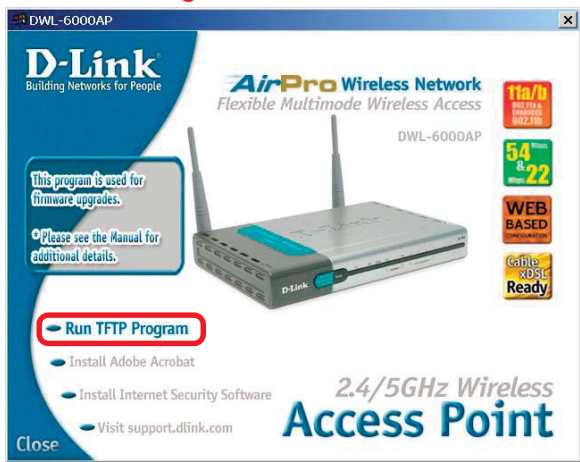
TFTP Program
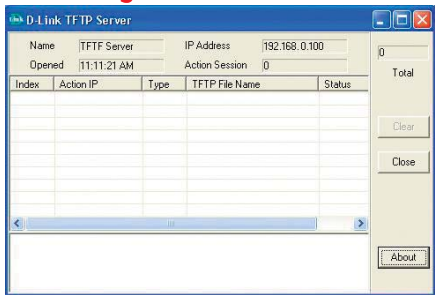
Status > Device Info
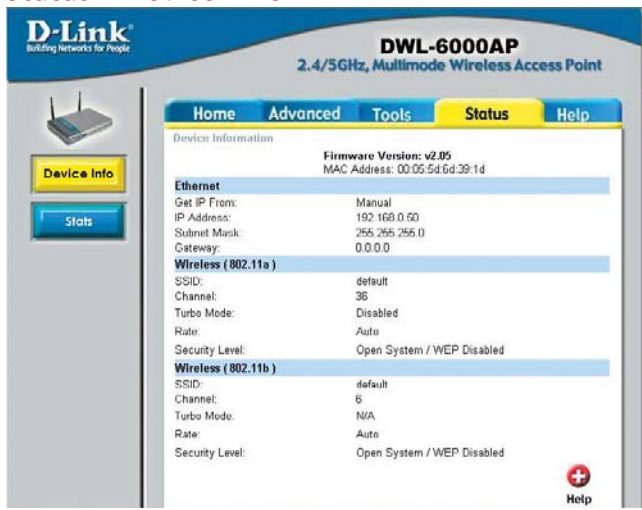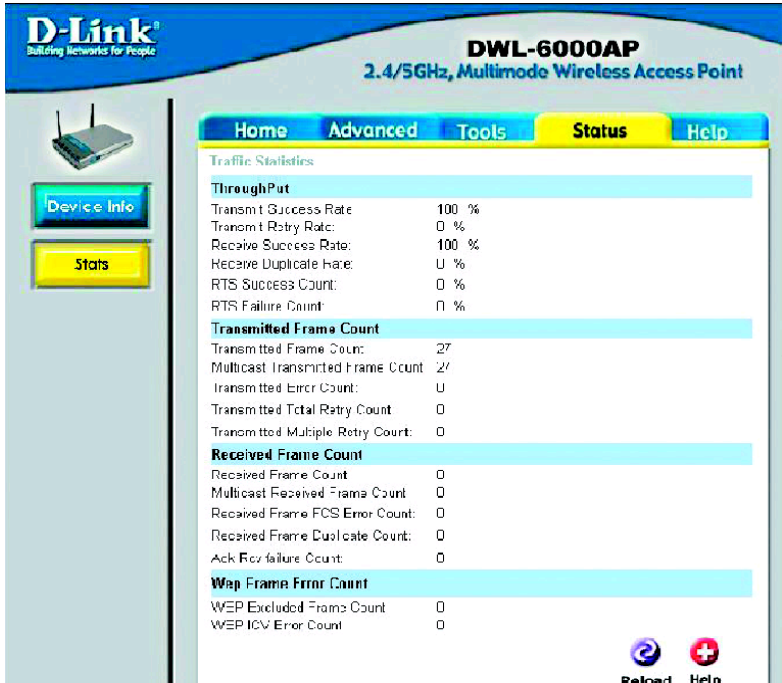
The *Status>Device Info* screen displays the configuration settings of your computer.

Using the Configuration Menu

Status > Stats

Displays the
network traffic
statistics for both
received and
transmitted
communications
through the
Ethernet port and
wireless connec-
tions associated
with the Access
Point.

Help

The **Help** menu
is displayed
here. You can
also click on
Help in any
window for
additional
information.

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 98.
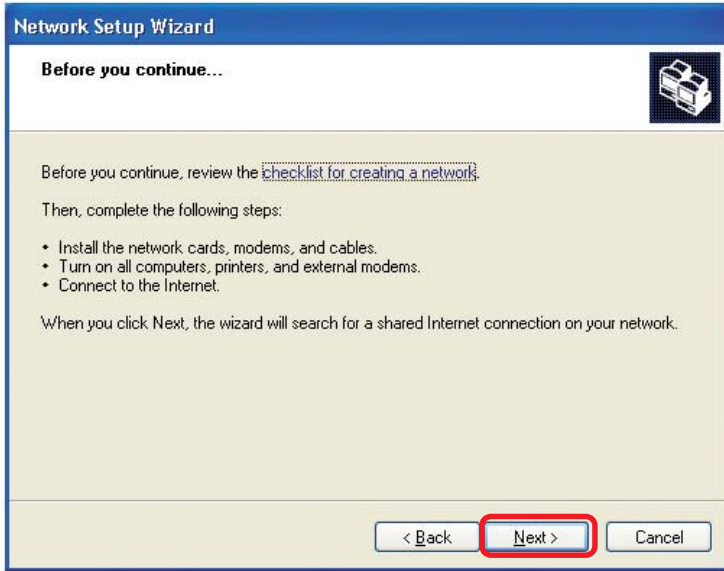
Go to **Start>Control Panel>Network Connections**
Select **Set up a home or small office network**

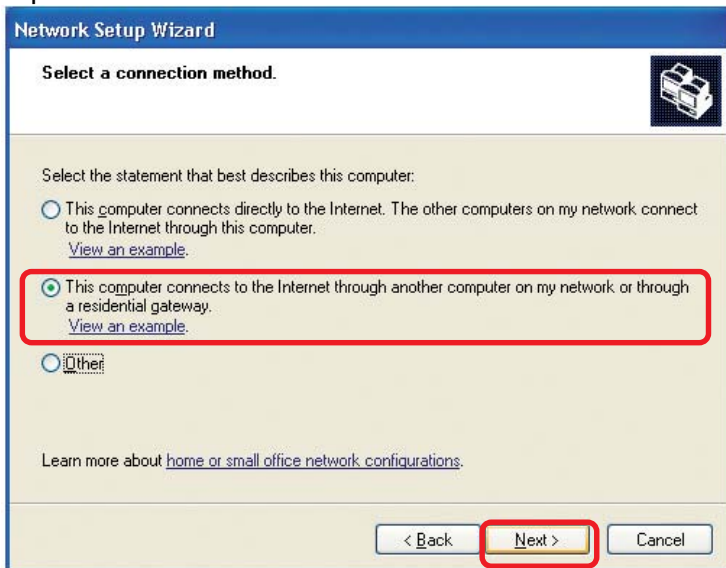When this screen appears, **Click Next.**

Networking Basics

Please follow all the instructions in this window:
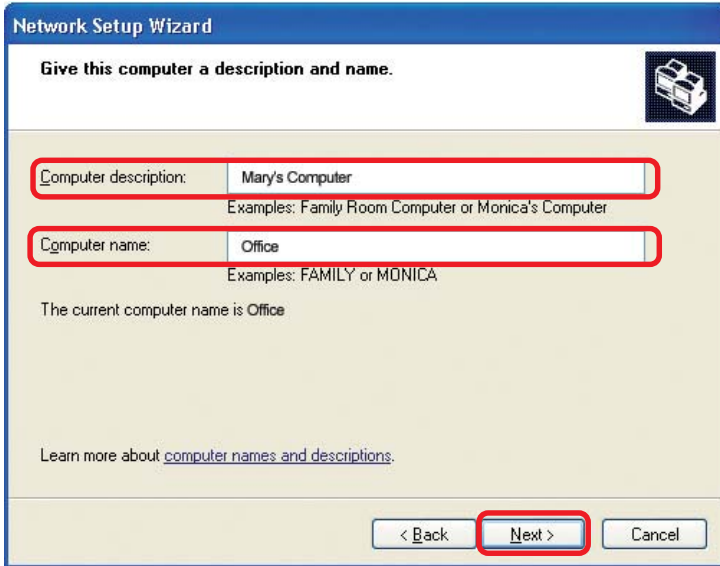

Click **Next**

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.
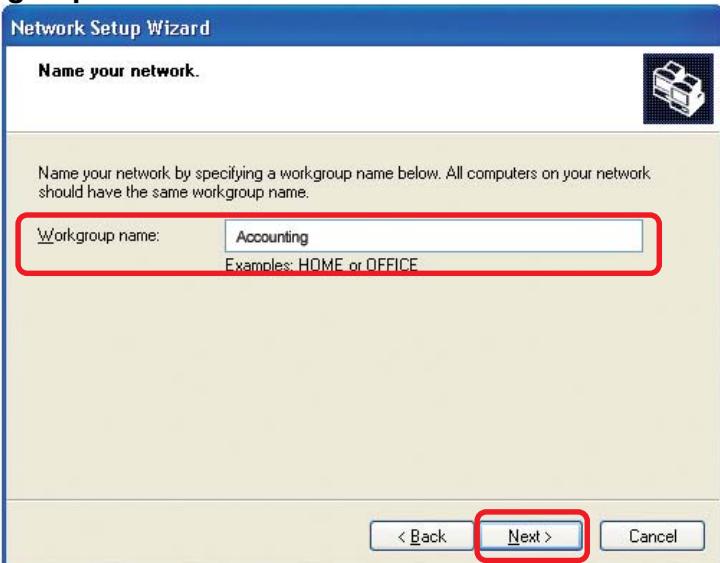

Click **Next**

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

Click **Next**

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

Click **Next**

Please wait while the **Network Setup Wizard** applies the changes.
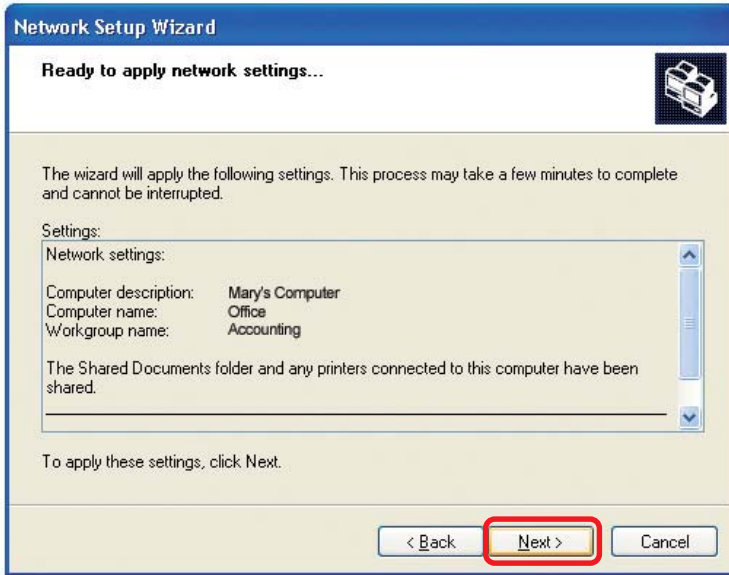
When the changes are complete, click **Next**.

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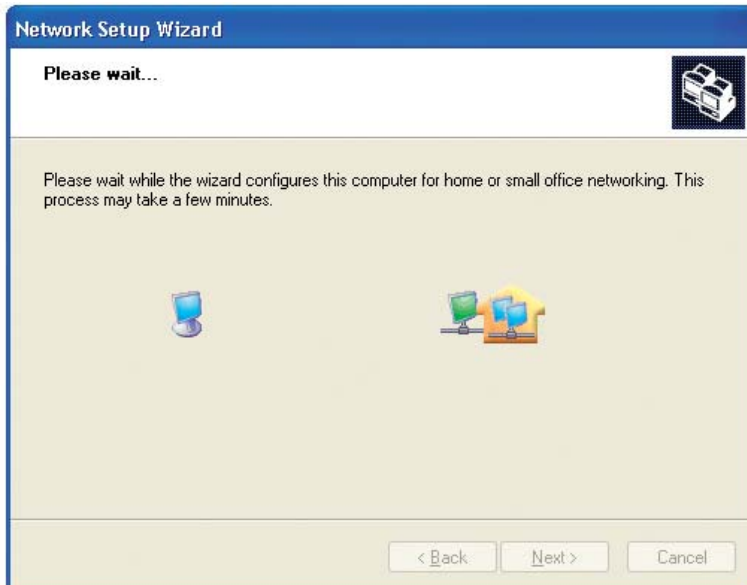
Networking Basics

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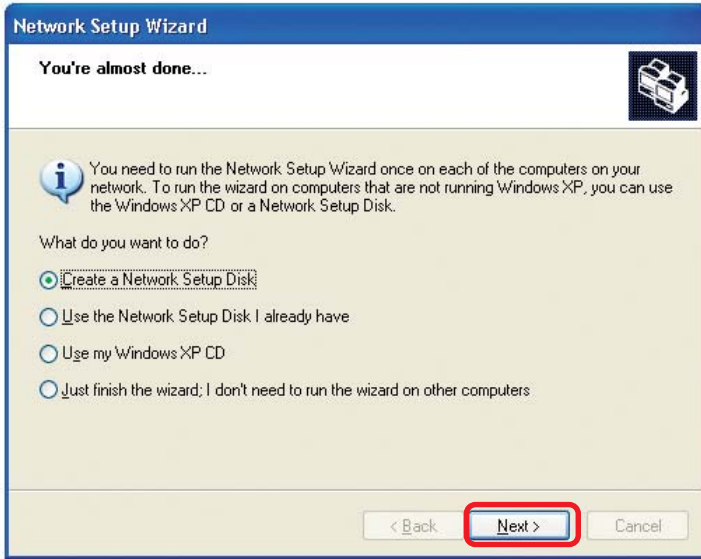
Insert a disk into the Floppy Disk Drive, in this case drive **A.**

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

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.**
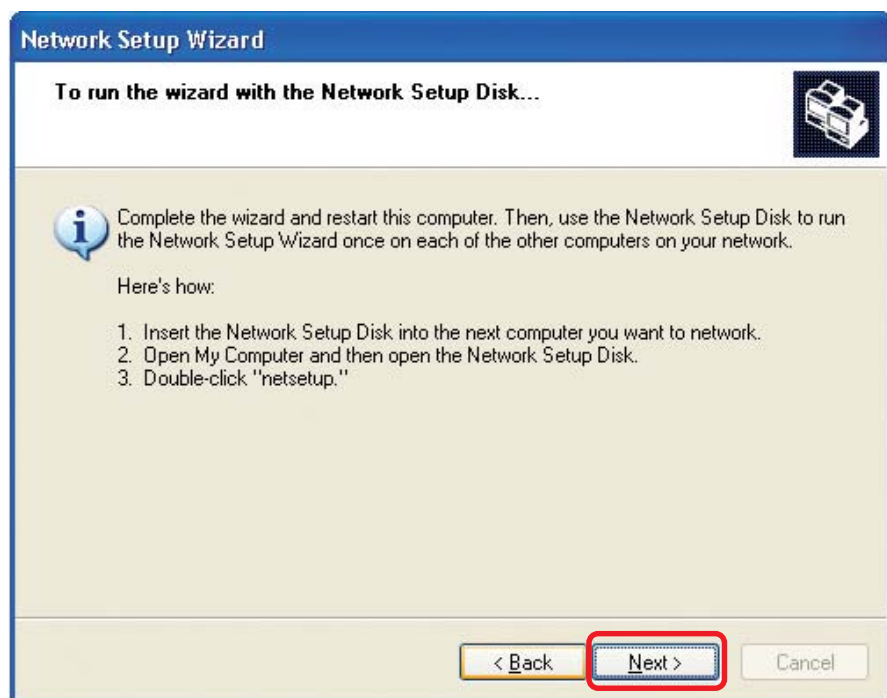
Networking Basics

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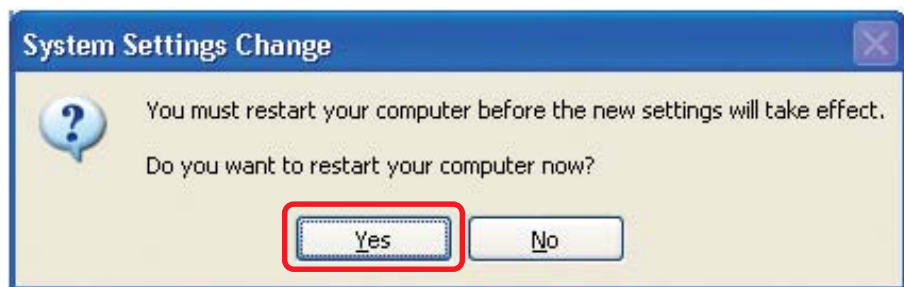
You have completed configuring this computer. Next, you will need to run the **Network Setup Disk** on all the other computers on your network. After running the **Network Setup Disk** on all your computers, your new wireless network will be ready to use.

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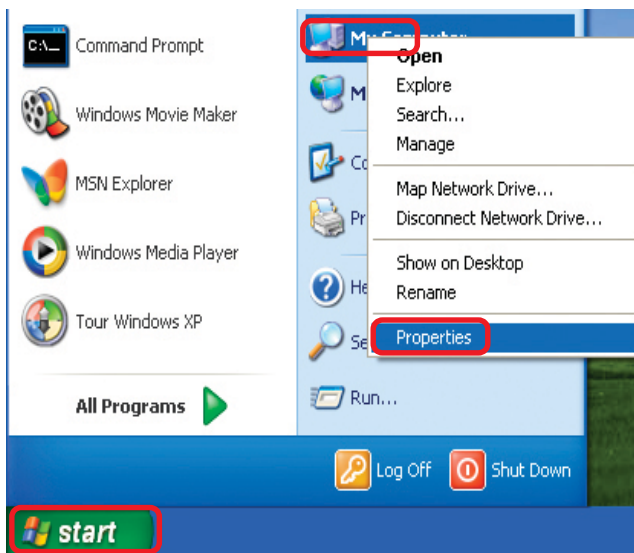
■ Select the **Computer Name Tab** in the System Properties window.

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

■ To rename the computer and join a domain, Click **Change**.
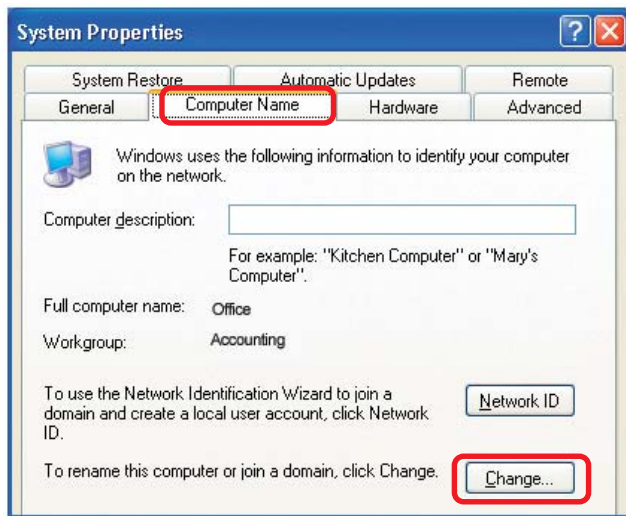
Networking Basics
Naming your Computer

- 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**

Computer Name Changes dialog:

Computer Name Changes

You can change the name and the membership of this computer. Changes may affect access to network resources.

Computer name:
Office

Full computer name:
Office

More...

Member of
○ Domain:

⊙ Workgroup:
Accounting

OK   Cancel
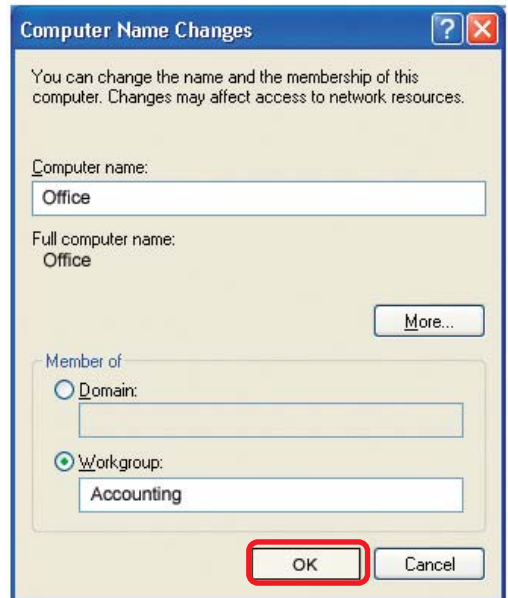
Checking the IP Address in Windows XP

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

Context menu:

Disable

Status

Repair

View Available Wireless Networks

Open Network Connections

3:05 PM

- Click on **Status**

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Networking Basics
Checking the IP Address in _Windows XP_

This window will appear.

■ Click the
Support tab

■ Click **Close**
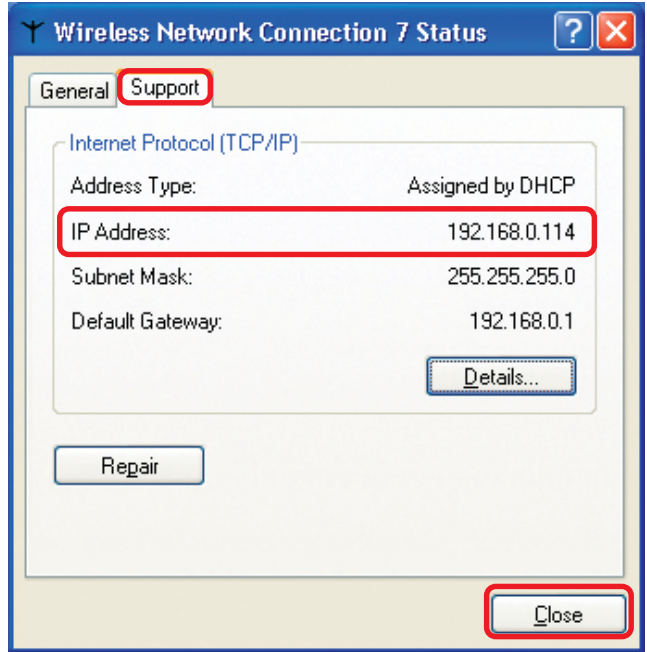
Assigning a Static IP Address in _Windows XP/2000_

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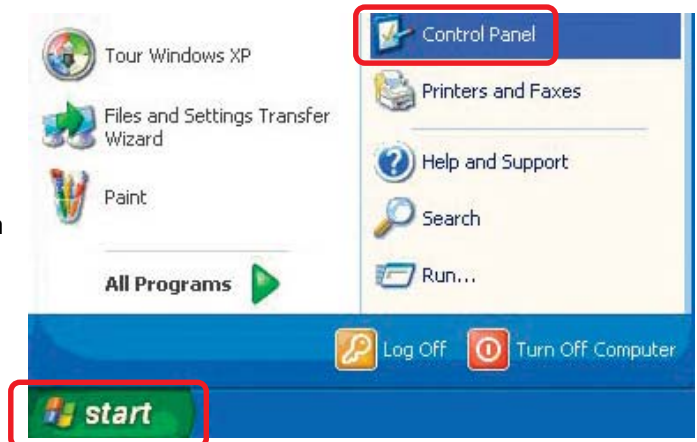
- Double-click on **Network Connections**
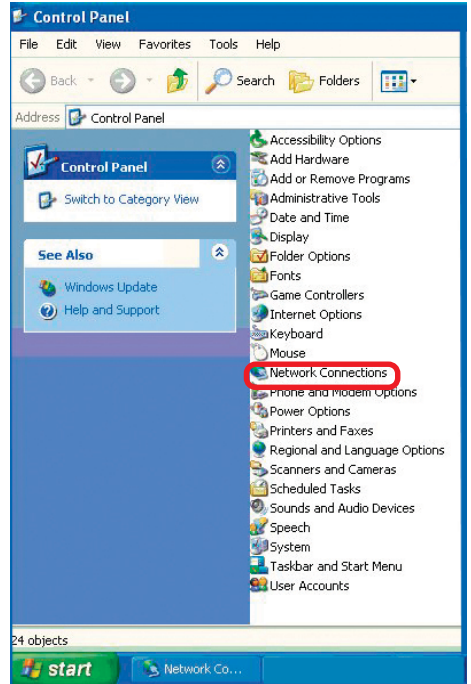
- Right-click on **Local Area Connections**

- Double-click on **Properties**

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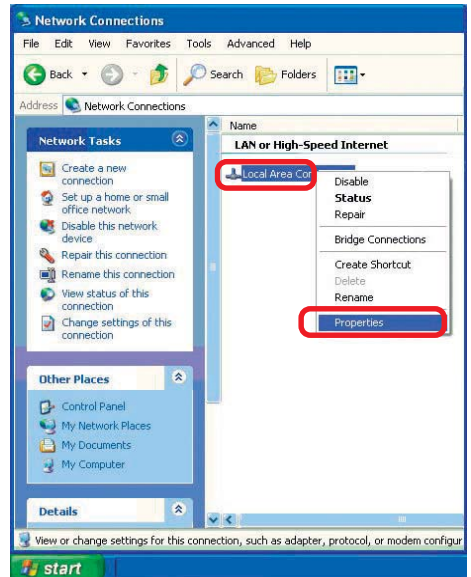
Networking Basics
Assigning a Static IP Address
in Windows XP/2000

■ Click on **Internet Protocol (TCP/IP)**

■ Click **Properties**

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

■ 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**

■ Go to the **Apple Menu** and se-
lect **System Preferences**

■ Click on **Network**

■ Select **Built-in Ethernet** in the
Show pull-down menu

■ Select **Manually** in the **Con-
figure** pull-down menu

■ Input the **Static IP Address**,
the **Subnet Mask** and the
Router IP Address in the ap-
propriate fields

■ Click **Apply Now**

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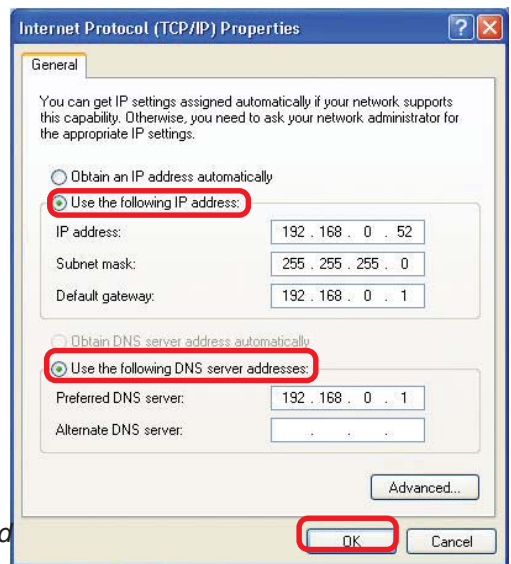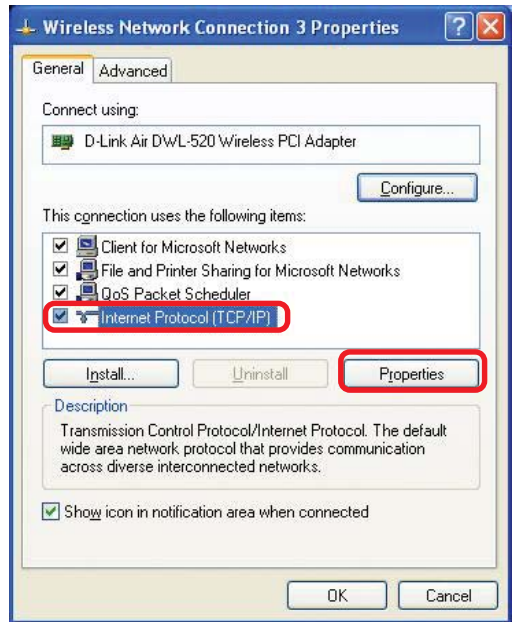
Networking Basics
Selecting a Dynamic IP Address with <u>Macintosh OSX</u>

■   Go to the **Apple Menu** and select **System Preferences**

■   Click on **Network**
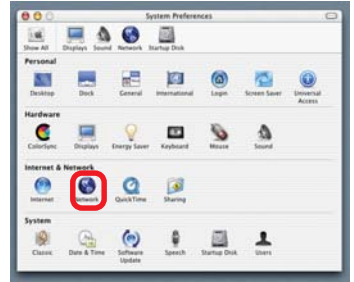
■   Select **Built-in Ethernet** in the **Show** pull-down menu

■   Select **Using DHCP** in the **Configure** pull-down menu
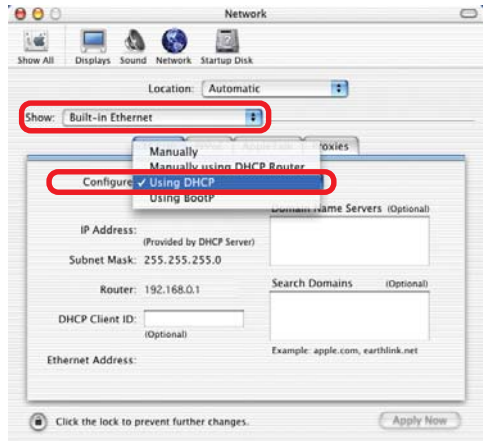
■   Click **Apply Now**
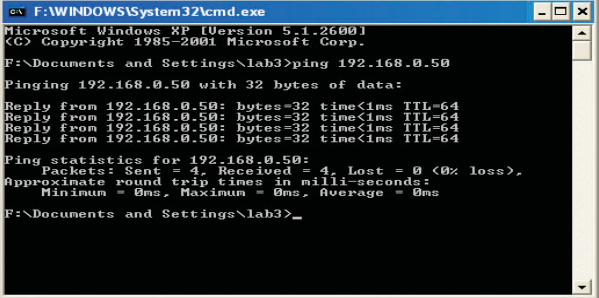
■   The **IP Address, Subnet mask**, and the **Router's IP Address** will appear in a few seconds
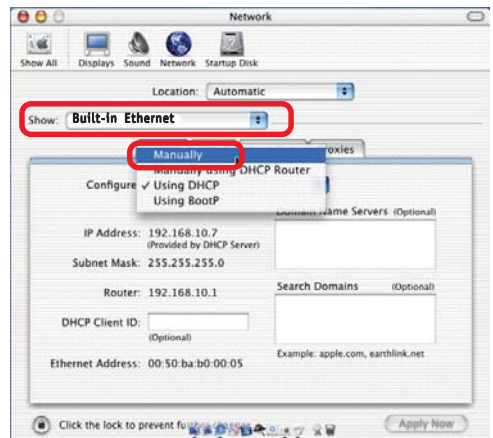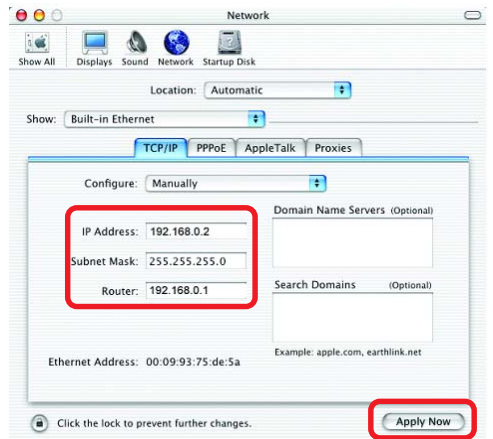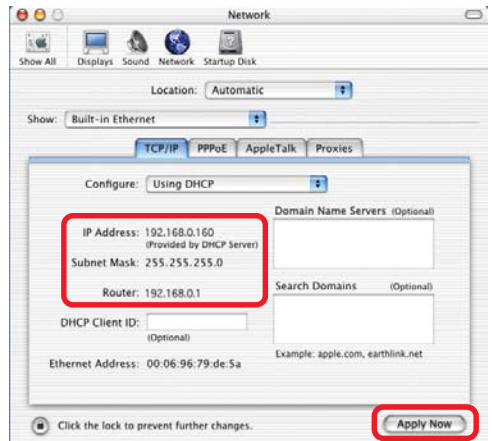
■ Go to **Start** > **Run** > type **cmd**. A window similar to this one will appear. Type **ping xxx.xxx.xxx.xxx**, where **xxx** is the **IP Address** of the Wireless Router or Access Point. A good wireless connection will show four replies from the Wireless Router or Acess Point, as shown.


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

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

F:\Documents and Settings\lab3>ping 192.168.0.50

Pinging 192.168.0.50 with 32 bytes of data:

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

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

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

Networking Basics
Adding and Sharing Printers in <u>Windows XP</u>

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.

On the following pages, we will show you these 3 ways to use the **Add Printer Wizard:**

1. Adding a local printer

2. Sharing a network printer

3. Sharing an LPR printer

(Other Networking Tasks)

For help with other tasks, that we have not covered here, in home or small office net-working, see **Using the Shared Documents** folder and **Sharing files and folders** in the **Help and Support Center** in Microsoft **Windows XP**.

Networking Basics
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**
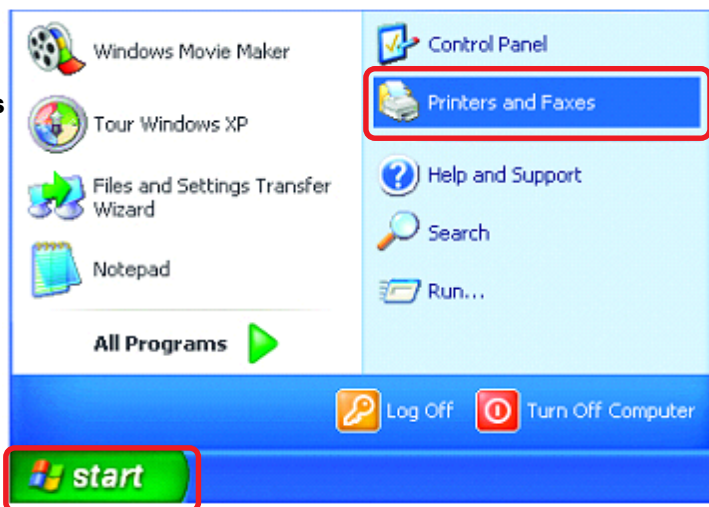
■ Click on **Add a printer**
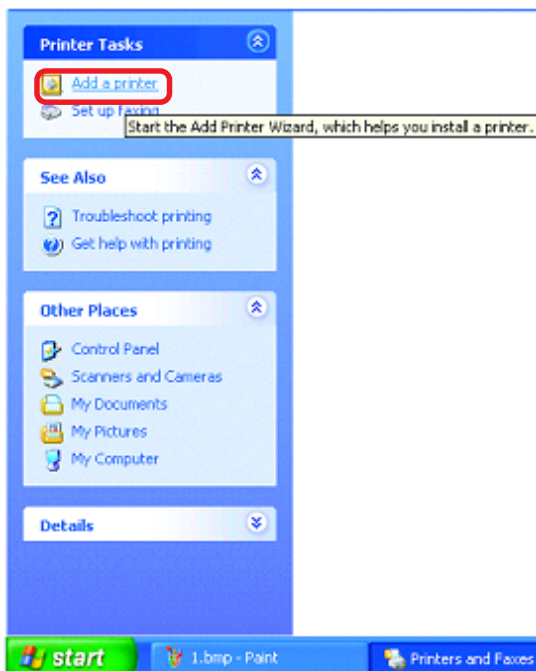
■ Click **Next**

■ 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**
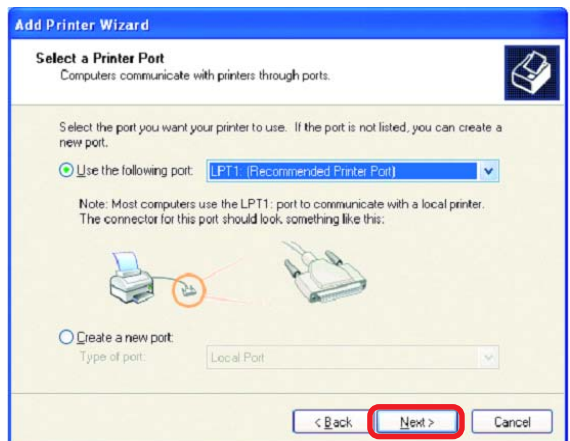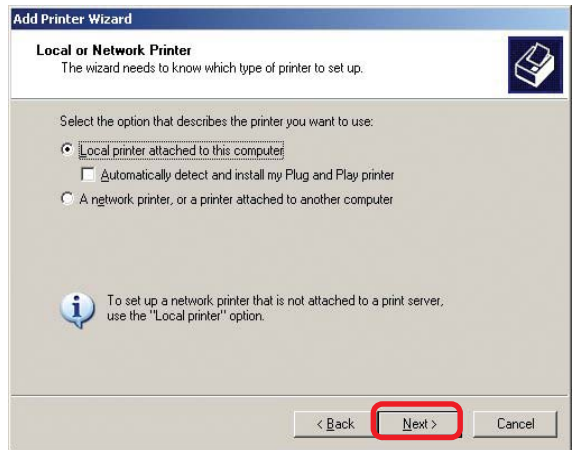
Networking Basics
Adding a local printer

■ 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**.)*
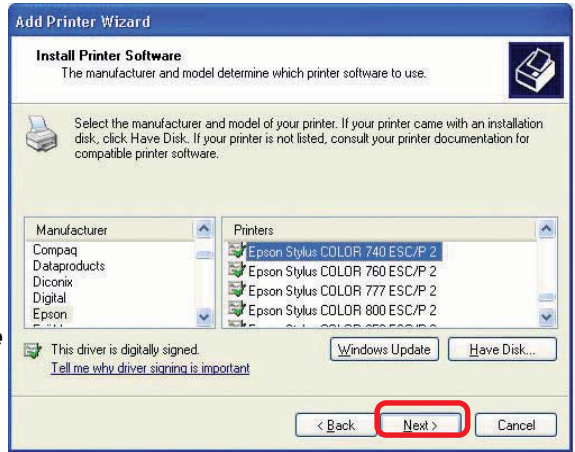
■ At this screen, you can change the name of the printer (optional.)
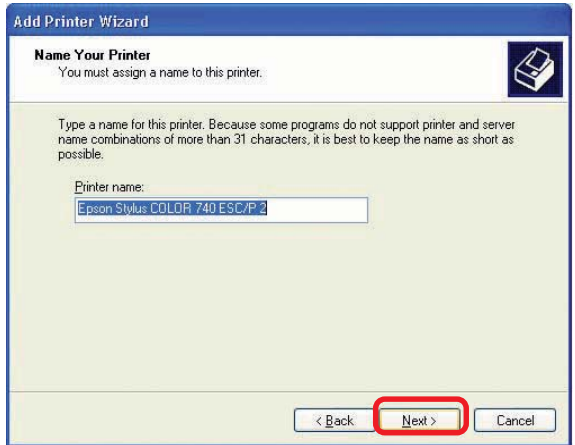
■ Click **Next**

■ 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**

When the test page has printed,
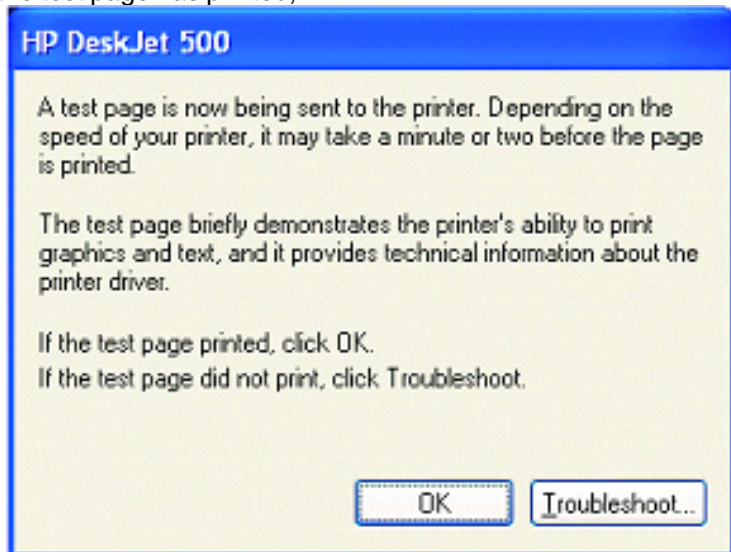
Click **OK**

Networking Basics
Adding a local printer

■ 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.
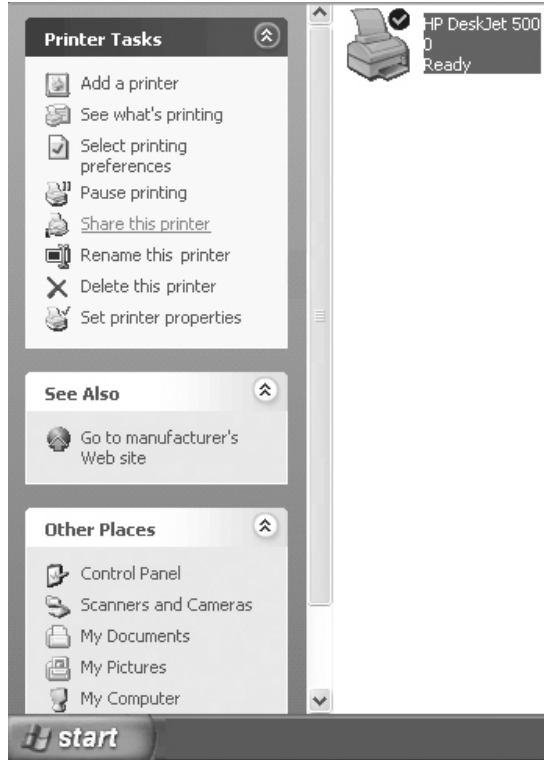
Sharing a network printer

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 a printer on your network:

■ Go to **Start**> **Printers and Faxes**
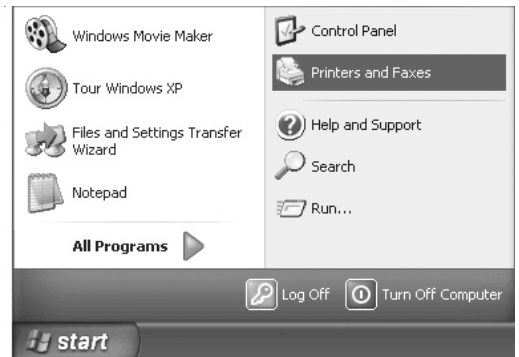
Networking Basics
Sharing a network printer

■   Click on
         Add a printer

■   Click **Next**

■   Select
         Network Printer

■   Click **Next**

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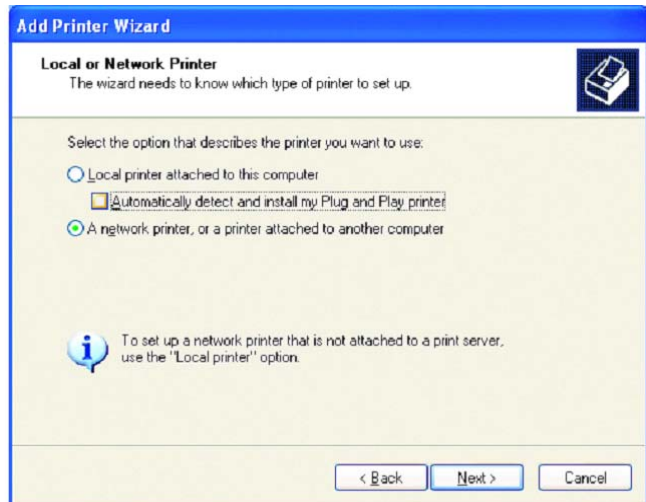
■ Select **Browse for a printer**

■ Click **Next**

Select the **printer** you would like to share

■ Click **Next**

■ Click **Finish**
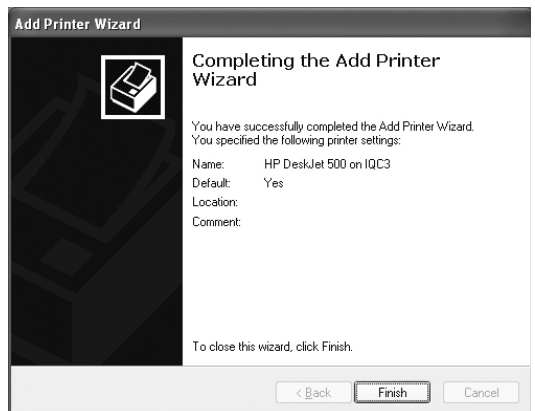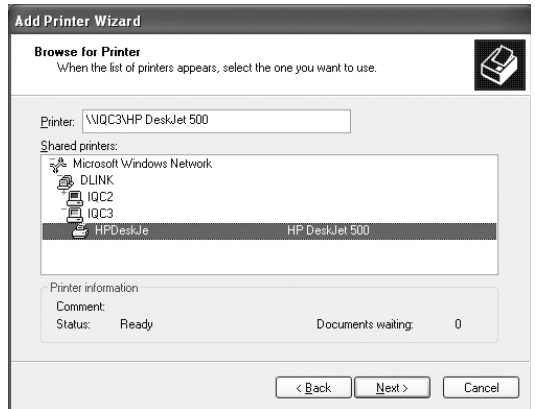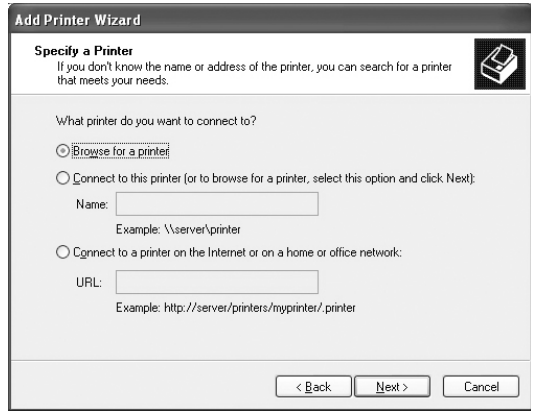
Networking Basics
Sharing a network printer

■   To check for proper installation:

■   Go to **Start** > **Printers and Faxes**
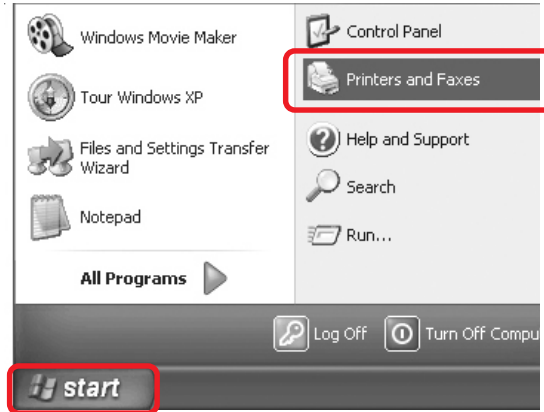
The printer icon will appear at right, indicating proper installation.

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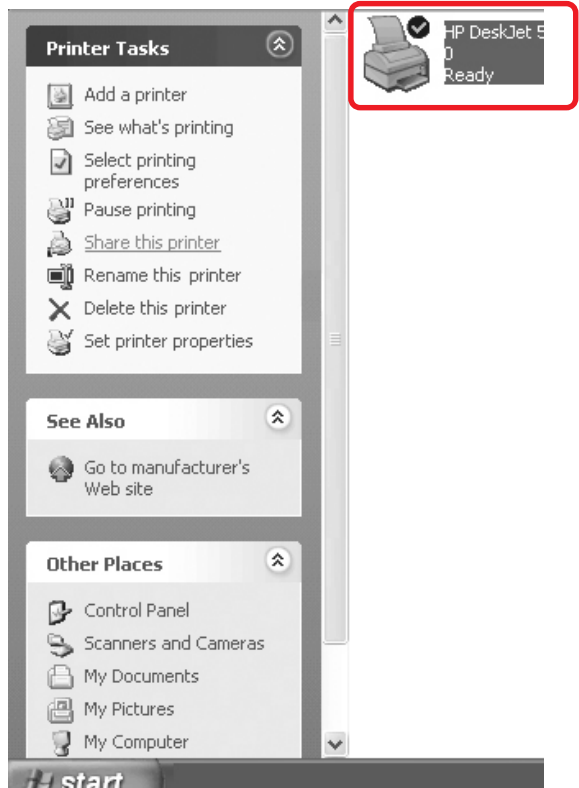
To share an **LPR printer** (using a print server,) you will need a Print Server such as the **DP-101P+**. Please make sure that you have run the **Network Setup Wizard** on all the computers on your network. To share an **LPR printer**, please follow these directions:

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

■ Click on **Add a Printer**

The screen to the right will appear
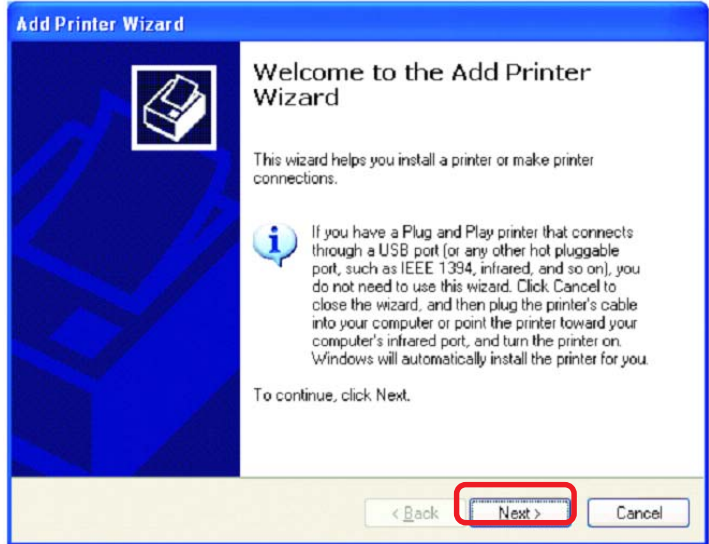
■ Click **Next**

■ Select **Local Printer...**

■ Click **Next**

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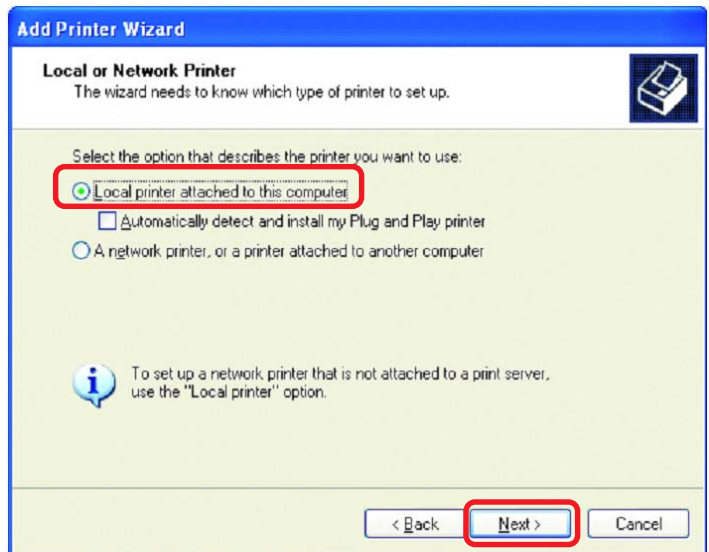
■ Select **Create a new port**

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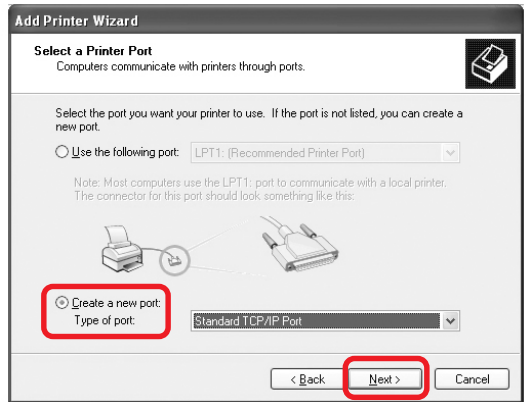
■ Click **Next**

■ Please read the instructions on this screen
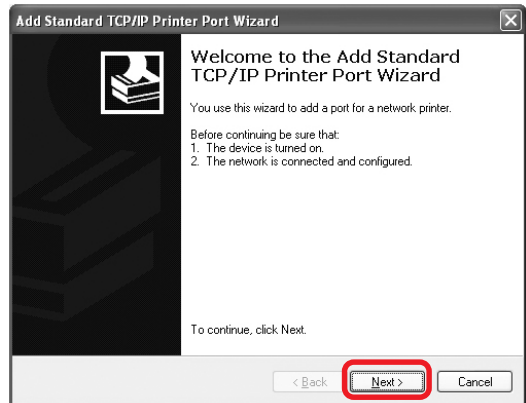
■ Click **Next**

■ Enter the **Printer IP Address** and the **Port Name**, as shown.
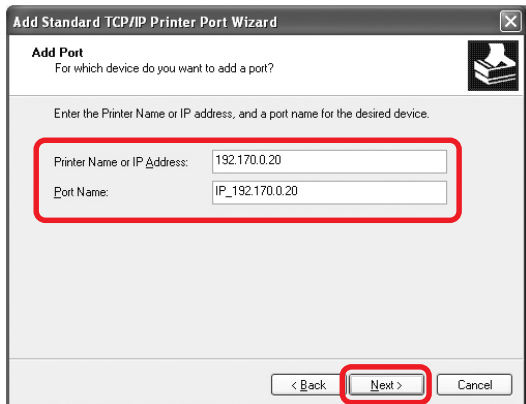
■ Click **Next**

■ 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 your Print-Server/ Gateway has more than one port, you will need a **Queue name**.)

■ Click **OK**

■ This screen will show you information about your printer.
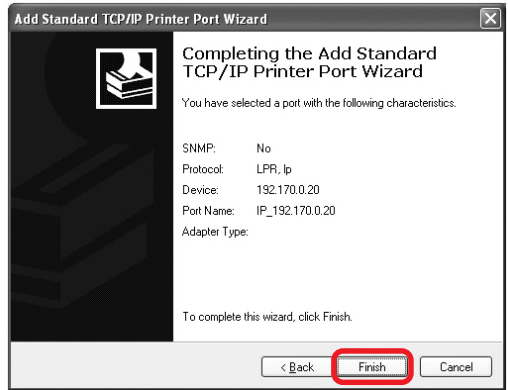
■ Click **Finish**

■ Select the **printer** you are adding from the list of **Printers**.
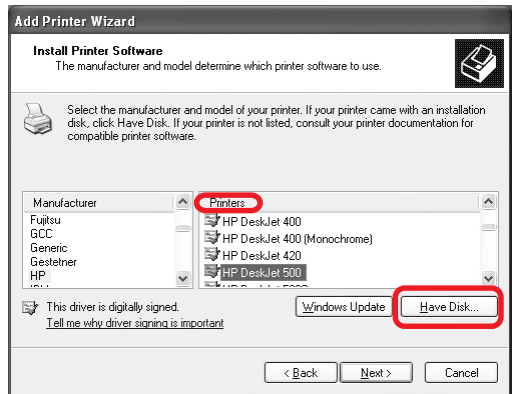
■ Insert the printer driver disk that came with your printer.

■ Click **Have Disk**

If the printer driver is already installed, do the following:

■ Select **Keep existing driver**
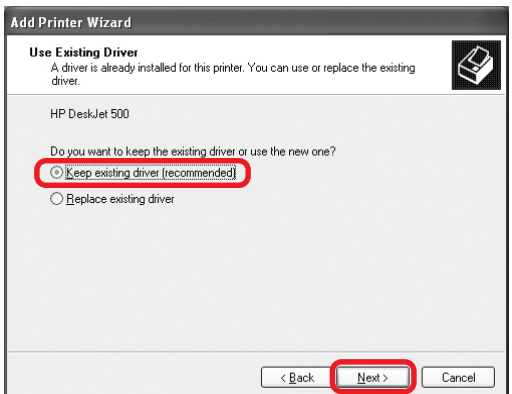
■ Click **Next**

■ 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.*
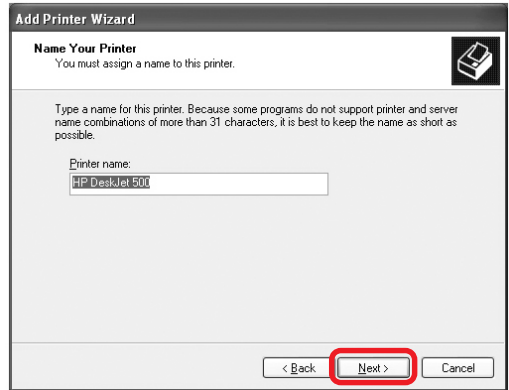
■ Click **Next**

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

■ Click **Next**
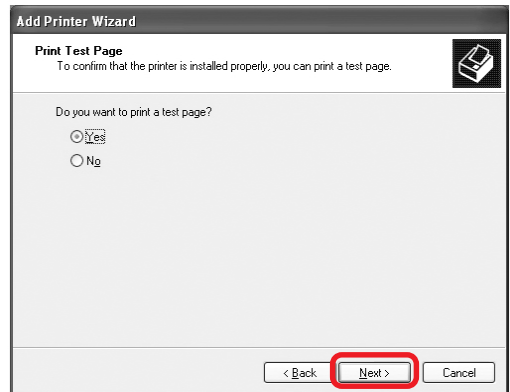
This screen will display information about your printer.

■ 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.
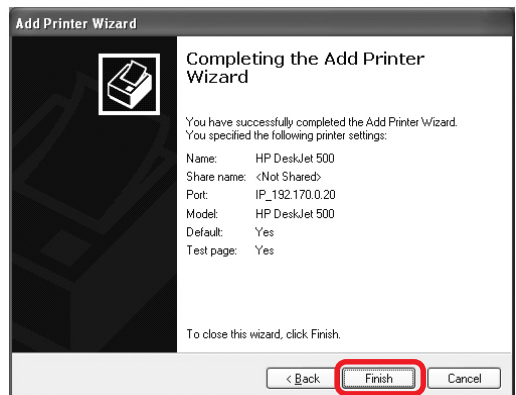
*Note: You must run the **Network Setup Wizard** on all the computers on your network before you run the **Add Printer Wizard**.*

Troubleshooting

This Chapter provides solutions to problems that can occur during the installation and operation of the DWL-6000AP Wireless Access Point. We cover various aspects of the network setup, including the network adapters. Please read the following if you are having problems.
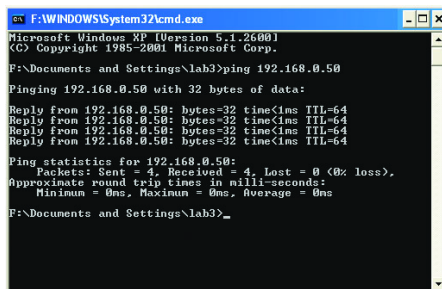
> *Note: It is recommended that you use an Ethernet connection to configure the DWL-6000AP Access Point.*

1.The computer used to configure the DWL-6000AP cannot access the Configuration menu.

- Check that the **Ethernet LED** on the DWL-6000AP is **ON**. If the **LED** is not **ON**, check that the cable for the Ethernet connection is securely inserted.

- Check that the Ethernet Adapter is working properly. Please see item 3 (**Check that the drivers for the network adapters are installed properly**) in this **Troubleshooting** section to check that the drivers are loaded properly.

- Check that the **IP Address** is in the same range and subnet as the DWL-6000AP. Please see **Checking the IP Address in Windows XP** in the **Networking Basics** section of this manual.

Note: The IP Address of the DWL-6000AP is 192.168.0.50. All the computers on the network must have a unique IP Address in the same range, e.g., 192.168.0.x. Any computers that have identical IP Addresses will not be visible on the network. They must all have the same subnet mask, e.g., 255.255.255.0

- Do a **Ping test** to make sure that the DWL-6000AP is responding. Go to **Start**>**Run**>Type **Command**>Type **ping 192.168.0.50.** A successful ping will show four replies.

Note: If you have changed the default IP Address, make sure to ping the correct IP Address assigned to the DWL-6000AP.

Troubleshooting

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

Make sure the wireless client is associated and joined with the correct Access Point. To check this connection: **Right-click** on the **Local Area Connection icon** in the taskbar> select **View Available Wireless Networks**. The **Connect to Wireless Network** screen will appear. Please make sure you have selected the correct available network, as shown in the illustrations below.
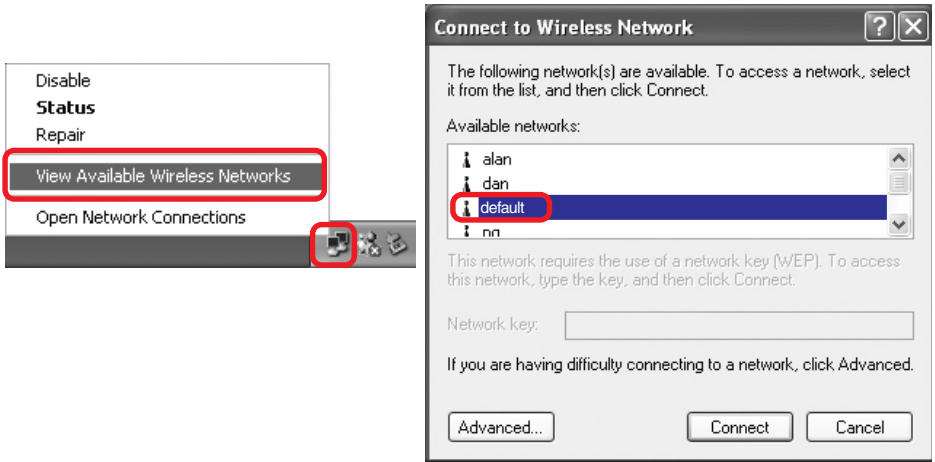
• Check that the **IP Address** assigned to the wireless adapter is within the same **IP Address range** as the access point and gateway. *(Since the DWL-6000AP has an IP Address of 192.168.0.50, wireless adapters must have an IP Address in the same range, e.g., 192.168.0.x. Each device must have a unique IP Address; no two devices may have the same IP Address. The subnet mask must be the same for all the computers on the network.)* To check the **IP Address** assigned to the wireless adapter, **double-click** on the **Local Area Connection icon** in the taskbar > select the **Support tab** and the **IP Address** will be displayed. *(Please refer to Checking the IP Address in the Networking Basics section of this manual.)*

• If it is necessary to assign a **Static IP Address** to the wireless adapter, please refer to the appropriate section in **Networking Basics**. If you are entering a **DNS Server address** you must also enter the **Default Gateway Address.** *(Remember that if you have a DHCP-capable router, you will not need to assign a Static IP Address. See Networking Basics: Assigning a Static IP Address.)*

Troubleshooting

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

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

- Go to **Start**

- Right-click on **My Computer**

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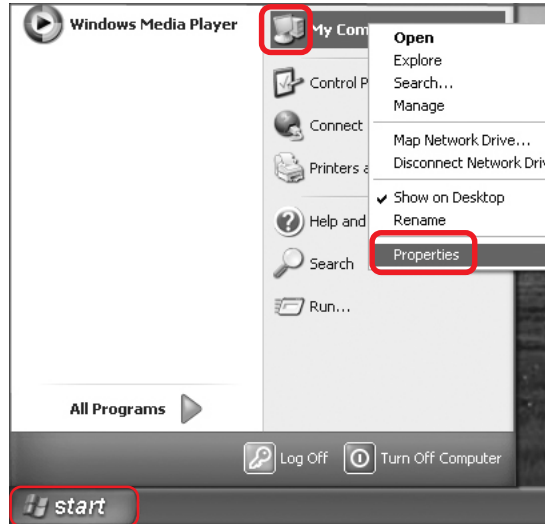
- **Select** the **Hardware Tab**

- Click **Device Manager**
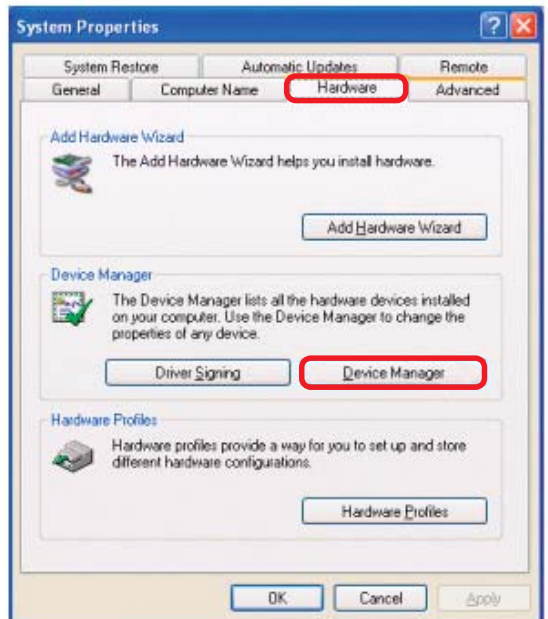
Troubleshooting

- Double-click on **Network Adapters**

- **Right-click** on **D-Link *Air*Pro DWL-A650 Wireless Cardbus Adapter**

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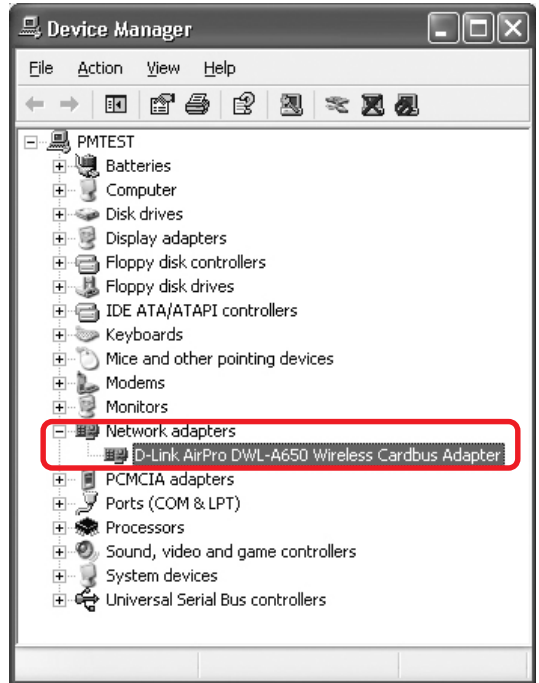
- Look under **Device Status** to check that the device is working properly.
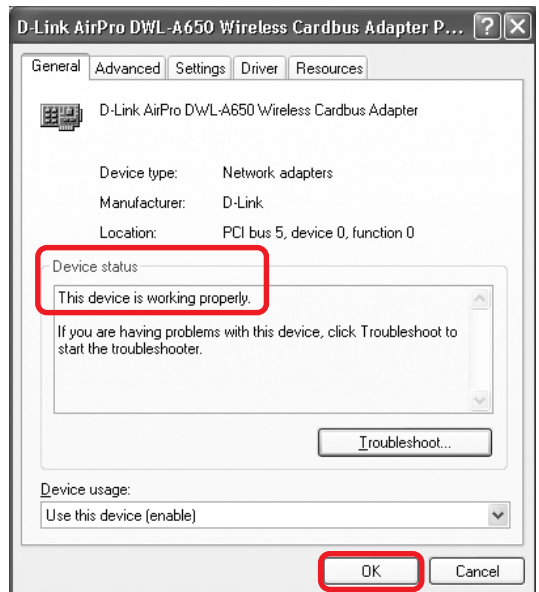
- Click **OK**

Troubleshooting

4. 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.

5. Why does my wireless connection keep dropping?

■ Antenna Orientation- Try different antenna orientations for the DWL-6000AP. 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 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.

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

To establish a wireless connection, while enabling Encryption on the DWL-6000AP, you must also enable encryption on the wireless client.

■ For 802.11a, the Encryption settings are: 64, 128 or 152 bit. Make sure that the encryption bit level is the same on the Access Point and the Wireless Client.

■ For 802.11b, the Encryption settings are: 64, 128, or 256 bit. Make sure that the encryption bit level is the same on the Access Point and the Wireless Client.

Make sure that the SSID on the Access Point and the Wireless Client 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**.

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Troubleshooting

7. Resetting the DWL-6000AP to Factory Default Settings

After you have tried other methods for troubleshooting your network, you may choose to **Reset** the DWL-6000AP to the factory default settings. Remember that D-Link *Air*Pro products network together, out of the box, at the factory default settings.

To hard-reset the D-Link *Air*Pro DWL-6000AP to Factory Default Settings, please do the following:

- Locate the **Reset** button on the back of the DWL-6000AP

- Use a paper clip to press the **Reset** button

- Hold for about 10 seconds and then release

- After the DWL-6000AP reboots (this may take a few minutes) it will be reset to the factory Default settings

Technical Specifications

Standards

- IEEE 802.11b
- IEEE 802.11a
- IEEE 802.3 and IEEE 802.3u
- IEEE 802.3x
- IEEE 802.1x

Ports

- (1) 10/100Base-T Ethernet, RJ-45 (UTP)

- (1) Power – 5V DC, 2.5A

Network Management

- Web-Based Interface
- AP Manager available on the Installation CD
- Telnet-compatible

Network Architecture

- Supports Infrastructure Mode

Diagnostic LED

- Power
- 100M Link/Act
- 10M Link/Act
- 11a WLAN
  11b WLAN

Range

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

Temperature

- Operating: 0ºC to 40ºC (32ºF to 104ºF)
- Storing: -25ºC to 60ºC (-77ºF to 140ºF)

Humidity:
- 5%-95%, non-condensing

Emissions:
- FCC part 15b
- UL1950-3

Physical Dimensions:
- L = 9.25 inches
- W = 6.25 inches
- H = 1.50 inches

802.11a Specifications

Data Rates:*
- 6, 9, 12, 18, 24, 36, 48, 54Mbps* (up to 108 Mbps in *Turbo Mode)*

Data Security:
- 64, 128, 152-bit WEP (Wired Equivalent Privacy) Encryption
- Access Control List

Antenna Type:
- 5dBi dipole antenna with diversity
- Power parameter software configurable

Available Channels:
- Eight non-overlapping channels for North America

Frequency Range:
- 5.150 – 5.850 GHz

Modulation Technology:
- Orthogonal Frequency Division Multiplexing (OFDM)

*Maximum wireless signal rate based on IEEE Standard 802.11a specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead lower actual data throughput rate.

- BPSK
- QPSK
- 16 QAM
- 64 QAM

- 5dBi dipole antenna with diversity

Modulation Techniques:
- BPSK
- QPSK

802.11b Specifications

Data Rates:
- 1, 2, 5.5, 11, 22Mbps*

Data Security:
- 64, 128, 256-bit WEP (Wired Equivalent Privacy) Encryption

Antenna Type:
- 2dBi antenna with Diversity

Available Channels:
- Eleven channels for North America. Three non-overlapping

Frequency Range:
- 2.4 – 2.497 GHz

Modulation Technology:
- Direct Sequence Spread Spectrum (DSSS)

Modulation Techniques:
- CCK
- DQPSK
- DBSK

*Maximum wireless signal rate derived from IEEE Standard 802.11b specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead lower actual data throughput rate.

Contacting Technical Support

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

D-Link provides free technical support for customers within the United States and within Canada for the duration of the warranty period on this product.

U.S. and Canadian customers can contact D-Link technical support through our web site, or by phone.

Technical Support for customers within the United States:
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

Technical Support for customers within Canada:
D-Link Technical Support over the Telephone:
(800) 361-5265
Monday to Friday 8:30am to 9:00pm EST

D-Link Technical Support over the Internet:
http://support.dlink.ca
email:support@dlink.ca

When contacting technical support, please provide the following information:

- *Serial number of the unit*

- *Model number or product name*

- *Software type and version number*

Warranty

Subject to the terms and conditions set forth herein, D-Link Systems, Inc. ("D-Link") provides this Limited Warranty:

- Only to the person or entity that originally purchased the product from D-Link or its authorized reseller or distributor, and
- Only for 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, or addresses with an APO or FPO.

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

- Hardware (excluding power supplies and fans): Three (3) years
- Power supplies and fans: One (1) year
- Spare parts and spare kits: Ninety (90) days

The customer's sole and exclusive remedy and the entire liability of D-Link and its suppliers under this Limited Warranty will be, at D-Link's option, to repair or replace the defective Hardware during the Warranty Period at no charge to the original owner or to refund the actual purchase price paid. Any 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, at its option, 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 or ninety (90) days, whichever is longer, and is subject to the same limitations and exclusions. If a material defect is incapable of correction, or if D-Link determines that it is not practical to repair or replace the defective Hardware, the actual 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 ("Software 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 Software Warranty Period, the magnetic media on which D-Link delivers the Software will be free of physical defects. The customer's sole and exclusive remedy and the entire liability of D-Link and its suppliers under this Limited Warranty will be, at D-Link's option, 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 the portion of the actual purchase price paid that is attributable to the Software. 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. Replacement Software will be warranted for the remainder of the original Warranty Period and is subject to the same limitations and exclusions. 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 portions 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, along with proof of purchase of the product (such as a copy of the dated purchase invoice for the product) if the product is not registered.

- The customer must obtain a Case ID Number from D-Link Technical Support at 1-877-453-5465, who will attempt to assist the customer in resolving any suspected defects with the product. If the product is considered defective, the customer must obtain a Return Material Authorization ("RMA") number by completing the RMA form and entering the assigned Case ID Number at https://rma.dlink.com/ .

- 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., 17595 Mt. Herrmann, Fountain Valley, CA 92708**. 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. Return shipping charges shall be prepaid by D-Link if you use an address in the United States, otherwise we will ship the product to you freight collect. Expedited shipping is available upon request and provided shipping charges are prepaid by the customer.

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: The Limited Warranty provided herein by D-Link does not cover: Products that, 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; and 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. While necessary maintenance or repairs on your Product can be performed by any company, we recommend that you use only an Authorized D-Link Service Office. Improper or incorrectly performed maintenance or repair voids this Limited 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 THE DURATION OF THE APPLICABLE WARRANTY PERIOD SET FORTH ABOVE. 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 you may also have other rights which vary from state to state.

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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.

For detailed warranty information applicable to products purchased outside the United States, please contact the corresponding local D-Link office.

Registration

Register your product online at:
http://support.dlink.com/register

Product registration is entirely voluntary and failure to complete or return this form will not diminish your warranty rights.

(02/09/2005)