

D-Link *AirPlus Xtreme G* DWL-2100AP

**802.11g Wireless
108Mbps Access Point**

Manual

D-Link

Building Networks for People

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Package Contents



Contents of Package:

- **D-Link AirPlus Xtreme GTM DWL-2100AP**
802.11g Wireless 108Mbps Access Point
- Power Adapter-DC 5V, 2.0A
- Manual and Warranty on CD
- Quick Installation Guide
- Ethernet Cable
-

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

Note: Using a power supply with a different voltage rating than the one included with the DWL-2100AP will cause damage and void the warranty for this product.

System Requirements for Configuration:

- Computers with Windows, Macintosh, or Linux-based operating systems with an installed Ethernet adapter
- Internet Explorer Version 6.0 or Netscape Navigator Version 6.0 and Above

Introduction

At up to fifteen times the speed of previous wireless devices (up to 108Mbps in Super G mode), you can work faster and more efficiently, increasing productivity. With the DWL-2100AP, bandwidth-intensive applications like graphics or multimedia will benefit significantly because large files are able to move across the network quickly.

The DWL-2100AP is capable of operating in one of 5 different modes to meet your wireless networking needs. The DWL-2100AP can operate as an access point; in access point-to-access point bridging mode; access point-to-multipoint bridging mode; wireless client mode; or repeater.

The DWL-2100AP is an ideal solution for quickly creating and extending a wireless local area network (WLAN) in offices or other workplaces, trade shows and special events.

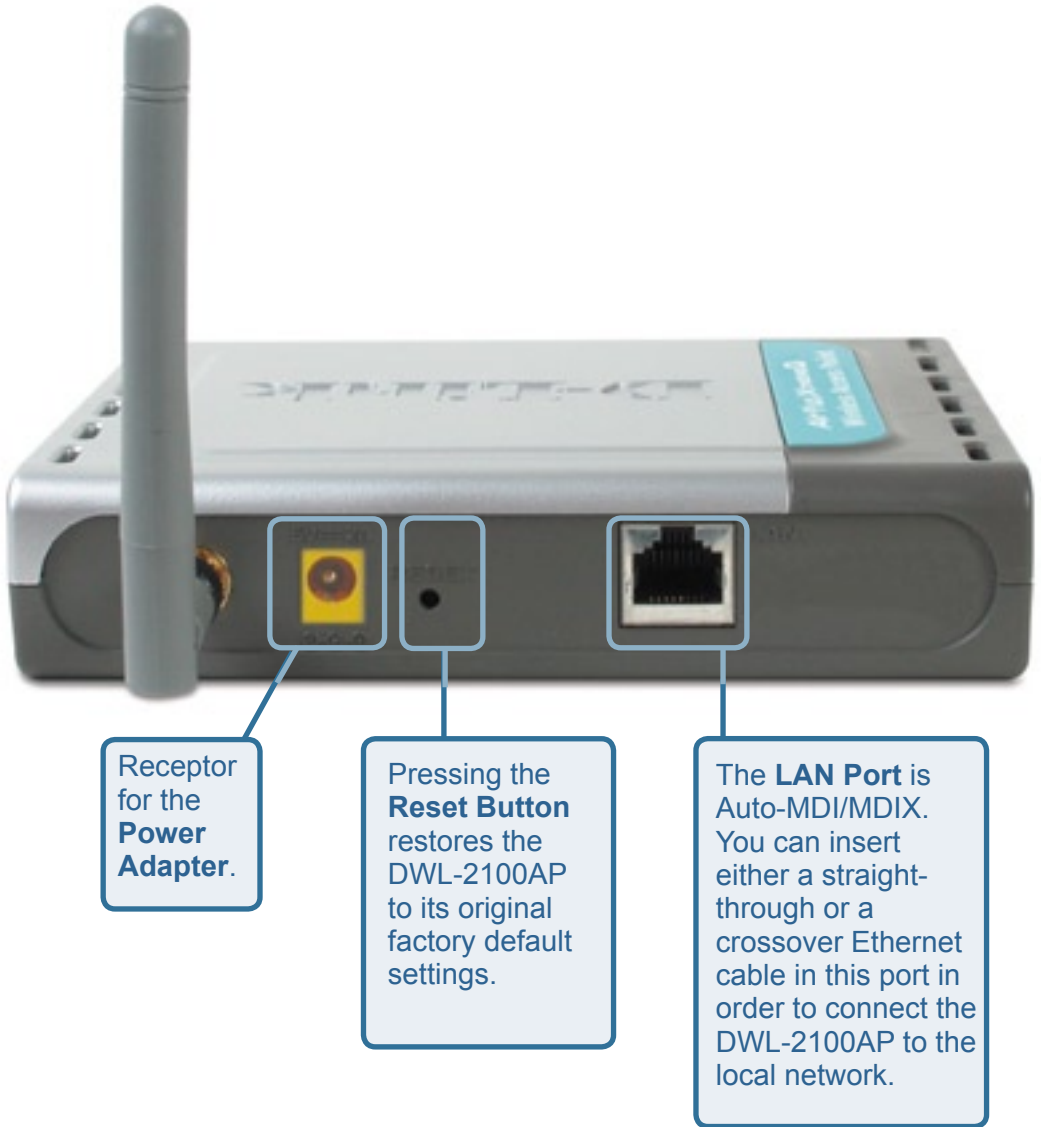
Unlike most access points, the DWL-2100AP provides data transfers at up to 108 Mbps in Super G mode when used with other D-Link *AirPlus Xtreme G™* products. The 802.11g standard is backwards compatible with 802.11b devices.

The DWL-2100AP has the newest, strongest, most advanced security features available today. When used with other 802.11g WPA (WiFi Protected Access) compatible products in a network with a RADIUS server, the security features include:

WPA: **Wi-Fi Protected Access** which authorizes and identifies users based on a secret key that changes automatically at regular intervals. **WPA** uses **TKIP (Temporal Key Integrity Protocol)** to change the temporal key every 10,000 packets (a packet is a kind of message transmitted over a network.) This insures much greater security than the standard WEP security. (By contrast, the previous WEP encryption implementation required the keys to be changed manually.)

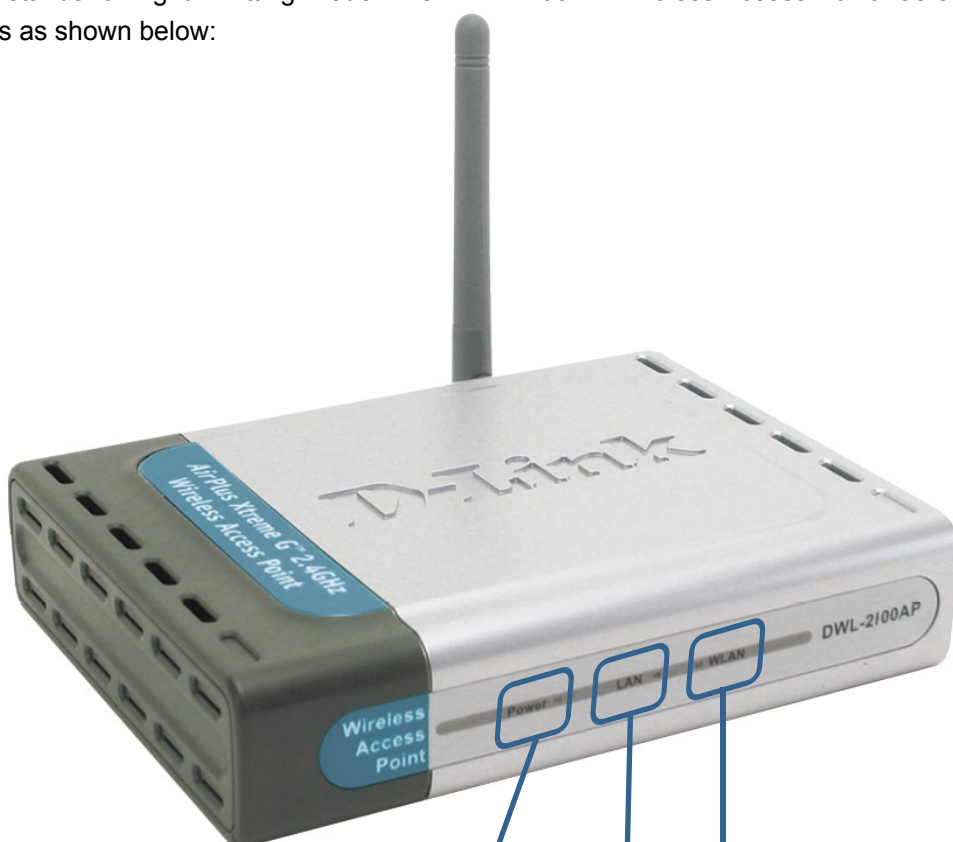
For home users that will not incorporate a RADIUS server in their network, the security for the DWL-2100AP, used in conjunction with other WPA-compatible 802.11 products, will still be much stronger than ever before. Utilizing the **Pre-Shared Key mode** of WPA, the DWL-2100AP will obtain a new security key every time it connects to the 802.11 network. You only need to input your encryption information once in the configuration menu. No longer will you have to manually input a new WEP key frequently to ensure security. With the DWL-2100AP, you will automatically receive a new key every time you connect, vastly increasing the safety of your communication.

Connections



LEDs

LED stands for Light-Emitting Diode. The DWL-2100AP Wireless Access Point has 3 LEDs as shown below:



Power: Solid green light indicates connection.

LAN: Blinking green light indicates activity on the Ethernet Port; solid green light indicates connection.

WLAN: Blinking green light indicates wireless activity; solid green light indicates connection.

Features

- **5 Different Operation modes** - Capable of operating in one of five different operation modes to meet your wireless networking requirements: Access Point; AP-to-AP Bridging; AP-to-Multipoint Bridging; Wireless Client; or Repeater.
- **Faster wireless networking** with the 802.11g standard to provide a wireless data rate of up to 54Mbps (108Mbps in Super G mode).
- **Compatible with the 802.11b standard** to provide a wireless data rate of up to 11Mbps - that means you can migrate your system to the 802.11g standard on your own schedule without sacrificing connectivity.
- **Better security with WPA.** The DWL-2100AP can securely connect to wireless clients on the network using WPA (Wi-Fi Protected Access) providing a much higher level of security for your data and communications than has previously been available. AES is also supported by the DWL-2100AP to maximize the network security with data encryption.
- **SNMP for Management.** The DWL-2100AP is not just fast but it also supports SNMP v.3 for a better network management. Superior wireless AP manager software is bundled with the DWL-2100AP for network configuration and firmware upgrade. Systems administrators can also setup the DWL-2100AP easily with the Web-based configuration. A D-Link D-View module will be downloadable for network administration and real-time network traffic monitoring with D-Link D-View software.
- Utilizes **OFDM** technology (**O**rthogonal **F**requency **D**ivision **M**ultiplexing)
- Operates in the 2.4GHz frequency range
- **Easy Installation** with the Setup Wizard
- **Web-based interface** for Managing and Configuring

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. D-Link wireless products will allow you access to the data you want, when and where you want it. You will be able to enjoy the freedom that wireless networking brings.

A Wireless Local Area Network (WLAN) is a computer network that transmits and receives data with radio signals instead of wires. WLANs 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.

People use WLAN 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 are easy to set up, manage, change and relocate. Networks that frequently change can benefit from WLANs ease of implementation. WLANs can operate in locations where installation of wiring may be impractical.

Installation and Network Expansion - Installing a WLAN system can be fast and easy and can eliminate the need to pull cable through walls and ceilings. Wireless technology allows the network to go where wires cannot go - even outside the home or office.

Inexpensive Solution - Wireless network devices are as competitively priced as conventional Ethernet network devices.

Scalability - WLANs can be configured in a variety of ways 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 larger Infrastructure networks to accommodate hundreds or thousands of users, depending on the number of wireless devices deployed.

Wireless Basics (continued)

The DWL-2100AP is compatible, in default mode, with the following wireless products:

- **D-Link AirPlus Xtreme G™ DWL-G650** Wireless Cardbus Adapters used with laptop computers.
- **D-Link AirPlus Xtreme G™ DWL-G520** Wireless PCI cards used with desktop computers.
- The DWL-2100AP is also interoperable with other 802.11g and 802.11b standards-compliant devices.

Standards-Based Technology

The DWL-2100AP Wireless Access Point utilizes the **802.11b** and the **802.11g** standards.

The IEEE **802.11g** standard is an extension of the **802.11b** standard. It increases the data rate up to 54 Mbps (108Mbps in Super G mode) within the 2.4GHz band, utilizing **OFDM technology**.

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 **crosstalk** (interference) in signal transmissions. The D-Link DWL-2100AP will automatically sense the best possible connection speed to ensure the greatest speed and range possible.

802.11g offers the most advanced network security features available today, including: WPA, TKIP, AES and Pre-Shared Key mode.

Wireless Basics (continued)

Installation Considerations

The D-Link AirPlus Xtreme G™ DWL-2100AP lets you access your network, using a wireless connection, from virtually anywhere within its operating range. 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-2100AP and other network devices to a minimum - each wall or ceiling can reduce your DWL-2100AP's range from 3-90 feet (1-30 meters.) Position your 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! Position devices so that the signal will travel straight through a wall or ceiling (instead of at an angle) for better reception.
- 3** Building materials can impede the wireless signal - 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

On the following pages we will show you an example of an **Infrastructure Network** incorporating the DWL-2100AP.

An **Infrastructure** network contains an access point or a wireless 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 access point - **D-Link AirPlus Xtreme G™ DWL-2100AP**
- A wireless router - **D-Link AirPlus Xtreme G™ DI-624**
- A laptop computer with a wireless adapter - **D-Link AirPlus Xtreme G™ DWL-G650**
- A desktop computer with a wireless adapter - **D-Link AirPlus Xtreme G™ DWL-G520**
- A cable modem - **D-Link DCM-201**

Getting Started (continued)

Setting up a Wireless Infrastructure Network



Please remember that D-Link AirPlus Xtreme G wireless devices are pre-configured to connect together, right out of the box, with their default settings.

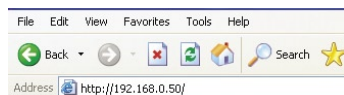
For a typical wireless setup at home (as shown above), please do the following:

- 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 the DI-624 Router (see the printed Quick Installation Guide included with your router.)
- 4** Connect the Ethernet Broadband Router to the DWL-2100AP (See the printed Quick Installation Guide included with the DWL-2100AP.)
- 5** If you are connecting a desktop computer to your network, install the D-Link AirPlus Xtreme G DWL-G520 wireless PCI adapter into an available PCI slot on your desktop computer.
(See the printed Quick Installation Guide included with the network adapter.)
- 6** Install the drivers for the D-Link DWL-G650 wireless Cardbus adapter into a laptop computer.
(See the printed Quick Installation Guide included with the DWL-G650.)

Using the Configuration Menu

After you have completed the *Setup Wizard* (please see the *Quick Installation Guide* that came with the product) you can access the *Configuration* menu at any time by opening the Web browser and typing in the IP address of the DWL-2100AP. The DWL-2100AP default IP address is shown below:

- Open the Web browser
- Type in the **IP address** of the DWL-2100AP



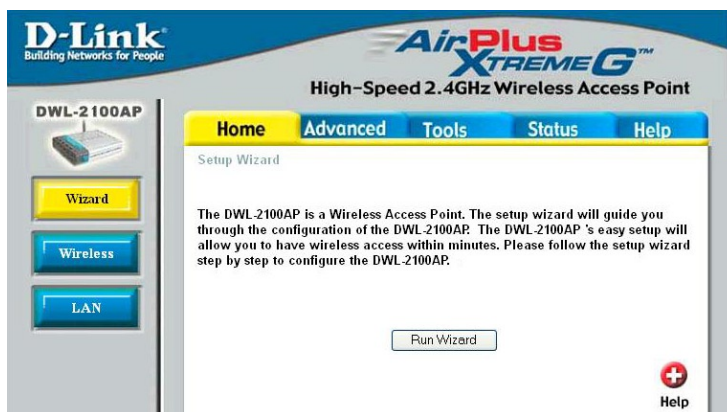
Note: if you have changed the default IP address assigned to the DWL-2100AP, make sure to enter the correct IP address.

- Type **admin** in the **User Name** field
- Leave the **Password** blank.
(However, if you have changed the password, please enter the correct password.)
- Click **OK**



Home > Wizard

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



Using the Configuration Menu (continued)

Home > Wireless

The screenshot shows the D-Link configuration interface for a DWL-2100AP. The top navigation bar includes 'Home', 'Advanced', 'Tools', 'Status', and 'Help'. The 'Wireless Settings' section is active, displaying the following configuration options:

Setting	Value
Wireless Band	IEEE802.11g
SSID	default
SSID Broadcast	Enable
Channel	6
Radio Frequency	2.437 GHz

At the bottom right of the settings area are three buttons: 'Apply' (green checkmark), 'Cancel' (orange X), and 'Help' (red plus).

Wireless Band-

IEEE 802.11g.

SSID-

Service Set Identifier (SSID) is the name designated for a specific wireless local area network (WLAN). The SSID's factory default setting is **default**. The SSID can be easily changed to connect to an existing wireless network or to establish a new wireless network.

SSID Broadcast-

Enable or Disable SSID Broadcast. Enabling this feature broadcasts the SSID across the network.

Channel-

6 is the default channel. All devices on the network must share the same channel.

Radio Frequency-

The radio frequency will remain at 2.437 GHz .

Apply-

Click **Apply** to save the changes.

Using the Configuration Menu (continued)

Home > LAN

The screenshot shows the D-Link configuration interface for the DWL-2100AP. The top navigation bar includes 'Home', 'Advanced', 'Tools', 'Status', and 'Help'. The 'Home' tab is selected. On the left sidebar, there are buttons for 'Wizard', 'Wireless', and 'LAN'. The 'LAN Settings' section is active, displaying the following fields:

LAN Settings	
Get IP From	Static (Manual) ▼
IP Address	192.168.0.50
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0

At the bottom right of the configuration area, there are three buttons: 'Apply' (with a green checkmark icon), 'Cancel' (with a red X icon), and 'Help' (with a red plus icon).

LAN is short for Local Area Network. This is considered your internal network. These are the IP settings of the LAN interface for the DWL-2100AP. These settings may be referred to as private settings. You may change the LAN IP address if needed. The LAN IP address is private to your internal network and cannot be seen on the Internet.

Get IP From-

Select **Static (Manual)** or **Dynamic (DHCP)** as the method you will use to assign an IP address to the DWL-2100AP.

IP Address-

The IP address of the LAN interface. The default IP address is: **192.168.0.50**

Subnet Mask-

The subnet mask of the LAN interface.
The default subnet mask is **255.255.255.0**

Default Gateway-

This field is optional. Enter in the IP address of the router on your network.

Apply-

Click **Apply** to save the changes.

Using the Configuration Menu (continued)

Advanced > Mode

The DWL-2100AP can be configured to perform in any of five modes: a Wireless Access Point; a Wireless Client; a Wireless Bridge; a Multi-Point Bridge; or a Repeater.

Access Point- is the default setting. This mode is used to create a wireless LAN.

PtP Bridge- will allow you to connect two LANs together. The wireless bridge will only work with another DWL-2100AP. Click to enable and enter the MAC address of the remote bridge.

PtMP Bridge- will allow you to connect multiple wireless LANs together. Other wireless LANs must be using DWL-2100APs. Click to enable and enter up to 8 remote AP MAC addresses.

AP Repeater- will allow you to repeat the wireless signal of the root AP. Click to enable and enter the MAC address of the root AP.

AP Client- will transform any IEEE 802.3 Ethernet device (e.g., a computer, printer, etc.) into an 802.11b wireless client when it communicates with another DWL-2100AP that is acting as an AP. Click to enable and enter the MAC address of the root AP.

Apply - Click **Apply** if you have made any changes.

The screenshot shows the D-Link configuration interface for a DWL-2100AP. The page title is 'D-Link Building Networks for People' and 'AirPlus Xtreme G High-Speed 2.4GHz Wireless Access Point'. The navigation tabs are 'Home', 'Advanced' (selected), 'Tools', 'Status', and 'Help'. On the left, there is a sidebar with buttons for 'Mode', 'Performance', 'Filters', 'Encryption', and 'DHCP Server'. The main content area shows the 'Mode' configuration. The 'Wireless Band' is set to 'IEEE802.11g'. The 'Access Point' mode is selected with a radio button. Below this, there are fields for 'PtP Bridge' (disabled), 'Remote AP MAC Address' (empty), 'PtMP Bridge' (disabled), and 'Remote AP MAC Address' (empty). There are eight input fields for remote AP MAC addresses, numbered 1 through 8. The 'AP Repeater' mode is disabled. There are fields for 'Root AP MAC Address' (empty), 'AP Client' (disabled), and 'Root AP MAC Address' (empty). At the bottom right, there are three buttons: 'Apply' (green checkmark), 'Cancel' (orange X), and 'Help' (red plus).

Find the **MAC address** of the DWL-2100AP that is acting as a **Remote Access Point** or a **Remote Bridge**, by going to **Status > Device Info** in the configuration utility of the remote DWL-2100AP. There you will find the MAC address.

MAC Address - Media Access Control Address

A unique hardware address that identifies a device on a network. It is assigned at the factory and cannot be changed. Usually you will find this address on a sticker on the device or on the packaging.

Using the Configuration Menu (continued)

Wireless Band-

Select **802.11g only** or **802.11g and 802.11b**.

Frequency-

The frequency remains at **2.437 GHz**.

Channel-

Select from channels **1-11**.

Data Rate-

The **Data Rates** are Auto, 1Mbps, 2Mbps, 5.5Mbps, 6Mbps, 9Mbps, 11Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps.

Advanced > Performance

The screenshot shows the D-Link configuration interface for a DWL-2100AP. The 'Advanced' tab is selected, and the 'Performance' sub-tab is active. The 'Advance Wireless Settings' section includes the following fields:

- Wireless Band: IEEE802.11g
- Frequency: 2.437 GHz
- Channel: 6
- Data Rate: Auto
- Beacon Interval (20 - 1000): 100
- DTIM (1 - 255): 1
- Fragment Length (256 - 2346): 2346
- RTS Length (256 - 2346): 2346
- Transmit Power: full
- Super G Mode: Super G with Dynamic Turbo
- 802.11g Only: Enabled
- Radio Ware: On

At the bottom right, there are three status icons (green checkmark, yellow X, red plus) and buttons for 'Apply', 'Cancel', and 'Help'.

Beacon Interval- Beacons are packets sent by an access point to synchronize a network. Specify a beacon interval value. The default (100) is recommended.

DTIM- (*Delivery Traffic Indication Message*)- **3** is the default setting. DTIM is a countdown informing clients of the next window for listening to broadcast and multicast messages.

Fragment Length- The fragmentation threshold, which is specified in bytes, determines whether packets will be fragmented. Packets exceeding the 2346 byte setting will be fragmented before transmission. 2346 is the default setting

RTS Length- This value should remain at its default setting of 2,346. If you encounter inconsistent data flow, only minor modifications to the value range between 256 and 2,346 are recommended

Transmit Power- Choose full, half (-3dB), quarter (-6dB), eighth (-9dB), minimum power.

Super G Mode- Super G is a group of performance enhancement features that increase end user application throughput in an 802.11g network. Super G is backwards compatible to standard 802.11g devices. For top performance, all wireless devices on the network should be Super G capable. Select either Disabled, Super G without Turbo, Super G with Dynamic Turbo, or Super G with Static Turbo.

Disabled- Standard 802.11g support, no enhanced capabilities.

Using the Configuration Menu (continued)

Advanced > Performance (continued)

Super G with Dynamic Turbo-

Capable of Packet Bursting, FastFrames, Compression, and Dynamic Turbo. This setting is backwards compatible with non-Turbo (legacy) devices. Dynamic Turbo mode is only enabled when all devices on the wireless network are configured with Super G with Dynamic Turbo enabled.

Super G with Static Turbo-

Capable of Packet Bursting, FastFrames, Compression, and Static Turbo. This setting is not backwards compatible with non-Turbo (legacy) devices. Static turbo mode is always on and is only enabled when all the devices on the wireless network are configured with Super G with Static Turbo enabled.

802.11g only-

For increased speed in your network, enable this option. 802.11b devices will be excluded.

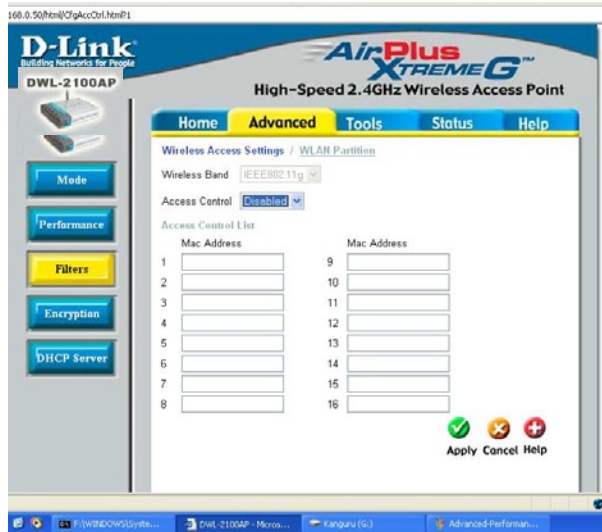
Radio Wave-

Select ON or OFF.

Advanced > Filters > Wireless Access Settings

Wireless Band-

Select the wireless band.



The following fields are available for configuration in this win-

Access Control-

Select **Disabled** to disable the filters function.

Select **Accept** to accept only those devices with MAC addresses in the Access Control List.

Select **Reject** to reject the devices with MAC addresses in the Access Control List.

Access Control List-

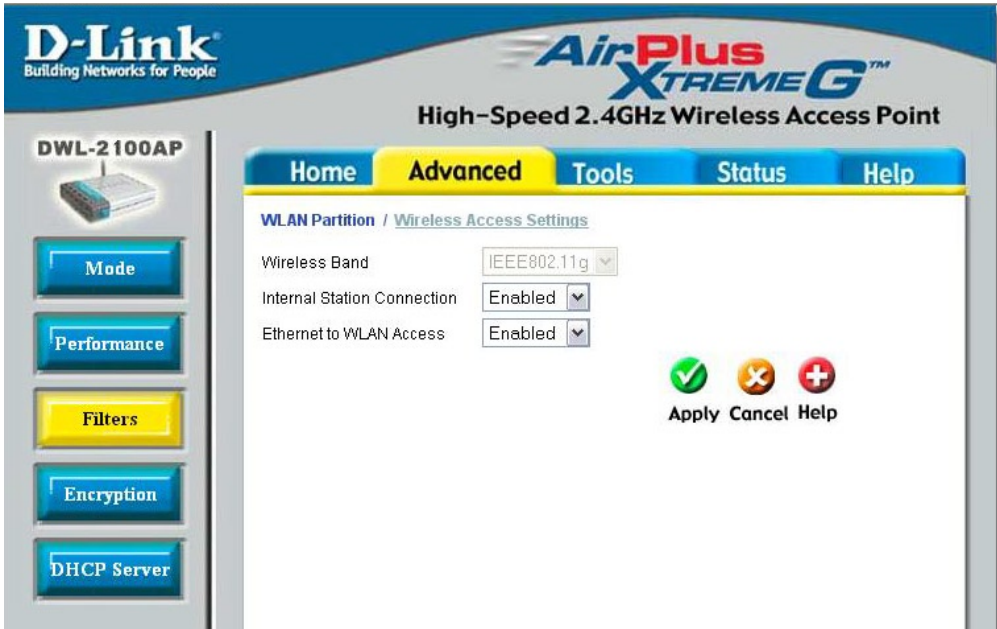
The MAC addresses in this list can be accepted or rejected for inclusion in the network, depending upon the Access Control selection.

Apply-

Click **Apply** to save the changes

Using the Configuration Menu (continued)

Advanced > Filters > WLAN Partition



Wireless Band-

IEEE 802.11g

Internal Station Connection-

Enabling this feature allows wireless clients to communicate with each other. If this feature is disabled, wireless stations of the selected band are not allowed to exchange data through the access point.

Ethernet to WLAN Access-

Enabling this feature allows Ethernet devices to communicate with wireless clients. If this feature is disabled, all data from the Ethernet to associated wireless devices is blocked, but wireless devices can still send data to the Ethernet.

Using the Configuration Menu (continued)

Advanced > Encryption

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

The screenshot shows the D-Link AirPlus Xtreme G configuration interface. The left sidebar contains buttons for Mode, Performance, Filters, Encryption (highlighted), and DHCP Server. The main content area is titled 'Security Settings' and includes the following fields:

- Wireless Band: IEEE802.11g
- Authentication: ☒ Open System, ☐ Shared Key, ☐ Open System / Shared Key, ☐ WPA
- Encryption: ☐ Disabled, ☒ Enabled
- Key Type: HEX
- Key Size: 128 Bits
- Valid Key: First
- Key Table: Four input fields for First Key, Second Key, Third Key, and Fourth Key, each containing a series of asterisks.

At the bottom right, there are three buttons: Apply (green checkmark), Cancel (orange X), and Help (red plus).

Wireless Band- IEEE 802.11g

Authentication- Select **Open System** to communicate the key across the network.

Select **Shared Key** to limit communication to only those devices that share the same WEP settings.

Select **Open System/Shared Key** to communicate the key and require identical WEP settings to communicate.

When you select **WPA**, you will be directed to the screen shown on the next page.

Encryption- Select **Disabled** or **Enabled**.

Key Type- Select **HEX** or **ASCII**.

Key Size- Select **64-**, **128-**, **152-bits**.

Valid Key- Select the **1st** through the **4th** key to be the active key.

Key Table- Input up to **four keys** for encryption. You will select one of these keys in the valid key field.

Apply- Click **Apply** to save changes.

Using the Configuration Menu (continued)

Advanced > Encryption > WPA

WPA mode-

Select **PSK** (the Pre-Shared Key mode of WPA does not require the inclusion of a RADIUS server in your network) or

EAP

(Extensible Authentication Protocol) is a general authentication protocol that is used in conjunction with a RADIUS server in the network).

The screenshot shows the D-Link configuration interface for a DWL-2100AP. The left sidebar contains buttons for Mode, Performance, Filters, Encryption (highlighted), and DHCP Server. The main content area is titled 'WPA Settings' and includes the following fields:

- WPA Mode: Radio buttons for PSK (selected) and EAP.
- PassPhrase: A text input field.
- Cipher Type: A dropdown menu currently showing 'TKIP'.
- Group Key Update Interval: A text input field with the value '1800'.
- Security Server Settings (required with EAP):
 - Domain Name Server IP address: A text input field with '0.0.0.0'.
 - Domain Name Server: A text input field.
 - RADIUS Server: A text input field.
 - RADIUS Port: A text input field with '1812'.
 - RADIUS Secret: A text input field.

At the bottom right, there are three icons: a green checkmark, a yellow 'X', and a red plus sign, followed by the text 'Apply Cancel Help'.

Passphrase-

If you selected PSK you will need to enter a **Passphrase** in this field.

Cipher Type-

If you selected **EAP** you will need to select a Cipher (EAP) Type: **Auto**, **AES**, or **TKIP**.

Group Key

Update Interval-

If you selected PSK you will need to enter a figure in this field.

Security Server Settings (required with EAP)

Domain Name Server IP ad- dress-

Input the IP address of the DNS server.

Domain Name Server-

Enter the domain name of the server.

RADIUS Server-

Enter the IP address of the RADIUS server.

RADIUS Port-

Enter the port on your AP dedicated to the RADIUS server.

RADIUS Secret-

Enter the **secret** phrase.

Apply-

Click Apply if you have made any changes.

Using the Configuration Menu (continued)

DHCP Server Control-
Enable or Disable the DHCP function here.

Dynamic Pool Settings

IP Assigned From-

Input the first IP address available for assignment in your network.

The Range of Pool (1-255)-

Enter the number of IP addresses available for assignment.

SubMask-

Enter the subnet mask.

Gateway-

Enter the IP address of the router on the network.

Wins-

Windows Internet Naming Service is a system that determines the IP address of a network computer that has a dynamically assigned IP address.

DNS-

Enter the IP address of the DNS server. The DNS server translates domain names such as www.dlink.com into IP addresses.

Domain Name-

Enter the Domain Name of the DWL-2100AP.

Lease Time (60-31536000 sec)-

The **Lease Time** is the period of time before the DHCP server will assign a new IP address.

Status-

Turn the **Dynamic Pool Settings** ON or OFF here.

Apply-

Click Apply if you have made any changes.

Advanced > DHCP Server > Dynamic Pool Settings

The screenshot shows the configuration interface for a D-Link DWL-2100AP. The page title is "AirPlus Xtreme G High-Speed 2.4GHz Wireless Access Point". The navigation menu includes Home, Advanced, Tools, Status, and Help. The "Advanced" tab is selected, and the "Dynamic Pool Settings" sub-tab is active. The "DHCP Server Control" section shows "Function Enable/Disable" set to "Disabled". The "Dynamic Pool Settings" section includes input fields for "IP Assigned From" (0.0.0.0), "The Range of Pool (1-255)" (0), "SubMask" (0.0.0.0), "Gateway" (0.0.0.0), "Wins" (0.0.0.0), "DNS" (0.0.0.0), "Domain Name", "Lease Time (60 - 31536000 sec)" (0), and "Status" (OFF). At the bottom right, there are three buttons: a green checkmark for "Apply", a red X for "Cancel", and a red plus sign for "Help".

Using the Configuration Menu (continued)

Advanced > DHCP Server > Static Pool Settings

DHCP Server Control-
Enable or Disable the DHCP function here.

Static Pool Settings

Assigned IP-
Enter the static IP address of the device here.

Assigned MAC Address-
Enter the MAC address of the device here.

SubMask-
Enter the subnet mask here.

Gateway-

Enter the IP address of the router on the network.

Wins-

Windows Internet Naming Service is a system that determines the IP address of the a network computer that has a dynamically assigned IP address.

DNS-

Enter the IP address of the DNS server. The DNS server translates domain names such as www.dlink.com into IP addresses.

Domain Name-

Enter the **Domain Name** of the DWL-2100AP.

Status-

Turn the **Static Pool Settings** ON or OFF here.

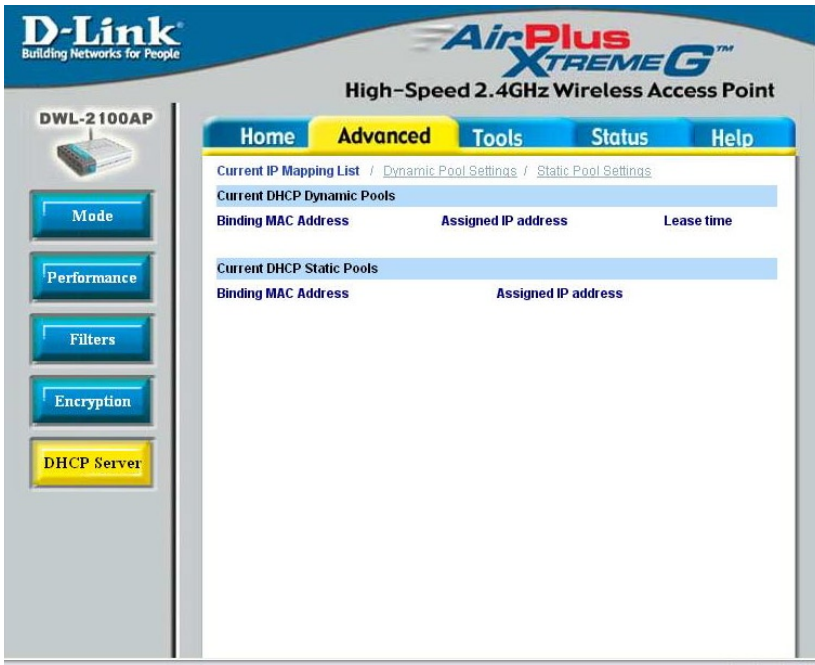
Assigned Static Pool

After you have input the **Static Pool Settings** for each device, click **Apply** and the profile will appear in this list at the bottom of the window.

The screenshot shows the D-Link configuration interface for the DWL-2100AP. The interface has a blue header with the D-Link logo and 'AirPlus Xtreme G' branding. Below the header, there are tabs for 'Home', 'Advanced', 'Tools', 'Status', and 'Help'. The 'Advanced' tab is selected. On the left side, there is a sidebar with buttons for 'Mode', 'Performance', 'Filters', 'Encryption', and 'DHCP Server'. The 'DHCP Server' button is highlighted. The main content area shows the 'Static Pool Settings' page. It includes a 'DHCP Server Control' section with a 'Function Enable/Disable' dropdown set to 'Disabled'. Below this is the 'Static Pool Settings' section with input fields for 'Assigned IP', 'Assigned MAC Address', 'SubMask', 'Gateway', 'Wins', 'DNS', 'Domain Name', and 'Status'. At the bottom right of this section are 'Apply', 'Cancel', and 'Help' buttons. Below the 'Static Pool Settings' section is the 'Assigned Static Pool' table, which has columns for 'MAC Address', 'IP address', 'State', 'Edit', and 'Delete'.

Using the Configuration Menu (continued)

Advanced > DHCP Server > Current IP Mapping List



This screen displays information about the current DHCP dynamic and static IP address pools. This information is available when you enable the DHCP function of the DWL-2100AP and assign dynamic and static IP address pools.

Current DHCP Dynamic Pools-These are IP address pools to which the DHCP server function has assigned dynamic IP addresses.

Binding MAC address- The MAC address of a device on the network that is within the DHCP dynamic IP address pool.

Assigned IP address- The current corresponding DHCP-assigned dynamic IP address of the device.

Lease Time- The length of time that the dynamic IP address will be valid.

Current DHCP Static Pools-These are IP address pools to which the DHCP server function has assigned static IP addresses.

Binding MAC address- The MAC address of a device on the network that is within the DHCP static IP address pool.

Assigned IP address- The current corresponding DHCP-assigned static IP address of the device.

Using the Configuration Menu (continued)

Tools > Admin

The screenshot shows the D-Link configuration interface for a DWL-2100AP. The top navigation bar includes Home, Advanced, Tools (selected), Status, and Help. The left sidebar contains buttons for Admin (selected), System, Firmware, Cfg File, and Misc. The main content area is titled 'Administrator Settings' and contains four input fields: 'User Name' (pre-filled with 'admin'), 'Old Password', 'New Password', and 'Confirm New Password'. At the bottom right of the form are three buttons: 'Apply' (with a green checkmark icon), 'Cancel' (with an orange X icon), and 'Help' (with a red plus icon).

User Name- Enter a user name; **admin** is the default setting.

Old Password- To change your password, enter your old password here

New Password- Enter your new password here.

Confirm New Password- Enter your new password again.

Using the Configuration Menu (continued)

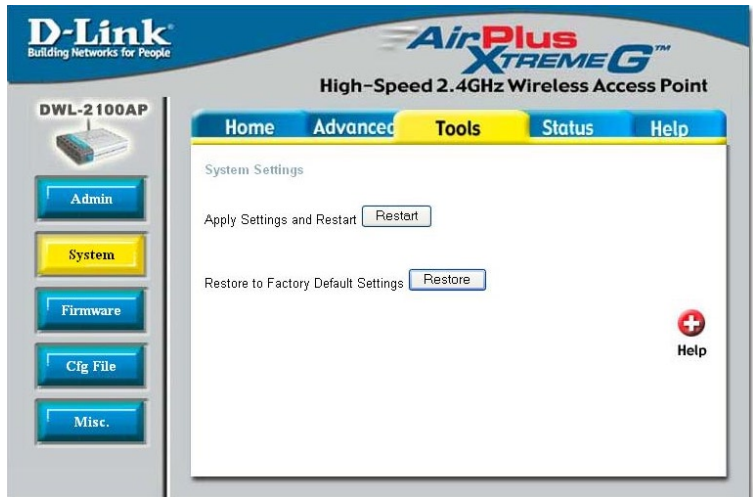
Apply Settings and Restart-

Click **Restart** to apply the system settings and restart the DWL-2100AP.

Restore to Factory Default Settings-

Click **Restore** to return the DWL-2100AP to its factory default settings.

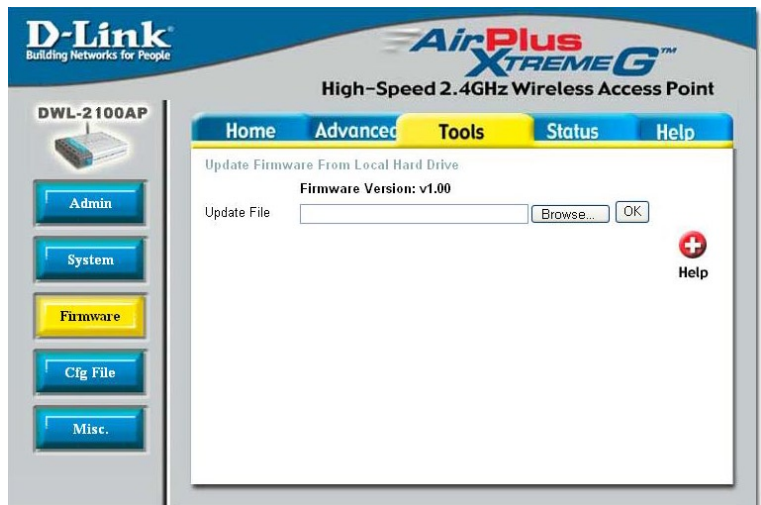
Tools > System



Tools > Firmware

Update File-

After you download the most recent firmware from www.dlink.com.au you can browse your hard drive to locate the downloaded file and click to update the firmware.



Using the Configuration Menu (continued)

Tools > Cfg File

Update File-

Browse for the configuration settings that you have saved to your hard drive. Click **OK** when you made your selection.

Load Settings to the Local Hard Drive-

Click **OK** to load the selected settings.



Tools > Misc.

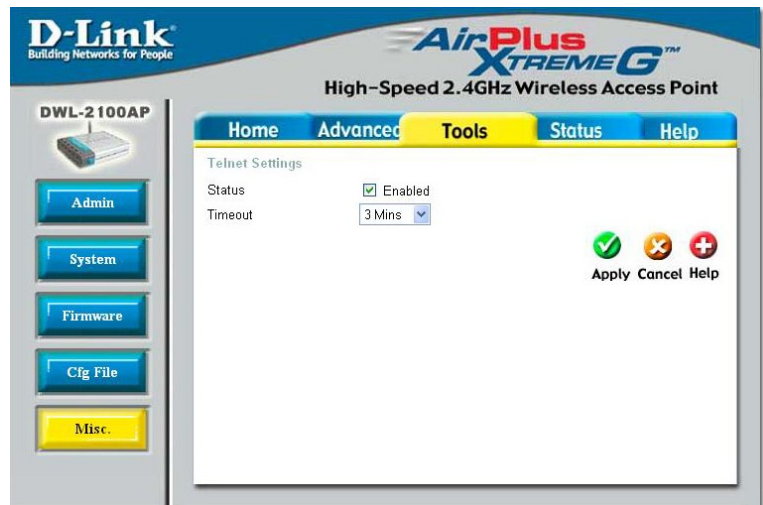
Telnet Settings

Status-

Click to Enable a Telnet session.

Timeout-

Select a time period after which a session timeout will occur.



Telnet is a program that allows you to control your network from a single PC.

Using the Configuration Menu (continued)

Status > Device Info

The screenshot shows the D-Link configuration interface for a DWL-2100AP. The top navigation bar includes 'Home', 'Advanced', 'Tools', 'Status' (selected), and 'Help'. The left sidebar contains 'Device Info' (selected) and 'Stats'. The main content area displays 'Device Information' with the following details:

Device Information	
Firmware Version: v1.00	
MAC Address: 00:05:5d:9a:10:0c	
Ethernet	
Get IP From:	Manual
IP address:	192.168.0.50
Subnet Mask:	255.255.255.0
Gateway:	0.0.0.0
Wireless (802.11g)	
SSID:	2100B
Channel:	1
Super G Mode:	Disabled
Rate:	Auto
Security Level:	Open System / WEP Enabled

A red circular 'Help' button with a white plus sign is located in the bottom right corner of the main content area.

This window displays the settings of the DWL-2100AP, as well as the Firmware version and the MAC address.

Using the Configuration Menu (continued)

Status > Stats

The screenshot shows the D-Link configuration interface for a DWL-2100AP. The top navigation bar includes 'Home', 'Advanced', 'Tools', 'Status' (selected), and 'Help'. The left sidebar contains 'Device Info' and 'Stats' (selected). The main content area displays 'WLAN 802.11G Traffic Statistics' with three sections: 'ThroughPut', 'Transmitted Frame Count', and 'Received Frame Count'. Each section contains a table of statistics. At the bottom right, there are 'Refresh' and 'Help' buttons.

D-Link
Building Networks for People

AirPlus Xtreme G™
High-Speed 2.4GHz Wireless Access Point

DWL-2100AP

Device Info

Stats

Home **Advanced** **Tools** **Status** **Help**

WLAN 802.11G Traffic Statistics

ThroughPut

Transmit Success Rate	70 %
Transmit Retry Rate:	71 %
Receive Success Rate:	100 %
Receive Duplicate Rate:	0 %
RTS Success Count:	11057
RTS Failure Count:	0

Transmitted Frame Count

Transmitted Frame Count	1092
Multicast Transmitted Frame Count	0
Transmitted Error Count:	476
Transmitted Total Retry Count:	2801
Transmitted Multiple Retry Count:	2801

Received Frame Count

Received Frame Count	0
Multicast Received Frame Count	0
Received Frame FCS Error Count:	0
Received Frame Duplicate Count:	0
Ack Rcv failure Count:	0

Wep Frame Error Count

WEP Excluded Frame Count	476
WEP ICV Error Count	0

Refresh **Help**

This window displays the statistics of the wireless local area network.

Using the Configuration Menu (continued)

Help



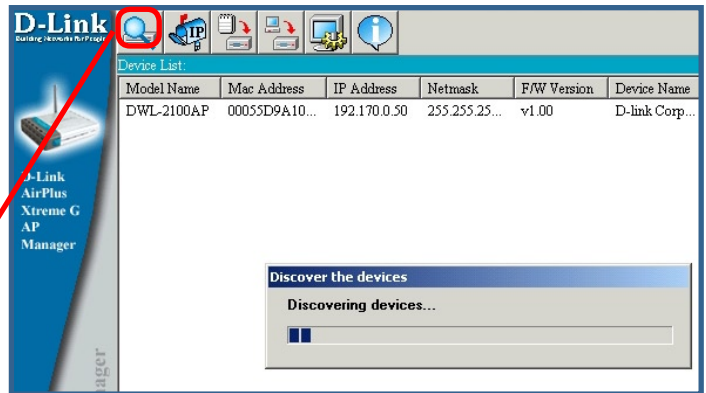
At this window you can access the help screens for the topics listed.

Using the AP Manager

The **AP Manager** is a convenient tool to manage the configuration of your network from a central computer. With the **AP Manager** there is no need to configure each device separately.

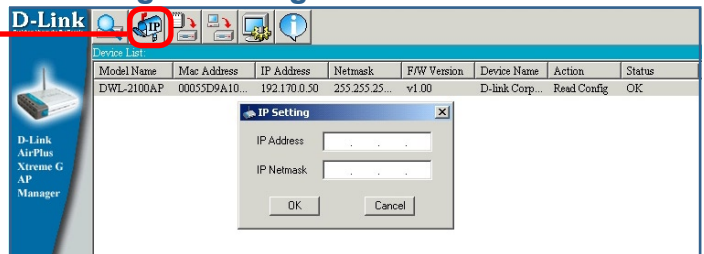
Click on this icon to begin **discovering the devices** on the network for configuration.

Discover the devices



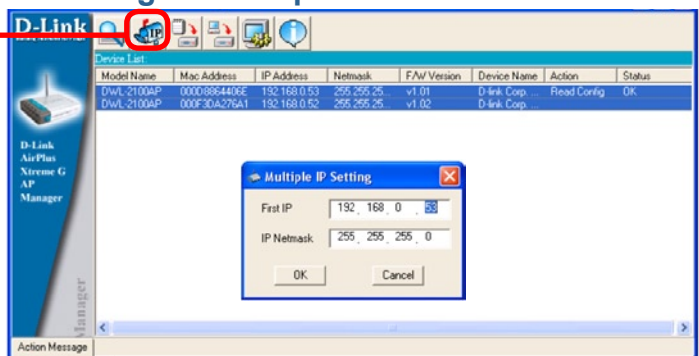
Click on this icon to configure the **IP address** in the dialogue box shown here.

IP Setting for a single IP address



To assign multiple IP addresses, highlight the devices, as shown here, and click on this icon. Enter the first IP address. The AP Manager will assign multiple sequential addresses to the devices.

IP Setting for multiple IP addresses



Using the AP Manager (continued)



Click on this icon in the AP Manager menu bar to access the **Device Configuration** screens shown on this page.

The **Wireless** configuration screen is shown here.

Device Configure>Wireless

The 'Device Configure' window is shown with the 'Wireless' tab selected. The 'IEEE802.11g' section is expanded, showing various settings. The 'Wireless setting' checkbox is checked. The 'SSID' is 'PMtest', 'Channel' is '7', 'SSID Broadcast' is 'enable', '11g only' is 'enable', 'Super G' is 'disable', and 'Radio Wave' is 'enable'. On the right, 'Data Rate' is 'auto', 'Beacon Interval (20~1000)' is '100', 'DTIM (1~255)' is '1', 'Fragment Length (256~2346)' is '2346', 'RTS Length (256~2346)' is '2346', and 'Tx Power' is 'full'. At the bottom are buttons: 'Check All', 'Clear Checks', 'Refresh', 'Apply', 'Open', 'Save', and 'Exit'.

Device Configure>Security

The 'Device Configure' window is shown with the 'Security' tab selected. The 'Wep Key' button is highlighted. The 'IEEE802.11g' section is expanded, showing security settings. 'Authentication' is 'open', 'Encryption' is 'enable', and 'Active Key Index' is '1'. Below are four key entries, each with a '1st Key' through '4th Key' label, a '64' dropdown, a 'HEX' dropdown, and a text field. The first key's text field contains '12 34 56 78 90', and the others are empty. At the bottom are buttons: 'Check All', 'Clear Checks', 'Refresh', 'Apply', 'Open', 'Save', and 'Exit'.

The **Security** configuration screen is shown here.

Using the AP Manager (continued)

Device Configure>Filters



Click on this icon in the AP Manager menu bar to access the **Device Configuration** screens shown on this page.

The 'Device Configure' window with the 'Filters' tab selected. The 'WLAN Partition' section shows 'IEEE802.11g' selected, with 'Internal Station Connection' and 'Broadcast from Ethernet to WLAN' both checked and set to 'enable'. The 'IEEE802.11g Access Setting' section shows 'Access Control' checked and set to 'disable'. At the bottom are buttons for 'Check All', 'Clear Checks', 'Refresh', 'Apply', 'Open', 'Save', and 'Exit'. A red line from the menu bar icon points to the 'Filters' tab.

The **DHCP server** configuration screen is shown here.

Device Configure>AP Mode>Normal

The **AP Mode** configuration screen is shown here.

Select one of five AP modes from the pulldown menu. **Normal** mode is selected here.

The 'Device Configure' window with the 'AP Mode' tab selected. The 'IEEE802.11g' section shows 'AP mode' checked and 'normal' selected in the pulldown menu. At the bottom are buttons for 'Check All', 'Clear Checks', 'Refresh', 'Apply', 'Open', 'Save', and 'Exit'. A red line from the menu bar icon points to the 'AP Mode' tab.

Using the AP Manager (continued)

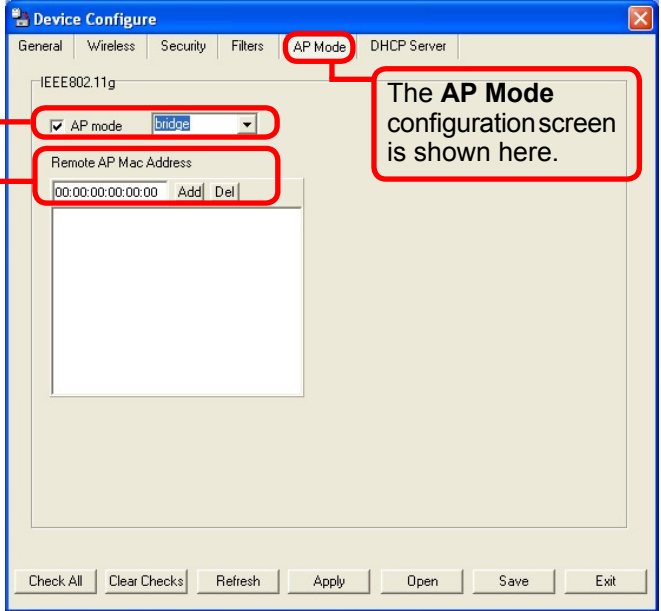
Device Configure>AP Mode>Bridge



Click on this icon in the AP Manager menu bar to access the **Device Configuration** screens shown on this page.

Bridge is selected here in AP mode.

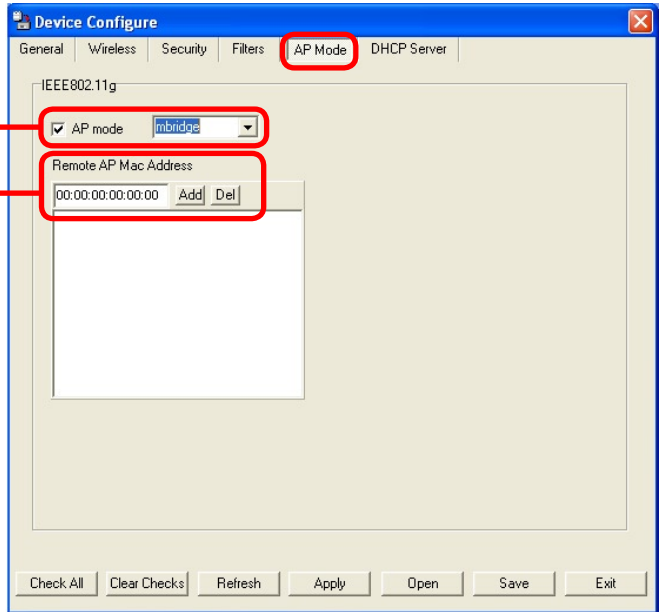
Add or delete the **Remote AP MAC address** of the DWL-2100AP that will act as a remote bridge to connect two LANs.



Device Configure>AP Mode>Multi-point Bridge

Multi-point Bridge is selected here in AP mode.

You can link up to 8 LANs by adding **Remote AP MAC Addresses** of up to 8 DWL-2100APs.



Using the AP Manager (continued)

Device Configure>AP Mode>Repeater

Repeater is selected here in AP mode.

Enter the remote **Root AP MAC Address** of the DWL-2100AP.

The screenshot shows the 'Device Configure' window with the 'AP Mode' tab selected. The 'Repeater' sub-tab is active. The 'IEEE802.11g' section is expanded, showing 'AP mode' set to 'repeater' and 'Root AP Mac Address' set to '00:00:00:00:00:00'. The 'AP Mode' tab is highlighted with a red box. The 'AP mode' dropdown menu is also highlighted with a red box, showing 'repeater' selected. The 'Root AP Mac Address' text box is highlighted with a red box, showing '00:00:00:00:00:00'. The bottom of the window has buttons for 'Check All', 'Clear Checks', 'Refresh', 'Apply', 'Open', 'Save', and 'Exit'.

Device Configure>AP Mode>AP Client

AP Client is selected here in AP mode.

Enter the remote **Root AP MAC Address** of the remote DWL-2100AP that will act as an AP.

The screenshot shows the 'Device Configure' window with the 'AP Mode' tab selected. The 'AP Client' sub-tab is active. The 'IEEE802.11g' section is expanded, showing 'AP mode' set to 'apclient' and 'Root AP Mac Address' set to '00:00:00:00:00:00'. The 'AP Mode' tab is highlighted with a red box. The 'AP mode' dropdown menu is also highlighted with a red box, showing 'apclient' selected. The 'Root AP Mac Address' text box is highlighted with a red box, showing '00:00:00:00:00:00'. The bottom of the window has buttons for 'Check All', 'Clear Checks', 'Refresh', 'Apply', 'Open', 'Save', and 'Exit'.

Using the AP Manager (continued)

Device Configure>DHCP Server



Click on this icon in the AP Manager menu bar to access the **Device Configuration** screens shown on this page.

The **DHCP Server** configuration screen is shown here.

The image shows the 'Device Configure' window with the 'DHCP Server' tab selected. The window has a blue title bar and a menu bar with 'General', 'Wireless', 'Security', 'Filters', 'AP Mode', and 'DHCP Server'. The 'DHCP Server' tab is active, showing options for 'DHCP Server' (checked), 'Dynamic Pool Settings', and 'Static Pool Settings'. The 'Dynamic Pool Settings' section includes fields for 'IP Assigned From' (192.168.0.110), 'Range of Pool (1~255)' (0), 'SubMask' (255.255.255.0), 'Gateway' (192.168.0.1), 'Wins' (0.0.0.0), 'DNS' (0.0.0.0), 'Domain Name', 'Lease Time(60~31536000 sec)' (60), and 'Status' (OFF). The 'Static Pool Settings' section has 'Add', 'Edit', and 'Del' buttons and a table with columns 'Mac Address', 'IP Address', and 'Status'. At the bottom are buttons for 'Check All', 'Clear Checks', 'Refresh', 'Apply', 'Open', 'Save', and 'Exit'.

Firmware

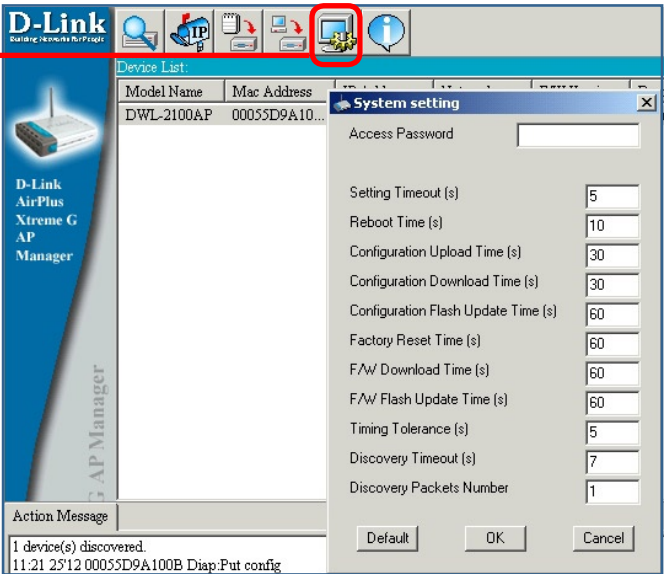
Click on this icon in the AP Manager menu bar to access the **Firmware Download** screen shown here.

The image shows the 'D-Link AirPlus Xtreme G AP Manager' window. The 'Firmware' tab is selected, showing a 'Device List' table with columns 'Model Name', 'Mac Address', 'IP Address', 'Netmask', 'F/W Version', 'Device Name', and 'Action'. The first row is 'DWL-2100AP'. Below the table is a 'Select firmware image file' dialog box. The dialog box has a 'Look in:' dropdown set to 'Firmware', a file list area, a 'File name:' input field, and a 'Files of type:' dropdown set to '*.*'. There are 'Open' and 'Cancel' buttons at the bottom right of the dialog box.

Using the AP Manager (continued)

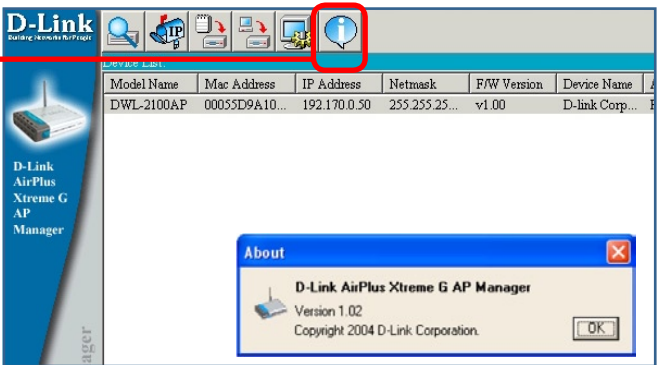
System

Click on this icon in the AP Manager menu bar to access the **System Setting** screen , shown here.



About

Click on this icon in the AP Manager menu bar to access the **About** screen, shown here.



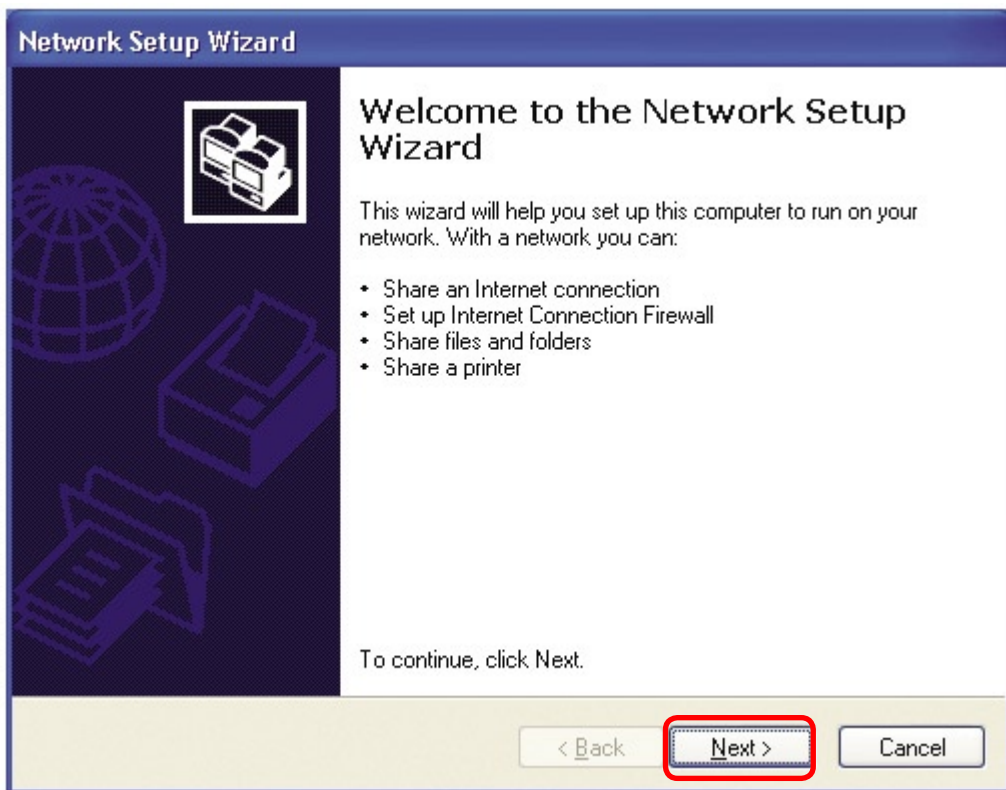
Networking Basics

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/98SE.

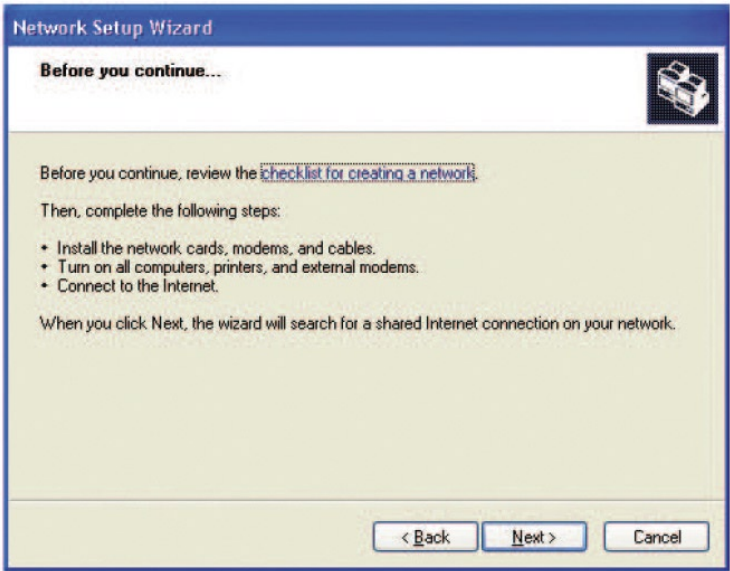
Go to **Start>Control Panel>Network Connections**
Select **Set up a home or small office network**



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

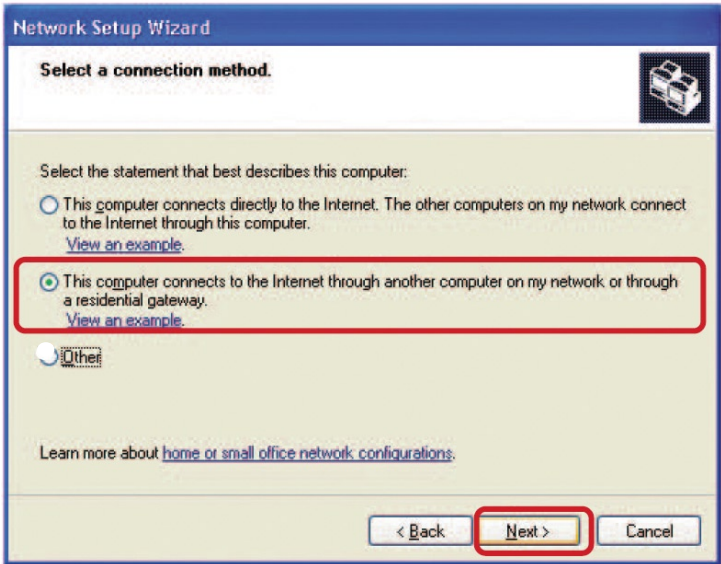
Networking Basics (continued)

Please follow all the instructions in this window:



Click **Next**.

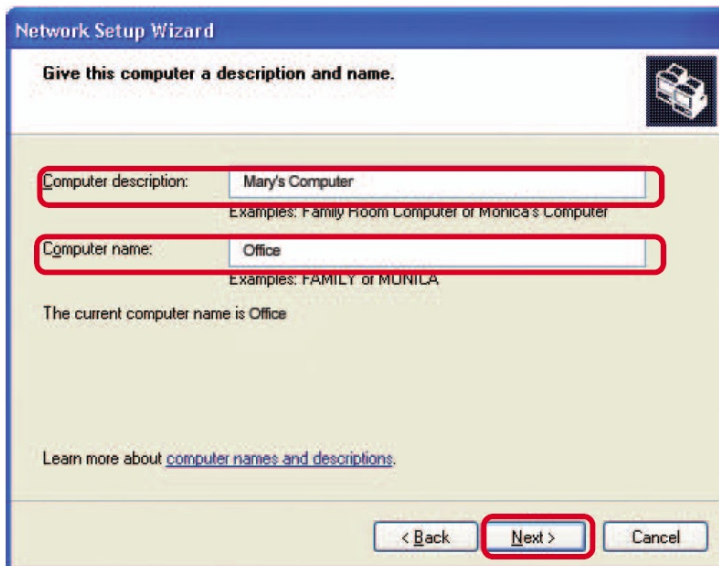
In the following window, select the best description of your computer. If your computer connects to the Internet through a router, select the second option as shown.



Click **Next**.

Networking Basics (continued)

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



The screenshot shows the 'Network Setup Wizard' window with the title 'Give this computer a description and name.' The window has a blue header bar and a small printer icon in the top right. Below the title bar, there are two text input fields. The first field is labeled 'Computer description:' and contains the text 'Mary's Computer'. Below this field, there is a line of text that says 'Examples: Family Room Computer or Monica's Computer'. The second field is labeled 'Computer name:' and contains the text 'Office'. Below this field, there is a line of text that says 'Examples: FAMILY or MONICA'. Below the input fields, there is a line of text that says 'The current computer name is Office'. At the bottom of the window, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a red rectangle.

Network Setup Wizard

Give this computer a description and name.

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

Computer name: Office
Examples: FAMILY or MONICA

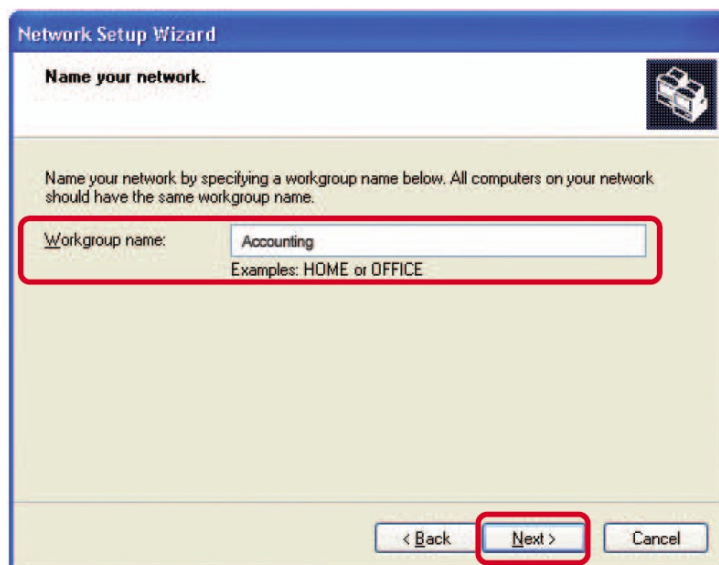
The current computer name is Office

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' window with the title 'Name your network.' The window has a blue header bar and a small printer icon in the top right. Below the title bar, there is a line of text that says 'Name your network by specifying a workgroup name below. All computers on your network should have the same workgroup name.' Below this text, there is a text input field labeled 'Workgroup name:' containing the text 'Accounting'. Below the input field, there is a line of text that says 'Examples: HOME or OFFICE'. At the bottom of the window, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is 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.

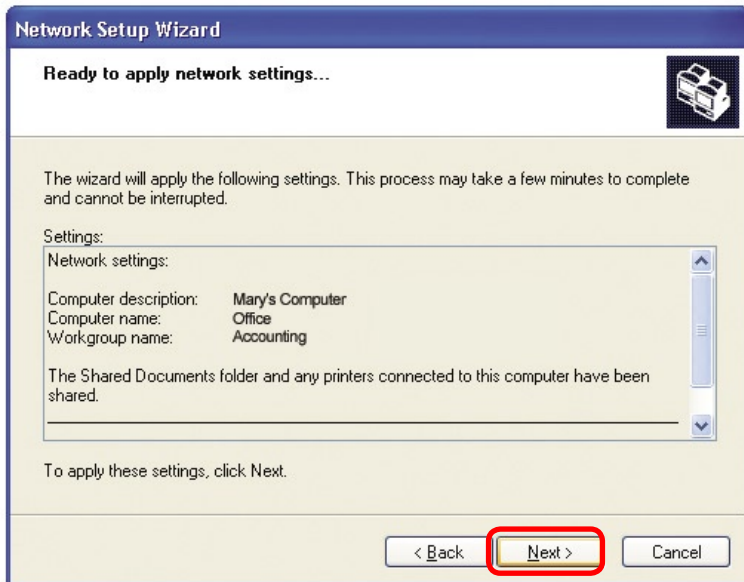
Workgroup name: Accounting
Examples: HOME or OFFICE

< Back Next > Cancel

Click **Next**.

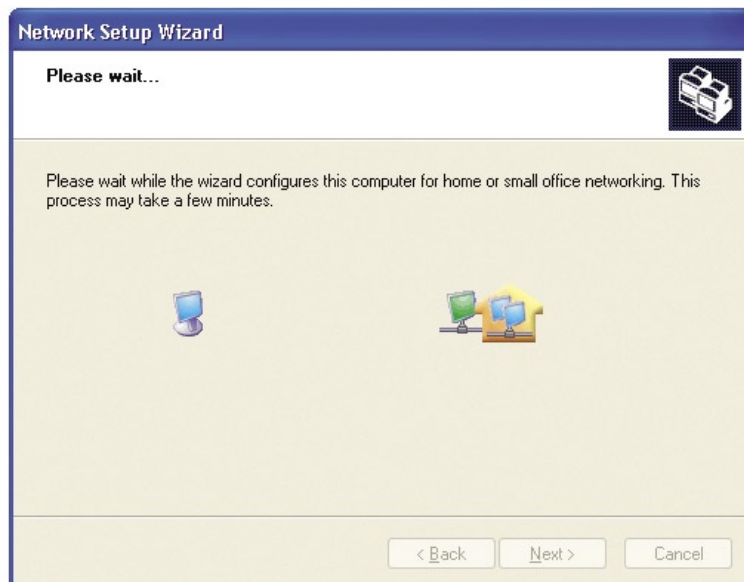
Networking Basics (continued)

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.

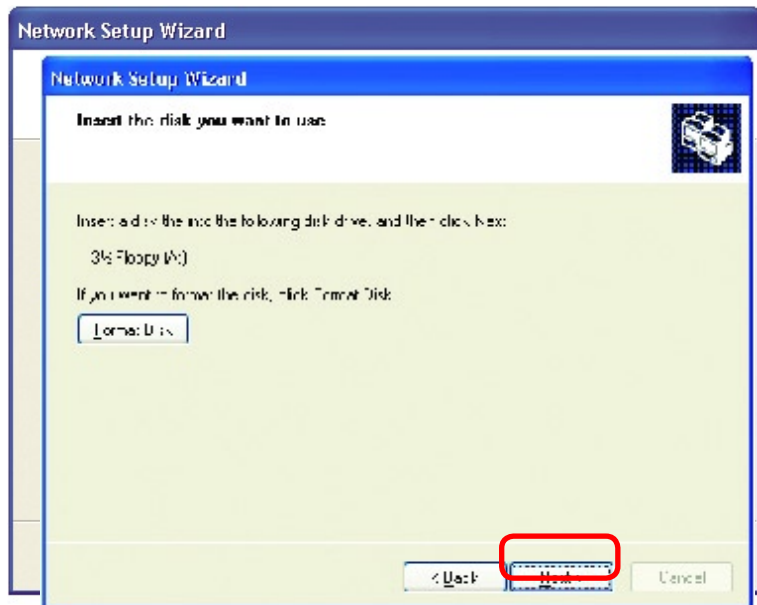


Networking Basics (continued)

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**.

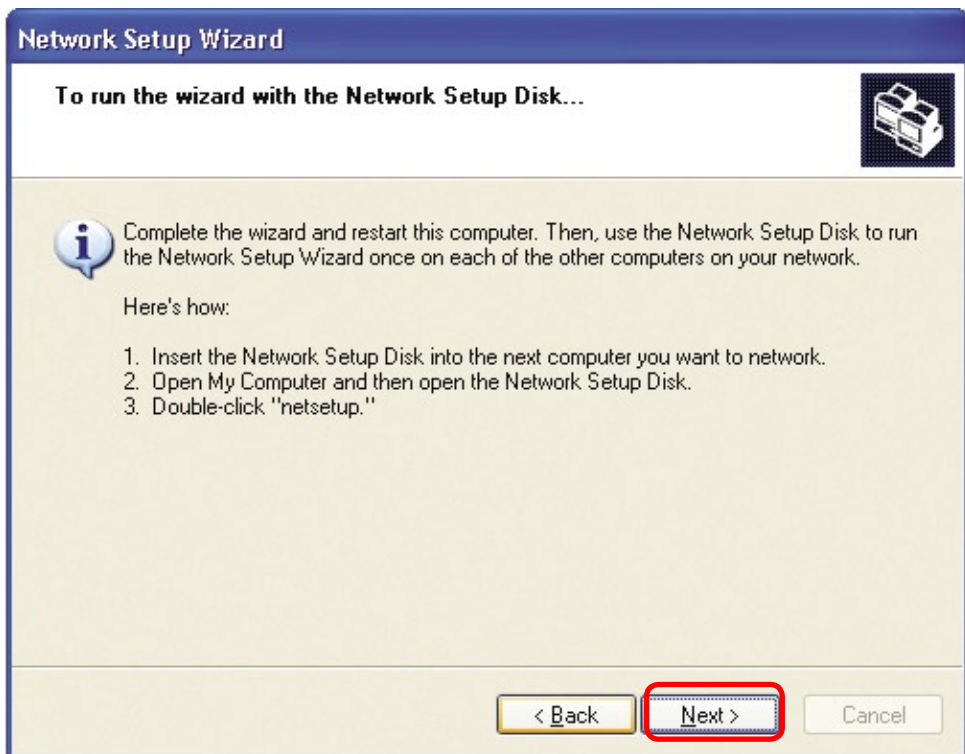


Click **Next**.

Networking Basics (continued)

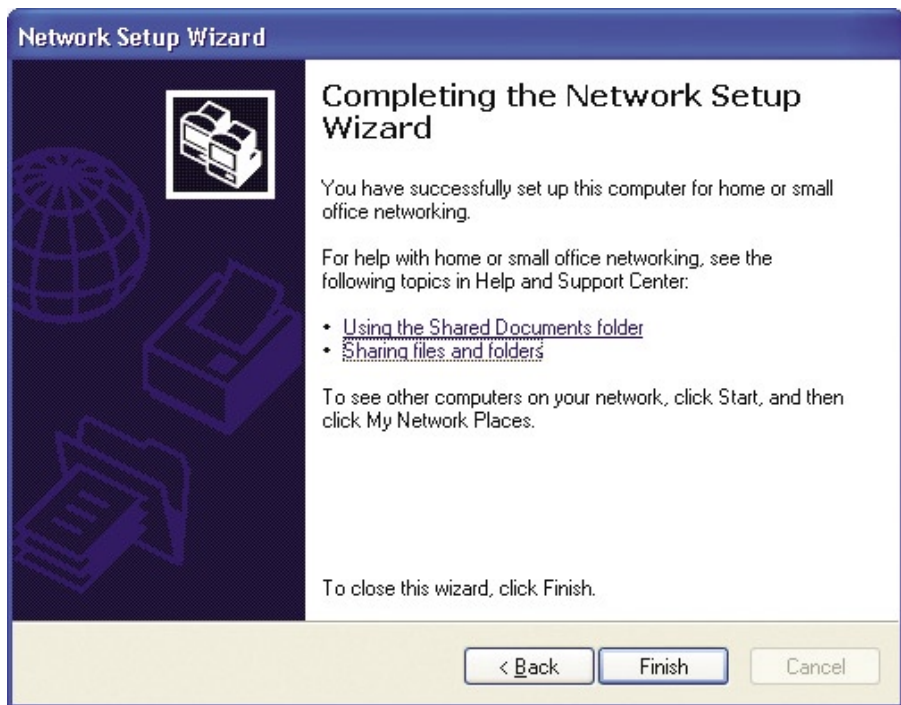


Please read the information under **Here's how** in the screen below. After you complete the **Network Setup Wizard** you will use the **Network Setup Disk** to run the **Network Setup Wizard** once on each of the computers on your network. Click **Next**.

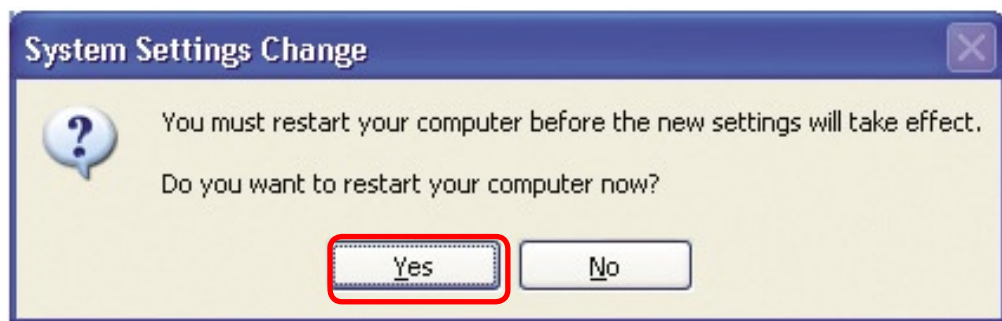


Networking Basics (continued)

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 (continued)

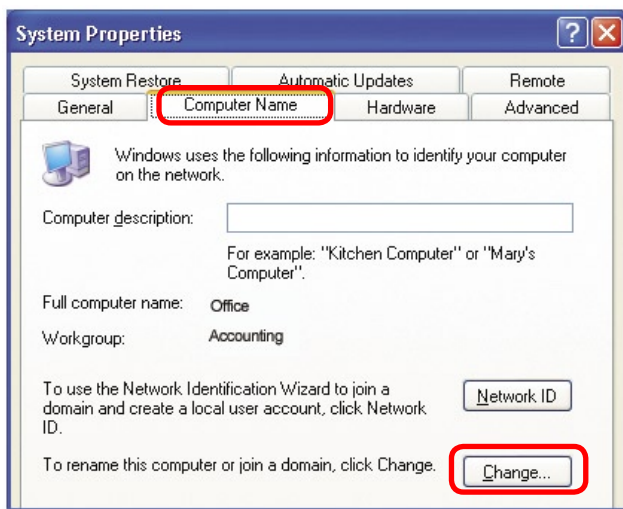
Naming your Computer

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

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



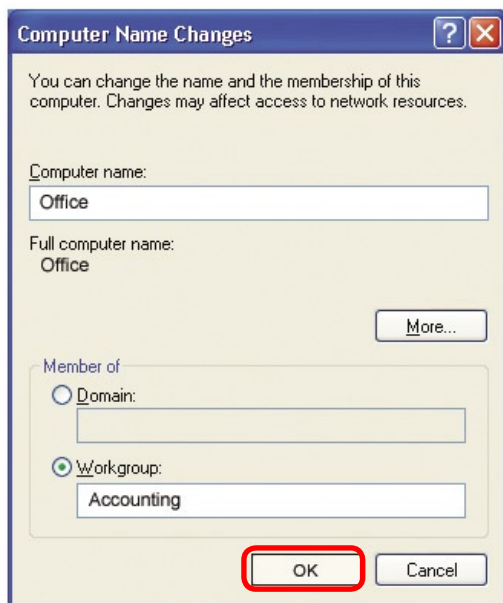
- Select the **Computer Name** Tab in the System Properties window.
- You may enter a **Computer Description** if you wish; this field is optional.
- To rename the computer and join a domain, click **Change**.



Networking Basics (continued)

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 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**.



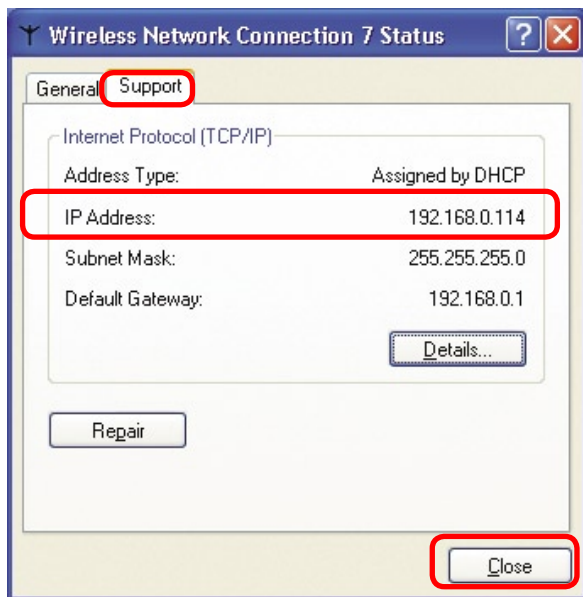
Networking Basics (continued)

Checking the IP Address in Windows XP

This window will appear.

- Click the **Support** tab.

- Click **Close**.



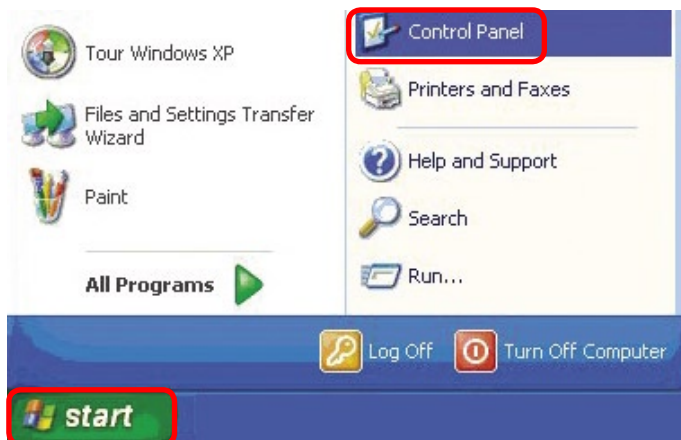
Assigning a Static IP Address in Windows XP/2000

Note: DHCP-capable 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 router you will not need to assign static IP addresses.

If you are not using a DHCP capable router, or you need to assign a static IP address, please follow these instructions:

- Go to **Start**.

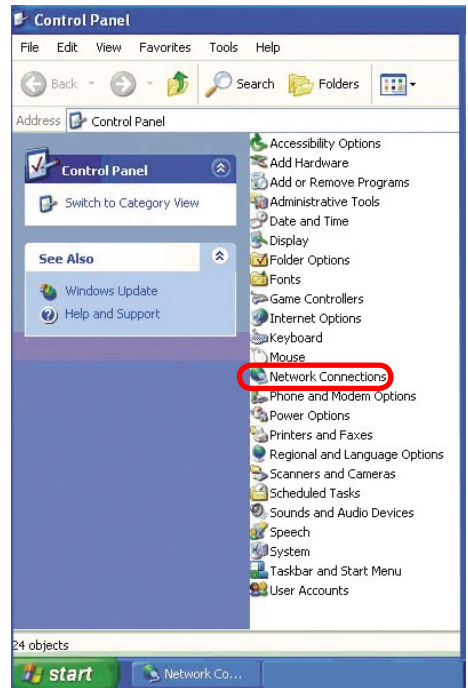
- Double-click on **Control Panel**.



Networking Basics (continued)

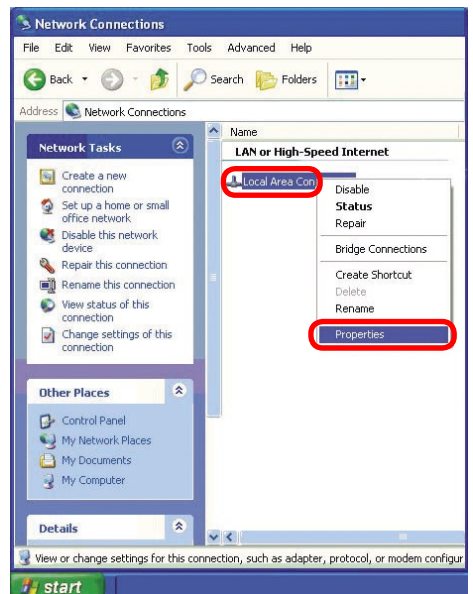
Assigning a Static IP Address in Windows XP/2000

- Double-click on **Network Connections**.



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

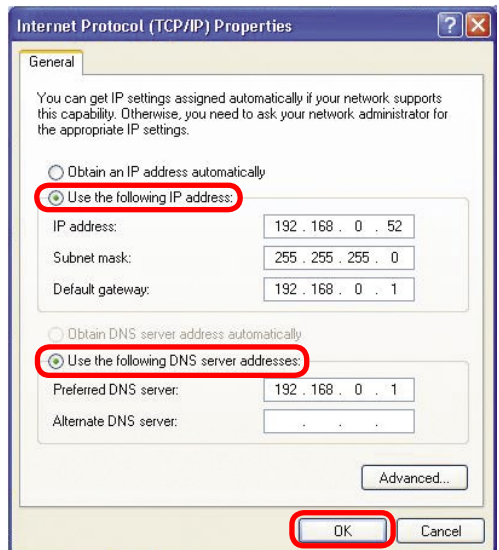
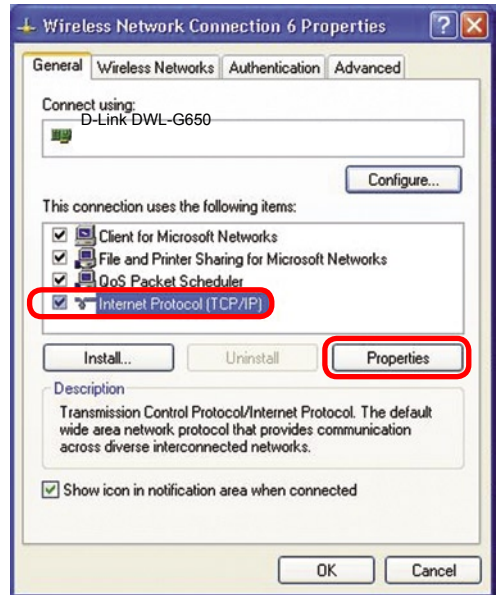
- Double-click on **Properties**.



Networking Basics (continued)

Assigning a Static IP Address

- 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.)



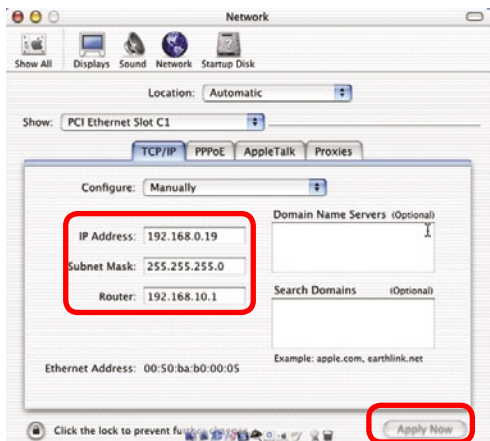
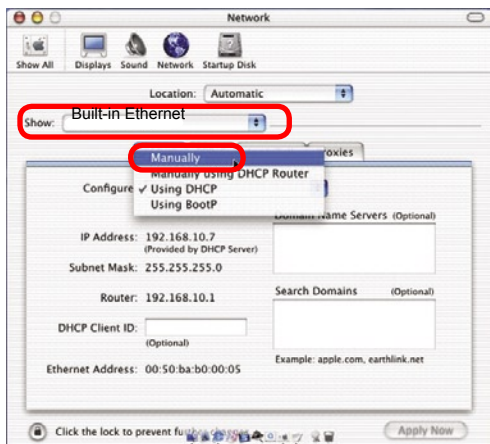
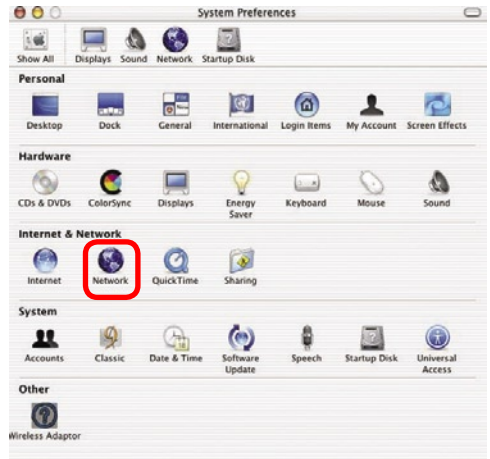
The DNS server information will be supplied by your ISP (Internet Service Provider.)

- Click **OK**.

Networking Basics (continued)

Assigning a Static IP Address with Macintosh OSX

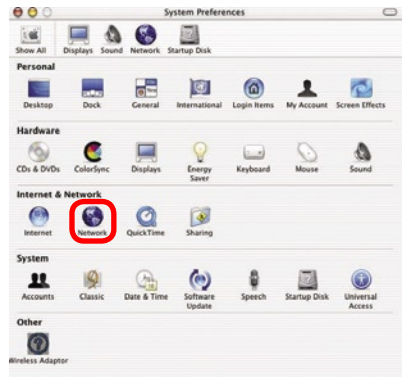
- Go to the **Apple Menu** and select **System Preferences**.
- Click on **Network**.
- Select **Built-in Ethernet** in the **Show** pull-down menu.
- Select **Manually** in the **Configure** pull-down menu.
- Input the **Static IP Address**, the **Subnet Mask** and the **Router IP Address** in the appropriate fields.
- Click **Apply Now**.



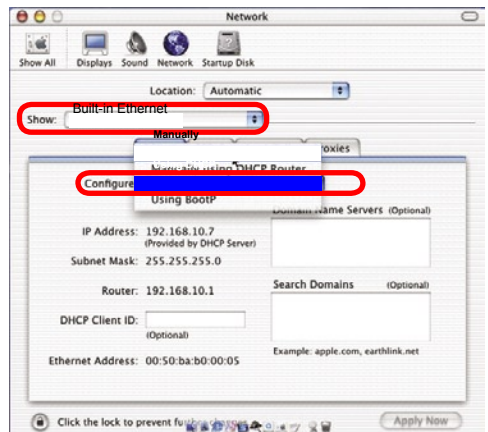
Networking Basics (continued)

Selecting a Dynamic IP Address with Macintosh OSX

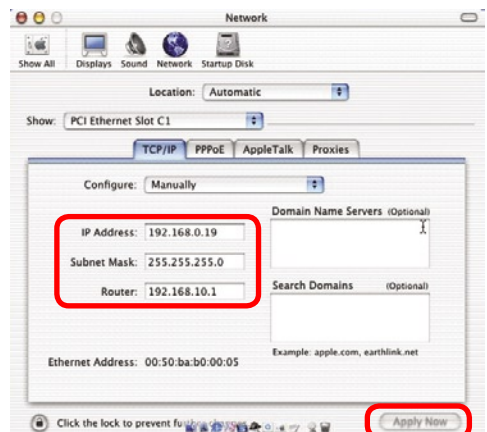
- Go to the **Apple Menu** and select **System Preferences**.
- Click on **Network**.



- Select **Built-in Ethernet** in the **Show** pull-down menu.
- Select **Using DHCP** in the **Configure** pull-down menu.



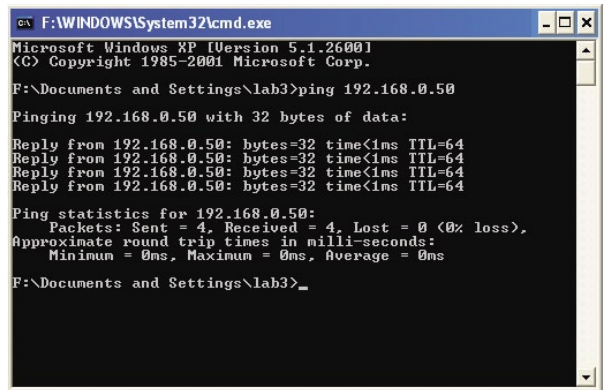
- Click **Apply Now**.
- The **IP Address**, **Subnet mask**, and the **Router's IP Address** will appear in a few



Networking Basics (continued)

Checking the Wireless Connection by Pinging in Windows XP/ 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\lab3>ping 192.168.0.50

Pinging 192.168.0.50 with 32 bytes of data:

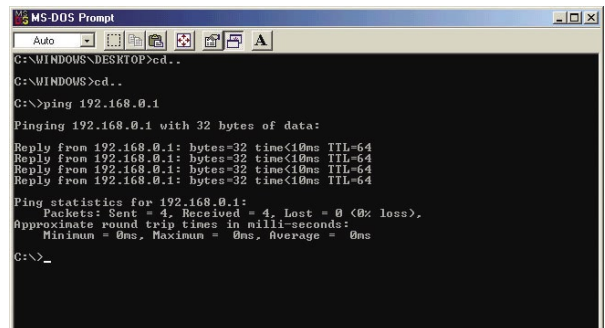
Reply from 192.168.0.50: bytes=32 time<1ms TTL=64
Reply from 192.168.0.50: bytes=32 time<1ms TTL=64
Reply from 192.168.0.50: bytes=32 time<1ms TTL=64
Reply from 192.168.0.50: bytes=32 time<1ms TTL=64

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>
```

Checking the Wireless Connection by Pinging in Windows Me/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>cd..
C:\WINDOWS>cd..
C:\>ping 192.168.0.1

Pinging 192.168.0.1 with 32 bytes of data:

Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64

Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Troubleshooting

This Chapter provides solutions to problems that can occur during the installation and operation of the DWL-2100AP Wireless Access Point. We cover various aspects of the network setup, including the network adapters. Please read the following if you are having problems.

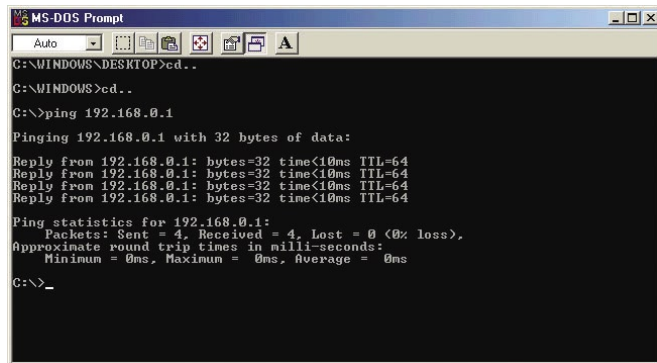
Note: It is recommended that you use an Ethernet connection to configure the DWL-2100AP Wireless Access Point.

1. The computer used to configure the DWL-2100AP cannot access the configuration menu.

- Check that the **Ethernet LED** on the DWL-2100AP 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-2100AP. Please see **Checking the IP Address in Windows XP** in the **Networking Basics** section of this manual.

Note: The IP address of the DWL-2100AP 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-2100AP is responding. Go to **Start>Run>Type Command>Type ping 192.168.0.50**. A successful ping will show four replies.



```
MS-DOS Prompt
Auto
C:\WINDOWS\DESKTOP>cd..
C:\WINDOWS>cd..
C:\>ping 192.168.0.1

Pinging 192.168.0.1 with 32 bytes of data:

Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64
Reply from 192.168.0.1: bytes=32 time<10ms TTL=64

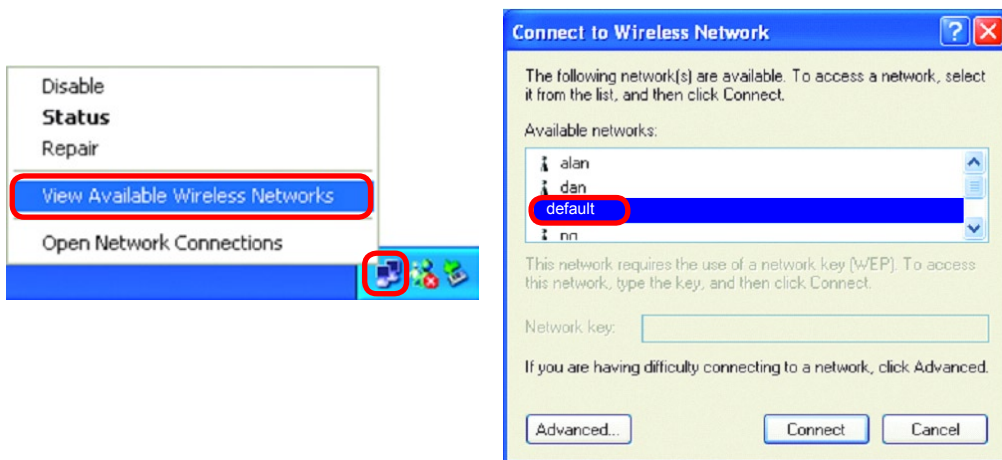
Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>_
```

Note: If you have changed the default IP address, make sure to ping the correct IP address assigned to the DWL-2100AP.

Troubleshooting (continued)

2. The wireless client cannot access the Internet in 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 illustration 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-2100AP 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 (continued)

2. The wireless client cannot access the Internet in the Infrastructure mode (*continued*).

- Check to make sure that the router in your network is functioning properly by pinging it. If the router is not functioning properly, it will not connect to the Internet. If you need to find out how to ping network devices, please refer to **Checking the Wireless Connection by pinging** in the **Networking Basics** section of this manual.
- Check to make sure that the DNS server in your network is functioning properly by pinging it. If the DNS server is not functioning properly, you may be unable to access the Internet. Typically, your ISP (Internet Service Provider) will be able to give you the DNS server information.

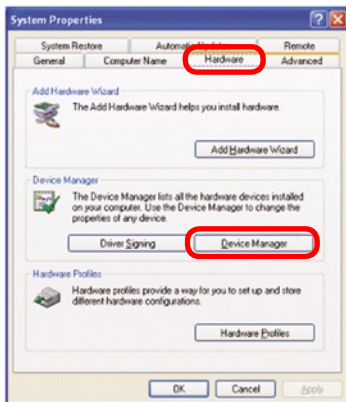
3. Check that the drivers for the network adapters are installed properly.

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 > My Computer > Properties.**



- Select the **Hardware** Tab.



- Click **Device Manager.**

Troubleshooting (continued)

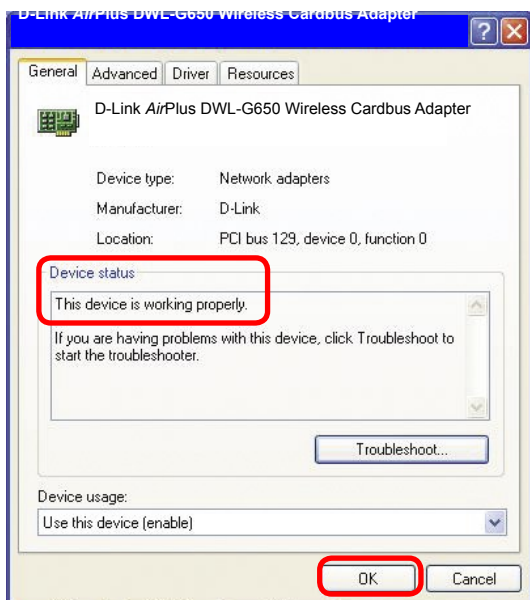
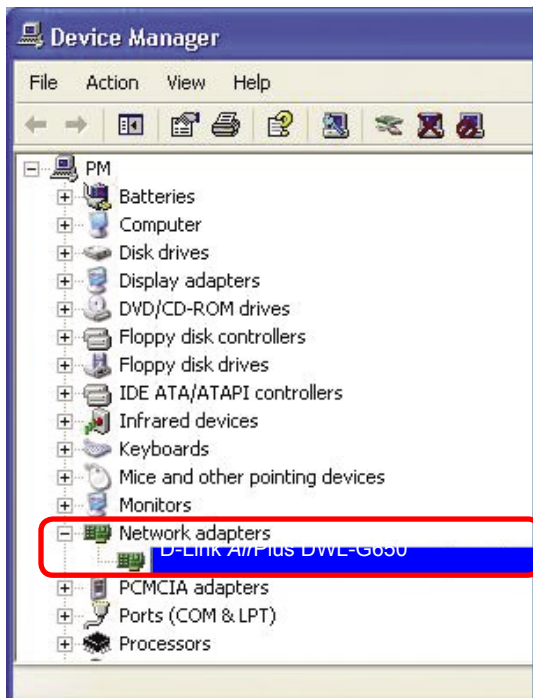
- Double-click on **Network Adapters**.

- Right-click on **D-Link AirPlus DWL-G650 Wireless Cardbus Adapter** (In this example we use the DWL-G650; you may be using other network adapters, but the procedure will remain

- 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 (continued)

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-2100AP. 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.
- When deploying several access points and wireless devices, please make sure that access points in close proximity do not have overlapping channels. Nearby access points should be assigned channels that are at least 4 channels apart to prevent interference. For example, with a group of 3 access points you could assign the first to channel 1, the second to channel 6, and the third to channel 11.

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

If you have enabled encryption on the DWL-2100AP, you must also enable encryption on all wireless clients in order to establish a wireless connection.

- 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.
- 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.
- Move the DWL-2100AP and the wireless client into the same room and then test the wireless connection.
- Disable all security settings. (WEP, MAC Address Control)

Troubleshooting (continued)

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

- Turn off your DWL-2100AP and the client. Turn the DWL-2100AP back on again, and then turn on the client.
- Make sure that all devices are set to **Infrastructure** mode.
- Check that the LED indicators are indicating normal activity. If not, check that the AC power and Ethernet cables are firmly connected.
- Check that the IP address, subnet mask, and gateway settings are correctly entered for the network.
- 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 DWL-2100AP, and on all the devices in your network 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.

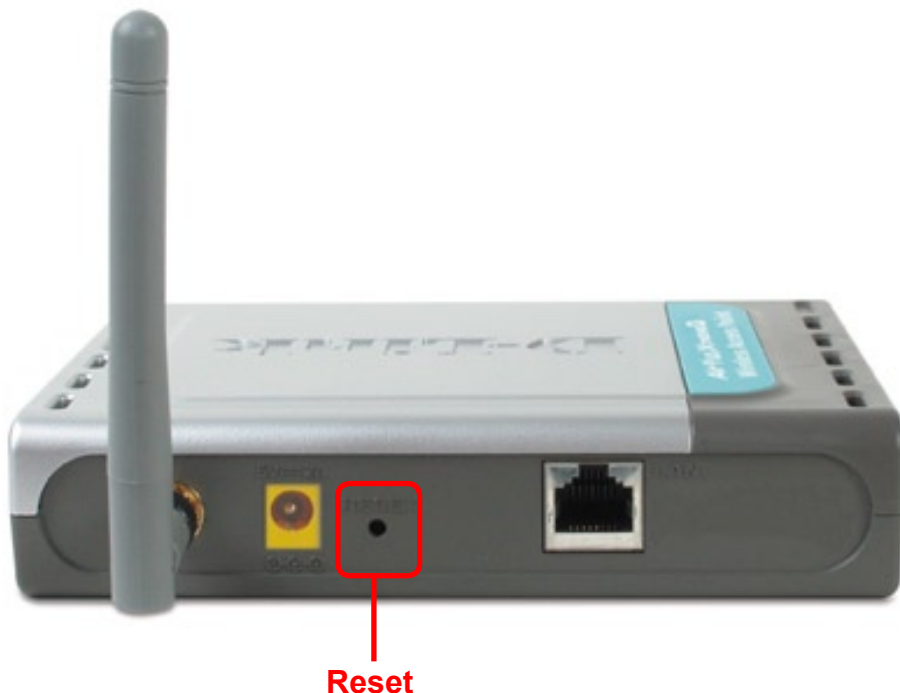
7. I forgot my encryption key.

- Reset the DWL-2100AP to its factory default settings and restore the other devices on your network to their default settings. You may do this by pressing the Reset button on the back of the unit. You will lose the current configuration settings.

Troubleshooting (continued)

8. Resetting the DWL-2100AP to Factory Default Settings

After you have tried other methods for troubleshooting your network, you may choose to **Reset** the DWL-2100AP to the factory default settings.



To hard-reset the D-Link DWL-2100AP to the Factory Default Settings, please do the following:

- Locate the **Reset** button on the back of the DWL-2100AP.
- Use a paper clip to press the **Reset** button.
- Hold for about 5 seconds and then release.
- After the DWL-2100AP reboots (this may take a few minutes) it will be reset to the factory **Default** settings.

Technical Specifications

Standards

- IEEE 802.11b
- IEEE 802.11g
- IEEE 802.3
- IEEE 802.3u
- IEEE 802.3x

Device Management

- Web-Based – Internet Explorer v6 or later; Netscape Navigator v6 or later; or other Java-enabled browsers.
- Telnet
- AP Manager
- SNMP v.3

Data Rate

For 802.11g:

- 108, 54, 48, 36, 24, 18, 12, 9 and 6Mbps

For 802.11b:

- 11, 5.5, 2, and 1Mbps

Security

- 64, 128, 152-bit WEP
- WPA – Wi-Fi Protected Access (WPA-TKIP/PSK/AES)
- 802.1x (EAP-MD5/TLS/TTLS/PEAP)
- MAC Address Access Control List

Wireless Frequency Range

- 2.4GHz to 2.4835GHz

Wireless Operating Range*

802.11g (Full Power with 2dBi gain diversity dipole antenna)

Indoors:

- 30m @ 54Mbps
- 32m @ 48Mbps
- 37m @ 36Mbps
- 45m @ 24Mbps
- 60m @ 18Mbps
- 68m @ 12Mbps
- 77m @ 9Mbps
- 90m @ 6Mbps

Outdoors:

- 95m @ 54Mbps
- 290m @ 11Mbps
- 420m @ 6Mbps

Antenna Type

- Dipole antenna with 2dBi gain

Operating Voltage

- 5VDC +/- 10%

* Environmental factors may adversely affect the wireless range

Technical Specifications (continued)

Radio and Modulation Type

For 802.11g:

OFDM:

- BPSK @ 6 and 9Mbps
- QPSK @ 12 and 18Mbps
- 16QAM @ 24 and 36Mbps
- 64QAM @ 48 and 54Mbps

DSSS:

- DBPSK @ 1Mbps
- DQPSK @ 2Mbps
- CCK @ 5.5 and 11Mbps

For 802.11b:

DSSS:

- DBPSK @ 1Mbps
- DQPSK @ 2Mbps
- CCK @ 5.5 and 11Mbps

LEDs

- Power
- 10M/100M
- WLAN

Temperature

- Operating: 0°C to 40°C
- Storing: -20°C to 65°C

Wireless Transmit Power

Typical RF Output Power at each Data Rate

For 802.11g:

- 31mW (15dBm) @ 54 and 108Mbps
- 40mW (16dBm) @ 48Mbps
- 63mW (18dBm) @ 36, 24, 18, 12, 9, and 6Mbps

For 802.11b:

- 63mW (18dBm) @ 11, 5.5, 2, and 1Mbps

Receiver Sensitivity

For 802.11g:

- 1Mbps: -94dBm
- 2Mbps: -91dBm
- 5.5Mbps: -89dBm
- 6Mbps: -91dBm
- 9Mbps: -90dBm
- 11Mbps: -86dBm
- 12Mbps: -89dBm
- 18Mbps: -87dBm
- 24Mbps: -84dBm
- 36Mbps: -80dBm
- 48Mbps: -76dBm
- 54Mbps: -73dBm

For 802.11b:

- 1Mbps: -94dBm
- 2Mbps: -90dBm
- 5.5Mbps: -88dBm
- 11Mbps: -85dBm

Technical Specifications (continued)

Humidity

- Operating: 10%~90% (non-condensing)
- Storing: 5%~95% (non-condensing)

Certifications

- FCC Part 15
- UL
- CSA

Dimensions

- L = 14.2cm
- W = 10.9cm
- H = 3.1cm

Weight

- 200g

Warranty

- 3 Year

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 Australia and New Zealand for the duration of the warranty period on this product.

Australian and New Zealand customers can contact D-Link technical support through our web site, or by phone.

Tech Support for customers within Australia:

D-Link Technical Support over the Telephone:

1300-766-868 (Australia)

8am to 8pm AEST Monday to Friday

9am to 1pm Saturday

D-Link Technical Support over the Internet:

<http://support.dlink.com.au>

email: support@dlink.com.au

Tech Support for customers within New Zealand:

D-Link Technical Support over the Telephone:

0800-900-900

8am to 8pm Monday to Friday

9am to 5pm Saturday

D-Link Technical Support over the Internet:

<http://support.dlink.co.nz>

email: support@dlink.co.nz

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

- D-Link or its authorized reseller or distributor and
- Products purchased and delivered within Australia and New Zealand

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

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

- Hardware (excluding power supplies and fans) Three (3) Years
- Power Supplies and Fans One (1) Year
- Spare parts and spare kits Ninety (90) days

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

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

Non-Applicability of Warranty: The Limited Warranty provided hereunder for hardware and software of D-Link's products will not be applied to and does not cover any refurbished product and any product purchased through the inventory clearance or liquidation sale or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product and in that case,

the product is being sold "As-Is" without any warranty whatsoever including, without limitation, the Limited Warranty as described herein, notwithstanding anything stated herein to the contrary.

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

- The customer must submit with the product as part of the claim a written description of the Hardware defect or Software nonconformance in sufficient detail to allow D-Link to confirm the same.
- The original product owner must obtain a Return Material Authorization ("RMA") number from the Authorized D-Link Service Office and, if requested provide written proof of purchase of the product (such as a copy of the dated purchase invoice for the product) before the warranty service is provided.
- After an RMA number is issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be prominently marked on the outside of the package. Do not include any manuals or accessories in the shipping package. D-Link will only replace the defective portion of the Product and will not ship back any accessories.
- The customer is responsible for all in-bound shipping charges to D-Link. No Cash on Delivery ("COD") is allowed. Products sent COD will either be rejected by D-Link or become the property of D-Link. Products shall be fully insured by the customer and shipped to **D-Link Australia Pty Ltd., 1 Giffnock Avenue, North Ryde, NSW 2112**. D-Link will not be held responsible for any packages that are lost in transit to D-Link. The repaired or replaced packages will be shipped to the customer via UPS Ground or any common carrier selected by D-Link, with shipping charges prepaid. Expedited shipping is available if shipping charges are prepaid by the customer and upon request.

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

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

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

Limitation of Liability: TO THE MAXIMUM EXTENT PERMITTED BY LAW, D-LINK IS NOT LIABLE UNDER ANY CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER LEGAL OR EQUITABLE THEORY FOR ANY LOSS OF USE OF THE PRODUCT, INCONVENIENCE OR DAMAGES OF ANY CHARACTER, WHETHER DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF GOODWILL, LOSS OF REVENUE OR PROFIT, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, FAILURE OF OTHER EQUIPMENT OR COMPUTER PROGRAMS TO WHICH D-LINK'S PRODUCT IS CONNECTED WITH, LOSS OF INFORMATION OR DATA CONTAINED IN, STORED ON, OR INTEGRATED WITH ANY PRODUCT

RETURNED TO D-LINK FOR WARRANTY SERVICE) RESULTING FROM THE USE OF THE PRODUCT, RELATING TO WARRANTY SERVICE, OR ARISING OUT OF ANY BREACH OF THIS LIMITED WARRANTY, EVEN IF D-LINK HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE SOLE REMEDY FOR A BREACH OF THE FOREGOING LIMITED WARRANTY IS REPAIR, REPLACEMENT OR REFUND OF THE DEFECTIVE OR NON-CONFORMING PRODUCT. THE MAXIMUM LIABILITY OF D-LINK UNDER THIS WARRANTY IS LIMITED TO THE PURCHASE PRICE OF THE PRODUCT COVERED BY THE WARRANTY. THE FOREGOING EXPRESS WRITTEN WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ANY OTHER WARRANTIES OR REMEDIES, EXPRESS, IMPLIED OR STATUTORY

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

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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.

FCC Statement: 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 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 outside of Australia or New Zealand, please contact corresponding local D-Link office.

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