D-Link *Air*Plus *Xtreme G*®
DWL-2100AP

802.11g Wireless
108Mbps Access Point

Manual
V2.10

D-Link

Building Networks for People

Contents

Package Contents

Contents of Package:

- **D-Link *Air*Plus Xtreme G® 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 maximum wireless signal rate 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, access point-to-multi-point bridging mode with AP function, access point-to-multi-point bridging mode without ap function, repeater, or wireless client mode.

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 *Air*Plus 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.

*Maximum wireless signal rate derived from IEEE Standard 802.11g specifications. Actual data throughput will vary. Network conditions and environmental factors lower actual data throughput rate.

Connections

Pressing the **Reset Button** restores the DWL-2100AP to its original factory default settings.

The **LAN Port** is Auto-MDI/MDIX. You can insert either a straight-through or a crossover Ethernet cable in this port in order to connect the DWL-2100AP to the local network.

Receptor for the **Power Adapter**.

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-multipoint bridge with AP function, AP-to-Multipoint Bridging without AP function , Repeater, or Wireless Client.
- **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.
- AP Manager Setup Wizard -The new Setup Wizard makes networks configuration quick and simple.
- **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.
- **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 *Air*Plus Xtreme G™ DWL-G650**
- Wireless Cardbus Adapters used with laptop computers
- **D-Link *Air*Plus 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** (**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. 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 *Air*Plus 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 *Air*Plus Xtreme G™ DWL-2100AP
- A wireless router - **D-Link *Air*Plus Xtreme G™ DI-624**
- A laptop computer with a wireless adapter -
  D-Link *Air*Plus Xtreme™ G DWL-G650
- A desktop computer with a wireless adapter -
  D-Link *Air*Plus 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 *Air*Plus Xtreme™ G** *wireless devices are pre-configured to connect together, right out of the box, with their default settings.*

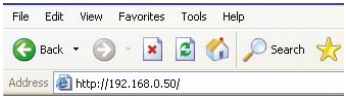
For a typical wireless setup at home (as shown above), please do the following:

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 *Air*Plus 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

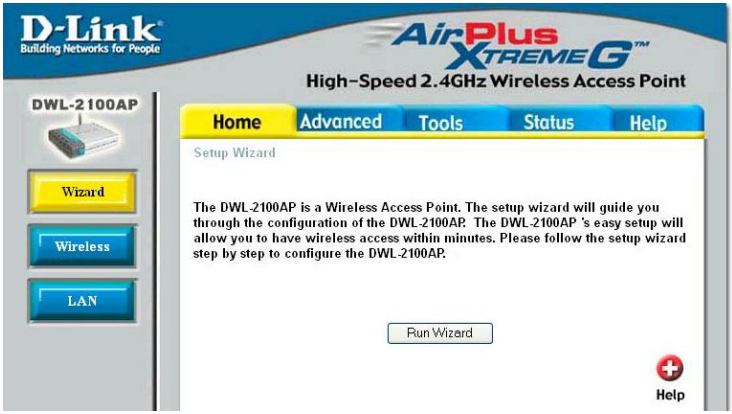


Note: if you have changed the default IP address assigned to the DWL-2100AP, make sure to enter the correct IP address.

- 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 >AP Mode

Wireless Band- IEEE 802.11g.

Mode Access Point is selected from the pull down menu..

SSID Service Set Identifier(SSID)is the name designated for a specific wireless local area network(WLAN).The SSID factpru default setting is default.The SSID can be easily changed to connect to an existing 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.

Auto Channel Scan Select Enable or Disable.(Enable this feature to auto-select the channel for best wireless performance.)

Using the Configuration Menu (continued)

Home > Wireless>AP Mode(continued)

Authentication: **Open System**
Shared Key
Open System/Shared Key
WPA-EAP
WPA-PSK

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 allow either form of data encryption.

Select **WPA-EAP** to secure your network with the inclusion of a RADIUS server.

Select **WPA-PSK** to secure your network using a password and dynamic key changes. (No RADIUS server required).

Home > Wireless>AP Mode>WEP Encryption

Encryption: Select **Disabled** or **Enabled.** (**Disabled** is selected here).

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

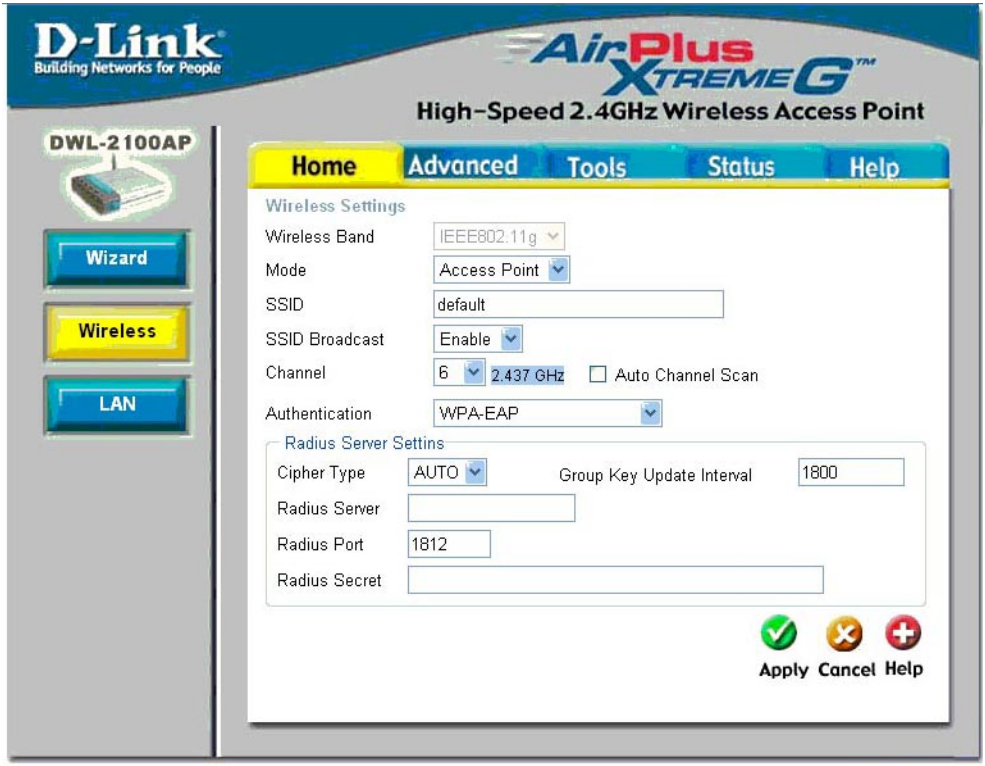
Key Size: Select **64-, 128-, 152-**bits.

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

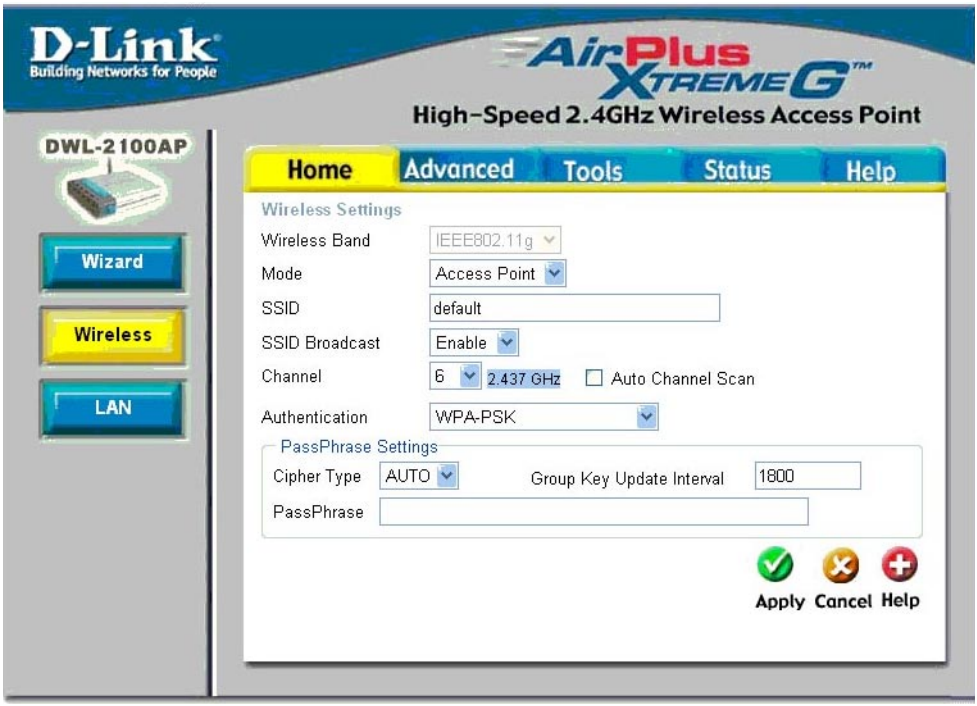
First through Fourth keys: Input up to **four keys** for encryption. You will select one of these keys in the valid key field.

***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*



Cipher Type:	When you select **WPA-EAP**, you must select **AES**, **AUTO** or **TKIP** from the pull down menu.
Group Key Update Interval:	Select the interval during which the group key will be valid. 1800 is the recommended value. A lower interval may reduce data transfer rate.
Radius Server:	Enter the IP address of the Radius server.
Radius Port:	Enter the Radius port.
Radius Secret:	Enter the the Radius secret.



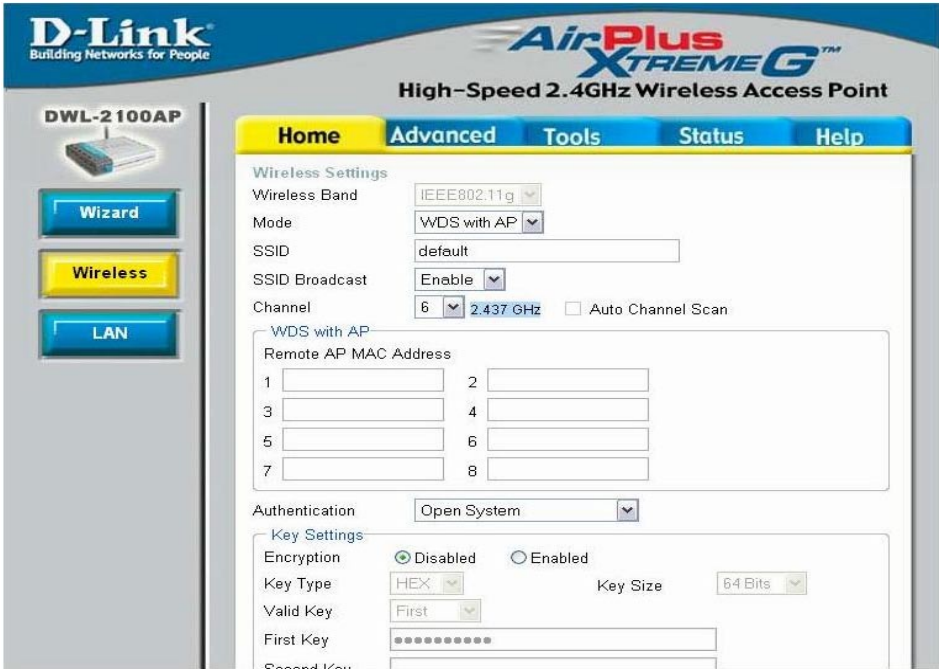
Cipher Type: When you select **WPA-PSK**, please select **AES**, **AUTO** or **TKIP** from the pull down menu.

Group Key Update Interval: Select the interval during which the group key wll be valid. The default value of 1800 is recommended.

Pass-Phrase: When you select **WPA-PSK**, please enter a **PassPhrase** in the corresponding field.

Using the Configuration Menu (continued)

Home > Wireless >WDS with AP Mode



*** WDS (Wireless Distribution System) with AP mode: can set APs to work as PtP/PtMP Bridge and Access Point simultaneously with the same encryption.**

Wireless Band- IEEE 802.11g.

Mode WDS with AP mode is selected from the pull-down menu.

SSID Service Set Identifier(SSID)is the name designated for a specific wireless local area network(WLAN).The SSID factpru default setting is default.The SSID can be easily changed to connect to an existing 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.

Auto Channel Scan Select Enable or Disable.(Enable this feature to auto-select the channel for best wireless performance.)

Using the Configuration Menu (continued)

Home > Wireless>WDS with AP Mode(continued)

Remote AP MAC Address- Enter the MAC address of the APs in your network that will serve as bridges to wirelessly connect multiple networks.

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

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

Select **Open System/Shared Key** to allow either form of data encryption.

Open System- When Open System is selected , the following field will be configurable. other methods of authentication will have different configuration fields.

Encryption- Select Disable or Enable(Disable is selected here .

Key Type- Select HEX or ACII.

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

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

Using the Configuration Menu (continued)

Home > Wireless >WDS Mode

*** WDS (Wireless Distribution System) mode: can set APs to work as PtP/PtMP Bridge.**

Wireless Band- IEEE 802.11g.

Mode WDS is selected from the pull-down menu.

SSID Service Set Identifier(SSID)is the name designated for a specific wireless local area network(WLAN).The SSID factpru default setting is default.The SSID can be easily changed to connect to an existing 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.

Auto Channel Scan Select Enable or Disable.(Enable this feature to auto-select the channel for best wireless performance.)

Using the Configuration Menu (continued)

Home > Wireless>WDS Mode(continued)

Remote AP Mac Address- Enter the MAC address of the APs in your network that will serve as bridges to wirelessly connect multiple networks.

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 allow either form of data encryption.

Open System When Open System is selected , the following field will be configurable. other methods of authentication will have different configuration fields.

Encryption- Select Disable or Enable(Disable is selected here .

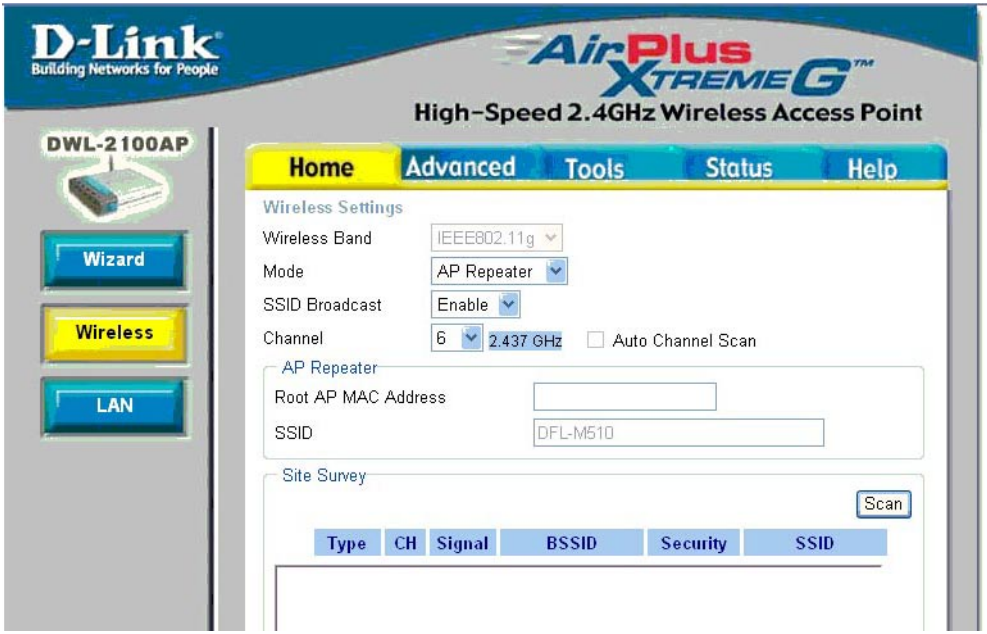
Key Type- Select HEX or ACII.

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

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

Using the Configuration Menu (continued)

Home > Wireless > AP Repeater Mode



Wireless Band- IEEE 802.11g.

Mode AP Repeater is selected from the pull-down menu.

SSID Service Set Identifier(SSID)is the name designated for a specific wireless local area network(WLAN).The SSID factpru default setting is default.The SSID can be easily changed to connect to an existing 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.

Auto Channel Scan- Select Enable or Disable.(Enable this feature to auto-select the channel for best wireless performance.)

Using the Configuration Menu (continued)

Home > Wireless>AP Repeater Mode(continued)

Remote AP Mac Address or Site Survey- Enter the MAC address of the root AP or site survey to choose the root AP in your network that will allow you to repeat the wireless signal of the root AP.

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 allow either form of data encryption.

Select **WPA-PSK** to communicate using WPA encryption

Open System- When Open System is selected , the following field will be configurable. other methods of authentication will have different configuration fields.

Encryption- Select Disable or Enable(Disable is selected here .

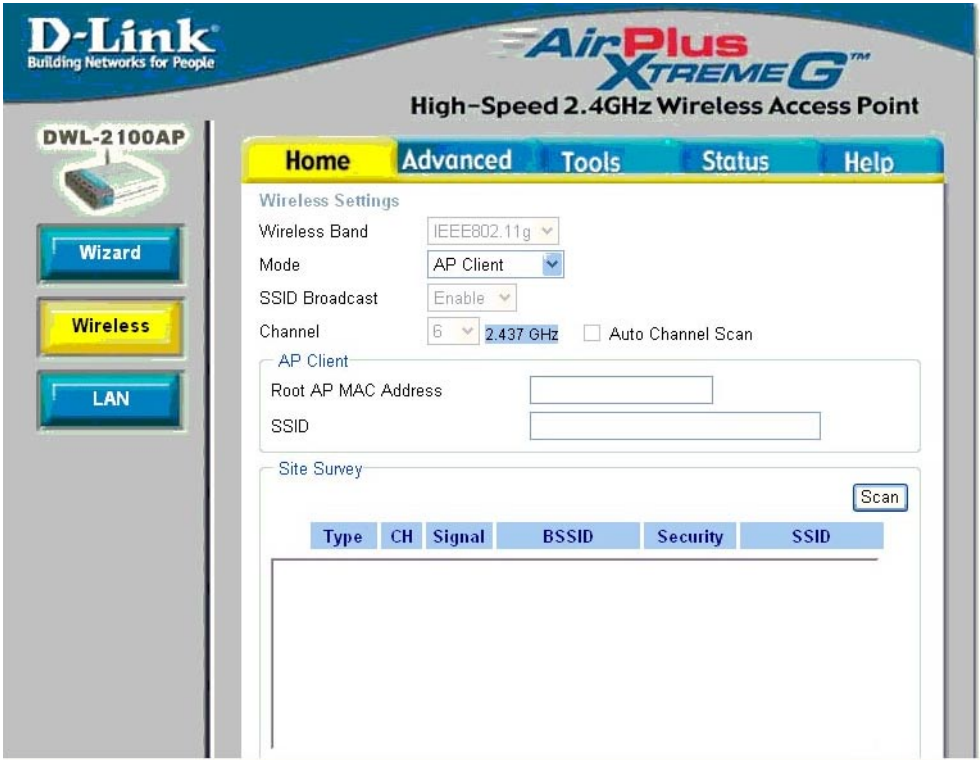
Key Type- Select HEX or ACII.

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

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

Using the Configuration Menu (continued)

Home > Wireless > AP Client Mode



Wireless Band- IEEE 802.11g.

Mode- AP Client is selected from the pull-down menu.

SSID- Service Set Identifier(SSID)is the name designated for a specific wireless local area network(WLAN).The SSID factpru default setting is default.The SSID can be easily changed to connect to an existing 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.

Auto Channel Scan- Select Enable or Disable.(Enable this feature to auto-select the channel for best wireless performance.)

Using the Configuration Menu (continued)

Home > Wireless>AP Client Mode(continued)

Remote AP Mac Address or Site Survey- will transform any IEEE 802.3 device(e.g., a computer, printer, etc.). into an 802.11b wireless client when it communicates with another DWL-2100AP that is acting as the root AP. Enter the MAC address of the root AP or site survey to choose the root AP in your network.

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 allow either form of data encryption.
Select **WPA-PSK** to communicate using WPA encryption

Open System- When Open System is selected , the following field will be configurable. other methods of authentication will have different configuration fields.

Encryption- Select Disable or Enable(Disable is selected here .

Key Type- Select HEX or ACII.

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

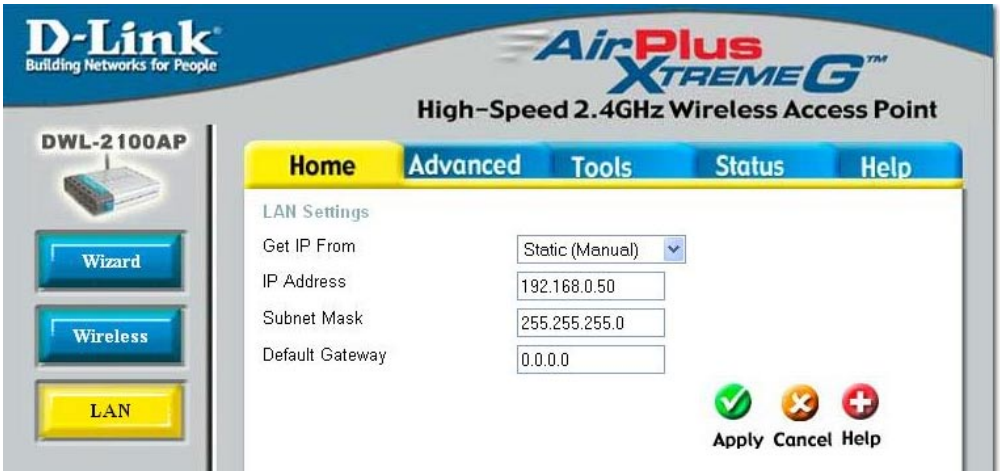
Valid Key- Select the 1st through the 4th key to be the active key.

WPA mode- **PSK** - The Pre-Shared Key mode of WPA does not require the inclusion of a RADIUS server in your networks.

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

Using the Configuration Menu (continued)

Home > LAN



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**

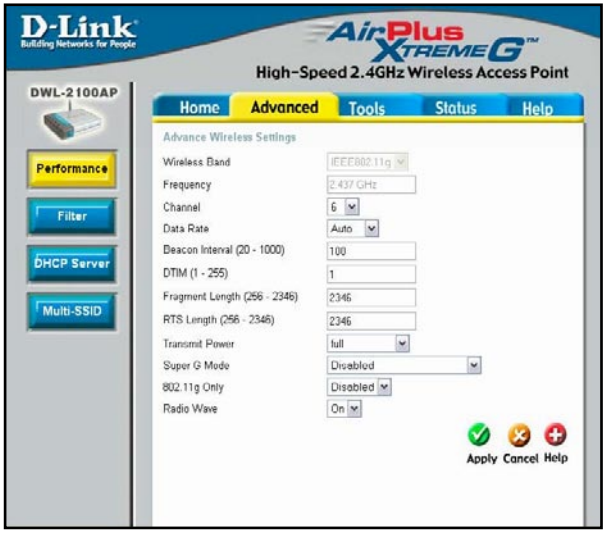
Subnet Mask- The subnet mask of the LAN interface.
The default subnet mask is **255.255.255.0**

Default Gateway- This field is optional. Enter in the IP address of the gateway on your network.

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

Using the Configuration Menu (continued)

Advanced > Performance



Wireless Band-

IEEE 802.11g

Frequency-

The frequency remains at **2.437 GHz** for channel 6. The frequency will change to reflect the change in the channel setting.

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.

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 wirelss 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, or Super G without 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.

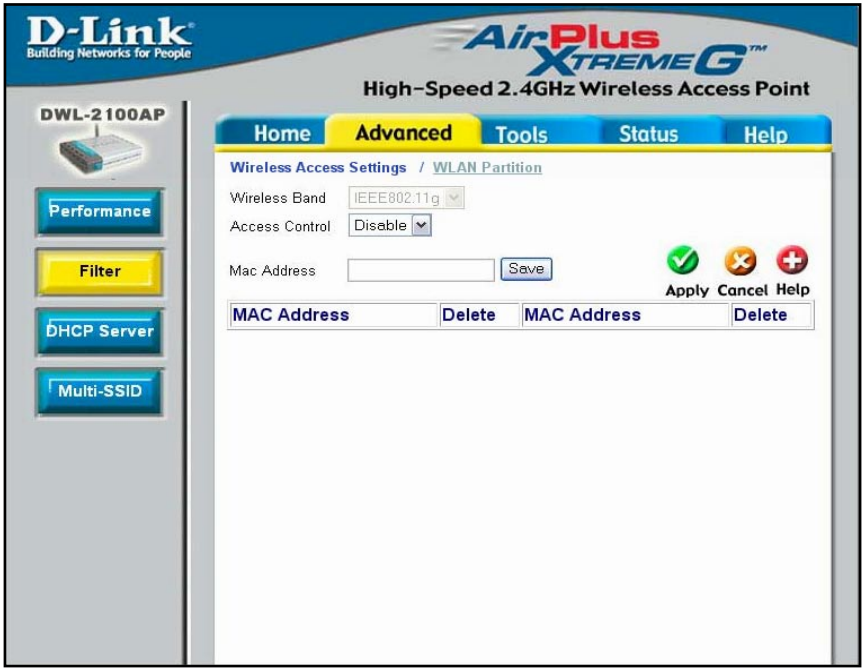
Super G without Turbo- Capable of Packet Bursting, FastFrames, Compression, and no Turbo mode.

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

Radio Wave- Select ON or OFF.

Using the Configuration Menu (continued)

Advanced > Filters > Wireless Access Settings



The following fields are available for configuration in this window:

Wireless Band- IEEE 802.11g.

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.

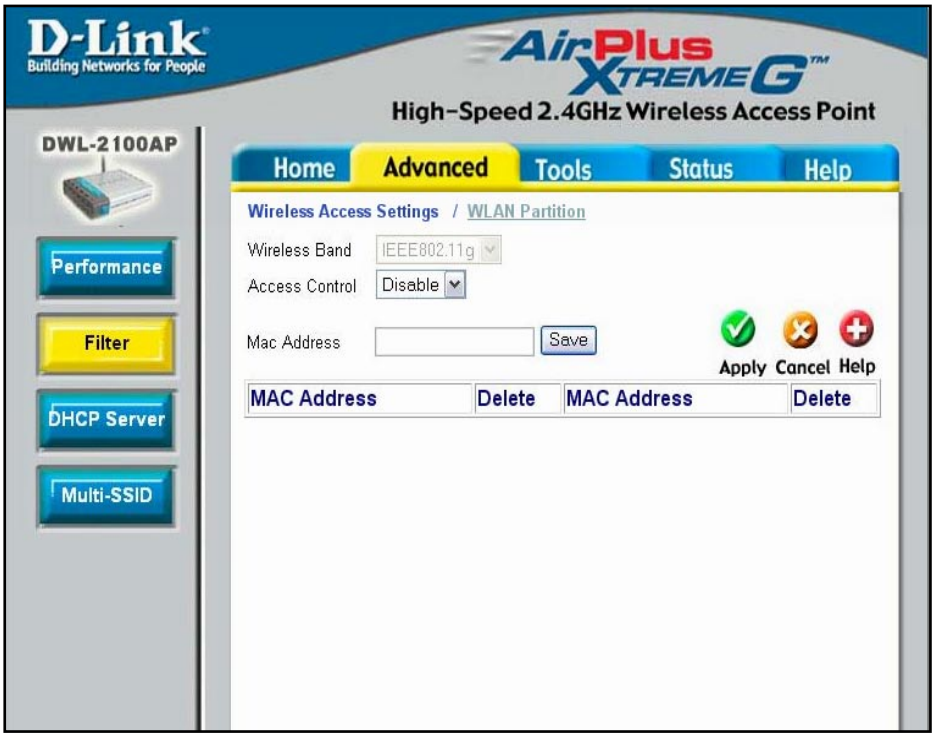
MAC Address- Enter the MAC addresses of the devices that you wish to control here. Click **Save** to add to the Access Control List.

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. Click on the Delete icon next to the MAC address to delete it from the list.

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 > DHCP Server > Dynamic Pool Settings

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.

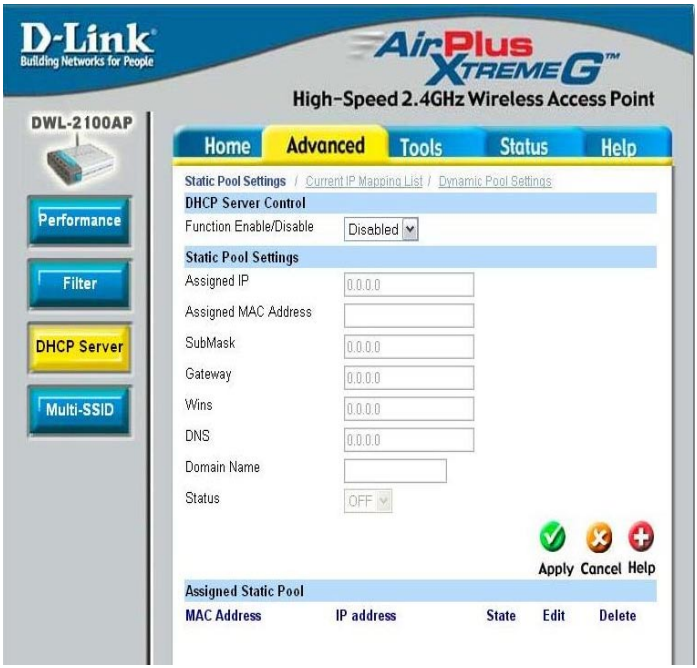
Lease Time (60-31536000 sec)- The **Lease Time** is the period of time before the DHCP server will assign a new IP address.

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

Apply- Click Apply if you have made any changes.

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 gateway 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.

*Please note that IPs assigned in the Static Pool Settings must not be in the same range as those in the Dynamic Pool Settings.

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.

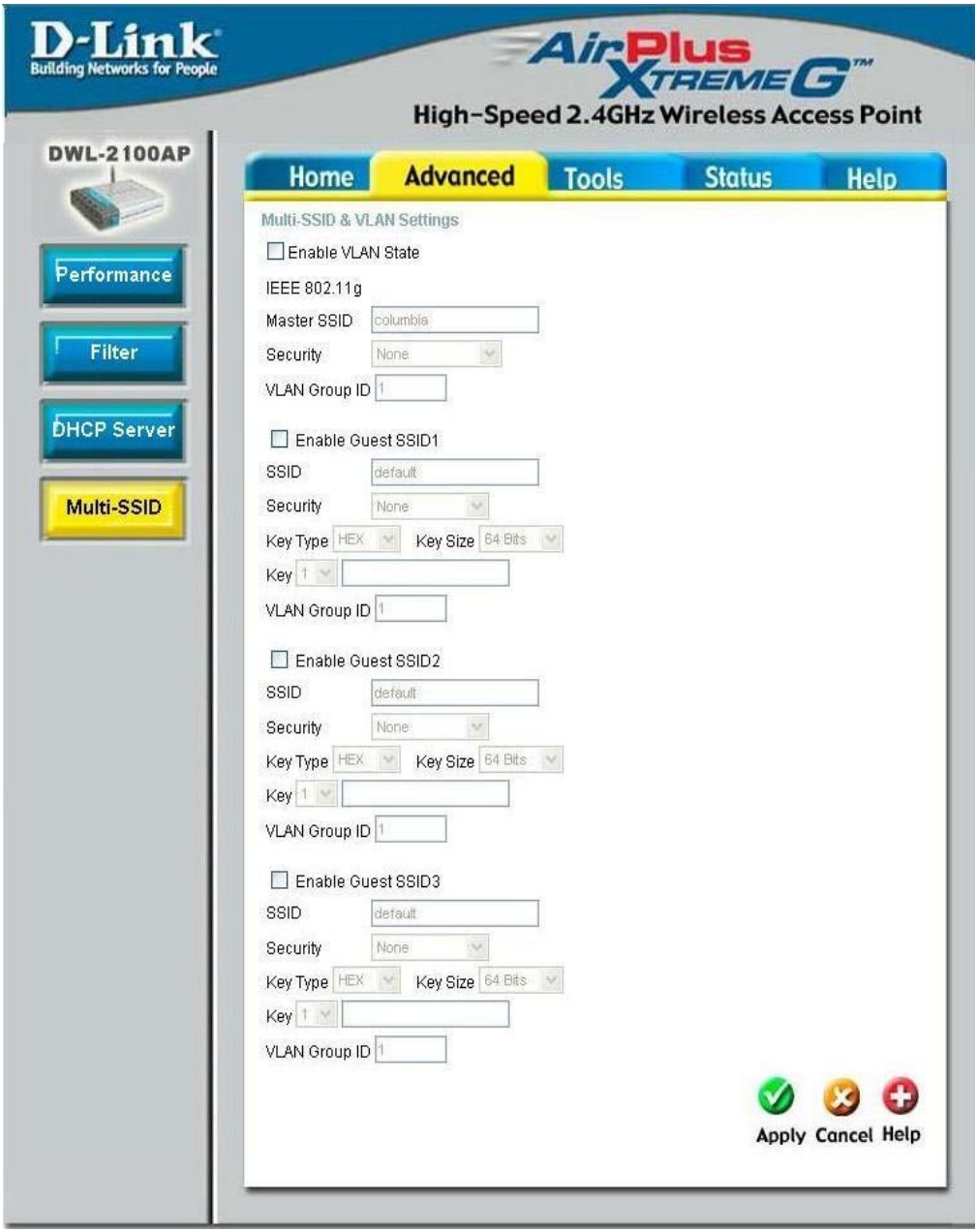
Assigned IP address- The current corresponding DHCP-assigned dynamic IP address of the device.

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.



If you want to configure the Guest and Internal networks on Virtual LAN (VLANs), the switch and DHCP server you are using must suppport VLANs. As a prerequisite step, configure a port on the switch for handling VLAN tagged packets as described in the IEEE802.1Q standard.

(Please see the following page for more information.)

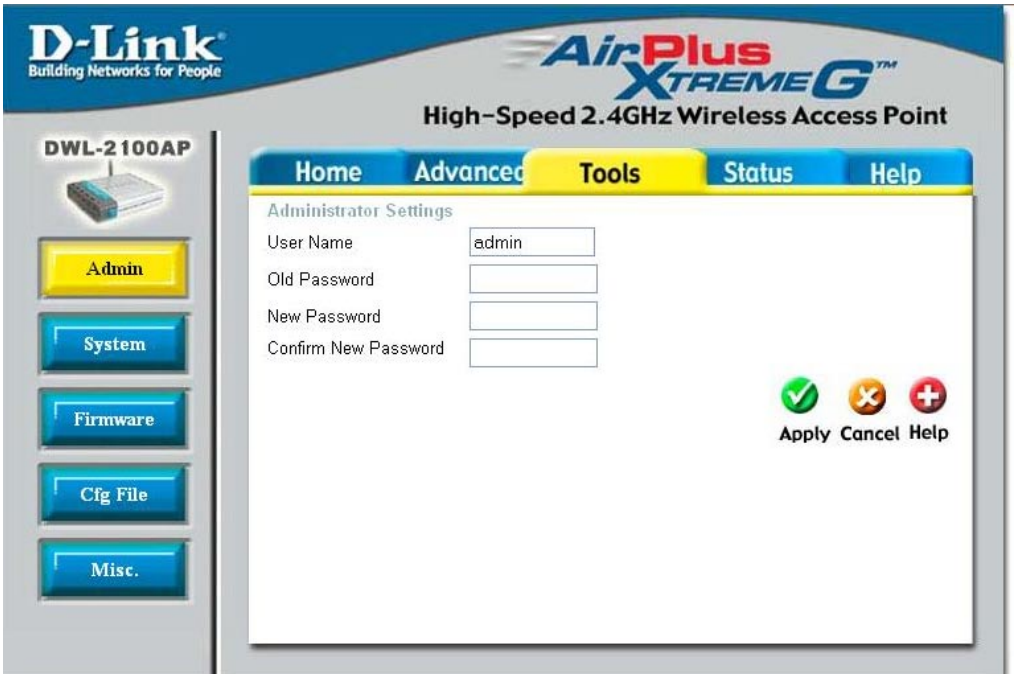
Using the Configuration Menu (continued)

Advanced > Multi-SSID(continued)

Mater SSID	The Master SSID and Security cannot be changed here,Those values follow the setting in Home>Wireless.
Guest SSID	When you Enable Guest SSID you can name each guest SSID.The Security option for these three Guest SSIDs are open System or shared key.
Key Type	Select HEX or ASCII
Key Size	Select 64-,128-,152-bits
Key	Select the 1st through the 4th key to b the active key. Enter key here.
VLAN Group ID	If you configure enable Guest access and configure internal and Guest networks on VLANs, this field will be enable. Provide a number between 1 and 4094 for internal VLAN. This will cuase the access point to send DHCP request woth the VLAN tags. The switch and the DHCP server must support VLAN IEEE802.1Q frames.The access point must be able to reach the DHCP Server. Check with the Administator greading the VLAN and DHCP configurations

Using the Configuration Menu (continued)

Tools > Admin



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)

Tools > System

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 > Firmware

Update File-

After you have downloaded the most recent version of the firmware from www.support.dlink.com you can **browse** your hard drive to locate the downloaded file and click **OK** 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.

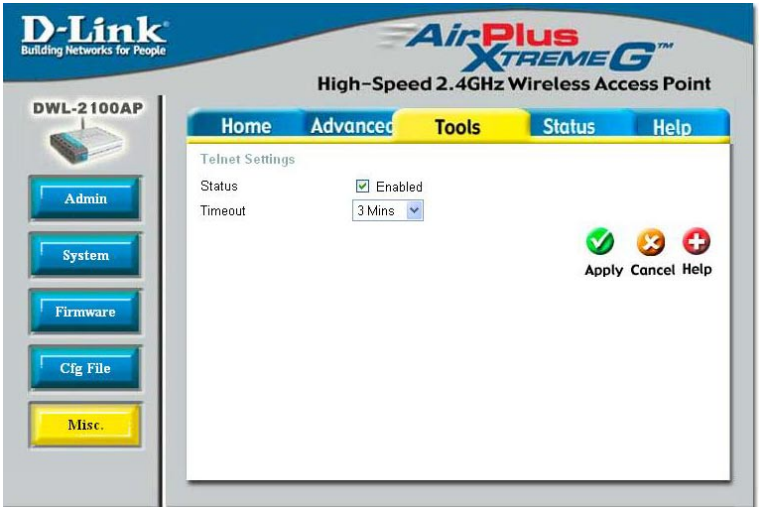
Telnet Settings

Status-

Click to Enable a Telnet session.

Timeout-

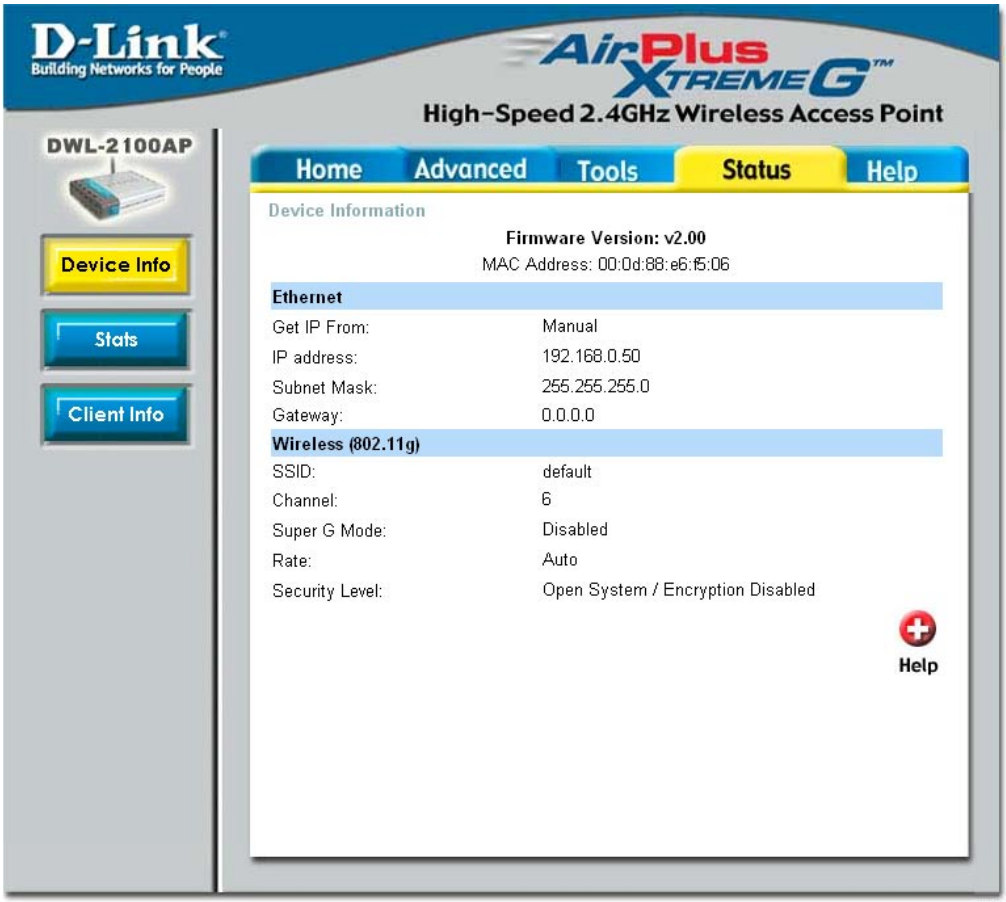
Select a time period after which a session timeout will occur.



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

Using the Configuration Menu (continued)

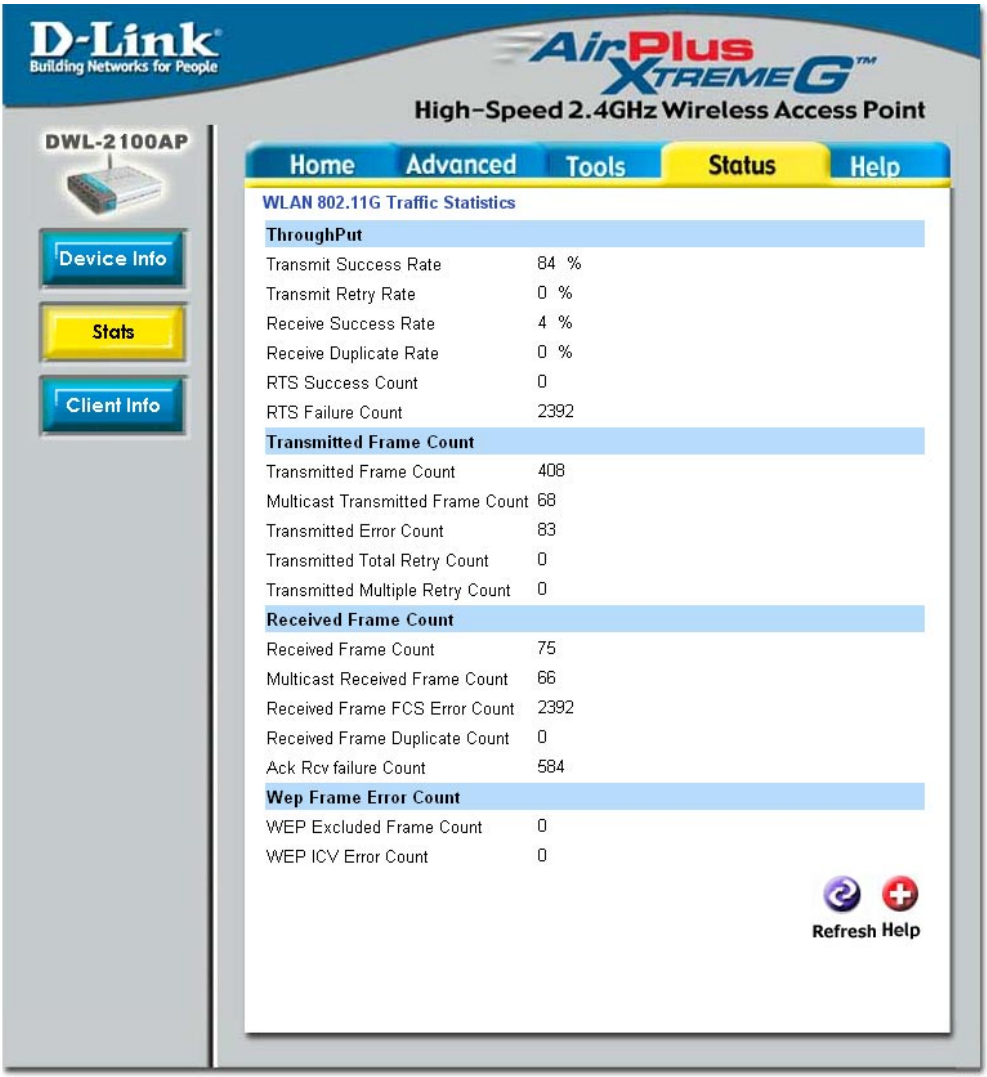
Status > Device Info



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

Using the Configuration Menu (continued)

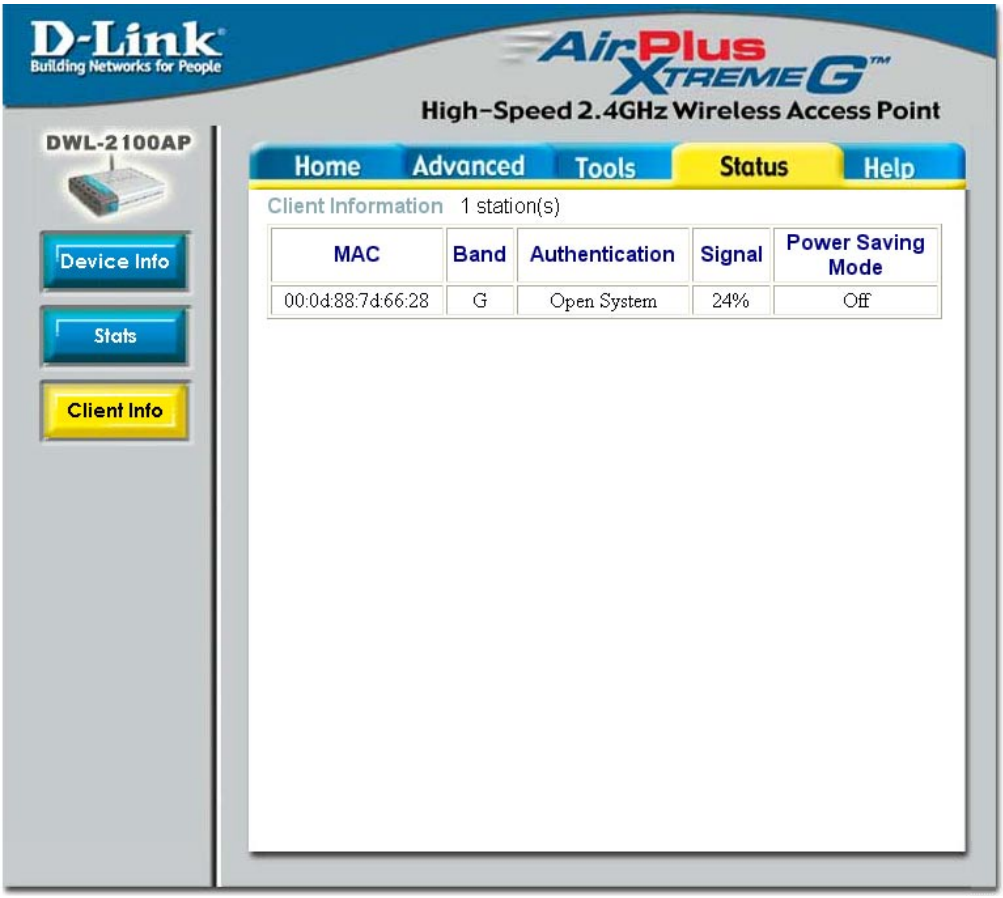
Status > Stats



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

Using the Configuration Menu (continued)

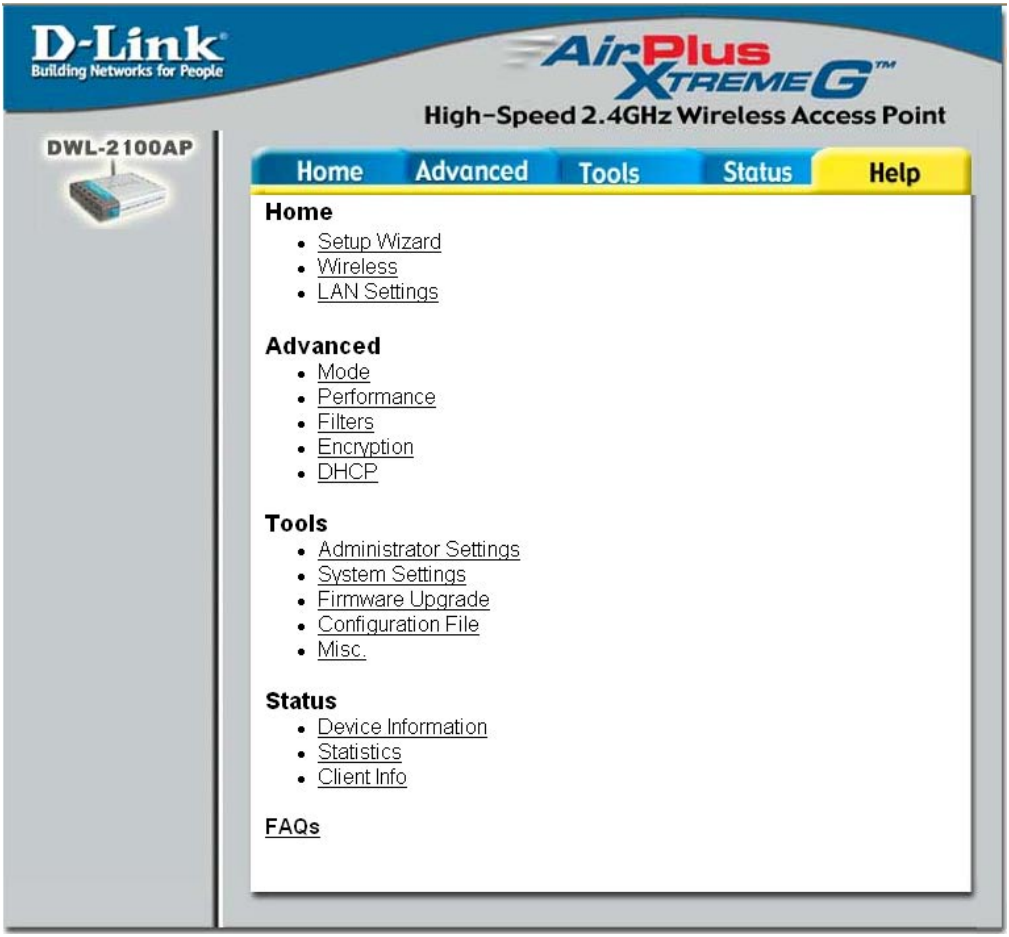
Status > Client Info



Client Information Select this option to obtine infomation on wireless clients.(A client is a device on the network that is communicating with the DWL-2100AP)

Using the Configuration Menu (continued)

Help



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

Using the AP Manager

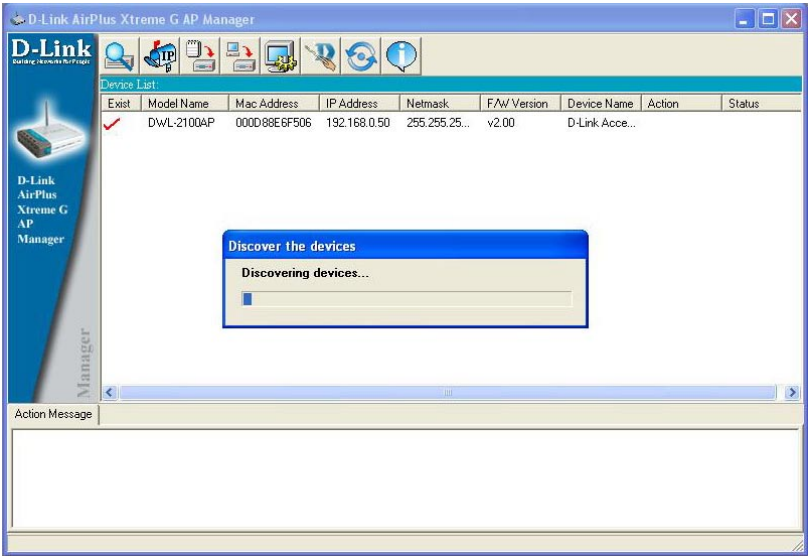
The **AP Manager** is a convenient tool to manage the configuration of your network from a central computer. With **AP Manager** there is no need to configure devices individually.

To launch the **AP Manager**:

- Go to the **Start Menu**
- Select **Programs**
- Select **D-Link *Air*Plus Xtreme G® AP Manager**
- Select **DWL-2100AP**

Discovering Devices

Click on this button to **discover the devices** available on the network.



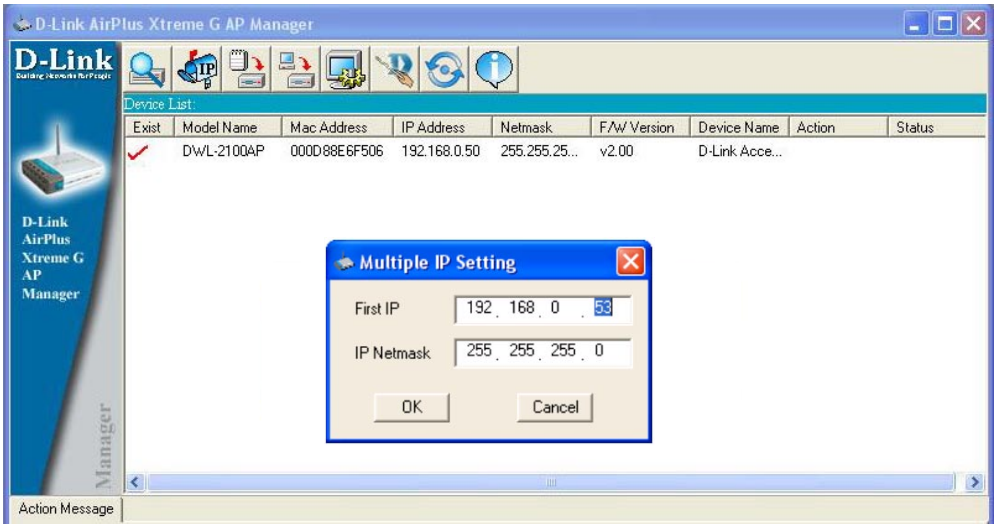
Using the AP Manager (continued)

Selecting Devices

The AP Manager allows you to configure multiple devices all at once. To select a single device, simply click on the device you want to select. To select multiple devices, hold down the **Ctrl** key while clicking on each additional device. To select an entire list, hold the **Shift** key, click on the first AP on the list and then click on the last AP on the list.

IP Configuration

You can assign an IP address to an AP or assign IP addresses to multiple AP's by clicking on this button after selecting the device(s).



Select the AP that you want to assign an IP address to and click the IP button. Enter the IP address and IP netmask for the selected device and click OK.

You can configure multiple AP's with IP addresses all at once. Click on the IP button after you've selected all of the AP's you want to assign an IP address. Enter the IP address you want to assign the first unit and the AP manager will automatically assign sequential IP addresses.

Using the AP Manager (continued)

Device Configuration

Click on this button to access the configuration properties of the selected device(s).

The device configuration window allows you to configure settings but does not actually apply the settings to the device unless you click the **Apply** button. You can also save and load configuration files from this window. When you load a configuration file, you must click **Apply** if you want the settings to be applied to the selected device(s).

Check All — The Check All button will select all configurable options. Any setting that has a checkmark next to it is applied to the device or saved to the configuration file.

Clear Checks — The Clear Checks button deselects all configurable options. This feature is useful if you only want to change a few settings. Deselect all items and only check the items that you want to modify.

Refresh — Refresh will revert to the actual device settings of the selected device(s).

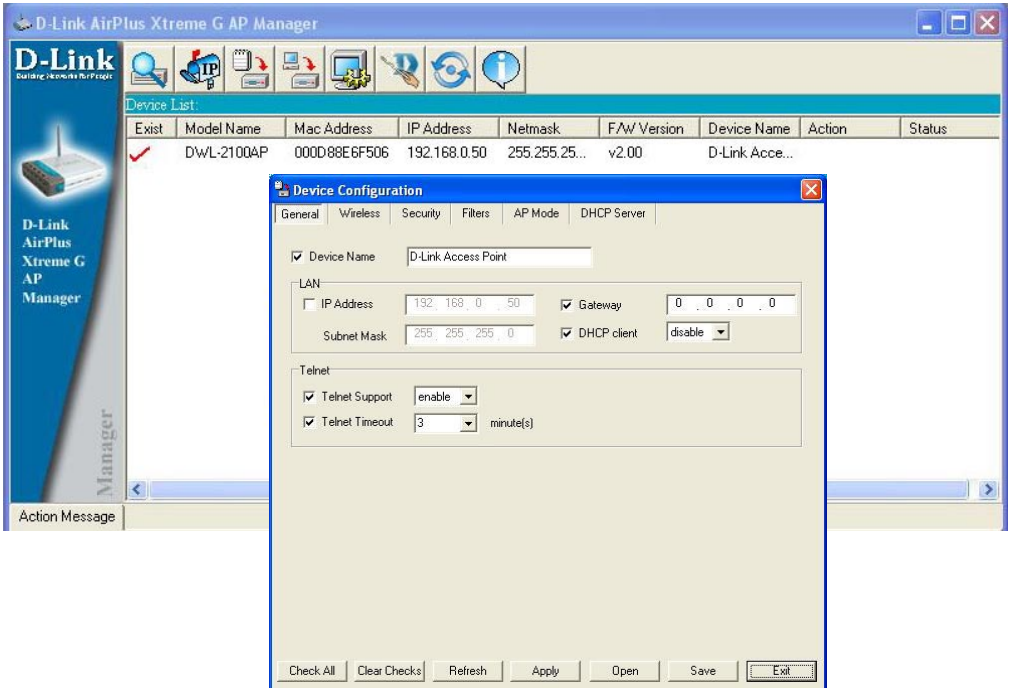
Apply — To save settings to the device, you must click the Apply button. Only settings that have a checkmark next to them will be applied.

Open — The open button is used to load a previously saved configuration file. After opening a configuration file, you must click the Apply button to save the settings to the selected device(s).

Save — The save button allows you to save a configuration file of the selected device settings. Only settings that have a checkmark next to them are saved. You cannot save a configuration file if you selected more than one device in the device list.

Exit — The Exit button will close the device configuration window. Any settings that haven't been applied will be lost.

Using the AP Manager (continued)



Device Configuration>General

When selecting multiple devices for configuration, some options are unavailable for configuration as noted(*) below:

- **Device Name(*)**: This allows you to change the device name for the selected access point. You must place a checkmark in the Device Name box to change the name. This option can only be configured when one access point is selected for configuration.
- **IP address and Subnet Mask(*)**: If you've selected one device for configuration and you want to change the IP address of the device, check the IP Address box. You can then enter an IP address and Subnet Mask for the selected access point. This option is only configurable when one access point is selected for configuration. To configure multiple devices with an IP address at one time, please reference the previous page.
- **Gateway**: Enter the IP address of your gateway, typically your router address.
- **DHCP client**: There is a pulldown menu to select enabled or disabled. When enabled, the selected device(s) will function as a DHCP client(s). This allows them to receive IP configuration information from a DHCP server. When disabled, the access point(s) must have a static IP address assigned to them.

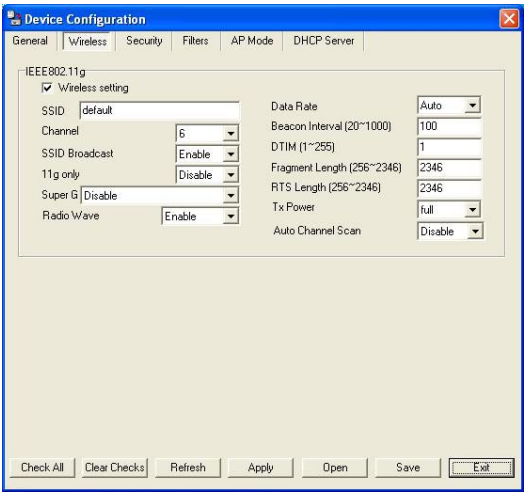
Using the AP Manager (continued)

Device Configuration>General (continued)

- **Telnet Support**: This pulldown selection enables or disables the ability to Telnet into the selected device(s).
- **Telnet Timeout**: This pulldown selection defines the timeout period during a Telnet session with the selected device(s).

Using the AP Manager (continued)

Device Configuration>Wireless



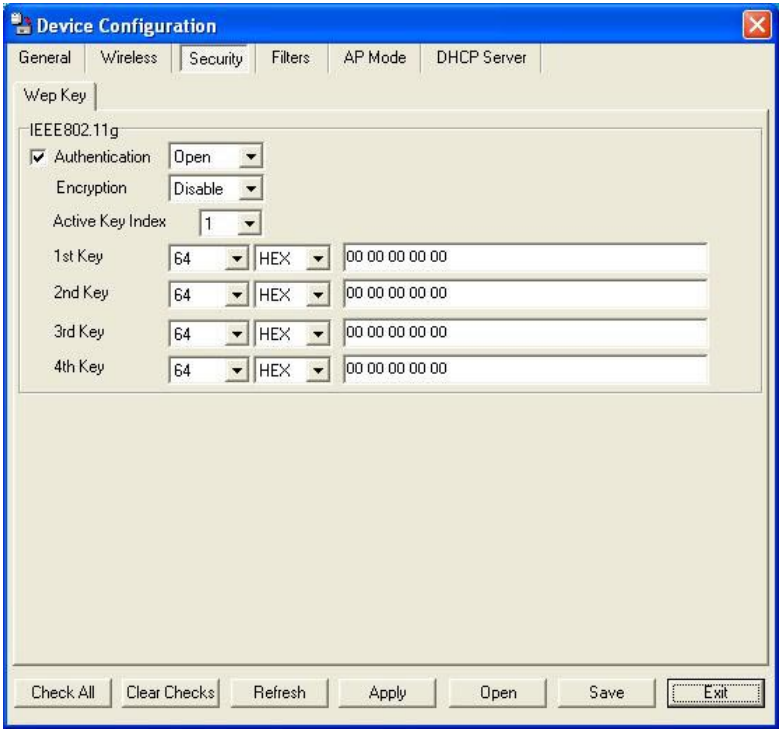
- **SSID**: The Service Set (network) Identifier of your wireless network.
- **Channel**: Allows you to select a channel. 6 is the default setting.
- **SSID Broadcast**: Allows you to enable or disable the broadcasting of the SSID to network clients.
- **Super G**: Super G is a group of performance enhancement features that increase end user application throughput in an 802.11g network. Super G is backwards compatible with standard 802.11g devices. For ideal performance, all wireless devices on the network should be Super G capable. The modes are listed below:

Super G Mode	Function
Disabled	Standard 802.11g support. No enhanced capabilities.
Super G without Turbo	Capable of Packet Bursting, FastFrames, Compression. No Turbo mode.
Super G with Dynamic Turbo	Capable of Packet Bursting, FastFrames, Compression, and Dynamic Turbo mode. 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 and Dynamic Turbo enabled.
Super G with Static Turbo	Capable of Packet Bursting, FastFrames, Compression, and Static Turbo mode. This setting is not backwards compatible with non-Turbo (legacy) devices. Static turbo mode is always on and is only enabled when all devices on the wireless network are configured with Super G and Static Turbo enabled.

- **Radio Wave**: Enable or disable the wireless functionality of the selected device(s).
- **Data Rate**: A pulldown menu to select the maximum wireless signal rate for the selected devices(s).
- **Beacon Interval (20~1000)**: Beacons are packets sent by an access point to synchronize a network. Specify the beacon value for the selected device(s) here. The default value of 100 is recommended.
- **DTIM (1~255)**: DTIM (Delivery Traffic Indication Message) is a countdown informing clients of the next listening window for broadcast and multicast messages.
- **Fragment Length (256~2346)**: This sets the fragmentation threshold (specified in bytes). Packets exceeding the value set here will be fragmented. The default is 2346.
- **RTS Length (256~2346)**: The RTS value should not be changed unless you encounter inconsistent data flow. The default value is 2346.
- **Tx Power**: A pulldown menu for selecting the transmit power of the selected device(s).
- **Auto Channel Scan**: Enable to scan for the least populated channel.

Using the AP Manager (continued)

Device Configuration>Security



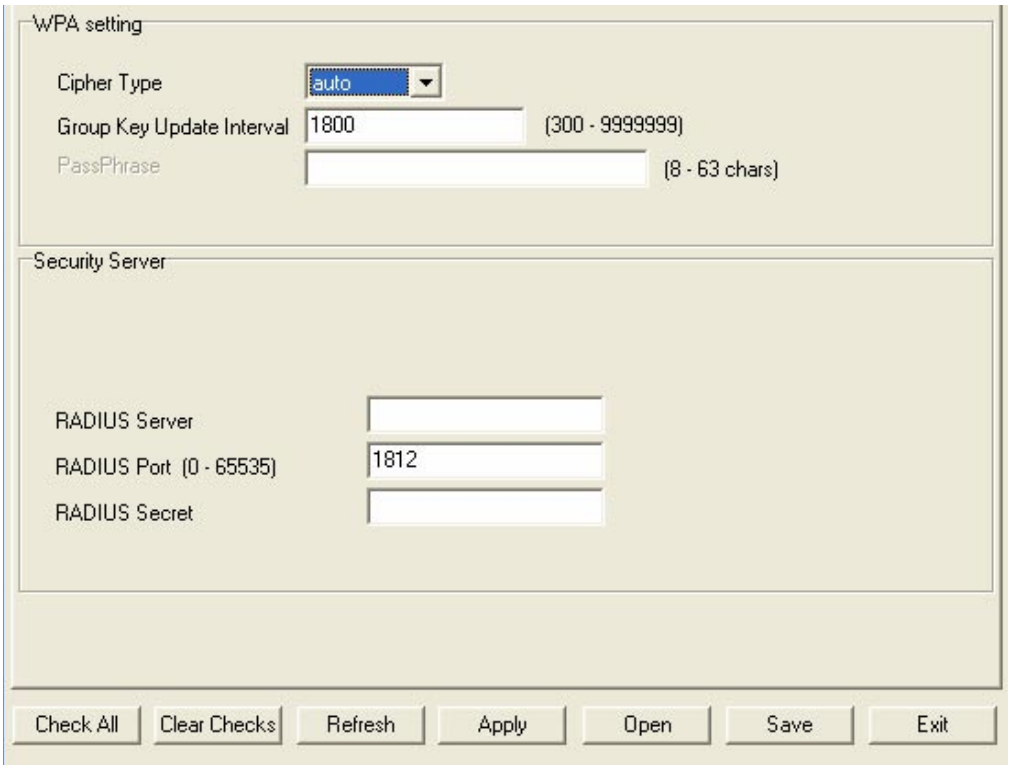
The Security tab contains the WEP configuration settings on the intial page. If you select WPA as the authentication type, an additional tab will appear with the WPA configuration options based on your selection.

- **Authentication Type**: Select from the pulldown menu the type of authentication to be used on the selected device(s).

Authentication Type	Function
Open	The key is communicated across the network.
Shared	Limited to communication with devices that share the same WEP settings.
Both	The key is communicated and identical WEP settings are required.
WPA-EAP	Used to authenticate clients via a server.
WPA-PSK	Does not utilize a server for authentication but uses a pass phrase that is configured on the clients and access point(s).

- **Encryption**: Enable or disable encryption on the selected device(s).
- **Active Key Index**: Select which defined key is active on the selected device(s).
- **Key Values**: Select the key size (64-bit, 128-bit, or 152-bit) and key type (HEX or ASCII) and then enter a string to use as the key. The key length is automatically adjusted based on the settings you choose.

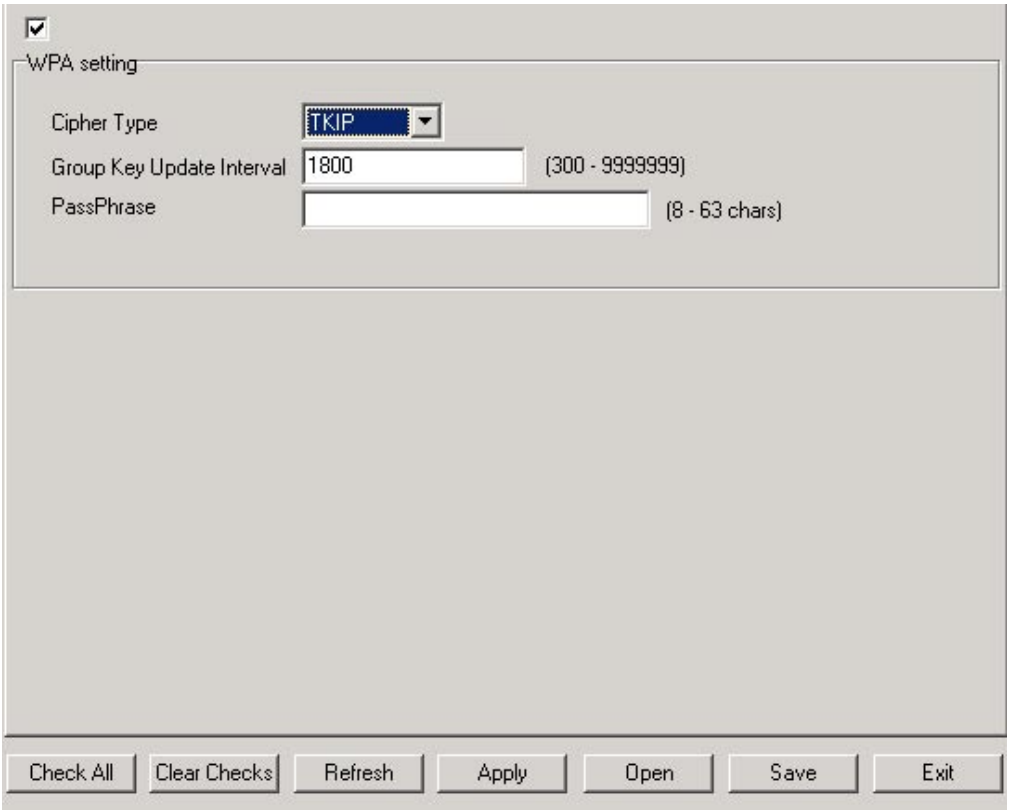
Using the AP Manager (continued)



Device Configuration>Security>WPA-EAP

- **Cipher Type**: Select auto, TKIP, or AES from the pulldown menu.
- **Group Key Update Interval**: Select the interval during which the group key will be vaild. 1800 is the recommended setting. A lower interval may reduce transfer rates.
- **RADIUS Server**: Enter the IP address of the RADIUS server.
- **RADIUS Port**: Enter the port used on the RADIUS server.
- **RADIUS Secret**: Enter the RADIUS secret.

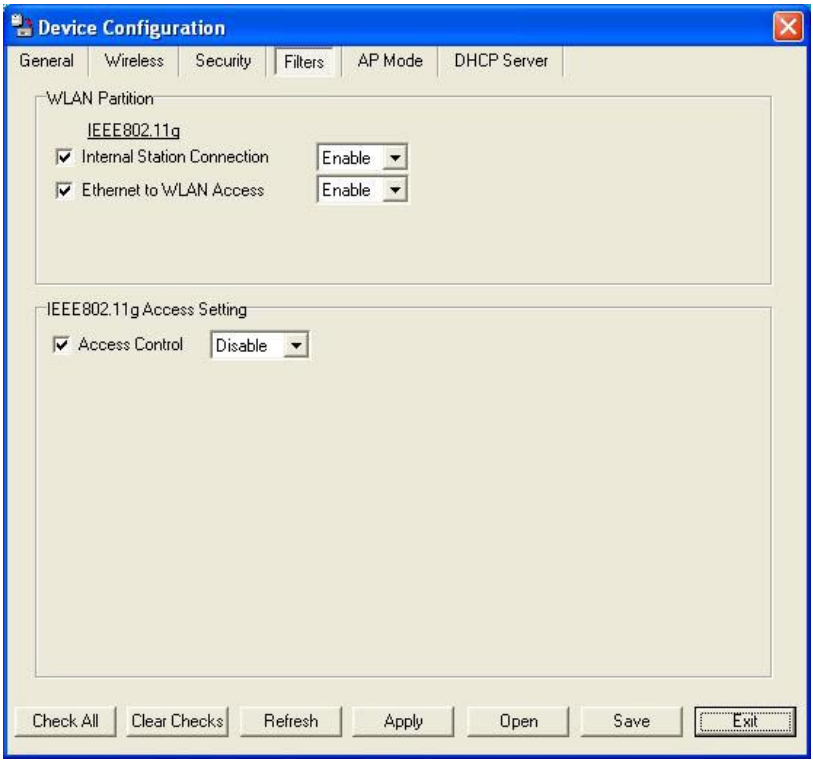
Using the AP Manager (continued)



Device Configuration>Security>WPA-PSK

- **Cipher Type**: Select auto, TKIP, or AES from the pulldown menu.
- **Group Key Update Interval**: Select the interval during which the group key will be vaild. 1800 is the recommended setting. A lower interval may reduce transfer rates.
- **PassPhrase**: Enter a PassPhrase between 8-63 characters in length .

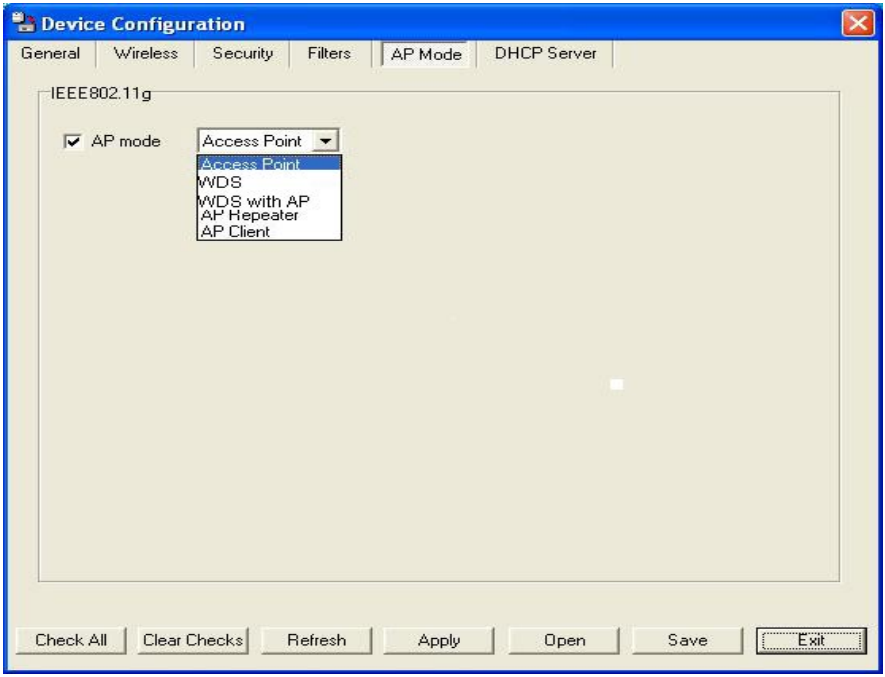
Using the AP Manager (continued)



Device Configuration>Filters

- **Internal Station Connection**: Enabling this allows wireless clients to communicate with each other. When this option is disabled, wireless stations are not allowed to exchange data through the access point.
- **Ethernet to WLAN Access**: Enabling this option allows Ethernet devices to communicate with wireless clients. When this option is disabled, all data from Ethernet to wireless clients is blocked. Wireless devices can still send data to the Ethernet devices when this is disabled.
- **Access Control**: When disabled access control is not filtered based on the MAC address. If Accept or Reject is selected, then a box appears for entering MAC addresses. When **Accept** is selected, only devices with a MAC address in the list are granted access. When **Reject** is selected, devices in the list of MAC addresses are not granted access.

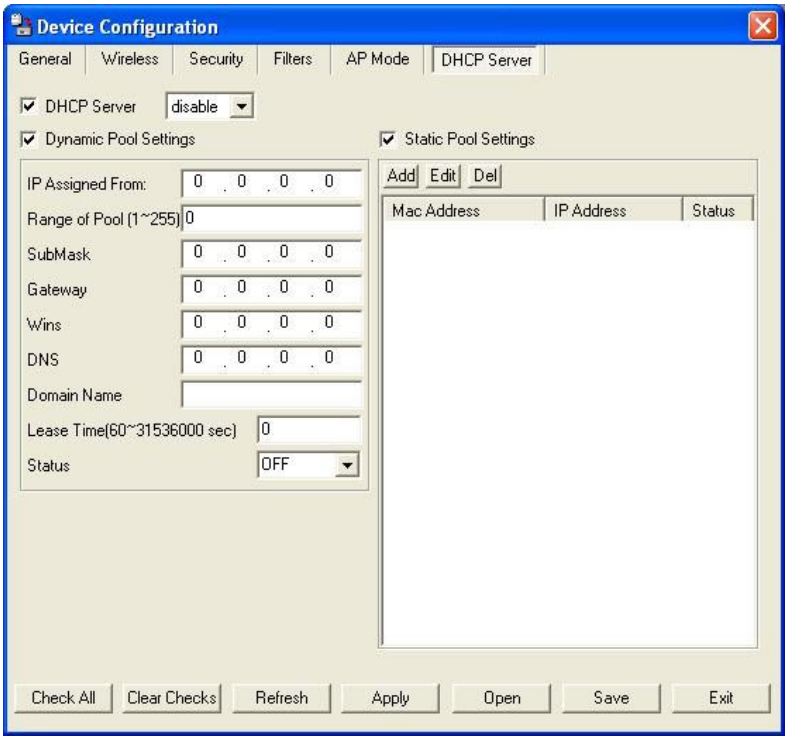
Using the AP Manager (continued)



Device Configuration>AP Mode

- **Access Point**: The default setting used to create a wireless LAN.
- **WDS with AP**: Allows you to connect multiple wireless LANs together,while still functioning as an AP.If enable, you must enter the MAC address of the other DWL-2100APs.
- **WDS**: Allows you to connect mulitple wireless LANs together. All other LANs must be using DWL-2100APs.When enable , you must enterthe MAC address of the other DWL-2100APs.
- **AP Repeater**: Allows you to repeat the wireless signal of the root access point. When enabled you must enter the MAC address of the root access point.
- **AP Client**: Allows any device with an Ethernet connection to connect to the wireless network via another DWL-2100AP, such as a printer, gaming console (Xbox, PS2), or a computer. You will need to enter the SSID of the DWL-2100AP that is functioning as an AP.

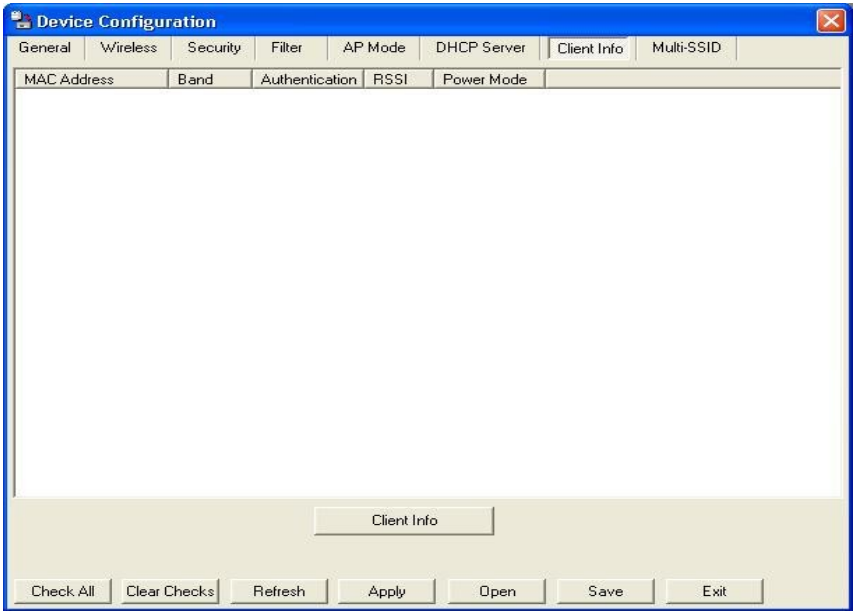
Using the AP Manager (continued)



Device Configuration>DHCP

- **DHCP Server**: Enable or disable the DHCP server function.
- **Dynamic Pool Settings**: Click to enable Dynamic Pool Settings. Configure the IP address pool in the fields below.
- **Static Pool Settings**: Click to enable Static Pool Settings. Use this function to assign the same IP address to a device at every restart. The IP addresses assigned in the Static Pool list must NOT be in the same IP range as the Dynamic Pool.
- **IP Assigned From**: Enter the initial IP address to be assigned by the DHCP server.
- **Range of Pool (1~255)**: Enter the number of allocated IP addresses.
- **SubMask**: Enter the subnet mask.
- **Gateway**: Enter the gateway IP address, typically a router.
- **Wins**: Wins (Windows Internet Naming Service) is a system that determines the IP address of a network computer with a dynamically assigned IP address, if applicable.
- **DNS**: The IP address of the DNS server, if applicable.
- **Domain Name**: Enter the domain name of the DWL-2100AP, if applicable.
- **Lease Time**: The period of time that the client will retain the assigned IP address.
- **Status**: This option turns the dynamic pool settings on or off.

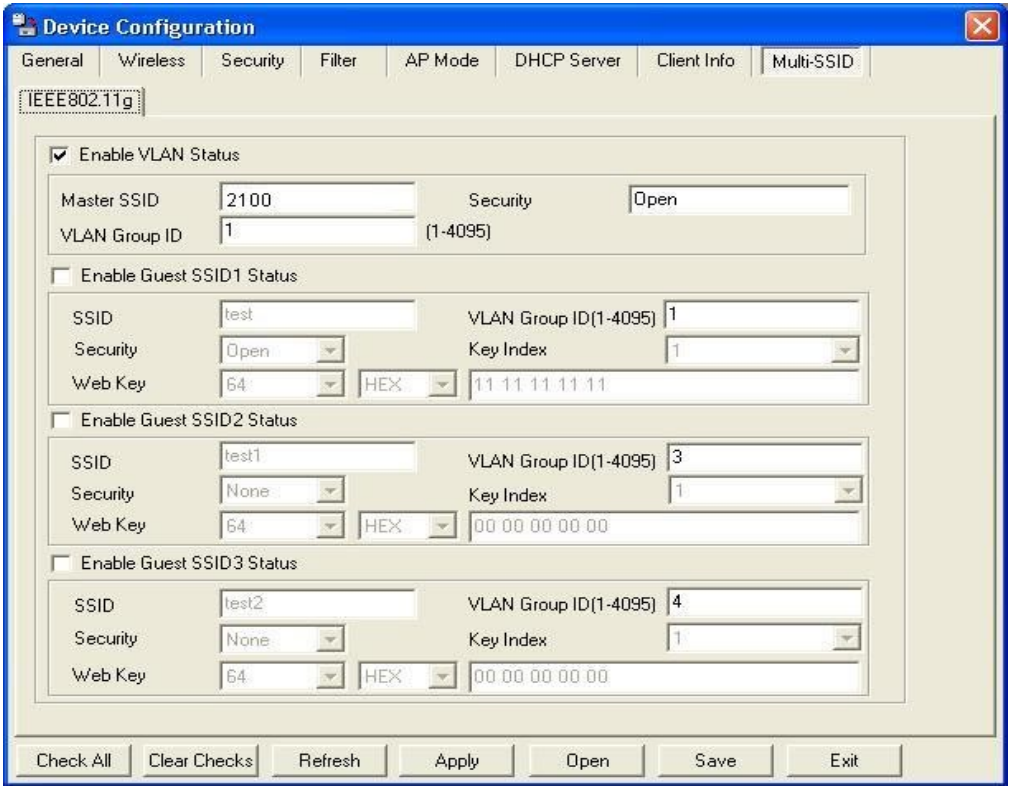
Using the AP Manager (continued)



Device Configuration>Client Info

Client Info.	Select the option to obtain information on wireless clients.(A client is a device on the network that is communicating with the DWL-2100AP)
Mac Address	Displays the MAC address of the client.
Band	Displays the wireless band.
Authentication	Displays the type of authentication that is enabled.
RSSI	Indicates the strength of the signal.
Power Mode	Displays the status of the power saving feature.

Using the AP Manager (continued)



Device Configuration>Multi-SSID

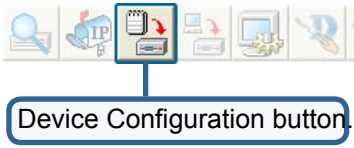
The DWL-2100AP offers configure using Multiple SSIDs. allowing of a vitually sepegated station by sharing the same channel. One primary SSIDcan be assocaited with up to 3 guest SSIDs. Becuase guest SSIDs cannot be scanned by site survey tools uers cannnot assocaite with guest SSIDs unless thy know the exact SSID and security setting. The VLAN function can been enabled for both the primary SSID and the guest SSID.

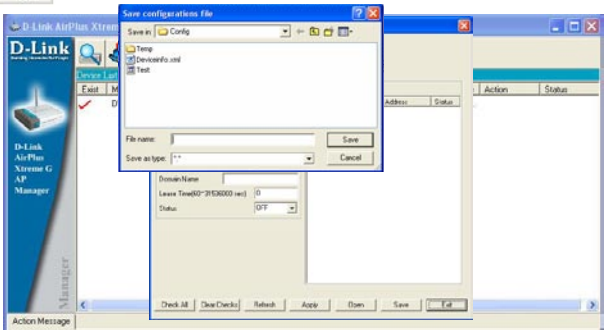
Using the AP Manager (continued)

Configuration Files

The DWL-2100AP allows you to save the device settings to a configuration file. To save a configuration file, follow these steps:

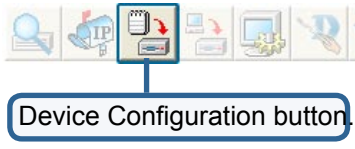
- Select a device from the Device List on the main screen of the AP Manager.
- Click the device configuration button.
- Click the **Save** button after you have all of the settings as you want them.
- A popup window will appear prompting you for a file name and location. Enter the file name, choose a file destination, and click **Save**.

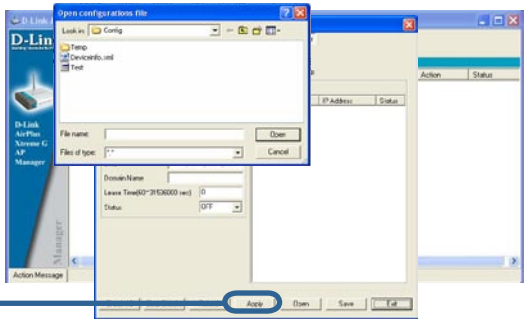




To load a previously saved configuration file, follow these steps:

- Select a device or devices from the Device List on the main screen of the AP Manager.
- Click the device configuration button.
- Click the **Open** button.
- A popup window will appear prompting you to locate the configuration file. Locate the file and click **Open**.
- The configuration file is loaded into the AP Manager but has not actually been written to the device(s). If you want to use the newly loaded configuration for the selected device(s), click **Apply** and the configuration settings will be written to the device(s).





You must always click **Apply** in the Configuration window if you want the settings to take effect.

Using the AP Manager (continued)

Firmware

You can upgrade the firmware by clicking on this button after selecting the device(s).

To upgrade the firmware:

- Download the latest firmware upgrade from **http://support.dlink.com** to an easy to find location on your hard drive.
- Click on the firmware button as shown above.
- A popup window will appear. Locate the firmware upgrade file and click **Open**.

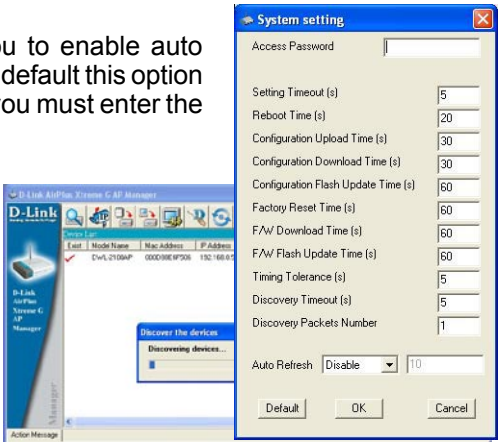
IMPORTANT! DO NOT DISCONNECT POWER FROM THE UNIT WHILE THE FIRMWARE IS BEING UPGRADED.

System Settings

You can customize the basic System Settings for the DWL-2100AP by clicking on this button.

- **Access Password**: This sets the admin password for the selected device(s).
- **Auto Refresh**: This setting allows you to enable auto refreshing of the network device list. By default this option is disabled. If you choose to enable it, you must enter the refresh interval in seconds.

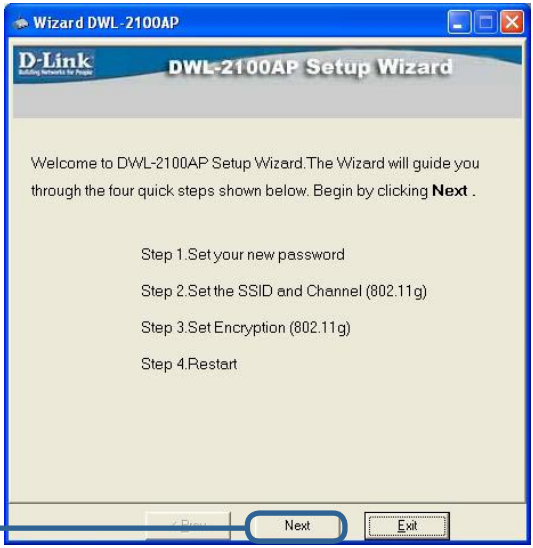
All other settings on this screen should be left at the default setting.



Using the AP Manager (continued)

Setup Wizard

This button will launch the Setup Wizard that will guide you through device configuration.



Click **Next**

Enter a **Password** and retype it in the **Verify Password** field.

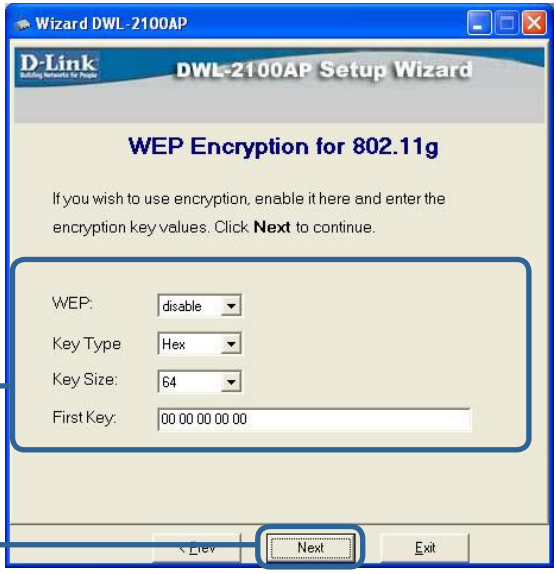
Click **Next**

Using the AP Manager (continued)

Setup Wizard (continued)

Enter the **SSID** and the **Channel** for the network.

Click **Next**

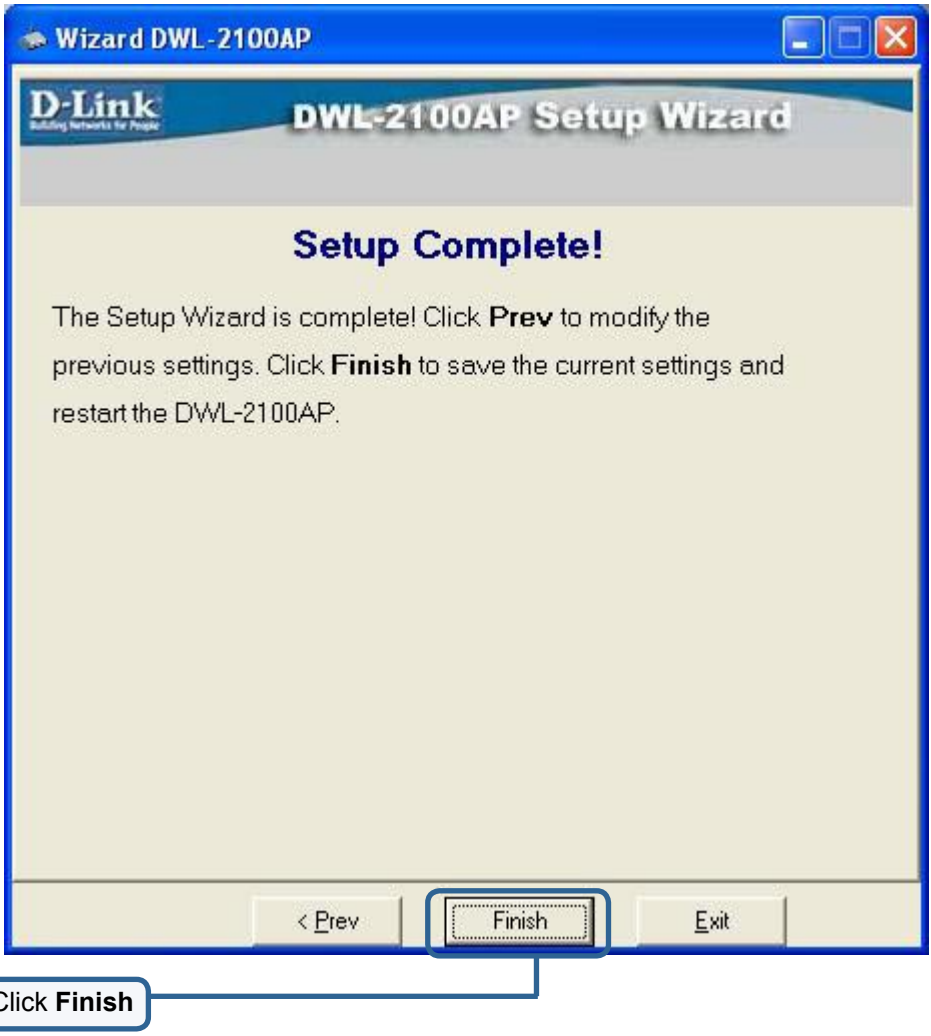


If you want to enable Encryption, enter the Encryption values here.

Click **Next**

Using the AP Manager (continued)

Setup Wizard (continued)



Click **Finish**

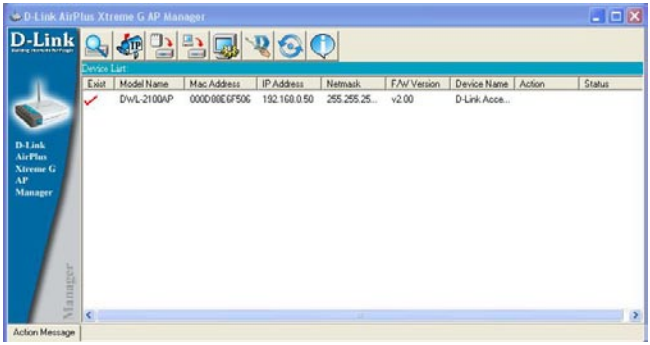
The DWL-2100AP setup is complete!

Using the AP Manager (continued)

Refresh

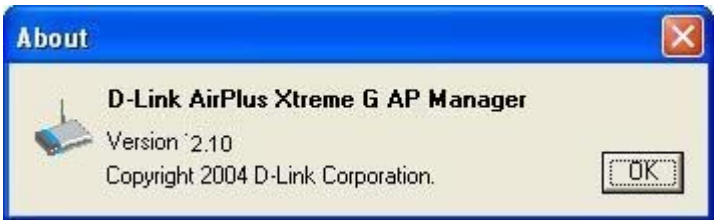
Click on this button to **refresh the list of devices** available on the network.

Devices with a checkmark next to them are still available on the network. Devices with an X are no longer available on the network.



About

Click on this button to view the version of AP Manager.



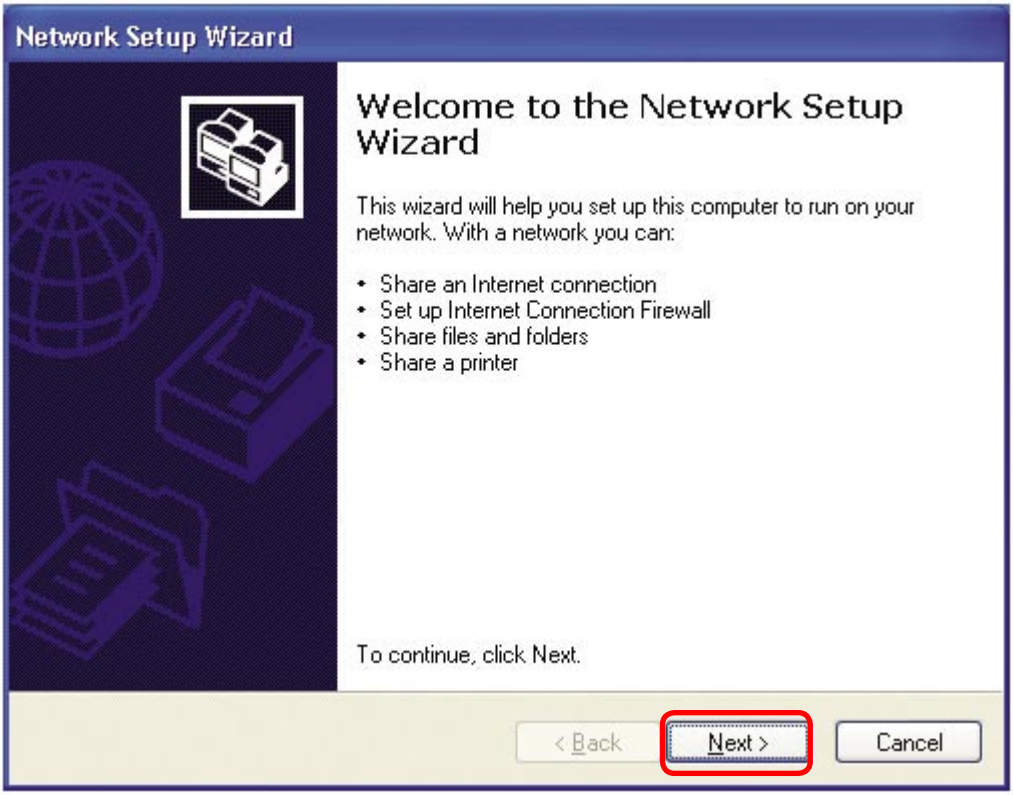
Networking Basics

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.

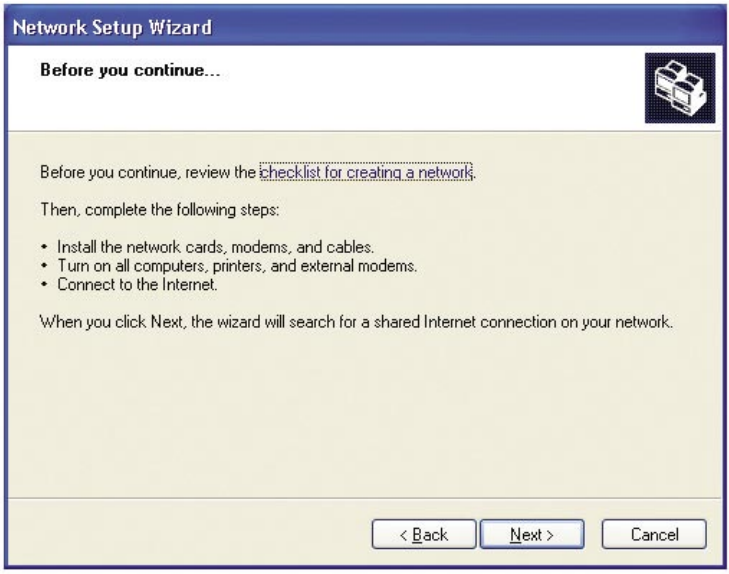
Go to **Start>Control Panel>Network Connections**
Select **Set up a home or small office network**



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

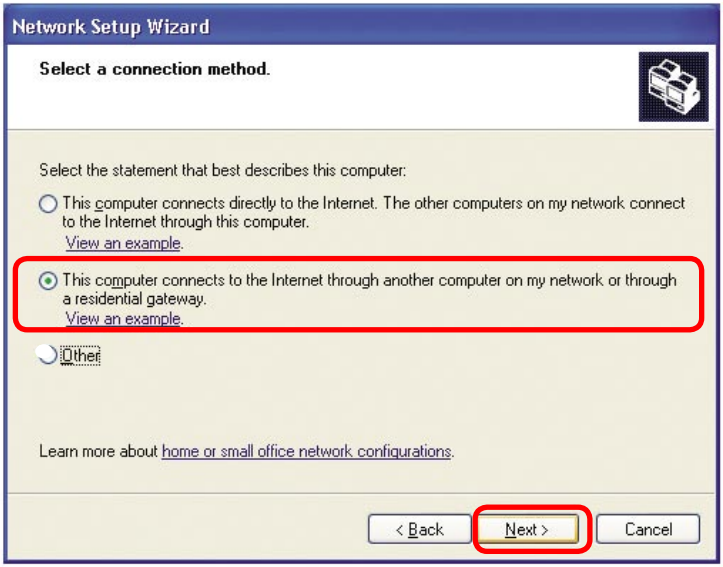
Networking Basics (continued)

Please follow all the instructions in this window:



Click **Next**.

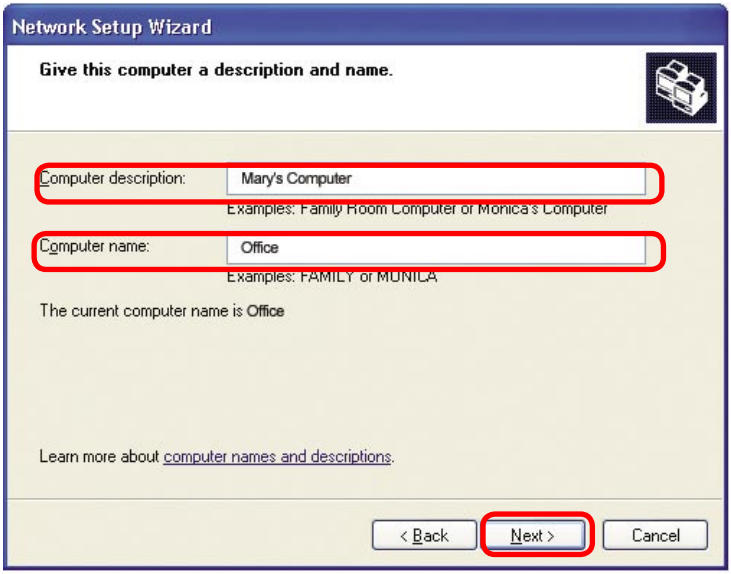
In the following window, select the best description of your computer. If your computer connects to the Internet through a router, select the second option as shown.



Click **Next**.

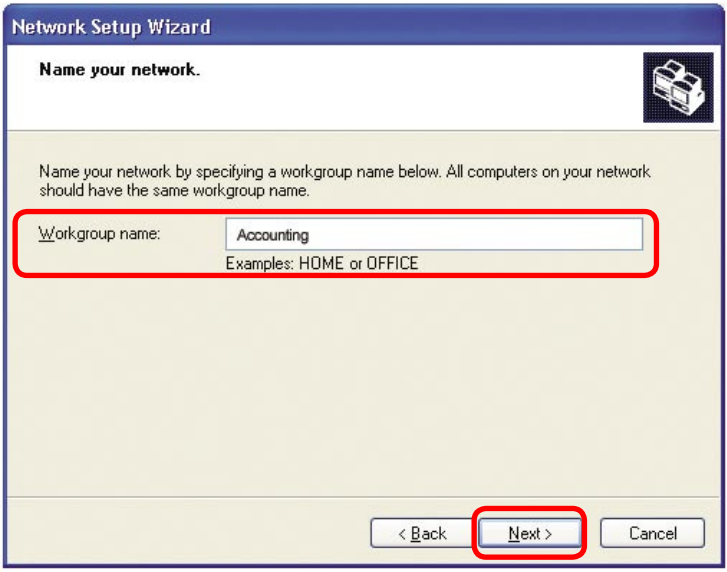
Networking Basics (continued)

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



Click **Next.**

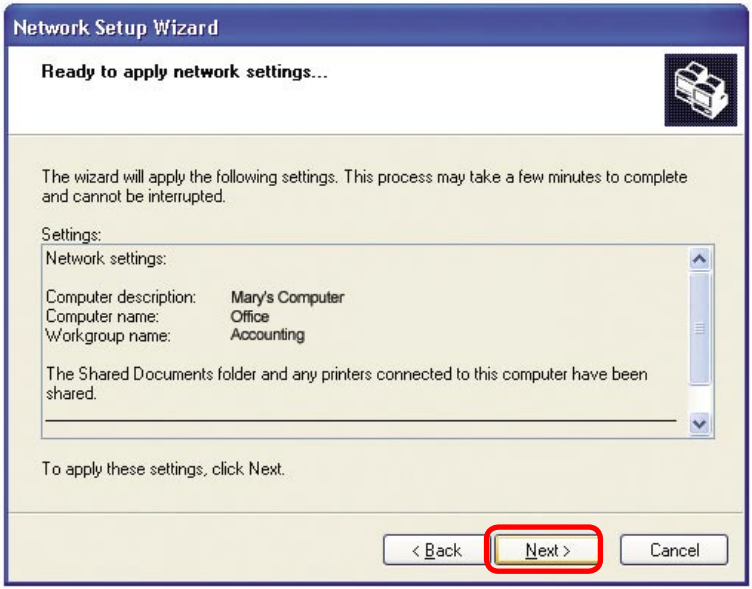
Enter a **Workgroup** name. All computers on your network should have the same **Workgroup name.**



Click **Next.**

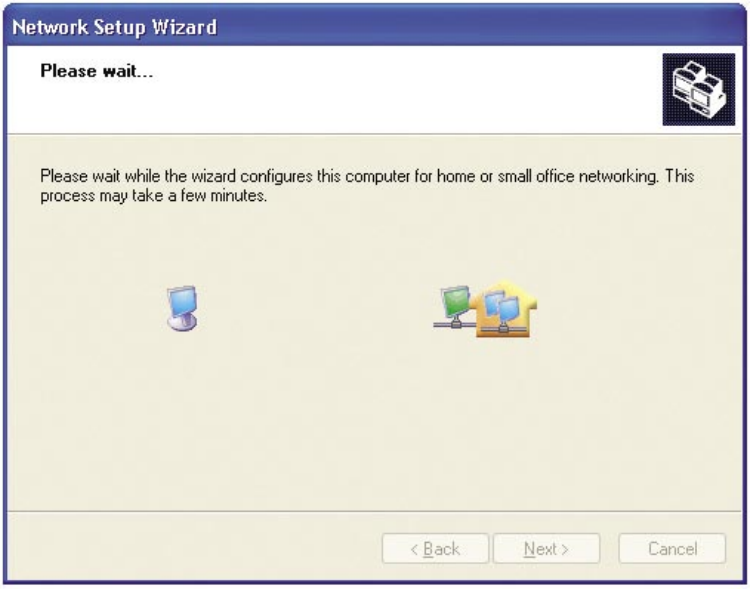
Networking Basics (continued)

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.



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

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**.

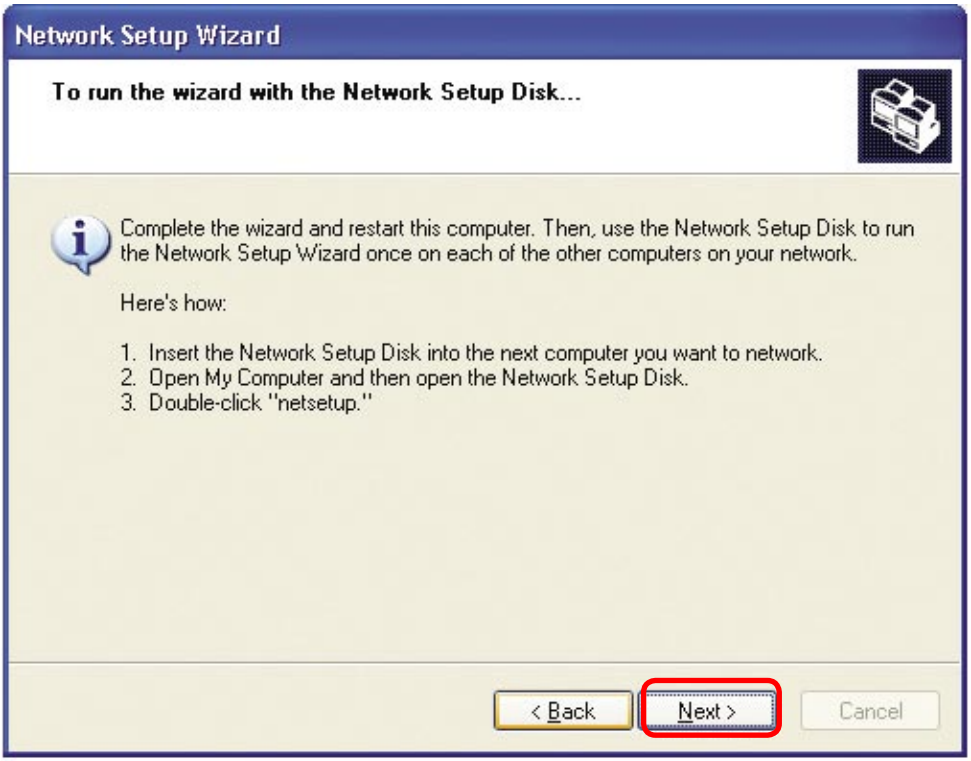
Please wait while the **Network Setup Wizard** copies the files.

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

Click **Next**.

Networking Basics (continued)

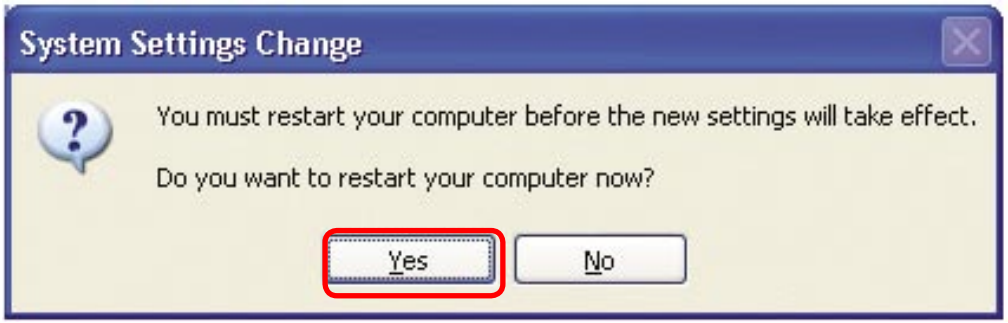
Please read the information under **Here's how** in the screen below. After you complete the **Network Setup Wizard** you will use the **Network Setup Disk** to run the **Network Setup Wizard** once on each of the computers on your network. Click **Next.**



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.

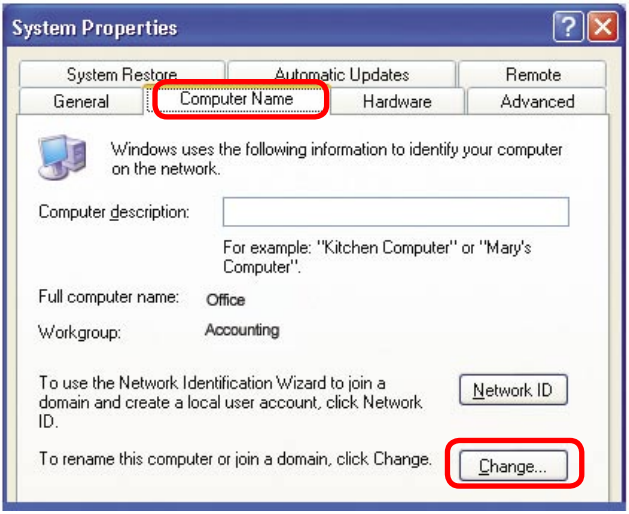
Networking Basics (continued)

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:

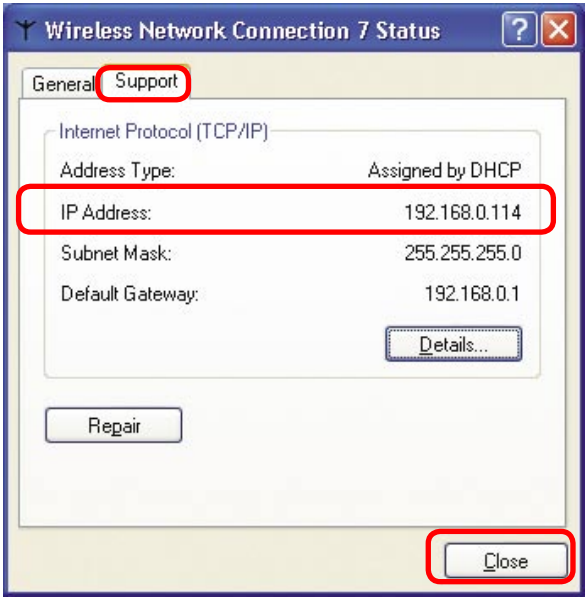
- Right-click on the ***Local Area Connection icon*** in the task bar.
- Click on **Status**.

Networking Basics (continued)

Checking the IP Address in Windows XP

This window will appear.

- Click the **Support tab**.
- Click **Close**.

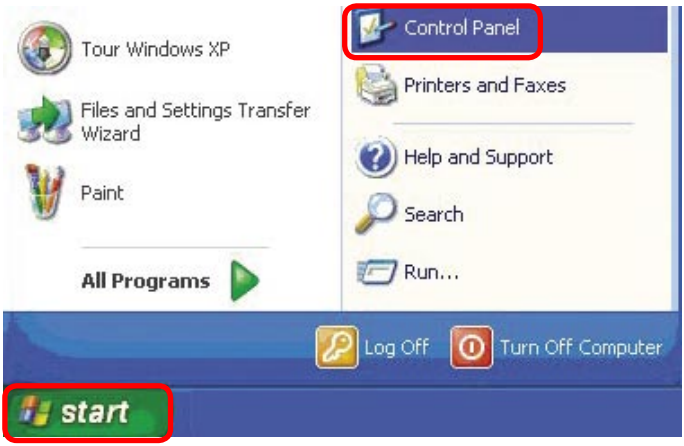


Assigning a Static IP Address in Windows XP/2000

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:

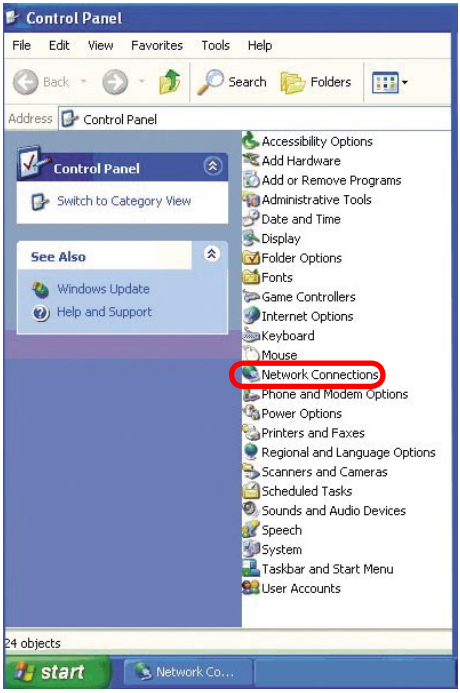
- Go to **Start**.
- Double-click on **Control Panel**.



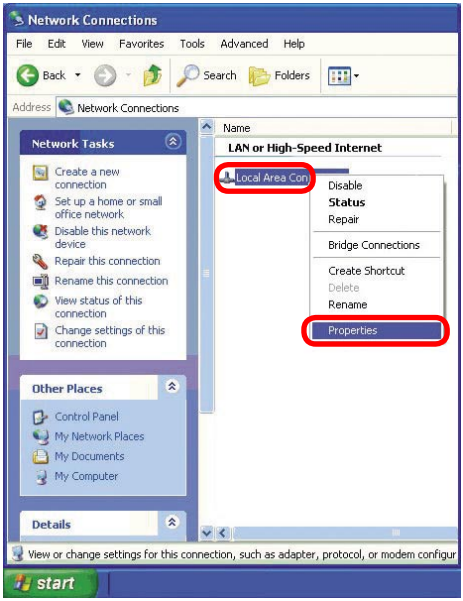
Networking Basics (continued)

Assigning a Static IP Address in Windows XP/2000

- Click on **Internet Protocol (TCP/IP)**
- Click **Properties**
- Double-click on **Network Connections**.
- **Select Use the following IP address** in the **Internet Protocol (TCP/IP) Properties** window *(shown below)*



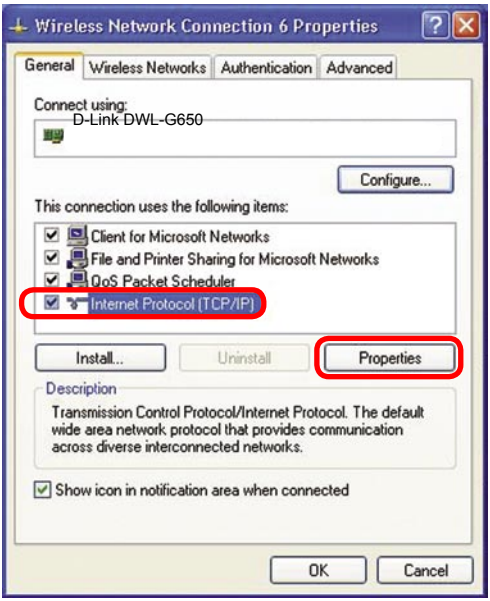
- Right-click on **Local Area Connections**.
- Double-click on **Properties**.



Networking Basics (continued)

Assigning a Static IP Address

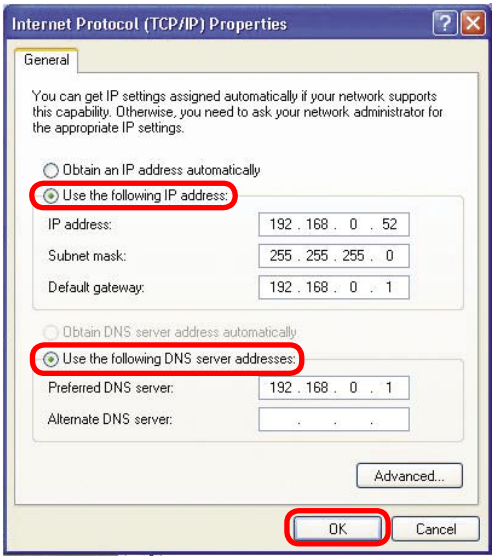
- Click on **Internet Protocol (TCP/IP)**.
- Click **Properties**.



- 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.)

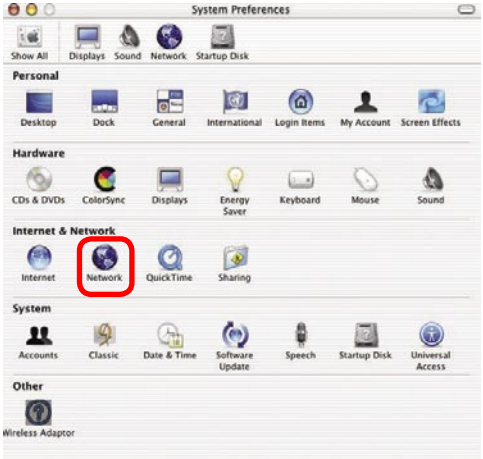


- Click **OK**.

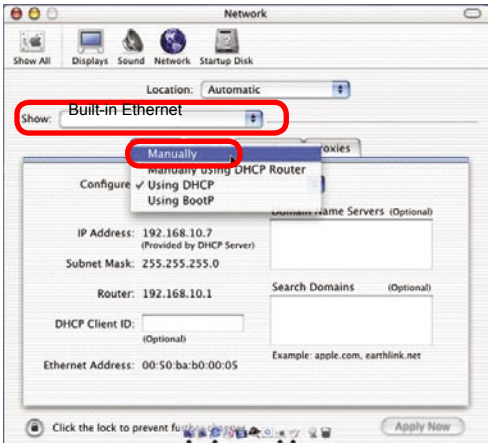
Networking Basics (continued)

Assigning a Static IP Address with Macintosh OSX

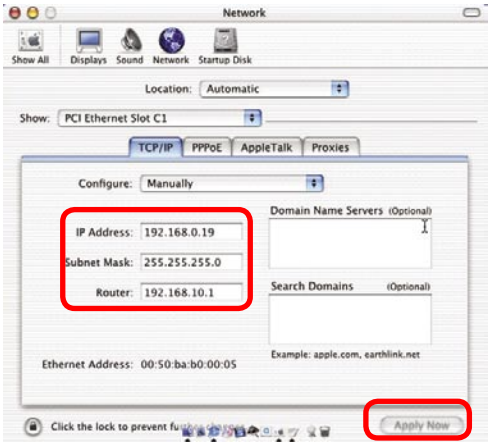
- Go to the **Apple Menu** and select **System Preferences**.
- Click on **Network**.



- 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**.

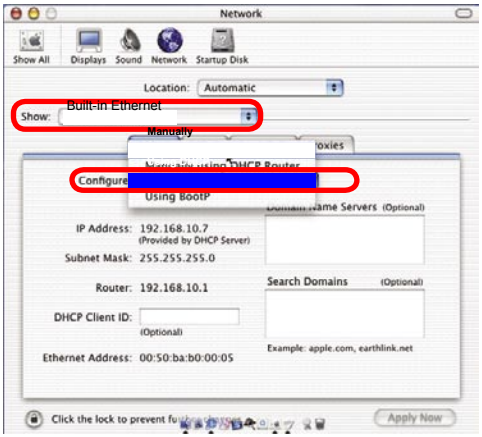


Networking Basics (continued)

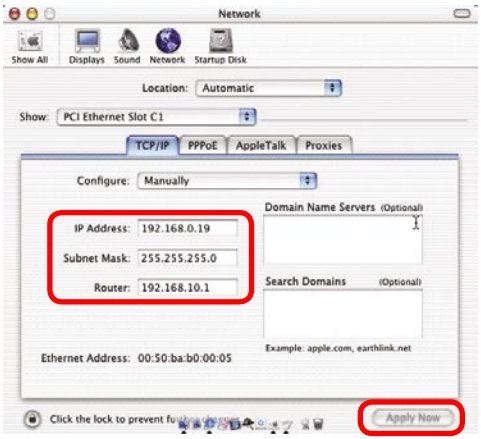
Selecting a Dynamic IP Address with Macintosh OSX

- 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.



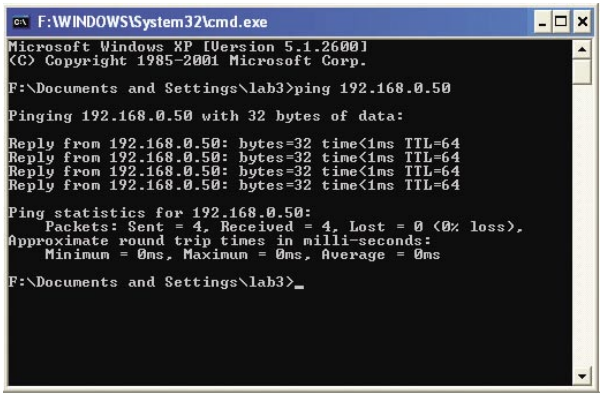
- Click **Apply Now**.
- The **IP Address, Subnet mask**, and the **Router's IP Address** will appear in a few seconds.



Networking Basics (continued)

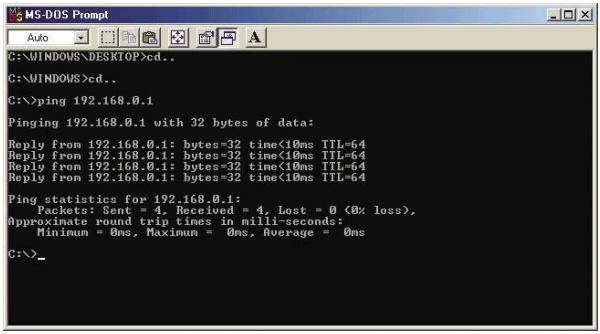
Checking the Wireless Connection by Pinging in Windows XP/ 2000

- 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.



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.



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.

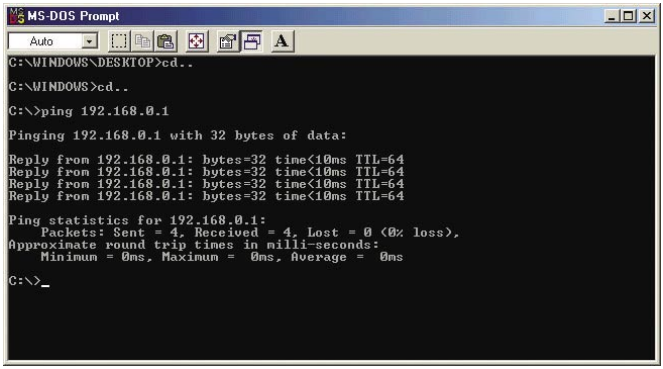
Note: It is recommended that you use an Ethernet connection to configure the DWL-2100AP Wireless Access Point.

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.



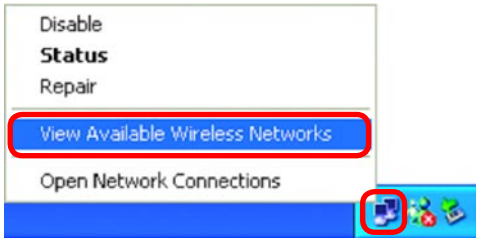
Note: If you have changed the default IP address, make sure to ping the correct IP address assigned to the DWL-2100AP.

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.

- Go to **Start**
- Right-click on **My Computer**
- Click **Properties**



- 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.

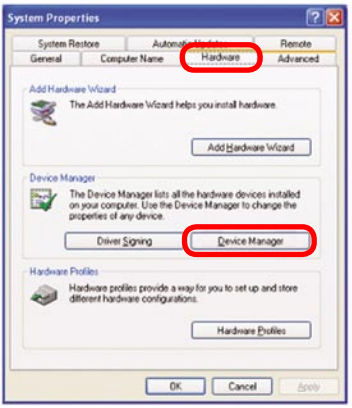
- Check to make sure that the DNS server in your network is functioning properly by pinging it. If the DNS server is not functioning properly, you may be unable to access the Internet. Typically, your ISP (Internet Service Provider) will be able to give you the DNS server information.

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.**

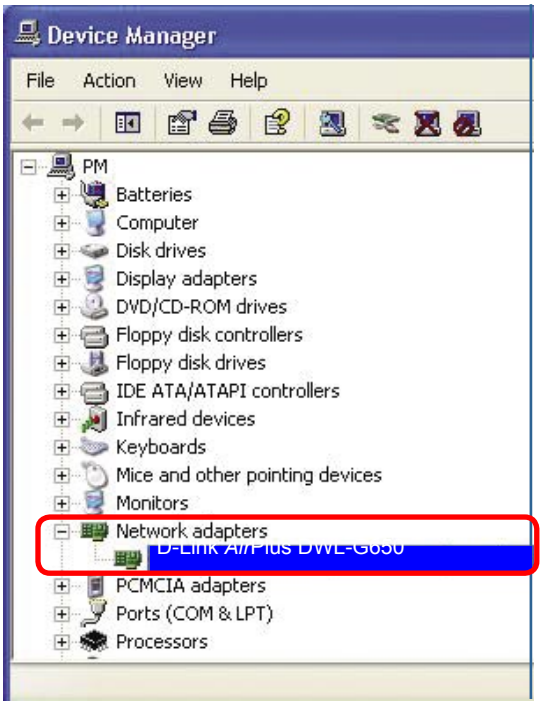
- **Select** the **Hardware Tab.**



- Click **Device Manager.**

Troubleshooting (continued)

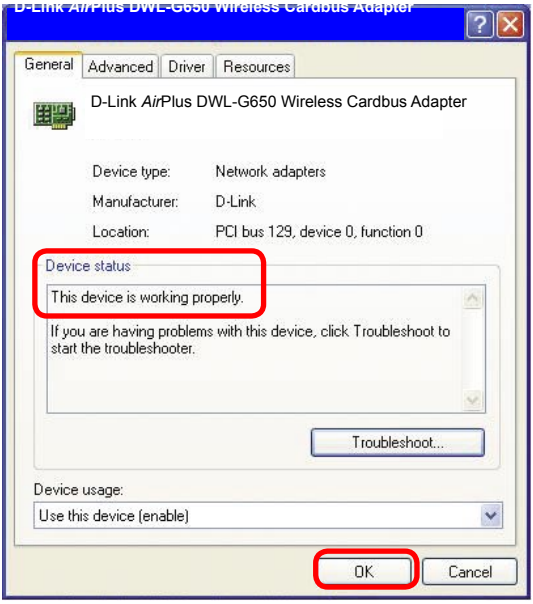
- Double-click on **Network Adapters.**



- Right-click on **D-Link *Air*Plus 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 the same.)

- 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.

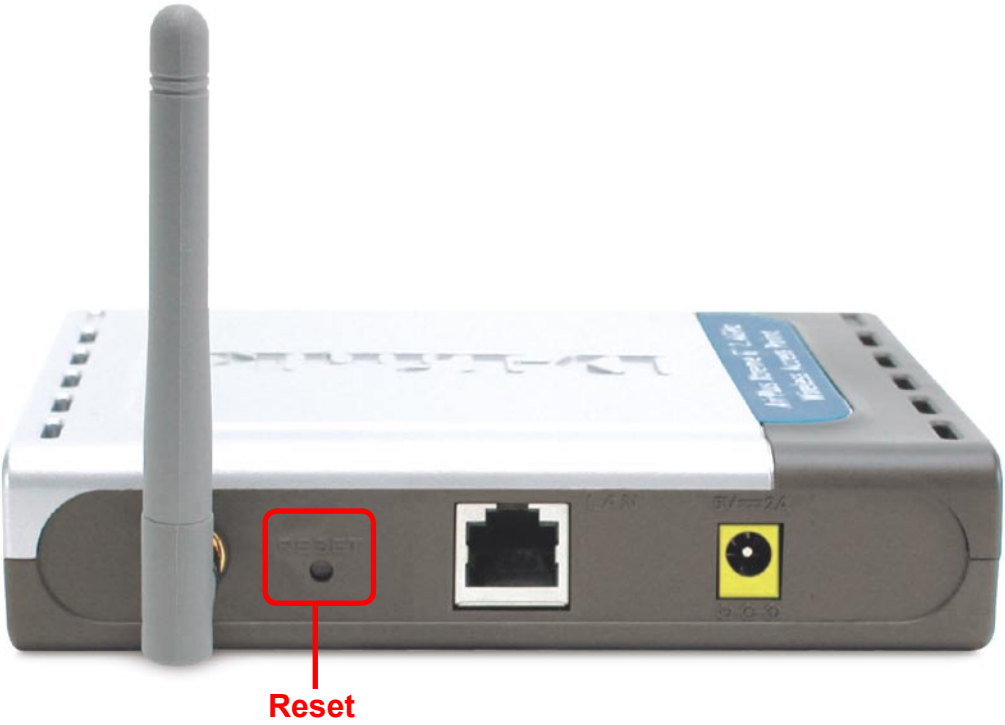
7. I forgot my encryption key.

- 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, and1Mbps

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:
• 98ft (30m) @ 54Mbps
• 105ft (32m) @ 48Mbps
• 121ft (37m) @ 36Mbps
• 148ft (45m) @ 24Mbps
• 197ft (60m) @ 18Mbps
• 223ft (68m) @ 12Mbps
• 253ft (77m) @ 9Mbps
• 295ft (90m) @ 6Mbps

Outdoors:
• 312ft (95m) @ 54Mbps
• 951ft (290m) @ 11Mbps
• 1378ft (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

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

LEDs
• Power
• 10M/100M
• WLAN

Temperature
• Operating: 32ºF to 104ºF
• Storing: -4ºF to 149ºF

Technical Specifications (continued)

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

Certifications
• FCC Part 15
• UL
• CSA
• Wi-Fi

Dimensions
• L = 5.59 inches (142mm)
• W = 4.29 inches (109mm)
• H = 1.22 inches (31mm)

Weight
• 0.44 lbs (200g)

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.

Tech 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
email:support@dlink.com

Tech 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

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

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

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

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 or original retail purchase. If a material non-conformance is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to replace the non-conforming Software, the price paid by the original licensee for the non-conforming Software will be refunded by D-Link; provided that the non-conforming Software (and all copies thereof) is first returned to D-Link. The license granted respecting any Software for which a refund is given automatically terminates.

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

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

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

- The original product owner must obtain a Return Material Authorization ("RMA") number from the Authorized D-Link Service Office and, if requested, provide written proof of purchase of the product (such as a copy of the dated purchase invoice for the product) before the warranty service is provided.
- After an RMA number is issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be prominently marked on the outside of the package. Do not include any manuals or accessories in the shipping package. D-Link will only replace the defective portion of the Product and will not ship back any accessories.
- The customer is responsible for all in-bound shipping charges to D-Link. No Cash on Delivery ("COD") is allowed. Products sent COD will either be rejected by D-Link or become the property of D-Link. Products shall be fully insured by the customer. 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.
- Return Merchandise Ship-To Address
  USA: 17595 Mt. Herrmann, Fountain Valley, CA 92708
  Canada: 2180 Winston Park Drive, Oakville, ON, L6H 5W1 (Visit http://www.dlink.ca for detailed warranty information within Canada)

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

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

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

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

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

Trademarks: D-Link is a registered trademark of D-Link Systems, Inc. Other trademarks or registered trademarks are the property of their respective manufacturers or owners.

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 outside the United States, please contact corresponding local D-Link office.