



Manual

Version 1.0

DWL-7700AP

Wireless AG AP/Bridge

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Package Contents

- **D-Link AirPremier™ DWL-7700AP**
11a/11g Dualband High Speed Outdoor Wireless AP/Bridge
- Eight screws & one rubber ring
- Two rubber dipole antennas
- Manual on CD
- Quick Installation Guide
- 2 Mounting Kits
- PoE base unit
- Power adapter
- Power cord
- RF jumper cable
- Grounding wire
- Surge arrestor
- 30m Ethernet cable



Note: Using a power supply with a different voltage than the one included with the **DWL-7700AP** will cause damage and void the warranty for this product.

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

Minimum System Requirements

- Computers with Windows, Macintosh, or Linux-based operating systems with an installed Ethernet Adapter
- Internet Explorer version 6.0 or Netscape Navigator version 7.0 and above

Introduction

The DWL-7700AP covers a large operating distance, providing an 802.11a/g outdoor WLAN which enables users to access the Internet or an organization's network.

At up to five times the speed of previous wireless devices, you can work faster and more efficiently, increasing productivity. With the DWL-7700AP, bandwidth-intensive applications like graphics or multimedia will benefit significantly because large files are able to move across the network quickly.

The D-Link *AirPremier*[™] DWL-7700AP features a die-cast watertight housing and a built-in lightning protector to protect the access point from harsh environmental conditions, including extreme variance in temperature. It also includes *Power over Ethernet* (POE) and a unique outdoor remote-mounted design for easy installation. With two mounting kits, you have the option of either pole or wall mounting.

The DWL-7700AP is suitable for manufacturing plants, industrial sites, military bases, universities, hotels, airports and golf courses.

Configurable in four different modes (access point, bridge, multi-point bridge, and wireless client), the DWL-7700AP offers 152-bit encryption, WPA and 802.1X authentication when used with a RADIUS server, MAC address access control, and additional security features.

The DWL-7700AP is easy to manage with its Web-based user interface and Telnet configuration. For Enterprise networks, the DWL-7700AP supports SNMP v.3 network administration and real-time network traffic monitoring via D-Link's D-View Network Management software.

Features and Benefits

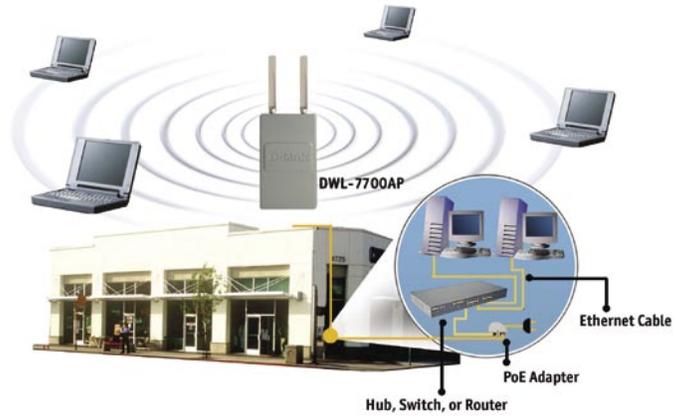
- **Ideal for Internet Hotspots** - Provides outdoor users with wireless Internet access.
- **Robust Outdoor Housing** - Designed for harsh outdoor environments, with die-cast, watertight housing, built-in heater and temperature sensor.
- **4 Different Operation modes with WDS (Wireless Distribution System)** - Capable of operating in one of four different operation modes to meet your wireless networking requirements: access point (AP), Point-to-Point (PtP) bridge, Point-to-multipoint (PtMP) bridge, or wireless client.
- **Embedded DHCP Server** automatically assigns IP addresses to wireless clients.
- **Connect networks in different buildings** when used in conjunction with D-Link's high-gain outdoor antennas.
- **Easy Installation with 802.3af PoE.**
- **Compatible with IEEE802.11a and IEEE802.11g standards** to provide a wireless data rate of up to 54Mbps.*
- **Backward compatible with the 802.11b standard** to provide a wireless data rate of up to 11Mbps with 802.11b devices - that means you can migrate your system to the 802.11g standard on your own schedule without sacrificing connectivity.
- **Better security with ACL, WPA, AES and 802.1X**- The DWL-7700AP 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. In conjunction with a RADIUS server, 802.1X authentication verifies the identity of would-be clients.
- **Convenient Network Management with the AP Manager** - Manage devices on the network with D-Link's AP Manager.
- **Communicate between IEEE802.11a and IEEE802.11g bands** - Optional configuration allows communication between bands.
- **Supports up to 152-bit WEP encryption and AES (Advanced Encryption Standard).**
- **Two mounting kits** - Gives you the flexibility of either wall or pole outdoor mounting.

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

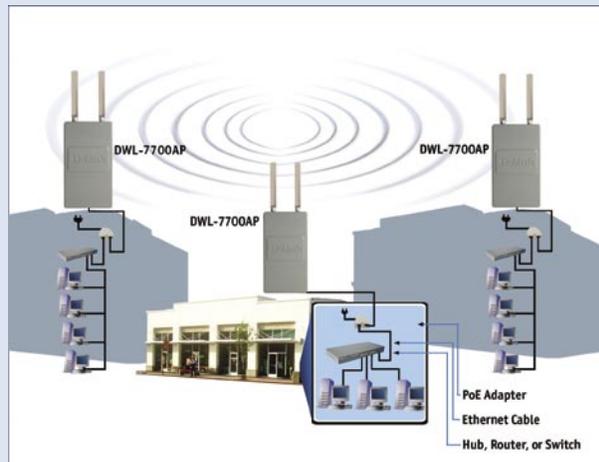
Four Operational Modes

Operation Mode (Only supports 1 mode at a time)	Function
Access Point (AP)	Create a Wireless LAN
AP - to - AP Bridging	Wirelessly Connect 2 Networks
Point - to - Multipoint Bridging	Wirelessly Connect Multi Networks
Wireless Client	Wirelessly Connect Ethernet Devices

AP Mode



Bridge Mode



Using the Configuration Menu

To configure the DWL-7700AP, use a computer which is connected to the DWL-7700AP with an Ethernet cable (see the *Network Layout* diagram).

First, disable the **Access the Internet using a proxy server** function. To disable this function, go to **Control Panel > Internet Options > Connections > LAN Settings** and uncheck the enable box.

Start your web browser program (Internet Explorer, Netscape Navigator).

Type the IP address and http port of the DWL-7700AP in the address field (http://192.168.0.50) and press **Enter**. Make sure that the IP addresses of the DWL-7700AP and your computer are in the same subnet.



After the connection is established, you will see the user identification window as shown.

Note: If you have changed the default IP address assigned to the DWL-7700AP, make sure to enter the correct IP address.

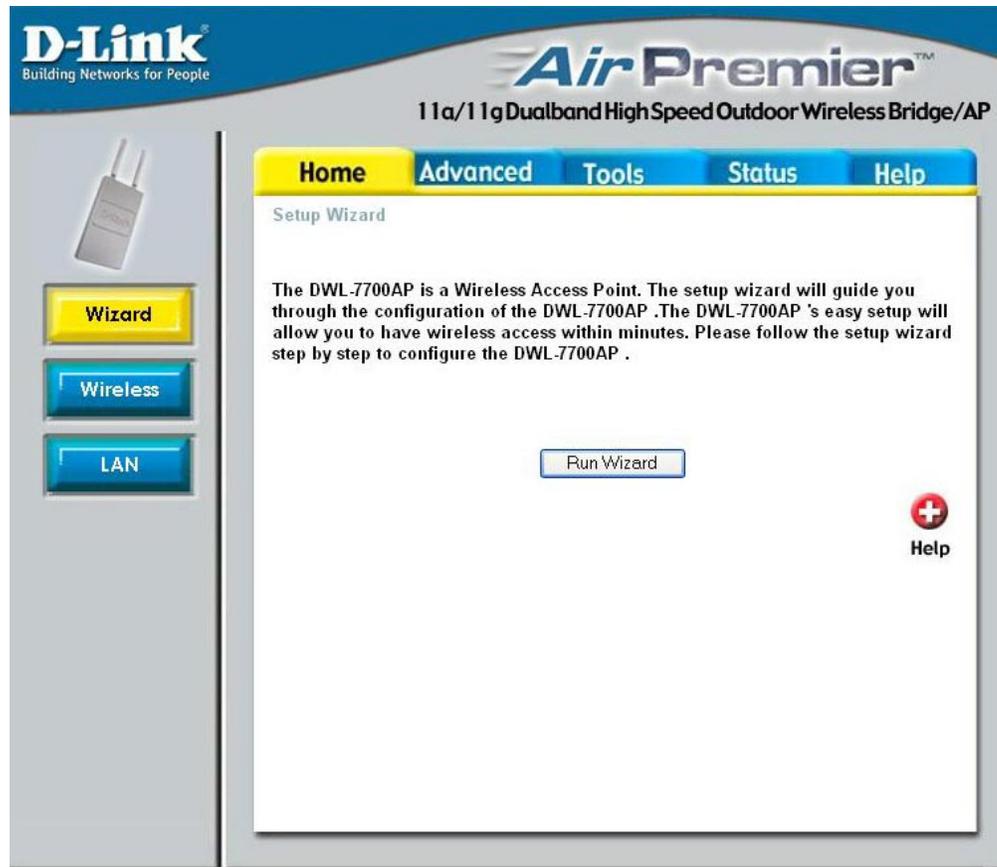
- Type **admin** in the **User Name** field
- Leave the **Password** field blank
- Click **OK**



Note: If you have changed the password, make sure to enter the correct password.

Home > Wizard

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



These buttons appear on most of the configuration screens in this section. Please click on the appropriate button at the bottom of each screen after you have made a configuration change.



Apply

Clicking **Apply** will save changes made to the page



Cancel

Clicking **Cancel** will clear changes made to the page



Help

Clicking **Help** will bring up helpful information regarding the page



Restart

Clicking **Restart** will restart the router. (Necessary for some changes.)

Home > Wireless > 802.11a

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Home Advanced Tools Status Help

Wireless Settings

Wireless Band: IEEE802.11a

SSID: default

SSID Broadcast: Enable

Channel: 52

Radio Frequency: 5.26GHz

Apply Cancel Help

Wireless Band: 802.11a is selected here.
Choose the wireless band from the pulldown menu.

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

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

Channel: **52** is the default channel. All devices on the network must share the same channel. (Note: The wireless adapters will automatically scan and match the wireless setting.)

Radio Frequency: The radio frequency will vary depending on the wireless channel that is chosen. The frequency in channel 52 is 5.26GHz.

Home > Wireless > 802.11g

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Home Advanced Tools Status Help

Wireless Settings

Wireless Band: IEEE802.11g

SSID: default

SSID Broadcast: Enable

Channel: 6

Radio Frequency: 2.412 GHz

Apply Cancel Help

Wireless Band: 802.11g is selected here.
Choose the wireless band from the pulldown menu.

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

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

Channel: 6 is the default channel. All devices on the network must share the same channel. (Note: The wireless adapters will automatically scan and match the wireless setting.)

Radio Frequency: The radio frequency will vary depending on the wireless channel that is chosen. The frequency in channel 6 is 2.412GHz.

Home > LAN > Static

The screenshot shows the configuration page for the LAN interface. The page title is "D-Link Air Premier 11a/11g Dualband High Speed Outdoor Wireless Bridge/AP". The navigation tabs are "Home", "Advanced", "Tools", "Status", and "Help". The "LAN Settings" section is active, showing the following fields:

- Get IP From: Static (Manual) (dropdown menu)
- IP Address: 192.168.0.50
- Subnet Mask: 255.255.255.0
- Default Gateway: 0.0.0.0

At the bottom right of the settings area, there are three icons: a green checkmark for "Apply", a red X for "Cancel", and a red plus sign for "Help". On the left side of the interface, there are three buttons: "Wizard", "Wireless", and "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-7700AP. 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: Static (Manual) is chosen here. Choose this option if you do not have a DHCP server in your network, or if you wish to assign a static IP address to the DWL-7700AP.

IP Address: The default IP address is 192.168.0.50. Assign a static IP address that is within the IP address range of your network.

Subnet Mask: Enter the subnet mask. All devices in the network must share the same subnet mask..

Default Gateway: Enter the IP address of the gateway in your network. If there isn't a gateway in your network, please enter an IP address within the range of your network.

Home > LAN > DHCP



Get IP From: Dynamic (DHCP) is chosen here. Choose Dynamic IP Address to obtain an IP Address automatically from a DHCP server in your network.

IP Address: This field is unavailable when DHCP is chosen.

Subnet Mask: This field is unavailable when DHCP is chosen.

Default Gateway: This field is unavailable when DHCP is chosen.

Advanced > Mode

The screenshot displays the configuration web interface for a D-Link Air Premier 11a/11g Dualband High Speed Outdoor Wireless Bridge/AP. The interface features a top navigation bar with tabs for Home, Advanced (selected), Tools, Status, and Help. On the left side, there is a vertical menu with buttons for Mode (selected), Performance, Filters, Encryption, Grouping, and DHCP Server. The main content area is titled 'AP Mode Settings' and includes a 'Wireless Band' dropdown menu set to 'IEEE802.11a'. Below this, there are three radio button options: 'Access Point' (selected), 'PtP Bridge', and 'PtMP Bridge'. The 'Access Point' section contains a 'Remote AP MAC Address' field with three input boxes. The 'PtMP Bridge' section contains a 'Remote AP MAC Address' field with sixteen input boxes arranged in two columns. The 'AP Client' section contains a 'Root AP MAC Address' field with one input box. At the bottom right of the settings area, there are three icons: a green checkmark for 'Apply', an orange 'X' for 'Cancel', and a red plus sign for 'Help'. Below the settings area, there is a 'Site Survey' section with a 'Site Survey' button.

Wireless Band: Choose IEEE802.11a or IEEE802.11g. IEEE802.11a is chosen here.
The DWL-7700AP can be configured to perform in any of **four modes**: wireless access point, wireless bridge, multi-point bridge, and wireless client.

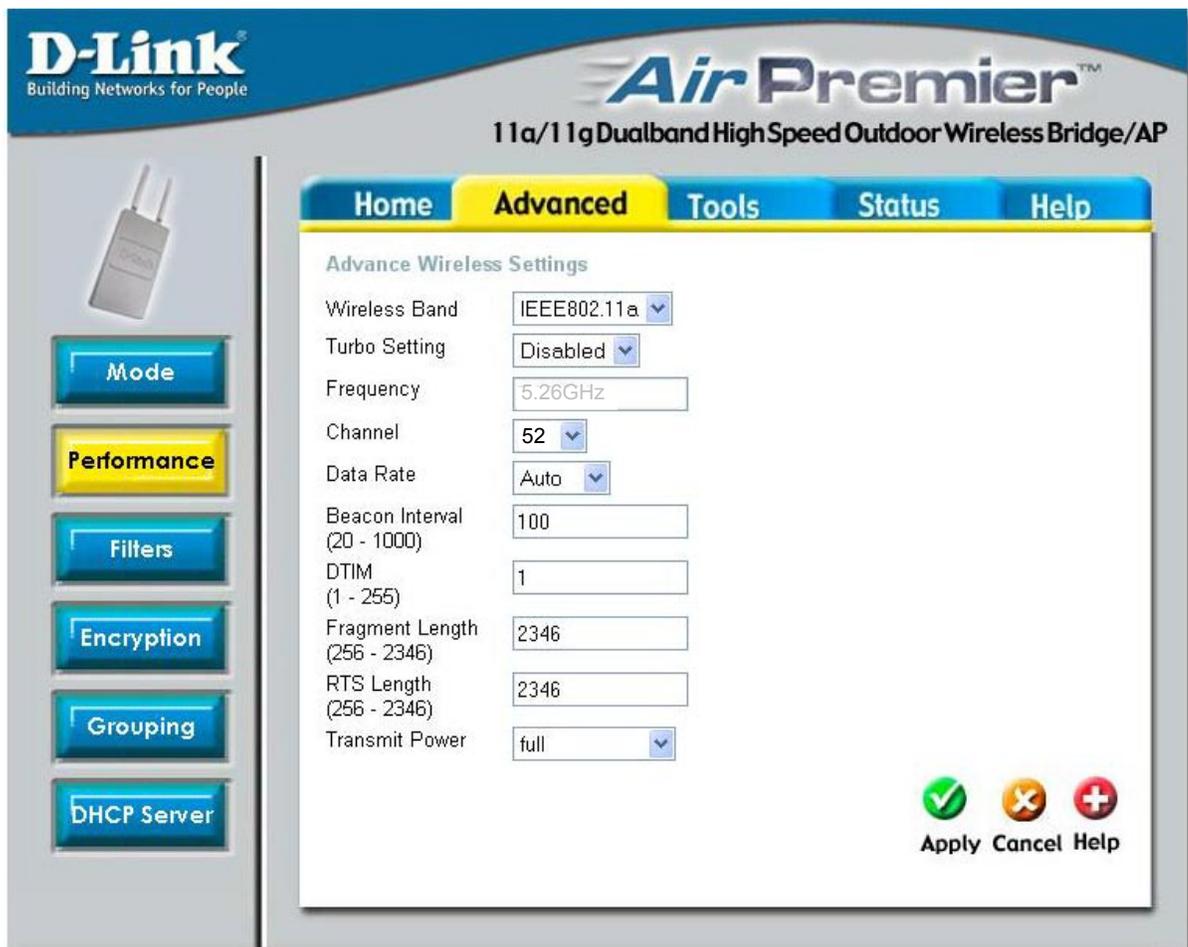
Access Point: **Access Point** is the default setting. This mode is used to create a wireless LAN.

PtP Bridge: **PtP Bridge** will allow you to connect two LANs together. The wireless bridge mode will work only with another DWL-7700AP. Click to enable and enter the MAC address of the remote bridge.

PtMP Bridge: **PtMP Bridge** will allow you to connect multiple wireless LANs together. Other wireless LANs must be using DWL-7700APs. Click to enable and enter up to 16 remote AP MAC addresses.

AP Client: **AP Client** will transform any IEEE 802.3 Ethernet device (e.g., a computer, printer, etc.) into an 802.11a/g wireless client when it communicates with another DWL-7700AP that is acting as an AP. Click to enable and enter the MAC address of the root AP.

Advanced > Performance



Wireless Band: Select IEEE802.11a or IEEE802.11g. IEEE802.11a is selected here.

Turbo Setting: This function is not available in IEEE802.11g.

Frequency: The frequency reflects the choice of the wireless band. When IEEE802.11a is chosen the frequency is 5.26GHz for channel 52. When IEEE802.11g is chosen the frequency is 2.412GHz for channel 6.

Channel: The default channel for IEEE802.11a is 52, and the default channel for IEEE802.11g is 6.

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.



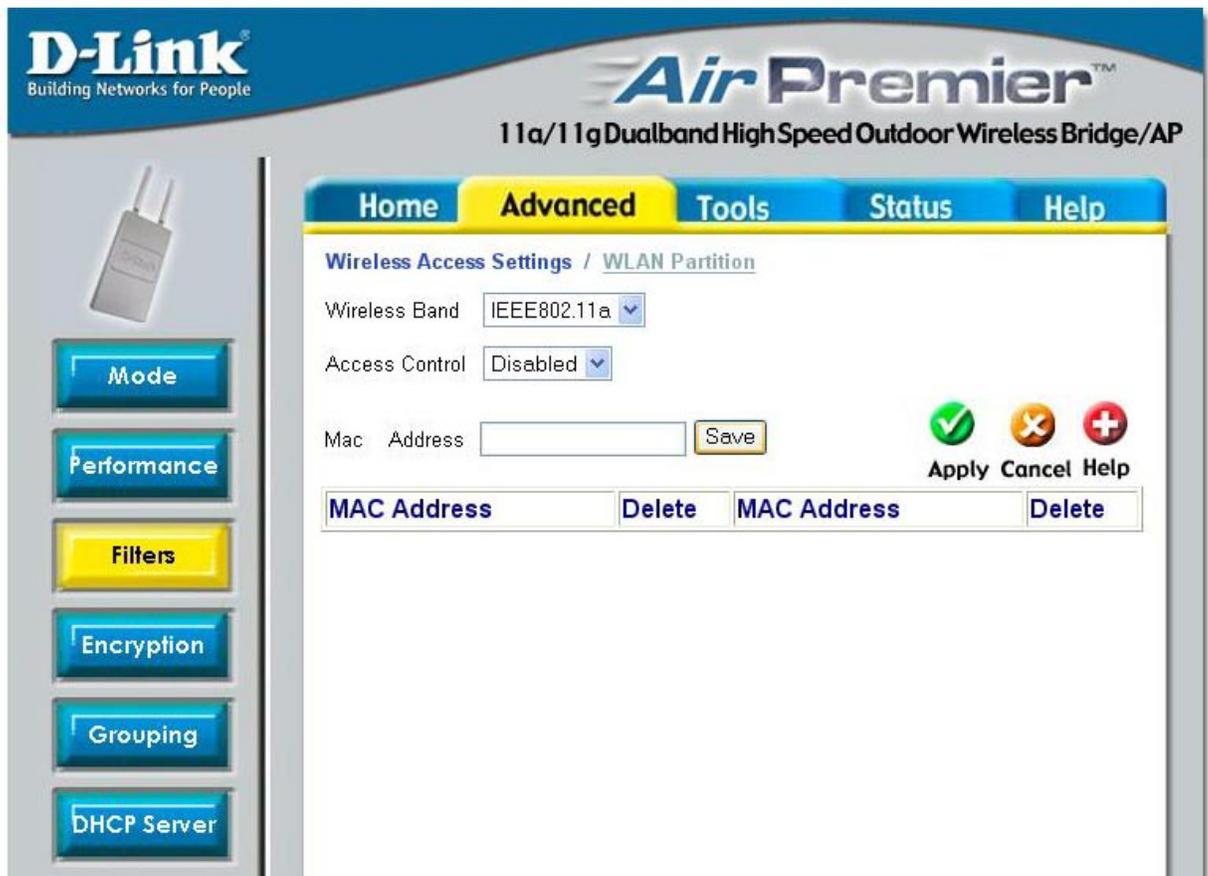
DTIM: (*Delivery Traffic Indication Message*) - Select a setting between 1 and 255. 1 is the default setting. DTIM is a countdown informing clients of the next window for listening to broadcast and multicast

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 2346. If you encounter inconsistent data flow, only minor modifications to the value range between 256 and 2346 are recommended

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

Advanced > Filters > Wireless Access Settings



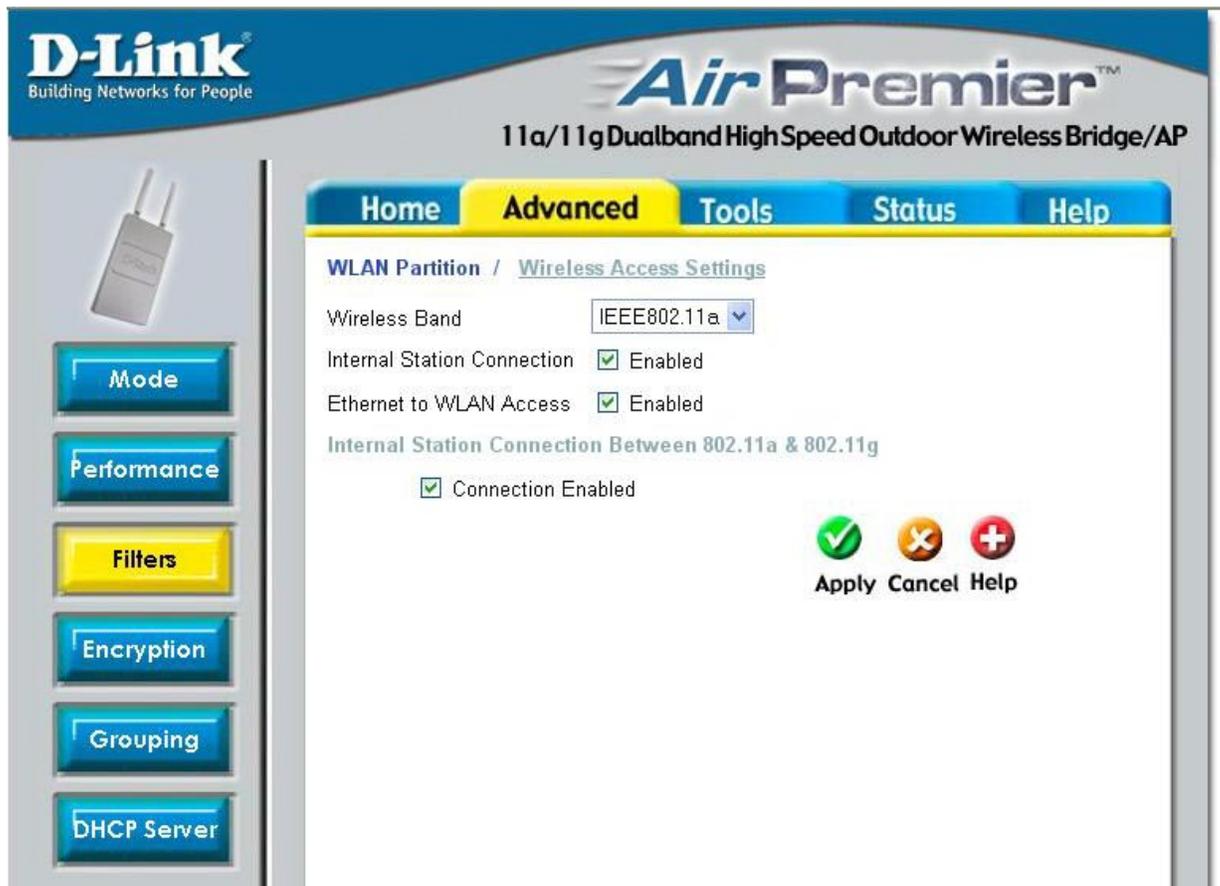
Wireless Band: Select IEEE802.11a or IEEE802.11g. IEEE802.11a is chosen here.

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 that you wish to include in your filters list, and click **Save**.

MAC Address List: When you enter a MAC address, it appears in this list. Highlight a MAC address and click **Delete** to remove it from the list.

Advanced > Filters > WLAN Partition



Wireless Band: Select IEEE802.11a or IEEE802.11g. IEEE802.11a is selected here.

Internal Station Connection: Enabling this feature allows wireless clients to communicate with each other. If this 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 is disabled, all data from the Ethernet to associated wireless devices is blocked. Wireless devices can still send data to the Ethernet.

Internal Station Connection Between 802.11a & 802.11g: Enabling this feature allows IEEE802.11a wireless clients to communicate with IEEE802.11g wireless clients.

Advanced > Encryption

The DWL-7700AP has the newest, strongest and most advanced security features available today. When used with other 802.11 WPA (Wi-Fi Protected Access) compatible products in a network with a RADIUS server, the security features include:

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

WPA (Wi-Fi Protected Access) 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 ensures much greater security than the standard WEP security. (By contrast, the previous WEP encryption implementations required the keys to be changed manually.)

WPA-PSK allows home users that will not incorporate a RADIUS server in their network, access to WPA security. Utilizing the **Pre-Shared Key mode** of WPA, the DWL-7700AP 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-7700AP and WPA-PSK, you will automatically receive a new key every time you connect, vastly increasing the safety of your communication.

Advanced > Encryption > Open System



Wireless Band: Select IEEE802.11a or IEEE802.11g. IEEE802.11a is selected here.

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

Encryption: Select **Enabled** or **Disabled**. When Enabled is selected, as it is here, please fill in the following fields.

Key Type: Select **HEX** (*Hexadecimal digits consist of the numbers 0-9 and the letters A-F*), or **ASCII** (*American Standard Code for Information Interchange*) is a code for representing English letters as numbers from 0-127.

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

Valid Key: Select one of the keys in the Key table to be the active key.

Key Table: Enter up to four encryption keys here.

Advanced > Encryption > Shared Key



Wireless Band: Select IEEE802.11a or IEEE802.11g. IEEE802.11a is selected here.

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

Encryption: **Enabled** is the only option available in Shared Key mode. Please fill in the following fields.

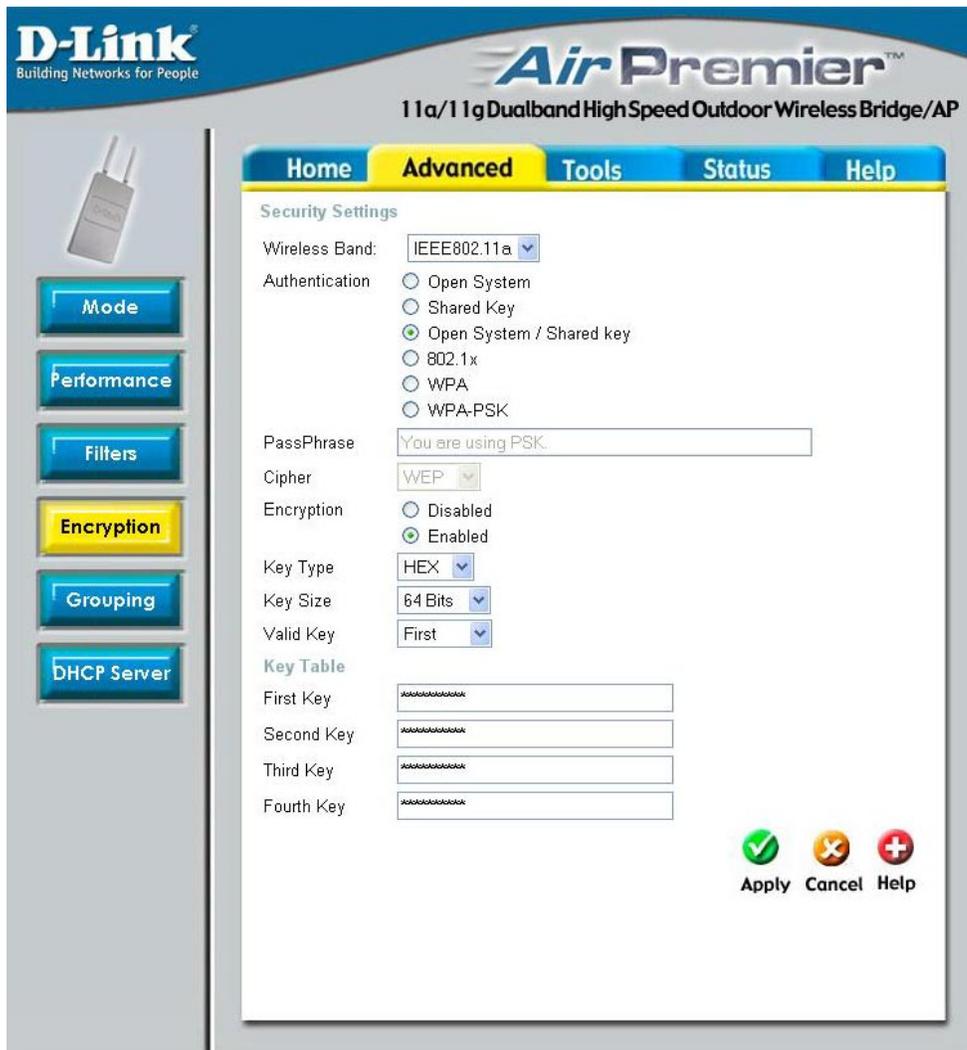
Key Type: Select **HEX** (*Hexadecimal digits consist of the numbers 0-9 and the letters A-F*), or **ASCII** (*American Standard Code for Information Interchange*) is a code for representing English letters as numbers from 0-127.

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

Valid Key: Select one of the keys in the Key table to be the active key.

Key Table: Enter up to four encryption keys here.

Advanced > Encryption > Open System/Shared Key



Wireless Band: Select IEEE802.11a or IEEE802.11g. IEEE802.11a is selected here.

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

Encryption: **Enabled** is the only option available in Open System/Shared Key mode. Please fill in the following fields.

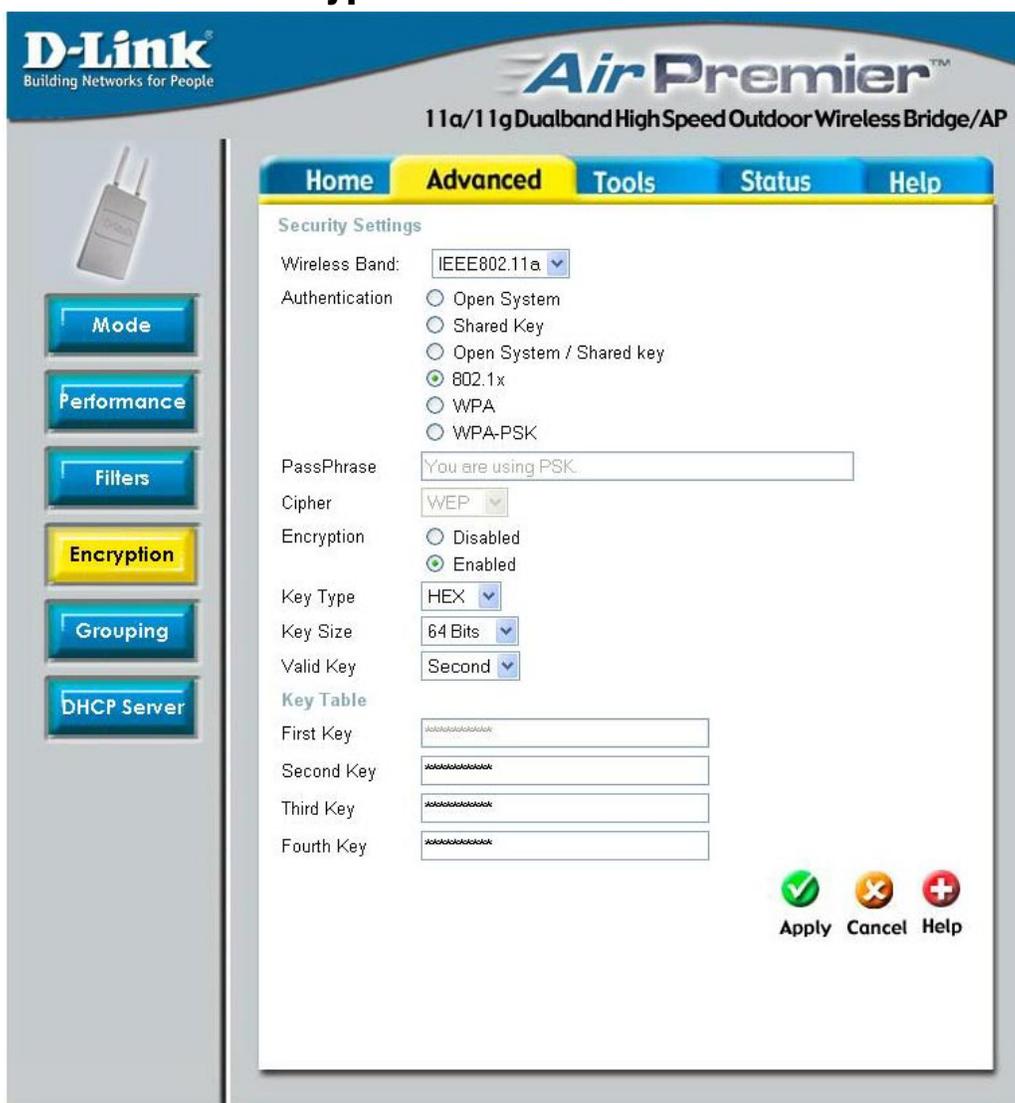
Key Type: Select **HEX** (*Hexadecimal digits consist of the numbers 0-9 and the letters A-F*), or **ASCII** (*American Standard Code for Information Interchange*) is a code for representing English letters as numbers from 0-127.

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

Valid Key: Select one of the keys in the Key table to be the active key.

Key Table: Enter up to four encryption keys here.

Advanced > Encryption > 802.1X



Please see the following page for details on the screen shown above.

- Wireless Band:** Select IEEE802.11a or IEEE802.11g. IEEE802.11a is selected here.
- Authentication:** When you select **802.1X** for increased security features with a RADIUS server, the screen below appears. Select the **WEP key size** and the **Authentication** type from the pulldown menus.
- Encryption:** **Enabled** is the only option available in 802.1X mode. Please fill in the following fields.
- Key Type:** Select **HEX** (*Hexadecimal digits consist of the numbers 0-9 and the letters A-F*), or **ASCII** (*American Standard Code for Information Interchange*) is a code for representing English letters as numbers from 0-127.
- Key Size:** Select **64-**, **128-**, **152-**bits.
- Valid Key:** Select one of the keys in the Key table to be the active key.
- Key Table:** Enter up to four encryption keys here.
- Apply:** Click **Apply** in the screen on the previous page. The screen below will appear.

Advanced > Encryption > 802.1X Authentication



WEP Key Size: Select the WEP key size.

Authentication From: Select the Authentication source.

Advanced > Encryption > WPA

The screenshot shows the configuration interface for a D-Link Air Premier 11a/11g Dualband High Speed Outdoor Wireless Bridge/AP. The interface includes a navigation sidebar on the left with buttons for Mode, Performance, Filters, Encryption (highlighted in yellow), Grouping, and DHCP Server. The main content area is titled 'Security Settings' and contains the following fields:

- Wireless Band:** A dropdown menu set to 'IEEE802.11a'.
- Authentication:** Radio buttons for 'Open System', 'Shared Key', 'Open System / Shared key', '802.1x', 'WPA' (selected), and 'WPA-PSK'.
- PassPhrase:** A text input field containing 'You are using PSK'.
- Cipher:** A dropdown menu set to 'TKIP'.
- Encryption:** Radio buttons for 'Disabled' and 'Enabled' (selected).
- Key Type:** A dropdown menu set to 'HEX'.
- Key Size:** A dropdown menu set to '64 Bits'.
- Valid Key:** A dropdown menu set to 'First'.
- Key Table:** Four text input fields labeled 'First Key', 'Second Key', 'Third Key', and 'Fourth Key', each containing a series of asterisks.

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

Wireless Band: Select IEEE802.11a or IEEE802.11g. IEEE802.11a is selected here.

Authentication: When you select **WPA** for increased security features with a RADIUS server, the screen on the next page appears.

Apply: Click Apply and the screen on the next page appears.

Advanced > Encryption > WPA > Radius Server Setting

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Home **Advanced** Tools Status Help

Radius Server Setting

Index: First

Radius Server: 0.0.0.0

Authentic Port: 1812

Accounting Port: 1813

Key:

Confirm Key:

Status: Invalid

Apply Cancel Help

Current Radius Server(s) Settings Table

Succession	Radius Server	Authentic Port	Accounting Port	Valid Status
First	0.0.0.0	1812	1813	Invalid
Second	0.0.0.0	1812	1813	Invalid
Third	0.0.0.0	1812	1813	Invalid

Index: Select the indexing order from the pulldown menu

RADIUS Server: Enter the IP address of the RADIUS server.

Authentic Port: 1812 is the port number dedicated to the authentication function of the RADIUS server.

Accounting Port: Enter the port number dedicated to RADIUS accounting. The RADIUS server uses accounting to keep track of user login sessions.

Key: Enter the secret Key that is required of all devices to communicate with the RADIUS server.

Confirm Key: Enter the secret key again.

Status: Select the RADIUS server status. Invalid or Valid.

Server(s) Settings Table: The servers are listed in sequence with their configuration settings

Advanced > Encryption > WPA-PSK

The screenshot shows the configuration interface for a D-Link Air Premier 11a/11g Dualband High Speed Outdoor Wireless Bridge/AP. The interface is divided into a left sidebar and a main content area. The sidebar contains navigation buttons for Mode, Performance, Filters, Encryption (highlighted in yellow), Grouping, and DHCP Server. The main content area has a top navigation bar with Home, Advanced (highlighted in yellow), Tools, Status, and Help. Below this is the 'Security Settings' section, which includes the following fields and options:

- Wireless Band:** IEEE802.11a
- Authentication:**
 - Open System
 - Shared Key
 - Open System / Shared key
 - 802.1x
 - WPA
 - WPA-PSK
- PassPhrase:** You are using PSK.
- Cipher:** TKIP
- Encryption:**
 - Disabled
 - Enabled
- Key Type:** HEX
- Key Size:** 64 Bits
- Valid Key:** First
- Key Table:**
 - First Key: [text input field]
 - Second Key: [text input field]
 - Third Key: [text input field]
 - Fourth Key: [text input field]

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

- Wireless Band:** Select IEEE802.11a or IEEE802.11g. IEEE802.11a is selected here.
- Authentication:** **WPA-PSK** offers enhanced security without the need for a RADIUS server.
- Passphrase:** Enter a passphrase that will be shared by all devices using WPA-PSK on the network.

Advanced > Grouping



- Load Balance:** Select Enabled or Disabled. When you **Enable Load Balance** you allow several DWL-7700APs to balance wireless network traffic and wireless clients among the DWL-7700APs in the network.

- User Limit (0-64):** Set the **User Limit** in this field (0-64).
- Link Integrate:** Select **Enabled** or **Disabled**. (When **Link Integrate** is **Enabled**, and the Ethernet connection between the LAN and the AP is disconnected, the wireless segment associated with the AP will also be disconnected from the AP.)
- Ethernet Link Status:** This field displays the Ethernet Link Status. **Link Up** indicates that there is an Ethernet LAN connection to the AP.

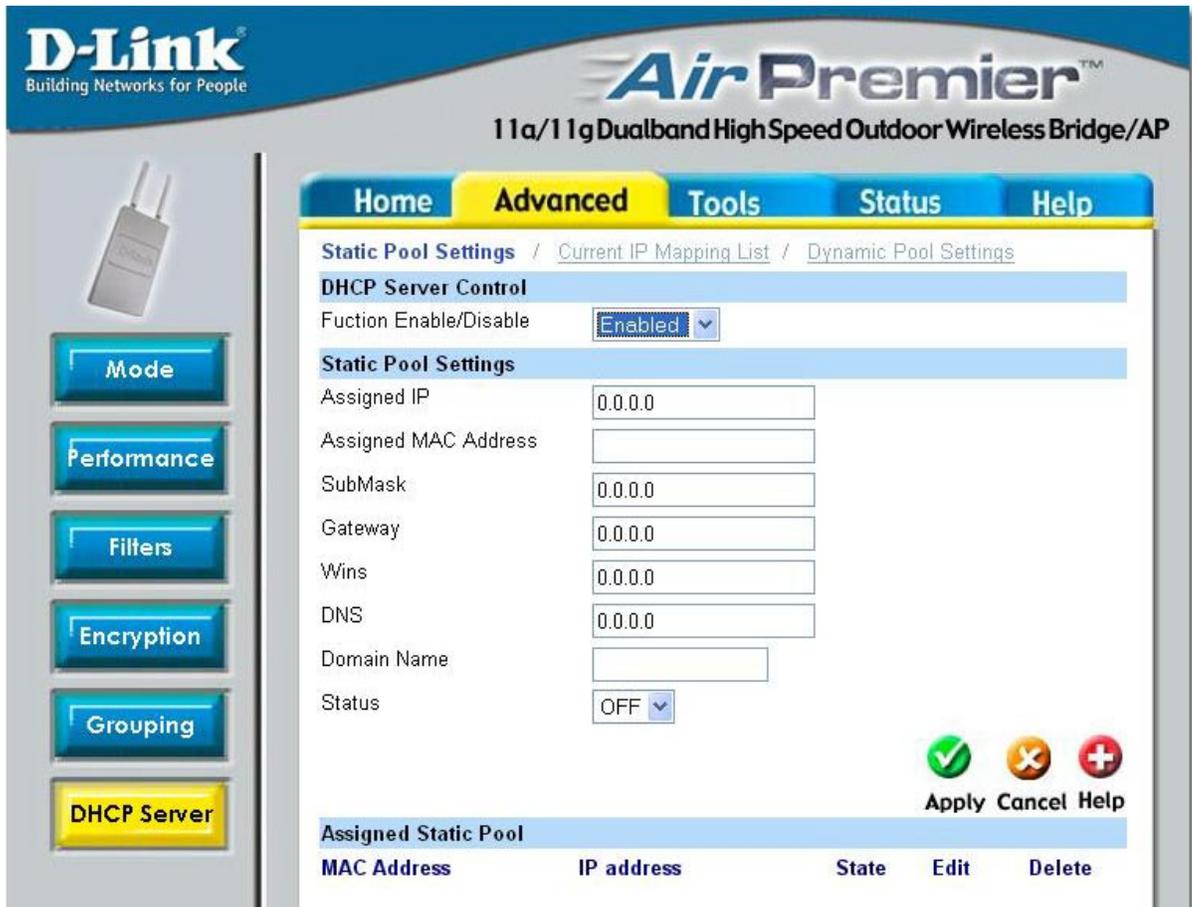
Advanced > DHCP Server > Dynamic Pool Settings

DHCP Server Control: **Dynamic Host Configuration Protocol** assigns dynamic IP addresses to devices on the network. This protocol simplifies network management and allows new wireless devices to receive IP addresses automatically without the need to manually assign new IP addresses. Select **Enable** to allow the DWL-7700AP to function as a DHCP server.

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:	All devices in the network must have the same subnet mask to communicate. Enter the submask for the network 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 a network computer that has a dynamically assigned IP address.
	DNS:	Enter the IP address of the DNS server. The DNS (Domain Name Server) translates domain names such as www.dlink.com into IP addresses.
	Domain Name:	Enter the domain name of the DWL-7700AP, if applicable. (An example of a domain name is: www.dlink.com.)
	Lease Time (60-31536000 sec.):	The Lease Time is the period of time before the DHCP server will assign new IP addresses.
	Status:	Turn the Dynamic Pool Settings ON or OFF here.

Advanced > DHCP Server > Static Pool Settings



DHCP Server Control: **Dynamic Host Configuration Protocol** assigns IP addresses to wireless devices on the network. This protocol simplifies network management and allows new wireless devices to receive IP addresses automatically without the need to manually assign IP addresses. Select **Enable** to allow the DWL-7700AP to function as a DHCP server.

Assigned IP: Use the **Static Pool Settings** 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. After you have assigned a static IP address to a device via its MAC address, click **Apply**; the device will appear in the **Assigned Static Pool** at the bottom of the screen. Edit or delete the device in this list.

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 a network computer with a dynamically assigned IP address, if applicable.

DNS: Enter the IP address of the Domain Name Server, if applicable. The DNS translates domain names such as www.dlink.com into IP addresses.

Domain Name: Enter the domain name of the DWL-7700AP, if applicable.

Status: This option turns the Static Pool settings ON or OFF.

Advanced > DHCP Server > Current IP Mapping List

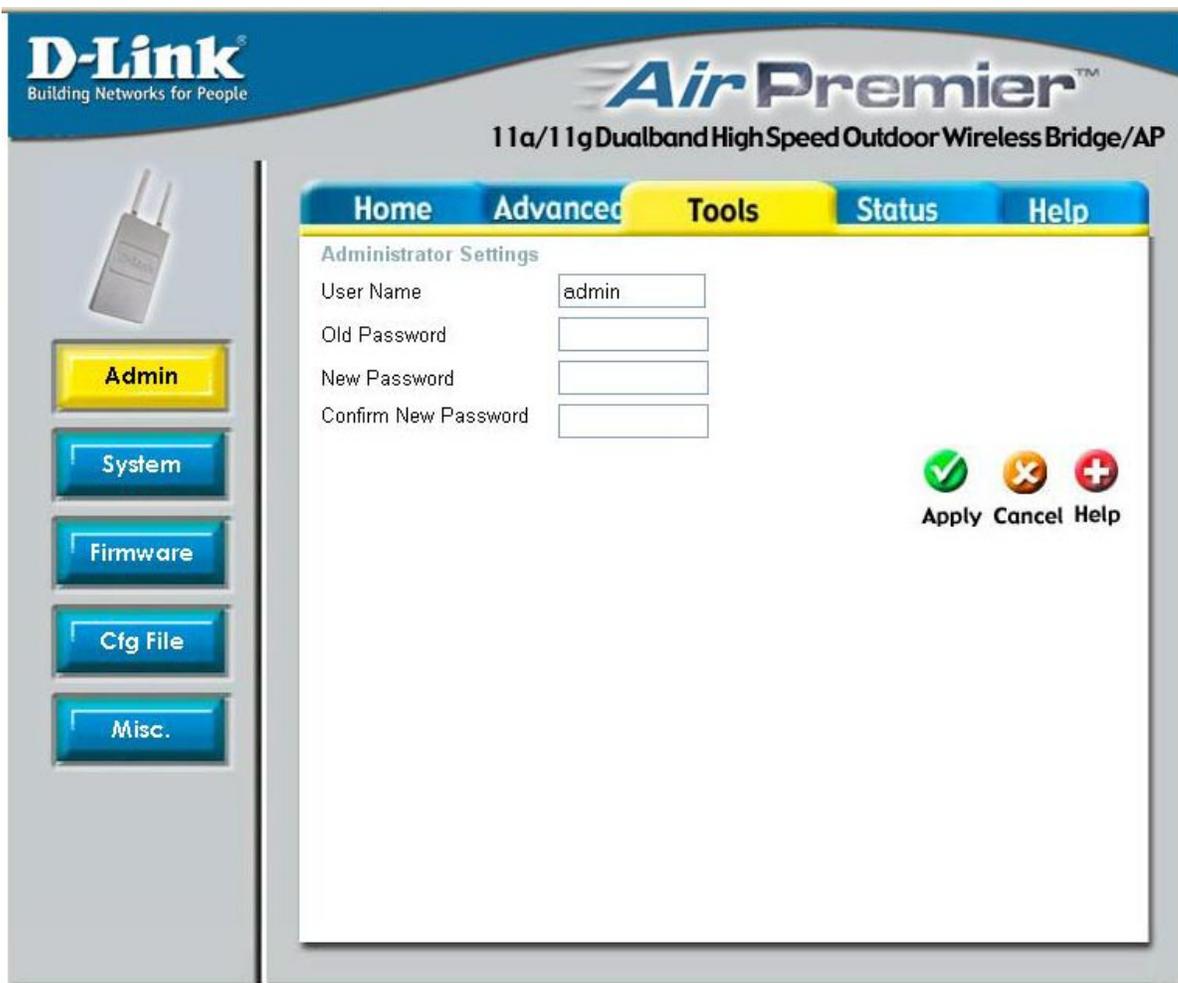
The screenshot shows the configuration interface for a D-Link Air Premier 11a/11g Dualband High Speed Outdoor Wireless Bridge/AP. The 'Advanced' tab is selected, and the 'Current IP Mapping List' page is displayed. The page features a navigation menu with 'Home', 'Advanced', 'Tools', 'Status', and 'Help'. The 'Advanced' menu is expanded to show 'Current IP Mapping List', 'Dynamic Pool Settings', and 'Static Pool Settings'. The 'Current DHCP Dynamic Pools' section has a table with columns for 'Binding MAC Address', 'Assigned IP address', and 'Lease time'. The 'Current DHCP Static Pools' section has a table with columns for 'Binding MAC Address' and 'Assigned IP address'. A sidebar on the left contains buttons for 'Mode', 'Performance', 'Filters', 'Encryption', 'Grouping', and 'DHCP Server'.

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-7700AP 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.

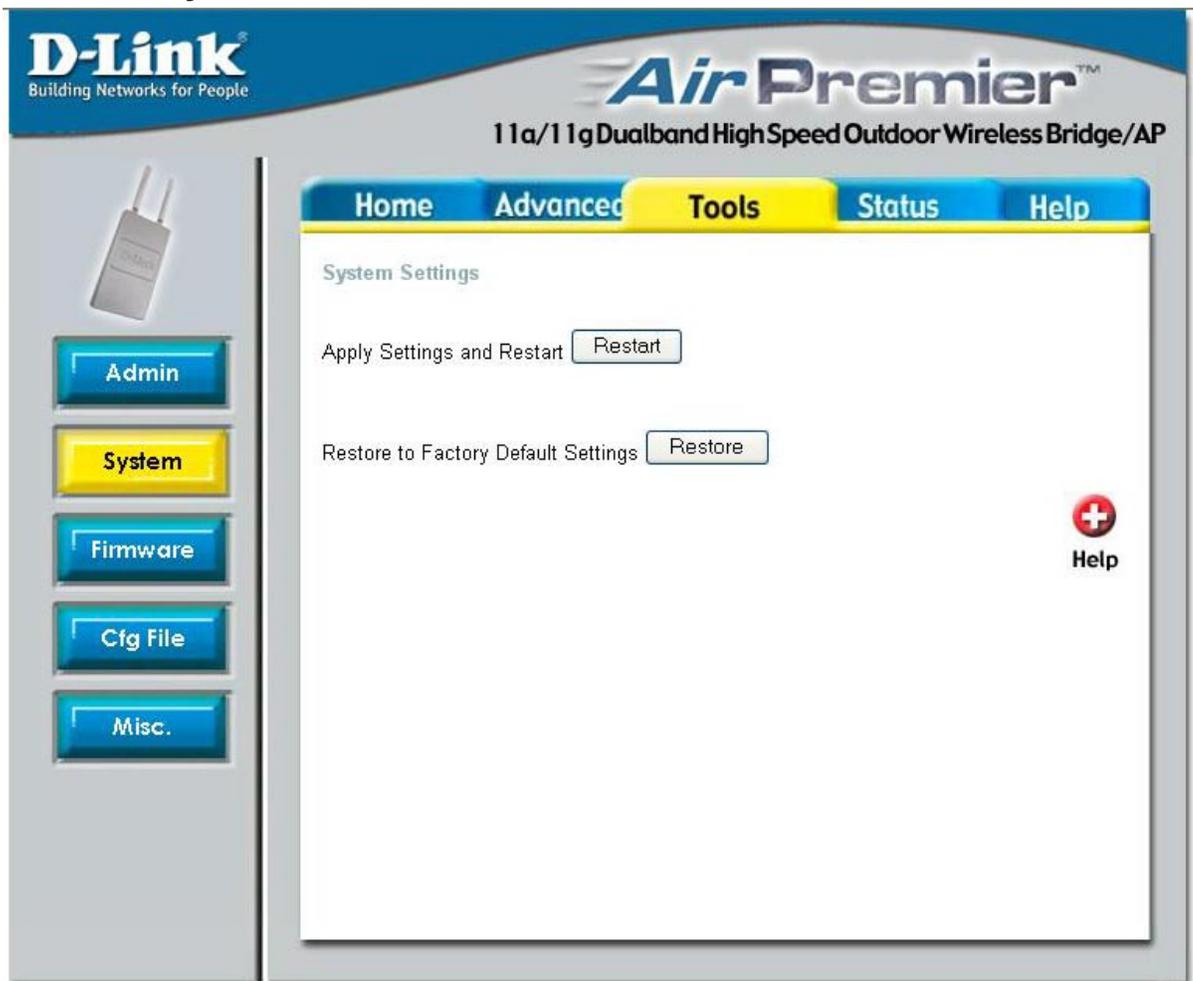
Binding MAC address:	The MAC address of a device on the network that is within the DHCP dynamic IP address pool.
Assigned IP address:	The current corresponding DHCP-assigned dynamic IP address of the device.
Lease Time:	The length of time that the dynamic IP address will be valid.
Current DHCP Static 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.

Tools > Admin



- User Name:** Enter a user name. The default setting is **admin**.
- Old Password:** To change your password, enter the old password here.
- New Password:** Enter your new password here.
- Confirm New Password:** Enter your new password again.

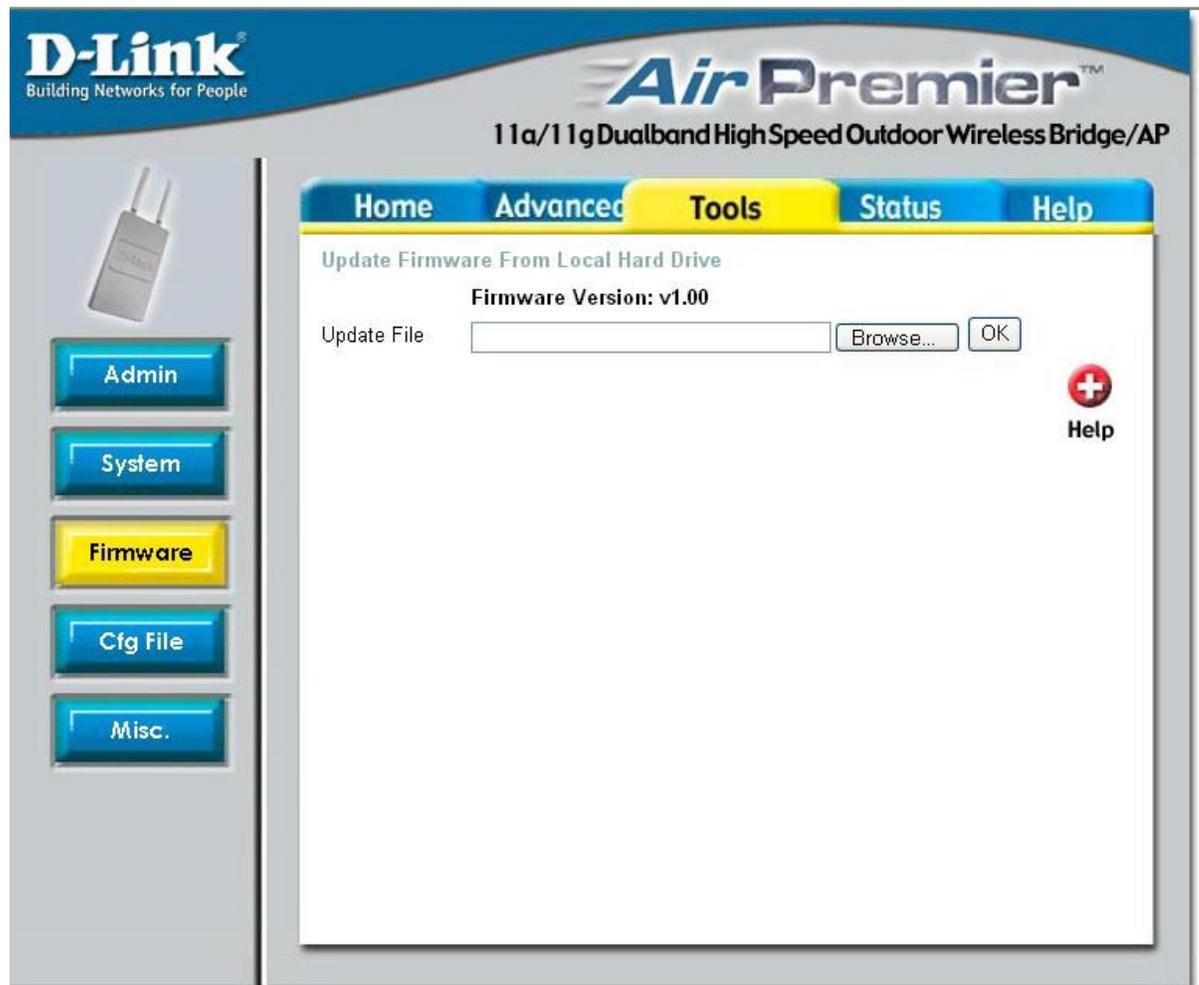
Tools > System



Apply Settings and Restart: Click Restart to apply the system settings and restart the DWL-7700AP.

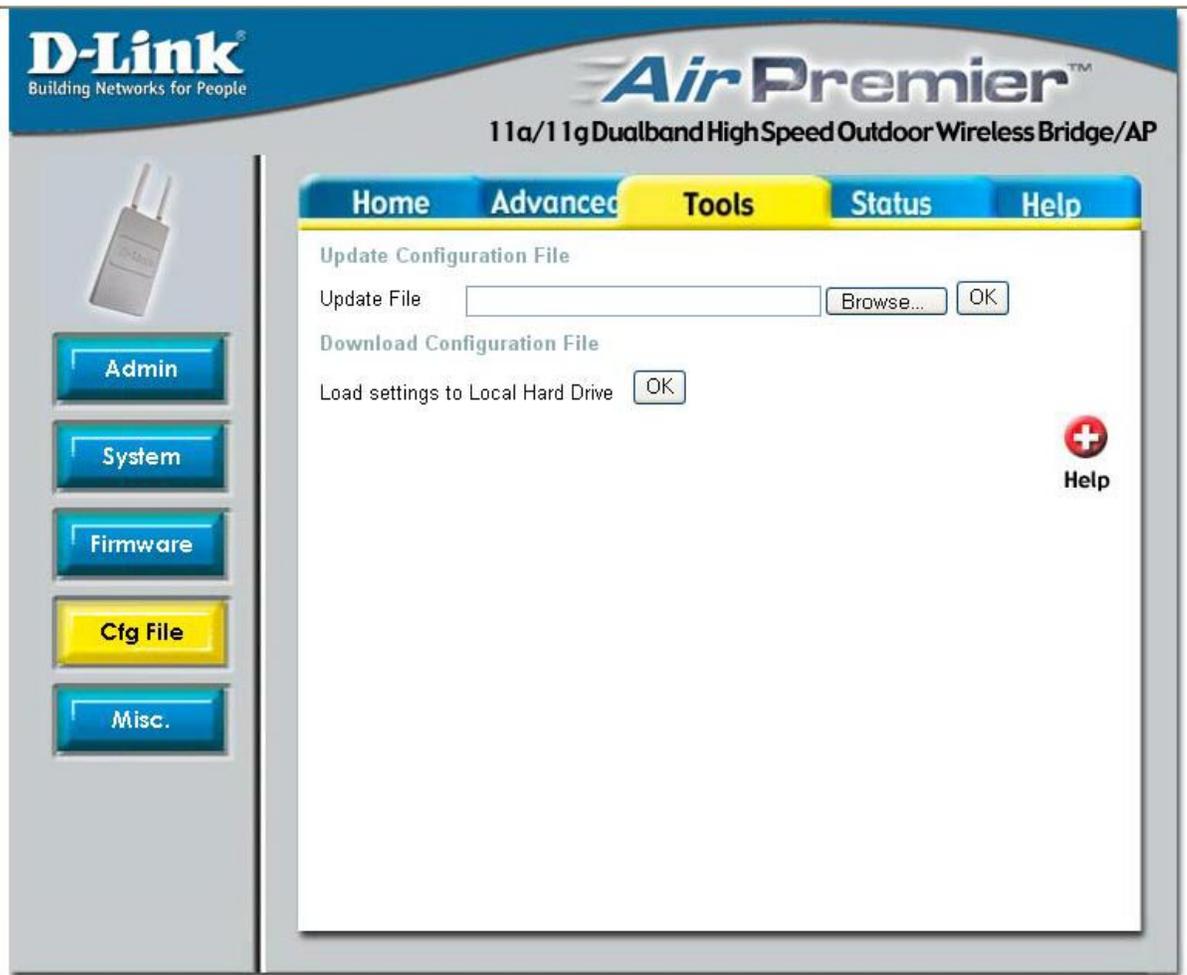
Restore to Factory Default Settings: Click Restore to return the DWL-7700AP to its factory default settings..

Tools > Firmware



Update File: After you have downloaded the most recent version of the firmware from <http://support.dlink.com> to your hard drive, you can **Browse** your hard drive to locate the downloaded file. Select the file and click **OK** to update the firmware.

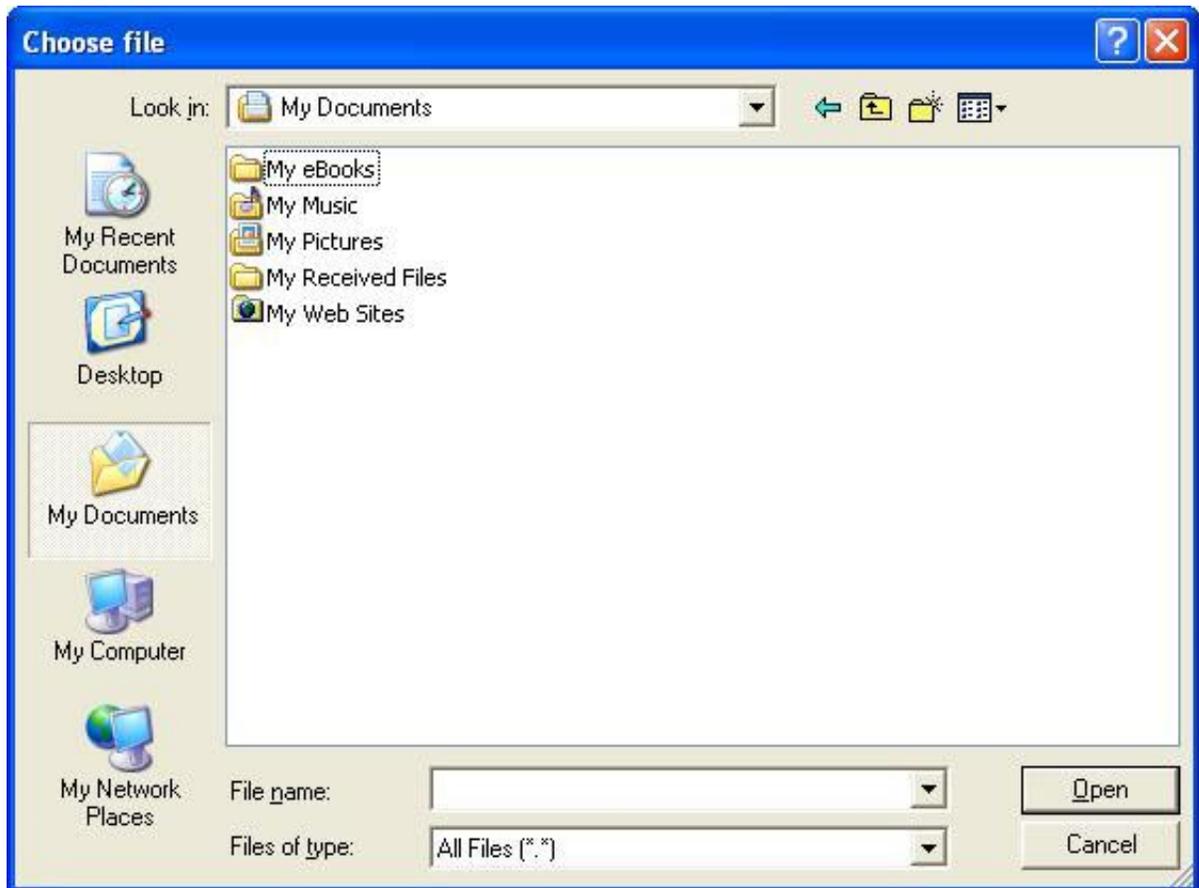
Tools > Cfg File



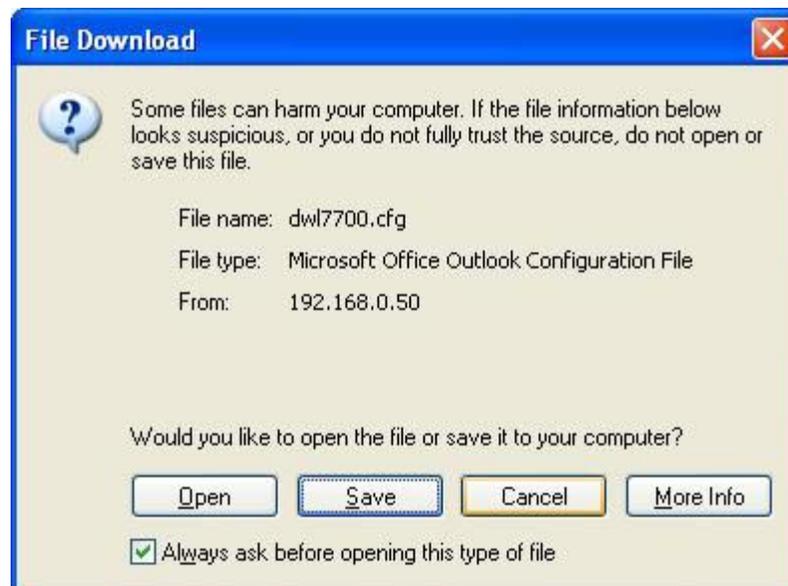
Update File: Browse for the configuration settings that you have saved to your hard drive. Click OK after you have selected the settings file.

Load Settings to the Local Hard Drive: Click OK to save the selected settings to your hard drive.

Tools > Cfg File > Choose file

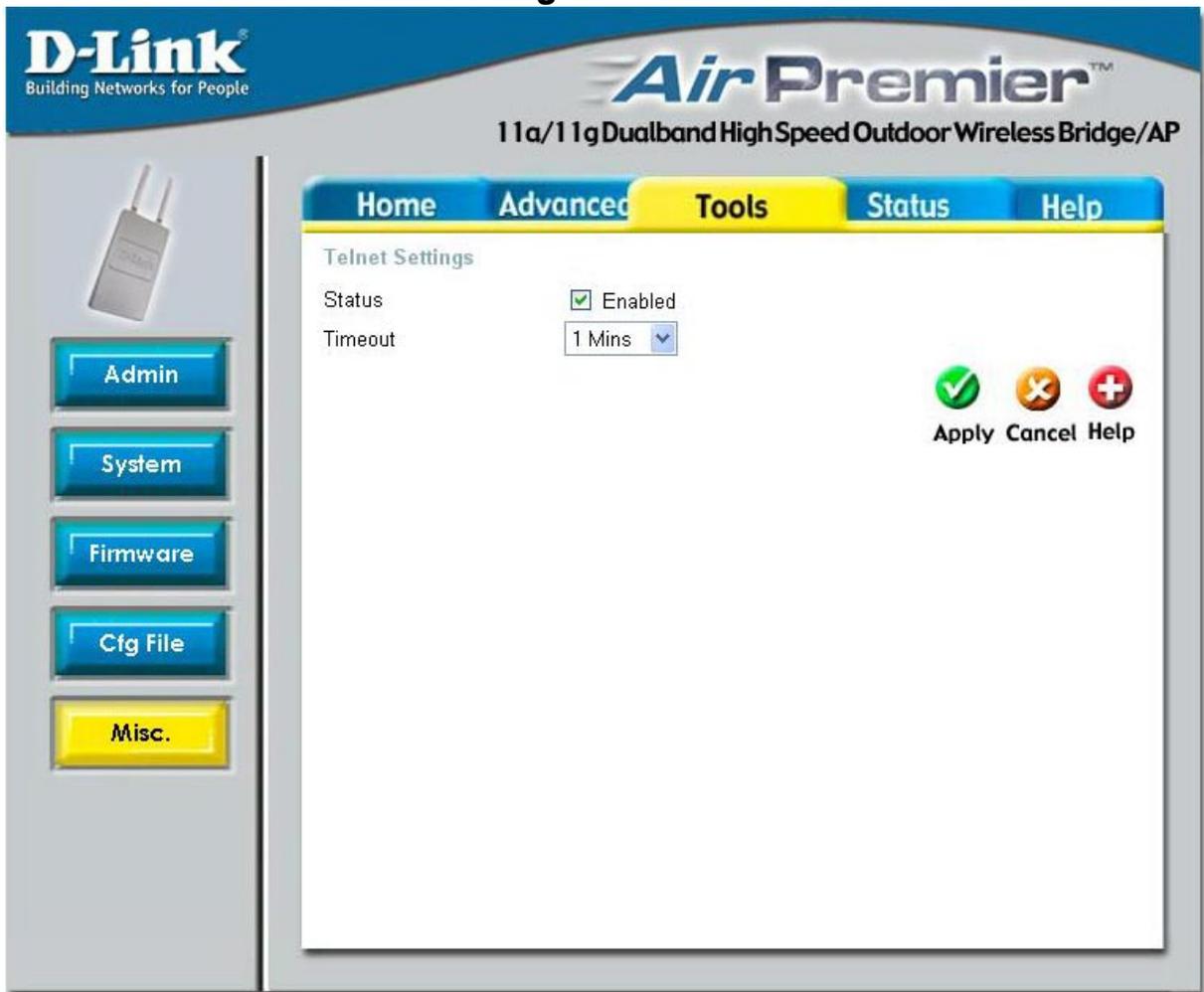


When you click **Browse** in the previous screen, the dialog box shown above appears. Select the file you wish to download and click **Open**.



When this dialog box appears, click **Save** and select a location to save the configuration file.

Tools > Misc > Telnet Settings



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

Status: Telnet is enabled by default.

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

Status > Device Info

D-Link
Building Networks for People

Air Premier™
11a/11g Dualband High Speed Outdoor Wireless Bridge/AP

Home Advanced Tools **Status** Help

Device Information

Firmware Version: v1.00
MAC Address: 00:05:5d:28:30:f1

Ethernet

Get IP From:	Manual
IP address:	192.168.0.50
Subnet Mask:	255.255.255.0
Gateway:	0.0.0.0

Wireless (802.11a)

SSID:	default
Channel:	52
Turbo Mode:	Disabled
Rate:	Auto
Security Level:	Open System / Encryption Disabled

Wireless (802.11g)

SSID:	default
Channel:	6
Turbo Mode:	Disabled
Rate:	Auto
Security Level:	Open System / Encryption Disabled

Help

Device Information: This window displays the settings of the DWL-7700AP, the firmware version and the MAC address.

Status > Stats

The screenshot shows the configuration menu for a D-Link Air Premier 11a/11g Dualband High Speed Outdoor Wireless Bridge/AP. The 'Status' tab is selected, and the 'Stats' sub-tab is active. The interface displays traffic statistics for WLAN 802.11A. On the left, there are navigation buttons for 'Device Info', 'Stats', 'Indication', and 'Client Info'. The main content area shows the following statistics:

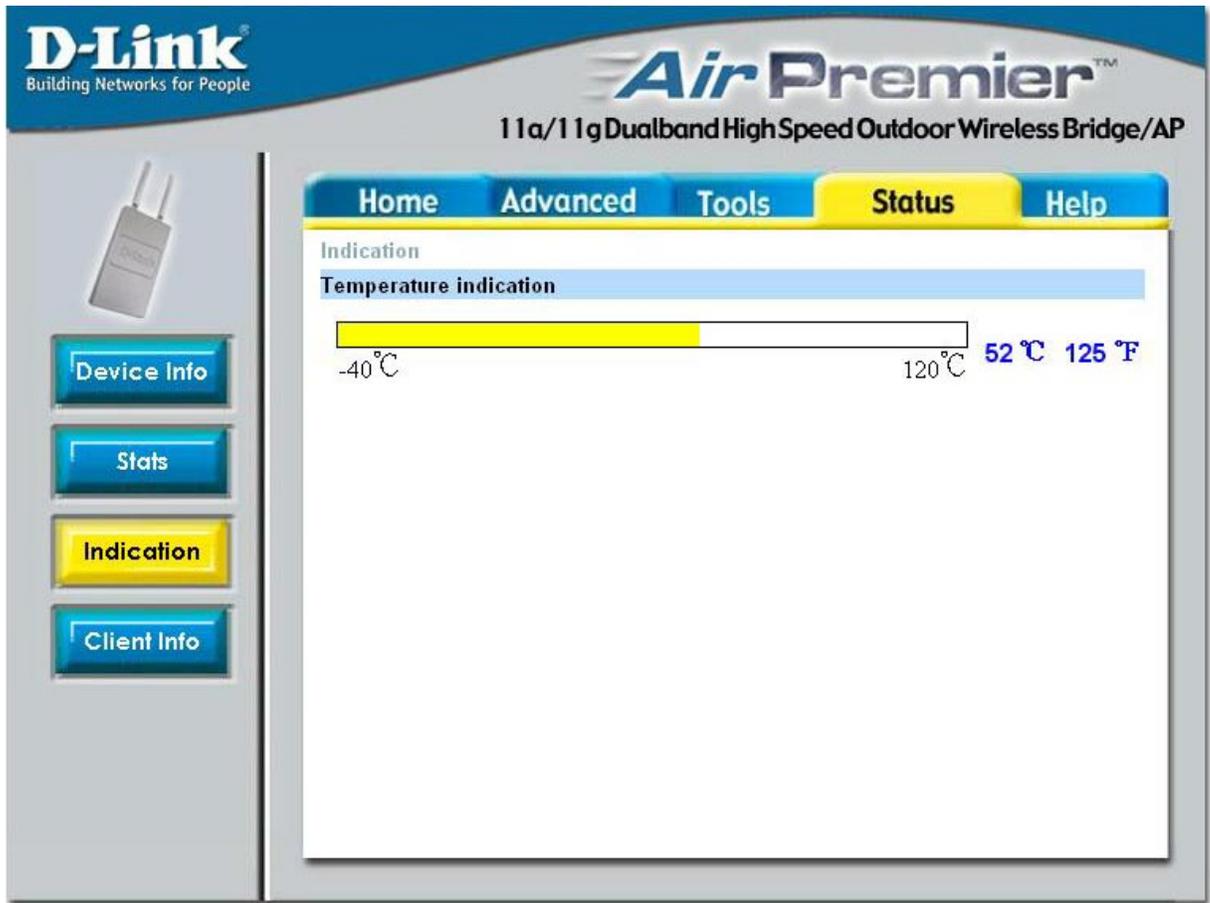
ThroughPut	
Transmit Success Rate	100 %
Transmit Retry Rate:	0 %
Receive Success Rate:	100 %
Receive Duplicate Rate:	0 %
RTS Success Count:	0
RTS Failure Count:	0
Transmitted Frame Count	
Transmitted Frame Count	2730
Multicast Transmitted Frame Count	0
Transmitted Error Count:	0
Transmitted Total Retry Count:	0
Transmitted Multiple Retry Count:	0
Received Frame Count	
Received Frame Count	0
Multicast Received Frame Count	2730
Received Frame FCS Error Count:	0
Received Frame Duplicate Count:	0
Ack Rcv failure Count:	0
Wep Frame Error Count	
WEP Excluded Frame Count	0
WEP ICV Error Count	0

At the bottom right of the statistics area, there are 'Refresh' and 'Help' buttons.

WLAN 802.11A Traffic Statistics:

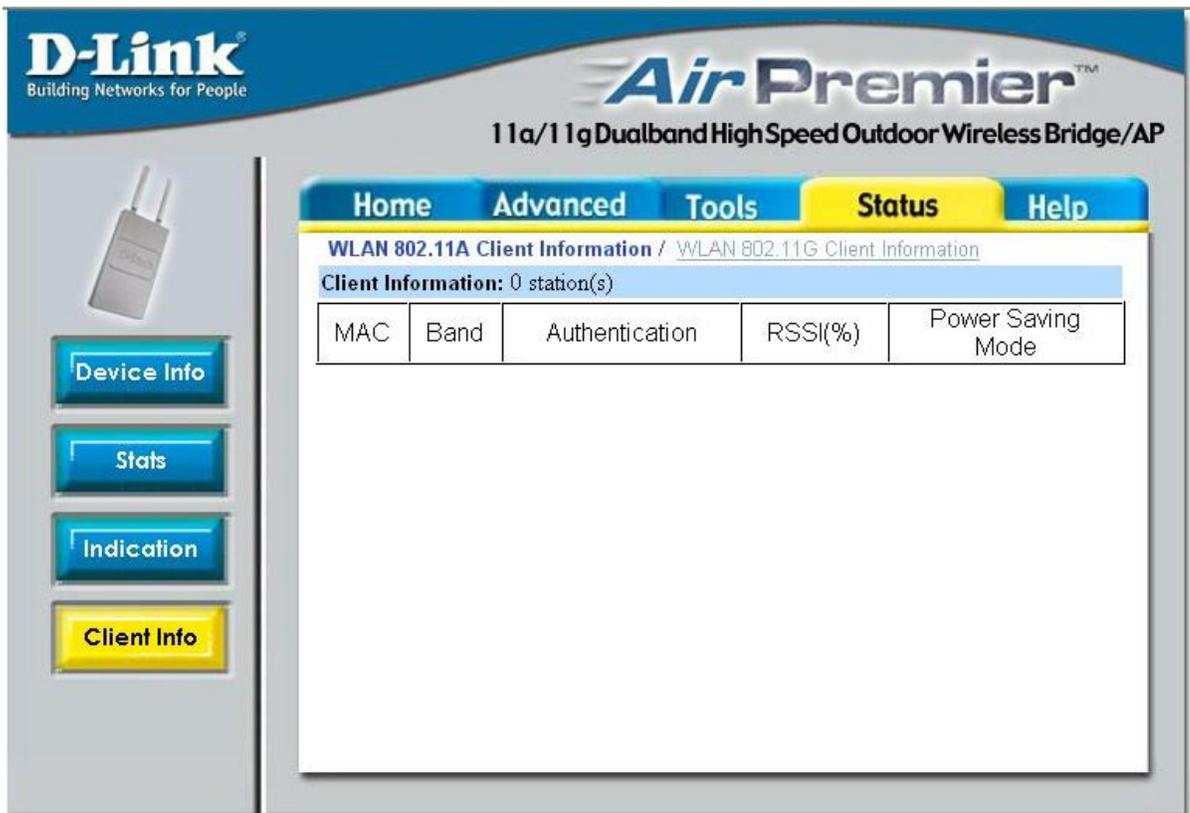
Choose **WLAN 802.11A Traffic Statistics**, or choose **WLAN 802.11G Traffic Statistics**. WLAN 802.11A is chosen here. This window displays the statistics of the IEEE802.11a or IEEE802.11g network, depending upon your selection.

Status > Indication



Temperature Indication: This window displays the current operating temperature.

Status > Client Info



Client Information: Select this option to obtain information on IEEE802.11a clients. Select WLAN 802.11G Client Information to obtain information on IEEE802.11g clients. (A client is a device on the network that is communicating with the DWL-7700AP.)

The following information is available for each client that is communicating with the DWL-7700AP.

- MAC:** Displays the MAC address of the client.
- Band:** Displays the wireless band, 802.11a or 802.11g.
- Authentication:** Displays the type of authentication that is enabled.
- RSSI:** Receive Signal Strength Indicator indicates the strength of the signal
- Power Saving Mode:** Displays the status of the power saving feature.

Help



Help: Click on any item in the Help screen for more information.

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**:

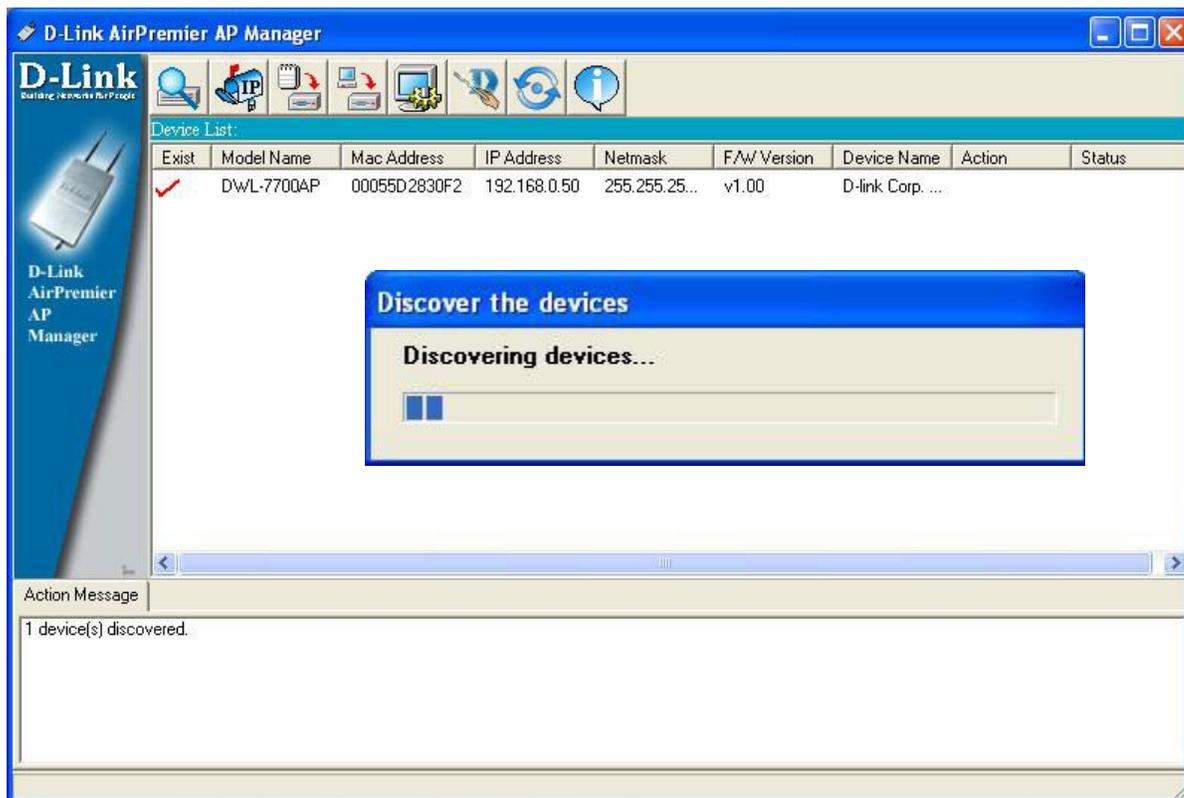
- Go to the **Start Menu**
- Select **Programs**
- Select **D-Link AirPremier AP Manager**
- Select **DWL-7700AP**



Discovering Devices



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



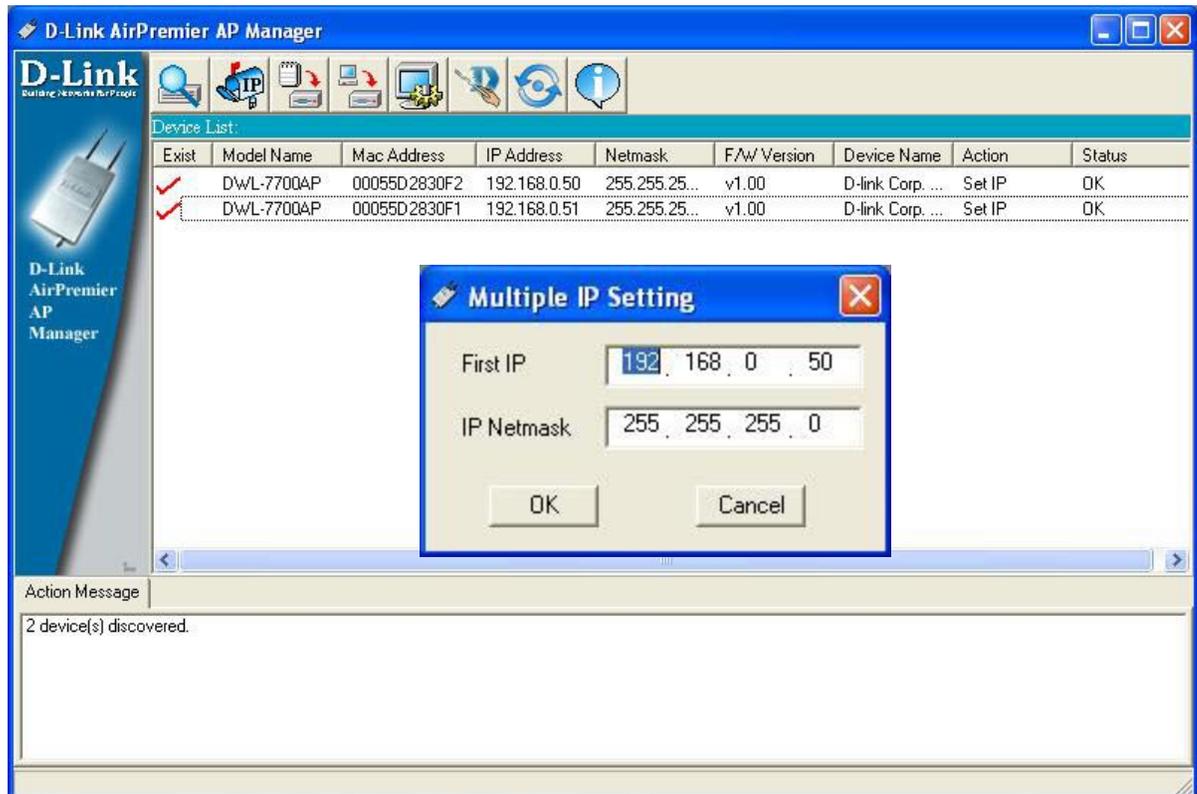
Selecting Devices

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.

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).

You can configure a single device by highlighting one device in the list, or you can configure multiple devices by highlighting multiple devices before clicking on the Device Configuration icon pictured above. The examples in this section show single device configuration. When you select multiple devices for configuration the procedure will be similar.

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

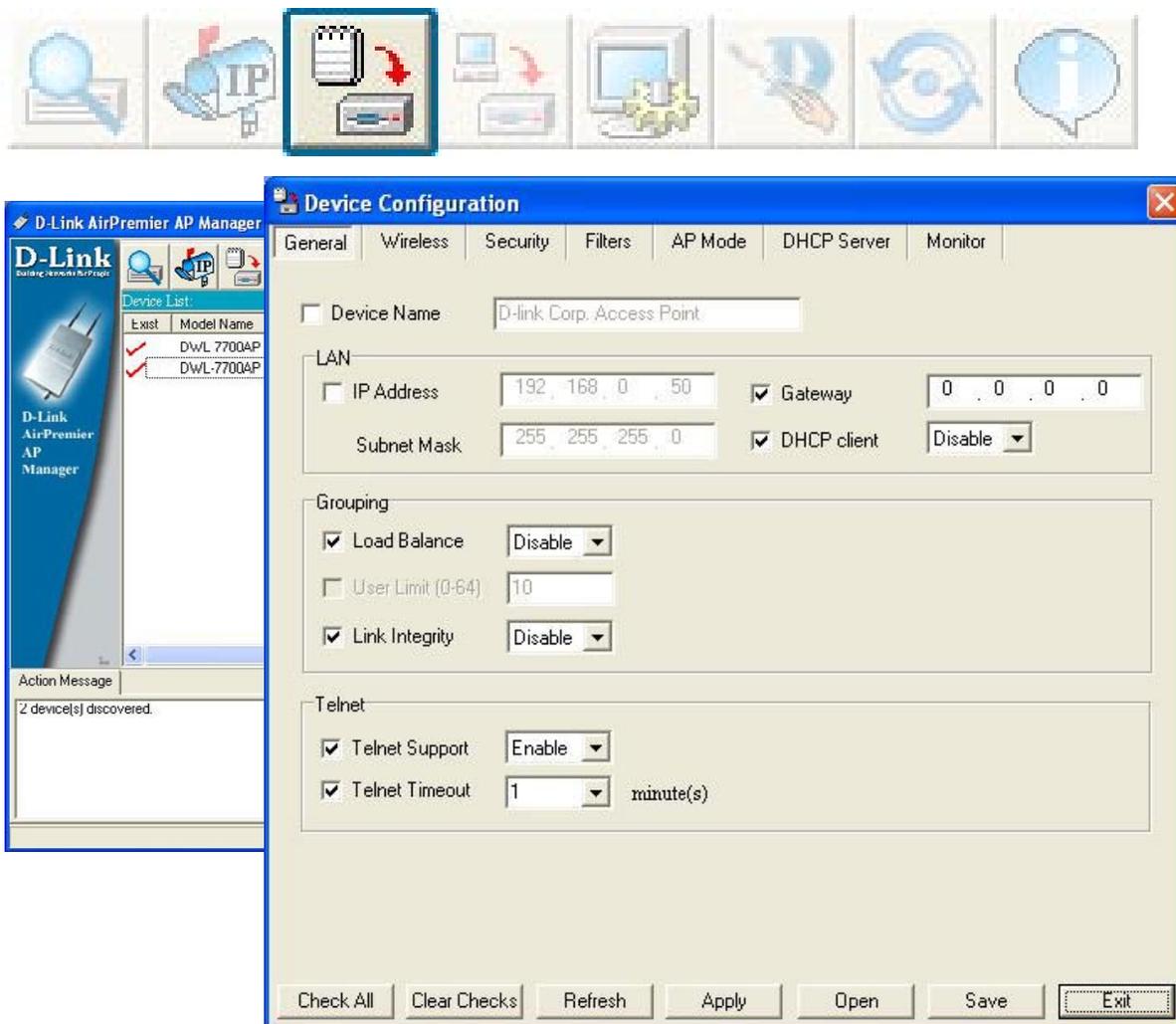
The open button is used to load a previously saved configuration file. After opening a configuration file, you must click the Apply button to save the settings to the selected device(s).

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.



Device Configuration > General

When selecting multiple devices for configuration, some options are unavailable for configuration by default 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 should 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 should only be 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.



Device Configuration > General (continued)

- 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.
- Load Balance:** This pulldown selection enables or disables load balancing. When you enable load balance you allow several access points to balance wireless network traffic and wireless clients among the access points with the same SSID. All the APs that share Load Balancing must have the same SSID. Assign each access point a different non-overlapping channel (e.g., 1, 6, 11).
- User Limit:** Enter the number of load balancing users, from 0-64.
- Link Integrity:** This pulldown selection enables or disables Link Integrity. When Link Integrity is enabled, the wireless segment associated with the AP will be disconnected whenever the connection between the AP and the LAN is dropped.
- 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).

Device Configuration > Wireless > IEEE802.11a

The screenshot shows a 'Device Configuration' window with tabs for General, Wireless, Security, Filters, AP Mode, DHCP Server, and Monitor. The 'Wireless' tab is active, showing settings for IEEE802.11a and IEEE802.11g. For IEEE802.11a, SSID is 'default', Channel is 52, Data Rate is Auto, Tx Power is Full, Beacon Interval is 100, SSID Broadcast is Enable, Turbo Setting is Disable, DTIM is 1, Fragment Length is 2346, and RTS Length is 2346. For IEEE802.11g, SSID is 'default', Channel is 6, Data Rate is Auto, Tx Power is Full, Beacon Interval is 100, SSID Broadcast is Enable, DTIM is 1, Fragment Length is 2346, and RTS Length is 2346. At the bottom, there are buttons for Check All, Clear Checks, Refresh, Apply, Open, Save, and Exit.

A pulldown menu to select the maximum wireless signal rate for the selected device(s).

- SSID:** The Service Set (network) Identifier of your wireless network.
- Channel:** Allows you to select a channel. 52 is the default setting.
- Data Rate:** A pulldown menu to select the maximum wireless signal rate for the selected device(s).
- Tx Power:** A pulldown menu for selecting the transmit power of the selected device(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.
- SSID Broadcast:** Allows you to enable or disable the broadcasting of the SSID to network clients.

Device Configuration > Wireless > IEEE802.11a (continued)

- Turbo Setting:** Turbo Setting is a group of performance enhancement features that increase end user application throughput in an 802.11a network. Turbo is backwards compatible with standard 802.11a devices. For ideal performance, all wireless devices on the network should be Turbo capable. Enable or disable this setting. When Turbo is enabled experience a maximum wireless signal rate of up to 108Mbps.*
- 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.

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

Device Configuration > Wireless > IEEE802.11g

Device Configuration

General | **Wireless** | Security | Filters | AP Mode | DHCP Server | Monitor

IEEE802.11a

- SSID: default
- Channel: 52
- Data Rate: Auto
- Tx Power: Full
- Beacon Interval (20~1000): 100
- SSID Broadcast: Enable
- Turbo Setting: Disable
- DTIM (1~255): 1
- Fragment Length (256~2346): 2346
- RTS Length (256~2346): 2346

IEEE802.11g

- SSID: default
- Channel: 6
- Data Rate: Auto
- Tx Power: Full
- Beacon Interval (20~1000): 100
- SSID Broadcast: Enable
- DTIM (1~255): 1
- Fragment Length (256~2346): 2346
- RTS Length (256~2346): 2346

Check All | Clear Checks | Refresh | Apply | Open | Save | Exit

SSID: The Service Set (network) Identifier of your wireless network.

Channel: Allows you to select a channel. 6 is the default setting.

Data Rate: A pulldown menu to select the maximum wireless signal rate for the selected device(s).

Tx Power: A pulldown menu for selecting the transmit power of the selected device(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.

SSID Broadcast: Allows you to enable or disable the broadcasting of the SSID to network clients.

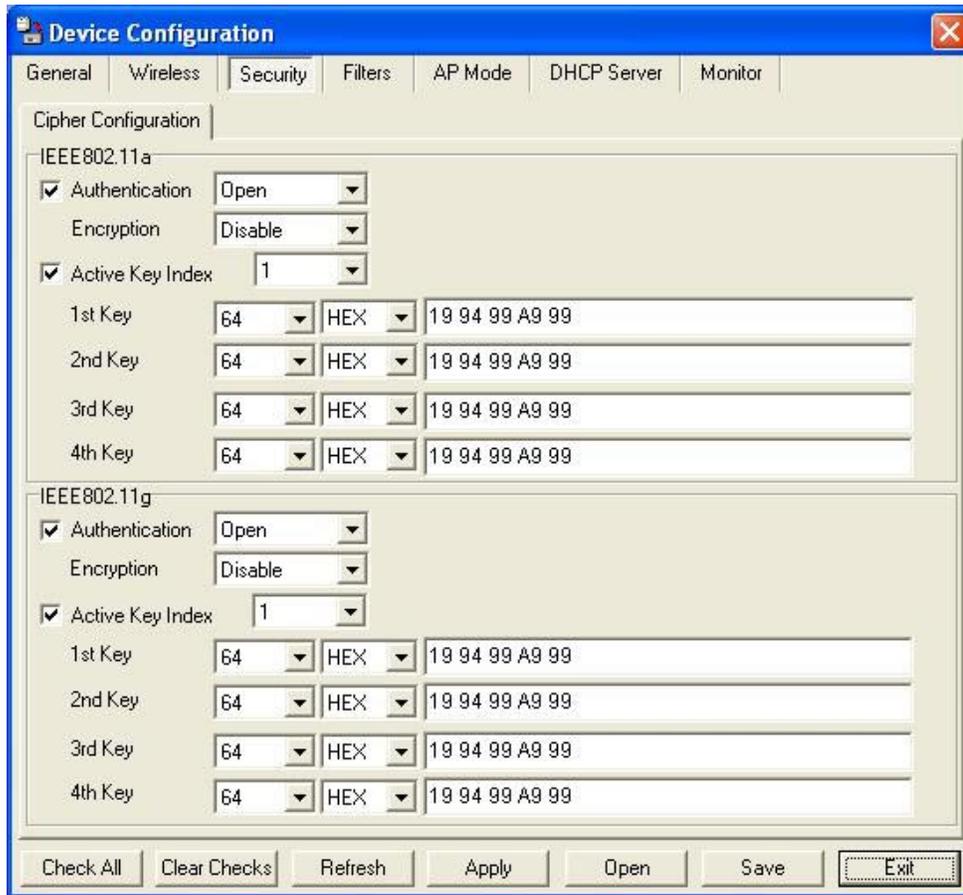
Device Configuration > Wireless > IEEE802.11g (continued)

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.

Device Configuration > Security > 802.11a & 802.11g



The Security tab contains the WEP configuration settings on the initial 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).

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: Used to authenticate clients via a RADIUS server.

WPA-PSK: Does not utilize a RADIUS server for authentication but uses a passphrase that is configured on the clients and access points.

RADIUS: Built-in RADIUS server does not require outside server.

Local User: A type of 802.1x security that utilizes user login for security.

Device Configuration > Security > 802.11a & 802.11g

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.

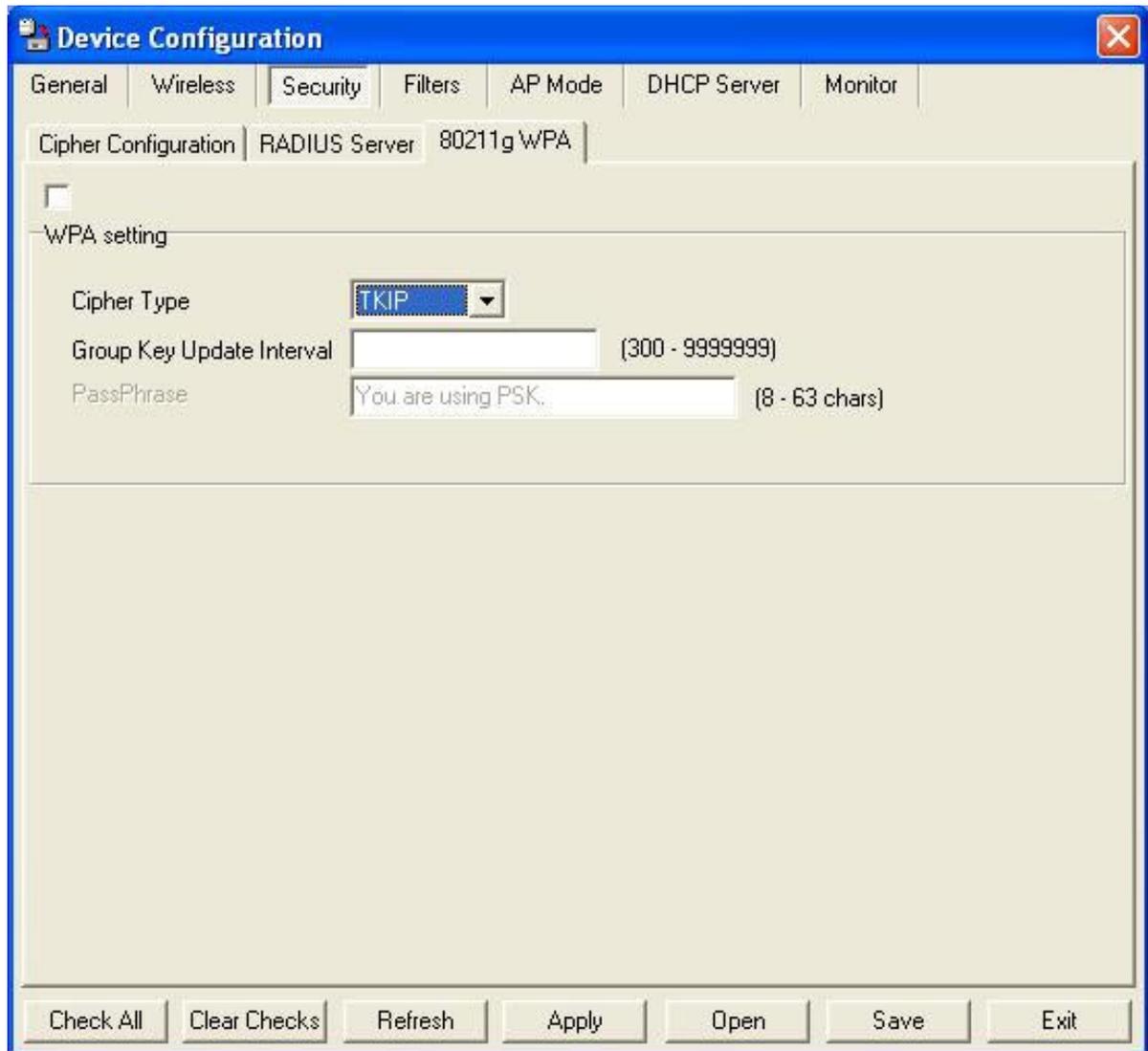
Device Configuration > Security > 802.11a > WPA

The screenshot shows a web-based configuration window titled "Device Configuration" with a blue header and a close button in the top right. The window has several tabs: "General", "Wireless", "Security" (which is selected), "Filters", "AP Mode", "DHCP Server", and "Monitor". Under the "Security" tab, there are sub-tabs for "Cipher Configuration", "RADIUS Server", and "80211a WPA". The "80211a WPA" sub-tab is active. Below the sub-tabs, there is a checkbox for "WPA setting" which is currently unchecked. Underneath, there are three input fields: "Cipher Type" with a dropdown menu showing "TKIP", "Group Key Update Interval" with a text box and "(300 - 9999999)" to its right, and "PassPhrase" with a text box containing "You are using PSK." and "(8 - 63 chars)" to its right. At the bottom of the window, there is a row of buttons: "Check All", "Clear Checks", "Refresh", "Apply", "Open", "Save", and "Exit".

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 valid. 1800 is the recommended setting. A lower interval may reduce transfer rates.

Device Configuration > Security > 802.11g > WPA



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 valid. 1800 is the recommended setting. A lower interval may reduce transfer rates.

Device Configuration > Security > IEEE802.11a & IEEE802.11g > RADIUS server

Device Configuration

General | Wireless | **Security** | Filters | AP Mode | DHCP Server | Monitor

Cipher Configuration | **RADIUS Server**

Authentication From: Radius | WEP Key Size: 128

RADIUS Server

RADIUS Server

Server I

RADIUS Server: 0 . 0 . 0 . 0

RADIUS Port (0 - 65535): 1812

RADIUS Secret: [Empty]

Server II

RADIUS Server: 0 . 0 . 0 . 0

RADIUS Port (0 - 65535): 1812

RADIUS Secret: [Empty]

Server III

RADIUS Server: 0 . 0 . 0 . 0

RADIUS Port (0 - 65535): 1812

RADIUS Secret: [Empty]

Check All | Clear Checks | Refresh | Apply | Open | Save | Exit

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.

Device Configuration > Security > IEEE802.11a > WPA-PSK

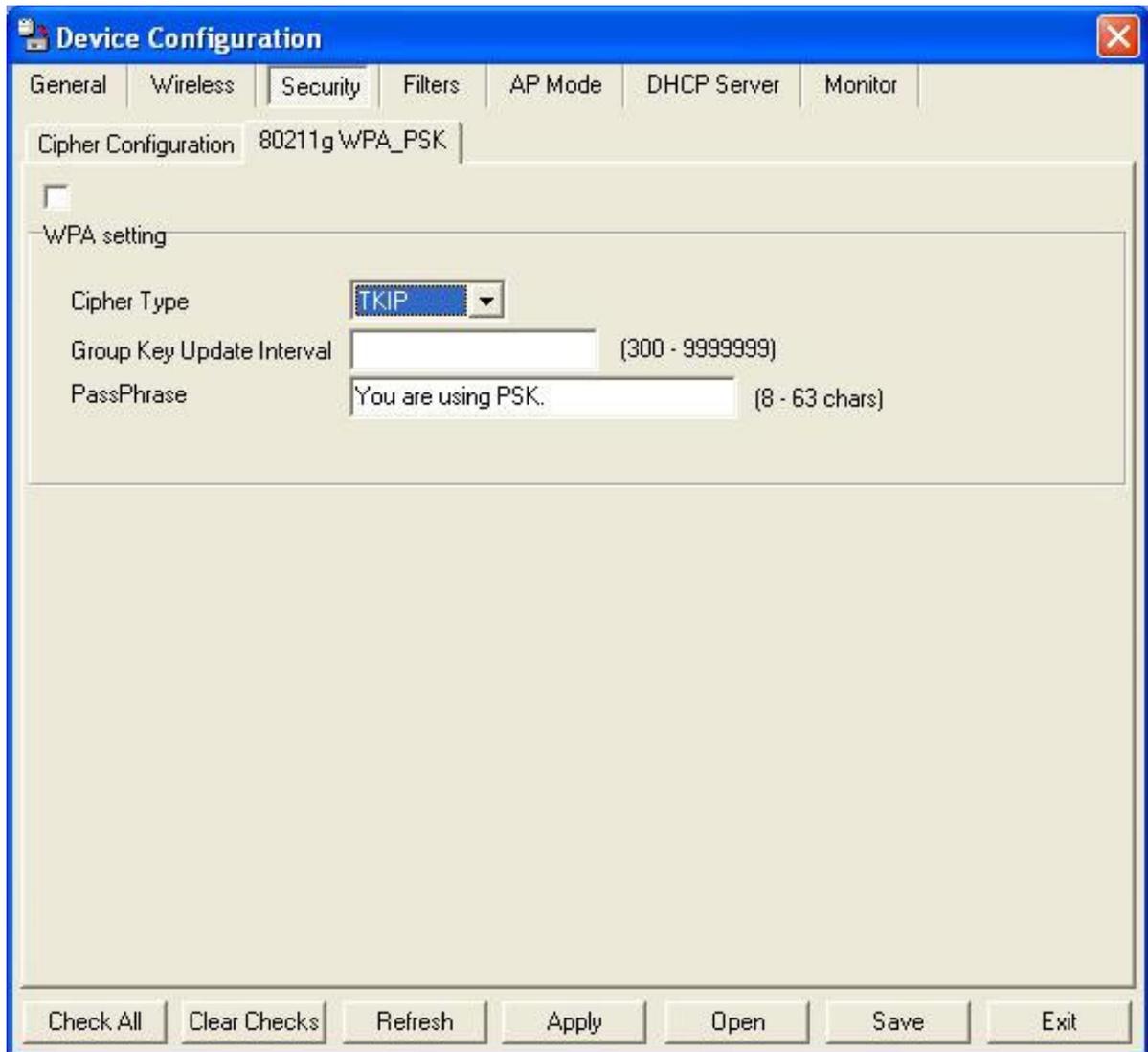
The screenshot shows a web-based configuration window titled "Device Configuration" with a blue header and a close button in the top right. The window has several tabs: "General", "Wireless", "Security" (which is selected), "Filters", "AP Mode", "DHCP Server", and "Monitor". Below the tabs, there is a "Cipher Configuration" section with a dropdown menu set to "80211a WPA_PSK". Underneath, there is a "WPA setting" section with a checkbox that is unchecked. The "Cipher Type" is set to "TKIP" in a dropdown menu. The "Group Key Update Interval" is an empty text box with "(300 - 9999999)" to its right. The "PassPhrase" is an empty text box with "You are using PSK." and "(8 - 63 chars)" to its right. At the bottom of the window, there are seven buttons: "Check All", "Clear Checks", "Refresh", "Apply", "Open", "Save", and "Exit".

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 valid. 1800 is the recommended setting. A lower interval may reduce transfer rates.

PassPhrase: Enter a PassPhrase between 8-63 characters in length.

Device Configuration > Security > IEEE802.11g > WPA-PSK

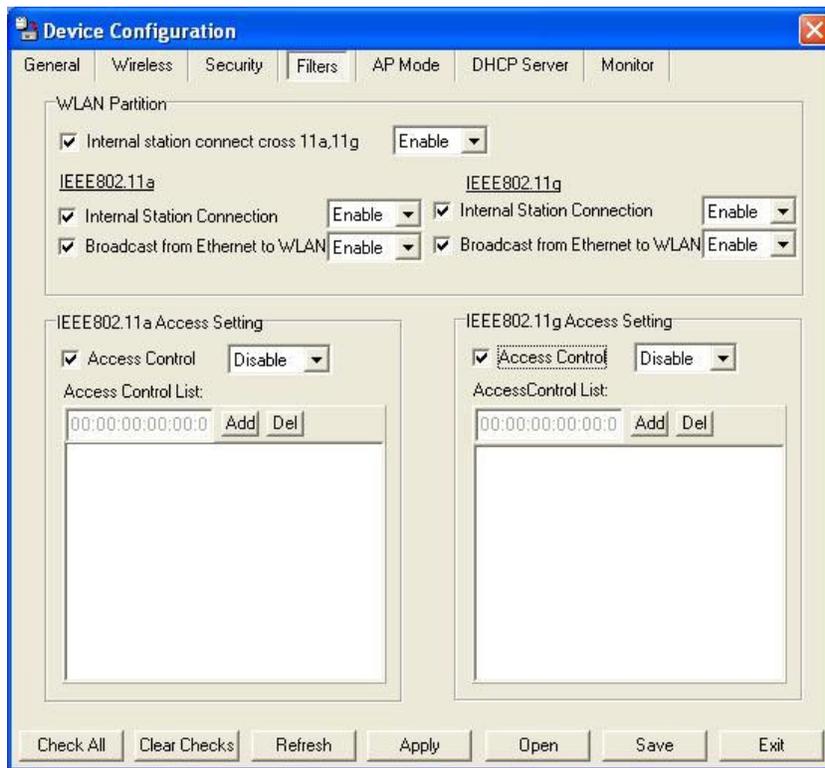


Cipher Type: Select auto, TKIP, or AES from the pulldown menu.

Group Key Update Interval: Select the interval during which the group key will be valid. 1800 is the recommended setting. A lower interval may reduce transfer rates.

PassPhrase: Enter a PassPhrase between 8-63 characters in length.

Device Configuration > Filters



Internal Station Connect Cross 11a, 11g: Enabling this allows wireless IEEE802.11a and IEEE802.11g clients to communicate with each other. When this option is disabled, IEEE802.11a and IEEE802.11g wireless stations are not allowed to exchange data through the access point.

The following features are configurable in IEEE802.11a & IEEE802.11g:

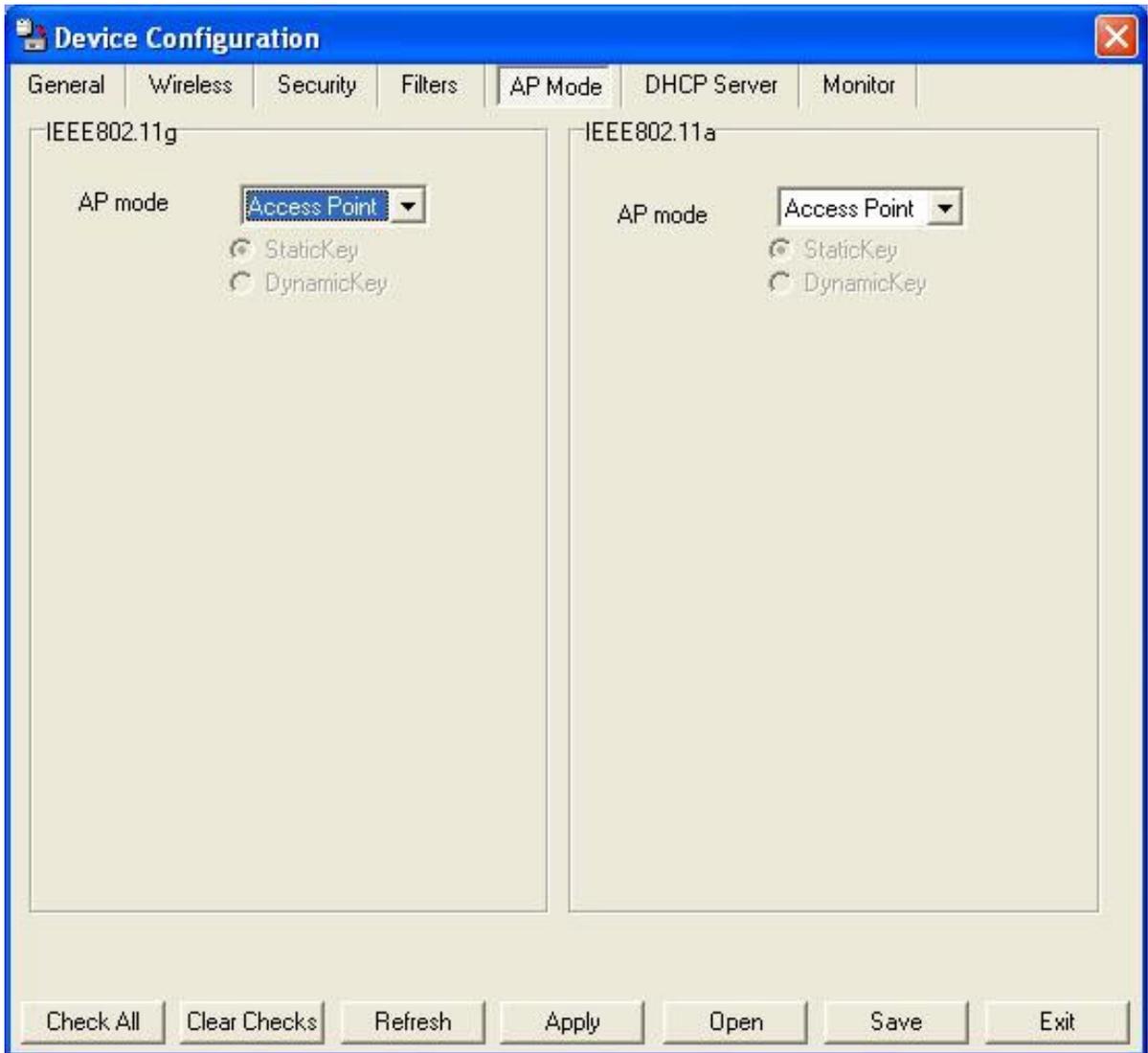
Internal Station Connection: Enabling this allows wireless clients to communicate with each other. When this option is disabled, wireless stations are not allowed to exchange data through the access point.

Broadcast from Ethernet to WLAN: 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.

Access Control List: Add or Delete MAC addresses in the Access Control List.

Device Configuration > AP Mode



Access Point: There are 4 AP modes that are configurable in IEEE802.11a & IEEE802.11g:

- Access Point**
- PtP Bridge**
- PtMP Bridge**
- AP Client**

AP Client, the default setting used to create a wireless LAN, is displayed here.

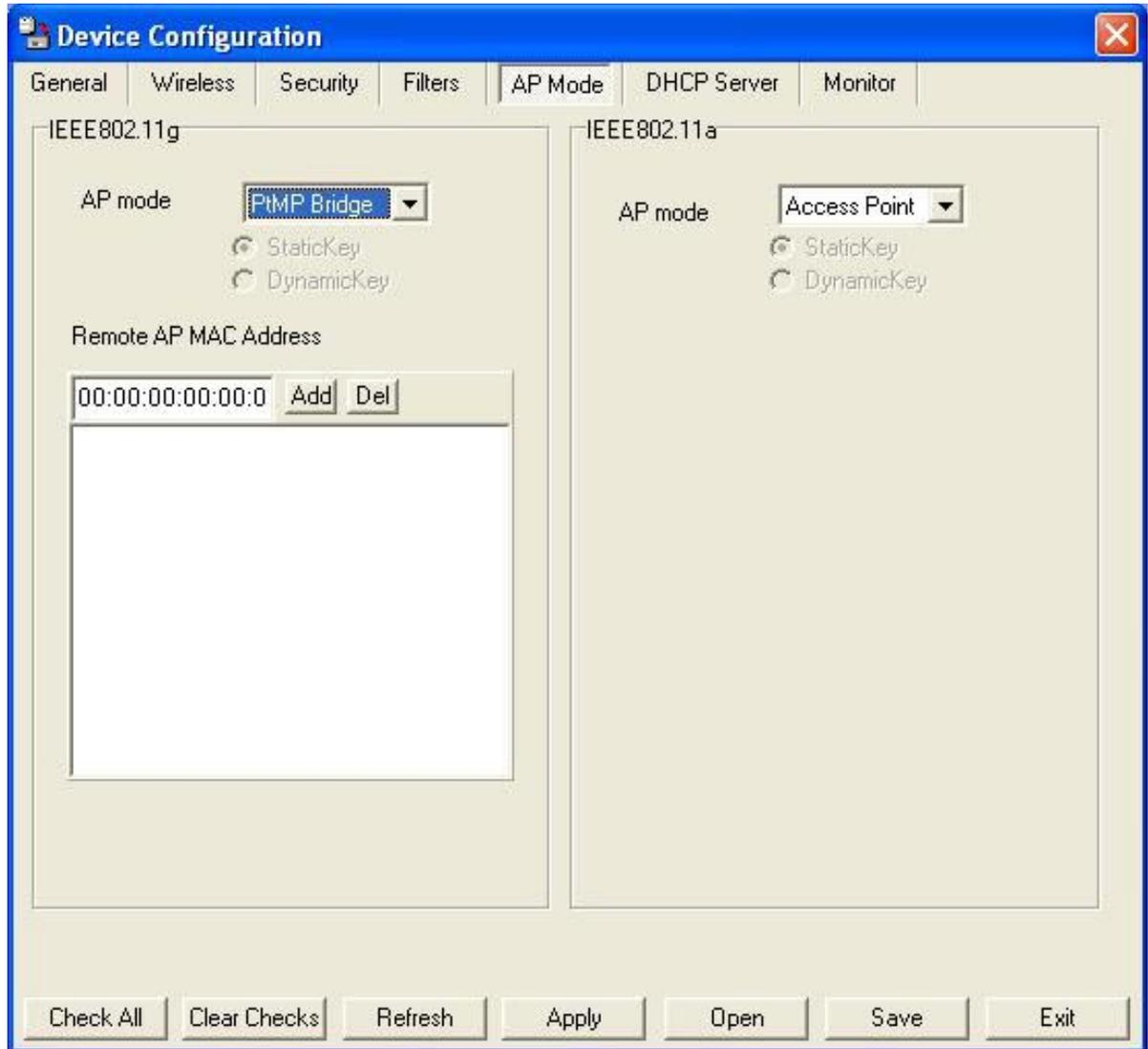
Please see the following pages for an explanation of the other 4 AP modes.

Device Configuration > AP Mode > PtP Bridge

The screenshot shows the 'Device Configuration' window with the 'AP Mode' tab selected. The window is divided into two sections: IEEE802.11g on the left and IEEE802.11a on the right. In the IEEE802.11g section, the 'AP mode' dropdown is set to 'PtP Bridge'. Below it are radio buttons for 'StaticKey' (selected) and 'DynamicKey'. A 'Remote AP MAC Address' field contains '00:00:00:00:00:0' with 'Add' and 'Del' buttons. The IEEE802.11a section has 'AP mode' set to 'Access Point', with 'StaticKey' selected. At the bottom of the window are buttons for 'Check All', 'Clear Checks', 'Refresh', 'Apply', 'Open', 'Save', and 'Exit'.

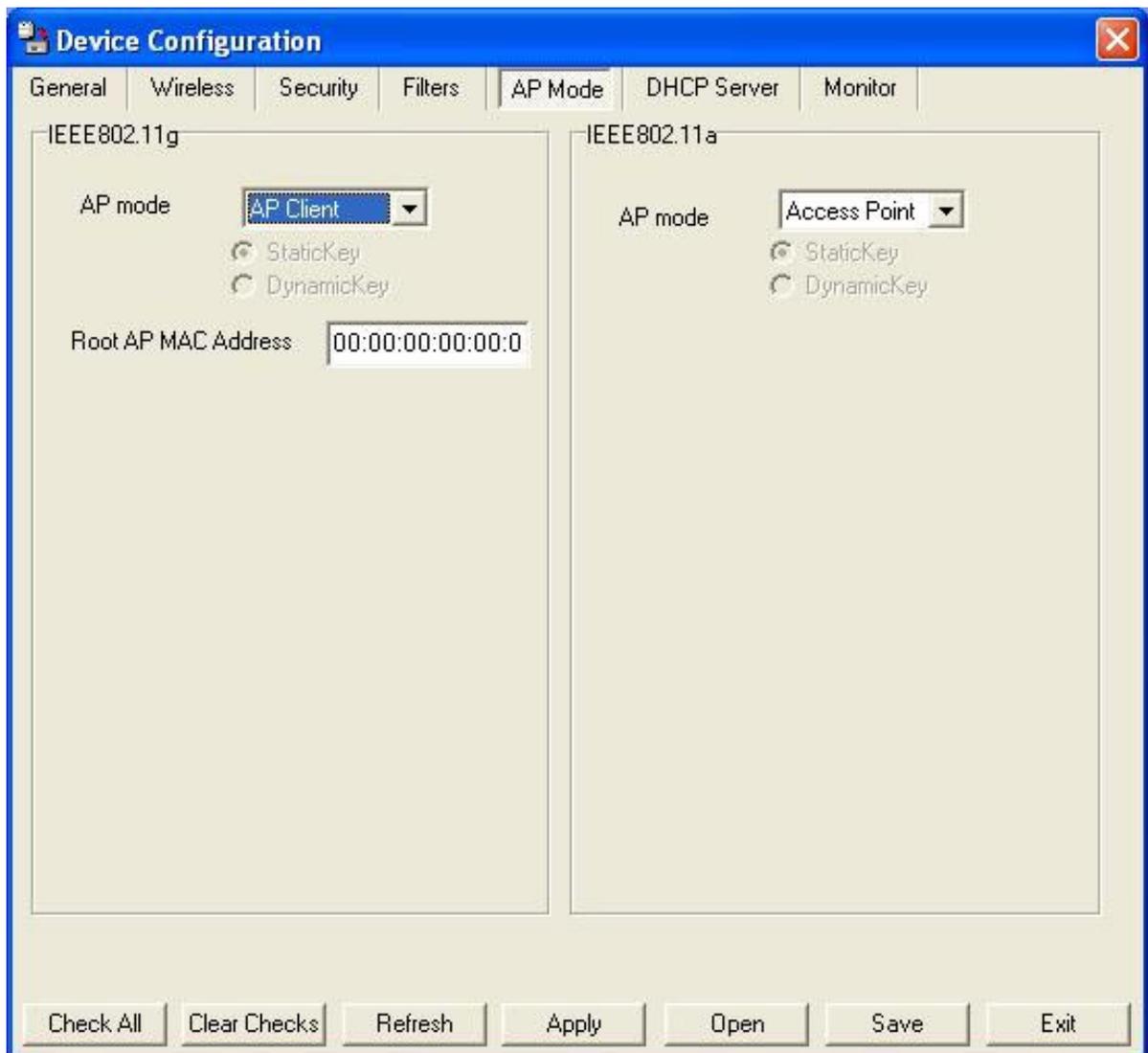
PtP Bridge: Allows you to connect two wireless LANs together. This only works with another DWL-7700AP. If enabled, you must enter the MAC address of the other DWL-7700AP.

Device Configuration > PtMP Bridge



PtMP Bridge: Allows you to connect multiple wireless LANs together. All other LANs must be using DWL-7700APs. When enabled, you must enter the MAC address of the other DWL-7700APs. Enter up to sixteen addresses.

Device Configuration > AP Client



The screenshot shows the 'Device Configuration' window with the 'AP Mode' tab selected. The window is divided into two panes: IEEE802.11g on the left and IEEE802.11a on the right. In the IEEE802.11g pane, the 'AP mode' dropdown is set to 'AP Client', and the 'Root AP MAC Address' text box contains '00:00:00:00:00:0'. In the IEEE802.11a pane, the 'AP mode' dropdown is set to 'Access Point'. Both panes have radio buttons for 'StaticKey' and 'DynamicKey'. At the bottom of the window are buttons for 'Check All', 'Clear Checks', 'Refresh', 'Apply', 'Open', 'Save', and 'Exit'.

AP Client: In AP Client mode, the DWL-7700AP can be used as a client of a DWL-2700AP or another DWL-7700AP. Enter the Root AP MAC address of the DWL-7700AP that is acting as an access point in the network.

Device Configuration > DHCP

The screenshot shows the 'Device Configuration' window with the 'DHCP Server' tab selected. The 'DHCP Server' checkbox is checked, and the dropdown menu is set to 'Disable'. Under 'Dynamic Pool Settings', the 'IP Assigned From' field is set to '0.0.0.0', 'Range of Pool (1~255)' is '0', 'SubMask' is '0.0.0.0', 'Gateway' is '0.0.0.0', 'Wins' is '0.0.0.0', 'DNS' is '0.0.0.0', 'Domain Name' is empty, 'Lease Time(60~31536000 sec)' is '0', and 'Status' is 'OFF'. Under 'Static Pool Settings', there are 'Add', 'Edit', and 'Del' buttons and a table with columns for 'Mac Address', 'IP Address', and 'Status'.

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.

Device Configuration > DHCP (continued)

- DNS:** The IP address of the DNS server, if applicable.
- Domain Name:** Enter the domain name of the DWL-7700AP, 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.

Device Configuration > Monitor

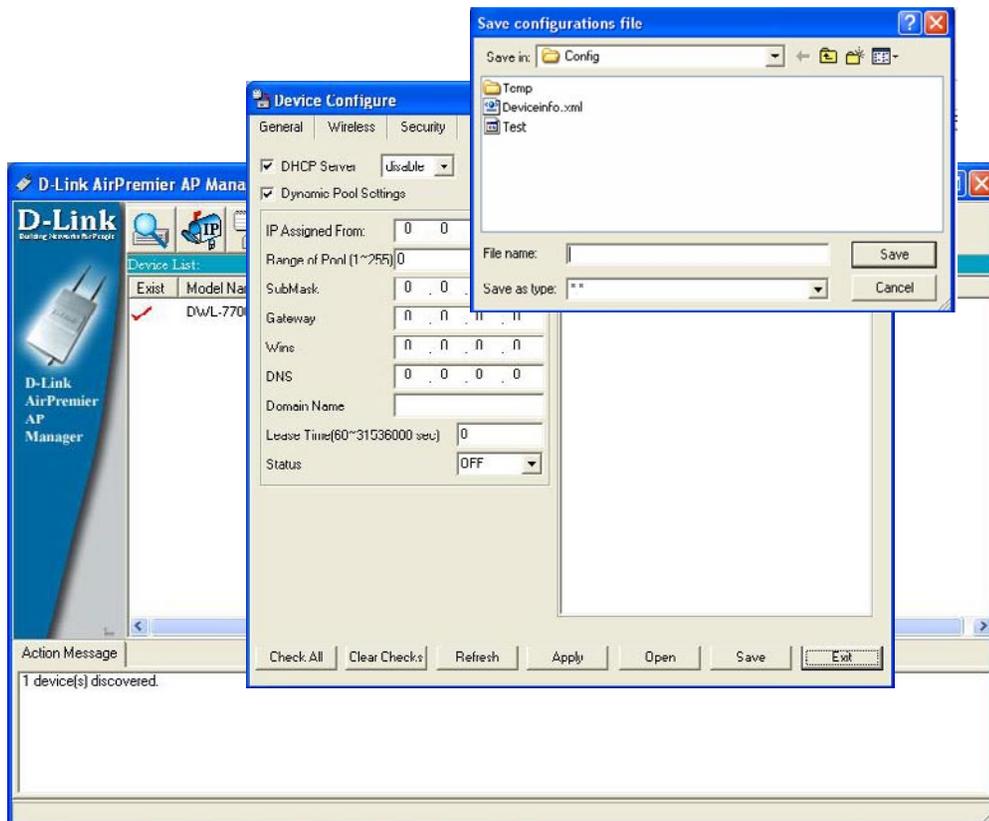
The screenshot shows the 'Device Configuration' window with the 'Monitor' tab selected. The 'Monitor' section includes a 'Current Temp.' field with the value 52 and a 'Temp. Threshold' field with the value 80 and a checked checkbox. Below this are two sections for monitoring 80211a and 80211g, each with an 'RSSI' field. The bottom of the window features a row of buttons: 'Check All', 'Clear Checks', 'Refresh', 'Apply', 'Open', 'Save', and 'Exit'.

- Current Temp:** Displays the current operating temperature of the DWL-7700AP.
- Temp. Threshold:** When selected, displays the maximum operating temperature.
- RSSI:** Receiver Signal Strength Indicator displays the strength of the received signal.

Configuration Files

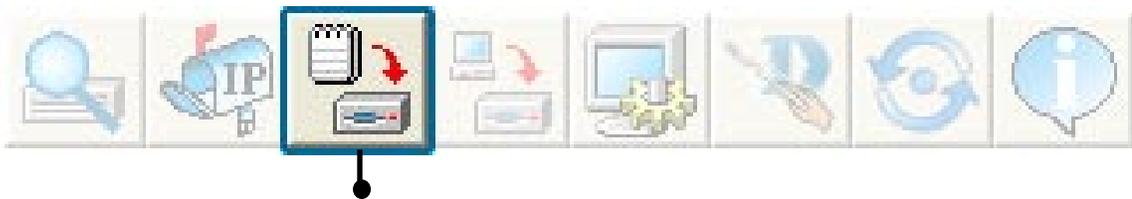
The DWL-7700AP allows you to save the device settings to a configuration file. To save a configuration file follow these steps:

- 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 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.

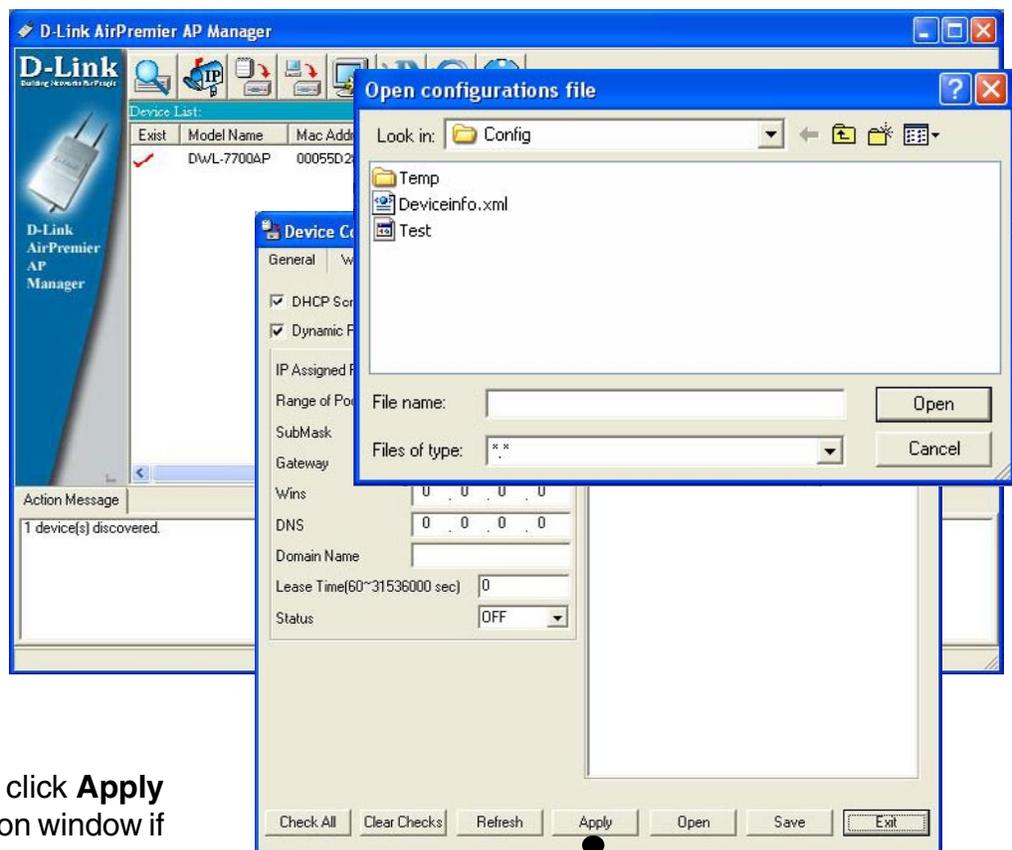


To load a previously saved configuration file, follow these steps:

- Select a device 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).

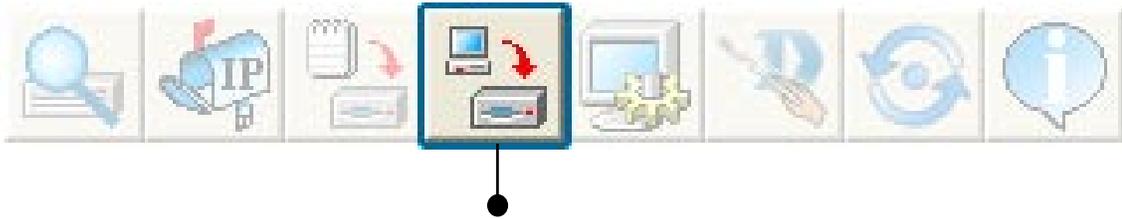


Device Configuration button.



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

Firmware



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

To upgrade the firmware:

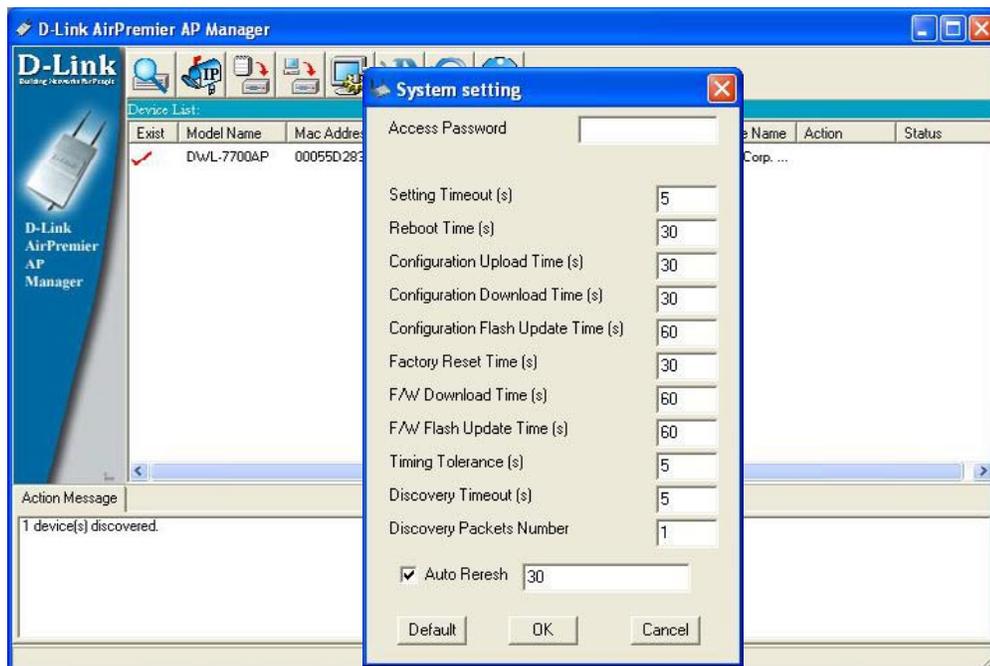
- Download the latest firmware upgrade from <http://support.dlink.com> to an easy to find location on your hard drive.
- Click on the firmware button as shown above.
- A popup window will appear. Locate the firmware upgrade file and click **Open**.

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-7200AP by clicking on this button.



- **Access Password:** This sets the admin password for the select 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.

Setup Wizard



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



Click **Next**.

Setup Wizard (continued)



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



Click **Next**.

Setup Wizard (continued)



IEEE802.11a

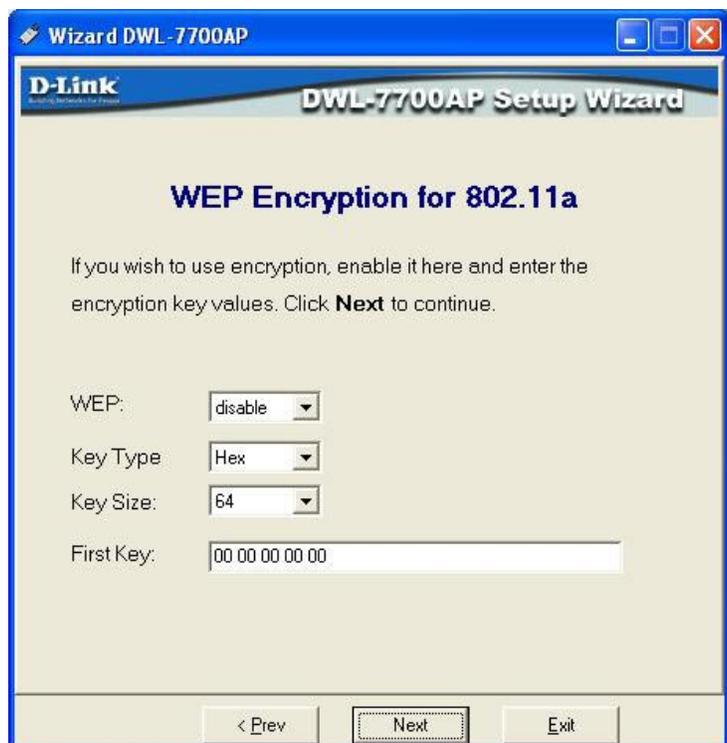
Enter the **SSID** and the **Channel** for the IEEE network.

Click **Next**.



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

Click **Next**.



Setup Wizard (continued)



IEEE802.11g

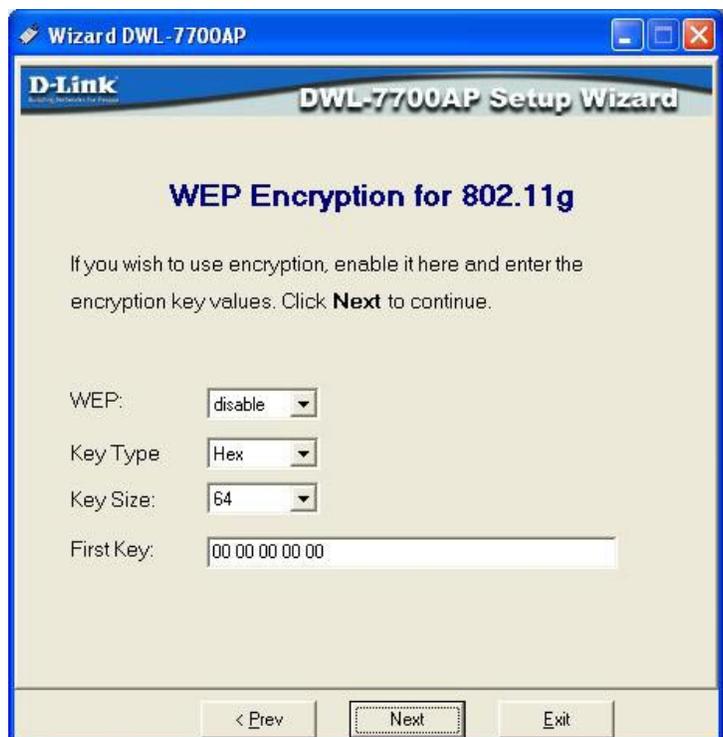
Enter the **SSID** and the **Channel** for the IEEE network.

Click **Next**.



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

Click **Next**.



Setup Wizard (continued)



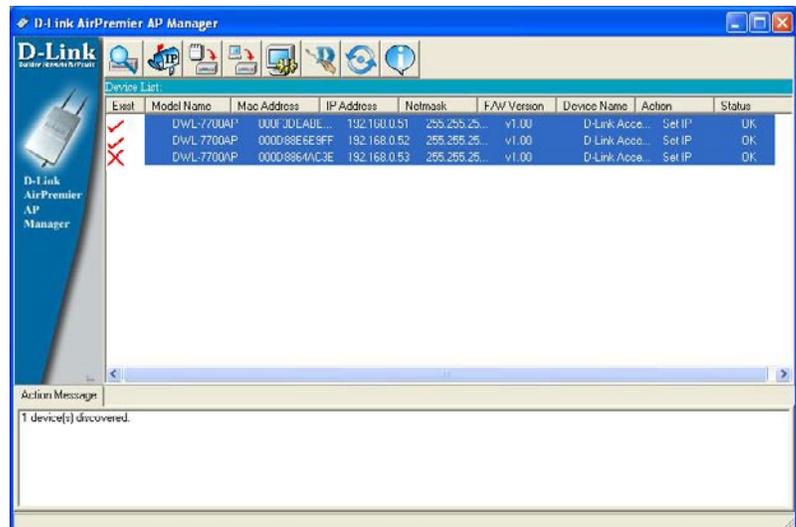
The DWL-7700AP setup is complete!

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 or 98.

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



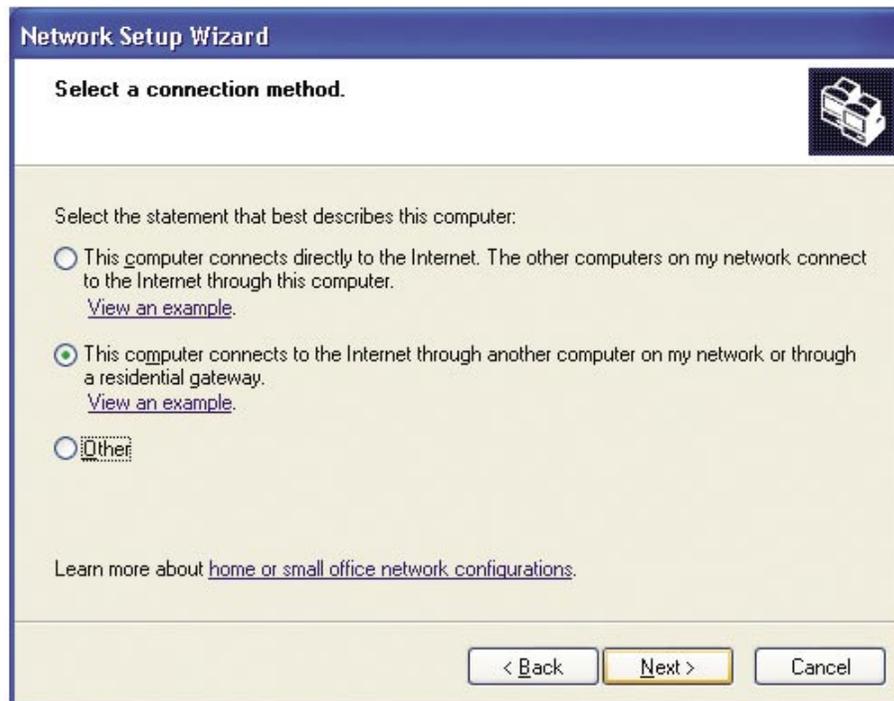
When this screen appears, click **Next**.

Please follow all the instructions in this window:



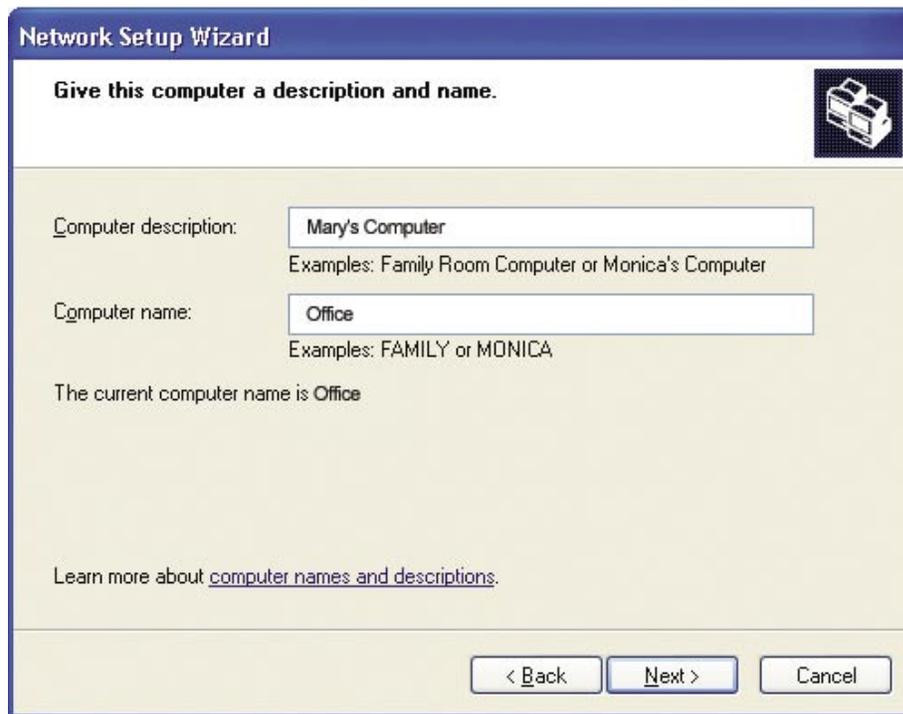
Click **Next**.

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



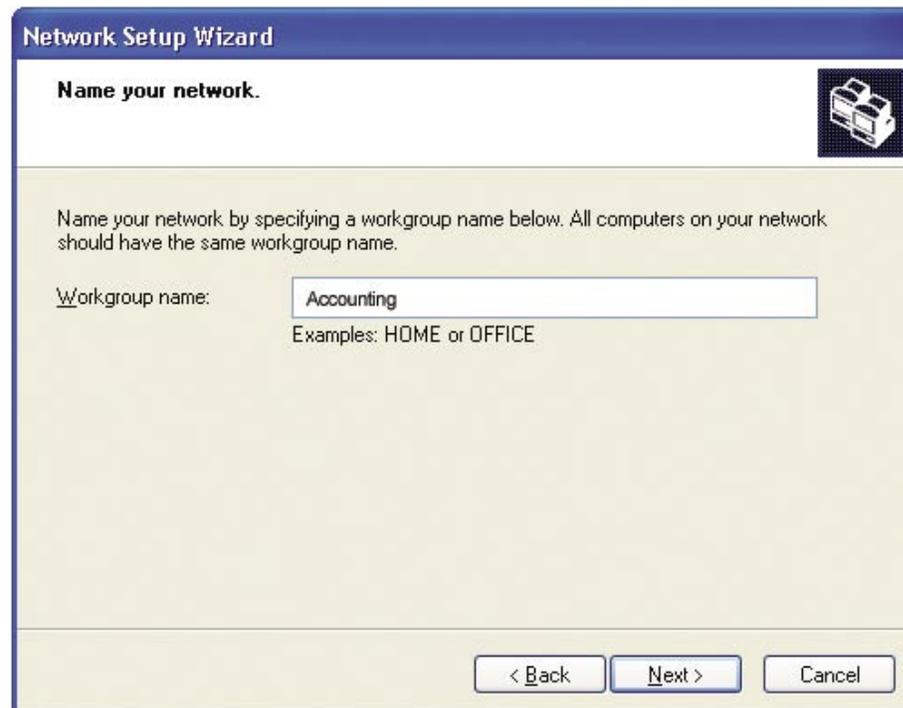
Click **Next**.

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



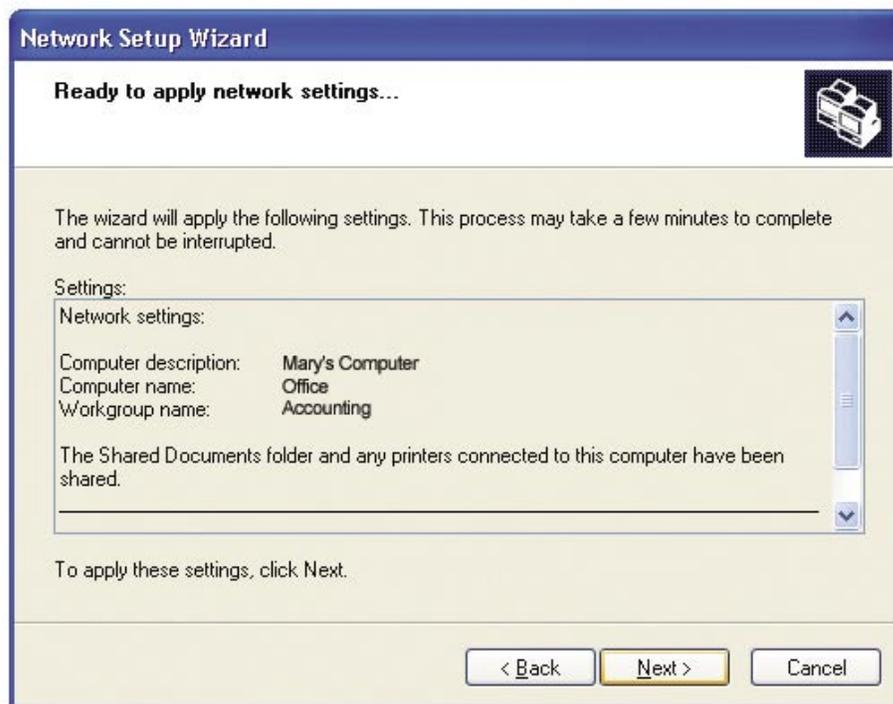
Click **Next**.

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



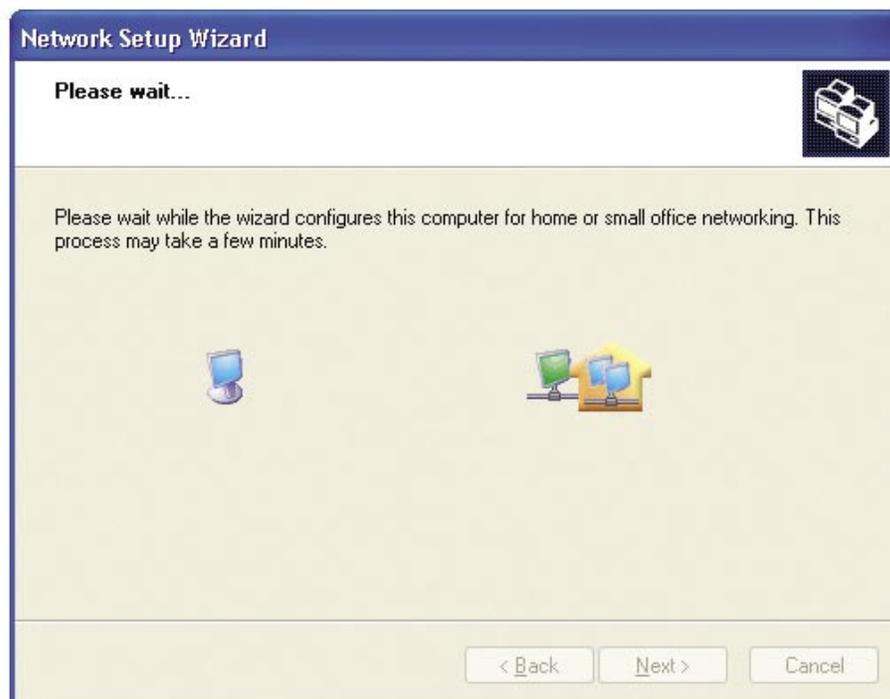
Click **Next**.

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



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

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



In the window below, select the option that fits your needs. In this example, **Create a Network Setup Disk** has been selected. You will run this disk on each of the computers on your network. Click **Next**.



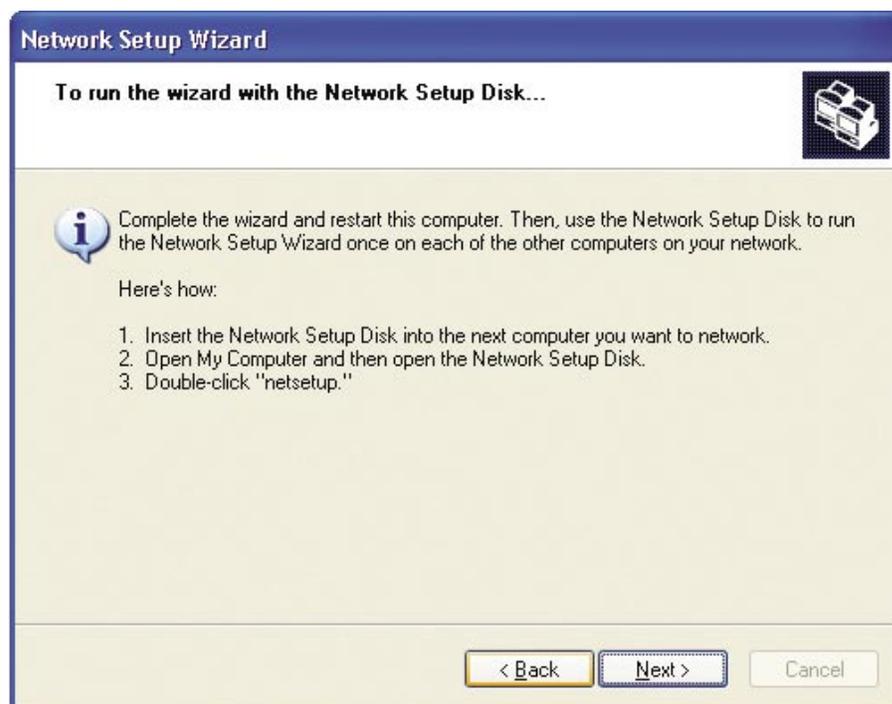
Insert a disk into the Floppy Disk Drive, in this case drive **A**.



Click **Next**.



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



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.

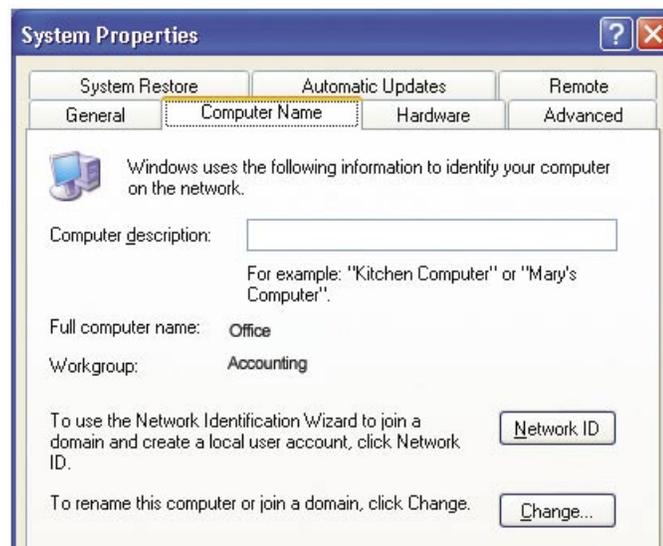
Naming Your Computer

To name your computer in **Windows XP**, please follow these directions.

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



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



- In this window, enter the **Computer name**.
- Select **Workgroup** and enter the name of the **Workgroup**.
- All computers on your network must have the same **Workgroup** name.
- Click **OK**.



Checking the IP Address in Windows XP

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

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



This window will appear:

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



Assigning a Static IP Address in Windows

Note: DHCP-enabled 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:

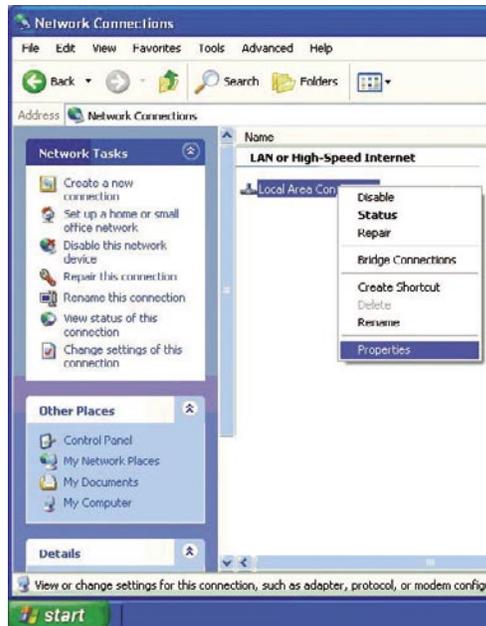
- Go to **Start**.
- Double-click on **Control Panel**.



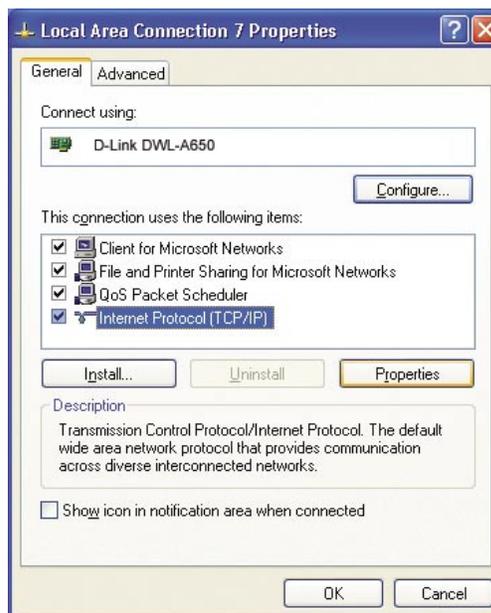
- Double-click on **Network Connections**.



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



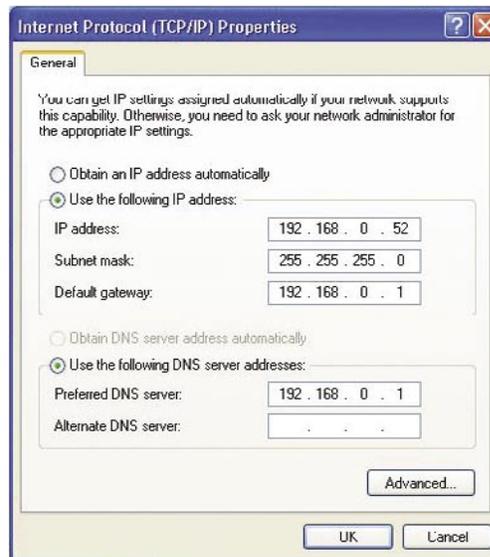
- Click on **Internet Protocol (TCP/IP)**.
- Click **Properties**.
- Input your **IP address and subnet mask**. (The IP addresses on your network must be within the same range. For example, if one computer has an IP address of 192.168.0.2, the other computers should have IP addresses that are sequential, 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**.

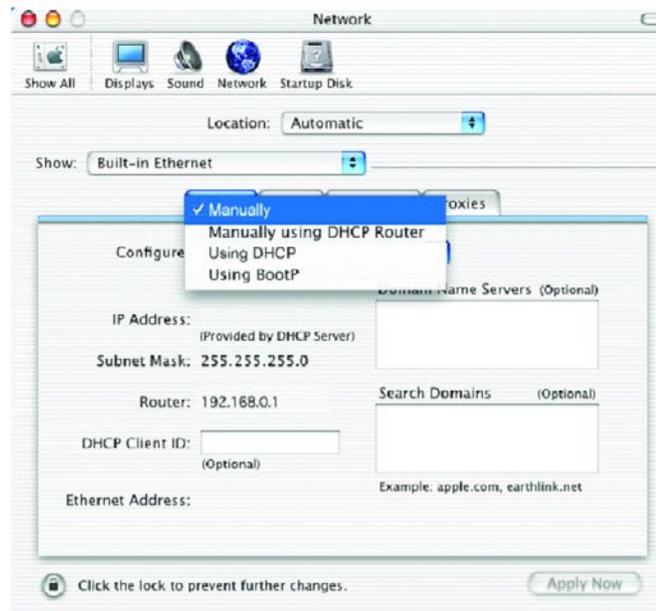


Assigning a Static IP Address in Macintosh OSX

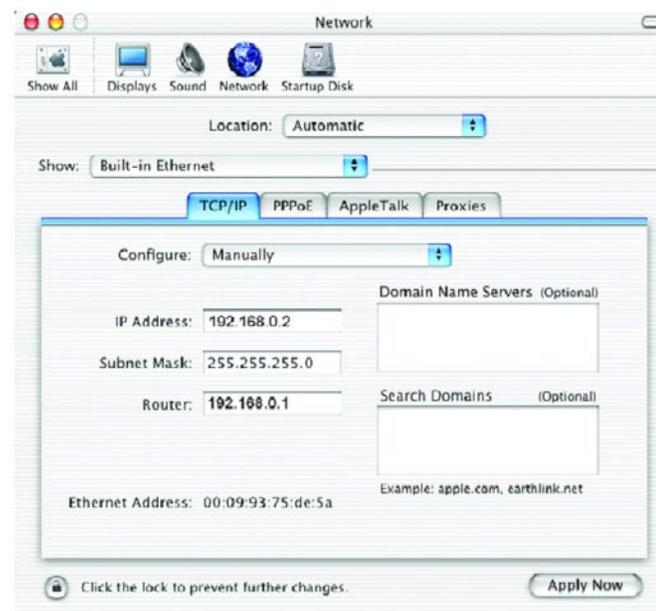
- Go to the **Apple Menu** and select **System Preferences**.
- Click on **Network**.



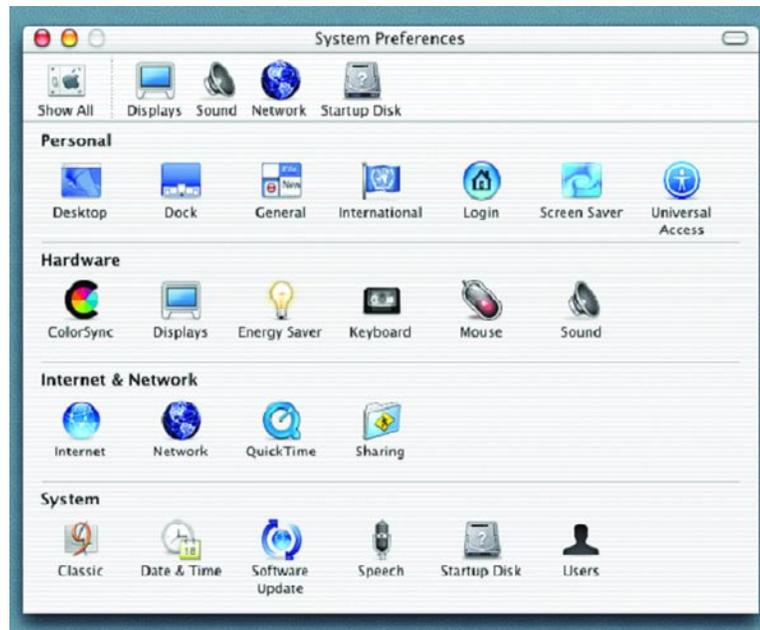
- Select **Built-in Ethernet** in the **Show** pull-down menu.
- Select **Manually** in the **Configure** pull-down menu.



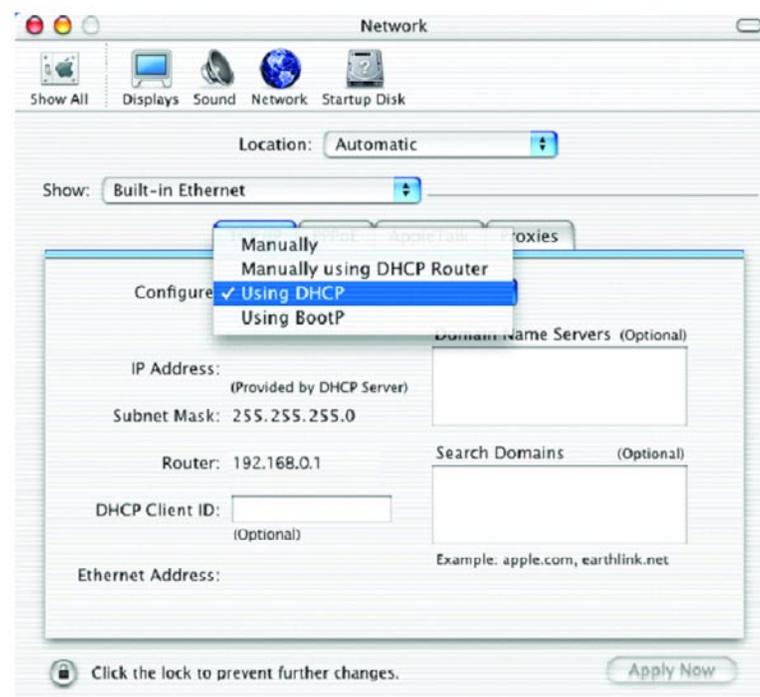
- Input the **Static IP Address**, the **Subnet Mask** and the **Router IP Address** in the appropriate fields.
- Click **Apply Now**.



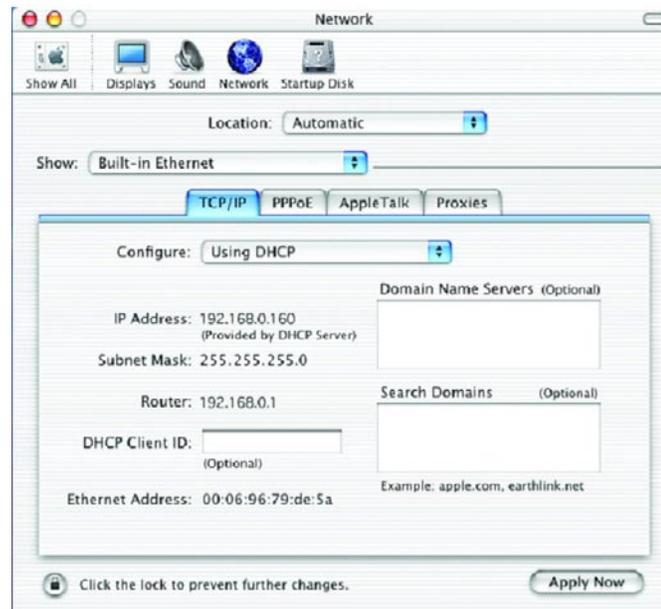
- Go to the **Apple Menu** and select **System Preferences**.
- Click on **Network**.



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

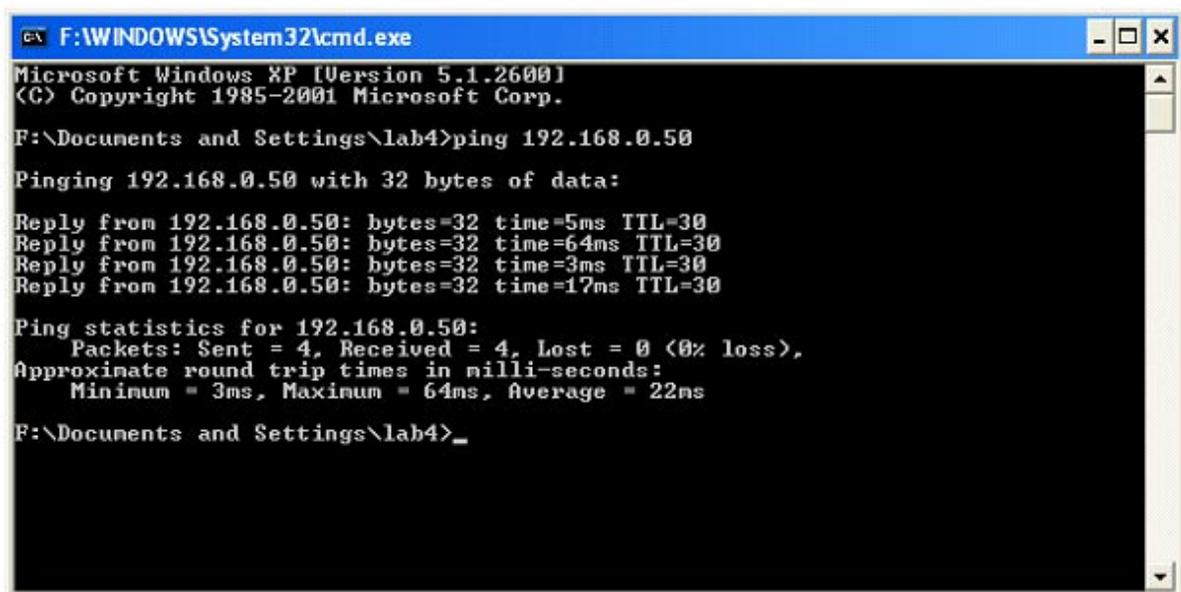


- Click **Apply Now**.
- The **IP Address**, **Subnet mask**, and the **Router's IP Address** will appear in a few seconds.



Checking the Wireless Connection by Pinging in Windows XP and 2000

Go to **Start > Run > type cmd**. A window similar to this one will appear. Type **ping xxx.xxx.xxx.xxx**, where **xxx** is the **IP address** of the wireless router or access point. A good wireless connection will show four replies from the wireless router or access point, as shown.



```
F:\WINDOWS\System32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

F:\Documents and Settings\lab4>ping 192.168.0.50

Pinging 192.168.0.50 with 32 bytes of data:

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

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

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

Troubleshooting

This Chapter provides solutions to problems that can occur during the installation and operation of the DWL-7700AP 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-7700AP Wireless Access Point**.

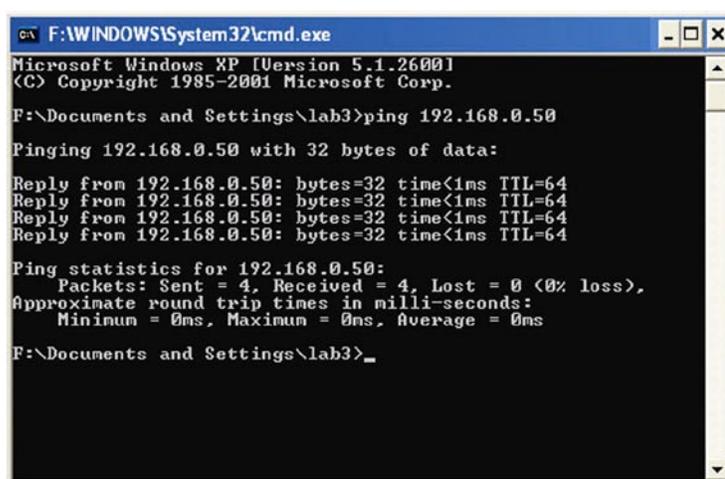
1. The computer used to configure the DWL-7700AP cannot access the Configuration menu.

- Check that the **Ethernet LED** on the DWL-7700AP 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-7700AP. Please see **Checking the IP Address in Windows XP** in the **Networking Basics** section of this manual.

Note: The IP address of the DWL-7700AP 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-7700AP 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-7700AP.



```
GA F:\WINDOWS\System32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

F:\Documents and Settings\lab3>ping 192.168.0.50

Pinging 192.168.0.50 with 32 bytes of data:

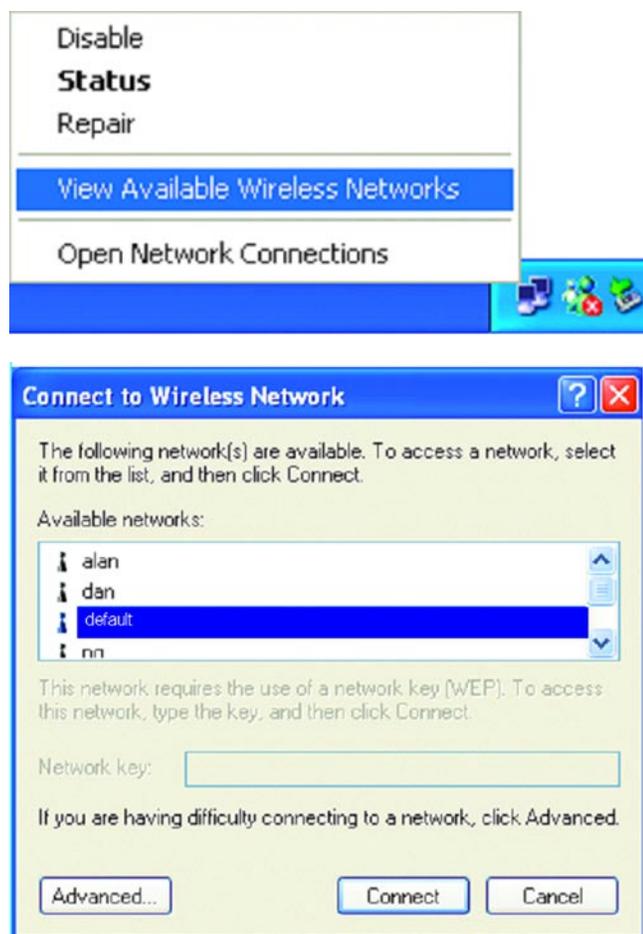
Reply from 192.168.0.50: bytes=32 time<1ms TTL=64

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

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

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

Make sure the wireless client is associated and joined with the correct access point. To check this connection: **Right-click** on the **Local Area Connection icon** in the taskbar > select **View Available Wireless Networks**. The **Connect to Wireless Network** screen will appear. Please make sure you have selected the correct available network, as shown in the illustrations below.



- Check that the **IP address** assigned to the wireless adapter is within the same **IP address range** as the access point and gateway. *Since the DWL-7700AP 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**.)*

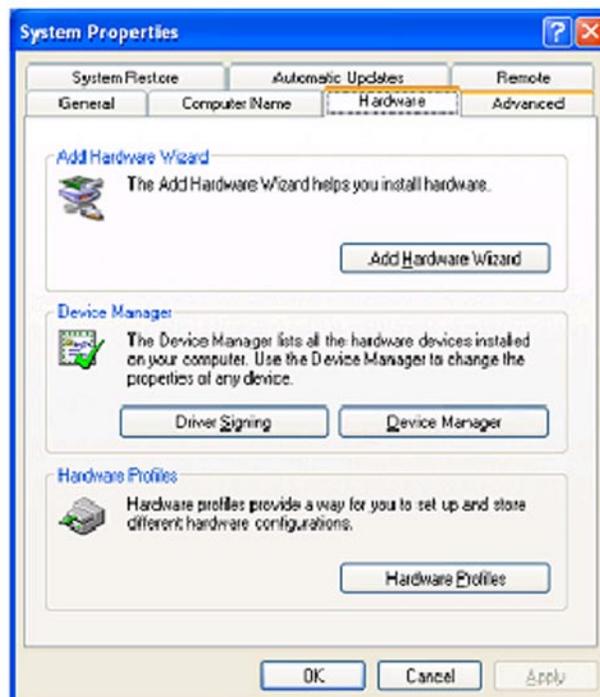
3. Check that the drivers for the network adapters are installed properly.

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.

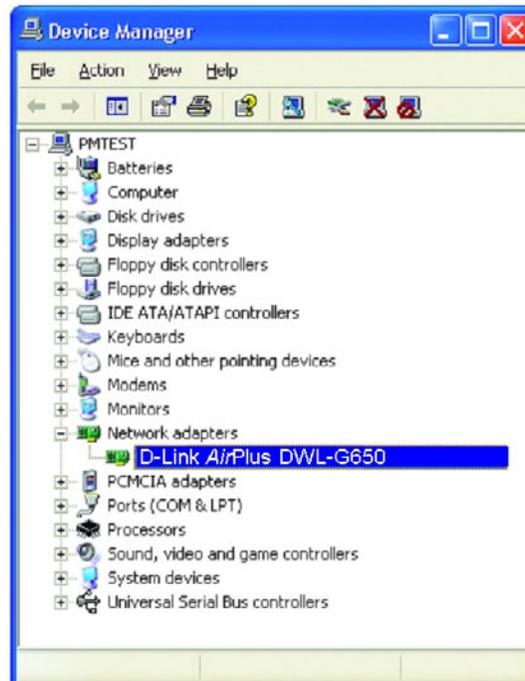
- Go to **Start > My Computer > Properties**.



- **Select the Hardware Tab.**
- **Click Device Manager.**



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



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-7700AP. 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.

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

If you have enabled encryption on the DWL-7700AP, you must also enable encryption on all wireless clients in order to establish a wireless connection.

- Make sure that the SSID on the router and the wireless client are exactly the same. If they are not, wireless connection will not be established.
- Move the DWL-7700AP and the wireless client into the same room and then test the wireless connection.
- Disable all security settings.
- Turn off your DWL-7700AP and the client. Turn the DWL-7700AP 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, gateway and DNS 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-7700AP, 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-7700AP 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.



Technical Specifications

Standards

- IEEE 802.11a
- 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 v7 or later; or other Java-enabled browsers.
- Telnet
- AP Manager
- SNMP v.3

Data Rate

For 802.11a/g:

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

For 802.11b:

- 11, 5.5, 2, and 1Mbps

Security

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

Wireless Frequency Range

- 2.4GHz to 2.4835GHz
- 5.15GHz to 5.35GHz and 5.725GHz to 5.825GHz

Wireless Operating Range*

802.11a/g (Full Power with 5dBi gain diversity dualband dipole antenna)

Indoors:

- 98ft (30m) @ 54Mbps
- 112ft (34m) @ 48Mbps
- 128ft (39m) @ 36Mbps
- 154ft (47m) @ 24Mbps
- 184ft (56m) @ 18Mbps
- 217ft (66m) @ 12Mbps
- 259ft (79m) @ 9Mbps
- 325ft (99m) @ 6Mbps

Outdoors:

- 367ft (112m) @ 54Mbps
- 820ft (250m) @ 18Mbps
- 1640ft (500m) @ 6Mbps

Operating Voltage

- 48VDC +/- 10% for PoE



Radio and Modulation Type

For 802.11b:

DSSS:

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

For 802.11a/g:

OFDM:

- BPSK @ 6 and 9Mbps
- QPSK @ 12 and 18Mbps
- 16QAM @ 24 and 36Mbps
- 64QAM @ 48, 54 and 108Mbps

DSSS:

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

Transmit Output Power

For 802.11a:

- 100mW (20dBm)
- 50mW (17dBm)
- 30mW (15dBm)
- 20mW (13dBm)
- 10mW (10dBm)
- 5mW (7dBm)
- 1mW (0dBm)

For 802.11b:

- 100mW (20dBm)
- 50mW (17dBm)
- 30mW (15dBm)
- 20mW (13dBm)
- 10mW (10dBm)
- 5mW (7dBm)
- 1mW (0dBm)

For 802.11g:

- 200mW (23dBm)
- 63mW (18dBm)
- 30mW (15dBm)
- 20mW (13dBm)
- 10mW (10dBm)
- 5mW (7dBm)
- 1mW (0dBm)

Receiver Sensitivity

For 802.11a:

- 6Mbps: -85dBm
- 9Mbps: -84dBm
- 12Mbps: -82dBm
- 18Mbps: -80dBm
- 24Mbps: -77dBm
- 36Mbps: -73dBm
- 48Mbps: -69dBm
- 54Mbps: -68dBm

For 802.11b:

- 1Mbps: -94dBm
- 2Mbps: -91dBm
- 5.5Mbps: -89dBm
- 11Mbps: -85dBm

For 802.11g:

- 1Mbps: -95dBm
- 2Mbps: -91dBm
- 5.5Mbps: -89dBm
- 6Mbps: -90dBm
- 9Mbps: -84dBm
- 11Mbps: -88dBm
- 12Mbps: -82dBm
- 18Mbps: -80dBm
- 24Mbps: -77dBm
- 36Mbps: -73dBm
- 48Mbps: -72dBm
- 54Mbps: -72dBm

Current Consumption

- Max.7W without PoE (without heater)
- Max.8.5W with PoE (without heater)
- Max.27W without PoE (with heater)
- Max.28.5W without PoE (with heater)

LEDs

- Power
- 10/100M
- 802.11a
- 802.11b/g

Temperature

- Operating: -40°F to 140°F (-40°C to 60°C)
- Storing: -40°F to 149°F (-40°C to 65°C)

Humidity

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

Certifications

- FCC Part 15
- CSA

Dimensions

- L = 10.93 inches (277.7mm)
- W = 6.10 inches (155mm)
- H = 1.77 inches (45mm)

Warranty

- 1 Year

* Environmental Factors may Adversely Affect Wireless Range

Contacting Technical Support

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

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

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

Tech Support for customers within the United States:

D-Link Technical Support over the Telephone:

(877) 453-5465

Monday through Friday 6:00am to 6:00pm.

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

When contacting technical support, please provide the following information:

- *Serial number of the unit*
- *Model number or product name*
- *Software type and version number*

Warranty

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

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

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

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

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

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

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

Non-Applicability of Warranty: The Limited Warranty provided hereunder for hardware and software of D-Link's products will not be applied to and does not cover any refurbished product and any product

purchased through the inventory clearance or liquidation sale or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product and in that case, the product is being sold "As-Is" without any warranty whatsoever including, without limitation, the Limited Warranty as described herein, notwithstanding anything stated herein to the contrary.

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

- The customer must submit with the product as part of the claim a written description of the Hardware defect or Software nonconformance in sufficient detail to allow D-Link to confirm the same.
- The original product owner must obtain a Return Material Authorization ("RMA") number from the Authorized D-Link Service Office and, if requested, provide written proof of purchase of the product (such as a copy of the dated purchase invoice for the product) before the warranty service is provided.
- After an RMA number is issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be prominently marked on the outside of the package. Do not include any manuals or accessories in the shipping package. D-Link will only replace the defective portion of the Product and will not ship back any accessories.
- The customer is responsible for all in-bound shipping charges to D-Link. No Cash on Delivery ("COD") is allowed. Products sent COD will either be rejected by D-Link or become the property of D-Link. Products shall be fully insured by the customer. 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.

Copyright Statement: **No part of this publication or documentation accompanying this Product may be reproduced in any form or by any means or used to make any derivative such as translation, transformation, or adaptation without permission from D-Link Corporation/D-Link Systems, Inc., as stipulated by the United States Copyright Act of 1976. Contents are subject to change without prior notice. Copyright® 2002 by D-Link Corporation/D-Link Systems, Inc. All rights reserved.**

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.

FCC Caution:

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment; such modifications could void the user's authority to operate the equipment.

(1) The devices are restricted to indoor operations within the 5.15 to 5.25GHz range. (2) For this device to operate in the 5.15 to 5.25GHz range, the devices must use integral antennas.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

The antenna(s) used for this equipment must be installed to provide a separation distance of at least eight inches (20 cm) from all persons.

This equipment must not be operated in conjunction with any other antenna.

Registration



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

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