D-Link®
Building Networks for People

DWL-7700AP
Release 2.00

Outdoor AP/Bridge

Wireless A/G Outdoor AP/Bridge

User Manual

Business Class Networking

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Package Contents

- **D-Link *Air*Premier™ DWL-7700AP**
  802.11A/G 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
- Console Cable

Note: Using a power supply with a different voltage than the one included with the

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

At up to fifteen 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.

Inclusion of all three standards (802.11a; 802.11b; 802.11g) means that the **DWL-7700AP** is versatile enough to allow connection to almost any 802.11 network or device.

The **DWL-7700AP** is capable of operating in one of 3 different modes to meet your wireless networking needs. The **DWL-7700AP** can operate as an access point, or in WDS (Wireless Distribution System) with AP, or in WDS mode.

Use less wiring, enjoy increased flexibility, save time and money with PoE (Power over Ethernet). With PoE, the **DWL-7700AP** shares power and data over the CAT5 cable, making the setup of your network less expensive and more convenient.

An ideal solution for quickly creating and extending a wireless local area network (WLAN) in offices or other workplaces, trade shows and special events, the **DWL-7700AP** provides data transfers at up to 54Mbps* when used with other D-Link ***Air*** **Premier®** or ***Air*** **Premier AG®** products (The 802.11g standard is backwards compatible with 802.11b devices).

WPA is offered in two flavors: **Enterprise** (used for corporations), and **Personal** (used for home users).

WPA-Personal and **WPA2-Personal** is directed at home users who do not have the server based equipment required for user authentication. The method of authentication is similar to WEP because you define a "Pre-Shared Key" on the wireless router/AP. Once the pre-shared key is confirmed and satisfied on both the client and access point, then access is granted. The encryption method used is referred to as the Temporal Key Integrity Protocol (TKIP), which offers per-packet dynamic hashing. It also includes an integrity checking feature which ensures that the packets were not tampered with during wireless transmission. **WPA2-Personal** is far superior to **WPA-Personal**, because the encryption of data is upgraded with the Advanced Encryption Standard (AES).

*Maximum wireless signal rate derived from 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.

Introduction (continued)

WPA-Enterprise and **WPA2-Enterprise** is ideal for businesses that have existing security infrastructures in place. Management and security implementation can now be centralized on a server participating on the network. Utilizing 802.1x with a RADIUS (Remote Authentication Dial-in User Service) server, a network administrator can define a list of authorized users who can access the wireless LAN. When attempting to access a wireless LAN with either **WPA-Enterprise** or **WPA2-Enterprise** configured, the new client will be challenged with a username and password. If the new client is authorized by the administration, and enters the correct username and password, then access is granted. In a scenario where an employee leaves the company, the network administrator can remove the employee from the authorized list and not have to worry about the network being compromised by a former employee. **WPA2-Enterprise** is far superior to **WPA-Enterprise**, because the encryption of data is upgraded with the Advanced Encryption Standard (AES).

802.1x: Authentication which is a first line of defense against intrusion. In the authentication process, the Authentication Server verifies the identity of the client attempting to connect to the network. Unfamiliar clients would 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.

Features and Benefits

- **3 Different Operation modes -** Capable of operating in one of three different operation modes to meet your wireless networking requirements: Access Point; WDS with AP; or WDS.
- **Easy Installation with PoE (Power over Ethernet).**
- **Faster wireless networking** speeds up to 54Mbps*.
- **Compatible with 802.11a, 802.11b and 802.11g Devices** that is fully compatible with the IEEE 802.11a, 802.11b and 802.11g standards, the **DWL-7700AP** can connect with existing 802.11b-, 802.11g- or 802.11a-compliant wireless network adapter cards.
- **Compatible with the 802.11b standard** to provide a wireless data rate of up to 11Mbps - that means you can migrate your system to the 802.11g standard on your own schedule without sacrificing connectivity.
- **Better security with WPA -** The **DWL-7700AP** can securely connect 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.
- **AP Manager Setup Wizard -** The new Setup Wizard makes network configuration quick and simple.
- **SNMP for Management -** The **DWL-7700AP** is not just fast but it also supports SNMP v.3 for a better network management. Superior wireless AP manager software is bundled with the **DWL-7700AP** for network configuration and firmware upgrade. Systems administrators can also setup the **DWL-7700AP** easily with the Web-based configuration. A D-Link D-View module will be downloadable for network administration and real-time network traffic monitoring with D-Link D-View software.
- Utilizes **OFDM** technology (**O**rthogonal **F**requency **D**ivision **M**ultiplexing).
- Operates in the 5.26GHz frequency range for an 802.11a network, and in the 2.437GHz frequency range for an 802.11b and 802.11g network.
- **Web-based interface** for managing and configuring.

*Maximum wireless signal rate derived from 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.

Wireless Basics

D-Link wireless products are based on industry standards to provide easy-to-use and compatible high-speed wireless connectivity within your home, business or public access wireless networks. D-Link wireless products will allow you to access the data you want, when and where you want it. You will be able to enjoy the freedom that wireless networking brings.

A Wireless Local Area Network (WLAN) is a computer network that transmits and receives data with radio signals instead of wires. WLANs are used increasingly in both home and office environments, and public areas such as airports, coffee shops and universities. Innovative ways to utilize WLAN technology are helping people to work and communicate more efficiently. Increased mobility and the absence of cabling and other fixed infrastructure have proven to be beneficial for many users.

Wireless users can use the same applications they use on a wired network. Wireless adapter cards used on laptop and desktop systems support the same protocols as Ethernet adapter cards.

People use WLAN technology for many different purposes:

Mobility - Productivity increases when people have access to data in any location within the operating range of the WLAN. Management decisions based on real-time information can significantly improve worker efficiency.

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

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

Inexpensive Solution - Wireless network devices are as competitively priced as conventional Ethernet network devices. The **DWL-7700AP** saves money by providing multi-functionality, configurable in one of three different modes.

Scalability - WLANs can be configured in a variety of ways to meet the needs of specific applications and installations. Configurations are easily changed and range from Peer-to-Peer networks suitable for a small number of users to larger Infrastructure networks to accommodate hundreds or thousands of users, depending on the number of wireless devices deployed.

Wireless Basics (continued)

Standards-based Technology

The **DWL-7700AP** Wireless Access Point utilizes the **802.11a**, **802.11b** and the **802.11g** standards.

The IEEE **802.11g** standard is an extension of the **802.11b** standard. It increases the maximum wireless signal rate of up to 54Mbps* within the 2.4GHz band, utilizing **OFDM technology.**

This means that in most environments, within the specified range of this device, you will be able to transfer large files quickly or even watch a movie in MPEG format over your network without noticeable delays. This technology works by transmitting high-speed digital data over a radio wave utilizing **OFDM** (**O**rthogonal **F**requency **D**ivision **M**ultiplexing) technology. **OFDM** works by splitting the radio signal into multiple smaller sub-signals that are then transmitted simultaneously at different frequencies to the receiver. **OFDM** reduces the amount of **crosstalk** (interference) in signal transmissions.

The D-Link **DWL-7700AP** will automatically sense the best possible connection speed to ensure the greatest speed and range possible.

The **DWL-7700AP** offers the most advanced network security features available today, including WPA and WPA2.

In addition to its compatibility with 802.11g and 802.11a devices, the **DWL-7700AP** is compatible with 802.11b devices. This means that if you have an existing 802.11b network, or a network with a mixture of 802.11g, 802.11a and 802.11b, the devices in that network will be compatible with the **DWL-7700AP**.

*Maximum wireless signal rate derived from 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.

Wireless Basics (continued)

Installation Considerations

The D-Link *Air* Premier® **DWL-7700AP** lets you access your network, using a wireless connection, from virtually anywhere within its operating range. Keep in mind, however, that the number, thickness and location of walls, ceilings, or other objects that the wireless signals must pass through, may limit the range. Typical ranges vary depending on the types of materials and background RF (radio frequency) noise in your home or business. The key to maximizing wireless range is to follow these basic guidelines:

1. Keep the number of walls and ceilings between the **DWL-7700AP** and other network devices to a minimum - each wall or ceiling can reduce your **DWL-7700AP**'s range from 3-90 feet (1-30 meters.) Position your devices so that the number of walls or ceilings is minimized.

2. Be aware of the direct line between network devices. A wall that is 1.5 feet thick (.5 meters), at a 45-degree angle appears to be almost 3 feet (1 meter) thick. At a 2-degree angle it looks over 42 feet (14 meters) thick! Position devices so that the signal will travel straight through a wall or ceiling (instead of at an angle) for better reception.

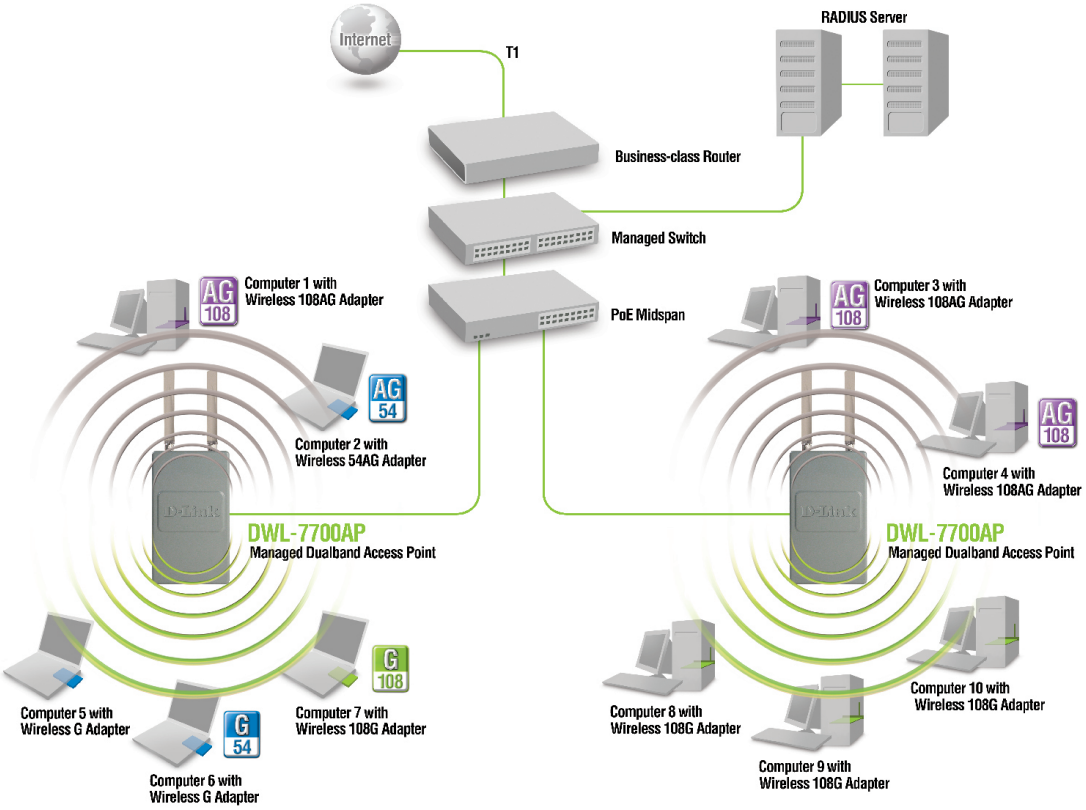
3. Building materials can impede the wireless signal - a solid metal door or aluminum studs may have a negative effect on range. Try to position wireless devices and computers with wireless adapters so that the signal passes through drywall or open doorways and not other materials.

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

Three Operational Modes

Operation Mode (Only supports 1 mode at a time)	Function
Access Point (AP)	Create a Wireless LAN
WDS with AP	Wireless Connect Multi Networks While Still Functioning as a Wireless AP
WDS	Wireless Connect Multi Networks

Getting Started



1 You will need broadband Internet access.

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

3 Connect the Cable or DSL modem to a Router.
(*See the printed Hardware Installation Guide included with your router.*)

4 Connect the Ethernet Broadband Router to the PoE base unit.
(*See the printed Hardware Installation Guide included with the **DWL-7700AP**.*)

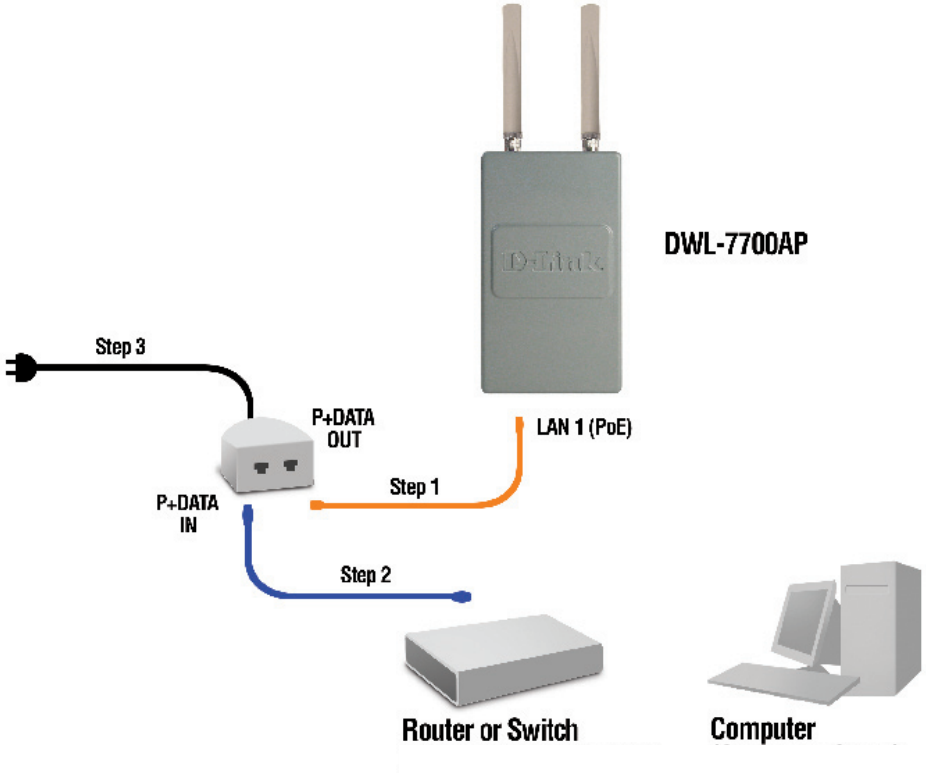
5 Connect the **DWL-7700AP** to the PoE base unit.
(*See the printed Hardware Installation Guide included with the **DWL-7700AP**.*)

6 If you are connecting a desktop computer to your network, install the D-Link DWL-AG530 wireless PCI adapter into an available PCI slot on your desktop computer.

7 Install the drivers for the D-Link DWL-AG660 wireless Cardbus adapter into a laptop computer.

Getting Started (continued)

Connecting PoE (Power over Ethernet)



Step 1 Connect one end of an Ethernet cable (included with your package) to the **LAN port** on the **DWL-7700AP** and the other end of the Ethernet cable to the port labeled **P+DATA OUT** on the PoE base unit.

Step 2 Connect another Ethernet cable from the **P+DATA IN** port on the PoE base unit to your router/switch or to a PC.

Step 3 Attach the power adapter to the connector on the PoE base unit. Attach the power cord to the power adapter and into an electrical outlet.

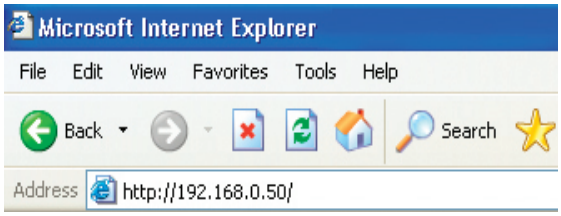
Using the Configuration Menu

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.



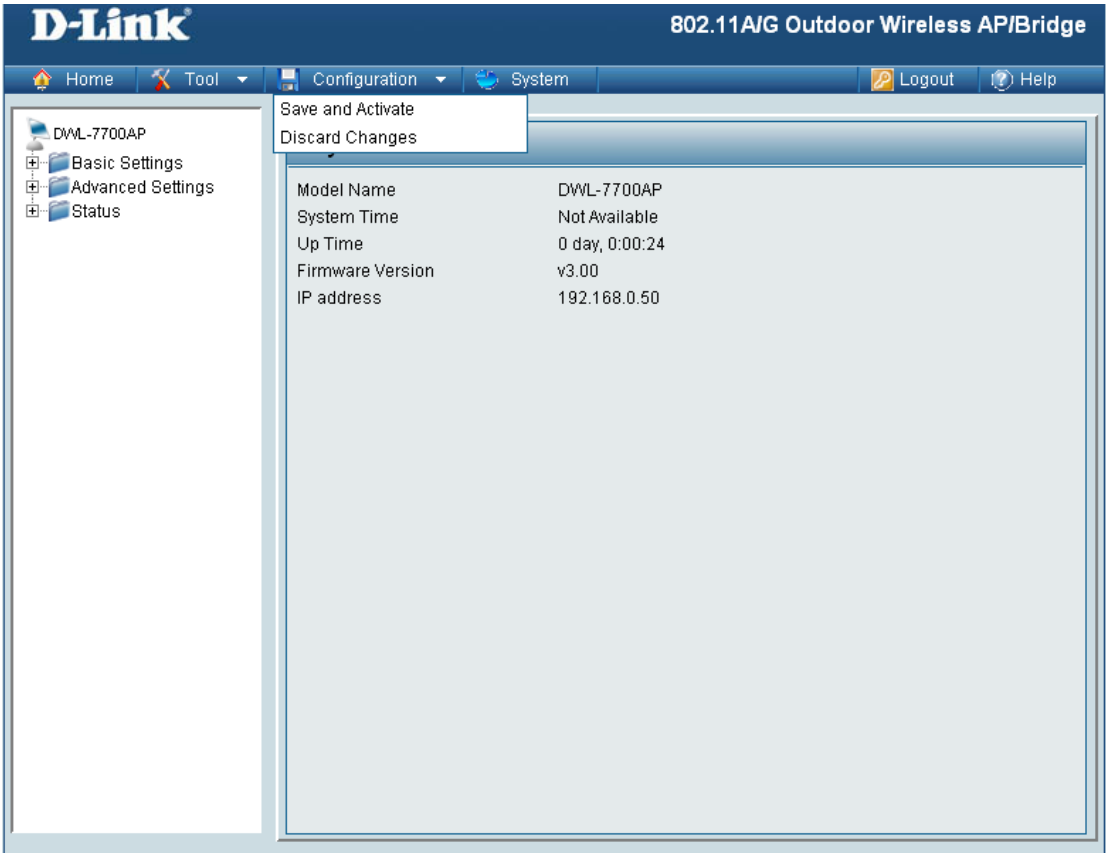
After the connection is established, you will see the user identification window as shown.

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.

Configuration > Save and Activate



Clicking **Save and Activate** will save and activate all changes made to the configuration and reboot the system.

Clicking **Discard Changes** will discard all changes made to the configuration.

Click the Apply button to save changes made to the current page. Please note that you still must select Save and Activate under Configuration in order for changes to take effect.

Home >Basic Settings > Wireless > Access Point

Wireless Band: Select either **802.11a** or **802.11g**.

Mode: Select **Access Point** from the drop-down menu.

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

SSID Broadcast: Select **Enable** or **Disable** SSID broadcast. Enabling this feature broadcasts the SSID across the network. Disabling this feature will make the SSID invisible.

Channel: **Auto Channel Scan** is selected by default. All devices on the network must share the same channel.

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

Home > Basic Settings > Wireless > Access Point (continued)

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

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

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

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

Select **802.1x** to verify the identity of would-be clients in conjunction with a RADIUS server.

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

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

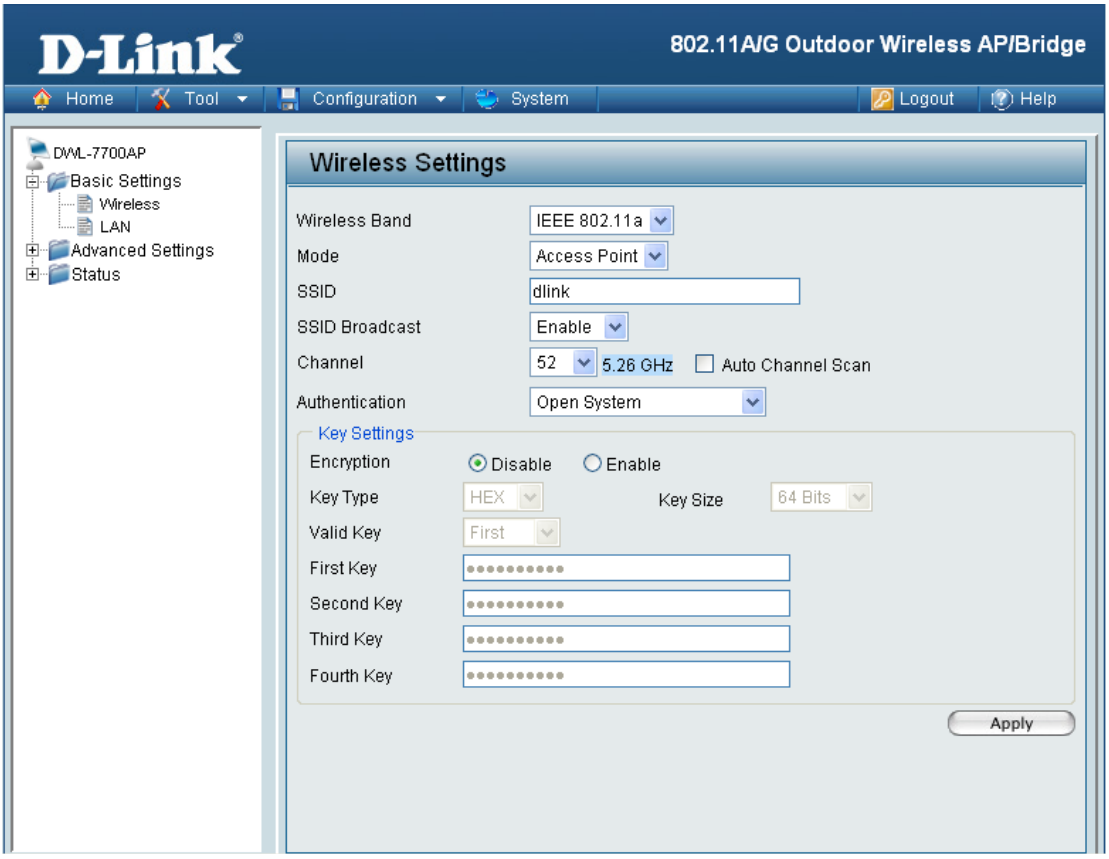
Select **WPA2-Enterprise** to secure your network with the inclusion of a RADIUS server and upgrade the encryption of data with the Advanced Encryption Standard (AES).

Select **WPA2-Personal** to secure your network using a password and dynamic key changes. No RADIUS server required and encryption of data is upgraded with the Advanced Encryption Standard (AES).

Select **WPA-Auto-Enterprise** to allow the client to either use **WPA-Enterprise** or **WPA2-Enterprise**.

Select **WPA-Auto-Personal** to allow the client to either use **WPA-Personal** or **WPA2-Personal**.

Home > Basic Settings > Wireless > Access Point (Open System / WEP)



Encryption: Select **Enabled** to enable WEP encryption.

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

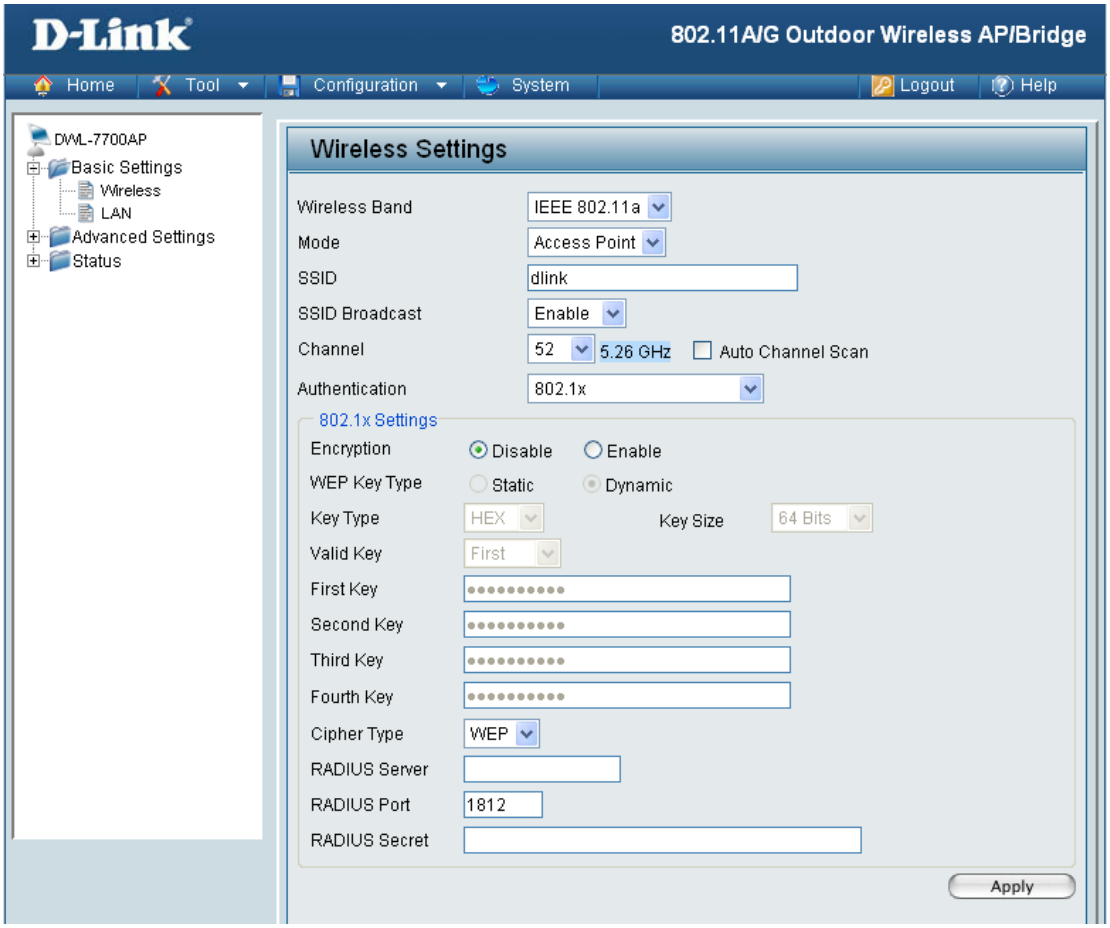
Key Size: Select **64-bit, 128-bit,** or **152-bit.**

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

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

* **Hexadecimal** digits consist of the numbers 0-9 and the letters A-F.
ASCII (American Standard Code for Information Interchange) is a code for representing English letters as numbers 0-127.

Home > Basic Settings > Wireless > Access Point (802.1x)



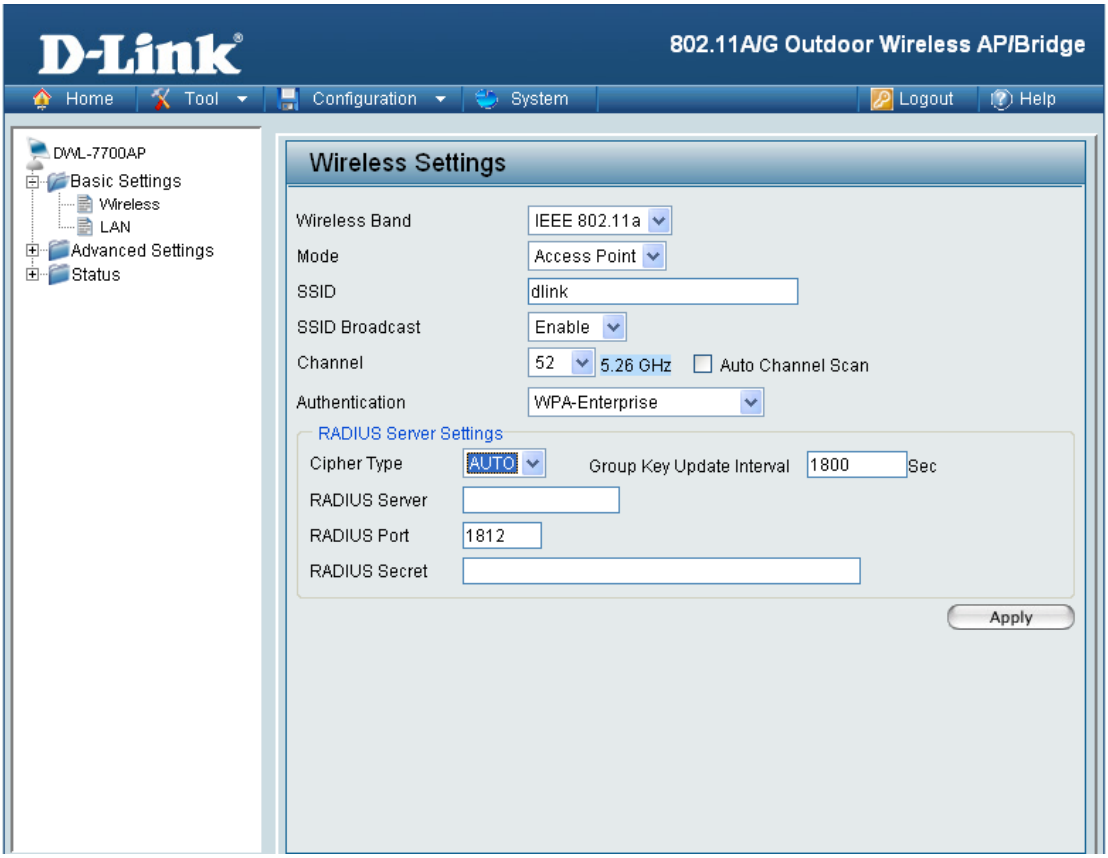
Cipher Type: WEP is selected.

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

RADIUS Port: Enter the RADIUS port.

RADIUS Secret: Enter the RADIUS secret.

Home > Basic Settings > Wireless > Access Point (WPA/WPA2-Enterprise WPA-Auto-Enterprise)



Cipher Type: When you select **WPA-Enterprise**, **WPA2-Enterprise** or **WPA-Auto-Enterprise**, you must select **AES**, **AUTO**, or **TKIP** from the pull-down menu.

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

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

RADIUS Port: Enter the RADIUS port.

RADIUS Secret: Enter the RADIUS secret.

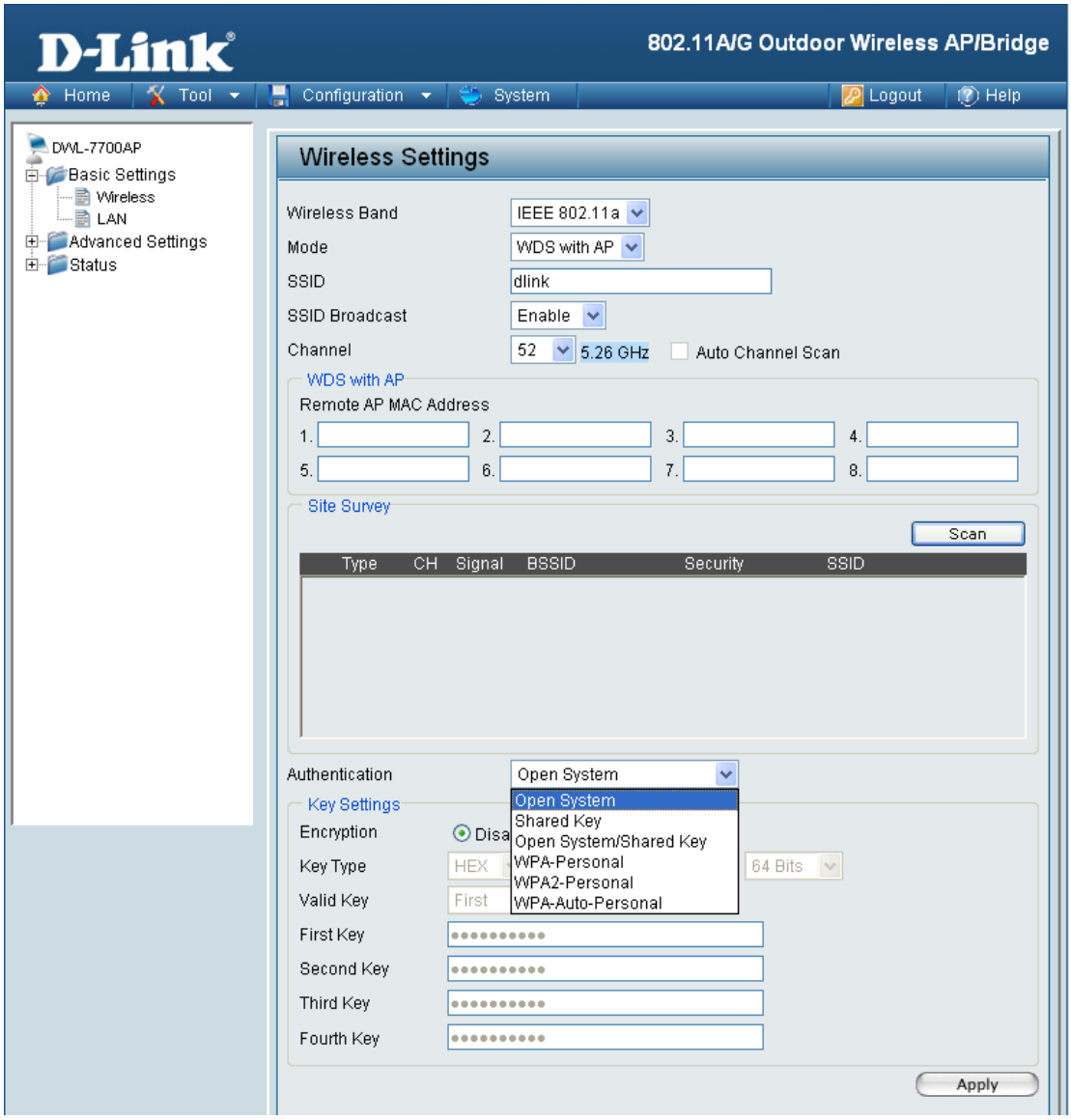
Home > Basic Settings > Wireless > Access Point (WPA/WPA2-Personal WPA-Auto-Personal)

Cipher Type: When you select **WPA-Personal**, **WPA2-Personal,** or **WPA-Auto-Personal,** you must select **AES**, **AUTO**, or **TKIP** from the pull-down menu.

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

PassPhrase: Enter a passphrase. The passphrase is an alpha-numeric password between 8 and 63 characters long. The password can include symbols (!?*&_) and spaces. Make sure you enter this key exactly the same on all other wireless clients.

Home > Basic Settings > Wireless > WDS with AP



In WDS with AP mode, the **DWL-7700AP** wirelessly connects multiple networks, while still functioning as a wireless AP. WDS (Wireless Distribution System) allows access points to communicate with one another wirelessly in a standardized way. It can also simplify the network infrastructure by reducing the amount of cabling required. Basically the access points will act as a client and an access point at the same time.

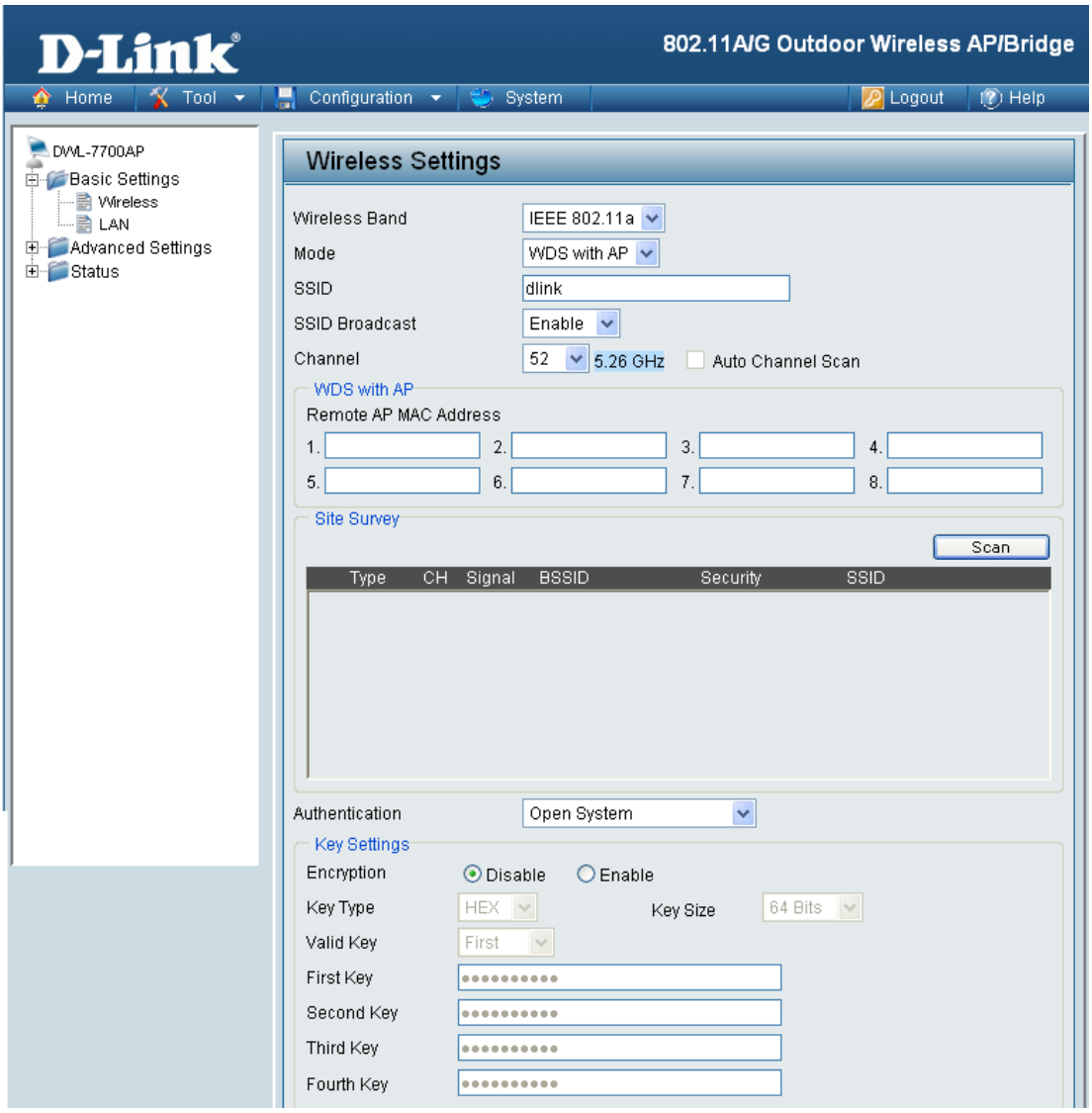
Wireless Band:	Select either IEEE 802.11a or IEEE 802.11g
Mode:	**WDS with AP** is selected from the pull-down menu.
SSID:	Service Set Identifier (SSID) is the name designated for a specific wireless local area network (WLAN). The SSID factory default setting is **dlink**. The SSID can be easily changed to connect to an existing wireless network or to establish a new wireless network.

Home >Basic Settings > Wireless > WDS with AP (Continued)

SSID Broadcast:	Enable or Disable SSID broadcast. Enabling this feature broadcasts the SSID across the network.
Channel:	**52** is the default channel for IEEE 802.11a, and **6** is the default channel for IEEE 802.11g. All devices on the network must share the same channel. (Note: The wireless adapters will automatically scan and match the wireless setting.)
Auto Channel Scan:	This option is unavailable in WDS with AP mode.
Remote AP MAC Address:	Enter the MAC addresses of the APs in your network that will serve as bridges to wirelessly connect multiple networks.
Scan:	Click Scan to view available APs in your network that will serve as bridges.
Authentication:	Select **Open System** to communicate the key across the network. Select **Shared Key** to limit communication to only those devices that share the same WEP settings. Select **Open System/Shared Key** to allow either form of data encryption. Select **WPA-Personal, WPA2-Personal** or **WPA-Auto-Personal** to secure your network using a password and dynamic key changes (No RADIUS server required).

Note: WDS is not completely specified in WiFi or IEEE standards. Communication with other vendors access points is not guaranteed.

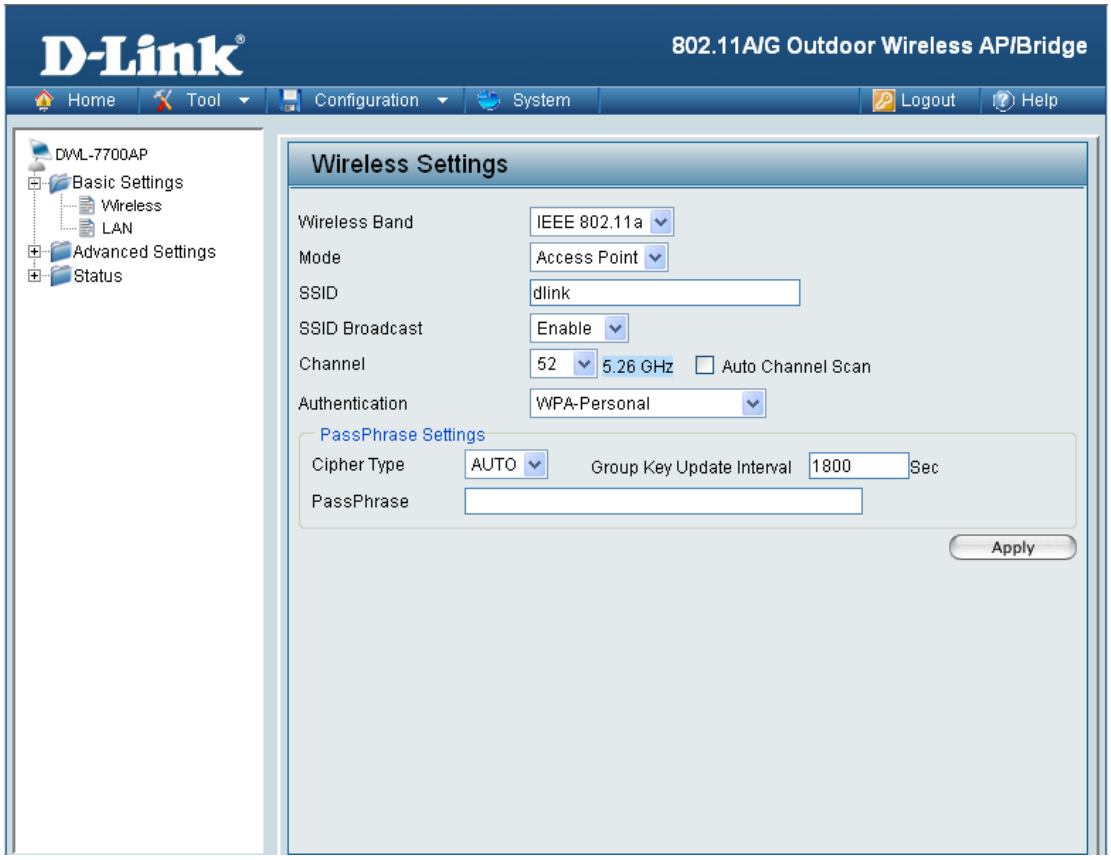
Home > Basic Settings > Wireless > WDS with AP (WEP)



Encryption:	Select **Enabled** to enable WEP encryption.
Key Type:	Select **HEX** or **ASCII.**
Key Size:	Select **64-bit, 128-bit,** or **152-bit.**
Valid Key:	Select the **1st** through the **4th** key to be the active key.
First through Fourth keys:	Input up to four keys for encryption. You will select one of these keys in the valid key field.

* **Hexadecimal** digits consist of the numbers 0-9 and the letters A-F.
ASCII (American Standard Code for Information Interchange) is a code for representing English letters as numbers 0-127.

Home > Basic Settings > Wireless > WDS with AP (WPA/WPA2-Personal / WPA-Auto-Personal)



Cipher Type: When you select **WPA-Personal**, **WPA2-Personal**, or **WPA-Auto-Personal** you must select **AES** or **AUTO** from the pull-down menu.

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

PassPhrase: Enter a passphrase. The passphrase is an alpha-numeric password between 8 and 63 characters long. The password can include symbols (!?*&_) and spaces. Make sure you enter this key exactly the same on all other wireless clients.

Home > Basic Settings > Wireless > WDS

In WDS, the DWL-7700AP wirelessly connects multiple networks, without functioning as a wireless AP.

Wireless Band: Select either IEEE 802.11a or IEEE 802.11g

Mode: **WDS** is selected from the pull-down menu.

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

Home > Basic Settings > Wireless > WDS (continued)

SSID Broadcast:	Enable or Disable SSID broadcast. Enabling this feature broadcasts the SSID across the network.
Channel:	**52** is the default channel for IEEE 802.11a, and **6** is the default channel for IEEE 802.11g. All devices on the network must share the same channel. (Note: The wireless adapters will automatically scan and match the wireless setting.)
Auto Channel Scan:	This option is unavailable in WDS with AP mode.
Remote AP MAC Address:	Enter the MAC addresses of the APs in your network that will serve as bridges to wirelessly connect multiple networks.
Scan:	Click Scan to view available APs in your network that will serve as bridges.
Authentication:	Select **Open System** to communicate the key across the network. Select **Shared Key** to limit communication to only those devices that share the same WEP settings. Select **Open System/Shared Key** to allow either form of data encryption. Select **WPA-Personal, WPA2-Personal** or **WPA-Auto-Personal** to secure your network using a password and dynamic key changes (No RADIUS server required).

Home > Basic Settings > Wireless > WDS (WEP)

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

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

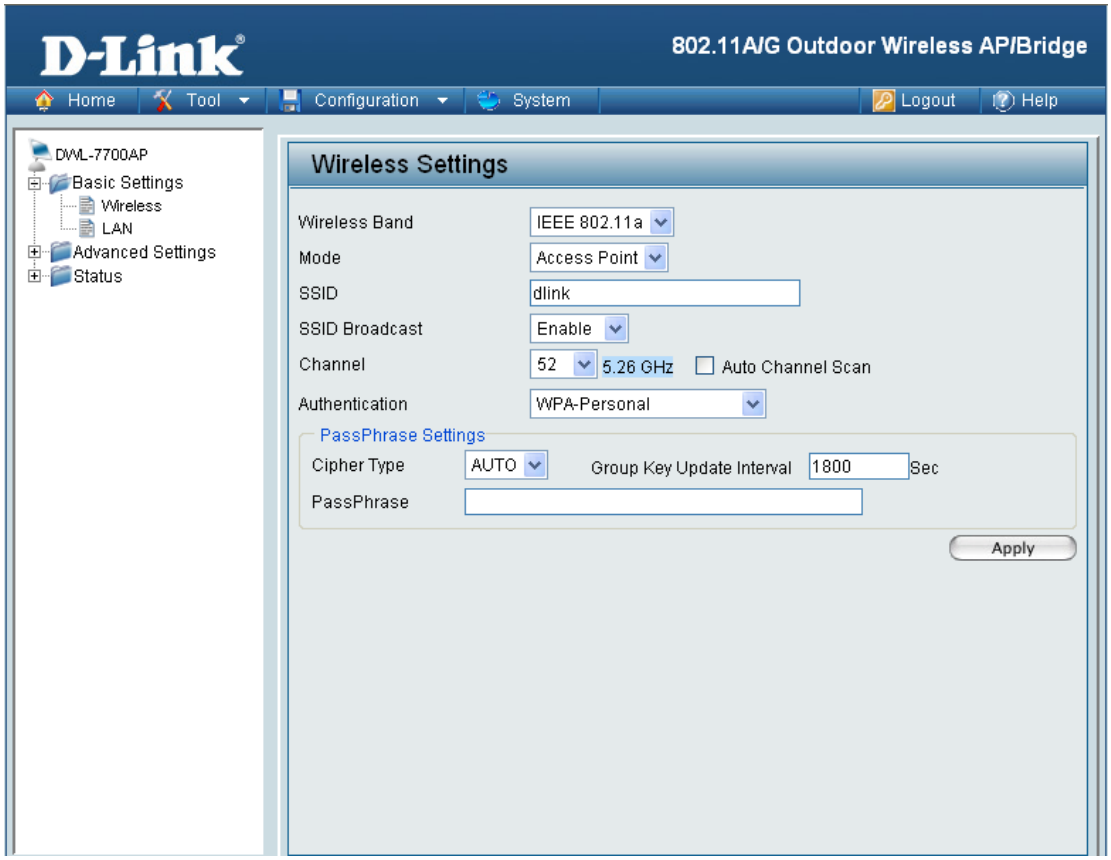
Key Size: Select **64-bit, 128-bit,** or **152-bit.**

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

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

* **Hexadecimal** digits consist of the numbers 0-9 and the letters A-F.
ASCII (American Standard Code for Information Interchange) is a code for representing English letters as numbers 0-127.

Home > Basic Settings > Wireless > WDS (WPA/WPA2-Personal / WPA-Auto-Personal)



Cipher Type: When you select **WPA-Personal**, **AES** is selected as the Cipher Type.

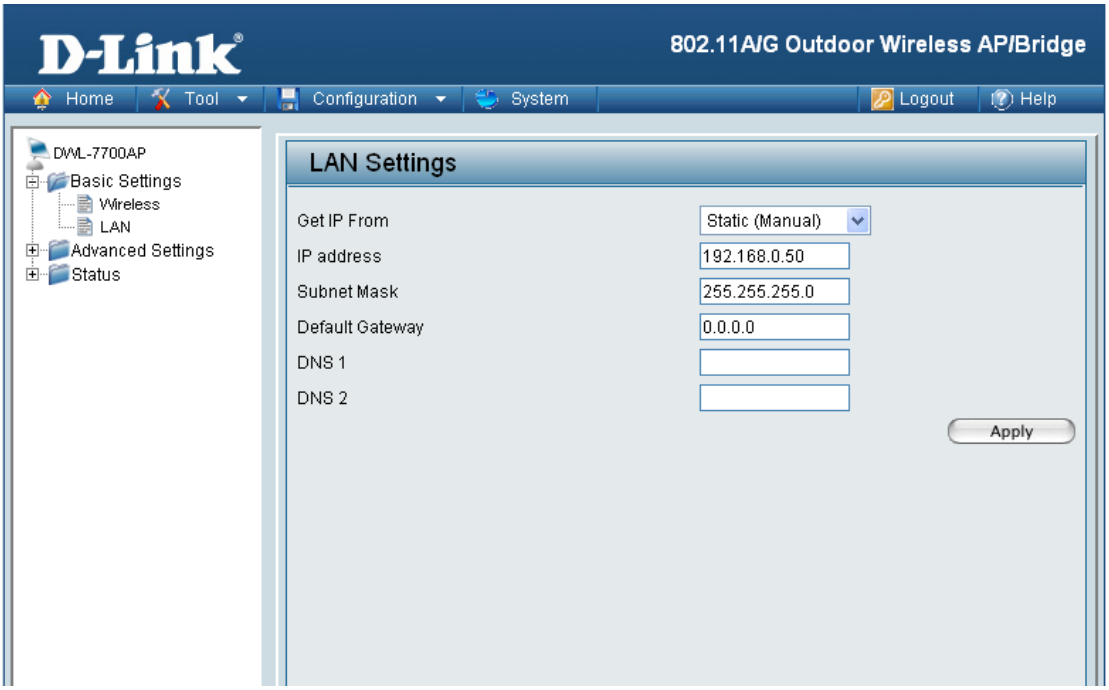
Group Key Update Interval: Select the interval during which the group key will be valid. The default value of 1800 is recommended.

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

Home > Basic Settings > Wireless Modes

AP Mode	Authentication Available
Access Point	Open System Shared Key Open System/Shared Key 802.1x WPA-Enterprise WPA-Personal WPA2-Enterprise WPA2-Personal WPA-Auto-Enterprise WPA-Auto-Personal
WDS with AP	Open System Shared Key Open System/Shared Key WPA-Personal WPA2-Personal WPA-Auto-Personal
WDS	Open System Shared Key Open System/Shared Key WPA-Personal WPA2-Personal WPA-Auto-Personal

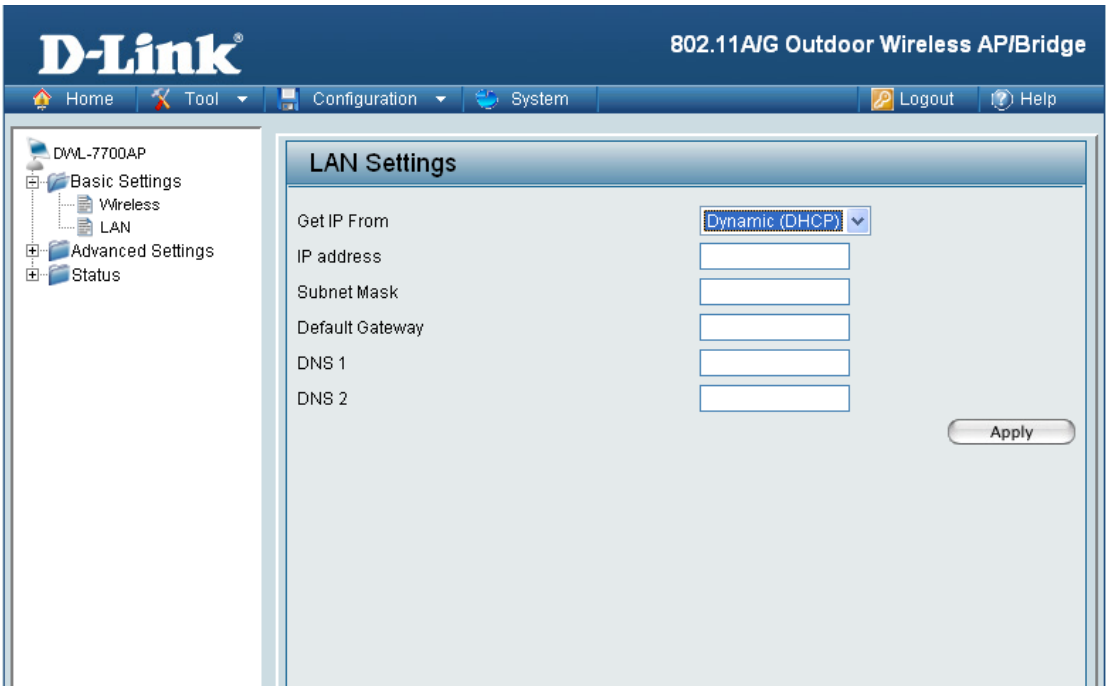
Home > Basic Settings > LAN > Static



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.

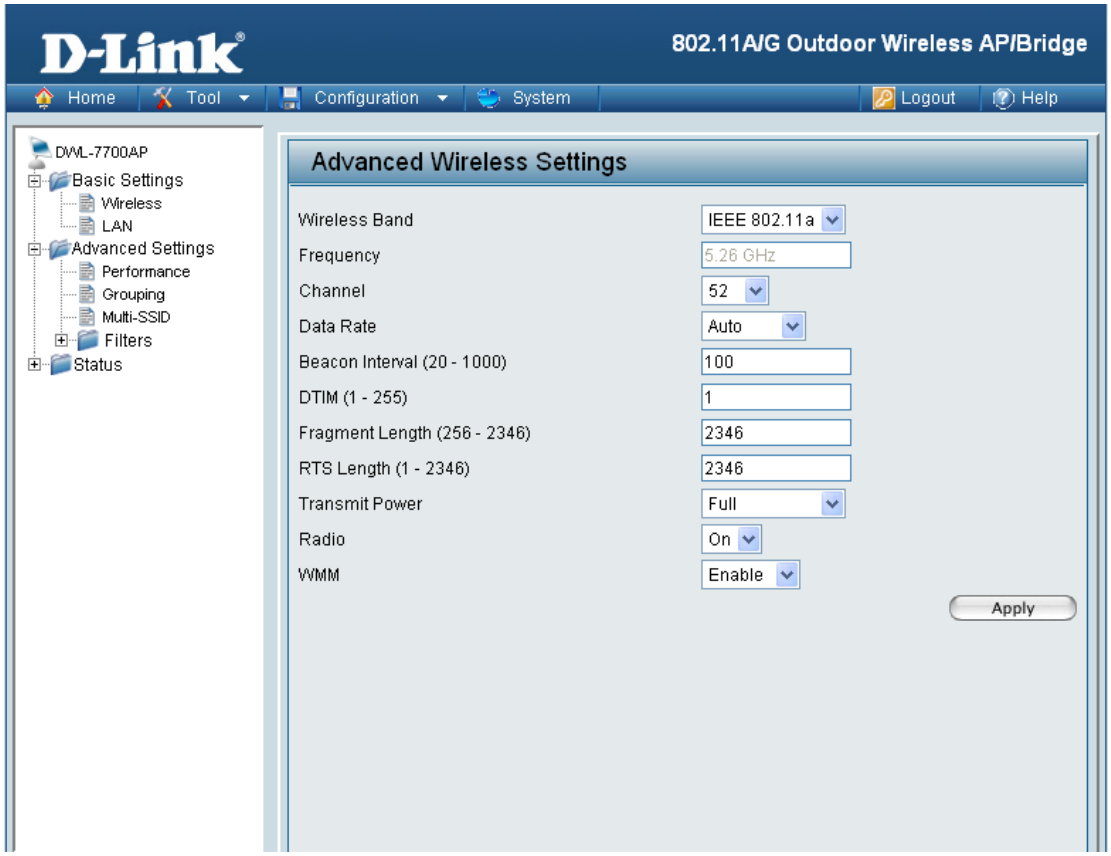
Get IP From:	Static (Manual) is chosen here. Choose this option if you do not have a DHCP server in your network, or if you wish to assign a static IP address to the DWL-7700AP.
IP Address:	The default IP address is 192.168.0.50. Assign a static IP address that is within the IP address range of your 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.
DNS 1:	Enter your primary DNS IP address.
DNS 2:	Enter your secondary DNS IP address.

Home > Basic Settings > LAN > Dynamic



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 selected.
Subnet Mask:	This field is unavailable when DHCP is selected
Default Gateway:	This field is unavailable when DHCP is selected.
DNS 1:	This field is unavailable when DHCP is selected.
DNS 2:	This field is unavailable when DHCP is selected.

Home > Advanced Settings > Performance



Wireless Band: Select IEEE 802.11a or IEEE 802.11g.

Frequency: The frequency reflects the choice of the wireless band. When IEEE 802.11a is chosen the frequency is 5.26GHz for channel 52. When IEEE 802.11g is chosen the frequency is 2.437GHz for channel 6.

Channel: The default channel for IEEE 802.11a is 52, and the default channel for IEEE 802.11g 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.

Home > Advanced Settings > Performance (continued)

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 messages.

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

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

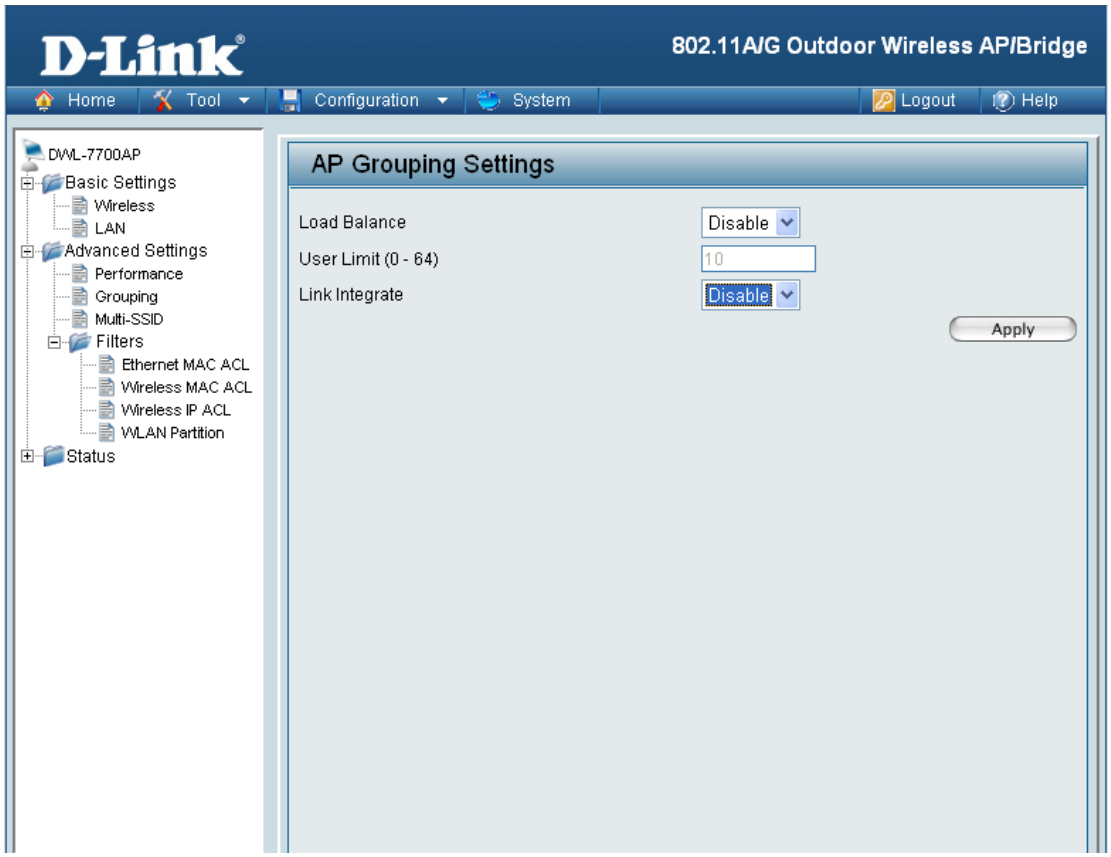
Transmit Power: Choose full, half (-3dB), quarter (-6dB), eighth (-9dB), minimum power.

Radio: Select **ON** or **OFF**.

WMM: (Wi-Fi Multimedia) Improves the user experience for audio, video, and voice applications over a Wi-Fi network. This feature is enabled by default, uncheck to disable.

*Maximum wireless signal rate derived from 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.

Home > Advanced Settings > AP Grouping

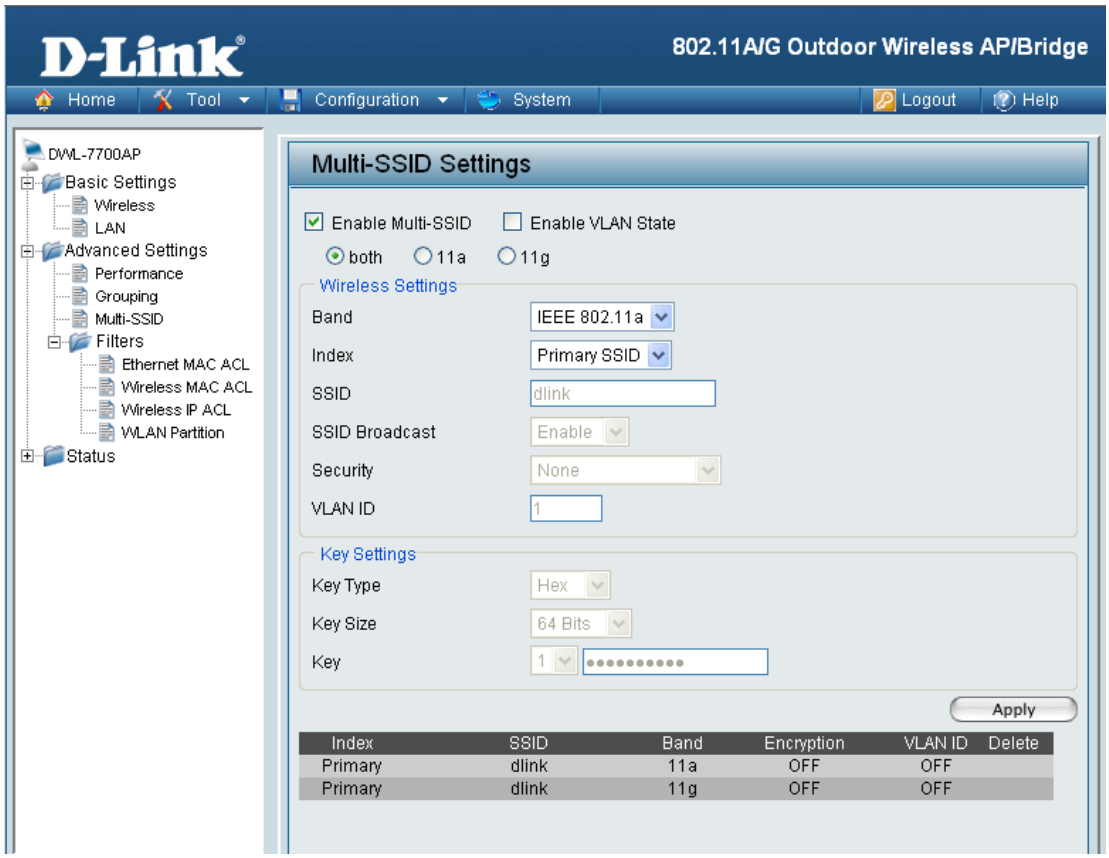


Load Balance: Load Balancing allows you to balance and share the wireless network traffic and clients using multiple DWL-7700APs. Select **Enable** or **Disable**.

User Limit: Sets the maximum amount of users allowed (0-64).

Link Integrate: If the Ethernet connection between the LAN and the DWL-7700AP is disconnected, the Link Integrate option will cause the wireless segment associated with the AP to be disconnected from the AP. Select **Enable** or **Disable**.

Home > Advanced Settings > Multi-SSID



Enable Multi-SSID: Check to enable Multi-SSID

Enable VLAN State: Check to enable VLANs.

Band: Select **IEEE 802.11a** or **IEEE 802.11g**.

Index: Select the Index you want to configure, **Primary** or **Multi-SSID 1** through **Multi-SSID 7**. Primary SSID and security cannot be configured here, as those values follow the settings configured on the Home > Basic Settings > Wireless page.

SSID: Service Set Identifier (SSID) is the unique name designated for the Index being configured.

Home > Advanced Settings > Multi-SSID (continued)

SSID Broadcast: Enabled by default, disabling SSID Broadcast will make the SSID invisible. Select **Enable** or **Disable**.

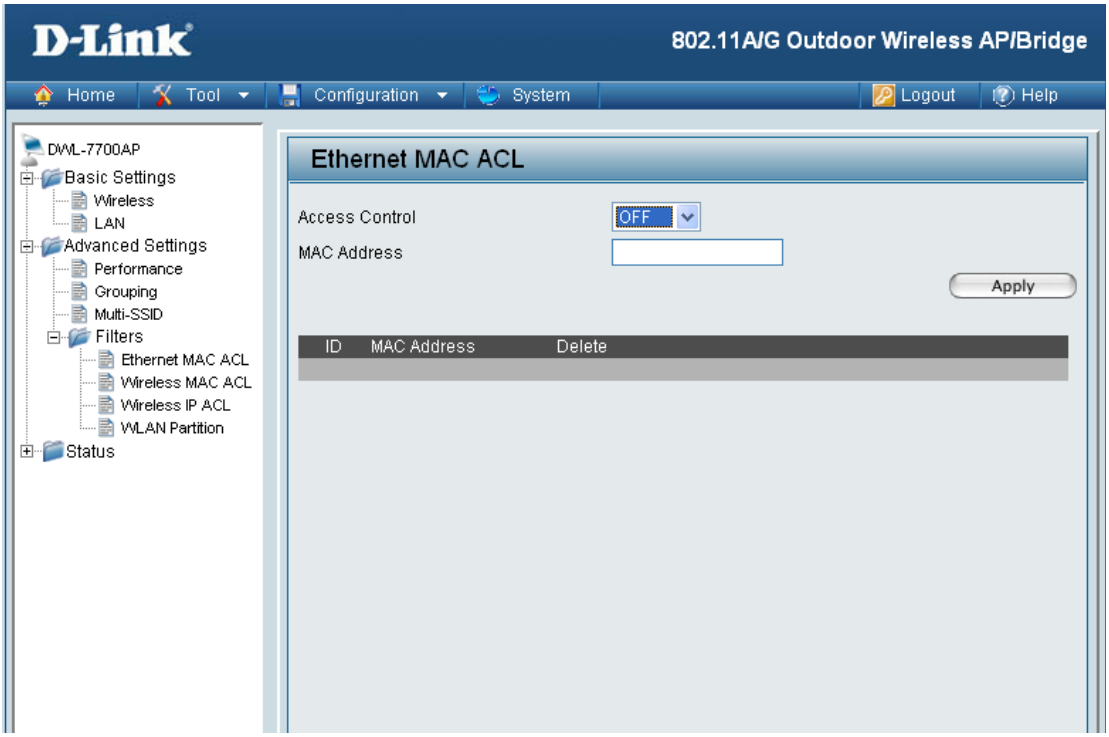
Security: The Security options available are **Open-System**, **Shared Key**, **WPA-Personal**, **WPA2-Personal**, or **WPA-Auto-Personal**.

Note: *Security Setting Limit:*
When the Primary SSID is set to use one key index for WEP, you can use the 3 other key indexes for Guest SSIDs.

If the Primary SSID is set to WPA/WPA2-Personal, or WPA-Auto-Personal, you can only use WEP key index 1 and 4 for Guest SSIDs.

Key Type:	Select **HEX** or **ASCII**. (Only when Open System or Shared Key Security is selected.)
Key Size:	Select **64-bit**, **128-bit** or **152-bit**. (Only when Open System or Shared Key is selected for Security.)
Key:	Select from 1 of 4 Keys to be the active key. (Only when Open System or Shared Key is selected for Security.)
Cipher Type:	When using WPA-Personal, WPA2-Personal, or WPA-Auto-Personal, you must select a cipher type. Available options are **Auto**, **AES**, or **TKIP**.
Group Key Update Interval:	Select the interval during which the group key will remain valid. 1800 is the recommended value, as a lower value may reduce the transfer rate.
PassPhrase:	The passphrase is an alpha-numeric password that must be between 8-63 characters long. The password can include symbols (!?*_) and spaces. Make sure to enter the passphrase exactly the same on all wireless clients.

Home > Advanced Settings > Filters > Ethernet MAC ACL



Access Control: Select **Off** to disable MAC address filtering. Select **Accept** to allow association between the DWL-7700AP and the MAC addresses listed. Select **Reject** to reject devices with the MAC address listed.

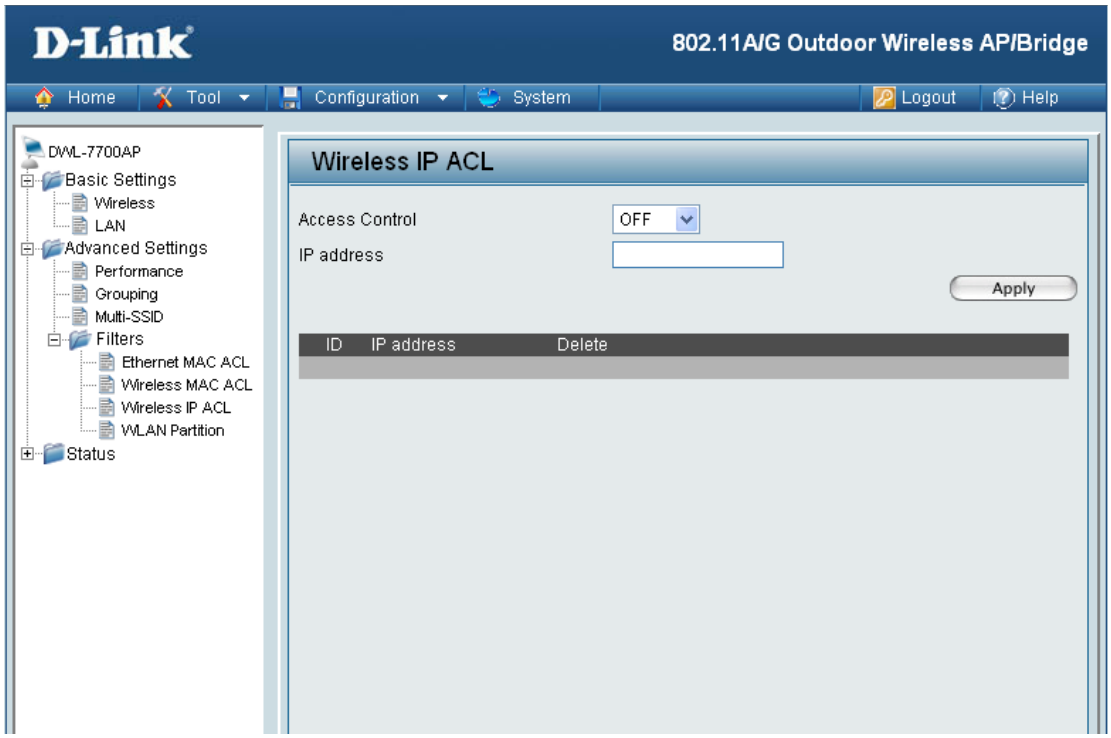
MAC Address: Enter the MAC address you want to include in the Access Control List and click **Apply**.

MAC Address List: MAC addresses added to the Access Control List will appear in this list. Click Delete next to a MAC address to remove it from the list.

Home > Advanced Settings > Filters > Wireless MAC ACL

Wireless Band:	Select **IEEE 802.11a** or **IEEE 802.11g**.
Access Control:	Select **Off** to disable MAC address filtering. Select **Accept** to allow association between the DWL-7700AP and the MAC addresses listed. Select **Reject** to reject devices with the MAC addresses listed.
MAC Address:	Enter the MAC address you want to include in the Access Control List and click **Apply**.
MAC Address List:	MAC addresses added to the Access Control List will appear in this list. Click Delete next to a MAC address to remove it from the list.

Home > Advanced Settings > Filters > Wireless IP ACL

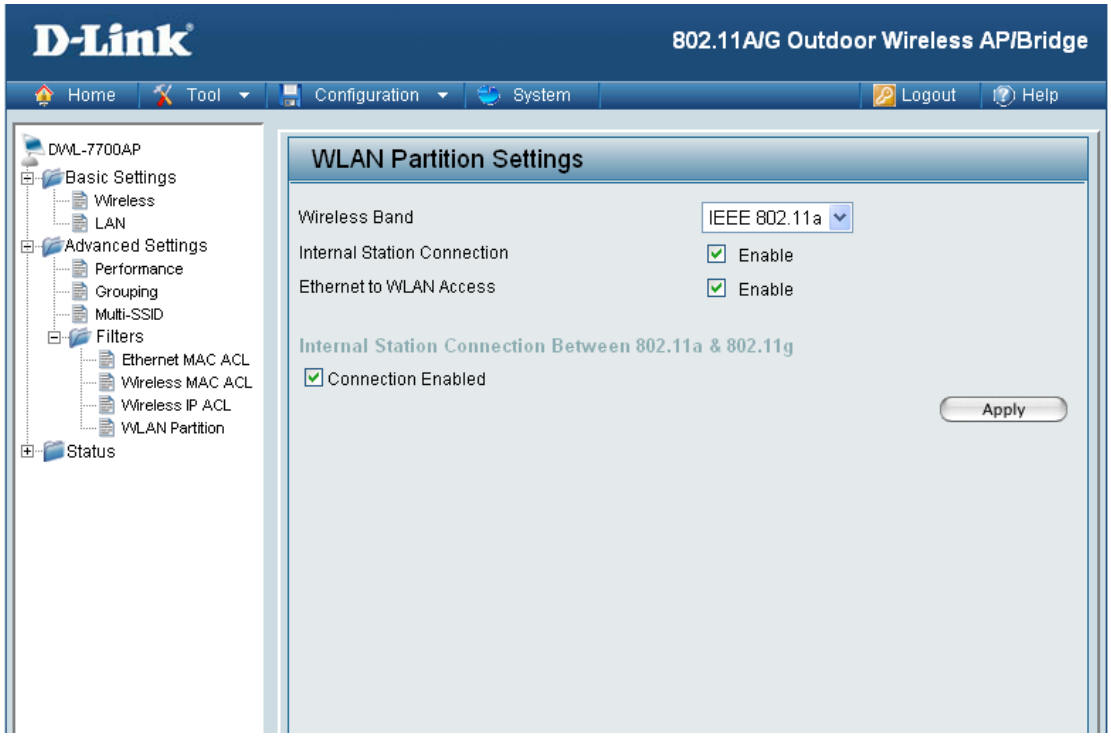


Access Control: Select **Off** to disable IP address filtering. Select **Accept** to allow association between the DWL-7700AP and the IP addresses listed. Select **Reject** to reject devices with the IP addresses listed.

IP Address: Enter the IP address you want to include in the Access Control List and click **Apply**.

IP Address List: IP addresses added to the Access Control List will appear in this list. Click Delete next to an IP address to remove it from the list.

Home > Advanced Settings > Filters > WLAN Partition



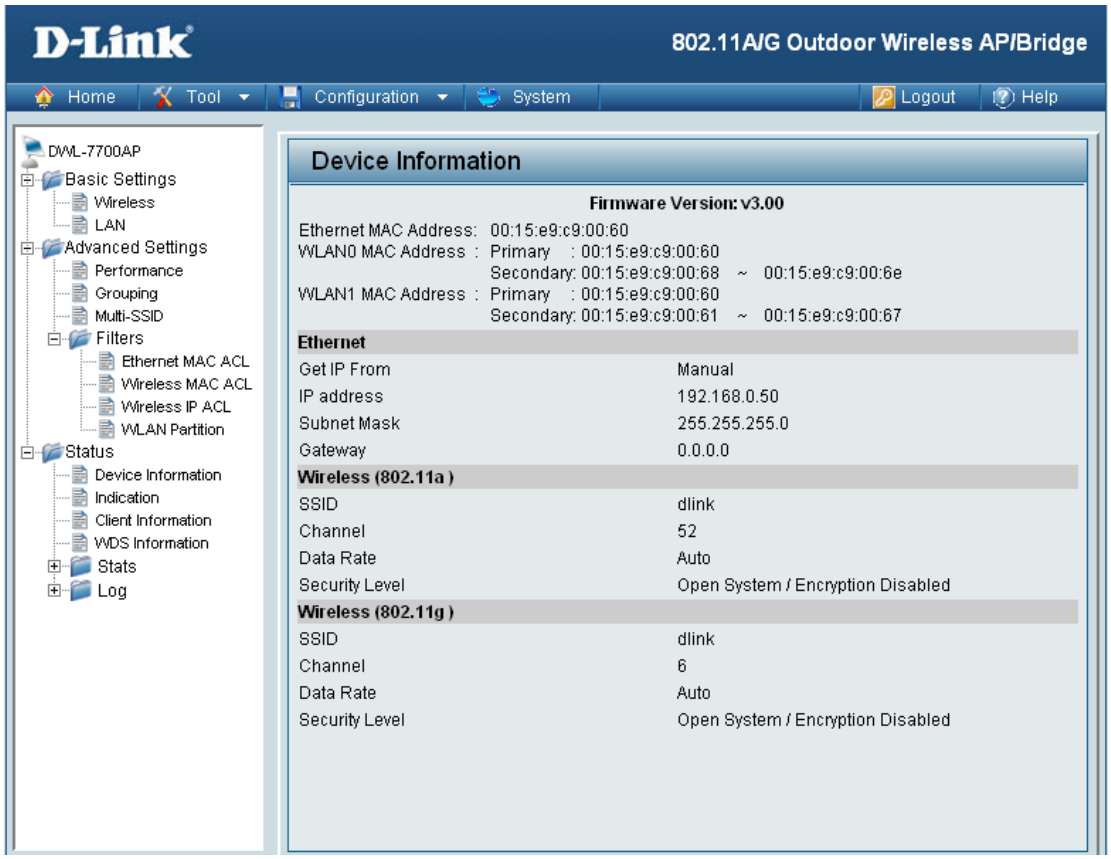
Wireless Band: Select **IEEE 802.11a** or **IEEE 802.11g.**

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

Ethernet to WLAN Access: Enabling this feature allows Ethernet devices on the LAN to communicate with wireless clients on the WLAN. If this feature is disabled, all data from Ethernet devices to wireless clients is blocked. Wireless devices can still send data to Ethernet devices.

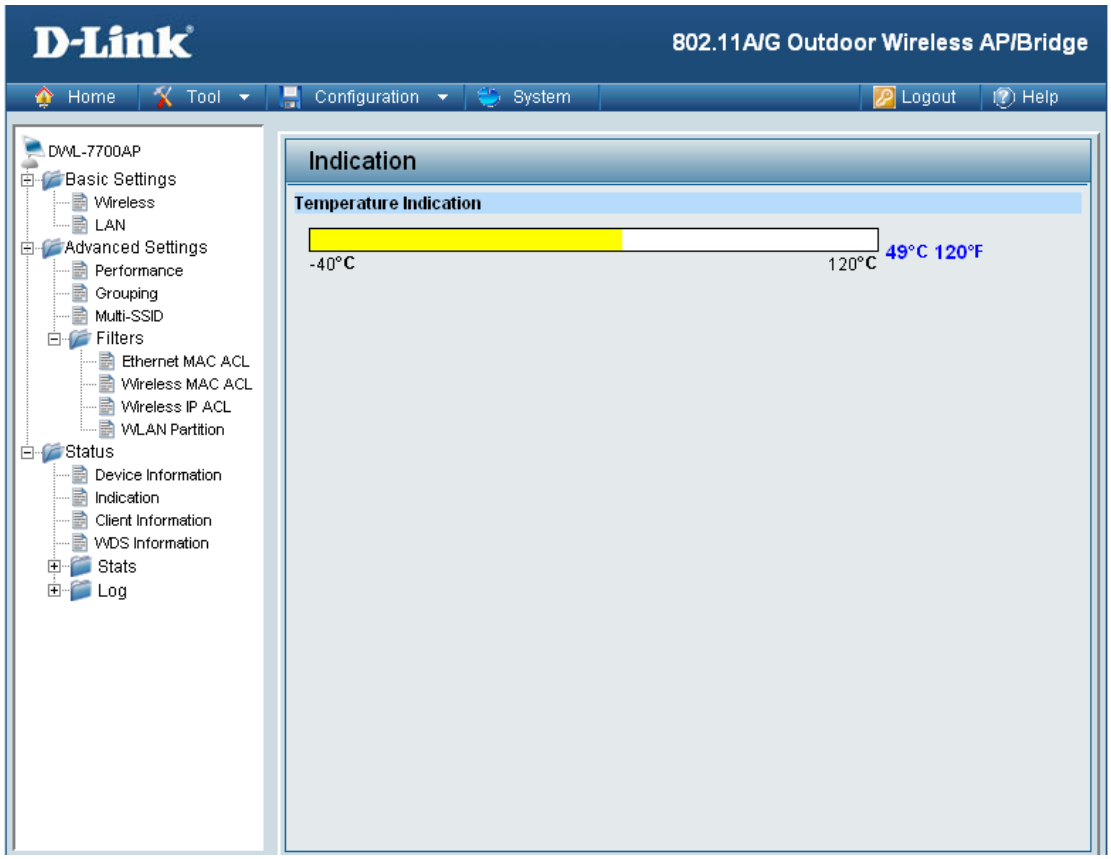
Connection Enabled: Enabling this feature allows 802.11a wireless clients to communicate with 802.11g wireless clients.

Home > Status > Device Information



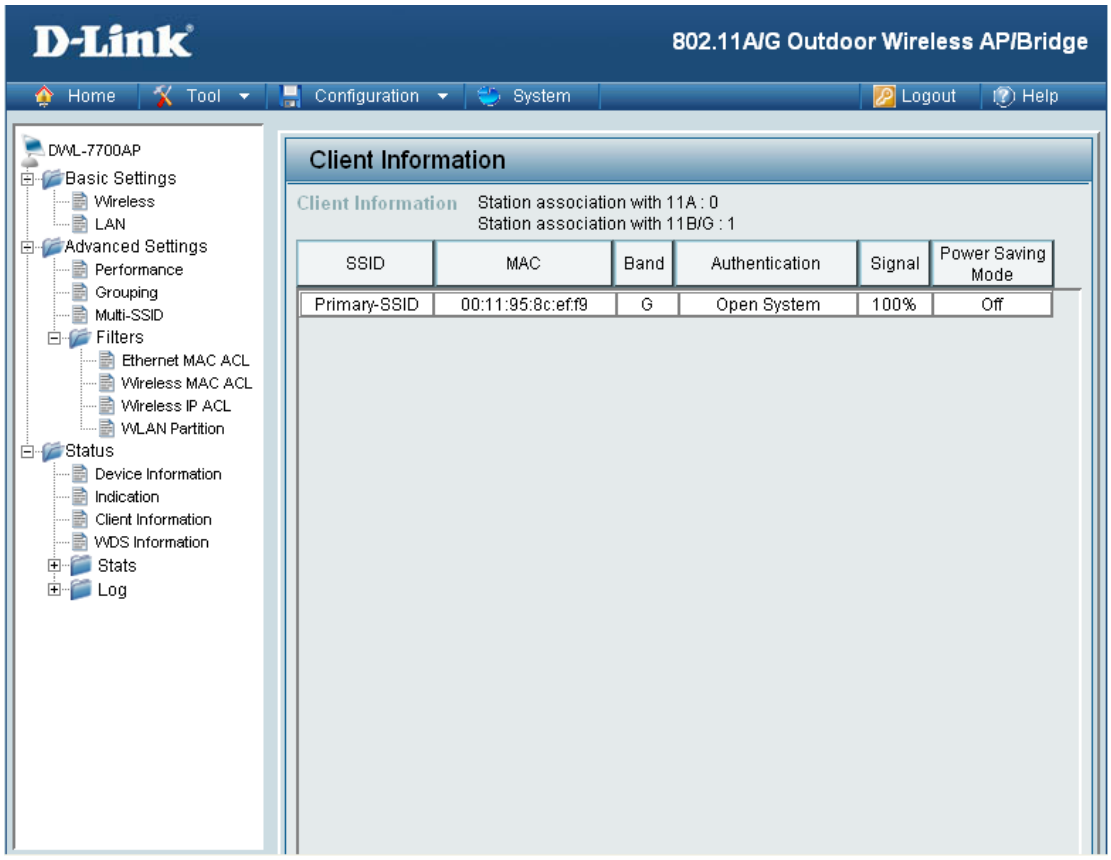
Device Information: This window displays the configuration settings of the DWL-7700AP, including the firmware version and device MAC address.

Home > Status > Indication



Temperature Indication: This window displays the current operating temperature of the DWL-7700AP.

Home > Status > Client Information



Client Information: The Client Information page provides information about the wireless clients connected to the DWL-7700AP.

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

MAC: Displays the MAC address of the client.

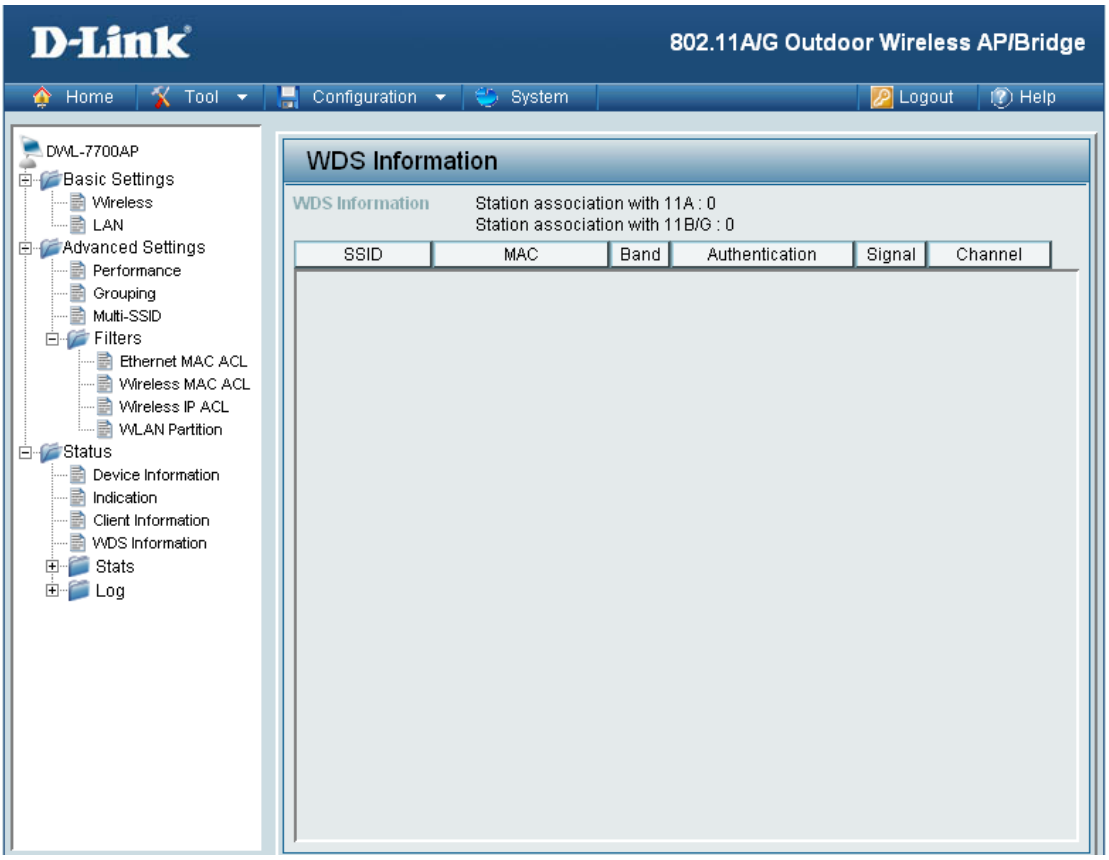
Band: Displays the wireless band the client is connected on.

Authentication: Displays the type of authentication being used.

Signal: Displays the strength of the clients signal.

Power Saving Mode: Displays the status of the power saving feature.

Home > Status > WDS Information



MAC: Displays the MAC address of the client.

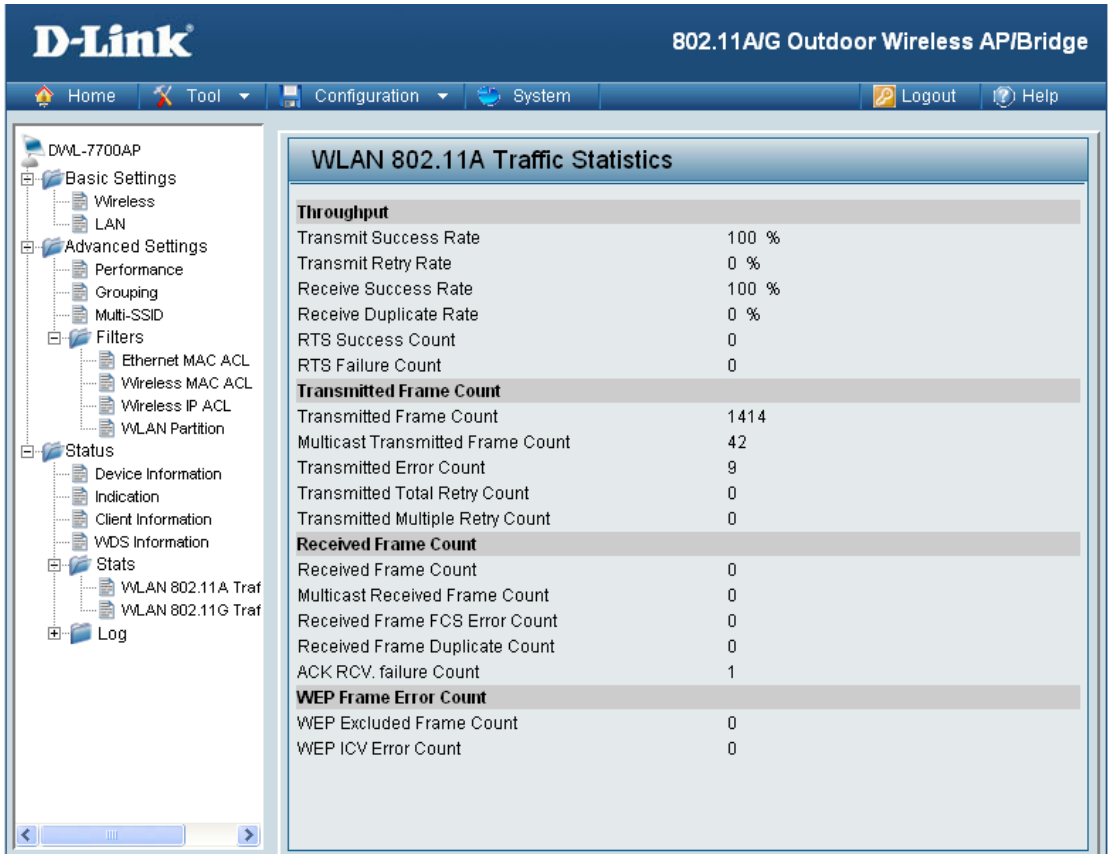
Band: Displays the wireless band the client is connected on.

Authentication: Displays the type of authentication being used.

Signal: Displays the strength of the clients signal.

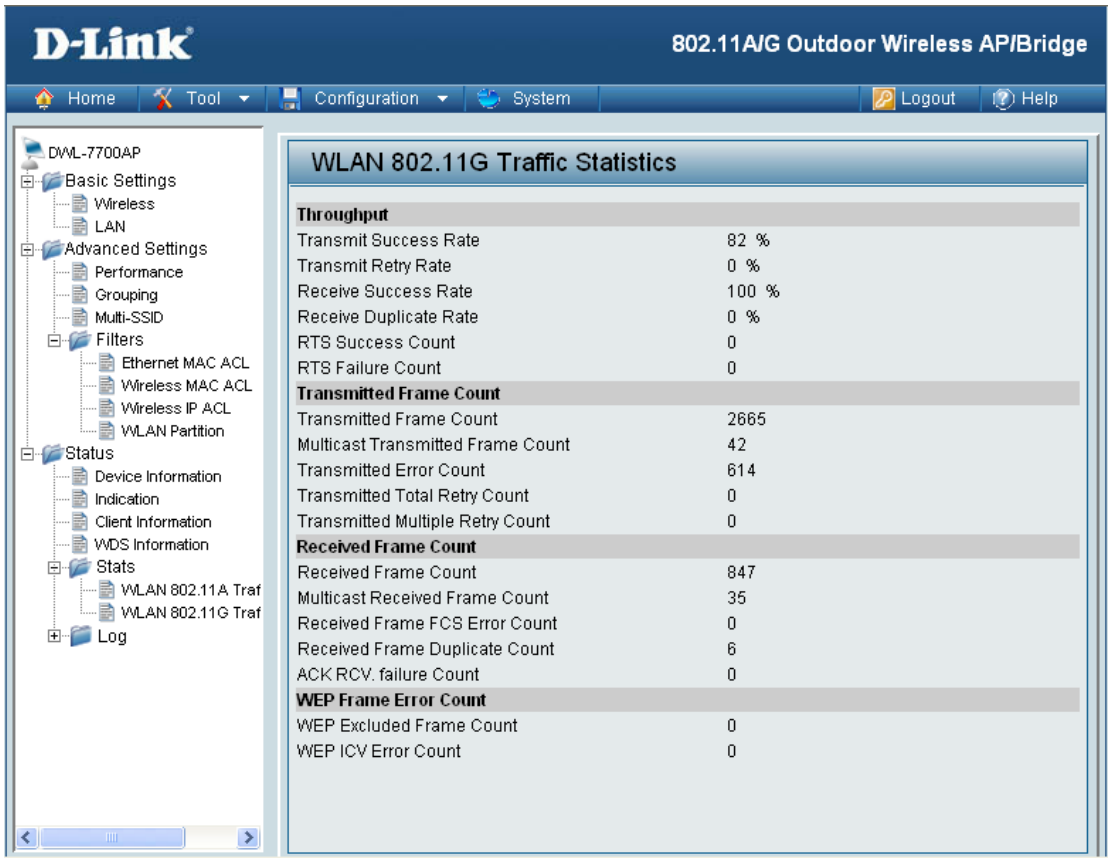
Channel: Displays the wireless channel being used.

Home > Status > WLAN 802.11A Traffic Statistics



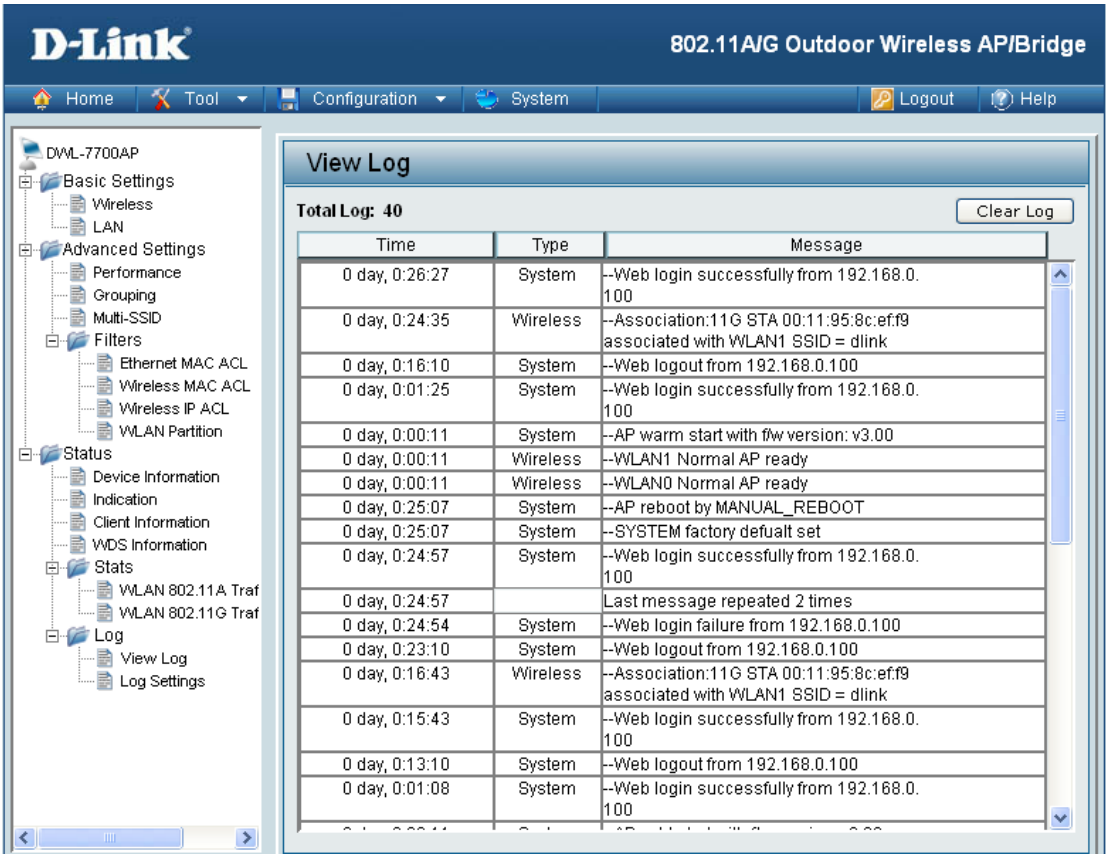
WLAN 802.11a Traffic Statistics: This page displays statistics for data throughput, transmitted and received frames, and WEP frame errors for the 802.11a wireless network.

Home > Status > WLAN 802.11G Traffic Statistics



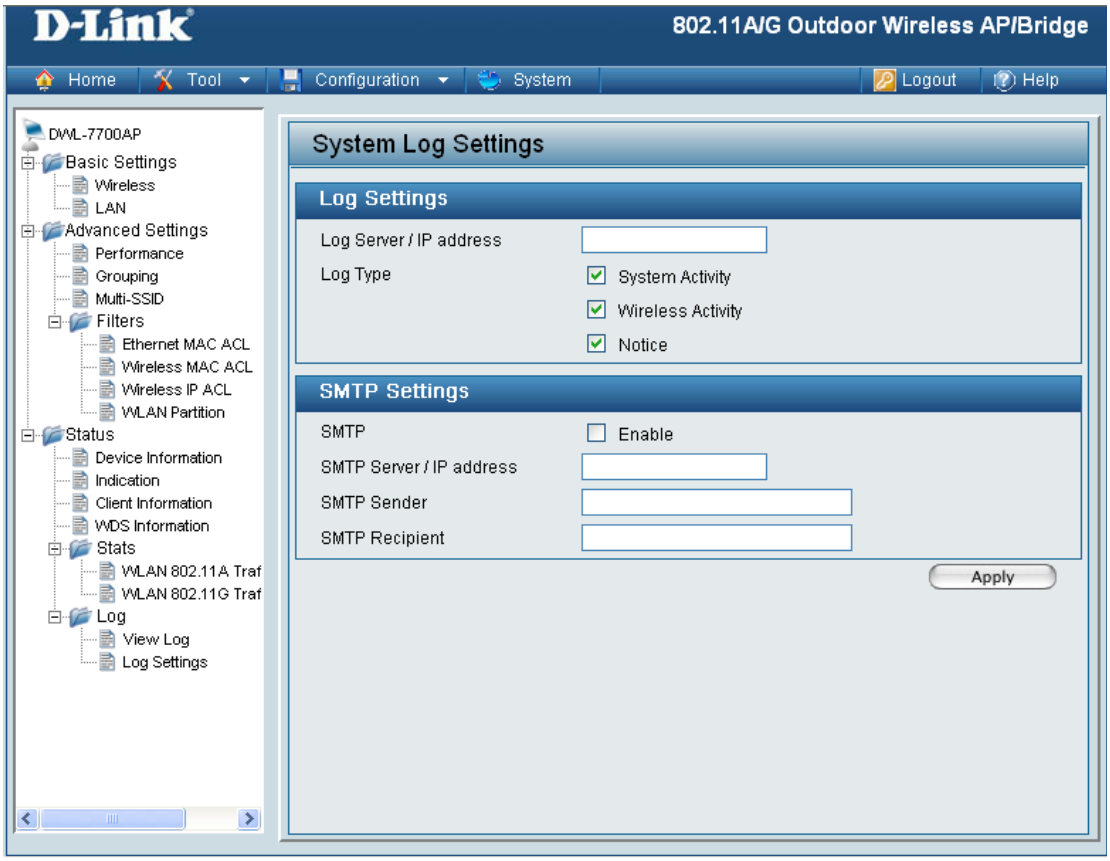
WLAN 802.11g Traffic Statistics: This page displays statistics for data throughput, transmitted and received frames, and WEP frame errors for the 802.11g wireless network.

Home > Log > View Log



View Log: The log displays system and network messages including a time stamp and message type.

Home > Log > Log Settings



Log Settings

Log Server / IP Address: Enter the IP address of the server you would like to send the DWL-7700APs log to.

Log Type: Check the box for the type of activity you want to log. There are three types: **System**, **Wireless** and **Notice**.

SMTP Settings

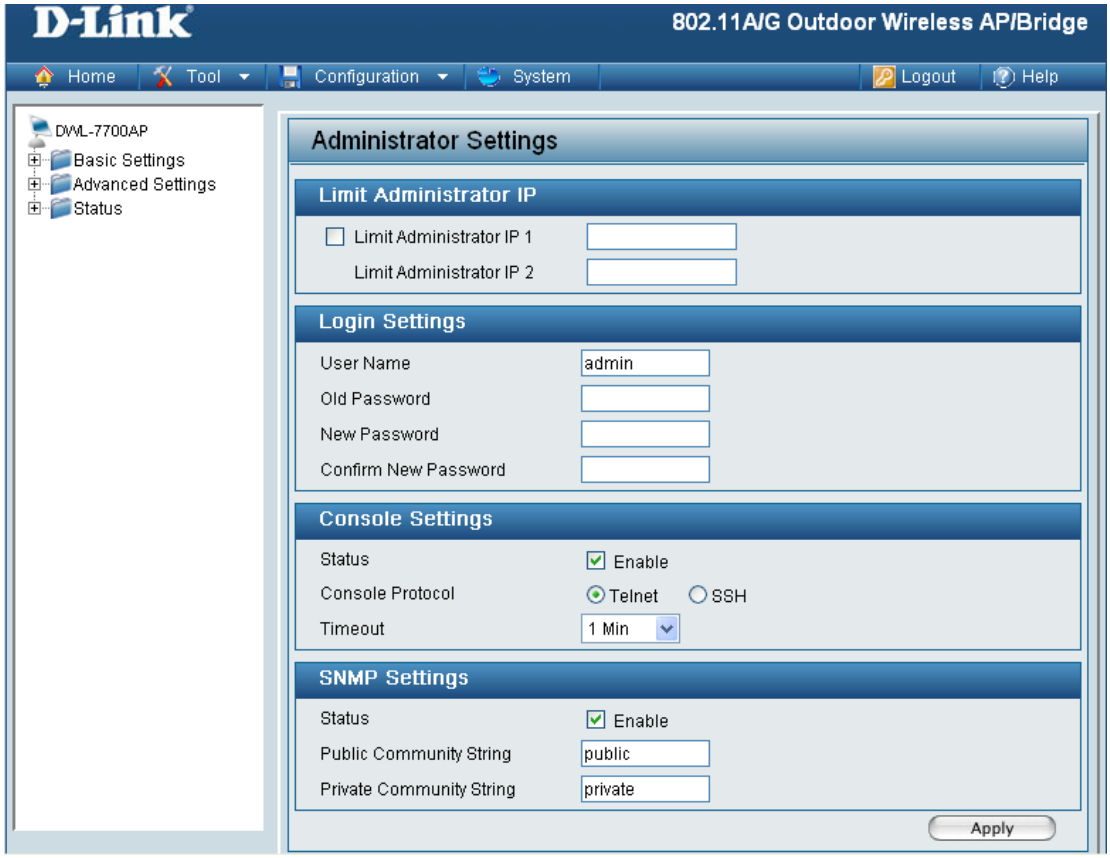
SMTP: Check the box to enable SMTP.

SMTP Server / IP Address: Enter the IP address of the SMTP server.

SMTP Sender: Enter the e-mail address of the SMTP sender.

SMTP Recipient: Enter the e-mail address of the SMTP recipient.

Tool > Administrator Settings



Limit Administrator IP — Check the box to enable the feature.

Limit Administrator IP 1: — Enter the IP address that the administrator will be allowed to log in from.

Limit Administrator IP 2: — Enter a secondary IP address that the administrator will be allowed to log in from.

Login Settings

User Name: — Enter a user name. The default is admin.

Old Password: — When changing your password, enter the old password here.

New Password: — When changing your password, enter the new password here.

Confirm New Password: — Confirm your new password here.

Tool > Administrator Settings (continued)

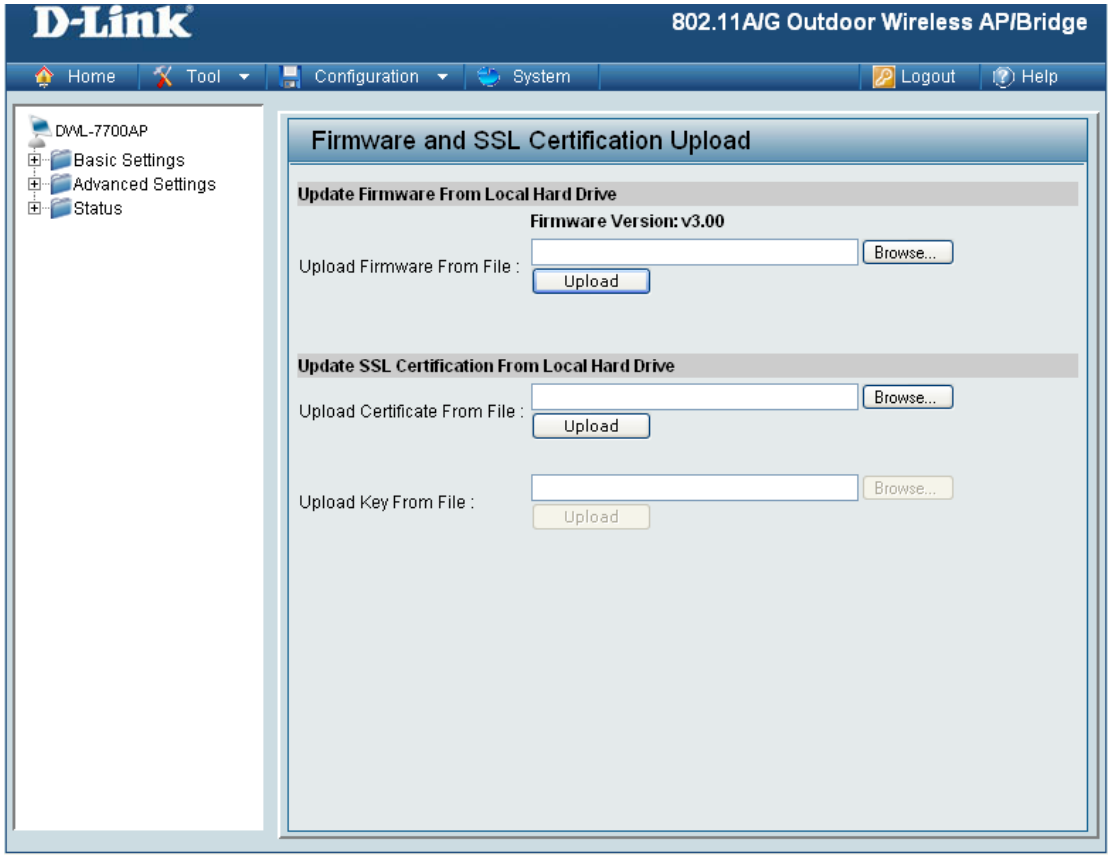
Console Settings

Status:	Status is Enabled by default. Uncheck the box to disable the console.
Console Protocol:	Select the type of protocol you would like to use, **Telnet** or **SSH**.

SNMP Settings

Status:	Status is Enabled by default. Uncheck the box to disable the SNMP functions.
Public Community String:	Enter the public SNMP community string.
Private Community String:	Enter the private SNMP community string.

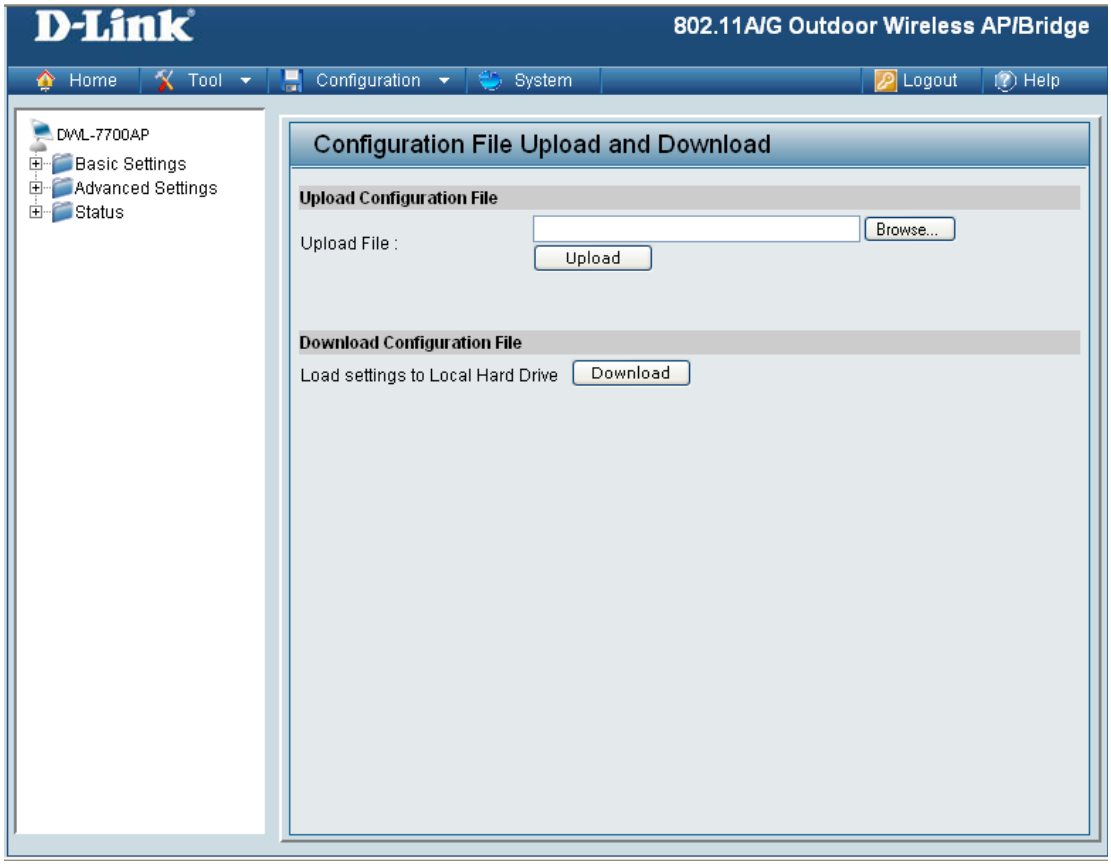
Tool > Firmware and SSL Certification Upload



Upload Firmware After downloading the most recent version of firmware for the DWL-7700AP from http://support.dlink.com to your local computer, use the **Browse** button to locate the firmware file on your computer. Click **Upload** to update the firmware version.

Upload SSL Certification: Click **Browse** to locate the SSL Certification file on your local computer. After selecting and opening the file, click **Upload** to upload the file to the DWL-7700AP.

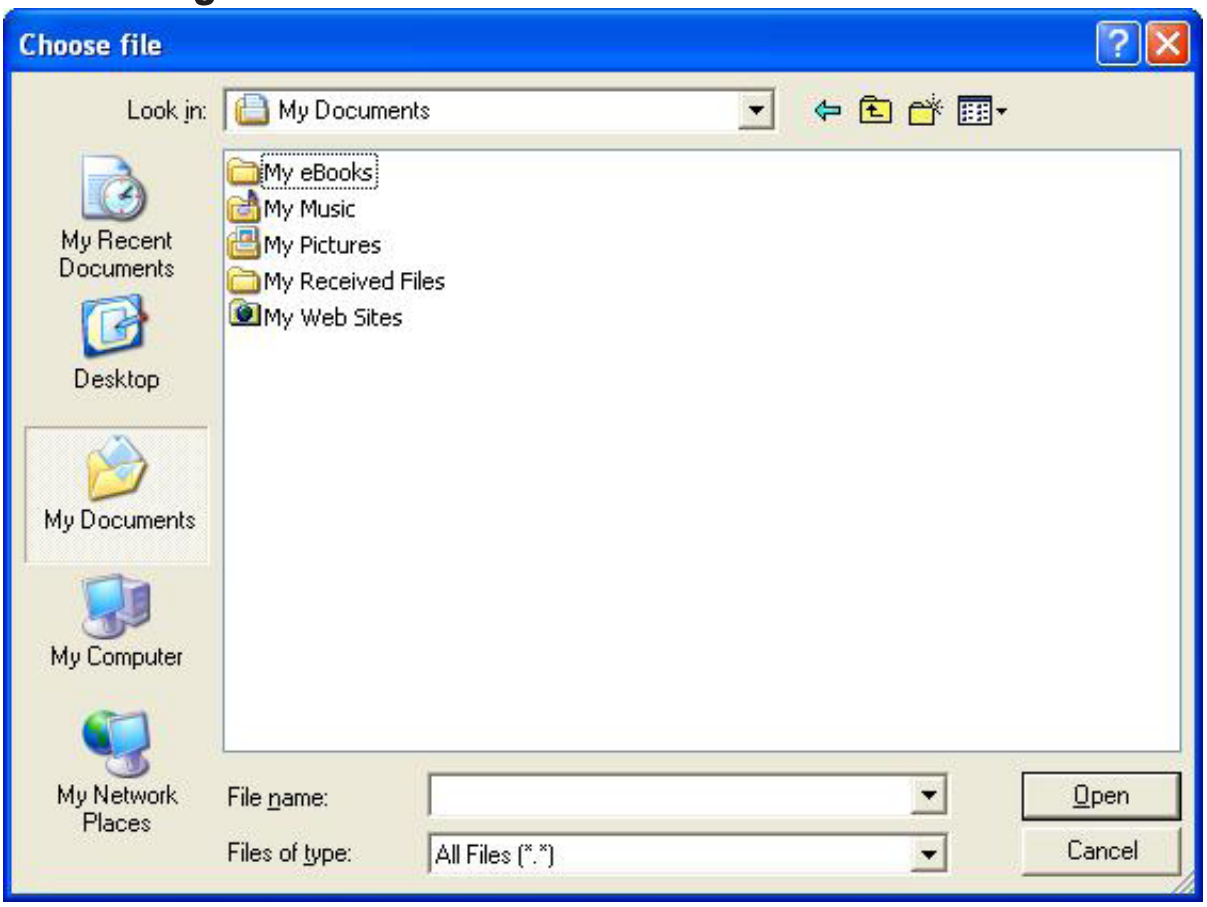
Tool > Configuration File Upload and Download



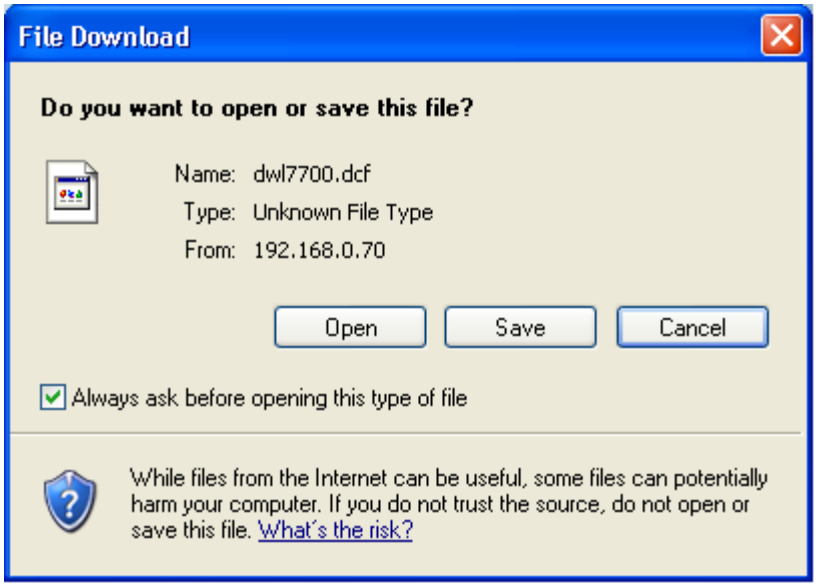
Upload File: Click **Browse** to locate a previously saved configuration file on your local computer. After selecting the file, click **Upload** to apply the configuration settings to the DWL-7700AP.

Download Configuration File: Click **Download** to save the current DWL-7700AP configuration to your local computer.

Tool > Cfg File > Choose file

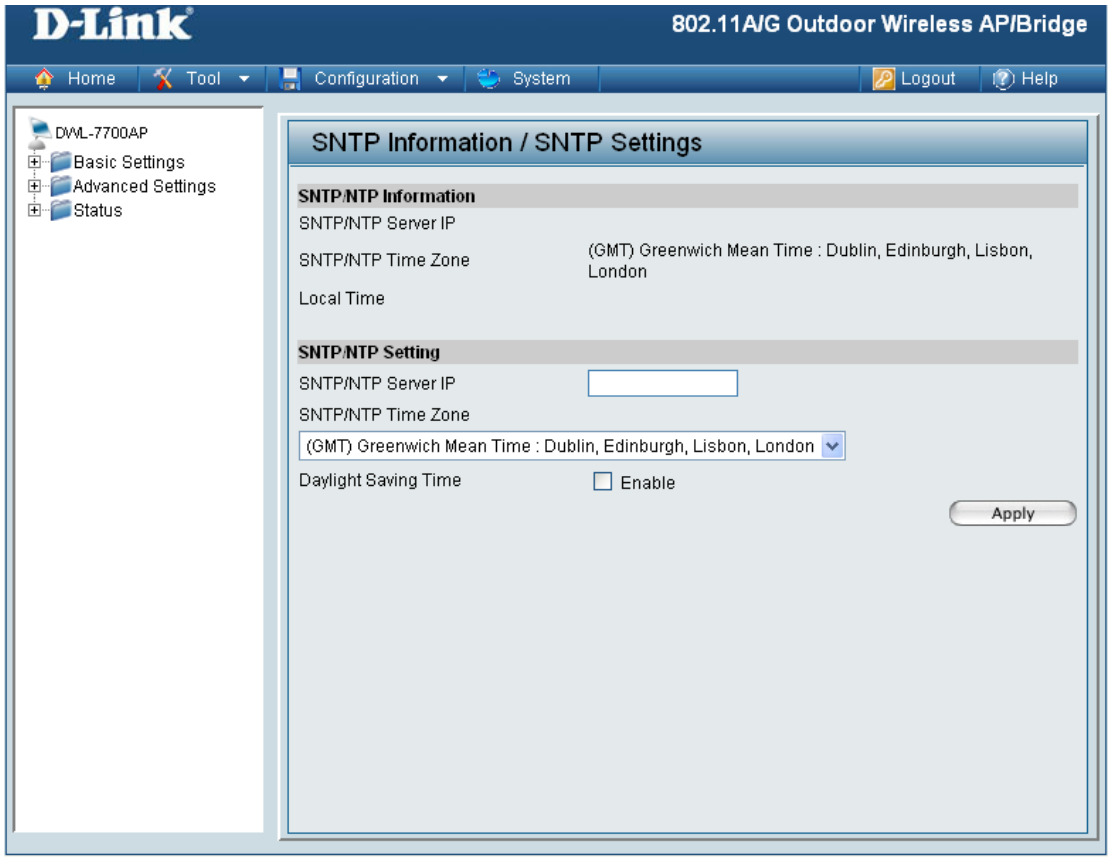


When you click **Browse** in the previous screen, the dialog box shown above appears. Select the file you wish to download and click **Open**.



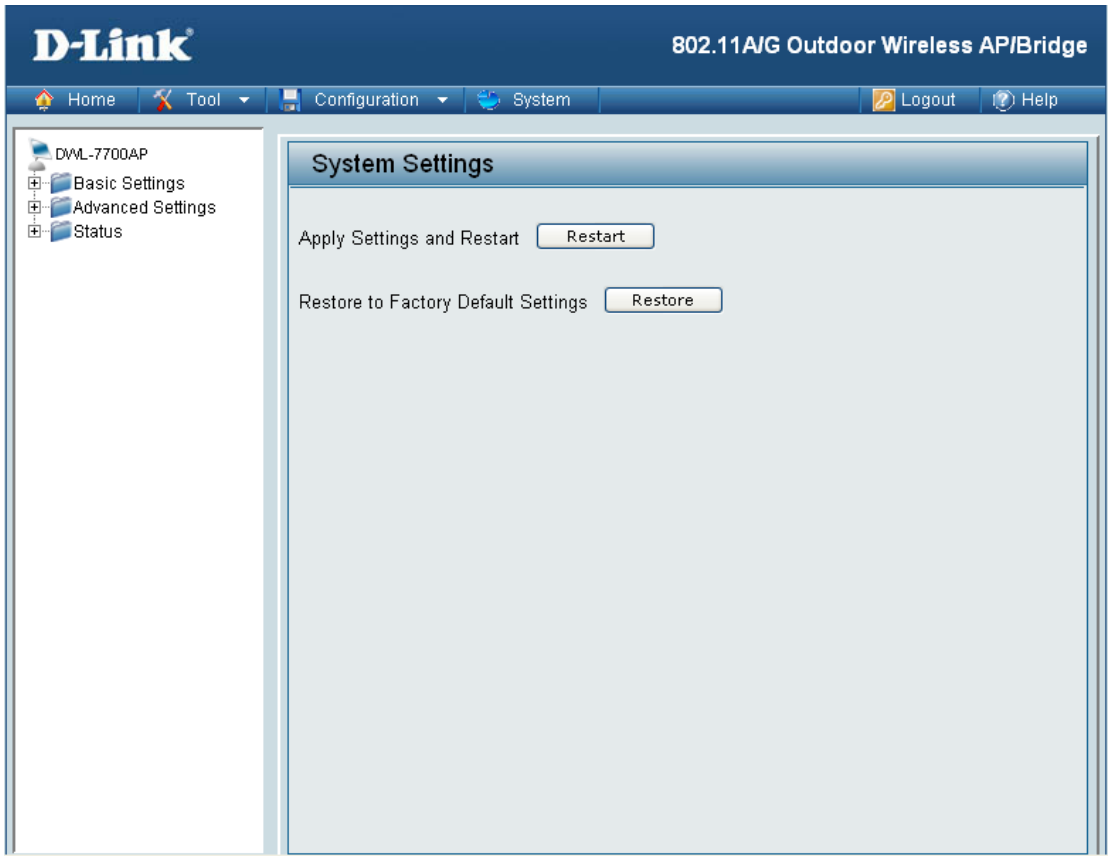
When this dialog box appears, click **Save** and select a location to save the configuration file.

Tool > SNTP



SNTP/NTP Information:	Displays the current SNTP/NTP settings.
SNT/NTP Server IP Address:	Enter the SNTP/NTP server IP address.
SNTP/NTP Time Zone:	Select your correct Time Zone.
Daylight Saving Time:	Check the box to **Enable** Daylight Saving Time.

System > System Settings



Click **Restart** to restart the DWL-7700AP.

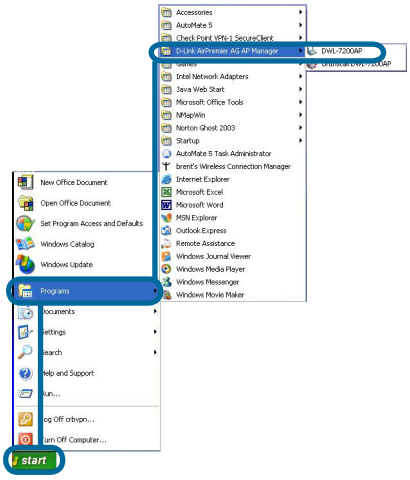
Click **Restore** to restore the DWL-7700AP back to factory default settings.

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.

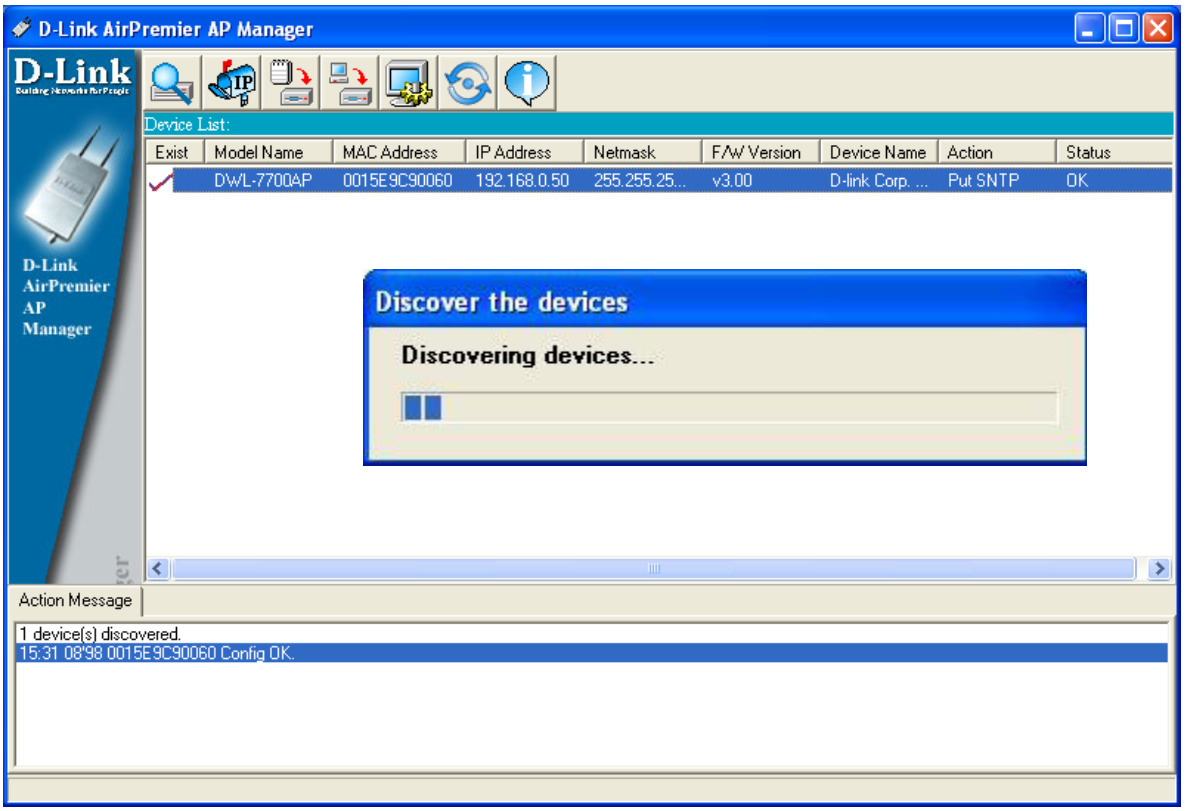
To launch the **AP Manager**:

- 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.

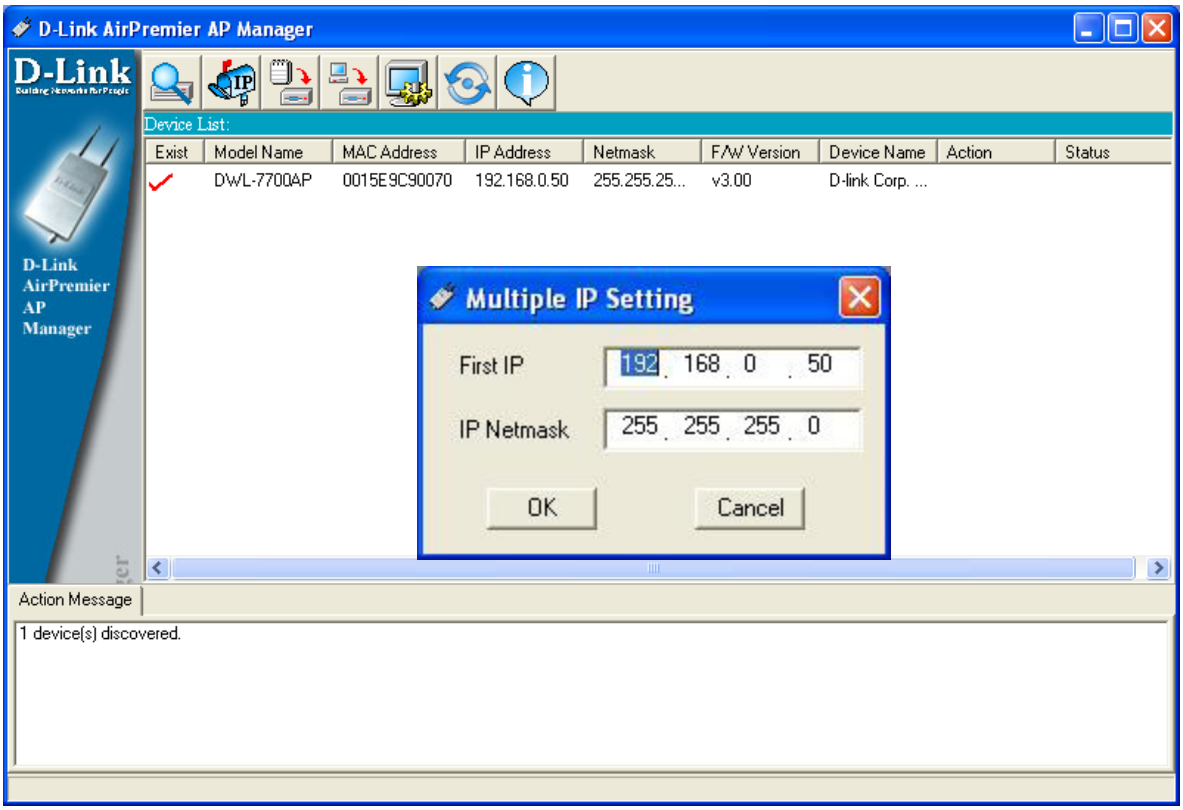


Selecting Devices

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 APs 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 APs with IP addresses all at once. Click on the IP button after you've selected all of the APs 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).

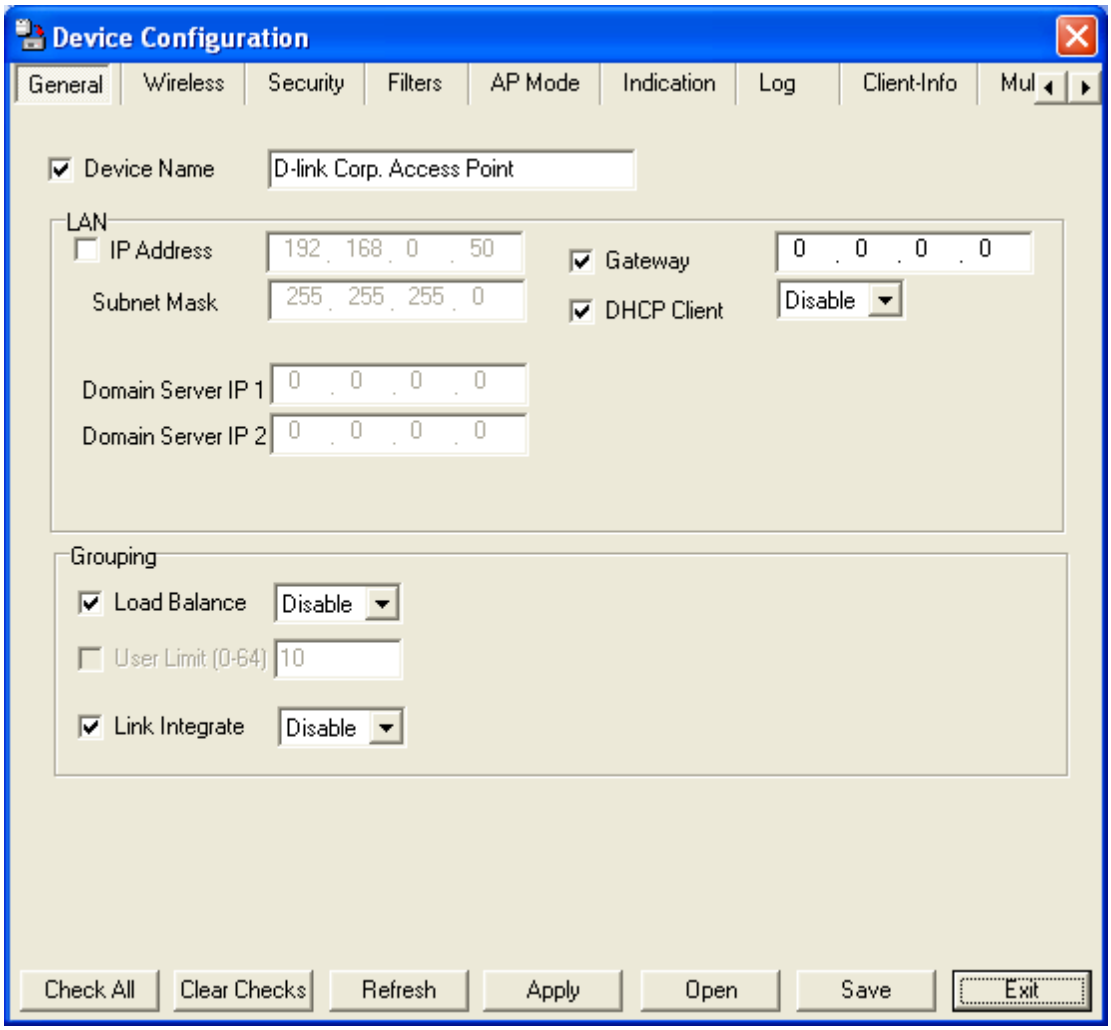
Apply — To save settings to the device, you must click the Apply button. Only settings that have a checkmark next to them will be applied.

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.

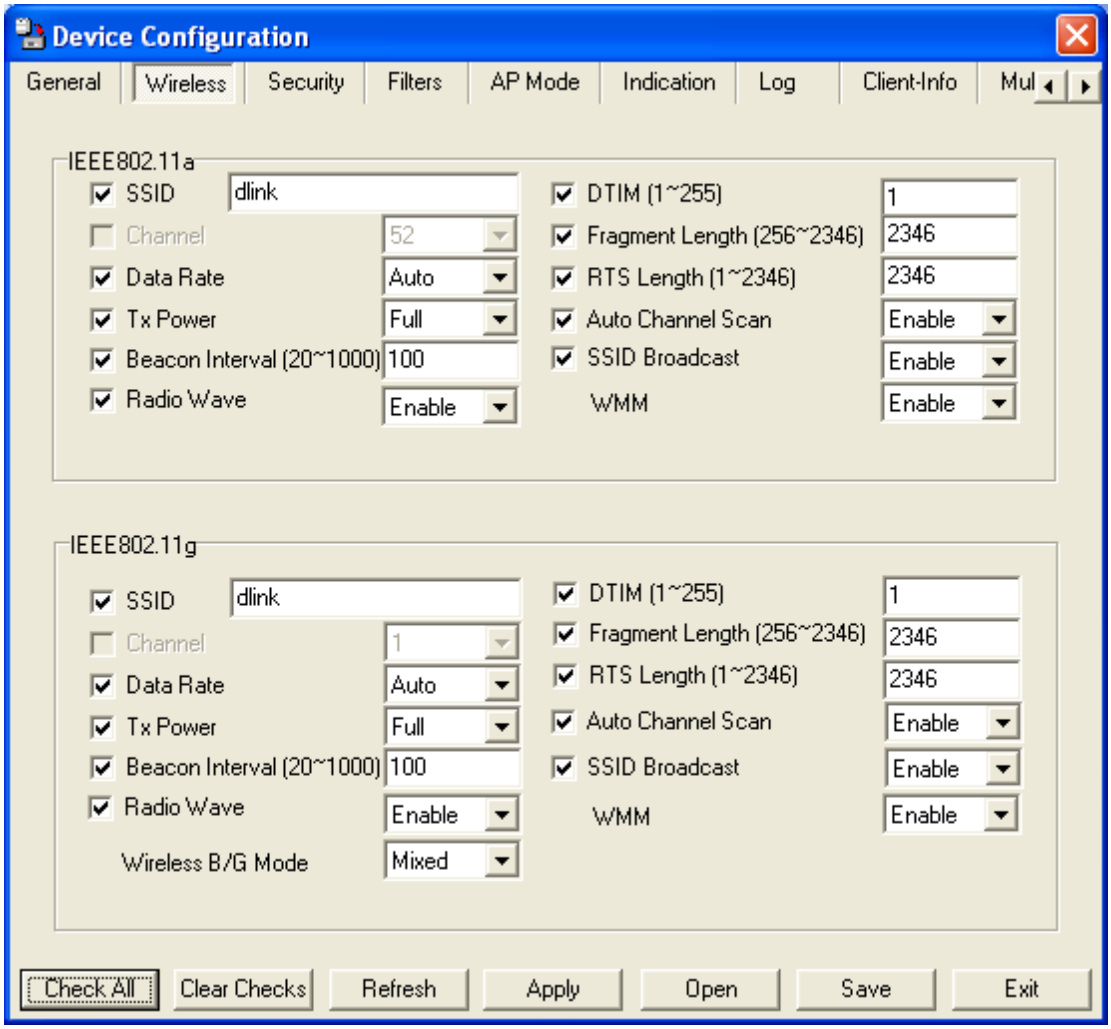
IP address and Subnet Mask(*): If you've selected one device for configuration and you want to change the IP address of the device, check the IP Address box. You ca then enter an IP address and Subnet Mask for the selected access point. This option should only be configurable when one access point is 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)

Domain Name Server 1:	Enter the IP address of your primary Domain Name Server.
Domain Name Server 2:	Enter the IP address of your secondary Domain Name Server.
Load Balance:	This pull down selection enables or disabled load balancing. When Load Balance is enabled, it allows several DWL-7700APs to balance wireless network traffic and wireless clients. All the access points must have Load Balance enabled and have the same SSID. It is recommended that each access point be assigned non-overlapping wireless channels. (e.g. 1, 6, 11)
User Limit:	Enter the number of load balancing users, from 0-64.
Link Integrity:	This pull-down 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 broken.

Device Configuration > Wireless > IEEE 802.11a



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 pull-down menu to select the maximum wireless signal rate for the selected devices(s).

Tx Power: A pull-down 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.

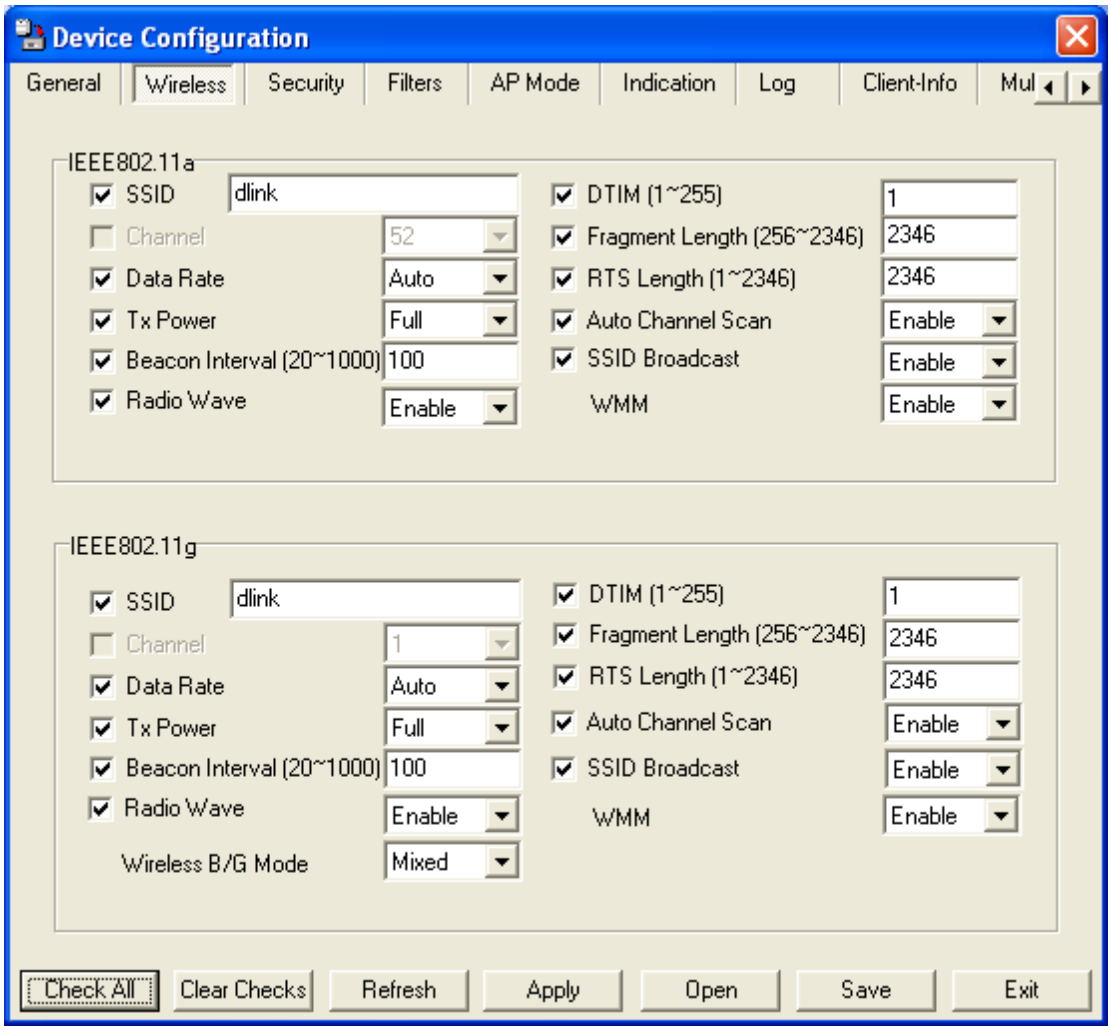
Radio Wave: Allows you to enable or disable the wireless (802.11a) signal from being transmitted.

Device Configuration > Wireless > IEEE 802.11a (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.
Autochannel Scan:	Enable this option to allow the access point to automatically scan for an available channel.
SSID Broadcast:	Allows you to enable or disable the broadcasting of the SSID to network clients.
SSID Broadcast:	Allows you to enable or disable the broadcasting of the SSID to network clients.
WMM:	Select **Enable** or **Disable** to enable or disable WMM mode.

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

Device Configuration > Wireless > IEEE 802.11g



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 pull-down menu to select the maximum wireless signal rate for the selected devices(s).

Tx Power: A pull-down 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.

Radio Wave: Allows you to enable or disable the wireless (802.11b/g) signal from being transmitted.

Device Configuration > Wireless > IEEE 802.11g (continued)

Wireless B/G Mode: Select from the pull-down menu the wireless mode. **11g Only** for 802.11g only, **11b Only** for 802.11b only, or **Mixed** for both 802.11b and 802.11g modes.

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.

Autochannel Scan: Enable this option to allow the access point to automatically scan for an available channel.

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

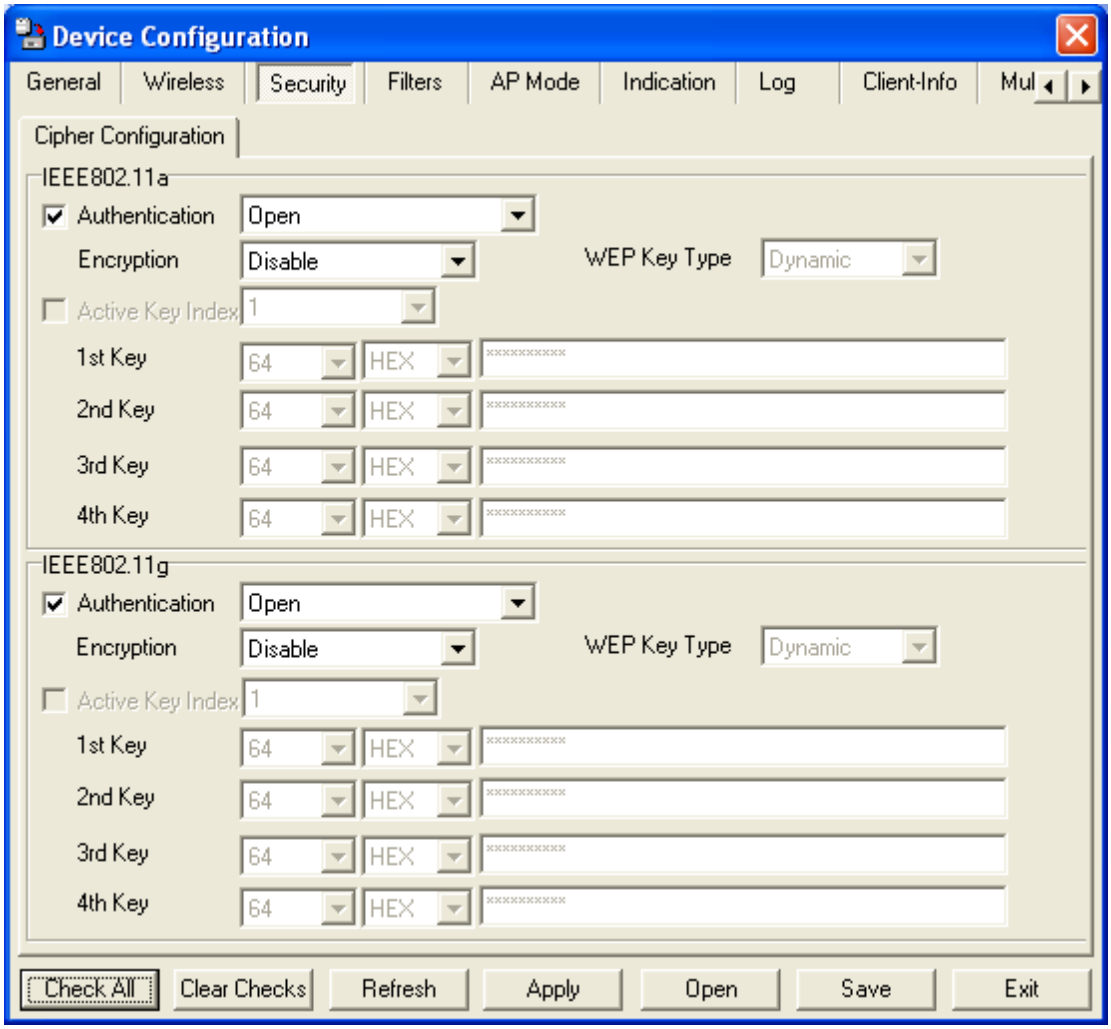
WMM: Select **Enable** or **Disable** to enable or disable WMM mode.

* Maximum wireless signal rate derived from IEEE Standard 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.

Device Configuration > Wireless > Authentication Modes

AP Mode	Authentication Available
Access Point	Open System Shared Key Open System/Shared Key 802.1x WPA-Enterprise WPA-Personal WPA2-Enterprise WPA2-Personal WPA-Auto-Enterprise WPA-Auto-Personal
WDS with AP	Open System Shared Key Open System/Shared Key WPA-Personal WPA2-Personal WPA-Auto-Personal
WDS	Open System Shared Key Open System/Shared Key WPA-Personal WPA2-Personal WPA-Auto-Personal

Device Configuration > Security > 802.11a & 802.11g



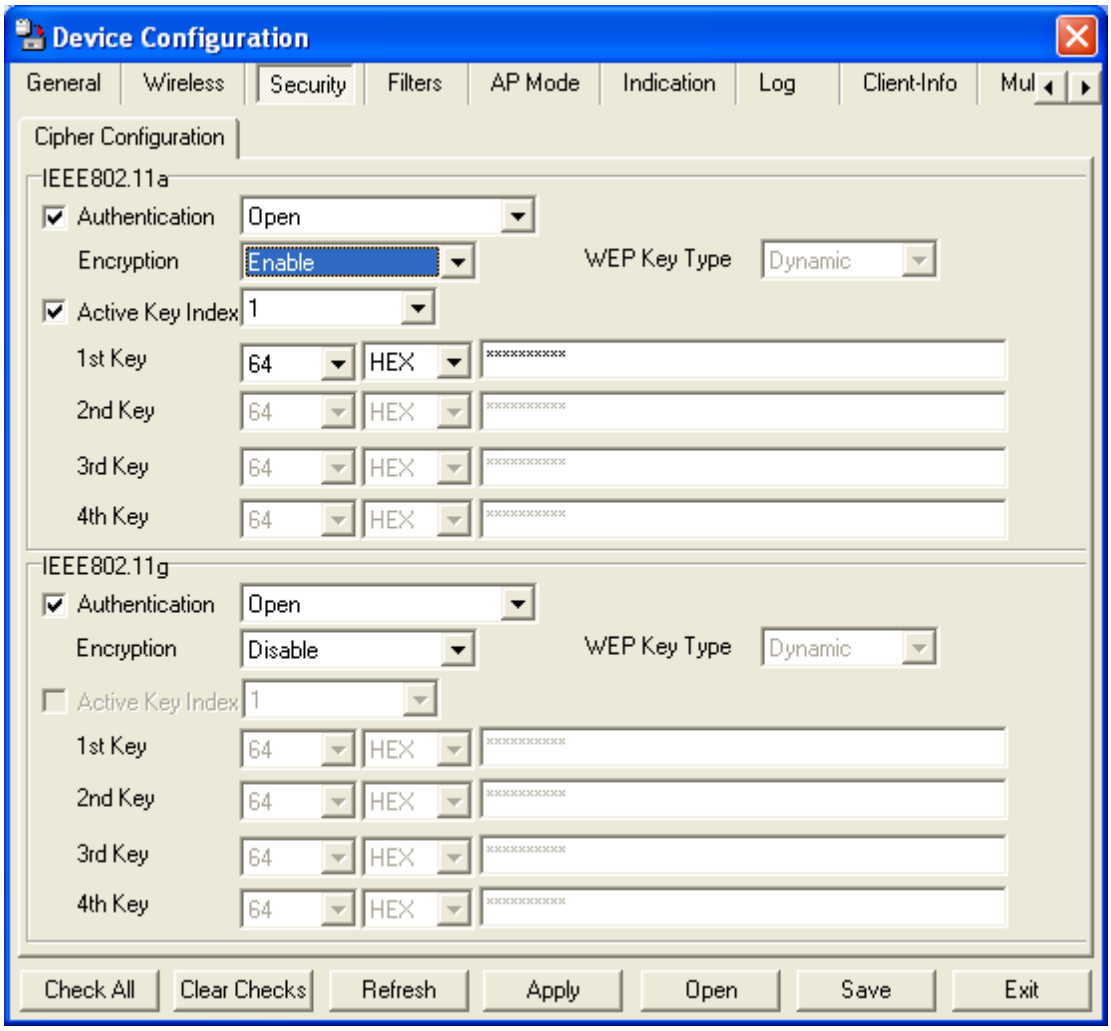
The Security tab contains the WEP configuration settings on the initial page. If you select WPA as the authentication type, an additional tab will appear with the WPA configuration options based on your selection.

Authentication Type:	Select from the pull-down 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.
Open System/ Shared Key:	The key is communicated and identical WEP settings are required.

Device Configuration > Security > 802.11a & 802.11g (continued)

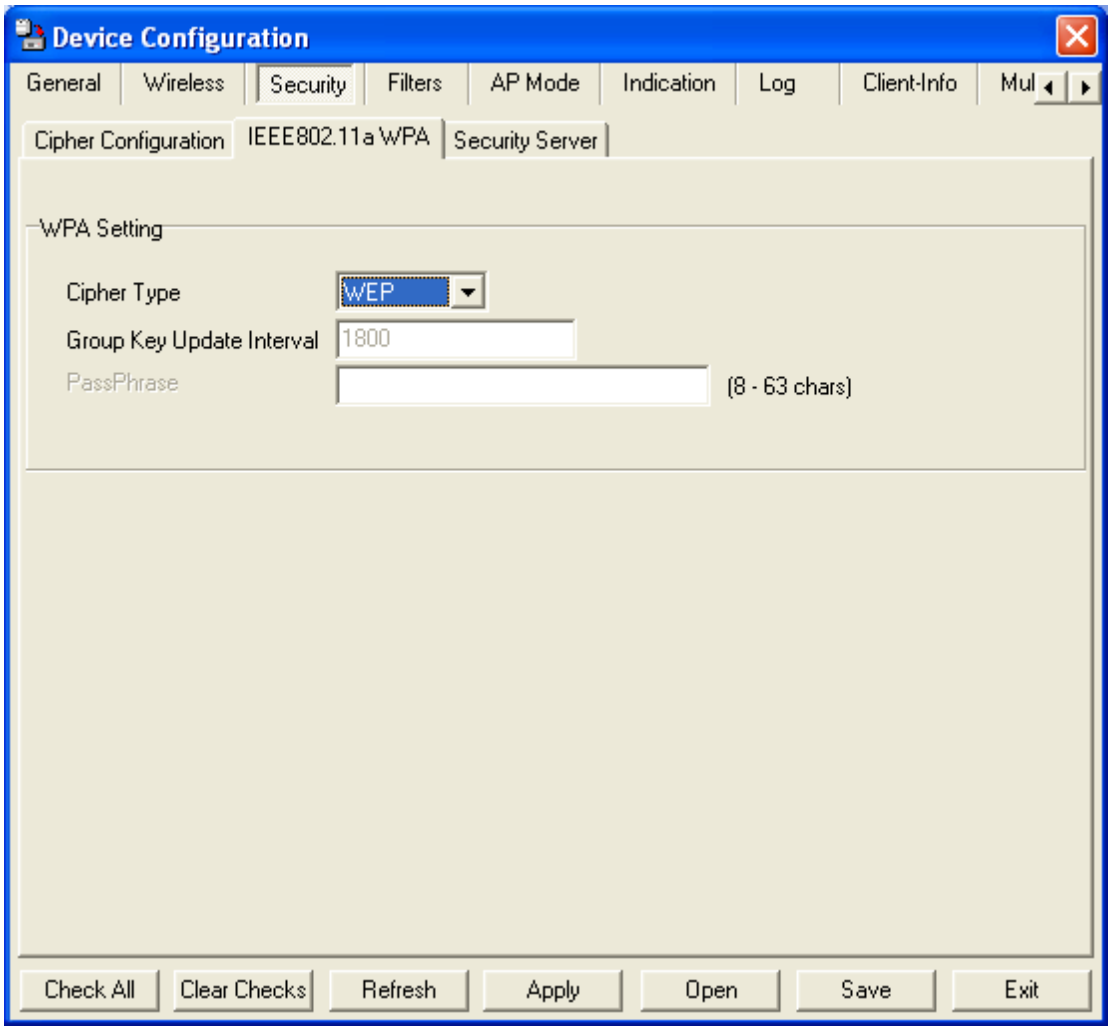
WPA:	Used to authenticate clients via a RADIUS server.
WPA-Personal:	Does not utilize a RADIUS server for authentication but uses a passphrase that is configured on the clients and access points.
RADIUS:	Built-in RADIUS server does not require outside server.
Local User:	A type of 802.1x security that utilizes user login for security.
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 > WEP



Authentication Type:	Select from the pull-down 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 (recommended).
Open System/ Shared Key:	The key is communicated and identical WEP settings are required.
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.

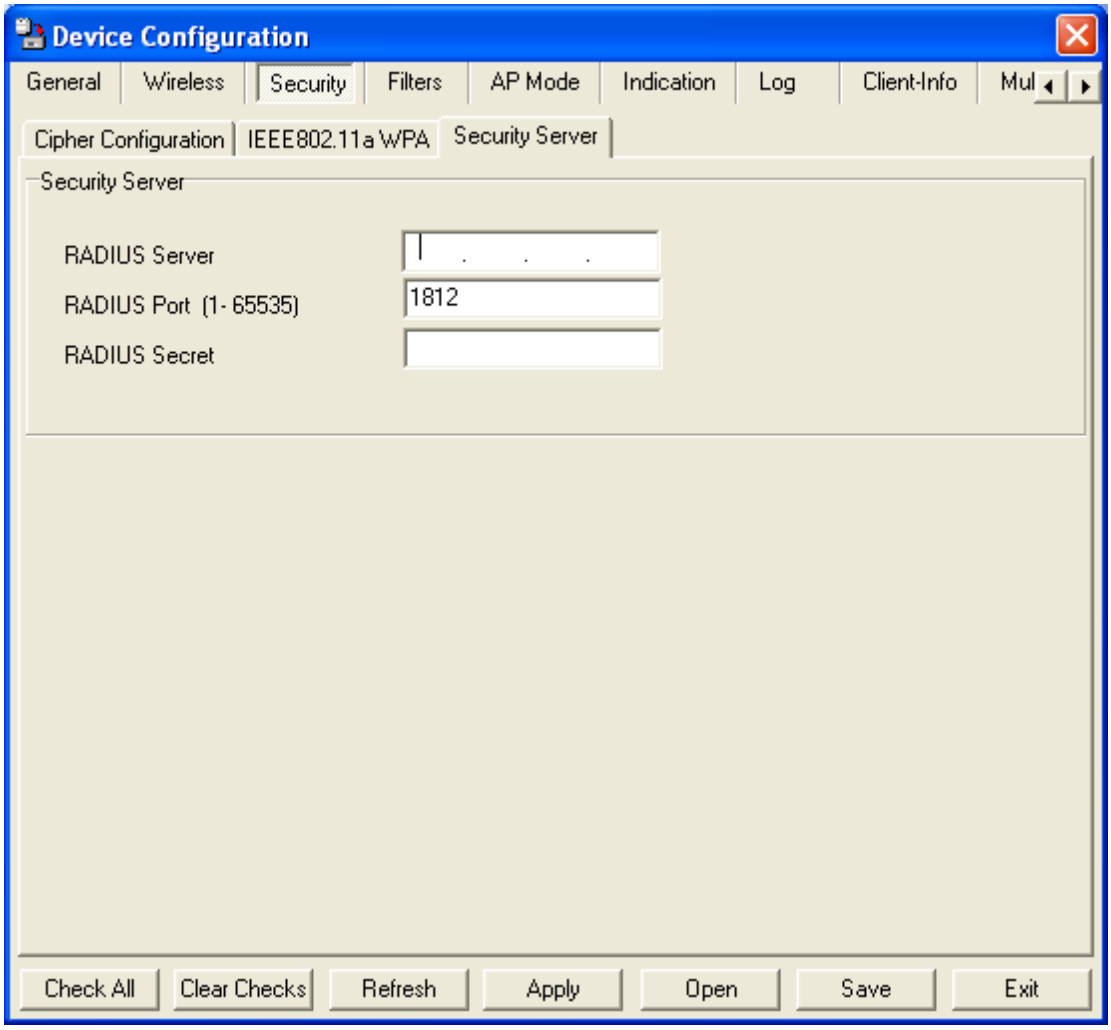
Device Configuration > Security > 802.1x



Cipher Type: WEP only.

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 > 802.1x (RADIUS)

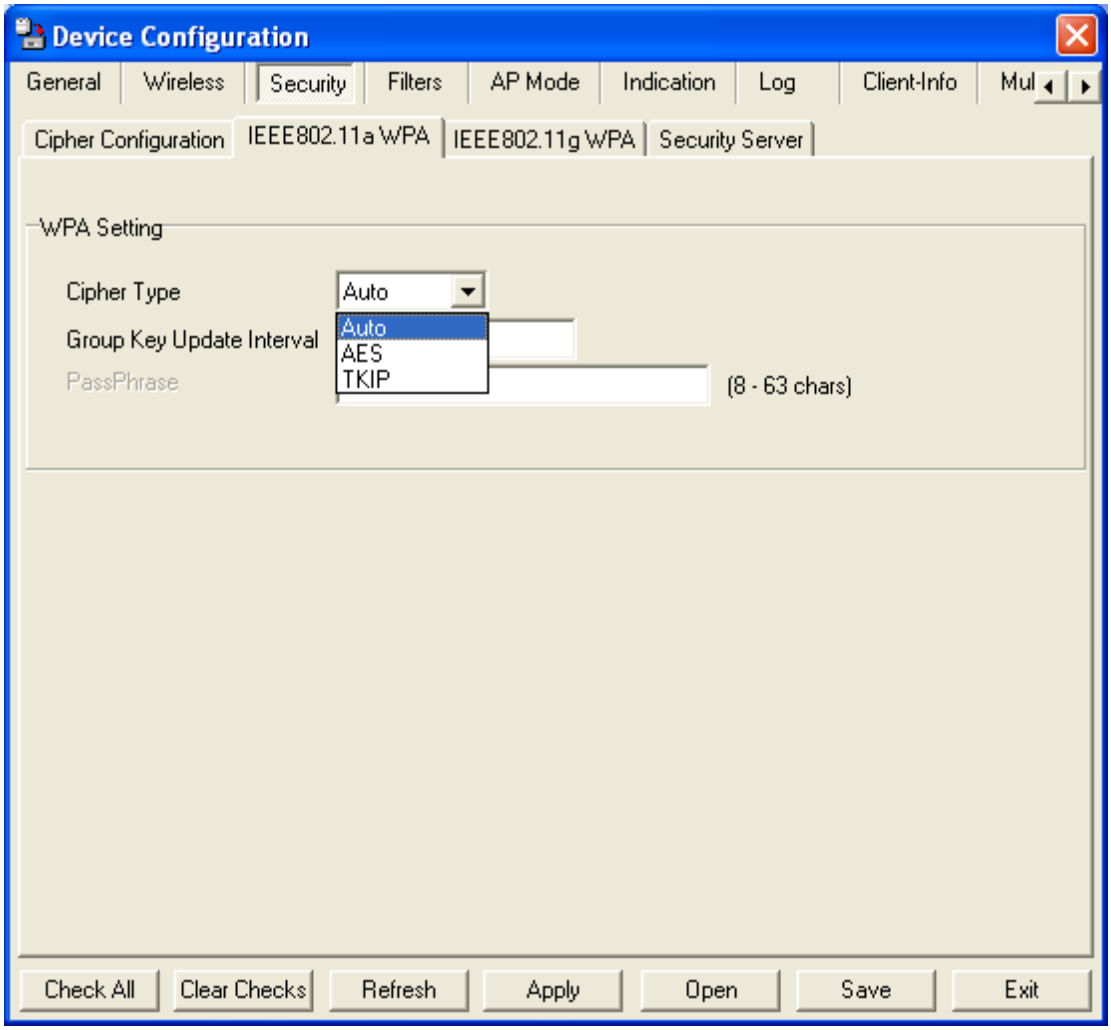


RADIUS Server: Enter the IP address of the RADIUS server.

RADIUS Port: Enter the port used on the RADIUS server. (1812 is default)

RADIUS Secret: Enter the RADIUS secret.

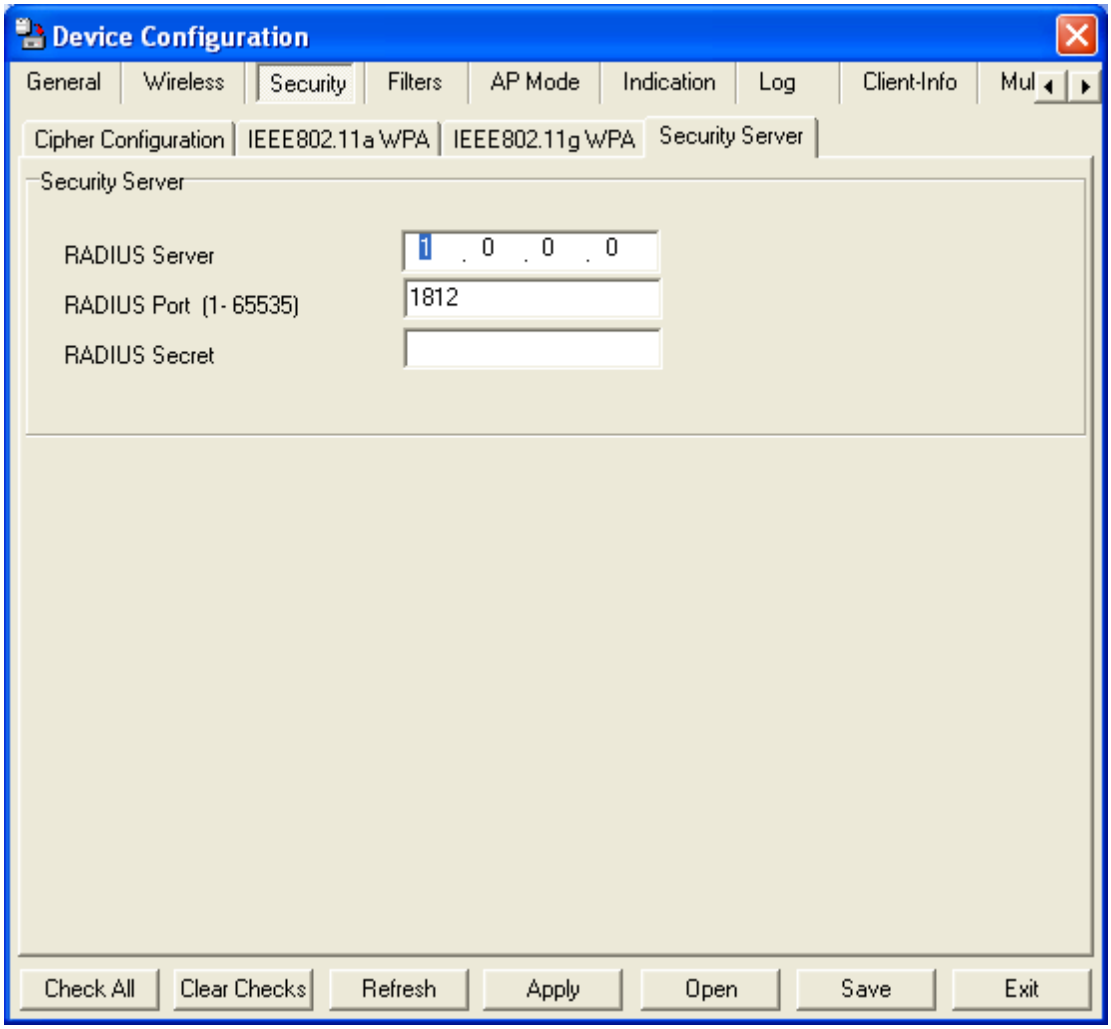
Device Configuration > Security > WPA-Enterprise/WPA2-Enterprise/WPA-Auto-Enterprise



Cipher Type: Select Auto, AES, or TKIP from the drop-down 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 > WPA-Enterprise/ WPA2-Enterprise/WPA-Auto-Enterprise (Server)

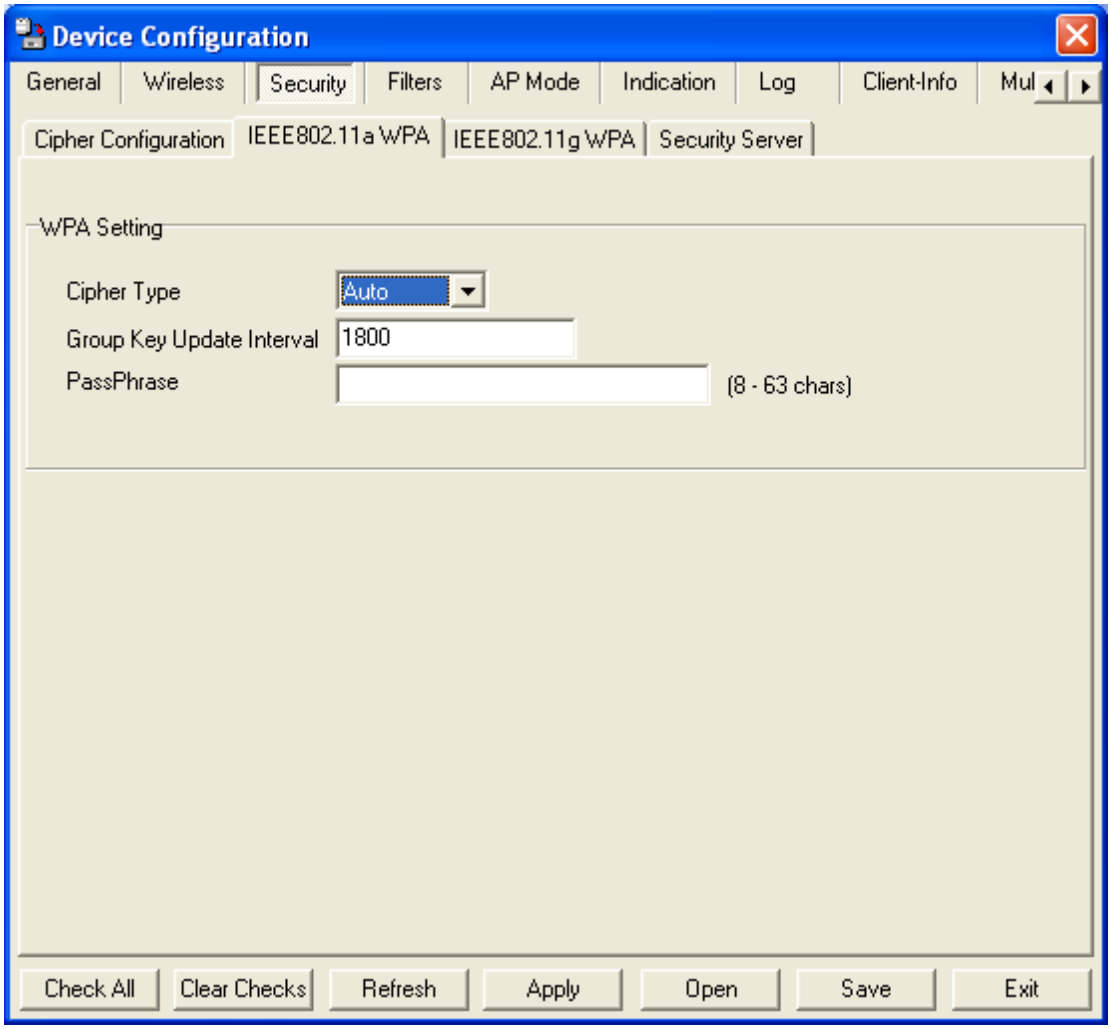


RADIUS Server: Enter the IP address of the RADIUS server.

RADIUS Port: Enter the port used on the RADIUS server. (1812 is default)

RADIUS Secret: Enter the RADIUS secret.

Device Configuration > Security > WPA-Personal/WPA2-Personal/WPA-Auto-Personal

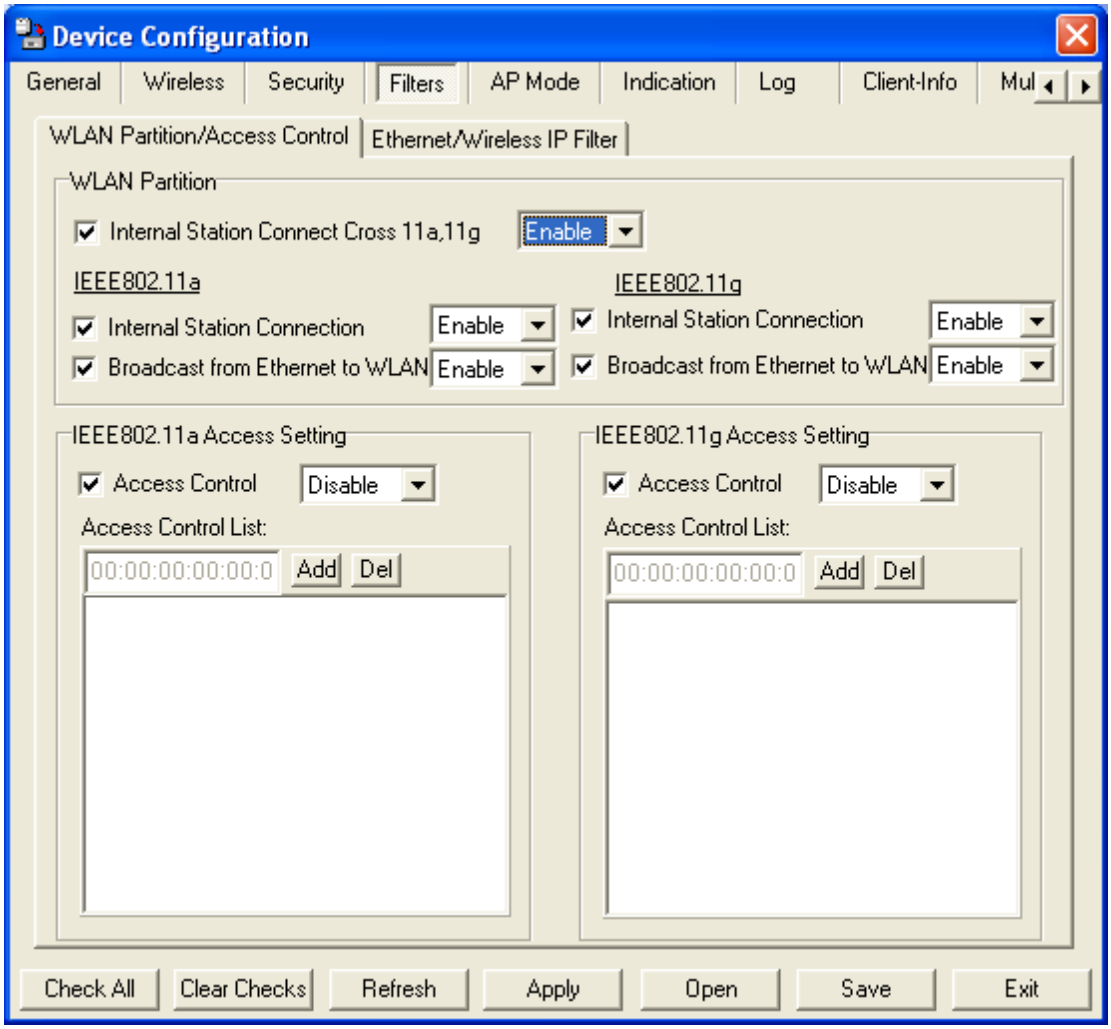


Cipher Type: Select Auto, AES, or TKIP from the drop-down menu.

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 > WLAN Partition



Internal Station Connect Cross 11a, 11g: Enabling this allows wireless IEEE 802.11a and IEEE 802.11g clients to communicate with each other. When this option is disabled, IEEE 802.11a and IEEE 802.11g wireless stations are not allowed to exchange data through the access point.

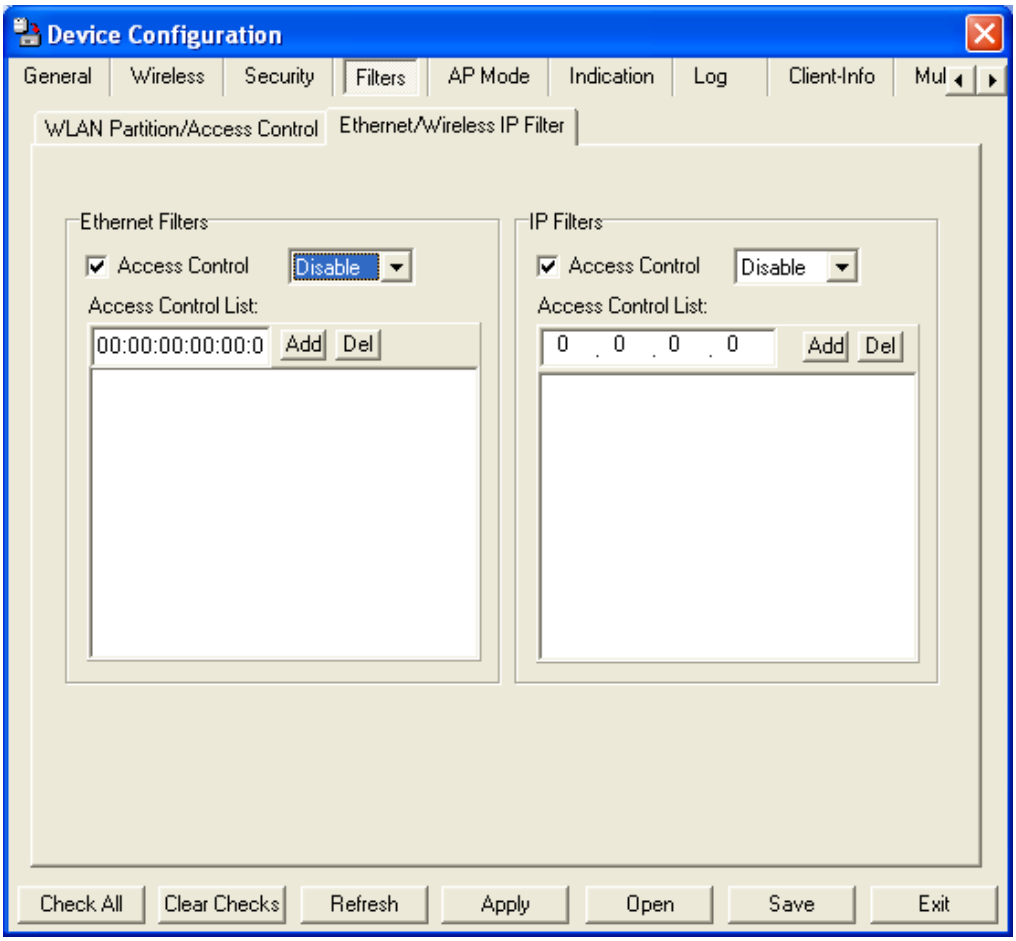
The following features are configurable in IEEE 802.11a & IEEE 802.11g:

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.

Device Configuration > Filters > WLAN Partition (continued)

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 > Filters > Ethernet/Wireless IP Filters



Ethernet Filters:

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.

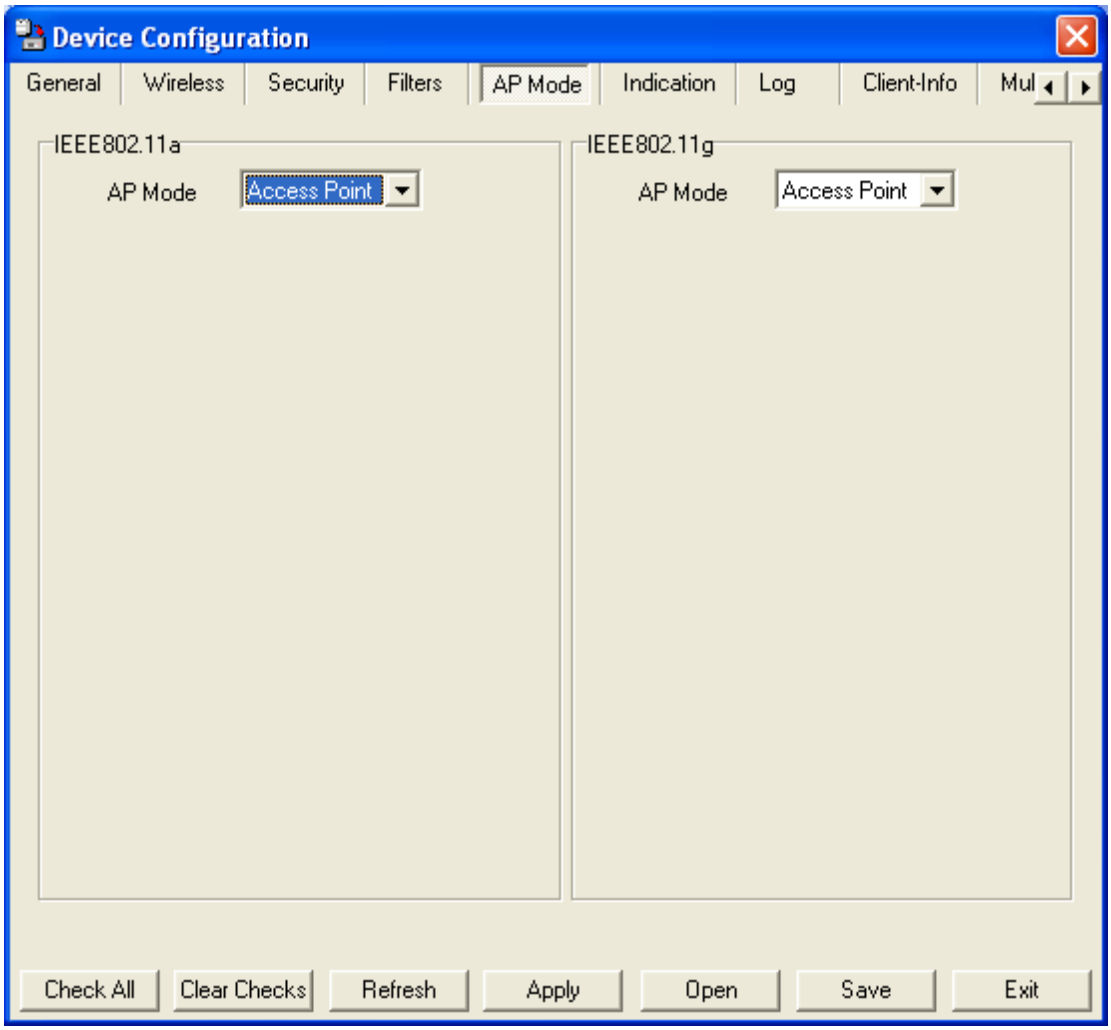
Access Control List: **Add** or **Delete** MAC addresses in the Access Control List.

Device Configuration > Filters > Ethernet/Wireless IP Filters (continued)

IP Filters:

Access Control:	When disabled access control is not filtered based on the IP address. If **Accept** or **Reject** is selected, then a box appears for entering IP addresses. When **Accept** is selected, only devices with an IP address in the list are granted access. When **Reject** is selected, devices in the list of IP addresses are not granted access.
Access Control List:	**Add** or **Delete** IP addresses in the Access Control List.

Device Configuration > AP Mode

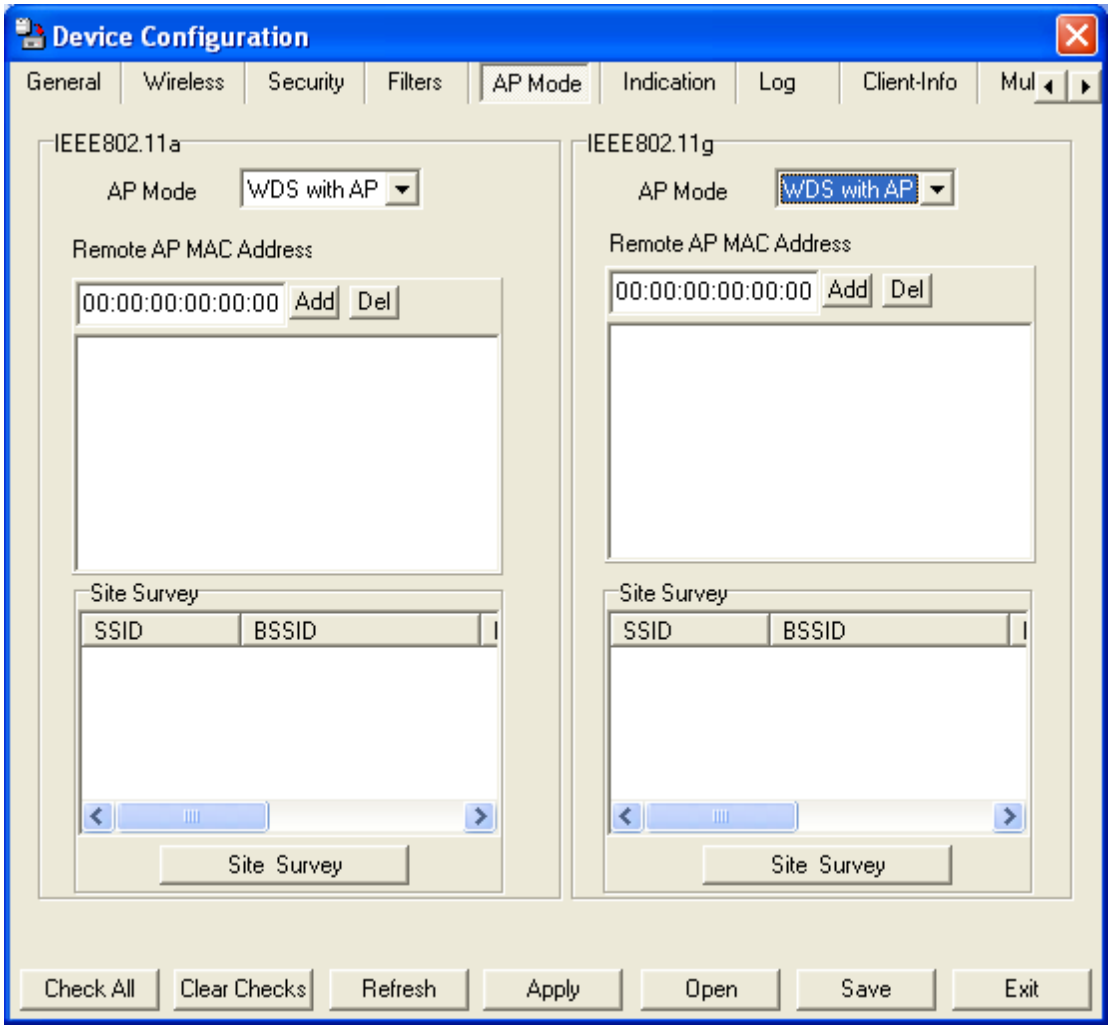


Access Point: There are 3 AP modes that are configurable in IEEE 802.11a & IEEE 802.11g:

- **Access Point**
- **WDS with AP**
- **WDS**

Access Point, the default setting used to create a wireless LAN, is displayed here.
Please see the following pages for an explanation of the other 2 AP modes.

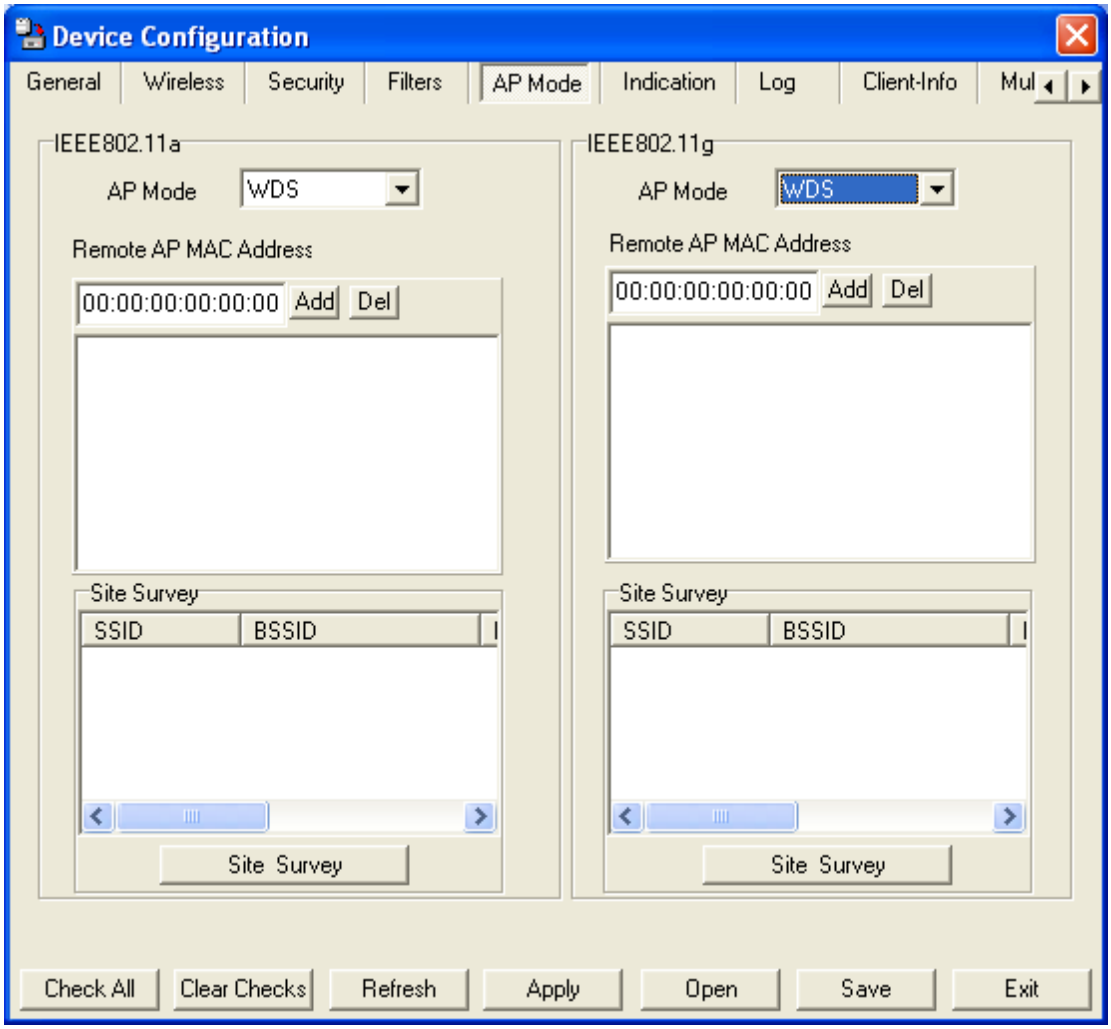
Device Configuration > AP Mode > WDS with AP



WDS with AP: Allows you to connect multiple wireless LANs together wile acting as an access point as the same time. This only works with other DWL-7700APs. If enabled, you must enter the MAC address(es) of the other DWL-7700AP(s) on your network.

Site Survey: Click **Site Survey** to view available APs in your network.

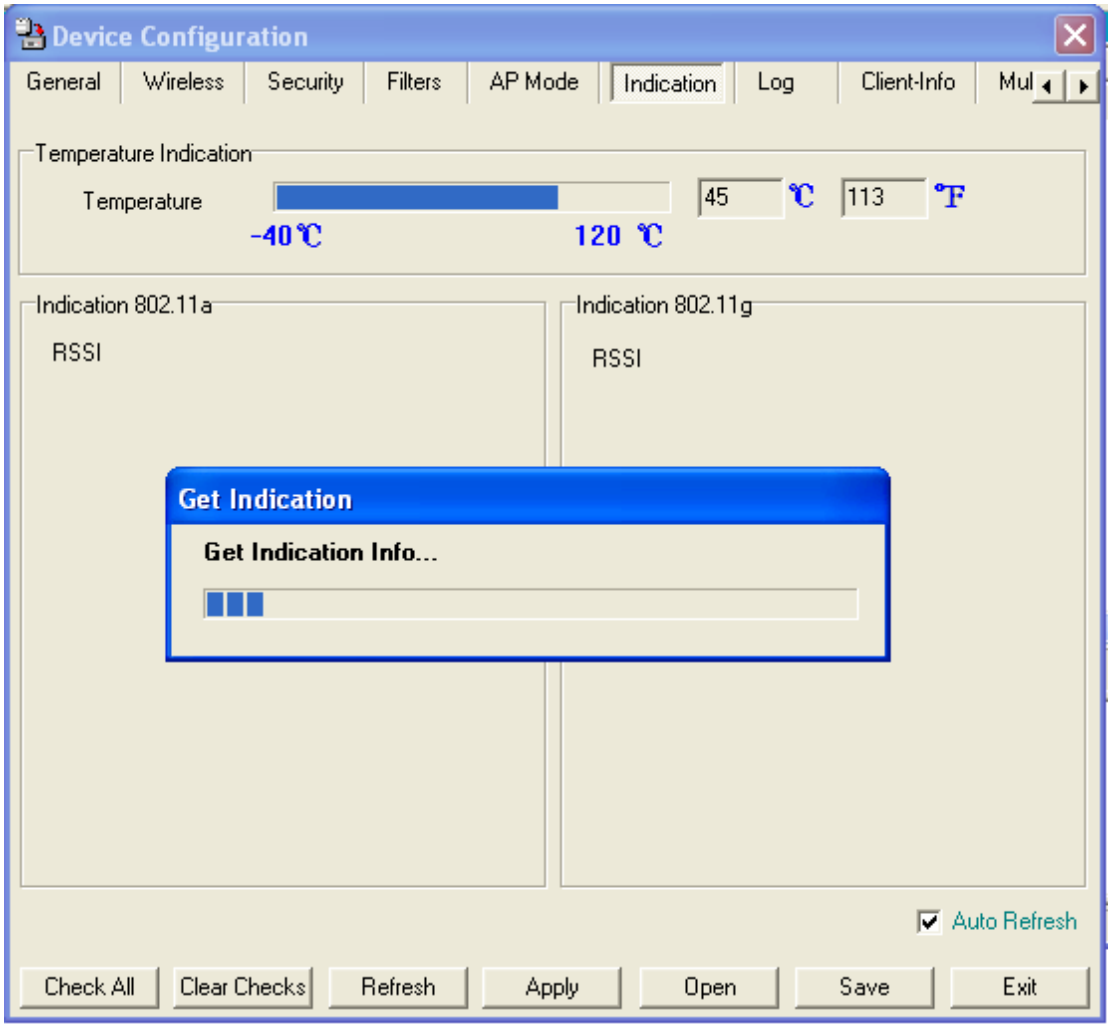
Device Configuration > WDS



WDS: 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.

Site Survey: Click **Site Survey** to view available APs in your network.

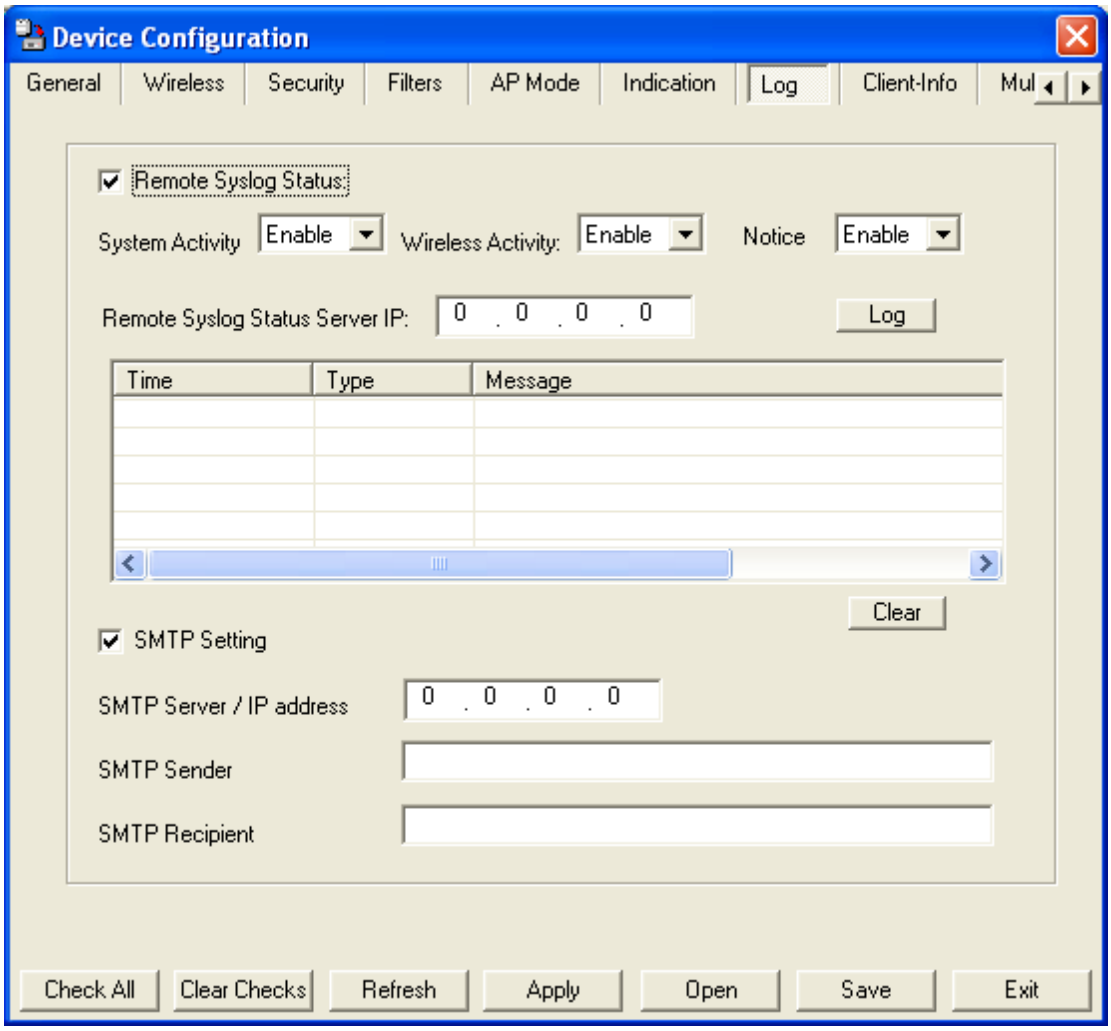
Device Configuration > Indication



Monitor: Select Monitor to view the operating temperature of the device and the RSSI (Receive Signal Strength) of both bands.

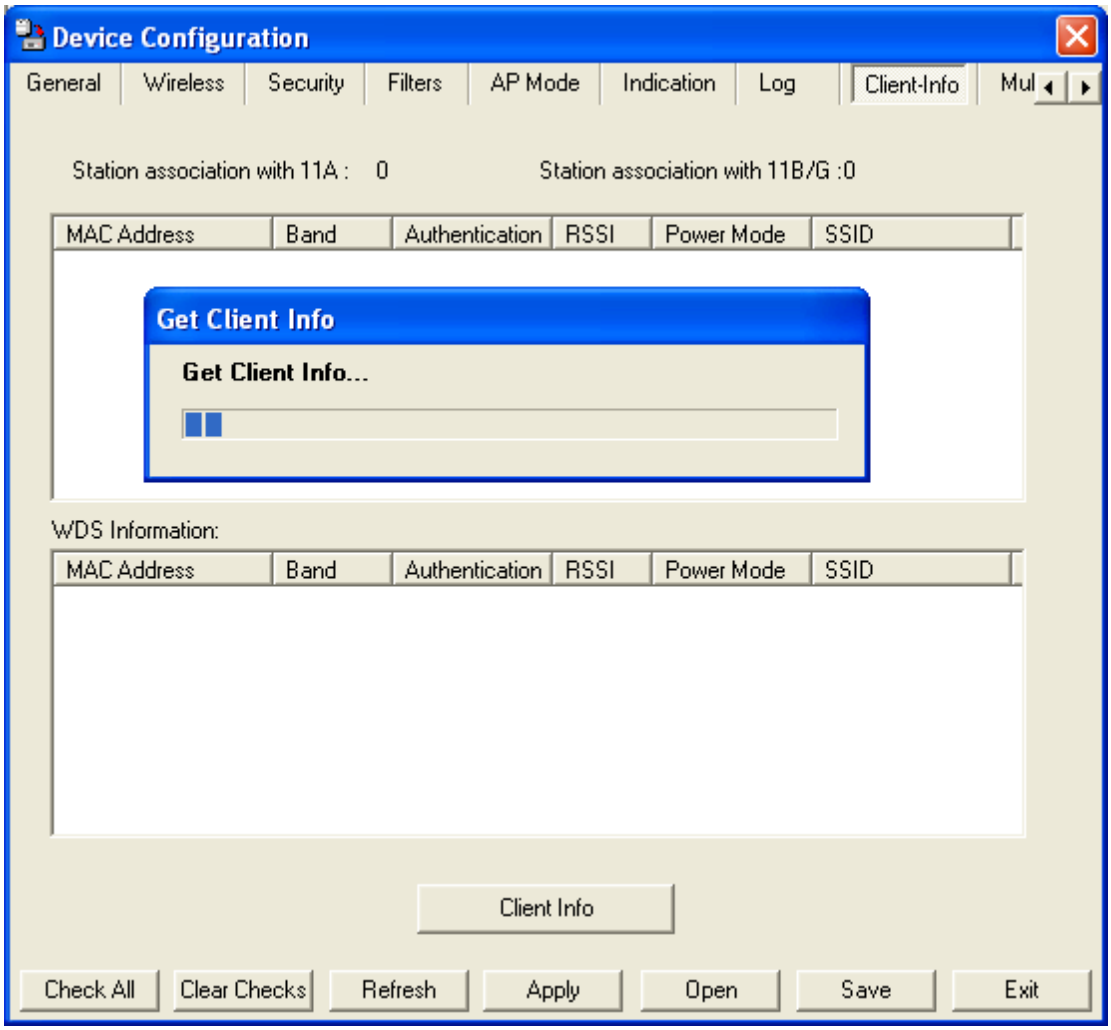
Auto Refresh: Check this box to automatically refresh the Indication information.

Device Configuration > Log



Remote Syslog Status:	Check this box to enable syslog logging.
Activity:	Enable or Disable the three types of logging activity, **System Activity**, **Wireless Activity**, and **Notice** messages.
Remote Syslog Status Server IP:	Enter the IP address of the syslog server.
SMTP Setting:	Check this box to enable SMTP.
SMTP Server / IP Address:	Enter the IP address of the SMTP server.
SMTP Sender:	Enter the SMTP Sender.
SMTP Recipient:	Enter the SMTP Recipient.

Device Configuration > Client Info



Client Information: Select this option to obtain information on wireless 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.

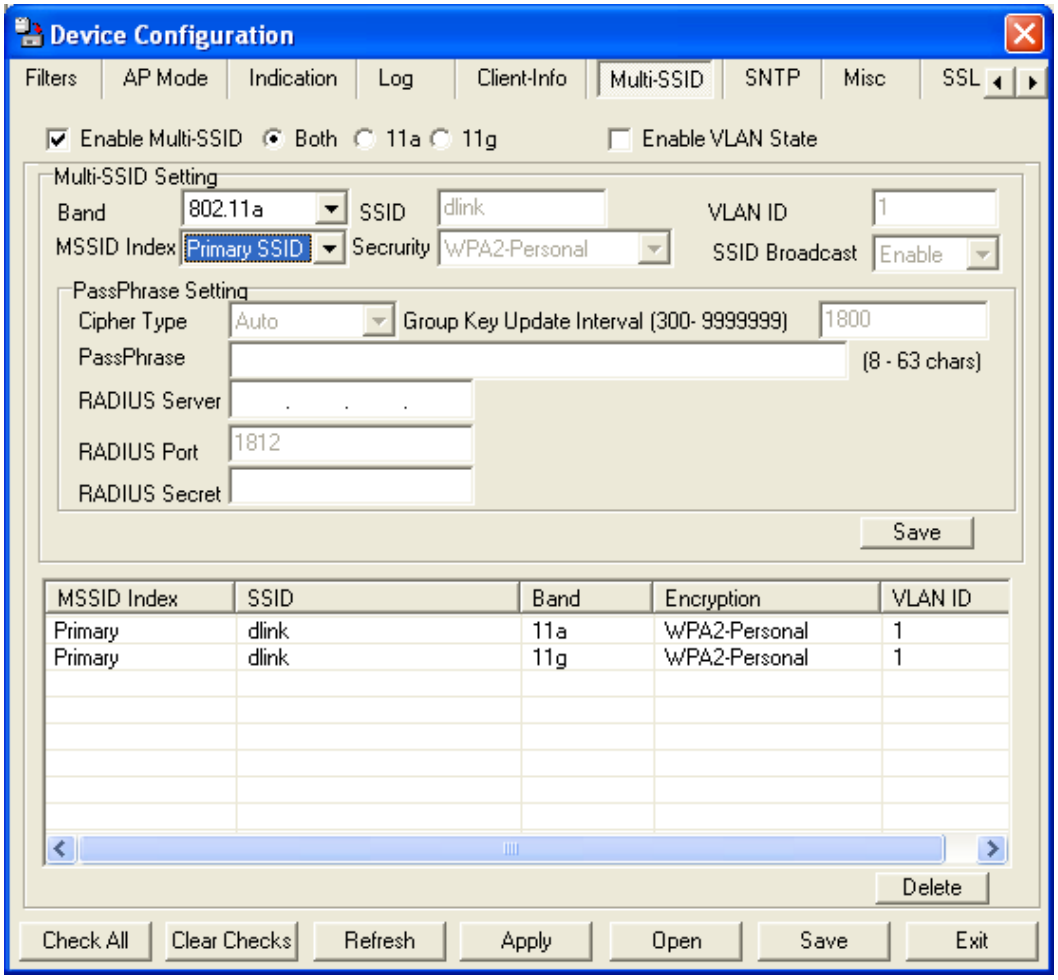
Band: Displays the wireless band.

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.

Device Configuration > Multi-SSID



If you want to configure the Guest and Internal networks on Virtual LAN (VLANs), the switch and DHCP server you are using must support VLANs. As a prerequisite step, configure a port on the switch for handling VLAN tagged packets as described in the IEEE 802.1Q standard.

Primary SSID: The Primary SSID and Security can not be changed here. Those values follow the settings in Home > Wireless.

Multi-SSID: When you **Enable Multi-SSID** you can name each guest SSID.

Security: The **Security** options for Multi-SSID 1-7 are Open System, Shared Key, WPA-Personal, WPA2-Personal, and WPA-Auto-Personal.

Note: *Security Setting Limit:*
When the Primary SSID is set to use one key index for WEP, you can use the 3 other key indexes for Guest SSIDs.

If the Primary SSID is set to WPA/WPA2-Personal, or WPA-Auto-Personal, you can only use WEP key index 1 and 4 for Guest SSIDs.

Device Configuration > Multi-SSID (continued)

Enable Multi-SSID: Check this box to enable multiple SSIDs and select the band.

Enable VLAN State: Check this box to enable VLANs.

Multi SSID Setting

Band: Available when **Both** is selected, select the band you want to use on the pull-down menu.

SSID: The Service Set (network) Identifier.

VLAN ID: If you enable Multiple-SSID, and configure Internal and MSSID on VLANs, this field will be enabled.

Provide a number between 1 and 4094 for the Internal VLAN.

This will cause the access point to send DHCP requests with the VLAN tag. The switch and the DHCP server must support VLAN IEEE 802.1Q frames. The access point must be able to reach the DHCP server.

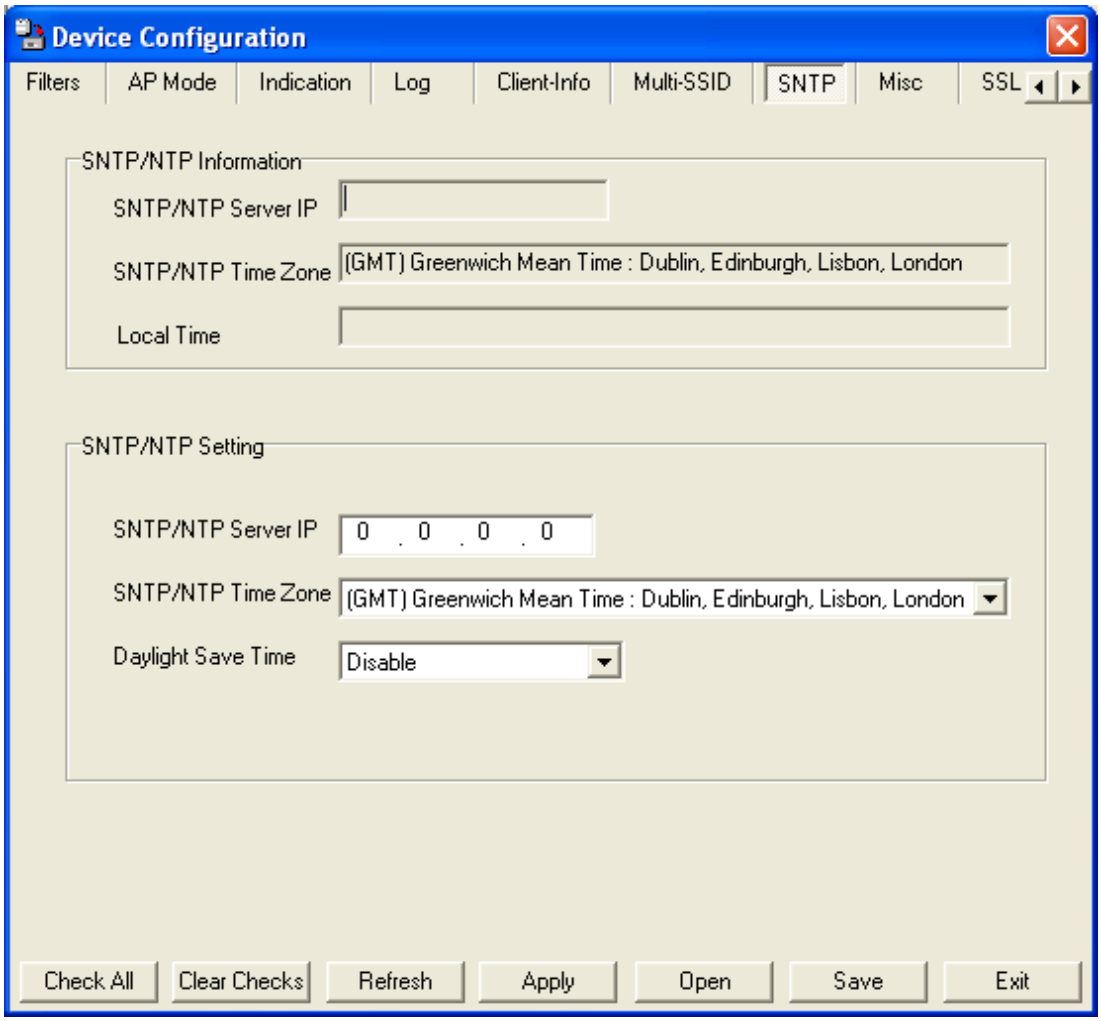
Check with the Administrator regarding the VLAN and DHCP configurations.

Cipher Type: Select a cipher type from the pull-down menu.

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

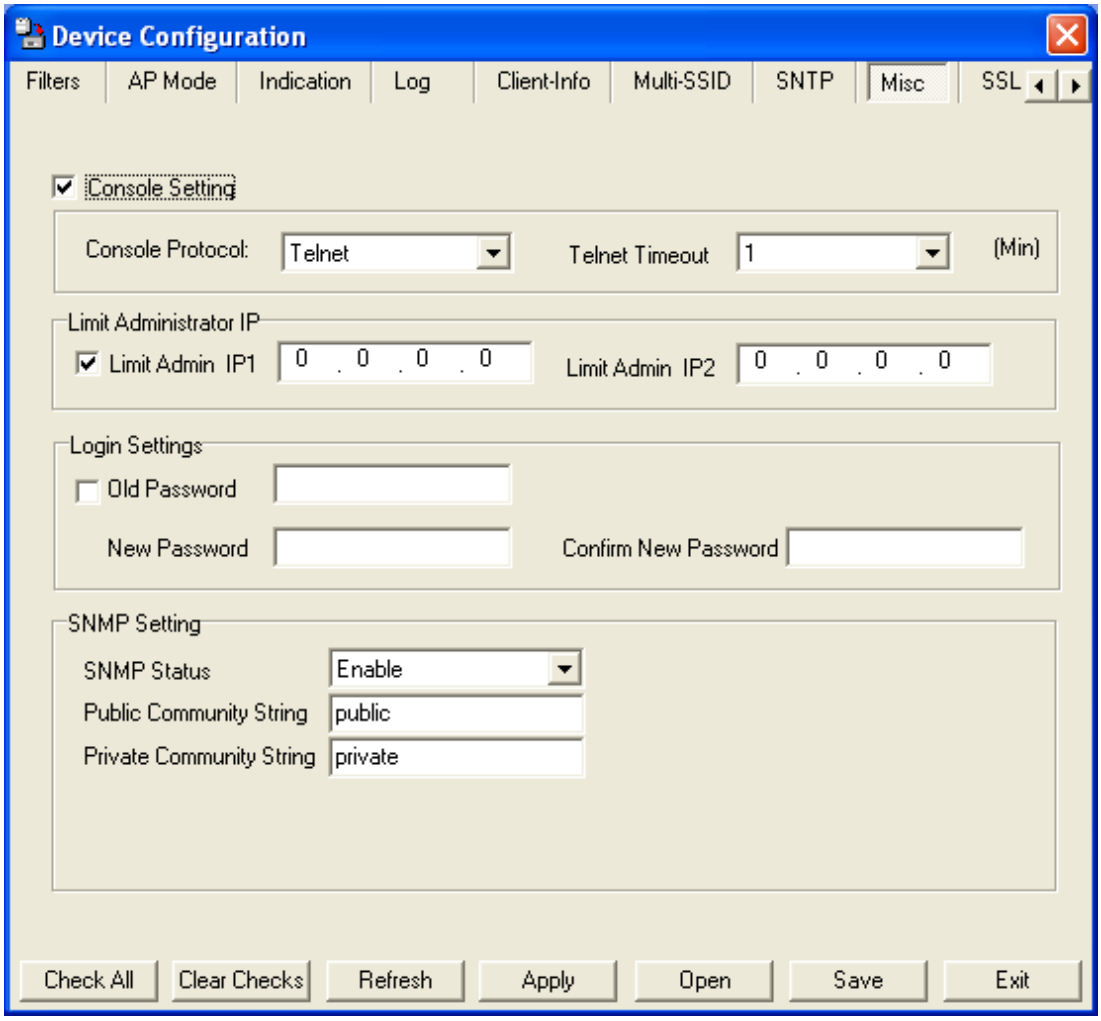
Passphrase: Enter a PassPhrase between 8-63 characters in length.

Device Configuration > SNTP



SNTP/NTP Information:	Displays the current SNTP/NTP settings.
SNT/NTP Server IP Address:	Enter the SNTP/NTP server IP address.
SNTP/NTP Time Zone:	Select your correct Time Zone.
Daylight Saving Time:	Check the box to **Enable** Daylight Saving Time.

Device Configuration > Misc.



Console Settings: Check the box to enable the device console settings.

Console Protocol: Select the type of protocol you would like to use, **Telnet** or **SSH**.

Telnet Timeout: Select the telnet timeout value (in seconds).

Limit Administrator IP Check the box to enable the feature.

Limit Administrator IP 1: Enter the IP address that the administrator will be allowed to log in from.

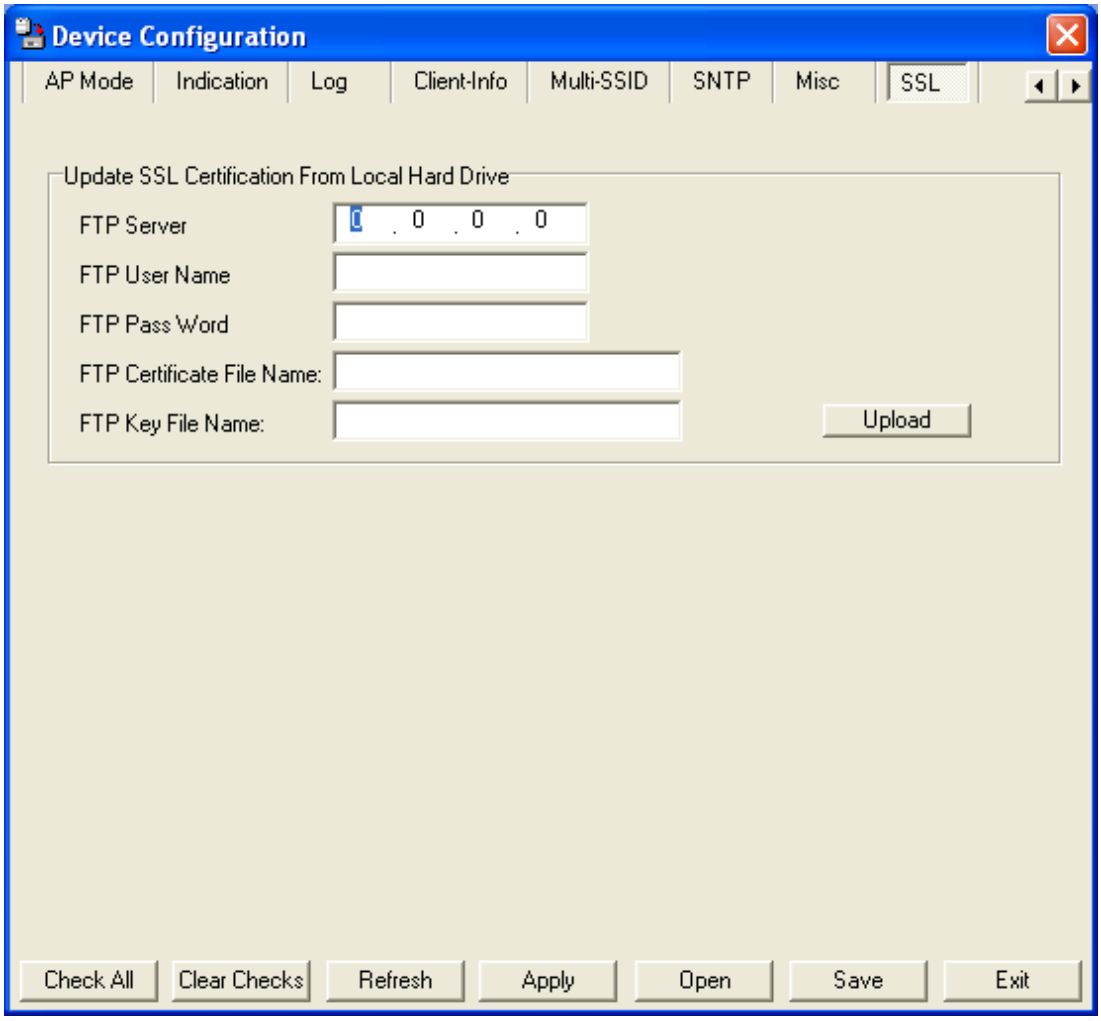
Limit Administrator IP 2: Enter a secondary IP address that the administrator will be allowed to log in from.

Device Configuration > Misc. (continued)

SNMP Settings

Status:	Status is Enabled by default. Uncheck the box to disable the SNMP functions.
Public Community String:	Enter the public SNMP community string.
Private Community String:	Enter the private SNMP community string.
User Status Notification:	Check the box to enable user status notification.
Trap Server IP:	Enter the IP address of the trap server.

Device Configuration > SSL



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

FTP User Name: Enter the FTP user name.

FTP Password: Enter the password for the FTP user name.

FTP Certificate File Name: Enter the FTP certificate file name.

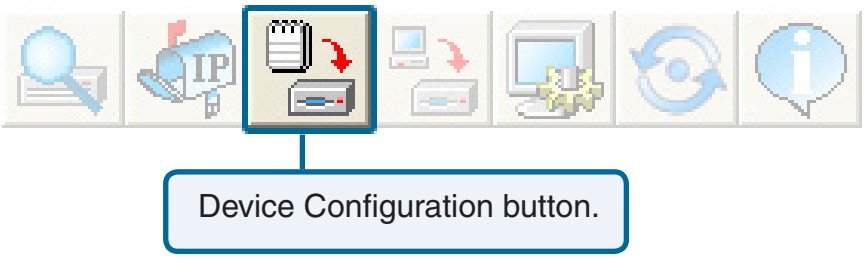
FTP Key File Name: Enter the FTP key file name.

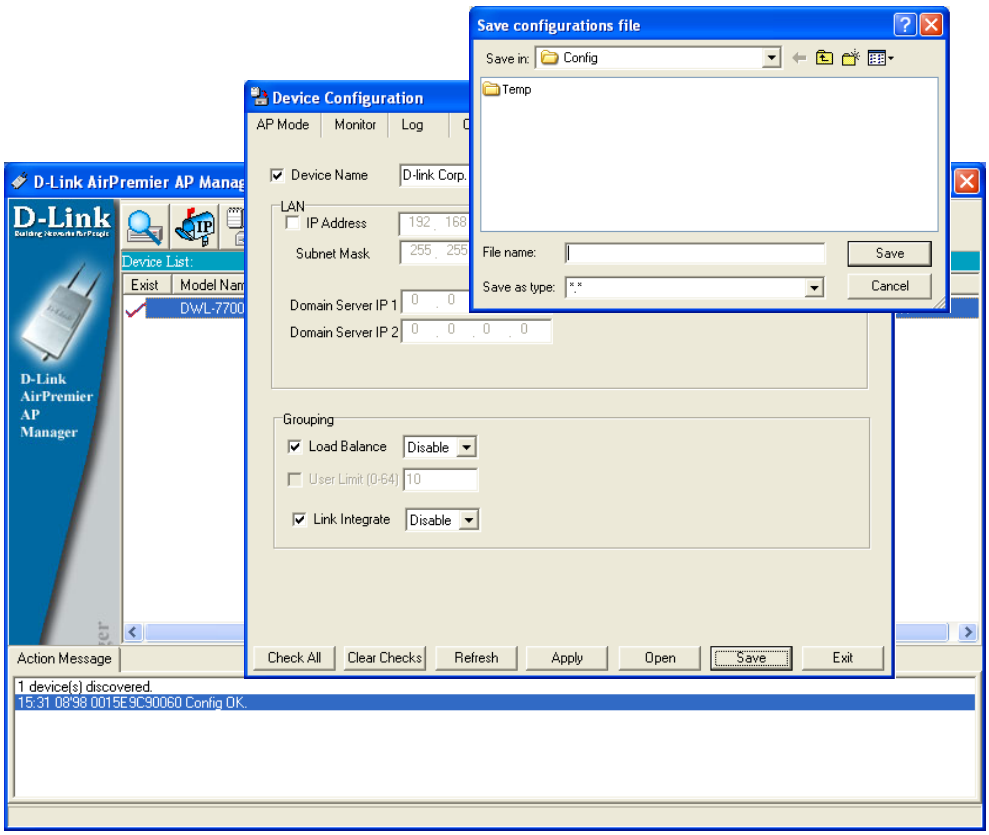
Upload: Click **Upload** to load the settings.

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.

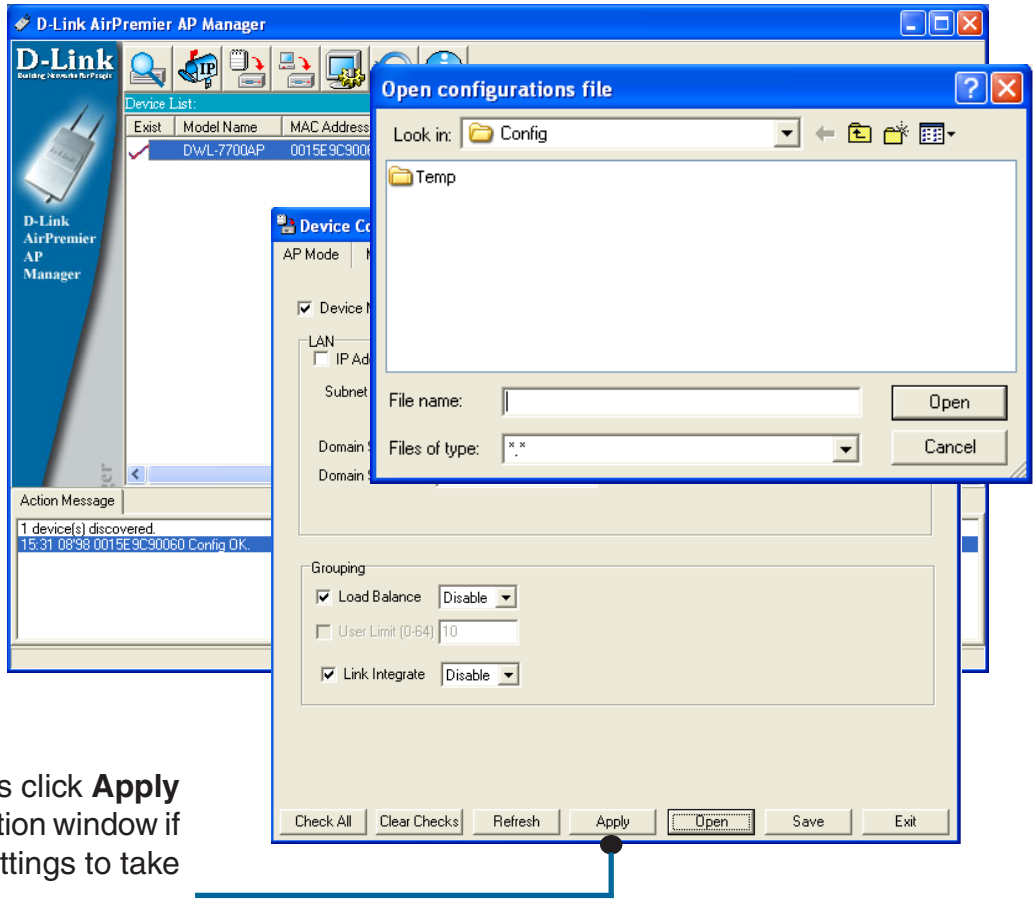




To load a previously saved configuration file, follow these steps:

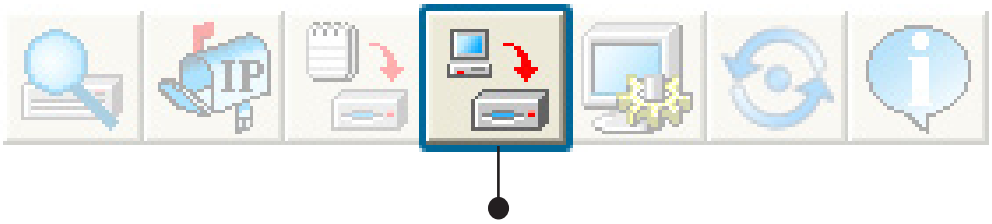
- Select a device from the Device List on the main screen of the AP Manager.
- Click the device configuration button.
- Click the **Open** button.
- A popup window will appear prompting you to locate the configuration file. Locate the file and click **Open**.
- The configuration file is loaded into the 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).

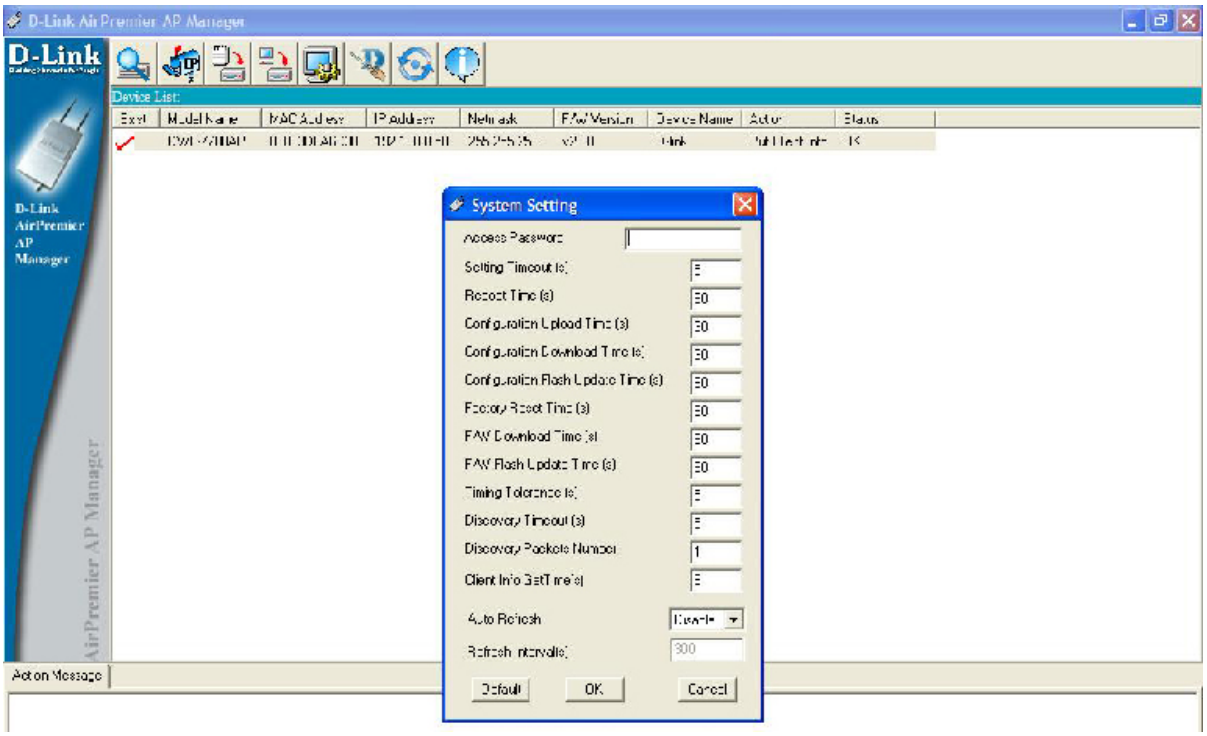
To upgrade the firmware:

- 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-7700AP by clicking on this button.



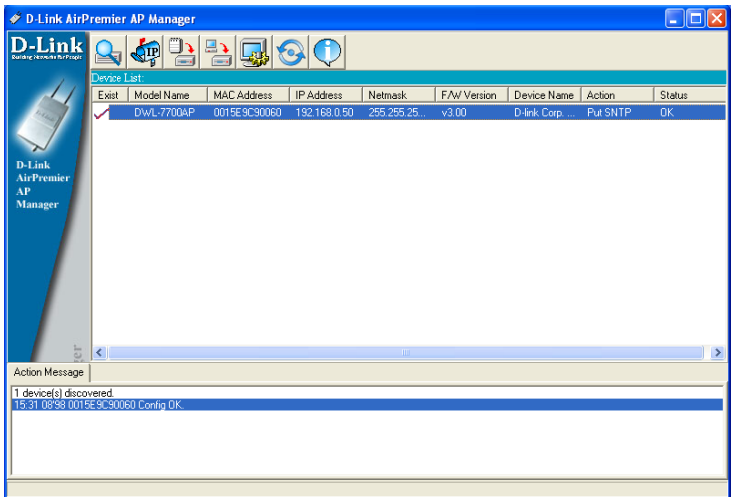
- **Access Password**: This sets the admin password for the select device(s).

- **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.

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.

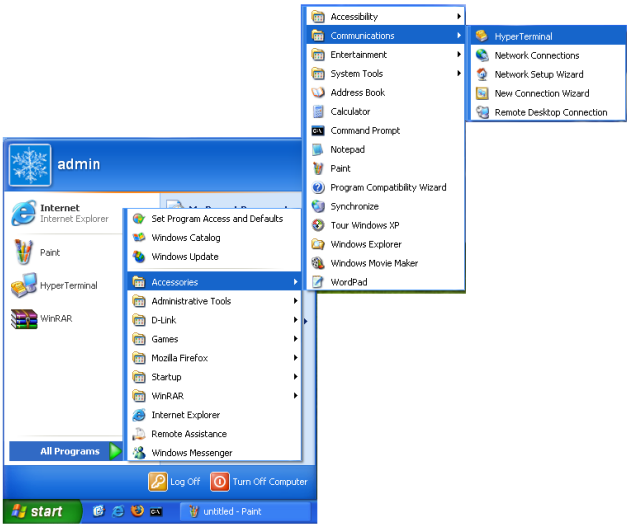
Using the Console Port

You can connect to the DWL-7700AP console port to configure device settings via the command line.

1. Connect one end of the provided serial console cable to the console port on the DWL-7700AP, and the other to an available serial port on the PC you wll use to connect to the device.

2. Run HyperTerminal on the PC:

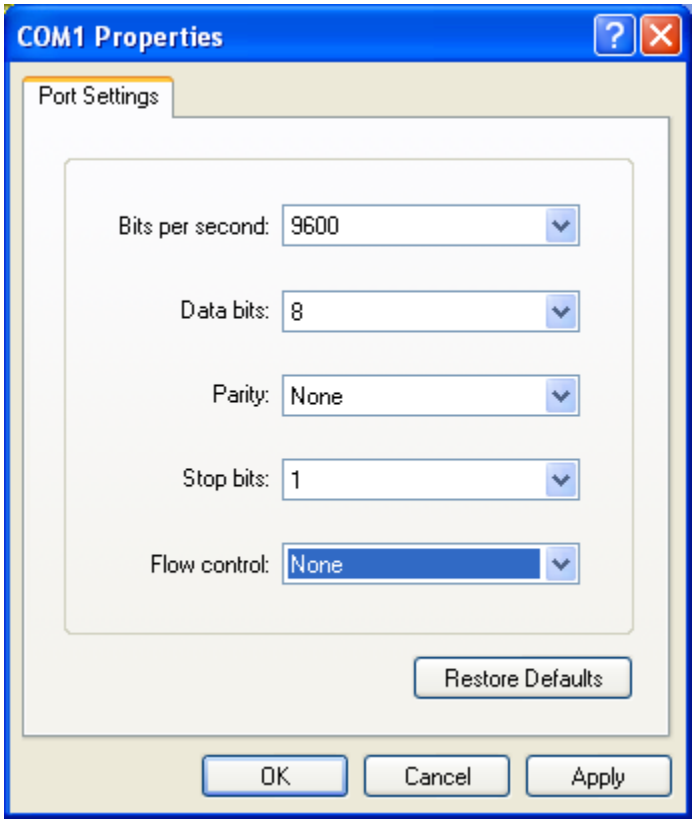
- Go to the **Start Menu**
- Select **All Programs**
- Select **Accessories**
- Select **Communications**
- Select **HyperTerminal**



3. Enter a New Connection name:

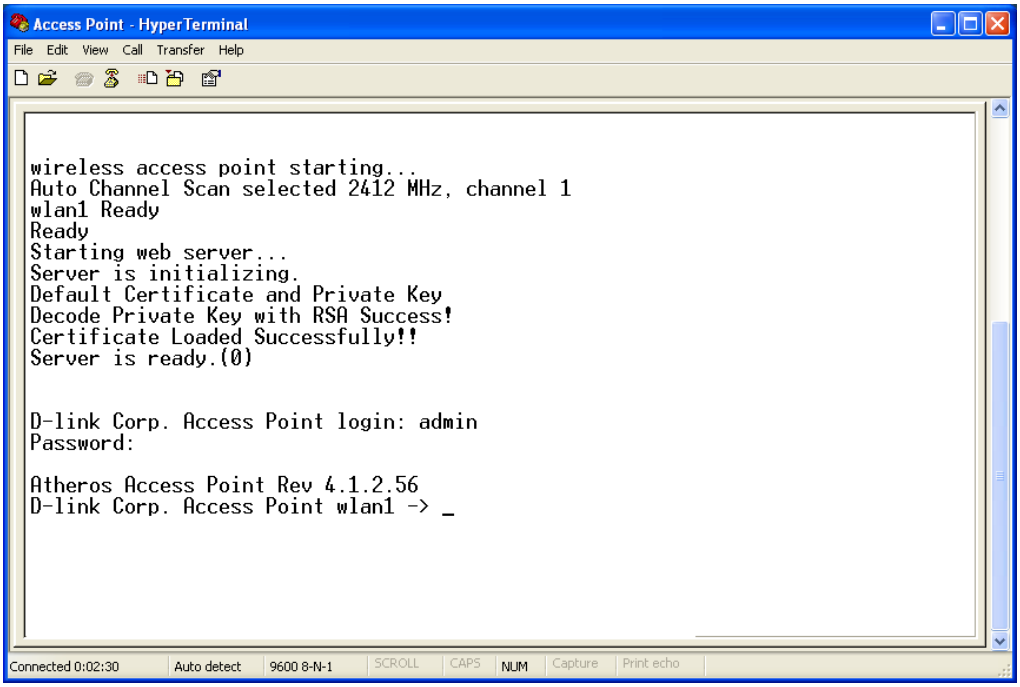
4. Select the appropriate COM port:

5. Configure the Port Settings:



Note: Your terminal emulation must be set to 9600 bits per second.

6. Enter Login Name and Password:



Once logged in, you will be able to run configuration commands from the command line prompt.

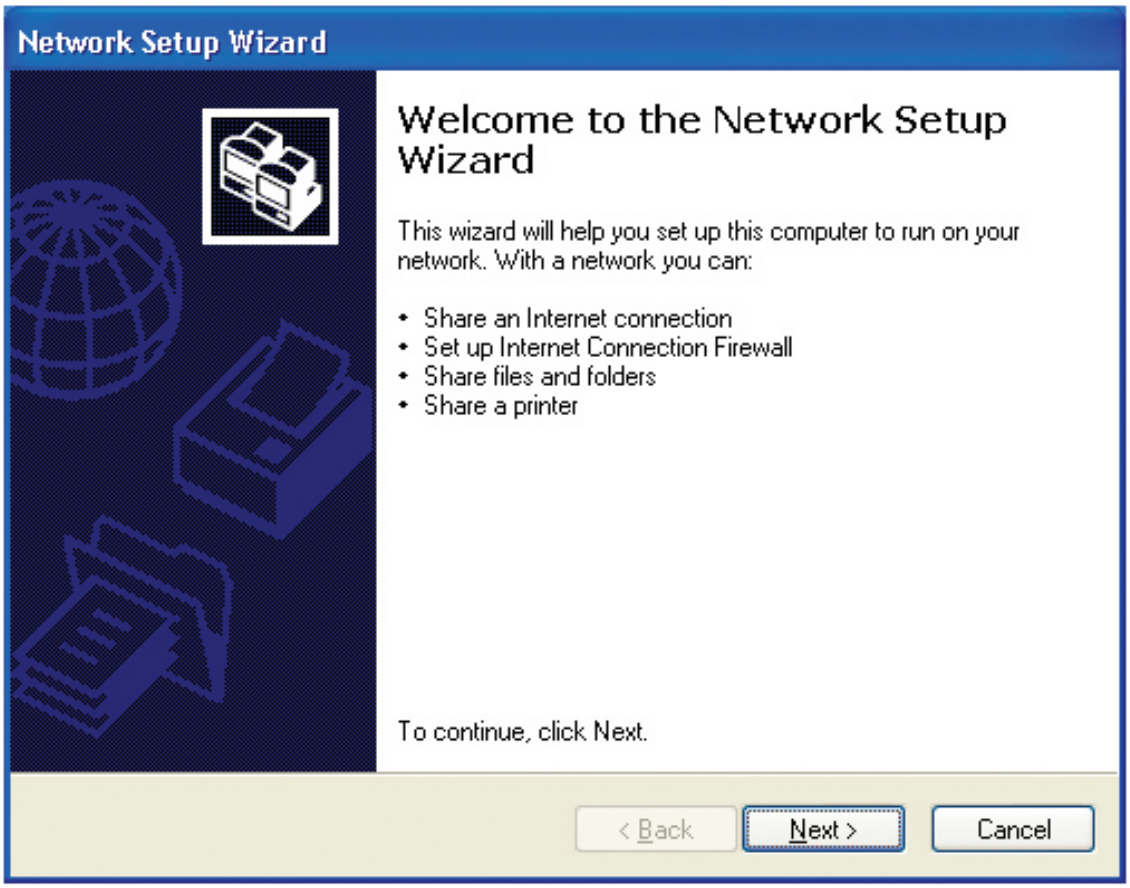
Networking Basics

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.**

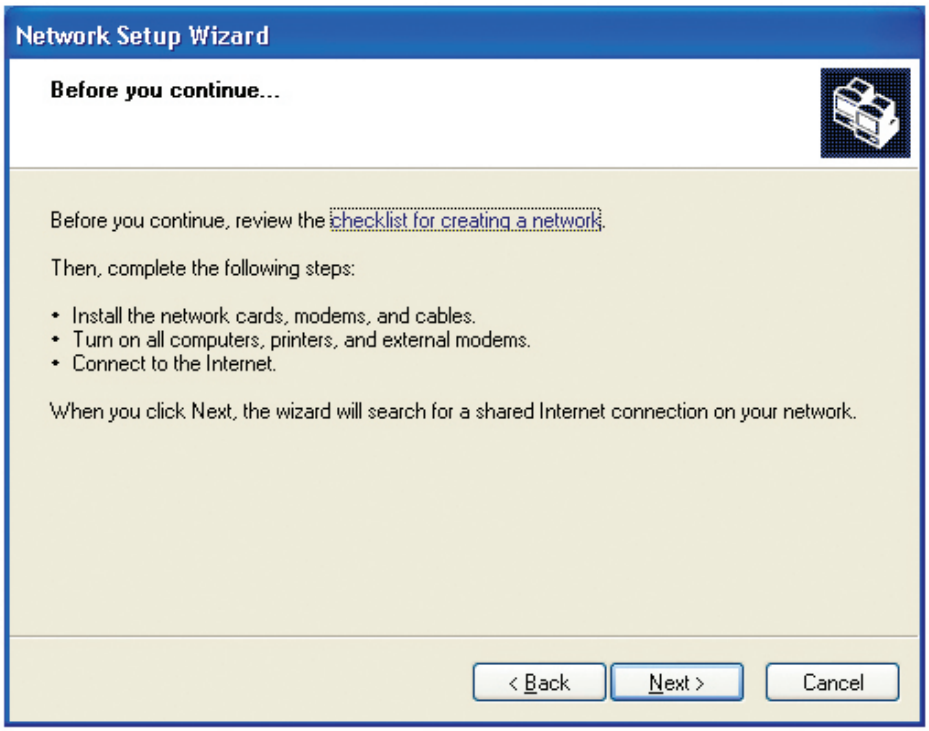
Note: Please refer to websites such as http://www.homenethelp.com and http://www.microsoft.com/windows2000 for information about networking computers using Windows 2000, Me or 98.

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



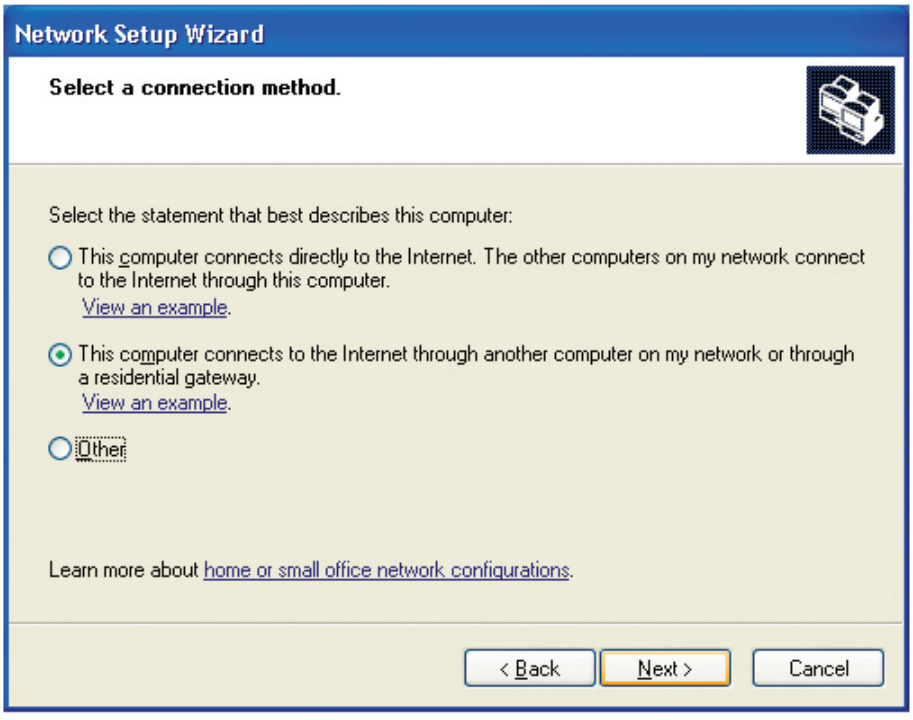
When this screen appears, click **Next.**

Please follow all the instructions in this window:



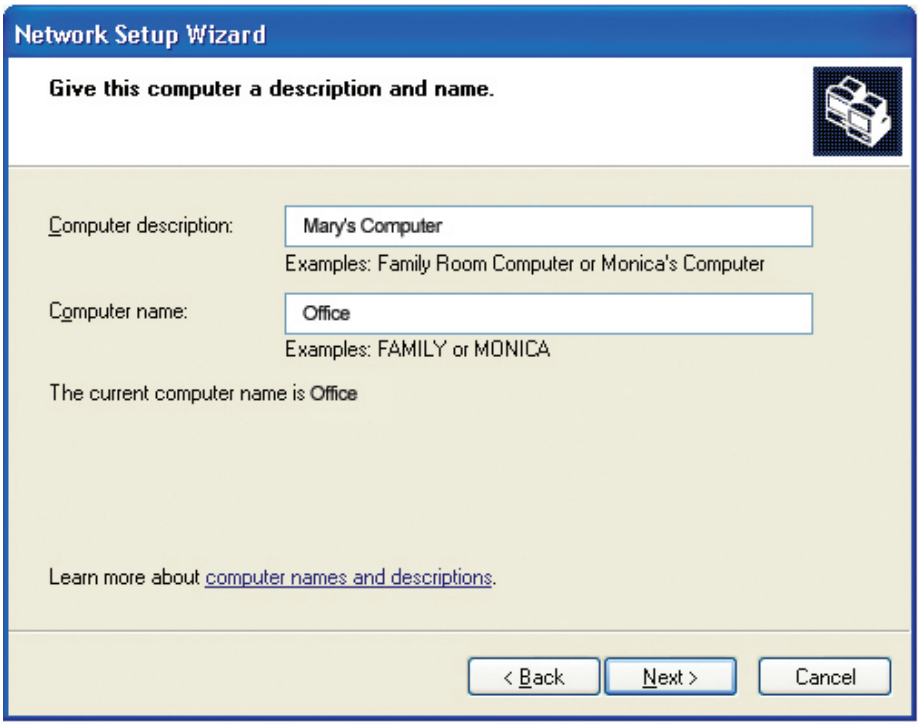
Click **Next**.

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.



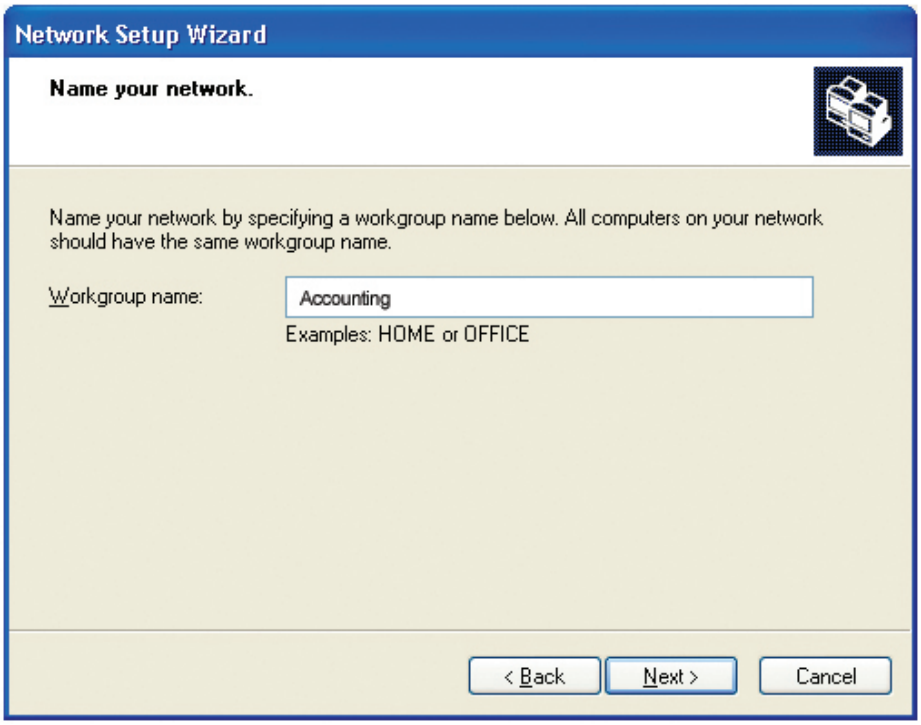
Click **Next**.

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



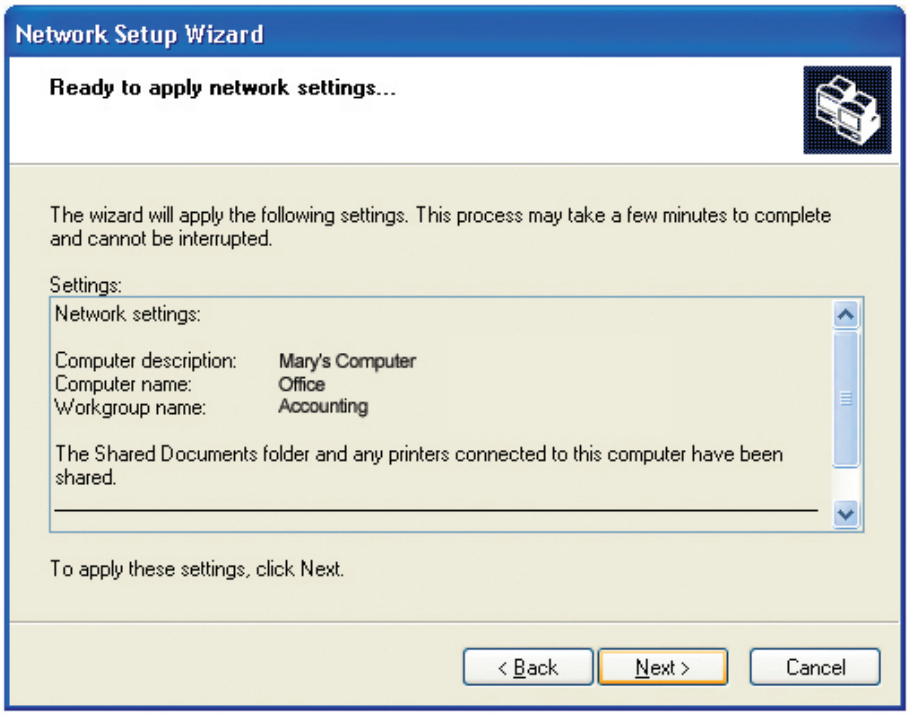
Click **Next**.

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



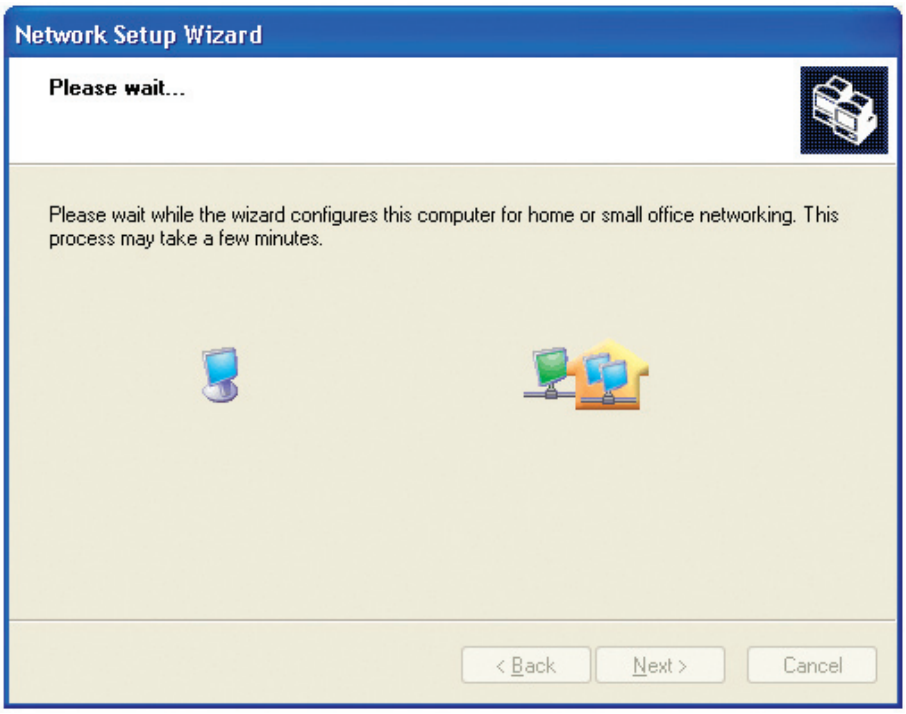
Click **Next**.

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

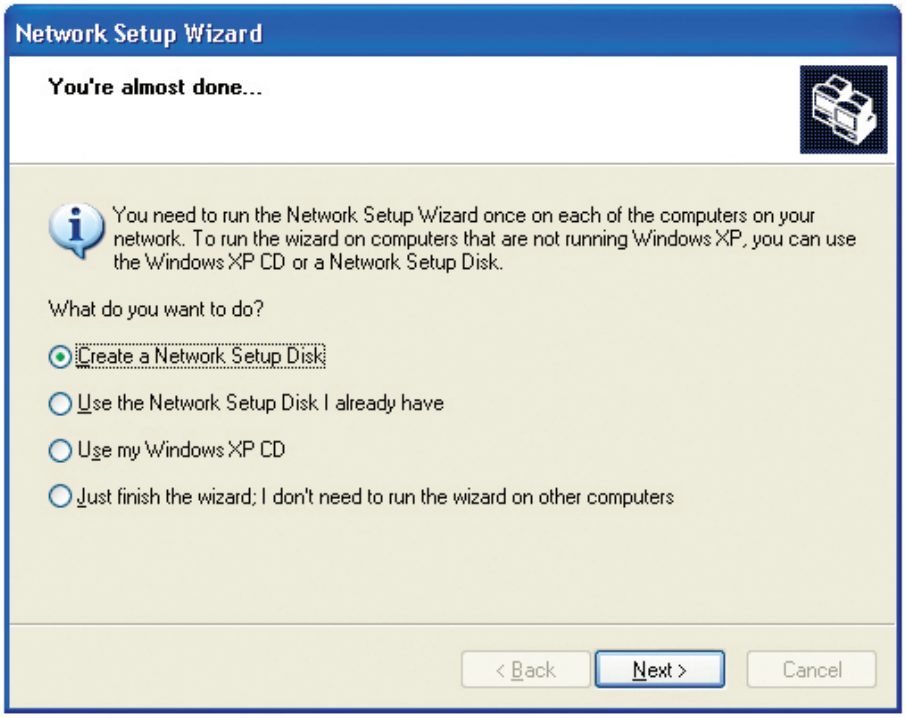


When the changes are complete, click **Next**.

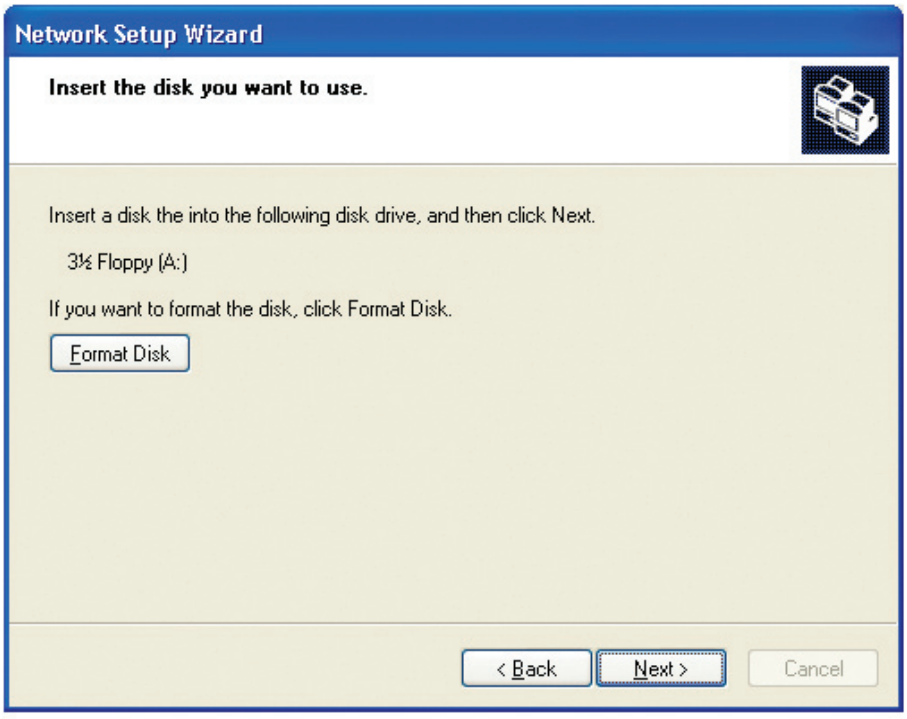
Please wait while the **Network Setup Wizard** configures the computer. This may take a few minutes.



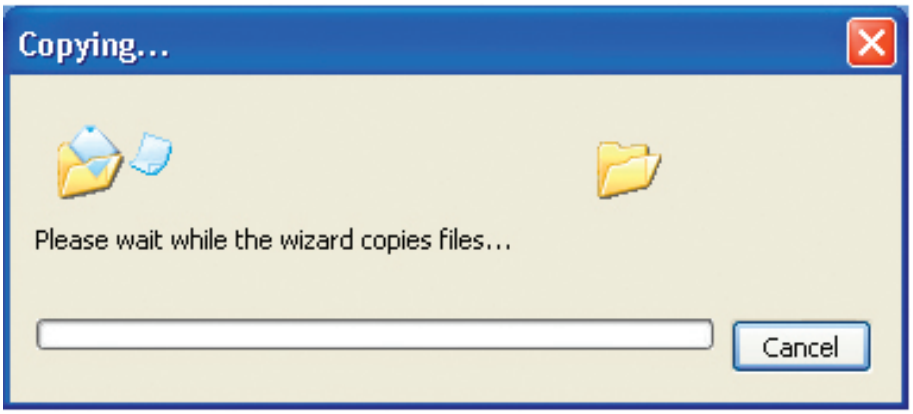
In the window below, select the option that fits your needs. In this example, **Create a Network Setup Disk** has been selected. You will run this disk on each of the computers on your network. Click **Next**.



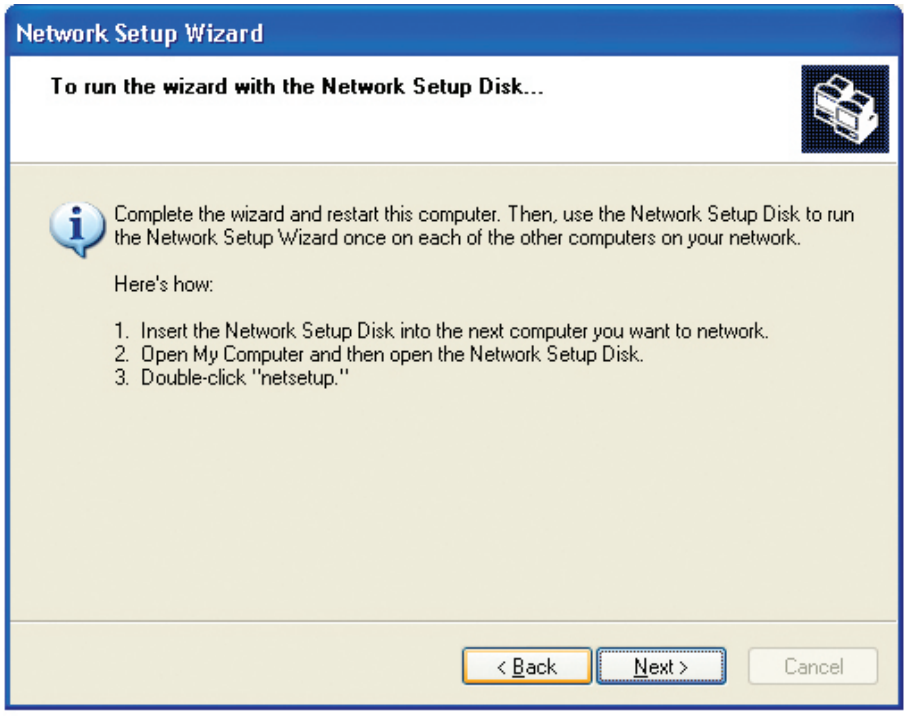
Insert a disk into the Floppy Disk Drive, in this case drive **A**.



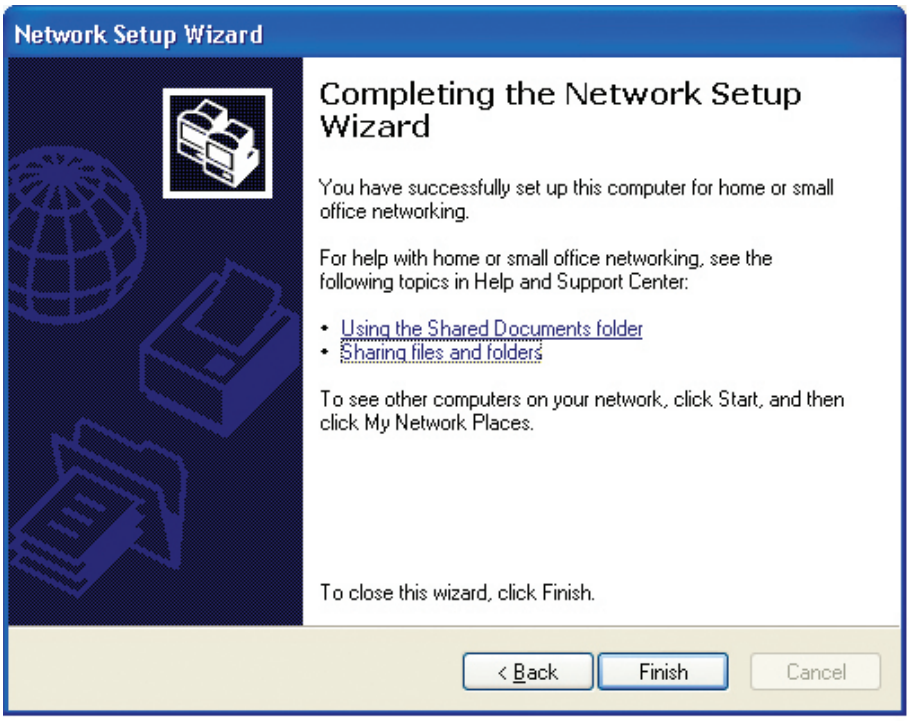
Click **Next**.



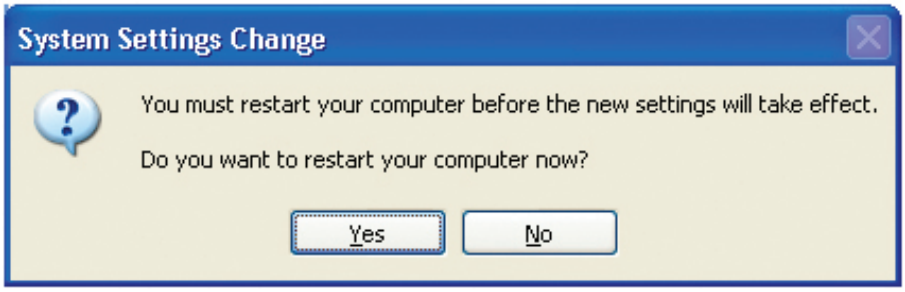
Please read the information under **Here's how** in the screen below. After you complete the **Network Setup Wizard** you will use the **Network Setup Disk** to run the **Network Setup Wizard** once on each of the computers on your network. To continue click **Next**.



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.



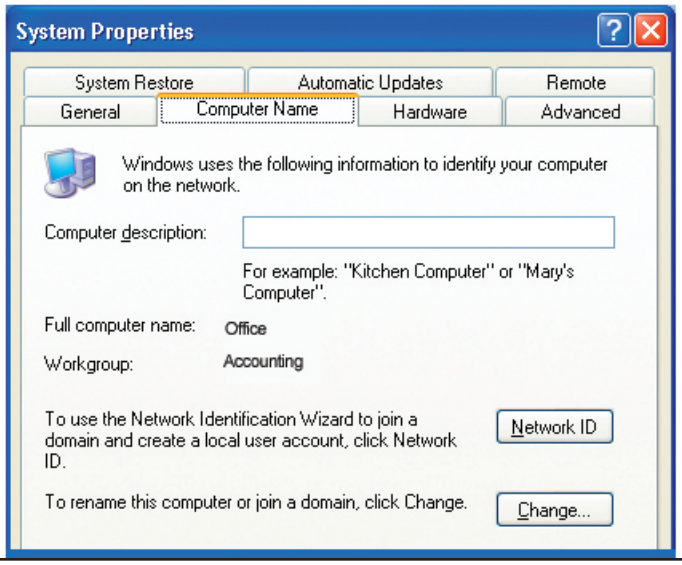
You have completed configuring this computer. Next, you will need to run the **Network Setup Disk** on all the other computers on your network. After running the **Network Setup Disk** on all your computers, your new wireless network will be ready to use.

Naming Your Computer

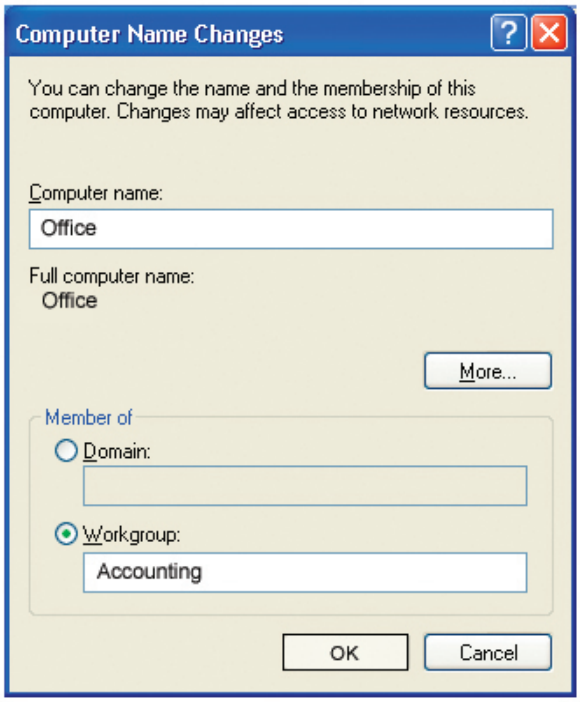
To name your computer n **Windows XP**, please follow these directions.

- 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**.



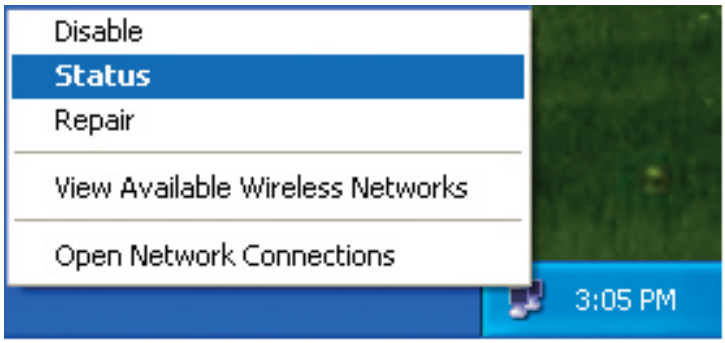
- In this window, enter the **Computer name**.
- Select **Workgroup** and enter the name of the **Workgroup**.
- All computers on your network must have the same **Workgroup** name.
- Click **OK**.



Checking the IP Address in Windows XP

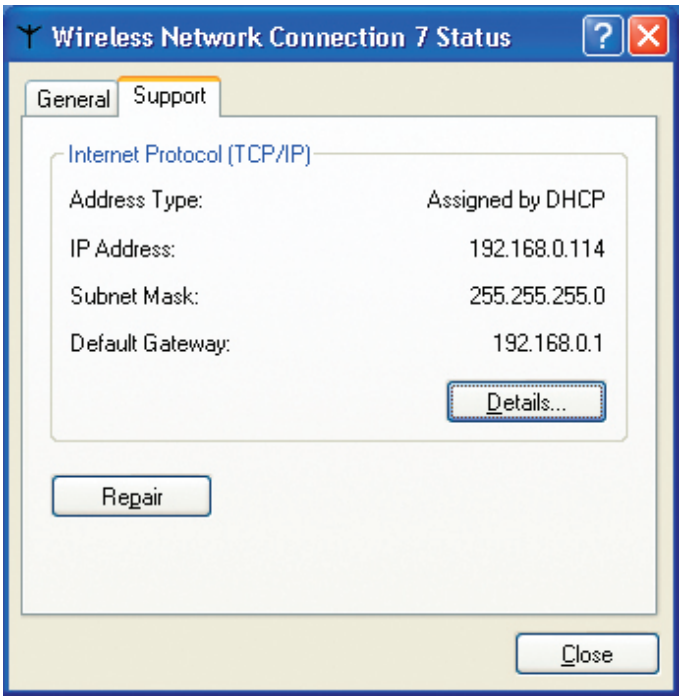
The wireless adapter-equipped computers in your network must be in the same IP Address range (see Getting Started in this manual for a definition of IP Address Range.) To check on the IP Address of the adapter, please do the following:

- 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**.

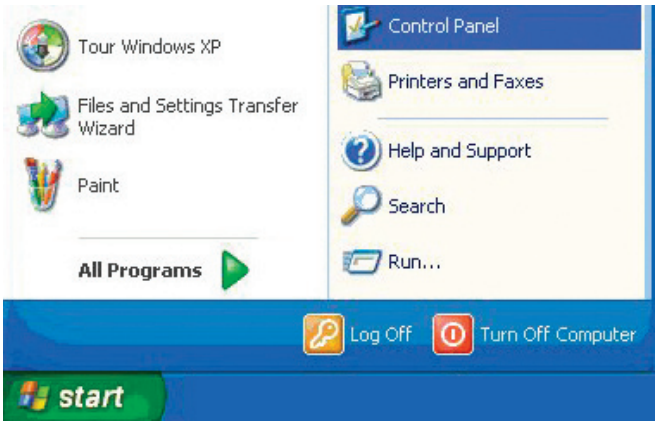


Assigning a Static IP Address in Windows XP/2000

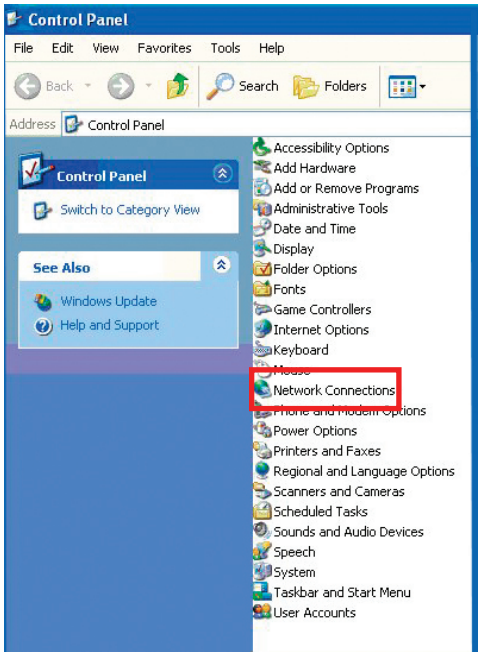
Note: DHCP enabled routers will automatically assign IP addresses to the computers on the network, using DHCP (Dynamic Host Configuration Protocol) technology. If you are using a DHCP capable router you will not need to assign static IP addresses.

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

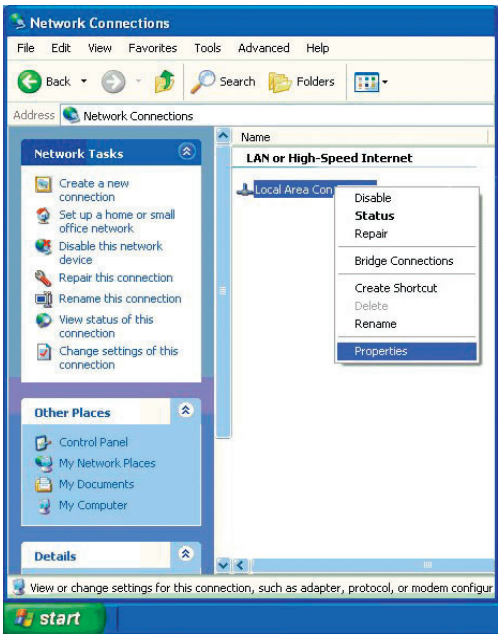
- Go to **Start**.
- Double-click on **Control Panel**.



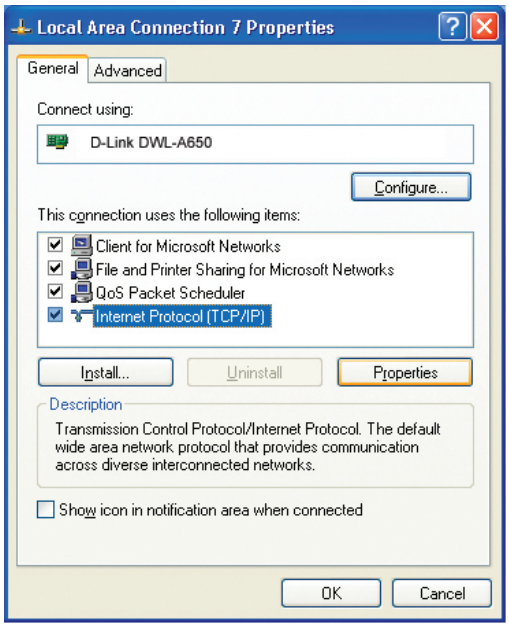
- Double-click on **Network Connections**.



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



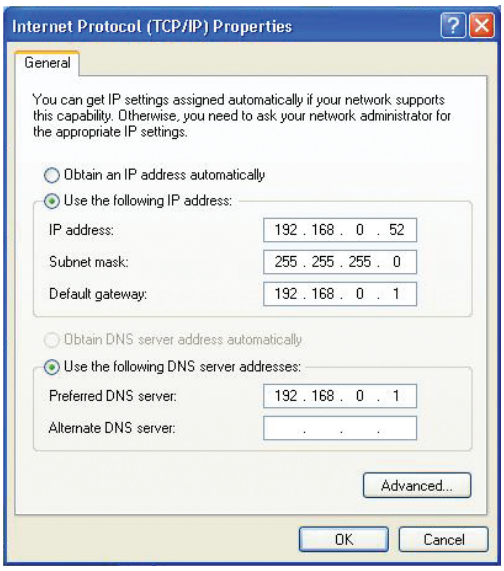
- Click on **Internet Protocol (TCP/IP)**.
- Click **Properties**.
- Input your **IP address and subnet mask**. (The IP addresses on your network must be within the same range. For example, if one computer has an IP address of 192.168.0.2, the other computers should have IP addresses that are sequential,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

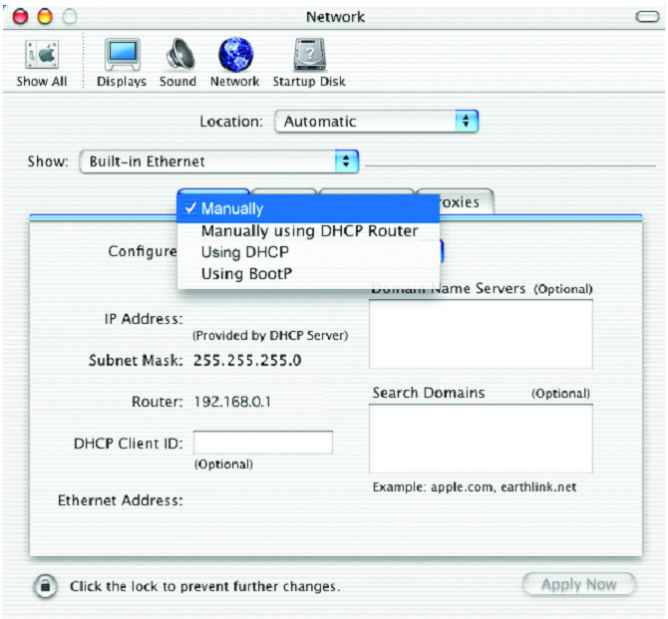
- Click **OK**.



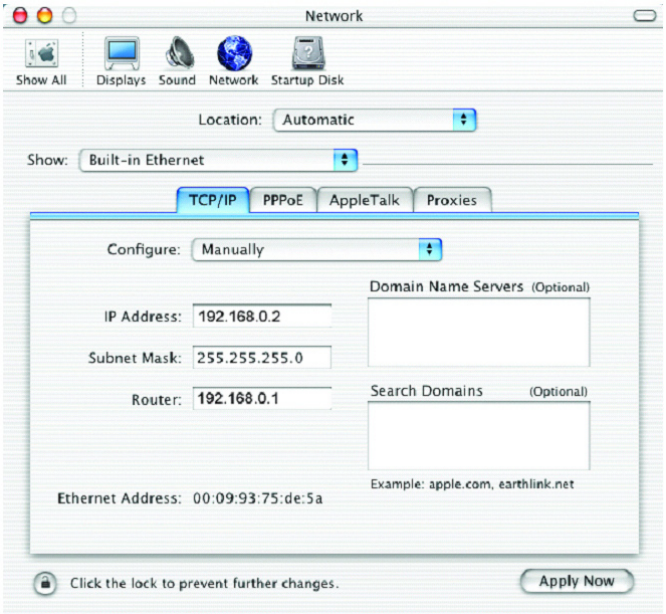
Assigning a Static IP Address in Macintosh OSX

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

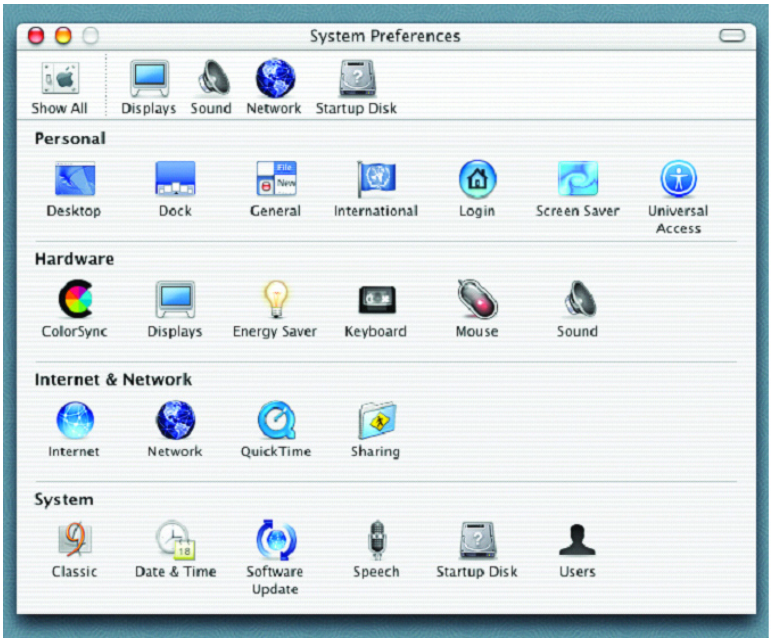
- Select **Built-in Ethernet** in the **Show** pull-down menu.
- Select **Manually** in the **Configure** pull-down menu.



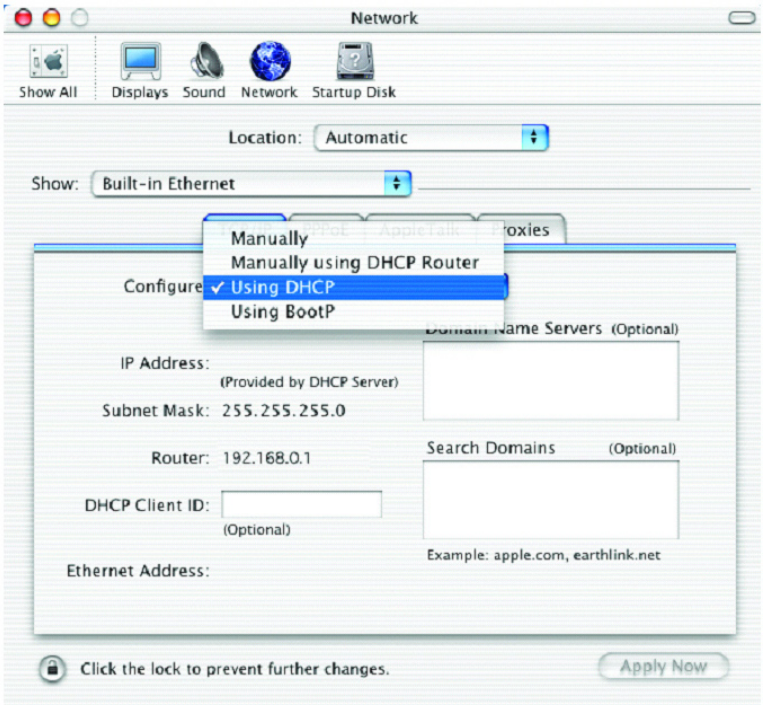
- Input the **Static IP Address**, the **Subnet Mask** and the **Router IP Address** in the appropriate fields.
- Click **Apply Now**.



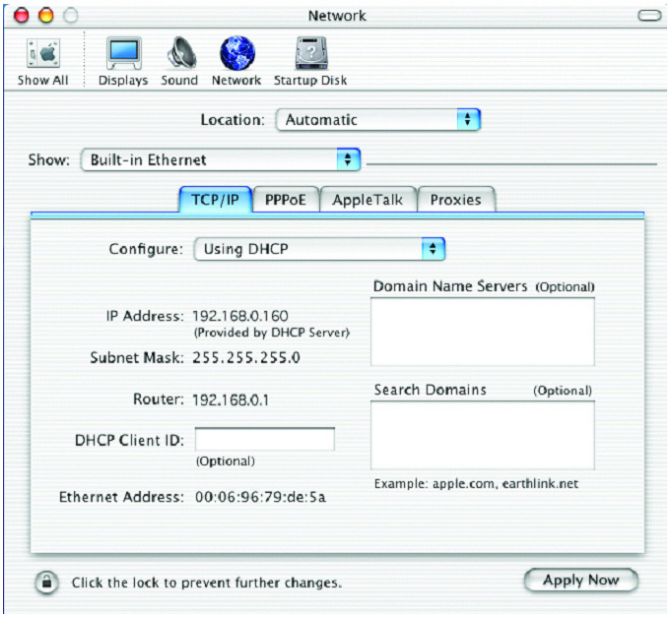
- Go to the **Apple Menu** and select **System Preferences**.
- Click on **Network**.



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

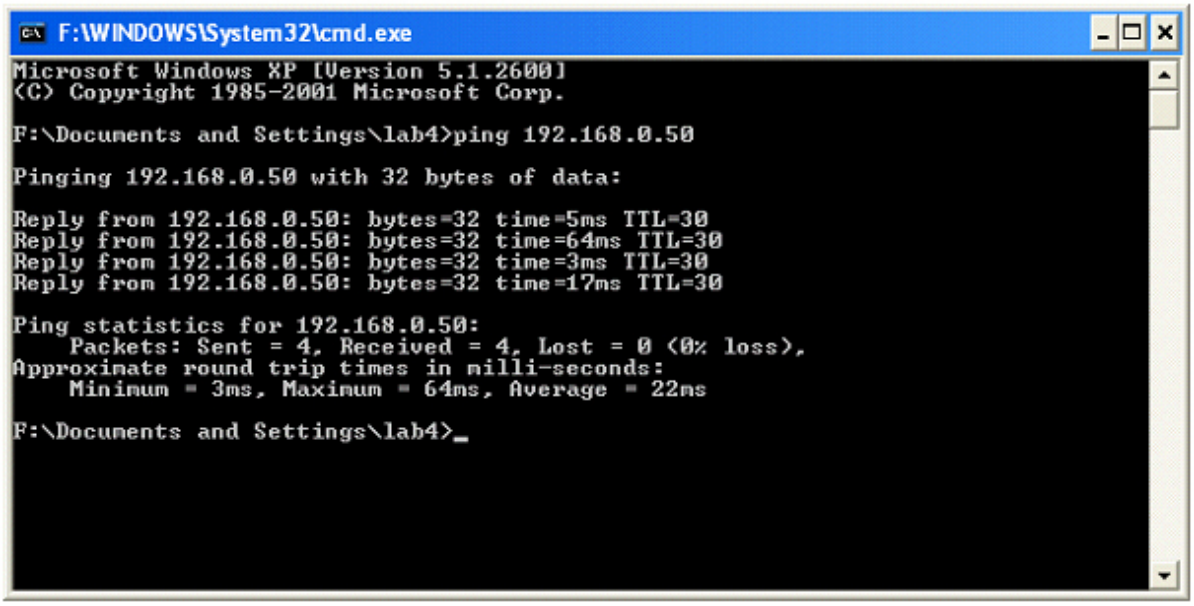


- Click **Apply Now**.
- The **IP Address, Subnet mask**, and the **Router's IP Address** will appear in a few seconds.



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.



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.***

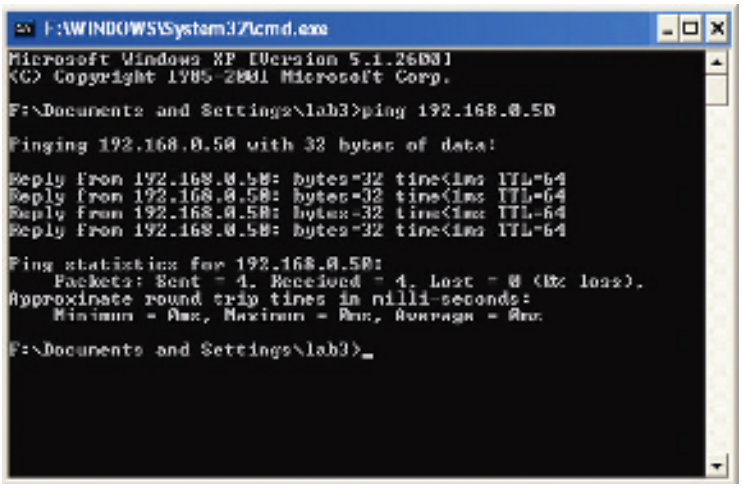
1. The computer used to configure the DWL-7700AP cannot access the Configuration menu.

- 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.

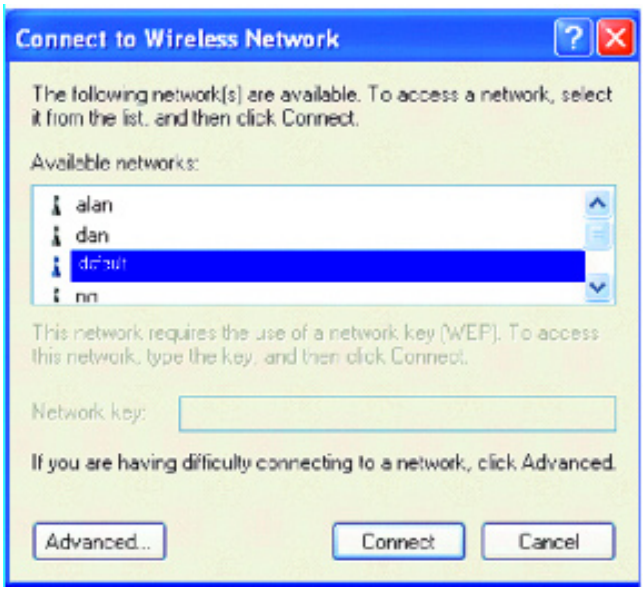
- Do a **Ping test** to make sure that the DWL-7700AP is responding. Go to **Start**>**Run**>Type **Command**>Type **ping 192.168.0.50.** A successful ping will show four replies.

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



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.)*

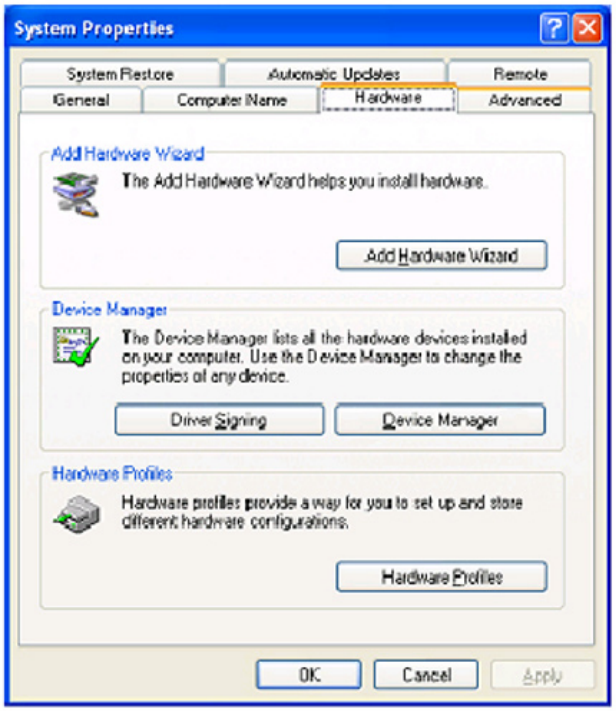
- If it is necessary to assign a **Static IP Address** to the wireless adapter, please refer to the appropriate section in **Networking Basics**. If you are entering a **DNS Server address** you must also enter the **Default Gateway Address.** *(Remember that if you have a DHCP capable router, you will 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.

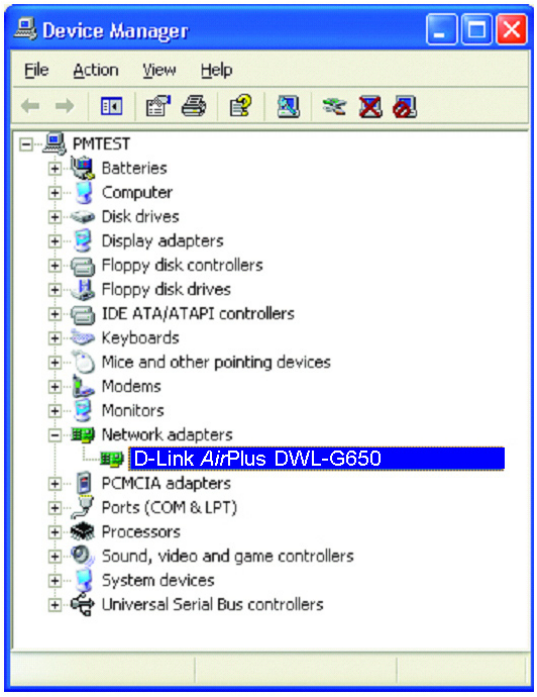
You may be using different network adapters than those illustrated here, but this procedure will remain the same, regardless of the type of network adapters you are using.

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

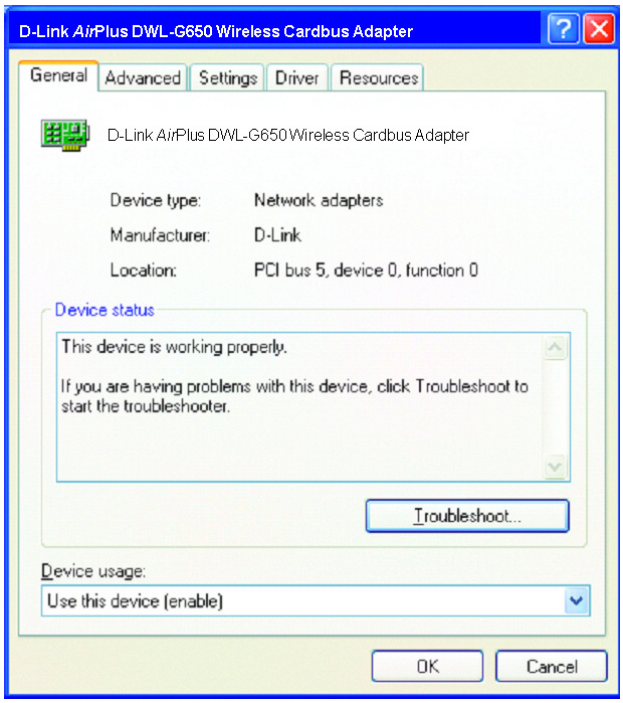
- **Select** the **Hardware Tab**.
- Click **Device Manager**.



- Double-click on **Network Adapters**.
- Right-click on **D-Link *Air*Plus DWL-G650 Wireless Cardbus Adapter**. (In this example we use the DWL-G650; you may be using other network adapters, but the procedure will remain the same.)
- Select **Properties** to check that the drivers are installed properly.



- Look under **Device Status** to check that the device is working properly.
- Click **OK**.



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.

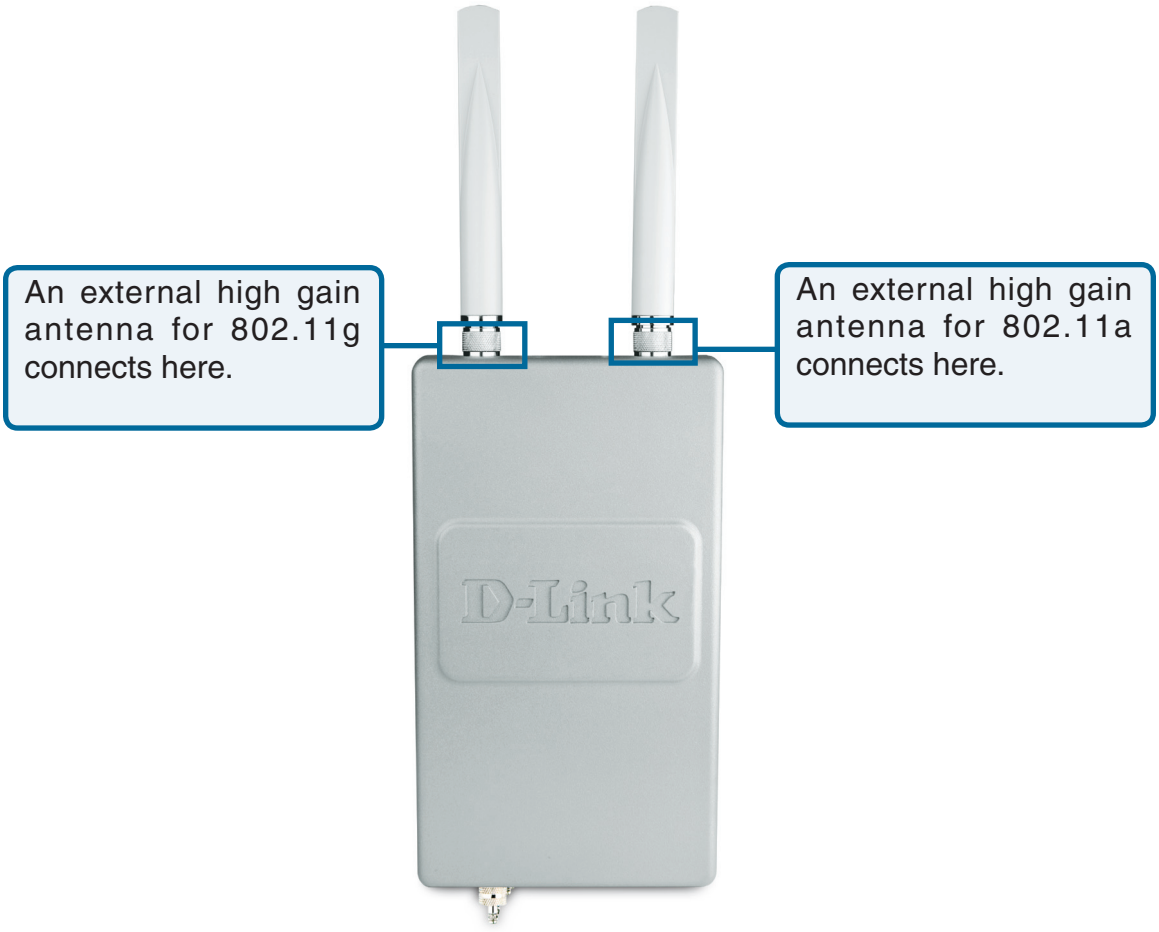
- Make sure that the SSID on the router and the wireless client are exactly the same. If they are not, wireless connection will not be established.
- Move the DWL-7700AP and the wireless client into the same room and then test the wireless connection.
- Disable all security settings.
- Turn off your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

High Gain External Antenna (Optional)

An external, high gain antenna (not included) can be connected to the DWL-7700AP to extend the range of the network.

For high gain antenna information, please contact D-Link Sales at (800) 326-1688.

The external gain antenna attaches to the right side of the DWL-7700AP when the front panel is facing towards you.



Technical Specifications

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

Network Management
- Web Browser interface
  - HTTP
- AP Manager
- SNMP Support
  - D-View Module
  - Private MIB
- Command Line Interface
  - Telnet

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
- WPA-Personal
- WPA-Enterprise
- WPA2-Personal
- WPA2-Enterprise
- 64/128/152-bit WEP
- SSID Broadcast Disable
- 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:
• 200mW (23dBm)
• 63mW (18dBm)
• 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.8.5W with PoE (without heater)
- Max.28.5W without PoE (with heater)

LEDs
- Power
- LAN
- 802.11a
- 802.11b/g

Temperature
- Operating: -40ºF to 140ºF (-40ºC to 60ºC)
- Storing: -4ºF to 149ºF (-40ºC to 65ºC)

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

Certifications
- FCC Part 15
- CSA
- UL

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 8:00am to 5:00pm PST
D-Link Technical Support over the Internet:
http://support.dlink.com

Tech Support for customers within Canada:

D-Link Technical Support over the Telephone:
(800) 361-5265
Monday to Friday 7:30am to 9:00pm EST
D-Link Technical Support over the Internet:
http://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 or original retail purchase. If a material non-conformance is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to replace the non-conforming Software, the price paid by the original licensee for the non-conforming Software will be refunded by D-Link; provided that the non-conforming Software (and all copies thereof) is first returned to D-Link. The license granted respecting any Software for which a refund is given automatically terminates.

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

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

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

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

· Return Merchandise Ship-To Address
USA: 17595 Mt. Herrmann, Fountain Valley, CA 92708
Canada: 2180 Winston Park Drive, Oakville, ON, L6H 5W1 (Visit http://www.dlink.ca for detailed warranty information within Canada)

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

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

Disclaimer of Other Warranties: EXCEPT FOR THE LIMITED WARRANTY SPECIFIED HEREIN, THE PRODUCT IS PROVIDED "AS-IS" WITHOUT ANY WARRANTY OF ANY KIND WHATSOEVER INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. IF ANY IMPLIED WARRANTY CANNOT BE DISCLAIMED IN ANY TERRITORY WHERE A PRODUCT IS SOLD, THE DURATION OF SUCH IMPLIED

WARRANTY SHALL BE LIMITED TO NINETY (90) DAYS. EXCEPT AS EXPRESSLY COVERED UNDER THE LIMITED WARRANTY PROVIDED HEREIN, THE ENTIRE RISK AS TO THE QUALITY, SELECTION AND PERFORMANCE OF THE PRODUCT IS WITH THE PURCHASER OF THE PRODUCT.

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

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

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

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.

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

Federal Communication Commission Interference 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 communications. 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 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.

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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

Industry Canada Statement

Operation is subject to the following two conditions:
1) this device may not cause interference and
2) this device must accept any interference, including interference that may cause undesired operation of the device

This device has been designed to operate with an antenna having a maximum gain of 21 dBi.

Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the EIRP is not more than required for successful communication.

IMPORTANT NOTE:

IC Radiation Exposure Statement:
This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Registration

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

Version 2.00
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