# USER MANUAL

## DAP-1353

VERSION 1.0


D-Link®

WIRELESS

# Table of Contents

# Package Contents

- D-Link DAP-1353 RangeBooster N 650 Access Point
- 3 Detachable Antennas
- Power Adapter
- CAT5 Ethernet Cable
- CD-ROM with Product Documentation
- Quick Install Guide


**Note:1.** Using a power supply with a different voltage rating than the one included with the DAP-1353 will cause damage and void the warranty for this product.

**2.** The power supply shall instruct the user not to remove the plug and plug into a wall outlet by itself; always attach the plug to the power supply first before insert.

# System Requirements

- Computers with Windows®, Macintosh®, or Linux-based operating systems with an installed Ethernet Adapter
- Internet Explorer Version 6.0 and Firefox 1.5 or above ( for configuration)

# Introduction

**TOTAL PERFORMANCE**
Combines award winning access point features and draft 802.11n wireless technology to provide the best wireless performance.

**TOTAL COVERAGE**
Provides greater wireless signal rates even at further distances for best-in-class coverage.

**ULTIMATE PERFORMANCE**
The D-Link RangeBooster N 650 Access Point (DAP-1353) is a draft 802.11n compliant device that delivers real world perfomance of up to 650% faster than an 802.11g wireless connection (also faster than a 100Mbps wired Ethernet connection). Create a secure wireless network to share photos, files, music, video, printers and network storage.

**EXTENDED WHOLE HOME COVERAGE**
Powered by RangeBooster N 650 technology, this high performance access point provides superior Whole Home Coverage while reducing wireless dead spots. The RangeBooster N 650 Access Point is designed for use in bigger homes and for users who demand higher performance networking. Add a RangeBooster N 650 notebook or desktop wireless adapter and stay connected to your network from virutally anywhere in your home.

**TOTAL NETWORK SECURITY**
The RangeBooster N 650 Access Point supports all of the latest wireless security features to prevent unauthorized access. Support for WPA and WEP encryption standards ensure that you'll be able to use the best possible encryption method, regardless of your wireless client devices.

* Maximum wireless signal rate derived from IEEE Standard 802.11g and draft 802.11n 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. Environmental conditions will adversely affect wireless signal range.

# Features

- **Faster Wireless Networking** - The DAP-1353 provides up to 300Mbps* wireless connection with other draft 802.11n wireless clients. This capability allows users to participate in real-time activities online, such as video streaming, online gaming, and real-time audio. The performance of this draft 802.11n wireless access point gives you the freedom of wireless networking at speeds 650% faster than 802.11g.

- **Compatible with 802.11b and 802.11g Devices** - The DAP-1353 is still fully compatible with the IEEE 802.11b standard, so it can connect with existing 802.11b PCI, USB and Cardbus adapters.

- **MAC Address Filtering -** Allow or deny wireless clients access to the network based on their MAC address.

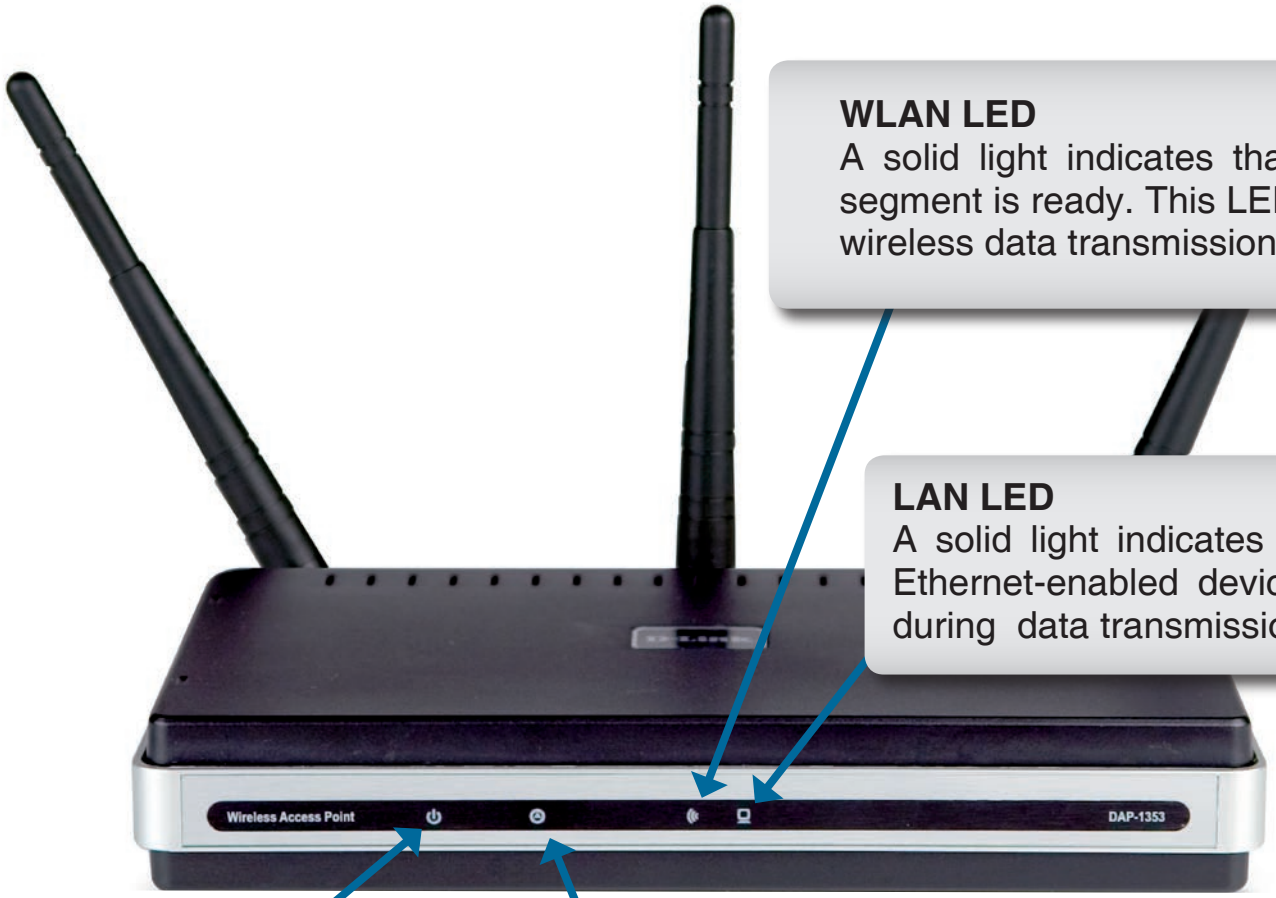
- **User-friendly Setup Wizard** - Through its easy-to-use Web-based user interface, the DAP-1353 lets you control what information is accessible to those on the wireless network, whether from the Internet or from your company's server. Configure your access point to your specific settings within minutes.

* Maximum wireless signal rate derived from IEEE Standard 802.11g and draft 802.11n 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. Environmental conditions will adversely affect wireless signal range.

# Hardware Overview
## Connections

# Hardware Overview

## LEDs




**WLAN LED**
A solid light indicates that the wireless segment is ready. This LED blinks during wireless data transmission.

**LAN LED**
A solid light indicates a connection to an Ethernet-enabled device. This LED blinks during data transmission.

**Power LED**
A solid light indicates a proper connection to the power supply.

**Status LED**
A blinking light indicates that the DAP-1353 is ready.

# Installation

This section will walk you through the installation process. Placement of the access point is very important. Do not place the access point in an enclosed area such as a closet, cabinet, or in the attic or garage.

# Wireless Installation Considerations

The D-Link RangeBooster N 650 wireless access point lets you access your network using a wireless connection from virtually anywhere within the operating range of your wireless network. 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 access point and other network devices to a minimum - each wall or ceiling can reduce your adapter'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 make a difference. A solid metal door or aluminum studs may have a negative effect on range. Try to position access points, wireless routers, and computers so that the signal passes through drywall or open doorways. Materials and objects such as glass, steel, metal, walls with insulation, water (fish tanks), mirrors, file cabinets, brick, and concrete will degrade your wireless signal.

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

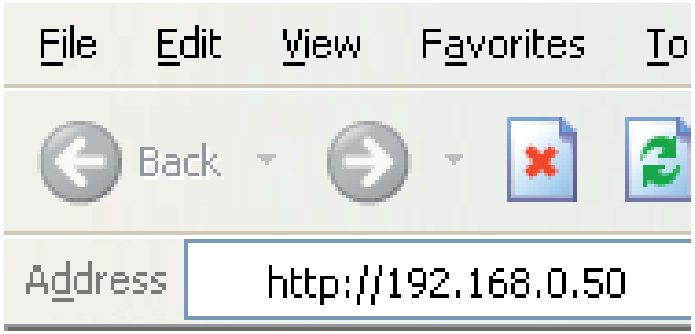
5. If you are using 2.4GHz cordless phones or X-10 (wireless products such as ceiling fans, lights, and home security systems), your wireless connection may degrade dramatically or drop completely. Make sure your 2.4GHz phone base is as far away from your wireless devices as possible. The base transmits a signal even if the phone in not in use.

# Configuration

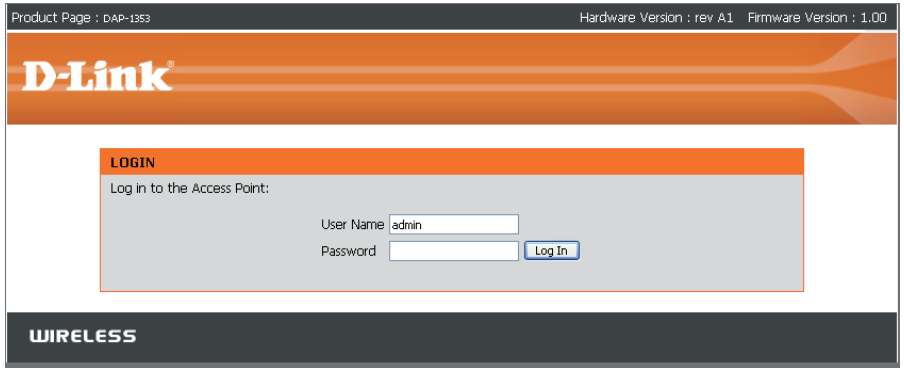
This section will show you how to configure your new D-Link wireless access point using the web-based configuration utility.

## Web-based Configuration Utility

To access the configuration utility, open a web-browser such as Internet Explorer and enter the IP address of the access point (192.168.0.50).

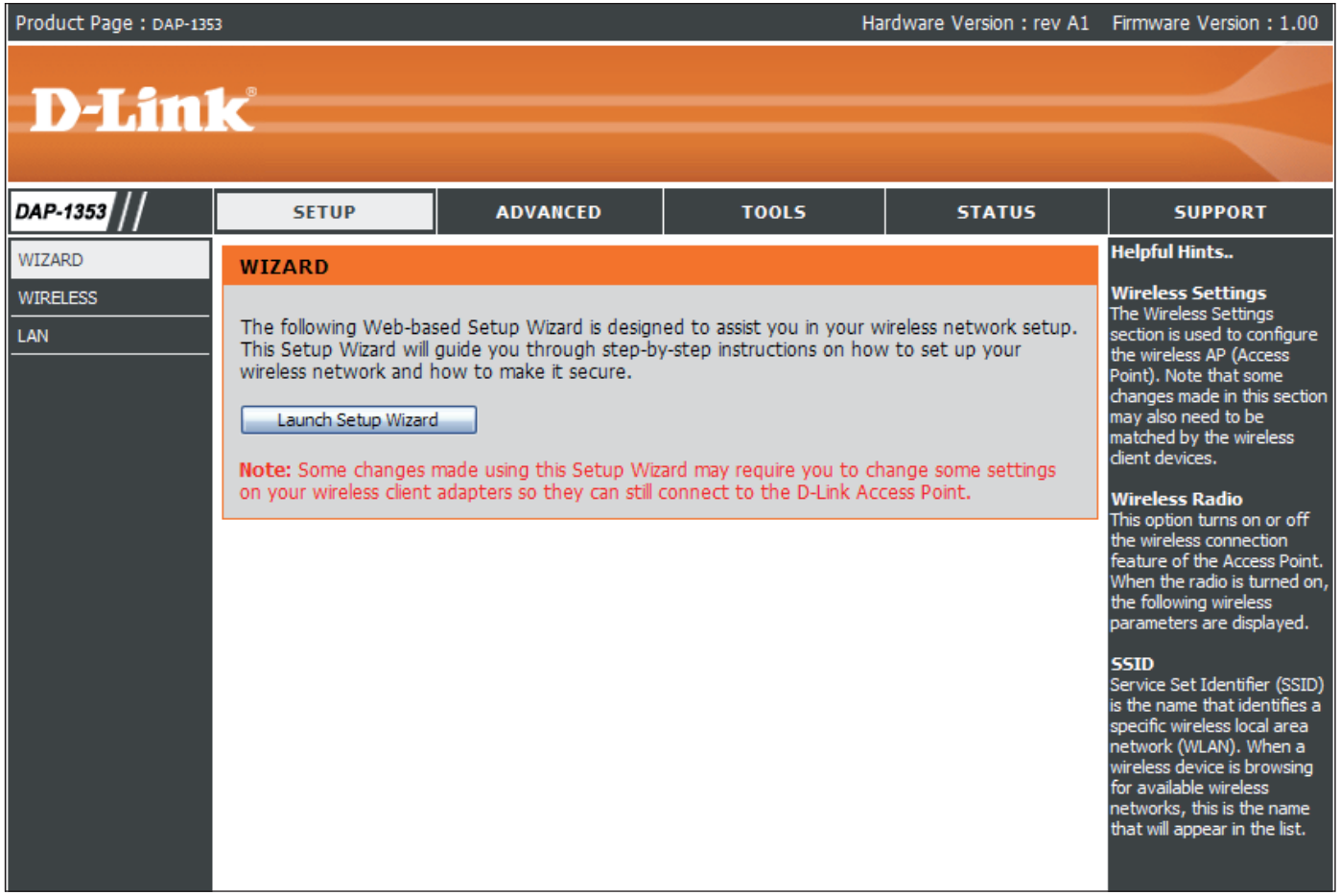



Enter the user name (admin) and your password. Leave the password blank by default.




If you get a “Page Cannot be Displayed” error, please refer to the **Troubleshooting** section for assistance.

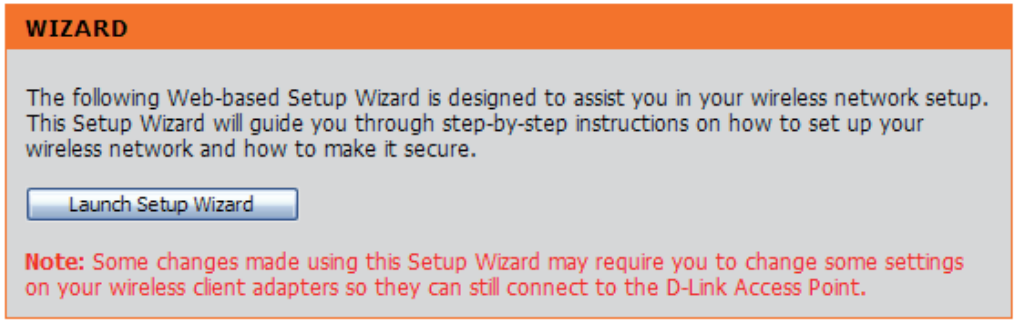
After logging in the **Setup > Wizard** page will be displayed:



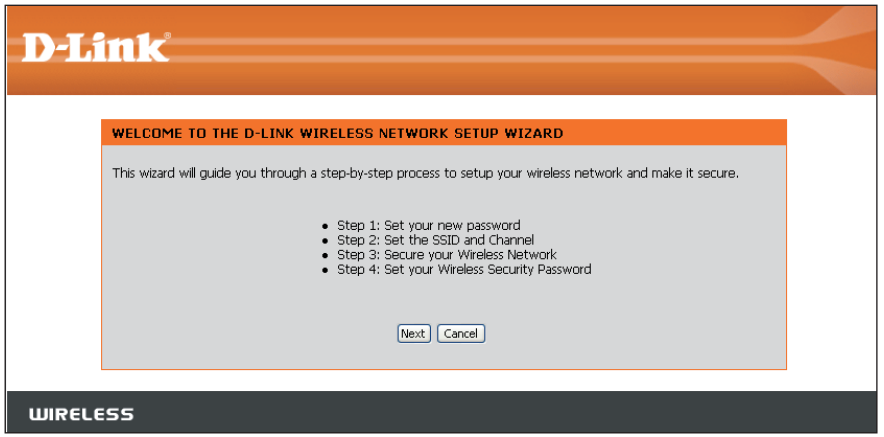
# Setup Wizard

A Setup Wizard is available to quickly and easily configure access point wireless security settings.

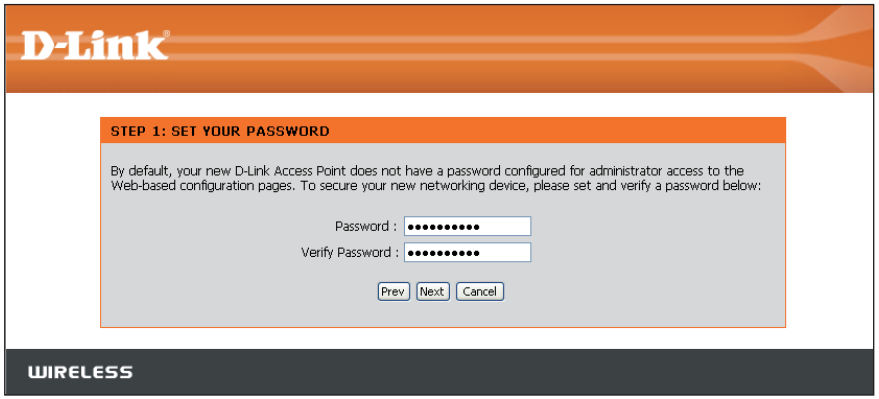
Click **Launch Setup Wizard**.



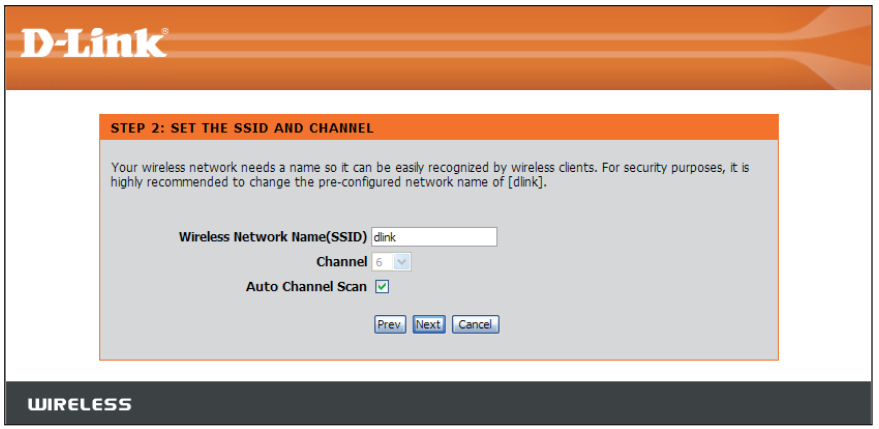
The wizard welcome screen will appear. Click **Next** to continue.




Create a new password and then click **Next** to continue.



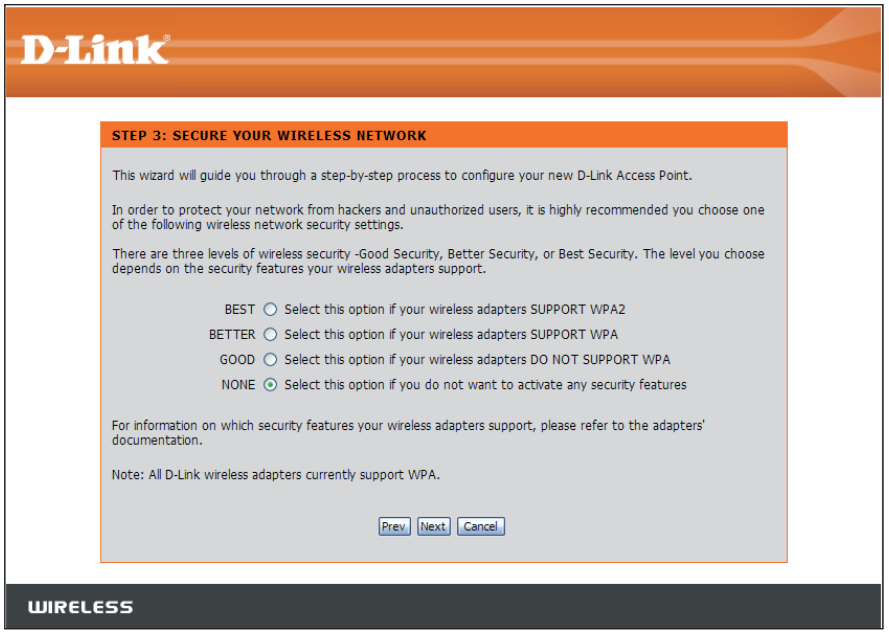

Enter your wireless network name (SSID). Auto Channel Scan is enabled by default. Uncheck the option to select a channel. Click **Next** to continue.



Select the type of wireless security you want to use:

- Best - WPA2 Authentication
- Better - WPA Authentication
- Good - WEP Encryption
- None - No Security

Click **Next** to continue.

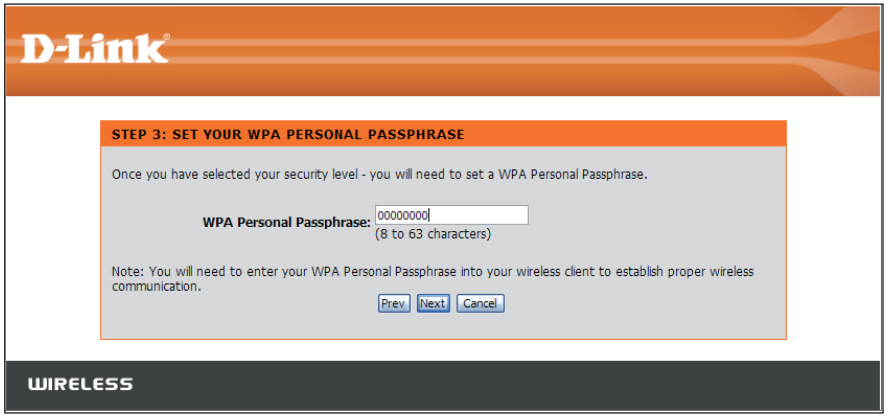



If you selected Good (WEP) security, select a **Key Type**, **Key Size**, and enter a **Wireless Security Password**:

Click **Next** to continue.

If you selected Better/Best security, enter a **Wireless Security Password** between 8-63 characters:

Click **Next** to continue.




At the **Setup Complete** screen, if you selected Good security, the following screen will show your WEP key. This key should be used by wireless clients connecting to the wireless network:

Click **Save**.

If you selected Better security, the following screen will show your Pre-Shared Key. This key should be used by wireless clients connecting to the wireless network.

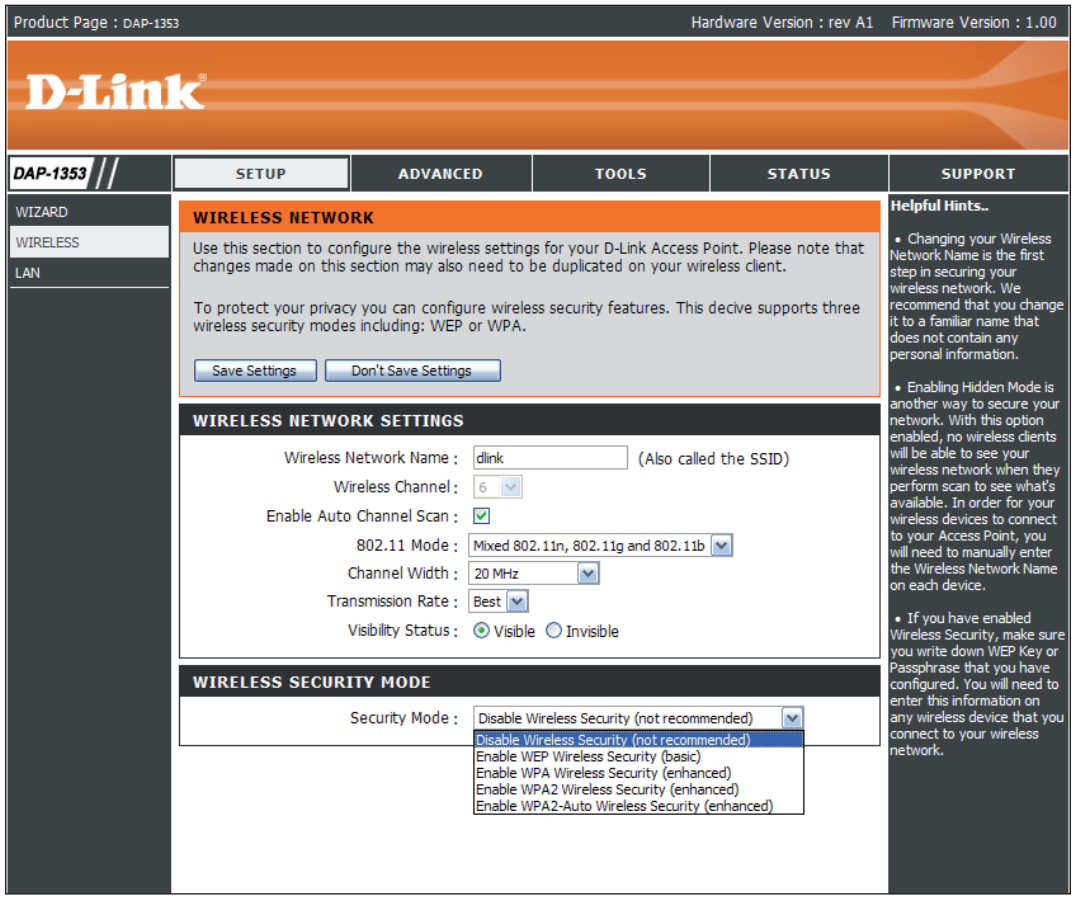
Click **Save**.


If you selected Best security, the following screen will show your Pre-Shared Key. This key should be used by wireless clients connecting to the wireless network:

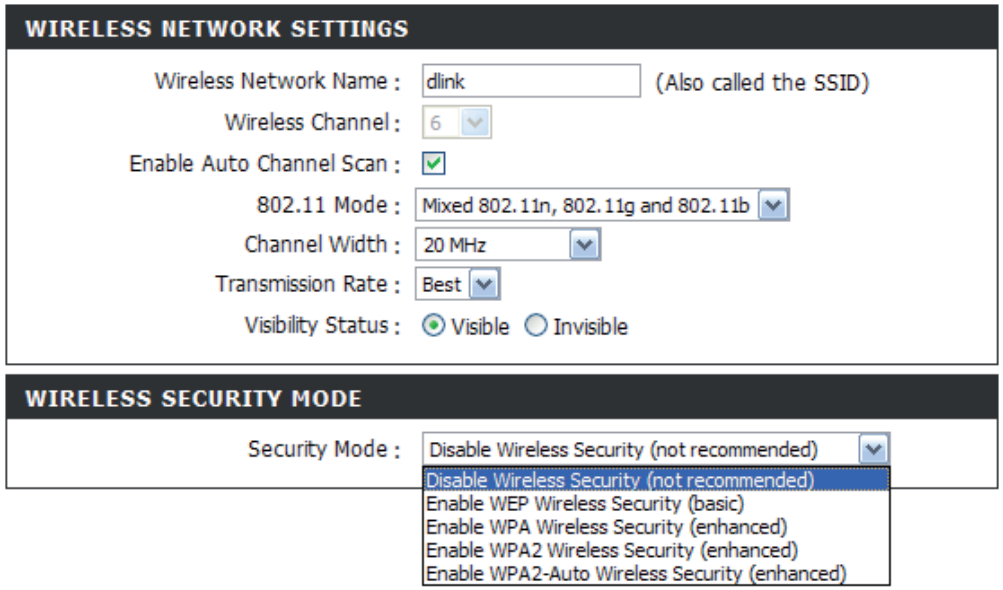
Click **Save**.

# Wireless

The Wireless page is used to configure the wireless settings for the access point. Wireless security settings are also configured on this page.



# Wireless Settings




**Wireless Network Name:** Service Set Identifier (SSID) is the name of your wireless network. Create a name using up to 32 characters. The SSID is case-sensitive, and set to **dlink** by default.

**Wireless Channel:** Indicates the channel setting for the DAP-1353. The Channel can be changed to fit the channel setting for an existing wireless network or to customize the wireless network.

**Enable Auto Chanel Scan:** Enabled by default, allows the DAP-1353 to select the channel with the least amount of interference.

**802.11 Mode:** Select the appropriate 802.11 mode based on the wireless clients in your network. The drop-down menu options are **802.11g Only**, **Mixed 802.11b/g**, **802.11b Only**, **802.11n Only**, or **Mixed 802.11b/g/n**.

**Channel Width:** Select the appropriate channel width between **20MHz** or **Auto 20/40MHz** from the pull-down menu. Select 20MHz if you are not using any 802.11n wireless clients.

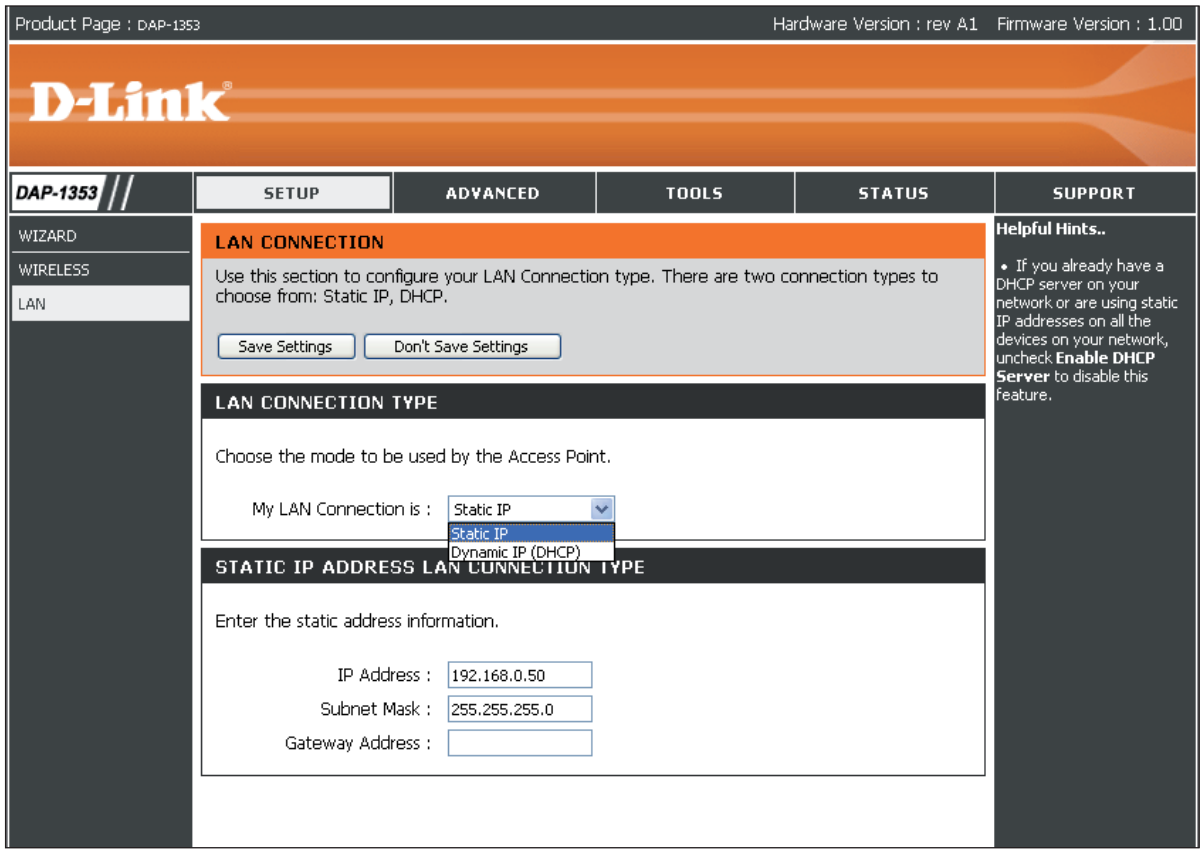
**Transmission Rate:** Select the transmission rate. It is strongly suggested to use the **Best** setting for optimal performance.

**Visibility Status:** Select Invisible if you do not want the SSID to be broadcast by the DAP-1353. This prevents the SSID from being seen by Site Survey utilities, so any wireless clients will have to be pre-configured with the SSID of the DAP-1353 in order to connect to it.

**Wireless Security Mode:** Select a wireless security setting. Options are None, WEP, WPA, WPA2 or WPA2-Auto. See p. 34 for a detailed explanation of the wireless security options.

# LAN

The LAN, or Local Area Network, is your private, internal network. This page allows you to configure the IP settings of the LAN interface for the DAP-1353. The IP address can be changed to your current network IP range.  This IP address cannot be seen from the Internet.



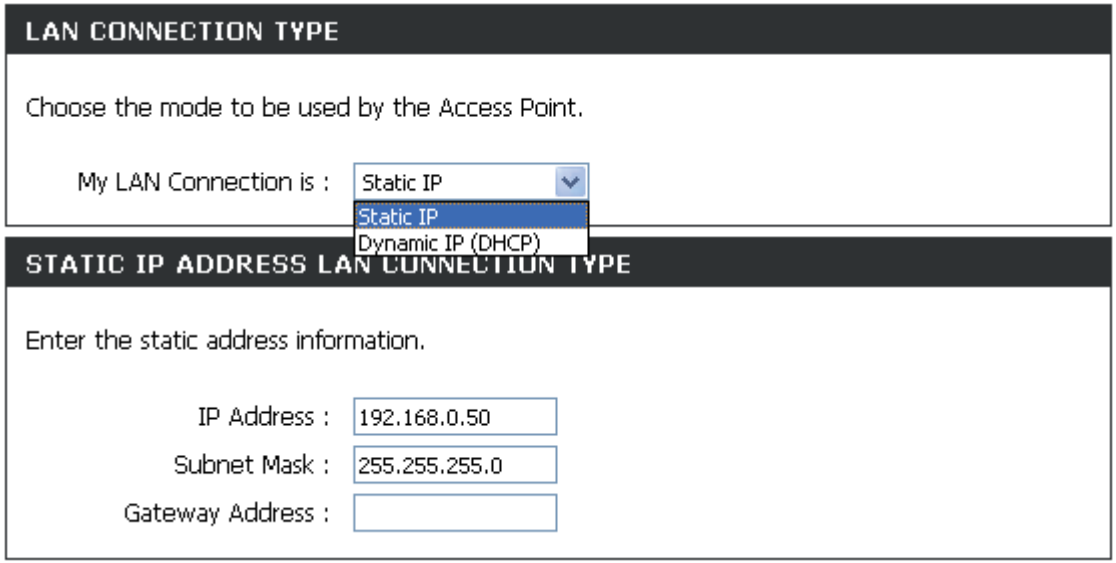
# LAN Settings

**My LAN Connection Is:** The DAP-1353 is set to Static by default. Select this option if you do not have a DHCP server on your network, or if you wish to assign a static IP address to the DAP-1353.

**IP Address:** If you change the IP address and save the settings, you will need to log back into the DAP-1353 using the new IP address.

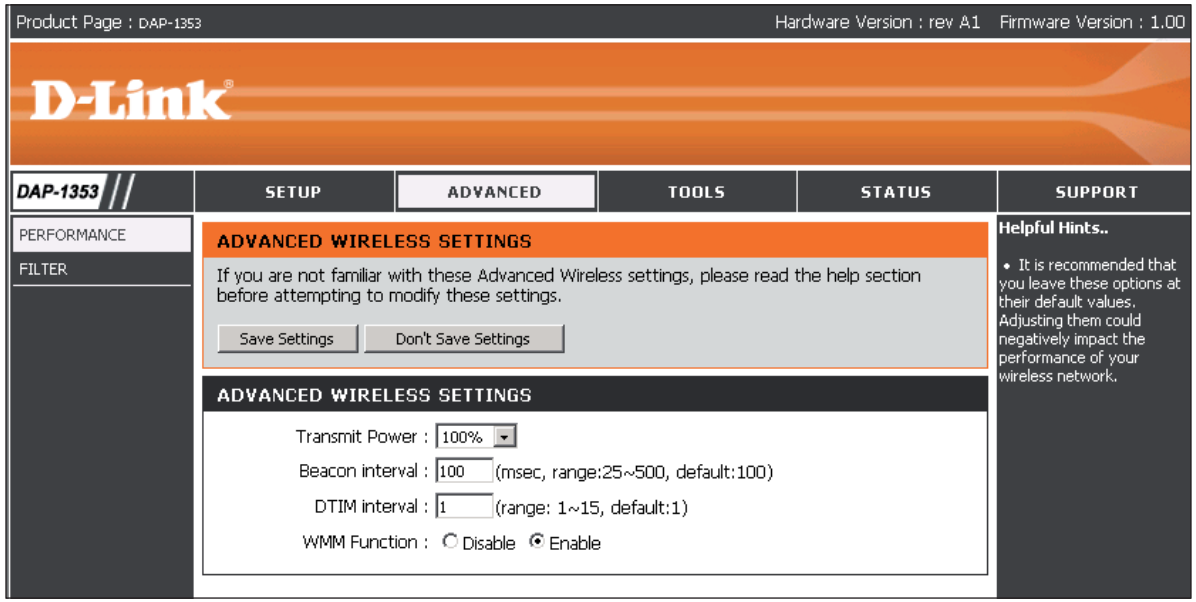
**Subnet Mask:** Enter the subnet mask. Default setting is 255.255.255.0.

**Gateway Address:** Enter the IP address of the your network gateway.

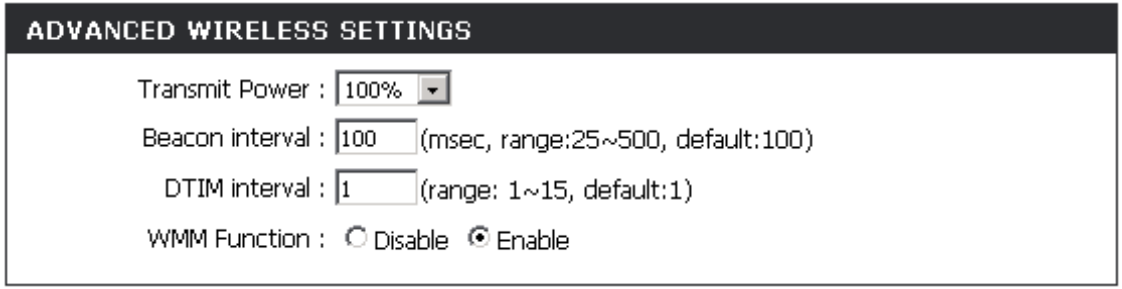


# Advanced
## Performance

This section contains advanced wireless configuration options. It is recommended that these options remain at their default values, as improperly adjusting them can have a negative effect on your wireless network perfomance. If you want to modify these settings and are unfamiliar with them, refer to the explainations below or the Support menu of the access point.



# Advanced Wireless Settings




**Transmit Power:** Set the transmit power of the antennas.

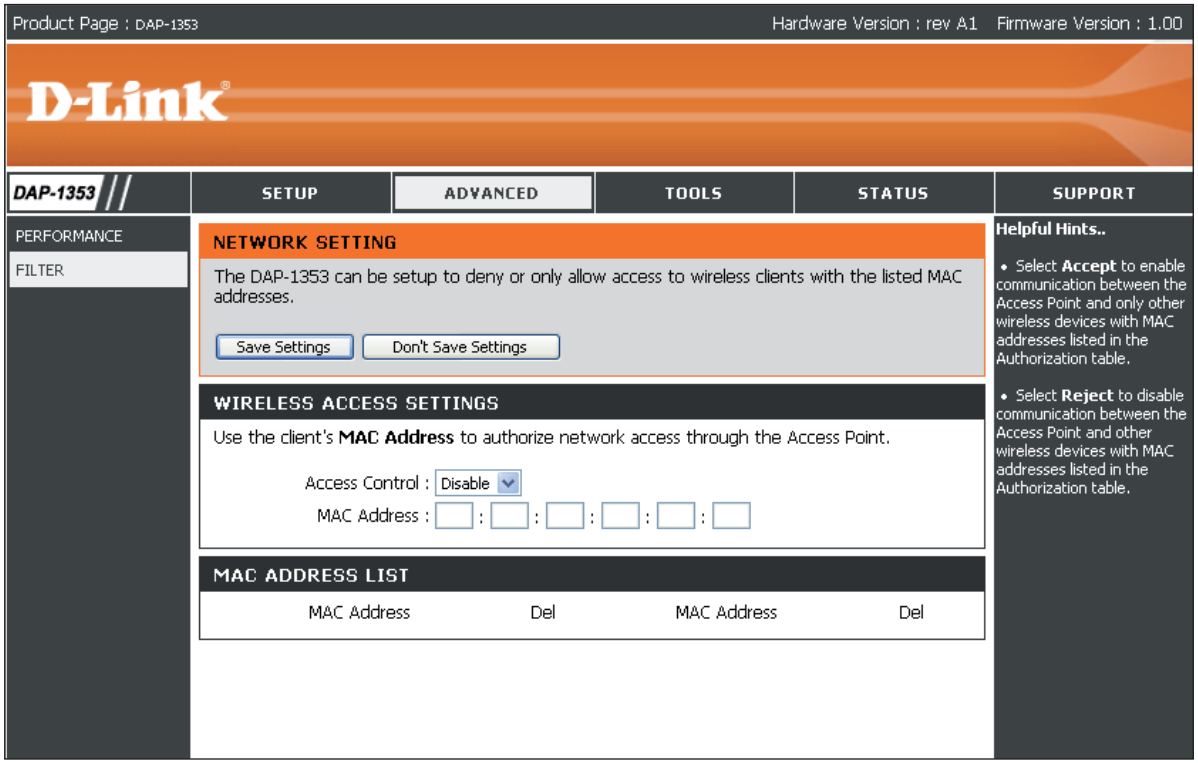
**Beacon Interval:** Beacons are packets sent by an Access Point to synchronize a wireless network. Specify a value. 100 is the default setting and is recommended.

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

**WMM Function:** WMM is QoS for your wireless network. Enable this option to improve the quality of video and voice applications for your wireless clients.

# Filter

Use MAC address filters to allow or deny wireless clients network access based on their MAC address.

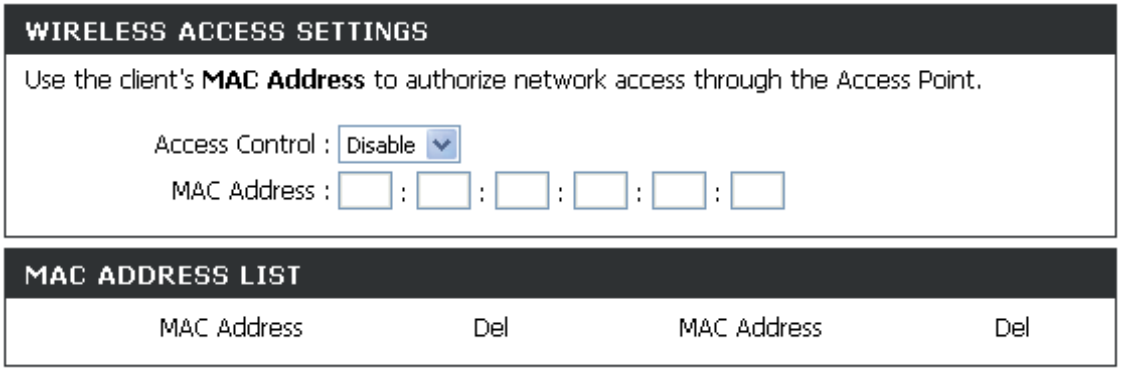


# Wireless Access Settings

**Access Control:** Disabled by default, select **Accept** or **Reject** to filter wireless access to the MAC addresses listed in the MAC Address List.

**MAC Address:** Enter MAC addresses to be associated with the selected Access Control option.

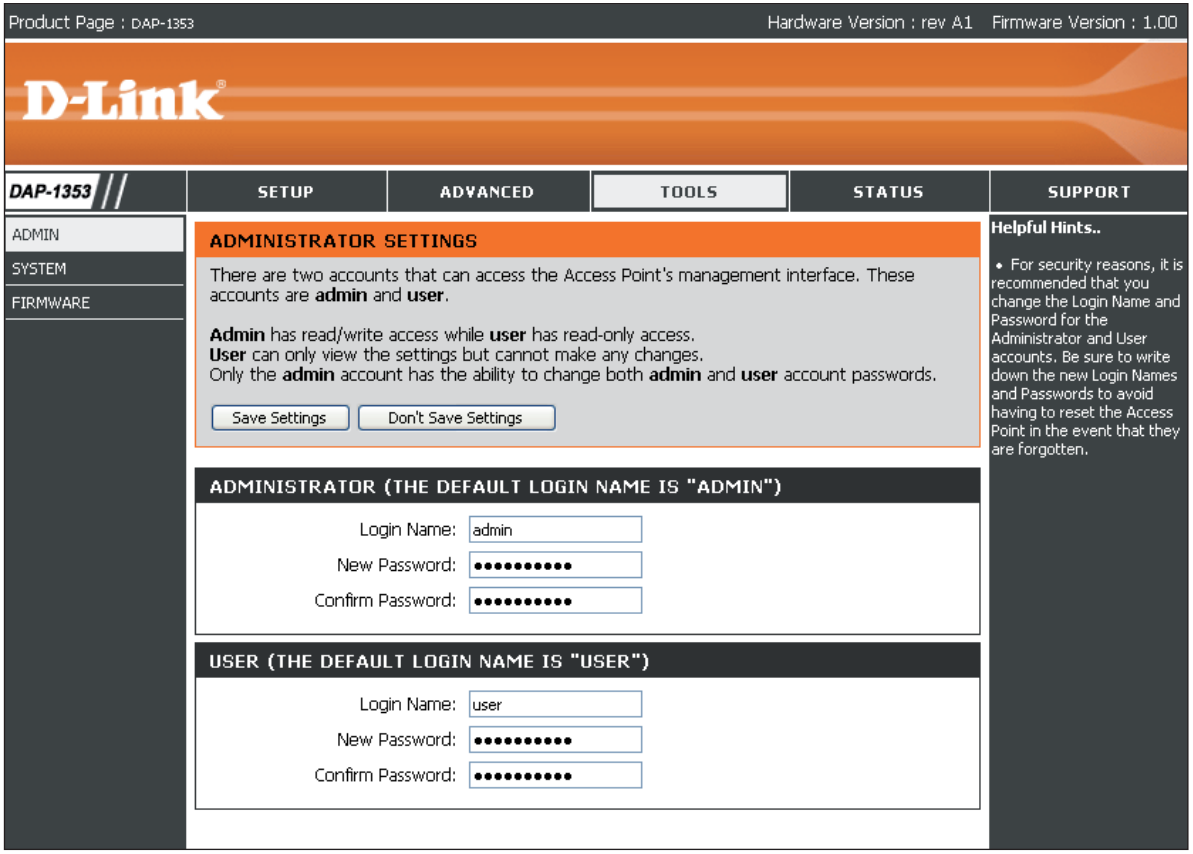
**MAC Address List:** Displays list of currently filtered MAC addresses.



# Tools

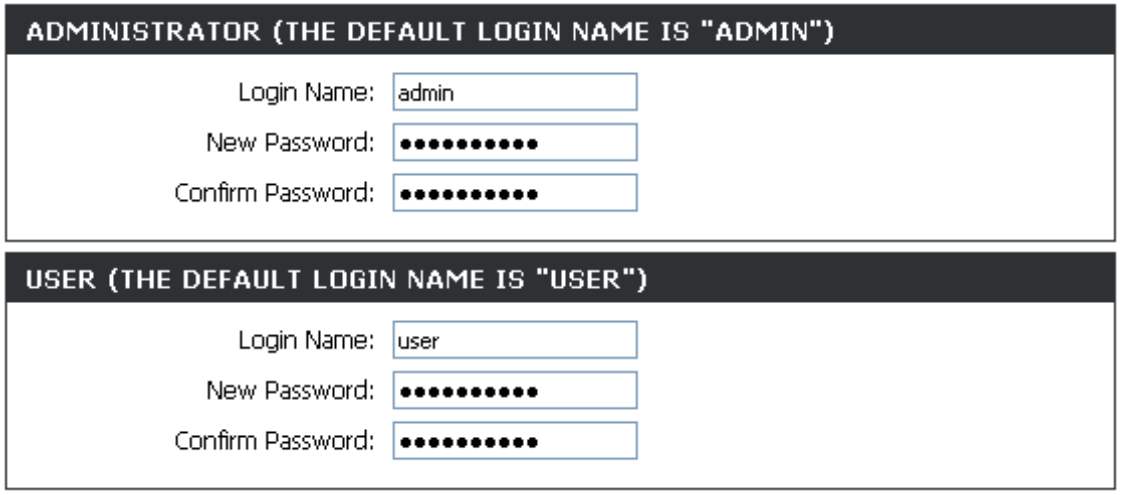
## Administrator Settings

This page will allow you to change the Administrator and User passwords. There are two accounts that can access the management interface through the web browser. The accounts are admin and user. Admin has read/write access while user has read-only access. User can only view the settings but cannot make any changes. Only the admin account has the ability to change both admin and user account passwords.

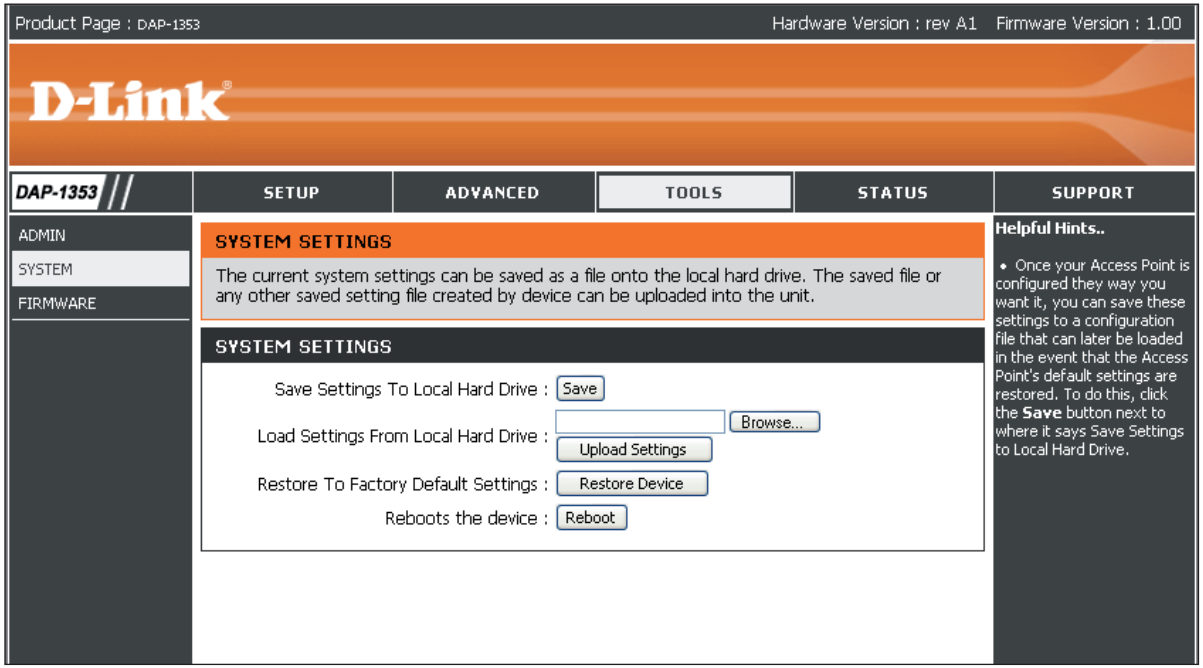


**Administrator Password:** Enter the new password for the Administrator login. The administrator can make changes to the settings.

**User Password:** Enter the new password for the User login. If you login as the User, you can only see the settings, but cannot change them.



# System Settings




**Save Settings to Local Hard Drive:** Use this option to save the current access point configuration settings to a file on the hard disk of the computer you are using. First, click the **Save** button. You will then see a file dialog, where you can select a location and file name for the settings.

**Load Settings from Local Hard Drive:** Use this option to load previously saved access point configuration settings. First, click the **Browse** control to find a previously saved file of configuration settings. Then, click the **Load** button to transfer those settings to the access point.

**Restore to Factory Default Settings:** This option will restore all configuration settings back to the settings that were in effect at the time the access point was shipped from the factory. Any settings that have not been saved will be lost, including any rules that you have created. If you want to save the current access point configuration settings, click the **Save** button above.

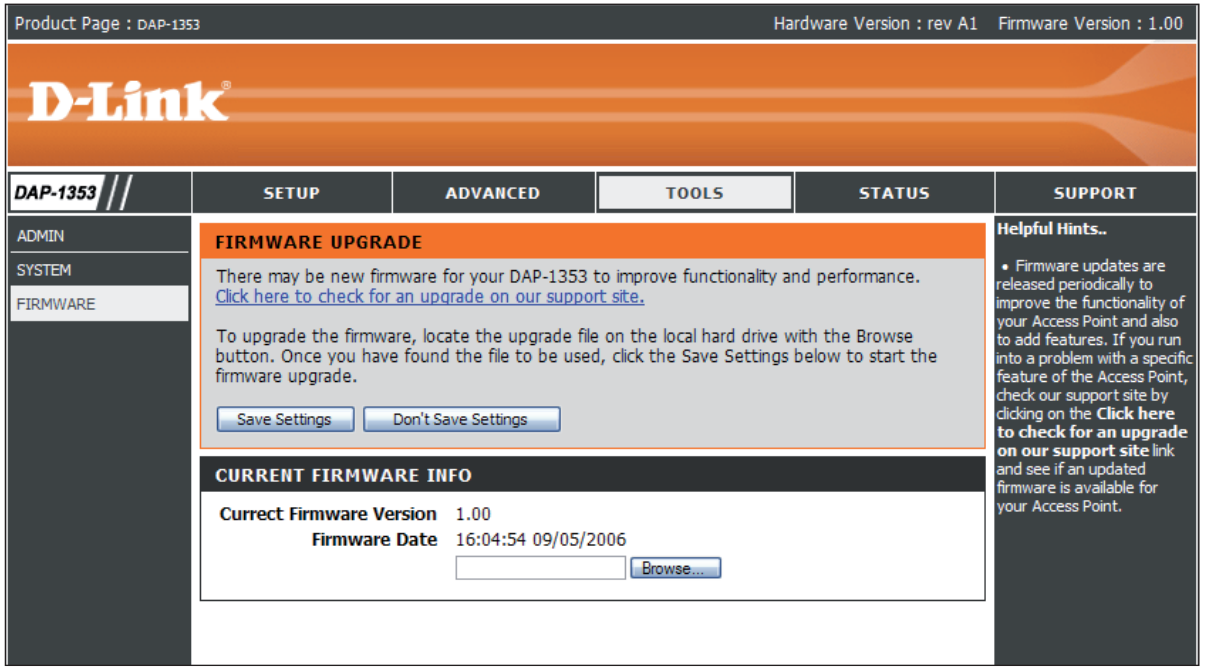
**Reboot:** Reboots the DAP-1353.

# Update Firmware

You can upgrade the firmware of the access point here. Make sure the firmware you want to use is on the local hard drive of the computer. Click on **Browse** to locate the firmware file to be used for the update. Please check the D-Link support website for firmware updates at http://support.dlink.com. You can download firmware upgrades to your hard drive from the this site.

**Firmware Upgrade:** Click on the link in this screen to find out if there is an updated firmware; if so, download the new firmware to your hard drive.

**Browse:** After you have downloaded the new firmware, click **Browse** in this window to locate the firmware update on your hard drive. Click **Save Settings** to complete the firmware upgrade.

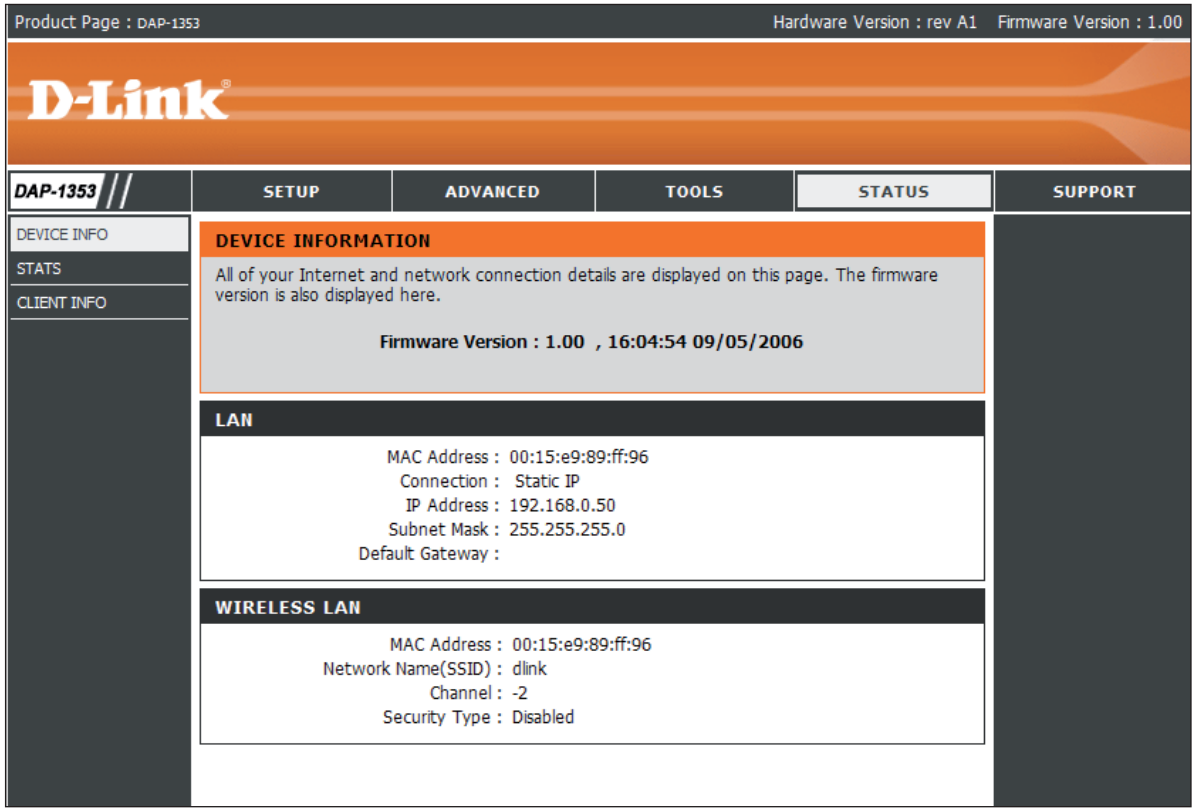


# Status
## Device Info

This page displays the current information for the DAP-1353. It will display the LAN and Wireless information.

**LAN:** Displays the MAC address and the private (local) IP settings for the access point.

**Wireless LAN:** Displays the wireless MAC address and your wireless settings such as SSID, Channel and Security Type.

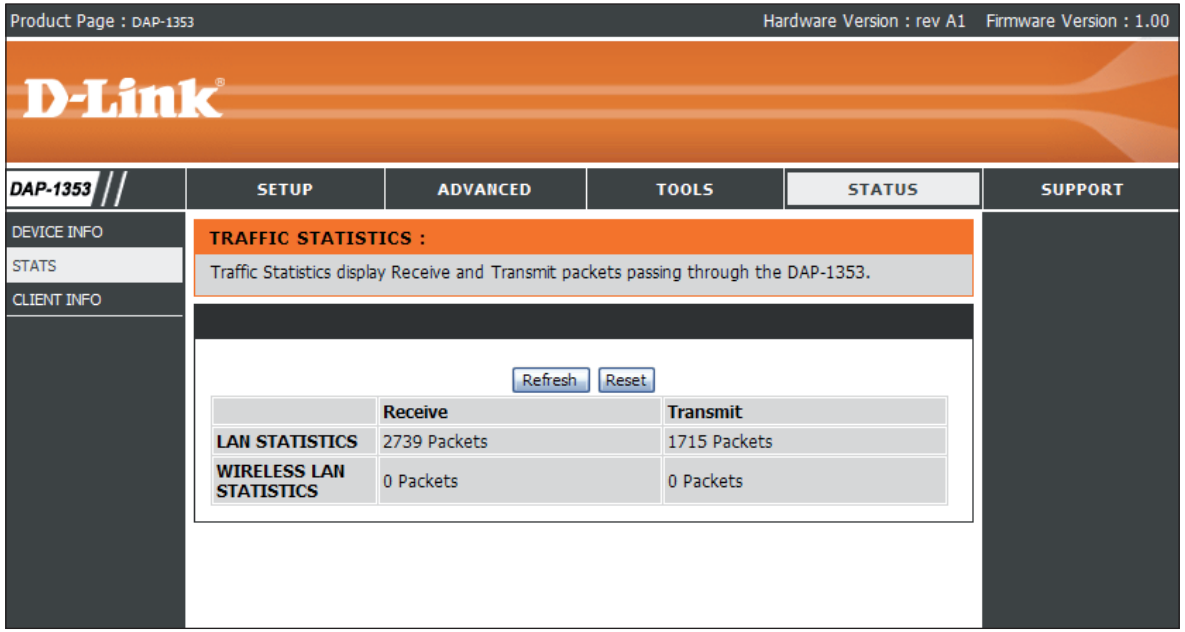


# Stats

The screen below displays the Traffic Statistics. Here you can view the amount of packets that pass through the DAP-1353 on the LAN and Wireless network. The traffic counter will reset if the device is rebooted.

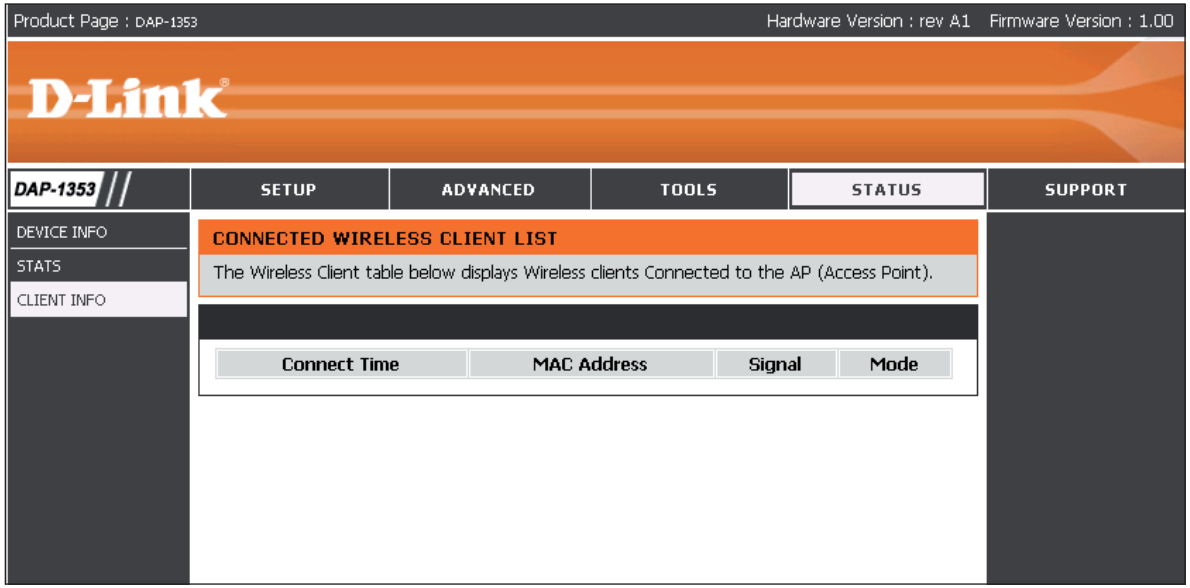
**Refresh** Click Refresh to refresh the Traffic Statistics display.

**Reset** Click Reset to reset the Traffic Statistics.



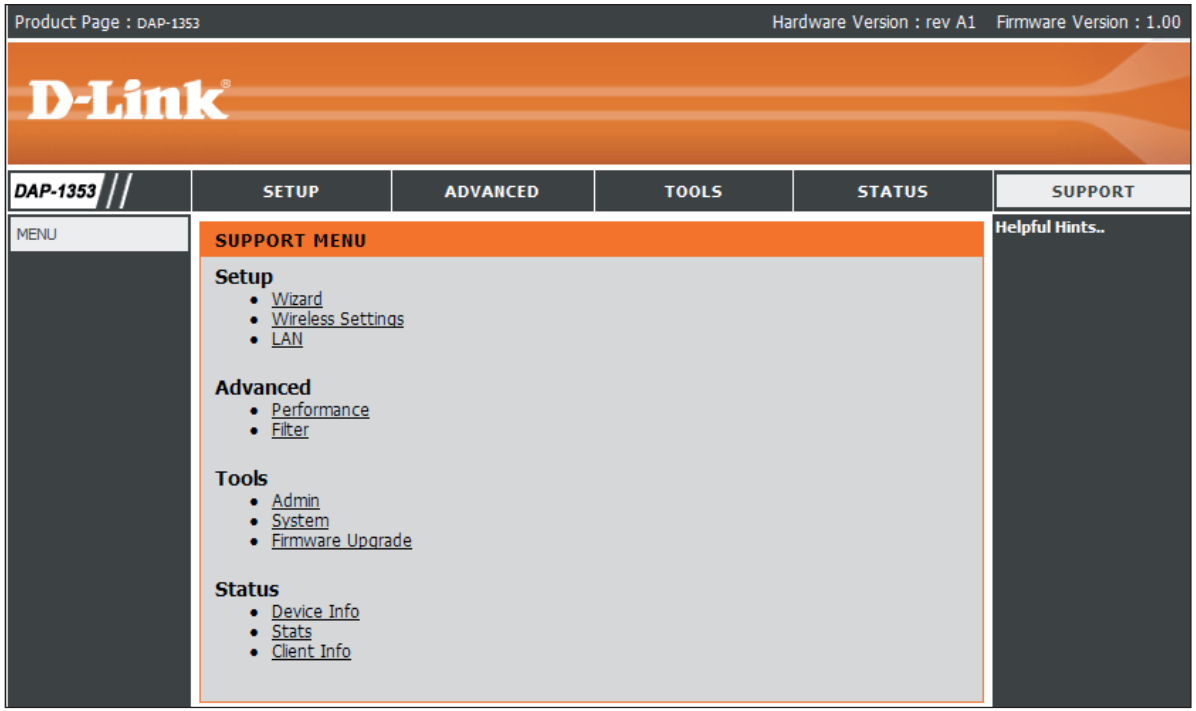
# Client Info

The Connected Wireless Client list shows the currently connected wireless clients. This table also displays the MAC address and wireless mode of the connected wireless clients.



# Support

The Support page contains an index of links to help topics for each function of the DAP-1353.



# Wireless Security

This section will show you the different levels of security you can use to protect your data from intruders. The DAP-1353 offers the following types of security:

- WPA-Personal (Pre-Shared Key)
- WPA2-Personal (Pre-Shared Key 2)
- WPA2-Auto-Personal (Auto)
- WEP (Wired Equivalent Privacy)
- WPA-Enterprise (Extensible Authentication Protocol)
- WPA2-Enterprise (Extensible Authentication Protocol 2)
- WPA2-Auto-Enterprise (Extensible Authentication Protocol 2 Auto)

## What is WEP?

WEP stands for Wired Equivalent Privacy. It is based on the IEEE 802.11 standard and uses the RC4 encryption algorithm. WEP provides security by encrypting data over your wireless network so that it is protected as it is transmitted from one wireless device to another.

To gain access to a WEP network, you must know the key. The key is a string of characters that you create. When using WEP, you must determine the level of encryption. The type of encryption determines the key length. 128-bit encryption requires a longer key than 64-bit encryption. Keys are defined by entering in a string in HEX (hexadecimal - using characters 0-9, A-F) or ASCII (American Standard Code for Information Interchange – alphanumeric characters) format. ASCII format is provided so you can enter a string that is easier to remember. The ASCII string is converted to HEX for use over the network. Four keys can be defined so that you can change keys easily.

# Configure WEP

It is recommended to enable encryption on your wireless access point before your wireless network adapters. Please establish wireless connectivity before enabling encryption. Your wireless signal may degrade when enabling encryption due to the added overhead.

**1.** Log into the web-based configuration by opening a web browser and entering the IP address of the access point (192.168.0.50). Click on **Wireless Settings** on the left side.

2. Next to *Security Mode*, select **Enable WEP Security**.

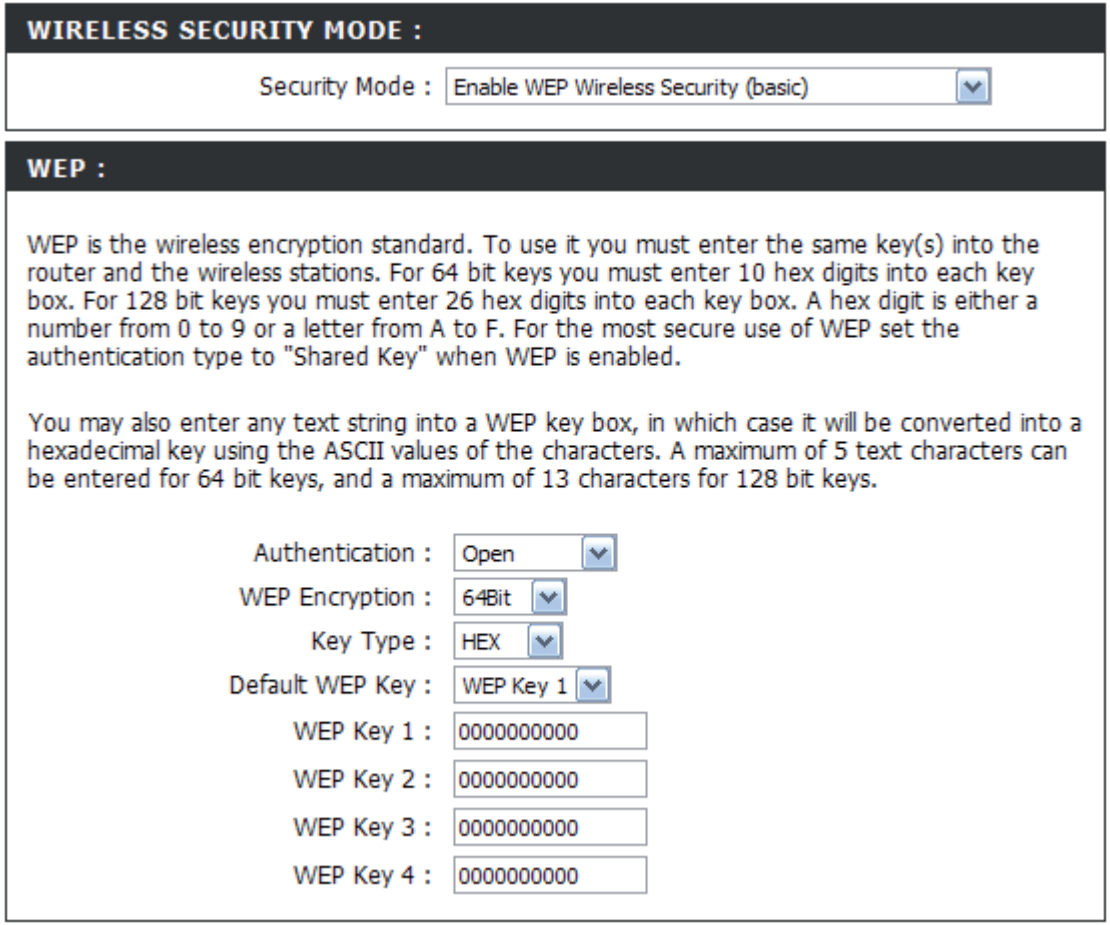
3. Next to *Authentication*, select **Shared Key** or **Open**.

4. Select either **64-bit** or **128-bit** encryption from the drop-down menu next to *WEP Encryption*.

5. Next to *Key Type*, select either **Hex** or **ASCII**.

   Hex (recommended) - Letters A-F and numbers 0-9 are valid.

   ASCII - All numbers and letters are valid.



6. Next to *Key 1*, enter a WEP key that you create. Make sure you enter this key exactly on all your wireless devices. You may enter up to 4 different keys.

7. Click **Save Settings** to save your settings. If you are configuring the access point with a wireless adapter, you will lose connectivity until you enable WEP on your adapter and enter the same WEP key as you did on the access point.

# What is WPA?

WPA, or Wi-Fi Protected Access, is a Wi-Fi standard that was designed to improve the security features of WEP (Wired Equivalent Privacy).

The 2 major improvements over WEP:

- Improved data encryption through the Temporal Key Integrity Protocol (TKIP). TKIP scrambles the keys using a hashing algorithm and, by adding an integrity-checking feature, ensures that the keys haven't been tampered with. WPA2 is based on 802.11i and uses Advanced Encryption Standard (AES) instead of TKIP.

- User authentication, which is generally missing in WEP, through the extensible authentication protocol (EAP). WEP regulates access to a wireless network based on a computer's hardware-specific MAC address, which is relatively simple to be sniffed out and stolen. EAP is built on a more secure public-key encryption system to ensure that only authorized network users can access the network.

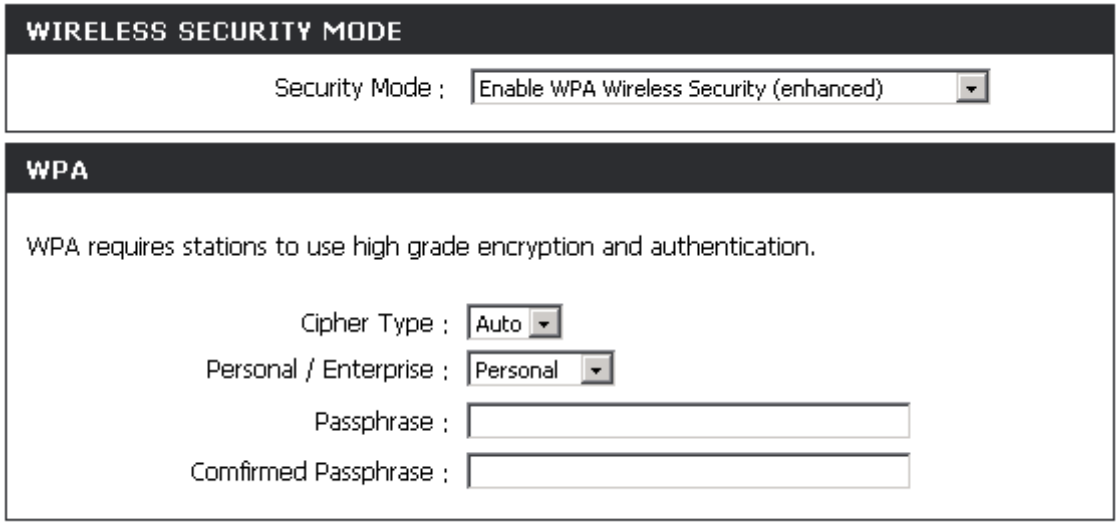
WPA-PSK/WPA2-PSK uses a passphrase or key to authenticate your wireless connection. The key is an alpha-numeric password between 8 and 63 characters long. The password can include symbols (!?*&_) and spaces. This key must be the exact same key entered on your wireless router or access point.

WPA/WPA2 incorporates user authentication through the Extensible Authentication Protocol (EAP). EAP is built on a more secure public key encryption system to ensure that only authorized network users can access the network.

# Configure WPA-Personal

It is recommended to enable encryption on your wireless access point before your wireless network adapters. Please establish wireless connectivity before enabling encryption. Your wireless signal may degrade when enabling encryption due to the added overhead.

**1.** Log into the web-based configuration by opening a web browser and entering the IP address of the access point (192.168.0.50). Click on **Wireless Settings** on the left side.




2. Next to *Security Mode*, select **Enable WPA Wireless Security**, **Enable WPA2 Wireless Security**, or **Enable WPA2-Auto Wireless Security**.

3. Next to *Cipher Mode*, select **TKIP, AES,** or **Auto**.

4. Next to *Personal / Enterprise*, select **Personal**.

5. Next to *Passphrase*, enter a key (passphrase). The key 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.

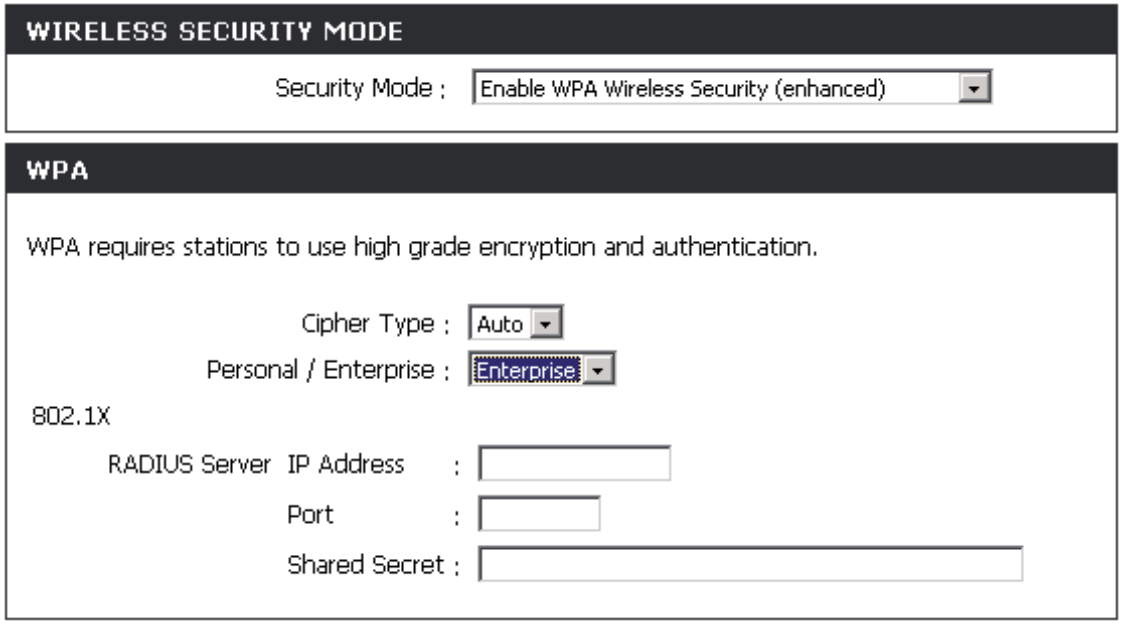
6. Enter the passphrase again next to *Confirmed Passphrase*.

7. Click **Save Settings** to save your settings. If you are configuring the access point with a wireless adapter, you will lose connectivity until you enable WPA-Personal, WPA2-Personal, or WPA2-Auto-Personal on your adapter and enter the same passphrase as you did on the access point.

# Configure WPA (Enterprise)

It is recommended to enable encryption on your wireless access point before your wireless network adapters. Please establish wireless connectivity before enabling encryption. Your wireless signal may degrade when enabling encryption due to the added overhead.

**1.** Log into the web-based configuration by opening a web browser and entering the IP address of the access point (192.168.0.50). Click on **Wireless Settings** on the left side.




2. Next to *Security Mode*, select **Enable WPA Wireless Security**, **Enable WPA2 Wireless Security**, or **Enable WPA2-Auto Wireless Security**.

3. Next to *Cipher Mode*, select **TKIP, AES,** or **Auto**.

4. Next to *Personal / Enterprise*, select **Enterprise**.

5. Next to *RADIUS Server* enter the IP Address of your RADIUS server.

6. Next to *Port*, enter the port you are using with your RADIUS server. 1812 is the default port.

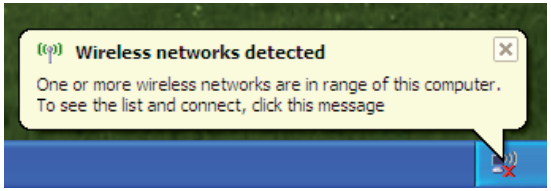
7. Next to *Shared Secret*, enter the security key.

8. Click **Apply Settings** to save your settings.

# Connect to a Wireless Network Using Windows® XP

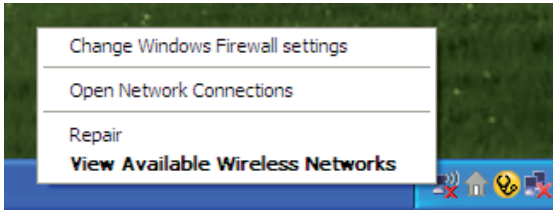
Windows® XP users may use the built-in wireless utility (Zero Configuration Utility). The following instructions are for Service Pack 2 users. If you are using another company's utility or Windows® 2000, please refer to the user manual of your wireless adapter for help with connecting to a wireless network. Most utilities will have a "site survey" option similar to the Windows® XP utility as seen below.

If you receive the **Wireless Networks Detected** bubble, click on the center of the bubble to access the utility.



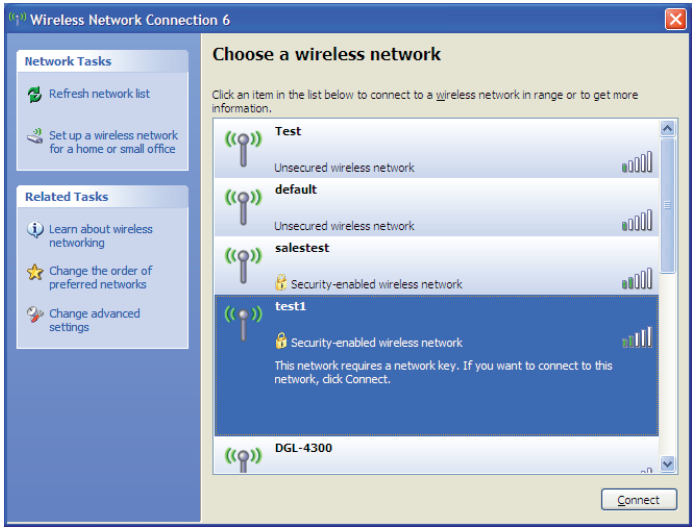

or

Right-click on the wireless computer icon in your system tray (lower-right corner next to the time). Select **View Available Wireless Networks**.




The utility will display any available wireless networks in your area. Click on a network (displayed using the SSID) and click the **Connect** button.

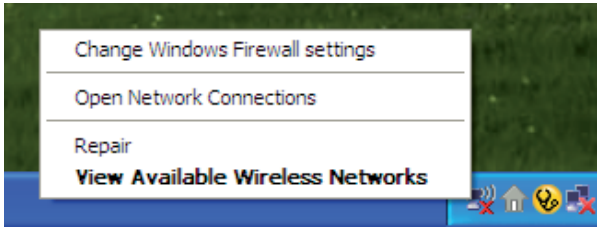
If you get a good signal but cannot access the Internet, check you TCP/IP settings for your wireless adapter. Refer to the **Networking Basics** section in this manual for more information.



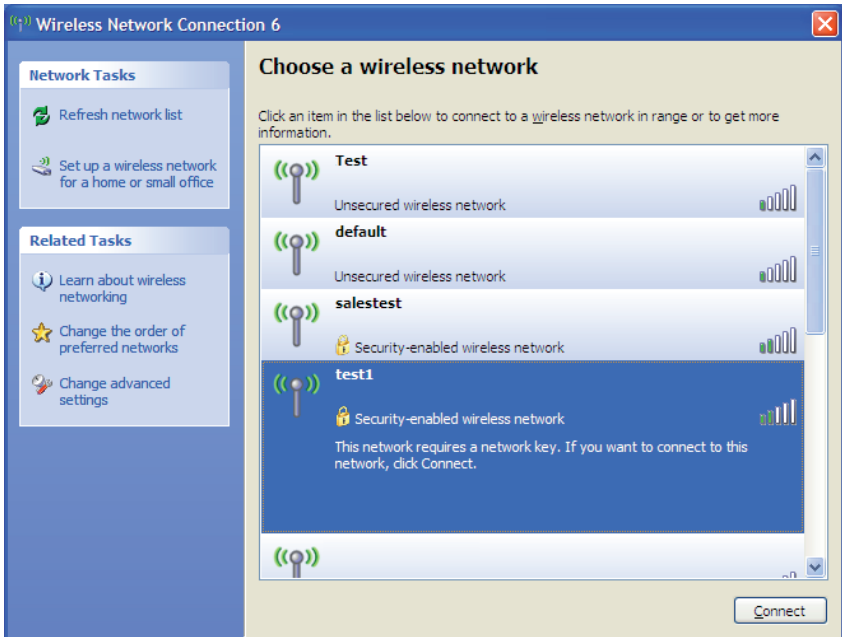
# Configure WEP

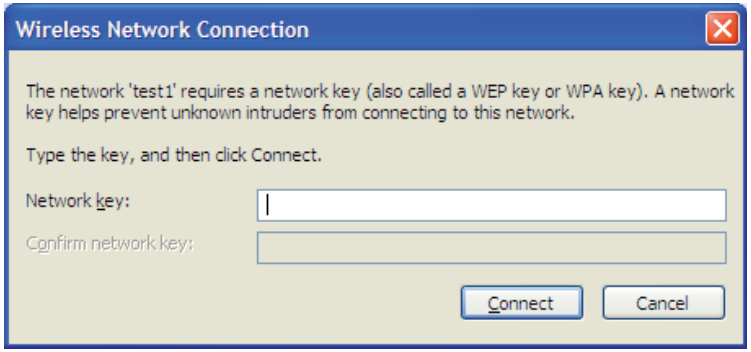
It is recommended to enable WEP on your wireless access point before configuring your wireless adapter. If you are joining an existing network, you will need to know the WEP key being used.

1. Open the Windows® XP Wireless Utility by right-clicking on the wireless computer icon in your system tray (lower-right corner of screen). Select **View Available Wireless Networks**.




2. Highlight the wireless network (SSID) you would like to connect to and click **Connect**.





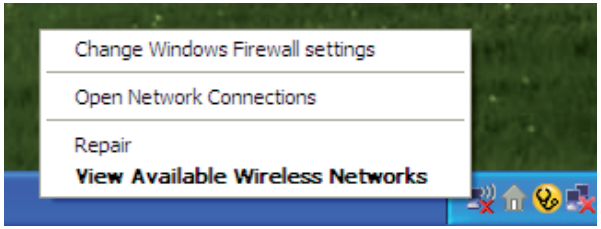

**3.** The **Wireless Network Connection** box will appear. Enter the same WEP key that is on your access point and click **Connect**.

It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the WEP settings are correct. The WEP key must be exactly the same as on the wireless access point.

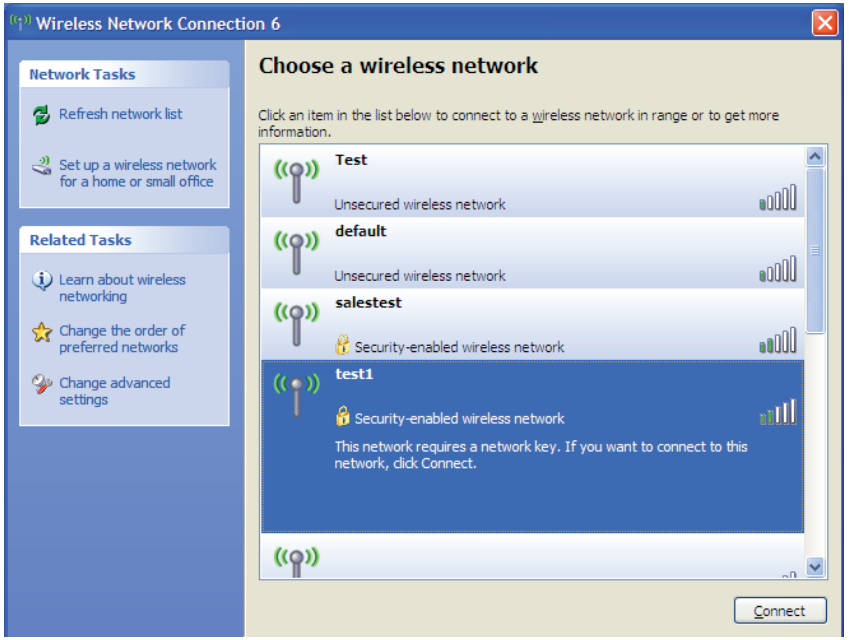
# Configure WPA-Personal

It is recommended to enable WEP on your wireless access point before configuring your wireless adapter. If you are joining an existing network, you will need to know the WEP key being used.

**1.** Open the Windows® XP Wireless Utility by right-clicking on the wireless computer icon in your system tray (lower-right corner of screen). Select **View Available Wireless Networks**.

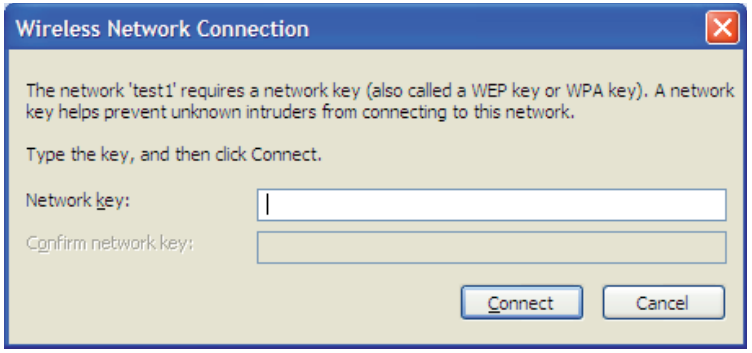



**2.** Highlight the wireless network (SSID) you would like to connect to and click **Connect**.



**3.** The **Wireless Network Connection** box will appear. Enter the WPA-Personal passphrase and click **Connect**.

It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the WPA-Personal settings are correct. The WPA-Personal passphrase must be exactly the same as on the wireless access point.



# Troubleshooting

This chapter provides solutions to problems that can occur during the installation and operation of the DAP-1353. Read the following descriptions if you are having problems. (The examples below are illustrated in Windows® XP. If you have a different operating system, the screenshots on your computer will look similar to the following examples.)

**1. Why can't I access the web-based configuration utility?**

When entering the IP address of the D-Link access point (192.168.0.50 for example), you are not connecting to a website on the Internet or have to be connected to the Internet. The device has the utility built-in to a ROM chip in the device itself. Your computer must be on the same IP subnet to connect to the web-based utility.

- Make sure you have an updated Java-enabled web browser. We recommend the following:
    - Internet Explorer 6.0 or higher
    - Firefox 1.5 or higher
- Verify physical connectivity by checking for solid link lights on the device. If you do not get a solid link light, try using a different cable or connect to a different port on the device if possible. If the computer is turned off, the link light may not be on.
- Disable any internet security software running on the computer. Software firewalls such as Zone Alarm, Black Ice, Sygate, Norton Personal Firewall, and Windows® XP firewall may block access to the configuration pages. Check the help files included with your firewall software for more information on disabling or configuring it.

- Configure your Internet settings:

    - Go to **Start** > **Settings** > **Control Panel**. Double-click the **Internet Options** Icon. From the **Security** tab, click the button to restore the settings to their defaults.

    - Click the **Connection** tab and set the dial-up option to Never Dial a Connection. Click the LAN Settings button. Make sure nothing is checked. Click **OK**.

    - Go to the **Advanced** tab and click the button to restore these settings to their defaults. Click **OK** three times.

    - Close your web browser (if open) and open it.

- Access the web management. Open your web browser and enter the IP address of your D-Link access point in the address bar. This should open the login page for your the web management.

- If you still cannot access the configuration, unplug the power to the access point for 10 seconds and plug back in. Wait about 30 seconds and try accessing the configuration. If you have multiple computers, try connecting using a different computer.

**2. What can I do if I forgot my password?**

If you forgot your password, you must reset your access point. Unfortunately this process will change all your settings back to the factory defaults.

To reset the access point, locate the reset button (hole) on the rear panel of the unit. With the access point powered on, use a paperclip to hold the button down for 10 seconds. Release the button and the access point will go through its reboot process. Wait about 30 seconds to access the access point. The default IP address is 192.168.0.50. When logging in, the username is **admin** and leave the password box empty.

# 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. Strictly adhering to the IEEE standard, the D-Link wireless family of products will allow you to securely access the data you want, when and where you want it. You will be able to enjoy the freedom that wireless networking delivers.

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

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

Under many circumstances, it may be desirable for mobile network devices to link to a conventional Ethernet LAN in order to use servers, printers or an Internet connection supplied through the wired LAN. A Wireless Router is a device used to provide this link.

## What is Wireless?

Wireless or Wi-Fi technology is another way of connecting your computer to the network without using wires. Wi-Fi uses radio frequency to connect wirelessly, so you have the freedom to connect computers anywhere in your home or office network.

## Why D-Link Wireless?

D-Link is the worldwide leader and award winning designer, developer, and manufacturer of networking products. D-Link delivers the performance you need at a price you can afford. D-Link has all the products you need to build your network.

## How does wireless work?

Wireless works similar to how cordless phone work, through radio signals to transmit data from one point A to point B. But wireless technology has restrictions as to how you can access the network. You must be within the wireless network range area to be able to connect your computer. There are two different types of wireless networks Wireless Local Area Network (WLAN), and Wireless Personal Area Network (WPAN).

### Wireless Local Area Network (WLAN)

In a wireless local area network, a device called an Access Point (AP) connects computers to the network. The access point has a small antenna attached to it, which allows it to transmit data back and forth over radio signals. With an indoor access point, the signal can travel up to 300 feet. With an outdoor access point the signal can reach out up to 30 miles to serve places like manufacturing plants, industrial locations, college and high school campuses, airports, golf courses, and many other outdoor venues.

### Wireless Personal Area Network (WPAN)

Bluetooth is the industry standard wireless technology used for WPAN. Bluetooth devices in WPAN operate in a range up to 30 feet away.

Compared to WLAN the speed and wireless operation range are both less than WLAN, but in return it doesn't use nearly as much power which makes it ideal for personal devices, such as mobile phones, PDAs, headphones, laptops, speakers, and other devices that operate on batteries.

## Who uses wireless?

Wireless technology as become so popular in recent years that almost everyone is using it, at home and in the office.

**Home**

- Gives everyone at home broadband access
- Surf the web, check email, instant message, and etc.
- Gets rid of the cables around the house
- Simple and easy to use

**Small Office and Home Office**

- Stay on top of everything at home as you would at office
- Remotely access your office network from home
- Share Internet connection and printer with multiple computers
- No need to dedicate office space

## Where is wireless used?

Wireless technology is expanding everywhere not just at home or office. People like the freedom of mobility and it's becoming so popular that more and more public facilities now provide wireless access to attract people. The wireless connection in public places is usually called "hotspots".

Using a D-Link Cardbus Adapter with your laptop, you can access the hotspot to connect to Internet from remote locations like Airports, Hotels, Coffee Shops, Libraries, Restaurants, and Convention Centers.

Wireless network is easy to setup, but if you're installing it for the first time it could be quite a task not knowing where to start. That's why we've put together a few setup steps and tips to help you through the process of setting up a wireless network.

## Tips

Here are a few things to keep in mind, when you install a wireless network.

### Centralize your Access Point

Make sure you place the router/access point in a centralized location within your network for the best performance. Try to place the router/access point as high as possible in the room, so the signal gets dispersed throughout your home. If you have a two-story home, you may need a repeater to boost the signal to extend the range.

### Eliminate Interference

Place home appliances such as cordless telephones, microwaves, and televisions as far away as possible from the router/access point. This will significantly reduce any interference that the appliances might cause if operating on same frequency.

**Security**

Don't let you next-door neighbors or intruders connect to your wireless network. Secure your wireless network by turning on the WPA or WEP security feature on the access point. Refer to product manual for detail information on how to set it up.

# Wireless Modes

There are basically two modes of networking:

- **Infrastructure** – All wireless clients will connect to an access point or wireless router.

- **Ad-Hoc** – Directly connecting to another computer, for peer-to-peer communication, using wireless network adapters on each computer.

An Infrastructure network contains an Access Point or wireless router. All the wireless devices, or clients, will connect to the wireless router or access point.

An Ad-Hoc network contains only clients, such as laptops with wireless cardbus adapters. All the adapters must be in Ad-Hoc mode to communicate.

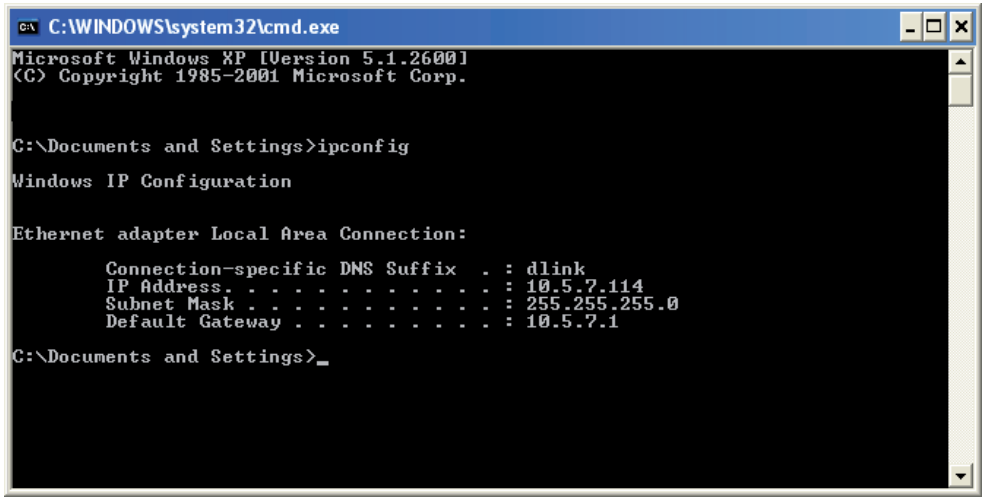
# Networking Basics

## Check your IP address

After you install your network adapter, by default, the TCP/IP settings should be set to obtain an IP address from a DHCP server (i.e. wireless router) automatically. To verify your IP address, please follow the steps below.

Click on **Start** > **Run**. In the run box type ***cmd*** and click **OK**.

At the prompt, type ***ipconfig*** and press **Enter**.




This will display the IP address, subnet mask, and the default gateway of your adapter.

If the address is 0.0.0.0, check your adapter installation, security settings, and the settings on your router. Some firewall software programs may block a DHCP request on newly installed adapters.

If you are connecting to a wireless network at a hotspot (e.g. hotel, coffee shop, airport), please contact an employee or administrator to verify their wireless network settings.

# Statically Assign an IP address

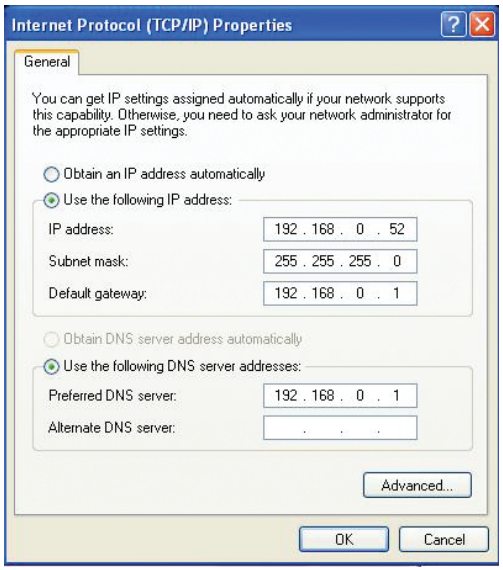
If you are not using a DHCP capable gateway/router, or you need to assign a static IP address, please follow the steps below:

**Step 1**
Windows® XP - Click on **Start** > **Control Panel** > **Network Connections**.
Windows® 2000 - From the desktop, right-click **My Network Places** > **Properties**.

**Step 2**
Right-click on the **Local Area Connection** which represents your network adapter and select **Properties**.

**Step 3**
Highlight **Internet Protocol (TCP/IP)** and click **Properties**.

**Step 4**
Click **Use the following IP address** and enter an IP address that is on the same subnet as your network or the LAN IP address on your router.




Example: If the router´s LAN IP address is 192.168.0.1, make your IP address 192.168.0.X where X is a number between 2 and 99. Make sure that the number you choose is not in use on the network. Set Default Gateway the same as the LAN IP address of your router (192.168.0.1).

Set Primary DNS the same as the LAN IP address of your router (192.168.0.1). The Secondary DNS is not needed or you may enter a DNS server from your ISP.

**Step 5**
Click **OK** twice to save your settings.

# Technical Specifications

**Standards**

- IEEE 802.11n (draft)
- IEEE 802.11g
- IEEE 802.11b
- IEEE 802.3
- IEEE 802.3u

**Security**

- WPA-Personal
- WPA2-Personal
- WPA-Enterprise
- WPA2-Enterprise
- 64/128-bit WEP

**Wireless Signal Rates***

- 108Mbps
- 54Mbps
- 36Mbps
- 18Mbps
- 11Mbps
- 6Mbps
- 2Mbps
- 48Mbps
- 24Mbps
- 12Mbps
- 9Mbps
- 5.5Mbps
- 1Mbps

**MSC (0-15)**

- 130Mbps (270)
- 104Mbps (216)
- 66Mbps (135)
- 52Mbps (108)
- 26Mbps (54)
- 12Mbps (27)
- 117Mbps (243)
- 78Mbps (162)
- 58.5Mbps (121.5)
- 39Mbps (81)
- 19.5Mbps (40.5)
- 6.5Mbps (13.5)

**Frequency Range**
2.4GHz to 2.483GHz

**Transmitter Output Power**
15dBm ± 2dB

**External Antenna Type**
Three (3) detachable reverse SMA Antennas

**LEDs**

- Power
- WLAN
- Internet
- LAN (10/100)
- Status
- USB

**Operating Temperature**
32°F to 131°F ( 0°C to 55°C)

**Humidity**
95% maximum (non-condensing)

**Safety & Emissions**

- FCC
- CE

**Dimensions**

- L = 7.6 inches
- W = 4.6 inches
- H = 1.2inches

**Warranty**
1 Year

* Maximum wireless signal rate derived from IEEE Standard 802.11g and Draft 802.11n 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. Environmental factors will adversely affect wireless signal range.

D-Link®

Building Networks for People

Version 1.0

Oct. 25, 2006