



# User Manual

## Wireless N 150 Bridge/Access Point

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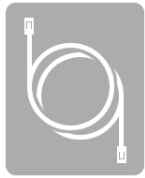
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# Package Contents



DAP-1160 Wireless N 150 Bridge/Access Point



Ethernet Cable



Power Adapter

**Note:** Using a power supply with a different voltage rating than the one included with the DAP-1160 will cause damage and void the warranty for this product.

# System Requirements

<b>Network Requirements</b>	<ul style="list-style-type: none"><li>• An Ethernet-based Network</li><li>• IEEE 802.11n/g wireless clients (AP)</li><li>• IEEE 802.11n/g wireless network (Client Mode)</li><li>• 10/100 Ethernet</li></ul>
<b>Web-based Configuration Utility Requirements</b>	<p><b>Computer with the following:</b></p> <ul style="list-style-type: none"><li>• Windows®, Macintosh, or Linux-based operating system</li><li>• An installed Ethernet adapter</li></ul> <p><b>Browser Requirements:</b></p> <ul style="list-style-type: none"><li>• Internet Explorer 8 or later</li><li>• Firefox 12.0 or later</li><li>• Safari 4 or later</li><li>• Google Chrome 20.0 or later</li></ul> <p><b>Windows® Users:</b> Make sure you have the latest version of Java installed. Visit <a href="http://www.java.com">www.java.com</a> to download the latest version.</p>

# Introduction

D-Link, an industry leader in networking, introduces the new D-Link DAP-1160 Wireless N 150 Bridge/Access Point. With the ability to transfer files with a maximum wireless signal rate of up to 150Mbps\*, the DAP-1160 gives you faster wireless network access for your home or office.

The DAP-1160 can connect and interoperate with other 802.11n compatible wireless client devices. The DAP-1160 is also backwards compatible with 802.11b/g. It can be flexibly configured to operate in 2 different modes **Access Point, Wireless Client**. With its Setup Wizard, the DAP-1160 ensures that you will be up and running on a wireless network in just a matter of minutes.

The DAP-1160 features Wi-Fi Protected Access (WPA-PSK/WPA2-PSK) to provide an enhanced level of security for wireless data communications. The DAP-1160 also includes additional security features to keep your wireless connection safe from unauthorized access.

The DAP-1160 supports WPS on the AP, and wireless client operation modes, with each capable of being conveniently set up by using the PIN method or Push Button.

## Power Usage

This device is an Energy Related Product (ErP) with High Network Availability (HiNA), and automatically switches to a power-saving Network Standby mode within 1 minute of no packets being transmitted. It can also be turned off through a power switch to save energy when it is not needed.

Network Standby: 1.91 watts

Switched Off: 0.19 watts

\* 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.

## **TOTAL PERFORMANCE**

Combines award winning access point features and Wireless N 150 technology to provide the best wireless performance.

## **TOTAL SECURITY**

The most complete set of security features including WPA/WPA2 encryption to protect your network against outside intruders.

## **Connect home and soho to a wireless network**

Create a wireless network for your home and office using the D-Link DAP-1160 as an 802.11n standard Wireless Access Point. Connect this Access Point to a broadband modem and let others wirelessly access your Internet connection. Enjoy surfing the web, checking e-mail, and chatting with family and friends online.

## **TOTAL NETWORK SECURITY**

The DAP-1160 supports all of the latest wireless security features to prevent unauthorized access, be it from over the wireless network or from the Internet. Support for WPA and WPA2 standards ensure that you'll be able to use the best possible encryption method, regardless of your client devices.

\* Maximum wireless signal rate derived from IEEE Standard 802.11g and 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-1160 provides up to 150Mbps\* wireless connection with other 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.
- **Compatible with IEEE802.11g Devices** - The DAP-1160 is still fully compatible with the 802.11g standards, so it can connect with existing 802.11g PCI, USB, and Cardbus adapters.
- **Advanced Firewall Features** - The Web-based user interface displays advanced network management features including Content Filtering, which allows easily applied content filtering based on MAC Address.
- **WPS PBC**- (Wi-Fi Protected Setup Push Button Configuration) Push Button Configuration is a button that can be pressed to add the device to an existing network or to create a new network. A virtual button can be used on the utility while a physical button is placed on the side of the device.  
This easy setup method allows you to form a secured wireless link between the DAP-1160 and another WPS enabled device. A PC is no longer needed to log into the Web-based interface.
- **WPS PIN** - (Wi-Fi Protected Setup Personal Identification Number ) A PIN is a unique number that can be used to add the access point to an existing network or to create a new network. The default PIN may be printed on the bottom of the access point. For extra security, a new PIN can be generated. You can restore the default PIN at any time. Only the Administrator (“admin” account) can change or reset the PIN.
- **User-friendly Setup Wizard** - Through its easy-to-use Web-based user interface, the DAP-1160 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.



# Hardware Overview

## Connections



1	<b>WPS/Reset Button</b>	Press 1 second to start the WPS process. Press and hold for 5 seconds is Reset Button to restore to its original factory default settings.
2	<b>LAN Port</b>	Connect 10/100 Ethernet devices such as computers, switches, and hubs.
3	<b>Power Button</b>	Push the Power Button to switch power on/off.
4	<b>Power Receptor</b>	Receptor for the supplied power adapter.

# Hardware Overview

## LEDs



<b>1</b>	<b>Power LED</b>	A solid green light indicates a proper connection to the power supply.
<b>2</b>	<b>Wireless LED</b>	A solid green light indicates the wireless function is working. The light will be off during device reboot or if the wireless radio is disabled.
<b>3</b>	<b>WPS LED</b>	A solid light indicates a successful WPS connection. A blinking light indicates the device is trying to establish a connection.

# Installation

Please configure the DAP-1160 with a computer connected directly to the AP. The next few pages will explain the different operational modes you can use.

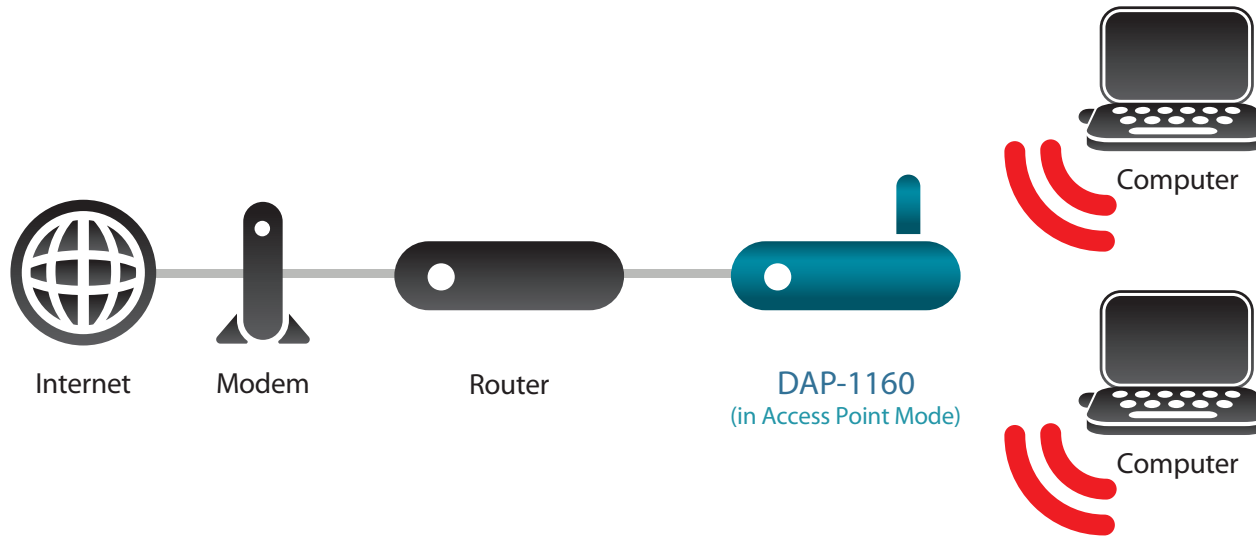
## Operation Modes

Depending on how you want to use your DAP-1160 will determine which mode you use. This section will help you figure out which setting works with your setup.

- Access Point Mode - page 12
- Wireless Client Mode - page 13

## Access Point Mode

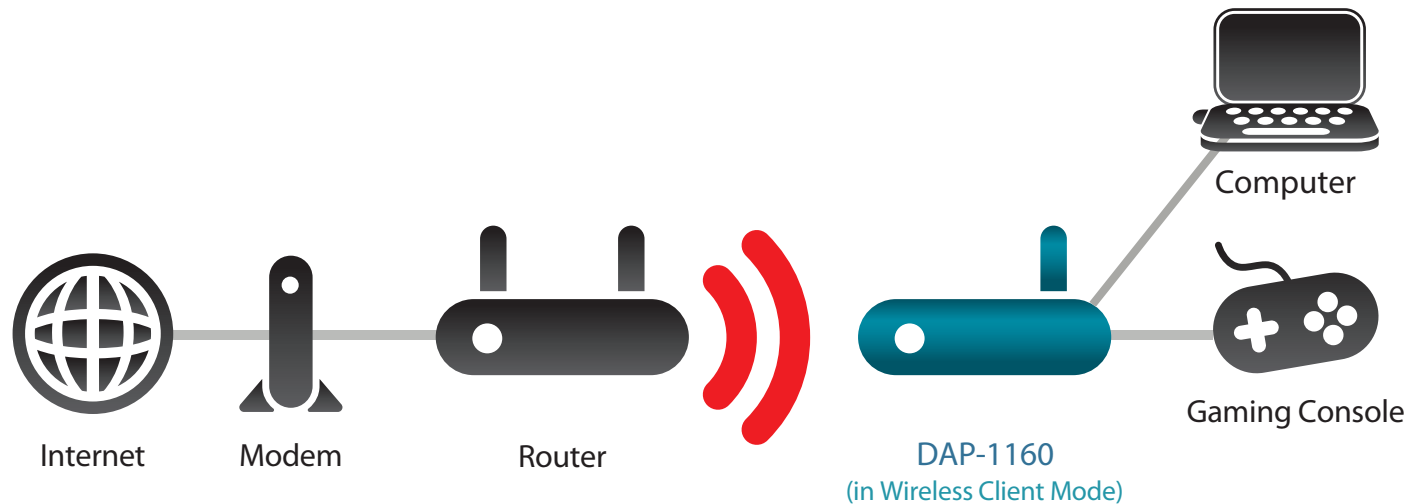
In the Access Point mode, the DAP-1160 acts as a central connection point for any computer (client) that has a 802.11n or backward-compatible 802.11g wireless network interface and is within range of the AP. Clients must use the same SSID (wireless network name) and channel as the AP in order to connect. If wireless security is enabled on the AP, the client will need to enter a password to connect to the AP. In Access Point mode, multiple clients can connect to the AP at the same time.



## Wireless Client Mode

In the Wireless Client mode, the DAP-1160 acts as a wireless network adapter for your Ethernet-enabled device (such as a game console or a TV set-top box). Connect your Ethernet-enabled device to the AP using an Ethernet cable. The AP Client mode can support multiple wired clients.

**Example:** Connect a gaming console using an ethernet cable to the DAP-1160. The unit is set to Wireless Client mode which will wirelessly connect to a wireless router on your network.



# Wireless Installation Considerations

The D-Link 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 D-Link 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 access points, 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 is 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.

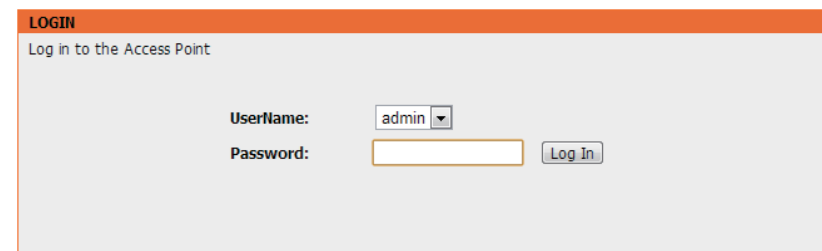
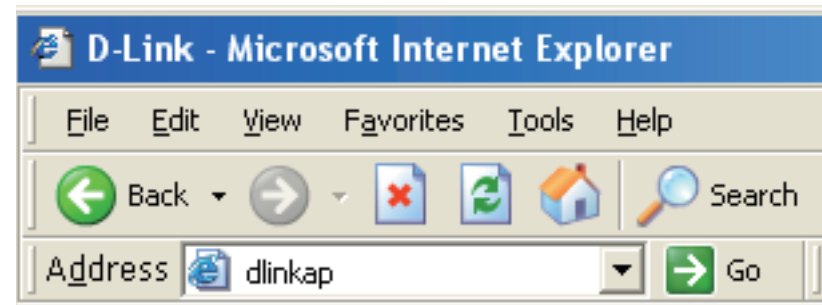
## Web-based Configuration Utility

If you wish to change the default settings or optimize the performance of the DAP-1160, you may use the web-based configuration utility.

To access the configuration utility, open a web browser such as Internet Explorer and enter **http://dlinkap** or **http://192.168.0.50** in the address field.

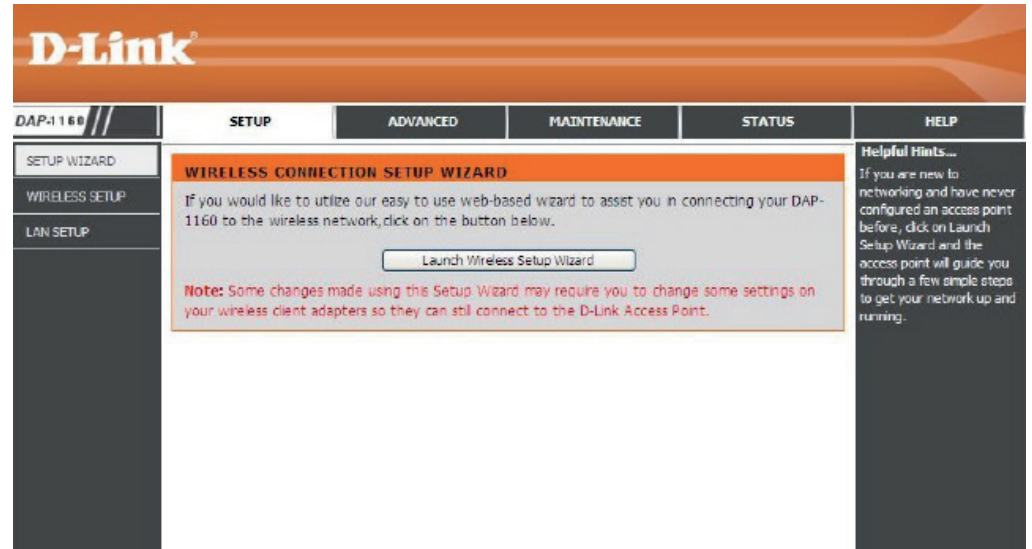
Select **admin** and then enter your password. Leave the password blank by default.

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

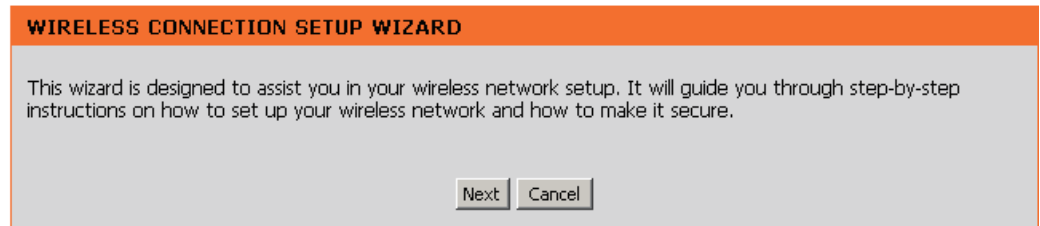


# Wireless Setup Wizard

Click **Launch Wireless Setup Wizard** to configure your access point.



Click **Next** to continue.

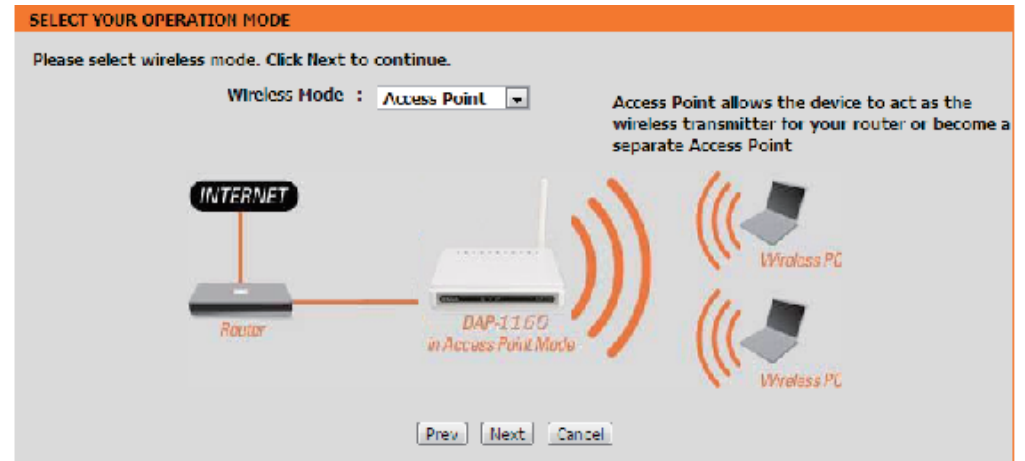




## Access Point Mode

This Wizard is designed to assist you in configuring your DAP-1160 as an access point.

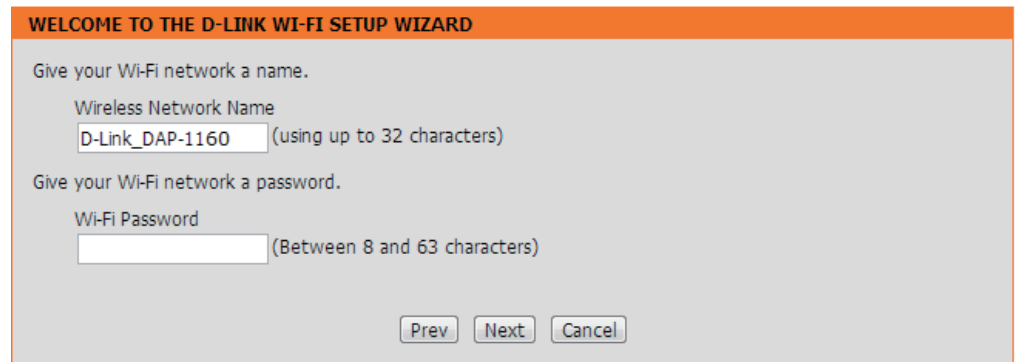
Select **Access Point** from the drop-down menu. Then, click **Next** to continue.



Enter a name for your wireless network (SSID).

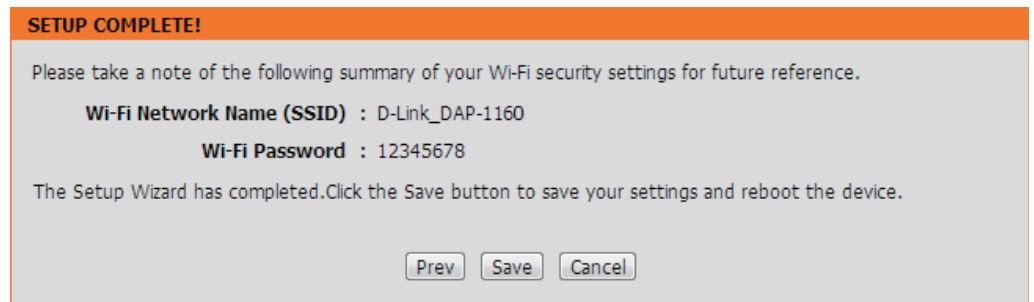
Enter your Wi-Fi Password. This Password must be entered on your wireless clients.

Click **Next** to continue.



The following screen will show you your network key to enter on your wireless clients.

Click **Save** to finish the Setup Wizard.



## Wireless Client Mode

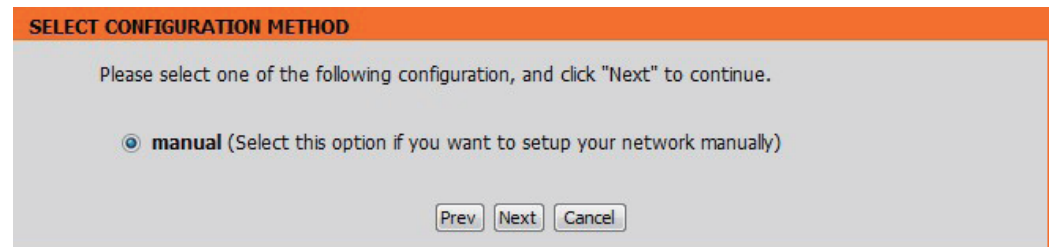
This Wizard is designed to assist you in configuring your DAP-1160 as a wireless client.

Select **Wireless Client** from the drop-down menu.



Select **Manual** configuration to setup your network manually.

Click **Next** to continue.



## Section 3 - Configuration

Find your access point from the list, click the radio button in the right column, and click **Connect**.

**SELECT WI-FI NETWORK**

ID	Wi-Fi Network Name	Encrypt	Channel	Signal (%)	Select
1	CX468	WPA-PSK/WPA2-PSK(aes)	4	70	<input type="radio"/>
2	Dlink_NewUI_24G	WPA-PSK(auto)/WPA2-PSK(auto)	4	29	<input type="radio"/>
3	Shareplay_Timmy	WPA-PSK(auto)/WPA2-PSK(auto)	8	29	<input type="radio"/>
4	Apple Martini	WPA-PSK(auto)/WPA2-PSK(auto)	11	29	<input type="radio"/>
5	dlink-guest	no	4	29	<input type="radio"/>
6	D-Link	no	6	26	<input type="radio"/>
7	AirPort Express	WPA2-PSK(aes)	11	20	<input type="radio"/>
8	dlink-andy	WPA-PSK(auto)/WPA2-PSK(auto)	9	20	<input type="radio"/>
9	845neutrino	WPA-PSK(auto)/WPA2-PSK(auto)	11	20	<input type="radio"/>
10	D-Link	no	1	13	<input type="radio"/>
11	dlink-8575	WPA-PSK(auto)/WPA2-PSK(auto)	1	10	<input type="radio"/>
12	dlink-435D	WPA-PSK(auto)/WPA2-PSK(auto)	3	10	<input type="radio"/>
13	ray845-24g	WPA-PSK(auto)/WPA2-PSK(auto)	11	10	<input type="radio"/>
14	DIR.508L_DESK	WPA-PSK(auto)/WPA2-PSK(auto)	3	10	<input type="radio"/>
15	dlink_645L_Betty	WPA-PSK(auto)/WPA2-PSK(auto)	10	10	<input type="radio"/>
16	wireless123	WPA2-PSK(aes)	11	10	<input type="radio"/>
17	Shai-Hulud	WPA-PSK/WPA2-PSK(aes)	8	10	<input type="radio"/>

Enter the Wi-Fi password. Click **Next** to complete the Setup Wizard.

**ENTER WI-FI PASSWORD**

Please enter Wi-Fi Password to establish wireless connection.

Wi-Fi Password:

The Wi-Fi Setup Wizard is complete. Click **Finish** to reboot the device.

**CONNECT TO WIRELESS DEVICE**

The Wi-Fi setup wizard has completed

# Manual Configuration

## Wireless Settings

You may manually configure your DAP-1160 instead of running the setup wizard.

- Access Point Mode - page 22
- Wireless Client Mode - page 24

## Access Point Mode

**Enable Wireless:** Check the box to enable the wireless function. If you do not want to use wireless, uncheck the box to disable all the wireless functions. You may also set up a specific time range (schedule). Select a schedule from the drop-down menu or click **Add New** to create a new schedule.

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

**Wireless Network Name:** When you are browsing for available wireless networks, this is the name that will appear in the list (unless Visibility Status is set to Invisible, see below). This name is also referred to as the SSID. For security purposes, it is highly recommended to change from the default network name.

**802.11 Mode:** Select one of the following:  
**802.11n Only** - Select if you are only using 802.11n wireless clients.

**Mixed 802.11n and 802.11g** - Select if you are using a mix of 802.11n and 11g wireless clients.

**Mixed 802.11n, 802.11g and 802.11b** - Select if you are using a mix of 802.11n, 11g, and 11b wireless clients.

**Wireless Channel:** Indicates the channel setting for the DAP-1160. The Channel can be changed to fit the channel setting for an existing wireless network or to customize the wireless network. If you enable Auto Channel Scan, this option will be grayed out.

**Enable Auto Channel Scan:** The **Auto Channel Scan** setting can be selected to allow the DAP-1160 to choose the channel with the least amount of interference.

**WIRELESS NETWORK**

Use this section to configure the wireless settings for your D-Link Access Point. Please note that changes made on this section may also need to be duplicated on your wireless client.

Save Settings    Don't Save Settings

**WIRELESS NETWORK SETTINGS :**

Enable Wireless : Always

Wireless Mode : Access Point

Wireless Network Name : egle-R990-CFD3L3 (Also called the SSID)

802.11 Mode : Mixed 802.11n, 802.11g and 802.11b

Wireless Channel : 1

Enable Auto Channel Scan :

Channel Width : Auto 20/40MHz

Visibility Status :  Visible  Invisible

**WIRELESS SECURITY MODE :**

Security Mode : None

**Helpful Hints...**

**Wireless Mode :**  
Select a function mode to configure your wireless network. Function wireless modes include Access Point, Wireless Client. Function wireless modes are designed to support various wireless network topologies and applications.

**Wireless Network Name :**  
Changing your Wireless Network Name is the first step in securing your wireless network. We recommend that you change it to a familiar name that does not contain any personal information.

**Visibility Status :**  
Enabling Hidden Mode is another way to secure your network. With this option enabled, no wireless clients will be able to see your wireless network when they

**Channel Width:** Select the Channel Width:

**Auto 20/40** - Select if you are using both 802.11n and non-802.11n wireless devices.

**20MHz** - Select if you are not using any 802.11n wireless clients.

**Visibility Status:** Check the box if you do not want the SSID of your wireless network to be broadcasted by the DAP-1160. If checked, the SSID of the DAP-1160 will not be seen by Site Survey utilities so your wireless clients will have to know the SSID of your DAP-1160 in order to connect to it.

**Security Mode:** Refer to page 65 for more information regarding the wireless security.

## Wireless Client Mode

**Wireless Mode:** Select **Wireless Client Mode** from the drop-down menu.  
**Site Survey:**

**Wireless Type:** Click **Site Survey** to display a list of wireless networks in your area. You may select the wireless access point to connect to.  
 Select **Infrastructure** if connecting to an access point or wireless router, or select **Ad-Hoc** if connecting to another wireless client.

**Wireless Network Name:** Enter the SSID of the access point you want to repeat the signal of. If you do not know for sure, click **Site Survey** and select it from the list, if available.

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

**Wireless Channel:** The channel will automatically change to the channel of the AP you are connected to.

**Enable Auto Channel Scan:** The **Auto Channel Scan** setting can be selected to allow the DAP-1160 to choose the channel with the least amount of interference.

**Channel Width:** Select the appropriate channel width between **20MHz** or **Auto 20/40MHz** from the drop-down menu.

**Visibility Status:** Check the box if you do not want the SSID to be broadcast by the DAP-1160. 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-1160 in order to connect to it.

**Wireless MAC Clone:** You can clone the wireless MAC address to connect the device.

**Wireless Security Mode:** Select a wireless security setting. Options are **None**, **WEP**, **WPA**, or **WPA2**. See the Wireless Security section in this manual for a detailed explanation of the wireless security options.

**WPS:** Select enable if you want to configure the DAP-1160 with Wi-Fi Protection setup.

The screenshot shows the D-Link DAP-1160 web interface. The top navigation bar includes 'DAP-1160', 'SETUP', 'ADVANCED', 'MAINTENANCE', 'STATUS', and 'HELP'. The left sidebar has 'SETUP WIZARD', 'WIRELESS SETUP', and 'LAN SETUP'. The main content area is titled 'WIRELESS NETWORK' and contains the following configuration options:

- WIRELESS NETWORK SETTINGS:**
  - Wireless Mode: Wireless Client (selected), Site Survey
  - Wireless Type: Infrastructure
  - Wireless Network Name: legale-R0950-CFD315 (Also called the SSID)
  - 802.11 Mode: Mixed 802.11n, 802.11g and 802.11b
  - Wireless Channel: 11
  - Enable Auto Channel Scan:
  - Channel Width: Auto 20/40MHz
  - Visibility Status:  Visible  Invisible
- WIRELESS MAC CLONE:**
  - Enable:
  - MAC Source: Auto
  - MAC Address: [input field]
  - [Scan button]
  - MAC Address: [input field]
- WIRELESS SECURITY MODE:**
  - Security Mode: WPA Personal

The 'Helpful Hints' sidebar on the right contains the following text:

**Wireless Mode:** Select a function mode to configure your wireless network. Function wireless modes include Access Point, Wireless Client. Function wireless modes are designed to support various wireless network topologies and applications.

**Wireless Network Name:** Changing your Wireless Network Name is the first step in securing your wireless network. We recommend that you change it to a familiar name that does not contain any personal information.

**Visibility Status:** Enabling Hidden Mode is another way to secure your network. With this option enabled, no wireless clients will be able to see your wireless network when they perform scan to see what's available. In order for your wireless devices to connect to your AP, you will need to manually enter the Wireless Network Name on each device.

**Security Keys:** If you have enabled Wireless Security, make sure you write down WEP Key or Passphrase that you have configured. You will



# LAN Settings

This section will allow you to change the local network settings of the access point and to configure the DHCP settings.

**Device Name:** Enter the Device Name of the AP. It is recommended to change the Device Name if there is more than one D-Link device within the subnet.

**LAN Connection Type:** Use the drop-down menu to select Dynamic IP (DHCP) to automatically obtain an IP address on the LAN/private network.

**D-Link**

DAP-1160 // SETUP ADVANCED MAINTENANCE STATUS HELP

SETUP WIZARD  
WIRELESS SETUP  
LAN SETUP

**NETWORK SETTINGS**

Use this section to configure the internal network settings of your AP. Device Name allows you to configure this device more easily when your network using TCP/IP protocol. You can enter the device name of the AP into your web browser to access the instead of IP address for configuration. Recommend to change the device name if there's more than one D-Link devices within the subnet.

Save Settings Don't Save Settings

**DEVICE NAME**

Device Name allows you to configure this device more easily. You can enter "http://device name" into your web browser instead of IP address for configuration. (Default: http://dlinkap)

Device Name :

**LAN IPV4 CONNECTION TYPE**

Choose the IPv4 mode to be used by the Access Point

MY LAN Connection is :

**DYNAMIC IP (DHCP) LAN CONNECTION TYPE :**

IP Address Information.

IP Address :

Subnet Mask :

Gateway Address :

Primary DNS Server :

Secondary DNS Server :

**Helpful Hints...**

**LAN Settings :**

**LAN Connection type :**  
The factory default setting is "Dynamic(DHCP) IP" which allows the IP address of the DAP-1160 to be manually configured in accordance to the applied local area network. Enable Dynamic (DHCP) to allow the DHCP host to automatically assign the Access Point an IP address that conforms to the applied local area network.

**IP Address :**  
The default IP address is 192.168.0.10. It can be modified to conform to an existing local area network. Please note that the IP address of each device in the wireless local area network must be within the same IP address range and subnet mask. Take default DAP-1160 IP address as an example, each station associated to the AP must be configured with a unique IP address falling in the range of 192.168.0.\* \*#\* ranges from 1 to 254 but 50 in this case.

**Subnet Mask :**  
A mask used to determine what subnet an IP address

## Static IP

Select Static IP Address if all the Internet port's IP information is provided to you by your ISP. You will need to enter in the IP address, subnet mask, gateway address, and DNS address(es) provided to you by your ISP. Each IP address entered in the fields must be in the appropriate IP form, which are four octets separated by a dot (x.x.x.x). The Access point will not accept the IP address if it is not in this format.

**Device Name:** Enter the Device Name of the AP. It is recommended to change the Device Name if there is more than one D-Link device within the subnet. You can enter the device name of the AP into your web browser to access the instead of IP address for configuration. If you are using the device name to connect, ensure that your PC and your DAP-1160 are on the same network.

**LAN Connection Type:** Select Static IP from the drop-down menu.

**IP Address:** Enter the IP address of the access point. The default IP address is 192.168.0.50. If you change the IP address, once you click **Apply**, you will need to enter the new IP address in your browser to get back into the configuration utility.

**Subnet Mask:** Enter the Subnet Mask assigned by your ISP.

**Default Gateway:** Enter the Gateway assigned by your ISP.

The screenshot shows the D-Link web interface for the DAP-1160. The main navigation bar includes 'D-Link', 'DAP-1160', and tabs for 'SETUP', 'ADVANCED', 'MAINTENANCE', 'STATUS', and 'HELP'. The left sidebar contains 'SETUP WIZARD', 'WIRELESS SETUP', and 'LAN SETUP'. The main content area is titled 'NETWORK SETTINGS' and contains the following sections:

- NETWORK SETTINGS:** A text block explaining that this section is for configuring internal network settings. It includes a 'Save Settings' button and a 'Don't Save Settings' button.
- DEVICE NAME:** A text block explaining that the device name allows for easier access via a web browser. The 'Device name' field is set to 'dlinkap'.
- LAN IPv4 CONNECTION TYPE:** A section with the instruction 'Choose the IPv4 mode to be used by the Access Point'. The 'MY LAN Connection is:' dropdown menu is set to 'Static IP'.
- STATIC IP ADDRESS LAN CONNECTION TYPE:** A section with the instruction 'Enter the IPv4 Address information.' containing five input fields:
  - IP Address: 192.168.0.50
  - Subnet Mask: 255.255.255.0
  - Gateway Address: 0.0.0.0
  - Primary DNS Server: 0.0.0.0
  - Secondary DNS Server: 0.0.0.0

On the right side, there is a 'Helpful Hints...' section with 'LAN Settings' and 'LAN Connection type' information, including a note about the default 'Dynamic (DHCP) IP' setting and a warning that all devices on the same network must have the same IP address range and subnet mask.

## DHCP Server

The DHCP server settings defines the range of the IP address that can be assigned to stations in the network. If needed or required in the network, the DAP-1160 is capable of acting as a DHCP server.

**Enable DHCP server :** Check to allow the DAP-1160 to function as a DHCP server.

**DHCP IP Address Range :** Input the IP address available for assignment on your network.

**Always Broadcast :** Check to keep broadcast.

**Gateway :** Enter the IP address of the gateway on the network.

**WINS :** Enter the IP address of the WINS on the network.

**DNS :** Enter the IP address of the DNS on the network.

**DHCP Lease Time :** The lease time is the period of time before the DHCP server will assign new IP addresses.

**DHCP SERVER SETTINGS**

Use this section to configure the built-in DHCP Server to assign IP addresses to the computers on your network.

**Enable DHCP Server :**

**DHCP IP Address Range :**  to

**Always Broadcast :**

**Gateway :**

**WINS :**

**DNS :**

**DHCP Lease Time :**

# Advanced Advanced Wireless

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

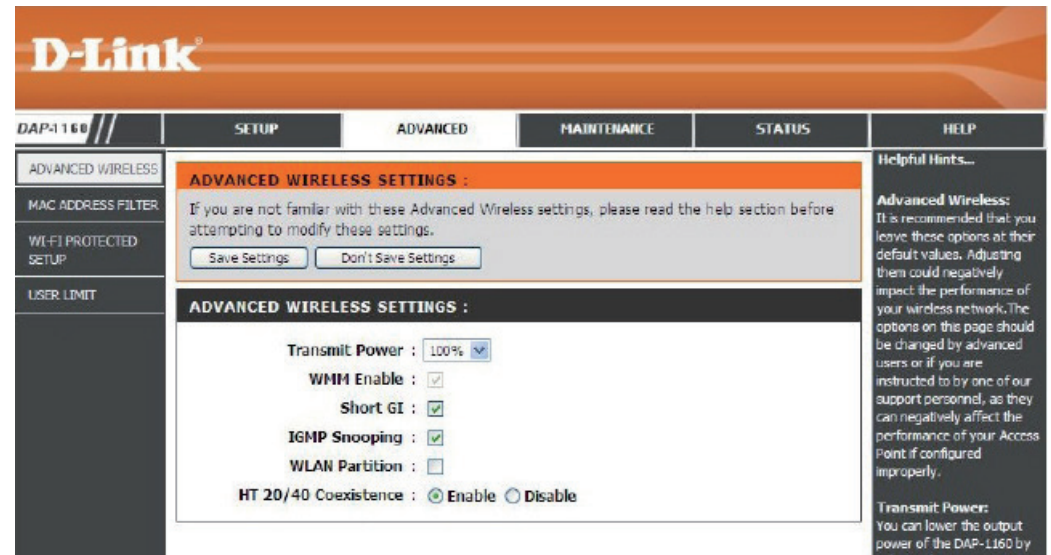
**WMM Enable:** WMM is QoS for your wireless network. This will improve the quality of video and voice applications for your wireless clients.

**Short GI:** Check this box to reduce the guard interval time therefore increasing the data capacity. However, it's less reliable and may create higher data loss.

**IGMP Snooping:** This enables IGMP snooping for the wireless connection. We recommend enabling this if you often use multicast services such as video conferencing and streaming audio/video.

**WLAN Partition:** This feature enables client isolation. If enabling, all clients will not be able to view or access each other's information or within the network.

**HT 20/40 Coexistence:** Check to enable or disable this feature.







# Wi-Fi Protected Setup

Wi-Fi Protected Setup (WPS) System is a simplified method for securing your wireless network during the “Initial setup” as well as the “Add New Device” processes. The Wi-Fi Alliance (WFA) has certified it across different products as well as manufactures. The process is just as easy, as depressing a button for the Push-Button Method or correctly entering the 8-digit code for the Pin-Code Method. The time reduction in setup and ease of use are quite beneficial, while the highest wireless Security setting of WPA2 is automatically used.

**Enable:** Check this box to enable the function

**Disable WPS-PIN Method:** Locking the wireless security settings prevents the settings from being changed by the Wi-Fi Protected Setup feature of the router. Devices can still be added to the network using Wi-Fi Protected Setup. However, the settings of the network will not change once this option is checked.

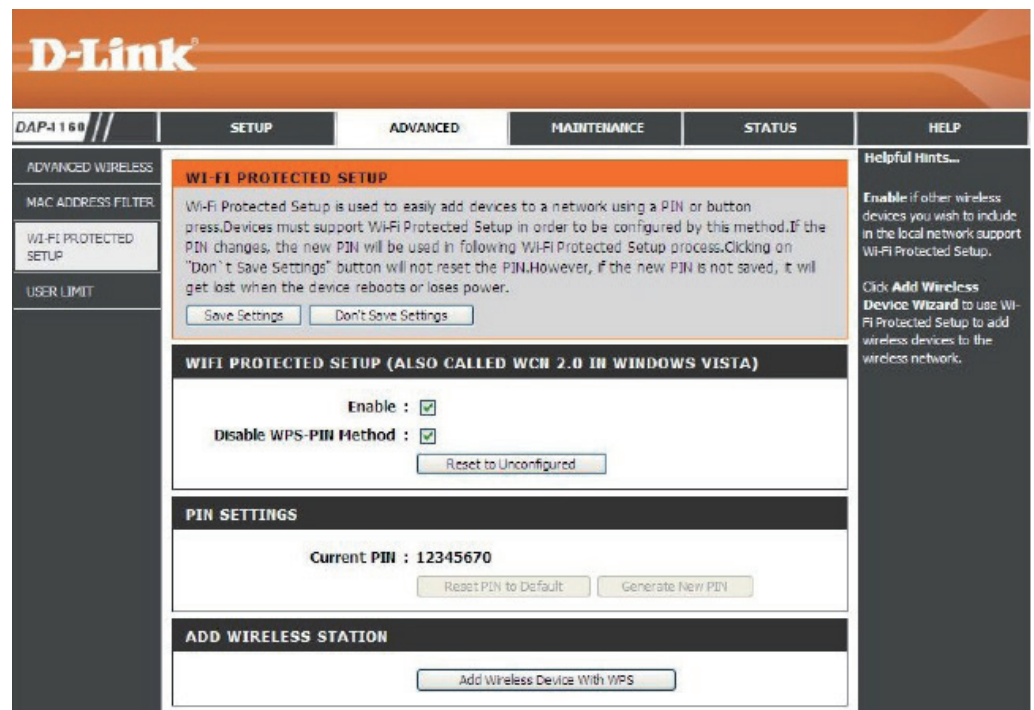
**Pin Settings:** Press the button to generate a new PIN or Reset to Default.

**Current PIN:** Shows the current value of the router’s PIN.

**Reset PIN to Default:** Restore the default PIN of the access point.

**Generate New PIN:** Create a random number that is a valid PIN. This PIN becomes the router’s PIN. You can then copy this PIN to the user interface of the registrar.

**Add Wireless Station:** Press the button to start with the wizard to setup the WPS.



# User Limits

Enter the maximum number of wireless clients that can connect at one time to your access point.

**Enable User Limit:** Check the **Enable User Limit** box to enable this feature.

**User Limit:** Enter the maximum number of clients, between 1 and 32.

**Save Settings:** Click **Save Settings** to save and activate the new changes.

The screenshot displays the D-Link web interface for the DAP-1160. The top navigation bar includes the D-Link logo and tabs for SETUP, ADVANCED, MAINTENANCE, STATUS, and HELP. The left sidebar lists menu items: ADVANCED WIRELESS, MAC ADDRESS FILTER, WI-FI PROTECTED SETUP, and USER LIMIT. The main content area is titled "USER LIMIT SETTINGS" and contains the following text: "Please apply the settings to limit how many wireless stations connecting to AP." Below this text are two buttons: "Save Settings" and "Don't Save Settings". Further down, the "USER LIMIT SETTINGS" section includes a checkbox for "Enable User Limit" and a text input field for "User Limit (1 - 32)". On the right side, a "Helpful Hints..." section provides additional information: "User Limit can set a limit upon the number of wireless clients. Using user limit, you can prevent scenarios where the DAP-1155 in your network shows performance degradation because it is handling heavy wireless traffic."

# Maintenance Admin

This page will allow you to change the Administrator password. The administrator password has read/write access.

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

**Confirm Password:** Enter the same password that you entered in the previous textbox in order to confirm its accuracy.

**Enable Graphical Authentication:** Check to enable this feature.

The screenshot shows the D-Link DAP-1160 Maintenance Admin page. The page has a navigation menu with tabs for SETUP, ADVANCED, MAINTENANCE (selected), STATUS, and HELP. The left sidebar contains a menu with options: ADMIN (selected), SYSTEM, FIRMWARE, TIME, SYSTEM CHECK, and SCHEDULES. The main content area is titled "DEVICE ADMINISTRATION :" and contains the following instructions: "Enter the new password in the 'New Password' field and again in the next field to confirm. Click on 'Save Settings' to execute the password change. The Password is case-sensitive, and can be made up of any keyboard characters. The new password must be between 0 and 15 characters in length." Below the instructions are two buttons: "Save Settings" and "Don't Save Settings". The "PASSWORD :" section contains two input fields: "New Password : \*\*\*\*\*" and "Confirm Password : \*\*\*\*\*". The "ADMINISTRATION :" section contains a checkbox labeled "Enable Graphical :  Authentication". On the right side, there is a "Helpful Hints..." section with the following text: "Passwords: For security reasons, it is recommended that you change the Password for the Administrator accounts. Be sure to write down the Passwords to avoid having to reset the AP in the event that they are forgotten."



# System

**Save 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. Click the **Save** button. You will then see a file dialog where you can select a location and file name for the settings.

**Upload from Local Hard Drive:** Use this option to load previously saved access point configuration settings. Click **Choose File** to find a previously saved configuration file. Then, click the **Upload Settings** button to transfer those settings to the access point.

**Restore to Factory Default:** 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, use the **Save** button above.

**Note:** Restoring the factory default settings will not reset the Wi-Fi Protected Status to Not Configured.

**Reboot the Device:** Click to reboot the access point.

The screenshot displays the D-Link web interface for the DAP-1160. The top navigation bar includes 'DAP-1160', 'SETUP', 'ADVANCED', 'MAINTENANCE', 'STATUS', and 'HELP'. A left sidebar menu lists 'ADMIN', 'SYSTEM', 'FIRMWARE', 'TIME', 'SYSTEM CHECK', and 'SCHEDULES'. The main content area is titled 'SAVE AND RESTORE' and contains the following text and controls:

**SAVE AND RESTORE :**  
The current system settings can be saved as a file onto the local hard drive. You can upload any saved settings file that was created by the DAP-1160.

**SAVE AND RESTORE :**

Save Settings To Local Hard Drive :

Load Settings From Local Hard Drive :  No file chosen

Restore To Factory Default Settings :

Reboot The Device :

On the right side, there is a 'Helpful Hints...' section with the following text:

**Saving System Settings:**  
Once your Access Point is configured the way you want it, you can save these settings to a configuration file that can later be loaded in the event that the AP's default settings are restored. To do this, click the **Save** button next to where it says Save Settings to Local Hard Drive.

# 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 **Choose File** 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 this site.

**Browse:** After you have downloaded the new firmware, click **Choose File** to locate the firmware update on your hard drive.

**Upload:** Once you have a firmware update on your computer, use this option to browse for the file and then upload the information into the access point.

## Language Pack

You can change the language of the web UI by uploading available language packs.

**Browse:** After you have downloaded the new language pack, click **Choose File** to locate the language pack file on your hard drive.

The screenshot displays the D-Link web interface for a DAP-1160 access point. The top navigation bar includes 'DAP-1160', 'SETUP', 'ADVANCED', 'MAINTENANCE', 'STATUS', and 'HELP'. The left sidebar contains menu items: ADMIN, SYSTEM, FIRMWARE, TIME, SYSTEM CHECK, and SCHEDULES. The main content area is titled 'FIRMWARE UPDATE' and contains the following sections:

- FIRMWARE UPDATE :** A message stating: "There may be new firmware for your DAP-1160 to improve functionality and performance. [Click here to check for an upgrade on our support site.](#) After you have download the new firmware file from our support site, click the Browse button below to find the firmware file on your local hard drive. Click the Save Settings button to update the firmware on the DAP-1160. **Do not update firmware through wireless network!!**"
- FIRMWARE INFORMATION**
  - Current Firmware Version: 2.00 Date: 2013-11-14
  - Current Language Pack Version: No Language pack
- FIRMWARE UPGRADE**
  - Note:** Some firmware upgrades reset the configuration options to the factory defaults. Before performing an upgrade, be sure to save the current configuration from the [Maintenance -> System](#) screen.
  - To upgrade the firmware, your PC must have a wired connection to the access point. Enter the name of the firmware upgrade file, and click on the Upload button.
  - Upload:  No file chosen
- LANGUAGE PACK UPGRADE**
  - Upload:  No file chosen

On the right side, there is a 'Helpful Hints...' section with the text: "Firmware Updates: Firmware updates are released periodically to improve the functionality of your Access Point and also to add features. If you run into a problem with a specific feature of the Access Point, check our support site by clicking on the **Click here to check for an upgrade on our support site** link and see if an updated firmware is available for your Access Point."

# Time

The Time Configuration option allows you to configure, update, and maintain the correct time on the internal system clock. From this section you can set the time zone that you are in. Daylight Saving can also be configured to automatically adjust the time when needed.

**Time Zone:** Select the Time Zone from the drop-down menu.

**Daylight Saving:** To select Daylight Saving time manually, click the **Enable Daylight Saving** check box. Next use the drop-down menu to select a Daylight Saving Offset and then enter a start date and an end date for daylight saving time.

**Enable NTP Server:** NTP is short for Network Time Protocol. NTP synchronizes computer clock times in a network of computers. Check this box to use a NTP server. This will only connect to a server on the Internet, not a local server.

**NTP Server Used:** Enter the NTP server or select one from the drop-down menu.

**Date and Time:** To manually input the time, enter the values in these fields for the Year, Month, Day, Hour, Minute, and Second and then click **Save Settings**. You can also click the **Copy computer time** button at the bottom of the screen.

The screenshot shows the D-Link DAP-1160 web interface. The top navigation bar includes 'DAP-1160', 'SETUP', 'ADVANCED', 'MAINTENANCE', 'STATUS', and 'HELP'. The left sidebar lists 'ADMIN', 'SYSTEM', 'FIRMWARE', 'TIME', 'SYSTEM CHECK', and 'SCHEDULES'. The main content area is titled 'TIME' and contains the following sections:

- Time Configuration:**
  - Time: 01/01/2011 20:04:50
  - Time Zone: (GMT+08:00) Beijing, Chongqing, Hong Kong, Urumqi
  - Enable Daylight Saving:
  - Daylight Saving Offset: 0:00
  - Daylight Saving Dates:
 

DST Start	Month: Apr	Week: 1st	Day: Fri	Time: 2 am
DST End	Month: Sep	Week: 1st	Day: Thu	Time: 2 am
- AUTOMATIC TIME CONFIGURATION:**
  - Enable NTP server:
  - NTP Server Used: ntp1.dlink.com
- SET THE DATE AND TIME MANUALLY:**
  - Date and Time:
 

Year	2011	Month	1	Day	1
Hour	8 pm	Minute	4	second	32
  - Copy computer time button

Helpful Hints... System Time Settings: This section allows admins to configure, update, and maintain the correct time on the Access Point's internal system clock.

# System Check

This section Ping Tests by sending ping packets to test if a computer on the internet is running and responding.

**Ping Test :** The Ping Test is used to send Ping.

**Ping Result:** The results of your ping attempts will be displayed here.



# Schedules

**Name:** Enter a name for your new schedule.

**Days:** Select a day, a range of days, or All Week to include every day.

**Time:** Enter a start and end time for your schedule.

**Schedule Rules** The list of schedules will be listed here. Click the

**List:** **Add** icon to make changes or click the **Clear** icon to remove the schedule.

The screenshot shows the D-Link DAP-1160 web interface. The top navigation bar includes 'DAP-1160', 'SETUP', 'ADVANCED', 'MAINTENANCE', 'STATUS', and 'HELP'. The left sidebar contains 'ADMIN', 'SYSTEM', 'FIRMWARE', 'TIME', 'SYSTEM CHECK', and 'SCHEDULES'. The main content area is titled 'SCHEDULES' and contains the following text: 'The Schedule configuration option is used to manage schedule rules for wireless LAN control features.' Below this is the 'ADD SCHEDULE RULE' section, which includes a 'Name' input field, a 'Day(s)' section with radio buttons for 'All Week' and 'Select Day(s)', and checkboxes for 'Sun', 'Mon', 'Tue', 'Wed', 'Thu', 'Fri', and 'Sat'. There is also an 'All Day - 24 hrs' checkbox and a 'Time format' dropdown set to '24-hour'. The 'Start Time' and 'End Time' are each represented by hour, minute, and AM/PM dropdown menus. At the bottom of this section are 'Add' and 'Clear' buttons. Below the 'ADD SCHEDULE RULE' section is a 'SCHEDULE RULES LIST' table with columns for 'Name', 'Day(s)', and 'Time Frame'. The 'HELP' sidebar on the right contains 'Helpful Hints...' and explains that schedules are used with other features to define when they are in effect. It provides an example: 'Give each schedule a name that is meaningful to you. For example, a schedule for Monday through Friday from 3:00pm to 9:00pm, might be called "After School".' It also instructs the user to 'Save to add a completed schedule to the list below.', to 'Click the Edit icon to change an existing schedule.', and to 'Click the Delete icon to permanently delete a schedule.'

# Status

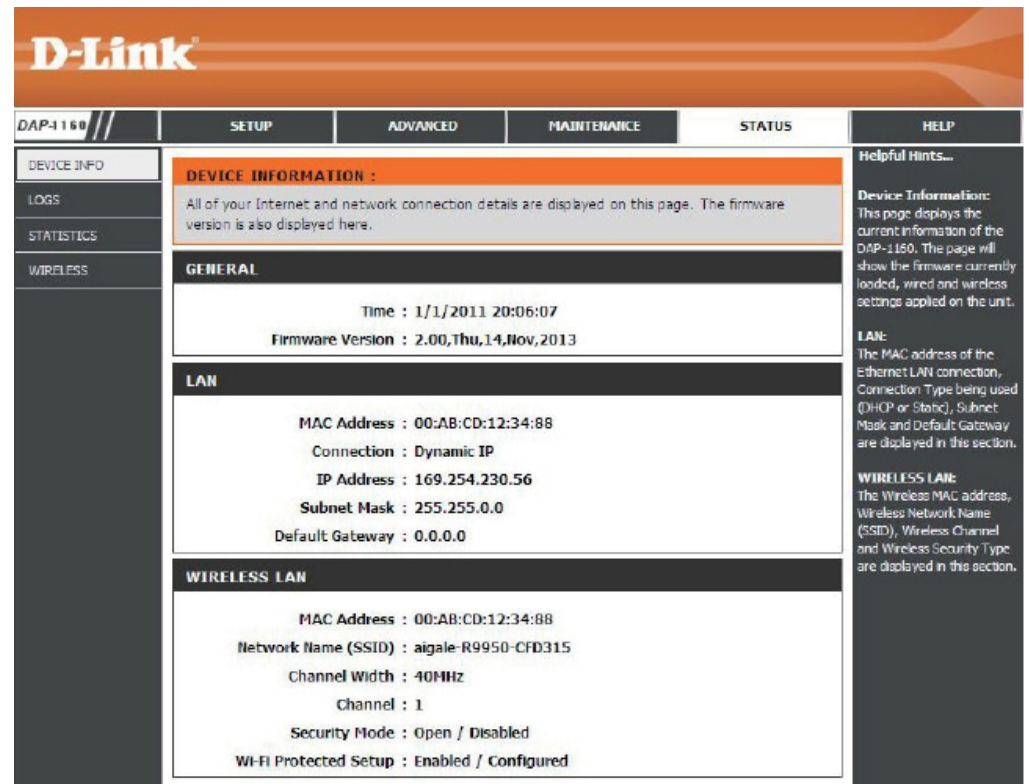
## Device Info

This page displays the current information for the DAP-1160. It will display the LAN and wireless LAN information.

**General:** Displays the access point's time and firmware version.

**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 and Channel.



D-Link	
DAP-1160	SETUP    ADVANCED    MAINTENANCE    STATUS    HELP
DEVICE INFO	<p><b>DEVICE INFORMATION :</b></p> <p>All of your Internet and network connection details are displayed on this page. The firmware version is also displayed here.</p>
LOGS	
STATISTICS	
WIRELESS	<p><b>GENERAL</b></p> <p>Time : 1/1/2011 20:06:07 Firmware Version : 2.00,Thu,14,Nov,2013</p> <p><b>LAN</b></p> <p>MAC Address : 00:AB:CD:12:34:88 Connection : Dynamic IP IP Address : 169.254.230.56 Subnet Mask : 255.255.0.0 Default Gateway : 0.0.0.0</p> <p><b>WIRELESS LAN</b></p> <p>MAC Address : 00:AB:CD:12:34:88 Network Name (SSID) : aigale-R9950-CFD315 Channel Width : 40MHz Channel : 1 Security Mode : Open / Disabled Wi-Fi Protected Setup : Enabled / Configured</p>
	<p><b>Helpful Hints...</b></p> <p><b>Device Information:</b> This page displays the current information of the DAP-1160. The page will show the firmware currently loaded, wired and wireless settings applied on the unit.</p> <p><b>LAN:</b> The MAC address of the Ethernet LAN connection, Connection Type being used (DHCP or Static), Subnet Mask and Default Gateway are displayed in this section.</p> <p><b>WIRELESS LAN:</b> The Wireless MAC address, Wireless Network Name (SSID), Wireless Channel and Wireless Security Type are displayed in this section.</p>

# Logs

The DAP-1160 keeps a running log of events and activities occurring on the AP. If the AP is rebooted, the logs are automatically cleared. You can save the log files under Log Setting.

**Log Options:** There are several types of logs that can be viewed: **System Activity, Debug Information, Attacks, Dropped Packets** and **Notice**.

**First Page:** This button directs you to the first page of the log.

**Last Page:** This button directs you to the last page of the log.

**Previous Page:** This button directs you to the previous page of the log.

**Next Page:** This button directs you to the next page of the log.

**Clear Log:** This button clears all current log content.

**Log Settings:** This button opens a new menu where you can configure the log settings.

**Refresh:** This button refreshes the log.

The screenshot displays the D-Link DAP-1160 web interface. At the top, the D-Link logo is visible. Below it, a navigation menu includes 'DAP-1160', 'SETUP', 'ADVANCED', 'MAINTENANCE', 'STATUS', and 'HELP'. A sidebar on the left contains 'DEVICE INFO', 'LOGS', 'STATISTICS', and 'WIRELESS'. The main content area is titled 'VIEW LOG' and contains the following sections:

- VIEW LOG :** A message stating 'View Log displays the activities occurring on the DAP-1155.'
- LOG OPTIONS :** A section with checkboxes for 'System Activity', 'Debug Information', 'Attacks', 'Dropped Packets', and 'Notice', along with an 'Apply Log Settings Now' button.
- LOG DETAILS :** A section with navigation buttons: 'First Page', 'Last Page', 'Previous Page', 'Next Page', 'Clear Log', 'Save Log', and 'Refresh'. Below these buttons, it shows 'Page 1 of 1' and a table header with columns 'Time' and 'Message'.

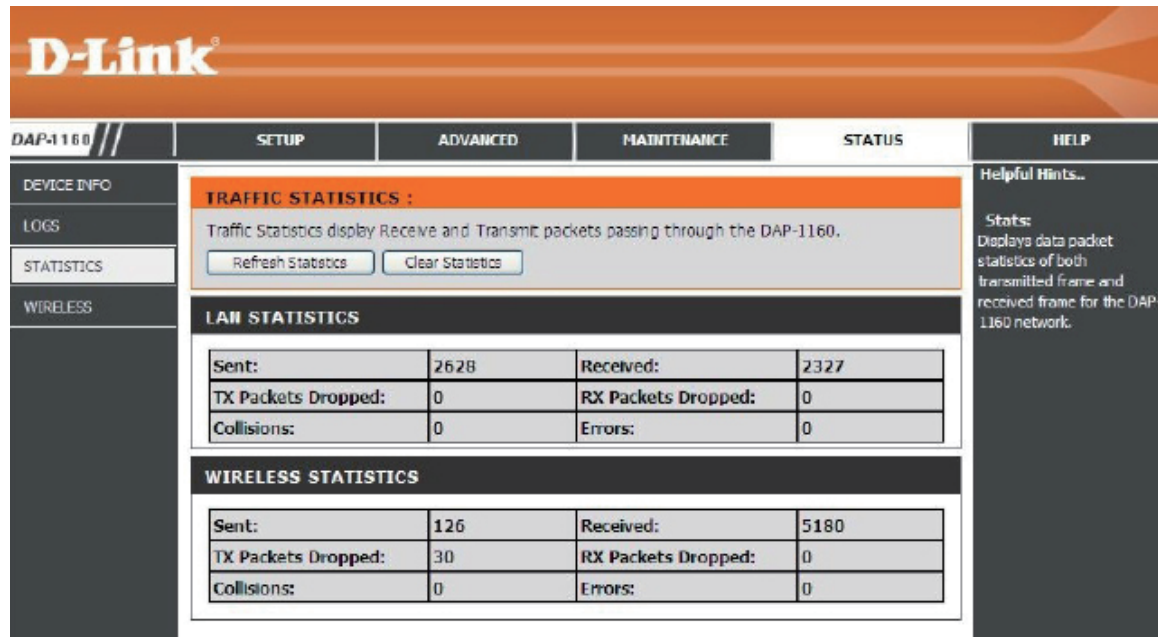
On the right side of the interface, there is a 'Helpful Hint...' section with the following text:

- First Page:** The first page of the log.
- Last Page:** The last page of the log.
- Previous Page:** Moves back one log page.
- Next Page:** Moves forward one log page.
- Clear Log:** Clears the logs completely.



# Statistics

The DAP-1160 keeps statistics of the traffic that passes through it. You can view the amount of packets that pass through the LAN and wireless portions of the network. The traffic counter will reset if the access point is rebooted.



**D-Link**

DAP-1160 // SETUP ADVANCED MAINTENANCE STATUS HELP

DEVICE INFO  
LOGS  
STATISTICS  
WIRELESS

**TRAFFIC STATISTICS :**  
Traffic Statistics display Receive and Transmit packets passing through the DAP-1160.  
Refresh Statistics Clear Statistics

**LAN STATISTICS**

Sent:	2628	Received:	2327
TX Packets Dropped:	0	RX Packets Dropped:	0
Collisions:	0	Errors:	0

**WIRELESS STATISTICS**

Sent:	126	Received:	5180
TX Packets Dropped:	30	RX Packets Dropped:	0
Collisions:	0	Errors:	0

Helpful Hints...  
Stats:  
Displays data packet statistics of both transmitted frame and received frame for the DAP-1160 network.



# Wireless

The wireless section allows you to view the wireless clients that are connected to your wireless access point.

**Connection Time:** Displays the amount of time the wireless client has been connected to the access point.

**MAC Address:** The Ethernet ID (MAC address) of the wireless client.

Product Page:DAP-1160 Hardware Version:B1 Firmware Version:2.00

**D-Link**

DAP-1160 // SETUP ADVANCED MAINTENANCE STATUS HELP

DEVICE INFO  
LOGS  
STATISTICS  
WIRELESS

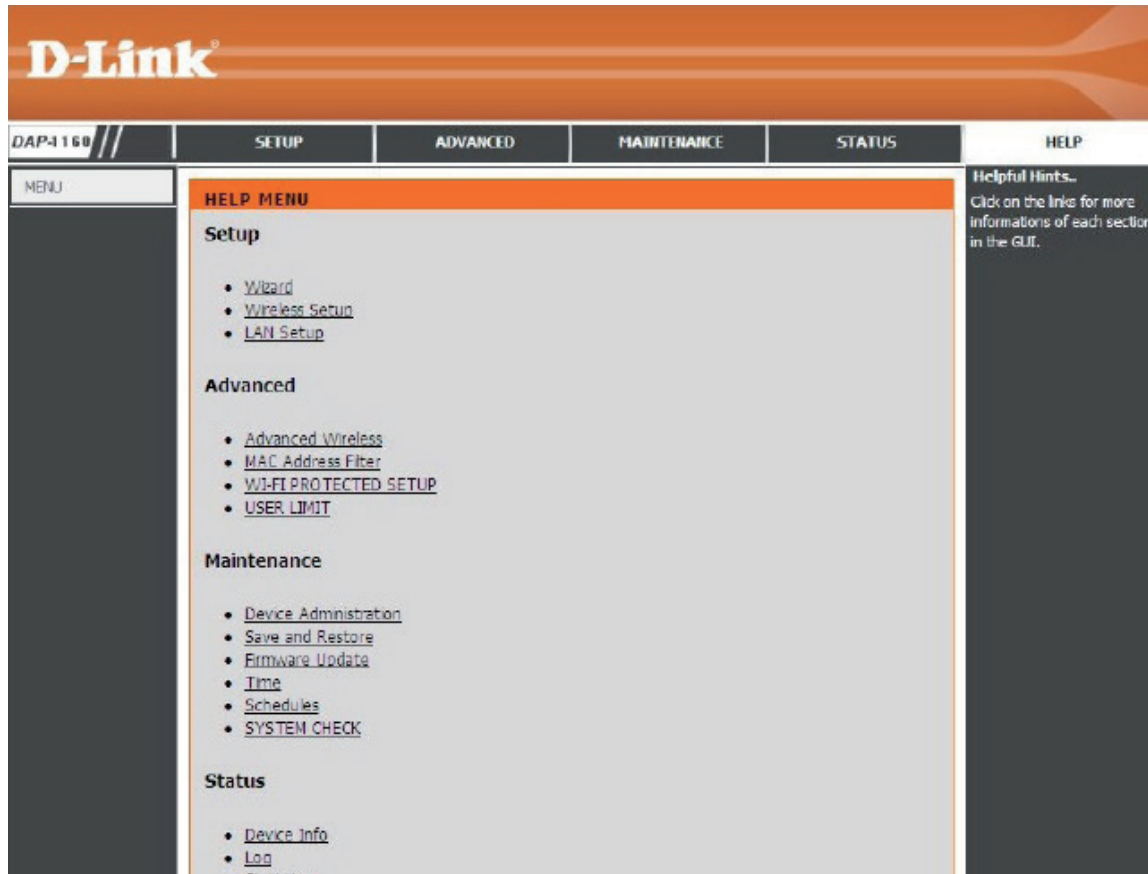
**CONNECTED WIRELESS CLIENT LIST :**  
The Wireless Client table below displays Wireless clients connected to the AP (Access Point). In AP Client mode it displays the connected AP's MAC address and connected Time.

Connected Time	MAC Address
None	--

**Helpful Hints...**  
**Wireless**  
Displays connected client station main parameters, such as Connect Time and station MAC address. In AP Client mode it displays the connected AP's MAC address and connected Time.

**WIRELESS**

# Help



# Wireless Security

This section will show you the different levels of security you can use to protect your data from intruders. The DAP-1160 offers the following types of security:

- WPA2 (Wi-Fi Protected Access 2)
- WPA (Wi-Fi Protected Access)
- WPA2-PSK (Pre-Shared Key)
- WPA-PSK (Pre-Shared Key)

# 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 bridge 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/WPA2 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 Setup and then click 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 Type*, select **TKIP**, **AES**, or **Auto**.
4. Next to *PSK / EAP*, select **Personal**.
5. Next to *Passphrase*, enter a key. The key is entered as a passphrase in ASCII format at both ends of the wireless connection. The passphrase must be between 8-63 characters.
6. Click **Save Settings** at the top of the window to save your settings. If you are configuring the access point with a wireless adapter, you will lose connectivity until you enable WPA-PSK on your adapter and enter the same passphrase as you did on the access point.

The screenshot displays the 'WIRELESS SECURITY MODE' section of a configuration page. The 'Security Mode' dropdown menu is set to 'Enable WPA Wireless Security (enhanced)'. Below this, the 'WPA' section is active, showing a note: 'WPA requires stations to use high grade encryption and authentication.' The 'Cipher Type' dropdown is set to 'AUTO', and the 'PSK / EAP' dropdown is set to 'Personal'. There are two empty text input fields for 'Passphrase' and 'Confirmed Passphrase'.

# Configure WPA/WPA2 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 **Setup** and then click **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 **Save Settings** to save your settings.

The screenshot displays the configuration page for wireless security. At the top, under 'WIRELESS SECURITY MODE', the 'Security Mode' is set to 'Enable WPA Wireless Security (enhanced)'. Below this, the 'WPA' section is active, showing a note that WPA requires high-grade encryption and authentication. The 'Cipher Type' is set to 'AUTO' and 'PSK / EAP' is set to 'Enterprise'. Under the '802.1X' section, there are two RADIUS server configurations. 'RADIUS Server 1' has fields for IP, Port (1812), and Shared Secret. 'RADIUS Server 2' also has fields for IP, Port (1812), and Shared Secret.

# 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.

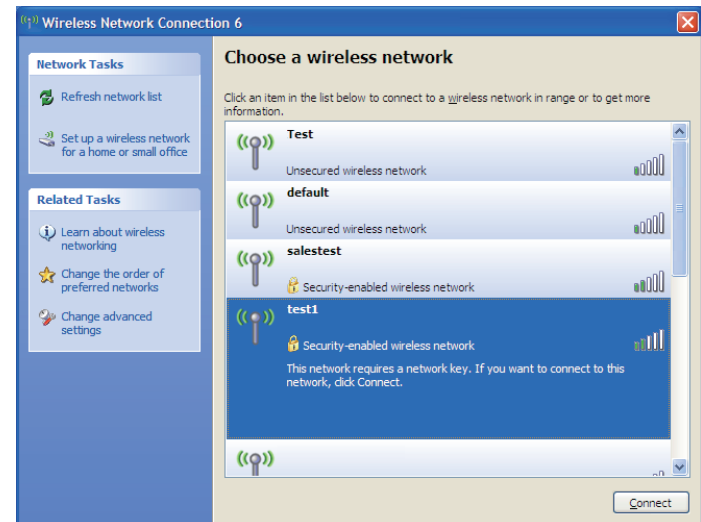
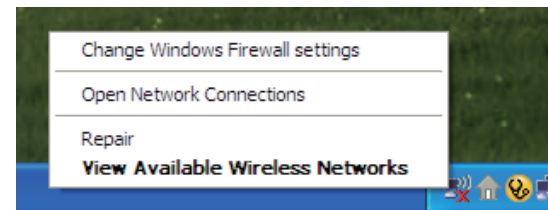
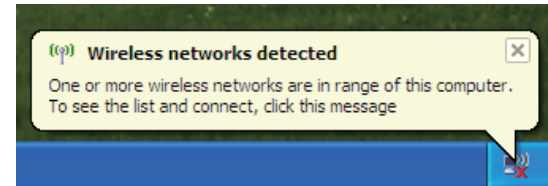
If you receive the **Wireless Networks Detected** bubble, click on the center of the bubble to access the utility.

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.

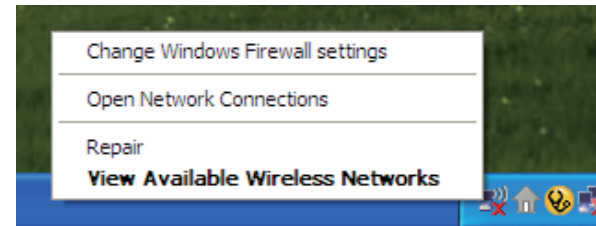
If you get a good signal, but cannot access the Internet, check you TCP/IP settings for your wireless adapter. Refer to the **Networking Basics** section in this manual for more information.



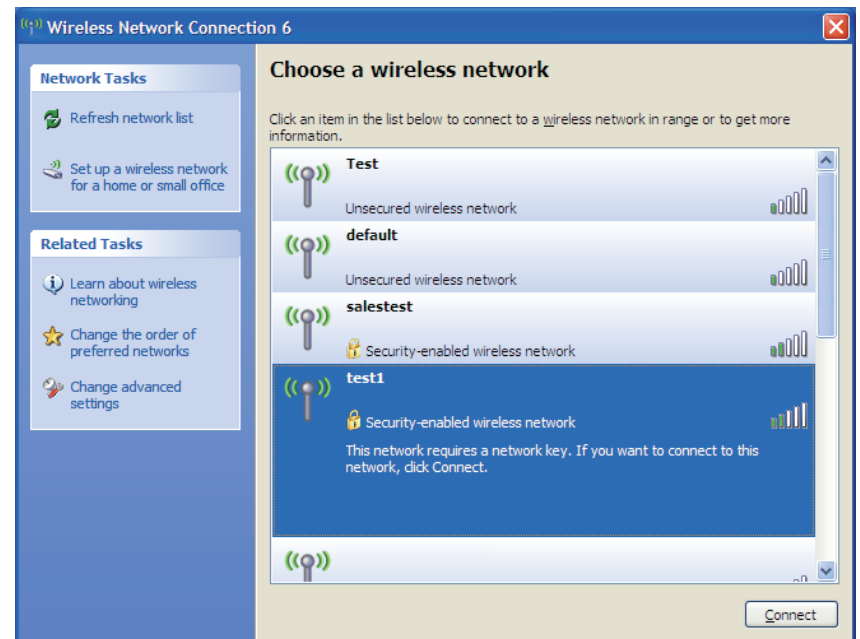
# Configure WPA-PSK

It is recommended to enable WEP on your wireless bridge or 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**.



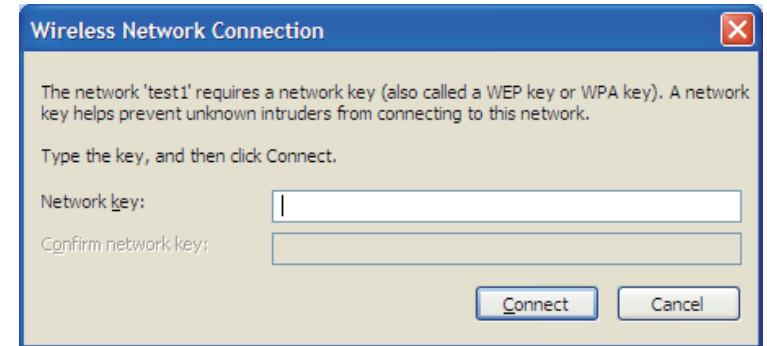
2. Highlight the wireless network (SSID) you would like to connect to and click **Connect**.





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

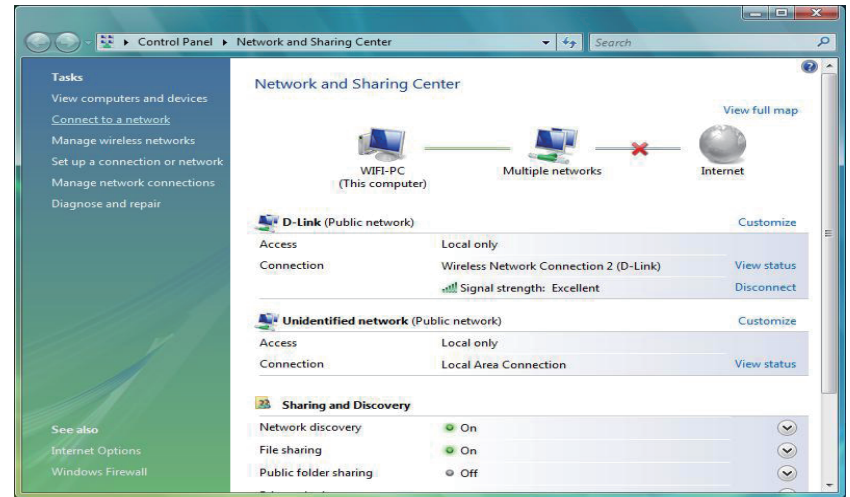
It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the WPA-PSK settings are correct. The WPA-PSK passphrase must be exactly the same as on the wireless access point.



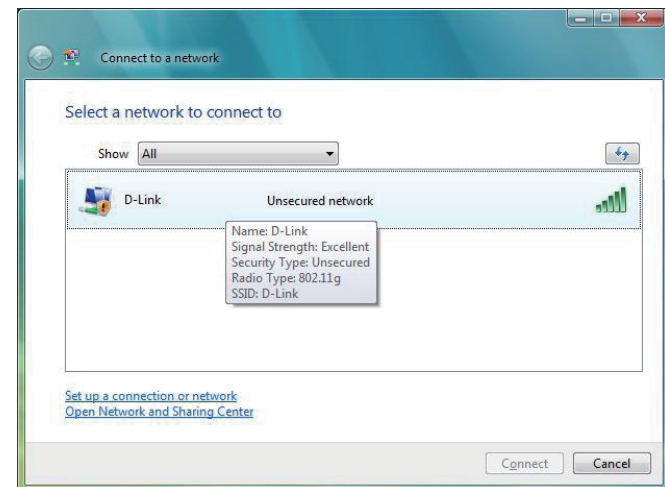
# Using Windows Vista®

Windows Vista® users may use the convenient, built-in wireless utility. Follow these instructions:

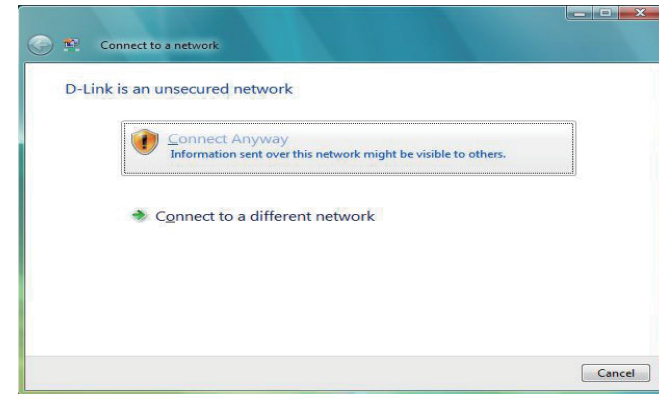
From the Start menu, go to Control Panel, and then click on **Network and Sharing Center**.



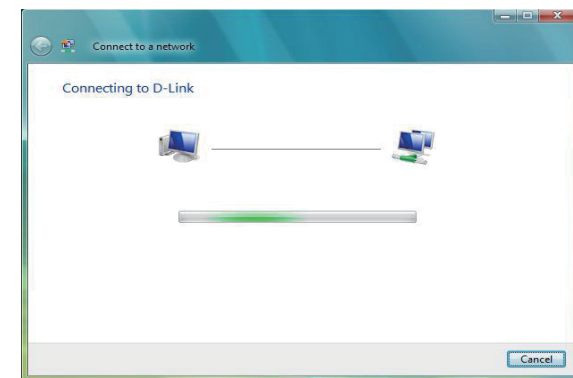
The utility will display any available wireless networks in your area. Click on a network (displayed using the SSID) under Select a network to connect to and then click the **Connect** button.



Click **Connect Anyway** to continue.

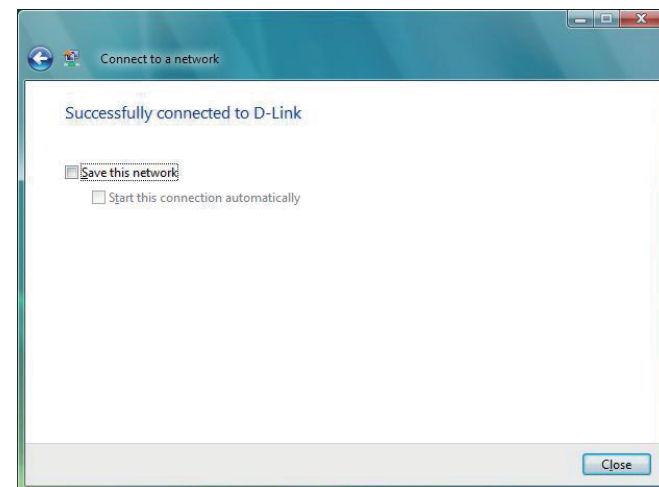


The utility will display the following window to indicate a connection is being made.



The final window indicates the establishment of a successful connection.

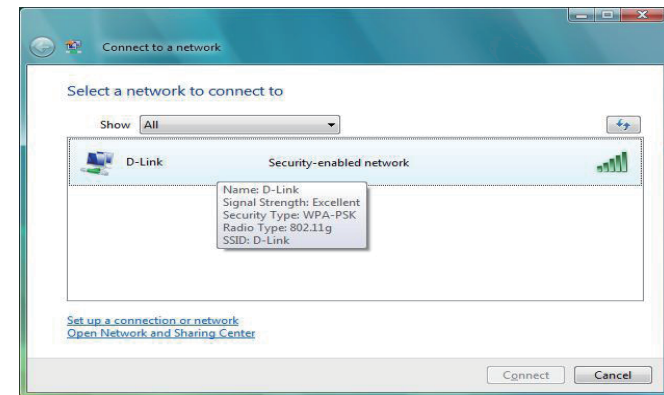
The next two pages display the windows used to connect to either a WEP or a WPA-PSK wireless network.



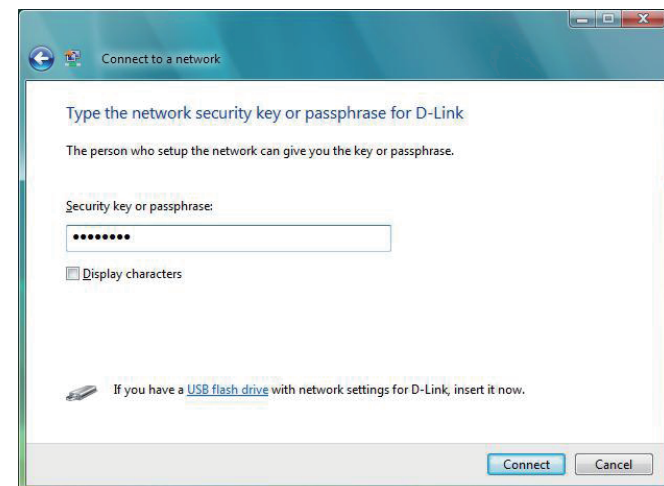
# Configure WPA-PSK

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

Click on a network (displayed using the SSID) using WPA-PSK under Select a network to connect to and then click the **Connect** button.



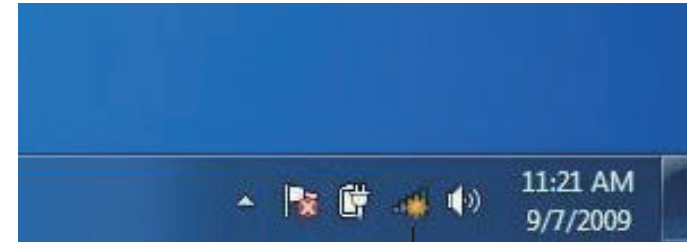
Enter the appropriate security key or passphrase in the field provided and then click the **Connect** button.



# Using Windows® 7

It is recommended to enable wireless security (WPA/WPA2) on your wireless router or access point before configuring your wireless adapter. If you are joining an existing network, you will need to know the security key or passphrase being used.

1. Click on the wireless icon in your system tray (lower-right corner).



Wireless Icon

2. The utility will display any available wireless networks in your area.

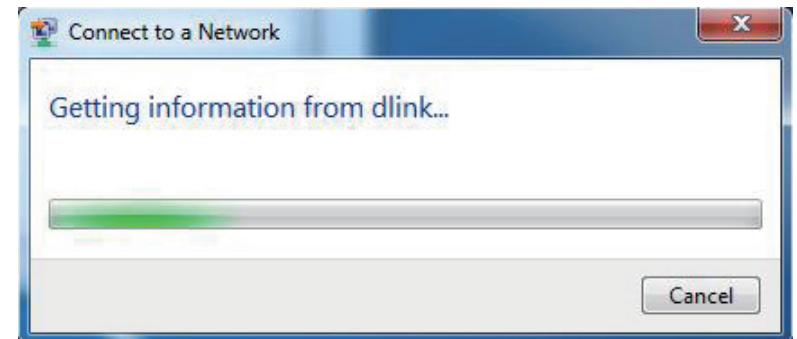


3. Highlight the wireless network (SSID) you would like to connect to and click the **Connect** button.

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

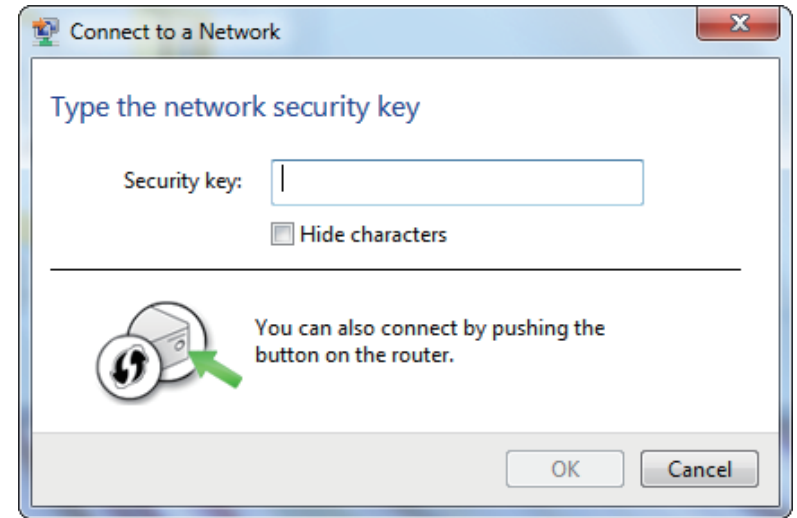


4. The following window appears while your computer tries to connect to the router.



5. Enter the same security key or passphrase that is on your router and click **OK**.

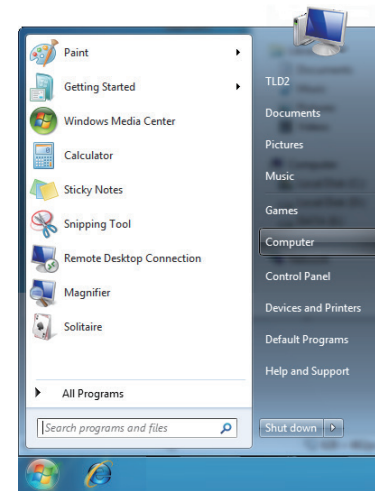
It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the security settings are correct. The key or passphrase must be exactly the same as on the wireless router.



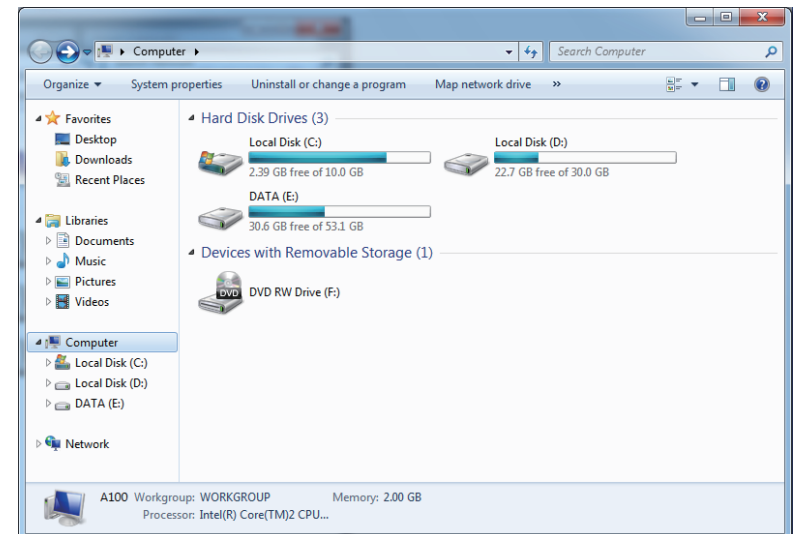
# Configure WPS

The WPS feature of the DAP-1160 can be configured using Windows® 7. Carry out the following steps to use Windows® 7 to configure the WPS feature of the DAP-1160:

1. Click the **Start** button and select **Computer** from the Start menu.

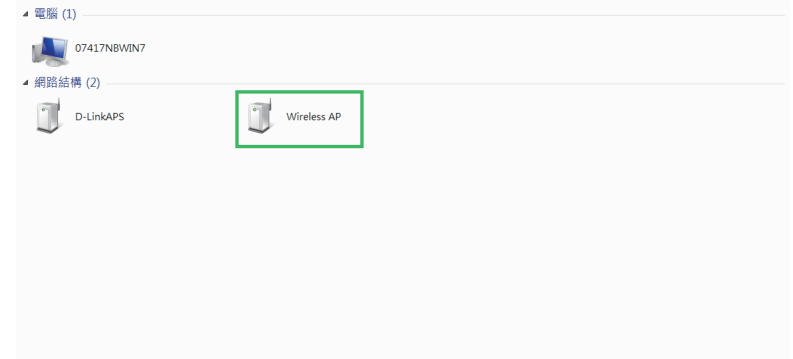


2. Click the **Network** option.

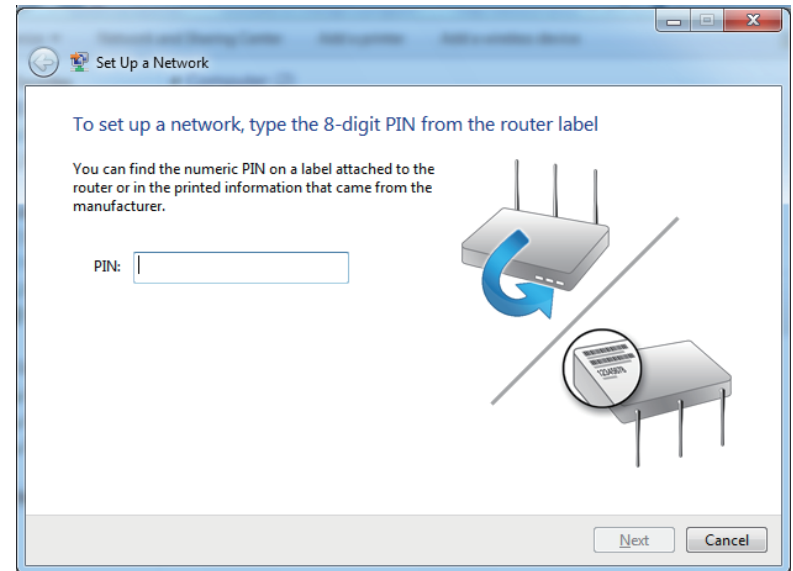




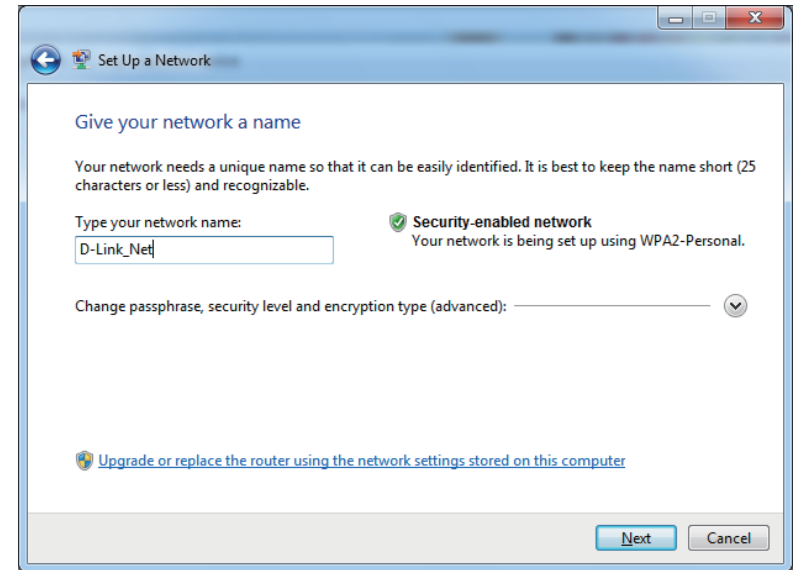
3. Double-click the Wireless AP.




4. Input the WPS PIN number (displayed in the WPS window on the Router's LCD screen or in the **Setup** > **Wireless Setup** menu in the Router's Web UI) and click **Next**.

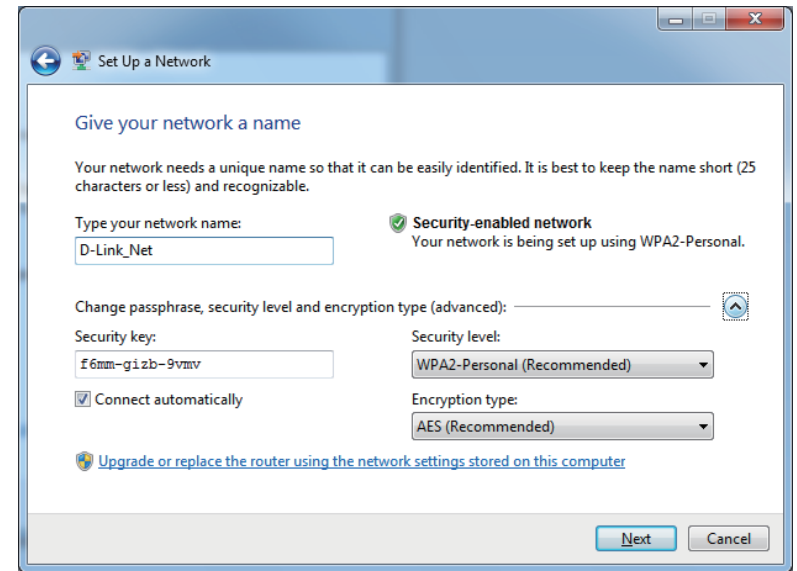


5. Type a name to identify the network.



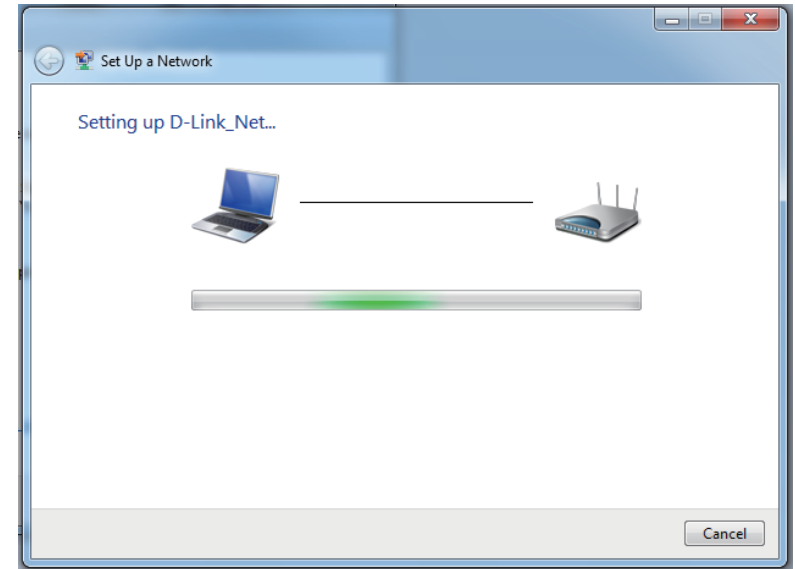
6. To configure advanced settings, click the  icon.

Click **Next** to continue.



7. The following window appears while the Router is being configured.

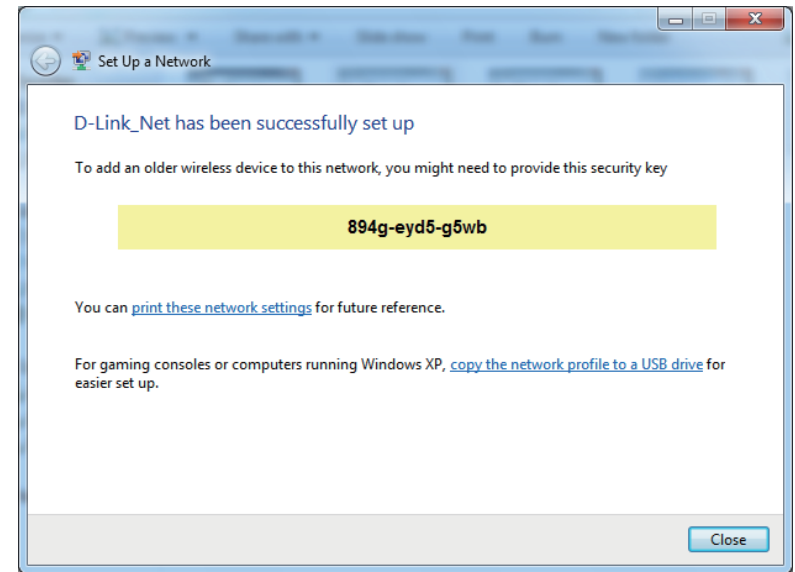
Wait for the configuration to complete.



8. The following window informs you that WPS on the DAP-1160 has been setup successfully.

Make a note of the security key as you may need to provide this security key if adding an older wireless device to the network in the future.

9. Click **Close** to complete WPS setup.



# Troubleshooting

This chapter provides solutions to problems that can occur during the installation and operation of the DAP-1160. 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:
  - Microsoft Internet Explorer® 6.0 and higher
  - Mozilla Firefox 3.0 and higher
  - Google™ Chrome 2.0 and higher
  - Apple Safari 3.0 and 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.

### 3. Why can't I connect to certain sites or send and receive emails when connecting through my access point?

If you are having a problem sending or receiving email, or connecting to secure sites such as eBay, banking sites, and Hotmail, we suggest lowering the MTU in increments of ten (Ex. 1492, 1482, 1472, etc).

**Note: AOL DSL+ users must use MTU of 1400.**

To find the proper MTU Size, you'll have to do a special ping of the destination you're trying to go to. A destination could be another computer, or a URL.

- Click on **Start** and then click **Run**.
- Windows® 95, 98, and Me users type in command (Windows® NT, 2000, and XP users type in cmd) and press **Enter** (or click **OK**).
- Once the window opens, you'll need to do a special ping. Use the following syntax:

```
ping [url] [-f] [-l] [MTU value]
```

Example: **ping yahoo.com -f -l 1472**

```
C:\>ping yahoo.com -f -l 1482
Pinging yahoo.com [66.94.234.13] with 1482 bytes of data:
Packet needs to be fragmented but DF set.
Packet needs to be fragmented but DF set.
Packet needs to be fragmented but DF set.
Packet needs to be fragmented but DF set.
Ping statistics for 66.94.234.13:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping yahoo.com -f -l 1472
Pinging yahoo.com [66.94.234.13] with 1472 bytes of data:
Reply from 66.94.234.13: bytes=1472 time=93ms TTL=52
Reply from 66.94.234.13: bytes=1472 time=109ms TTL=52
Reply from 66.94.234.13: bytes=1472 time=125ms TTL=52
Reply from 66.94.234.13: bytes=1472 time=203ms TTL=52
Ping statistics for 66.94.234.13:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 93ms, Maximum = 203ms, Average = 132ms
C:\>
```

You should start at 1472 and work your way down by 10 each time. Once you get a reply, go up by 2 until you get a fragmented packet. Take that value and add 28 to the value to account for the various TCP/IP headers. For example, let's say that 1452 was the proper value, the actual MTU size would be 1480, which is the optimum for the network we're working with ( $1452+28=1480$ ).

Once you find your MTU, you can now configure your access point with the proper MTU size.

To change the MTU rate on your access point follow the steps below:

- Open your browser, enter the IP address of your access point (192.168.0.50) and click **OK**.
- Enter your username (Admin) and password (blank by default). Click **OK** to enter the web configuration page for the device.
- Click on **Setup** and then click **Manual Configure**.
- To change the MTU enter the number in the MTU field and click **Save Settings** to save your settings.
- Test your email. If changing the MTU does not resolve the problem, continue changing the MTU in increments of ten.

# 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 Access point 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.

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 as seen in the picture, 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 has become so popular in recent years that almost everyone is using it, whether it's for home, office, business, D-Link has a wireless solution for it.

#### **Home**

- Gives everyone at home broadband access
- Surf the web, check email, instant message, 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 or Access Point**

Make sure you place the bridge/access point in a centralized location within your network for the best performance. Try to place the bridge/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, wireless speakers, and televisions as far away as possible from the bridge/access point. This would significantly reduce any interference that the appliances might cause since they operate on same frequency.

## Security

Don't let your 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 bridge.
- **Ad-Hoc** – Directly connecting to another computer, for peer-to-peer communication, using wireless network adapters on each computer, such as two or more wireless network Cardbus adapters.

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

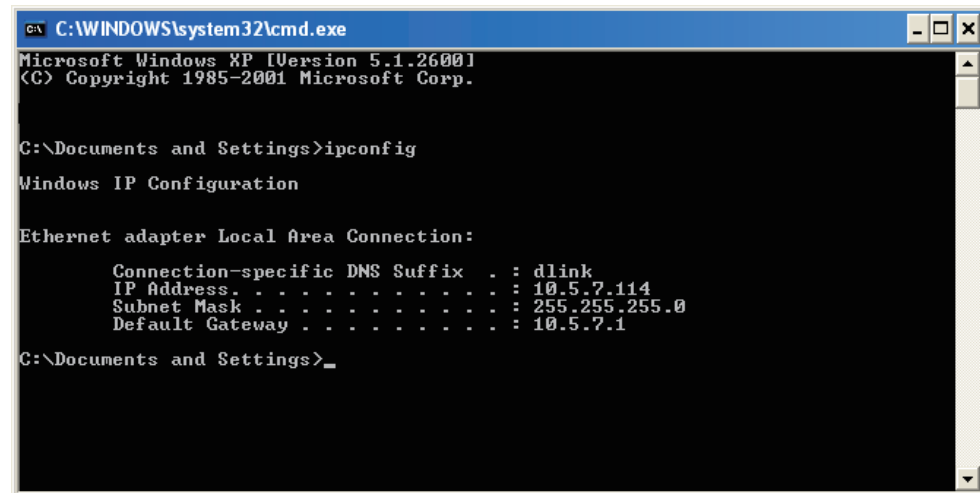
After you install your adapter, by default, the TCP/IP settings should be set to obtain an IP address from a DHCP server (i.e. wireless router) automatically. To verify your IP address, please follow the steps below.

Click on Start > Run. In the run box type **cmd** and click **OK**. (Windows® 7/Vista® users type cmd in the Start Search box.)

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.



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600.1
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : dlink
    IP Address . . . . . : 10.5.7.114
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.5.7.1

C:\Documents and 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® 7 - Click on **Start > Control Panel > Network and Internet > Network and Sharing Center > Change Adapter Setting.**

Windows Vista® - Click on **Start > Control Panel > Network and Internet > Network and Sharing Center > Manage Network Connections.**

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

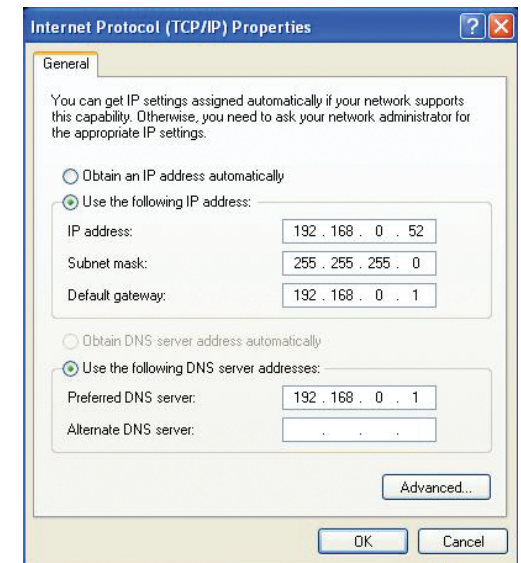
Click **Use the following IP address** and enter an IP address that is on the same subnet as your network or the LAN IP address on your router.

**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 802.11g, compatible with 802.11n devices
- IEEE 802.3
- IEEE 802.3u

## Security

- Wi-Fi Protected Access (WPA, WPA2)<sup>®</sup>
- Wi-Fi Protected Setup™ (WPS)
  - PBC
  - PIN

## Interface Type

- 2 10/100 LAN/WAN Port
- 1 Push-Button (for Reset and Wi-Fi Protected Setup™)

## Maximum Operating Voltage

- 12V / 0.5A

## Frequency Range<sup>2</sup>

- 2.4GHz to 2.483GHz

## LEDs

- Power
- Wireless
- WPS

## Operating Temperature

- 32°F to 131°F ( 0°C to 55°C)

## Humidity

- 90% maximum (non-condensing)

## Safety & Emissions

- CE
- Wi-Fi

## Dimensions

- 120 (W) x 92 (D) x 24.5 (H) mm

<sup>1</sup>Maximum wireless signal rate derived from IEEE Standard 802.11g and 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.

<sup>2</sup>Range varies depending on country's regulation.

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**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.

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