USER MANUAL

DAP-1150

VERSION 1.1

D-Link®

WIRELESS

Table of Contents

Package Contents

- D-Link DAP-1150 Wireless G Access Point
- Power Supply
- Manual on CD
- Quick Installation Guide
- Ethernet Cable

Note: Using a power supply with a different voltage rating than the one included with the DAP-1150 will cause damage and void the warranty for this product.

System Requirements

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

Introduction

D-Link, an industry leader in networking, introduces the new D-Link Wireless G Access Point(DAP-1150). With the ability to transfer files with a maximum wireless signal rate of up to 54Mbps[1], the DAP-1150 gives you high-speed wireless network access for your home or office.

The DAP-1150 is Wi-Fi IEEE 802.11g compliant, meaning that it can connect and interoperate with other 802.11g compatible wireless client devices. The 1150 is also backwards compatible to 802.11b. It can be flexibly configured to operate as an Access Point, Wireless Client and Repeater mode.With its Setup Wizard, the DAP-1150 Access Point ensures that you will be up and running on a wireless network in just a matter of minutes.

The DAP-1150 Access Point features Wi-Fi Protected Access (WPA-PSK/WPA2-PSK) and 64/128-bit WEP Encryption to provide an enhanced level of security for wireless data communications. The DAP-1150 also includes additional security features to keep your wireless connection safe from unauthorized access.

The DAP-1150 supports WPS on three operation modes,with each capable of being conveniently setup by using PIN method or Push Button.

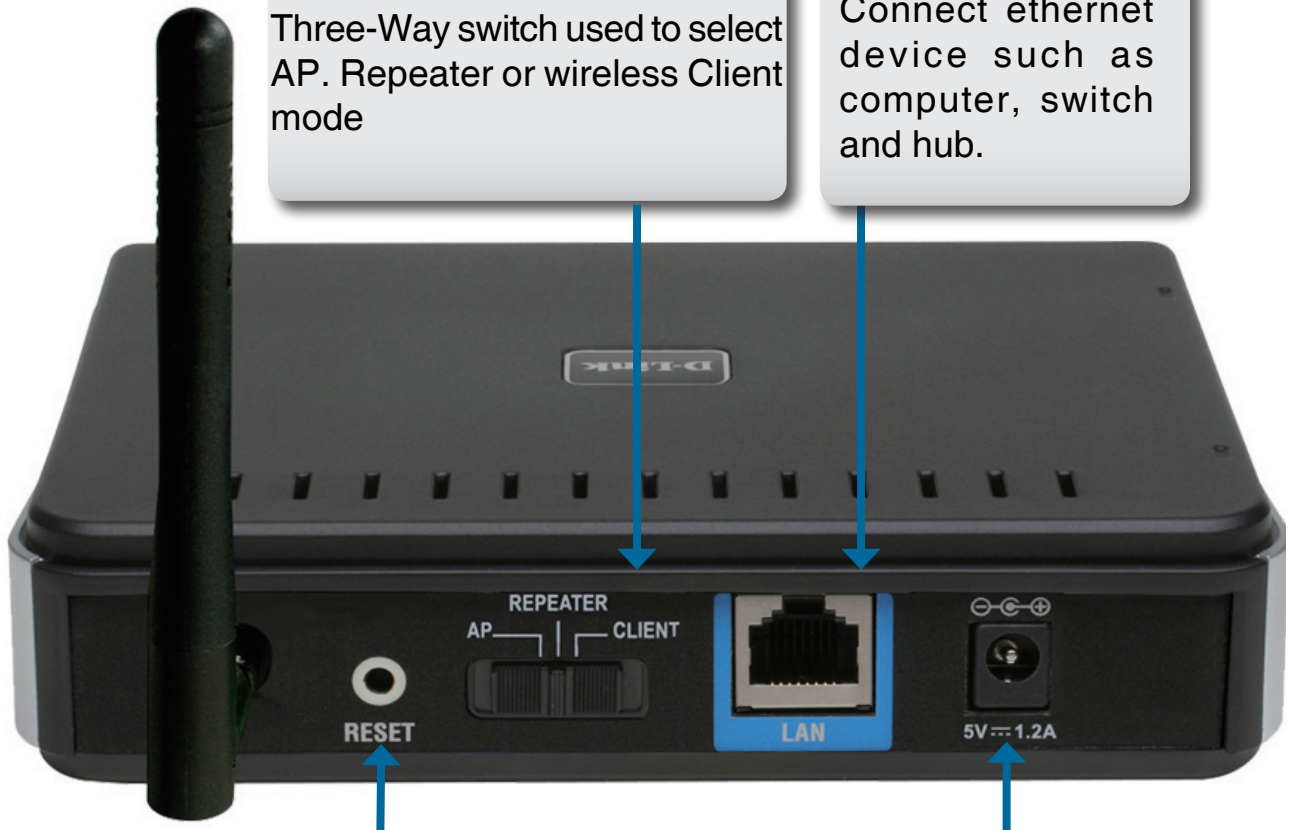
1 Maximum wireless signal rate based on IEEE Standard 802.11g specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate.

Features

- **Multiple operation modes –** Can be flexibly configured to operate as an Access Point, Wireless Client, Wireless Repeater mode.
- **Total security –** Complete set of security features including WEP encryption and WPA/WPA2 to protect network against outside intruders.
- **Supports WPS(WiFi Protected Setup) on three operation modes.**
- **Connect home and soho to a wireless network –** Create a wireless network for your home and office using the D-Link DAP-1150 as an 802.11g 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.
- **Protect wireless network and data –** The DAP-1150 provides 64/128-bit WEP encryption and WPA/WPA2 security to protect your network and wireless data. In addition, it also provides MAC address filtering and the Disable SSID Broadcast function to limit outsiders' access to your home and office network.
- **Flexibly configure your AP for different applications –** The DAP-1150 can be configured to operate as (1) an Access Point to act as a central hub for wireless users, (2) an Wireless Client to connect to another Access Point, (3) a Repeater to extend the wireless coverage to cover all "dead" spots".
- **Easy to install and use –** With D-Link's Setup Wizard, you can set up your wireless network in minutes. It configures your DAP-1150's operation mode, makes it easy to add new wireless devices onto the network, and helps you create a simple wireless network for your home and office.

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

Hardware Overview
Connections



Hardware Overview

LEDs

Power: Solid green light indicates connection to a power source

LAN:Blinking green light indicates activity;Solid green light indicates connection

WLAN: Blinking green light indicates wireless activity;solid green light indicates connection

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.

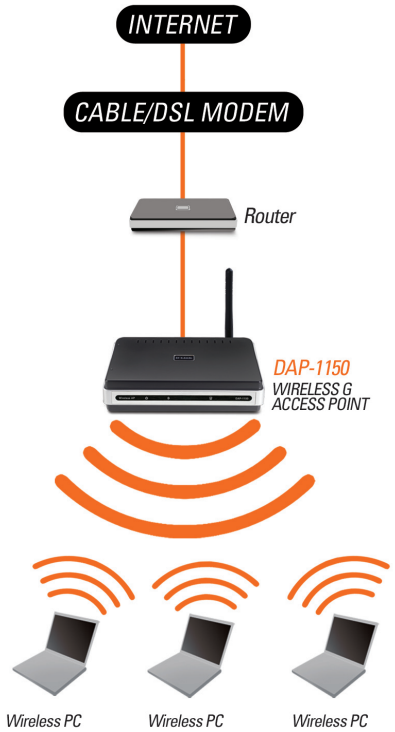
5. If you are using 2.4GHz cordless phones or X-10 (wireless products such as ceiling fans, lights, and home security systems), your wireless connection may degrade dramatically or drop completely. Make sure your 2.4GHz phone base is as far away from your wireless devices as possible. The base transmits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

AP/Repeater/Wireless Client Mode

How you use your DAP-1150 will determine which mode you choose on the DAP-1150. This section will help you figure out which setting works with your setup.

Access Point Mode

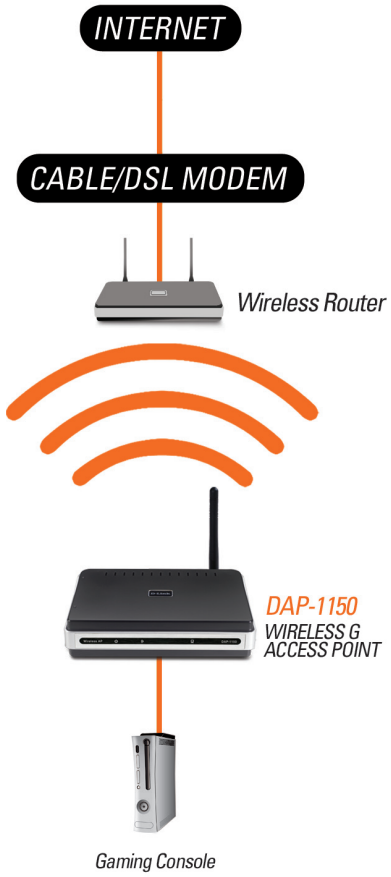
In Access Point mode, the DAP-1150 acts as a central connection point for any computer (client) that has a 802.11g or backward-compatible 802.11b wireless network adapter and is within range of the AP. Clients must use the same SSID (wireless network name) and channel as the AP in order to connect. If wireless security is enabled on the AP, the client will need to enter a password to connect to the AP. Multiple clients can connect to the AP at the same time in Access Point mode.



Wireless PCs Using the DAP-1150 as a Central Connection Point

Wireless Client Mode

In AP Client mode, the DAP-1150 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. AP Client mode can support multiple wired clients.



Ethernet-enabled Gaming Console Using the DAP-1150 as a Wireless Interface to Access the Internet

Repeater Mode

Repeater mode increases the range of your wireless network by extending the wireless coverage of another AP or wireless router. The APs and wireless router (if used) must be within range of each other. Make sure that all clients, APs, and the wireless router all use the same SSID (wireless network name) and channel.

Extending the Wireless Coverage of a Wireless Router Using the DAP-1150

Configuration

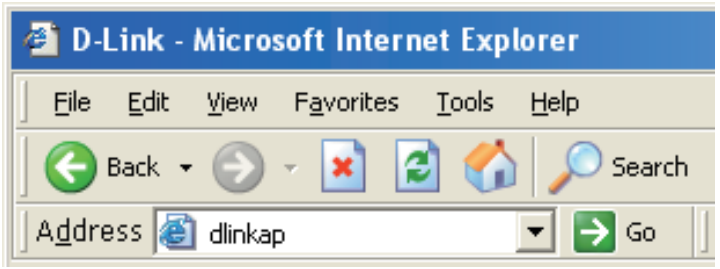
Web-based Configuration Utility

If you wish to change the default settings or optimize the performance of the DAP-1150, you may use the configuration utility that D-Link has included a configuration utility for this purpose.

After you have completed the initial installation, you can access the configuration menu, at any time, by opening the web-browser and typing in the device name of the DAP-1150. The DAP-1150's default device name is shown below:

1. Open the web browser

2. Type in the **device name** of the DAP-1150.(dlinkap)

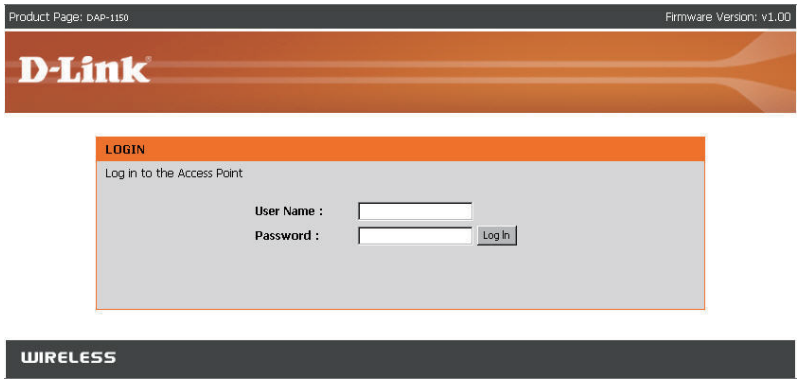


Note: If you have changed the default device name assigned to the DAP-1150, make sure to enter the correct device name.

3. Type **admin** in the **User Name** field

4. Leave the **Password** blank

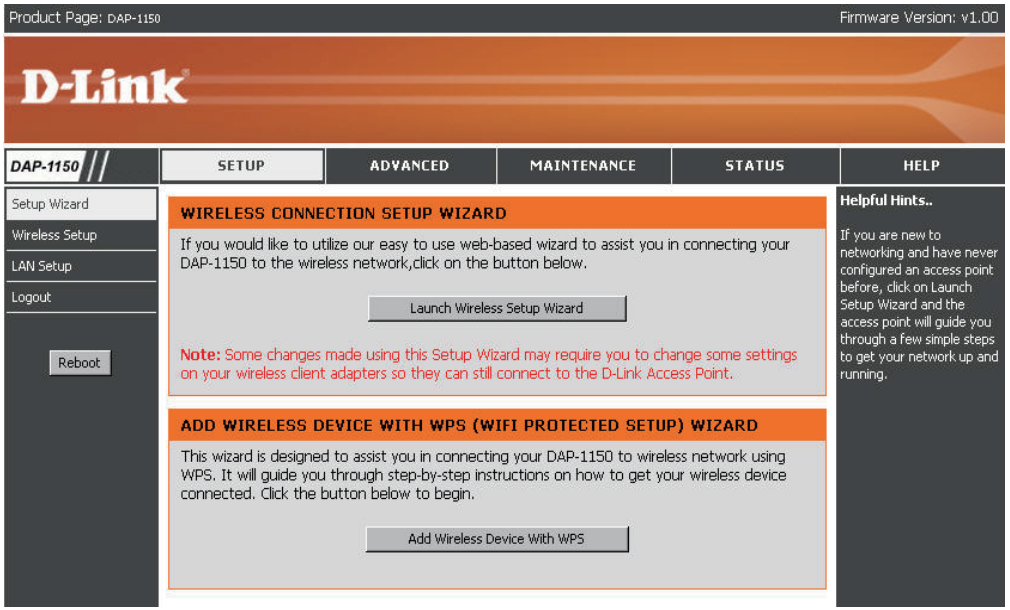
5. Click **OK**



Wireless Setup Wizard

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

To setup your wireless network using WPS, you can click **Add Wireless Device With WPS** and skip to page 37.

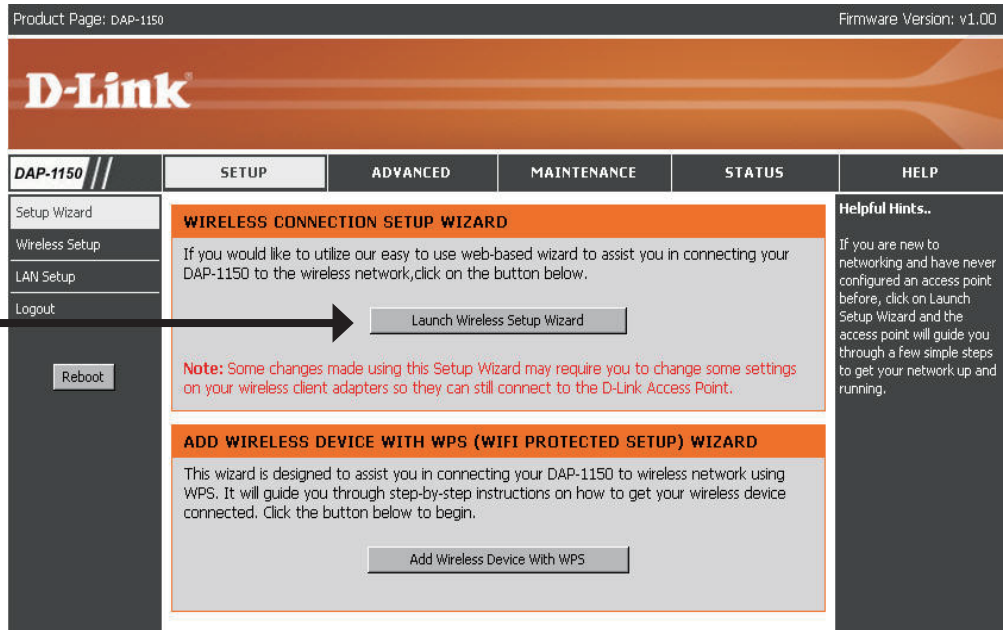


Wireless Setup Wizard For AP Mode

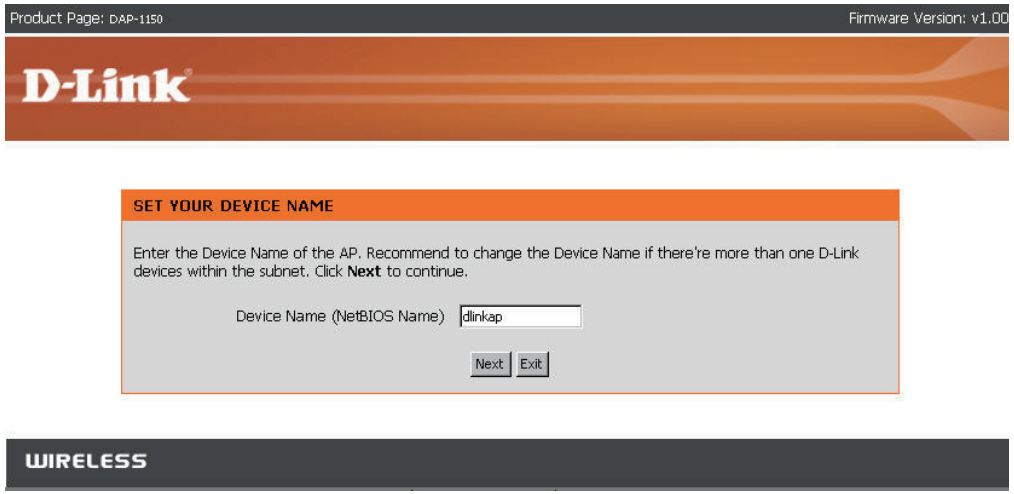
This Wizard is designed to assist you in connecting you wireless device to your access point. It will guide you through step-by-step instructions on how to get your wireless device connected.

Click **Launch Wireless Setup Wizard** to begin.

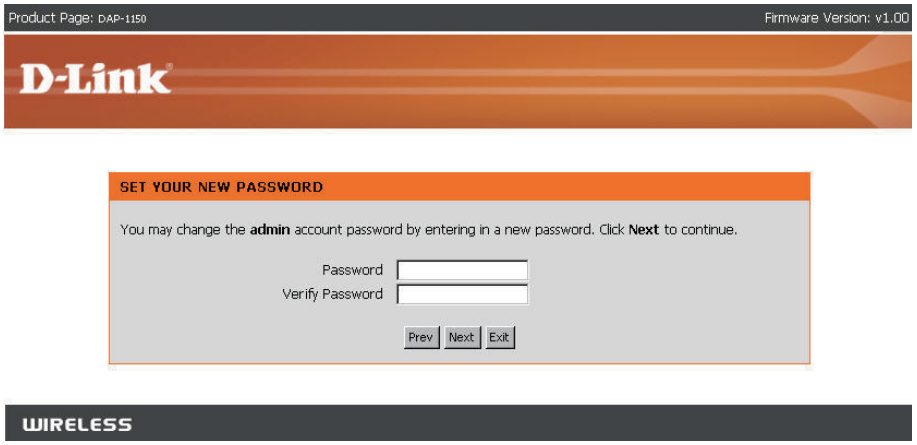
Click **Launch Wireless Setup Wizard**



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



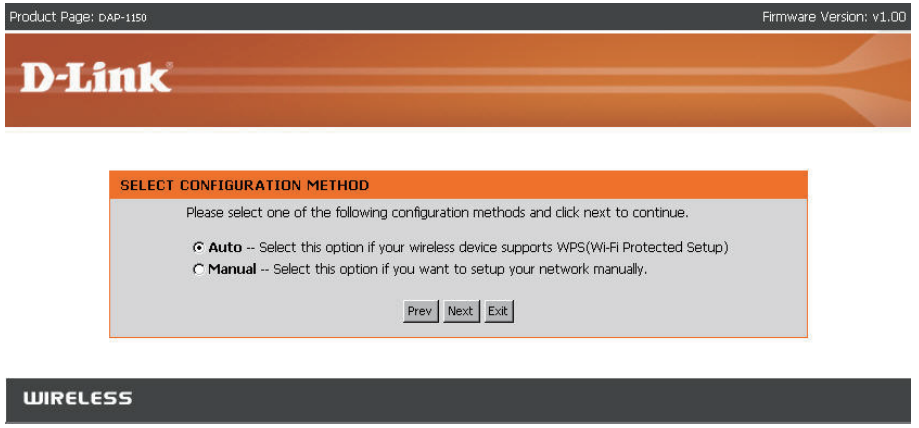
If you want to change the admin account password, enter a new password and click **Next**.



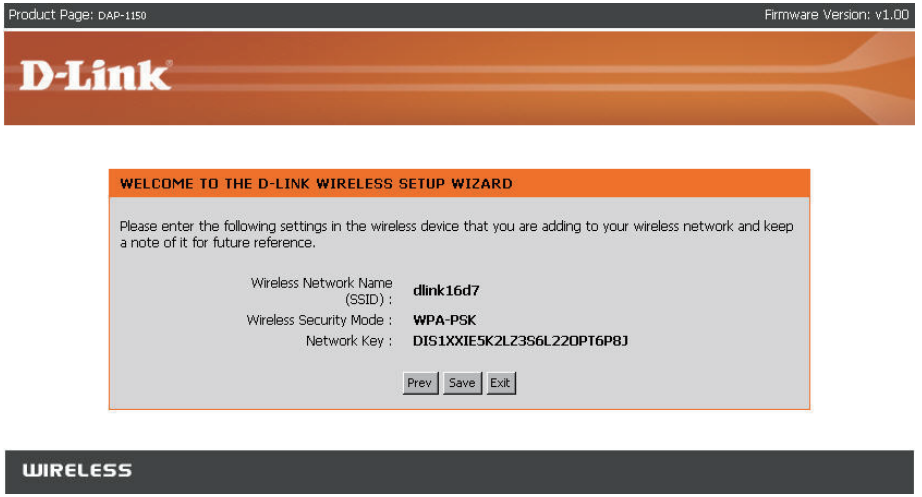
Select **Auto** as the configuration method only if your wireless device supports Wi-Fi Protected Setup.

Skip to next page for **Manual** configuration.

Click **Next** to continue.

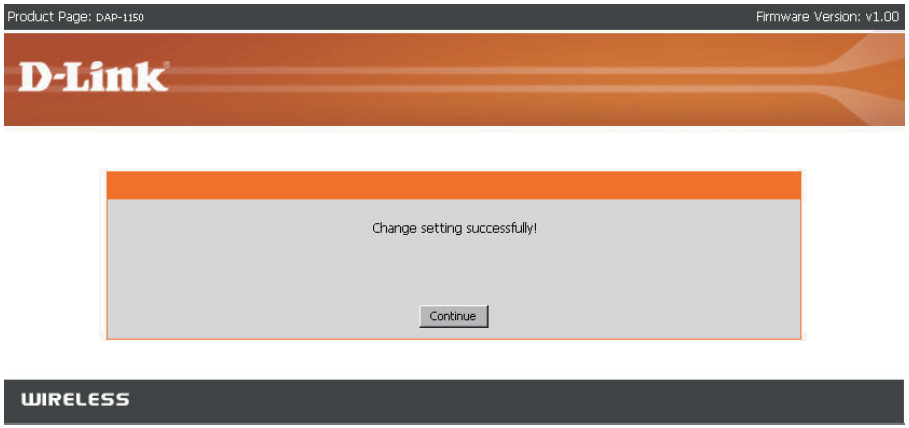


Click **Save** to save your network settings.



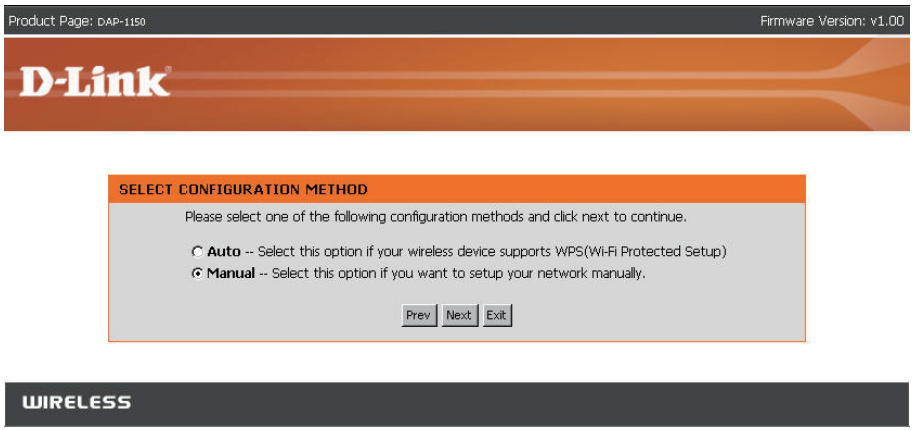
In order for your network settings to take effect AP will reboot automatically.

Click continue to return to the login page.



Select **Manual** as the configuration method to setup your network manually.

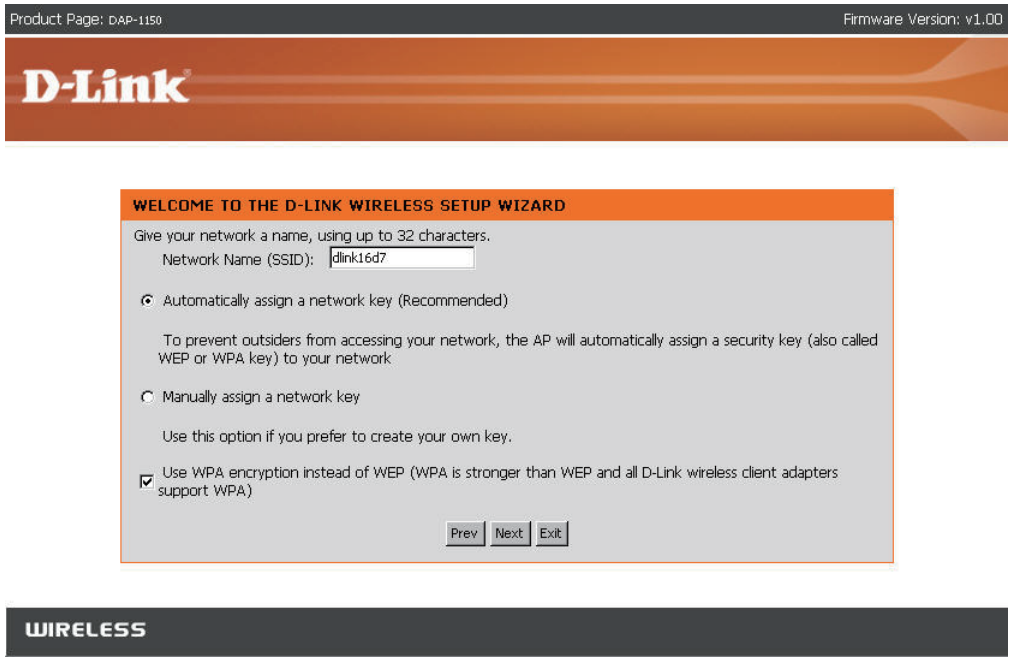
Click **Next** to continue.



Enter a network name and choose Automatically assign a network key.

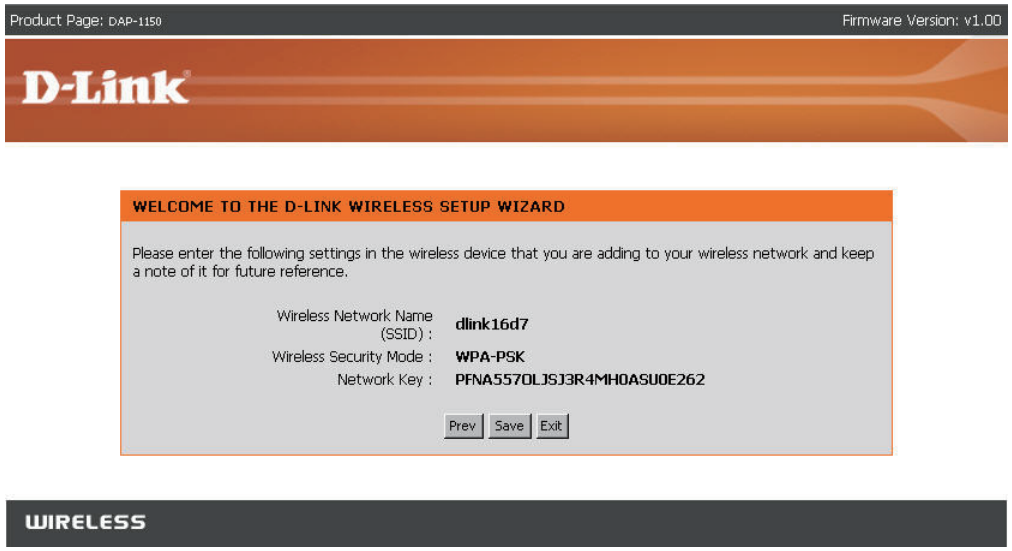
To Manually assign a network key, skip to page 19.

Click **Next** to continue.



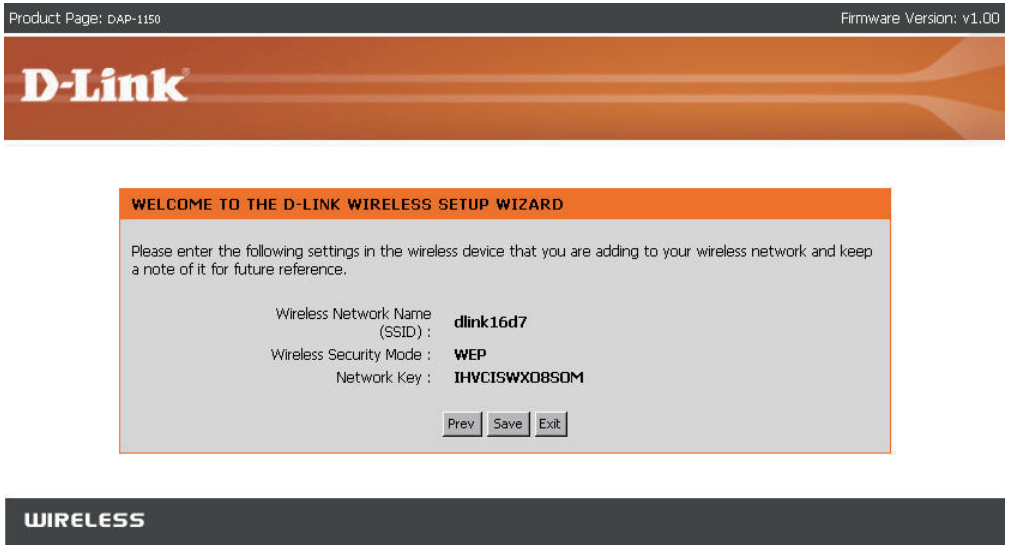
If you choose WPA-PSK encryption, the following screen will show you your Network Key to enter on your wireless clients.

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



If you choose WEP encryption, the following screen will show you your Network Key to enter on your wireless clients.

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

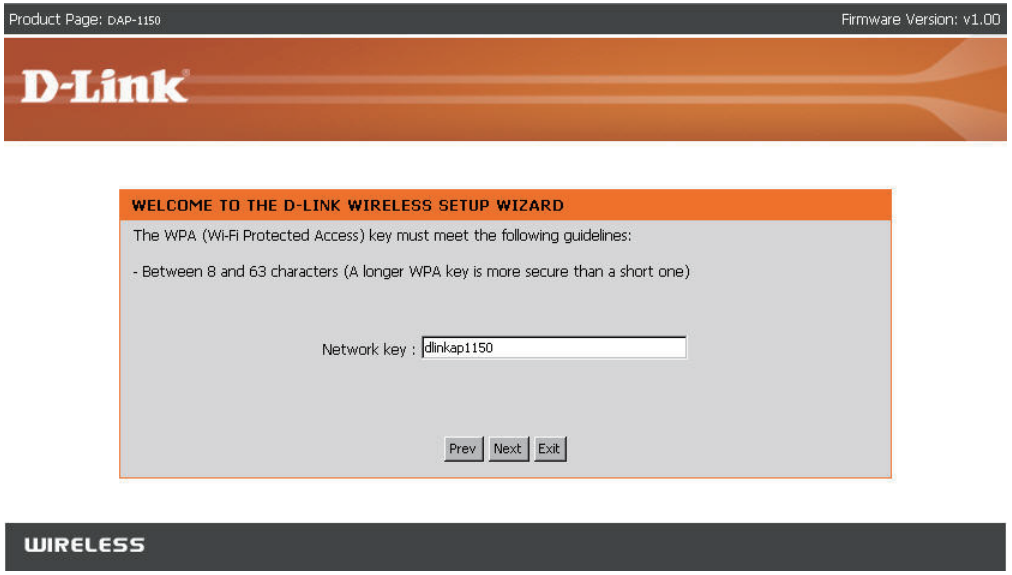


Choose **Manually assign a network key** to create you own key.

Click **Next** to continue.

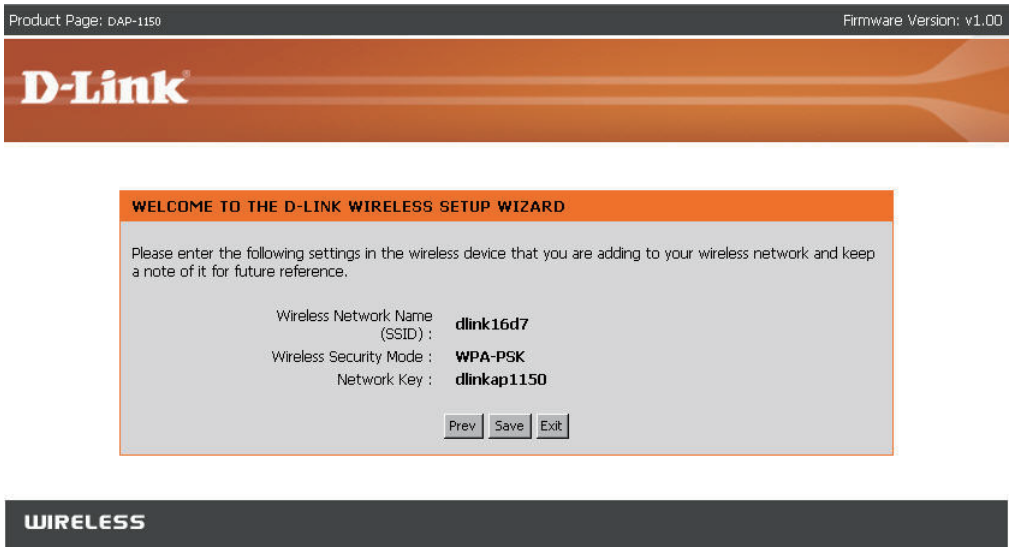
For **WPA** encryption, enter a Network Key between 8 and 63 characters long or enter exactly 64 characters using 0-9 and A-F.

Click **Next** to continue.



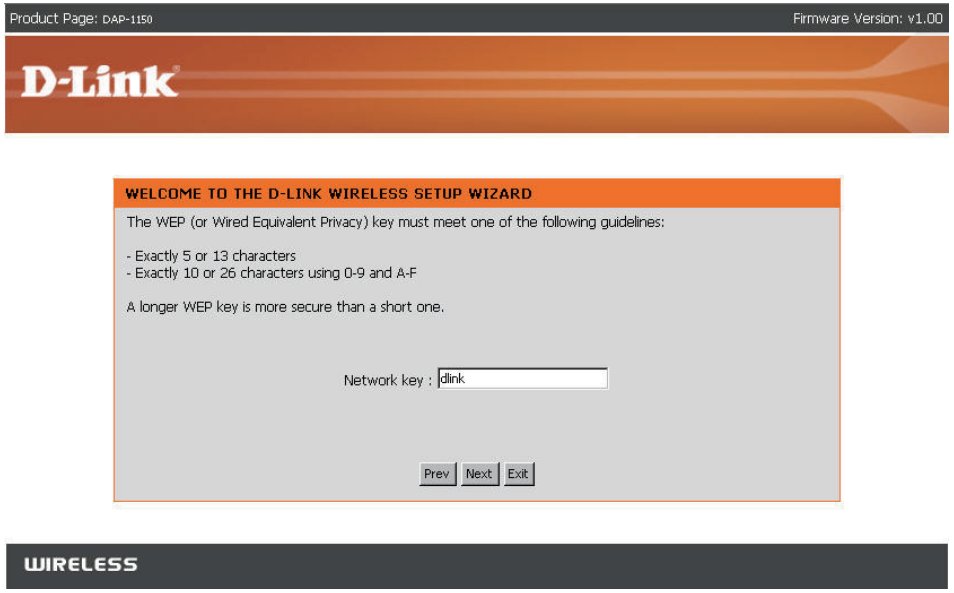
If you select **WPA** encryption, the following screen will show you your network key to enter on your wireless clients.

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



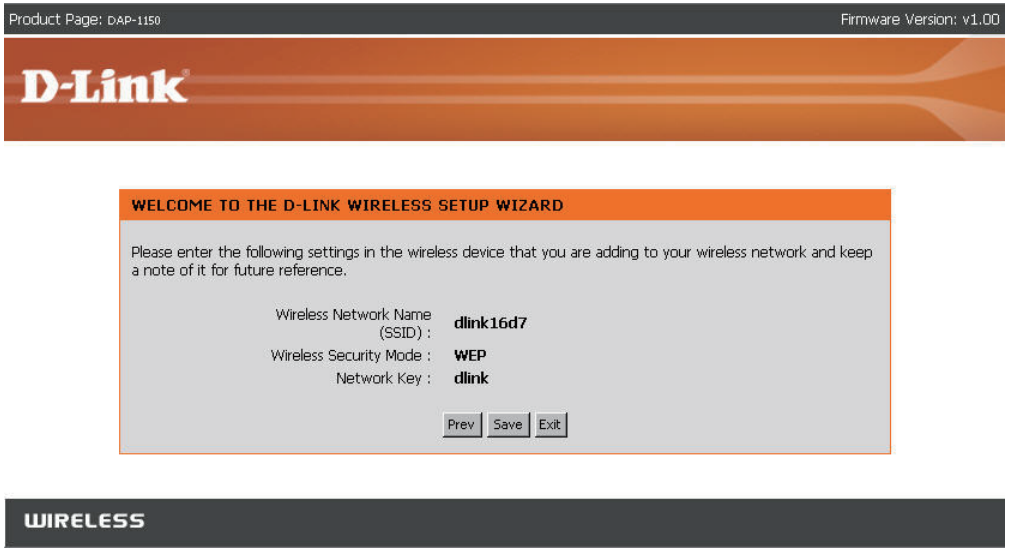
For **WEP** encryption, enter a Network Key exactly 5 or 13 characters long or exactly 10 or 26 characters using 0-9 and A-F.

Click **Next** to continue.



If you select **WEP** encryption, the following screen will show you your network key to enter on your wireless clients.

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

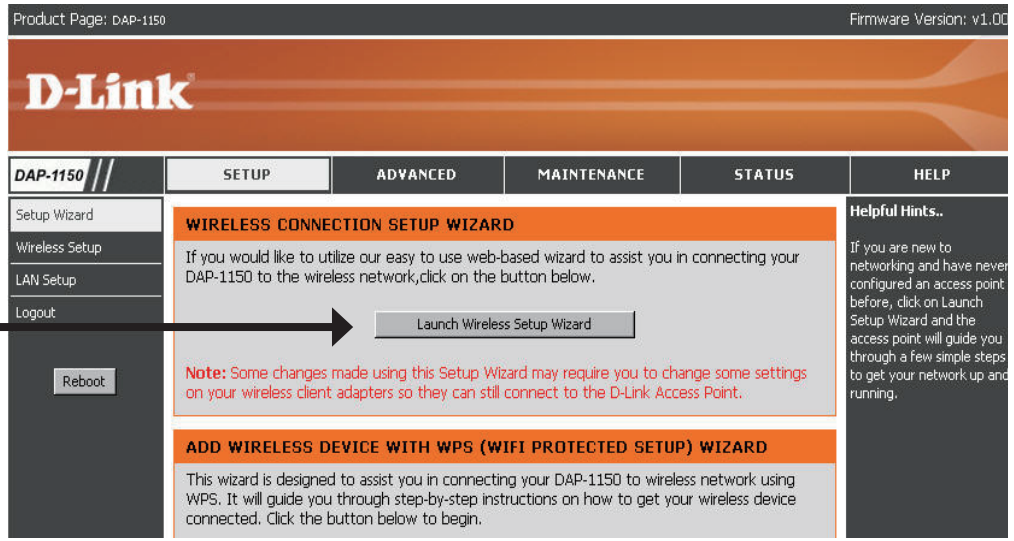


Setup Wizard For Repeater Mode

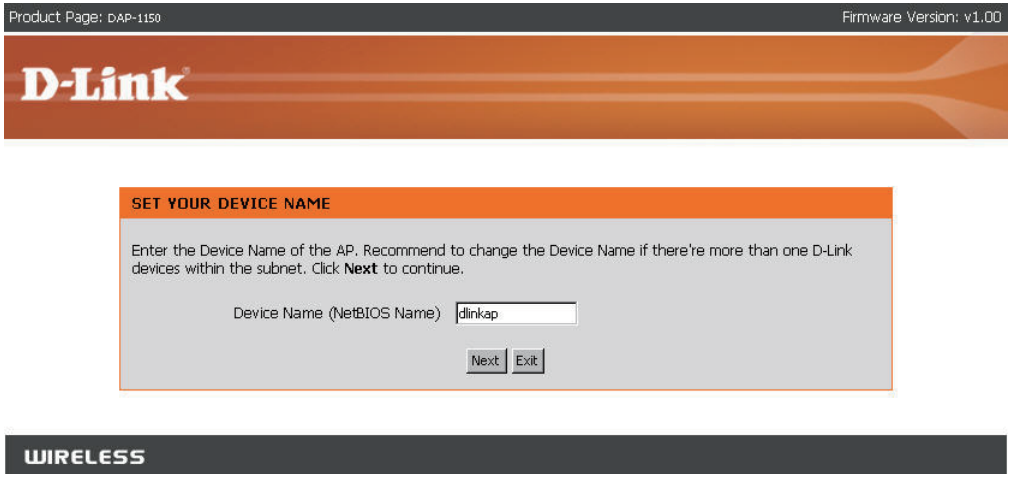
This wizard is designed to assist you in configuring the wireless settings for your DAP-1150 with repeater mode. It will guide you through step-by-step instructions on how to setup your wireless network. You can click launch wireless setup wizard to quickly configure your access point. If DAP-1150 successfully connect to the AP or Wireless router with repeater mode, you can also click add wireless device with WPS to setup your wireless network using WPS.

Click **Launch Wireless Setup Wizard** to begin.

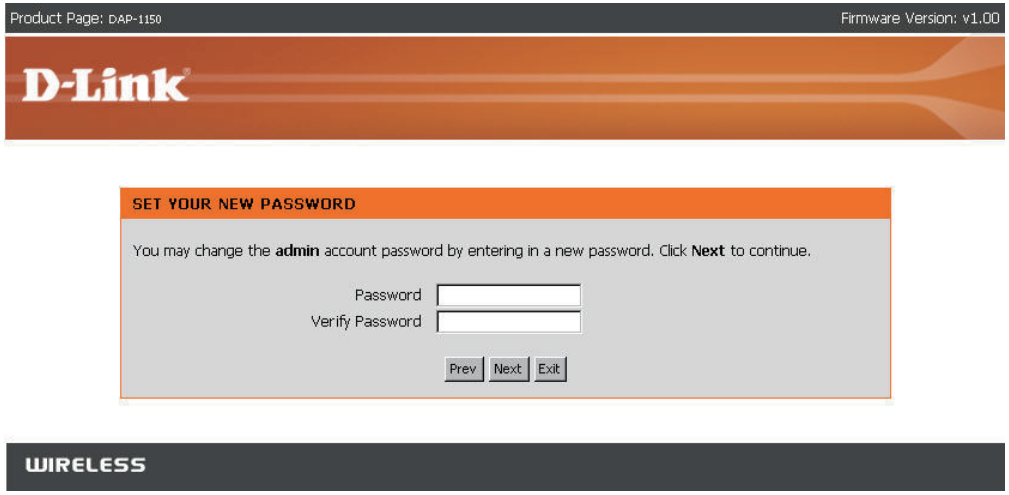
Click **Launch Wireless Setup Wizard**



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



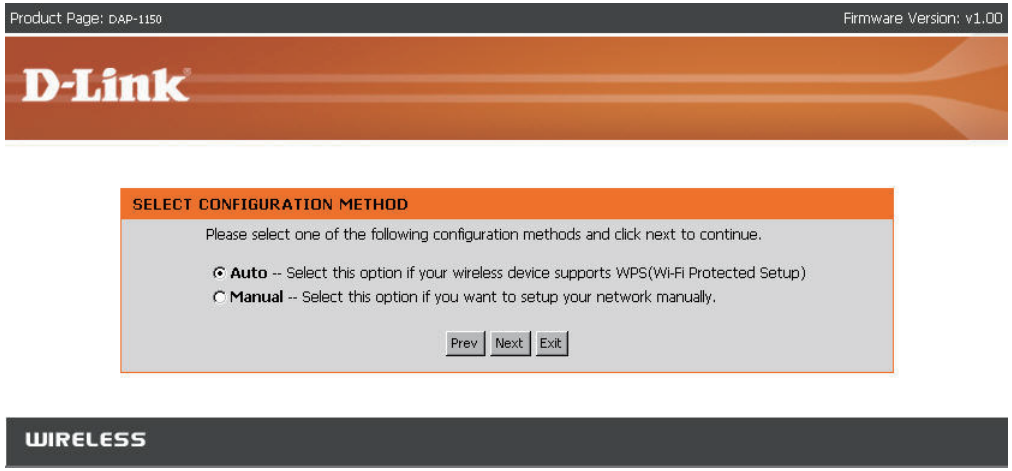
If you want to change the admin account password, enter a new password and click **Next**.



Select **Auto** configuration if you want to use Wi-Fi Protected Setup.

If you want to setup your network manually, skip to page 26.

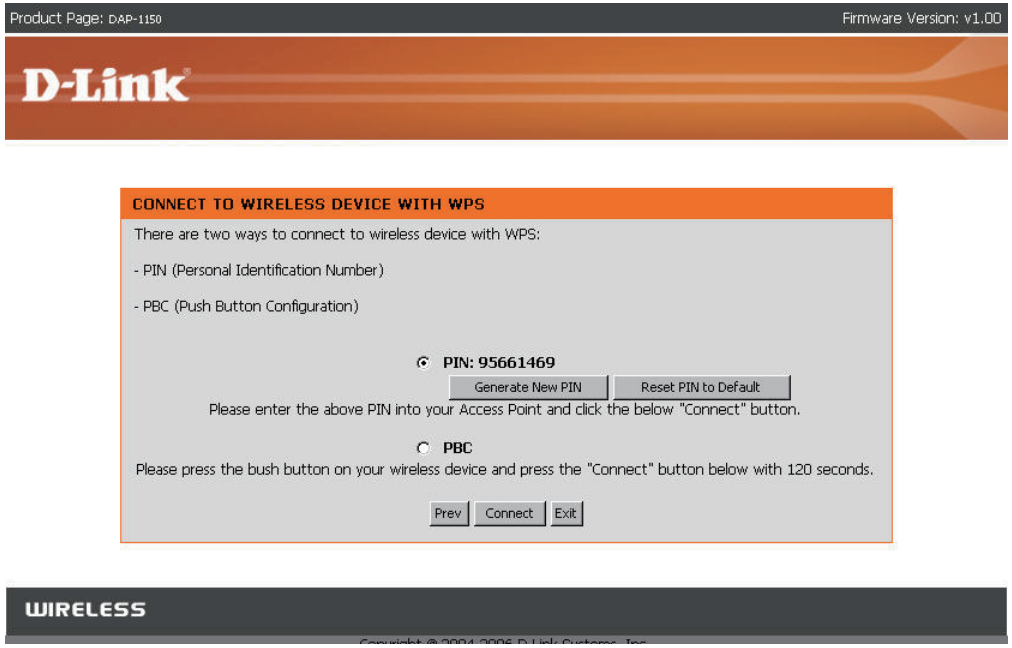
Click **Next** to continue.



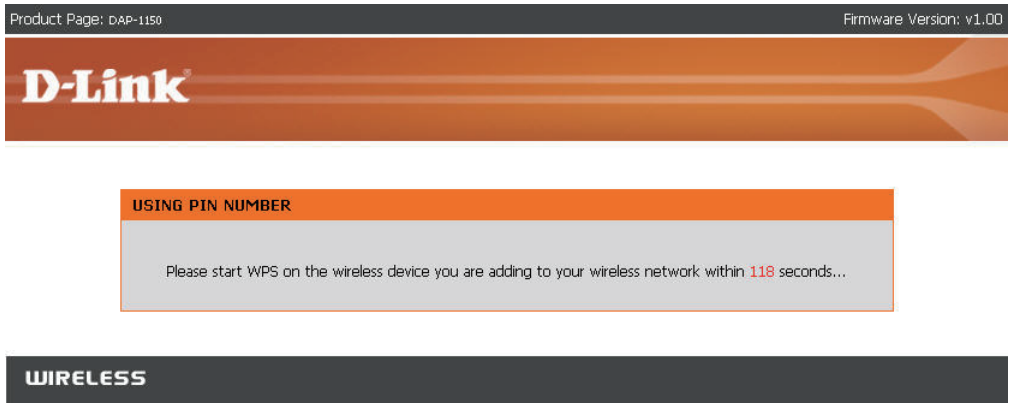
Select **PIN** to connect your wireless device with WPS.

For **PBC** configuration, skip to next page.

Enter the PIN number used into you access point and click **Connect**.

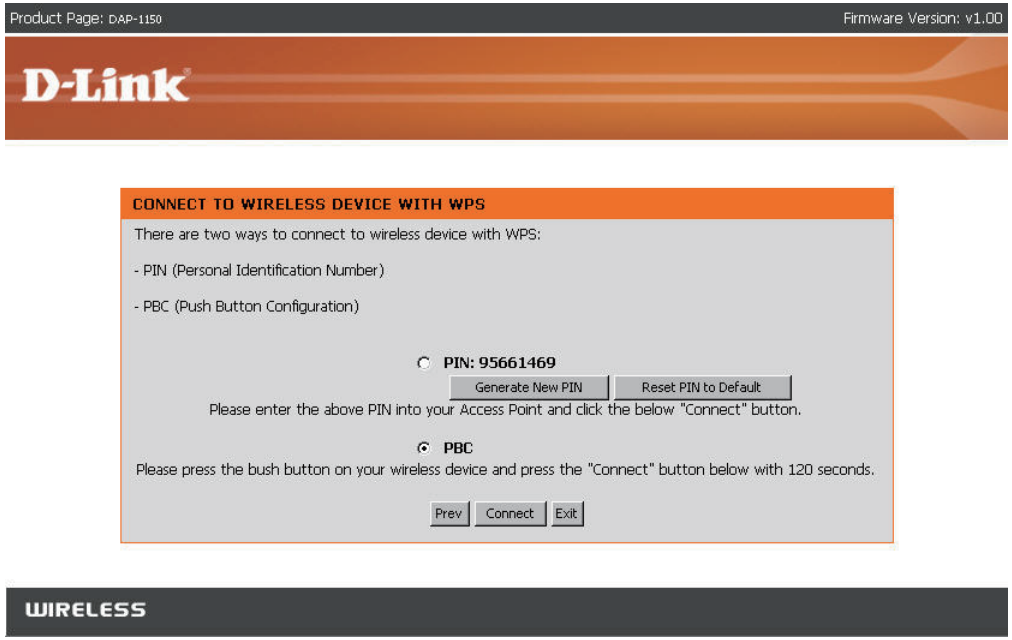


Start WPS on the wireless device you are adding to you wireless network to complete the setup.

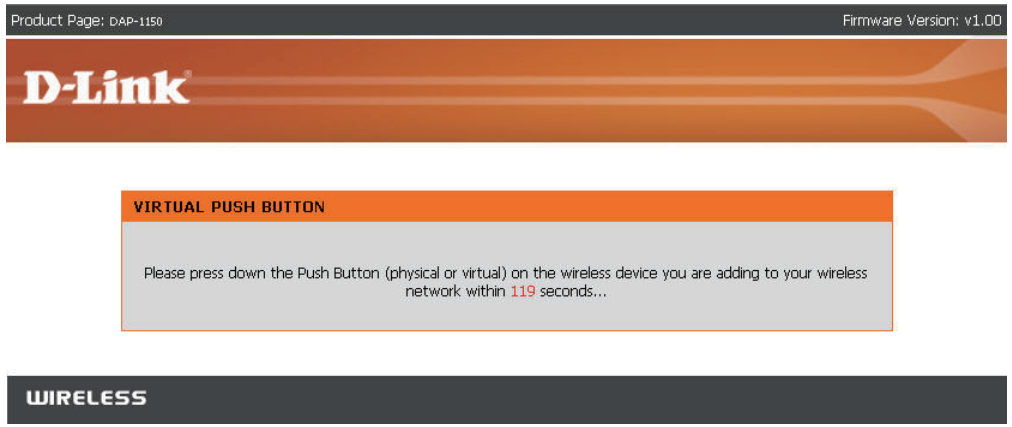


Select **PBC** to use the Push Button Configuration to connect to your network.

Click **Connect** to continue.

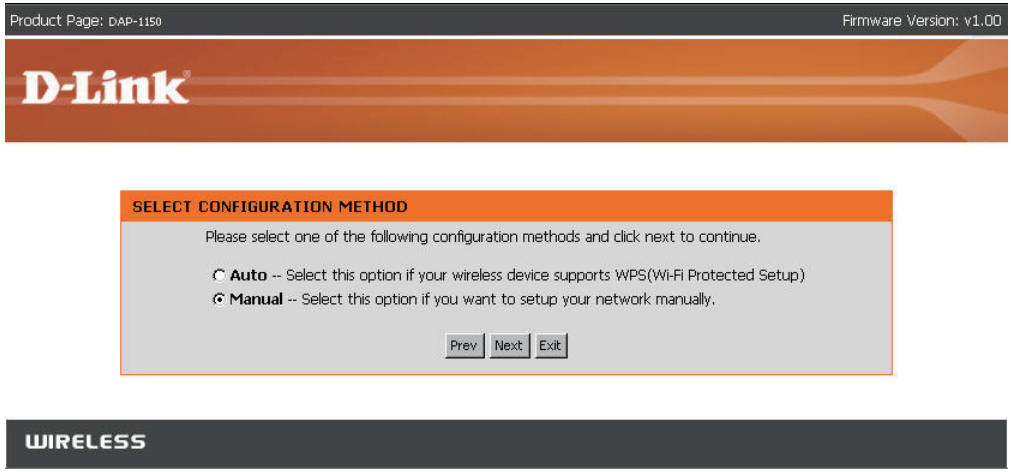


Press down the Push Button on the wireless device you are adding to your network to complete the setup.



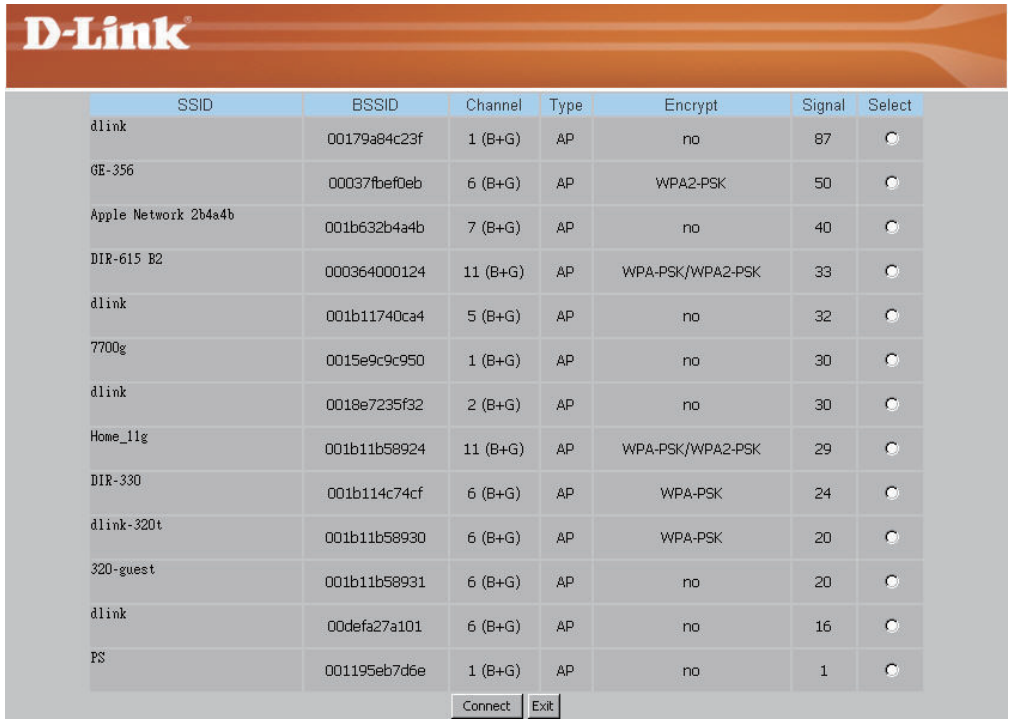
Select **Manual** configuration to setup your network manually.

Click **Next** to continue.

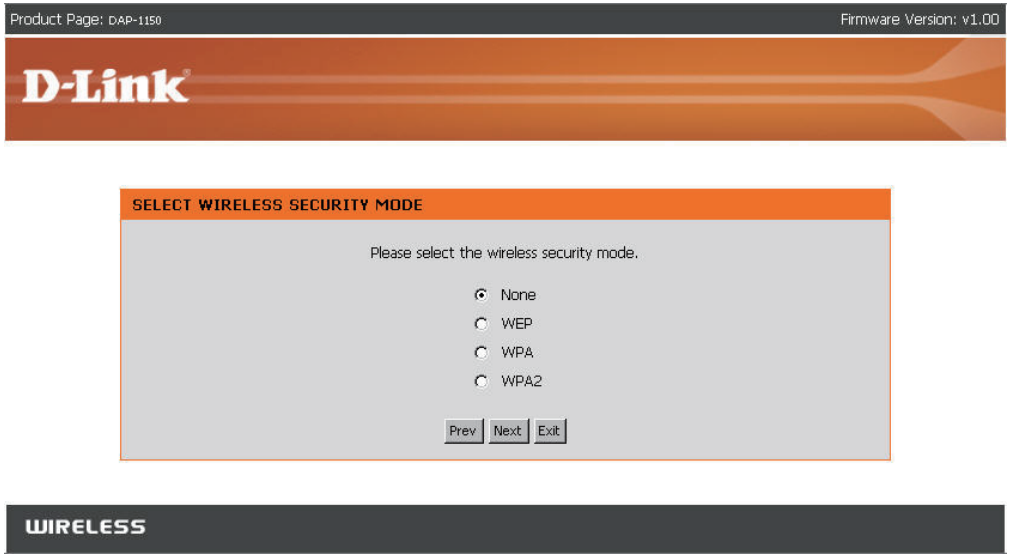


If you clicked on **Site Survey** to following screen will be displayed.

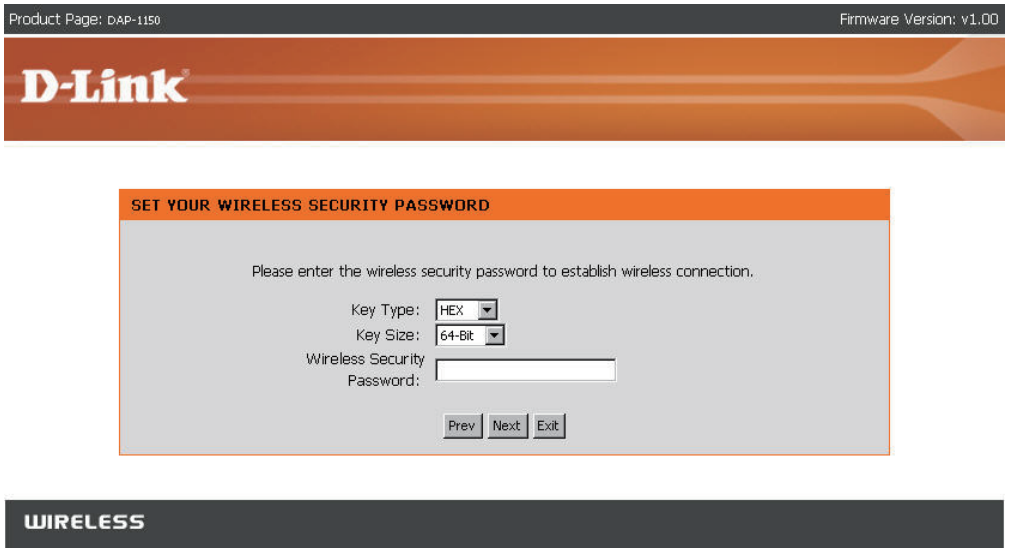
Find your access point from the list and click **Connect** to complete the Setup Wizard.



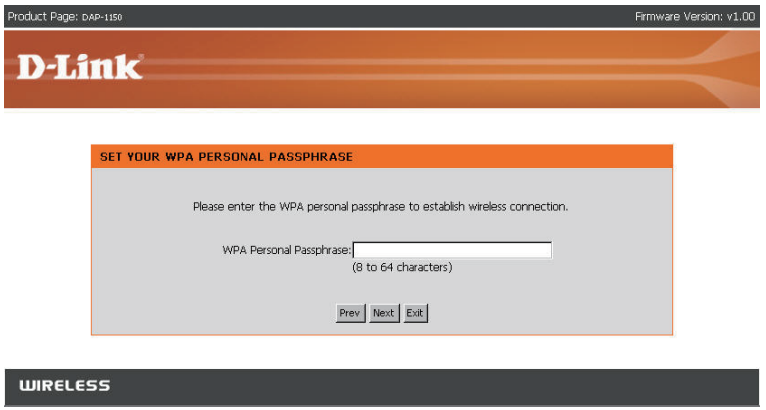
Choose which Security Mode you want to use and click **Next** to continue.



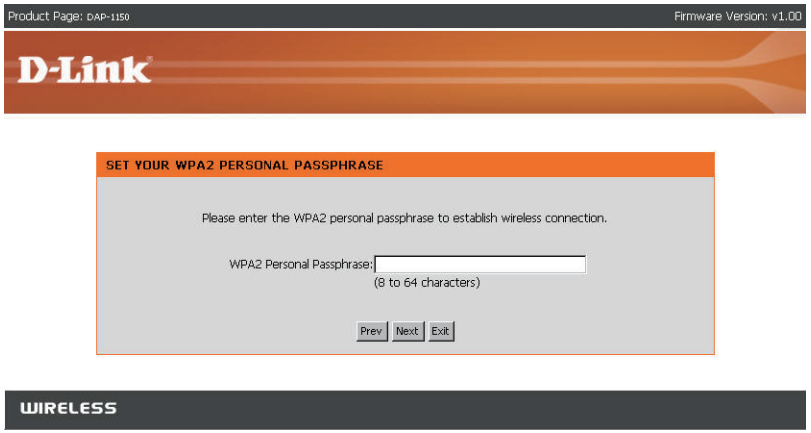
If you choose **WEP**, enter the wireless security password and click **Next** to complete the Setup Wizard.



If you choose **WPA**, enter the WPA Personal Passphrase and click **Next** to complete the Setup Wizard.

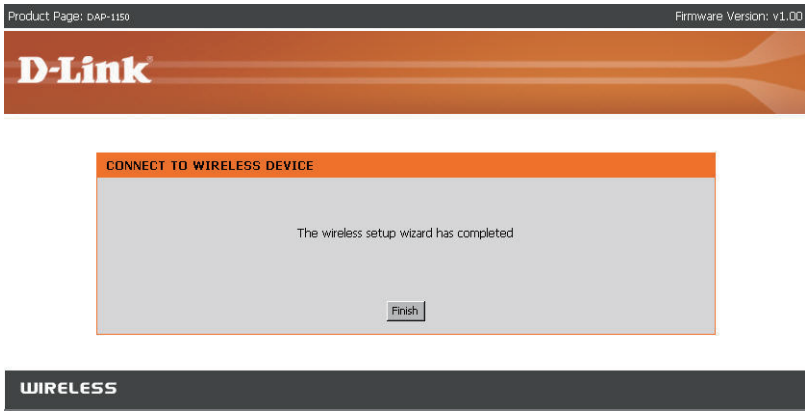


If you choose **WPA2**, enter the WPA2 Personal Passphrase and click **Next** to complete the Setup Wizard.



The Wireless Setup Wizard is complete.

Click **Finish** to reboot the device.

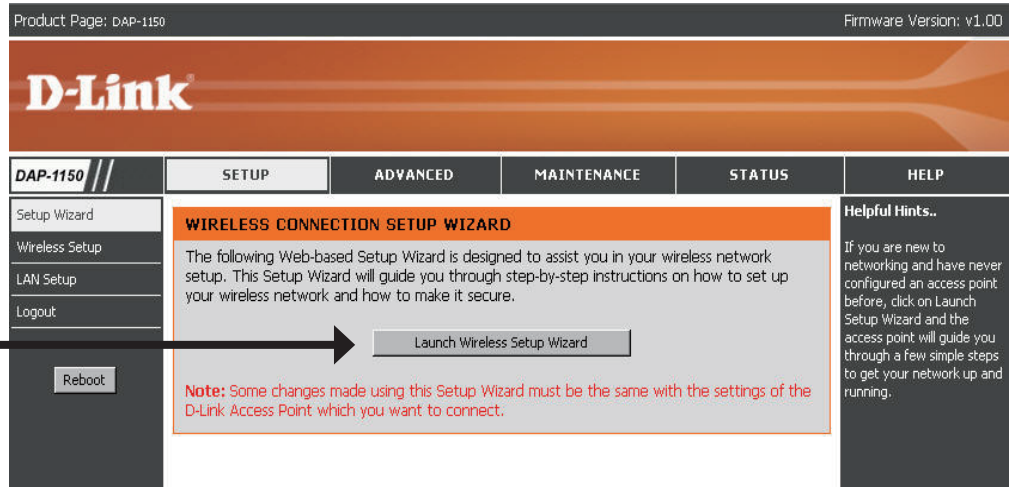


Setup Wizard For Wireless Client Mode

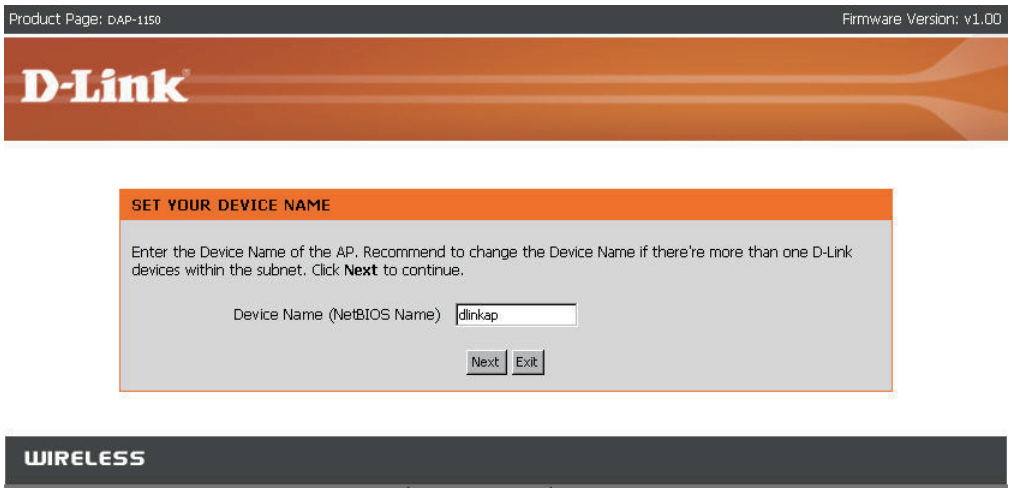
This wizard is designed to assist you in configuring the wireless settings for your AP with wireless client mode. It will guide you through step-by-step instructions on how to setup your wireless network.

Click Launch Wireless Setup Wizard to begin.

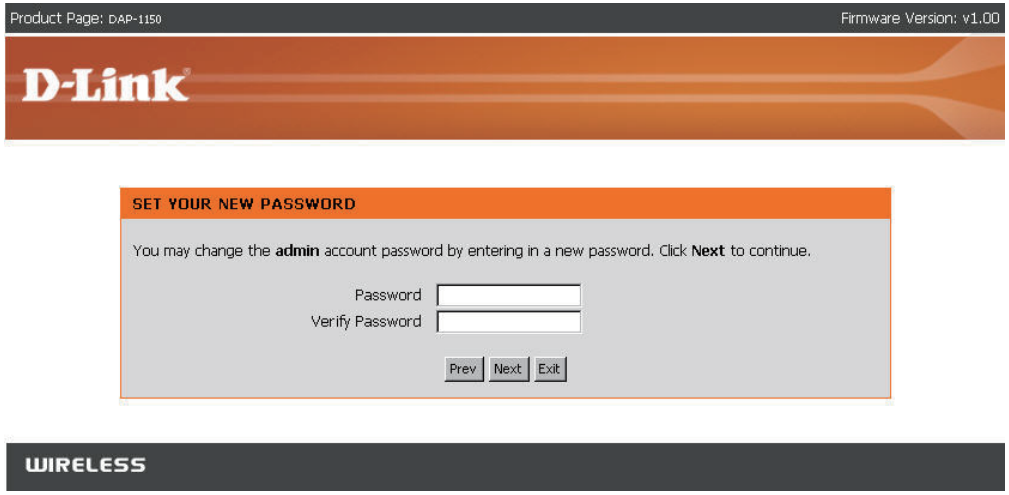
Click Launch Wireless Setup Wizard



Enter the Device Name of the AP and click Next to continue. It is recommended to change the Device Name if there is more than one D-Link device within the subnet.



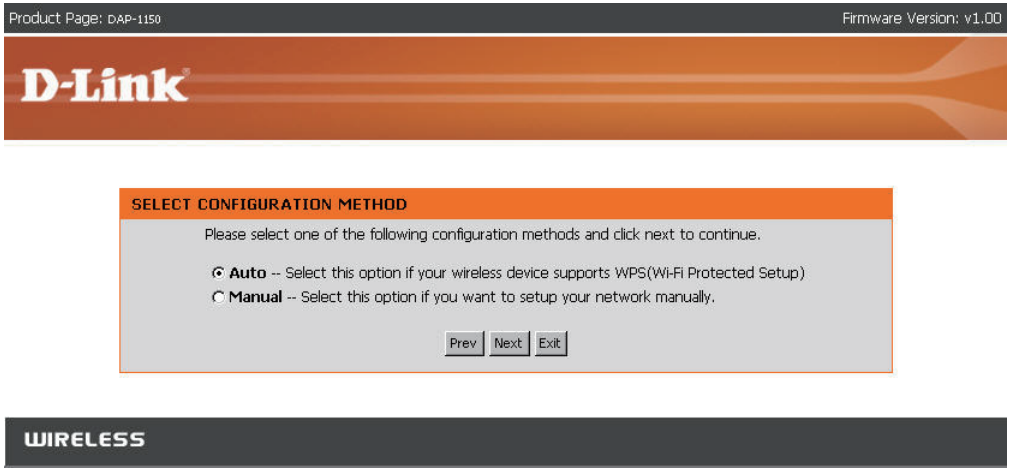
If you want to change the admin account password, enter a new password and click Next.



Select Auto configuration if you want to use Wi-Fi Protected Setup.

If you want to setup your network manually, skip to page 33.

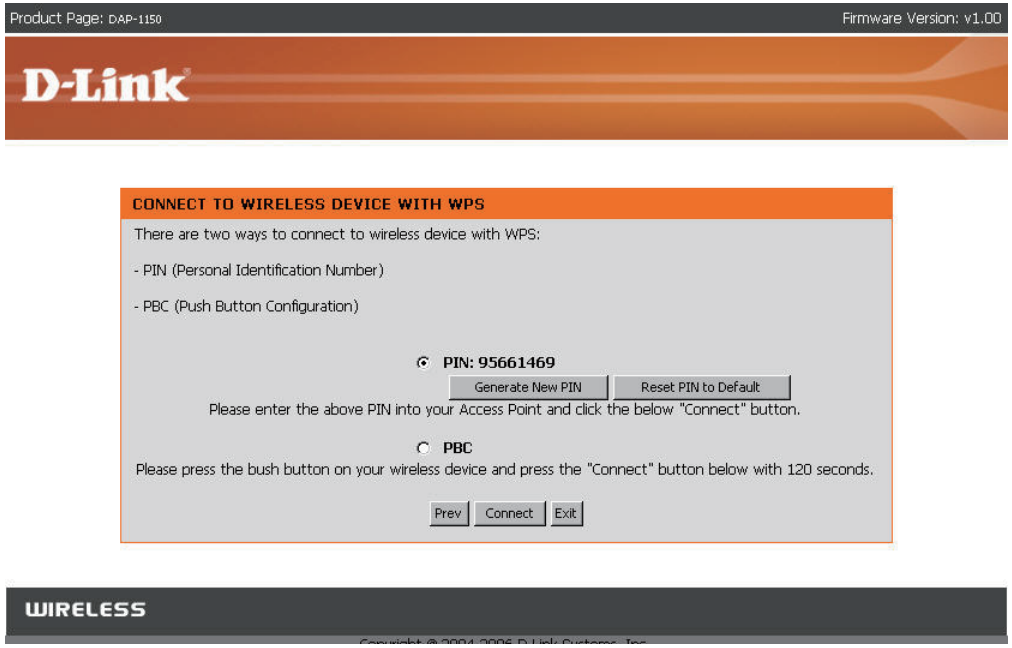
Click Next to continue.



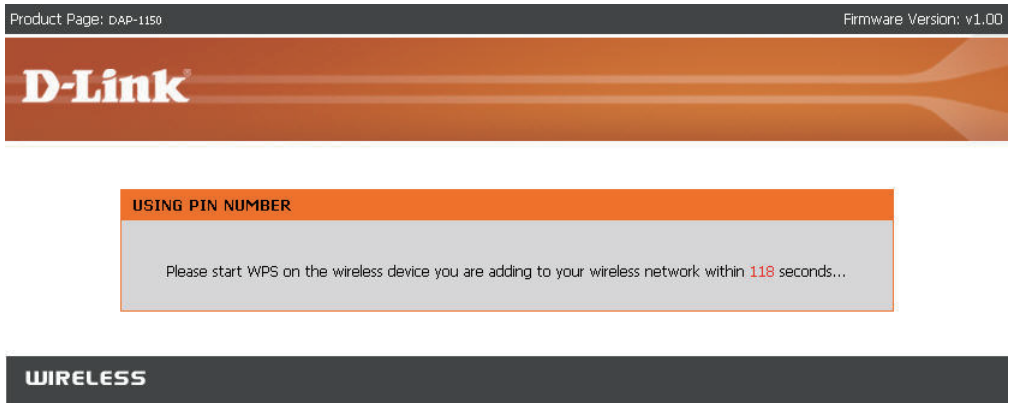
Select PIN to connect your wireless device with WPS.

For PBC configuration, skip to next page.

Enter the PIN number used into you access point and click Connect.

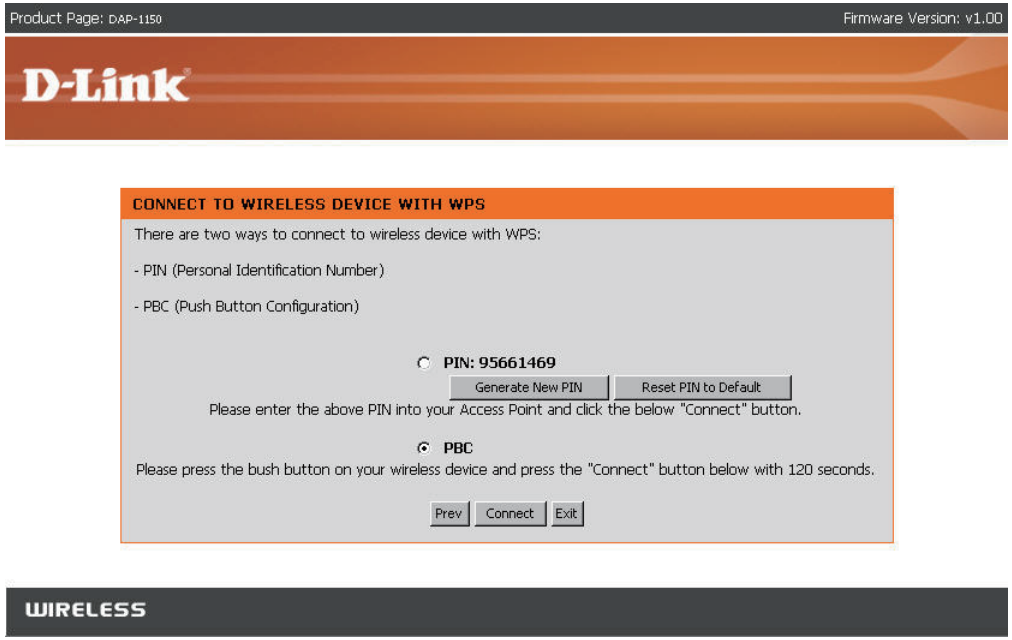


Start WPS on the wireless device you are adding to you wireless network to complete the setup.

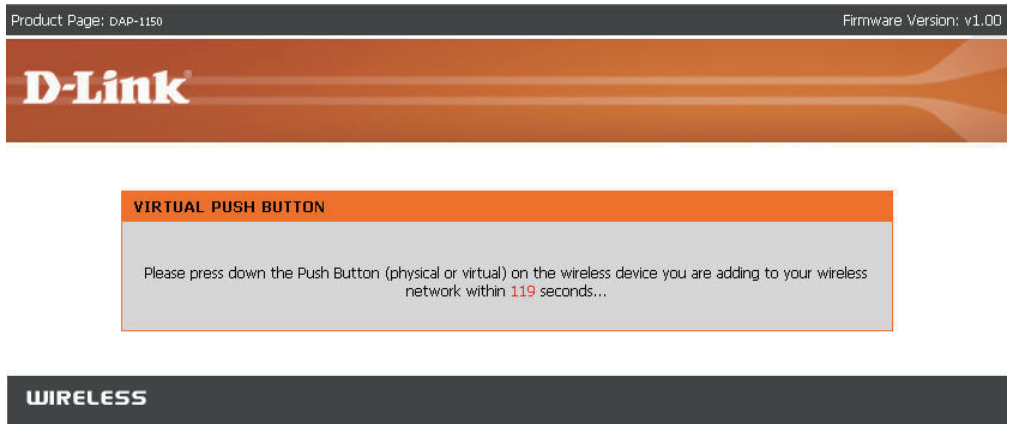


Select PBC to use the Push Button Configuration to connect to your network.

Click Connect to continue.

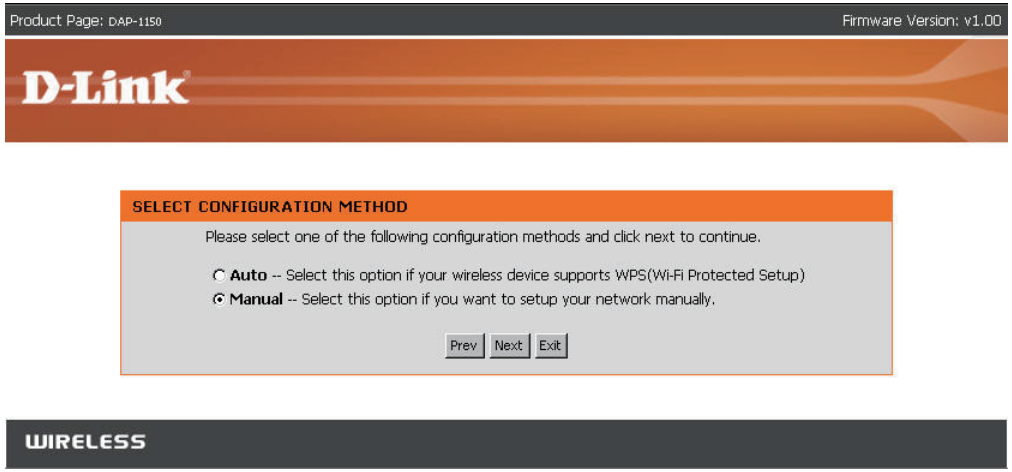


Press down the Push Button on the wireless device you are adding to your network to complete the setup.



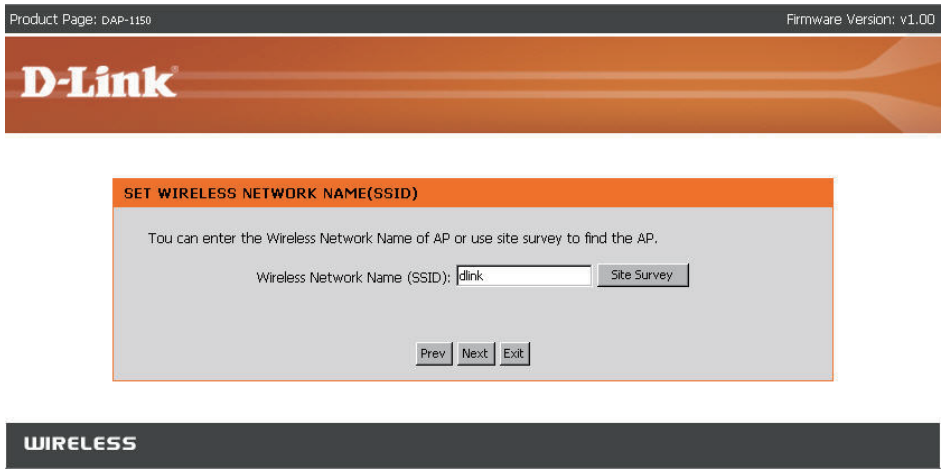
Select Manual configuration to setup your network manually.

Click Next to continue.



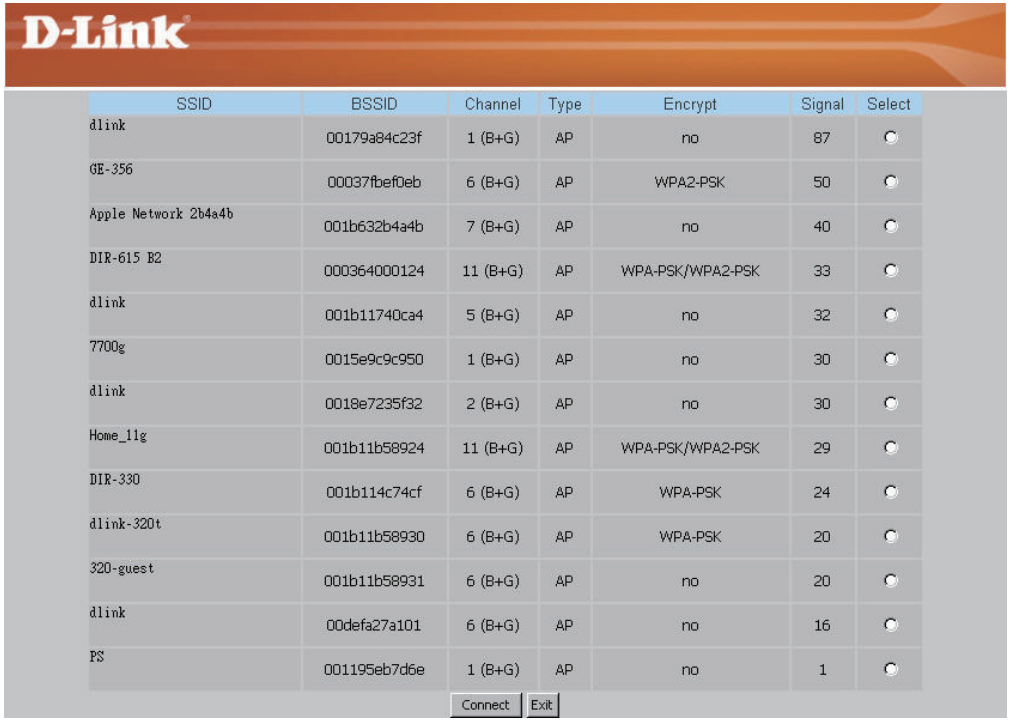
Enter the Wireless Network Name of the AP or use site survey to find the AP.

Click Next to continue.

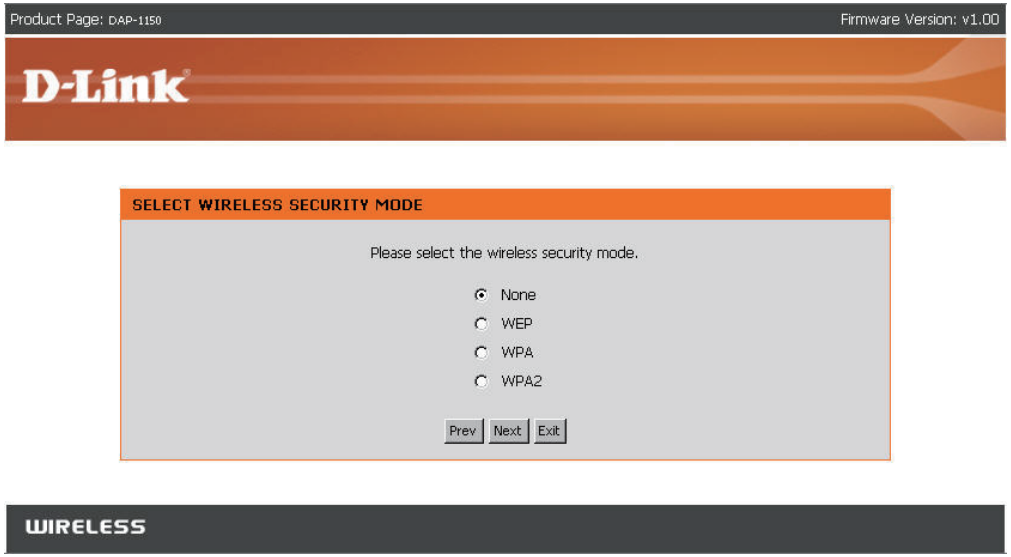


If you clicked on Site Survey to following screen will be displayed.

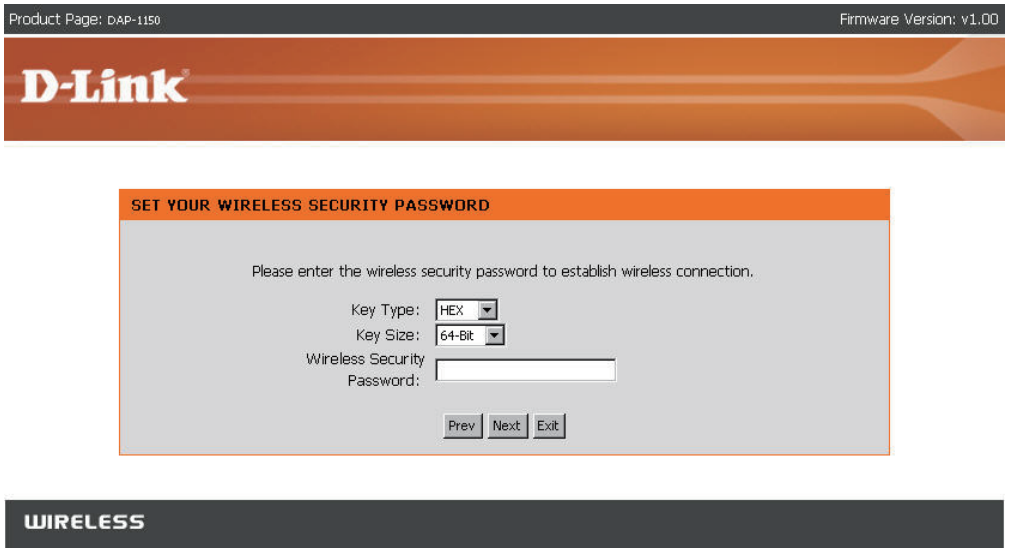
Find your access point from the list and click Connect to complete the Setup Wizard.



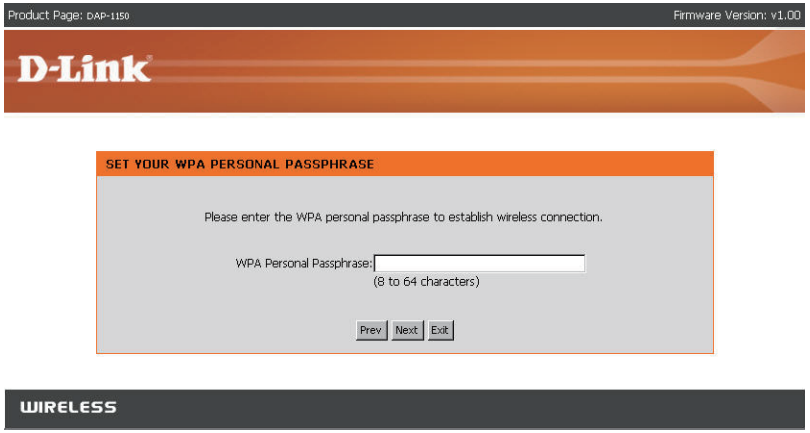
Choose which Security Mode you want to use and click Next to continue.



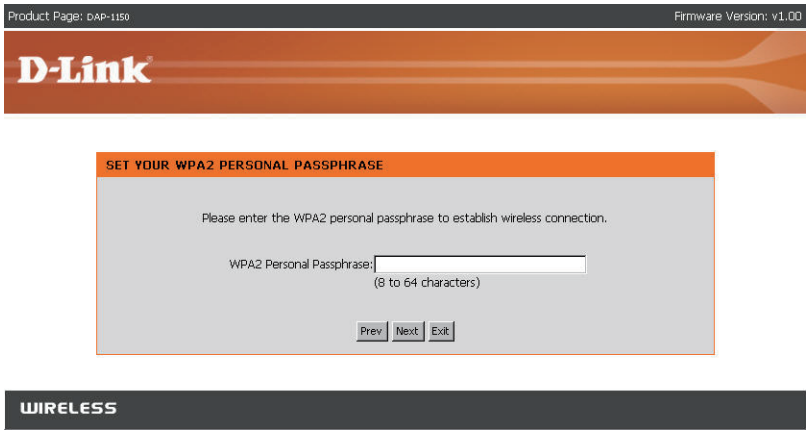
If you choose WEP, enter the wireless security password and click Next to complete the Setup Wizard.



If you choose WPA, enter the WPA Personal Passphrase and click Next to complete the Setup Wizard.

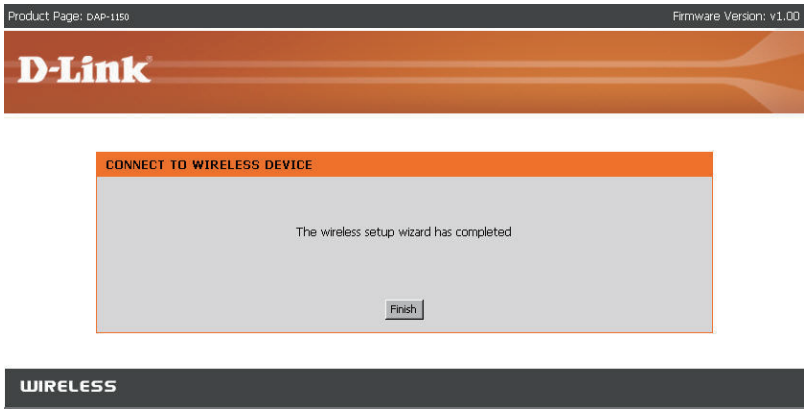


If you choose WPA2, enter the WPA2 Personal Passphrase and click Next to complete the Setup Wizard.



The Wireless Setup Wizard is complete.

Click Finish to reboot the device.



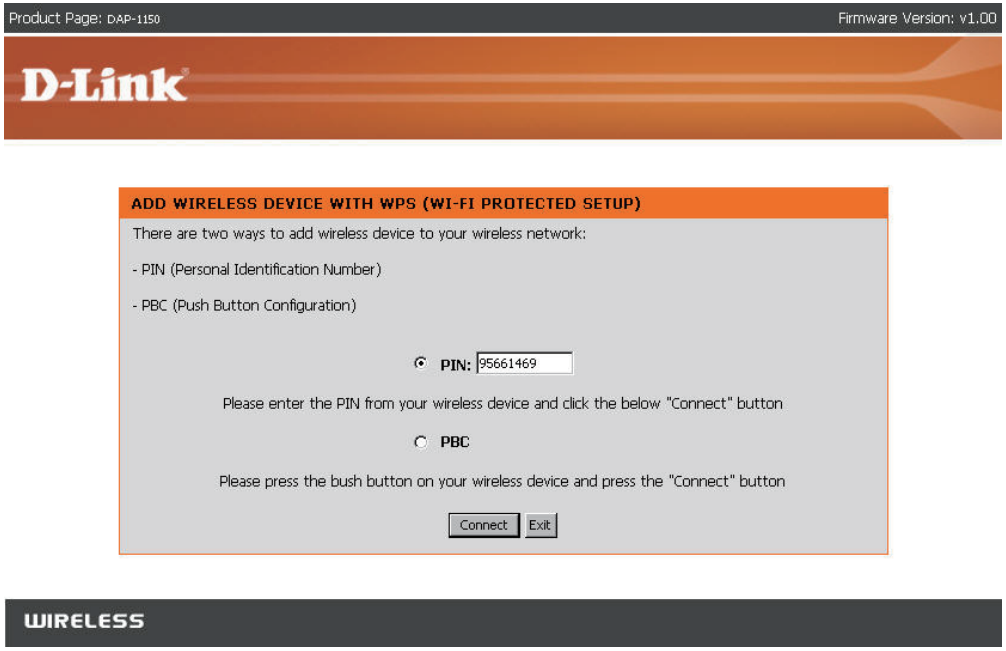
Add Wireless Device With WPS

This Wizard is designed to assist you in your wireless network setup. It will guide you through step-by-step instructions on how to set up your wireless network and how to make it secure.

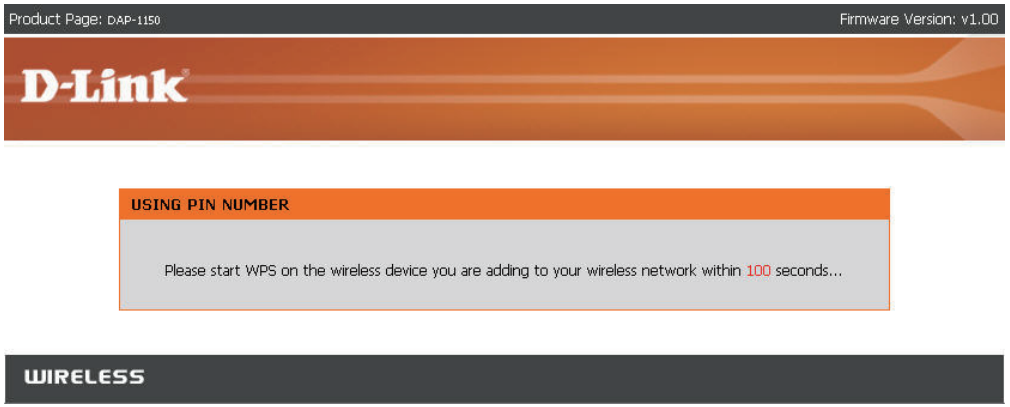
Select **PIN** to use your PIN number from your wireless device to connect to your network.

For PBC configuration, skip to next page.

Click Connect to continue.

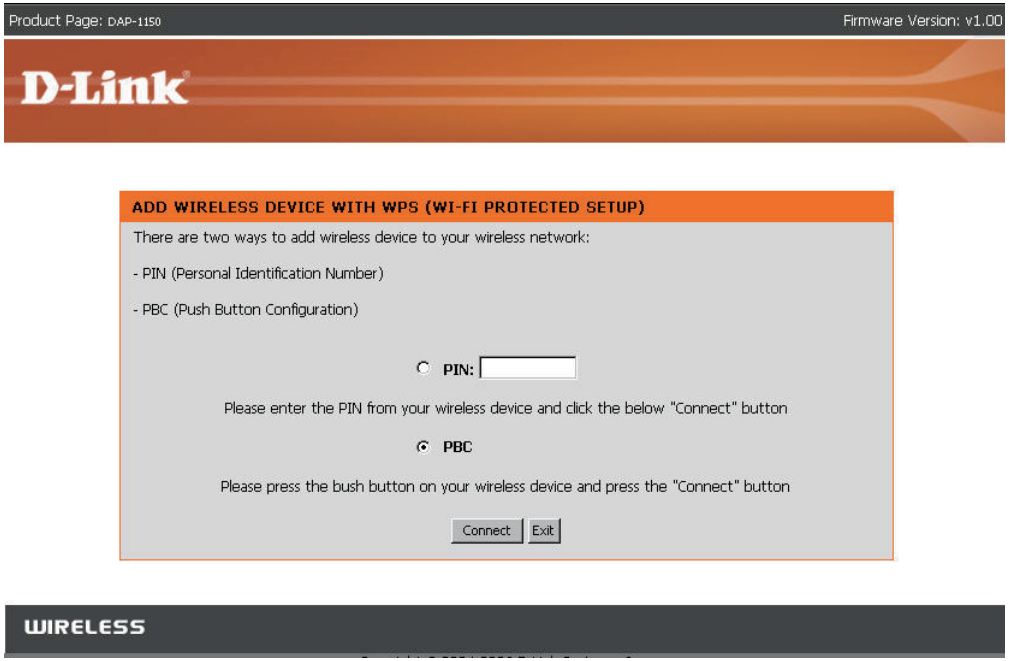


Start WPS on the wireless device you are adding to you wireless network to complete the setup.

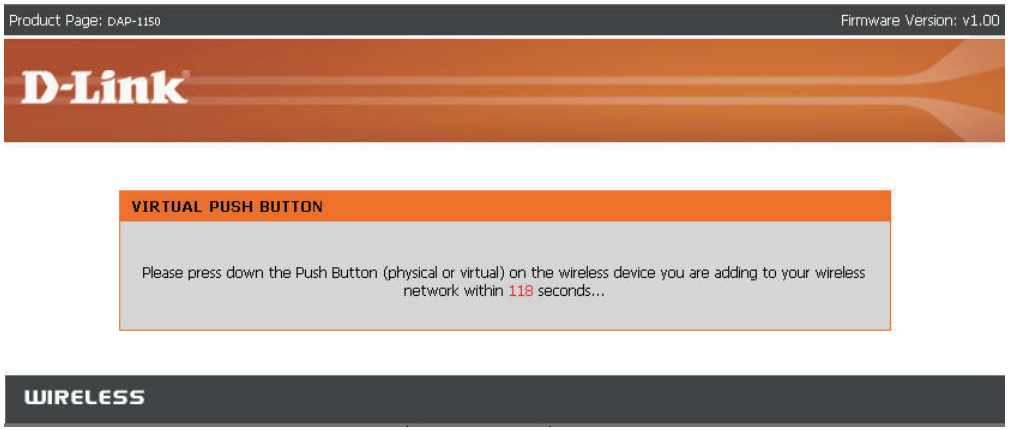


Select PBC to use the Push Button Configuration to connect to your network.

Click Connect to continue.



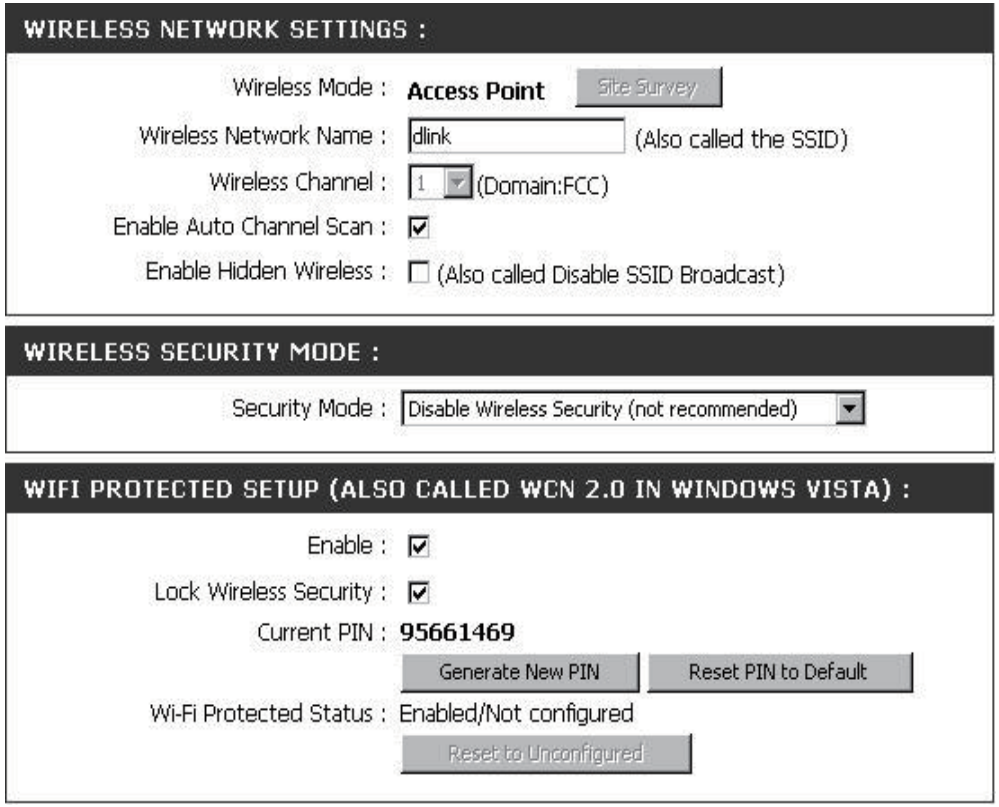
Press down the Push Button on the wireless device you are adding to your network to complete the setup.



Wireless Setup

Access Point

In AP mode, the DAP-1150 acts as a central connection point for any computer (client) that has an 802.11g or backward-compatible 802.11b wireless network adapter and is within range of the AP.



Wireless Network Name (also called the SSID): The Wireless Network Name is a unique name that identifies a network. All devices on a network must share the same wireless network name in order to communicate on the network. If you decide to change the wireless network name from the default setting, enter your new wireless network name in this field.

Site Survey: This button is unavailable in Access Point mode.

Wireless Channel: Auto channel selection is the default setting. First disable Auto Channel Scan (see below) and you will be able to select a wireless channel.

Enable Auto Channel Scan: Check the box to enable Auto Channel Scan. Enable this feature to auto-select the channel for the best wireless performance.

Enable Hidden Wireless: Check the box if you do not want the SSID to be broadcast by the DAP-1150. 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-1150 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.53 of this manual for a detailed explanation of the wireless security options.

Wi-Fi Protected Setup: Enable or disable the Wi-Fi protected setup feature.

Lock Wireless Security: Locking the wireless security prevents the settings from being changed by any new external registar using its PIN. Devices can still be added to the wireless network using Wi-Fi Protected Setup. It is still possible to change wireless network settings with Manual Wireless Network Setup, Wireless Network Setup Wizard, or an existing external WLAN Manager Registar.

Current PIN: Shows the current value of the access point's PIN.

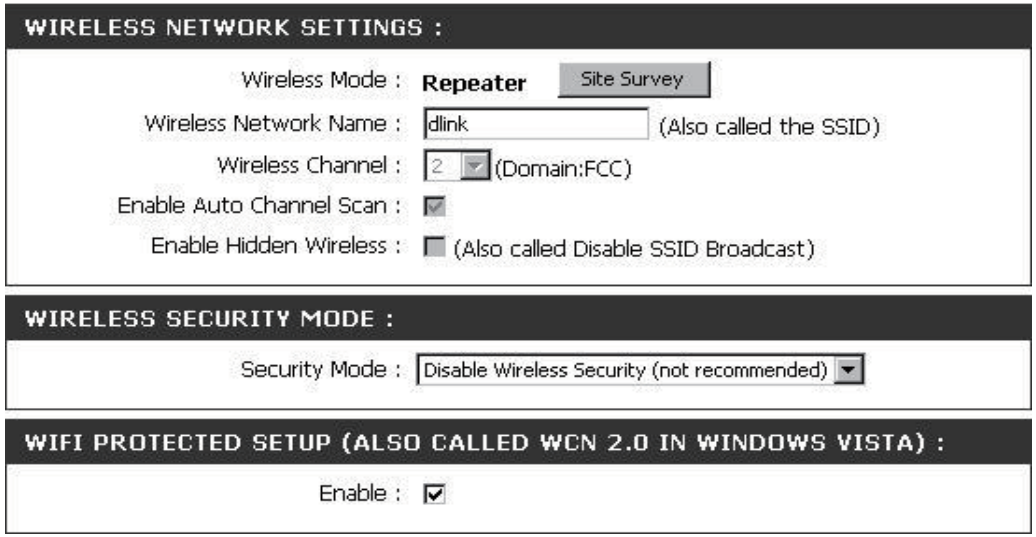
Generate New PIN: Create a random number that is a valid PIN. This becomes the access point's PIN. You can then copy this PIN to the user interface of the registrar.

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

Reset to Unconfigured: Resets Wi-Fi Protected Status to Not Configured. Vista WPS icon will only be displayed when the Wi-Fi Protected Status is Not Configured.

Repeater

Wireless repeater mode extends the wireless coverage of another wireless AP or wireless router.



Wireless Network Name (also called the SSID): The Wireless Network Name is a unique name that identifies a network. All devices on a network must share the same wireless network name in order to communicate on the network. If you decide to change the wireless network name from the default setting, enter your new wireless network name in this field.

Site Survey: Click this button to choose the root AP from an available connection list.

Wireless Channel: The channel will follow the root AP. The channel used will be displayed.

Enable Auto Channel scan: This option is unavailable in Repeater mode.

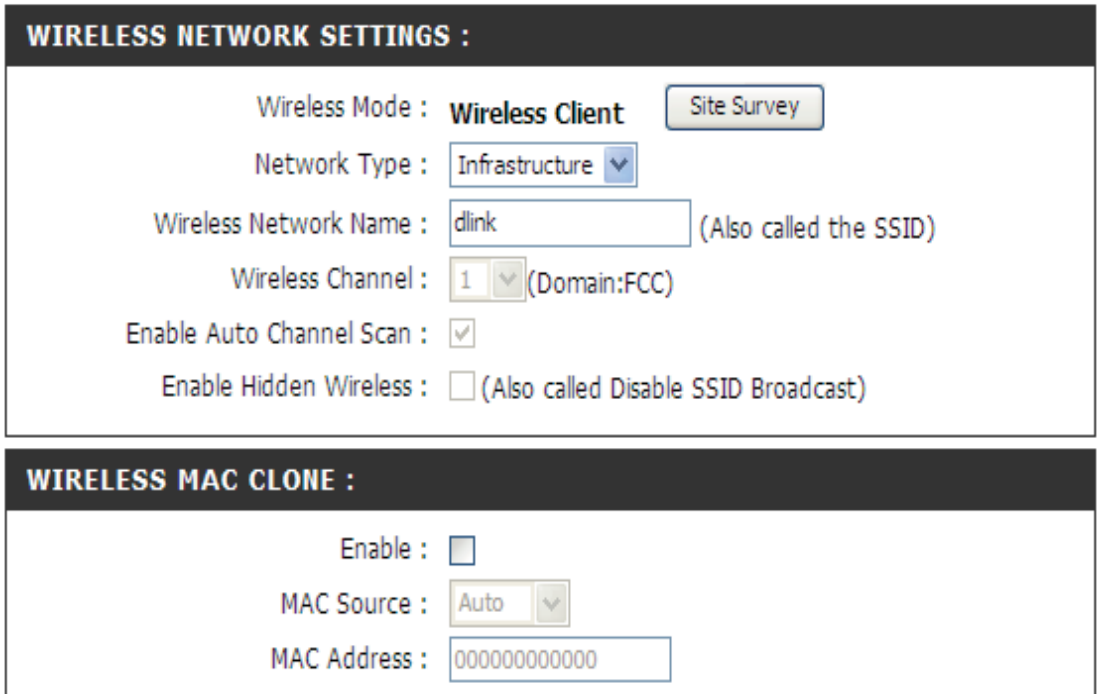
Enable Hidden Wireless: This option is unavailable in Repeater mode.

Wireless Security Mode: Select a wireless security setting. Options are **None**, **WEP**, **WPA**, or **WPA2**. See p.53 of this manual for a detailed explanation of the wireless security options.

Wi-Fi Protected Setup: Select enable if you want to configure 1150 with WPS.

Wireless Client

In wireless client mode, the DAP-1150 acts as a wireless network adapter for your Ethernet-enabled device (such as a game console or a TV set-top box).



Network Type: Select Infrastructure if you only connect your DAP-1150 to other wireless clients (as such wireless PCs). Select Ad-Hoc if you connect your DAP-1150 to another DAP-1150 operating in the Ad-Hoc mode.

Wireless Network Name (also called the SSID): You can input the wireless network name of the root AP or click the **Site Survey** button to find the root AP.

Site Survey: Click this button to choose the root AP from an available connection list.

Wireless Channel: The channel used will be displayed. The channel will follow the root AP.

Wireless MAC Clone: Enabling this option allows the user to manually assign the source MAC address to packets forwarded by the DAP-1150. If not manually assigned, the packet's source MAC address field will be automatically selected as the DAP-1150's MAC address.

MAC Address: Enter the desired MAC address connected to your DAP-1150 to enable the clone function.

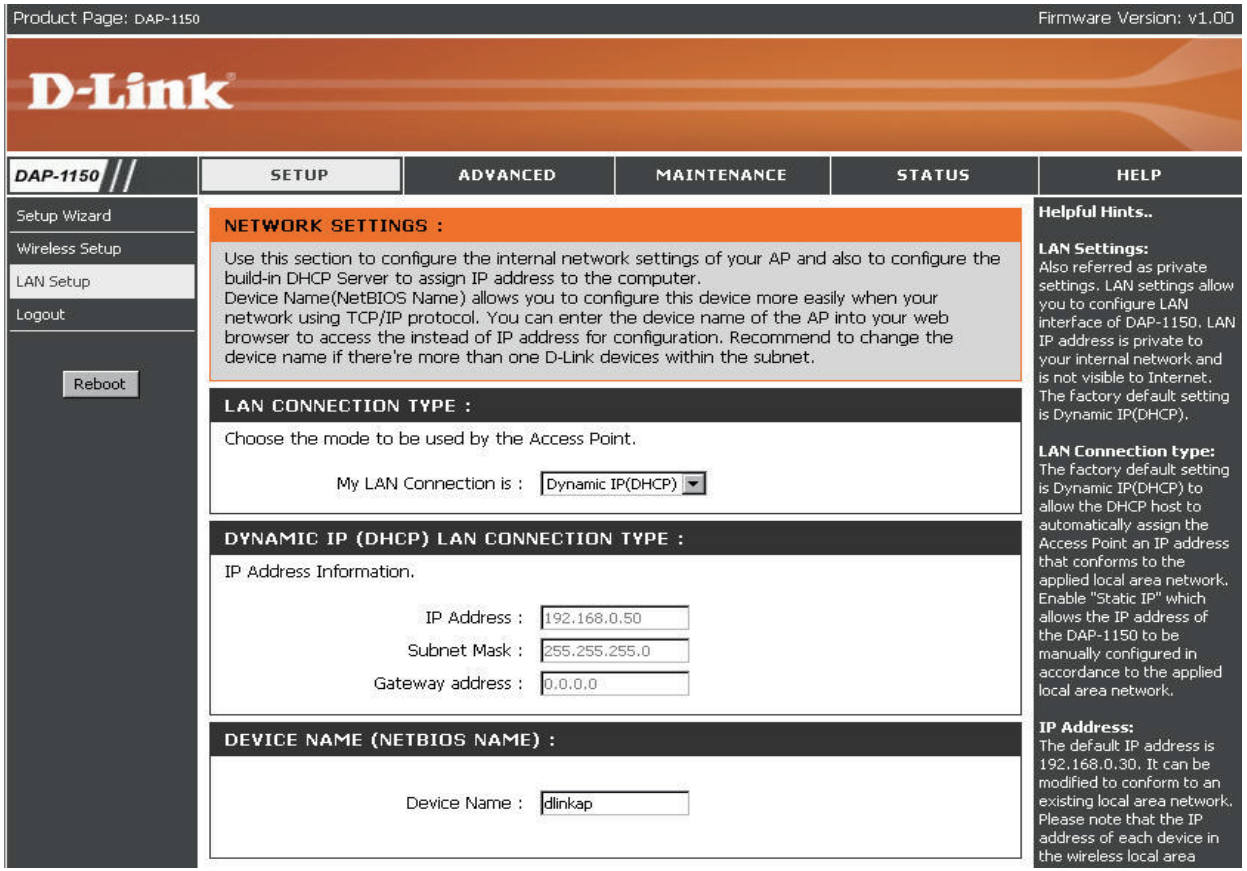
Scan: Click the Scan button to search for all available devices connected to your DAP-1150's Ethernet ports.

Wireless Security Mode: Select a wireless security setting. Options are **None**, **WEP**, **WPA**, or **WPA2**. See p.53 of this manual for a detailed explanation of the wireless security options.

Wi-Fi Protected Setup: Select enable if you want to configure 1150 with WPS.

LAN Setup

The LAN (Local Area Network) is your private, internal network. This page allows you to configure the IP settings of the LAN interface for the DAP-1150. 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-1150 is set to Dynamic IP by default. . The IP address and subnet mask will fallback to 192.168.0.50 and 255.255.255.0, if don't get IP address from DHCP server exceed 30 seconds.

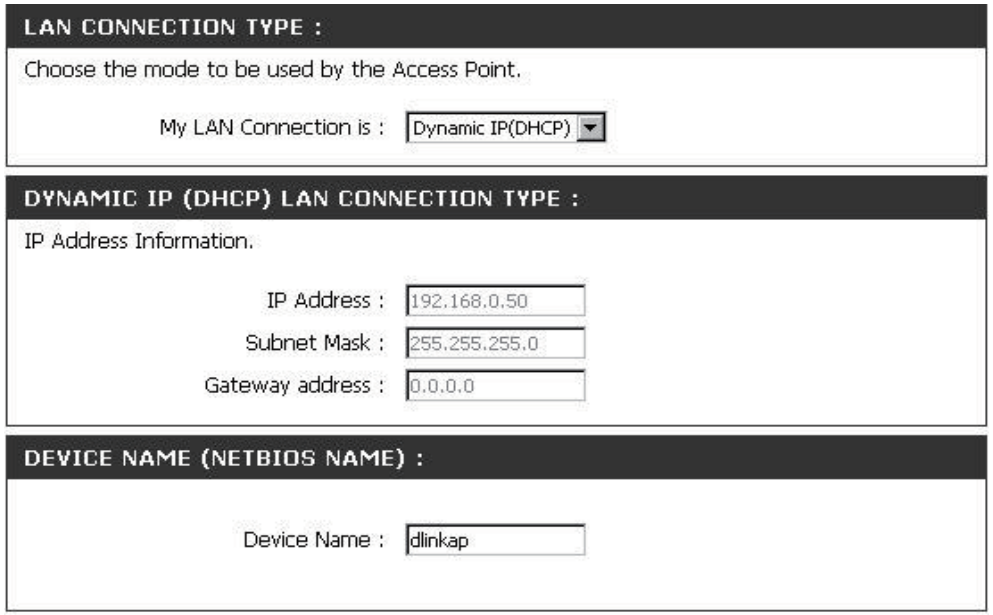
Static IP: Select this option if you are manually assigning an IP Address.

Dynamic IP: Select this option if you would like to have an IP Address automatically assigned to the DAP-1150 by a DHCP server in your network.

IP Address: Enter the IP address of the access point.

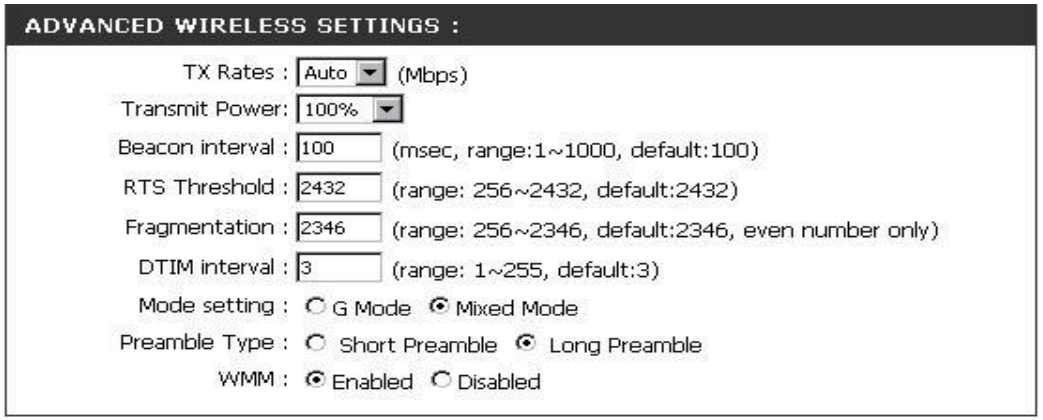
Subnet Mask: Enter the subnet mask of your access point.

Gateway address: Enter the IP Address of the router in your network.



Device Name(NetBIOS Name): It 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.

Advanced Wireless



TX Rates: Select the transmission rate for the network.

Transmit Power: Choose **100%**, **50%**(-3dB), **25%** (-6dB), or **12.5%** (-9dB).

Beacon Interval: Beacons are packets sent by an access point to synchronize a wireless network. Specify a beacon interval value. The default value 100 is recommended.

RTS Threshold: This value should remain at its default setting of 2,432. If you encounter inconsistent data flow, only minor modifications to the value range between 256 and 2,432 are recommended.

Fragmentation: This value should remain at its default setting of 2,346. If you experience a high packet error rate, you may slightly decrease your fragmentation threshold within the value range of 256 to 2,346. Setting the fragmentation threshold too low may result in poor performance.

DTIM Interval (Beacon Rate): A DTIM (Delivery Traffic Indication Message) is a countdown informing clients of the next window for listening to broadcast and multicast messages. The default vaule is 3 and the possible range of vaules is between 1 and 255.

Mode Setting: For the fastest speed, select **G Mode** to include only 802.11g devices in your network. Select **Mixed Mode** to include 802.11g and 802.11b devices in your network.

Preamble Type: Select Short or Long Preamble. The default setting in Long Preamble. The Preamble defines the length of the CRC block (Cyclic Redundancy Check is a common technique for detecting data transmission errors) for communication between the access point and roaming wireless network adapters. **Note:** High network traffic areas should use the short preamble type.

WMM: WMM (Wi-Fi Multimedia) is only available in Access Point Mode. WMM provides basic QoS (Quality of Service) functions for wireless networks. WMM prioritizes traffic based on the 4 AC (Access Categories) of voice, video, best effort, and background. However, WMM does not provide guaranteed throughput.

Access Control

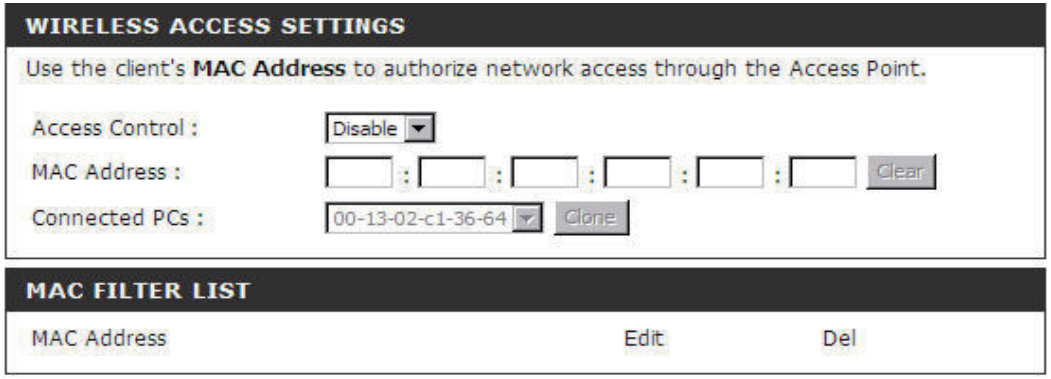
Use MAC Filters to allow or deny wireless clients, by their MAC addresses, from accessing the DAP-1150. You can manually add a MAC address or select the MAC address from the list of clients that are currently connected to the AP (Connected PCs). The default setting is Disable MAC Filters.

Access Control: Access control is set to **Disable** by default. Select **Reject** to deny access to the AP. Select **Accept** to allow access to the AP.

MAC Address: Enter the MAC address of the client that you want to allow or deny access to the AP.

Connected PCs: Select the MAC address of a computer from the drop-down menu and click **Clone** to fill in the MAC Address field with that computer.

MAC Filter List: This list will display the MAC addresses that are in the selected filter.

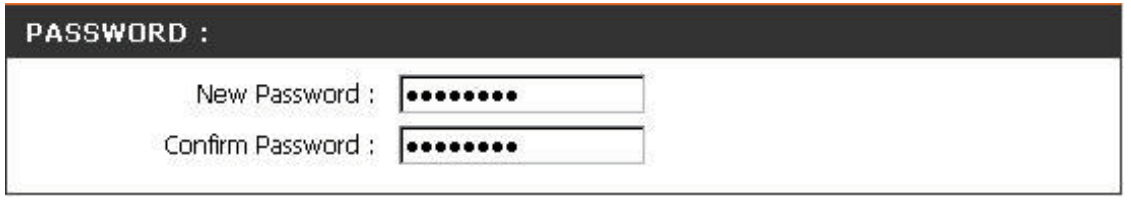


Maintenance

Device Administration

New Password: Enter a new password.

Confirm Password: Re-enter the password to confirm it.

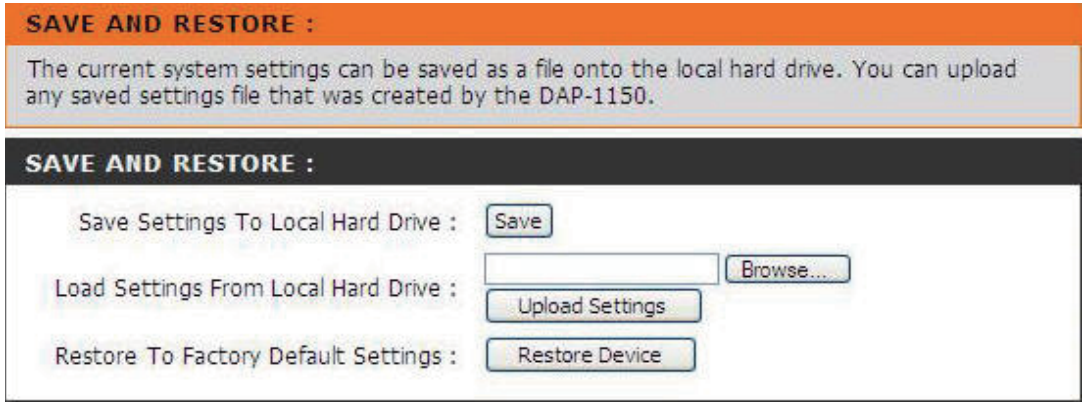


Save and Restore

Save Settings To Local Hard Drive: Click **Save** to save the current system settings as a file onto your local hard drive.

Load Settings From Local Hard Drive: To load a system settings file, click on **Browse** to browse the local hard drive and locate the system settings file to be used. Click **Upload Settings** when you have selected the file to be loaded back onto the access point.

Restore To Factory Default Settings: You can reset the DAP-1150 back to the factory default settings by clicking on **Restore Device**. Make sure to save the current system settings before clicking on **Restore Device**. You will lose your current system settings after you click **Restore Device**.



Firmware Update

This feature is used to update the firmware of the DAP-1150. The current firmware version and firmware date are displayed here.

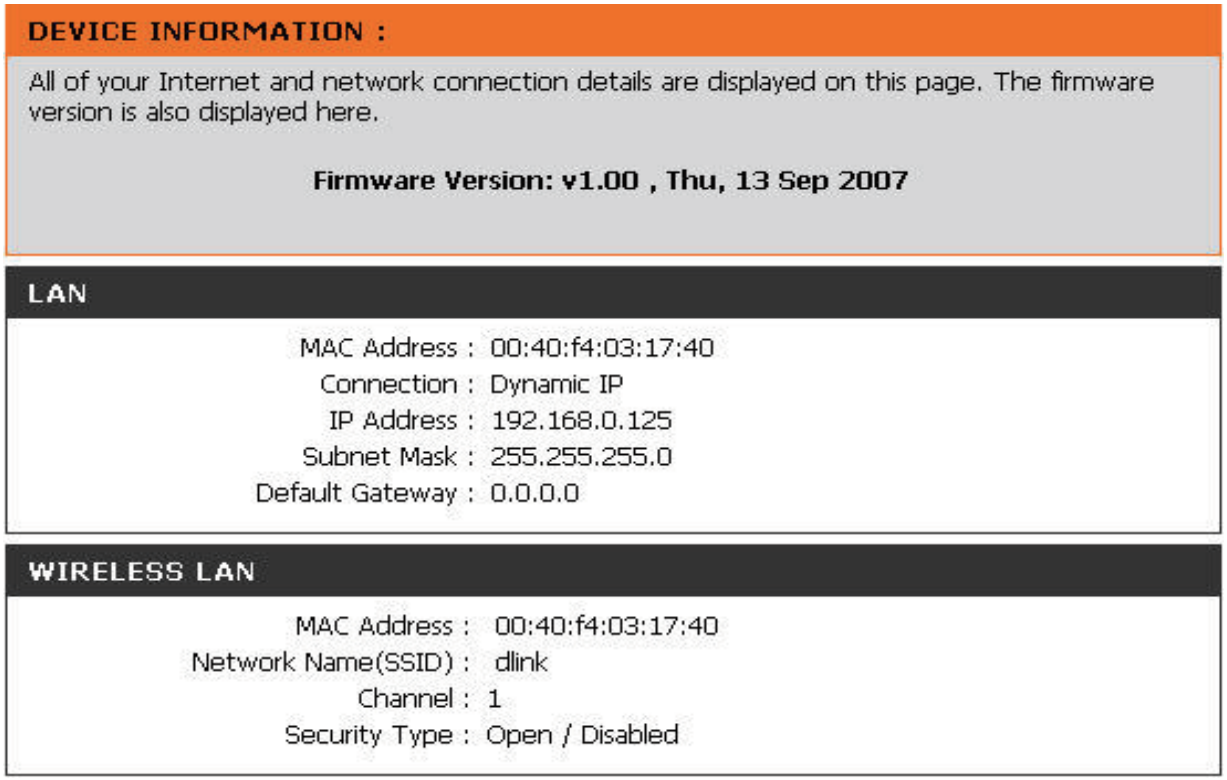
Click here to check for an update on our support site: Click this link and you will be connected to D-Link's support website where you can download the latest firmware version to your local hard drive.

Current Firmware Info: To update the firmware, click on **Browse** to browse the local hard drive and locate the updated firmware file. Click the **Save Settings** button after you have selected the updated firmware file.

Status

Device Info

This screen displays the current firmware version and the current LAN, and Wireless LAN settings on your access point.



Log

The DAP-1150 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.

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.

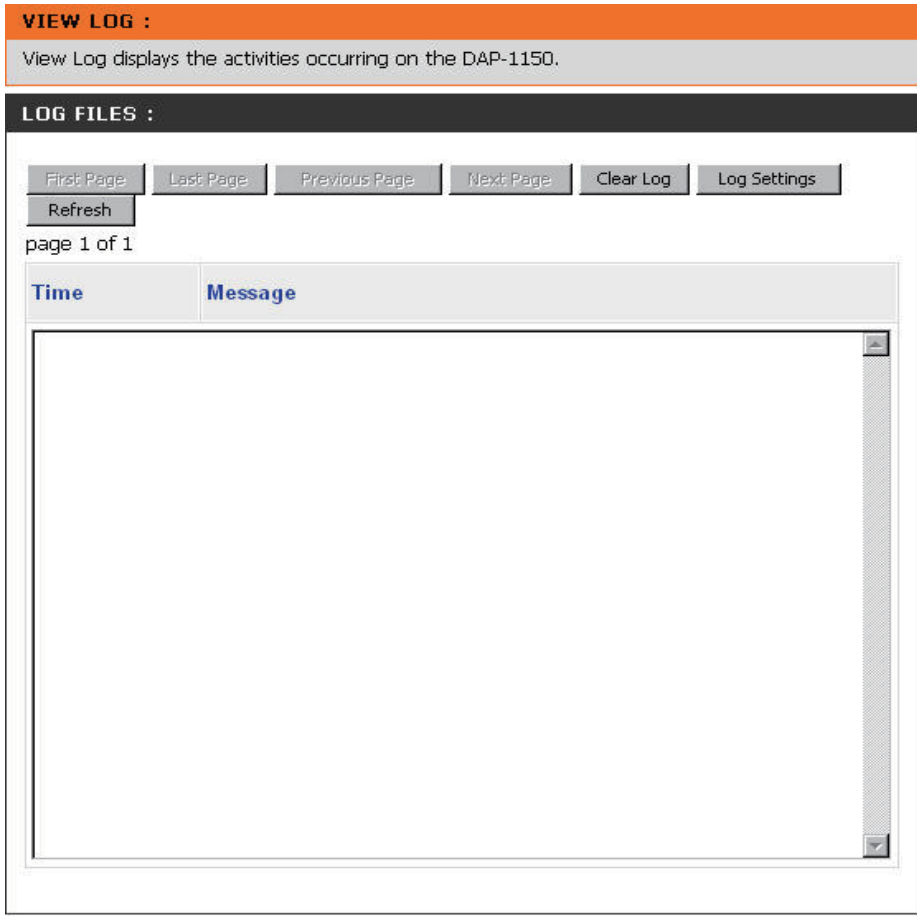
Previous Page: This button directs you to the previous page of the log.

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

Clear Log: This button clears all current log content.

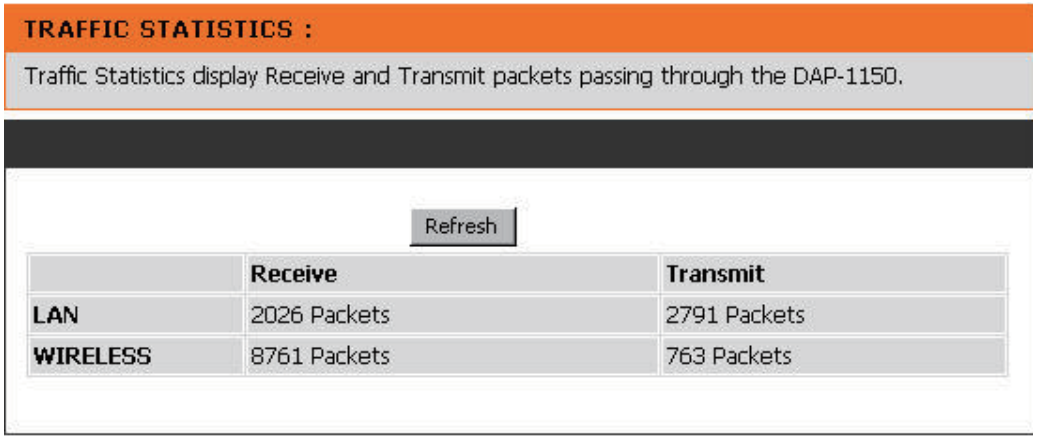
Log Settings: This button opens a new menu where you can configure the log settings.

Refresh: This button refreshes the log.



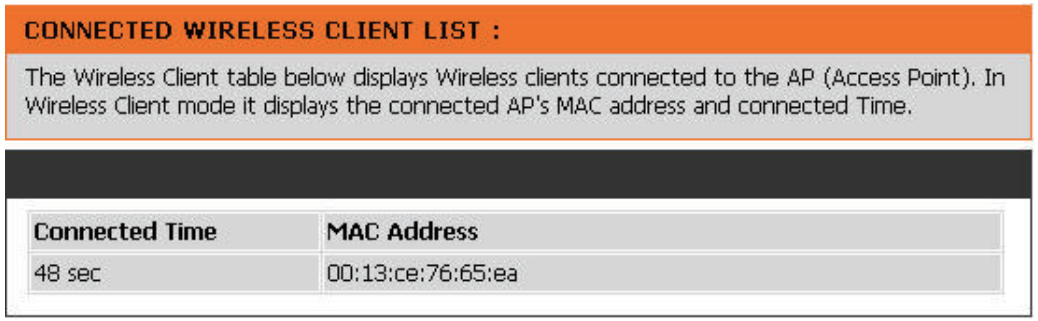
Statistics

The DAP-1150 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.



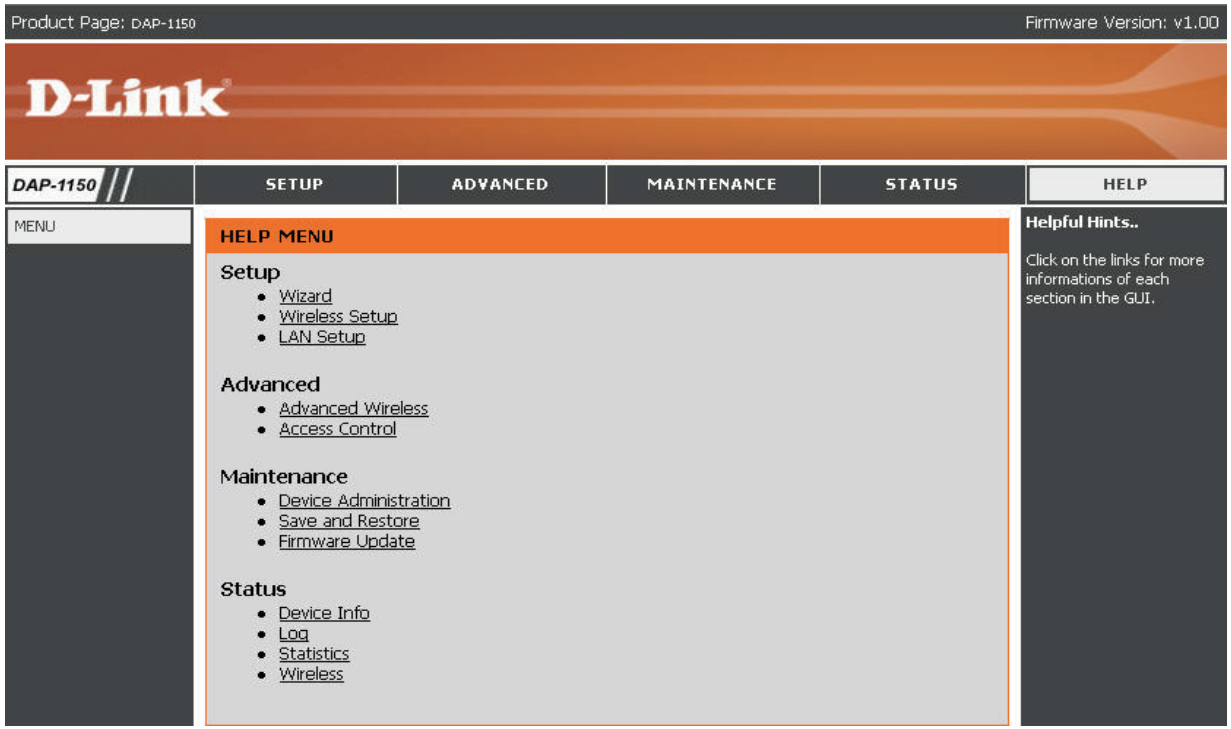
Wireless

This list displays the MAC addresses of connected wireless clients and the length of time that they have been connected.



Help

The Help menu contains an index of links to help topics for each feature of the DAP-1150.



Wireless Security

This section will show you the different levels of security you can use to protect your data from intruders. The DAP-1150 offers the following types of security:

- WPA-Personal (Pre-Shared Key)
- WPA2-Personal (Pre-Shared Key 2)
- WPA2-Auto-Personal
- 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 utility by opening a web browser and entering the device name of the access point (dlinkap). Click on **Wireless Settings** on the left side.

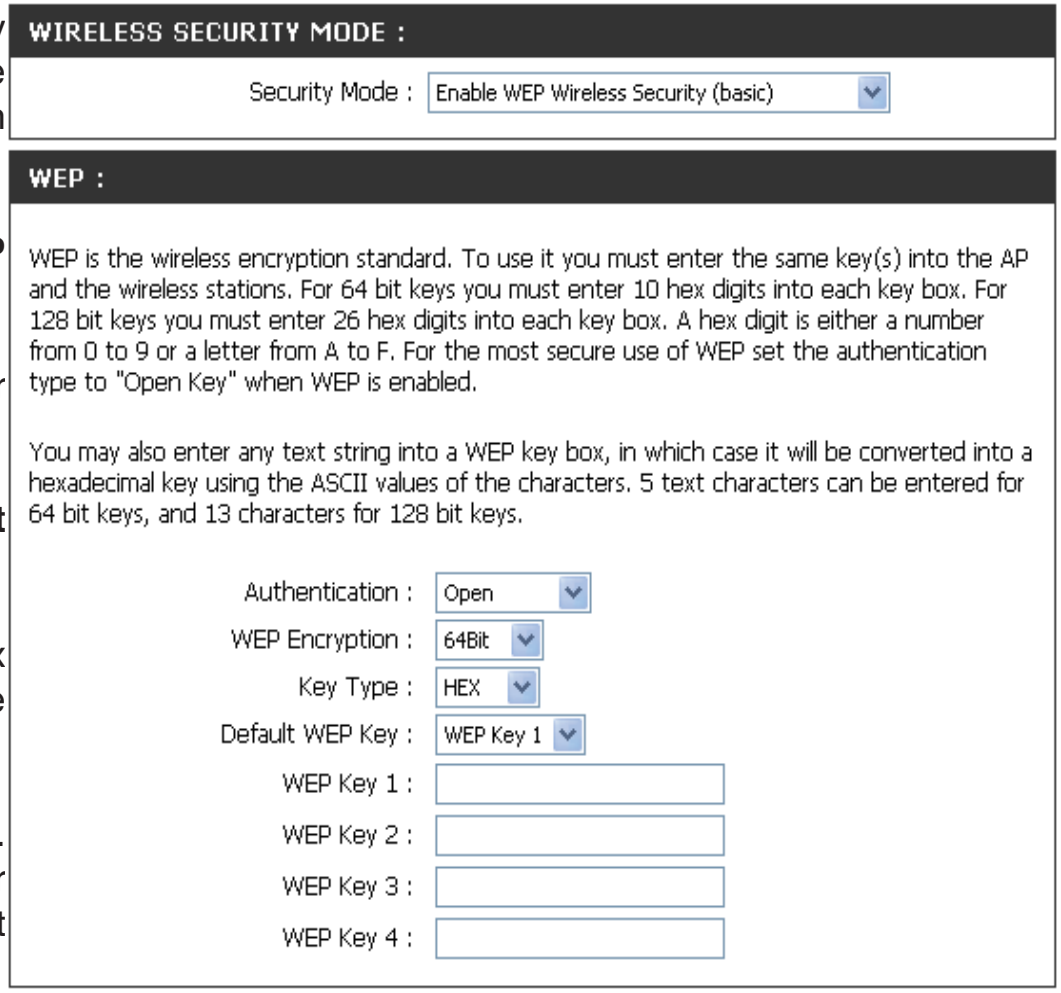
2. Next to Security Mode, select **Enable WEP Security**.

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

4. Next to WEP Encryption, select **64-bit** or **128-bit** 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).

There are 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.

- User authentication, which is generally missing in WEP, is done 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.

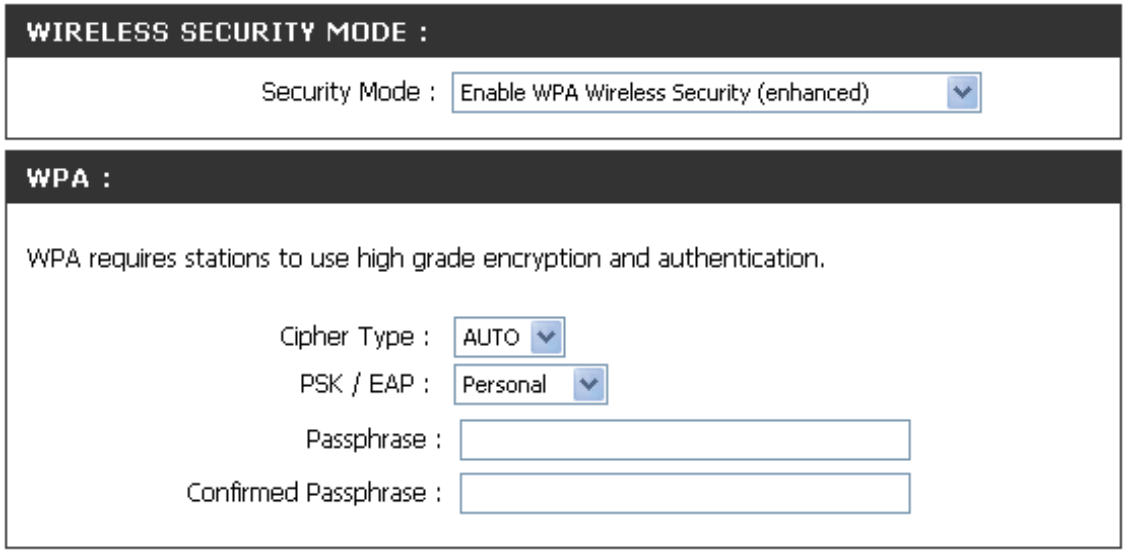
WPA-PSK/WPA2-PSK uses a passphrase or key to authenticate your wireless connection. The key is an alpha-numeric password between 8 and 63 characters long. The password can include symbols (!?*&_) and spaces. This key must be the exact same key entered on your wireless router or access point.

WPA-EAP/WPA2-EAP 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.

WPA2-Auto-PSK/WPA2-Auto-EAP accepts wireless clients that use WPA or WPA2. Authentication is sill necessary.

Configure WPA-PSK, WPA2-PSK, and WPA2-Auto-PSK (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 utility by opening a web browser and entering the device name of the access point (dlinkap). 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 PSK / EAP, 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. 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-EAP, WPA2-EAP, and WPA2-Auto-EAP (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 utility by opening a web browser and entering the device name of the access point (dlinkap). 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.

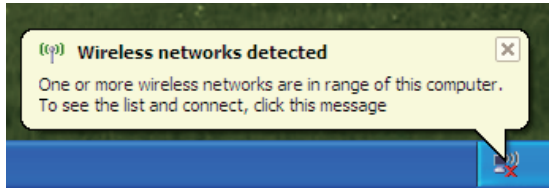
7. Next to Shared Secret, enter the security key.

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

Connect to a Wireless Network Using Windows® XP

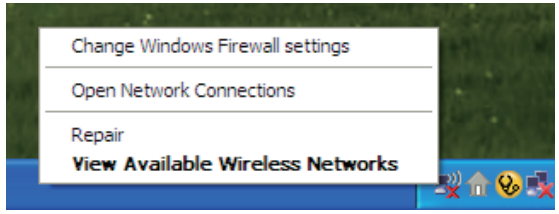
Windows® XP users can use the built-in wireless utility (Zero Configuration Utility) to connect to a wireless network. The following instructions are for Service Pack 2 users. If you are using another company's utility or Windows® 2000, please refer to the user manual of your wireless adapter for help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

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



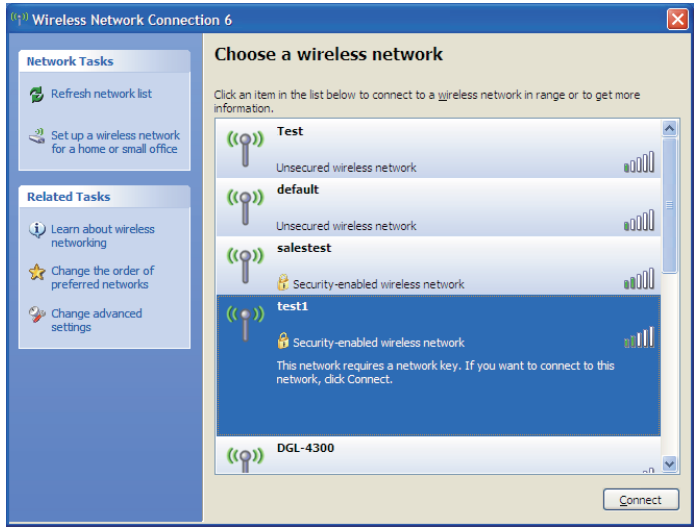
or

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 all available wireless networks in your area. Click on a network (displayed using the SSID) and click the **Connect** button.

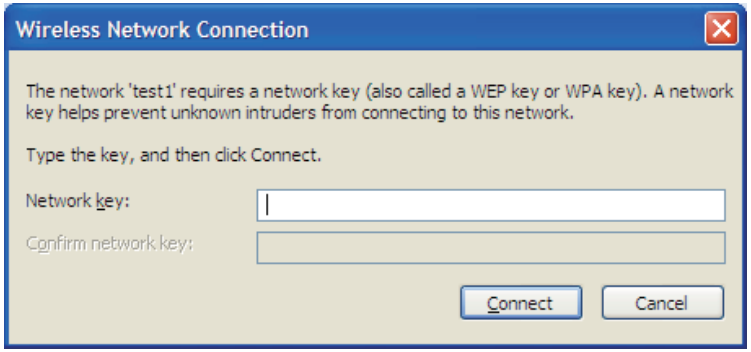
If you get a good signal but cannot access the Internet, check the TCP/IP settings for your wireless adapter. Refer to the **Networking Basics** section in this manual for more information.



Configure WEP/WPA-PSK

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

Follow the steps on the previous page to connect to a wireless network using Windows® XP. After you highlight a network and click **Connect**, the **Wireless Network Connection** box will appear if the network requires authentication. Enter the same WEP or WPA-PSK key that is on your access point and click **Connect**.

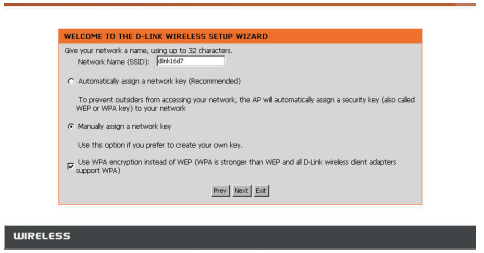


It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the WEP or WPA-PSK settings are correct. The WEP or WPA-PSK key must be exactly the same as on the wireless access point.

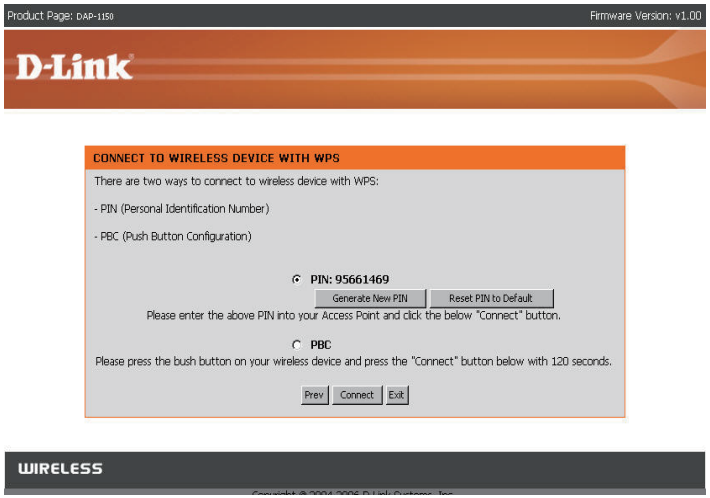
Using Windows® Vista (Secured Network)

The following are step-by-step directions to connect to a secured wireless network using Windows® Vista.

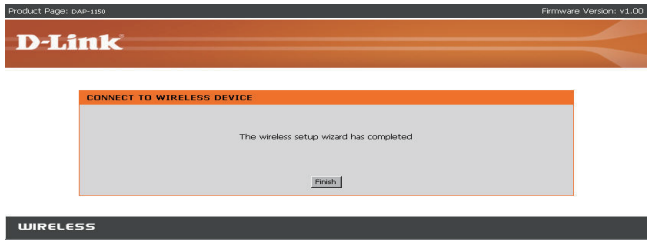
1. Right-click on **Network** and click on **Properties**.



2. Click the **Manage network connections** link in the **Network and Sharing Center** window.

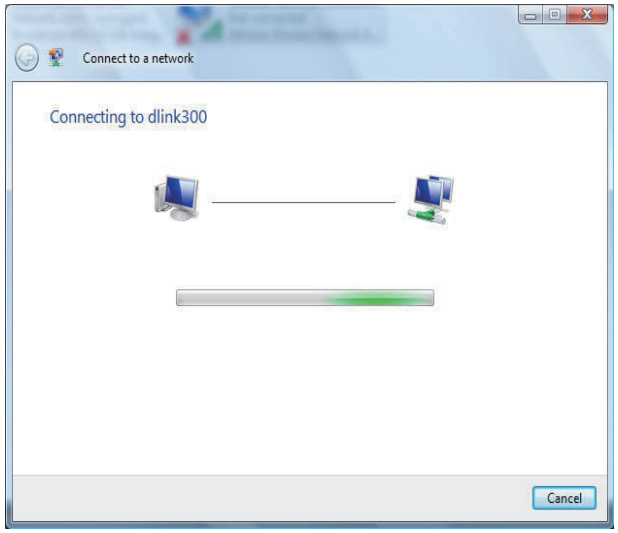


3. Right-click the **Wireless Network Connection** entry and then select **Connect/Disconnect** from the drop-down menu.

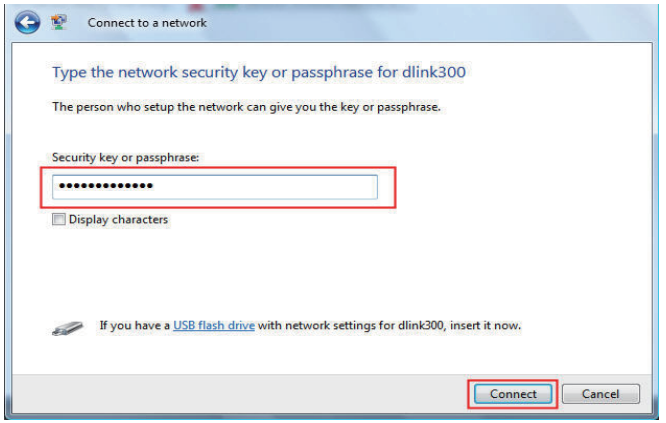


4. Select a network to connect to in the **Select a network to connect to** window and then click the **Connect** button.

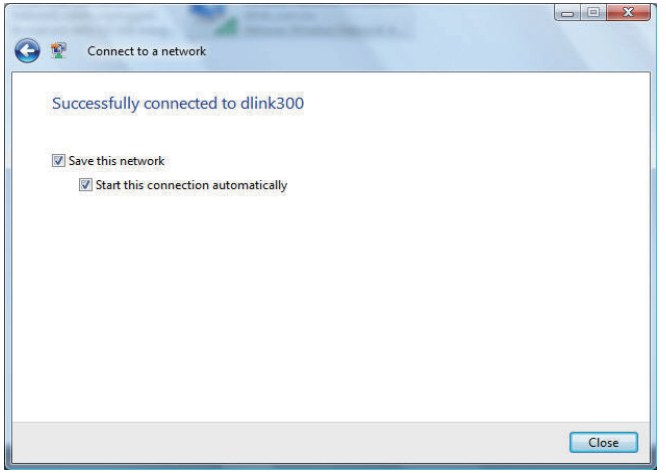
5. The following window displays connection progress.



6. Enter the network security key or passphrase for the AP in the textbox provided in the **Type the network security key or passphrase for [SSID name]** window. When you are finished, click the **Connect** button.



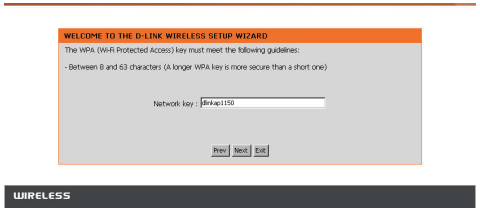
7. The following **Successfully connected to [SSID name]** window is displayed. Choose to save this network and/or start this new connection automatically. When you are finished, click the **Close** button.



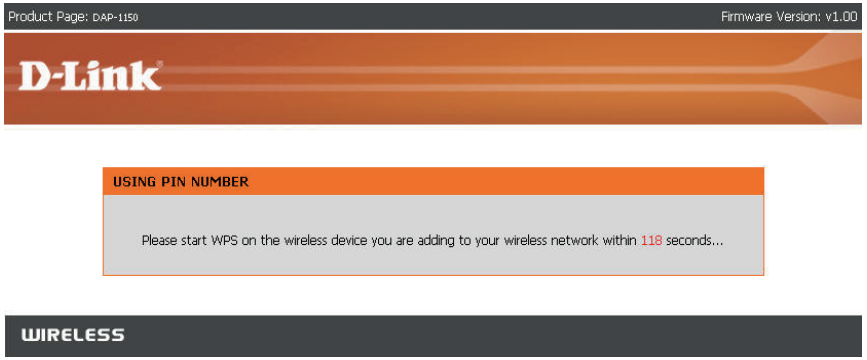
Using Windows® Vista (Unsecured Network)

The following are step-by-step directions to set up a wireless connection on an unsecured network using Windows® Vista.

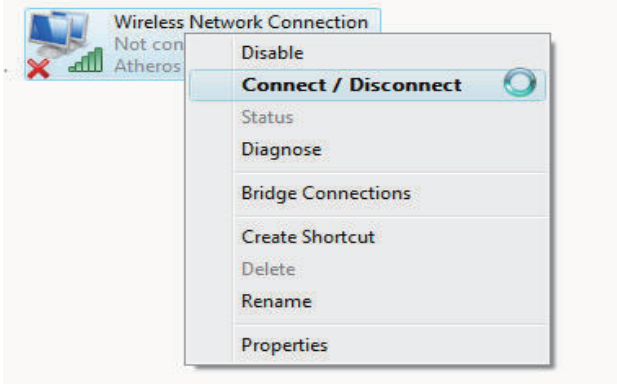
1. Right-click on **Network** and click on **Properties**.



2. Go to the **Network and Sharing Center** window and click the **Manage Network Connections** link.

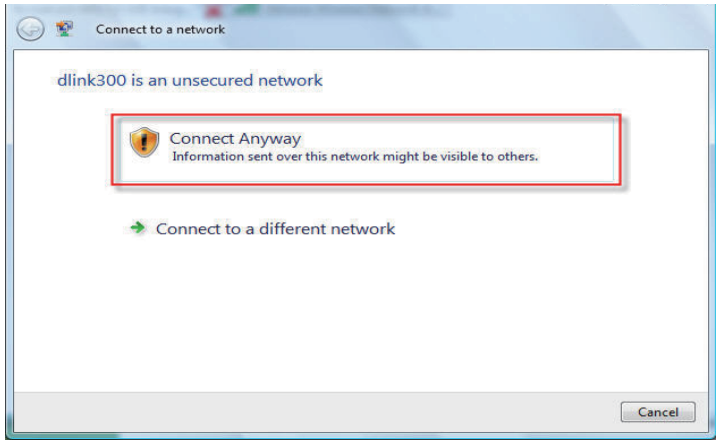


3. Right-click the **Wireless Network Connection** entry and then select **Connect/Disconnect** from the drop-down menu.

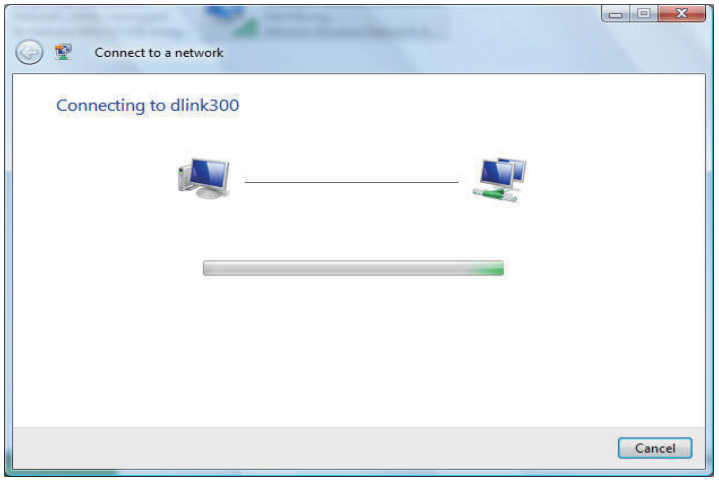


4. Select a network to connect to in the **Select a network to connect to** window and then click the **Connect** button.

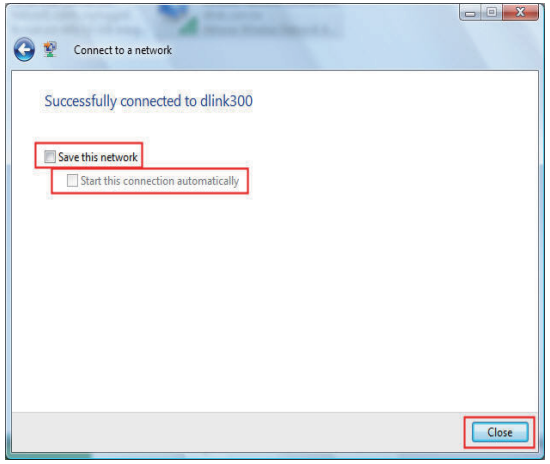
5. Confirm that you still want to connect on the following **Network Connection Status** window by clicking on **Connect Anyway**.



6. The following **Connect to a network** wizard window displays the connection progress.



7. The following **Successfully connected to [SSID name]** window is displayed. Choose to save this network and/or start this new connection automatically. When you are finished, click the **Close** button.



Troubleshooting

This chapter provides solutions to problems that can occur during the installation and operation of the DAP-1150. Read the following descriptions if you are having problems. The examples below use Windows® XP. If you have a different operating system, the troubleshooting steps may be different from 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 (for example, dlinkap), 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-based configuration utility. 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-based configuration utility.

- If you still cannot access the web-based configuration utility, unplug the power to the access point for 10 seconds and plug back in. Wait about 30 seconds and try accessing the web-based configuration utility. 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 dlinkap. When logging in, the username is **admin** and leave the password box empty.

Wireless Basics

D-Link wireless products are based on the latest industry standards to provide easy-to-use and compatible high-speed wireless connectivity within your home, business, or public wireless networks. Strictly adhering to IEEE standards, the D-Link wireless family of products allows 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 waves 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 a worldwide leader and an 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 a cordless phone works- using radio signals to transmit data from one point to another. However, 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: a Wireless Local Area Network (WLAN) and a Wireless Personal Area Network (WPAN).

Wireless Local Area Network (WLAN)

In a WLAN, 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 AP, the signal can travel up to 300 feet. With an outdoor AP 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 WPANs. Bluetooth devices in WPANs operate in a range up to 30 feet away.

The speed and wireless operation range of a WPAN is less than of a WLAN, but it excels in its efficient consumption of power. WPANs are 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, at home and in the office.

Home

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

Small Office and Home Office (SOHO)

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

Where is wireless used?

Wireless technology is quickly expanding beyond home and office use. The freedom of mobility it offers is becoming so popular that more and more public facilities are now providing wireless access to attract people. Public places that offer wireless access is usually called a “hotspot”.

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.

A wireless network is relatively 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 central 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 and 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 the same frequency.

Security

Don't let your next-door neighbors or unwanted intruders connect to your wireless network. Secure your wireless network by turning on the WEP or WPA security feature on the access point. Refer to the section "Wireless Security" in this manual for detailed 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 AP or a wireless router. All the wireless devices, or clients, will connect to the wireless router or the AP.

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.

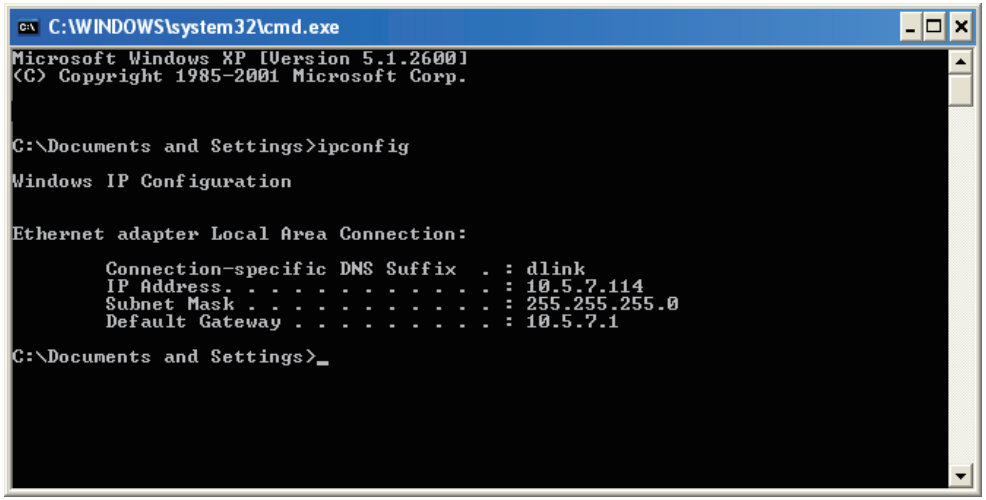
Networking Basics

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 in a hotel, coffee shop, airport, or another public place, 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**.

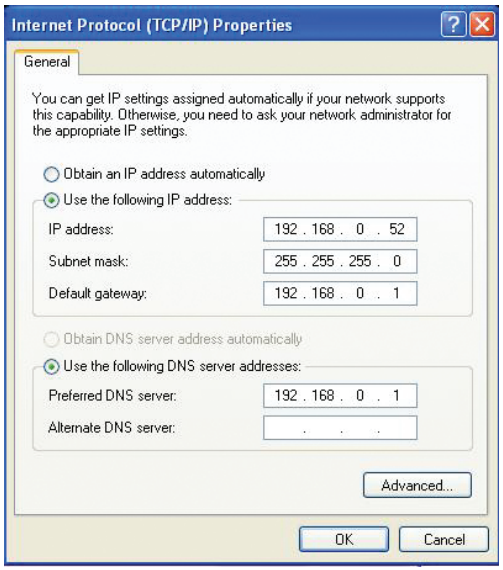
Step 2
Right-click on the **Local Area Connection** which represents your network adapter and select **Properties**.

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

NETWORK STANDARDS
- 802.11g wireless LAN
- 802.11b wireless LAN
- 802.3/802.3u 10BASE-T/100BASE-TX Ethernet
- ANSI/IEEE 802.3 NWay auto-negotiation

DEVICE INTERFACES
- 802.11g wireless LAN
- One 10/100BASE-TX Ethernet LAN port

OPERATING FREQUENCY
2.4 to 2.4835 GHz

OPERATING CHANNELS
- FCC: 11
- ETSI: 13

RADIO & MODULATION SCHEMES
DQPSK, DBPSK, CCK, OFDM

OPERATION MODES
- Access Point
- Repeater
- Wireless Client

ANTENNA
2dBi Gain detachable omni-directional antenna with RP-SMA connector

RECEIVE SENSITIVITY
+For 802.11b, at 8% PER:
- 11Mbps: -80dBm
- 5.5Mbps: -84dBm
- 2Mbps: -87dBm
- 1Mbps: -88dBm

+ For 802.11g, at 10% PER:
- 54Mbps: -65dBm
- 48Mbps: -66dBm
- 36Mbps: -70dBm
- 24Mbps: -74dBm
- 18Mbps: -77dBm
- 12Mbps: -79dBm
- 9Mbps: -81dBm
- 6Mbps: -82dBm

Transmit Output Power
+ For 802.11b:
16dBm (typical)
+ For 802.11g:
14dBm (typical)

SECURITY
- 64/128-bit WEP data encryption
- WPA-PSK, WPA2-PSK
- WPA-EAP, WPA2-EAP
- TKIP, AES
- MAC address filtering
- SSID broadcast disable function

QUALITY OF SERVICE (QoS)
Wi-Fi Multimedia (WMM)

DEVICE MANAGEMENT
- Web-based management through Internet Explorer v.6 or later, Netscape Navigator v.6 or later or other Java-enabled browser

Diagnostic LED
- Power
- WLAN
- LAN

POWER INPUT
5VDC 1.2A
External power adapter

DIMENSIONS
144 (W) x 109 (D) x 30 (H) mm (5.67 x 4.29 x 1.18 inches)

WEIGHT
220grams (0.5lb)

OPERATING TEMPERATURE
0 to 55 C (32 to 131 F)

STORAGE TEMPERATURE
-10 to 70 C (14 to 158 F)

OPERATING HUMIDITY
10% to 90% non-condensing

STORAGE HUMIDITY
5% to 95% non-condensing

54Mbps maximum wireless signal rate derived from IEEE standard 802.11g specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, may lower actual throughput rate. Environmental factors will adversely affect wireless signal range, maximum throughput based on 802.11g devices.

D-Link®

Building Networks for People

Version 1.10

2009/04/15