USER MANUAL

DWA-111

VERSION 1.0

D-Link

WIRELESS

Table of Contents

Package Contents

- D-Link DWA-111 2.4GHz Wireless G USB 2.0 Adapter
- Manual, Software, and Warranty on CD

System Requirements

- A computer or laptop with an available USB 2.0 port
- Windows® 2000 (Service Pack 4) or XP (Service Pack 2)
- At least 64MB of memory and a 500MHz processor
- Properly installed and working USB Controller

Introduction

D-Link, the industry pioneer in wireless networking, introduces the DWA-111 Wireless USB Adapter, part of the Wireless G family of 802.11g wireless networking devices.

Using the DWA-111 Wireless USB Adapter, you can now enable 802.11g wireless connectivity for your PC using the convenience and speed of a USB 2.0 interface**. Featuring the latest in wireless technology, the DWA-111 delivers incredibly fast performance and industrywide compatibility. By adhering to the 802.11g wireless standard, the DWA-111 is capable of streaming video and transferring large files across a wireless network.

The DWA-111 Wireless USB Adapter includes an easy-to-use configuration that discovers available wireless networks wherever you go. The utility can also create detailed connectivity profiles to save your most frequently used networks. You can also enable support for WPA and 802.1x, for better data encryption and user authentication.

The DWA-111 is a Wireless USB 2.0 adapter that installs quickly and easily into any desktop or laptop PC with an available USB port. You can simply plug in the DWA-111 to enjoy the freedom of wireless networking. When used with other D-Link Wireless G products in their default configuration, the DWA-111 automatically discovers and connects to the wireless network.

Like all other D-Link wireless adapters, the DWA-111 Wireless USB Adapter can be used in peer-to-peer mode (ad-hoc) to directly connect to other 802.11b/g wirelessly enabled computers for direct file sharing, or in client mode (infrastructure) to connect with wireless access points or routers.

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

** Compatible with USB 1.1 port. If used with 1.1 port, throughput may be diminished.

Features

- Provides maximum wireless signal rate of up to 54Mbps*.

- Compact size for placement anywhere.

- Convenience of Plug & Play installation.

- Fully 802.11b/802.11g compatible.

- Powered by the USB port; no external power source required.

- USB 2.0 standard**.

- Better Security with 802.1x and WPA - In addition to 64-bit and 128-bit WEP encryption, you can also securely connect to a wireless network using 802.1x for wireless authentication, as well as WPA (Wi-Fi Protected Access) providing you a much higher level of security for your data and communication than has previously been available.

- Optimal wireless reception using its cradle (included). Position the DWA-111 almost anywhere in your workspace to achieve the best reception possible.

- Supports Infrastructure networks via an access point and Peer-to-Peer communication in Ad-Hoc mode.

- User-friendly configuration and diagnostic utilities.

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

**Using a USB 1.1 port will adversely affect throughput.

Hardware Overview

Link Light
A blinking light indicates activity on your wireless network.

USB Port
Used to connect the DWA-111 to your computer.

Installation

This section will walk you through the installation process. If you have a built-in wireless adapter, please disable it in device manager before installing your D-Link adapter. Also, if you have previously installed another wireless adapter, please make sure any software is uninstalled.

Getting Started

Before installing your new D-Link wireless adapter, please verify the following:

- • Remove any previous installations of wireless adapters
- • Disable any built-in wireless adapters
- • Verify the settings such as the SSID and security settings of the network(s) you want to connect to

Remove Existing Installations

If you've installed a different manufacture's adapter or a different model D-Link adapter, make sure the software is uninstalled before installing the new software. Some utilities may cause a conflict with the new software. If you plan to use multiple adapters at different times, make sure the utilities are not set to load when your computer boots up. Windows® XP users may use the built-in wireless utility for all adapters.

To remove any old software:

Windows® XP users: Click **Start** > **Control Panel** > **Add or Remove Programs**.
Windows® 2000 users: Click **Start** > **Settings** > **Control Panel** > **Add or Remove Programs**.
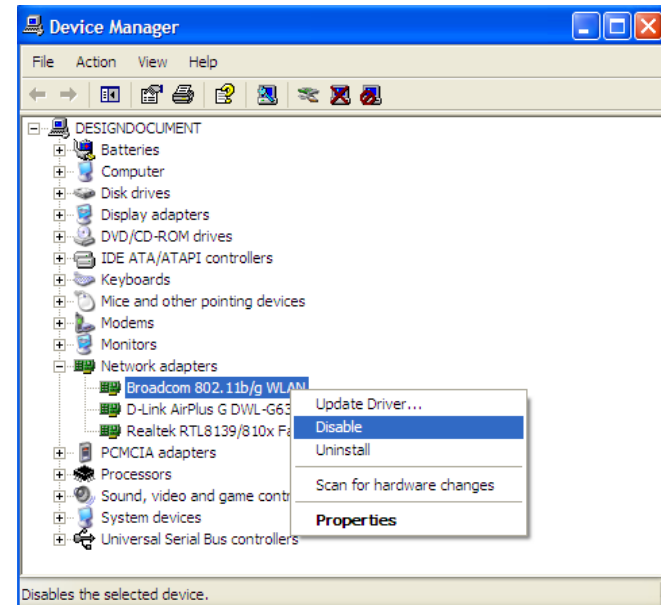
Disable Other Wireless Adapters

Most newer laptops may include a built-in wireless adapter. To prevent any conflicts with the D-Link wireless adapter, it is recommended to disable the wireless adapter (as well as any unused Ethernet adapters).

From the desktop, right-click on the **My Computer** icon and select **Properties**.

Click the **Hardware** tab and then click **Device Manager**. Scroll down the list and click the **+** sign to the left of **Network Adapters**.
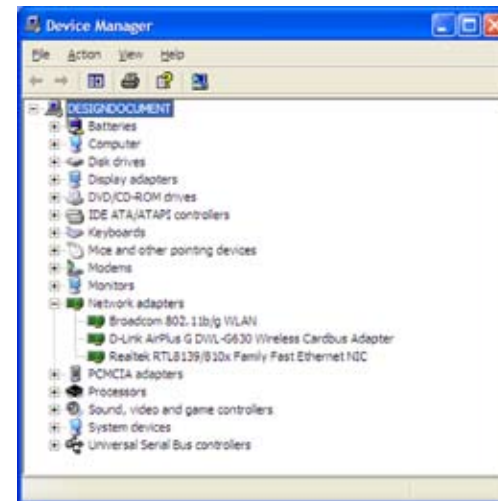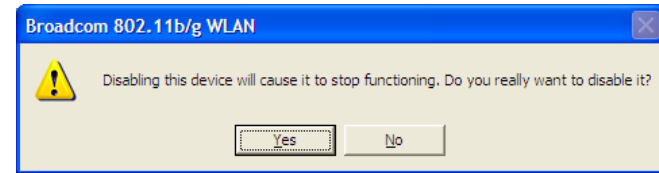
Right-click the adapter you would like to disable and select **Disable**.

Click **Yes** to disable the adapter.

The adapter is now disabled. When disabled, a red X will be displayed.

Disabling the adapter will not remove the drivers. If you would like to use the adapter, simply right-click it and select **Enable**.

Wireless Installation Considerations

The D-Link wireless adapter 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 adapter and other network devices to a minimum - each wall or ceiling can reduce your adapter's range from 3-90 feet (1-30 meters.) Position your devices so that the number of walls or ceilings is minimized.

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

3. Building Materials make a difference. A solid metal door or aluminum studs may have a negative effect on range. Try to position access points, wireless routers, and computers so that the signal passes through drywall or open doorways. Materials and objects such as glass, steel, metal, walls with insulation, water (fish tanks), mirrors, file cabinets, brick, and concrete will degrade your wireless signal.

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

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

Software Installation

Turn on the computer and Insert the D-Link DWA-111 Driver CD in the CD-ROM drive. The step-by-step instructions that follow are shown in Windows® XP. The steps and screens are similar for the other Windows® operating systems.

Note: Do <u style="color:red">NOT</u> install the DWA-111 Wireless G USB Adapter into your computer before installing the driver software from the D-Link CD!

Click **Install Drivers.**

If the CD Autorun function does not automatically start on your computer, type "**D:\Drivers\setup.exe**". If it does start, proceed to the next screen.

The *InstallShield Wizard* window will appear.
Click **Next** to continue.

By default setup will install to the default location: *C:\Program
Files\Wireless G DWA-111*, where C: represents the drive letter
of your hard drive. To install to a different location click **Browse** and
specify the location. Click **Next**.

Select the Program Files folder location. Click **Next** to continue.

The D-Link configuration wizard will now appear.

If you are using Windows® XP (SP2), you will have the option to use either the D-Link utility or the built-in Windows® Wireless utility.

Click **Next** to continue.

Insert the adapter into an available USB port on your computer.

> *Optional: If desired or necessary, attach the cradle between the DWA-111 and your computer.*

If the *Found New Hardware Wizard* appears, click **Cancel**.

Click **Next** to continue.

Enter the network name (SSID) manually. If you enter the SSID incorrectly, you will automatically be brought to the site survey page.

Click **Next** to continue or click **Scan** to display the site survey page.

Click the **Scan** button to display a list of wireless networks (site survey). Click on the network name (SSID) and click **Connect**.

If the wireless network you are trying to connect to is encrypted, enter the WEP key or WPA-PSK passphrase. Click **Next** to continue.

Click **Finish** to continue. If you are prompted to reboot your computer, select **Yes, I want to restart my computer now**.

Configuration

This section will show you how to configure your new D-Link wireless adapter using the D-Link Utility as well as the Windows® XP Zero Configuration Utility.

D-Link Configuration Utility

The D-Link DWA-111 uses the Configuration Utility as the management software. The utility provides the user an easy interface to change any settings related to the wireless adapter. After you have completed the installation of the DWA-111 and whenever you start the computer, the Configuration Utility starts automatically and the system tray icon is loaded in the toolbar. Clicking on the utility icon will start the Configuration Utility.

If you are using Windows® XP, please skip to page 22.

Wireless Networks

The Wireless Networks (Site Survey) page will display all wireless networks that are available in your area. To connect to a network, simply highlight the wireless network (SSID) and click Connect.

SSID: The SSID (Service Set Identifier) is the name of the wireless network.

MAC: Displays the MAC address of the wireless device.

**Signal:** Displays the Link Quality of the wireless connection.

Security: If there is a "lock" icon, this means the wireless network is secure. You must know the encryption key/security settings to connect.

Channel: Displays the channel of the wireless network.

Refresh Button: Rescans for available wireless networks in your area.

Connect Button: Highlight a wireless network and click the **Connect** button. If the network is secure, a pop-up window will appear. Enter the security information to connect (refer to the *Wireless Security* section for more information).

Active Button: Select a wireless network profile from the drop-down menu and click **Active** to connect. Allow up to 30 seconds to connect.
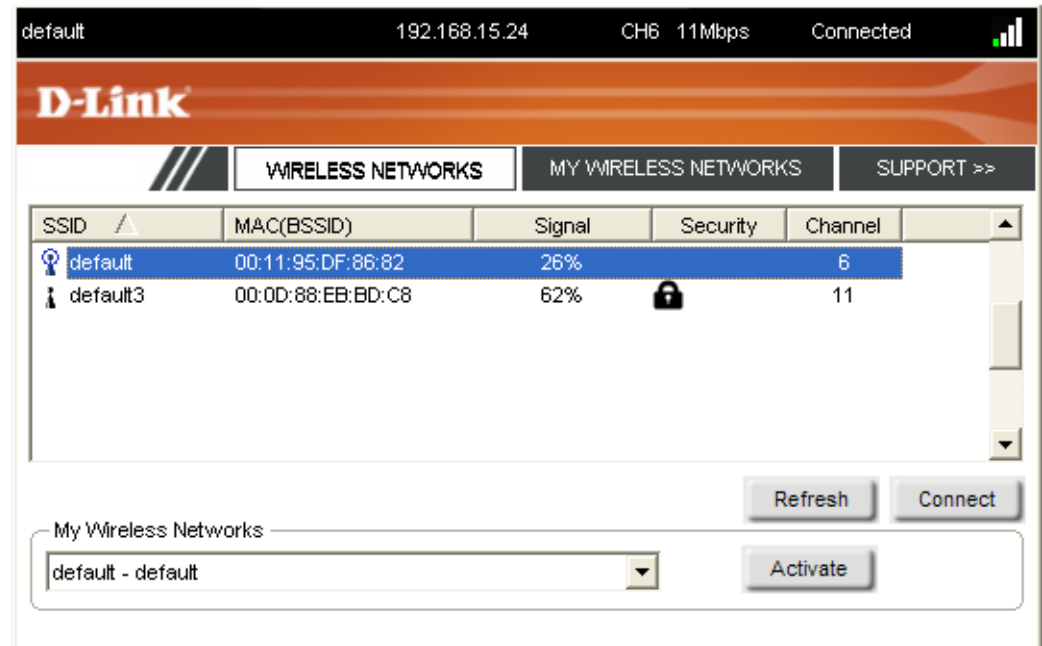
My Wireless Networks

The My Wireless Networks page will allow you to create, edit, and delete wireless network profiles. Every time you connect to a network using the *Wireless Networks* page, a profile will automatically be created.

New Button: Click **New** to create a new wireless network profile (refer to page 18).

Modify: Click **Modify** to edit a current profile (refer to page 19).

Delete: Click **Delete** to remove a profile.

Active: Click **Active** to activate a profile. Allow up to 30 seconds to connect to the wireless network.

Profile Details: The Profile Details section will display information about the wireless network such as the network name (SSID), network type (Infrastructure or Ad-Hoc), and if the network is secured.

Add Profile

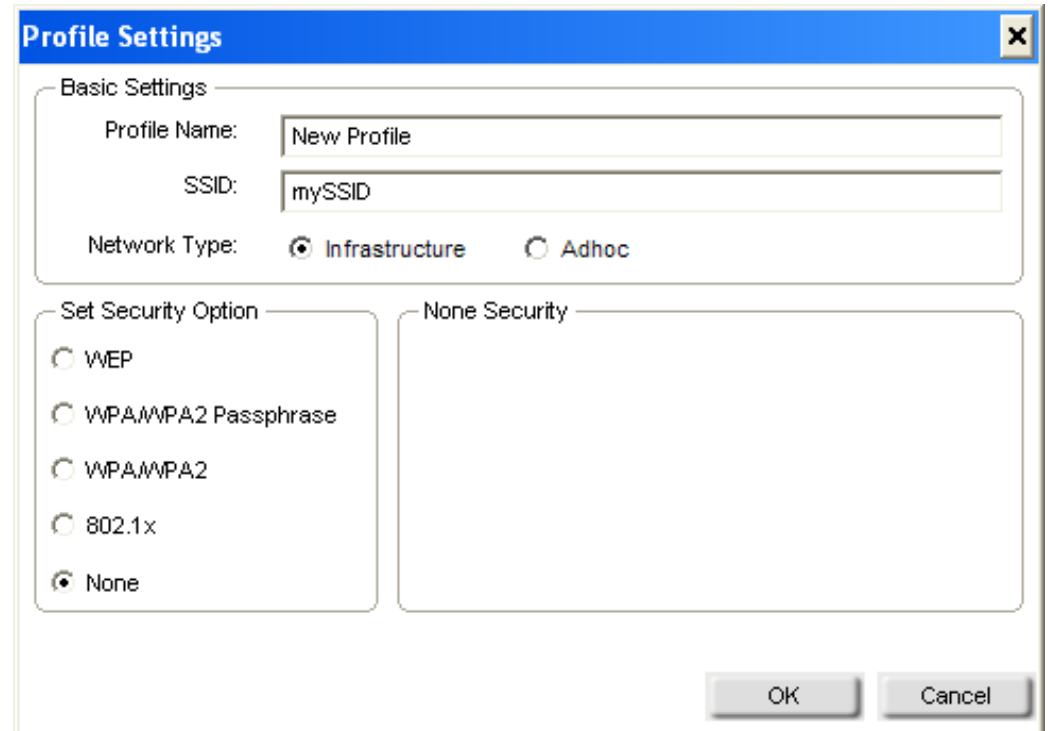You may add a new network by clicking the **New** button from the *My Wireless Networks* page.

Profile Name: Enter a name for your profile (e.g. Home, Office, Coffee Shop).

SSID: Enter the SSID of the wireless network.

Network Type: Select the network type. If you are connecting to a wireless router or access point, select **Infrastructure**. If you are connecting to another wireless client such as an adapter, select **Ad-Hoc**.

Set Security: Select the type of security used. Please refer to the **Wireless Security** section for more information.

OK Button: Click **OK** to save your settings.

Modify Profile

You may edit an existing profile by clicking the **Modify** button from the *My Wireless Networks* page.
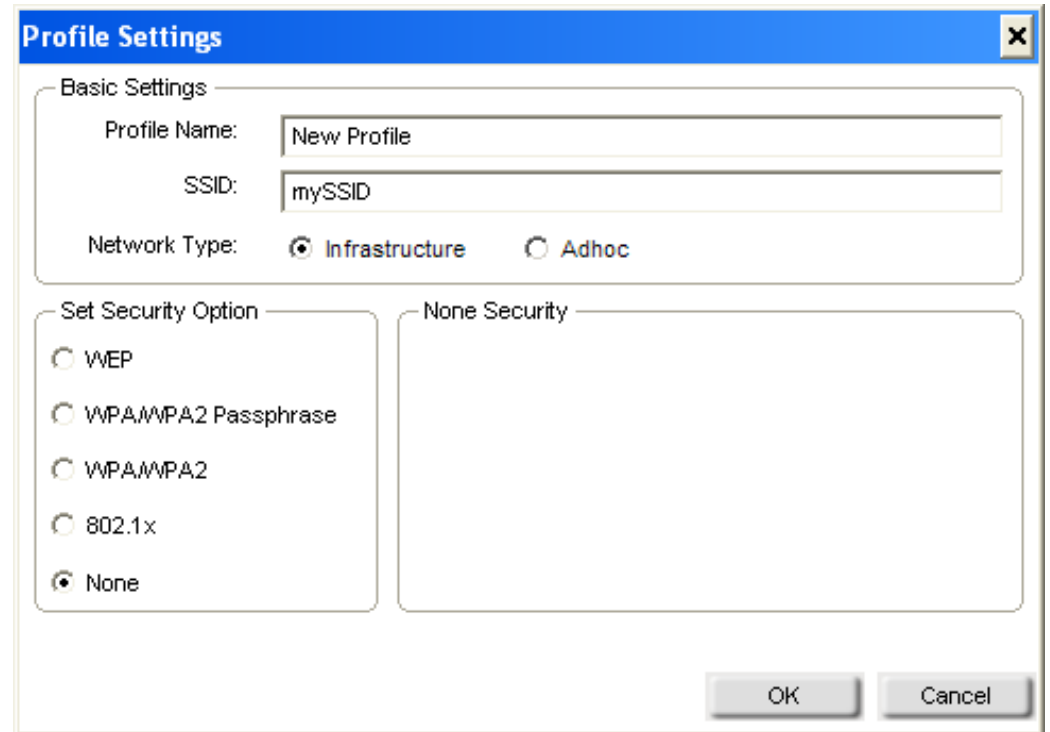
Profile Name: Enter a name for your profile (e.g. Home, Office, Coffee Shop).

SSID: Displays the SSID of the network.

Network Type: Displays the network type.

Set Security: Select the type of security used. Please refer to the **Wireless Security** section for more information.

OK Button: Click **OK** to save your settings.

Support

If you need help, click the Support button. A pane will appear to the right of the utility which will display information about the utility.

About

The About screen gives you information about the Firmware and Utility Versions of the DWA-111.

Windows® XP Configuration Utility

Windows® XP users may use the built-in wireless utility. The following instructions are for Service Pack 2 users. If you are using Windows® 2000, you must use the D-Link utility. Please refer to page 15.

If you receive the **Wireless Networks Detected** bubble, click on the center of the bubble to access the utility.
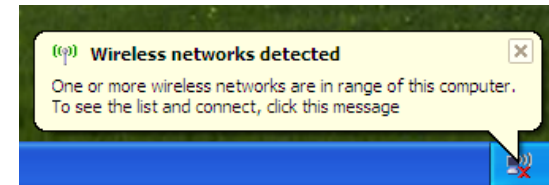
Right-click on the wireless computer icon in your system tray (lower-right corner next to the time). Select **View Available Wireless Networks**.
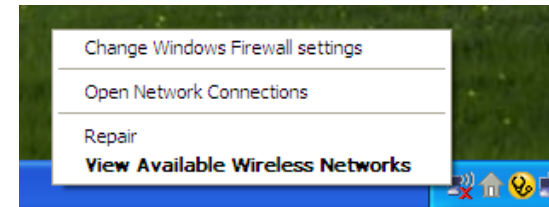
The utility will display any available wireless networks in your area. Click on a network and click the **Connect** button.

Refer to the **Wireless Security** section for information on connecting to a secure network.

If you want to use the D-Link utility instead of the Windows® XP wireless utility, refer to the next page.

Disabling The Windows® XP Utility

If you want to use the D-Link wireless utility you must disable the Windows® XP wireless utility.

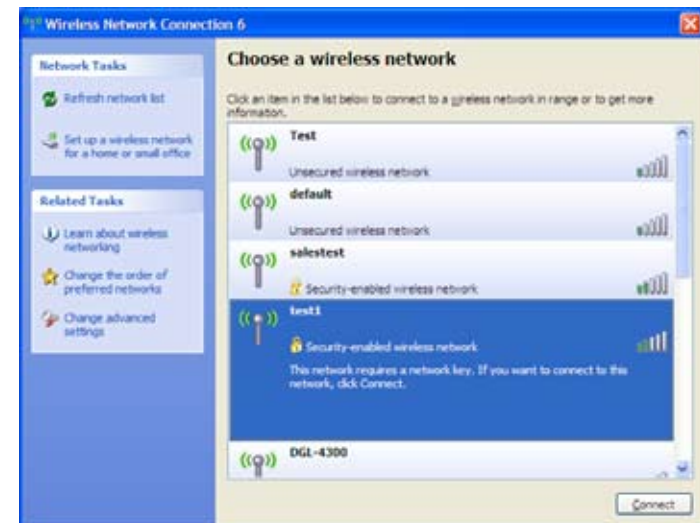Right-click on the wireless computer icon in your system tray (lower-right corner next to the time). Select **View Available Wireless Networks**.
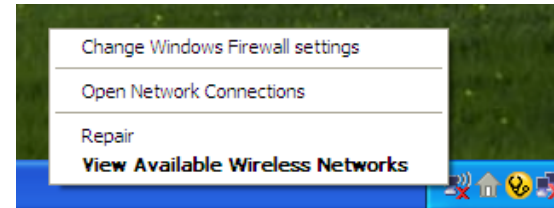
In the **Choose a Wireless Network** window click **Change Advanced Settings** on the left side below *Related Tasks*.
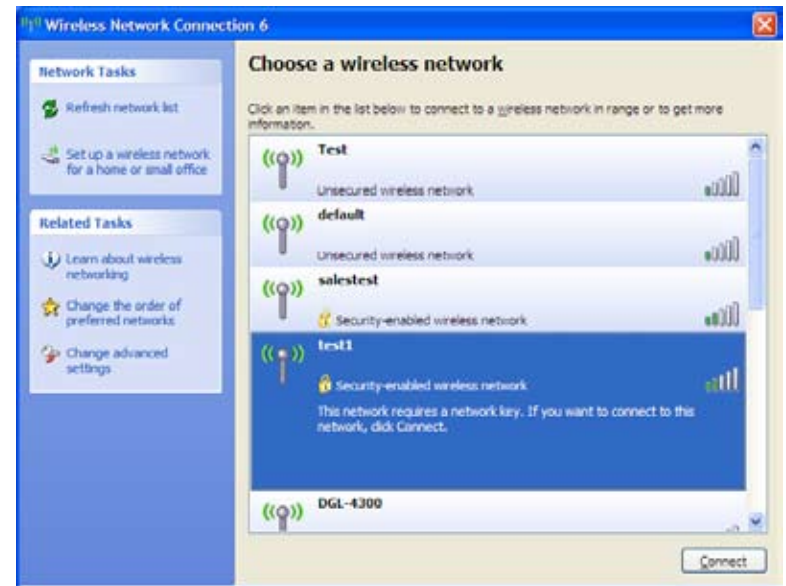
In the *Wireless Network Connection Properties* window, uncheck **Use Windows® to configure my wireless network settings** and then click **OK**.
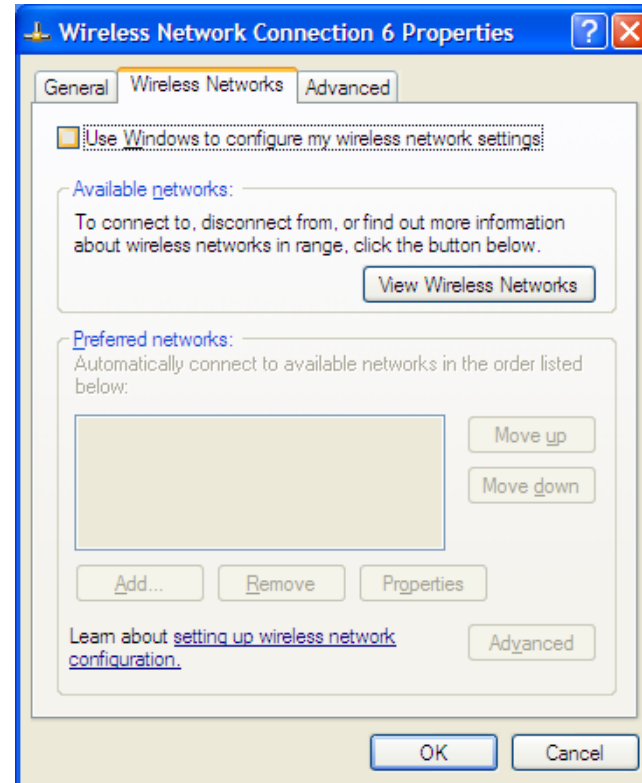
Wireless Security

This section will show you the different levels of security you can use to protect your data from intruders. The DWA-111 offers the following types of security:

- WPA2 (Wi-Fi Protected Access 2)
- WPA (Wi-Fi Protected Access)
- WEP (Wired Equivalent Privacy)

- WPA2-PSK (Pre-Shared Key)
- WPA-PSK (Pre-Shared Key)

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.

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 instead of TKIP.

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

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

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

Configure WEP

Using the D-Link Utility

It is recommended to enable WEP 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 WEP key being used.

1. Open the Wireless Utility by double-clicking on the D-Link icon in your system tray (lower-right corner of screen). From the list of available wireless networks, select the network you want to connect to and click **Connect**. If the network is using WEP, the screen (as shown to the left) will appear.

2. Enter the WEP key exactly as it is on your wireless router or access point.
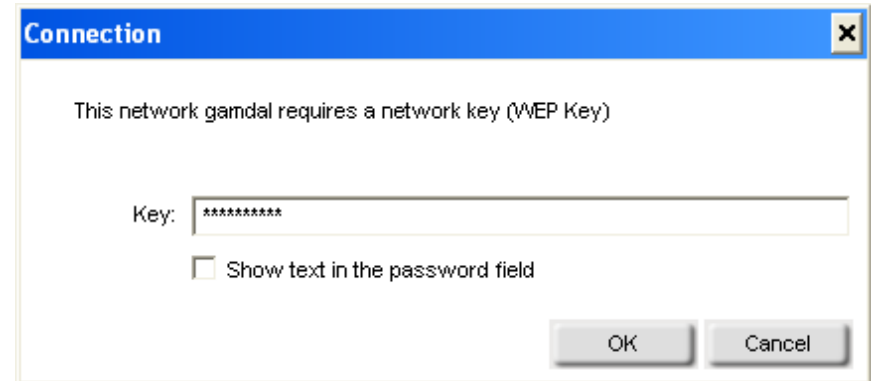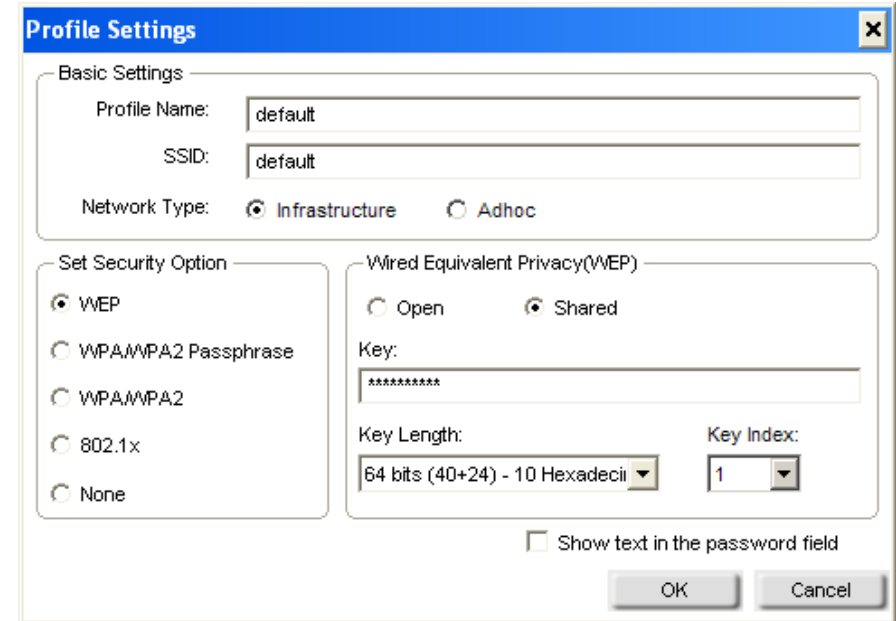
3. Click the **Show text in the password field** box to see the WEP key. Unchecking it will hide the key.

4. Click **OK** to connect to the network. Allow up to 30 seconds to connect.

If you would like to create a new network and enter the WEP settings, refer to the next page.

It is recommended to enable WEP on your wireless router or access point before configuring your wireless adapter. make sure you enter the WEP key exactly the same on all wireless devices. It is strongly recommended to set the authentication to **Shared Key**.

1. Open the Wireless Utility by double-clicking on the D-Link icon in your system tray (lower-right corner of screen). Click on **New** to create a new profile or highlight an existing profile and click **Modify**.

2. Select **WEP** under *Set Security Option*.

3. Select **Shared** and then select the *Key Length* from the drop-down menu.

4. Enter the WEP key exactly as it is on your wireless router or access point.

5. Click **OK** to connect to the network. Allow up to 30 seconds to connect.

Configure WEP

Using the Windows® XP Utility

It is recommended to enable WEP 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 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 WEP key and click **Connect**.

It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the WEP settings are correct. The WEP key must be exactly the same as on the wireless router or access point.
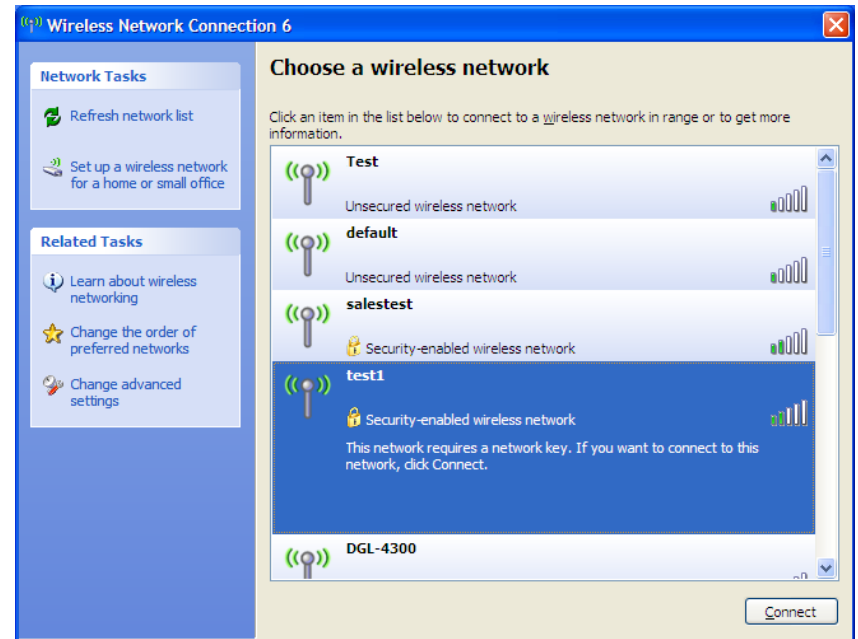
Configure WPA/WPA2 Passphrase

Using the D-Link Utility

It is recommended to enable WPA-PSK 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 WPA-PSK passphrase being used.

1. Open the Wireless Utility by double-clicking on the D-Link icon in your system tray (lower-right corner of screen).

2. Highlight the wireless network (SSID) you would like to connect to and click **Connect**. If the network is using WPA-PSK, the screen (as shown to the left) will appear.

3. Enter the WPA-PSK passphrase exactly as it is on your wireless router or access point. Click the **Show text in the password field** box to see the passphrase. Unchecking it will hide it.

4. Click **OK** to connect to the network. Allow up to 30 seconds to connect.
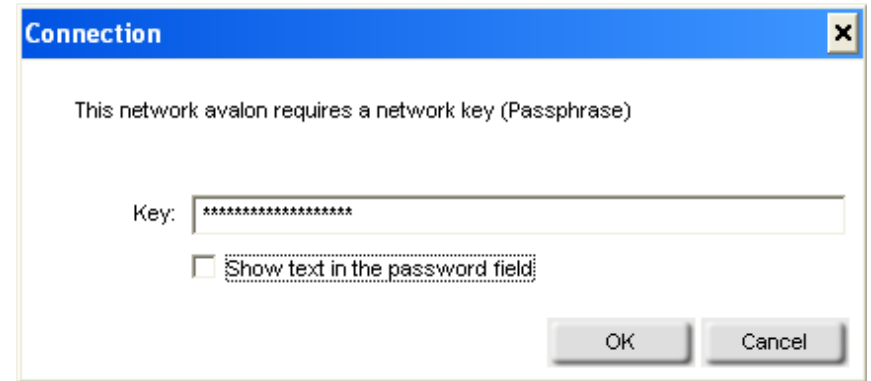
If you would like to create a new network and enter the WEP settings, refer to the next page.

It is recommended to enable WPA-PSK on your wireless router or access point before configuring your wireless adapter. Make sure you enter the passphrase exactly the same on all wireless devices.

1. Open the Wireless Utility by double-clicking on the D-Link icon in your system tray (lower-right corner of screen). Click on **New** to create a new profile or highlight an existing profile and click **Modify**.

2. Select **WPA/WPA2 Passphrase** under *Set Security Option*.

3. Select **TKIP** or **AES**.

4. Enter the passphrase exactly as it is on your wireless router or access point.

5. Click **OK** to connect to the network. Allow up to 30 seconds to connect.

Configure WPA/WPA2 Passphrase

Using the Windows® XP Utility

It is recommended to enable WPA-PSK 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 WPA-PSK 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**.
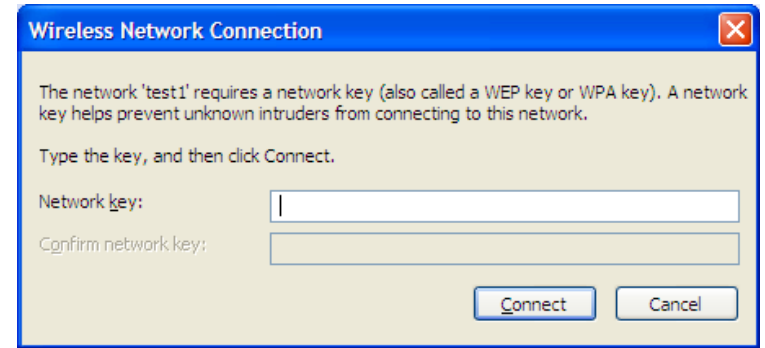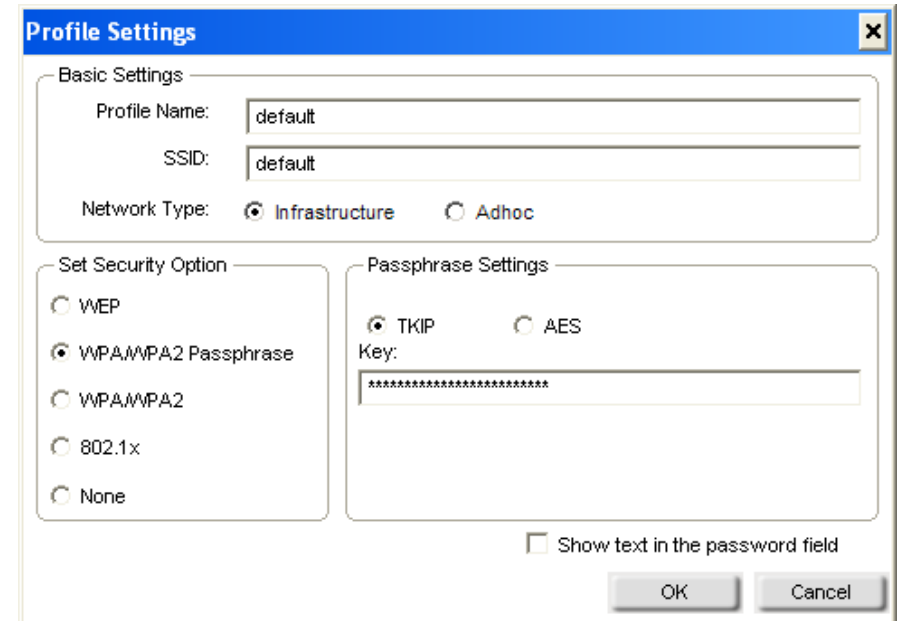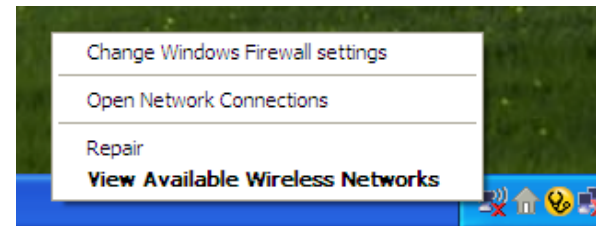

2. Highlight the wireless network (SSID) you would like to connect to and click **Connect**.
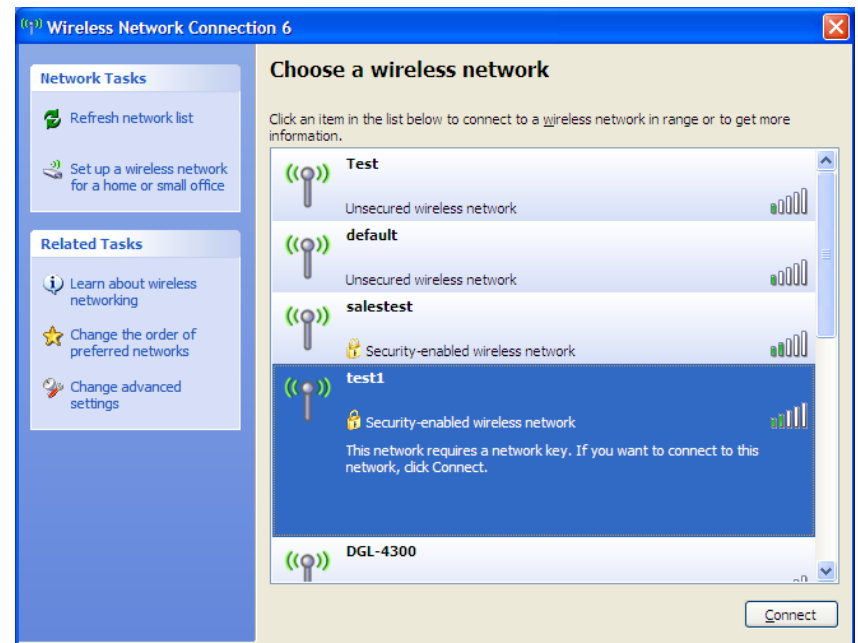
3. The **Wireless Network Connection** box will appear. Enter the WPA-PSK passphrase and click **Connect**.

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 router or access point.

Wireless Network Connection

The network 'test1' requires a network key (also called a WEP key or WPA key). A network key helps prevent unknown intruders from connecting to this network.

Type the key, and then click Connect.

Network key: |

Confirm network key:

[Connect]   [Cancel]
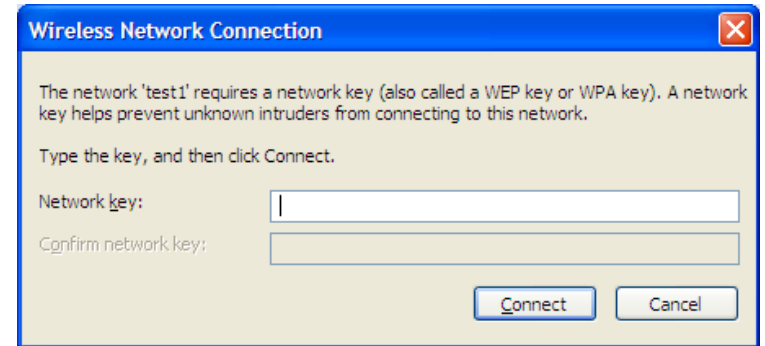
Configure WPA/WPA2

Using the D-Link Utility

WPA and WPA2 are for advanced users who are familiar with using a RADIUS server and setting up certificates.

1. Open the Wireless Utility by double-clicking on the D-Link icon in your system tray (lower-right corner of screen). Click on **New** to create a new profile or highlight an existing profile and click **Modify**.

2. Select **WPA/WPA2** under *Set Security Option* and then select **TKIP** or **AES**.

3. Click on **Advanced Config** to continue.

4. Next to *EAP Type*, select **EAP-TLS**, **EAP-TTLS**, or **PEAP**. Extensible Authentication Protocols allow devices on the network to request authentication from the RADIUS server in the network. All the devices on the network must use the same EAP type when using a RADIUS server for authentication. Some RADIUS servers require that the Validate Server field be selected. Check this field if your RADIUS server requires validation.

5. Select an **User Certificate** from the drop-down menu.

6. Enter the login information required to authenticate.

7. Click **Add** to enter the IP address(es) of your RADIUS servers.

8. Click **OK** to save your settings.

Configure 802.1x

Using the D-Link Utility

802.1x is for advanced users who are familiar with using a RADIUS server and setting up certificates.

1. Open the Wireless Utility by double-clicking on the D-Link icon in your system tray (lower-right corner of screen). Click on **New** to create a new profile or highlight an existing profile and click **Modify**.
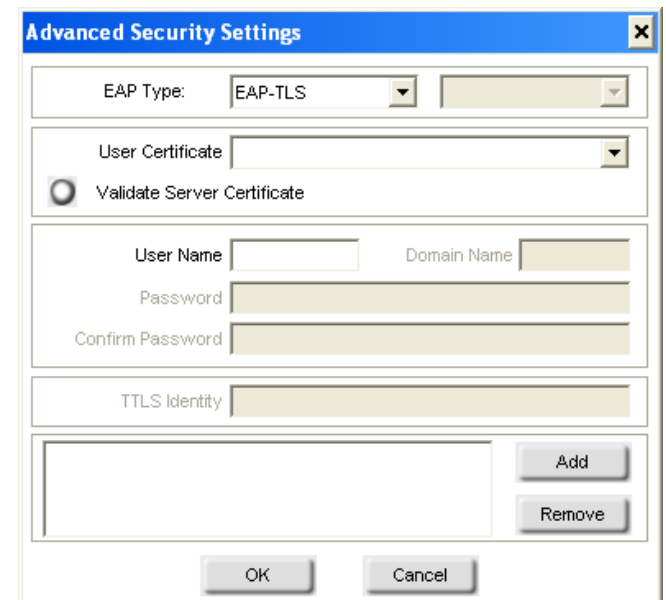
2. Select **802.1x** under *Set Security Option*.

3. Click on **Advanced Config** to continue.

4. Next to *EAP Type*, select **EAP-TLS**, **LEAP**, **EAP-TTLS**, or **PEAP**. Extensible Authentication Protocols allow devices on the network to request authentication from the RADIUS server in the network. All the devices on the network must use the same EAP type when using a RADIUS server for authentication. Some RADIUS servers require that the Validate Server field be selected. Check this field if your RADIUS server requires validation.

5. Select an **User Certificate** from the drop-down menu.

6. Enter the login information required to authenticate.

7. Click **Add** to enter the IP address(es) of your RADIUS servers.

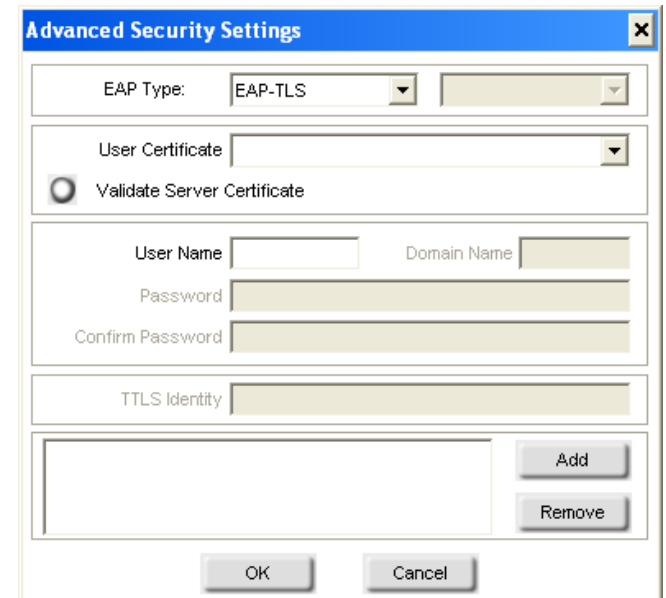8. Click **OK** to save your settings.
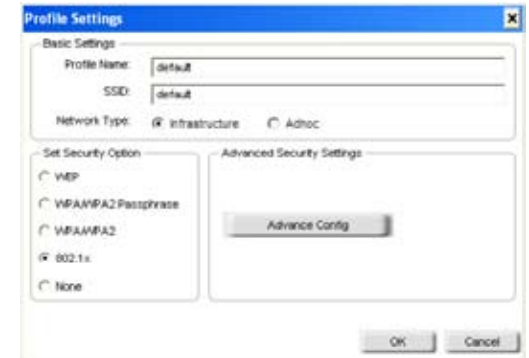
Troubleshooting

This chapter provides solutions to problems that can occur during the installation and operation of the DWA-111. 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. How do I know if my adapter is installed properly?

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

Select the **Hardware Tab.**
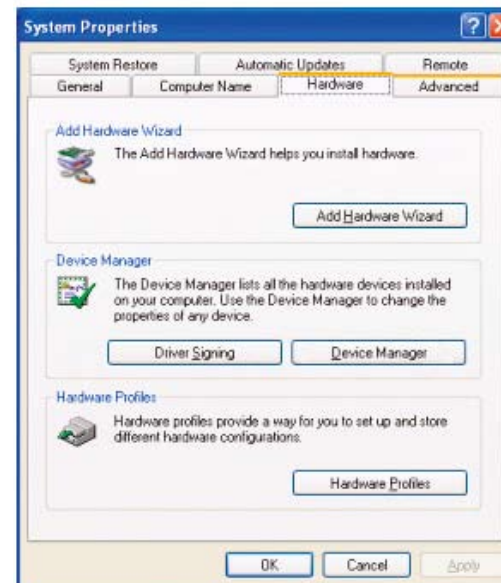
Click the **+** sign next to **Network Adapters.**

Right-click on **D-Link DWA-111 USB Adapter.**

Select **Properties** to check that the drivers are installed properly.
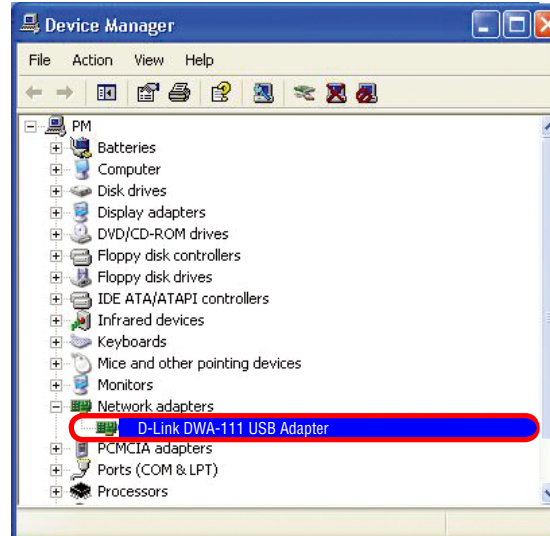
Look under **Device Status** to check that the device is working properly. Click **OK** to continue.
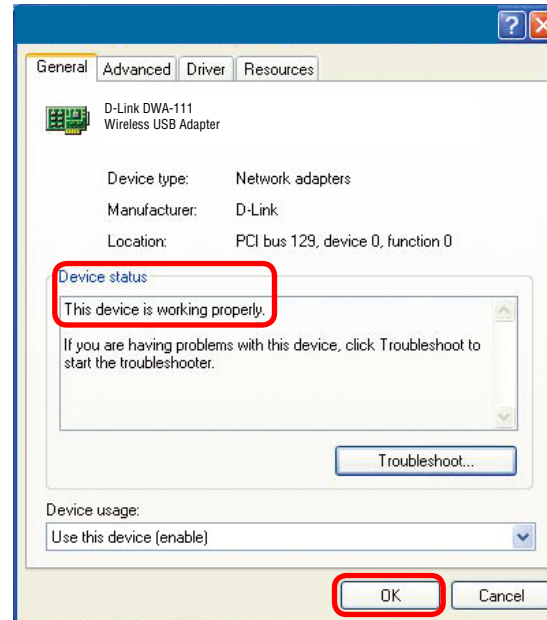
2. The computer does not recognize the DWA-111 Wireless Adapter.

Make sure that the DWA-111 Wireless Adapter is properly seated in the computer's USB slot.
If Windows® does not detect the hardware upon insertion of the adapter, make sure to completely remove drivers that were previously loaded.

3. The computer with the DWA-111 installed is unable to connect to the wireless network and/or the Internet.

- Check that the LED indicators for the broadband modem are indicating normal activity. If not, there may be a problem with the broadband connection.

- Check that the LED indicators on the wireless router are functioning properly. If not, check that the AC power and Ethernet cables are firmly connected.

- Check that the IP Address, subnet mask, gateway, and DNS settings are correctly entered for the network

- In **Infrastructure** mode, make sure the same **Service Set Identifier (SSID)** is specified on the settings for the wireless clients and access points. The **SSID** factory default setting for D-Link products is **default.** (Double-click on the WLAN icon in the taskbar. The **Link Info** screen will display the SSID setting.)

- In **Ad-Hoc** mode, both wireless clients will need to have the same **SSID**. Please note that it might be necessary to set up one client to establish a **BSS (Basic Service Set)** and wait briefly before setting up other clients. This prevents several clients from trying to establish a **BSS** at the same time, which can result in multiple singular **BSSs** being established, rather than a single **BSS** with multiple clients associated to it.

Check that the **Network Connection** for the wireless client is configured properly. Select **AP (Infrastructure)** when connecting to an access point and select **Ad-Hoc mode** when connecting without an access point. Double-click on the **WLAN icon** in the taskbar >

click on **Configuration** to change the settings for the wireless adapter.

If **Security** is enabled, make sure that the correct encryption keys are entered on both the DWA-111 and the access point. Double-click on the **WLAN** icon in the taskbar > click **Encryption**. Check to see that the key selected is set to the same key as other devices on the network.

Wireless Basics

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

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

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

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

What is Wireless?

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

Why D-Link Wireless?

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

How does wireless work?

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

Wireless Local Area Network (WLAN)

In a wireless local area network, a device called an Access Point (AP) connects computers to the network. The access point has a small antenna attached to it, which allows it to transmit data back and forth over radio signals. With an indoor access point 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 as 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, and etc
- Gets rid of the cables around the house
- Simple and easy to use

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

Where is wireless used?

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

Using a D-Link USB 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 router or Access Point

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

Eliminate Interference

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

Security

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

Wireless Modes

There are basically two modes of networking:

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

- **Ad-Hoc** – Directly connecting to another computer, for peer-to-peer communication, using wireless network adapters on each computer, such as two or more DWA-111 wireless network USB adapters.

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

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

Networking Basics

Check your IP address

After you install your new D-Link adapter, by default, the TCP/IP settings should be set to obtain an IP address from a DHCP server (i.e. wireless router) automatically. To verify your IP address, please follow the steps below.
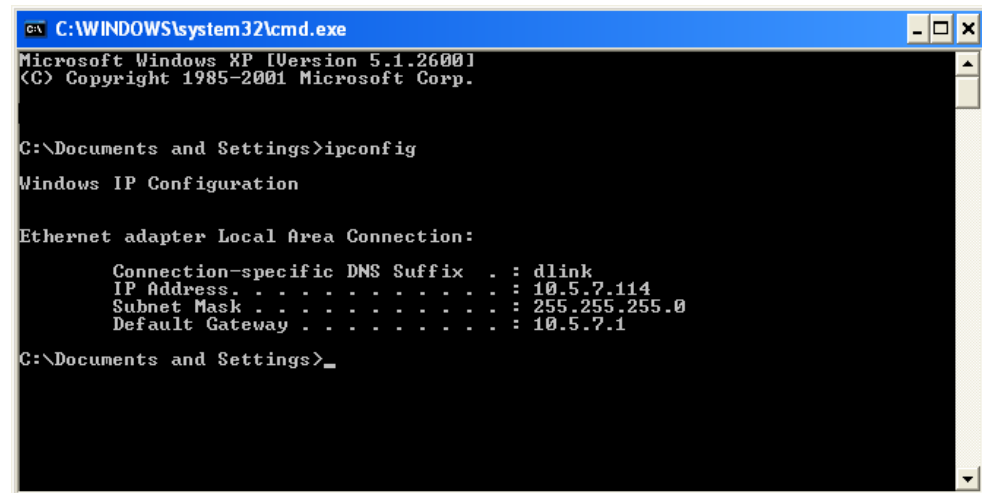
Click on **Start** > **Run**. In the run box type *cmd* and click **OK**.

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

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

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

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

Statically Assign an IP address

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

Step 1

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

Step 2

Right-click on the **Local Area Connection** which represents your D-Link 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.
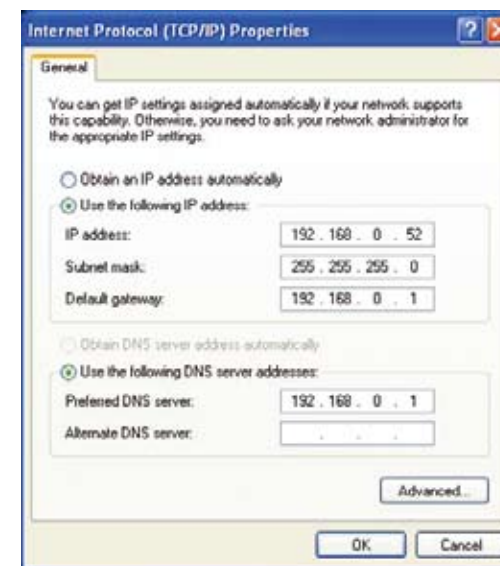
Technical Specifications

Standards
- IEEE 802.11b
- IEEE 802.11g

Bus Type
USB 2.0

Wireless Signal Rates*
- 54Mbps
- 48Mbps
- 36Mbps
- 24Mbps
- 18Mbps
- 12Mbps
- 11Mbps
- 9Mbps
- 6Mbps
- 5.5Mbps
- 2Mbps
- 1Mbps

Security
- WPA - Wi-Fi Protected Access (TKIP, MIC, IV Expansion, Shared Key Authentication)
- 802.1x
- 64/128-bit WEP

Media Access Control
CSMA/CA with ACK

Frequency Range
2.4GHz to 2.462GHz

Wireless Signal Range*
- Indoors: Up to 328 feet (100 meters)
- Outdoors: Up to 1,312 feet (400 meters)

Power Consumption
- PowerSave mode = 28mA
- Standby mode = 4.66mA
- Transmit mode = 248mA

Modulation Technology
- Orthogonal Frequency

Division Multiplexing (OFDM)
- Complementary Code Keying (CCK)

Receiver Sensitivity
- 54Mbps OFDM, 10% PER,-68dBm)
- 48Mbps OFDM, 10% PER,-68dBm)
- 36Mbps OFDM, 10% PER,-75dBm)
- 24Mbps OFDM, 10% PER,-79dBm)
- 18Mbps OFDM, 10% PER,-82dBm)
- 12Mbps OFDM, 10% PER,-84dBm)
- 11Mbps CCK, 8% PER,-82dBm)
- 9Mbps OFDM, 10% PER,-87dBm)
- 6Mbps OFDM, 10% PER,-88dBm)
- 5.5Mbps CCK, 8% PER,-85dBm)
- 2Mbps QPSK, 8% PER,-86dBm)
- 1Mbps BPSK, 8% PER,-89dBm)

Transmitter Output Power
15dBm ± 2dB

Internal Antenna Type
Dual Antenna Diversity Switching

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

Humidity
95% maximum (non-condensing)

Dimensions
- L = 4.64 (114.3mm)
- W = 2.13 (54mm)
- H = 0.34 inches (8.7mm)

Weight
0.12 lb (55g)

Warranty
1 Year

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

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