

USER MANUAL

DIR-524

VERSION 1.0



D-Link

WIRELESS

Preface

D-Link reserves the right to revise this publication and to make changes in the content hereof without obligation to notify any person or organization of such revisions or changes.

Manual Revisions

Revision	Date	Description
1.0	August, 2010	• Updated for revision

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Package Contents

- D-Link DIR-524 Wireless Router
- Power Adapter
- Ethernet Cable
- Manual and Warranty on CD

Note: Using a power supply with a different voltage rating than the one included with the DIR-524 will cause damage and void the warranty for this product.

The product must be used with the power adapter included with the device.

Note: Always attach the power cord plug to the power supply, before inserting the power cord and connected power supply to the wall outlet.



System Requirements

- Ethernet-based Cable or DSL Modem
- Computers with Windows® , Macintosh® , or Linux-based operating systems with an installed Ethernet adapter
- Internet Explorer 6 or Firefox 2.0 or above (for configuration)

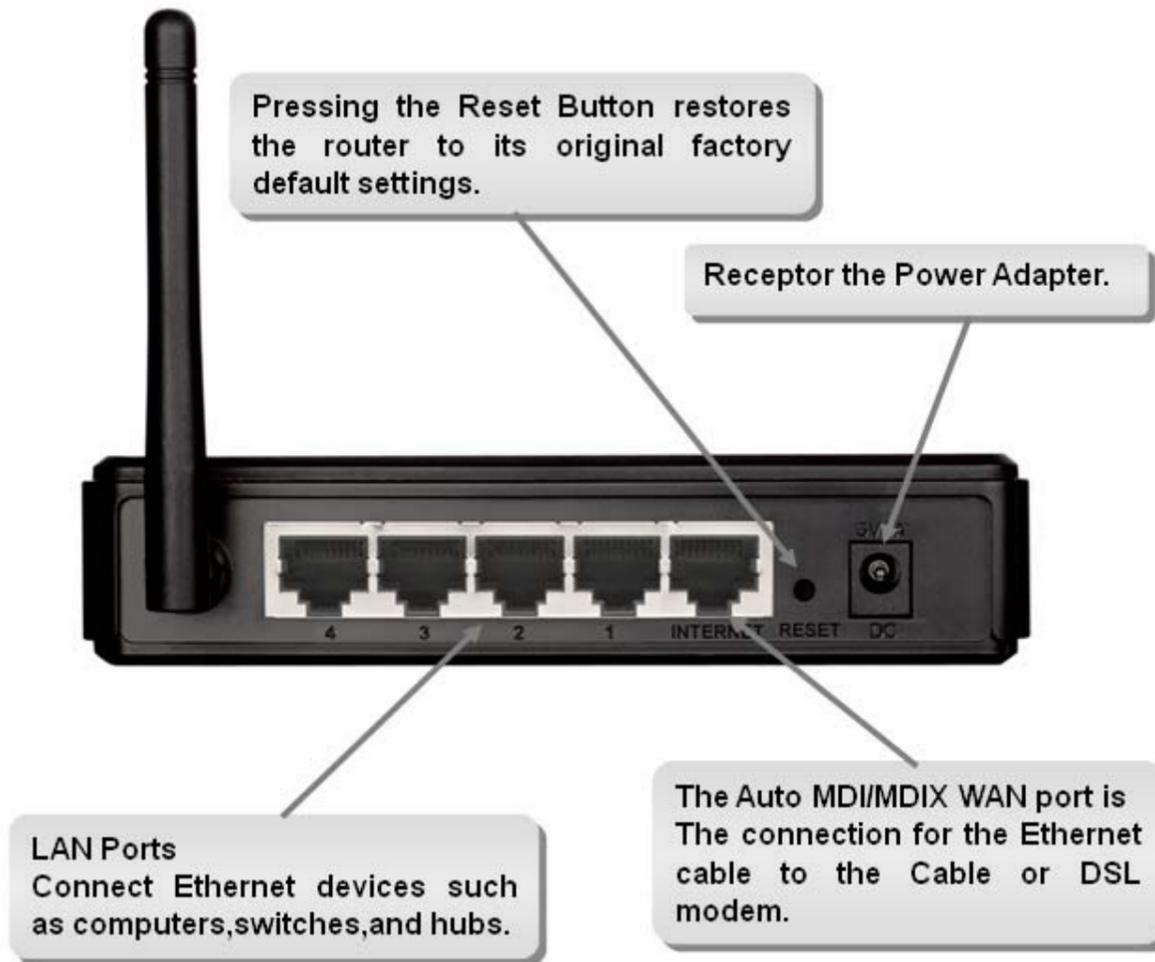
Features

- **Faster Wireless Networking** - The DIR-524 provides up to 150Mbps* wireless connection with other 802.11n wireless clients. This capability allows users to participate in real-time activities online, such as video streaming, online gaming, and real-time audio.
- **Compatible with 802.11g Devices** - The DIR-524 is still fully compatible with the IEEE 802.11g standard, so it can connect with existing 802.11g PCI, USB and FireWire adapters.
- **Advanced Firewall Features** - The Web-based user interface displays a number of advanced network management features including:
 - **Content Filtering** - Easily applied content filtering based on MAC Address, URL, and/or Domain Name.
 - **Filter Scheduling** - These filters can be scheduled to be active on certain days or for a duration of hours or minutes.
 - **Secure Multiple/Concurrent Sessions** - The DIR-524 can pass through VPN sessions. It supports multiple and concurrent IPSec and PPTP sessions, so users behind the DIR-524 can securely access corporate networks.
- **User-friendly Setup Wizard** - Through its easy-to-use Web-based user interface, the DIR-524 lets you control what information is accessible to those on the wireless network, whether from the Internet or from your company's server. Configure your router to your specific settings within minutes.

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

Hardware Overview

Connections



Hardware Overview

LEDs



Installation

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

Before you Begin

- Please configure the router with the computer that was last connected directly to your modem.
- You can only use the Ethernet port on your modem. If you were using the USB connection before using the router, then you must turn off your modem, disconnect the USB cable and connect an Ethernet cable to the Internet port on the router, and then turn the modem back on. In some cases, you may need to call your ISP to change connection types (USB to Ethernet).
- If you have DSL and are connecting via PPPoE, make sure you disable or uninstall any PPPoE software such as WinPoet, Broadjump, or Enternet 300 from your computer or you will not be able to connect to the Internet.
- When running the Setup Wizard from the D-Link CD, make sure the computer you are running the CD from is connected to the Internet and online or the wizard will not work. If you have disconnected any hardware, re-connect your computer back to the modem and make sure you are online.

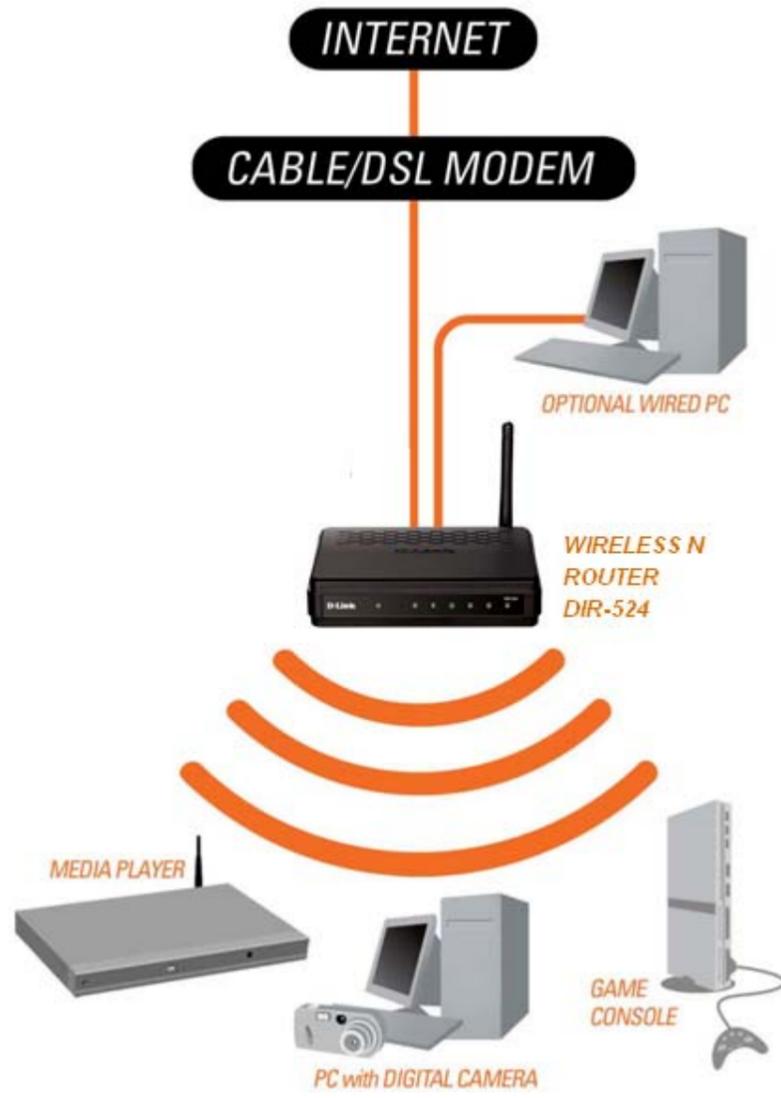
Wireless Installation Considerations

The D-Link wireless router 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 router 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 is not in use.

Network Diagram

YOUR NETWORK SETUP



Connect to Cable/DSL/Satellite Modem

If you are connecting the router to a cable/DSL/satellite modem, please follow the steps below:

1. Place the router in an open and central location. Do not plug the power adapter into the router.
2. Turn the power off on your modem. If there is no on/off switch, then unplug the modem's power adapter. Shut down your computer.
3. Unplug the Ethernet cable (that connects your computer to your modem) from your computer and place it into the Internet port on the router.
4. Plug an Ethernet cable into one of the four LAN ports on the router. Plug the other end into the Ethernet port on your computer.
5. Turn on or plug in your modem. Wait for the modem to boot (about 30 seconds).
6. Plug the power adapter to the router and connect to an outlet or power strip. Wait about 30 seconds for the router to boot.
7. Turn on your computer.
8. Verify the link lights on the router. The power light, Internet light, and the LAN light (the port that your computer is plugged into) should be lit. If not, make sure your computer, modem, and router are powered on and verify the cable connections are correct.
9. Skip to page 15 to configure your router.

Connect to Another Router

If you are connecting the D-Link router to another router to use as a wireless access point and/or switch, you will have to do the following before connecting the router to your network:

- Disable UPnP™
- Disable DHCP
- Change the LAN IP address to an available address on your network. The LAN ports on the router cannot accept a DHCP address from your other router.

To connect to another router, please follow the steps below:

1. Plug the power into the router. Connect one of your computers to the router (LAN port) using an Ethernet cable. Make sure your IP address on the computer is 192.168.0.xxx (where xxx is between 2 and 254). Please see the **Web-based Configuration Utility** section for more information. If you need to change the settings, write down your existing settings before making any changes. In most cases, your computer should be set to receive an IP address automatically in which case you will not have to do anything to your computer.
2. Open a web browser and enter **http://192.168.0.1** and press **Enter**. When the login window appears, set the user name to **admin** and leave the password box empty. Click **OK** to continue.
3. Click on **Advanced** and then click **Advanced Network**. Uncheck the Enable UPnP checkbox. Click **Save Settings** to continue.
4. Click **Setup** and then click **Network Settings**. Uncheck the Enable DHCP Server server checkbox. Click **Save Settings** to continue.
5. Under Router Settings, enter an available IP address and the subnet mask of your network. Click **Save Settings** to save your settings. Use this new IP address to access the configuration utility of the router in the future. Close the browser and change your computer's IP settings back to the original values as in Step 1.
6. Disconnect the Ethernet cable from the router and reconnect your computer to your network.

7. Connect an Ethernet cable in one of the LAN ports of the router and connect it to your other router. Do not plug anything into the Internet port of the D-Link router.
8. You may now use the other 3 LAN ports to connect other Ethernet devices and computers. To configure your wireless network, open a web browser and enter the IP address you assigned to the router. Refer to the **Configuration** and **Wireless Security** sections for more information on setting up your wireless network.

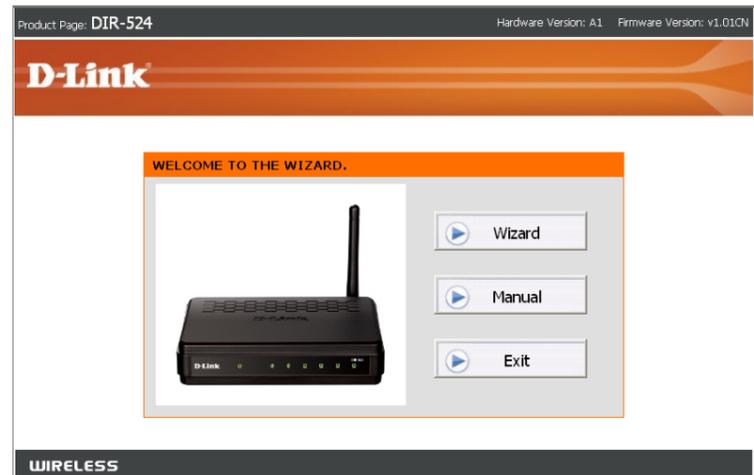
Getting Started

The DIR-524 includes a Quick Router Setup Wizard CD. Follow the simple steps below to run the Setup Wizard to guide you quickly through the installation process. You may manually configure your router without the wizard. Refer to the next page to manually setup your router.

Insert the **Quick Router Setup Wizard CD** in the CD-ROM drive. The step-by-step instructions that follow are shown in Windows® XP or Vista®. The steps and screens are similar for the other Windows® operating systems.

If the CD autorun function does not automatically start on your computer, go to **Start > Run**. In the run box type **"D:\DIR524.exe"** (where **D:** represents the drive letter of your CD-ROM drive).

When the autorun screen appears, click **Wizard** and follow the on-screen instructions.



Note: It is recommended to write down the login password on the provided CD holder.

Configuration

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

Web-based Configuration Utility

To access the configuration utility, open a web-browser such as Internet Explorer and enter the IP address of the router (192.168.0.1).



Select **admin** from the drop-down menu and then enter your password. Leave the password blank by default.

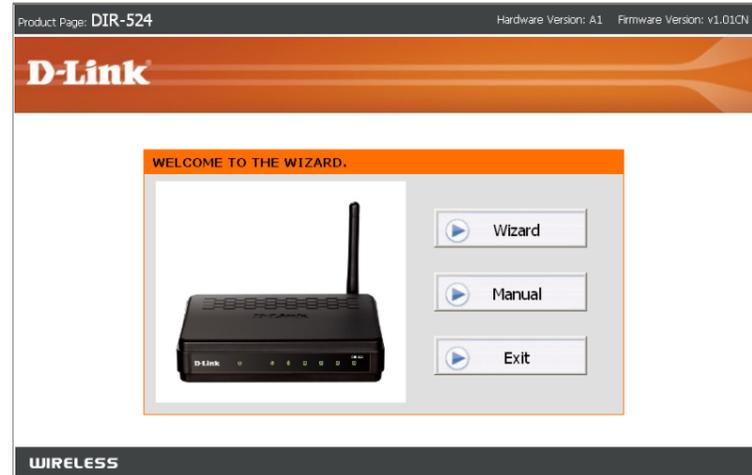
If you get a **Page Cannot be Displayed** error, please refer to the **Troubleshooting** section for assistance.



Internet Connection Setup Wizard

Once logged into the web interface of the router, the **WELCOME TO THE WIZARD** page will appear. Click the **Wizard** button to quickly configure your router using the setup wizard.

If you want to enter your settings without running the wizard, click **Manual** and skip to page 23.



Click **Next** to continue.



Select the **Static IP Address Connection** and then click **Next** to continue.

1 Connection Type 2 Set Connection 3 Set SSID 4 Set Security 5 Save Settings

CHOOSE YOUR INTERNET CONNECTION TYPE

If your Internet Service Provider was not listed or you don't know who it is, please select the Internet connection type below:

- Static IP Address Connection**
Choose this option if your Internet service provider (ISP) provided you with IP Address information that has to be manually configured.
- DHCP Connection (Dynamic IP Address)**
Choose this option if your Internet connection automatically provides you with an IP Address. Most cable modems use this type of connection.
- Username / Password Connection (PPPoE)**
Choose this option if your Internet connection requires a username and password to get online. Most DSL modems use this type of connection.

Next Cancel

Fill in you IP information provided by you Internet Service Provider and then click **Next** to continue.

1 Connection Type 2 Set Connection 3 Set SSID 4 Set Security 5 Save Settings

STATIC IP ADDRESS CONNECTION

Please enter the following information to set up your Static IP connection. This information should be provided by your Internet Service Provider (ISP). If you do not have this information, please contact your ISP.

IP Address : 192 . 168 . 1 . 2

Subnet Mask : 255 . 255 . 255 . 0

ISP Gateway Address : 192 . 168 . 1 . 1

Primary DNS Address : 202 . 96 . 134 . 133

Secondary DNS Address : . . . (Optional)

Prev Next Cancel

Set the Wireless Network Name(SSID) and then click **Next** to continue.

1 Connection Type 2 Set Connection 3 Set SSID 4 Set Security 5 Save Settings

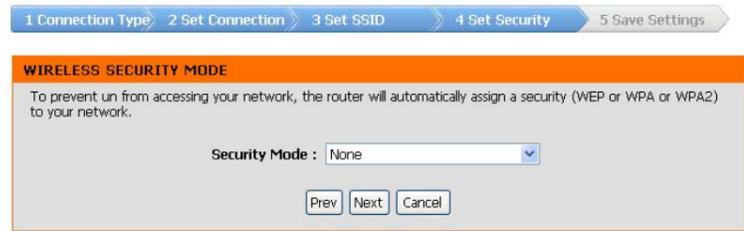
WIRELESS NETWORK NAME (SSID)

Wireless Network Name (SSID)

SSID : D-Link_DIR-524

Prev Next Cancel

Select the Security Mode and then click **Next** to continue.



Click **Save** to Save your configuration.



Select the **DHCP Connection (Dynamic IP Address)** and then click **Next** to continue.



Section 3 – Configuration

If you selected **DHCP Connection (Dynamic IP Address)**, you may need to enter the MAC address of the computer that was last connected directly to your modem. If you are currently using that computer, click **Clone MAC Address** and then click **Next** to continue.

The **Host Name** is optional but may be required by some ISPs. The default host name is “**DIR-524**”.

Set the Wireless Network Name(SSID) and then click **Next** to continue.

Select the Security Mode and then click **Next** to continue.

The screenshot shows the 'DHCP CONNECTION (DYNAMIC IP ADDRESS)' configuration screen. At the top, a progress bar indicates the steps: 1 Connection Type, 2 Set Connection, 3 Set SSID, 4 Set Security, and 5 Save Settings. The main content area has an orange header with the title. Below the header, there is a paragraph of instructions. The 'MAC Address' field is pre-filled with '1C - AF - F7 - BE - 77 - 0D' and has a '(Optional)' label. There are two buttons: 'Clone MAC Address' and 'Restore MAC Address'. The 'Host Name' field is pre-filled with 'DIR-524'. A note below the field states: 'Note: You may also need to provide a Host Name. If you do not have or know this information, please contact your ISP'. At the bottom, there are three buttons: 'Prev', 'Next', and 'Cancel'.

The screenshot shows the 'WIRELESS NETWORK NAME (SSID)' configuration screen. At the top, a progress bar indicates the steps: 1 Connection Type, 2 Set Connection, 3 Set SSID, 4 Set Security, and 5 Save Settings. The main content area has an orange header with the title. Below the header, there is a paragraph of instructions. The 'SSID' field is pre-filled with 'D-Link_DIR-524'. At the bottom, there are three buttons: 'Prev', 'Next', and 'Cancel'.

The screenshot shows the 'WIRELESS SECURITY MODE' configuration screen. At the top, a progress bar indicates the steps: 1 Connection Type, 2 Set Connection, 3 Set SSID, 4 Set Security, and 5 Save Settings. The main content area has an orange header with the title. Below the header, there is a paragraph of instructions. The 'Security Mode' dropdown menu is set to 'WEP'. The 'Default Transmit Key' has four radio buttons, with the first one selected. The 'Encryption' dropdown menu is set to '64 bits 10 hex digits'. The 'Passphrase' field is pre-filled with '123456' and has a 'Generate' button. Below the passphrase field, there are four 'Key' fields: 'Key 1' (AA8465E6A4), 'Key 2' (966C5AF4E9), 'Key 3' (EDA7DA0B4F), and 'Key 4' (6919028F7C). At the bottom, there are three buttons: 'Prev', 'Next', and 'Cancel'.

Click **Save** to Save your configuration.



Select the **Username/Password Connection(PPPoE)** and then click **Next** to continue.

Note: Make sure to remove your PPPoE software from your computer. The software is no longer needed and will not work through a router.



If you selected PPPoE, enter your PPPoE username and password. Click **Next** to continue.

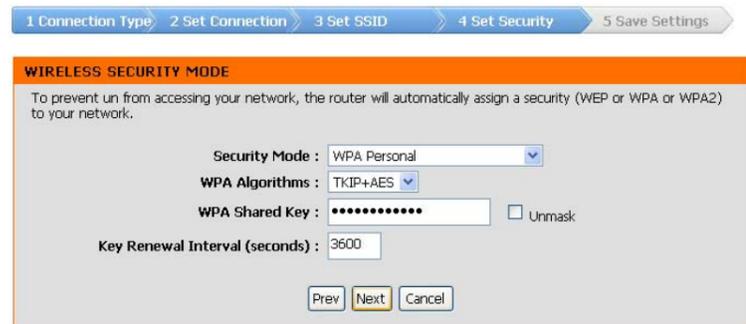


Section 3 – Configuration

Set the Wireless Network Name(SSID) and then click **Next** to continue.



Select the Security Mode and then click **Next** to continue.



Click **Save** to Save your configuration.



Manual Configuration

Static IP

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

IP Address: Enter the IP address assigned by your ISP.

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

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

MTU: Maximum Transmission Unit - you may need to change the MTU for optimal performance with your specific ISP. 1500 is the default MTU.

MAC Address: The default MAC Address is set to the Internet port's physical interface MAC address on the Broadband Router. It is not recommended that you change the default MAC address unless required by your ISP. You can use the **Clone MAC Address** button to replace the Internet port's MAC address with the MAC address of your Ethernet card.

Primary DNS Address: Enter the DNS address assigned by your ISP.

The screenshot shows the D-Link DIR-524 web interface. The top navigation bar includes 'D-Link', 'DIR-524', and tabs for 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The 'SETUP' tab is active, and the 'INTERNET' section is selected. The 'INTERNET CONNECTION' section is highlighted, and the 'Internet Connection Type' is set to 'Static IP'. Below this, the 'STATIC IP ADDRESS INTERNET CONNECTION TYPE' section is visible, containing fields for IP Address, Subnet Mask, ISP Gateway Address, MAC Address, Primary DNS Address, Secondary DNS Address, and MTU. The IP Address field is pre-filled with 192.168.1.2, Subnet Mask with 255.255.255.0, and MTU with 1500. There are also buttons for 'Clone MAC Address' and 'Restore MAC Address'.

Dynamic IP (DHCP)

Use Dynamic IP(DHCP) if your Internet Service Provider (ISP) didn't provide you with IP Address information and/or a username and password.

My Internet Connection: Select **Dynamic IP (DHCP)** to obtain IP Address information automatically from your ISP. Select this option if your ISP does not give you any IP numbers to use. This option is commonly used for Cable modem services.

Host Name: The Host Name is optional but may be required by some ISPs.

MTU: Maximum Transmission Unit - you may need to change the MTU for optimal performance with your specific ISP. 1500 is the default MTU.

MAC Address: The default MAC Address is set to the Internet port's physical interface MAC address on the Broadband Router. It is not recommended that you change the default MAC address unless required by your ISP. You can use the **Clone MAC Address** button to replace the Internet port's MAC address with the MAC address of your Ethernet card.

Product Page : DIR-524 Hardware Version: A1 Firmware Version: v1.01CN

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DIR-524 // SETUP ADVANCED TOOLS STATUS SUPPORT

INTERNET WIRELESS SETTINGS NETWORK SETTINGS

INTERNET CONNECTION :

Use this section to configure your Internet connection. There are several connection types to choose from: Static IP, DHCP, PPPoE. If you are unsure of your connection method, please contact your Internet Service Provider.

Note: If you select the PPPoE option, you will need to remove or disable any PPPoE client software on your computers.

Save Settings Don't Save Settings

INTERNET CONNECTION SETUP WIZARD :

The Internet Connection Setup Wizard will walk you through setting up your Internet connection and setting up a wireless network.

Internet Connection Setup Wizard

Note: Before launching the wizard, please make sure you have followed all steps outlined in the Quick Installation Guide included in the package.

MANUAL INTERNET CONNECTION OPTIONS :

To manually configure your Internet connection settings, select your connection type from the box below.

Internet Connection Type : Dynamic IP(DHCP)

DYNAMIC IP (DHCP) :

Use this Internet connection type if you do not require a Username or Password for your connection.

MAC Address : 1C AF F7 BE 77 0D (Optional)

Clone MAC Address Restore MAC Address

Host Name : DIR-524

MTU Auto : Manual

MTU : 1500 (576-1500)

Note: You may also need to provide a Host Name. If you do not have or know this information, please contact your ISP.

Helpful Hints...

When configuring the router to access the Internet for the first time, be sure to choose the correct Internet Connection type from the drop down menu. If you are unsure of which option to choose, please contact your Internet Service Provider (ISP).

PPPoE (username/password)

Choose PPPoE (Point to Point Protocol over Ethernet) if your ISP uses a PPPoE connection. Your ISP will provide you with a username and password. This option is typically used for DSL services. Make sure to remove your PPPoE software from your computer. The software is no longer needed and will not work through a router.

- PPPoE UserName:** Enter your PPPoE user name.
- PPPoE Password:** Enter your PPPoE password and then retype the password in the next box.
- PPPoE Service Name:** Enter the ISP Service Name (optional).
- Idle Time:** Enter a maximum idle time during which the Internet connection is maintained during inactivity. To disable this feature, enable Auto-reconnect.
- MTU:** Maximum Transmission Unit - you may need to change the MTU for optimal performance with your specific ISP. 1492 is the default MTU.
- MAC Address:** The default MAC Address is set to the Internet port's physical interface MAC address on the Broadband Router. It is not recommended that you change the default MAC address unless required by your ISP. You can use the **Clone MAC Address** button to replace the Internet port's MAC address with the MAC address of your Ethernet card.

Product Page : DIR-524 Hardware Version: A1 Firmware Version: v1.01CN

D-Link

DIR-524 // SETUP ADVANCED TOOLS STATUS SUPPORT

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Note: If you select the PPPoE option, you will need to remove or disable any PPPoE client software on your computers.
Save Settings Don't Save Settings

INTERNET CONNECTION SETUP WIZARD :
The Internet Connection Setup Wizard will walk you through setting up your Internet connection and setting up a wireless network.
Internet Connection Setup Wizard
Note: Before launching the wizard, please make sure you have followed all steps outlined in the Quick Installation Guide included in the package.

MANUAL INTERNET CONNECTION OPTIONS :
To manually configure your Internet connection settings, select your connection type from the box below.
Internet Connection Type : PPPoE(username/password)

PPPOE :
Enter the Username and Password you use to connect to your Internet Service Provider (ISP).
PPPoE Username : username
PPPoE Password : *****
PPPoE Service Name :
PPPoE Access Concentrator :
Idle Time : 0 (minutes)
MTU Auto : Manual
MRU : 1454 (576-1492)
MTU : 1454 (576-1492)
MAC Clone : Enabled
MAC Address : 1C AF F7 BE 77 0D (optional)
Clone MAC Address Restore MAC Address

Helpful Hints...
When configuring the router to access the Internet for the first time, be sure to choose the correct Internet Connection Type from the drop down menu. If you are unsure of which option to choose, please contact your Internet Service Provider (ISP).

Wireless Basic Settings

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

Enable Wireless: Select **Enabled** to enable the wireless function. If you do not want to use wireless, select **Disabled**.

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

Channel: Indicates the channel setting for the DIR-524. By default the channel is set to 6. The Channel can be changed to fit the channel setting for an existing wireless network or to customize the wireless network.

SSID Broadcast: When select **on**, your wireless network name is broadcast to anyone within the range of your signal. If you're not using encryption then they could connect to your network. When select **off**, SSID will hide, you must enter the SSID on the client manually to connect to the network.

AP Isolation : Selecting **On** enables AP isolation mode. When enabled, STAs associated to the AP will not be able to communicate with each other.

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DIR-524 // SETUP ADVANCED TOOLS STATUS SUPPORT

INTERNET WIRELESS SETTINGS NETWORK SETTINGS

WIRELESS BASIC SETTINGS :

Use this section to configure the wireless settings for your D-Link Router. Please note that changes made in this section may also require you to change settings on your wireless clients. To secure your wireless network, you should enable wireless encryption. This device supports three types of wireless encryption: WEP, WPA(Personal), and WPA2(Personal).

Save Settings Don't Save Settings

WIRELESS BASIC SETTINGS :

Wireless Mode : Wireless Router Mode

Enable Wireless : Enabled

Wireless Network Name(SSID) : D-Link_DIR-524

Region : China

Channel : 1

802.11 n-mode : Auto

Bandwidth : 20 MHz in Both Bands

Sideband for Control Channel (40MHz only) : Lower

NPHY Rate : Auto

SSID Broadcast : On Off

AP Isolation : On Off

Advertise WMM : Enabled

Multicast Forwarding : On Off

Wireless Mode
This wireless router can be operated in Wireless Router mode or Access Point (AP) mode. In Wireless Router mode, the WAN port connects to the Internet, and the wireless and LAN connections will be in the same network. In Access Point mode, wireless WAN and LAN connections will all be in the same network, and the router IP address will be assigned from WAN port.

Wireless Network Name(SSID)
Changing your Wireless Network Name (SSID) is the first step in securing your wireless network. Change it to something you can remember, but does not contain any personal information.

SSID Broadcast
SSID Broadcast allows wireless clients to see your wireless network.

Wireless Security Settings

It is recommended to enable encryption on your wireless router 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. Select **WEP** in the **Security Mode** .
2. Select **WEP Key Length**.
3. Enter a Phrase and click **Generate** button to generate 4 keys.
4. And you can enter the Key manual.
5. Click **Save Settings** to save your settings. If you are configuring the router with a wireless adapter, you will lose connectivity until you enable WEP on your adapter and enter the same passphrase as you did on the router.

WIRELESS SECURITY MODE :

Security Mode :

WEP :

WEP is a basic form of wireless encryption; select this option if your wireless clients do not support newer wireless encryption standards such as WPA or WPA2. To use WEP, you must enter the same key(s) into the router and your wireless clients. For 64-bit keys, each key must be 10 hex digits. For 128-bit keys, each key must be 26 hex digits. A hex digit is either a number from 0 to 9 or a letter from A to F. You may also enter a text string into a WEP key box; a maximum of 5 text characters can be entered for 64-bit keys, and a maximum of 13 characters for 128-bit keys. Alternatively, you can generate WEP keys by entering a phrase and clicking the Generate button. You will need to use the generated WEP keys when connecting your wireless clients, or you can enter the phrase if your wireless client supports phrase generated WEP keys.

WEP Encryption :

Phrase :

Default WEP Key :

WEP Key 1 :

WEP Key 2 :

WEP Key 3 :

WEP Key 4 :

WEP is the wireless encryption standard. To use it you must enter the same key(s) into the router and the wireless stations. For 64 bit keys you must enter 10 hex digits into each key box. For 128 bit keys you must enter 26 hex digits into each key box. A hex digit is either a number from 0 to 9 or a letter from A to F. You may also enter any text string into a WEP key box, in which case it will be converted into a hexadecimal key using the ASCII values of the characters. A maximum of 5 text characters can be entered for 64 bit keys, and a maximum of 13 characters for 128 bit keys.

1. The Security Mode include **WPA Personal Only**, **WPA2 Personal Only**, **Auto(WPA or WPA2 Personal)**. You can select one of them to configure.

2. Next to **Cipher Type**, select **TKIP + AES**, **TKIP**, or **AES**. If you have wireless clients that use both types, use **TKIP + AES**.

3. Next to **Pre-Shared Key**, enter a key (passphrase). The key is entered as a pass-phrase in ASCII format at both ends of the wireless connection. The passphrase must be between 8-63 characters.

4. Click **Save Settings** to save your settings. If you are configuring the router with a wireless adapter, you will lose connectivity until you enable the Security mode on your adapter and enter the same passphrase as you did on the router.

WIRELESS SECURITY MODE :

Security Mode : WPA Personal

WPA PERSONAL :

WPA is an older form of wireless encryption; select this option if your wireless clients do not support newer wireless encryption standards such as WPA2.

Cipher Type : TKIP

Pre-Shared Key : 123456123456 Unmask

Verify Pre-Shared Key : 123456123456

Network Key Rotation Interval: 3600 (seconds)

WIRELESS SECURITY MODE :

Security Mode : WPA2 Personal

WPA2 PERSONAL :

WPA2 is a newer implementation of the stronger IEEE 802.11i security standard, and is the recommended form of wireless encryption. In this mode, the router will only connect to wireless clients that also support WPA2 security.

Cipher Type : TKIP

Pre-Shared Key : Unmask

Verify Pre-Shared Key :

Network Key Rotation Interval: 3600 (seconds)

WIRELESS SECURITY MODE :

Security Mode : Auto (WPA or WPA2 Personal)

AUTO (WPA OR WPA2 PERSONAL) :

This mode provides a balance between strong security and compatibility. WPA2 is used for clients that can support it, and WPA is used for legacy clients. The strongest encryption that is supported by the client will be used.

Cipher Type : TKIP

Pre-Shared Key : Unmask

Verify Pre-Shared Key :

Network Key Rotation Interval: 3600 (seconds)

WDS Setting

Wireless Distribution System uses wireless media to communicate with other APs, like the Ethernet does. To do this, you must set these APs in the same channel and set MAC address of other APs which you want to communicate with in the table and then enable the WDS.

WDS MAC : Set another AP's MAC address. The MAC address must be the Wireless MAC address of the AP.

Bridge Restriction: Selecting **Disabled** disables wireless bridge restriction. Any wireless bridge (including the ones listed in Bridges) will be granted access. Selecting **Enabled** enables wireless bridge restriction. Only those bridges listed in Bridges will be granted access.

Bridge Link Detection Interval: Set the Wireless bridge link detection interval in seconds. Leave blank or set to zero to disable the detection.

WDS :

Wireless Distribution System (WDS) allows you to connect to other Access Points (APs) to wirelessly create a large network. To do this, you must enable WDS, set all of your APs to use the same channel, and then enter the MAC addresses of the other APs you want to connect to.

	Status
WDS MAC1 : <input type="text" value="01"/> <input type="text" value="11"/> <input type="text" value="2A"/> <input type="text" value="50"/> <input type="text" value="33"/> <input type="text" value="1F"/>	N/A
WDS MAC2 : <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	N/A
Bridge Restriction : <input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	
Bridge Link Detection Interval : <input type="text" value="1"/> (seconds)	

Network Settings

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

IP Address: Enter the IP address of the router. The default IP address is 192.168.0.1.

Subnet Mask: Enter the Subnet Mask of the router.

DHCP SERVER SETTINGS:

Enable DHCP Server: Select **Enabled** to enable the DHCP server on your router. Select **Disabled** to disable this function.

DHCP Start IP Address : Enter the starting and ending IP addresses for the DHCP server's IP assignment.

Maximum DHCP Users: Limiting number of DHCP users.

DHCP Lease Time : The length of time for the IP address lease. Enter the Lease time in minutes.

Add DHCP Reservation :

Enable: Check the box to enable this function.

IP Address: Enter the IP address you want to assign to the computer or device. This IP Address must be within the DHCP IP Address Range.

MAC Address: Enter the MAC address of the computer or device. And click the **Copy Your PC's MAC Address** button to replace the Internet port's MAC address with the MAC address of your Ethernet card.

DHCP Reservations List : The List show the clients of the DHCP Reservation.

DHCP Clients List : The List show the clients that had the dynamic IP Address .

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NETWORK SETTINGS :
Use this section to configure the internal network settings of your router and also to configure the built-in DHCP Server to assign IP addresses to the computers on your network.
Save Settings Don't Save Settings

LAN SETTINGS :
These are the settings for the LAN (Local Area Network) interface for the router. These settings may be referred to as "private settings". Here, you can change the LAN IP address or the router if needed. The LAN IP address is private to your internal network and cannot be seen on the Internet.
IP Address : 192 168 0 1
Subnet Mask : 255 255 255 0

DHCP SERVER SETTINGS :
Use this section to configure the built-in DHCP Server to assign IP addresses to the computers on your network.
Enable DHCP Server : Enabled
DHCP Start IP Address : 192 168 0 100
Maximum DHCP Users : 50
DHCP Lease Time : 1440 (10 - 5760 minutes)
Spanning Tree Protocol : Disabled

ADD DHCP RESERVATION :
Enable :
Computer Name :
IP Address : 192 168 0
MAC Address :
Copy Your PC's MAC Address
Add Clean

DHCP RESERVATIONS LIST :

Enable	Computer Name	IP Address	MAC Address
Enabled	aa	192.168.0.15	00:17:31:CE:4B:E5

DHCP CLIENTS LIST :

Host Name	IP Address	MAC Address	Expires Time
9546329D67DF4D7	192.168.0.100	XXXXXX:CE:4B:E5	23:05:46

Helpful Hints...
If you already have a DHCP server on your network or are using static IP addresses on all the devices on all the devices on your network, please disable this feature.
If you have devices on your network that should always have fixed IP addresses, add a DHCP Reservation for each such device.

Advanced configuration

Port Forwarding

The Port Forwarding option is used to open a range of ports through your firewall and redirect data through those ports to a single PC on your network.

Name: Enter a name for the rule .

**Public Port Start/
Public Port End:** Enter the port or a range of ports that you want to enable the port forwarding.

Traffic Type: You can select **TCP,UDP,BOTH**.

IP Address: Enter the IP address of the computer on your local network that you want to enable the function. If your computer is receiving an IP address automatically from the router (DHCP), you computer will be listed in the “Select DHCP Client” drop-down menu. Select your computer and click <<.

Enable: Select Enabled to enable the rule and click Add to add the rule.

Port Forwarding Rules List : The List show the rules you configured.

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PORT FORWARDING :
The Port Forwarding option is used to open a range of ports in your firewall and redirects data through those ports to a single PC on your network.

Save Settings Don't Save Settings

ADD A PORT FORWARDING RULE :

Name :

Public Port Start :

Public Port End :

Protocol : BOTH

Private IP : 192 | 168 | 0 | <<
Select DHCP Client

Enable Rule : Enabled

Add Cancel

PORT FORWARDING RULES LIST :

Name	Port Start	Port End	Protocol	Private	Enable
AA	20	30	BOTH	192.168.0.10	Enabled

Helpful Hints...
You can select a computer from the list of DHCP clients in the drop down menu, or you can manually enter the IP address of the computer to which you would like to open the specified port.

Application Rules

Some applications require multiple connections, such as Internet gaming, video conferencing, Internet telephony and others. These applications have difficulties working through NAT (Network Address Translation). Special Applications makes some of these applications work with the DIR-524. If you need to run applications that require multiple connections, specify the port normally associated with an application in the Incoming Ports , select the protocol type as TCP or UDP, then enter the Outgoing ports associated with the Incoming ports to open them for inbound traffic.

Name: Enter a name for the rule .

Incoming Port Start/ Incoming Port End: Enter the port or a range of ports that you want to use application rules .

Traffic Type: Select **TCP**, **UDP**, or **BOTH** from the drop-down menu.

Outgoing Port Start/ outgoing Port End: Enter the port or a range of ports that you want to access application rules on the WAN.

Application Rules List : The List show the rules you configured.

The screenshot shows the D-Link DIR-524 web interface. The main configuration area is titled 'APPLICATION RULES :'. It contains the following fields and options:

- Name :** [Text input field]
- Incoming Port Start :** [Text input field]
- Incoming Port End :** [Text input field]
- Protocol :** [Dropdown menu with 'BOTH' selected]
- Outgoing Port Start :** [Text input field]
- Outgoing Port End :** [Text input field]
- Enable Rule :** [Dropdown menu with 'Enabled' selected]

Below the configuration fields are 'Add' and 'Cancel' buttons. At the bottom, there is an 'APPLICATION RULES LIST' table:

Name	Incoming Port	Protocol	Outgoing Port	Enable
BB	10-20	BOTH	50-60	Enabled

On the right side of the interface, there is a 'Helpful Hints...' section with text explaining that application rules are used to open single or multiple ports on the router when it detects data sent to the Internet on a trigger port or range of ports. It also notes that these rules apply to all computers on the internal network and that some applications require multiple connections, such as Internet gaming, video conferencing, and Internet telephony.

Access Control

The Access Control section allows you to control access in and out of your network. Use this feature as Parental Controls to only grant access to approved sites, limit web access based on time or dates, and/or block access from applications like P2P utilities or games.

Default Rules: Select **Allow all to pass except the following settings**, if you only want to the selected computers to have network access and all other computers not to have network access. Select **Deny all to pass except the following settings**, if you want all computers to have network access except those computers in the list.

Policy Name: Enter a name to your policy.

Time Filter : Week: Choose the day of the week you would like your policy to be applied.

Time: Enter the time of the day you would like your policy to apply.

MAC Address Filter : You may choose some PCs based on MAC address to access Internet.

IP Address Filter : You may choose some PCs based on IP address to access Internet.

Ports Filter : You may choose some PCs based on Port to access Internet.

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PORT FORWARDING APPLICATION RULES ACCESS CONTROL WEBSITE FILTER FIREWALL SETTINGS ADVANCED WIRELESS WIRELESS MAC FILTER ADVANCED NETWORK STATIC ROUTE

ACCESS CONTROL :
You can allow or deny Internet access to certain client PCs on time, MAC address, IP address, or port.
Save Settings Don't Save Settings

DEFAULT RULES :
 Allow all traffic to pass except the following settings.
 Deny all traffic to pass except the following settings.

ACCESS CONTROL POLICY :
 Policy : 1 Policy Name : a Enabled

RULE SCHEDULE :
 Week: Every Day Sun Mon Tue Wed Thu Fri Sat

 Time: 24 hours from 08:00 to 18:00

MAC ADDRESS FILTER :
 MAC 1: 11 22 33 44 55 66 MAC 2:
 MAC 3: MAC 4:
 MAC 5: MAC 6:
 MAC 7: MAC 8:
 MAC 9: MAC 10:

IP ADDRESS FILTER :
 IP 1: 192 168 0 20 IP 2: 192 168 0
 IP 3: 192 168 0 IP 4: 192 168 0
 IP 5: 192 168 0 IP 6: 192 168 0
 IP Range 1: 192 168 0 IP Range 2: 192 168 0

PORT FILTER :
 Port 1: Both 20 30 Port 2: Both
 Port 3: Both Port 4: Both
 Port 5: Both Port 6: Both
 Port 7: Both Port 8: Both
 Port 9: Both Port 10: Both

Helpful Hints...
Default Rules
 Select **Allow all traffic to pass except the following settings**, if you only want to allow the specified computers to have network access and deny all other computers access.
 Select **Deny all traffic to pass except the following settings**, if you want to deny access only to the specified computers.
Policy
 You may define up to 10 access control policies.
Policy Name
 You may assign a name to your policy.
Policy Enable
 Enable or disable a policy.
Week
 Choose what days you would like your policy to be enabled.
Time
 Enter the time of the day you would like your policy to be enabled.
MAC Address Filter
 You may specify PCs based on their MAC address.
IP Address Filter
 You may specify PCs based on their IP address.
Port Filter
 You may specify some PCs based on port use.
Note
 A rule will only take effect if all conditions are satisfied. If a condition is empty, it will not be used.

Website Filters

Website Filters are used to allow you to set up a list of allowed Web sites that can be used by multiple users through the network.

URL Filter : You may choose some PCs based on URL to access Internet. Enter URLs that you want to deny.

Keyword Filter : You may choose some PCs based on Keyword to access Internet. Enter keywords that you want to deny.

The screenshot shows the D-Link DIR-524 Advanced Setup page. The top navigation bar includes 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The 'ADVANCED' tab is selected, and the 'WEBSITE FILTER' option is highlighted in the left sidebar. The main content area is titled 'WEBSITE FILTER' and contains the following sections:

- WEBSITE FILTER :** A header section with a sub-header 'You can limit access to some web sites by using URL Filters or Keyword Filters.' and two buttons: 'Save Settings' and 'Don't Save Settings'.
- URL FILTERS :** A section with ten input fields labeled 'URL 1' through 'URL 10' arranged in two columns.
- KEYWORD FILTERS :** A section with ten input fields labeled 'Keyword 1' through 'Keyword 10' arranged in two columns.

On the right side of the page, there is a 'Helpful Hints...' section with two sub-sections: 'URL Filters' (explaining that URLs can be entered to block access) and 'Keyword Filters' (explaining that keywords can be entered to block access).

Example :

If you wanted to block LAN users from any website containing a URL pertaining to shopping, you would need to enter **shopping** into the Website Filtering Rules list. Sites like these will be denied access to LAN users because they contain the keyword in the URL.

<http://www.XXX.shopping.com/stores.html>

Firewall Settings

A firewall protects your network from the outside world. The D-Link DIR-524 offers a firewall type functionality. The SPI feature helps prevent cyber attacks. Sometimes you may want a computer exposed to the outside world for certain types of applications. If you choose to expose a computer, you can enable DMZ. DMZ is short for Demilitarized Zone. This option will expose the chosen computer completely to the outside world.

SPI Firewall: SPI (Stateful Packet Inspection, also known as dynamic packet filtering) helps to prevent cyber attacks by tracking more state per session. It validates that the traffic passing through the session conforms to the protocol.

Block WAN PING: For added security, it is recommended that you enable the Block PING WAN option. Ping is often used by malicious Internet users to locate active networks or PCs.

Block IDENT: Block Identification used port 113. Port 113 is associated with the Internet's Ident/Auth (Identification / Authentication) service. When a client program in your computer contacts a remote server for services such as POP, IMAP, SMTP, or IRC, that remote server sends back a query to the "Ident" server running in many systems listening for these queries on port 113.

Enable DMZ Host: If an application has trouble working from behind the router, you can expose one computer to the Internet and run the application on that computer. Enter the DMZ IP Address.

Note: Placing a computer in the DMZ may expose that computer to a variety of security risks. Use of this option is only recommended as a last resort.

VPN Passthrough : Make sure VPN passthrough is enabled if you are trying to use a VPN client from behind the router.

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ADVANCED WIRELESS
WIRELESS MAC FILTER
ADVANCED NETWORK
STATIC ROUTE

FIREWALL SETTINGS :
The Firewall Settings section allows you to enable basic firewall features, set up a DMZ host, and set up VPN passthrough.
Save Settings Don't Save Settings

FIREWALL PROTECTION :
Here, you can enable or disable the SPI Firewall, as well as other security settings.

SPI Firewall : Enabled Disabled
Block ping requests from WAN :
Block IDENT requests : (Port 113)

DMZ HOST :
If you have a computer that cannot run Internet applications properly from behind the router, then you can allow the computer to have unrestricted Internet access. Enter the IP address of that computer as a DMZ (Demilitarized Zone) host with unrestricted Internet access. Adding a client to the DMZ may expose that computer to a variety of security risks; so only use this option as a last resort.
Note : Putting a computer in the DMZ may expose that computer to a variety of security risks. Use of this option is only recommended as a last resort.
Enable DMZ Host :
DMZ IP Address : 192.168.0.0

VPN PASSTHROUGH :
Enable PPTP Passthrough :
Enable L2TP Passthrough :
Enable IPsec Passthrough :

Helpful Hints...
For added security, it is recommended that you enable the Block ping requests from WAN option. Pings are often used by malicious Internet users to locate active networks or PCs.
Only enable the DMZ option as a last resort. If you are having trouble using an application from a computer behind the router, first try opening ports associated with the application in the Port Forwarding or Application Rule sections.
Make sure you enable the appropriate VPN passthrough settings if you are trying to use a VPN client from behind the router.

Advanced Wireless Settings

It is recommended that you leave wireless parameters at their default values. Adjusting them could limit the performance of your wireless network.

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

RTS Threshold: This value should remain at its default setting of 2432. If inconsistent data flow is a problem, only a minor modification should be made.

DTIM Interval: (Delivery Traffic Indication Message) 3 is the default setting. A DTIM is a countdown informing clients of the next window for listening to broadcast and multicast messages.

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

Preamble Type: The Preamble Type defines the length of the CRC (Cyclic Redundancy Check) block for communication between the Access Point and roaming wireless adapters. Make sure to select the appropriate preamble type and click the Save Settings button.

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

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ADVANCED WIRELESS :
If you are not familiar with these Advanced Wireless settings, please refer to the help section before attempting to modify these settings.
Save Settings Don't Save Settings

ADVANCED WIRELESS :

802.11n Support Required: Off
S1g™ Mode: S1g Auto
802.11n Protection: Auto
VLAN Priority Support: Off
Legacy Rate: Auto
Basic Rate Set: Default
Multicast Rate: Auto
Regulatory Mode: Off
Pre-Network Radar Check: 60
In-Network Radar Check: 60
TPC Mitigation (db): 0 (Off)
Fragmentation Threshold: 2346
RTS Threshold: 2347
DTIM Interval: 3
Beacon Interval: 100
Beacon Rotation: On
Preamble Type: Long
Max Associations Limit: 128
XPress™ Technology: Off
AfterBurner Technology: Off

WMM SUPPORT :

WMM Support: Off
No-Acknowledgement: Off
APSD Support: Off

EDCA AP Parameters:		CWmin	CWmax	AIFSN	TXOP(b)	TXOP (a/g)	Admission Control	Discard Oldest First
AC_BE	15	53	3	0	0	0	Off	Off
AC_BK	15	1023	7	0	0	0	Off	Off
AC_VI	7	15	1	6016	3008	0	Off	Off
AC_VO	3	7	1	3264	1504	0	Off	Off

WMM TX Parameters:		Short Retry Limit	Short Fallk Limit	Long Retry Limit	Long Fallk Limit	Max Rate In 500 kbps Disabled when 0
AC_BE	7	3	4	2	0	0
AC_BK	7	3	4	2	0	0
AC_VI	7	3	4	2	0	0
AC_VO	7	3	4	2	0	0

Helpful Hints...
It is recommended that you leave these parameters at their default values. Adjusting them could affect the performance of your wireless network.
Enabling WMM can help control latency and jitter when transmitting multimedia content over a wireless connection.

Wireless MAC Filter

The Wireless MAC (Media Access Controller) Address filter option is used to control wireless network access based on the MAC Address of the network adapter. A MAC address is a unique ID assigned by the manufacturer of the network adapter. This feature can be configured to ALLOW or DENY wireless access.

If you choose **ALLOW computers listed to access the wireless**, only those clients whose wireless MAC addresses are in the access control list will be able to connect to your wireless router.

When **Deny computers listed to access the wireless** is selected, these wireless clients on the list will not be able to connect the wireless router.



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WIRELESS MAC ADDRESS FILTER :

The Wireless MAC (Media Access Controller) Address Filter allows you to control access to wireless clients based on their MAC addresses. The filter can be set to allow or deny access to the listed clients only.

Save Settings Don't Save Settings

WIRELESS MAC ADDRESS FILTER :

Wireless MAC Address Control : ALLOW access to the listed clients

MAC1: 01 02 03 04 05 06 MAC2: [][][][][][]
 MAC3: [][][][][][] MAC4: [][][][][][]
 MAC5: [][][][][][] MAC6: [][][][][][]
 MAC7: [][][][][][] MAC8: [][][][][][]
 MAC9: [][][][][][] MAC10: [][][][][][]

Helpful Hints...

If you set the filter to **ALLOW access to the listed clients**, only those clients whose wireless MAC addresses are listed will be able to connect to your wireless router.

If you set the filter to **DENY access to the listed clients**, the clients whose wireless MAC addresses are listed will be denied access to your wireless router.

Advanced Network

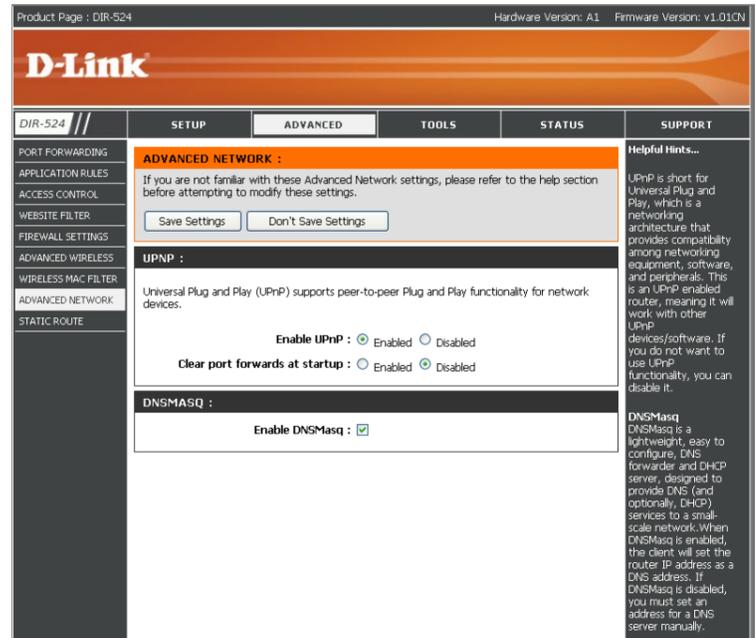
If you are not familiar with these Advanced Network settings, please read the help section before attempting to modify these settings.

UPnP

UPnP is short for Universal Plug and Play, which is a networking architecture that provides compatibility among networking equipment, software, and peripherals. This is an UPnP enabled router, meaning it will work with other UPnP devices/software. If you do not want to use the UpnP functionality, you can disable it.

DNSMasq

DNSMasq is a lightweight, easy to configure, DNS forwarder and DHCP server, designed to provide DNS (and optionally DHCP) services to a small-scale network. When DNSMasq is enabled, the client will set the router IP address as a DNS address, if DNSMasq is disabled, you must set a DNS address by manual.



Static Routing

The static routing function determines the path that data follows over your network before and after it passes through your router. You can use static routing to allow different IP domain users to access the Internet through this device.

Destination IP : Enter the routing destination IP address.

Subnet Mask: Enter the routing subnet mask.

Gateway: Enter the routing gateway.

Metric: It means the number of the network equipment that the data will pass.

Interface: Select the interface to transmit the data out the router.

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STATIC ROUTING :
If there are multiple routers installed on your network, it is necessary to configure the unit's routing functions.
Save Settings Don't Save Settings

Helpful Hints...
The static routing function determines the path that data travels through your network before and after it passes through your router. You can use static routing to allow different IP domain users to access the Internet through this device.

ADD A STATIC ROUTING :

Destination IP :
Subnet Mask :
Gateway :
Metric :
Interface : Any

Add Cancel

STATIC ROUTING LIST :

Destination IP	Subnet Mask	Gateway	Metric	Interface
192.168.3.10	255.255.255.0	192.168.1.1	5	ANY

tools

Administrator Settings

This page will allow you to change the Administrator and User passwords. You can also enable Remote Management. There are two accounts that can access the management interface through the web browser.

User Accounts: Enter a name for the Administrator Login Name. The administrator can make changes to the settings.

Password/Confirm Password: Enter the new password for the Administrator. Then enter the password again to confirm it.

Enable Remote Management: Remote management allows the DIR-524 to be configured from the Internet by a web browser. A username and password is still required to access the Web-Management interface. In general, only a member of your network can browse the built-in web pages to perform Administrator tasks. This feature enables you to perform Administrator tasks from the remote (Internet) host.

IP Address range: you can specify the IP address of the computer on the Internet that you want to have access to your router, or You can enable Any Remote IP to allow access to any computer on the Internet.

Port: The port number used to access the DIR-524. Example: `http://x.x.x.x:8080` whereas x.x.x.x is the Internet IP address of the DIR-524 and 8080 is the port used for the Web Management interface.

The screenshot shows the D-Link DIR-524 web management interface. At the top, it displays 'Product Page : DIR-524', 'Hardware Version: A1', and 'Firmware Version: v1.01CN'. The main navigation bar includes 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The 'TOOLS' tab is selected, and the 'ADMINISTRATOR SETTINGS' page is displayed. The page contains the following sections:

- ADMINISTRATOR SETTINGS :** A message stating 'Here, you can adjust the settings for the administrator account and the remote management interface.' Below this are 'Save Settings' and 'Don't Save Settings' buttons.
- Administrator Account :** Fields for 'Username' (pre-filled with 'admin'), 'Password', and 'Confirm Password'.
- REMOTE MANAGEMENT :**
 - 'Enable Remote Management' checkbox (unchecked).
 - 'Allow Connections From Any Remote IP' checkbox (checked).
 - 'IP Address Range' field with five input boxes for IP address digits.
 - 'Port' field with a dropdown menu showing '8080'.

On the right side, there is a 'Helpful Hints...' section with security advice: 'For security reasons, it is recommended that you change the User Name and Password for the Administrator account. Be sure to write down the new User Name and Password in a safe place. If you forget them, you will need to do a hard reset of your router.' Below this, it says: 'When enabling Remote Management, you can specify a range of IP addresses that are allowed to remotely access your router, or you can Allow Connections From Any Remote IP to allow any remote computer to remotely access your router.'

Time Settings

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

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

Enable Daylight Saving: To select Daylight Saving time manually, Check the box, and enter a start date and an end date for daylight saving time.

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

NTP Server : Enter the NTP server or select one from the drop-down menu, then the DIR-524 will sync the same time to D-Link Internet time server.

Manual: To manually input the time, enter the values in these fields for the Year, Month, Day, Hour, Minute, and Second . And you can Press the **Copy Your Computer's Time Settings** button to set the device's time the same to local PC.

The screenshot shows the D-Link DIR-524 web interface. At the top, it displays 'Product Page : DIR-524' and 'Hardware Version: A1 Firmware Version: v1.01CN'. The main navigation bar includes 'DIR-524 //', 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The left sidebar lists 'ADMIN', 'TIME', 'SYSTEM', 'FIRMWARE', 'DYNAMIC DNS', 'PING TEST', and 'LOG SETTINGS'. The main content area is titled 'TIME :'. It contains a message: 'Here, you can adjust the time on the internal system clock, which is important for scheduling and activity logs. You can set the router to update its clock automatically, or you can set then time manually.' Below this is a 'Save Settings' button and a 'Don't Save Settings' button. The 'TIME SETTINGS' section shows the current time as '1970-01-01 01:26:29' and a 'Time Zone' dropdown menu set to '(GMT+08:00) Beijing, Hong Kong, Singapore, Taipei'. There is an 'Enable Daylight Saving Time' checkbox which is currently unchecked. Below this are fields for 'DST Start' (Month: 1, Day: 1, Time: 12 am) and 'DST End' (Month: 2, Day: 1, Time: 12 am). The 'AUTOMATIC TIME CONFIGURATION' section has an 'Enable NTP Server' checkbox (unchecked) and an 'NTP Server' field with the value 'ntp1.dlink.com' and a 'Select NTP Server' dropdown. The 'SET THE DATE AND TIME MANUALLY' section has fields for 'Date And Time' with Year: 2010, Month: 7, Day: 26, Hour: 11, Minute: 12, Second: 35, and AM/PM: AM. A 'Copy Your Computer's Time Settings' button is located at the bottom of this section. A 'Helpful hints...' sidebar on the right provides additional information about time synchronization.

System

The System Tools section allows you to reboot the device, or restore the router to the factory default settings. Restoring the unit to the factory default settings will erase all settings, including any rules that you have created.

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

Load from Local Hard Drive: Use this option to load previously saved router configuration settings. First, use the **Browse** to find a previously save file of configuration settings. Then, click the **Restore Configuration from File** button to transfer those settings to the router.

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

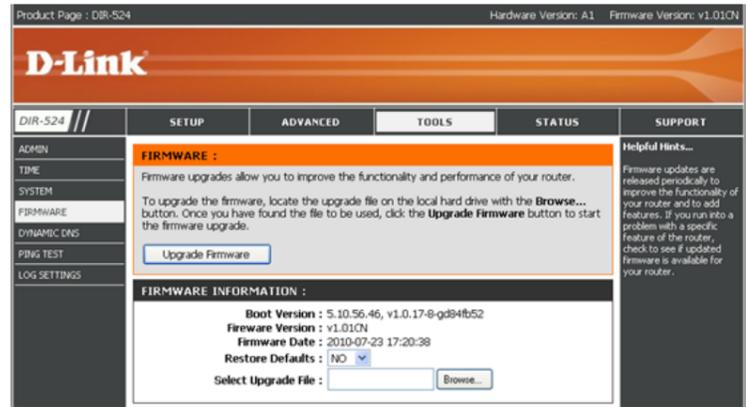
Reboot the Device: Click to reboot the router.



Firmware

There may be new firmware for your router to improve functionality and performance.

To upgrade the firmware, locate the upgrade file on the local hard drive with the **Browse** button. Once you have found the file to be used, click the **Upgrade** button below to start the firmware upgrade.



DDNS

The DDNS feature allows you to host a server (Web, FTP, Game Server, etc...) using a domain name that you have purchased (www.whateveryournameis.com) with your dynamically assigned IP address. Most broadband Internet Service Providers assign dynamic (changing) IP addresses. Using a DDNS service provider, your friends can enter in your domain name to connect to your server no matter what your IP address is.

Server: Choose your DDNS provider from the drop down menu.

Host Name: Enter the Host Name that you registered with your DDNS service provider.

Username : Enter the Username for your DDNS account.

Password : Enter the Password for your DDNS account.

Timeout: This is to test if the DDNS account is valid for use.

Product Page : DIR-524 Hardware Version: A1 Firmware Version: v1.01CN

D-Link

DIR-524 // SETUP ADVANCED TOOLS STATUS SUPPORT

ADMIN
TIME
SYSTEM
FIRMWARE
DYNAMIC DNS
PING TEST
LOG SETTINGS

DYNAMIC DNS :

The Dynamic DNS (DDNS) feature allows you to use an easy to remember domain name for your dynamically assigned IP address. This is useful if you host a server (web, FTP, game server, etc.). Using a DDNS service provider, your friends can enter your host name to connect to your game server no matter what your current IP address is.

You can sign up for D-Link's free DDNS service at www.dlinkddns.com

Save Settings Don't Save Settings

DYNAMIC DNS SETTINGS :

Server : dlinkddns.com
Host Name :
Username :
Password :
Timeout : 10 (Default is 10 days)

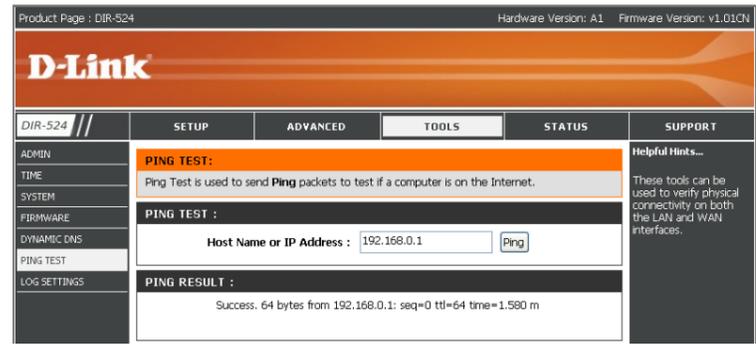
Helpful Hints...
To use this feature, you must first have a Dynamic DNS account from one of the providers listed in the drop down menu.

PING TEST

The System Check feature allows you to verify the physical connectivity on both LAN and Internet interface.

Ping Test: The Ping Test is used to send Ping packets to test if a computer is on the Internet. Enter the IP Address that you wish to Ping, and click **Ping**.

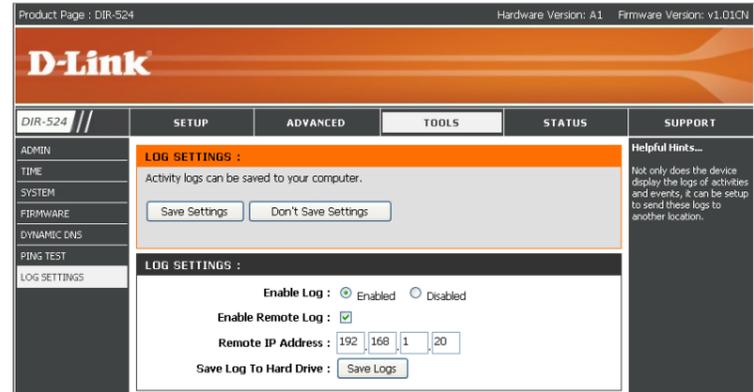
Ping Results: The results of your ping attempts will be displayed here.



LOG SETTINGS

The router automatically logs (records) events of possible interest in its internal memory. If there isn't enough internal memory for all events, logs of older events are deleted but logs of the latest events are retained. The Logs option allows you to view the router logs. You can define what types of events you want to view and the level of the events to view. This router also has external Syslog Server support so you can send the log files to a computer on your network that is running a Syslog utility.

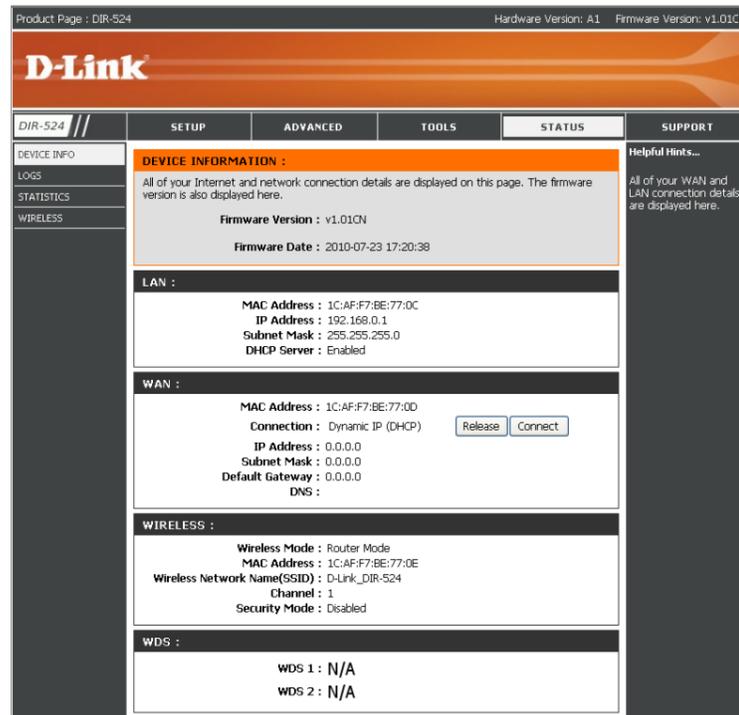
- Enable Log:** Select Enabled then the router will record the events in its internal memory.
- Enable Remote Log:** Check the box then the router will send these logs to another location. And enter the IP Address of the computer you want to send the log files.
- Save Logs:** Click the **Save** button to save the logs to local hard drive or to syslog server.



Status

Device Information

All of your Internet and network connection details are displayed on this page. The firmware version is also displayed here.



Product Page : DIR-524 Hardware Version: A1 Firmware Version: v1.01CN

D-Link

DIR-524 // SETUP ADVANCED TOOLS **STATUS** SUPPORT

DEVICE INFO
LOGS
STATISTICS
WIRELESS

DEVICE INFORMATION :
All of your Internet and network connection details are displayed on this page. The firmware version is also displayed here.
Firmware Version : v1.01CN
Firmware Date : 2010-07-23 17:20:38

LAN :
MAC Address : 1C:AF:F7:BE:77:0C
IP Address : 192.168.0.1
Subnet Mask : 255.255.255.0
DHCP Server : Enabled

WAN :
MAC Address : 1C:AF:F7:BE:77:00
Connection : Dynamic IP (DHCP)
IP Address : 0.0.0.0
Subnet Mask : 0.0.0.0
Default Gateway : 0.0.0.0
DNS :

WIRELESS :
Wireless Mode : Router Mode
MAC Address : 1C:AF:F7:BE:77:0E
Wireless Network Name(SSID) : D-Link_DIR-524
Channel : 1
Security Mode : Disabled

WDS :
WDS 1 : N/A
WDS 2 : N/A

Helpful Hints...
All of your WAN and LAN connection details are displayed here.

LOGS

Display the captured log messages of the router activities, these captured log messages might be useful for troubleshooting and monitoring.

Product Page : DIR-524 Hardware Version: A1 Firmware Version: v1.01CN

D-Link

DIR-524 // SETUP ADVANCED TOOLS STATUS SUPPORT

DEVICE INFO LOGS STATISTICS WIRELESS

SYSTEM LOG :
The System Log shows you a log of your router's activities, which may be useful for monitoring and troubleshooting your router.

LOG DETAILS :
First Page Previous Next Last Page Clear Page : 1 of 1

Time	Type	Message
Jan 1 00:00:02	info	started: BusyBox v1.13.
Jan 1 00:00:02	info	udhcpd : udhcp daemon successfully starte
Jan 1 00:00:02	info	dnsmasq : dnsmasq daemon successfully starte
Jan 1 00:00:02	info	started, version 1.10 cachesize 15
Jan 1 00:00:02	debug	cleared cach
Jan 1 00:00:02	debug	reading /tmp/resolv.dnsmas
Jan 1 00:00:02	info	using nameserver 4.2.2.
Jan 1 00:00:02	info	using nameserver 202.96.134.13
Jan 1 00:00:02	info	using nameserver 156.154.70.
Jan 1 00:00:02	info	uhttpd : uhttp daemon successfully starte
Jan 1 00:05:04	notice	("HTTP")Web Management. Login from 192.168.0.100

Helpful Hints...
You can view the different pages of the log by using the Previous and Next buttons, or skip to the First Page or Last Page by clicking their respective buttons. You can empty the log by clicking the Clear button.

Traffic Statistics

Traffic Statistics display Receive and Transmit packets passing through the router.

Product Page : DIR-524 Hardware Version: A1 Firmware Version: v1.01CN

D-Link

DIR-524 // SETUP ADVANCED TOOLS STATUS SUPPORT

DEVICES INFO

LOGS

STATISTICS

WIRELESS

TRAFFIC STATISTICS :
Traffic Statistics display Receive and Transmit packets passing through the router.

TRAFFIC STATISTICS :

Interface	Receive bytes	Receive packets	Transmit bytes	Transmit packets
WAN	0	0	239944	712
LAN	300051	3258	2479050	3730
Wireless	0	0	138754	638

LINK STATUS :

LAN4 LAN3 LAN2 LAN1 WAN

Helpful Hints...
Show the traffic statistics receive and transmit packets passing through the router.

Wireless

The Wireless Client table below displays Wireless clients Connected to the Router.

The screenshot shows the D-Link DIR-524 web interface. At the top, it displays 'Product Page : DIR-524', 'Hardware Version: A1', and 'Firmware Version: v1.01CN'. The D-Link logo is prominently displayed. Below the logo is a navigation menu with tabs for 'DIR-524', 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The 'STATUS' tab is selected. On the left side, there is a sidebar menu with options: 'DEVICE INFO', 'LOGS', 'STATISTICS', and 'WIRELESS'. The 'WIRELESS' option is highlighted. The main content area is titled 'WIRELESS CLIENTS' and contains the text: 'The Wireless Client table below displays information about all the wireless clients connected to the router.' Below this text is a table header for 'WIRELESS CLIENTS STATUS :'. The table has the following columns: 'MAC', 'Time', 'RX Rate', 'TX Rate', 'RX Packets', 'TX Packets', and 'WME'. To the right of the main content area, there is a 'Helpful Hints...' section with the text: 'This is a list of all wireless clients that are currently connected to your wireless router.'

Support

Product Page : DIR-524 Hardware Version: A1 Firmware Version: v1.01CN

The screenshot displays the D-Link DIR-524 web interface. At the top, the D-Link logo is visible. Below it, a navigation bar contains tabs for SETUP, ADVANCED, TOOLS, STATUS, and SUPPORT. The SUPPORT tab is selected. On the left side, a vertical menu lists the main sections: MENU, SETUP, ADVANCED, TOOLS, and STATUS. The main content area is titled 'SUPPORT MENU' and contains several sub-sections, each with a list of links:

- SUPPORT MENU**
 - Setup
 - Advanced
 - Tools
 - Status
- SETUP**
 - Internet
 - Wireless Settings
 - Network Settings
- ADVANCED**
 - Port Forwarding
 - Application Rules
 - Access Control
 - Website Filter
 - Firewall Settings
 - Advanced Wireless
 - Wireless MAC Filter
 - Advanced Network
 - Static Route
- TOOLS**
 - Admin
 - Time
 - System
 - Firmware
 - Dynamic DNS
 - Ping Test
 - Log Settings
- STATUS**
 - Device Info
 - Logs
 - Statistics
 - Wireless

Wireless Security

This section will show you the different levels of security you can use to protect your data from intruders. The DIR-524 offers the following types of security:

- WPA2 (Wi-Fi Protected Access 2)
- WPA (Wi-Fi Protected Access)

What is WPA?

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

The 2 major improvements over WEP:

- Improved data encryption through the Temporal Key Integrity Protocol (TKIP). TKIP scrambles the keys using a hashing algorithm and, by adding an integrity-checking feature, ensures that the keys haven't been tampered with. WPA2 is based on 802.11i and uses Advanced Encryption Standard (AES) instead of TKIP.
- User authentication, which is generally missing in WEP, through the extensible authentication protocol (EAP). WEP regulates access to a wireless network based on a computer's hardware-specific MAC address, which is relatively simple to be sniffed out and stolen. EAP is built on a more secure public-key encryption system to ensure that only authorized network users can access the network.

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

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

Configure WPA-Personal (PSK)

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

1. Log into the web-based configuration by opening a web browser and entering the IP address of the router (192.168.0.1). Click on **Setup** and then click Wireless Settings on the left side and then click Manual Wireless Network Setup.
2. Next to **Security Mode**, select **WPA-Personal**.
3. Next to **Cipher Type**, select **TKIP and AES**, **TKIP**, or **AES**. If you have wireless clients that use both types, use **TKIP + AES**.
4. Next to **Pre-Shared Key**, enter a key (passphrase). The key is entered as a pass-phrase in ASCII format at both ends of the wireless connection. The pass-phrase must be between 8-63 characters.
5. Click **Save Settings** to save your settings. If you are configuring the router with a wireless adapter, you will lose connectivity until you enable WPA-PSK on your adapter and enter the same passphrase as you did on the router.

Connect to a Wireless Network Using Windows Vista®

Windows Vista® users may use the built-in wireless utility. 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 Vista® utility as seen below.

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

or

Right-click on the wireless computer icon in your system tray (lower-right corner next to the time). Select **Connect to a network**.

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

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



Configure WPA/WPA2

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

1. Open the Windows Vista® Wireless Utility by right-clicking on the wireless computer icon in your system tray (lower right corner of screen). Select **Connect to a network**.



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



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

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



Using Windows® XP

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

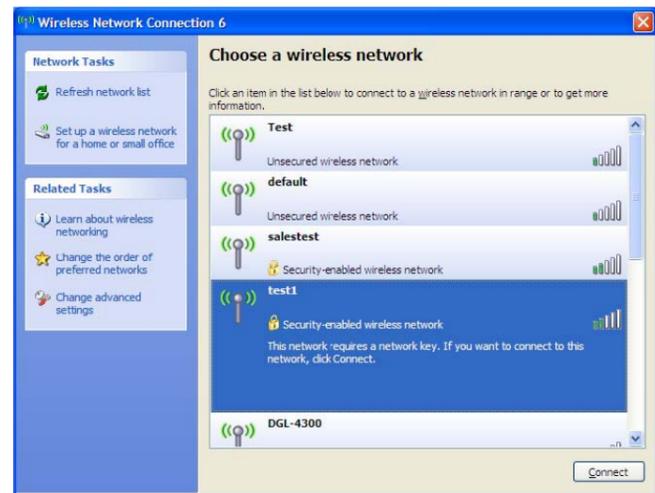
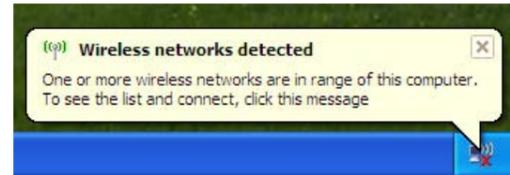
If you receive the **Wireless Networks Detected** bubble, click on the center of the bubble to access the utility.

or

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

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

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



Troubleshooting

This chapter provides solutions to problems that can occur during the installation and operation of the DIR-524. 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 screen shots on your computer will look similar to the following examples.)

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

When entering the IP address of the D-Link router (192.168.0.1 for example), you are not connecting to a website on the Internet or have to be connected to the Internet. The device has the utility built-in to a ROM chip in the device itself. Your computer must be on the same IP subnet to connect to the web-based utility.

- Make sure you have an updated Java-enabled web browser. We recommend the following:
 - Internet Explorer 6.0 or higher
 - Netscape 8 or higher
 - Mozilla 1.7.12 (5.0) or higher
 - Opera 8.5 or higher
 - Safari 1.2 or higher (with Java 1.3.1 or higher)
 - Camino 0.8.4 or higher
 - Firefox 1.5 or higher
- Verify physical connectivity by checking for solid link lights on the device. If you do not get a solid link light, try using a different cable or connect to a different port on the device if possible. If the computer is turned off, the link light may not be on.
- Disable any Internet security software running on the computer. Software firewalls such as Zone Alarm, Black Ice, Sygate, Norton Personal Firewall, and Windows® XP firewall may block access to the configuration pages. Check the help files included with your firewall software for more information on disabling or configuring it.

- Configure your Internet settings:
 - Go to **Start > Settings > Control Panel**. Double-click the **Internet Options** icon. From the **Security** tab, click the button to restore the settings to their defaults.
 - Click the **Connection** tab and set the dial-up option to Never Dial a Connection. Click the LAN Settings button. Make sure nothing is checked. Click **OK**.
 - Go to the **Advanced** tab and click the button to restore these settings to their defaults. Click **OK** three times.
 - Close your web browser (if open) and open it.
- Access the web management. Open your web browser and enter the IP address of your D-Link router in the address bar. This should open the login page for your the web management.
- If you still cannot access the configuration, unplug the power to the router for 10 seconds and plug back in. Wait about 30 seconds and try accessing the configuration. If you have multiple computers, try connecting using a different computer.

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

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

To reset the router, locate the reset button (hole) on the rear panel of the unit. With the router powered on, use a paperclip to hold the button down for 10 seconds. Release the button and the router will go through its reboot process. Wait about 30 seconds to access the router. The default IP address is 192.168.0.1. When logging in, the username is **admin** and leave the password box empty.

3. Why can't I connect to certain sites or send and receive e-mails when connecting through my router?

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

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

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

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

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

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

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

Section 6 – Troubleshooting

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

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

To change the MTU rate on your router follow the steps below:

- Open your browser, enter the IP address of your router (192.168.0.1) and click **OK**.
- Enter your username (admin) and password (blank by default). Click **OK** to enter the web configuration page for the device.
- Click on **Setup** and then click **Manual Configure**.
- To change the MTU enter the number in the MTU field and click **Save Settings** to save your settings.
- Test your e-mail. If changing the MTU does not resolve the problem, continue changing the MTU in increments of ten.

Wireless Basics

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

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

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

Under many circumstances, it may be desirable for mobile network devices to link to a conventional Ethernet LAN in order to use servers, printers or an Internet connection supplied through the wired LAN. A Wireless 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 has become so popular in recent years that almost everyone is using it, whether it's for home, office, business, D-Link has a wireless solution for it.

Home

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

Small Office and Home Office

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

Where is wireless used?

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

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

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

Tips

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

Centralize your 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.

Don't let your next-door neighbors or intruders connect to your wireless network. Secure your wireless network by turning on the WPA or WEP security feature on the 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 DIR-524 wireless network Cardbus 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 adapter, by default, the TCP/IP settings should be set to obtain an IP address from a DHCP server (i.e. wireless router) automatically. To verify your IP address, please follow the steps below.

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

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

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

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



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

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

C:\Documents and Settings>
```

Statically Assign an IP address

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

Step 1

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

Windows® XP - Click on **Start > Control Panel > Network Connections**.

Windows® 2000 - From the desktop, right-click **My Network Places > Properties**.

Step 2

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

Step 3

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

Step 4

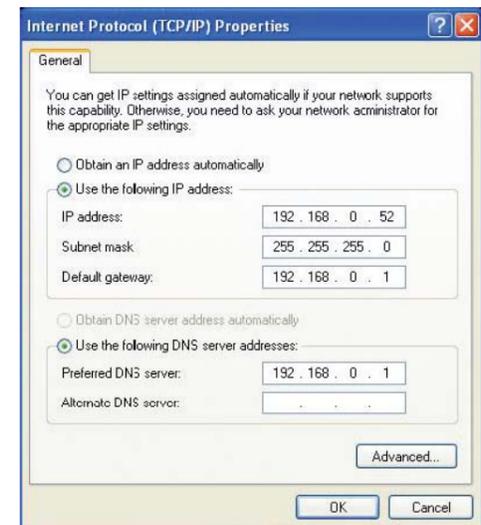
Click **Use the following IP address** and enter an IP address that is on the same subnet as your network or the LAN IP address on your router.

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

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

Step 5

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



Technical Specifications

Standards

- IEEE 802.11b • IEEE 802.3
- IEEE 802.11g • IEEE 802.3u
- IEEE 802.11n • IEEE 802.3x

Wireless Signal Rates

- 135Mbps • 121.5Mbps
- 108Mbps • 81Mbps
- 54Mbps • 40.5Mbps
- 27Mbps • 13.5Mbps
- 9Mbps • 6Mbps
- 5.5Mbps • 2Mbps
- 1Mbps

Security

- WPA • WPA2 • 64/128-bit WEP

Transmitter Output Power

- 11b:17dBm(Max) •11g:15dBm(Max)
- 11n:14dBm(Max)

Operating Temperature

32°F to 129 °F (0°C to 40°C)

Operating Humidity

10%-90% non-condensing

Safety & Emissions

- FCC Part 15B/ 15C/ MPE
- IC RSS-210 • NCC LP0002

LED

- Power • WLAN • LAN • INTERNET

Dimensions

- L =141 mm • W = 110.4mm • H = 31.7mm

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

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CE Mark Warning:

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

FCC Statement:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

For detailed warranty information applicable to products purchased outside the United States, please contact the corresponding local D-Link office.

FCC Caution:

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

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

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

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