

# USER MANUAL

DIR-628

VERSION 1.0



**D-Link**<sup>®</sup>

**WIRELESS**

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# 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	March 26, 2008	DIR-628 Revision A2 with Firmware version 1.10

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# Package Contents

<b>D-Link DIR-628 Rangebooster N™ Dual Band Router</b>	
<b>Power Adapter</b>	
<b>Ethernet Cable</b>	
<b>CD-ROM</b>	
<b>Stand</b>	

**Note:** Using a power supply with a different voltage rating than the one included with the DIR-628 will cause damage and void the warranty for this product.

# System Requirements

<b>Network Requirements</b>	<ul style="list-style-type: none"><li>• An Ethernet-based Cable or DSL modem</li><li>• IEEE 802.11n-draft or 802.11g wireless clients</li><li>• IEEE 802.11a wireless clients</li><li>• 10/100 Ethernet</li></ul>
<b>Web-based Configuration Utility Requirements</b>	<p><b>Computer with the following:</b></p> <ul style="list-style-type: none"><li>• Windows®, Macintosh, or Linux-based operating system</li><li>• An installed Ethernet adapter</li></ul> <p><b>Browser Requirements:</b></p> <ul style="list-style-type: none"><li>• Internet Explorer 6.0 or higher</li><li>• Mozilla 1.7.12 or higher</li><li>• Firefox 1.5 or higher</li><li>• Safari 1.0 or higher (with Java 1.3.1 or higher)</li><li>• Flock 0.7.14 or higher</li><li>• Opera 6.0 or higher</li></ul> <p><b>Windows® Users:</b> Make sure you have the latest version of Java installed. Visit <a href="http://www.java.com">www.java.com</a> to download the latest version.</p>
<b>CD Installation Wizard Requirements</b>	<p><b>Computer with the following:</b></p> <ul style="list-style-type: none"><li>• Windows® XP with Service Pack 2 or Vista™</li><li>• An installed Ethernet adapter</li><li>• CD-ROM drive</li></ul>

# Introduction

## **TOTAL PERFORMANCE**

Combines award winning router features and IEEE 802.11a and Draft 802.11n wireless technology to provide the best wireless performance

## **TOTAL SECURITY**

The most complete set of security features including Active Firewall and WPA2 to protect your network against outside intruders

## **TOTAL COVERAGE**

Provides greater wireless signal rates even at farther distances for best-in-class Whole Home Coverage.

## **ULTIMATE PERFORMANCE**

The D-Link RangeBooster N™ Dual Band Router (DIR-628) is a IEEE 802.11a and draft 802.11n compliant device that delivers real world performance of up to 650% faster than an 802.11g wireless connection (also faster than a 100Mbps wired Ethernet connection). Create a secure wireless network to share photos, files, music, video, printers, and network storage throughout your home. Connect the RangeBooster N™ Dual Band Router to a cable or DSL modem and share your high-speed Internet access with everyone on the network. In addition, this Router includes a Quality of Service (QoS) engine that keeps digital phone calls (VoIP) and online gaming smooth and responsive, providing a better Internet experience.

## **EXTENDED WHOLE HOME COVERAGE**

Powered by RangeBooster N™ Dual Band technology, this high performance router provides superior Whole Home Coverage while reducing dead spots. The RangeBooster N™ Dual Band Router is designed for use in bigger homes and for users who demand higher performance networking. Add a RangeBooster N™ Dual Band notebook or desktop adapter and stay connected to your network from virtually anywhere in your home.

## **TOTAL NETWORK SECURITY**

The RangeBooster N™ Dual Band Router supports all of the latest wireless security features to prevent unauthorized access, be it from over the wireless network or from the Internet. Support for WPA and WPA2 standards ensure that you'll be able to use the best possible encryption method, regardless of your client devices. In addition, this RangeBooster N™ Dual Band Router utilizes dual active firewalls (SPI and NAT) to prevent potential attacks from across the Internet.

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

# Features

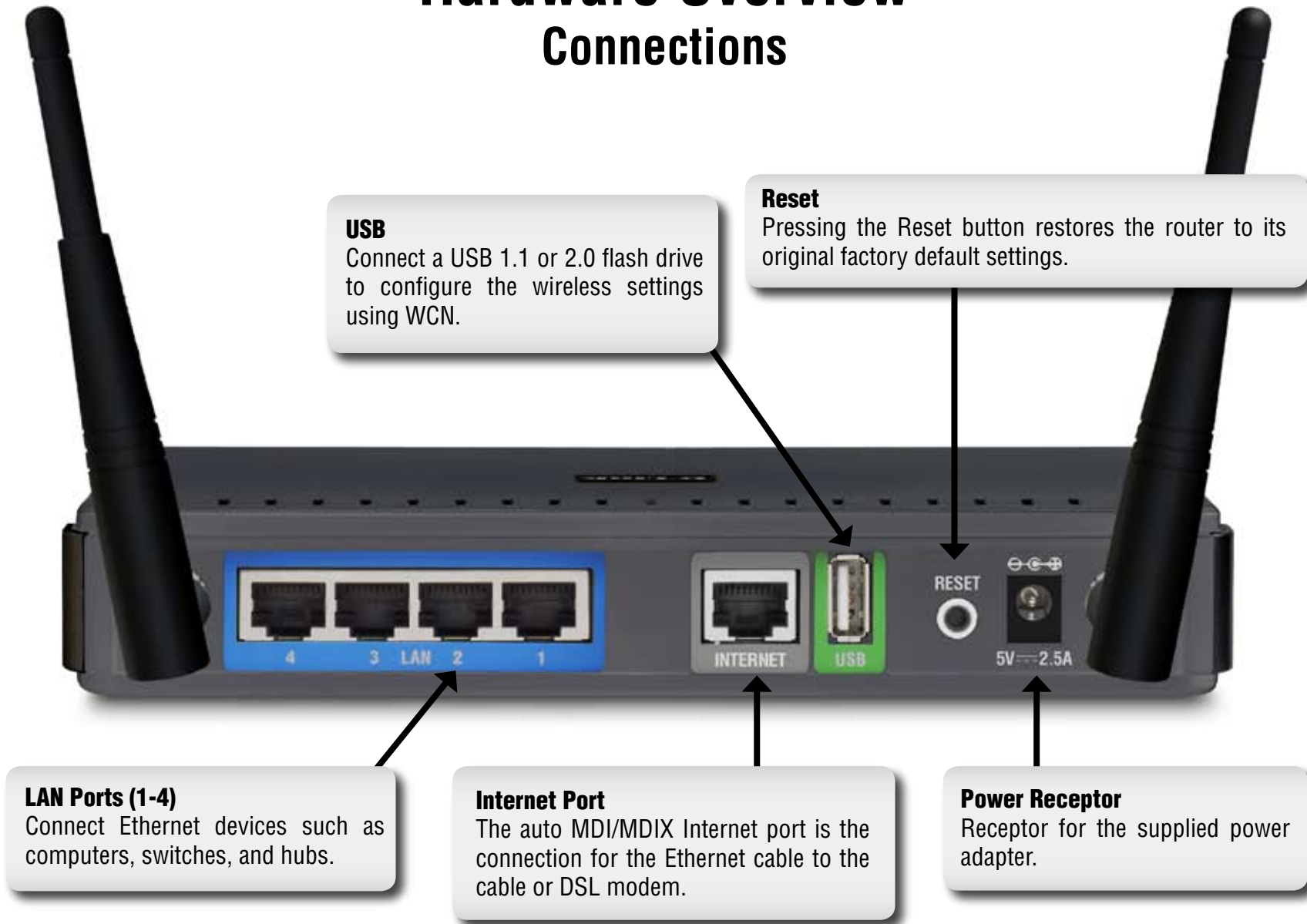
- **Faster Wireless Networking** - The DIR-628 provides up to 300Mbps\* wireless connection with other 802.11n wireless clients. This capability allows users to participate in real-time activities online, such as video streaming, online gaming, and real-time audio. The performance of this 802.11n wireless router gives you the freedom of wireless networking at speeds 14x faster than 802.11g.
- **Compatible with 802.11a and 802.11g Devices** - The DIR-628 is still fully compatible with the IEEE 802.11a/g standard, so it can connect with existing 802.11a/b/g PCI, USB and Cardbus 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-628 can pass through VPN sessions. It supports multiple and concurrent IPSec and PPTP sessions, so users behind the DIR-628 can securely access corporate networks.
- **User-friendly Setup Wizard** - Through its easy-to-use Web-based user interface, the DIR-628 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 802.11a, 802.11g, and Draft 802.11n specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate. Environmental conditions will adversely affect wireless signal range.



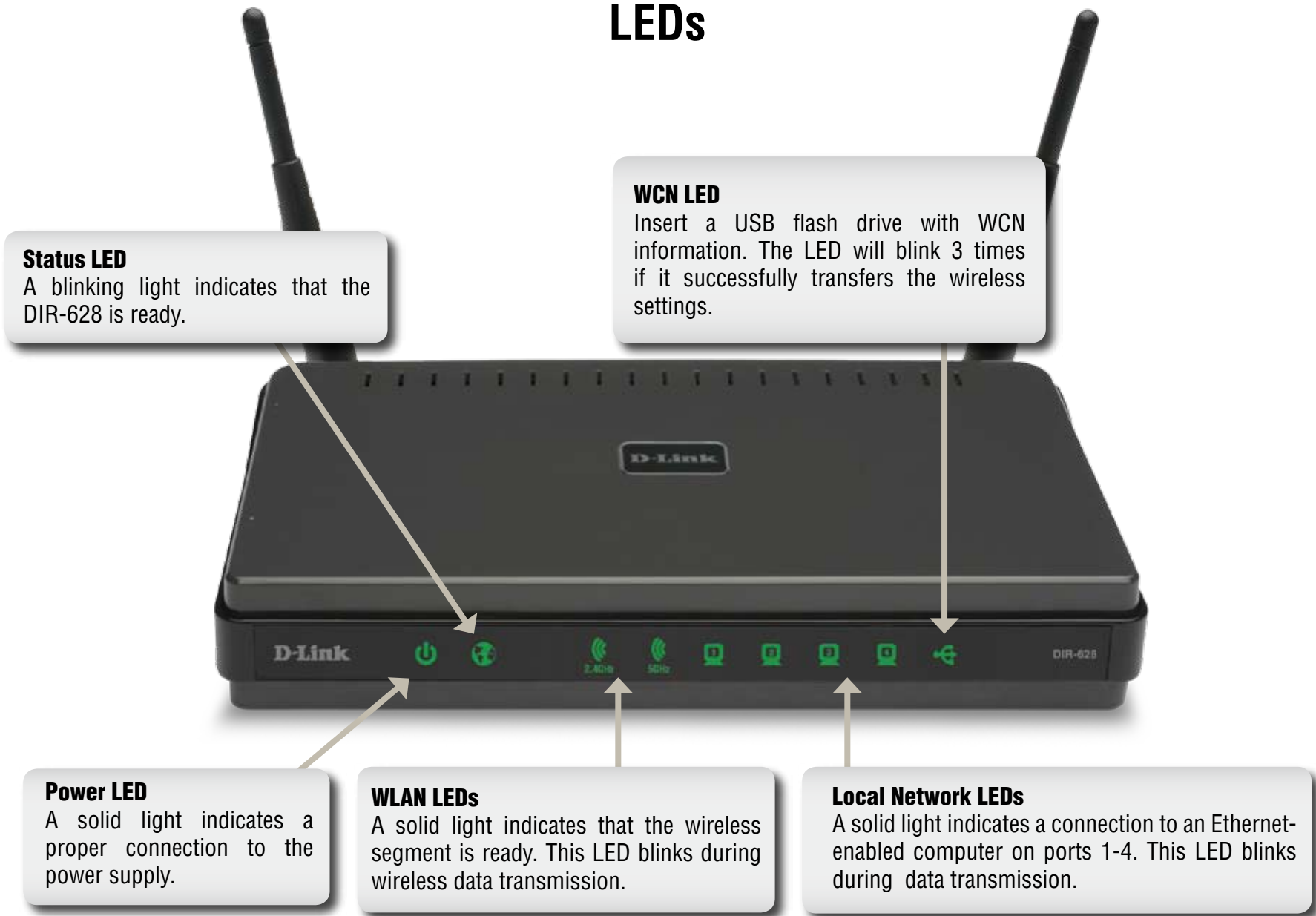
# Hardware Overview

## Connections



# Hardware Overview

## LEDs



# 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.

# 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 **Networking Basics** 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://dlinkrouter** or **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 **Log In** 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-628 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.

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

If the CD Autorun function does not automatically start on your computer, go to **Start > Run**. In the run box type "**D:\DIR628.exe**" (where **D:** represents the drive letter of your CD-ROM drive).

When the autorun screen appears, click **Install Router**.

Click **Install Router**



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

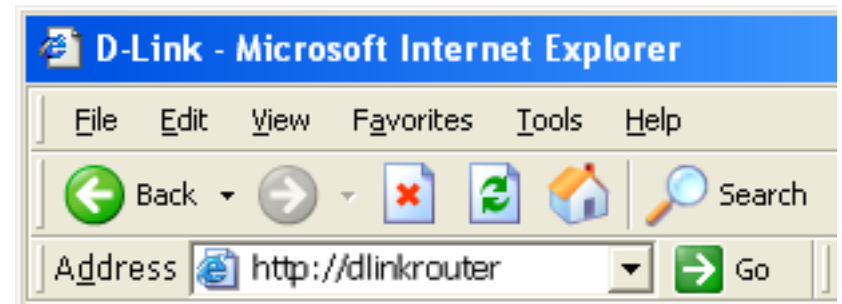


# Configuration

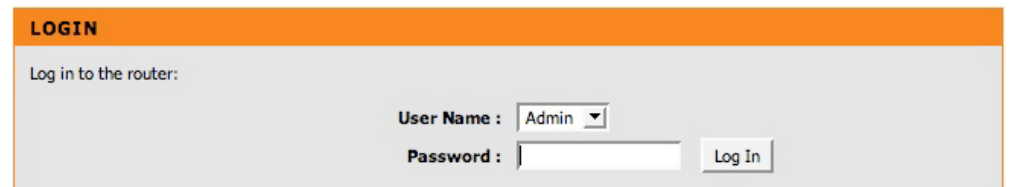
This section will show you how to configure your new D-Link wireless router using the web-based configuration utility.

## Web-based Configuration Utility

To access the configuration utility, open a web-browser such as Internet Explorer and enter `http://dlinkrouter` or `http://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.

# Setup Wizard

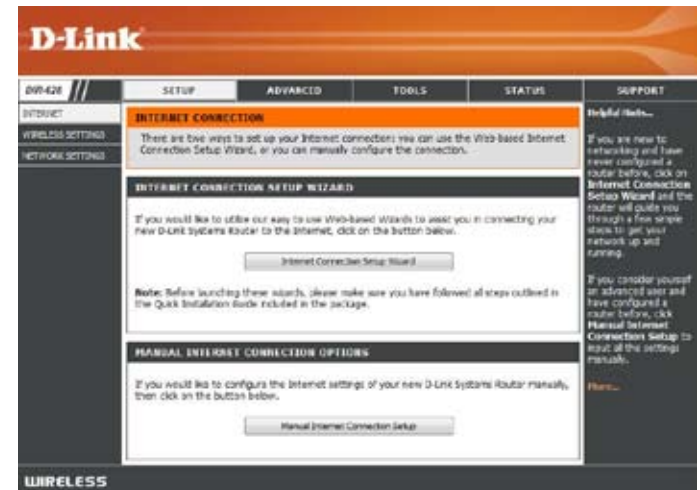
You may click **Setup Wizard** to quickly configure your router.

If you want to enter your settings without running the wizard, click **Manual Configuration** and skip to page 20.



Click **Internet Connection Setup Wizard** to begin.

If you want to configure your wireless settings, click **Launch Wireless Security Setup Wizard** and skip to page 63.



Click **Next** to continue.

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

Select your time zone from the drop-down menu and then click **Next** to continue.

Select the type of Internet connection you use and then click **Next** to continue.



If you selected Dynamic, 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 Your PC's 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 the device name of the Router and may be changed.

The screenshot shows the 'DYNAMIC CONNECTION (DYNAMIC IP ADDRESS)' configuration window. It includes a 'MAC Address' field with the value '00:00:00:00:00:00' and a 'Clone Your PC's MAC Address' button. There is also a 'Host Name' field. A note at the bottom states: 'Note: You may also need to provide a Host Name. If you do not have or know this information, please contact your ISP.' Buttons for 'Prev', 'Next', 'Cancel', and 'Connect' are visible at the bottom.

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

Select **Static** if your ISP assigned you the IP address, subnet mask, gateway, and DNS server addresses.

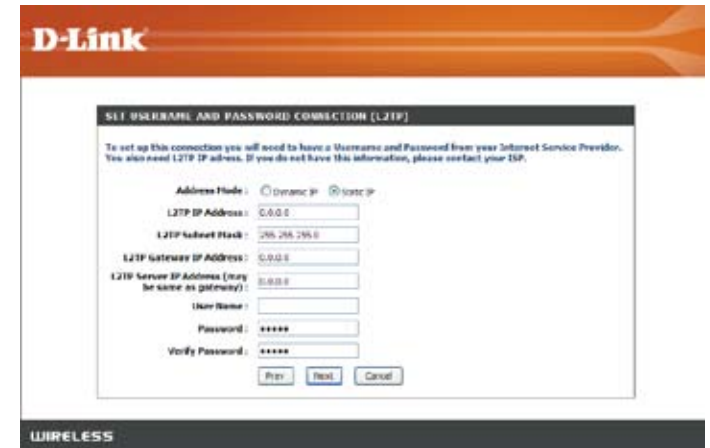
**Note:** Make sure to remove your PPPoE software from your computer. The software is no longer needed and will not work through a router.

The screenshot shows the 'SET USERNAME AND PASSWORD CONNECTION (PPPOE)' configuration window. It features an 'Address Mode' section with radio buttons for 'Dynamic IP' (selected) and 'Static IP'. Below are fields for 'IP Address', 'User Name', 'Password', 'Verify Password', and 'Service Name'. A note at the bottom reads: 'Note: You may also need to provide a Service Name. If you do not have or know this information, please contact your ISP.' Buttons for 'Prev', 'Next', 'Cancel', and 'Connect' are at the bottom.

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

The screenshot shows the 'SET USERNAME AND PASSWORD CONNECTION (PPTP)' configuration window. It has an 'Address Mode' section with radio buttons for 'Dynamic IP' and 'Static IP' (selected). Fields include 'PPTP IP Address', 'PPTP Subnet Mask', 'PPTP Gateway IP Address', 'PPTP Server IP Address (may be same as gateway)', 'User Name', 'Password', and 'Verify Password'. A note at the bottom states: 'Note: You may also need to provide a Service Name. If you do not have or know this information, please contact your ISP.' Buttons for 'Prev', 'Next', 'Cancel', and 'Connect' are at the bottom.

If you selected L2TP, enter your L2TP username and password. Click **Next** to continue.

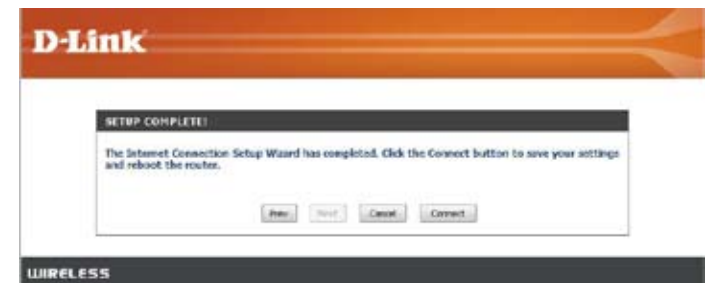


If you selected Static, enter your network settings supplied by your Internet provider. Click **Next** to continue.



Click **Connect** to save your settings. Once the router is finished rebooting, click **Continue**. Please allow 1-2 minutes to connect.

Close your browser window and reopen it to test your Internet connection. It may take a few tries to initially connect to the Internet.



# Manual Configuration

## Dynamic (Cable)

**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.

**Use Unicasting:** Check the box if you are having problems obtaining an IP address from your ISP.

**DNS Addresses:** Enter the Primary DNS server IP address 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 Your PC's MAC Address** button to replace the Internet port's MAC address with the MAC address of your Ethernet card.

The screenshot shows the D-Link DIR-628 web interface. The top navigation bar includes 'D-Link', 'DIR-628', and tabs for 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The left sidebar has 'INTERNET', 'WIRELESS SETTINGS', and 'NETWORK SETTINGS'. The main content area is titled 'WAN' and 'Internet Connection'. It contains the following text and fields:

Use this section to configure your Internet Connection type. There are several connection types to choose from: Static IP, DHCP, PPPoE, PPTP, L2TP, and BigPond. If you are unsure of your connection method, please contact your Internet Service Provider.

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

Buttons: Save Settings, Don't Save Settings

**INTERNET CONNECTION TYPE**

Choose the mode to be used by the router to connect to the Internet.

My Internet Connection is:

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

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

Host Name:

Use Unicasting:  (compatibility for some DHCP Servers)

Primary DNS Server:

Secondary DNS Server:

MTU:  (bytes) MTU default = 1500

MAC Address:

Clone Your PC's MAC Address

On the right side, there is a 'Helpful Hints...' section with text about configuring the router and a 'More...' link.

# Internet Setup

## PPPoE (DSL)

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.

**My Internet Connection:** Select **PPPoE (Username/Password)** from the drop-down menu.

**Address Mode:** Select **Static** if your ISP assigned you the IP address, subnet mask, gateway, and DNS server addresses. In most cases, select **Dynamic**.

**IP Address:** Enter the IP address (Static PPPoE only).

**User Name:** Enter your PPPoE user name.

**Password:** Enter your PPPoE password and then retype the password in the next box.

**Service Name:** Enter the ISP Service Name (optional).

**Reconnection Mode:** Select either **Always-on**, **On-Demand**, or **Manual**.

**Maximum Idle Time:** Enter a maximum idle time during which the Internet connection is maintained during inactivity. To disable this feature, enable Auto-reconnect.

**DNS Addresses:** Enter the Primary and Secondary DNS Server Addresses (Static PPPoE only).

**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 Your PC's MAC Address** button to replace the Internet port's MAC address with the MAC address of your Ethernet card.

The screenshot shows the D-Link DIR-628 web interface for configuring the Internet connection. The main heading is 'WAN' and the sub-heading is 'Internet Connection'. The 'Internet Connection Type' section shows 'My Internet Connection is: PPPoE (Username / Password)'. The 'PPPoE INTERNET CONNECTION TYPE' section contains the following fields and options:

- Address Mode:** Dynamic IP (selected) / Static IP
- IP Address:** [Empty field]
- Username:** [Empty field]
- Password:** [Masked field]
- Verify Password:** [Masked field]
- Service Name:** [Optional field]
- Reconnection Mode:** Always-on (selected) / On-Demand / Manual
- Maximum Idle Time:** 28 (minutes, 0=Infinite)
- Primary DNS Server:** 0.0.0.0
- Secondary DNS Server:** 0.0.0.0
- MTU:** 1492 (Default - MTU default = 1492)
- MAC Address:** [Default MAC address]

A button labeled 'Clone Your PC's MAC Address' is located below the MAC Address field.

# Internet Setup

## PPTP

Choose PPTP (Point-to-Point-Tunneling Protocol ) if your ISP uses a PPTP connection. Your ISP will provide you with a username and password. This option is typically used for DSL services.

**Address Mode:** Select **Static** if your ISP assigned you the IP address, subnet mask, gateway, and DNS server addresses. In most cases, select **Dynamic**.

**PPTP IP Address:** Enter the IP address (Static PPTP only).

**PPTP Subnet Mask:** Enter the Primary and Secondary DNS Server Addresses (Static PPTP only).

**PPTP Gateway:** Enter the Gateway IP Address provided by your ISP.

**PPTP Server IP:** Enter the Server IP provided by your ISP (optional).

**Username:** Enter your PPTP username.

**Password:** Enter your PPTP password and then retype the password in the next box.

**Reconnect Mode:** Select either **Always-on**, **On-Demand**, or **Manual**.

**Maximum Idle Time:** Enter a maximum idle time during which the Internet connection is maintained during inactivity. To disable this feature, enable Auto-reconnect.

**DNS Servers:** The DNS server information will be supplied by your ISP (Internet Service Provider.)

The screenshot shows the D-Link router's configuration interface for PPTP. The main heading is "WAN" and the sub-heading is "Internet Connection". Below this, there is a section for "INTERNET CONNECTION TYPE" where "PPTP (Username / Password)" is selected. The "PPTP INTERNET CONNECTION TYPE" section contains the following fields:

- Address Mode:** Radio buttons for Dynamic IP and Static IP (selected).
- PPTP IP Address:** Text input field with value 0.0.0.0.
- PPTP Subnet Mask:** Text input field with value 255.255.255.0.
- PPTP Gateway IP Address:** Text input field with value 0.0.0.0.
- PPTP Server IP Address:** Text input field with value 0.0.0.0.
- Username:** Text input field.
- Password:** Password input field with masked characters.
- Verify Password:** Password input field with masked characters.
- Reconnect Mode:** Radio buttons for Always on, On demand (selected), and Manual.
- Maximum Idle Time:** Text input field with value 20 (minutes, 0=infinite).
- Primary DNS Server:** Text input field with value 0.0.0.0.
- Secondary DNS Server:** Text input field with value 0.0.0.0.
- MTU:** Text input field with value 1400 (bytes) MTU default = 1400.
- MAC Address:** Text input field with value 00:00:00:00:00:00.

At the bottom of the form, there is a button labeled "Clone Your PC's MAC Address". The page also includes a navigation menu at the top with options like SETUP, ADVANCED, TOOLS, STATUS, and SUPPORT, and a sidebar with "Helpful Hints..." and "More..." links.



**MTU:** Maximum Transmission Unit - you may need to change the MTU for optimal performance with your specific ISP. 1400 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 Your PC's MAC Address** button to replace the Internet port's MAC address with the MAC address of your Ethernet card.

# Internet Setup

## L2TP

Choose L2TP (Layer 2 Tunneling Protocol) if your ISP uses a L2TP connection. Your ISP will provide you with a username and password. This option is typically used for DSL services.

**Address Mode:** Select **Static** if your ISP assigned you the IP address, subnet mask, gateway, and DNS server addresses. In most cases, select **Dynamic**.

**L2TP IP Address:** Enter the L2TP IP address supplied by your ISP (Static only).

**L2TP Subnet Mask:** Enter the Subnet Mask supplied by your ISP (Static only).

**L2TP Gateway:** Enter the Gateway IP Address provided by your ISP.

**L2TP Server IP:** Enter the Server IP provided by your ISP (optional).

**Username:** Enter your L2TP username.

**Password:** Enter your L2TP password and then retype the password in the next box.

**Reconnect Mode:** Select either **Always-on**, **On-Demand**, or **Manual**.

**Maximum Idle Time:** Enter a maximum idle time during which the Internet connection is maintained during inactivity. To disable this feature, enable Auto-reconnect.

**DNS Servers:** Enter the Primary and Secondary DNS Server Addresses (Static L2TP only).

The screenshot displays the D-Link router's configuration interface for L2TP. The 'WAN' section is active, showing 'Internet Connection' settings. The 'Internet Connection Type' is set to 'L2TP (Username / Password)'. The 'L2TP Internet Connection Type' section is expanded, showing the following fields and values:

- Address Mode:**  Dynamic IP  **Static IP**
- L2TP IP Address:** 0.0.0.0
- L2TP Subnet Mask:** 255.255.255.0
- L2TP Gateway IP Address:** 0.0.0.0
- L2TP Server IP Address:** 0.0.0.0
- Username:** [Empty]
- Password:** [Masked with asterisks]
- Verify Password:** [Masked with asterisks]
- Reconnect Mode:**  Always on  **On demand**  Manual
- Maximum Idle Time:** 20 (minutes, 0=infinite)
- Primary DNS Server:** 0.0.0.0
- Secondary DNS Server:** 0.0.0.0
- MTU:** 1400 (bytes) MTU default = 1400
- MAC Address:** 00:00:00:00:00:00

Buttons for 'Save Settings' and 'Don't Save Settings' are visible. A 'Clone Your PC's MAC Address' button is located at the bottom of the form. The right sidebar contains 'Helpful Hints...' and 'More...' sections.

**MTU:** Maximum Transmission Unit - you may need to change the MTU for optimal performance with your specific ISP. 1400 is the default MTU.

**Clone 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 Your PC's MAC Address** button to replace the Internet port's MAC address with the MAC address of your Ethernet card.

# Internet Setup

## Static (assigned by ISP)

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:** Enter the Gateway assigned by your ISP.

**DNS Servers:** The DNS server information will be supplied by your ISP (Internet Service Provider.)

**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 Your PC's MAC Address** button to replace the Internet port's MAC address with the MAC address of your Ethernet card.

**D-Link**

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INTERNET WIRELESS SETTINGS NETWORK SETTINGS

**WAN**

**Internet Connection**

Use this section to configure your Internet Connection type. There are several connection types to choose from: Static IP, DHCP, PPPoE, PPTP, L2TP, and BigPond. If you are unsure of your connection method, please contact your Internet Service Provider.

**Note:** If using 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 TYPE**

Choose the mode to be used by the router to connect to the Internet.

My Internet Connection is: Static IP

**STATIC IP ADDRESS INTERNET CONNECTION TYPE :**

Enter the static address information provided by your Internet Service Provider (ISP).

IP Address: 0.0.0.0

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

Primary DNS Server: 0.0.0.0

Secondary DNS Server: 0.0.0.0

MTU: 1500 (bytes) MTU default = 1500

MAC Address: 00:00:00:00:00:00

Clone Your PC's MAC Address

**WIRELESS**

**Helpful Hints...**

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

If you are having trouble accessing the Internet through the router, double check any settings you have entered on this page and verify them with your ISP if needed.

More...

# Wireless Settings

**Enable Wireless:** Check the box to enable the wireless function. If you do not want to use wireless, uncheck the box to disable all the wireless functions. Click **Add New** to create your own time schedule to enable the wireless function.

**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.

**802.11 Band:** Select **2.4GHz** if you want to use the 2.4GHz band or **5GHz** band if you want to use the 5GHz band.

## 802.11 Mode: 2.4GHz:

Select one of the following:

**802.11g Only** - Select if all of your wireless clients are 802.11g.

**Mixed 802.11g and 802.11b** - Select if you are using both 802.11b and 802.11g wireless clients.

**802.11b Only** - Select if all of your wireless clients are 802.11b.

**802.11n Only** - Select only if all of your wireless clients are 802.11n.

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

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

## 5GHz:

Select one of the following:

**802.11a Only** - Select if all of your wireless clients are 802.11a.

**802.11n Only** - Select only if all of your wireless clients are 802.11n.

**802.11n and 802.11a** - Select if you are using both 802.11b and 802.11g wireless clients.



**Enable Auto Channel Scan:** The **Auto Channel Scan** setting can be selected to allow the DIR-628 to choose the channel with the least amount of interference.

**Wireless Channel:** Indicates the channel setting for the DIR-628. 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. If you enable **Auto Channel Scan**, this option will be greyed out.

**Transmission Rate:** Select the transmit rate. It is strongly suggested to select **Best (Auto)** for best performance.

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

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

**20MHz** - Select if you are not using any 802.11n wireless clients. This is the default setting.

**Visibility Status:** Select **Invisible** if you do not want the SSID of your wireless network to be broadcasted by the DIR-628. If Invisible is selected, the SSID of the DIR-628 will not be seen by Site Survey utilities so your wireless clients will have to know the SSID of your DIR-628 in order to connect to it.

**Wireless Security:** Refer to page 71 for more information regarding wireless security.

# 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.

If you change the IP address, once you click **Apply**, you will need to enter the new IP address in your browser to get back into the configuration utility.

**Subnet Mask:** Enter the Subnet Mask. The default subnet mask is 255.255.255.0.

**Device Name:** Enter a name for the router.

**Local Domain:** Enter the Domain name (Optional).

**Enable DNS Relay:** Uncheck the box to transfer the DNS server information from your ISP to your computers. If checked, your computers will use the router for a DNS server.

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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. The IP Address that is configured here is the IP Address that you use to access the Web-based management interface. If you change the IP Address here, you may need to adjust your PC's network settings to access the network again.

Save Settings Don't Save Settings

**ROUTER SETTINGS**

Use this section to configure the internal network settings of your router. The IP Address that is configured here is the IP Address that you use to access the Web-based management interface. If you change the IP Address here, you may need to adjust your PC's network settings to access the network again.

Router IP Address: 192.168.0.1

Subnet Mask: 255.255.255.0

Device Name: dlinkrouter

Local Domain Name: (optional)

Enable DNS Relay:

**Helpful Hints...**

If you already have a DHCP server on your network or are using static IP addresses on all the devices on your network, uncheck **Enable DHCP Server** to 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.

More...

## DHCP Server Settings

DHCP stands for Dynamic Host Control Protocol. The DIR-628 has a built-in DHCP server. The DHCP Server will automatically assign an IP address to the computers on the LAN/private network. Be sure to set your computers to be DHCP clients by setting their TCP/IP settings to “Obtain an IP Address Automatically.” When you turn your computers on, they will automatically load the proper TCP/IP settings provided by the DIR-628. The DHCP Server will automatically allocate an unused IP address from the IP address pool to the requesting computer. You must specify the starting and ending address of the IP address pool.

**Enable DHCP Server:** Check this box to enable the DHCP server on your router. Uncheck to disable this function.

**DHCP IP Address Range:** Enter the starting and ending IP addresses for the DHCP server’s IP assignment.

**Note:** If you statically (manually) assign IP addresses to your computers or devices, make sure the IP addresses are outside of this range or you may have an IP conflict.

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

**Always Broadcast:** Enable this feature to broadcast your networks DHCP server to LAN/WLAN clients.

**NetBIOS Announcement:** NetBIOS allows LAN hosts to discover all other computers within the network, enable this feature to allow the DHCP Server to offer NetBIOS configuration settings.

**Learn NetBIOS from WAN:** Enable this feature to allow WINS information to be learned from the WAN side, disable to allow manual configuration.

**DHCP SERVER SETTINGS**

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

**Enable DHCP Server:**

**DHCP IP Address Range:** 192.168.0.100 to 192.168.0.199

**DHCP Lease Time:** 1440 (minutes)

**Always broadcast:**  (compatibility for some DHCP Clients)

**NetBIOS announcement:**

**Learn NetBIOS from WAN:**

**NetBIOS Scope:**  (optional)

**NetBIOS node type :**

- Broadcast only (use when no WINS servers configured)
- Point-to-Point (no broadcast)
- Mixed-mode (Broadcast then Point-to-Point)
- Hybrid (Point-to-Point then Broadcast)

**Primary WINS IP Address:**

**Secondary WINS IP Address:**



**NetBIOS Scope:** This feature allows the configuration of a NetBIOS 'domain' name under which network hosts operates. This setting has no effect if the 'Learn NetBIOS information from WAN' is activated."

**NetBIOS Mode Type:** Select the different type of NetBIOS node: **Broadcast only**, **Point-to-Point**, **Mixed-mode**, and **Hybrid**.

**Primary/Secondary WINS IP Address:** Enter your Primary (and Secondary) WINS IP address(es).

## DHCP Reservation

If you want a computer or device to always have the same IP address assigned, you can create a DHCP reservation. The router will assign the IP address only to that computer or device.

**Note:** This IP address must be within the DHCP IP Address Range.

**Enable:** Check this box to enable the reservation.

**Computer Name:** Enter the computer name or select from the drop-down menu and click <<.

**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.

**Copy Your PC's MAC Address:** If you want to assign an IP address to the computer you are currently on, click this button to populate the fields.

**Save:** Click **Save** to save your entry. You must click **Save Settings** at the top to activate your reservations.

**Number of Dynamic DHCP Clients:** In this section you can see what LAN devices are currently leasing IP addresses.

**Revoke:** Click **Revoke** to cancel the lease for a specific LAN device and free an entry in the lease table. Do this only if the device no longer needs the leased IP address, because, for example, it has been removed from the network.

**ADD DHCP RESERVATION**

**Enable:**

**Computer Name:**  << Computer Name ▼

**IP Address:**

**MAC Address:**

DHCP RESERVATIONS LIST			
Enable	Computer Name	MAC Address	IP Address

NUMBER OF DYNAMIC DHCP CLIENTS: 2				
Hardware Address	Assigned IP	Hostname	Expires	
00:0c:f1:fe:ee:cd	192.168.0.197	PMLab16	22 Hours 48 Minutes	<a href="#">Revoke</a> <a href="#">Reserve</a>
00:16:17:44:4a:d9	192.168.0.199	PMLab15	14 Hours 54 Minutes	<a href="#">Revoke</a> <a href="#">Reserve</a>

**Note:** The Revoke option will not disconnect a PC with a current network session from the network; you would need to use MAC Address Filter to do that. Revoke will only free up a DHCP Address for the very next requester. If the previous owner is still available, those two devices may both receive an IP Address Conflict error, or the second device may still not receive an IP Address; in that case, you may still need to extend the “DHCP IP Address Range” to address the issue, it is located in the DHCP Server section.

**Reserve:** The Reserve option converts this dynamic IP allocation into a DHCP Reservation and adds the corresponding entry to the DHCP Reservations List.

## Virtual Server

The DIR-628 can be configured as a virtual server so that remote users accessing Web or FTP services via the public IP address can be automatically redirected to local servers in the LAN (Local Area Network).

The DIR-628 firewall feature filters out unrecognized packets to protect your LAN network so all computers networked with the DIR-628 are invisible to the outside world. If you wish, you can make some of the LAN computers accessible from the Internet by enabling Virtual Server. Depending on the requested service, the DIR-628 redirects the external service request to the appropriate server within the LAN network.

The DIR-628 is also capable of port-redirection meaning incoming traffic to a particular port may be redirected to a different port on the server computer.

Each virtual service that is created will be listed at the bottom of the screen in the Virtual Servers List. There are pre-defined virtual services already in the table. You may use them by enabling them and assigning the server IP to use that particular virtual service.

For a list of ports for common applications, please visit [http://support.dlink.com/faq/view.asp?prod\\_id=1191](http://support.dlink.com/faq/view.asp?prod_id=1191).

This will allow you to open a single port. If you would like to open a range of ports, refer to page 35.

**Name:** Enter a name for the rule or select an application from the drop-down menu. Select an application and click << to populate the fields.

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

**Private Port/ Public Port:** Enter the port that you want to open next to Private Port and Public Port. The private and public ports are usually the same. The public port is the port seen from the Internet side, and the private port is the port being used by the application on the computer within your local network.

**Protocol Type:** Select **TCP**, **UDP**, or **Both** from the drop-down menu.

**Inbound Filter:** Select **Allow All** (most common) or a created Inbound filter. You may create your own inbound filters in the **Advanced > Inbound Filter** page.

**Schedule:** The schedule of time when the Virtual Server Rule will be enabled. The schedule may be set to Always, which will allow the particular service to always be enabled. You can create your own times in the **Tools > Schedules** section.

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**VIRTUAL SERVER**

The Virtual Server option allows you to define a single public port on your router for redirection to an internal LAN IP Address and Private LAN port if required. This feature is useful for hosting online services such as FTP or Web Servers.

Save Settings Don't Save Settings

**24 -- VIRTUAL SERVERS LIST**

	Name	IP Address	Port	Traffic Type	Schedule
<input type="checkbox"/>	<< Application Name	0.0.0.0	0	TCP	Always
<input type="checkbox"/>	<< Computer Name	0.0.0.0	0	6	Allow All
<input type="checkbox"/>	<< Application Name	0.0.0.0	0	TCP	Always
<input type="checkbox"/>	<< Computer Name	0.0.0.0	0	6	Allow All
<input type="checkbox"/>	<< Application Name	0.0.0.0	0	TCP	Always
<input type="checkbox"/>	<< Computer Name	0.0.0.0	0	6	Allow All
<input type="checkbox"/>	<< Application Name	0.0.0.0	0	TCP	Always
<input type="checkbox"/>	<< Computer Name	0.0.0.0	0	6	Allow All

**Helpful Hints...**

Check the **Application Name** drop down menu for a list of predefined server types. If you select one of the predefined server types, click the arrow button next to the drop down menu to fill out the corresponding field.

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

Select a schedule for when the virtual server will be enabled. If you do not see the schedule you need in the list of schedules, go to the **Tools -- Schedules** screen and create a new schedule.

# Port Forwarding

This will allow you to open a single port or a range of ports.

**Name:** Enter a name for the rule or select an application from the drop-down menu. Select an application and click << to populate the fields.

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

**TCP/UDP:** Enter the TCP and/or UDP port or ports that you want to open. You can enter a single port or a range of ports. Separate ports with a common.

Example: 24,1009,3000-4000

**Inbound Filter:** Select **Allow All** (most common) or a created Inbound filter. You may create your own inbound filters in the **Advanced > Inbound Filter** page.

**Schedule:** The schedule of time when the Virtual Server Rule will be enabled. The schedule may be set to Always, which will allow the particular service to always be enabled. You can create your own times in the **Tools > Schedules** section.

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**PORT FORWARDING**

This option is used to open multiple ports or a range of ports in your router and redirect data through those ports to a single PC on your network. This feature allows you to enter ports in various formats including, Port Ranges (100-150), Individual Ports (80, 68, 888), or Mixed (1020-5000, 689).

Save Settings Don't Save Settings

**24 -- PORT FORWARDING RULES**

Name	IP Address	Application Name	Computer Name	Ports to Open	Inbound Filter	Schedule
	0.0.0.0	<<	<<	TCP	Allow All	Always
	0.0.0.0	<<	<<	UDP	Allow All	Always
	0.0.0.0	<<	<<	TCP	Allow All	Always
	0.0.0.0	<<	<<	UDP	Allow All	Always
	0.0.0.0	<<	<<	TCP	Allow All	Always
	0.0.0.0	<<	<<	UDP	Allow All	Always

Helpful Hints...

Check the **Application Name** drop down menu for a list of predefined applications. If you select one of the predefined applications, click the arrow button next to the drop down menu to fill out the corresponding field.

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

Select a schedule for when the rule will be enabled. If you do not see the schedule you need in the list of schedules, go to the

# 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-628. If you need to run applications that require multiple connections, specify the port normally associated with an application in the “Trigger Port” field, select the protocol type as TCP or UDP, then enter the firewall (public) ports associated with the trigger port to open them for inbound traffic.

The DIR-628 provides some predefined applications in the table on the bottom of the web page. Select the application you want to use and enable it.

**Name:** Enter a name for the rule. You may select a pre-defined application from the drop-down menu and click <<.

**Trigger:** This is the port used to trigger the application. It can be either a single port or a range of ports.

**Traffic Type:** Select the protocol of the trigger port (TCP, UDP, or Both).

**Firewall:** This is the port number on the Internet side that will be used to access the application. You may define a single port or a range of ports. You can use a comma to add multiple ports or port ranges.

**Traffic Type:** Select the protocol of the firewall port (TCP, UDP, or Both).

**Schedule:** The schedule of time when the Application Rule will be enabled. The schedule may be set to Always, which will allow the particular service to always be enabled. You can create your own times in the **Tools** > **Schedules** section.

The screenshot shows the D-Link DIR-628 web interface. The main content area is titled "APPLICATION RULES" and contains a table with the following columns: Name, Application, Port, Traffic Type, and Schedule. There are three rows in the table, each with a checkbox, a text input for Name, a dropdown for Application, a text input for Port, a dropdown for Traffic Type, and a dropdown for Schedule. To the right of the table is a "Helpful Hints..." section with text explaining the feature and a link to "Schedules".

# QoS Engine

The QoS Engine option helps improve your network gaming performance by prioritizing applications. By default the QoS Engine settings are disabled and application priority is not classified automatically.

**Enable Traffic Shaping:** Traffic Shaping

**Automatic Uplink Speed:** This option is enabled by default when the Traffic Shaping option is enabled. This option will allow your router to automatically determine the uplink speed of your Internet connection.

**Measured Uplink:** This displays the detected uplink speed.

**Manual Uplink Speed:** The speed at which data can be transferred from the router to your ISP. This is determined by your ISP. ISP's often speed as a download/upload pair. For example, 1.5Mbits/284Kbits. Using this example, you would enter 284. Alternatively you can test your uplink speed with a service such as [www.dsreports.com](http://www.dsreports.com).

**Connection Type:** By default, the router automatically determines whether the underlying connection is an xDSL/Frame-relay network or some other connection type (such as cable modem or Ethernet), and it displays the result as Detected xDSL or Frame Relay Network. If you have an unusual network connection in which you are actually connected via xDSL but for which you configure either "Static" or "DHCP" in the Internet settings, setting this option to xDSL or Other Frame Relay Network ensures that the router will recognize that it needs to shape traffic slightly differently in order to give the best performance. Choosing xDSL or Other Frame Relay Network causes the measured uplink speed to be reported slightly lower than before on such connections, but gives much better results.

**Detected xDSL:** When Connection Type is set to automatic, the automatically detected connection type is displayed here.

The screenshot shows the D-Link DIR-628 web interface. The main navigation menu includes SETUP, ADVANCED, TOOLS, STATUS, and SUPPORT. The 'ADVANCED' tab is selected, and the 'QoS ENGINE' sub-tab is active. The page content is as follows:

- QoS ENGINE:** Use this section to configure D-Link's QoS Engine. The QoS Engine improves your online gaming experience by ensuring that your game traffic is prioritized over other network traffic, such as FTP or Web. For best performance, use the Automatic Classification option to automatically set the priority for your applications. Buttons: Save Settings, Don't Save Settings.
- WAN TRAFFIC SHAPING:**
  - Enable Traffic Shaping:
  - Automatic Uplink Speed:
  - Measured Uplink Speed: 1682 kbps
  - Manual Uplink Speed: 128 kbps << Select Transmission Rate >>
  - Connection Type: Auto-detect
  - Detected xDSL or Other Frame Relay Network: No
- QoS ENGINE SETUP:**
  - Enable QoS Engine:
  - Automatic Classification:
  - Dynamic Fragmentation:
- 10 -- QoS ENGINE RULES:**

Name	Priority	Protocol	Local IP Range	Remote IP Range	Local Port Range	Remote Port Range
<input type="checkbox"/>	1 (1..255)	TCP	0.0.0.0 to 255.255.255.255	0.0.0.0 to 255.255.255.255	0 to 65535	0 to 65535



**Enable QoS Engine:** This option is disabled by default. Enable this option for better performance and experience with online games and other interactive applications, such as VoIP.

**Automatic Classification:** This option is enabled by default. This will allow your router to automatically determine the network priority of running programs.

**Dynamic Fragmentation:** This option should be enabled when you have a slow Internet uplink. It helps to reduce the impact that large low priority network packets can have on more urgent ones.

# Network Filters

Use MAC (Media Access Control) Filters to allow or deny LAN (Local Area Network) computers by their MAC addresses from accessing the Network. You can either manually add a MAC address or select the MAC address from the list of clients that are currently connected to the Broadband Router.

**Configure MAC Filtering:** Select **Turn MAC Filtering Off, allow MAC addresses listed below**, or **deny MAC addresses listed below** from the drop-down menu.

**MAC Address:** Enter the MAC address you would like to filter.

To find the MAC address on a computer, please refer to the **Networking Basics** section in this manual.

**DHCP Client:** Select a DHCP client from the drop-down menu and click << to copy that MAC Address.

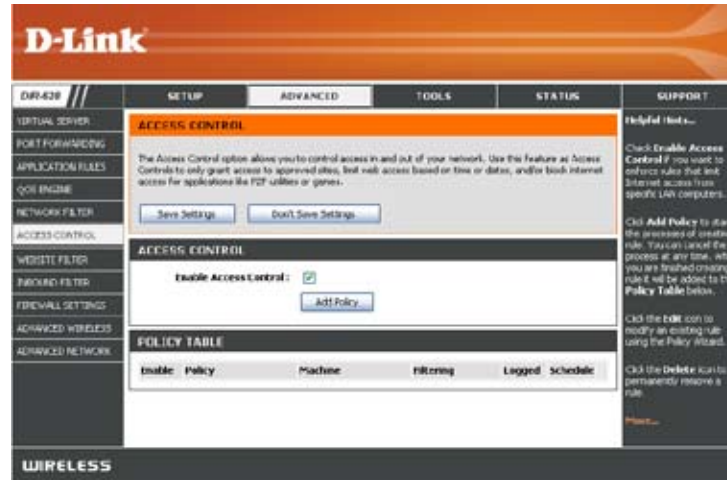
The screenshot shows the D-Link DIR-628 web interface. The top navigation bar includes 'DIR-628', 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The 'ADVANCED' tab is selected, and the 'MAC ADDRESS FILTER' page is displayed. The page contains a description of the MAC filter, 'Save Settings' and 'Don't Save Settings' buttons, and a section for 'MAC FILTERING RULES'. This section includes a dropdown menu set to 'Turn MAC Filtering OFF' and a table with columns for 'MAC Address' and 'DHCP Client List'. The table has five rows, each with an empty 'MAC Address' field, a '<<' button, a 'Computer Name' dropdown menu, and a 'Clear' button. A 'Helpful Hints...' sidebar on the right provides instructions on how to use the DHCP Client List.

MAC Address		DHCP Client List	
<input type="text"/>	<<	Computer Name	Clear
<input type="text"/>	<<	Computer Name	Clear
<input type="text"/>	<<	Computer Name	Clear
<input type="text"/>	<<	Computer Name	Clear
<input type="text"/>	<<	Computer Name	Clear

# 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.

**Add Policy:** Click the **Add Policy** button to start the Access Control Wizard.



## Access Control Wizard

Click **Next** to continue with the wizard.



## Access Control Wizard (continued)

Enter a name for the policy and then click **Next** to continue.

Select a schedule (I.E. Always) from the drop-down menu and then click **Next** to continue.

Enter the following information and then click **Next** to continue.

- **Address Type** - Select IP address, MAC address, or Other Machines.
- **IP Address** - Enter the IP address of the computer you want to apply the rule to.

## Access Control Wizard (continued)

Select the filtering method and then click **Next** to continue.

**STEP 4: SELECT FILTERING METHOD**

Select the method for filtering.

Method :  Log Web Access Only  Block All Access  Block Some Access

Apply Web Filter :

Apply Advanced Port Filters :

Enter the rule:

**Enable** - Check to enable the rule.

**Name** - Enter a name for your rule.

**Dest IP Start** - Enter the starting IP address.

**Dest IP End** - Enter the ending IP address.

**Protocol** - Select the protocol.

**Dest Port Start** - Enter the starting port number.

**Dest Port End** - Enter the ending port number.

**STEP 5: PORT FILTER**

Add Port Filters Rules.

Specify rules to prohibit access to specific IP addresses and ports.

Enable	Name	Dest IP Start	Dest IP End	Protocol	Dest Port Start	Dest Port End
<input type="checkbox"/>		0.0.0.0	255.255.255.255	Any	1	65535
<input type="checkbox"/>		0.0.0.0	255.255.255.255	Any	1	65535
<input type="checkbox"/>		0.0.0.0	255.255.255.255	Any	1	65535
<input type="checkbox"/>		0.0.0.0	255.255.255.255	Any	1	65535
<input type="checkbox"/>		0.0.0.0	255.255.255.255	Any	1	65535
<input type="checkbox"/>		0.0.0.0	255.255.255.255	Any	1	65535
<input type="checkbox"/>		0.0.0.0	255.255.255.255	Any	1	65535
<input type="checkbox"/>		0.0.0.0	255.255.255.255	Any	1	65535

To enable web logging, click **Enable**.

Click **Save** to save the access control rule.

**STEP 6: CONFIGURE WEB ACCESS LOGGING**

Web Access Logging :  Disabled  Enabled

## 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. To use this feature select to **Allow** or **Deny**, enter the domain or website and click **Save Settings**. You must also select **Apply Web Filter** under the *Access Control* section (page 43).

**Add Website Filtering Rule:** Select **Allow** or **Deny**.

**Website URL/ Domain:** Enter the keywords or URLs that you want to allow or block. Click **Save Settings**.

The screenshot displays the D-Link DIR-628 web interface. The top navigation bar includes 'D-Link', 'DIR-628', and tabs for 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The left sidebar lists various configuration options, with 'WEBSITE FILTER' selected. The main content area is titled 'WEBSITE FILTER' and contains the following text: 'The Website Filter option allows you to set up a list of Web sites you would like to allow or deny through your network. To use this feature, you must also select the "Apply Web Filter" checkbox in the Access Control section.' Below this text are two buttons: 'Save Settings' and 'Don't Save Settings'. A section titled '40 -- WEBSITE FILTERING RULES' contains the instruction 'Configure Website Filter below:' followed by a dropdown menu set to 'DENY computers access to ONLY these sites'. A 'Clear the list below...' button is also present. At the bottom, there is a table with the header 'Website URL/Domain' and three rows of input fields. The right sidebar contains 'Helpful Hints...' and instructions: 'Create a list of Web Sites to which you would like to deny or allow through the network.' and 'Use with Advanced -- Access Control. Here...'

## Inbound Filters

The Inbound Filter option is an advanced method of controlling data received from the Internet. With this feature you can configure inbound data filtering rules that control data based on an IP address range. Inbound Filters can be used with Virtual Server, Port Forwarding, or Remote Administration features.

**Name:** Enter a name for the inbound filter rule.

**Action:** Select **Allow** or **Deny**.

**Enable:** Check to enable rule.

**Remote IP Start:** Enter the starting IP address. Enter 0.0.0.0 if you do not want to specify an IP range.

**Remote IP End:** Enter the ending IP address. Enter 255.255.255.255 if you do not want to specify an IP range.

**Add:** Click the **Add** button to apply your settings. You must click **Save Settings** at the top to save the settings.

**Inbound Filter Rules List:** This section will list any rules that are created. You may click the **Edit** icon to change the settings or enable/disable the rule, or click the **Delete** icon to remove the rule.

**D-Link**

DIR-628 // SETUP ADVANCED TOOLS STATUS SUPPORT

**INBOUND FILTER**

The Inbound Filter option is an advanced method of controlling data received from the Internet. With this feature you can configure inbound data filtering rules that control data based on an IP address range.

Inbound Filters can be used for limiting access to a server on your network to a system or group of systems. Filter rules can be used with Virtual Server, Port Forwarding, or Remote Administration features.

**ADD INBOUND FILTER RULE**

Name :

Action : Deny

Remote IP Range	Enable	Remote IP Start	Remote IP End
<input type="checkbox"/> 0.0.0.0	<input type="checkbox"/>	0.0.0.0	255.255.255.255
<input type="checkbox"/> 0.0.0.0	<input type="checkbox"/>	0.0.0.0	255.255.255.255
<input type="checkbox"/> 0.0.0.0	<input type="checkbox"/>	0.0.0.0	255.255.255.255
<input type="checkbox"/> 0.0.0.0	<input type="checkbox"/>	0.0.0.0	255.255.255.255
<input type="checkbox"/> 0.0.0.0	<input type="checkbox"/>	0.0.0.0	255.255.255.255
<input type="checkbox"/> 0.0.0.0	<input type="checkbox"/>	0.0.0.0	255.255.255.255
<input type="checkbox"/> 0.0.0.0	<input type="checkbox"/>	0.0.0.0	255.255.255.255
<input type="checkbox"/> 0.0.0.0	<input type="checkbox"/>	0.0.0.0	255.255.255.255

**INBOUND FILTER RULES LIST**

Name	Action	Remote IP Range

**Helpful Hints...**

Give each rule a **Name** that is meaningful to you.

Each rule can either **Allow** or **Deny** access from the WAN.

Up to eight ranges of WAN IP addresses can be controlled by each rule. The checkbox by each IP range can be used to disable ranges already defined.

The starting and ending IP addresses are WAN-side address.

Click the **Add** or **Update** button to store a finished rule in the Rules List below.

Click the **Edit** icon in the Rules List to change a rule.

Click the **Delete** icon in the Rules List to permanently remove a rule.

[More...](#)

# Firewall Settings

A firewall protects your network from the outside world. The D-Link DIR-628 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.

**Enable SPI:** 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.

**NAT Endpoint Filtering:** Select one of the following for TCP and UDP ports:  
**Endpoint Independent** - Any incoming traffic sent to an open port will be forwarded to the application that opened the port. The port will close if idle for 5 minutes.

**Address Restricted** - Incoming traffic must match the IP address of the outgoing connection.

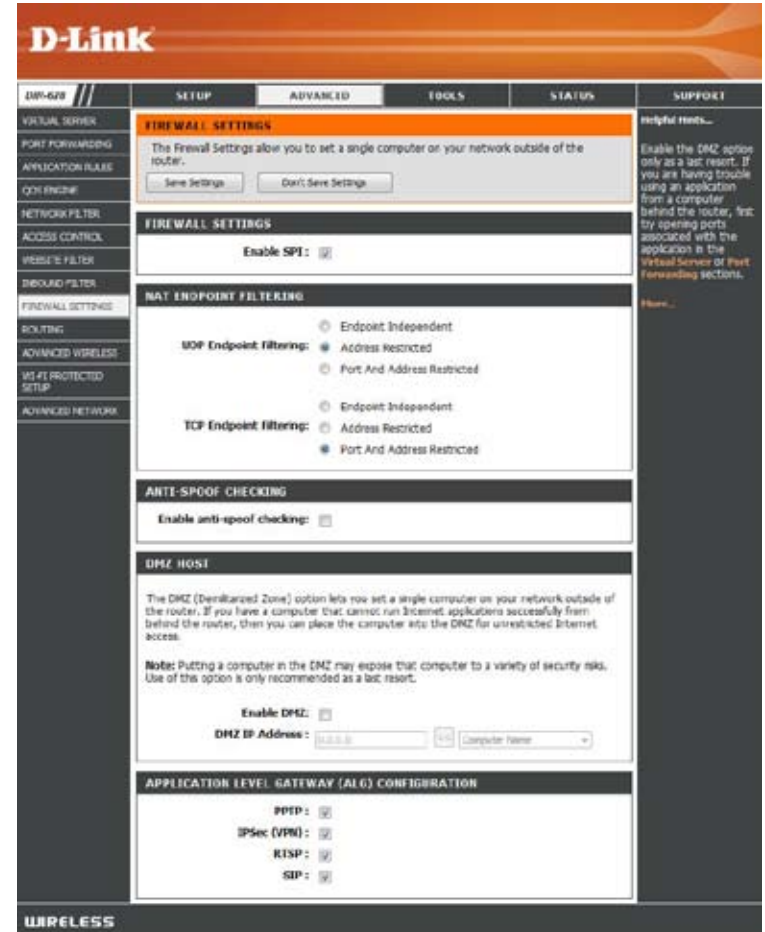
**Address + Port Restriction** - Incoming traffic must match the IP address and port of the outgoing connection.

**Anti-Spoof Check:** Enable this feature to protect your network from certain kinds of “spoofing” attacks.

**Enable DMZ:** 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.

**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.

**DMZ IP Address:** Specify the IP address of the computer on the LAN that you want to have unrestricted Internet communication. If this computer obtains its IP address automatically using DHCP, be sure to make a static reservation on the **Basic > DHCP** page so that the IP address of the DMZ machine does not change.





## Application Level Gateway Configuration

Here you can enable or disable ALG's. Some protocols and applications require special handling of the IP payload to make them work with network address translation (NAT). Each ALG provides special handling for a specific protocol or application. A number of ALGs for common applications are enabled by default.

**PPTP:** Allows multiple machines on the LAN to connect to their corporate network using PPTP protocol.

**IPSEC (VPN):** Allows multiple VPN clients to connect to their corporate network using IPsec. Some VPN clients support traversal of IPsec through NAT. This ALG may interfere with the operation of such VPN clients. If you are having trouble connecting with your corporate network, try turning this ALG off. Please check with the system administrator of your corporate network whether your VPN client supports NAT traversal.

**RTSP:** Allows applications that use Real Time Streaming Protocol to receive streaming media from the internet. QuickTime and Real Player are some of the common applications using this protocol.

**SIP:** Allows devices and applications using VoIP (Voice over IP) to communicate across NAT. Some VoIP applications and devices have the ability to discover NAT devices and work around them. This ALG may interfere with the operation of such devices. If you are having trouble making VoIP calls, try turning this ALG off.

# Routing

The Routing option is an advanced method of customizing specific routes of data through your network.

**Destination IP:** Enter the IP address of packets that will take this route.

**Netmask:** Enter the netmask of the route, please note that the octets must match your destination IP address.

**Gateway:** Enter your next hop gateway to be taken if this route is used.

**Metric:** The route metric is a value from 1 to 16 that indicates the cost of using this route. A value 1 is the lowest cost and 15 is the highest cost.

**Interface:** Select the interface that the IP packet must use to transit out of the router when this route is used.

**D-Link**

DIR-628 // SETUP ADVANCED TOOLS STATUS SUPPORT

**ROUTING**

This Routing page allows you to specify custom routes that determine how data is moved around your network.

Save Settings Don't Save Settings

**32--ROUTE LIST**

	Name	Destination IP	Metric	Interface
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="1"/>	WAN
	Netmask:	Gateway:		
	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>		
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="1"/>	WAN
	Netmask:	Gateway:		
	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>		
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="1"/>	WAN
	Netmask:	Gateway:		
	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>		
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="1"/>	WAN
	Netmask:	Gateway:		
	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>		

**Helpful Hints...**

Each route has a check box next to it; check this box if you want the route to be enabled.

The name field allows you to specify a name for identification of this route, e.g. 'Network 2'.

The destination IP address is the address of the host or network you wish to reach.

The netmask field identifies the portion of the destination IP in use.

The gateway IP address is the IP address of the router, if any, used to reach the specified destination.

More...

# Advanced Wireless Settings

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

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

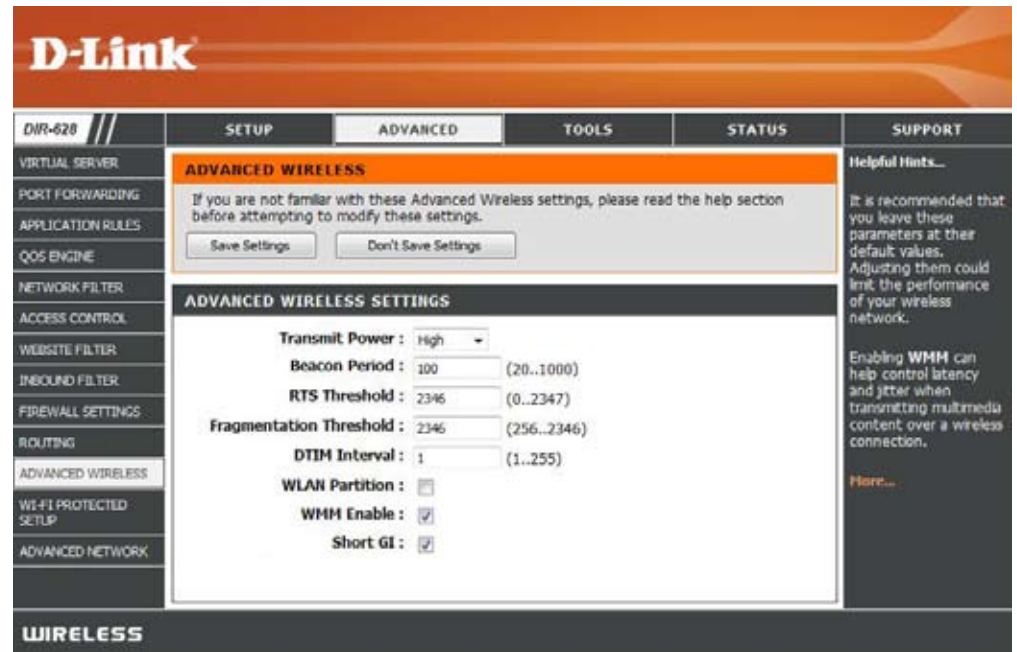
**RTS Threshold:** This value should remain at its default setting of 2346. If inconsistent data flow is a problem, only a minor modification should be made.

**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.

**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.

**WLAN Partition:** Enabling WLAN Partition prevents associated wireless clients from communicating with each other.

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



# Wi-Fi Protected Setup

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

**Enable:** Enable the Wi-Fi Protected Setup feature.

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

**PIN Settings:** A PIN is a unique number that can be used to add the router to an existing network or to create a new network. The default PIN may be printed on the bottom of the router. For extra security, a new PIN can be generated. You can restore the default PIN at any time. Only the Administrator (“admin” account) can change or reset the PIN.

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

**Reset PIN to Default:** Restore the default PIN of the router.

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

The screenshot shows the D-Link DIR-628 router's web interface. The top navigation bar includes 'D-Link', 'DIR-628', and tabs for 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The left sidebar lists various configuration options, with 'WI-FI PROTECTED SETUP' selected. The main content area is divided into three sections:

- WI-FI PROTECTED SETUP:** Contains a description of WPS, 'Save Settings' and 'Don't Save Settings' buttons, and a 'Reset to Unconfigured' button.
- PIN SETTINGS:** Shows 'Current PIN : 24681353' and buttons for 'Reset PIN to Default' and 'Generate New PIN'.
- ADD WIRELESS STATION:** Features a button labeled 'Add Wireless Device with WPS'.

The right sidebar, under 'Helpful Hints...', provides additional information:
 

- 'Enable if other wireless devices you wish to include in the local network support Wi-Fi Protected Setup.'
- 'Only "Admin" account can change security settings.'
- 'Lock Wireless Security Settings after all wireless network devices have been configured.'
- 'Click Add Wireless Device Wizard to use Wi-Fi Protected Setup to add wireless devices to the wireless network.'
- 'Here...'

**Add Wireless Station:** This Wizard helps you add wireless devices to the wireless network.

The wizard will either display the wireless network settings to guide you through manual configuration, prompt you to enter the PIN for the device, or ask you to press the configuration button on the device. If the device supports Wi-Fi Protected Setup and has a configuration button, you can add it to the network by pressing the configuration button on the device and then the on the router within 60 seconds. The status LED on the router will flash three times if the device has been successfully added to the network.

There are several ways to add a wireless device to your network. A “registrar” controls access to the wireless network. A registrar only allows devices onto the wireless network if you have entered the PIN, or pressed a special Wi-Fi Protected Setup button on the device. The router acts as a registrar for the network, although other devices may act as a registrar as well.

**Add Wireless Device Wizard:** Start the wizard.

# Advanced Network Settings

**UPnP:** To use the Universal Plug and Play (UPnP™) feature check the **Enabled UPnP** box. UPnP provides compatibility with networking equipment, software and peripherals.

**WAN Ping:** Unchecking the box will not allow the DIR-628 to respond to pings. Blocking the Ping may provide some extra security from hackers. Check the box to allow the WAN port to be “pinged”.

**Inbound Filter:** This section will list any rules that are created. You may click the **Edit** icon to change the settings or enable/disable the rule, or click the **Delete** icon to remove the rule.

**WAN Port Speed:** You may set the port speed of the Internet port to 10Mbps, 100Mbps, or auto. Some older cable or DSL modems may require you to set the port speed to 10Mbps.

**Multicast streams:** Check the box to allow multicast traffic to pass through the router from the Internet.

The screenshot displays the D-Link DIR-628 web interface for Advanced Network Settings. The main content area is divided into several sections:

- ADVANCED NETWORK:** A header section with a note: "If you are not familiar with these Advanced Network settings, please read the help section before attempting to modify these settings." Below this are "Save Settings" and "Don't Save Settings" buttons.
- UPNP:** A section titled "Universal Plug and Play (UPnP) supports peer-to-peer Plug and Play functionality for network devices." It features a checked checkbox for "Enable UPnP".
- WAN PING:** A section titled "If you enable this feature, the WAN port of your router will respond to ping requests from the Internet that are sent to the WAN IP Address." It includes an unchecked checkbox for "Enable WAN Ping Respond", a dropdown menu for "WAN Ping Inbound Filter" set to "Allow All", and a "Details" field also set to "Allow All".
- WAN PORT SPEED:** A section with a dropdown menu for "WAN Port Speed" set to "Auto 10/100Mbps".
- MULTICAST STREAMS:** A section with an unchecked checkbox for "Enable Multicast Streams".

The left sidebar contains a navigation menu with items like VIRTUAL SERVER, PORT FORWARDING, APPLICATION RULES, QOS ENGINE, NETWORK FILTER, ACCESS CONTROL, WEBSITE FILTER, INBOUND FILTER, FIREWALL SETTINGS, ROUTING, ADVANCED WIRELESS, WI-FI PROTECTED SETUP, and ADVANCED NETWORK. The right sidebar, titled "Helpful Hints...", contains text explaining UPnP interoperability, a security recommendation to enable WAN Ping, and a note about manually selecting WAN speed if automatic detection fails. A "More..." link is also present at the bottom of the hints section.

# 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. The accounts are admin and user. Admin has read/write access while user has read-only access. User can only view the settings but cannot make any changes. Only the admin account has the ability to change both admin and user account passwords.

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

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

**Gateway Name:** Enter a name for the DIR-628 router.

**Remote Management:** Remote management allows the DIR-628 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.

**Remote Admin Port:** The port number used to access the DIR-628.

**Port:** Example: `http://x.x.x.x:8080` where x.x.x.x is the Internet IP address of the DIR-628 and 8080 is the port used for the Web Management interface.

**Inbound Filter:** This section will list any rules that are created. You may click the **Edit** icon to change the settings or enable/disable the rule, or click the **Delete** icon to remove the rule.

The screenshot shows the D-Link DIR-628 web management interface. The top navigation bar includes tabs for SETUP, ADVANCED, TOOLS, STATUS, and SUPPORT. The left sidebar lists various configuration categories: ADMIN, TIME, LOGS, EMAIL SETTINGS, SYSTEM, FIRMWARE, DYNAMIC DNS, SYSTEM CHECK, and SCHEDULES. The main content area is titled "ADMINISTRATOR SETTINGS" and contains the following sections:

- ADMINISTRATOR SETTINGS:** A text box explaining that the 'admin' and 'user' accounts can access the management interface. It states that the admin has read/write access and can change passwords, while the user has read-only access. It notes that by default, there is no password configured and it is highly recommended to create a password to keep the router secure. Below this text are two buttons: "Save Settings" and "Don't Save Settings".
- ADMIN PASSWORD:** A section with the instruction "Please enter the same password into both boxes, for confirmation." It contains two input fields labeled "Password:" and "Verify Password:".
- USER PASSWORD:** A section with the instruction "Please enter the same password into both boxes, for confirmation." It contains two input fields labeled "Password:" and "Verify Password:".
- SYSTEM NAME:** A section with the label "Gateway Name:" and a text input field containing "D-Link Systems DIR-628".
- ADMINISTRATION:** A section with the following settings:
  - Enable Remote Management:
  - Remote Admin Port: 8080
  - Remote Admin Inbound Filter: Allow All
  - Details: Allow All

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

For security reasons, it is recommended that you change the password for the Admin and User accounts. Be sure to write down the new passwords to avoid having to reset the router in case they are forgotten.

Enabling Remote Management, allows you or others to change the router configuration from a computer on the Internet.

Choose a port to open for remote management.

Select a filter that controls access as needed for this admin port. If you do not see the filter you need in the list of filters, go to the Advanced Inbound Filter screen and create a new filter.

More...

# 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.

**Daylight Saving:** To select Daylight Saving time manually, select enabled or disabled, and enter a start date and an end date for daylight saving time.

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

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

**Manual:** To manually input the time, enter the values in these fields for the Year, Month, Day, Hour, Minute, and Second and then click **Set Time**. You can also click **Copy Your Computer's Time Settings**.

**D-Link**

DIR-628 // SETUP ADVANCED TOOLS STATUS SUPPORT

**TIME**

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

Save Settings Don't Save Settings

**TIME CONFIGURATION**

Current Router Time : Saturday, January 31, 2004 11:58:11 AM

Time Zone : (GMT-08:00) Pacific Time (US/Canada), Tijuana

Enable Daylight Saving :

Daylight Saving Offset : +1:00

Daylight Saving Dates :

	Month	Week	Day of Week	Time
DST Start	Apr	1st	Sun	2 am
DST End	Oct	5th	Sun	2 am

**AUTOMATIC TIME CONFIGURATION**

Enable NTP Server :

NTP Server Used : foridco.ath.cx << Select NTP Server

**SET THE DATE AND TIME MANUALLY**

Date And Time : Year 2004 Month Jan Day 31

Hour 11 Minute 57 Second 27 AM

Copy Your Computer's Time Settings

**WIRELESS**

**Helpful Hints...**

Good timekeeping is important for accurate logs and scheduled firewall rules.

More...



# SysLog

The Broadband Router keeps a running log of events and activities occurring on the Router. You may send these logs to a SysLog server on your network.

**Enable Logging to SysLog Server:** Check this box to send the router logs to a SysLog Server.

**SysLog Server IP Address:** The address of the SysLog server that will be used to send the logs. You may also select your computer from the drop-down menu (only if receiving an IP address from the router via DHCP).

The screenshot shows the D-Link DIR-628 web interface. The top navigation bar includes 'DIR-628', 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The 'SYSLOG' tab is selected. The main content area is titled 'SYSLOG' and contains the following text: 'The SysLog options allow you to send log information to a SysLog Server.' Below this text are two buttons: 'Save Settings' and 'Don't Save Settings'. Underneath is the 'SYSLOG SETTINGS' section, which includes a checkbox for 'Enable Logging To Syslog Server' (checked) and a text input field for 'Syslog Server IP Address' with the value '0.0.0.0' and a dropdown menu for 'Computer Name'. A sidebar on the right contains 'Helpful Hints...' and a paragraph explaining SysLog: 'A System Logger (syslog) is a server that collects in one place the logs from different sources. If the LAN includes a syslog server, you can use this option to send the router's logs to that server.' A 'More...' link is also present.

# Email Settings

The Email feature can be used to send the system log files, router alert messages, and firmware update notification to your email address.

**Enable Email Notification:** When this option is enabled, router activity logs are e-mailed to a designated email address.

**From Email Address:** This email address will appear as the sender when you receive a log file or firmware upgrade notification via email.

**To Email Address:** Enter the email address where you want the email sent.

**SMTP Server Address:** Enter the SMTP server address for sending email. If your SMTP server requires authentication, select this option.

**Enable Authentication:** Check this box if your SMTP server requires authentication.

**Account Name:** Enter your account for sending email.

**Password:** Enter the password associated with the account. Re-type the password associated with the account.

**On Log Full:** When this option is selected, logs will be sent via email when the log is full.

**On Schedule:** Selecting this option will send the logs via email according to schedule.

**Schedule:** This option is enabled when On Schedule is selected. You can select a schedule from the list of defined schedules. To create a schedule, go to **Tools > Schedules**.

The screenshot shows the D-Link DIR-628 web interface. The main content area is titled "EMAIL SETTINGS" and contains the following sections:

- ENABLE**: A checkbox for "Enable Email Notification".
- EMAIL SETTINGS**: Fields for "From Email Address", "To Email Address", "SMTP Server Address", "Enable Authentication", "Account Name", "Password", and "Verify Password".
- EMAIL LOG WHEN FULL OR ON SCHEDULE**: Checkboxes for "On Log Full" and "On Schedule", a "Schedule" dropdown menu (set to "Never"), and a "Details" field (set to "Server").

# System Settings

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

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

**Restore to Factory Default Settings:** 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 button above.

**Reboot Device:** Click to reboot the router.

The screenshot shows the D-Link DIR-628 web interface. The top navigation bar includes 'DIR-628', 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The 'SYSTEM SETTINGS' section is active, displaying instructions and controls for saving, loading, restoring, and rebooting the device. The 'Save To Local Hard Drive' section has a 'Save Configuration' button. The 'Load From Local Hard Drive' section has a text input field, a 'Browse...' button, and a 'Restore Configuration from File' button. The 'Restore To Factory Default' section has a 'Restore Factory Defaults' button and the text 'Restore all settings to the factory defaults.'. The 'Reboot The Device' section has a 'Reboot the Device' button. A 'Helpful Hints...' sidebar on the right provides additional instructions and a 'Here...' link. The 'WIRELESS' section is visible at the bottom of the interface.

# Update Firmware

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

**Firmware Update:** Click on **Check Online Now for Latest Firmware Version** to find out if there is an updated firmware; if so, download the new firmware to your hard drive.

**Browse:** After you have downloaded the new firmware, click **Browse** to locate the firmware update on your hard drive. Click **Upload** to complete the firmware upgrade.

**Notifications Options:** Check **Automatically Check Online for Latest Firmware Version** to have the router check automatically to see if there is a new firmware upgrade.

Check **Email Notification of Newer Firmware Version** to have the router send an email when there is a new firmware available.

The screenshot displays the D-Link web interface for a DIR-628 router. The top navigation bar includes 'DIR-628', 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The left sidebar lists various configuration options: ADMIN, TIME, SYSLOG, EMAIL SETTINGS, SYSTEM, FIRMWARE (highlighted), DYNAMIC DNS, SYSTEM CHECK, and SCHEDULES. The main content area is titled 'FIRMWARE' and contains the following sections:

- FIRMWARE:** A message stating: "There may be new firmware for your DIR-628 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 Upload button below to start the firmware upgrade." Below this message are two buttons: 'Save Settings' and 'Don't Save Settings'.
- FIRMWARE INFORMATION:** Shows 'Current Firmware Version : 1.00' and 'Current Firmware Date : 2008/03/12'. It includes a 'Check Online Now for Latest Firmware Version : Check Now' button.
- FIRMWARE UPGRADE:** Contains a note: "Note: Some firmware upgrades reset the configuration options to the factory defaults. Before performing an upgrade, be sure to save the current configuration from the Tools — System screen." Below the note, it states: "To upgrade the firmware, your PC must have a wired connection to the router. Enter the name of the firmware upgrade file, and click on the Upload button." There is an 'Upload :' text box with a 'Browse...' button and an 'Upload' button.
- FIRMWARE UPGRADE NOTIFICATION OPTIONS:** Includes two checkboxes: 'Automatically Check Online for Latest Firmware Version : ' and 'Email Notification of Newer Firmware Version : '.

The bottom of the interface features a 'WIRELESS' tab.

# 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.

**DDNS:** Dynamic Domain Name System is a method of keeping a domain name linked to a changing IP Address. Check the box to enable DDNS.

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

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

**Username or Key:** Enter the Username for your DDNS account.

**Password or Key:** Enter the Password for your DDNS account.

**Timeout:** Enter a time (in hours).

**Status:** Displays the current status - Connected or Disconnected.

The screenshot shows the D-Link DIR-628 web interface. The top navigation bar includes 'D-Link', 'DIR-628', and tabs for 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The left sidebar lists various settings categories: ADMIN, TIME, SYSLOG, EMAIL SETTINGS, SYSTEM, FIRMWARE, DYNAMIC DNS (selected), SYSTEM CHECK, and SCHEDULES. The main content area is titled 'DYNAMIC DNS' and contains the following text: '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 your host name to connect to your game server no matter what your IP address is.' Below this text is a link to 'Sign up for D-Link's Free DDNS service at [www.DLinkDDNS.com](http://www.DLinkDDNS.com)' and two buttons: 'Save Settings' and 'Don't Save Settings'. The bottom section of the main content area is a form for configuring DDNS. It includes a checkbox for 'Enable Dynamic DNS', a 'Server Address' dropdown menu (with a 'Select Dynamic DNS Server' button), a 'Host Name' text field (with an example '(e.g.: me.mydomain.net)'), and input fields for 'Username or Key', 'Password or Key', and 'Verify Password or Key'. There is also a 'Timeout' field set to '5%' (hours) and a 'Status' dropdown menu currently set to 'Disconnect'. The bottom of the page features a 'WIRELESS' section header.

# System Check

**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.



The screenshot shows the D-Link DIR-628 web interface. The top navigation bar includes 'D-Link', 'DIR-628', and tabs for 'SETUP', 'ADVANCED', 'TOOLS', 'STATUS', and 'SUPPORT'. The 'TOOLS' tab is selected, and the 'PING TEST' section is highlighted. The interface includes a sidebar menu with options like ADMIN, TIME, SYSLOG, EMAIL SETTINGS, SYSTEM, FIRMWARE, DYNAMIC DNS, SYSTEM CHECKS, and SCHEDULES. The main content area contains a 'PING TEST' section with a text input field for 'Host Name or IP Address', a 'Ping' button, and a 'Stop' button. Below this is a 'PING RESULT' section with a text input field and a 'Ping' button. A 'Helpful Hints...' section on the right provides instructions on how to use the ping test.

DIR-628	SETUP	ADVANCED	TOOLS	STATUS	SUPPORT
ADMIN	<b>PING TEST</b>				Helpful Hints...
TIME	Ping Test sends "ping" packets to test a computer on the Internet.				"Ping" checks whether a computer on the Internet is running and responding. Enter either the IP address of the target computer or enter its fully qualified domain name.
SYSLOG	<b>PING TEST</b>				None...
EMAIL SETTINGS	Host Name or IP Address : <input type="text"/> <input type="button" value="Ping"/> <input type="button" value="Stop"/>				
SYSTEM	<b>PING RESULT</b>				
FIRMWARE	Enter a host name or IP address above and click 'Ping'				
DYNAMIC DNS					
SYSTEM CHECKS					
SCHEDULES					

**WIRELESS**

# Schedules

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

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

**Time:** Check **All Day - 24hrs** or enter a start and end time for your schedule.

**Save:** Click **Save** to save your schedule. You must click Save Settings at the top for your schedules to go into effect.

**Schedule Rules List:** The list of schedules will be listed here. Click the **Edit List:** icon to make changes or click the **Delete** icon to remove the schedule.

**D-Link**

DIR-628 // SETUP ADVANCED TOOLS STATUS SUPPORT

**SCHEDULES**

The Schedule configuration option is used to manage schedule rules for various firewall and parental control features.

**ADD SCHEDULE RULE**

Name :

Day(s) :  All Week  Select Day(s)

Sun  Mon  Tue  Wed  Thu  Fri  Sat

All Day - 24 hrs :

Start Time : 12 : 0 AM (hour:minute, 12 hour time)

End Time : 12 : 0 AM (hour:minute, 12 hour time)

**SCHEDULE RULES LIST**

Name	Day(s)	Time Frame
------	--------	------------

**Helpful Hints...**

Schedules are used with a number of other features to define when those features are in effect.

Give each schedule a name that is meaningful to you. For example, a schedule for Monday through Friday from 3:00pm to 9:00pm, might be called "After School".

Click **Save** to add a completed schedule to the list below.

Click the **Edit** icon to change an existing schedule.

Click the **Delete** icon to permanently delete a schedule.

[More...](#)

**WIRELESS**

## Device Information

This page displays the current information for the DIR-628. It will display the LAN, WAN (Internet), and Wireless information.

If your Internet connection is set up for a Dynamic IP address then a **Release** button and a **Renew** button will be displayed. Use **Release** to disconnect from your ISP and use **Renew** to connect to your ISP.

If your Internet connection is set up for PPPoE, a **Connect** button and a **Disconnect** button will be displayed. Use **Disconnect** to drop the PPPoE connection and use **Connect** to establish the PPPoE connection.

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

**WAN:** Displays the MAC address and the public IP settings for the router.

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

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

**LAN Computers:** Displays computers and devices that are connected to the router via Ethernet and that are receiving an IP address assigned by the router (DHCP).

The screenshot displays the D-Link DIR-628 web interface. The main content area is titled "DEVICE INFORMATION" and contains the following sections:

- GENERAL:**
  - Time: Saturday, January 31, 2009 12:08:20 PM
  - Firmware Version: 3.00\_2009/03/12
- WAN:**
  - Connection Type: DHCP Client
  - QoS Engine: Active
  - Cable Status: Connected
  - Network Status: Disconnected
  - Connection Up Time: 2 Days, 21:28:15
  - Buttons:
  - MAC Address: 08:00:40:08:01:23
  - IP Address: 192.168.0.181
  - Subnet Mask: 255.255.255.0
  - Default Gateway: 192.168.0.1
  - Primary DNS Server: 192.168.0.1
  - Secondary DNS Server: 07.128.140.2
- LAN:**
  - MAC Address: 08:00:40:08:01:24
  - IP Address: 192.168.0.1
  - Subnet Mask: 255.255.255.0
  - DHCP Server: Enabled
- WIRELESS LAN:**
  - Wireless Radio: Enabled
  - MAC Address: 08:00:40:08:01:20:02
  - Network Name (SSID): DLink628
  - Channel: 36
  - Security Mode: WPA
  - WPA Protected Setup: Enabled (Default)
- LAN COMPUTERS:**

IP Address	Name (if any)	MAC
192.168.0.187	PHILIP	80:64:71:5e:aa:d1
192.168.0.199	PHILIP	9C:36:17:44:8a:09



# Log

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.

**What to View:** You can select the types of messages that you want to display from the log. **Firewall & Security**, **System**, and **Router Status** messages can be selected.

**View Levels:** There are three levels of message importance: **Informational**, **Warning**, and **Critical**. Select the levels that you want displayed in the log.

**Apply Log Settings:** Will filter the log results so that only the selected options appear.

**Refresh:** Updates the log details on the screen so it displays any recent activity.

**Clear:** Clears all of the log contents.

**Email Now:** This option will send a copy of the router log to the email address configured in the Tools > Email screen.

**Save Log:** This option will save the router to a log file on your computer.

**D-Link**

DIR-628 // SETUP ADVANCED TOOLS STATUS SUPPORT

**LOGS**

Use this option to view the router logs. You can define what types of events you want to view and the event levels to view. This router also has internal syslog server support so you can send the log files to a computer on your network that is running a syslog utility.

**LOG OPTIONS**

What to View :  Firewall & Security  System  Router Status

View Levels :  Critical  Warning  Informational

Apply Log Settings Now

**LOG DETAILS**

Refresh Clear Email Now Save Log

281 Log Entries:

Priority	Time	Message
[WARN]	Sat Jan 31 12:09:37 2004	Blocked packet from 192.168.69.101 to 192.168.69.101 (LAND Attack)
[INFO]	Sat Jan 31 12:01:02 2004	Above message repeated 25 times
[INFO]	Sat Jan 31 12:00:08 2004	Blocked incoming TCP packet from 64.4.23.60:443 to 192.168.69.101:49567 as RST:ACK received but there is no active connection
[WARN]	Sat Jan 31 11:56:36 2004	Blocked packet from 192.168.69.101 to 192.168.69.101 (LAND Attack)
[INFO]	Sat Jan 31 11:47:32 2004	Above message repeated 38 times
[INFO]	Sat Jan 31 11:43:56 2004	Blocked incoming TCP packet from 63.111.24.33:80 to 192.168.69.101:1202 as SYN:ACK received but there is no active connection
[WARN]	Sat Jan 31 11:43:06 2004	Blocked packet from 192.168.69.101 to 192.168.69.101 (LAND Attack)

Helpful Hints...  
Check the log frequently to detect unauthorized network usage.  
You can also have the log mailed to you periodically. Refer to Tools > Email.  
More...

# Stats

The screen below displays the Traffic Statistics. Here you can view the amount of packets that pass through the DIR-628 on both the WAN and the LAN ports. The traffic counter will reset if the device is rebooted.

**D-Link**

DIR-628 // SETUP ADVANCED TOOLS STATUS SUPPORT

DEVICE INFO LOGS STATISTICS INTERNET SESSIONS WIRELESS

**TRAFFIC STATISTICS**

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

Refresh Statistics Clear Statistics

**LAN STATISTICS**

Sent : 2495888	Received : 2922256
TX Packets Dropped : 0	RX Packets Dropped : 0
Collisions : 0	Errors : 0

**WAN STATISTICS**

Sent : 39193	Received : 53732
TX Packets Dropped : 0	RX Packets Dropped : 0
Collisions : 0	Errors : 0

**WIRELESS STATISTICS**

Sent : 428553	Received : 195327
TX Packets Dropped : 0	RX Packets Dropped : 0
	Errors : 16

Helpful Hints... This is a summary of the number of packets that have passed between the WAN and the LAN since the router was last initialized. More...

**WIRELESS**

# Internet Sessions

The Internet Sessions page displays full details of active Internet sessions through your router. An Internet session is a conversation between a program or application on a LAN-side computer and a program or application on a WAN-side computer.

**Local:** The IP address and, where appropriate, port number of the local application.

**NAT:** The port number of the LAN-side application as viewed by the WAN-side application.

**Internet:** The IP address and, where appropriate, port number of the application on the Internet.

**Protocol:** The communications protocol used for the conversation.

**State:** State for sessions that use the TCP protocol:

**NO: None** -- This entry is used as a placeholder for a future connection that may occur.

**SS: SYN Sent** -- One of the systems is attempting to start a connection.

**EST: Established** -- the connection is passing data.

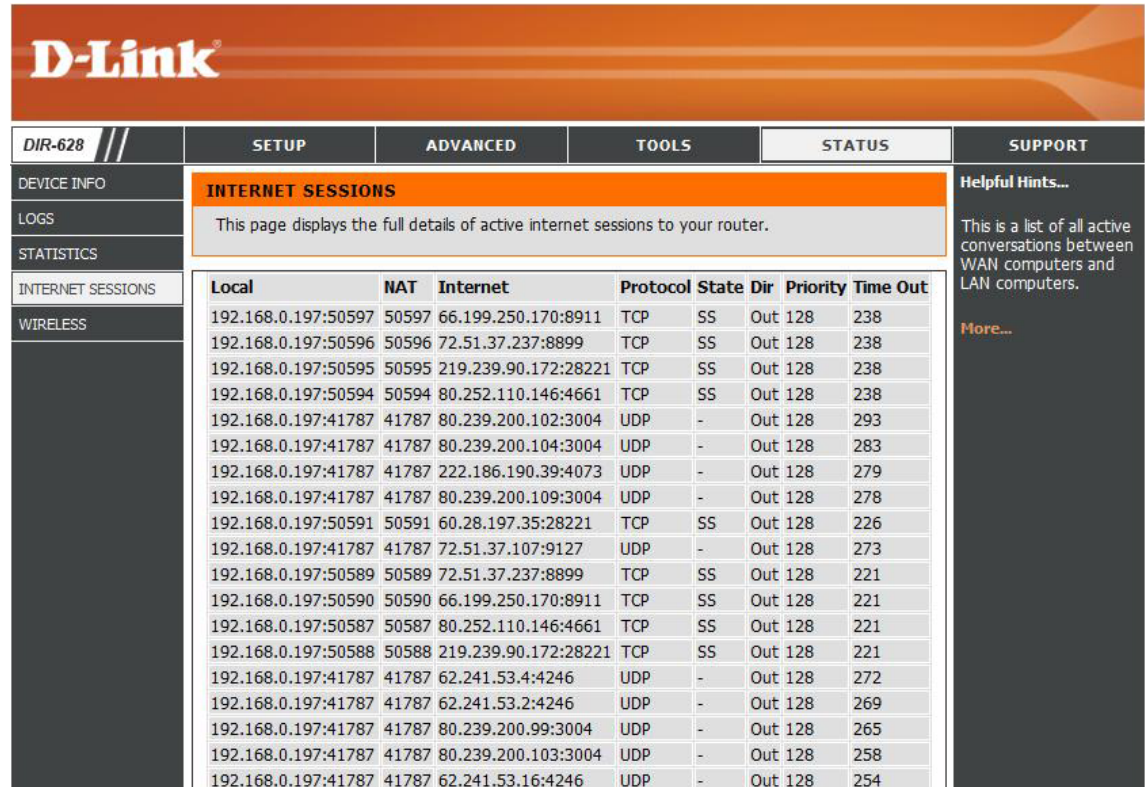
**FW: FIN Wait** -- The client system has requested that the connection be stopped.

**CW: Close Wait** -- The server system has requested that the connection be stopped.

**TW: Time Wait** -- Waiting for a short time while a connection that was in FIN Wait is fully closed.

**LA: Last ACK** -- Waiting for a short time while a connection that was in Close Wait is fully closed.

**CL: Closed** -- The connection is no longer active but the session is being tracked in case there are any retransmitted packets still pending.



D-Link									
DIR-628	SETUP	ADVANCED	TOOLS	STATUS	SUPPORT				
DEVICE INFO	<b>INTERNET SESSIONS</b>							Helpful Hints... This is a list of all active conversations between WAN computers and LAN computers. <a href="#">More...</a>	
LOGS	This page displays the full details of active internet sessions to your router.								
STATISTICS									
INTERNET SESSIONS	<b>Local</b>	<b>NAT</b>	<b>Internet</b>	<b>Protocol</b>	<b>State</b>	<b>Dir</b>	<b>Priority</b>		<b>Time Out</b>
WIRELESS									
	192.168.0.197:50597	50597	66.199.250.170:8911	TCP	SS	Out 128	238		
	192.168.0.197:50596	50596	72.51.37.237:8899	TCP	SS	Out 128	238		
	192.168.0.197:50595	50595	219.239.90.172:28221	TCP	SS	Out 128	238		
	192.168.0.197:50594	50594	80.252.110.146:4661	TCP	SS	Out 128	238		
	192.168.0.197:41787	41787	80.239.200.102:3004	UDP	-	Out 128	293		
	192.168.0.197:41787	41787	80.239.200.104:3004	UDP	-	Out 128	283		
	192.168.0.197:41787	41787	222.186.190.39:4073	UDP	-	Out 128	279		
	192.168.0.197:41787	41787	80.239.200.109:3004	UDP	-	Out 128	278		
	192.168.0.197:50591	50591	60.28.197.35:28221	TCP	SS	Out 128	226		
	192.168.0.197:41787	41787	72.51.37.107:9127	UDP	-	Out 128	273		
	192.168.0.197:50589	50589	72.51.37.237:8899	TCP	SS	Out 128	221		
	192.168.0.197:50590	50590	66.199.250.170:8911	TCP	SS	Out 128	221		
	192.168.0.197:50587	50587	80.252.110.146:4661	TCP	SS	Out 128	221		
	192.168.0.197:50588	50588	219.239.90.172:28221	TCP	SS	Out 128	221		
	192.168.0.197:41787	41787	62.241.53.4:4246	UDP	-	Out 128	272		
	192.168.0.197:41787	41787	62.241.53.2:4246	UDP	-	Out 128	269		
	192.168.0.197:41787	41787	80.239.200.99:3004	UDP	-	Out 128	265		
	192.168.0.197:41787	41787	80.239.200.103:3004	UDP	-	Out 128	258		
	192.168.0.197:41787	41787	62.241.53.16:4246	UDP	-	Out 128	254		

**Dir:** The direction of initiation of the conversation:

**Out** - Initiated from LAN to WAN.

**In** - Initiated from WAN to LAN.

**Priority:** The preference given to outbound packets of this conversation by the QoS Engine logic. Smaller numbers represent higher priority.

**Time Out:** The number of seconds of idle time until the router considers the session terminated. The initial value of Time Out depends on the type and state of the connection.

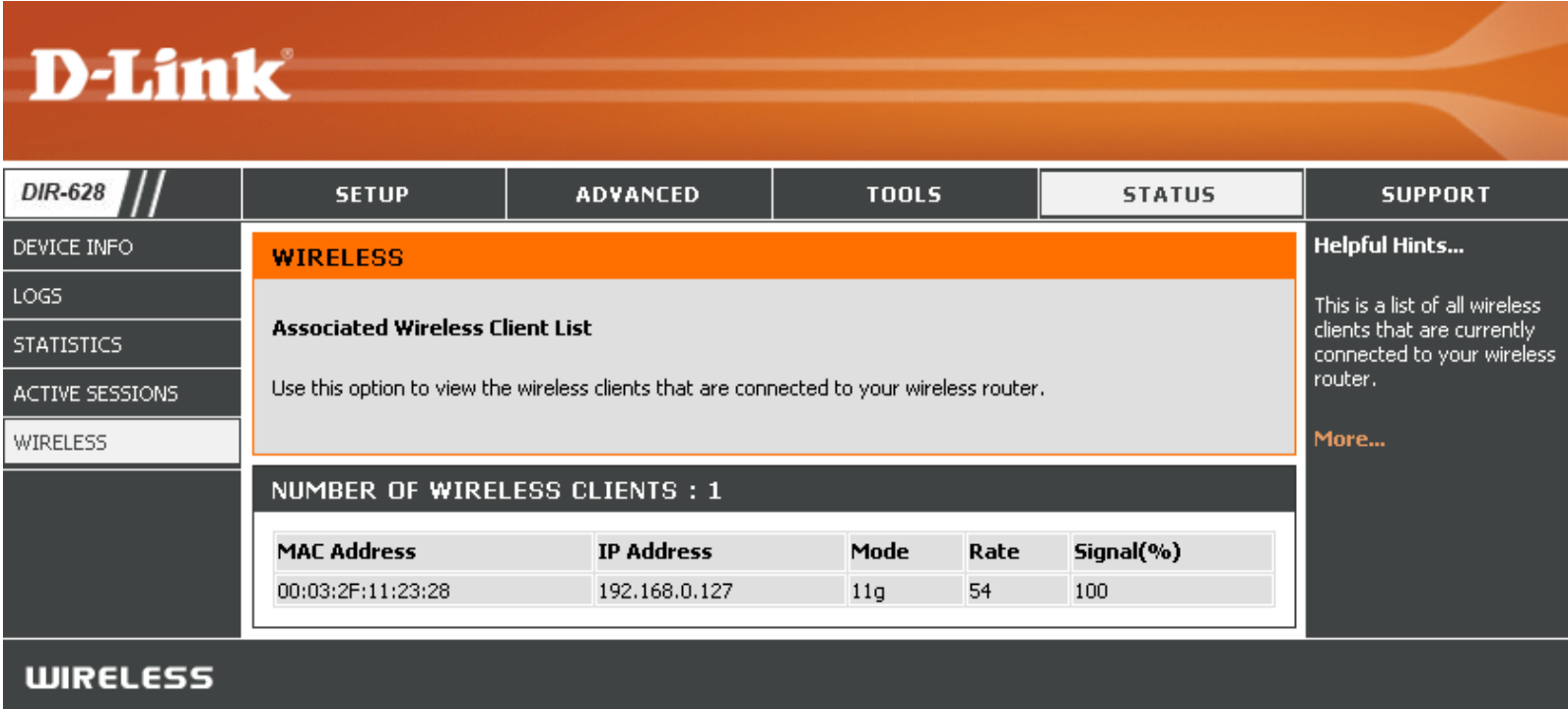
**300 seconds** - UDP connections.

**240 seconds** - Reset or closed TCP connections. The connection does not close instantly so that lingering packets can pass or the connection can be re-established.

**7800 seconds** - Established or closing TCP connections.

# Wireless

The wireless client table displays a list of current connected wireless clients. This table also displays the connection time and MAC address of the connected wireless clients.



The screenshot shows the D-Link DIR-628 web interface. The top navigation bar includes tabs for SETUP, ADVANCED, TOOLS, STATUS, and SUPPORT. The left sidebar contains menu items: DEVICE INFO, LOGS, STATISTICS, ACTIVE SESSIONS, and WIRELESS. The main content area is titled "WIRELESS" and features an "Associated Wireless Client List" section with the instruction: "Use this option to view the wireless clients that are connected to your wireless router." Below this, it states "NUMBER OF WIRELESS CLIENTS : 1" and displays a table with the following data:

MAC Address	IP Address	Mode	Rate	Signal(%)
00:03:2F:11:23:28	192.168.0.127	11g	54	100

On the right side of the interface, 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." and a "More..." link.

# Support

The screenshot displays the D-Link DIR-628 web interface. At the top, the D-Link logo is visible. Below it, a navigation bar contains the following tabs: DIR-628, SETUP, ADVANCED, TOOLS, STATUS, and SUPPORT. The SUPPORT tab is currently 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 HELP**
  - Internet Connection
  - WAN
  - Wireless
  - Network Settings
- ADVANCED HELP**
  - Virtual Server
  - Port Forwarding
  - Application Rules
  - QoS Engine
  - Access Control
  - Website Filter
  - Network Filter
  - Firewall Settings
  - Inbound Filter
  - Advanced Wireless
  - WiFi Protected Setup
  - Advanced Network
- TOOLS HELP**
  - Admin
  - Time
  - System
  - Email Settings
  - System
  - Firmware
  - Dynamic DNS
  - System Check
  - Schedules
- STATUS HELP**
  - Device Info
  - Wireless
  - Logs
  - Statistics
  - Internet Sessions

At the bottom of the interface, the word 'WIRELESS' is displayed in a dark bar.

# Wireless Security

This section will show you the different levels of security you can use to protect your data from intruders. The DIR-655 offers the following types of security:

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

## What is WPA?

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

The 2 major improvements over WEP:

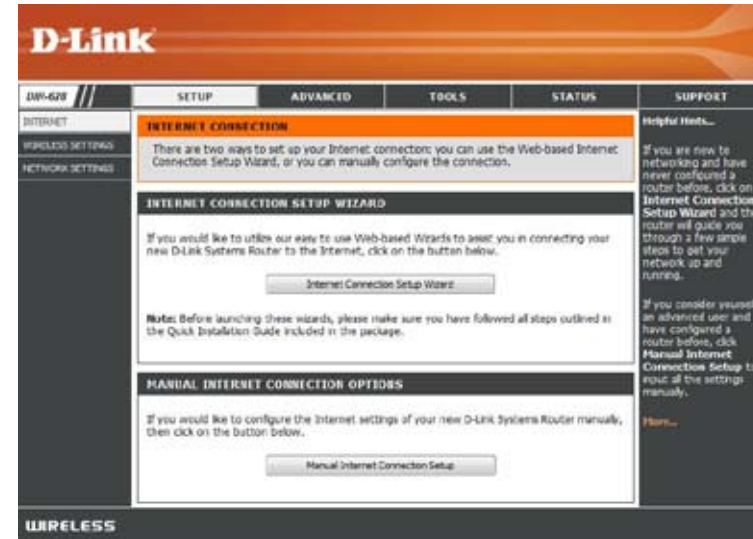
- Improved data encryption through the Temporal Key Integrity Protocol (TKIP). TKIP scrambles the keys using a hashing algorithm and, by adding an integrity-checking feature, ensures that the keys haven't been tampered with. WPA2 is based on 802.11i and uses Advanced Encryption Standard (AES) instead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

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

# Wireless Security Setup Wizard

To run the security wizard, click on Setup at the top and then click **Launch Wireless Security Setup Wizard**.



Type your desired wireless network name (SSID).

**Automatically:** Select this option to automatically generate the router's network key and click **Next**.

**Manually:** Select this option to manually enter your network key and click **Next**.

**STEP 1: WELCOME TO THE D-LINK WIRELESS SECURITY SETUP WIZARD**

Give your network a name, using up to 32 characters.

Network Name (SSID) :

Automatically assign a network key (Recommended)

To prevent outsiders from accessing your network, the router will automatically assign a security (also called WEP or WPA key) to your network.

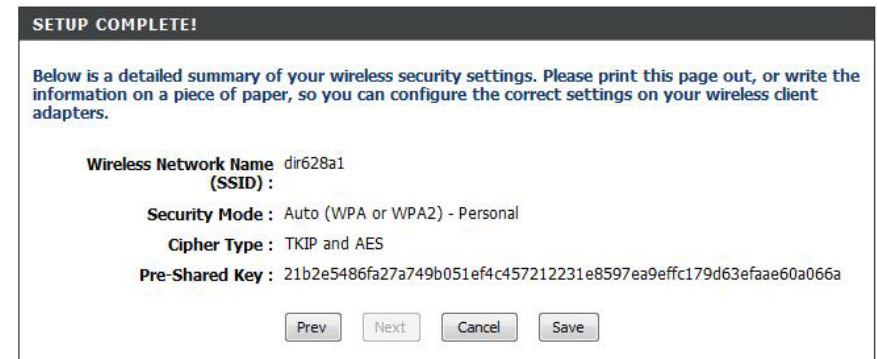
Manually assign a network key  
Use this options if you prefer to create our own key.

Use WPA encryption instead of WEP(WPA is stronger than WEP and all D-Link wireless client adapters support WPA)

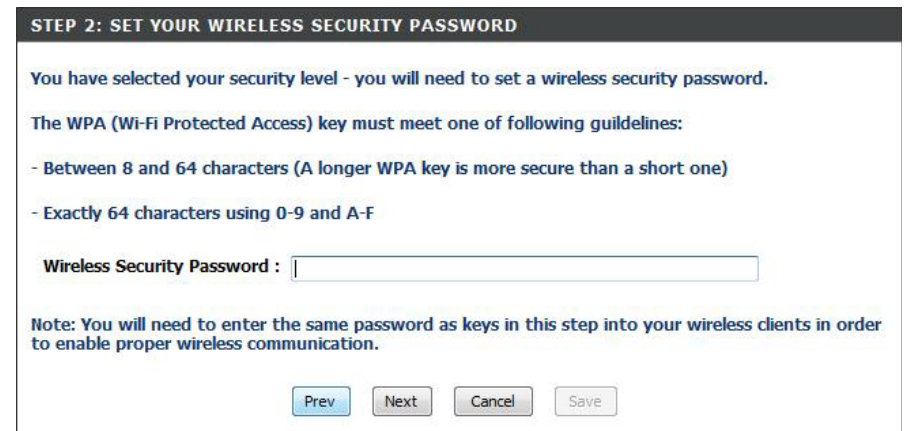
**Note: All D-Link wireless adapters currently support WPA.**



If you selected **Automatically**, the summary window will display your settings. Write down the security key and enter this on your wireless clients. Click **Save** to save your settings.

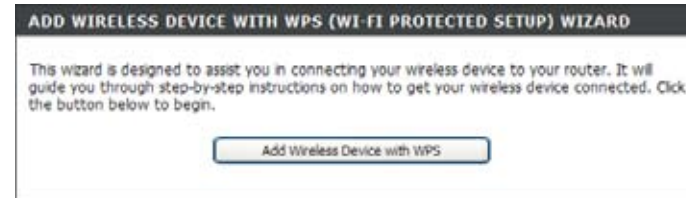


If you selected **Manually**, the following screen will appear.



# Add Wireless Device with WPS Wizard

From the **Basic** > **Wizard** screen, click **Add Wireless Device with WPS**.



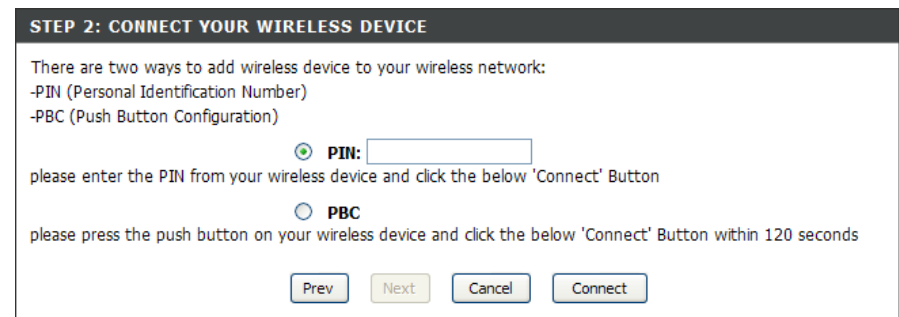
Select **Auto** to add a wireless client using WPS (Wi-Fi Protected Setup). Once you select **Auto** and click **Connect**, you will have a 120 second time limit to apply the settings to your wireless client(s) and successfully establish a connection.

If you select **Manual**, a settings summary screen will appear. Write down the security key and enter this on your wireless clients.



**PIN:** Select this option to use PIN method. In order to use this method you must know the wireless client's 8 digit PIN and click **Connect**.

**PBC:** Select this option to use PBC (Push Button) method to add a wireless client. Click **Connect**.



# 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.
2. Next to *Security Mode*, select **WPA-Personal**.
3. Next to *WPA Mode*, select **Auto**, **WPA2 Only**, or **WPA Only**. Use **Auto** if you have wireless clients using both WPA and WPA2.
4. Next to *Cypher Type*, select **TKIP and AES**, **TKIP**, or **AES**.
5. Next to *Group Key Update Interval*, enter the amount of time before the group key used for broadcast and multicast data is changed (3600 is default).
6. 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.
7. 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.

The screenshot displays the 'WIRELESS SECURITY MODE' configuration page. It includes a header section with a title and explanatory text. Below this, there are three main configuration sections: 'WPA', 'PRE-SHARED KEY', and 'WPA Mode'. Each section contains specific settings and a text input field for the key.

**WIRELESS SECURITY MODE**

To protect your privacy you can configure wireless security features. This device supports two wireless security modes including: WPA-Personal, and WPA-Enterprise. WPA provides a higher level of security. WPA-Personal does not require an authentication server. The WPA Enterprise option requires an external RADIUS server.

Security Mode : WPA-Personal

**WPA**

WPA requires stations to use high grade encryption and authentication. For legacy compatibility, use WPA or WPA2 mode. This mode uses WPA for legacy clients while maintaining higher security with stations that are WPA2 capable. The strongest cipher that the client supports will be used. For best security, use WPA2 Only mode. In this mode, legacy stations are not allowed access with WPA security. The AES cipher will be used across the wireless network to ensure best security.

WPA Mode : Auto (WPA or WPA2)

Cipher Type : TKIP and AES

Group Key Update Interval : 3600 (seconds)

**PRE-SHARED KEY**

Pre-Shared Key : .....

# Configure WPA-Enterprise (RADIUS)

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.
2. Next to *Security Mode*, select **WPA-Enterprise**.
3. Next to *WPA Mode*, select **Auto**, **WPA2 Only**, or **WPA Only**. Use **Auto** if you have wireless clients using both WPA and WPA2.
4. Next to *Cypher Type*, select **TKIP and AES**, **TKIP**, or **AES**.
5. Next to *Group Key Update Interval*, enter the amount of time before the group key used for broadcast and multicast data is changed (3600 is default).
6. Next to *Authentication Timeout*, enter the amount of time before a client is required to re-authenticate (60 minutes is default).
7. Next to *RADIUS Server IP Address* enter the IP Address of your RADIUS server.

**WIRELESS SECURITY MODE**

To protect your privacy you can configure wireless security features. This device supports two wireless security modes including: WPA-Personal, and WPA-Enterprise. WPA provides a higher level of security. WPA-Personal does not require an authentication server. The WPA-Enterprise option requires an external RADIUS server.

**Security Mode:**

---

**WPA**

WPA requires stations to use high grade encryption and authentication. For legacy compatibility, use **WPA or WPA2** mode. This mode uses WPA for legacy clients while maintaining higher security with stations that are WPA2 capable. The strongest cipher that the client supports will be used. For best security, use **WPA2 Only** mode. In this mode, legacy stations are not allowed access with WPA security. The AES cipher will be used across the wireless network to ensure best security.

**WPA Mode:**

**Cipher Type:**

**Group Key Update Interval:**  (seconds)

---

**EAP (802.1X)**

When WPA enterprise is enabled, the router uses EAP (802.1x) to authenticate clients via a remote RADIUS server.

**Authentication Timeout:**  (minutes)

**RADIUS server IP Address:**

**RADIUS server Port:**

**RADIUS server Shared Secret:**

**MAC Address Authentication:**

[Advanced >>](#)

8. Next to *RADIUS Server Port*, enter the port you are using with your RADIUS server. 1812 is the default port.
9. Next to *RADIUS Server Shared Secret*, enter the security key.
10. If the *MAC Address Authentication* box is selected then the user will need to connect from the same computer whenever logging into the wireless network.
11. Click **Advanced** to enter settings for a secondary RADIUS Server.
12. Click **Apply Settings** to save your settings.

### EAP (802.1X)

When WPA enterprise is enabled, the router uses EAP (802.1x) to authenticate clients via a remote RADIUS server.

Authentication Timeout :  (minutes)

RADIUS server IP Address :

RADIUS server Port :

RADIUS server Shared Secret :

MAC Address Authentication :

[<< Advanced](#)

Optional backup RADIUS server :

Second RADIUS server IP Address :

Second RADIUS server Port :

Second RADIUS server Shared Secret :

Second MAC Address Authentication :

# 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.

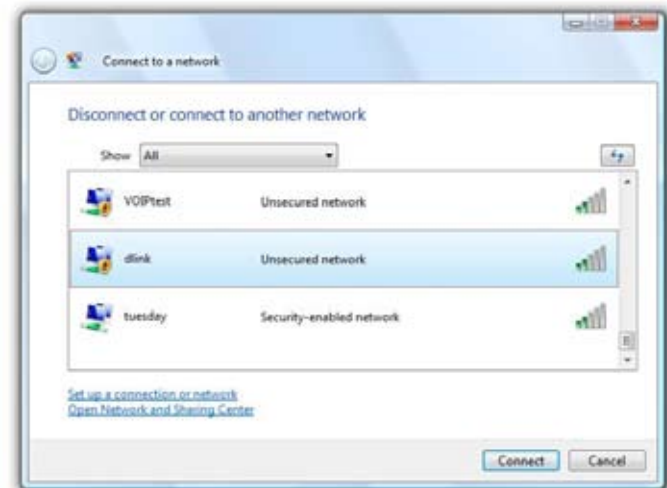
or

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.



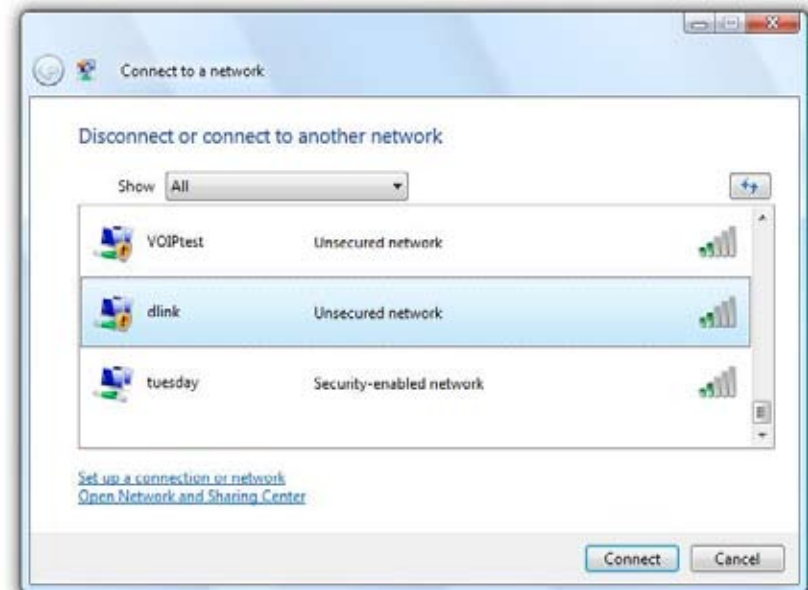
# Configure Wireless Security

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.





# Connect Using WCN 2.0 in Windows Vista™

The router supports Wi-Fi protection, referred to as WCN 2.0 in Windows Vista™. The following instructions for setting this up depends on whether you are using Windows Vista™ to configure the router or third party software.

When you first set up the router, Wi-Fi protection is disabled and unconfigured. To enjoy the benefits of Wi-Fi protection, the router must be both enabled and configured. There are three basic methods to accomplish this: use Windows Vista's built-in support for WCN 2.0, use software provided by a third party, or manually configure.

If you are running Windows Vista™, log into the router and click the **Enable** checkbox in the **Basic > Wireless** section. Use the Current PIN that is displayed on the **Advanced > Wi-Fi Protected Setup** section or choose to click the **Generate New PIN** button or **Reset PIN to Default** button.

For additional information, please refer to page 46.



If you are using third party software to set up Wi-Fi Protection, carefully follow the directions. When you are finished, proceed to the next section to set up the newly-configured router.

# Connect to a Wireless Network Using Windows® XP

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

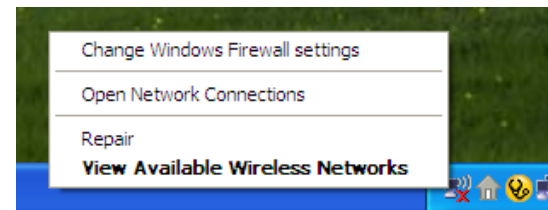
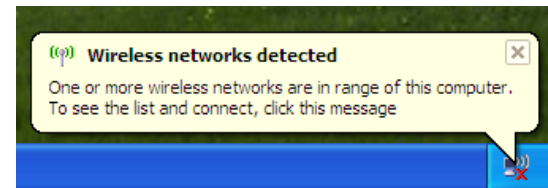
If you receive the **Wireless Networks Detected** bubble, click on the center of the bubble to access the utility.

or

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

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

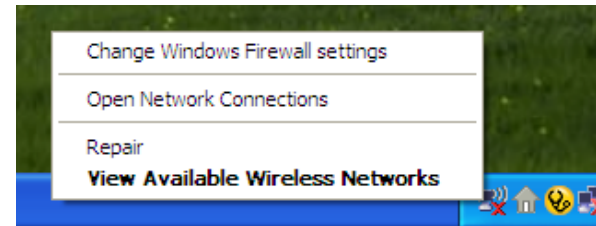
If you get a good signal but cannot access the Internet, check you TCP/IP settings for your wireless adapter. Refer to the **Networking Basics** section in this manual for more information.



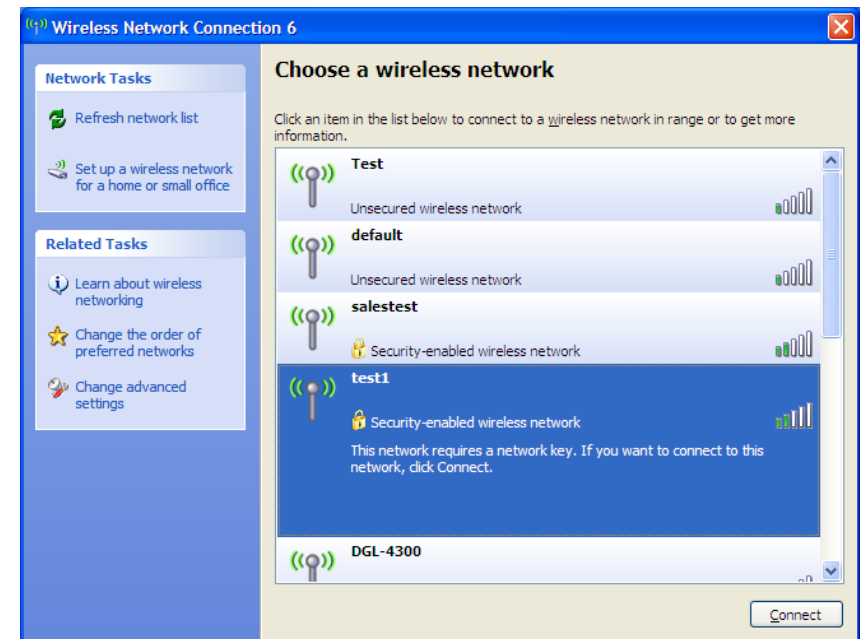
# Configure WPA-PSK

It is recommended to enable encryption 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 passphrase being used.

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

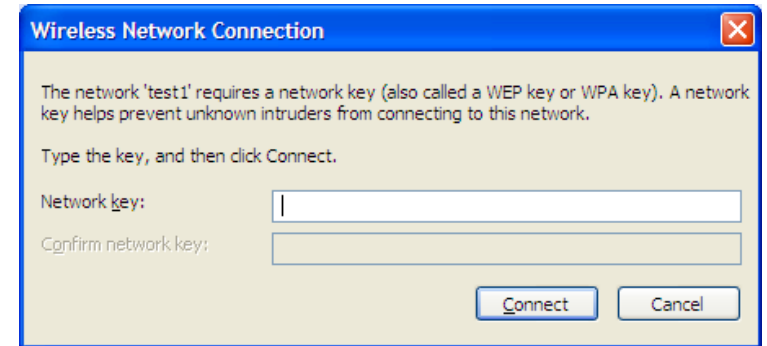


2. Highlight the wireless network (SSID) you would like to connect to and click **Connect**.



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

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



# Troubleshooting

This chapter provides solutions to problems that can occur during the installation and operation of the DIR-628. Read the following descriptions if you are having problems. (The examples below are illustrated in Windows® XP. If you have a different operating system, the screenshots on your computer will look similar to the following examples.)

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

When entering the IP address of the D-Link 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 emails when connecting through my router?

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

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

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

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

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

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

```
C:\>ping yahoo.com -f -l 1482
Pinging yahoo.com [66.94.234.13] with 1482 bytes of data:
Packet needs to be fragmented but DF set.
Packet needs to be fragmented but DF set.
Packet needs to be fragmented but DF set.
Packet needs to be fragmented but DF set.

Ping statistics for 66.94.234.13:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping yahoo.com -f -l 1472
Pinging yahoo.com [66.94.234.13] with 1472 bytes of data:
Reply from 66.94.234.13: bytes=1472 time=93ms TTL=52
Reply from 66.94.234.13: bytes=1472 time=109ms TTL=52
Reply from 66.94.234.13: bytes=1472 time=125ms TTL=52
Reply from 66.94.234.13: bytes=1472 time=203ms TTL=52

Ping statistics for 66.94.234.13:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 93ms, Maximum = 203ms, Average = 132ms

C:\>
```

You should start at 1472 and work your way down by 10 each time. Once you get a reply, go up by 2 until you get a fragmented packet. Take that value and add 28 to the value to account for the various TCP/IP headers. For example, 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 email. If changing the MTU does not resolve the problem, continue changing the MTU in increments of ten.



# Wireless Basics

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

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

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

Under many circumstances, it may be desirable for mobile network devices to link to a conventional Ethernet LAN in order to use servers, printers or an Internet connection supplied through the wired LAN. A Wireless 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 email, instant message, and etc
- Gets rid of the cables around the house
- Simple and easy to use

### **Small Office and Home Office**

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

## **Where is wireless used?**

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

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

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

## **Tips**

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

### **Centralize your router or Access Point**

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

### **Eliminate Interference**

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

## **Security**

Don't let 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-628 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 new D-Link adapter, by default, the TCP/IP settings should be set to obtain an IP address from a DHCP server (i.e. wireless router) automatically. To verify your IP address, please follow the steps below.

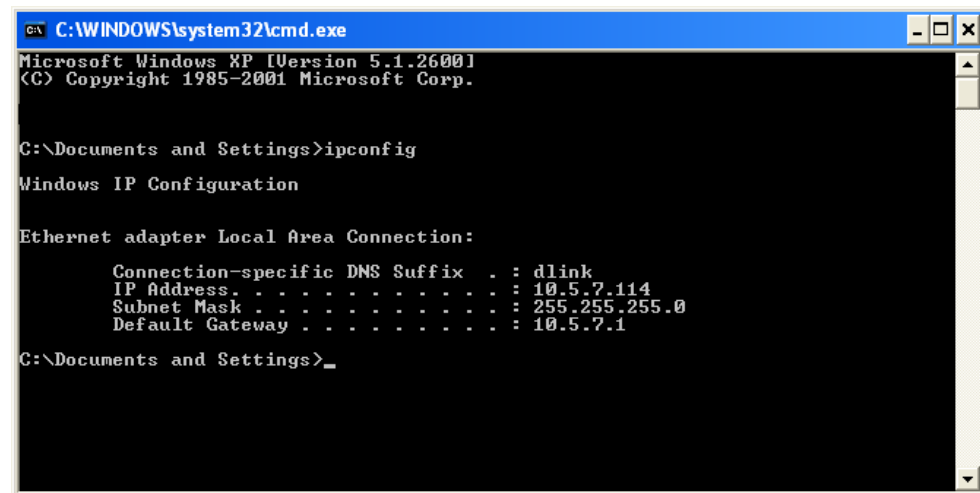
Click on **Start > Run**. In the run box type **cmd** and click **OK**. (Windows® Vista™ users type **cmd** in the **Start Search** box.)

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.

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



```
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 D-Link network adapter and select **Properties.**

### Step 3

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

### Step 4

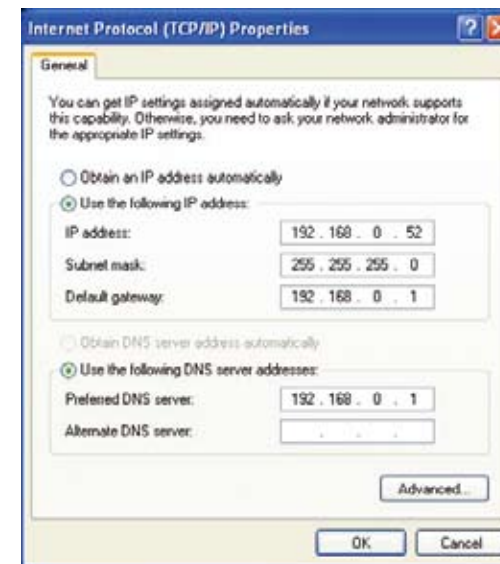
Click **Use the following IP address** and enter an IP address that is on the same subnet as your network or the LAN IP address on your router.

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

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

### Step 5

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



# Technical Specifications

## Standards

- IEEE 802.11n (draft 2.0)
- IEEE 802.11a
- IEEE 802.11g
- IEEE 802.11b
- IEEE 802.3
- IEEE 802.3u

## Security

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

## Wireless Signal Rates<sup>1</sup>

### IEEE 802.11n draft 2.0 (HT20/HT40)

- 144.4Mbps (300)
- 117Mbps (243)
- 78Mbps (162)
- 58.5Mbps (121.5)
- 39Mbps (81)
- 19.5Mbps (40.5)
- 6.5Mbps (13.5)
- 130Mbps (270)
- 104Mbps (216)
- 66Mbps (135)
- 52Mbps (108)
- 26Mbps (54)
- 12Mbps (27)

### IEEE 802.11a

- 54Mbps
- 36Mbps
- 18Mbps
- 11Mbps
- 6Mbps
- 48Mbps
- 24Mbps
- 12Mbps
- 9Mbps

### IEEE 802.11g

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

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

### North America

- 2.412GHz to 2.462GHz (802.11g/n)
- 5.15GHz to 5.825GHz (802.11a/n)<sup>3</sup>

### General Europe

- 2.412GHz to 2.472GHz (802.11g/n)
- 5.15GHz to 5.725GHz (802.11a/n)

## External Antenna

- Three (3) 2-dBi Gain Detachable Dipole Antennas with reverse SMA connectors

## Operating Temperature

- 32°F to 131°F ( 0°C to 55°C)

## Humidity

- 95% maximum (non-condensing)

## Safety & Emissions

- FCC
- CE
- IC
- C-Tick

## Dimensions

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

<sup>1</sup> Maximum wireless signal rate derived from IEEE Standard 802.11a, 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.

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

<sup>3</sup> The DIR-628 doesn't include 5.25-5.35GHz & 5.47-5.725GHz in some regions.



**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.

We declare that the product is limited in CH1~CH11 by specified firmware controlled in the USA.

### **IC statement**

Operation is subject to the following two conditions:

- 1) This device may not cause interference and
- 2) This device must accept any interference, including interference that may cause undesired operation of the device.

This device has been designed to operate with an antenna having a maximum gain of 2 dBi. Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

### **IMPORTANT NOTE:**

#### **IC Radiation Exposure Statement:**

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. 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.

### **Règlement d'Industry Canada**

Les conditions de fonctionnement sont sujettes à deux conditions:

- 1) Ce périphérique ne doit pas causer d'interférence et.
- 2) Ce périphérique doit accepter toute interférence, y compris les interférences pouvant perturber le bon fonctionnement de ce périphérique.

The Class [B] digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulation.

Cet appareil numérique de la class [B] respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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