USER MANUAL

DIR-685

VERSION 1.0

D-Link®

WIRELESS

Preface

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

Manual Revisions

Revision	Date	Description
1.0	December 5, 2008	DIR-685 Revision A1 with firmware version 1.00
1.1	February 26, 2009	Updated with minor changes
1.2	March 12, 2009	Updated with minor changes

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Table of Contents

Package Contents

D-Link DIR-685 Xtreme N™ Storage Router	
Power Adapter	
Ethernet Cable	
CD-ROM	
Stand	

Note: Using a power supply with a different voltage rating than the one included with the DIR-685 will cause damage and void the warranty.

System Requirements

Network Requirements	• An Ethernet-based Cable or DSL modem • IEEE 802.11n-draft or 802.11g wireless clients • 10/100/1000 Ethernet
Web-based Configuration Utility Requirements	**Computer with the following:** • Windows®, Macintosh, or Linux-based operating system • An installed Ethernet adapter **Browser Requirements:** • Internet Explorer 6.0 or higher • Mozilla 1.7.12 or higher • Firefox 2.0 or higher • Safari 1.0 or higher (with Java 1.3.1 or higher) • Flock 0.7.14 or higher • Opera 6.0 or higher **Windows® Users:** Make sure you have the latest version of Java installed. Visit www.java.com to download the latest version.
CD Installation Wizard Requirements	**Computer with the following:** • Windows® XP with Service Pack 2 or Vista • An installed Ethernet adapter • CD-ROM drive

Introduction

Thank you for purchasing the D-Link DIR-685 Xtreme N™ Storage Router. The DIR-685 is a draft 802.11n compliant device that delivers a high speed performance that is 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, videos, printers, and network storage throughout your home. Connect the Xtreme N™ Storage Router to a cable or DSL modem and share your high-speed Internet access with everyone on your 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.

Powered by Xtreme N™ technology, this high performance router provides superior coverage while reducing dead spots. The Xtreme N™ Storage Router is designed for use in bigger homes and for users who demand high performance networking. The Xtreme N™ Storage 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 WEP standards ensure that you'll be able to use the best possible encryption method, regardless of your client devices. In addition, this Xtreme N™ Storage Router utilizes dual active firewalls (SPI and NAT) to prevent potential attacks from across the Internet.

Features

- **Faster Wireless Networking** - The DIR-685 provides up to a 300Mbps* wireless connection to 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 that are up to 650% faster than 802.11g.

- **Compatible with 802.11g Devices** - The DIR-685 is still fully compatible with the IEEE 802.11g standard, so it can connect with existing 802.11b/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.

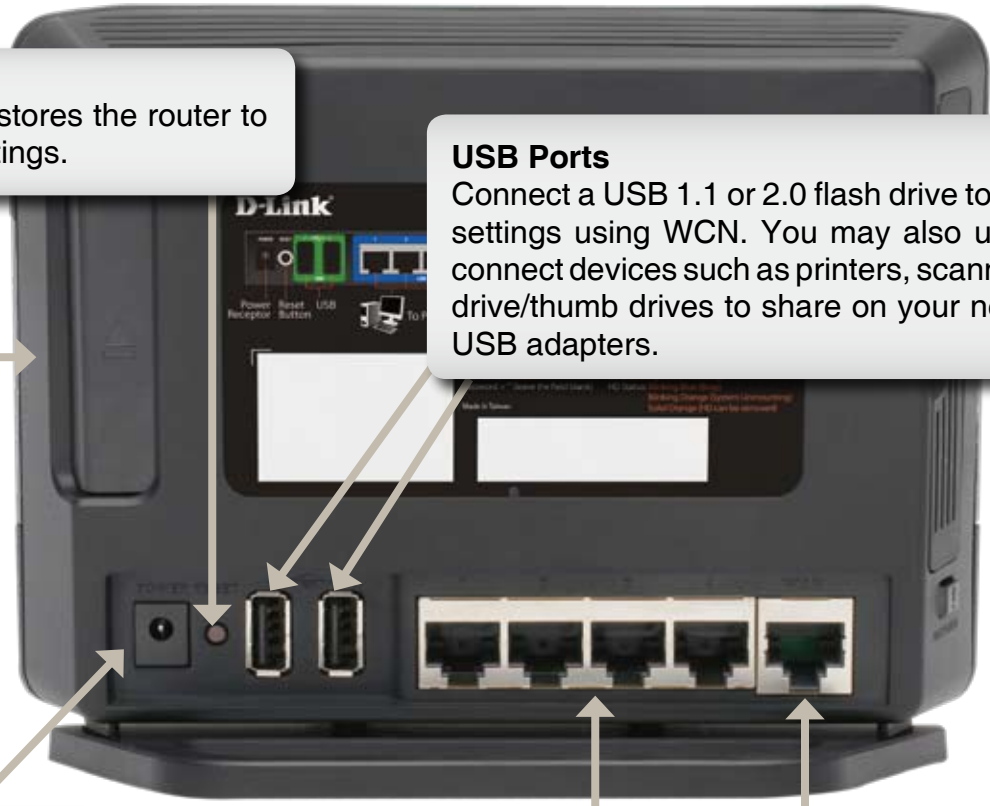
    - **Filter Scheduling** - These filters can be scheduled to be active on certain days or for a duration of hours or minutes.

    - **Secure Multiple/Concurrent Sessions** - The DIR-685 can pass through VPN sessions. It supports multiple and concurrent IPSec and PPTP sessions, so users behind the DIR-685 can securely access corporate networks.

- **User-friendly Setup Wizard** - Through its easy-to-use Web-based user interface, the DIR-685 lets you control what information is accessible to those on the wireless network, whether from the Internet or from your company's server. Configure your router to your specific settings within minutes.

* Maximum wireless signal rate derived from IEEE Standard 802.11g, and 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



Reset
Pressing the Reset button restores the router to its original factory default settings.

USB Ports
Connect a USB 1.1 or 2.0 flash drive to configure the wireless settings using WCN. You may also use the USB port(s) to connect devices such as printers, scanners, and USB external drive/thumb drives to share on your network, or connect 3G USB adapters.

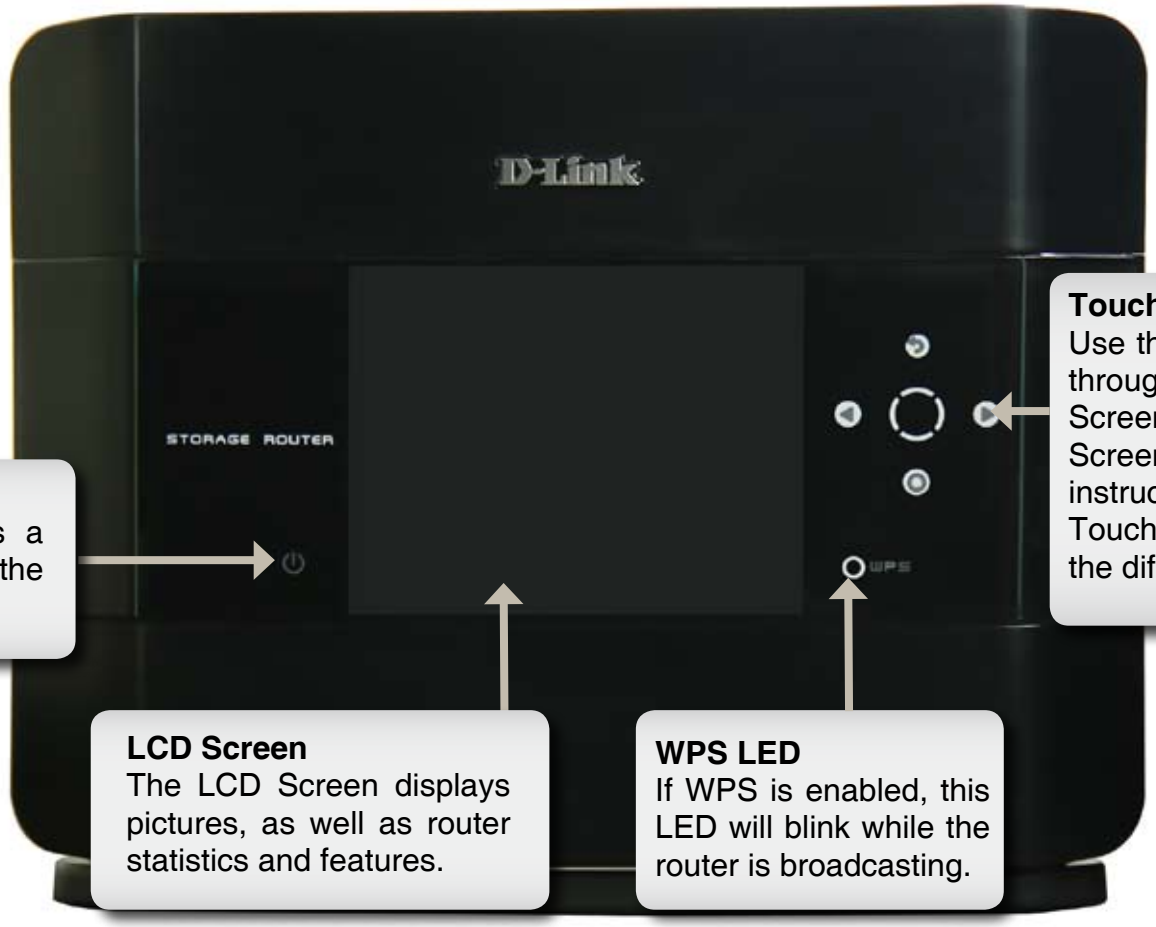
Eject Button
Press to eject the hard drive.

Power Receptor
The supplied power adapter connects to this socket.

LAN Ports (1-4)
Connect Ethernet devices such as computers, switches, and hubs to the Gigabit ports.

WAN Port
The auto MDI/MDIX WAN/Internet port connects the Ethernet cable to the cable or DSL modem.

Hardware Overview
Front View



Power LED
A solid light indicates a proper connection to the power supply.

LCD Screen
The LCD Screen displays pictures, as well as router statistics and features.

WPS LED
If WPS is enabled, this LED will blink while the router is broadcasting.

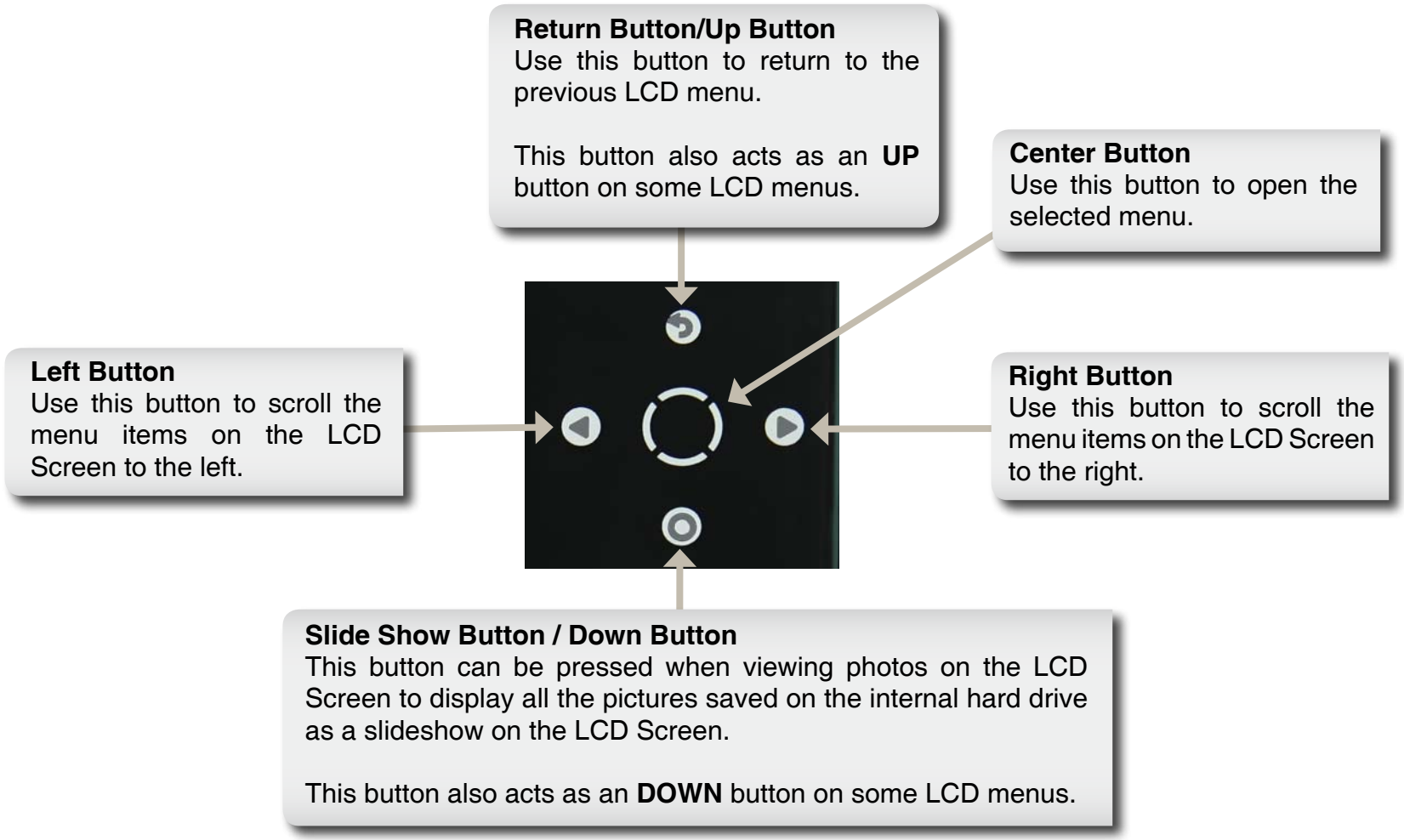
Touch Pad
Use the Touch Pad to navigate through the options on the LCD Screen. See the “Using the LCD Screen” section (page 8) for instructions on how to use the Touch Pad to navigate through the different LCD Screens.

Hardware Overview
Side View

Hardware Overview
Using the LCD Screen

The DIR-685 features an LCD Screen that can be used to display router statistics and change some basic settings.

Use the touch pad buttons to control the LCD Screen as indicated below:



The following screens can be viewed on the LCD Screen using the Touch Pad buttons:

- **Time / Date** - The router displays the date and time when the device has been left idle for the amount of time specified in the **Setup > LCD Setup** configuration screen.
- **Router Statistics** - The Router Statistics screen displays the send/receive rates of the different router interfaces.
- **Status** - The following screens can be viewed after selecting the Status screen:
    - **General Router Info** - Displays the Model Name, Hardware Version, Firmware Version, and System Up Time of the Router. The **New Firmware** field informs the user if there is a new firmware version available from the D-Link website.
    - **Internet Status** - Displays the Internet Connection Type, Cable Status, Network Status, Connection Time, MAC Address, IP Address, Subnet Mask, and Gateway of the Internet Connection.
    - **Wired Status** - Displays the MAC Address, IP Address, Subnet Mask, DHCP Server, and the status of each Ethernet connection on the Router.
    - **Wireless Status** - Displays the Wireless Radio status, Wireless Channel, SSID of the Host network, SSID of the Guest network, the enabled 802.11 modes, the Security mode enabled for the Host Zone, the Security mode enabled for the Guest Zone, MAC Address of the Wireless Radio and the WPS PIN number.
    - **Hard Disk Status** - Displays information about the Hard Drive installed in the 2.5” Hard Drive bay including the amount of available space, the make and model, disk format, total capacity, used disk space, available disk space, disk health, and disk temperature.
- **WPS** - The WPS (Wi-Fi Protected Setup) screen allows you to add your router into an existing network via a PIN number, or allows you to add a new wireless device to the router via Push Button Configuration (PBC). Use the touch pad buttons to select the desired option.

- **Photos** - The Photos screen allows you to view photos that are stored on the internal hard drive or on a USB Storage device connected to the Router.

- **FrameChannel** - Use the FrameChannel window to obtain an activation code so that you can register the DIR-685 on the FrameChannel website and view the pictures associated with your FrameChannel account on the LCD Screen.

Hardware Overview
LEDs

The DIR-685 has LEDs for Power, WPS, and Hard Drive Status.

See the table below for detailed information about the LEDs:

LED INDICATOR	COLOR	STATUS	DESCRIPTION
Power	Blue	Off	The device is powered off.
		Solid Blue	The device is powered on.
WPS	Blue	Off	WPS is ready to be triggered.
		Blinking Blue	WPS has been triggered and is processing.
		Solid Blue	WPS signal has been successfully established. The LED will remain solid blue for 5 seconds.
Unmount (Hard Drive Status)	Blue	Off	No hard drive detected.
		Blinking Blue	Hard drive is busy or the system is mounting the hard drive.
		Solid Blue	Hard drive has been detected and is idle.
	Orange	Blinking Orange	System is un-mounting the hard drive.
		Solid Orange	The hard drive can be removed safely.

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, attic or garage.

Before You Begin

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

Wireless Installation Considerations

The DIR-685 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. Ranges vary depending on the types of materials and background RF (radio frequency) noise in your home or office. The key to maximizing the 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 to 90 feet (1 to 30 meters.) Position your devices so that the number of walls and/or ceilings is minimized.

2. Be aware of the direct line between network devices. A wall that is 1.5 feet thick (0.5 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. Try to position access points, wireless routers, and computers so that the signal passes through open doorways and drywall. Materials such as glass, metal, brick, insulation, concrete and water can affect wireless performance. Large objects such as fish tanks, mirrors, file cabinets, metal doors and aluminum studs may also have a negative effect on range.

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

5. If you are using 2.4GHz cordless phones, make sure that the 2.4GHz phone base is as far away from your wireless device as possible. The base transmits a signal even if the phone in not in use. In some cases, cordless phones, X-10 wireless devices, and electronic equipment such as ceiling fans, fluorescent lights, and home security systems may dramatically degrade wireless connectivity.

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, 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 WAN 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 into the router and connect to an outlet or power strip. Wait about 30 seconds for the router to boot up.

7. Turn on your computer.

8. Verify that the Power LED and the LCD display on the router are lit. If the Power LED does not light up, make sure your computer, modem, and router are powered, on and verify that the cables connected correctly.

9. Skip to page 18 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 another router.

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

1. Plug the power into the router. Connect a computer 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, type **http://192.168.0.1** into the address bar, 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 Setup**. 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 into one of the LAN ports of the router and connect it to your other router. Do not plug anything into the WAN/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.

Install/Remove a Hard Drive

The DIR-685 includes the option to install a 2.5” SATA hard disk for network storage functions. Standard 2.5” hard drives of any capacity can be used with the DIR-685.

To install a hard drive:

Warning: The DIR-685 uses the ext3 file system. If the inserted hard drive uses any file system other than ext3, such as FAT or NTFS the drive will be reformatted. **All pre-exisiting data will be erased in this process.** If the inserted hard drive is already ext3 formatted, any pre-existing data will remain intact.

1. Open the hard drive bay. The router can be powered on during installation.
2. Insert your hard drive into the bay with the label facing towards the back of the router.
3. Push hard drive firmly into the bay.
4. Close the hard drive bay door.
5. The **Detect Hard Drive Success** message will appear on the LCD screen. Press the center button to continue.

To remove a hard drive:

Warning: Do NOT eject the hard drive without first pressing the unmount button located below the hard drive bay.

1. Open the hard drive bay door.
2. Press the **unmount** button. The button will blink orange for a few seconds.
3. Once the unmount button is solid orange, press the eject button located on the opposite side.
4. Pull the hard drive out.

Caution: The hard drive may be hot. Use caution when handling.

Getting Started

The DIR-685 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**. Type **D:\DIR685.exe** (where **D:** represents the drive letter of your CD-ROM drive) and press enter.

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

***Note**: You may write down the login password on the provided CD holder as a reminder.*

LCD Screen Options

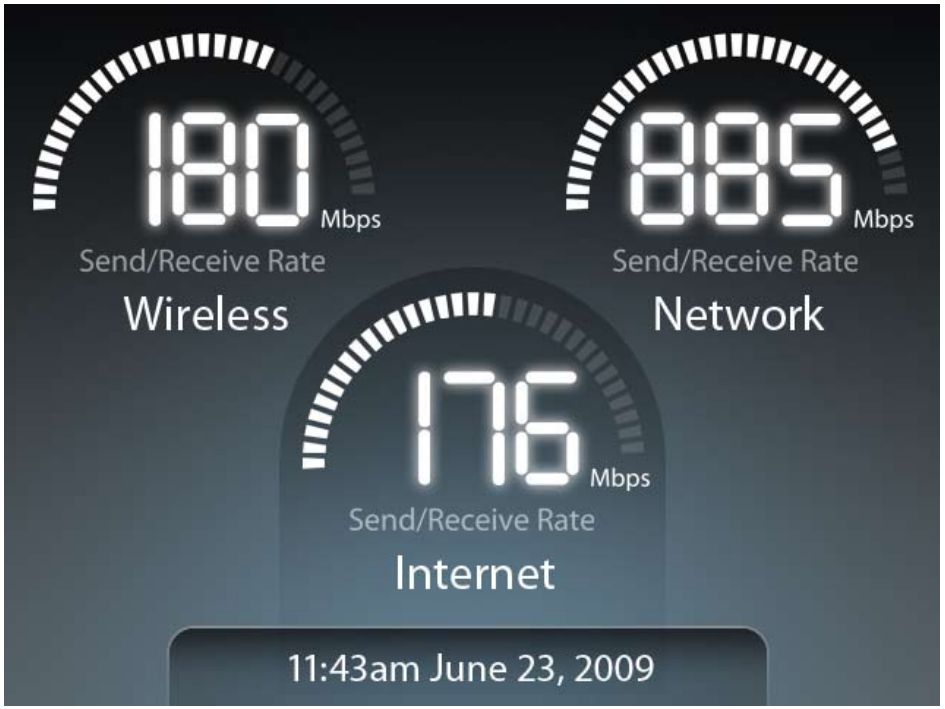
Router Statistics

The **Router Statistics** displays basic information about router performance.

Wireless: The send and receive rate of your wireless traffic.

Network: The send and receive rate of your network (LAN) traffic.

Internet: The send and receive rate of your Internet (WAN) traffic.



Status

General Router Info

The **General Router Information** screen displays basic information about the device.

Model Name: The model of the router (DIR-685).

Hardware Version: The hardware revision of the router.

Firmware Version: The current firmware version of the router.

System Up Time: Displays how long the router has been on.

New Firmware: Displays if there is a new firmware available for upgrading the router.

Internet Status

The **Internet Status** screen displays IP address information and information about the WAN/Internet connection.

Connection Type: The Internet connection type (Dynamic, PPPoE, PPTP, L2TP, or Static).

Cable Status: The connection status of the Internet port.

Network Status: The connection status of the Internet.

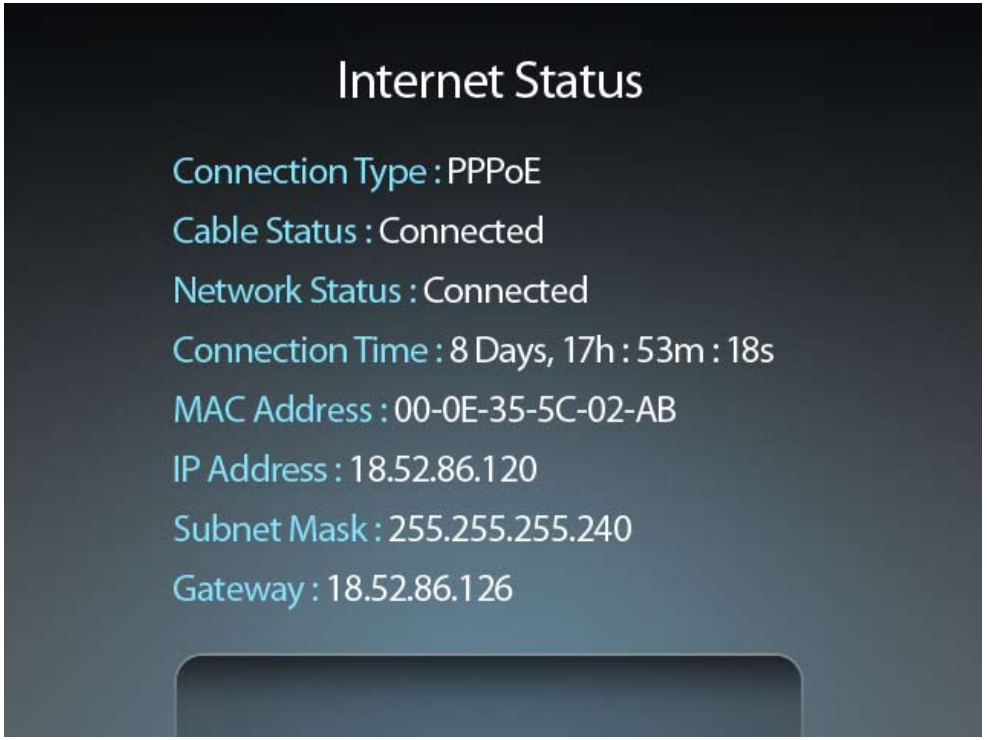
Connection Time: The amount of time that the router has been connected to the Internet.

MAC Address: The MAC address of the Internet port on the router.

IP Address: The IP address of the router (Internet port).

Subnet Mask: The subnet mask of the router.

Gateway: The gateway IP address of the router.



Wired Status

The **Wired Status** screen displays information about the wired network.

MAC Address: The MAC address of the router (LAN).

IP Address: The IP address of the router (LAN).

Subnet Mask: The subnet mask of the router.

DHCP Status: Displays whether the router's DHCP server is enabled or disabled.

Cable Status Port 1/2/3/4: Displays the connection status of each of the 4 LAN ports.

Wireless Status

The **Wireless Status** screen displays basic information about the router's wireless network.

Wireless Radio: Displays the status of the wireless function of the router (Enabled or Disabled).

Wireless Channel: Displays the channel of your wireless network.

Host Network Name (SSID): The SSID of the wireless network.

Guest Network Name (SSID): The SSID of the guest wireless network.

802.11 Mode: The IEEE 802.11 mode(s) used on the router.

Host Zone Security Mode: Displays the encryption used on the host wireless network.

Guest Zone Security Mode: Displays the encryption used on the guest wireless network.

MAC Address: The wireless MAC address of the router.

WPS PIN Number: The current WPS PIN number for the router.

Hard Disk Status

The **Hard Disk Status** screen will displays information about the internal removable hard disk drive, if one is installed.

HD: The brand/model of the hard drive.

Format: The format of the hard drive (EXT3).

Capacity: The total capacity of the hard drive.

Used: The amount of space used on the hard drive.

Available: The space available on the hard drive.

Disk Health: The hard drive health status.

Disk Temp: The temperature of the hard drive.

WPS

The **Wi-Fi Protected Setup**™ screen offers two options for setting up Wi-Fi Protected Setup (WPS):

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

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

Router Settings

LCD Saving Settings

The **Adjust Display Sleep Time** screen will appear. Use the left and right arrow buttons to select the amount of inactive time before the LCD display goes to sleep.

To save your settings, press the up arrow. You will be prompted to select **Yes** or **No**. Press the left button to select **Yes** and press the center button.

Clock Display Setting

Select **Yes** if you want the clock displayed on the LCD screen when asleep. Select **No** to have the LCD screen off when asleep.

LCD Luminance Settings

The **LCD Luminance Settings** screen will allow you to adjust the brightness of the LCD screen.

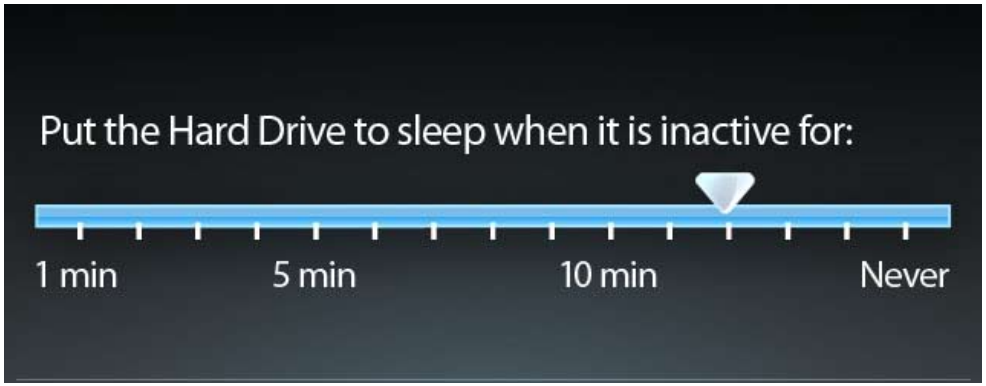
Press the left arrow to make the LCD screen darker or press the right arrow to make it brighter.

To save your settings, press the up arrow. You will be prompted to select **Yes** or **No**. Press the left button to select **Yes** and press the center button.

Hard Disk Saving Settings

The **Hard Disk Saving Settings** screen will allow you to set the duration of inactivity before the hard drive goes to sleep.

To save your settings, press the up arrow. You will be prompted to select **Yes** or **No**. Press the left button to select **Yes** and press the center button.



Photos

Select the hard drive or removable storage device that contains the images you want to display on the LCD screen and press the center button. Select the folder or subfolder that you would like to display and press the center button.

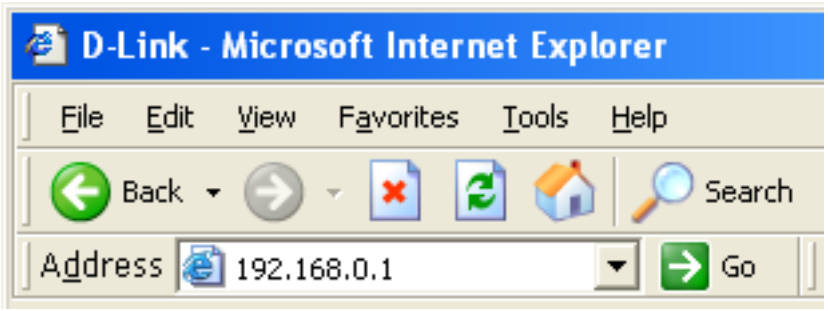
Thumbnails of the available images will appear. Select an image and press the center button. This will start the slideshow and display all images in the selected folder.

Configuration

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

Web-based Configuration Utility

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



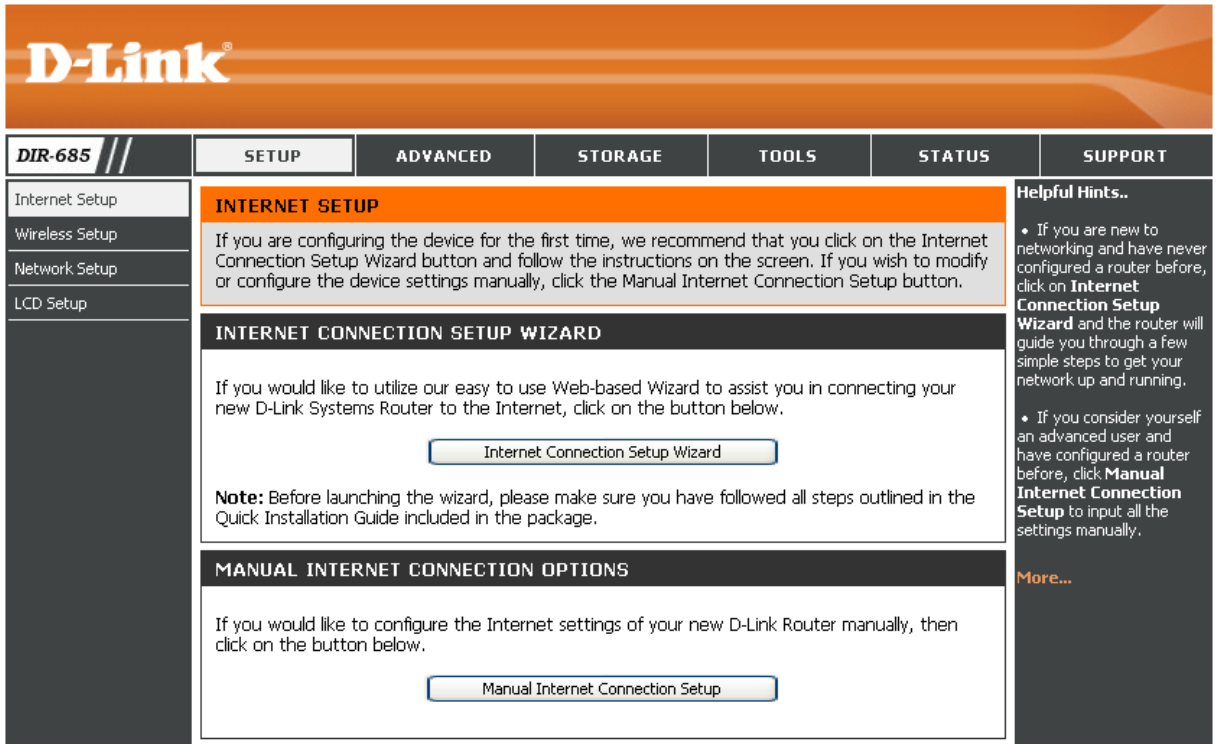
Log into the Router as follows:

- Select **Admin** from the drop-down menu and then enter your password. Leave the password blank by default.
- Type the characters that appear in the picture at the bottom of the window into the field above the picture and click the **Log In** button to log into the Router. Click the **Regenerate** button if you would like to generate a new code.
- If you get a **Page Cannot be Displayed** error, please refer to the **Troubleshooting** section for assistance.

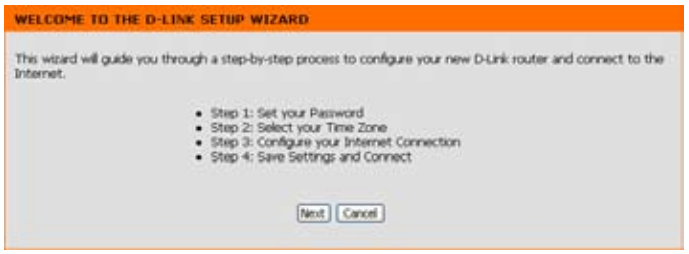
Internet Connection Setup Wizard

You may click **Internet Connection Setup Wizard** to quickly configure your router. Refer to the next page for more information.

If you would like to configure your settings without running the wizard, click **Manual Internet Connection Setup** and skip to page 23.

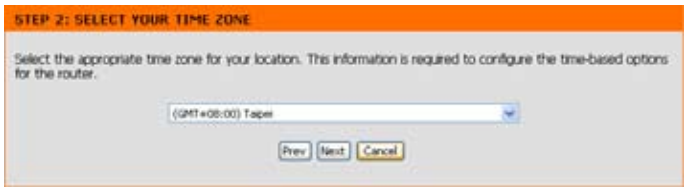


Click **Next** to continue.

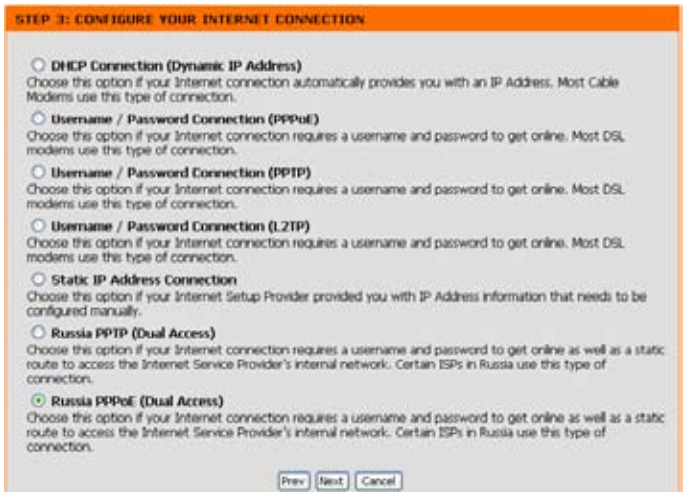


Create a new password and then click **Next** to continue.

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 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.

If you selected **PPPoE** or **Russia 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 any PPPoE software from your computer. The software is no longer needed and will not work through a router.*

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

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.

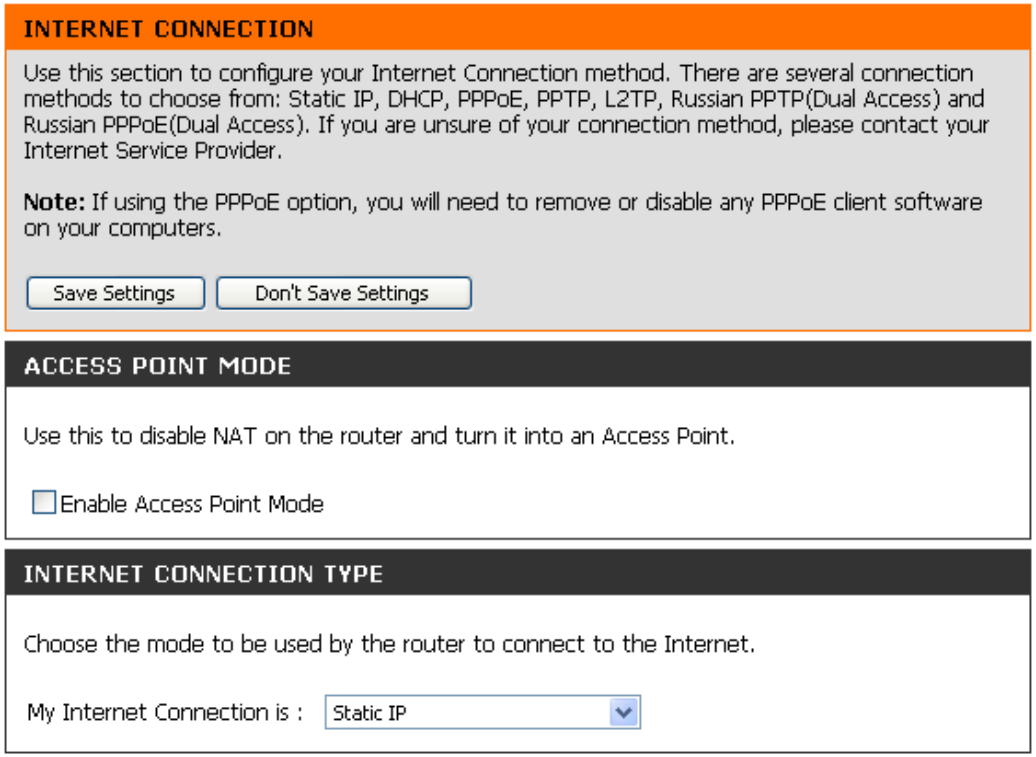
Click **Connect** to save your settings. Once the router has finished rebooting, click **Continue**. Please allow 1-2 minutes to connect.

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 Internet Connection Setup

Access Point Mode: Tick the **Enable Access Point Mode** checkbox if you want to disable NAT on the router and turn it into an Access Point.

Internet Connection Type: Use the **My Internet Connection is** drop-down menu to select the mode that the router should use to connect to the Internet.



Manual Internet Configuration
Static IP (assigned by ISP)

Select Static IP if all the WAN/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 must be in the appropriate IP form, which consists of four three-digit numbers 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.

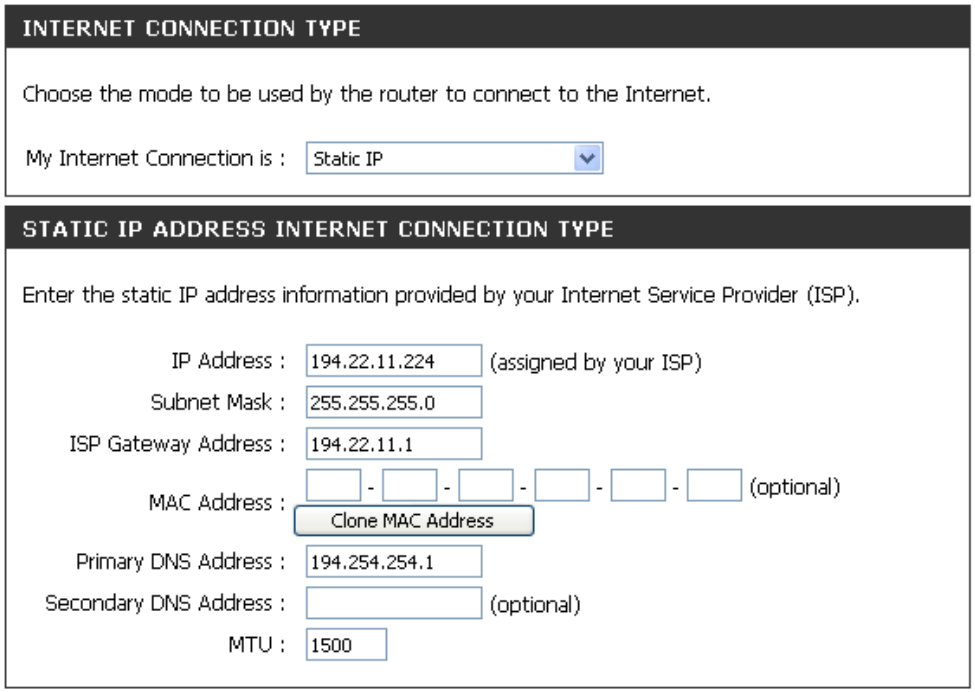
Subnet Mask: Enter the Subnet Mask assigned by your ISP.

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

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

Primary / Secondary DNS Address: Enter the IP addresses of the Primary and Secondary DNS servers 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.



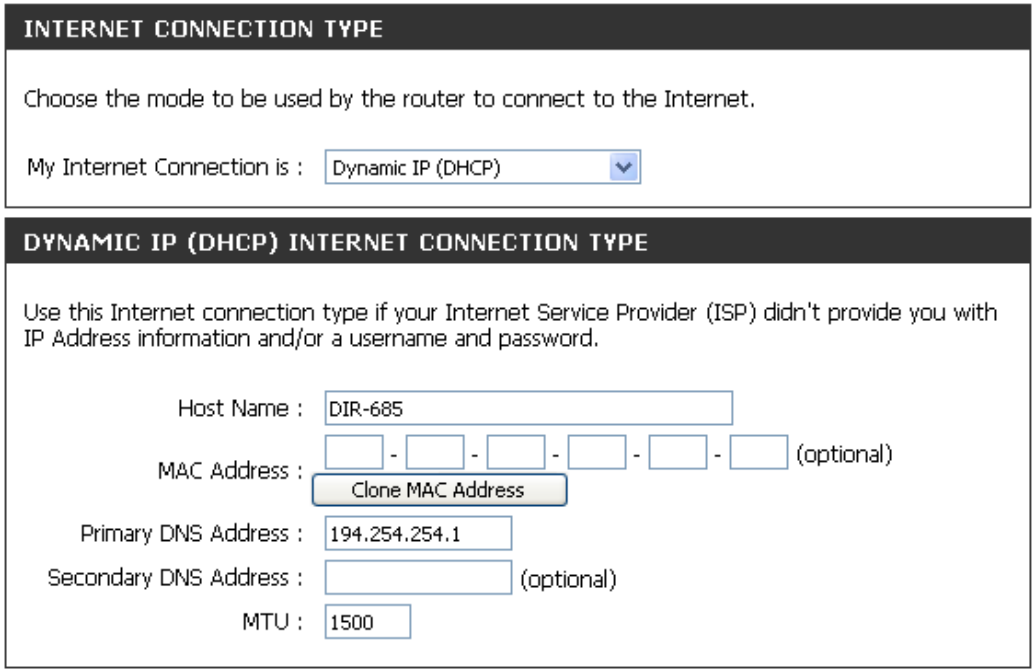
Manual Internet Configuration
Dynamic IP (DHCP)

My Internet Connection is: 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.

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

Primary / Secondary DNS Address: Enter the IP addresses of the Primary and Secondary DNS servers 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.

Manual Internet Configuration

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.

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

User Name: Enter your PPPoE user name.

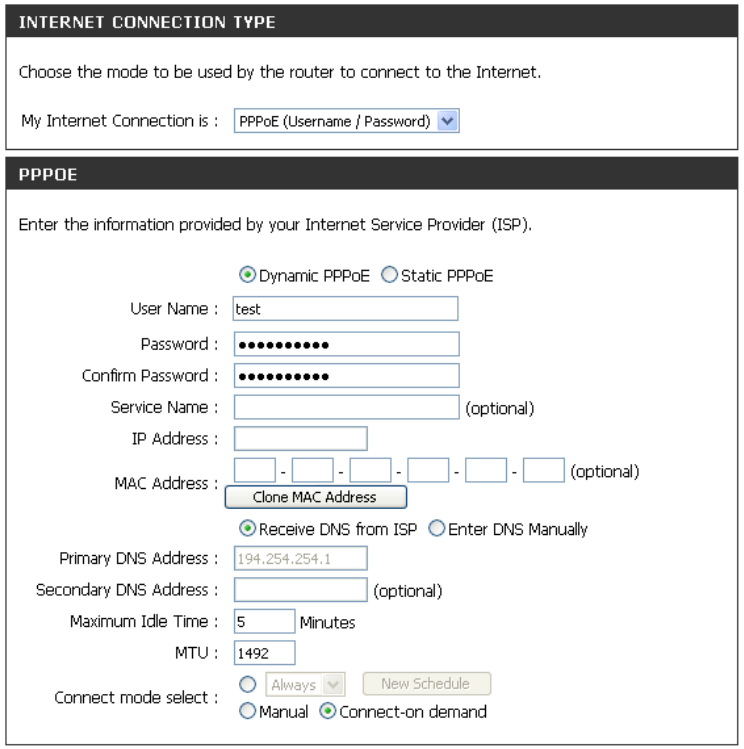
Password: Enter your PPPoE password and then retype the password in the **Confirm Password** box.

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

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

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

DNS Address: Click the **Receive DNS from ISP** radio button to automatically obtain the IP addresses of the DNS Servers for your Internet connection from your ISP. Click the **Enter DNS Manually** radio button to enter the DNS IP addresses manually. If choosing the manual option, enter the IP addresses of the Primary and Secondary DNS servers supplied by your ISP (Internet Service Provider) in the DNS Addresses textbox.



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

MTU: Maximum Transmission Unit - You may need to change the MTU for optimal performance with your specific ISP. 1492 is the default MTU.

Connect mode select: Use the drop-down menu to select a Schedule that determines when the router should try reconnecting to the Internet in the event that the Internet connection is lost. The router will list the Schedules that have been defined in the **Tools > Schedule** window. Click the **New Schedule** button to open the **Tools > Schedules** window and create a new schedule (see page 88 for instructions on how to create a New Schedule).

Click the **Manual** radio button to specify that the Internet connection should be re-established manually, in the event of the router losing its Internet connection.

Click the **Connect-on demand** radio button to specify that an Internet connection will only establish when a user or application tries to access the Internet.

Manual Internet Configuration
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 IP** if your ISP assigned you the IP address, subnet mask, gateway, and DNS server addresses. In most cases, select **Dynamic IP**.

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

Subnet Mask: Enter the Subnet Mask of the PPTP connection. (Static PPTP only).

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

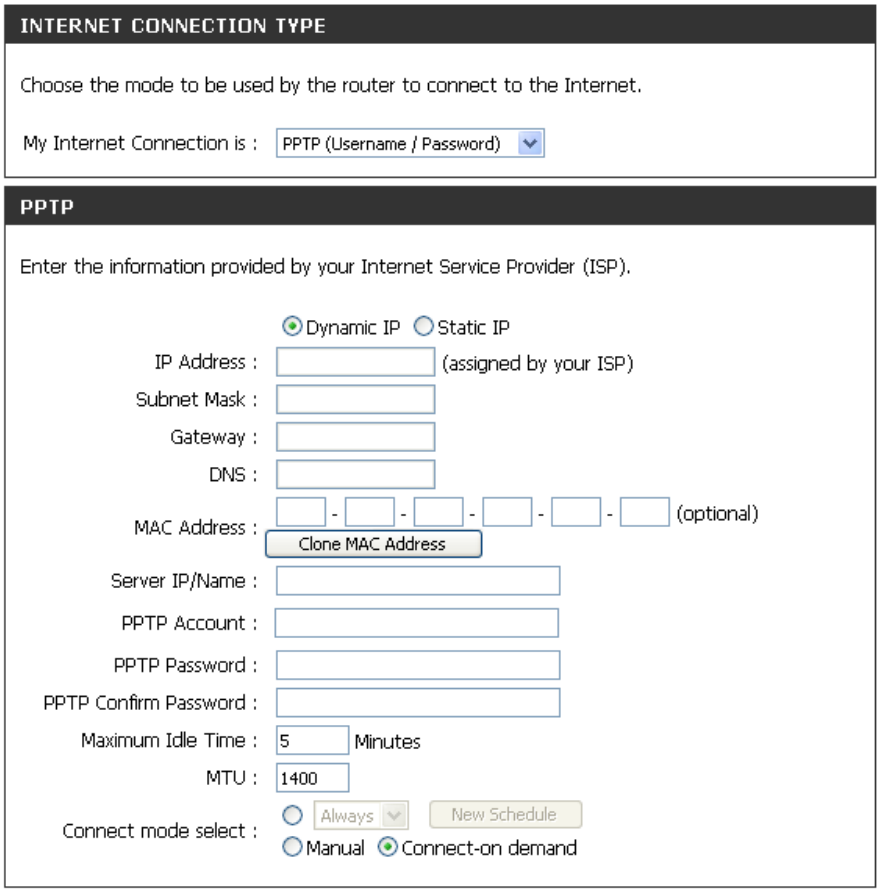
DNS: Enter the IP address of the DNS Server supplied by your ISP.

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

Server IP/Name: Enter the IP address or DNS Name of the PPTP Server provided by your ISP.

PPTP Account: Enter your PPTP username.

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



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

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

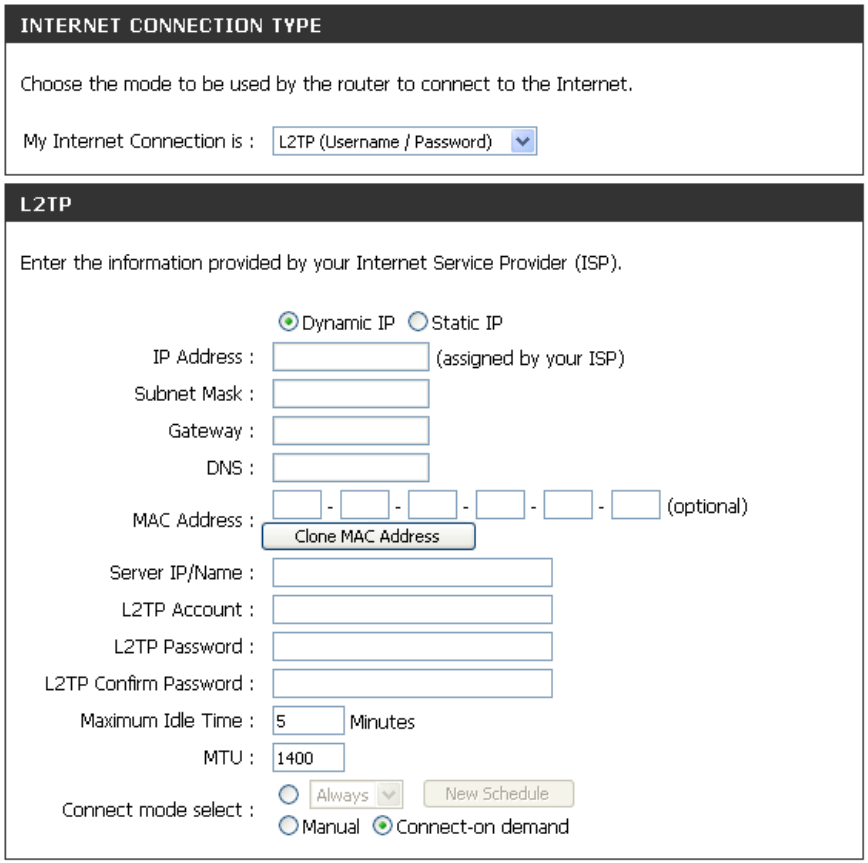
Connect mode select: Use the drop-down menu to select a Schedule that determines when the router should try reconnecting to the Internet in the event that the Internet connection is lost. The router will list the Schedules that have been defined in the **Tools > Schedule** window. Click the **New Schedule** button to open the **Tools > Schedules** window and create a new schedule (see page 88 for instructions on how to create a New Schedule).

Click the **Manual** radio button to specify that the Internet connection should be re-established manually, in the event of the router losing its Internet connection.

Click the **Connect-on demand** radio button to specify that an Internet connection will only establish when a user or application tries to access the Internet.

Manual Internet Configuration
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**.

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

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

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

DNS: Enter the IP address of the DNS Server supplied by your ISP.

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

Server IP/Name: Enter the L2TP Server IP address or name provided by your ISP (optional).

L2TP Account: Enter your L2TP username.

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

Maximum Idle Time: Enter a maximum idle time during which the Internet connection is maintained during inactivity. To disable this feature, select **Always** from the **Connect mode select:** drop-down menu.

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

Connect mode select: Use the drop-down menu to select a Schedule that determines when the router should try reconnecting to the Internet in the event that the Internet connection is lost. The router will list the Schedules that have been defined in the **Tools > Schedule** window. Click the **New Schedule** button to open the **Tools > Schedules** window and create a new schedule (see page 88 for instructions on how to create a New Schedule).

Click the **Manual** radio button to specify that the Internet connection should be re-established manually, in the event of the router losing its Internet connection.

Click the **Connect-on demand** radio button to specify that an Internet connection will only establish when a user or application tries to access the Internet.

Manual Internet Configuration
3G USB Adapter

Choose 3G USB Adapter if you are going to use a 3G USB Adapter to connect to the Internet. Your 3G service provider will provide you with a username and password.

Country: Use the drop-down menu to select the country you are connecting to the Internet from.

ISP: Use the drop-down menu to select the mobile phone company that is providing your 3G connection.

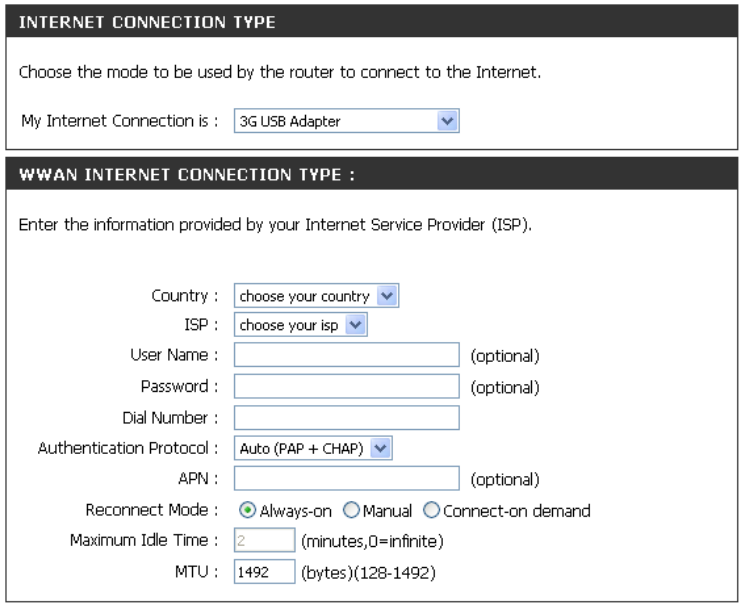
User Name: Enter the User Name you will use to connect to the 3G service.

Password: Enter your 3G connection password.

Dial Number: Enter the phone number used to connect to your 3G service.

Authentication Protocol: Use the drop-down menu to select the authentication protocol used by your 3G service provider.

APN: Enter the Access Point Name (APN) of your 3G connection.



Reconnect Mode: Click the **Always-on** radio button to specify that the router should automatically reconnect to the Internet in the event that the router loses its Internet connection.
Click the **Manual** radio button to specify that the Internet connection will need to be connected manually.

Click the **On-Demand** radio button to specify that an Internet connection will only establish when a user or application tries to access the Internet.

Maximum Idle Time: Enter a maximum idle time during which the Internet connection is maintained during inactivity. To disable this feature, select the **Always-on** radio button in the Reconnect Mode section.

MTU: Maximum Transmission Unit - You may need to change the MTU for optimal performance with your specific ISP. 1492 is the default MTU.

Manual Internet Configuration
Russia PPTP (Dual Access)

If you are in Russia and your ISP uses a PPTP connection, choose Russia PPTP (Dual Access) from the drop-down menu. Your ISP will provide you with a username and password. This option is typically used for DSL services.

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

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

Subnet Mask: Enter the Subnet Mask of the PPTP connection. (Static PPTP only).

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

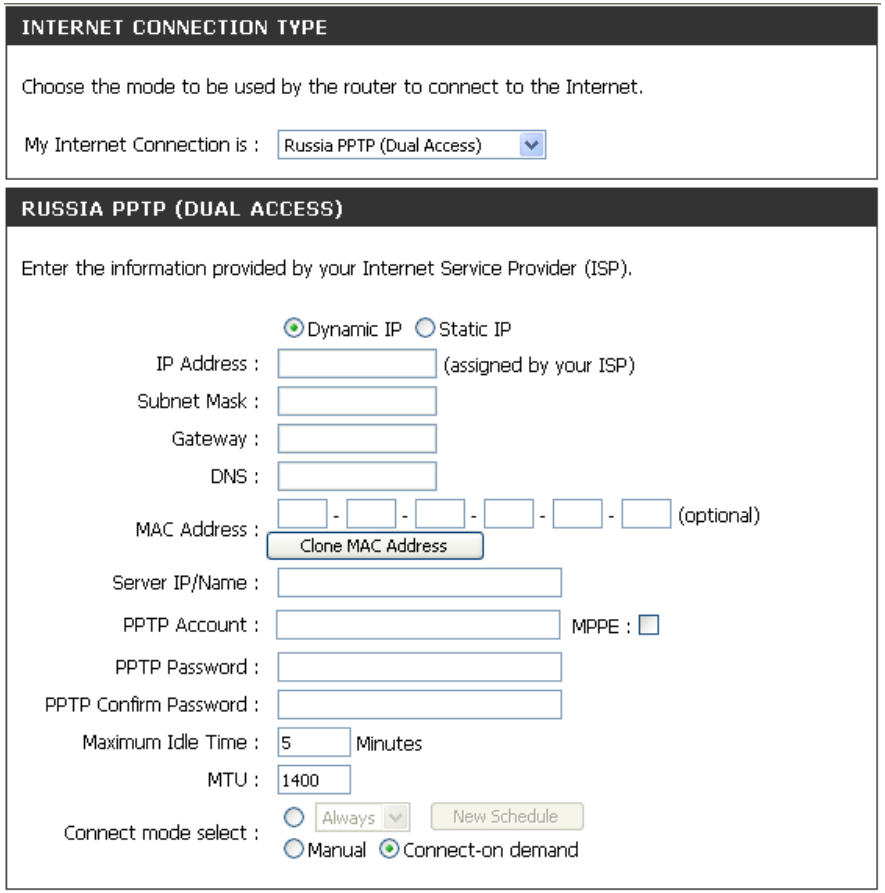
DNS: Enter the IP address of the DNS Server supplied by your ISP.

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

Server IP/Name: Enter the IP address or DNS Name of the PPTP Server provided by your ISP.

PPTP Account: Enter your PPTP username.

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



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

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

Connect mode select: Use the drop-down menu to select a Schedule that determines when the router should try reconnecting to the Internet in the event that the Internet connection is lost. The router will list the Schedules that have been defined in the **Tools > Schedule** window. Click the **New Schedule** button to open the **Tools > Schedules** window and create a new schedule (see page 88 for instructions on how to create a New Schedule).

Click the **Manual** radio button to specify that the Internet connection should be re-established manually, in the event of the router losing its Internet connection.

Click the **Connect-on demand** radio button to specify that the Internet connection re-connect when a user or application tries to establish an Internet connection.

Manual Internet Configuration
Russia PPPoE (Dual Access)

If you are in Russia and your ISP uses a PPPoE connection, choose Russia PPPoE (Dual Access) from the drop-down menu. Your ISP will provide you with a username and password. 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.

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

User Name: Enter your PPPoE user name.

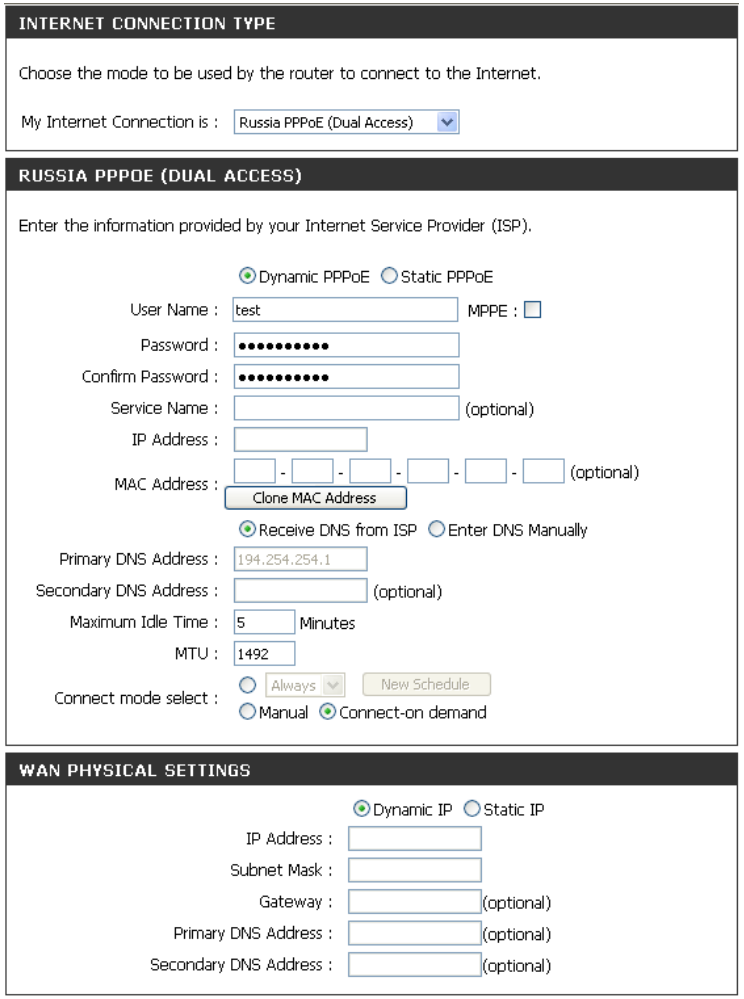
Password: Enter your PPPoE password and then retype the password in the **Confirm Password** box.

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

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

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

DNS Address: Click the **Receive DNS from ISP** radio button to automatically obtain the IP addresses of the DNS Servers for your Internet connection from your ISP. Click the **Enter DNS Manually** radio button to enter the DNS IP addresses manually. If choosing the manual option, enter the IP addresses of the Primary and Secondary DNS servers supplied by your ISP (Internet Service Provider) in the DNS Addresses textbox.



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

MTU: Maximum Transmission Unit - You may need to change the MTU for optimal performance with your specific ISP. 1492 is the default MTU.

Connect mode select: Use the drop-down menu to select a Schedule that determines when the router should try reconnecting to the Internet in the event that the Internet connection is lost. The router will list the Schedules that have been defined in the **Tools > Schedule** window. Click the **New Schedule** button to open the **Tools > Schedules** window and create a new schedule (see page 88 for instructions on how to create a New Schedule).

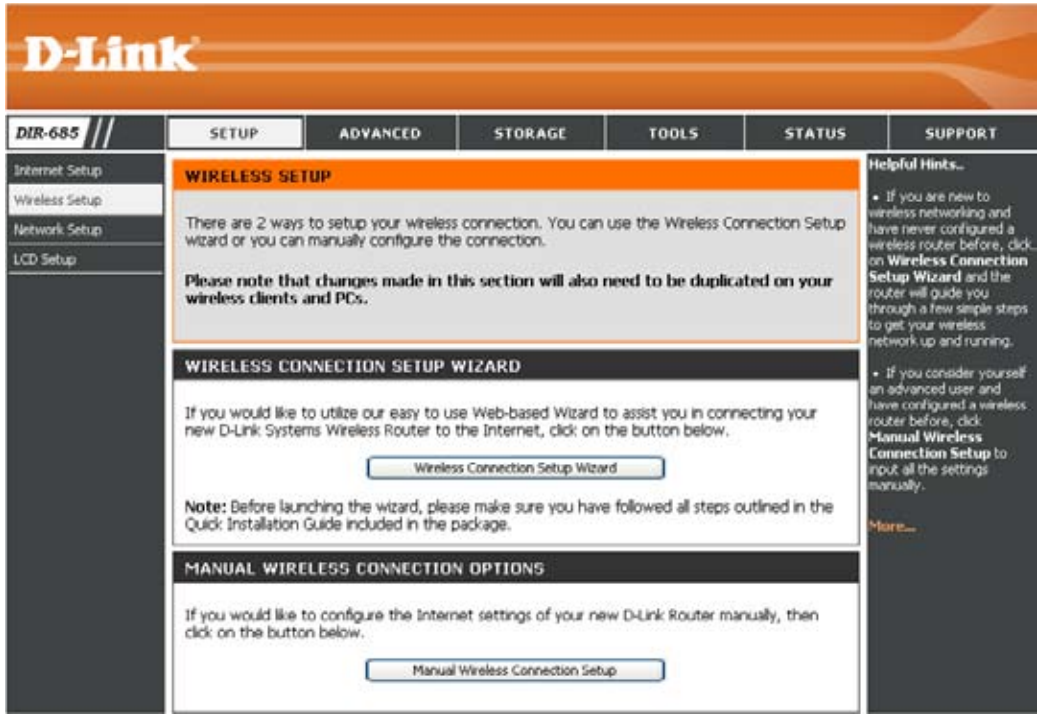
Click the **Manual** radio button to specify that the Internet connection should be re-established manually, in the event of the router losing its Internet connection.

Click the **Connect-on demand** radio button to specify that the Internet connection re-connect when a user or application tries to establish an Internet connection.

Wireless Setup

If you want to configure the wireless settings on your router using the wizard, click **Wireless Connection Setup Wizard** and refer to page 96.

If you want to manually configure the wireless settings on your router click **Manual Wireless Connection Setup** and refer to the next page.



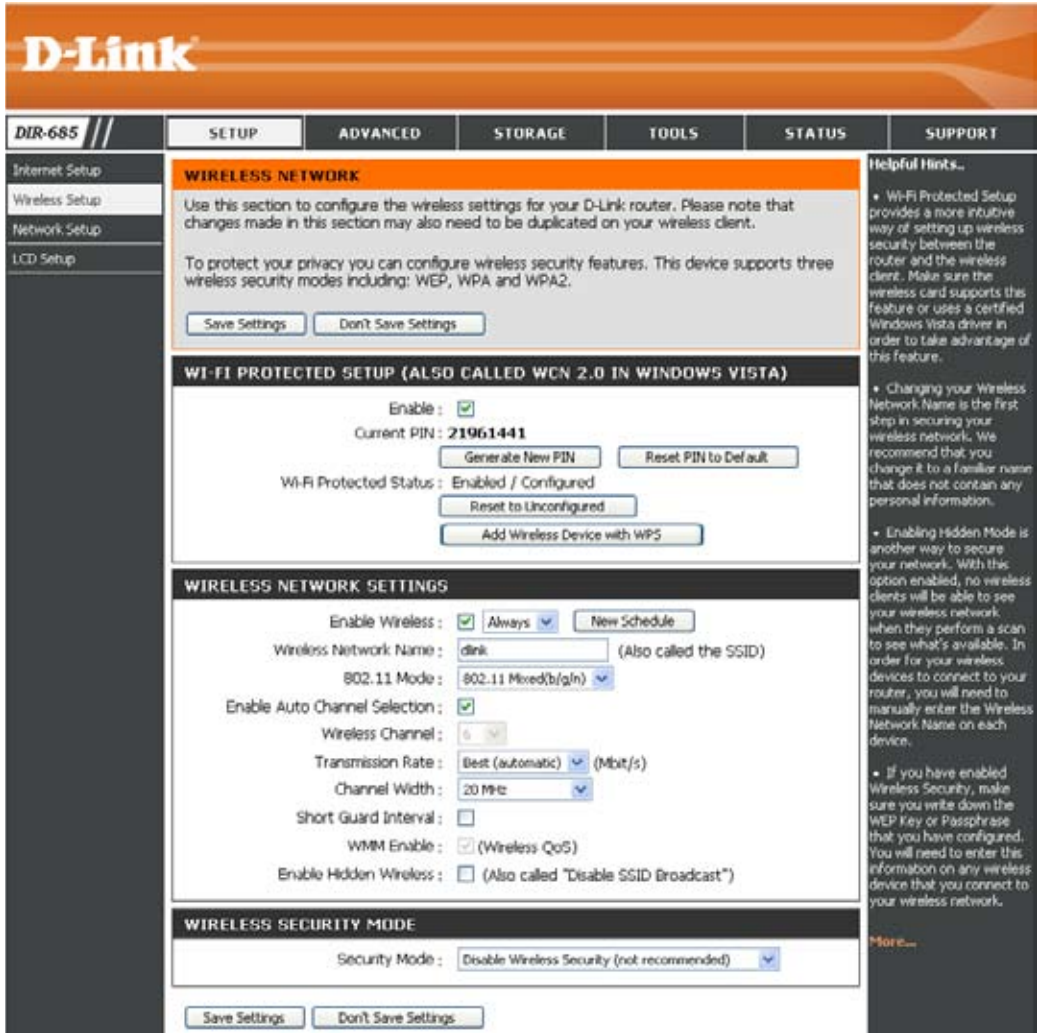
Manual Wireless Connection Setup

WI-FI Protected Setup: (Also called WCN 2.0 in Windows Vista) This section is used to enable and configure the Wi-Fi Protected Setup settings.

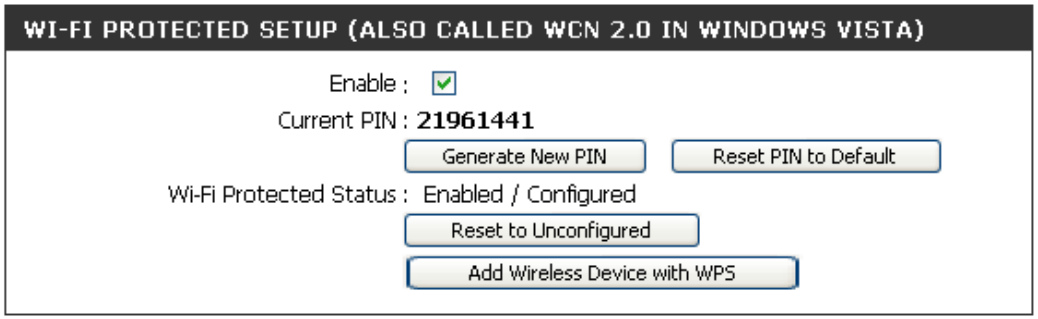
Wireless Network Settings: Use this section to configure the Wireless Network Settings.

Wireless Security Mode: Use the drop-down to enable Wireless Security on the DIR-685. The DIR-685 supports the following security methods:

- **WEP**
- **WPA/WPA2**



Manual Wireless Connection Setup
Wi-Fi Protected Setup



Enable: Tick this checkbox to enable Wi-Fi Protected Setup (WPS) on the Router.

Current PIN: Displays the WPS PIN that is currently set on the DIR-685.

Click the **Generate New PIN** button to generate a new WPS PIN.

Click the **Reset PIN to Default** button to reset the WPS PIN to default settings.

Wi-Fi Protected Status: Displays the status of the Wi-Fi Protected service.

Click the **Reset to Unconfigured** button to reset the WPS configuration.

Add Wireless Device with WPS: Click the **Add Wireless Device with WPS** button if you want to add a wireless device using Wi-Fi Protected Setup. See the **Add Wireless Device with WPS Wizard** section (page 98), for instructions on how to use WPS.

Manual Wireless Connection Setup
Wireless Network Settings

Enable Wireless: Tick this checkbox to enable the wireless function. If you do not want to use wireless, untick the box to disable all the wireless functions.

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

802.11 Mode: Select one of the following:

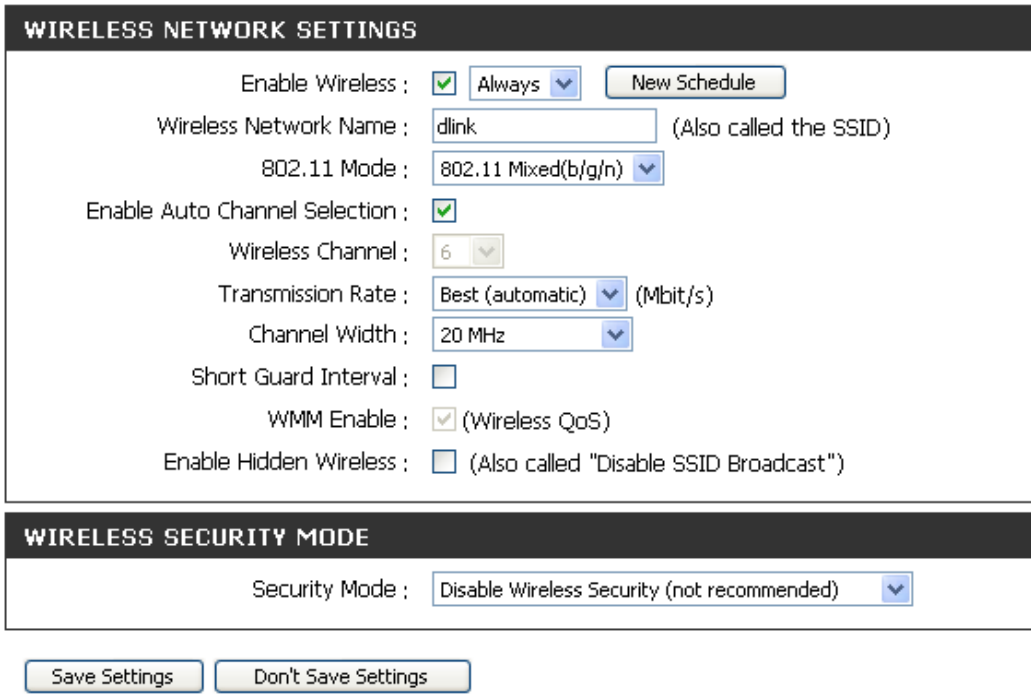
802.11b Only - Select if all of your wireless clients are 802.11b.

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

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

802.11 Mixed(b/g) - Select if you are using both 802.11b and 802.11g wireless clients.

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



Enable Auto Channel Scan Selection: Tick the **Auto Channel Scan Selection** checkbox to allow the DIR-685 to choose the channel with the least amount of interference.

Wireless Channel: Indicates the channel setting for the DIR-685. 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 transmission rate in Mbps. It is strongly suggested to select **Best (automatic)** for best performance. (This setting cannot be changed when the **802.11 Mode** is set to an 802.11 Mixed setting).

Channel Width: Select the Channel Width:
20MHz - Select if you are not using any 802.11n wireless clients. This is the default setting.
20/40 MHz (Auto) - Select if you are using both 802.11n and non-802.11n wireless devices.

Short Guard Interval: This option is only available when 802.11n has been enabled on the DIR-685. Tick this checkbox to enhance the wireless performance when the router is operating in a 'clean' wireless environment.

WMM Enable: Tick this checkbox to enable Wi-Fi Multimedia, which enables basic Quality of Service (QoS) features. WMM prioritizes traffic according to four access categories: voice, video, best effort, and background.

Enable Hidden Wireless: Tick this checkbox if you do not want the SSID of your wireless network to be broadcasted by the DIR-685. If the checkbox is ticked, the SSID of the DIR-685 will not be seen by site survey utilities, so wireless clients will have to know the SSID of the DIR-685 in order to connect to it.

Wireless Security Mode: Use the drop-down menu to set a Wireless Security Mode. Refer to page 95 for more information regarding wireless security.

Network Setup

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

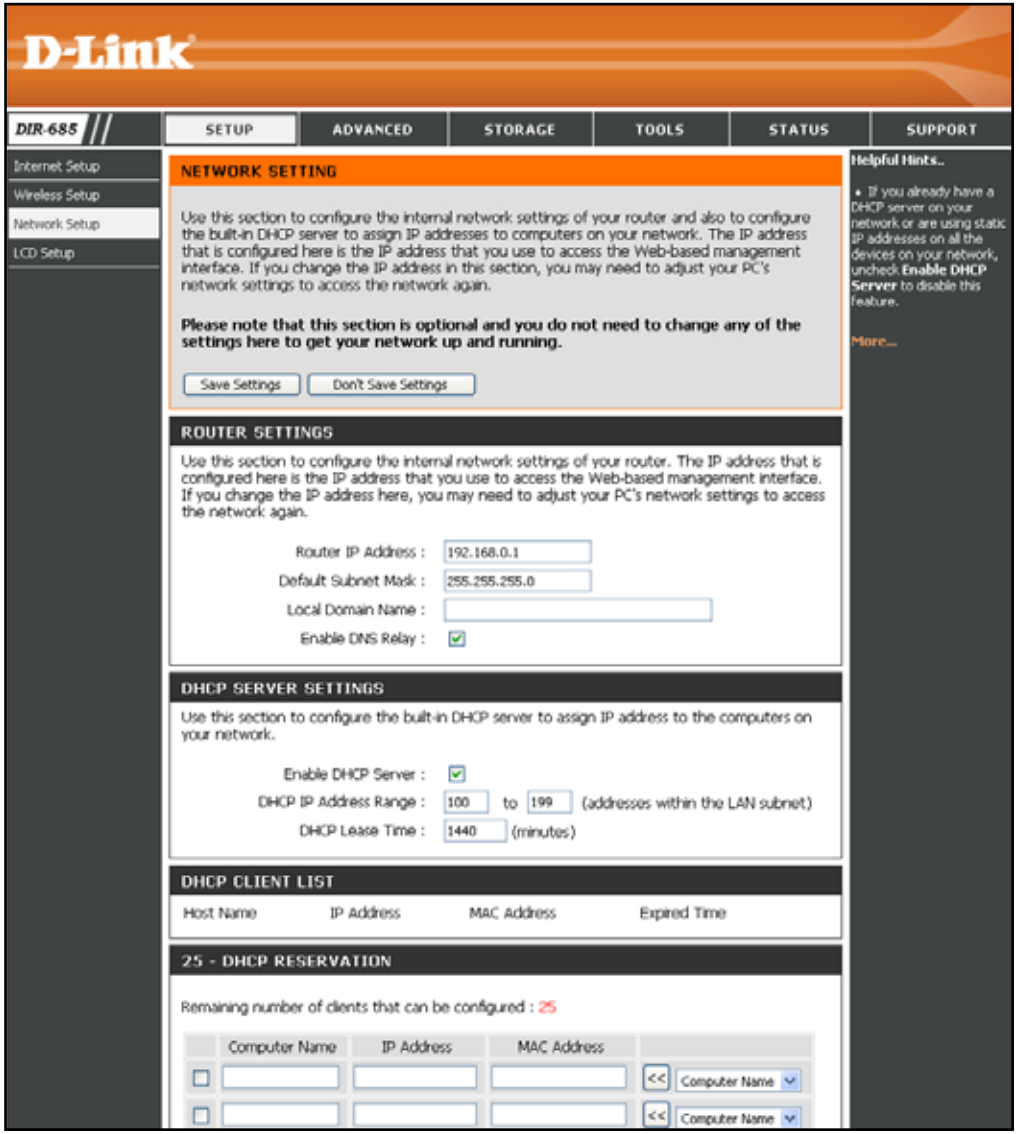
Router Settings: Use this section to configure the IP Address, Subnet Mask and Local Domain Name of the Router.

DNS Relay can also be enabled/disabled in this section.

DHCP Server Settings: Use this section to configure the DHCP Server Settings.

DHCP Client List: This section shows a list of devices that currently have a DHCP lease issued from the router.

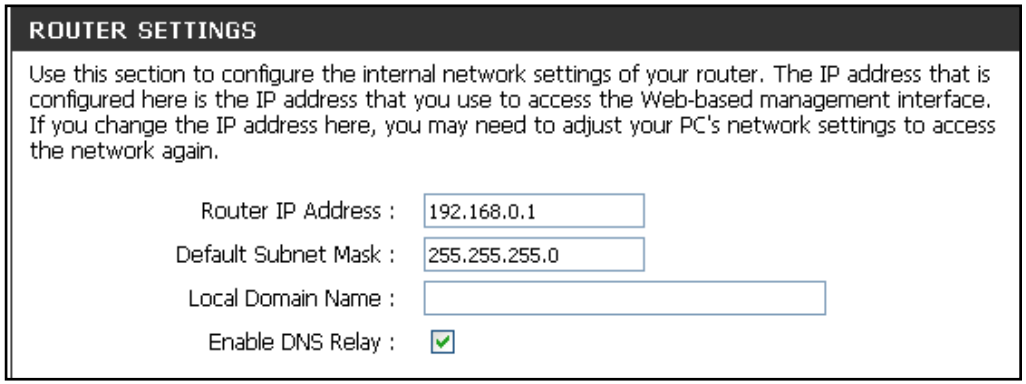
DHCP Reservation: Use this section to create and edit the DHCP Reservations of the router.



Network Setup

Router 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.

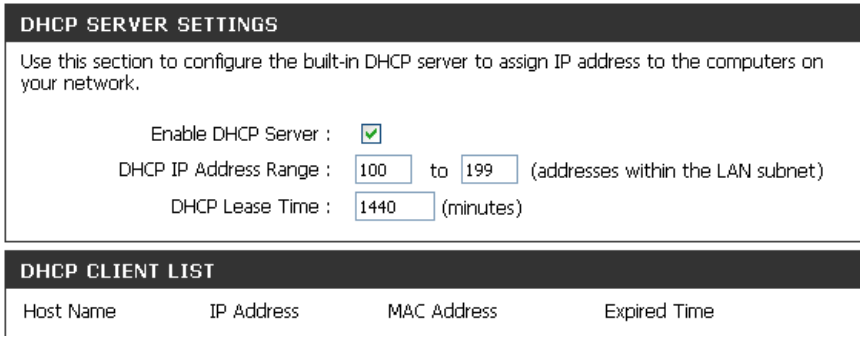
Local Domain: Enter the Domain Name (Optional).

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

Network Setup

DHCP Server Settings

DHCP stands for Dynamic Host Control Protocol. The DIR-685 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-685. 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 range.



Enable DHCP Server: Tick this checkbox to enable the DHCP server on your router. Untick 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.

DHCP Client List: Displays the Host Name, IP Address and the time the DHCP lease will expire for all the clients that have received DHCP IP addresses from the router.

Network Setup
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.*

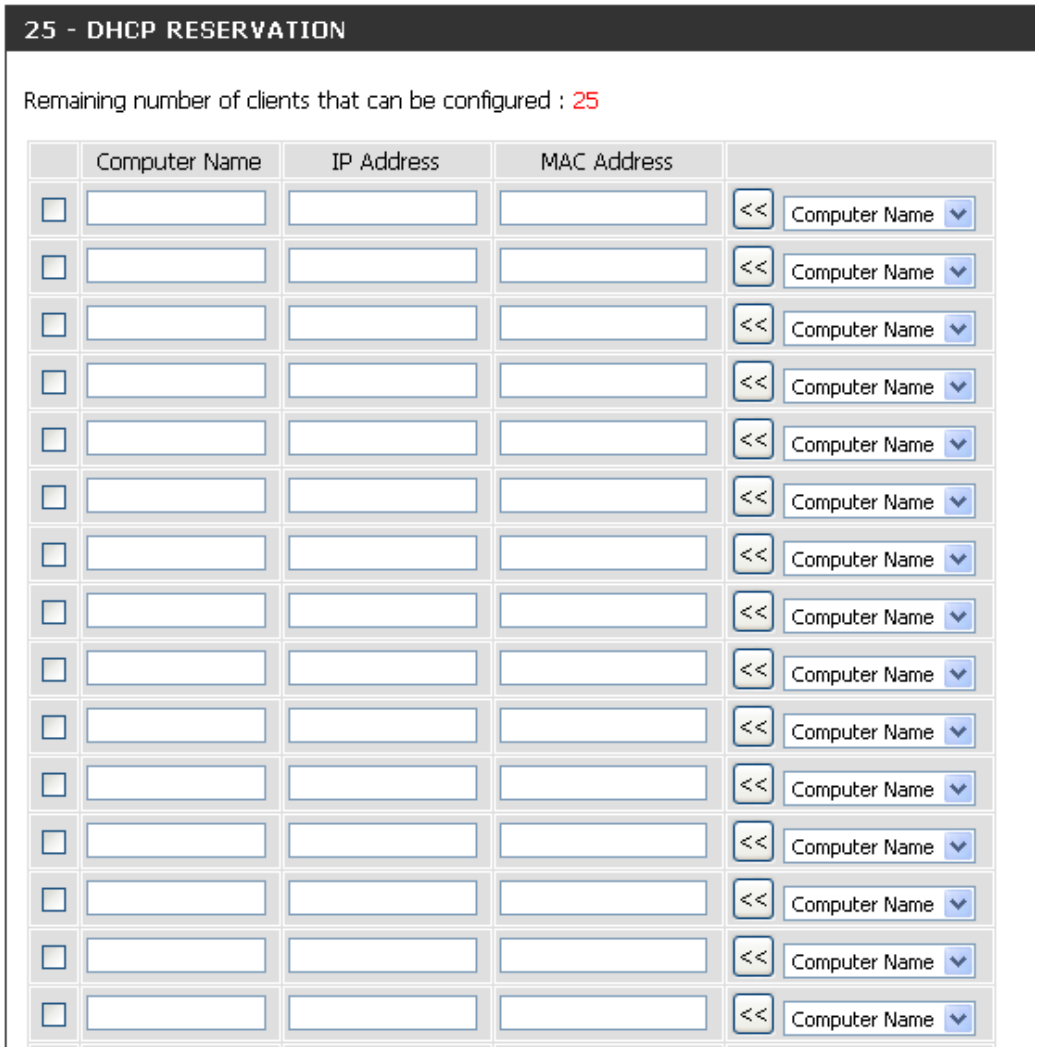
Enable: Tick the checkbox next to the reservation you want to enable.

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.

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

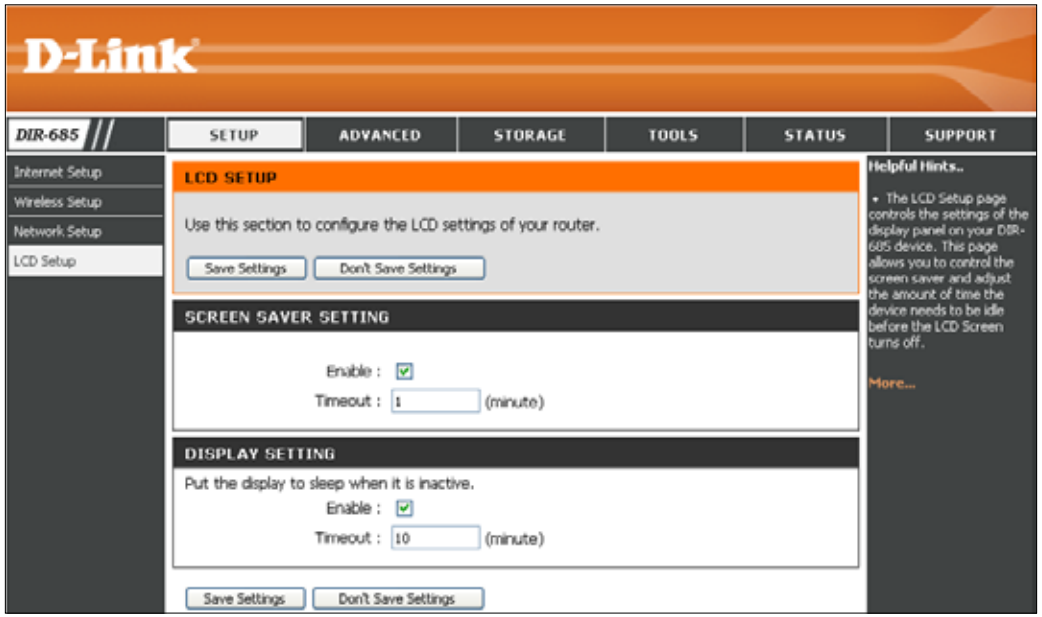


LCD Screen

This section allows you to configure the LCD screen Display Settings on the router.

Screen Saver Setting: Tick this checkbox to enable the screen saver. You can set the timeout in minutes.

Display Setting: Tick this checkbox to turn off the LCD screen on the router when idle after the entered time.



Port Forwarding

The DIR-685 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-685 firewall feature filters out unrecognized packets to protect your LAN network so all computers networked with the DIR-685 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-685 redirects the external service request to the appropriate server within the LAN network.

The DIR-685 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.

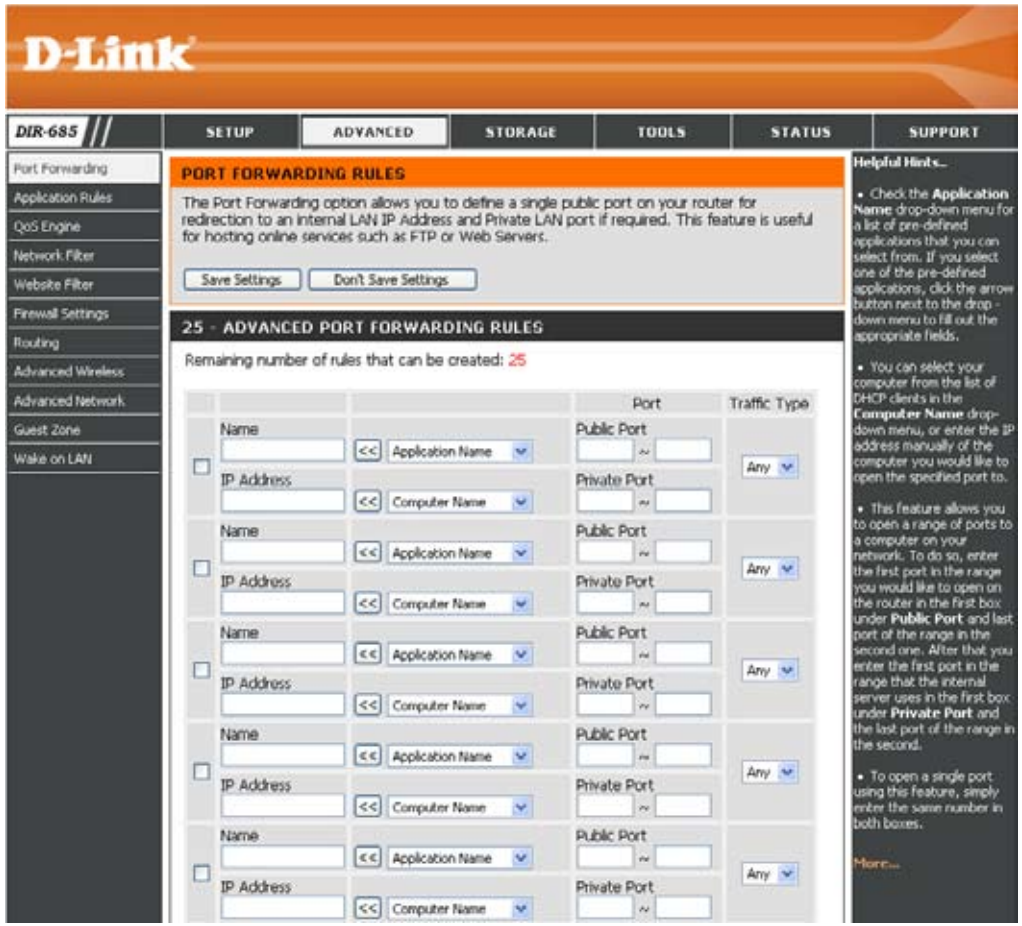
For a list of ports for common applications, please visit http://support.dlink.com/faq/view.asp?prod_id=1191.

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), you 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.

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



Application Rules

Some applications require multiple connections, such as Internet gaming, video conferencing, and Internet telephony. These applications have difficulties working through NAT (Network Address Translation). Application Rules makes some of these applications work with the DIR-685. 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-685 provides some predefined applications in the table on the bottom of the web page. Select the application you want to use and enable it.

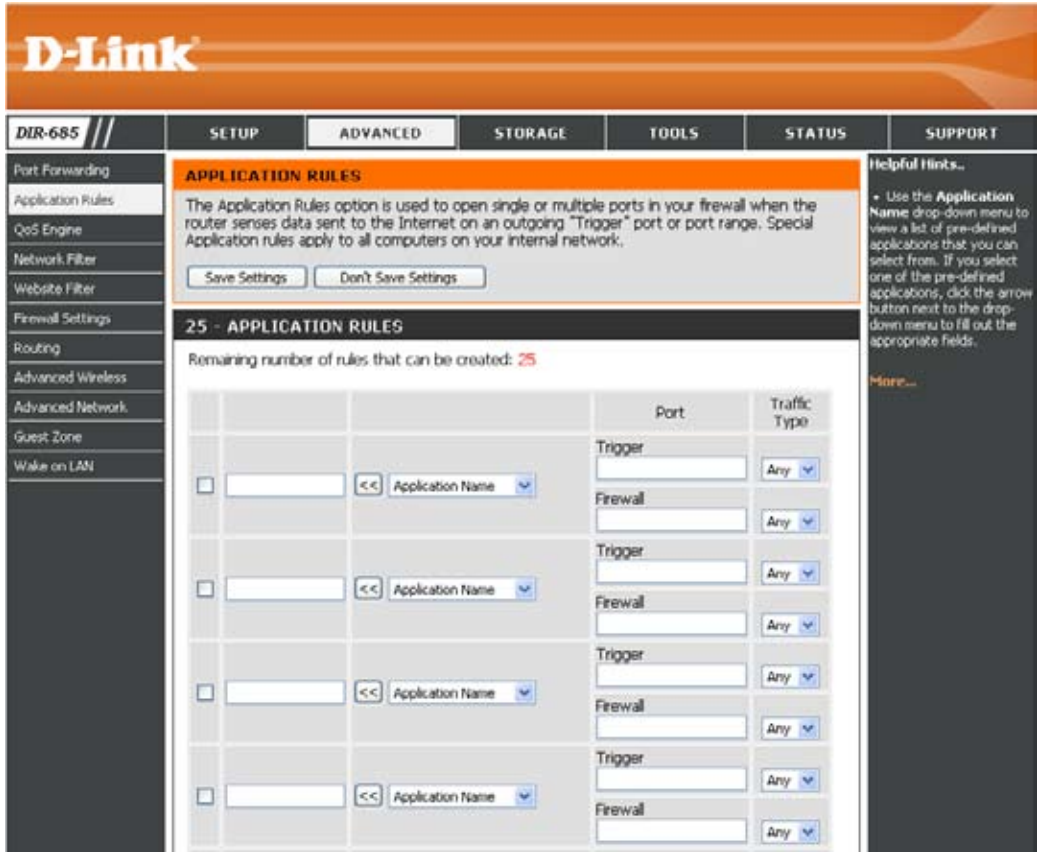
Enable checkbox: To enable an Application Rule, tick the checkbox next to the corresponding rule.

Application 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.

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 Any).



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.

Uplink Speed: The speed at which data can be transferred from the router to your ISP. This is determined by your ISP.

Downlink Speed: The speed at which data can be transferred from the Internet to your router. This is determined by your ISP.

Lag Eliminated: Tick this box to automatically set the priority for your applications.

Network Filter

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 router.

Configure MAC Filtering: Use the drop-down menu to select one of the following rules:

- Turn MAC Filtering OFF
- Turn MAC Filtering ON and allow computers listed to access the network
- Turn MAC Filtering ON and deny computers listed to access the network

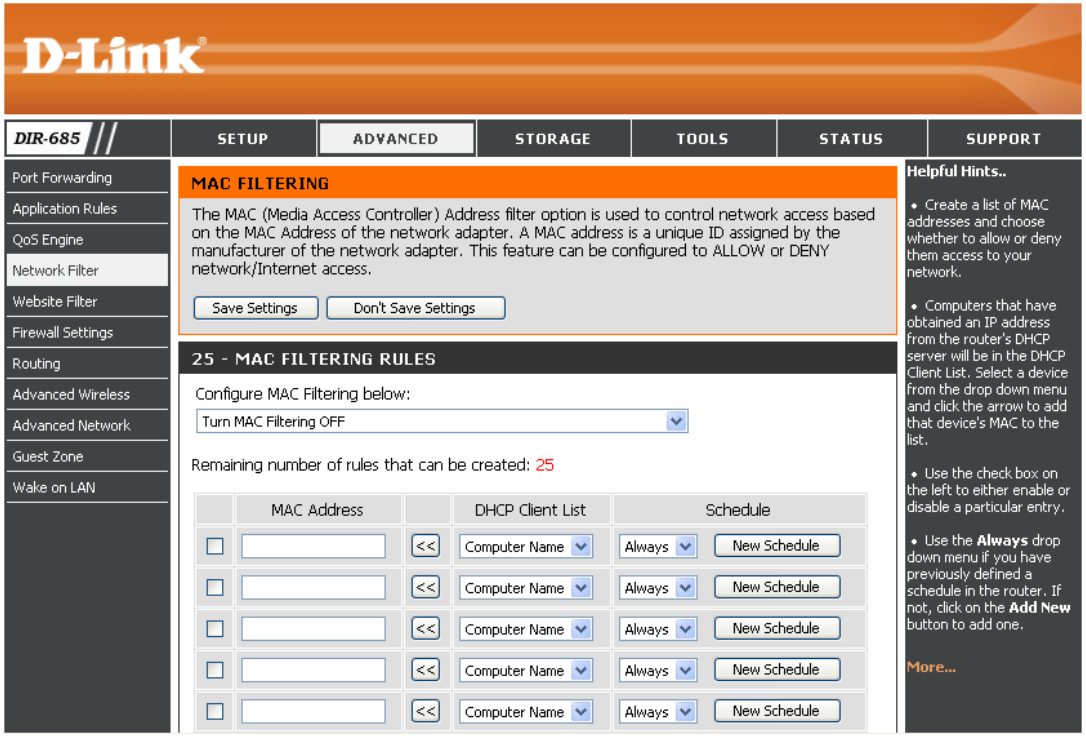
Enable checkbox: To enable a Network Filter, tick the checkbox next to the corresponding rule.

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.

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. Click the **New Schedule** button to create your own times in the **Tools** > **Schedules** section.

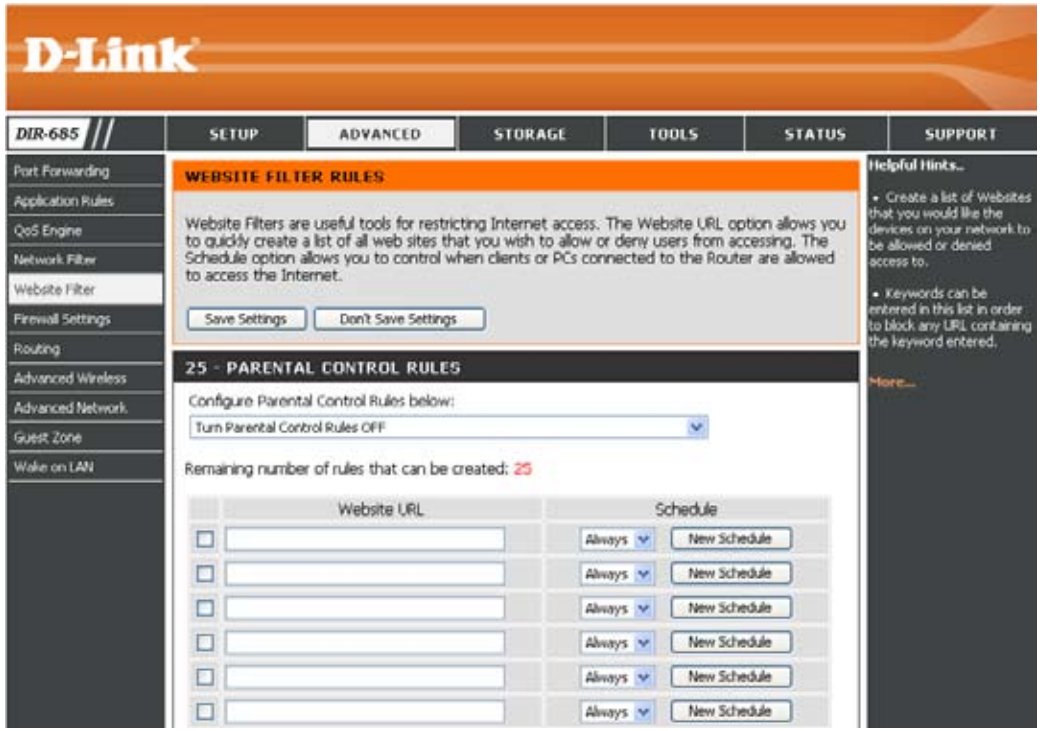


Website Filter

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**.

Configure Parental Control Rules: Use the drop-down menu to select one of the following rules:

- Turn Parental Control Rules OFF
- Turn Parental Control Rules ON and ALLOW computers access to ONLY these sites
- Turn Parental Control Rules ON and DENY computers access to ONLY these sites



Enable checkbox: To enable a Website Filter rule, tick the checkbox next to the corresponding rule.

Website URL: Enter the URL of the Website you would like to filter.

Schedule: Use the drop-down menu to define when the Website Filter will be enabled. The schedule may be set to Always, which will allow the particular service to always be enabled. Click the **New Schedule** button to list the Schedules that have been defined in the **Tools > Schedules** window (see page 88 for instructions on how to create a New Schedule).

Firewall Settings

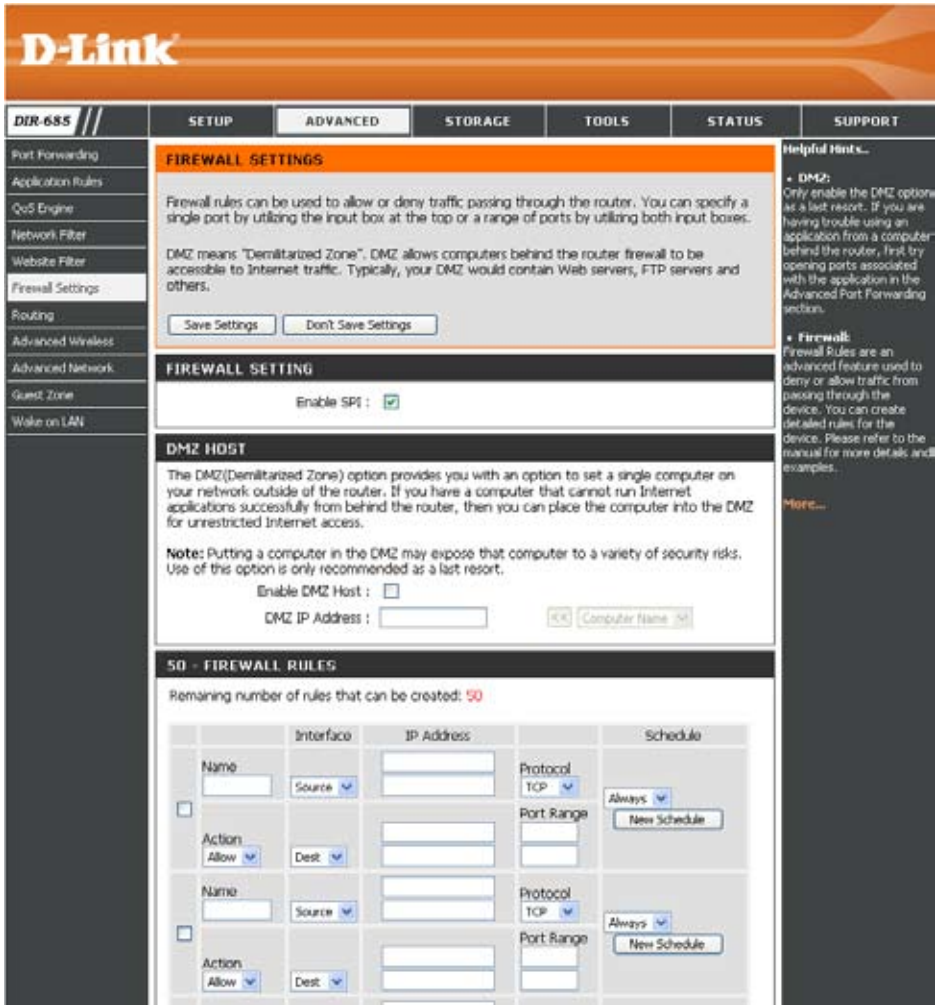
A firewall protects your network from the outside world. The D-Link DIR-685 offers a firewall type functionality. The SPI feature helps prevent cyber attacks. Sometimes you may want a computer exposed to the outside world for certain types of applications. If you choose to expose a computer, you cam enable DMZ. DMZ is short for Demilitarized Zone. This option will completely expose the chosen computer to the outside world.

Firewall Setting: Tick the checkbox to 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.

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

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.

Firewall Rules: Use this section to restrict external IP addresses and applications from accessing your network. This section also allows you to control the hosts/ applications that internal network devices can have access to on the Internet.



Firewall Settings

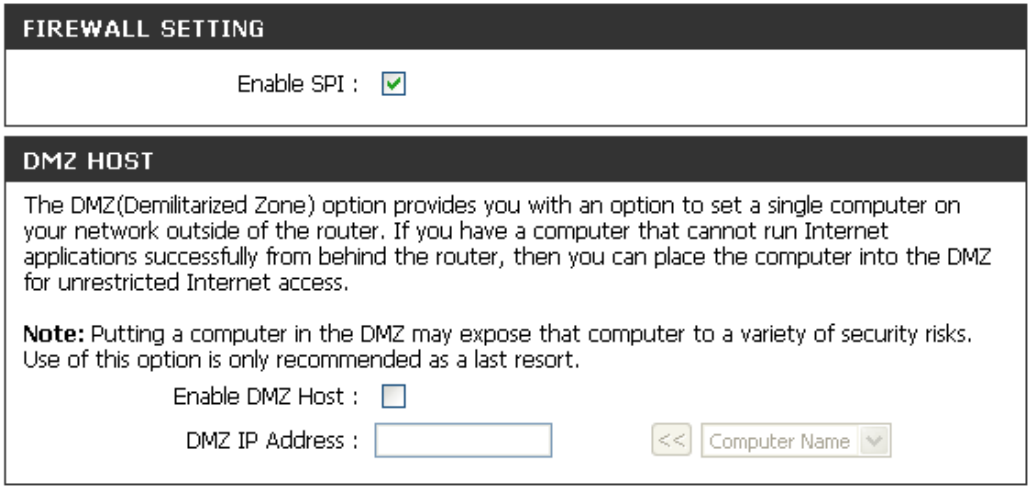
SPI / DMZ Host

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

Enable DMZ Host: If an application has trouble working from behind the router, you can expose one computer to the Internet and run the application on that computer. Tick the **Enable DMZ Host** checkbox if you want to add a computer to your DMZ.

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.



Firewall Settings

Firewall Rules

Enable checkbox: To enable a Firewall Rule, tick the checkbox next to the corresponding rule.

Name: Enter a name for the Firewall Rule.

Interface-Source: Use the drop-down menu to select the source interface for the Firewall Rule.

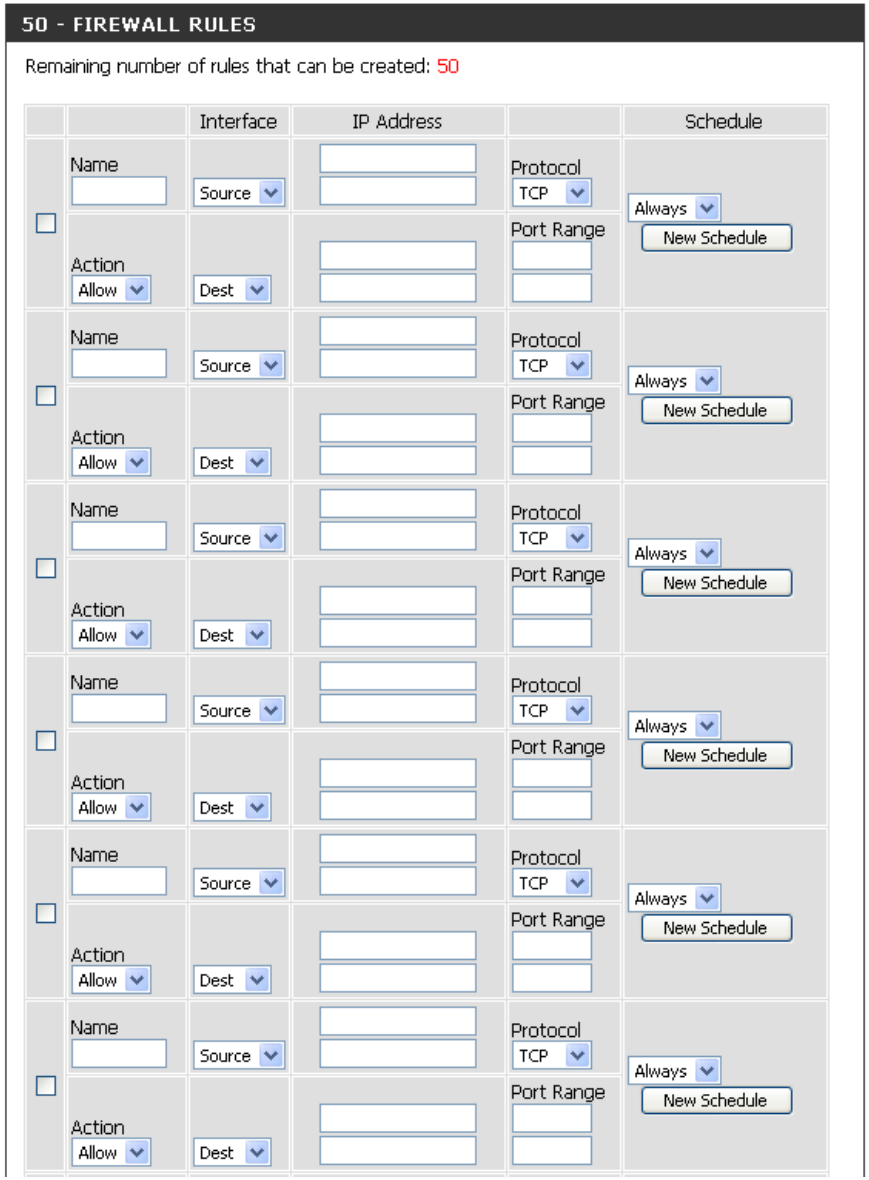
IP Address: Use these fields to specify the range of IP Addresses that you want to create the Firewall Rule for. Enter the lowest IP Address of the range in the box at the top and the highest IP Address of the range in the box underneath.

Protocol: Use the drop-down menu to select the protocol for the Firewall Rule (ALL, TCP, UDP, or ICMP).

Interface-Destination: Use the drop-down menu to select the destination interface for the Firewall Rule.

Port Range: Use these fields to specify the range of ports that should be used for the Firewall Rule. Enter the lowest port number of the range in the box at the top and the highest port number of the range in the box underneath.

Schedule: Use the drop-down menu to determine when the Firewall should run. Click the **New Schedule** button to list the Schedules that have been defined in the **Tools > Schedules** window (see page 88 for instructions on how to create a New Schedule).



Routing

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

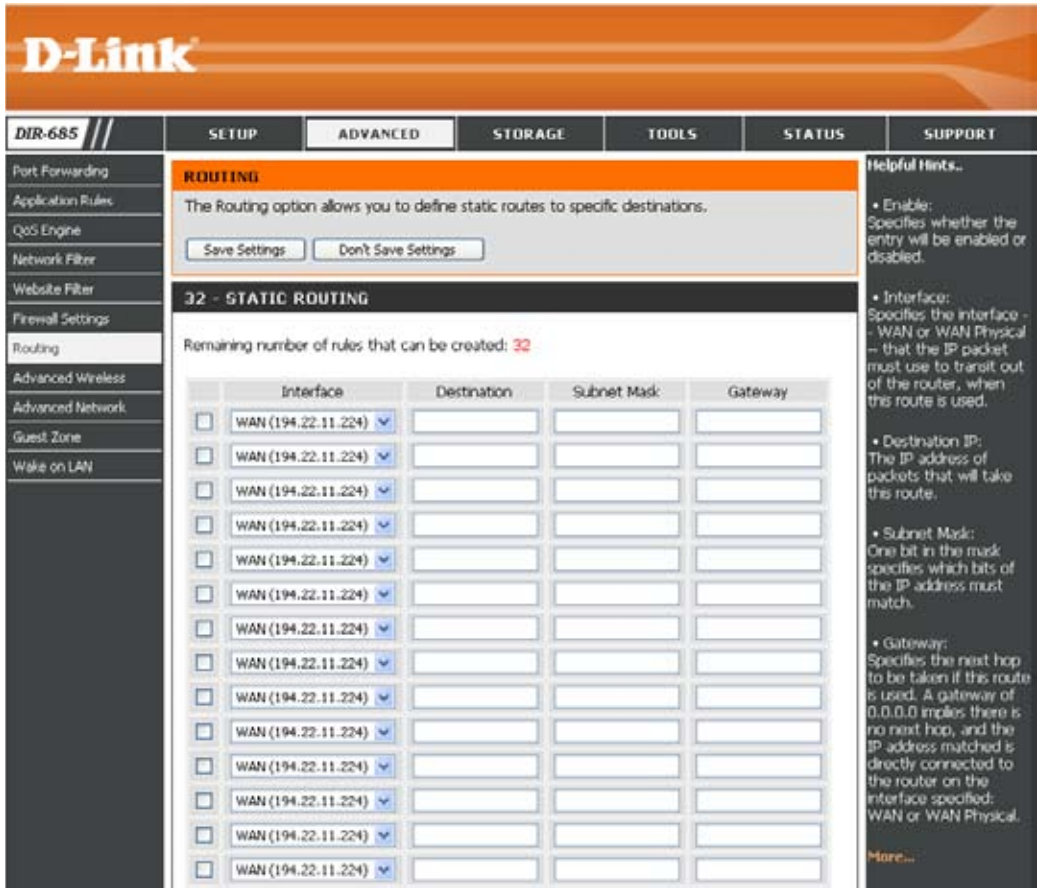
Enable checkbox: To enable a new route, tick the checkbox next to the corresponding route.

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

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

Subnet Mask: Enter the netmask of the route, please note that the numbers must match your destination IP address.

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



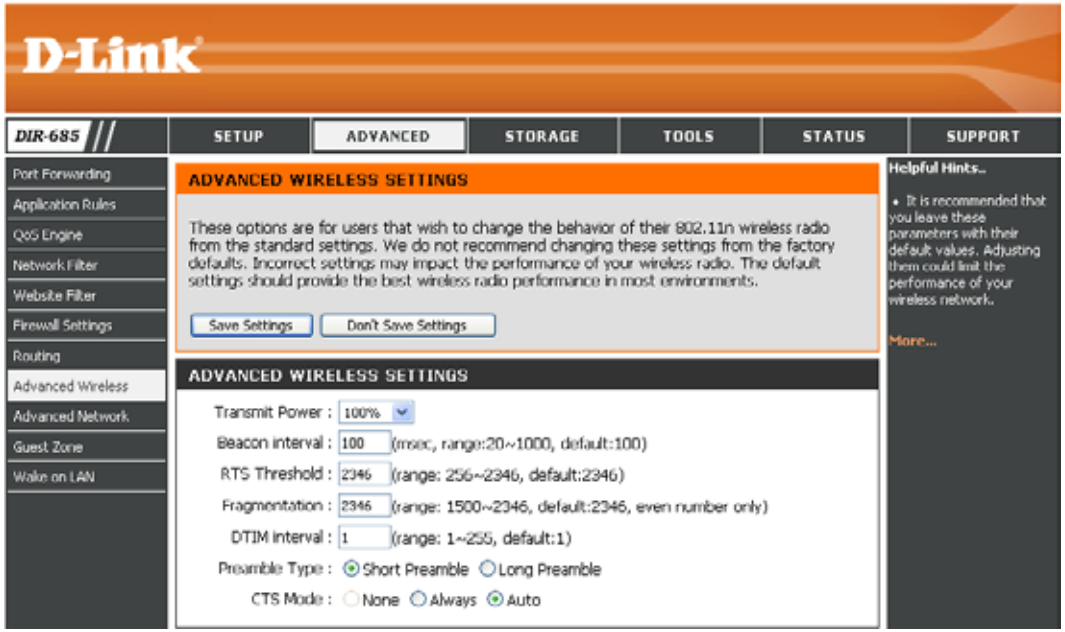
Advanced Wireless

Transmit Power: Set the transmit power of the antennas.

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

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

Fragmentation: 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) 1 is the default setting. A DTIM is a countdown informing clients of the next window for listening to broadcast and multicast messages.

Preamble Type: Select **Short Preamble** or **Long Preamble**.

CTS Mode: Clear To Send (CTS) is a mechanism that wireless devices use when the surrounding environment is 'dirty' (i.e. many senders and receivers over the same wireless frequency).

When the CTS Mode is set to **Always** the transmitting device will need to send out an RTS (Request To Send), and the intended receiving device needs to send out a CTS (Clear To Send), before the actual data can be sent.

Setting the CTS Mode to **Auto** indicates that the router will decide whether or not the CTS mechanism should be used or not, depending on the current environment and data length.

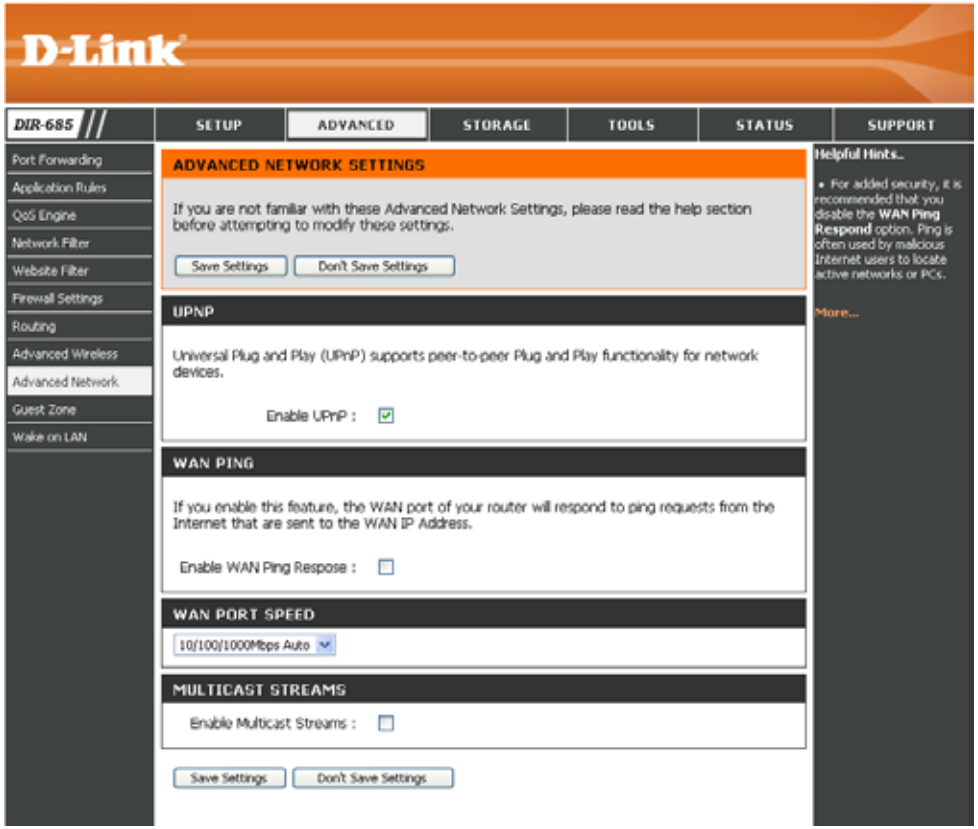
Advanced Network

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

WAN Ping: Unticking the box will not allow the DIR-685 to respond to pings. Blocking the Ping may provide some extra security from hackers. Tick the box to allow the WAN port to be “pinged”.

WAN Port Speed: You may set the port speed of the WAN/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: Tick the box to allow multicast traffic to pass through the router from the Internet.



Guest Zone

The Guest Zone feature will allow you to create temporary zones that can be used by guests to access the Internet. These zones will be separate from your main wireless network.

Enable Guest Zone: Tick this checkbox to enable the Guest Zone feature.

Wireless Network Name: Enter a wireless network name (SSID) that is different from your main wireless network.

Security Mode: Select the type of security or encryption you would like to enable for the guest zone.

Router IP Address: Type the IP Address that the router will use for the Guest Zone network.

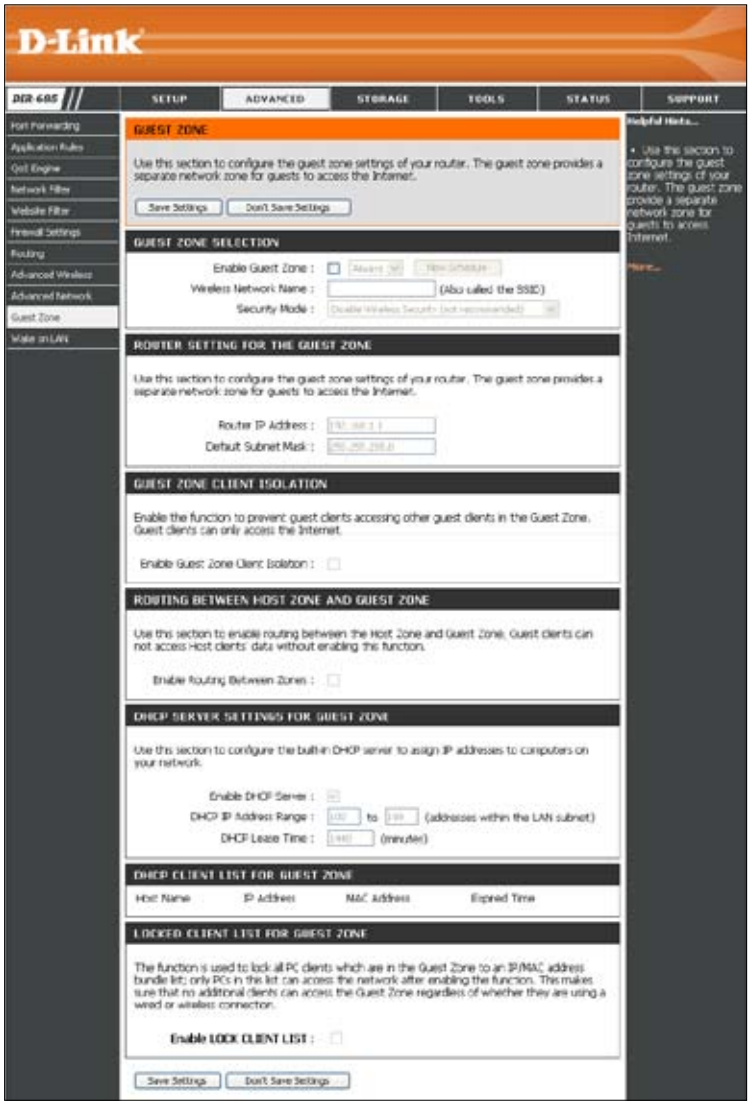
Default Subnet Mask: Type the Subnet Mask that the router will use for the Guest Zone network.

Enable Guest Zone Client Isolation: Tick this checkbox to prevent guest clients accessing other guest clients in the Guest Zone. Ticking this option only allows guest clients to access the Internet.

Enable Routing Between Zones: Tick this checkbox to allow network connectivity between the different zones created.

DHCP Server Settings for Guest Zone: Tick the **Enable DHCP Server** checkbox to configure the built-in DHCP server to assign IP addresses to computers in the Guest Zone.

Specify the range of IP addresses that will be assigned to computers in the Guest Zone in the **DHCP IP Address Range** fields. Type the last IP octet of the first host in the range in the textbox on the left and the last IP octet of the last host in the range in the textbox on the right.



DHCP Server Settings for Guest Zone: Tick the **Enable DHCP Server** checkbox to configure the built-in DHCP server to assign IP addresses to computers in the Guest Zone.

Enter the starting and ending IP addresses that will be assigned to devices in the Guest Zone in the **DHCP IP Address Range** fields.

Specify the length of time (in minutes) for the IP address lease in the **DHCP Lease Time** field.

DHCP Client List for Guest Zone: Displays the Host Name, IP Address and the time the DHCP lease will expire for all the DHCP clients in the Guest Zone.

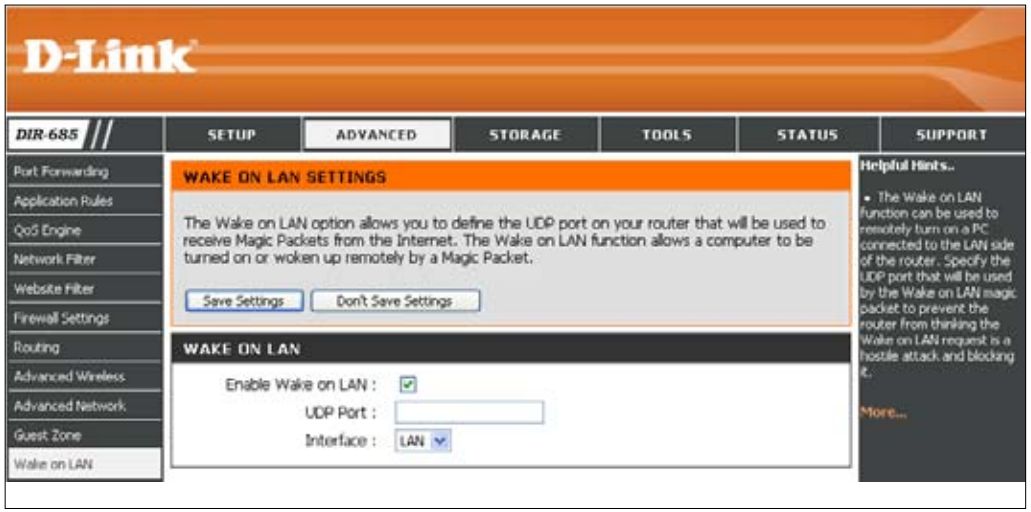
Wake on LAN

The Wake on LAN feature allows computers on your network to be turned on or woken up remotely.

Enable Wake on LAN: Tick the checkbox to enable the Wake on LAN feature.

UDP Port: Type a port number to specify the UDP port that the Magic Packet will use when trying to turn on or wake up a computer on your network,

Interface: Use the drop-down menu to specify the destination interface of the Magic Packet.



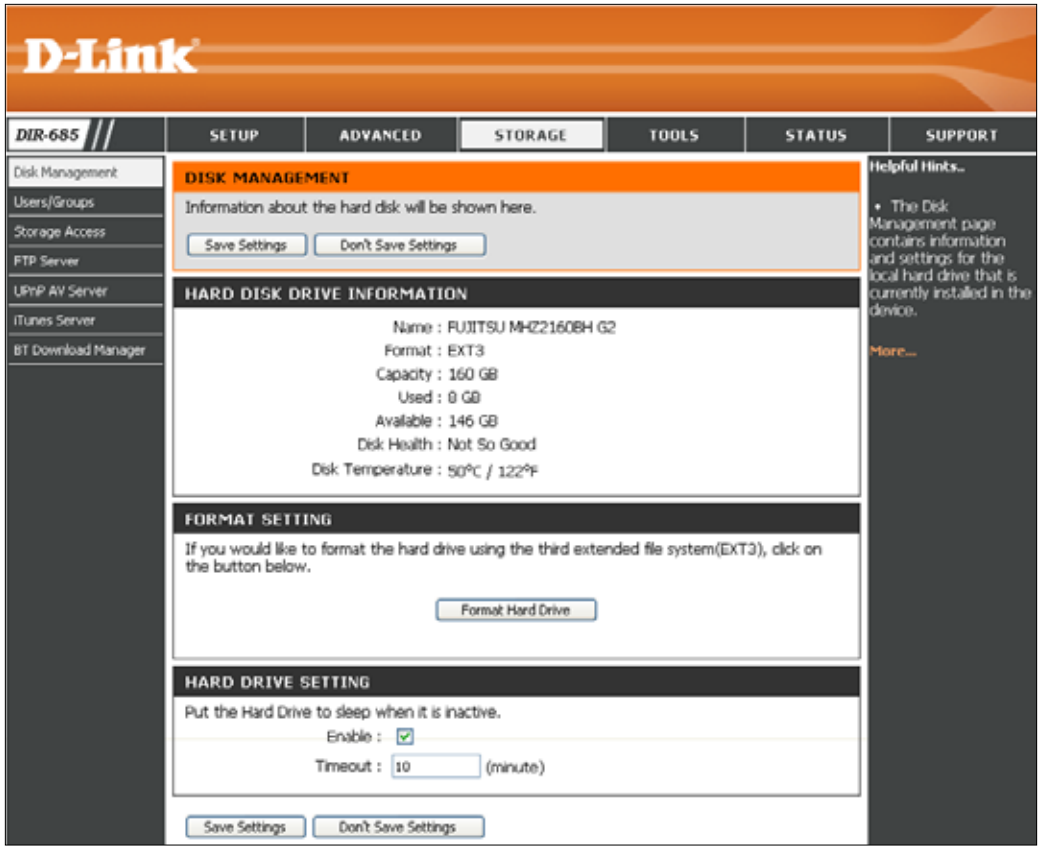
Disk Management

Hard Disk Drive Information: This window displays the hard drive information such as size, available space, used space, and format.

Format Setting: Click the **Format Hard Drive** button to format the hard drive.

Warning: When formatting your hard drive, all data will be lost.

Hard Drive Setting: Tick the box to turn off the hard drive after it has been idle for the amount of time (minutes) specified in the **Timeout** field.



User / Groups

The DIR-685 supports up to 64 unique users. The users can be added to a group, or individually. The users and groups are created to allow access to specific folders on the DIR-685, via FTP or your local network.

User and Group Creation

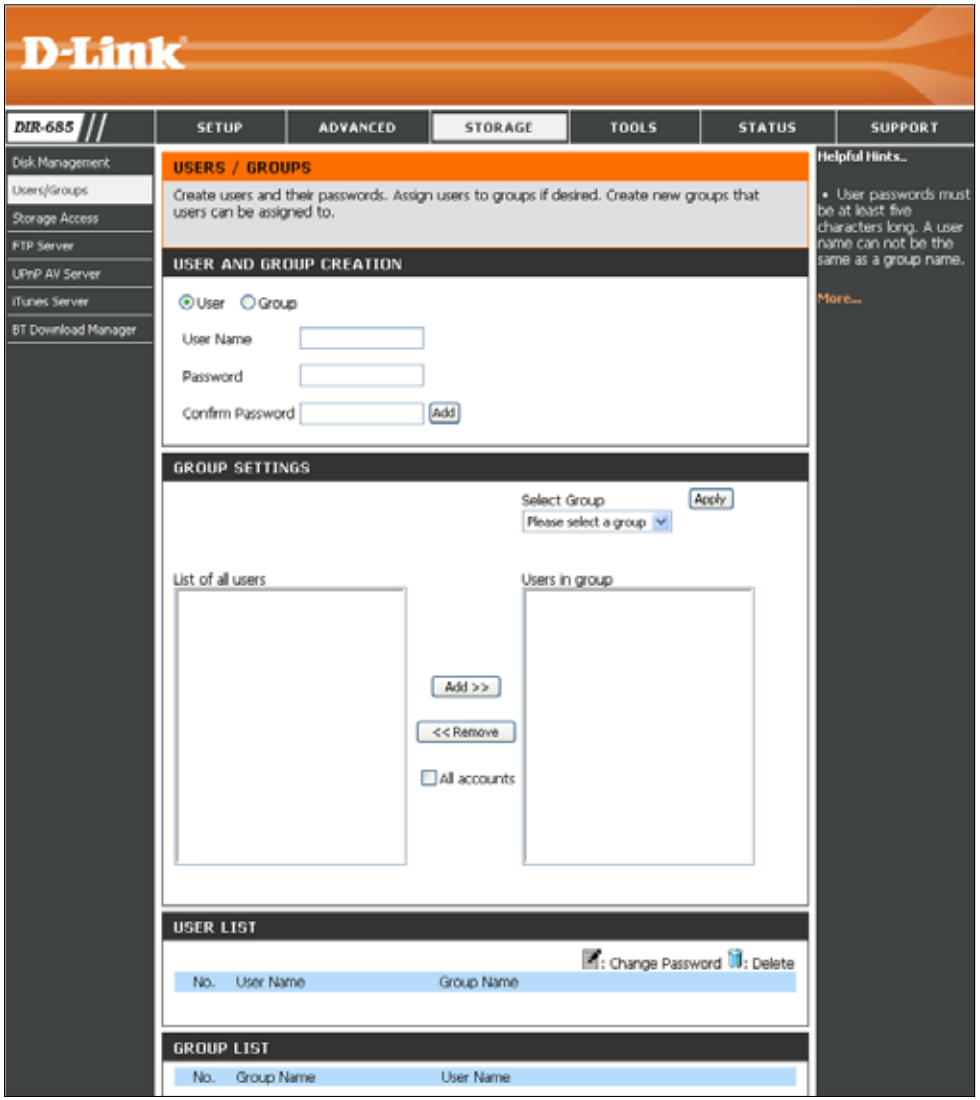
This section contains required attributes for a new user or group. Including User Name and Password or Group name.

If creating a new user carry out the following steps:

- Click the **User** radio button.
- Type in a *User Name*, *Password* and *Confirm* the Password in the relevant fields.

If creating a new group carry out the following steps:

- Click the **Group Radio** button.
- Type in a **Group Name** in the **Add New Group** text box.
- Click the **Add** button to finish creating the group



List of All Users

Displays the list of users that you may assign to the selected group.

Users in Group

Displays the users that are members of the group selected in the **Select Group** drop-down menu.

To add a new user to the selected group, click the user then click the **Add >>** button.

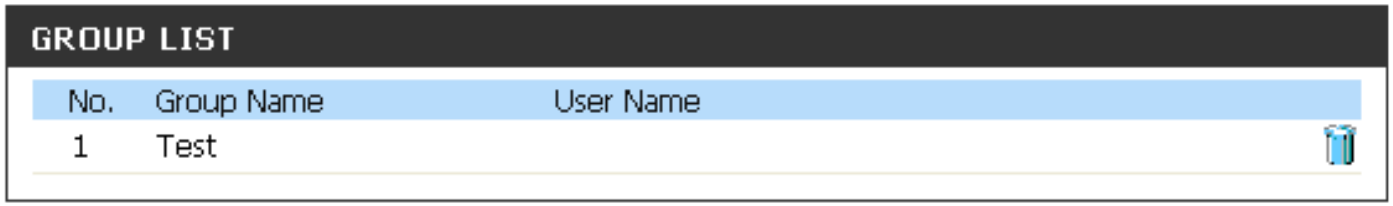
To remove a user from the group, click the user and then click the **<< Remove** button.

Tick the **All accounts** checkbox to select all accounts.

Users / Groups

Group List

Use the Group List section to view all the Groups setup on the DIR-685. The Group List section also allows you to delete groups that have been setup on the DIR-685. Carry out the following steps to delete an existing group:



1. In the Group List section, click the **Trash Can** icon next to the group you want to delete.

2.The following dialog box appears. Click the **OK** button to delete the Group.

Storage Access

The Storage Access settings allow you to assign users and groups to specific folders or volumes. By default, all volumes are open to anyone on the local network with read/write access. Before specific user or group rules can be created, the default rules must be deleted.

Storage Access Mode: Choose **Open Mode** to grant all users unrestricted access to the hard drive or volume connected to the DIR-685.

Choose **Security Mode** to reveal more parameters that allow you to configure the access rights for the connected hard drives.

Category: Determines whether the access rule will apply to a group or individual user.

User / Group: Select the user or group for the access rule or you can select **All Accounts**. If selecting the **User** category, tick the **Allow Guests** checkbox to allow Guest accounts access to the hard drive or volumes.

Folder: Browse to open and select the folder or directory you are controlling access to.

Permission: Set the user or group permission to **Read Only** or to **R/W: Read/Write**.

Oplocks: Opportunistic locks (oplocks) are a characteristic of the LAN Manager networking protocol implemented in the 32-Bit Windows family. Oplocks are guarantees made by a server for a shared logical volume to its clients. These guarantees inform the Client that a file's content will not be allowed to be changed by the server, or if some change is imminent, the client will be notified before the change is allowed to proceed.

Oplocks are designed to increase network performance when it comes to network file sharing however when using file-based database applications it is recommended to set the share oplocks to **No (off)**.

By default, Windows Vista® has Oplocks enabled and cannot be disabled. If you are having network performance issues with applications sharing files from the DIR-685 you may try to improve performance by setting Oplocks to **No (off)**.

Map Archive: When enabled, the file attribute "Archive" will be set for files stored on the DIR-685. Certain backup software set this attribute for files that are being stored as backups.

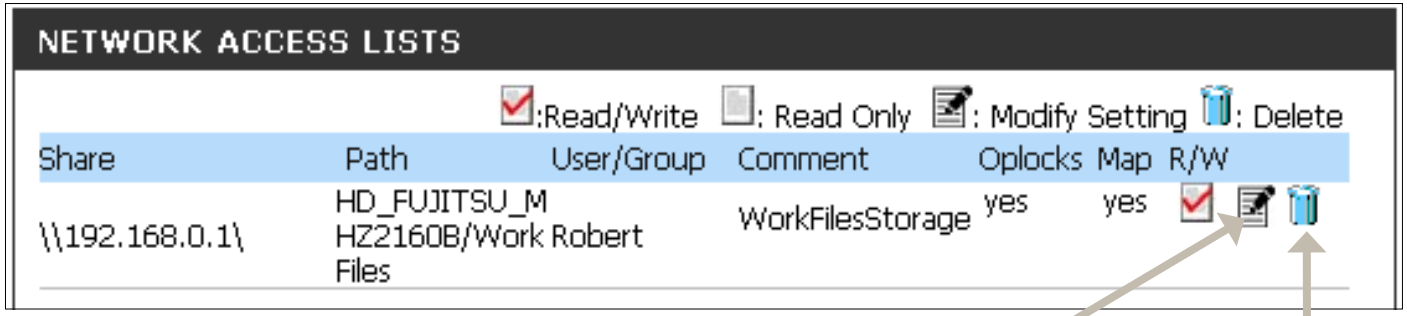
Comment: Enter a comment or enter a description of the rule for reference.

Network Access List: Lists all defined access rules.

Storage Access

Network Access Lists

Use the Network Access List section to view all the Network Access Lists that have been setup on the DIR-685. The Network Access List section also allows you to modify or delete Network Access Lists that have been setup on the DIR-685.



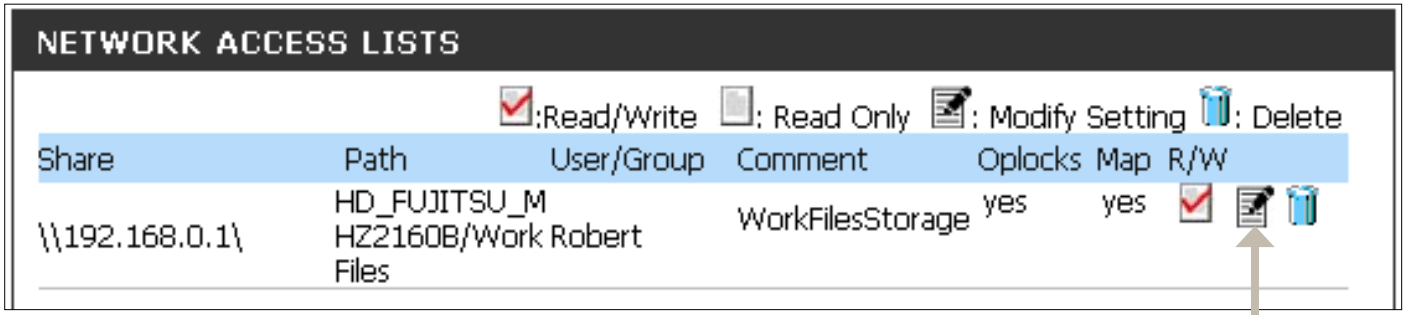
Editing a Network Access List
Click the notepad icon next to the user you want to edit. See the "**Editing Existing Network Access Lists**" section (page 68) for more information.

Deleting a Network Access List
Click the notepad icon next to the user you want to edit. See the "**Deleting Network Access Lists**" section (page 70) for more information.

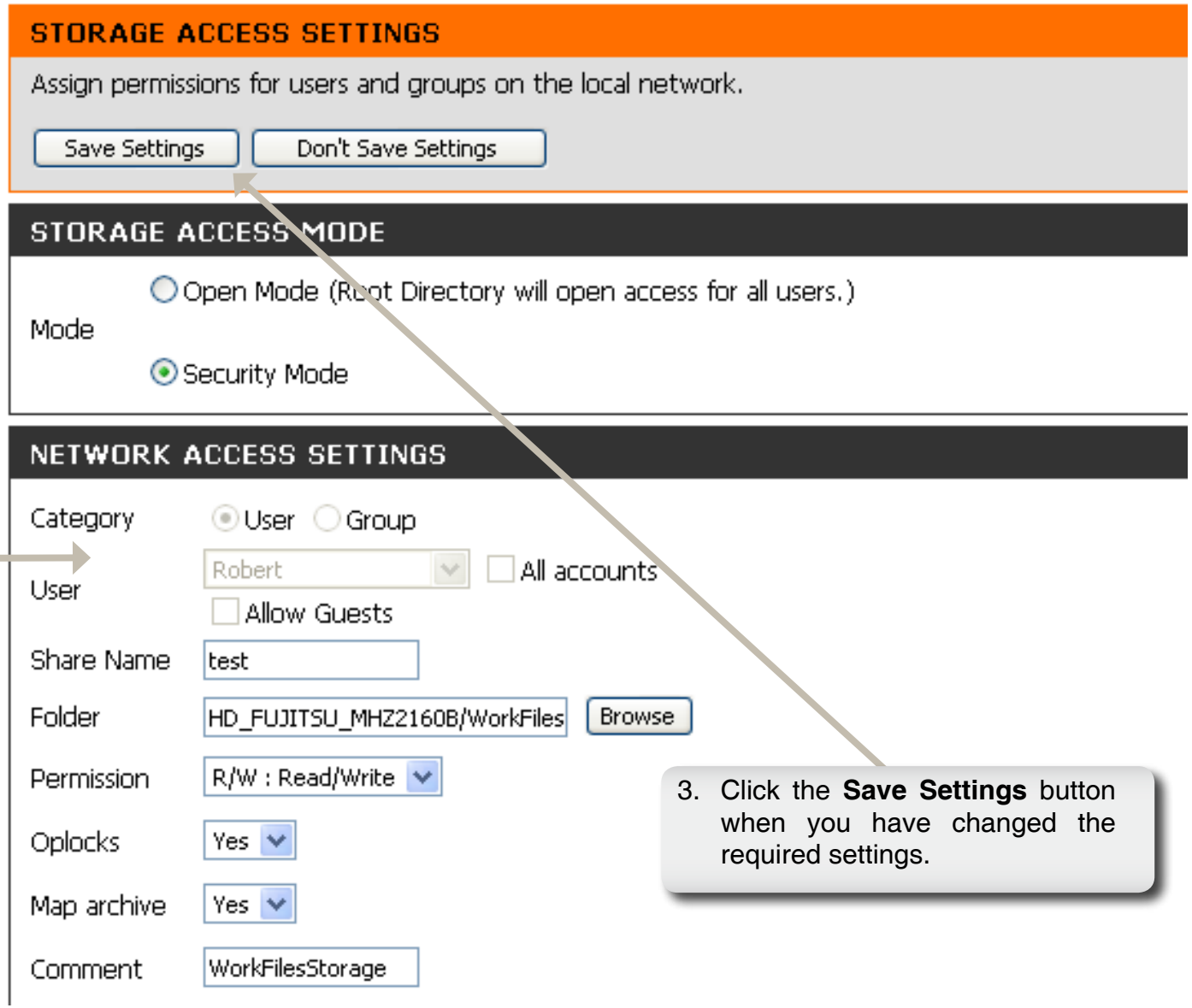
Storage Access

Editing Existing Network Access Lists

Carry out the following steps to edit a Network Access List:



1. In the Network Access Lists section, click the **Notepad** icon next to the Network Access List you want to edit.



2. Modify the required settings in the Network Access Settings section.

3. Click the **Save Settings** button when you have changed the required settings.

Users / Groups

Deleting a Network Access List

Carry out the following steps to delete a Network Access List:

1. In the Network Access Lists section, click the Trash Can icon next to the network access list you want to delete.

2. The following dialog box appears. Click the **OK** button to delete the Network Access List.

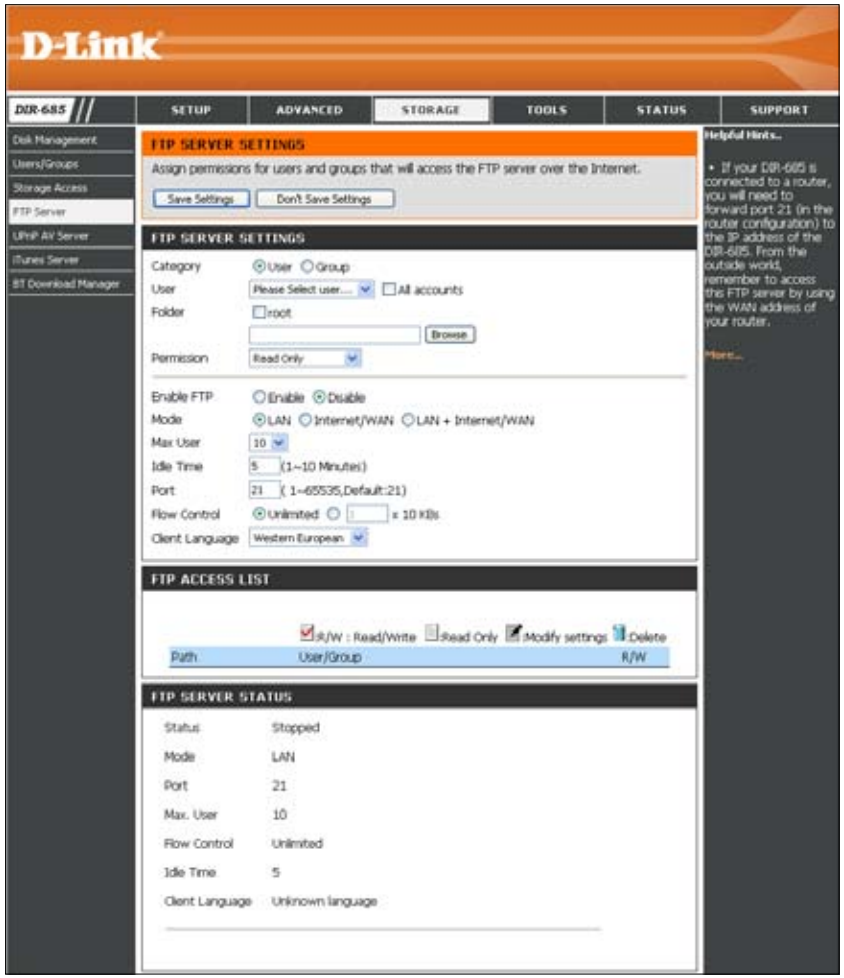
FTP Server

The DIR-685 is equipped with a built in FTP Server, which is easy to configure. It allows users access to important data whether they are on the local network or at a remote location. The FTP server can be configured to allow user access to specific directories, and will allow up to 10 users to access the DIR-685 at a time. For improved security, the DIR-685 supports use of an FTPS client, such as SSL/TLS, to encrypt both the password and the data. The DIR-685 supports FireFTP, a cross-platform FTP client for Mozilla Firefox users.

FTP Server Settings: This section contains the configuration settings for the DIR-685 FTP Server.

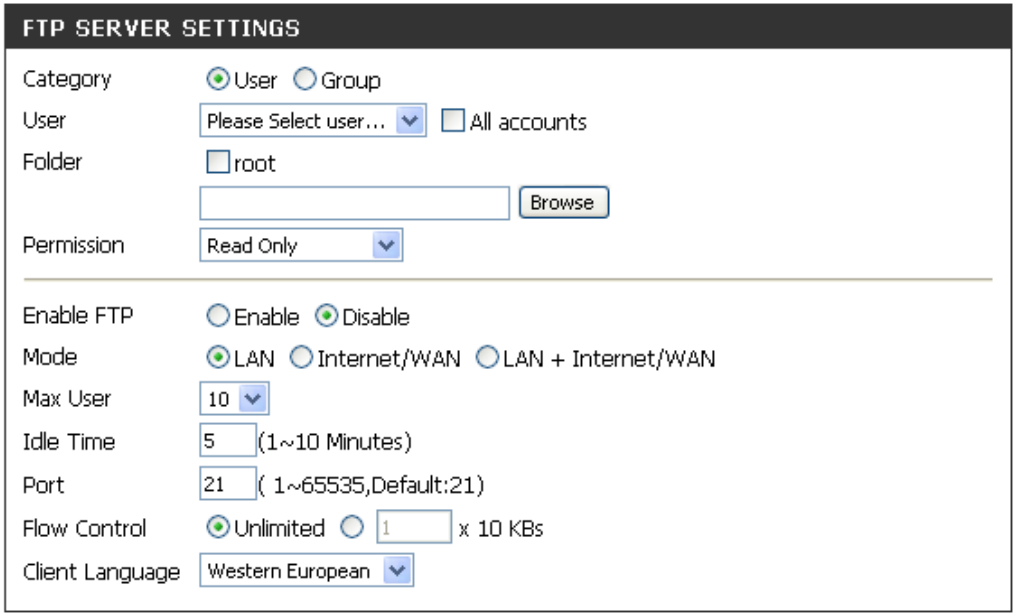
FTP Access List: The FTP access for users and groups can be added and edited here.

FTP Server Status: Displays the current status of the FTP Server.



FTP Server

FTP Server Settings



Category: Determines whether the access rule will apply to a group or individual user.

User / Group: Select the group or user the FTP server rule will apply to.

Folder: Browse to and select the folder or directory you are granting FTP access to. Select root to grant access to all volumes.

Permission: Set the user or group permission to Read Only or R/W: Read/Write.

Enable FTP: Select **Enable** or **Disable** to enable or disable the DIR-685 FTP server.

Mode: Click a radio button to specify which traffic sides will have access to the device's hard drives via FTP. The available options are: **LAN**, **Internet/WAN**, or **LAN + Internet/WAN.**

Max User: Sets the maximum amount of users that can connect to the FTP server.

Idle Time: Sets the amount of time a user can remain idle before being disconnected.

Port: Sets the FTP port. Default is 21.

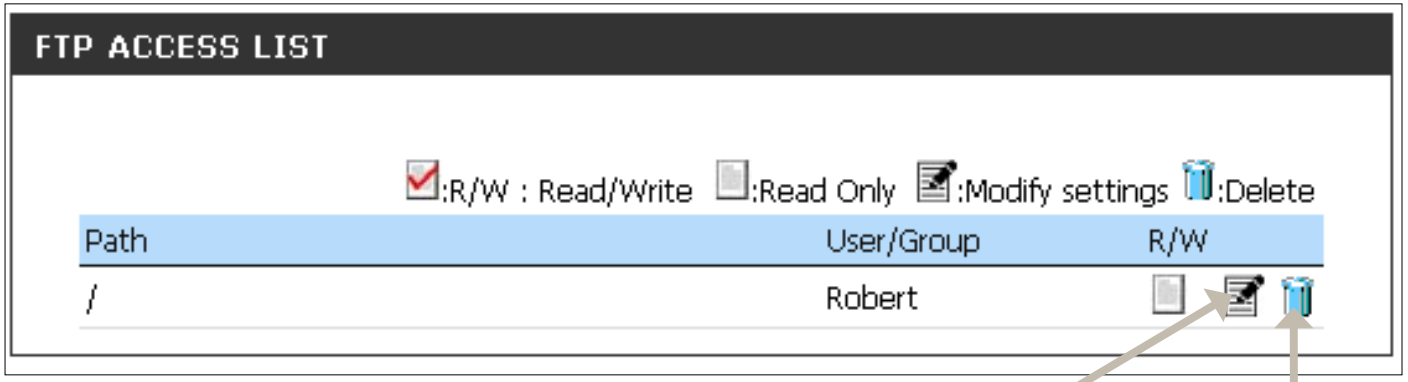
Flow Control: Allows you to limit the amount of bandwidth available for each user.

Client Language: Most standard FTP clients like Windows FTP, only support Western European codepage when transferring files. Support has been added for non standard FTP clients that are capable of supporting these character sets.

FTP Server

FTP Access List

Use the FTP Access List section to view all the FTP Access Lists that have been setup on the DIR-685. The FTP Access List section also allows you to modify or delete FTP Access Lists that have been setup on the DIR-685.



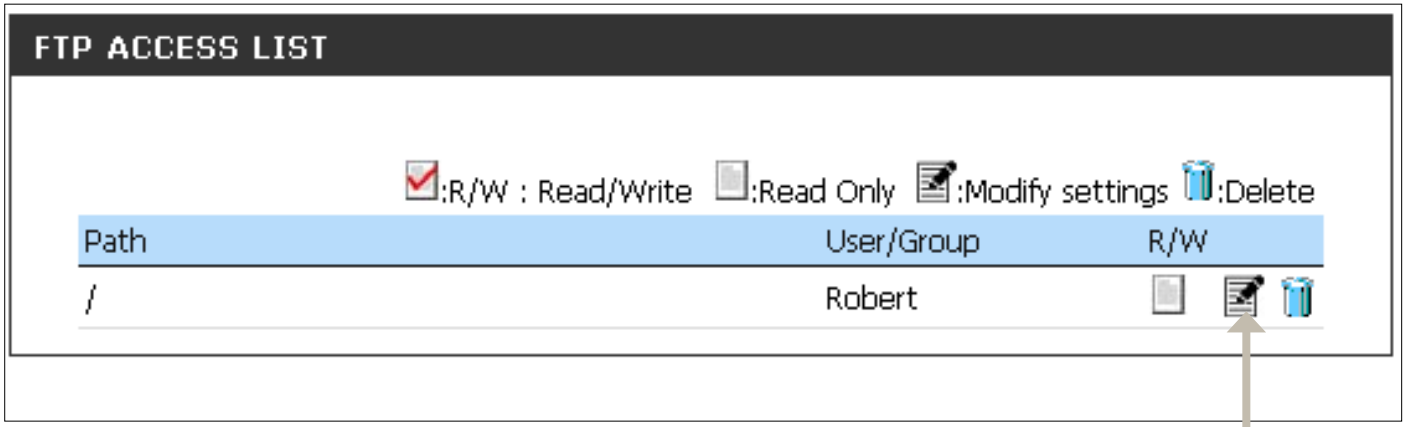
Editing an FTP Access List
Click the notepad icon next to the FTP user you want to edit. See the "**Editing an FTP Access List**" section (page 74) for more information.

Deleting an FTP Access List
Click the notepad icon next to the user you want to edit. See the "**Deleting an FTP Access List**" section (page 76) for more information.

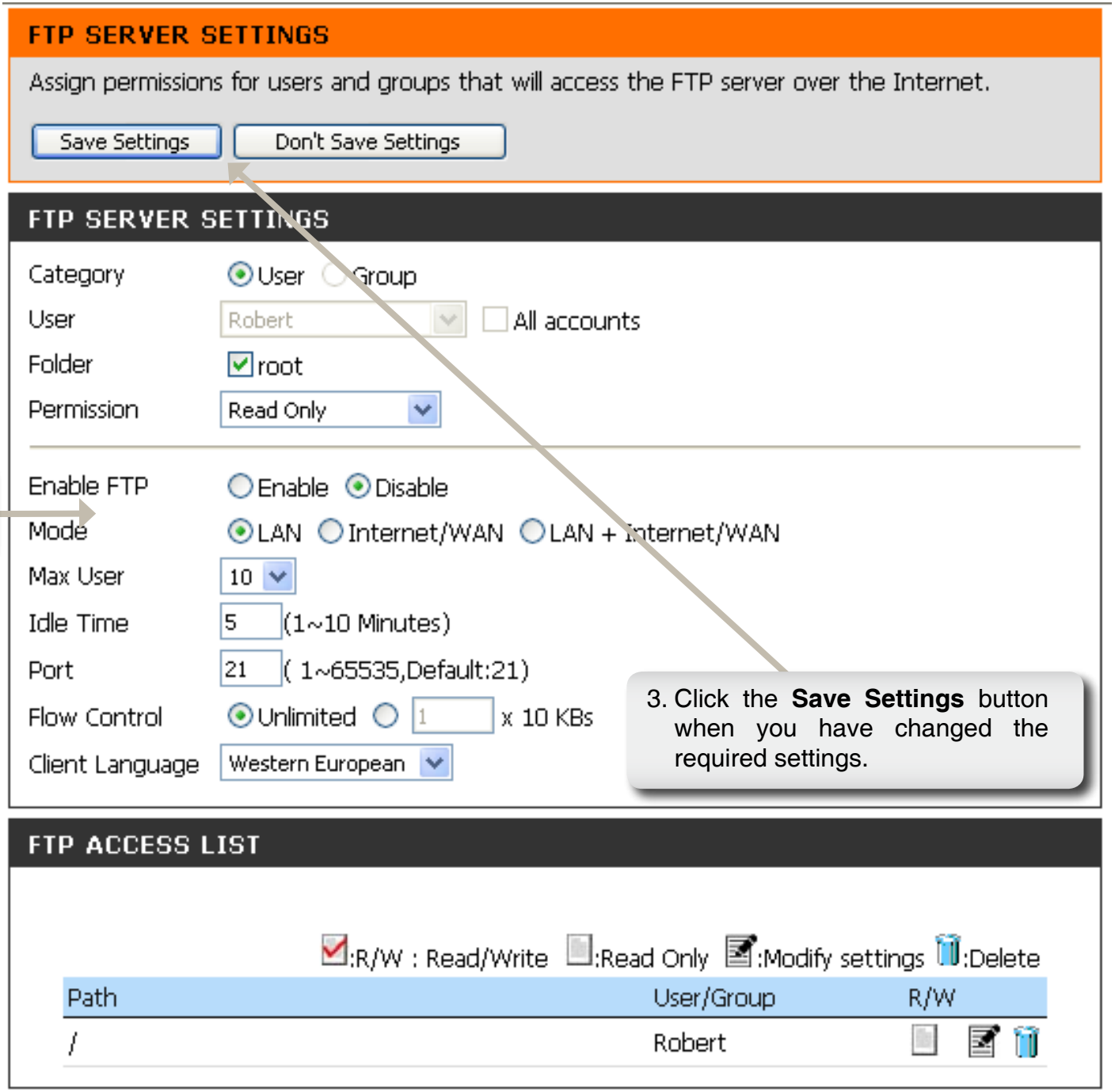
FTP Server

Editing an FTP Access List

Carry out the following steps to edit a FTP Access List:



1. In the FTP Access Lists section, click the **Notepad** icon next to the FTP Access List you want to edit.



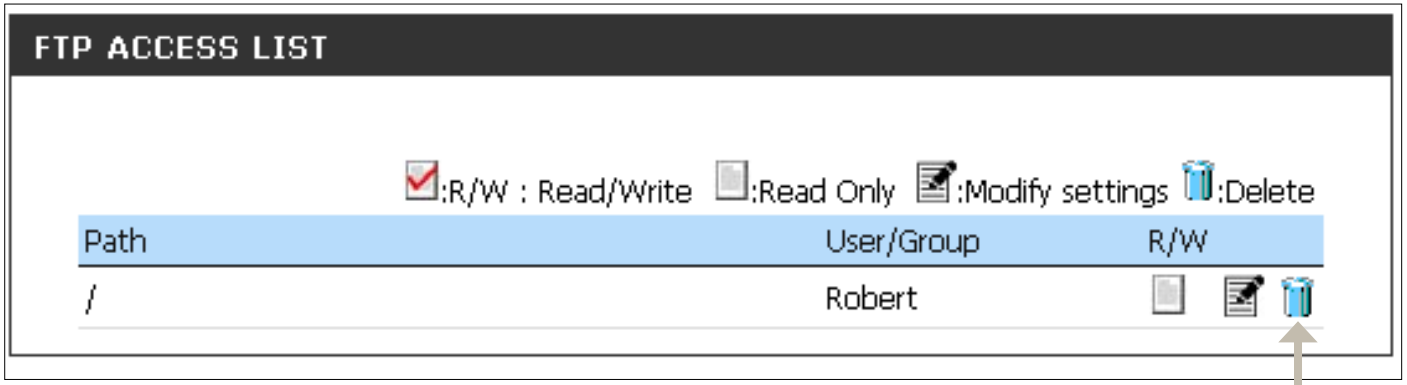
2. In the FTP Server Settings section, modify the required settings.

3. Click the **Save Settings** button when you have changed the required settings.

FTP Server

Deleting an FTP Access List

Carry out the following steps to delete a Network Access List:



1. In the FTP Access List section, click the **Trash Can** icon next to the FTP Access List you want to delete.

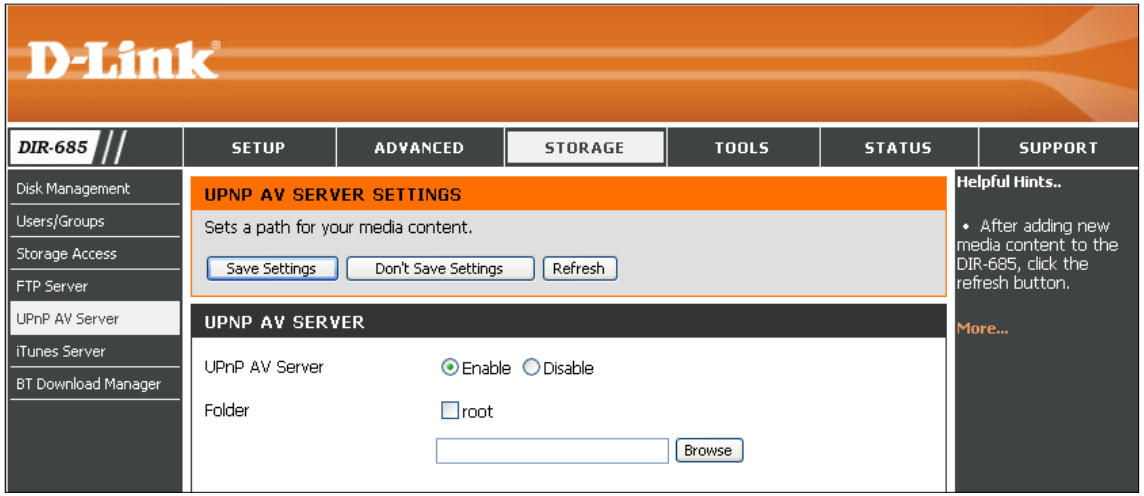
2. The following dialog box appears. Click the **OK** button to delete the FTP Access List.

UPnP AV Server

The DIR-685 features a UPnP AV Server. This server provides the ability to stream photos, music and videos to UPnP AV compatible network media players. If the server is enabled, the DIR-685 will be automatically detected by UPnP AV compatible media players on your local network.

UPnP AV Server: Select **Enable** or **Disable** to turn the DIR-685 UPnP AV server on or off.

Folder: Specifies the folder or directory that will be shared by the UPnP AV server. Select **root** to share all files on all volumes, or uncheck the box and click **Browse** to select a specific folder.



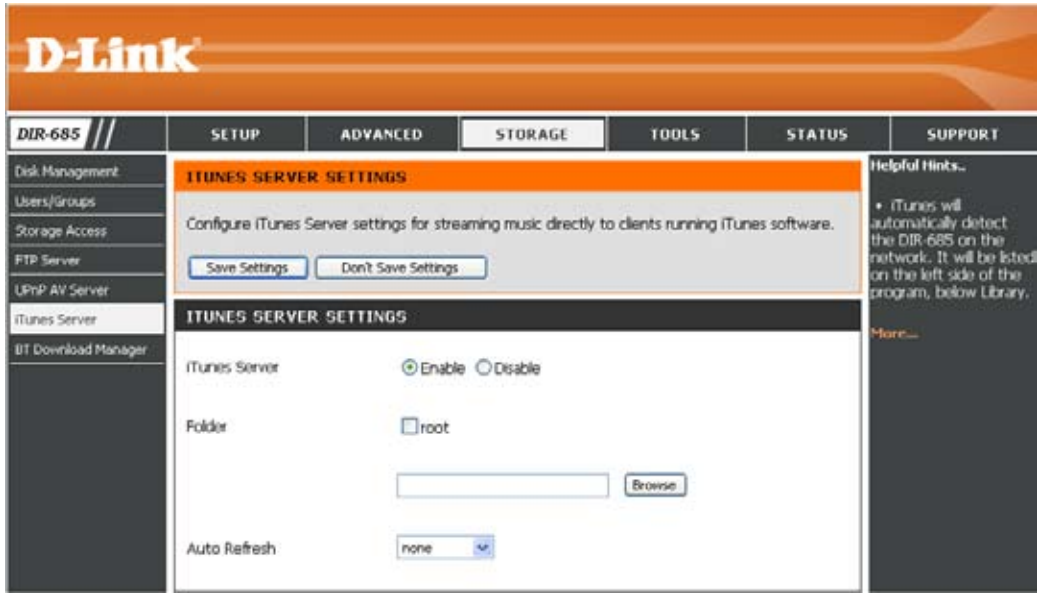
iTunes Server

The DIR-685 features an iTunes Server. This server provides the ability to share music and videos to computers on the local network running iTunes. If the server is enabled, the DIR-685 will be automatically detected by the iTunes program and the music and videos contained in the specified directory will be available to stream over the network.

iTunes Server: Select **Enable** or **Disable** to enable or disable the DIR-685 iTunes server.

Folder: Specifies the folder or directory that will be shared by the UPnP AV server. Select **root** to share all files on all volumes, or uncheck the box and click **Browse** to select a specific folder.

Auto Refresh: Use the drop-down menu to specify the interval that the iTunes Server settings on the DIR-685 should auto-refresh. You may configure Auto Refresh to automatically update your shared iTunes Library data every 5, 15, or 30 minutes or at 1, 2, 6, 12 or 24 hour intervals.

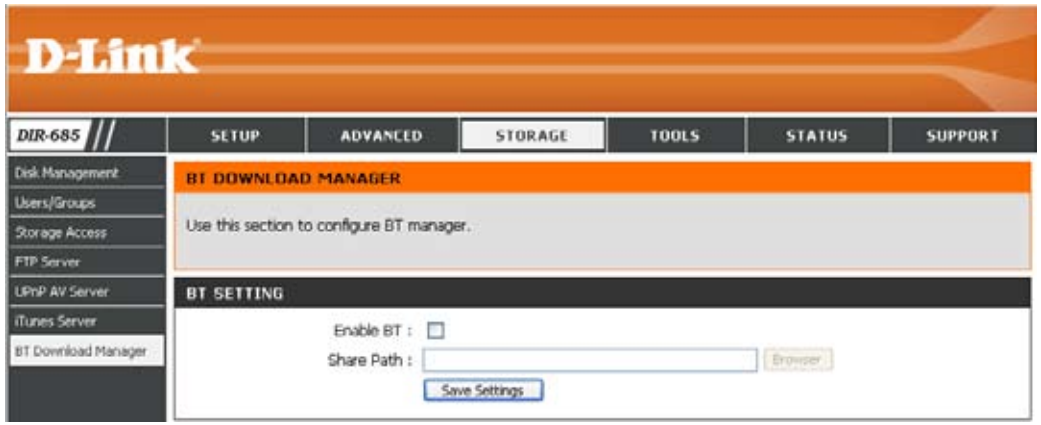


BT Download Manager

The DIR-685 features a built-in BitTorrent Manager that allows you to download and upload torrent files.

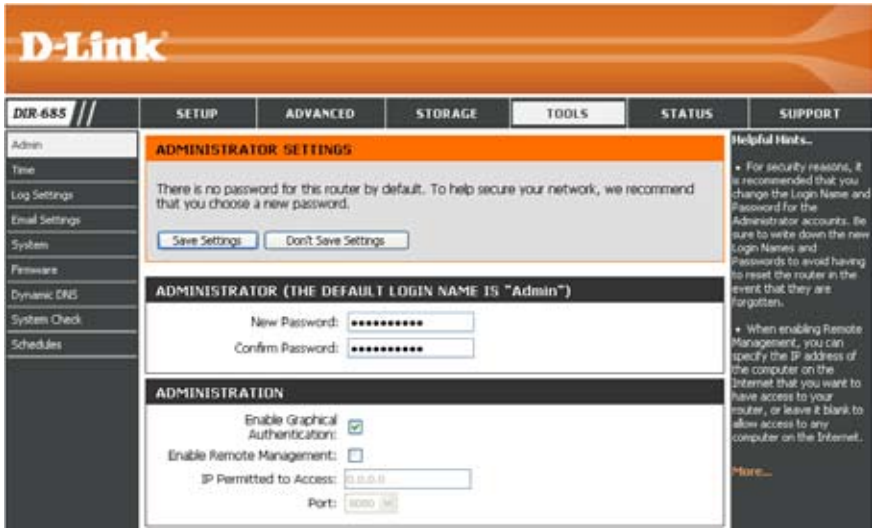
Enable BT: Tick the checkbox to enable the DIR-685 BitTorrent Manager.

Share Path: Specifies the folder that will be used for Downloading and Uploading Torrents. Click the **Browse** button to browse to the required folder on one of the hard drives connected to the DIR-685.



Admin

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 view settings but cannot make any changes. Only the admin account has the ability to change both admin and user account passwords.



Administrator Password: Enter a new password for the Administrator account. The administrator can make changes to router settings.

Enable Graphical Authentication: Tick the checkbox to display the graphical authentication window on the login screen. Enabling this option adds an extra level of security as it requires users to type the password that appears in the graphical authentication window on the login screen, in addition to their user name and password.

Enable Remote Management: Remote Management allows the DIR-685 to be configured from the Internet using a web browser. A username and password is still required to access the Web-Management interface. By default only a member of your network can browse the built-in web pages to perform Administrator tasks. This feature enables you to perform Administrator tasks from the remote (Internet) host.

IP Permitted to Access: If Remote Management is enabled, you can type an IP address in this field to restrict remote access to the specified IP address. Leave this field blank if you want to allow remote access from any computer on the Internet.

Port: The port number used to access the DIR-685 from the Internet.

Example: http://x.x.x.x:8080 where x.x.x.x is the Internet IP address of the DIR-685 and 8080 is the port used for the Web Management interface.

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 Time Server. Daylight Saving can also be configured to automatically adjust the time when needed.

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

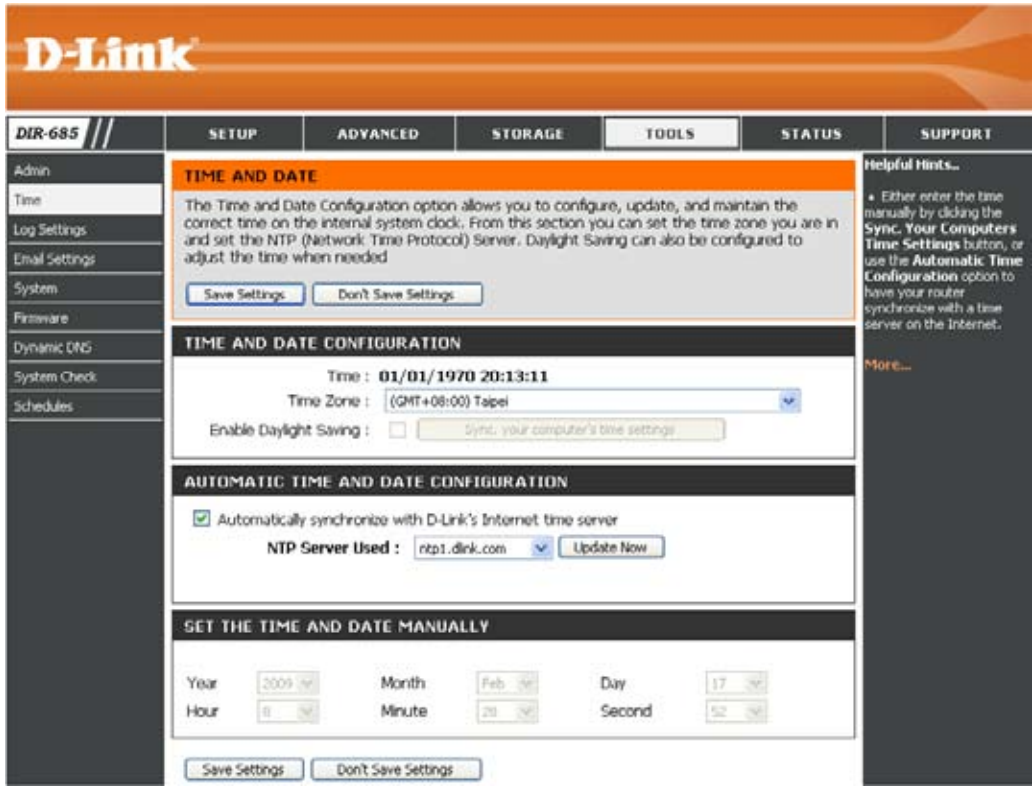
Enable Daylight Saving: To select Daylight Saving time manually, select enabled or disabled, and enter a start date and an end date for daylight saving time.

Sync. your computer's time settings: Click this button to synchronize the DIR-685's clock with the time set on your computer.

Automatically synchronize with D-Link's Internet time server: NTP is short for Network Time Protocol. NTP synchronizes computer clock times in a network of computers. Tick this box to use one of the D-Link NTP server's.

NTP Server Used: Use the drop-down menu to select one of the D-Link Internet time servers.

Set the Time and Date Manually: To manually input the time, enter the values in these fields for the Year, Month, Day, Hour, Minute, and Second

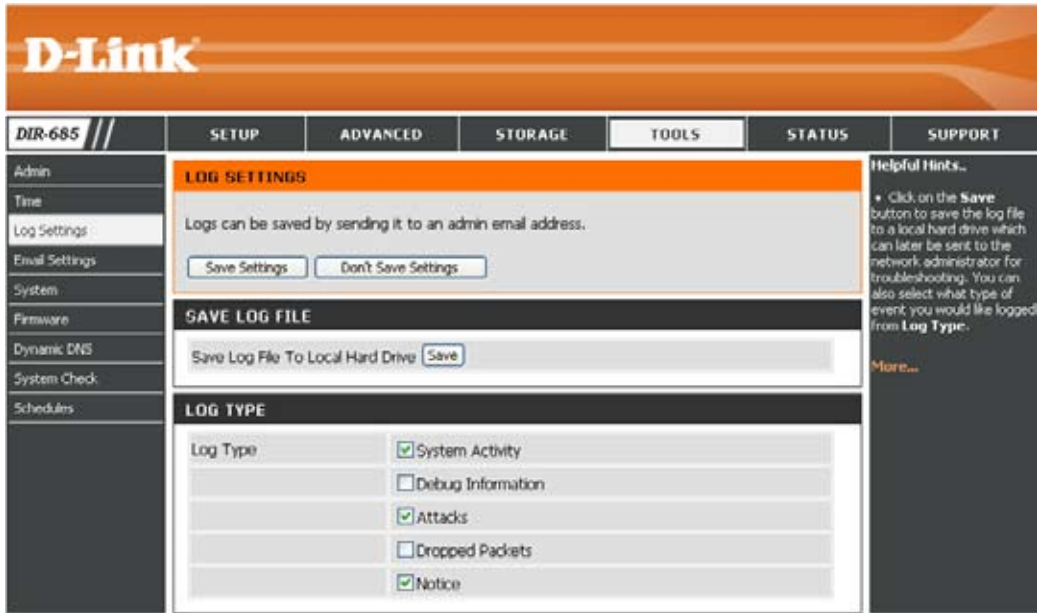


Log Settings

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.

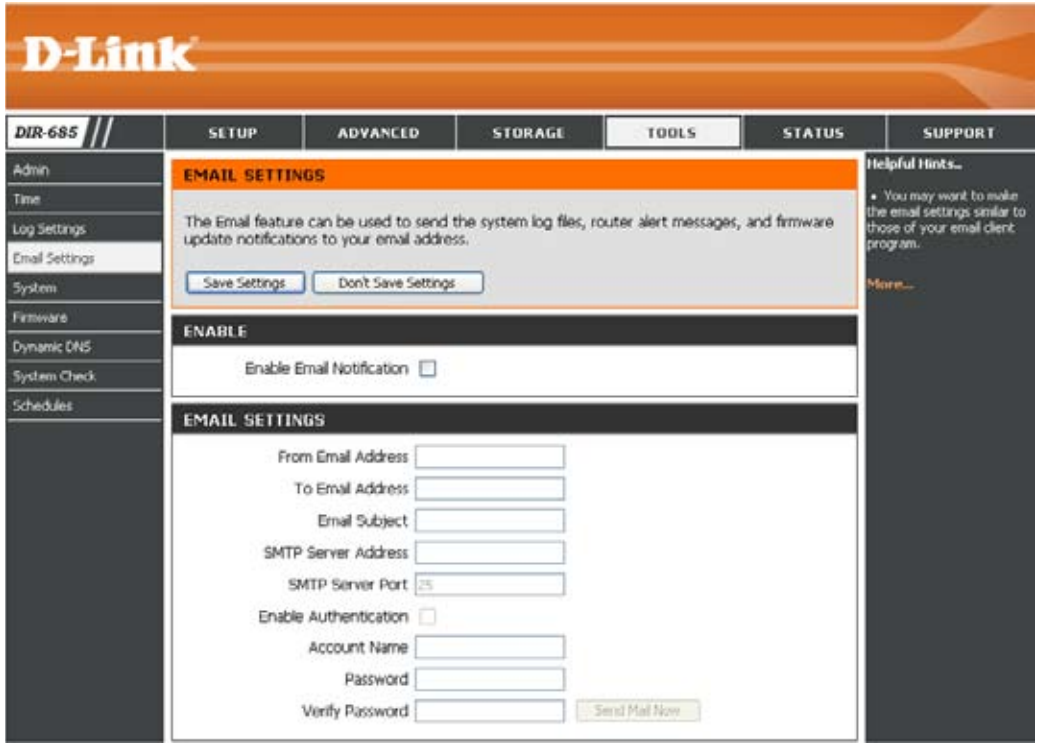
Save Log File: Click the **Save** button to save the log results to your hard drive.

Log Types: Select the type of information displayed in the router log.



Email Settings

The E-mail feature can be used to send the system log files, router alert messages, and firmware update notification to your e-mail address.



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

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

To Email Address: Enter the e-mail address where you want the e-mail sent.

Email Subject: Enter a Subject for the e-mail messages that will be sent from the DIR-685.

SMTP Server Address: Enter the SMTP server address for sending e-mail.

SMTP Server Port: Enter the Port Number used by your SMTP Server.

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

Account Name: If ticking the **Enable Authentication** checkbox, enter the account used to authenticate with the SMTP server.

Password: Enter the password associated with the account used to authenticate with the SMTP Server. Re-type the password associated with the account in the **Verify Password** field.

Send Mail Now: Click this button to send a test e-mail from the DIR-685 to the e-mail address specified in the **To Email Address** field.

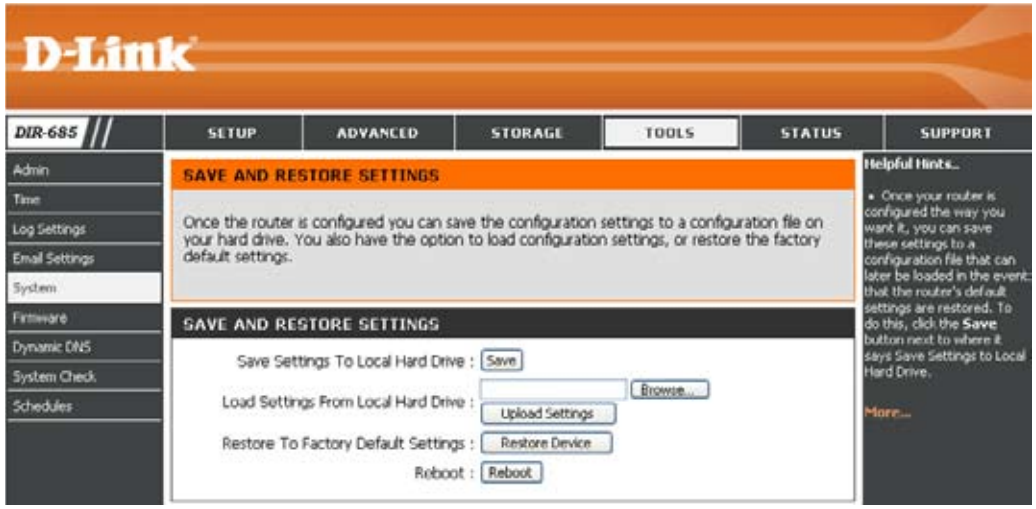
System

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 saved configuration file. Then, click the **Load** button to transfer those settings to the router.

Restore to Factory Default Settings: This option will restore all 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 would to save the current router configuration settings, use the **Save** button above.

Reboot: Click to reboot the router.

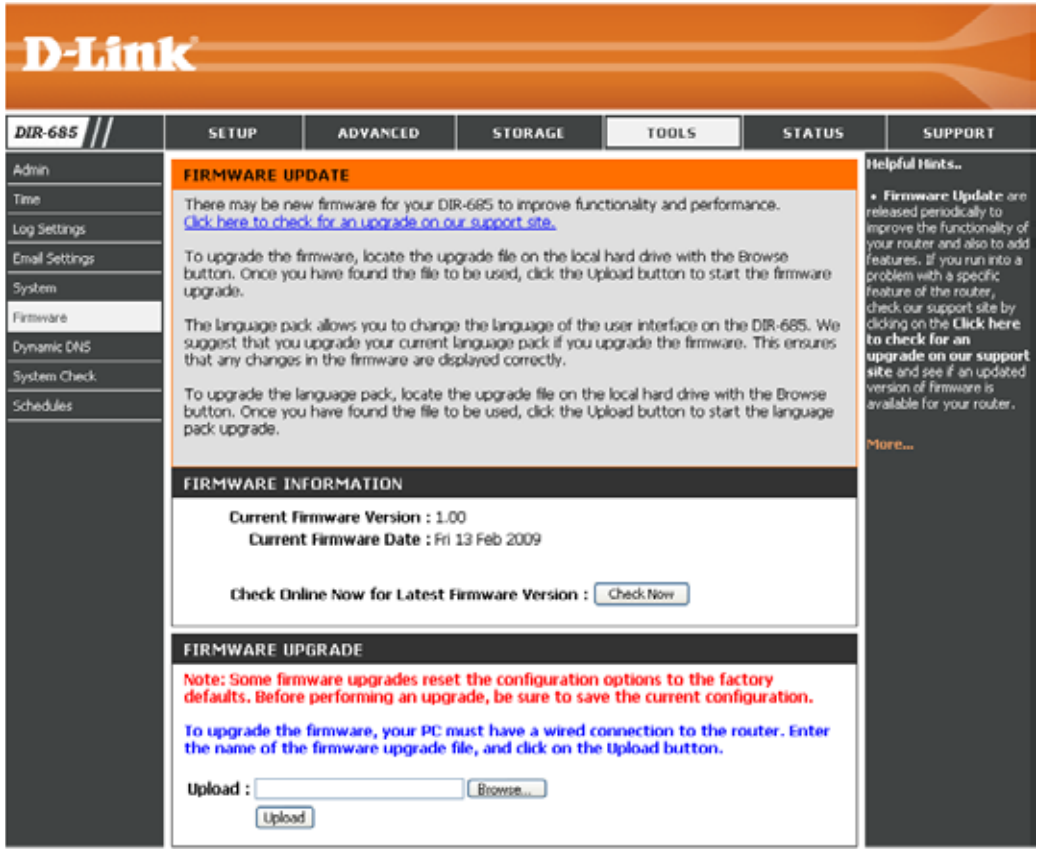


Firmware

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 Information: Click on **Check Now** to find out if there is an updated firmware; if so, download the new firmware to your hard drive.

Firmware Upgrade: 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.



Dynamic DNS

The DDNS feature allows you to host a server (Web, FTP, Game, etc.) with your dynamically assigned IP address, using a domain name. 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 the server no matter what your IP address is.

Enable DDNS: Dynamic Domain Name System is a method of keeping a domain name linked to a changing IP Address. Tick the checkbox to enable DDNS.

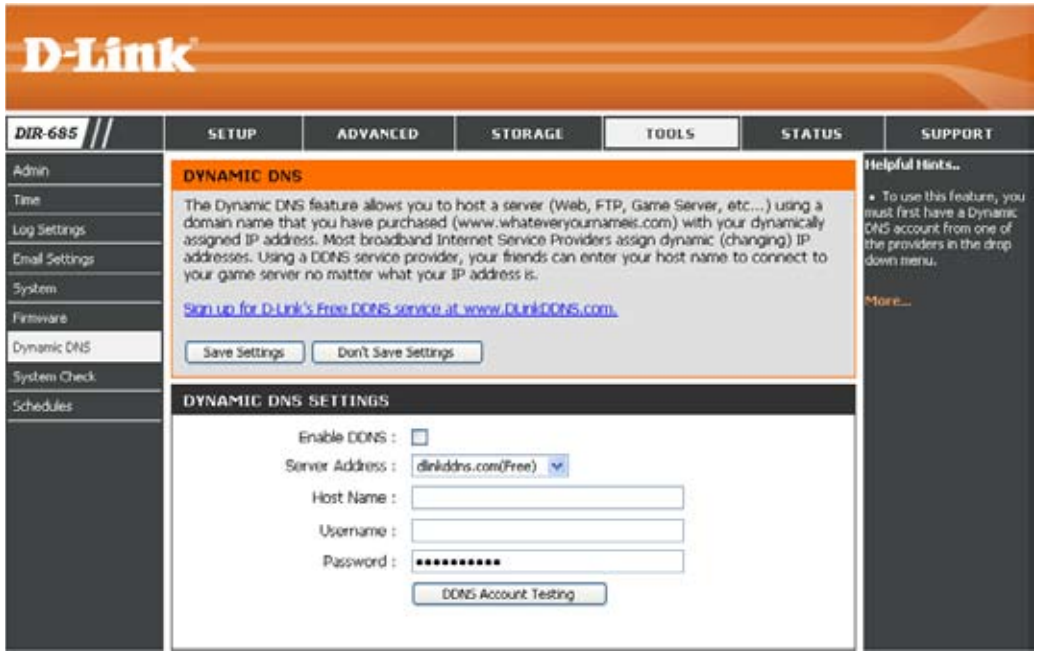
Server Address: Choose your DDNS provider from the drop down menu.

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

Username: Enter the **Username** of your DDNS account.

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

DDNS Account Testing: Click this button to test the Dynamic DNS settings.

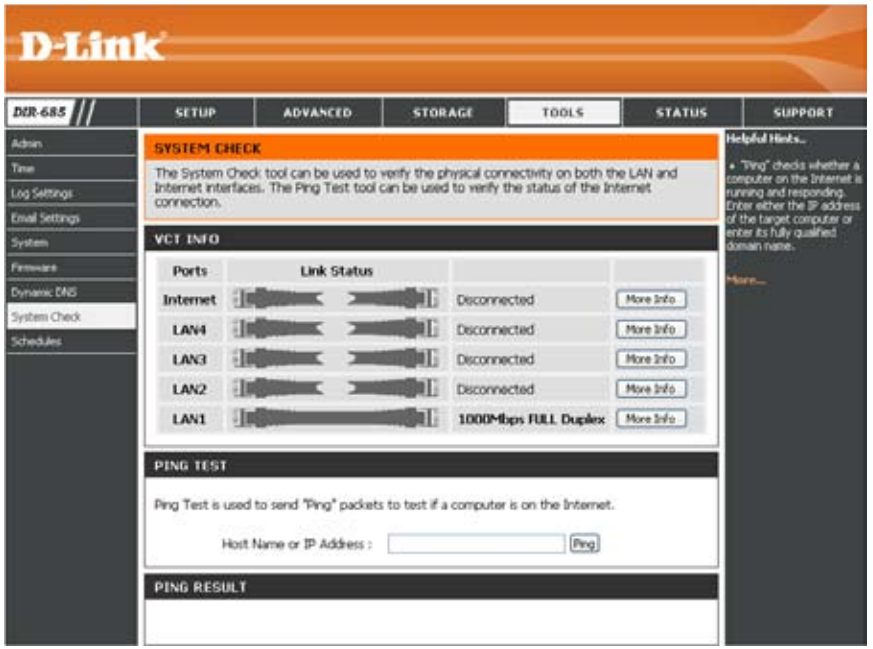


System Check

VCT Info: Displays the connection status of the Ethernet cables connected to your router.

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



Schedules

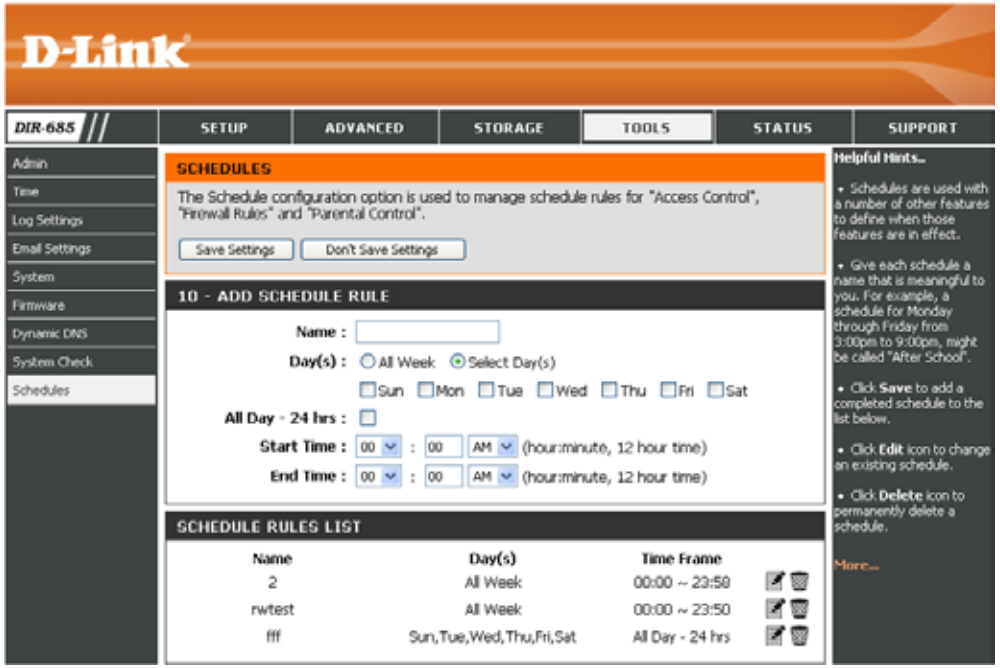
Name: Enter a name for your new schedule.

Days: Select a day, a range of days. You may also choose **All Week** to include every day.

Time: Tick **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 **Notepad** icon to make changes or click the **Trashcan** icon to remove the schedule.



Device Info

This page displays current status information for the DIR-685. The LAN, WAN (Internet), and Wireless information will be displayed on this page.

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.

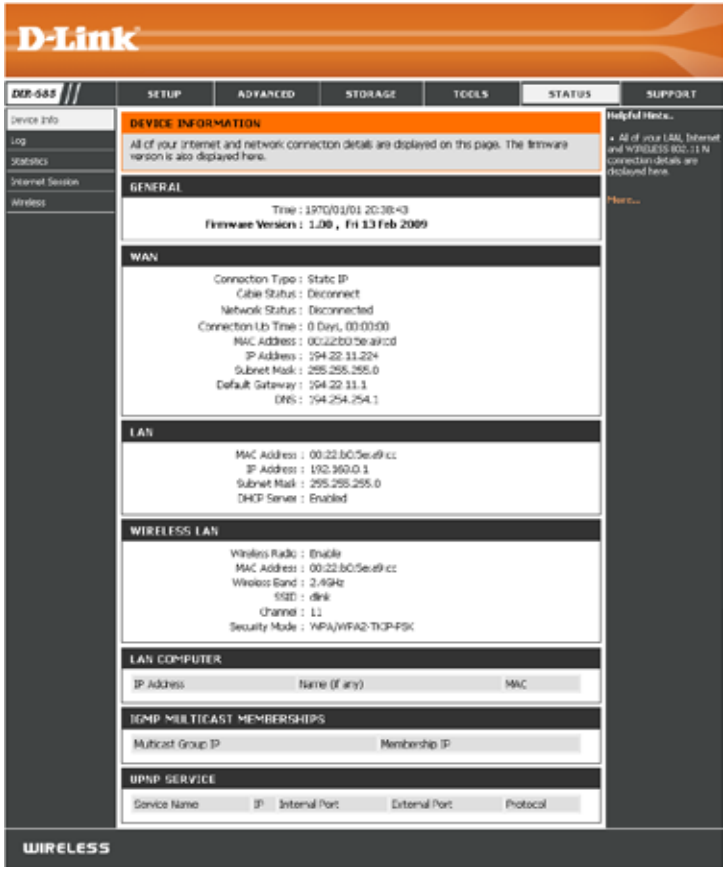
LAN: Displays the MAC address and the private (local) IP settings for the router.

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

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

IGMP Multicast Memberships: IGMP Multicasts are subscriptions based on audio and/or video streaming. This table displays the audio/video streams that are currently subscribed to by users connected to the LAN side of the router.

UPNP Service: This table displays the rules that have been created by the users using the UPnP protocol. Once UPnP has been enabled on the Router, users using the UPnP protocol can create certain rules similar to those that can be created in the Advanced menu.



Log

The Log page allows you to view the router logs. The router automatically logs (records) events of potential interest in its internal memory. If there is not enough internal memory for all events, logs of older events are deleted. Logs of the latest events will be retained. 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.

First Page: Click this button to view the first page of the log.

Last Page: Click this button to view the last page of the log.

Previous: Click this button to view the previous page of the log.

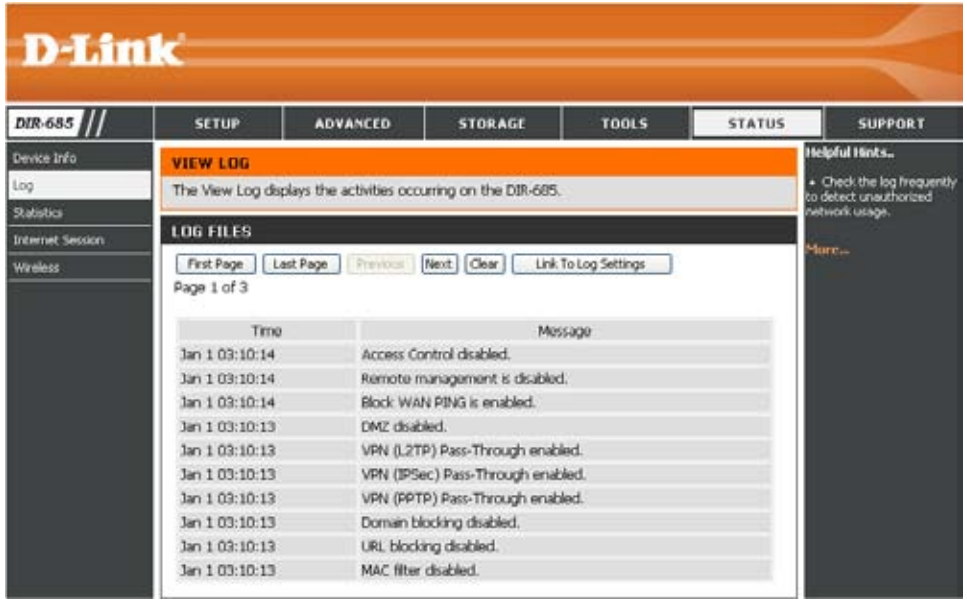
Next: Click this button to view the next page of the log.

Clear: Click this button to clear all Log entries.

Link To Log Settings: Click this button to open log settings page. You may click **Save** to save the log file to your local hard drive.

You may also choose the type of events to include in the log. The options include:

- System Activity
- Debug Information
- Attacks
- Dropped Packets
- Notice

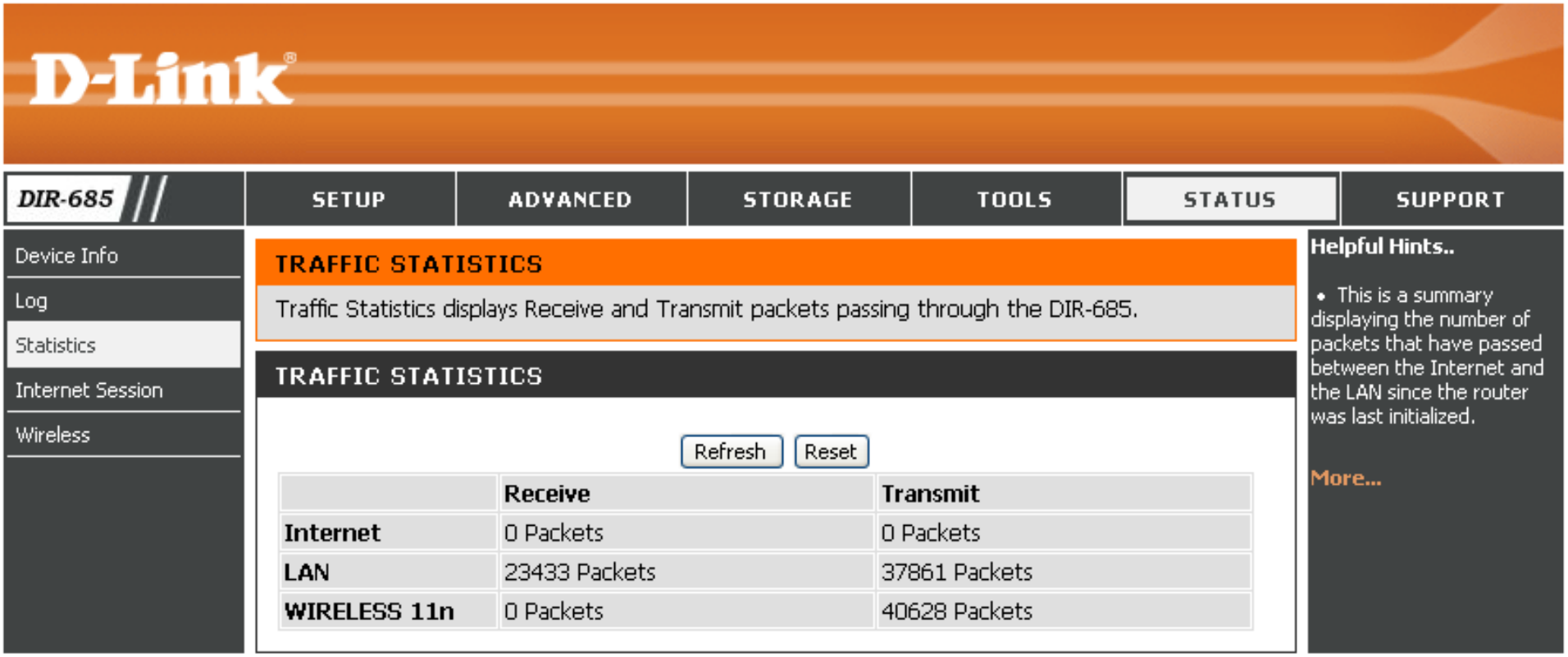


Statistics

The screen below displays the Traffic Statistics. Here you can view the amount of packets that pass through the DIR-685's WAN, LAN and Wireless LAN ports. The traffic counter will reset if the device is rebooted.

Clicking the **Refresh** button will refresh the Traffic Statistics.

Clicking the **Reset** button will reset all the Traffic Statistics.

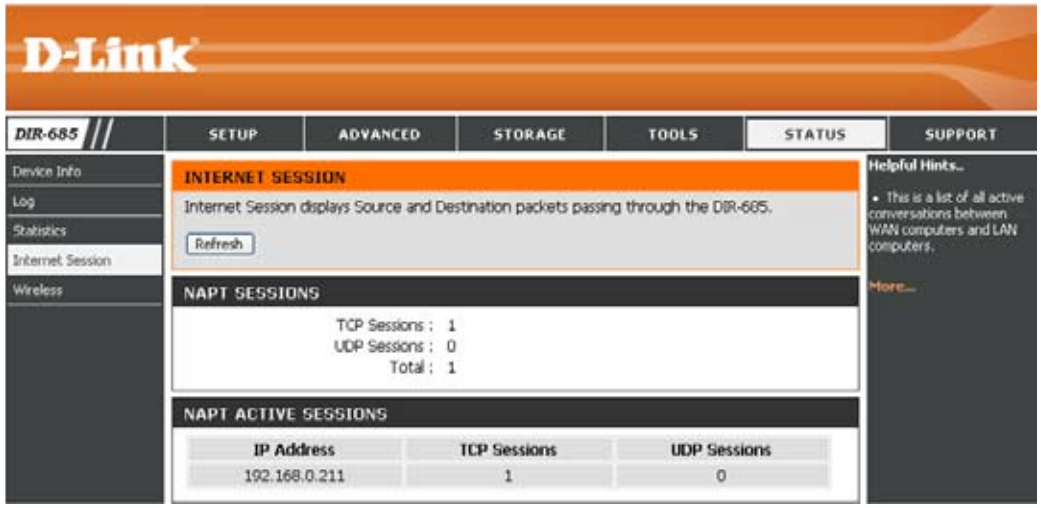


Internet Session

The Internet Session page displays full details on the NAPT and NAPT Active sessions through your router. NAPT stands for Network Access Port Translation. NAPT can be used by the router to identify how many Internet sessions are running and what type of Internet sessions are running.

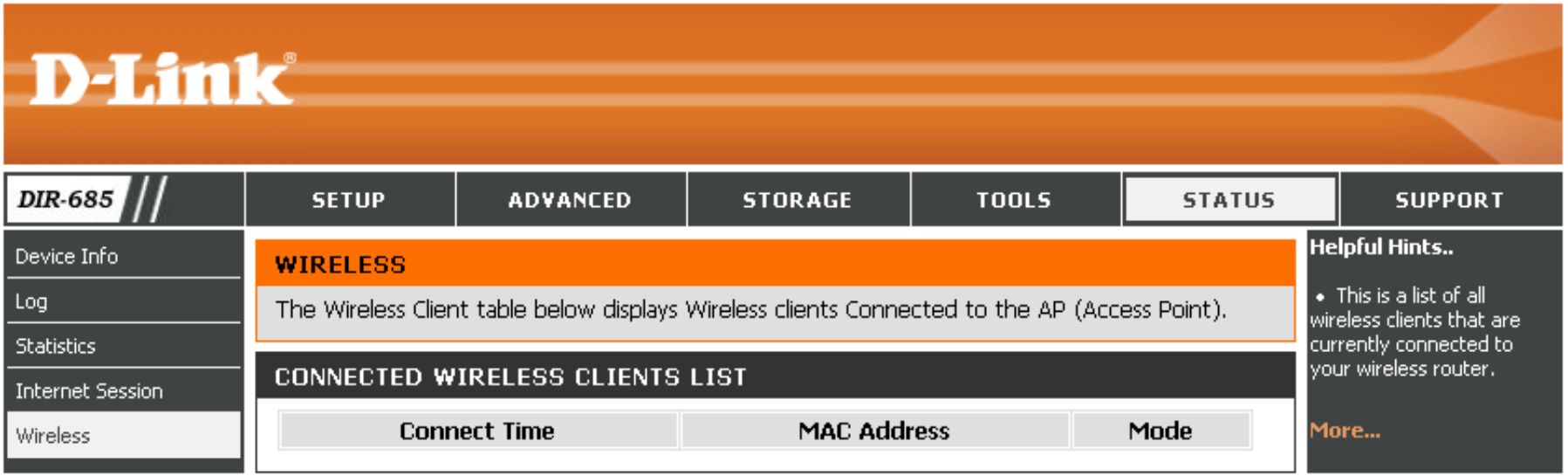
NAPT Sessions: This table displays the TCP, UDP and combined total of NAPT Sessions that are running.

NAPT Active Sessions: This table displays a detailed list of all the NAPT Sessions that are running, and the IP address of the LAN-side PC the session is being run from.



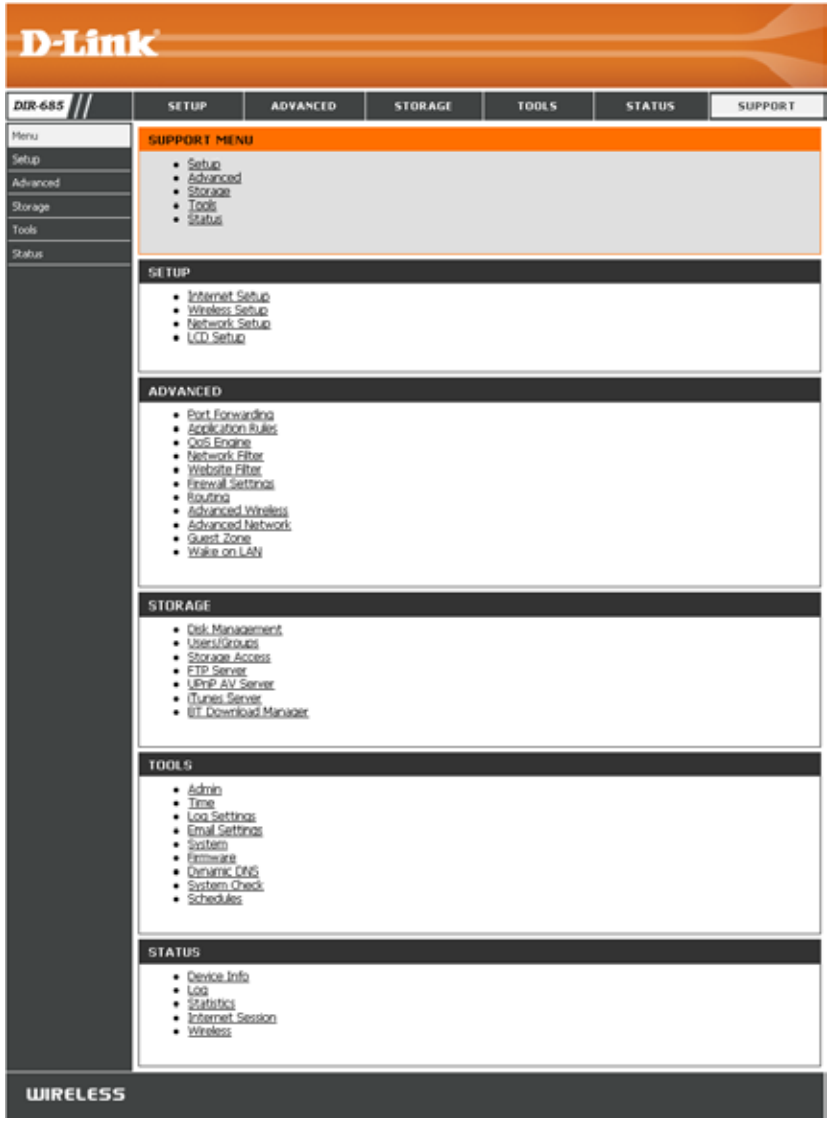
Wireless

The wireless client table displays a list of currently connected wireless clients. This table also displays their respective connection times and MAC addresses.



Support

Use the DIR-685 Support page to view support topics on the different features of the device. To view a particular topic, click the hyperlink of the feature you want to view the support information for.



Wireless Security

This section will show you the different levels of security you can use to protect your data from intruders. The DIR-685 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 have not been tampered with. WPA2 is based on 802.11i and uses Advanced Encryption Standard (AES) instead of TKIP.

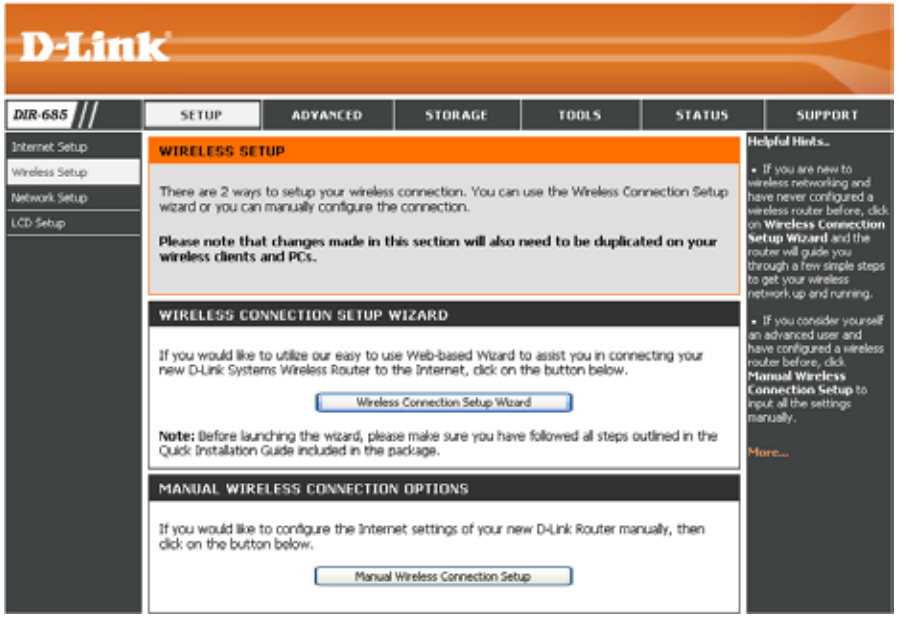
- User authentication, which is generally missing in WEP, through the extensible authentication protocol (EAP). WEP regulates access to a wireless network based on a computer's hardware-specific MAC address, which is relatively simple to be sniffed out and stolen. EAP is built on a more secure public-key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

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



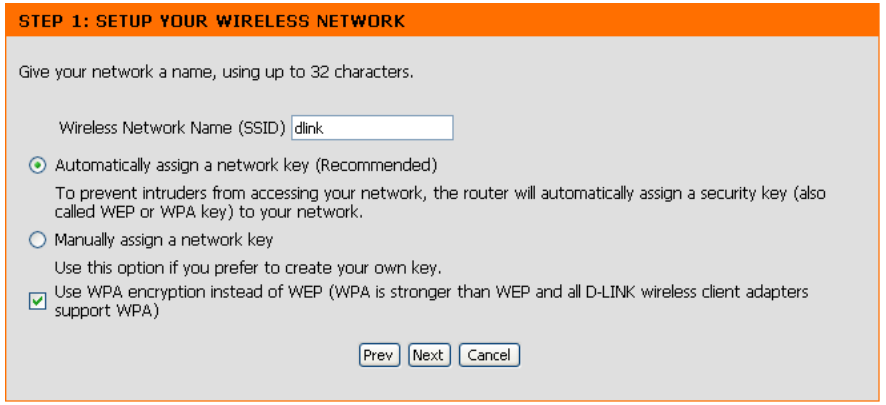
The following window appears, summarizing the steps of the Wireless Setup Wizard.

Click the **Next** button to start the Wizard.

Type your desired wireless network name (SSID).

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

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



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

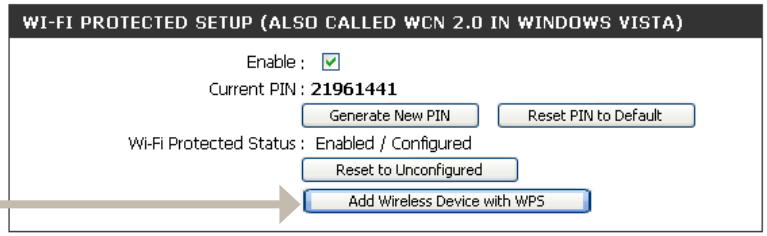
- Type a Wireless Security Key in the *Network Key* field.
- Click **Next** to complete the Wireless Setup Wizard

The summary window will display your settings. If you chose the Automatic option, write down the security key and enter this on your wireless clients. Click **Save** to save your settings.

Add Wireless Device with the WPS Wizard

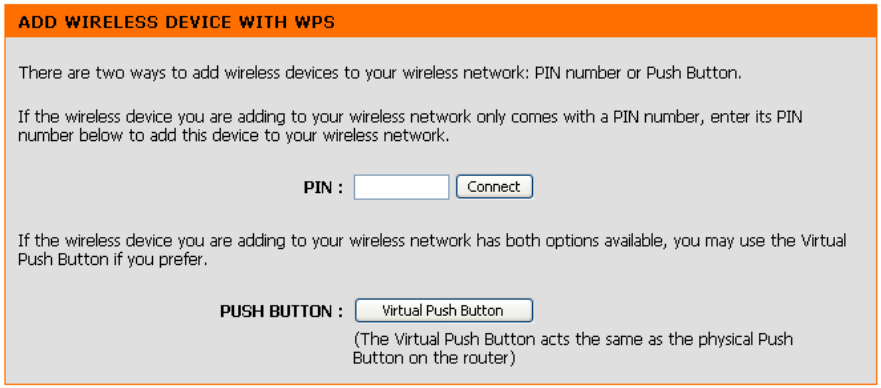
From the **Setup** > **Wireless Setup** screen, click the **Manual Wireless Connection Setup** button.

Click the **Add Wireless Device with WPS** button.



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**.

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



Configure WPA/WPA2 (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 Setup** on the left side.

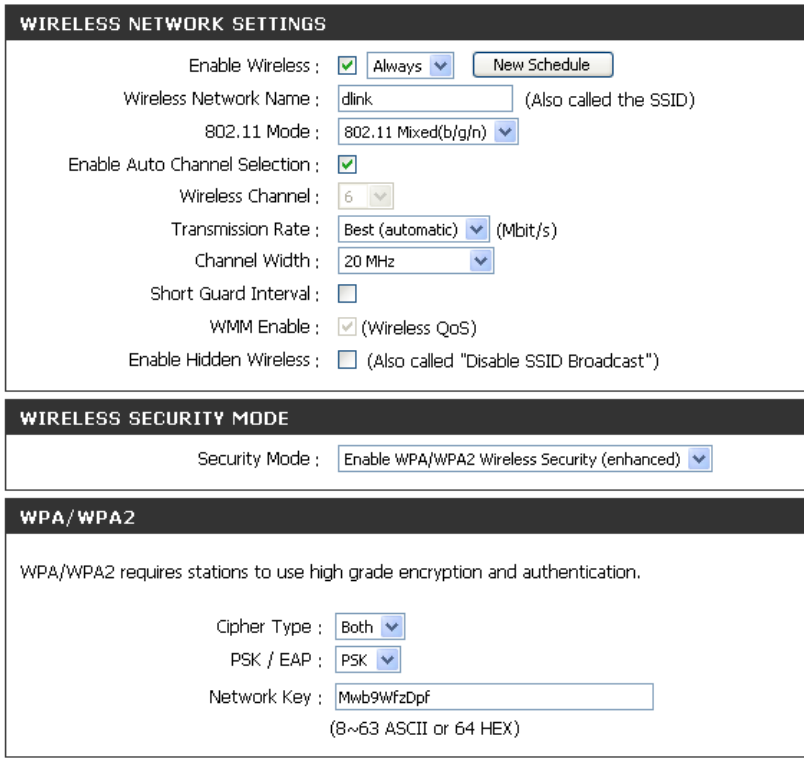
2. Click the **Manual Wireless Connection Setup** button.

3. Next to *Security Mode*, select **Enable WPA/WPA2 Wireless Security (enhanced)**.

4. Next to *Cypher Type*, select **TKIP, AES**, or **Both**.

5. Next to *PSK / EAP* select **PSK** from the drop-down menu.

6. Next to *Network 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 and 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.

Configure WPA/WPA2 (EAP)

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. You can configure the DIR-685 to use the 802.1x protocol by enabling the Extensible Authentication Protocol (EAP). Carry out the following steps to configure EAP on the DIR-685:

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 Setup** on the left side.

2. Click the **Manual Wireless Connection Setup** button.

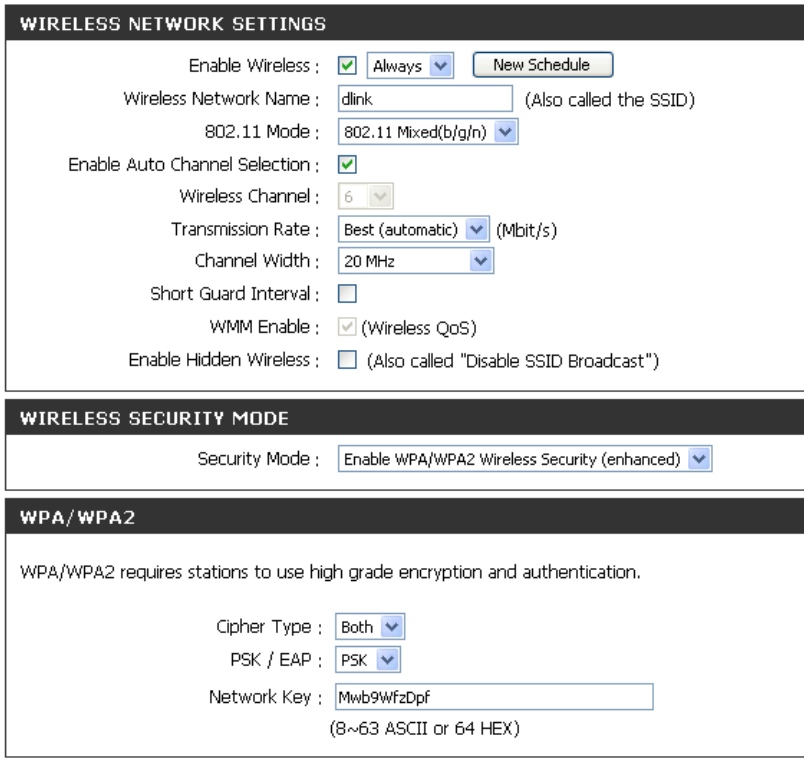
3. Next to *Security Mode*, select **Enable WPA/WPA2 Wireless Security (enhanced)**.

4. Next to *Cypher Type*, select **TKIP, AES**, or **Both**.

5. Next to *PSK / EAP* select **EAP** from the drop-down menu.

6. Next to *RADIUS Server IP Address*, enter the IP address of your RADIUS Server.

7. Enter the port used by your RADIUS Server in the *Port* field.



8. Enter the Shared Secret used by your RADIUS Server in the *Shared Secret* field.

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

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.

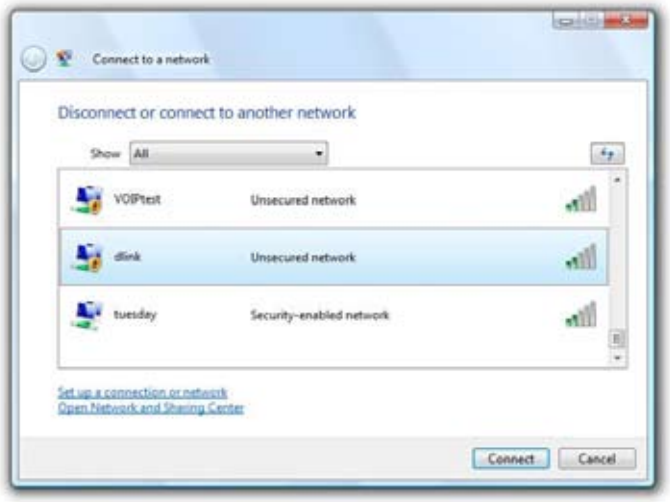
If you receive the **Wireless Networks Detected** bubble, click on the center of the bubble to access the utility.

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.

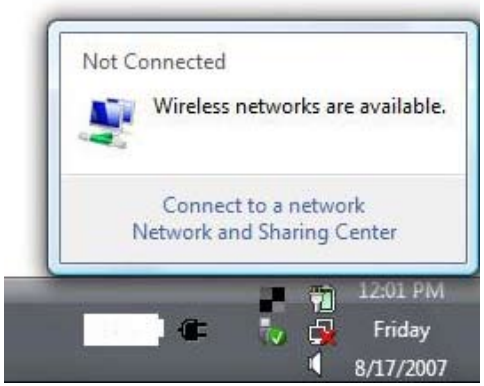
If you get a good signal but cannot access the Internet, check the TCP/IP settings for your wireless adapter. Refer to the **Networking Basics** section in this manual for more information.



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**.

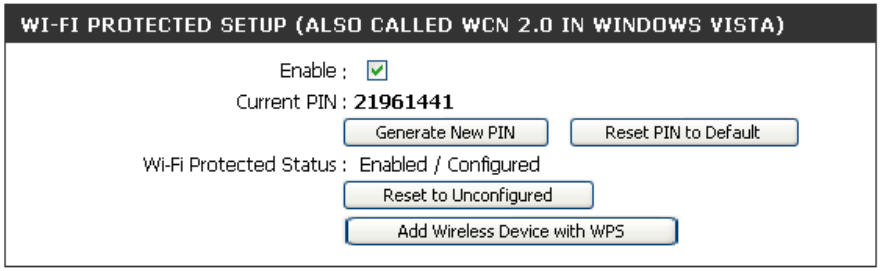
It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the security settings are correct. The key or passphrase must be exactly the same as on the wireless router.

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 depend 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 tick the **Enable** checkbox in the **Wireless Setup** > **Wi-Fi Protected Setup** window. Use the Current PIN that is displayed in the **Wi-Fi Protected Setup** section or create a new PIN by clicking the **Generate New PIN** button. Click the **Reset PIN to Default** button to reset the PIN to default settings.

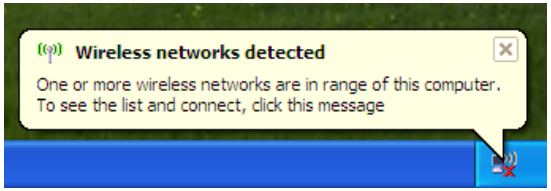


If you are using third party software to set up Wi-Fi Protection, carefully follow the directions. When you are finished, proceed to the next section to set up the newly-configured router.

Connect to a Wireless Network
Using Windows® XP

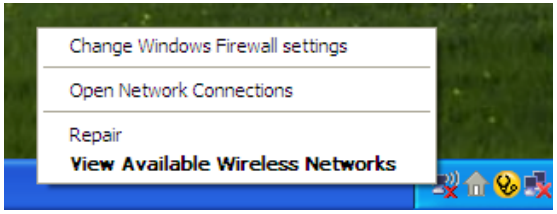
Windows® XP users may use the built-in wireless utility (Zero Configuration Utility). The following instructions are for Service Pack 2 users. If you are using another company's utility or Windows® 2000, please refer to the user manual of your wireless adapter for help with connecting to a wireless network.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



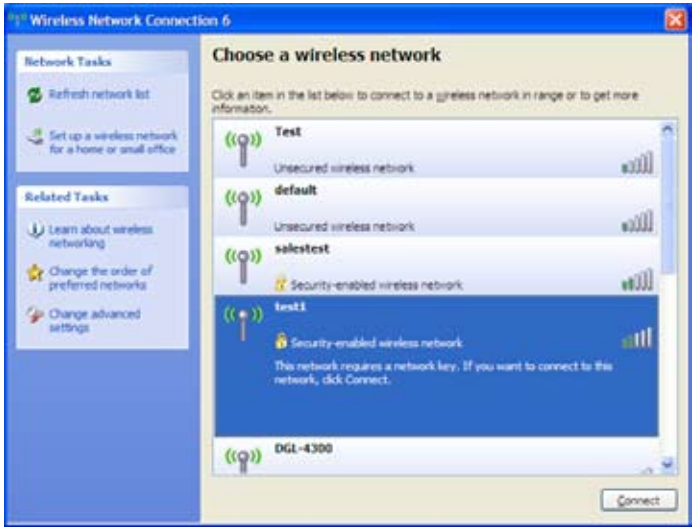
or

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.

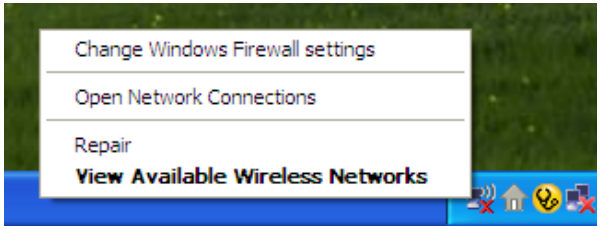
If you get a good signal but cannot access the Internet, check you TCP/IP settings for your wireless adapter. Refer to the **Networking Basics** section in this manual for more information.



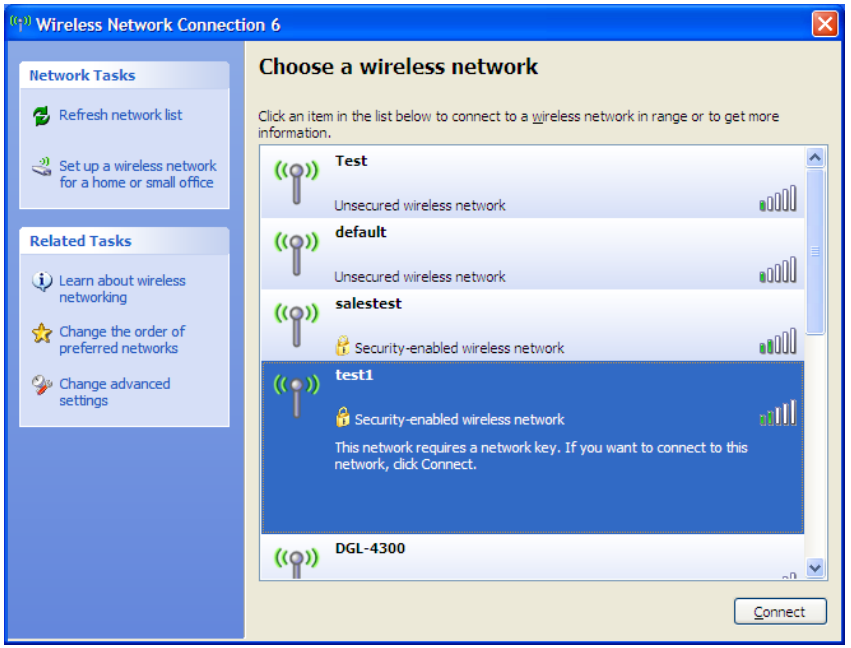
Configure WPA-PSK

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.

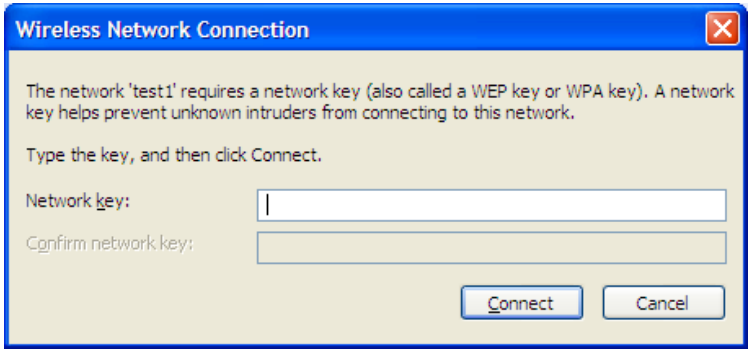
1. Open the Windows® XP Wireless Utility by right-clicking on the wireless computer icon in your system tray (lower-right corner of screen). Select **View Available Wireless Networks**.



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.

File Sharing

The DIR-685 differs from most routers as it combines the functions of a Network Attached Storage (NAS) device and a router. Combining the NAS and router functions simplifies network configuration by eliminating the need to implement a port forwarding rule, that would normally be required when connecting to a NAS device over a WAN connection. Once the FTP Server function has been enabled, the DIR-685 will automatically configure itself to open the port for the FTP protocol.

Complete the following steps to set up File Sharing on the DIR-685:

1. Create a user or group in the **Users/Groups** window (see the **Users/Groups** section on page 64 for instructions on creating users and groups).

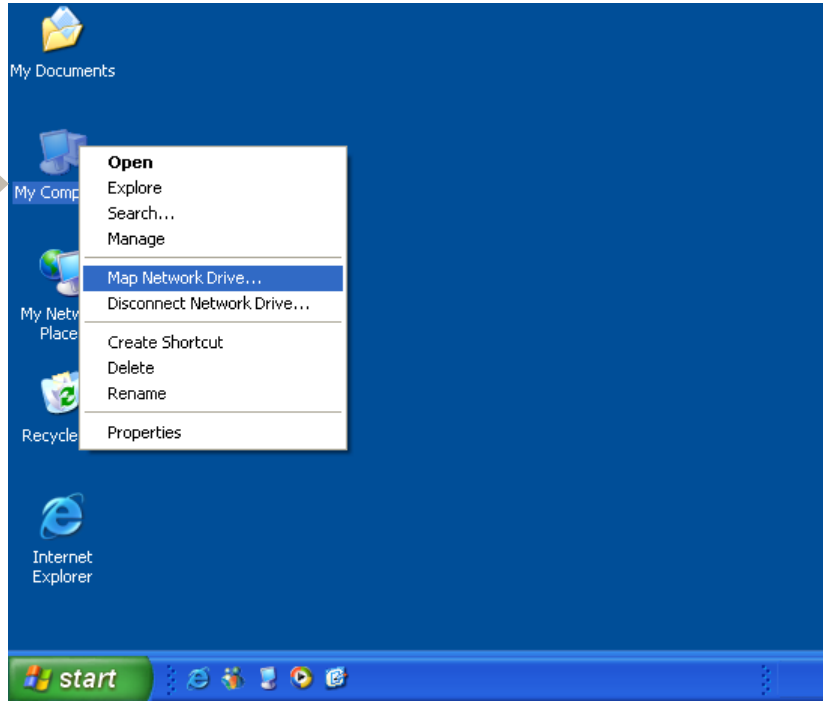
2. Create a Network Access List to define the users or groups that you want to give FTP access to in **Storage>Storage Access** window (see the **Network Access Lists** section on page 68 for more instructions on creating Network Access Lists).

3. You can now connect to the DIR-685 by mapping a network drive or with My Network Places.

Mapping a Drive

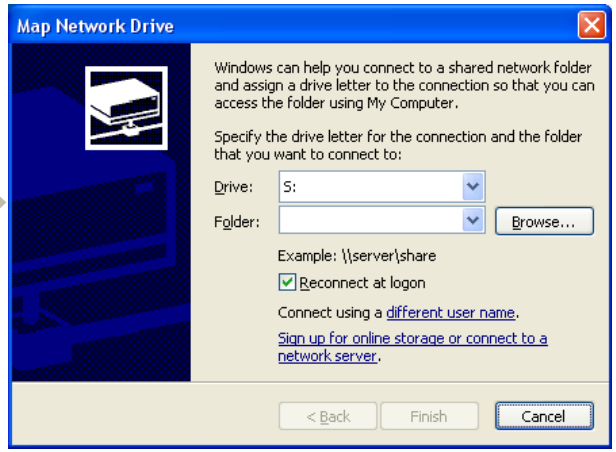
Carry out the following to setup map a drive to the DIR-685:

Right-click the **My Computer** icon on your desktop and select the **Map Network Drive** option.



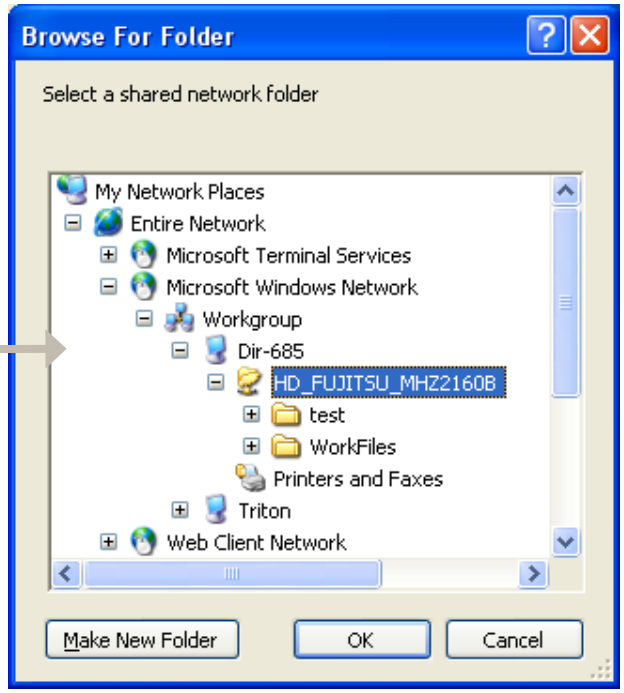
The **Map Network Drive** window appears.

- Choose an available drive letter from the **Drive** drop-down menu.
- Click the **Browse** button to browse to the DIR-685.

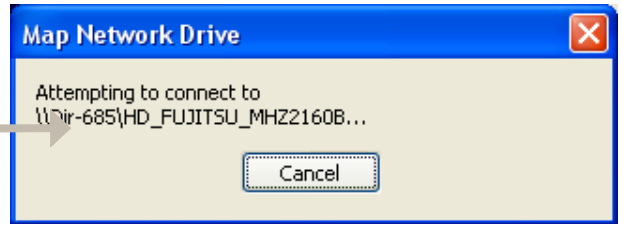


The **Browse For Folder** window appears.

- Browse to the Shared Folder on the DIR-685
- Click the **OK** button.

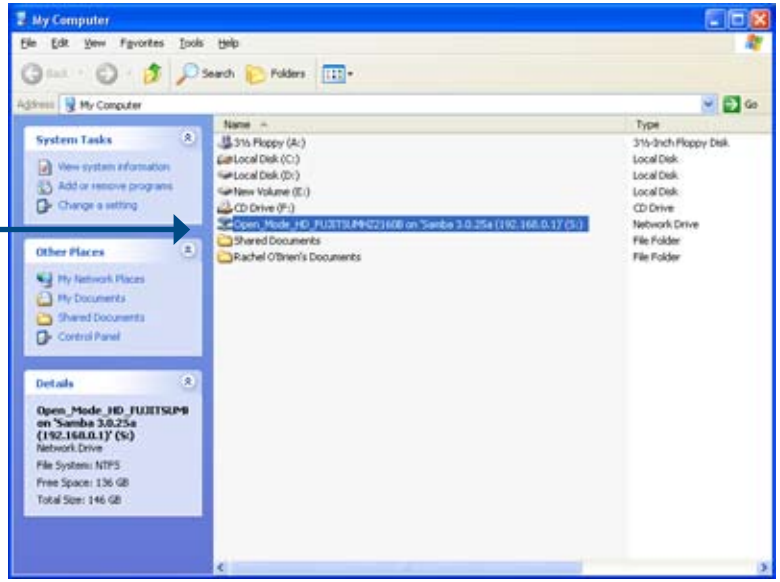


The following window appears to indicate that the drive is being mapped on the PC.



Double-click the My Computer icon on your desktop.

Double-click on the mapped drive to access the files and folders.



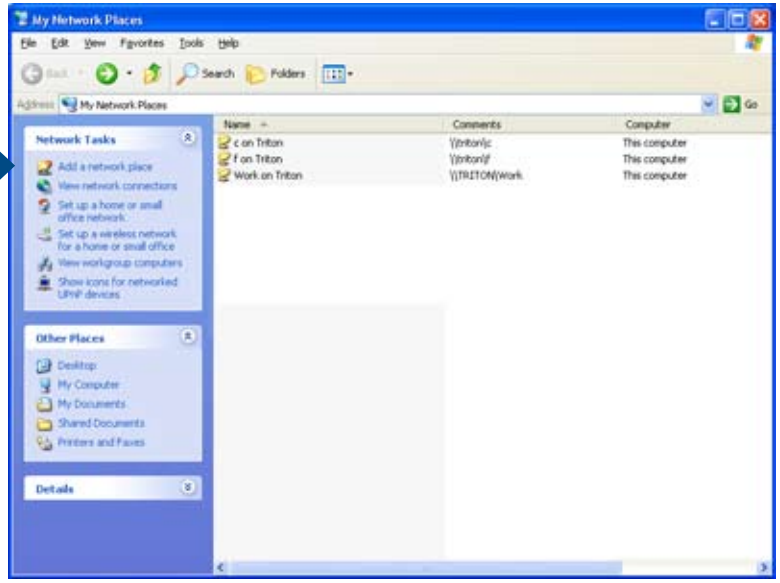
My Network Places

Carry out the following to browse to the DIR-685's FTP directory using My Network Places:

Double-click the **My Network Places** icon on your desktop.

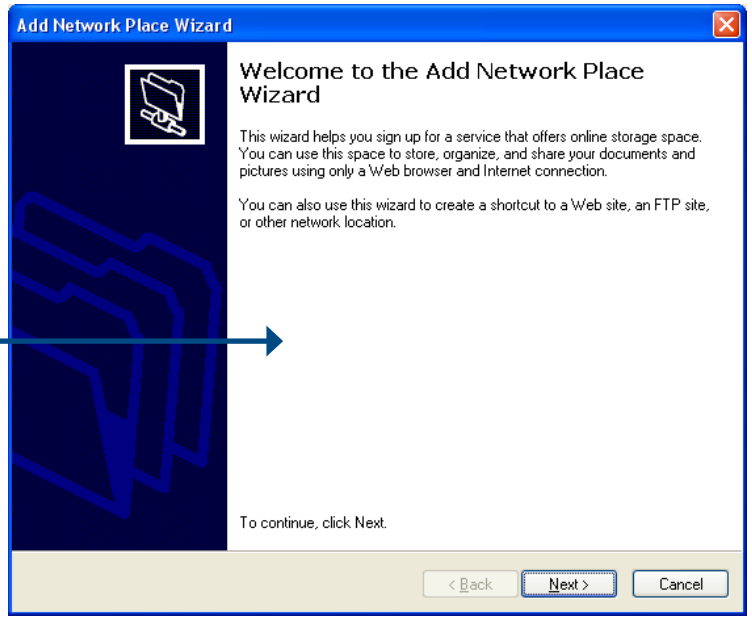
The **My Network Places** window appears.

Click the **Add a network place** icon on the left-hand side of the window.

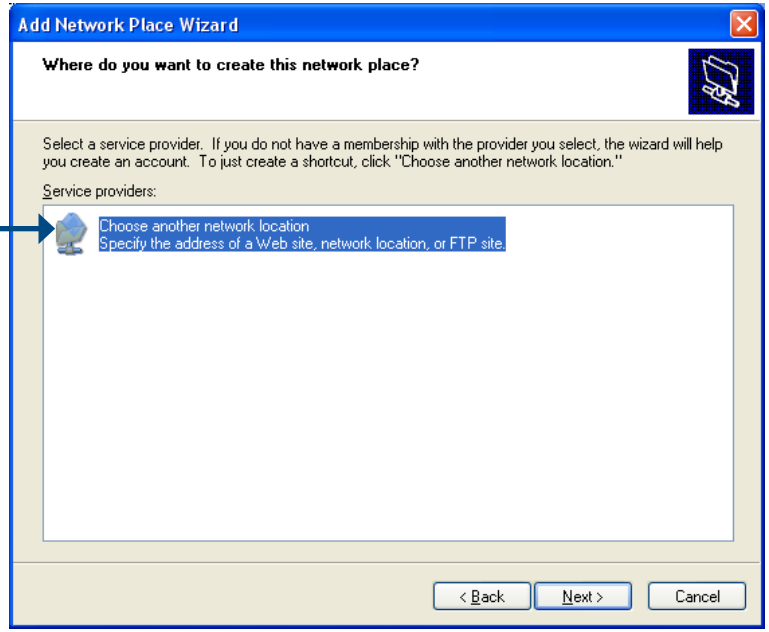


The **Add Network Place Wizard** opens.

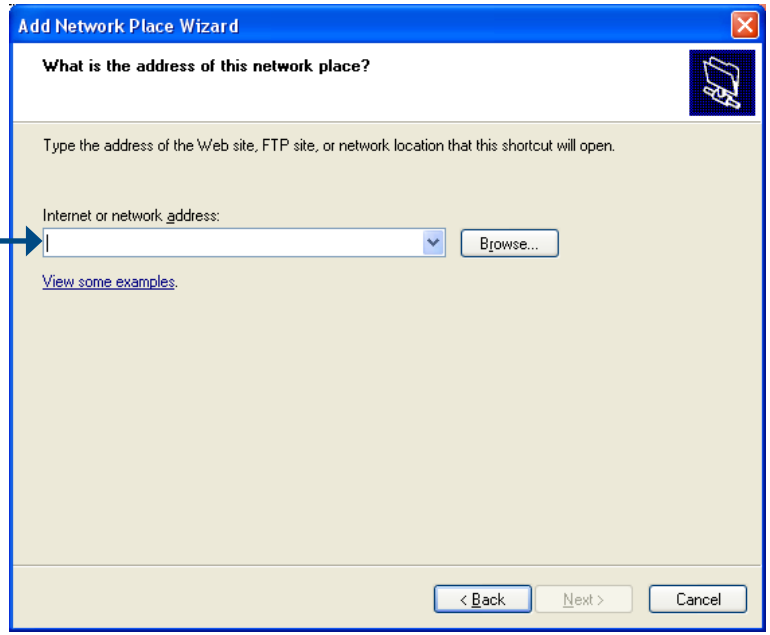
Click the **Next** button to start the Wizard.



Double-click the **Choose another network location** folder.

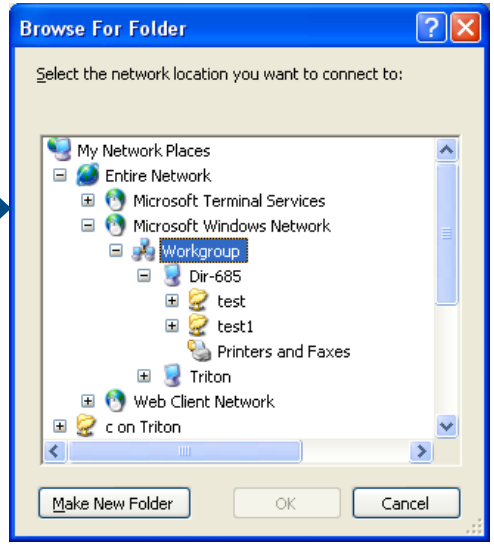


Click the **Browse** button to browse to the FTP folder on the DIR-685.

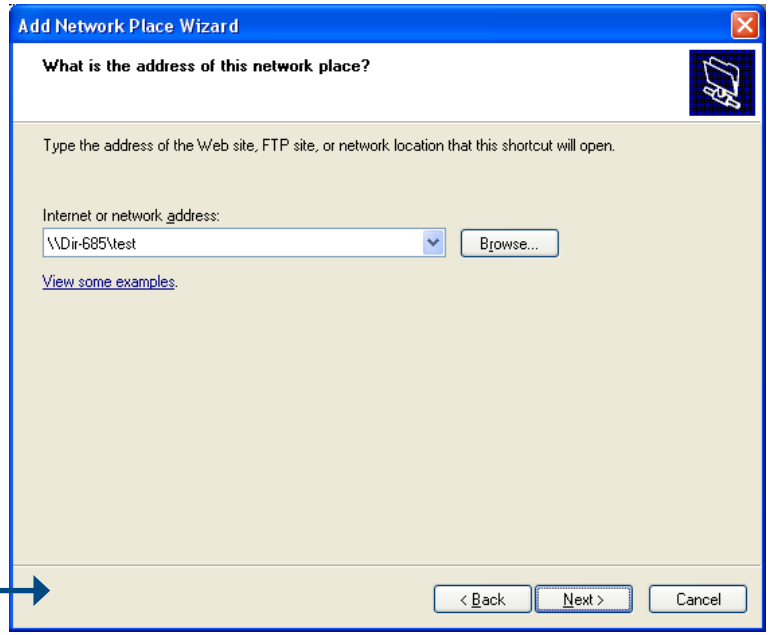


In the **Browse for Folder** window, expand **Microsoft Windows Network > Workgroup > DIR-685** and click on the folder you will use for FTP file transfers.

Click **OK** to set the folder.

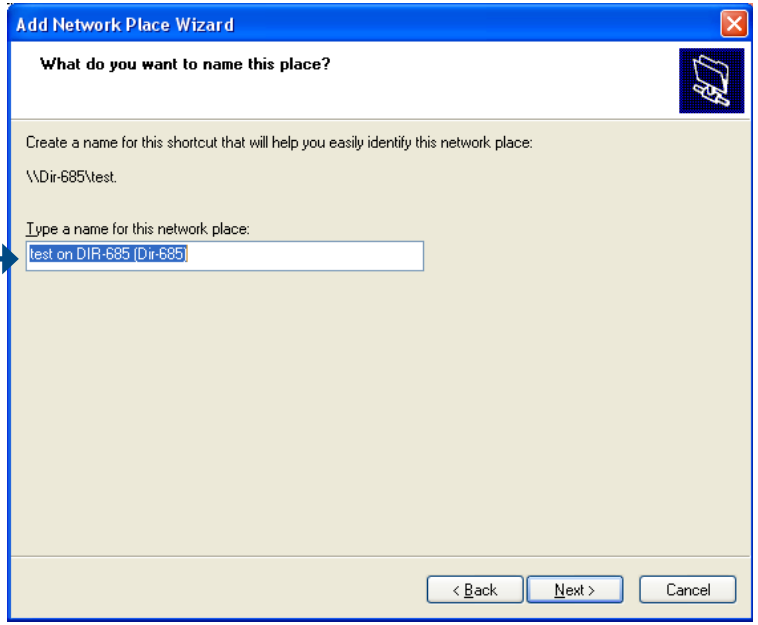


Click the **Next** button to proceed to the next window.



Type a name to easily identify the DIR-685 Network Place.

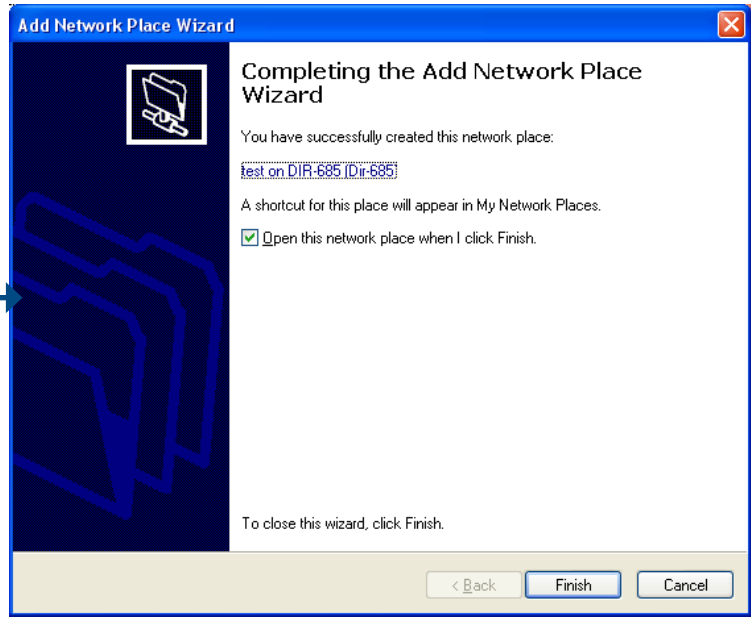
Click the **Next** button to proceed to the next setup window.



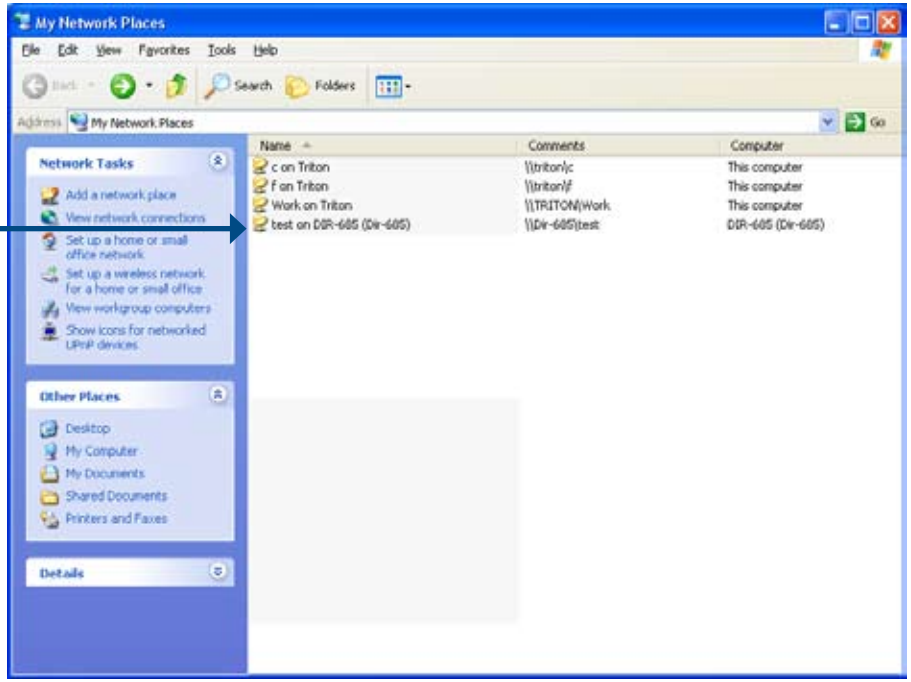
The following window appears to indicate that the **Add Network Place Wizard** has completed.

Tick the **Open this network place when I click Finish** checkbox if you want to view the FTP directory on the DIR-685.

Click the **Finish** button to finish setting up the FTP directory.



The FTP directory on the DIR-685 will now appear as a network place in **My Network Places**.



FrameChannel®

FrameChannel (http://dlinkrouter.framechannel.com), is a free online service that allows you to add, create, and manage channels with personalized content. FrameChannel also allows you to set up your router's LCD to incorporate images from popular photo sharing websites, such as Facebook®, Flickr®, Picasa®, and more. Your frame will automatically update when changes are made to any of your photo sharing sites. FrameChannel provides multilingual content in English, Spanish, French, and German.

The following pages outline the steps needed to create and activate your FrameChannel account. Until you register with FrameChannel, your DIR-685 will display an activation message like the one below when you access FrameChannel from the LCD Main Menu.

1. Make sure that your router and PC are connected to the Internet.

2. Open a web browser on your PC and connect to the website: **http://dlinkrouter.framechannel.com**

3. Click **Get Started Now**.

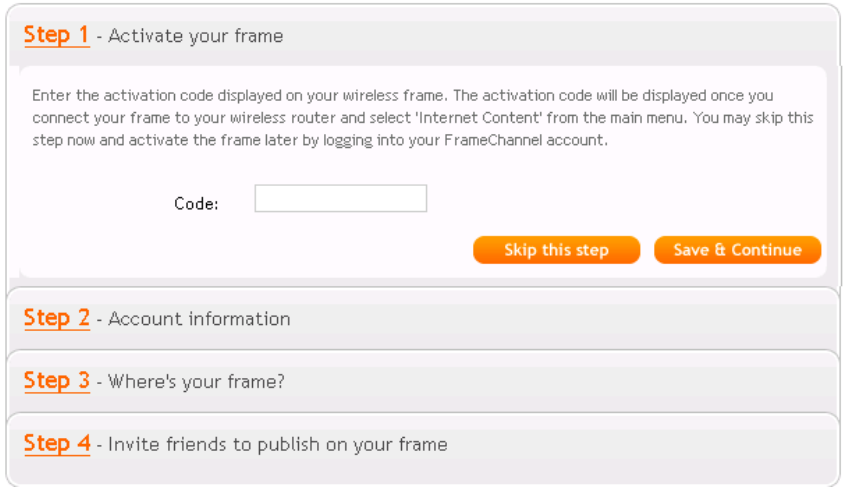
4. Enter the Activation Code displayed on your LCD's FrameChannel message. Click **Save & Continue** to proceed.

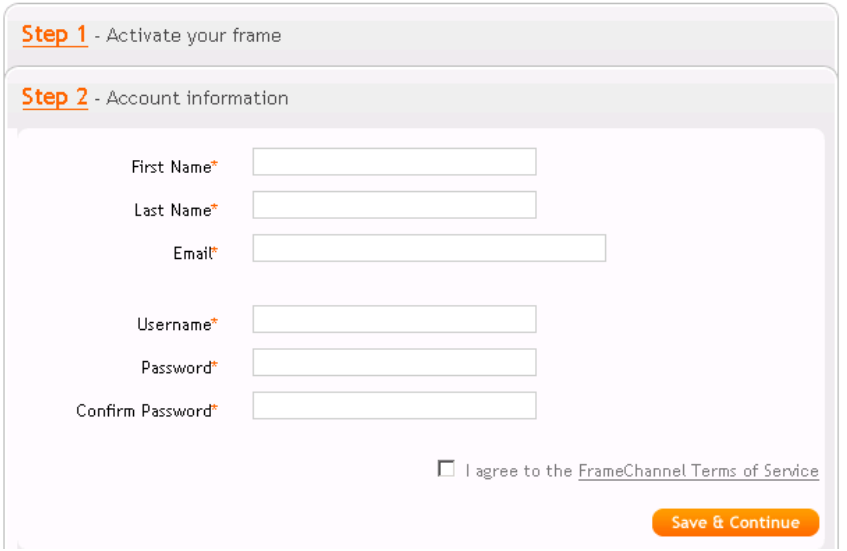
Note: The Activation Code can be found on your router's LCD menu. Use the left or right touch screen buttons to select FrameChannel and open by pressing the middle button.

5. Enter your account information. Read the Terms of Service and click on the checkbox to confirm.

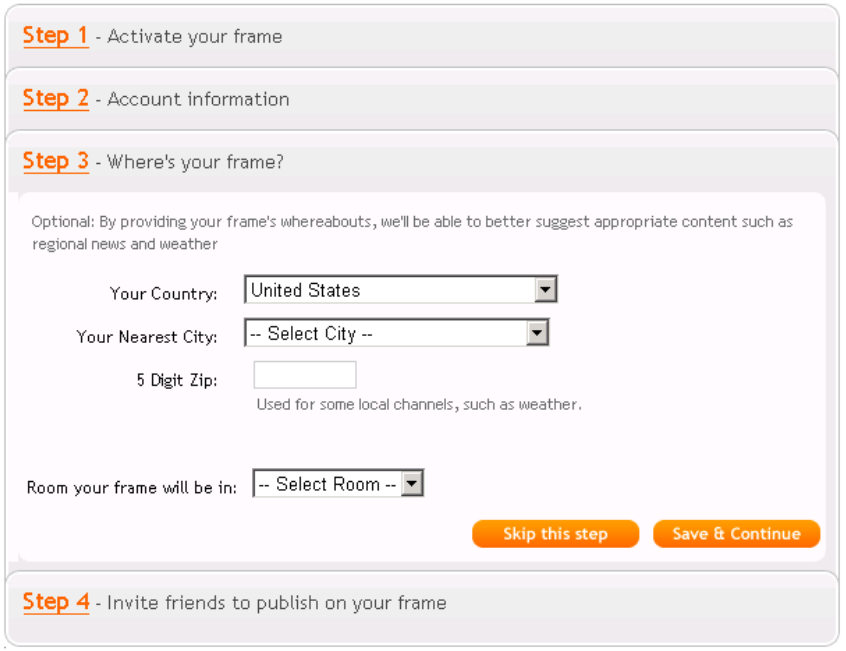
Note: You may wish to write down all of your account information for future reference.

6. Click **Save & Continue** to proceed.

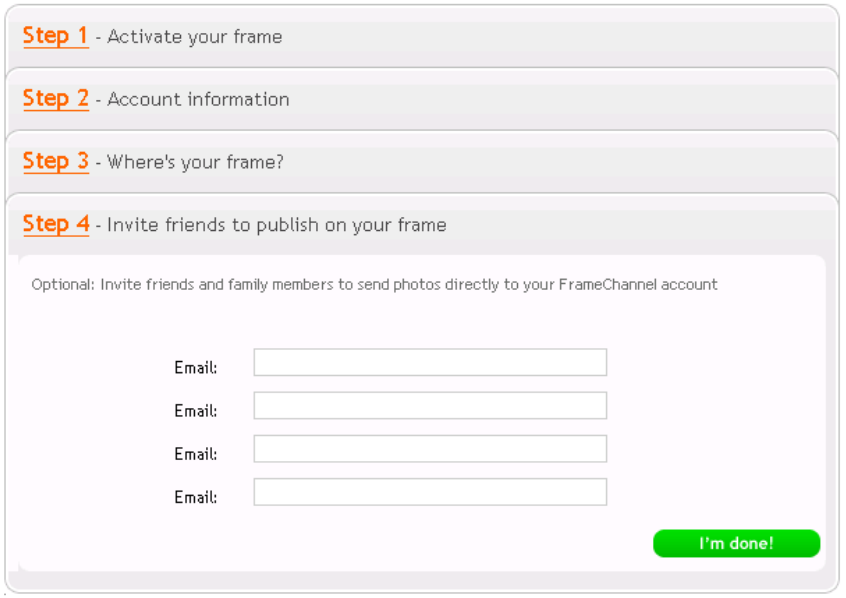




7. Enter the remaining information for your account and click **Save & Continue** to proceed.



8. You may invite your friends to join or click **I'm done!** to begin your FrameChannel experience.



9. Once your account is active, you can use the FrameChannel website to select the channels that you would like to display on your frame.

To immediately view changes to your channel, open FrameChannel from the router's LCD menu, and use the touch pad buttons to select the item labeled **Refresh Channel**.

Note: The **Reset Channel** button of the FrameChannel menu will clear all of your FrameChannel information from the router. After resetting the channel information, a new activation code will be displayed.

Troubleshooting

This chapter provides solutions to problems that can occur during the installation and operation of the DIR-685. 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 on-screen messages may look slightly different than the following examples.)

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

Your computer must be on the same IP subnet to connect to the web-based utility. The router has the configuration utility built into a ROM chip in the router itself.

- Make sure you have an up-to-date 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 2.0 or higher
- Verify physical connectivity by checking for solid link lights on the device that you are connecting. 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, Norton Personal Firewall, and Windows® XP firewall may block access to the configuration pages. Check the help files included with your firewall software for more information on disabling or configuring it.

- Configure your Internet settings:

    - Go to **Start** > **Settings** > **Control Panel**. Double-click the **Internet Options** Icon. From the **Security** tab, click the button to restore the settings to their defaults.

    - Click the **Connection** tab and set the dial-up option to Never Dial a Connection. Click the **LAN Settings** button. Make sure nothing is checked. Click **OK**.

    - Go to the **Advanced** tab and click the button to restore these settings to their defaults. Click **OK** three times.

    - Close your web browser (if open) and open it.

- Access the web management. Open your web browser and enter the IP address of your D-Link router in the address bar. This should open the login page for your the web management.

- If you still cannot access the configuration, unplug the power to the router for 10 seconds and plug back in. Wait about 30 seconds and try accessing the configuration. If you have multiple computers, try connecting using a different computer.

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

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

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

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

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

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

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

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

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

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

```
C:\>ping yahoo.com -f -l 1482

Pinging yahoo.com [66.94.234.13] with 1482 bytes of data:

Packet needs to be fragmented but DF set.
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 e-mail. If changing the MTU does not resolve the problem, continue changing the MTU in increments of ten.

4. What can I do if the DIR-685 locks up or stops responding?

If the LCD touchpad panel ever becomes unresponsive, or if the router itself is malfunctioning, you may need to reset the device. The DIR-685 can be reset by unplugging the power adapter from the wall for a few seconds. Plug it back in and wait a few moments for the router to restart.

Note: There is no on/off button on the router. The reset button on the back of the router is used to restore the router settings to factory defaults.

Networking Basics

Check your IP address

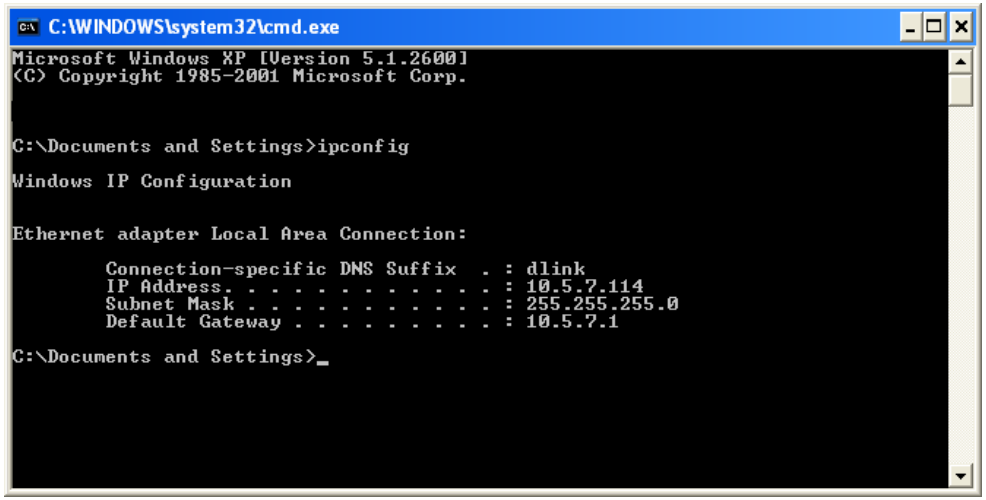
After you install your new D-Link adapter, by default, the TCP/IP settings should be set to obtain an IP address from a DHCP server (i.e. wireless router) automatically. To verify your IP address, please follow the steps below.

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.

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

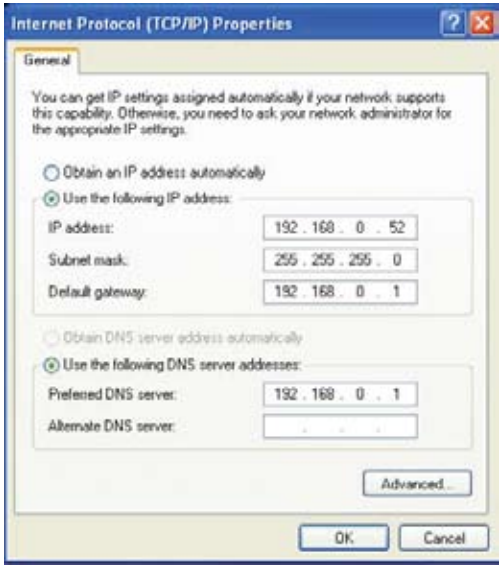
Right-click on the **Local Area Connection** which represents your D-Link network adapter and select **Properties**.

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.

Glossary

802.11a - An IEEE wireless LAN specification standard that operates on the 5GHz frequency band.*

802.11b - An IEEE wireless LAN specification standard that operates on the 2.4GHz frequency band and is interoperable with 802.11b standard devices.

802.11g - An IEEE wireless LAN specification standard that operates on the 2.4GHz frequency band and is interoperable with 802.11g standard devices.

802.11n - An IEEE wireless LAN specification standard that operates on the 2.4GHz and 5GHz frequency bands and is interoperable with 802.11n standard devices.*

Access Point - A device that creates wireless signal to allow users to connect wirelessly in a wired network.

Bridge - Connects any wired Ethernet device to a wireless network.

Broadband - Fast Internet connections typically at home such as DSL, and Cable that allow high bandwidth capability are considered broadband connection.

Bluetooth - A low power short-range wireless network used to connect between desktops and laptop computers, PDAs, digital cameras, scanners, cell phones, and printers. Bluetooth wireless signal can transmit up to 30 feet.

Cable Modem - A device that works over coaxial line (TV), providing high bandwidth transfer rate, to access the Internet.

Cardbus Network Adapter - A device that connects a laptop to the network.

* The DIR-685 supports 2.4GHz only

DDNS (Dynamic Domain Name System) - A service that maps Internet domain name to a dynamic IP address as it changes.

DHCP (Dynamic Host Configuration Protocol) - A protocol that dynamically assigns IP address to devices on the network.
DSL (Digital Subscriber Line) - DSL allows a high bandwidth transfer rates using existing phone line, to access the Internet.

Ethernet - First generation of Ethernet transfers up to 10 Mbps. Fast Ethernet, the second generation transfers up to 100Mbps, and Gigabit Ethernet, the third generation of Ethernet transfers up to 1000Mbps.

Firewall - A security feature that protects a network by preventing intruders to connect.

Hotspots - A place usually in public where you can access wireless connection to the Internet. Hotspots are commonly found at airports, hotels, coffee shops, libraries, restaurants, and convention centers.

IP (Internet Protocol) Address - An unique number that identifies computers or devices on the network.

ISP (Internet Service Provider) - Company that provides Internet access such as Cox, Adelphia, SBC, Verizon, Comcast, and many more.

LAN (Local Area Network) - Group of computers connected together that can share data and peripherals such as printers, scanners, and etc.

PCI Network Adapter - A device that connects a desktop to the network.

Router - A device that connects LANs, WANs, and the Internet.

SSID (Service Set Identifier) - A network name that identifies the wireless network.

USB (Universal Serial Bus) - A standard interface commonly used to connect peripheral devices to computers.

VPN (Virtual Private Network) - Provides secured remote access to a network via the Internet by sending data in tunnels.

WAN (Wide Area Network) - A network that covers a large geographic area, usually two or more LANs.

WEP (Wired Encryption Privacy) - A standard security feature used to encrypt data over a wireless network to prevent intruder.

WPA (Wi-Fi Protected Access) - A stronger and more secured encryption than WEP to prevent intruders from trying to connect to wireless networks.

WLAN (Wireless Local Area Network) - A type of LAN that uses high-frequency radio waves to communicate with devices rather than wires.

Technical Specifications

Standards

- IEEE 802.11n (draft 2.0)
- IEEE 802.11g
- IEEE 802.11b
- IEEE 802.3
- IEEE 802.3u
- IEEE 802.3ab
- SATA
- USB 2.0

Wireless Signal Rates[1]

IEEE 802.11n draft 2.0 (HT20/40)

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

IEEE 802.11a

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

IEEE 802.11g

- 54Mbps
- 8Mbps
- 36Mbps
- 24Mbps
- 18Mbps
- 12Mbps
- 11Mbps
- 9Mbps
- 6Mbps
- 5.5Mbps
- 2Mbps
- 1Mbps

Frequency Range[2]

North America

- 2.412GHz to 2.462GHz (802.11g/n)

General Europe

- 2.412GHz to 2.472GHz (802.11g/n)

Wireless Security

- WEP
- WPA-Personal
- WPA2-Personal
- WPA-Enterprise
- WPA2-Enterprise

Antenna

- Two Internal Antennas (2 dBi)

LEDs

- Power
- WPS
- Hard Drive Status

Display Panel

- LCD TFT 3.2” QVGA
- Touch Pad with Left, Right, Return, Picture Preview and Center (Confirm) Buttons.

Hard Drive Support[3]

- 2.5” SATA

Operating Temperature

- 0° ~ 30° C (32° ~ 86° F)

Operating Humidity

- 90% Maximum (Non-condensing)

Safety & Emissions

- FCC
- CE
- IC
- C-Tick
- NCC

Device Dimensions

- L = 6.5 inches (165.7 mm)
- W = 4.8 inches (122.8 mm)
- H = 1.27 inches (32.36 mm)

Device Weight

- 5.43 oz. (154.1 grams)

Stand Dimensions

- L = 6.06 inches (154 mm)
- W = 2.38 inches (60.5 mm)
- H = 0.49 inches (12.44 mm)

Stand Weight

- 4.58 oz.(129.9 grams)

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

[2] Frequency range varies based on country regulations.

[3] No hard drive is included with this device. Current 2.5” SATA hard drives support up to 500GB. Capacity may increase pending future technology. This device may not work with older generation SATA drives. For a list of SATA drives that have been tested to work with this device, visit your D-Link support web site.

[4] Maximum Photo file size: 5MB

[5] External Hard Drive Support: Limited to external 2.5 inch hard drive, without external power.