

D-Link *Air* Premier AG DI-784

11a/11g Dualband Wireless 108Mbps Router

Manual

D-Link[®]

Building Networks for People

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Package Contents



Contents of Package:

- **D-Link Air Premier AG DI-784** 11a/11g Wireless 108Mbps Router
- Power Adapter – 5V DC, 3.0A
- Manual on CD
- Quick Installation Guide
- Ethernet Cable

Note: Using a power supply with a different voltage rating than the one included with the DI-784 will cause damage and void the warranty for this product.

If any of the above items are missing, please contact your reseller.

System Requirements For Configuration:

- Computer with Windows, Macintosh, or Linux-based operating system with an installed Ethernet adapter

Introduction

At up to fifteen times the speed of previous wireless devices, you can work faster and more efficiently, increasing productivity. With the DI-784, bandwidth-intensive applications like graphics or multimedia will benefit significantly because large files are able to move across the network quickly. This versatile wireless router also features four times the number of non-overlapping channels than a device that supports only 802.11g, so more users can access the network.

Support for all three standards (802.11g; 802.11a; 802.11b) means that you can grow your network without having to worry about legacy wireless equipment being incompatible with newer compliant devices from other manufacturers. This also allows network administrators to partition the usage of the dualband by segmenting users and creating special access privilege networks for classified document transfer and communications.

With the DI-784 you can securely connect to wireless clients on the network using 802.1x for wireless user authentication, as well as WPA (Wi-Fi Protected Access™) providing you a much higher level of security for your data and communications than has previously been available.

Through its easy-to-use Web-based user interface, the DI-784 lets you control the information that is accessible to those on the wireless network, whether from the Internet or from your company's server:

Content Filtering – Easily applied content filtering based on MAC Address, IP Address, URL and /or Domain Name.

Filter Scheduling – Filters can be scheduled to be active on certain days or for a duration of hours or minutes.

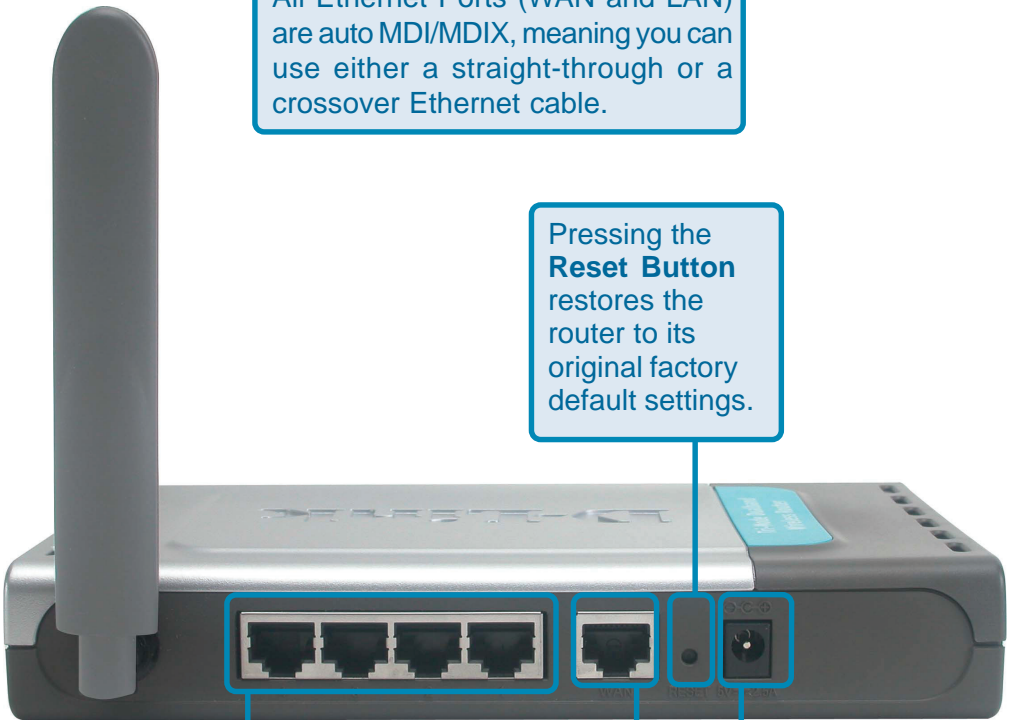
Network Address Translation – NAT protects the DI-784 and its users from outside intruders gaining access to your private network

VPN Multiple/Concurrent Sessions – Supports multiple and concurrent IPSec and PPTP sessions, so multiple users behind the DI-784 can access corporate networks through various VPN clients more securely.

Connections - Back Panel of Unit

All Ethernet Ports (WAN and LAN) are auto MDI/MDIX, meaning you can use either a straight-through or a crossover Ethernet cable.

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



Auto MDI/MDIX **LAN ports** automatically sense the cable type when connecting to Ethernet-enabled computers.

The Auto MDI/MDIX **WAN port** is the connection for the Ethernet cable to the Cable or DSL modem

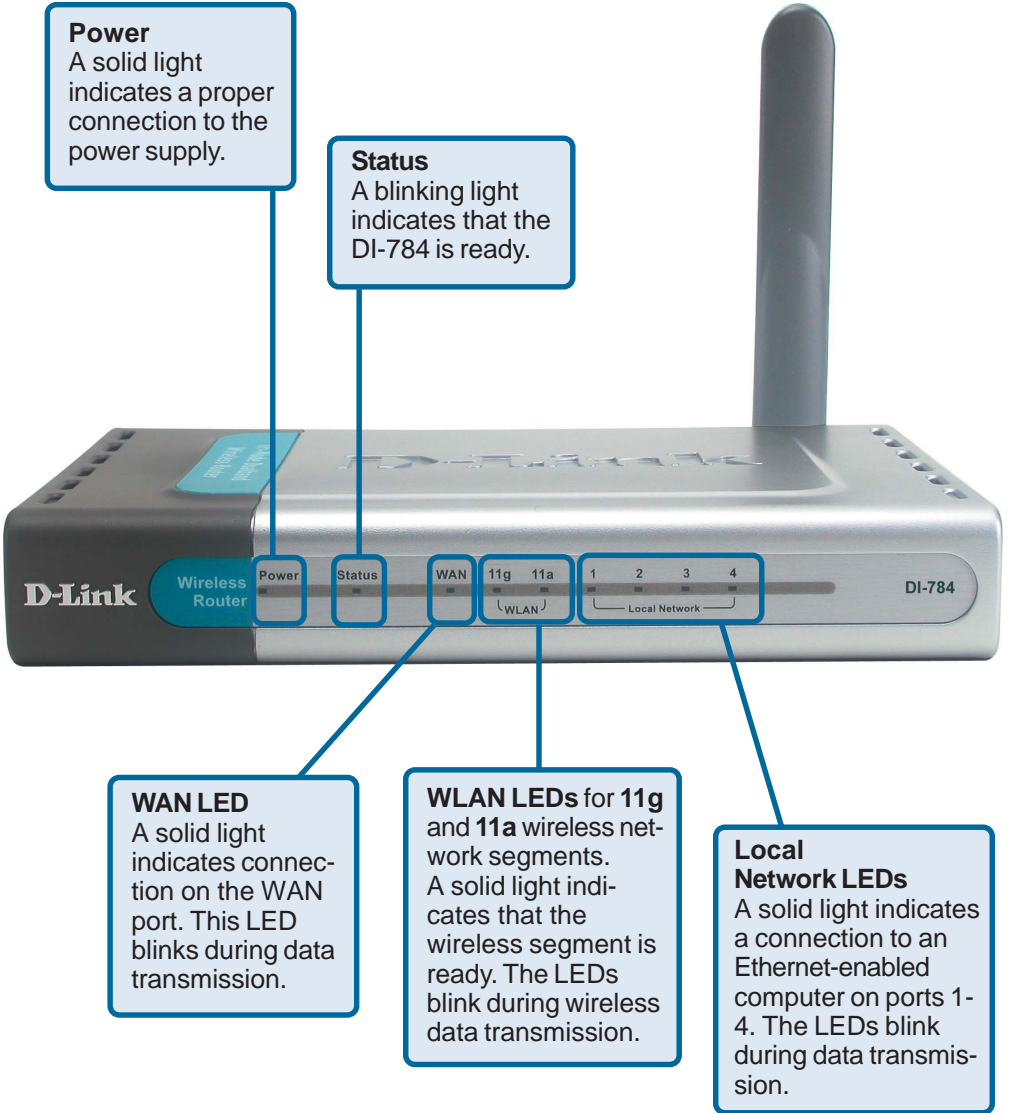
Receptor for the **Power Adapter**

Features

- Fully compatible with the 802.11a and 802.11g standards to provide a wireless data rate of up to 54Mbps
- Backwards compatible with the 802.11b standard to provide a wireless data rate of up to 11Mbps
- **WPA** (Wi Fi Protected Access™) authorizes and identifies users based on a secret key that changes automatically at a regular interval, for example:
 - **TKIP** (Temporal Key Integrity Protocol), in conjunction with a RADIUS server, changes the temporal key every 10,000 packets, ensuring greater security
 - **Pre-Shared Key** mode means that the home user, without a RADIUS server, can connect securely via a pre-shared key, vastly improving the safety of communications on the network.
- **802.1x Authentication** in conjunction with the RADIUS server verifies the identity of would be clients
- Utilizes **OFDM** technology (**O**rtogonal **F**requency **D**ivision **M**ultiplexing) to ensure strong wireless signals for both 802.11g and 802.11a
- User-friendly configuration and diagnostic utilities
- Operates in the 2.4GHz and 5GHz frequency ranges
- Connects multiple computers to a Broadband (Cable or DSL) modem to share the Internet connection
- Advanced Firewall features
 - Supports NAT with VPN pass-through, providing added security
 - MAC Filtering
 - IP Filtering
 - URL Filtering
 - Domain Blocking
 - Scheduling
- DHCP server supported enables all networked computers to automatically receive IP addresses
- Web-based interface for Managing and Configuring
- Access Control to manage users on the network
- Supports special applications that require multiple connections
- Equipped with 4 10/100 Ethernet ports, 1 WAN port, Auto MDI/MDIX

LEDs - Front Panel of Unit

LED stands for Light-Emitting Diode. The DI-784 has the following LEDs:



Wireless Basics

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

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

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

People use wireless LAN technology for many different purposes:

Mobility - Productivity increases when people have access to data in any location within the operating range of the WLAN. Management decisions based on real-time information can significantly improve worker efficiency.

Low Implementation Costs – WLANs are easy to set up, manage, change and relocate. Networks that frequently change can benefit from WLANs ease of implementation. WLANs can operate in locations where installation of wiring may be impractical.

Installation and Network Expansion - Installing a WLAN system can be fast and easy and can eliminate the need to pull cable through walls and ceilings. Wireless technology allows the network to go where wires cannot go - even outside the home or office.

Scalability – WLANs can be configured in a variety of topologies to meet the needs of specific applications and installations. Configurations are easily changed and range from peer-to-peer networks suitable for a small number of users to larger infrastructure networks to accommodate hundreds or thousands of users, depending on the number of wireless devices deployed.

Inexpensive Solution - Wireless network devices are as competitively priced as conventional Ethernet network devices.

Wireless Basics (continued)

Standards-Based Technology

The DI-784 Wireless Broadband Router utilizes the new **802.11g** standard, in addition to the 802.11a and 802.11b standards.

The IEEE **802.11g** standard is an extension of the 802.11b standard. It increases the data rate up to 54 Mbps within the 2.4GHz band, utilizing **OFDM technology**.

This means that in most environments, within the specified range of this device, you will be able to transfer large files quickly or even watch a movie in MPEG format over your network without noticeable delays. This technology works by transmitting high-speed digital data over a radio wave utilizing **OFDM (Orthogonal Frequency Division Multiplexing)** technology. **OFDM** works by splitting the radio signal into multiple smaller sub-signals that are then transmitted simultaneously at different frequencies to the receiver. **OFDM** reduces the amount of **crosstalk** (interference) in signal transmissions.

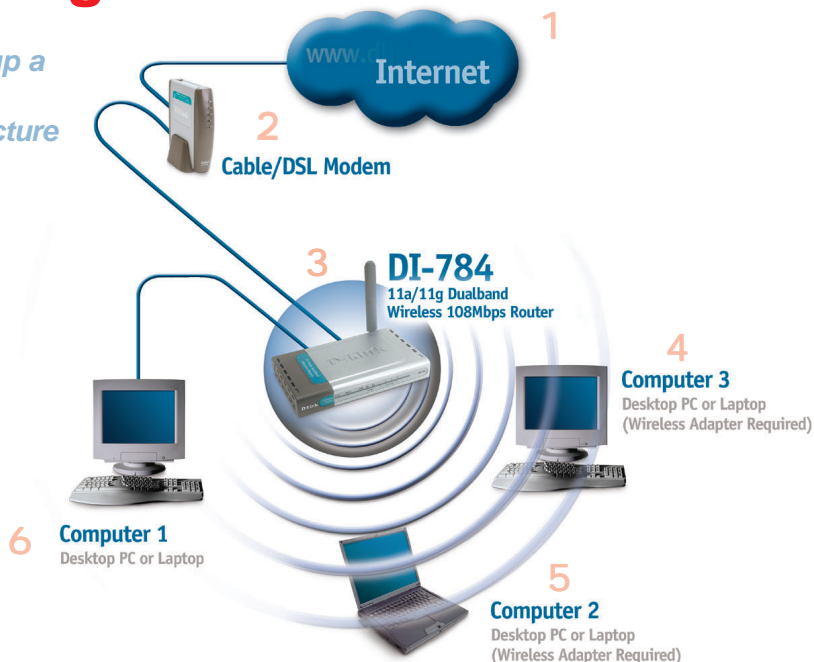
Installation Considerations

The D-Link *Air Premier* AG DI-784 lets you access your network, using a wireless connection, from virtually anywhere within its operating range. Keep in mind, however, that the number, thickness and location of walls, ceilings, or other objects that the wireless signals must pass through, may limit the range. Typical ranges vary depending on the types of materials and background RF (radio frequency) noise in your home or business. The key to maximizing wireless range is to follow these basic guidelines:

- 1 Keep the number of walls and ceilings between the DI-784 and other network devices to a minimum - each wall or ceiling can reduce your D-Link wireless product's range from 3-90 feet (1-30 meters.) Position your devices so that the number of walls or ceilings is minimized.
- 2 Be aware of the direct line between network devices. A wall that is 1.5 feet thick (.5 meters), at a 45-degree angle appears to be almost 3 feet (1 meter) thick. At a 2-degree angle it looks over 42 feet (14 meters) thick! Position devices so that the signal will travel straight through a wall or ceiling (instead of at an angle) for better reception.
- 3 Building Materials can impede the wireless signal - a solid metal door or aluminum studs may have a negative effect on range. Try to position wireless devices and computers with wireless adapters so that the signal passes through drywall or open doorways and not other materials.
- 4 Keep your product away (at least 3-6 feet or 1-2 meters) from electrical devices or appliances that generate extreme RF noise.

Getting Started

Setting up a Wireless Infrastructure Network



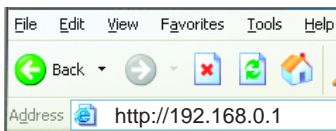
For a typical wireless setup at home (as shown above), please do the following:

- 1 You will need broadband Internet access (a Cable or DSL-subscriber line into your home or office)
- 2 Consult with your Cable or DSL provider for proper installation of the modem
- 3 Connect the Cable or DSL modem to the DI-784 Wireless Router (*see the printed Quick Installation Guide included with your router.*)
- 4 If you are connecting a desktop computer to your network, install the D-Link Air Premier AG DWL-AG530 wireless PCI adapter into an available PCI slot on your desktop computer.
(*See the printed Quick Installation Guide included with the network adapter.*)
- 5 Install the D-Link DWL-AG650S wireless Cardbus adapter into a laptop computer. (*See the printed Quick Installation Guide included with the DWL-AG660.*)
- 6 Install the D-Link DFE-530TX+ wireless Cardbus adapter into a desktop computer. The four Ethernet LAN ports of the DI-784 are Auto MDI/MDIX and will work with both Straight-through and Crossover cable.
(*See the printed Quick Installation Guide included with the DFE-530TX+.*)

Using the Configuration Menu

Whenever you want to configure your network or the DI-784, you can access the Configuration Menu by opening the web-browser and typing in the IP Address of the DI-784. The DI-784 default IP Address is shown here:

- Open the web browser
- Type in the **IP Address** of the Router (<http://192.168.0.1>)

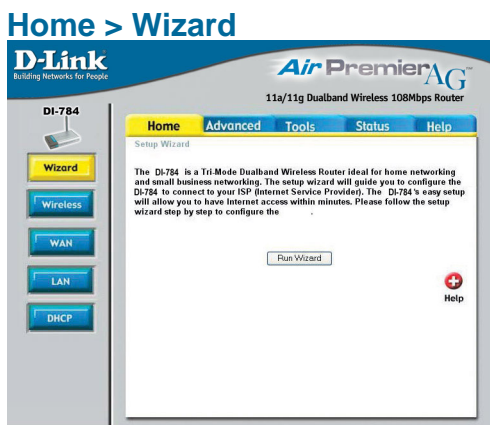


Note: if you have changed the default IP Address assigned to the DI-784, make sure to enter the correct IP Address.





- Type **admin** in the **User Name** field
- Leave the **Password** blank
- Click **OK**



The Home>Wizard screen will appear. Please refer to the *Quick Installation Guide* for more information regarding the Setup Wizard.



These buttons appear on most of the configuration screens in this section. Please click on the appropriate button at the bottom of each screen after you have made a configuration change.

-  Clicking **Apply** will save changes made to the page
-  Clicking **Cancel** will clear changes made to the page
-  Clicking **Help** will bring up helpful information regarding the page
-  Clicking **Restart** will restart the router. (Necessary for some changes.)

Using the Configuration Menu (continued)

Home > Wireless > Open or Shared

The screenshot shows the configuration interface for a D-Link Air Premier AG 11a/11g Dualband Wireless 108Mbps Router. The page has a blue header with the D-Link logo and the product name. On the left, there is a sidebar with navigation buttons: Wizard, Wireless (highlighted in yellow), WAN, LAN, and DHCP. The main content area has a yellow navigation bar with tabs: Home, Advanced, Tools, Status, and Help. The 'Advanced' tab is selected, and the 'Wireless Settings' section is active. The settings are for the 802.11a standard. The SSID is set to 'default'. The Channel is set to 52. Turbo Mode is set to Off. WEP is set to Disabled. WEP Encryption is set to 152Bit. Key Type is set to HEX. There are four key input fields, all containing 00000000000000000000000000000000. At the bottom right, there are three buttons: Apply (with a green checkmark), Cancel (with an orange X), and Help (with a red plus sign).

Wireless Settings-

Choose 802.11a or 802.11g. Here, 802.11a is selected.

802.11a uses the 5GHz frequency range and can support speeds of up to 54Mbps.

802.11g uses the 2.4GHz frequency range and can support speeds of up to 54Mbps.

802.11g is also backwards compatible with 802.11b.

SSID-

“default” is the default setting. All devices on the network must share the same SSID. If you change the default setting, the SSID may be up to 32 characters long.

Using the Configuration Menu (continued)

Home > Wireless > Open or Shared (continued)

Channel- **52** is the default channel for 802.11a.
6 is the default channel for 802.11g.
All devices on the network must share the same channel.

Authentication- **Open System** - communicates the key across the network
Shared Key - devices must have identical WEP settings in order to communicate in the network

WPA - Wi-Fi Protected Access authorizes and authenticates users onto the wireless network. WPA uses stronger security than WEP and is based on a key that changes automatically at a regular interval. This mode requires a RADIUS server in the network.

WPA-PSK - Pre-Shared Key mode means that the wireless client and the router must have the same passphrase in order to establish the wireless connection. A RADIUS server is **not** required with PSK.

WEP- Select **Enabled** or **Disabled**. **Disabled** is the default setting.

WEP Encryption- Select the level of encryption desired: 64, 128 or 152-bit



All the devices on your network must share the same wireless settings in order to communicate.

Key Type- Select **HEX** or **ASCII**

*Hexadecimal digits consist of the numbers 0-9 and the letters A-F
ASCII (American Standard Code for Information Interchange) is a code for representing English letters as numbers from 0-127*

Keys 1-4- Input up to 4 WEP keys; select the one you wish to use.

Using the Configuration Menu (continued)

Home > Wireless > WPA

The screenshot shows the configuration interface for a D-Link Air Premier AG 11a/11g Dualband Wireless 108Mbps Router. The 'Advanced' tab is selected, and the 'Wireless Settings' section is active for 802.11g. The 'Authentication' section has 'WPA' selected. Below it, the '802.1X' section is visible, with 'Lifetime' set to '30 Minutes', 'RADIUS Server 1' IP (0.0.0.0), Port (1812), and 'RADIUS Server 2' IP (Optional) (0.0.0.0). Buttons for 'Apply', 'Cancel', and 'Help' are at the bottom right.

Authentication-

WPA (Wi-Fi Protected Access) is selected.

Wi-Fi Protected Access authorizes and authenticates users onto the wireless network. WPA uses stronger security than WEP and is based on a key that changes automatically at a regular interval. This mode requires the inclusion of a RADIUS server in your network.

802.1x

802.1x Authentication is a first line of defense against intrusion. In the Authentication process the server verifies the identity of the client attempting to connect to the network. Unfamiliar clients are denied access.

Lifetime-

Select 5, 15, 30 minutes, or 1 or 8 hours, or 1 day for the authentication period. After this period expires, a new key will automatically be generated.

Radius Server 1-

IP - Enter the IP Address of the RADIUS server.

Port - Enter the port number that your RADIUS server uses for Authentication. The default setting of 1812 is the port setting for many RADIUS servers.

Shared Secret - Enter the Shared Secret. The Shared Secret must be the same as the Shared Secret on your RADIUS server.

Radius Server 2-

Optional. If you have a second RADIUS server, you will input the same information as shown above.

Using the Configuration Menu (continued)

Home > Wireless > WPA-PSK

The screenshot shows the configuration interface for a D-Link DI-784 router. The page title is "Air Premier AG 11a/11g Dualband Wireless 108Mbps Router". The navigation menu includes "Home", "Advanced", "Tools", "Status", and "Help". The "Wireless Settings" section is active, showing options for 802.11g (selected) and 802.11a. Below this, it states "These are the wireless settings for the AP(Access Point)Portion." The SSID is set to "default" and the Channel is set to "6". The Authentication mode is set to "WPA-PSK" (selected), with other options being "Open System", "Shared Key", and "WPA". A "Passphrase" field is present but empty. At the bottom right, there are three buttons: "Apply" (with a green checkmark), "Cancel" (with a red X), and "Help" (with a red plus sign).

Authentication-

WPA-PSK - Pre-Shared Key mode means that the wireless client and the router must have the same passphrase in order to establish the wireless connection. A RADIUS server is **not** required with PSK.

Passphrase-

Enter a passphrase for the router. The RADIUS server should use the same passphrase (secret key) as the router.

Using the Configuration Menu (continued)

Home > WAN > Dynamic IP Address

The screenshot shows the configuration page for a D-Link router. The breadcrumb path is Home > WAN > Dynamic IP Address. The page title is 'Dynamic IP Address' under the 'WAN' tab. The router model is 'Air Premier AG 11a/11g Dualband Wireless 108Mbps Router'. The left sidebar contains navigation buttons: Wizard, Wireless, WAN (highlighted), LAN, and DHCP. The main content area has tabs for Home, Advanced, Tools, Status, and Help. Under 'WAN Settings', there are four radio button options: Dynamic IP Address (selected), Static IP Address, PPPoE, and Others (with a sub-option PPTP). Below these are fields for Dynamic IP: Host Name (DI-774), MAC Address (00-11-22-33-44-56), Primary DNS Address (0.0.0.0), Secondary DNS Address (0.0.0.0), and MTU (1500). A 'Clone MAC Address' button is present. At the bottom right are 'Apply', 'Cancel', and 'Help' buttons.

Dynamic IP Address-

Most Cable modem users will select this option to obtain an IP Address automatically from their ISP (Internet Service Provider).

Host Name-

This is optional, but may be required by some ISPs. The host name is the device name of the Router.

MAC Address-

The default MAC Address is set to the WAN's physical interface MAC address on the Router.

Clone MAC Address-

Copy the MAC address of the Ethernet card installed by your ISP, and replace the WAN MAC address with this Ethernet card MAC address. It is not recommended that you change the default MAC address unless required by your ISP.

Primary/Secondary DNS-

Enter a DNS Address if you do not wish to use the one provided by your ISP. (*DNS is short for Domain Name System. It translates domain names into IP Addresses*).

MTU-

Enter an MTU value only if required by your ISP. Otherwise, leave this section to its default setting of 1500. (*MTU is short for Maximum Transfer Unit. Messages longer than the MTU will be divided into smaller units for transmission*).

Using the Configuration Menu (continued)

Home > WAN > Static IP Address

The screenshot shows the D-Link configuration interface for a Static IP Address. The page title is "Home > WAN > Static IP Address". The D-Link logo is in the top left, and the router model "11a/11g Dualband Wireless 108Mbps Router" is in the top right. The interface has a navigation menu on the left with buttons for "Wizard", "Wireless", "WAN" (highlighted), "LAN", and "DHCP". The main content area has tabs for "Home", "Advanced", "Tools", "Status", and "Help". Under "WAN Settings", there are radio buttons for "Dynamic IP Address", "Static IP Address" (selected), "PPPoE", and "Others". Below "Static IP" are input fields for "IP Address", "Subnet Mask", "ISP Gateway Address", "Primary DNS Address", "Secondary DNS Address", and "MTU". The "Apply", "Cancel", and "Help" buttons are at the bottom right.

Static IP Address-

Select this option to set static IP information provided to you by your ISP.

IP Address-

Input the IP Address provided by your ISP

Subnet Mask-

Input your Subnet mask. (All devices in the network must have the same subnet mask.)

ISP Gateway Address-

Input the Gateway address

Primary/ Secondary DNS-

Enter a DNS Address if you do not wish to use the one provided by your ISP. (DNS is short for Domain Name System. It translates domain names into IP Addresses).

MTU-

Enter an MTU value only if required by your ISP. Otherwise, leave this section to its default setting of 1500. (MTU is short for Maximum Transfer Unit. Messages longer than the MTU will be divided into smaller units for transmission).

Using the Configuration Menu (continued)

Home > WAN > PPPoE

Please be sure to remove any existing PPPoE client software installed on your computers.



PPPoE-

Choose this option if your ISP uses PPPoE. (Most DSL users will select this option).

Dynamic PPPoE- receive an IP Address automatically from your ISP.

Static PPPoE- you have an assigned (static) IP Address.

User Name-

Your PPPoE username provided by your ISP.

Password-

Your PPPoE password provided by your ISP.

Retype Password-

Re-enter the PPPoE password

Service Name-

Enter the Service Name provided by your ISP (optional).

IP Address-

This option is only available for Static PPPoE. Enter the static IP Address for the PPPoE connection.

Using the Configuration Menu (continued)

Home > WAN > PPPoE *continued*

Primary/Secondary DNS- Enter a DNS Address if you do not wish to use the one provided by your ISP. (*DNS is short for Domain Name System. It translates domain names into IP Addresses*).

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

MTU- Maximum Transmission Unit-1472 is default-you may need to change the MTU to conform with your ISP.

Auto-reconnect- If enabled, the DI-784 will automatically connect to your ISP after your system is restarted or if the connection is dropped.

Home > LAN

LAN is short for Local Area Network. This is considered your internal network. These are the IP settings of the LAN interface for the DI-784. These settings may be referred to as Private settings. You may change the LAN IP Address if needed. The LAN IP Address is private to your internal network and cannot be seen on the Internet.

The screenshot shows the configuration interface for a D-Link router. The top navigation bar includes 'Home', 'Advanced', 'Tools', 'Status', and 'Help'. The 'LAN Settings' section is active, displaying the IP address of the DI-784 interface. The IP Address field is set to 192.168.0.1, and the Subnet Mask is set to 255.255.255.0. The Local Domain Name field is empty and marked as optional. At the bottom right of the form, there are three buttons: 'Apply' (with a green checkmark), 'Cancel' (with a red X), and 'Help' (with a red plus sign).

IP Address- The IP Address of the LAN interface. The default IP Address is: **192.168.0.1**.

Subnet Mask- The subnet mask of the LAN interface. The default subnet mask is **255.255.255.0**.

Local Domain Name- The domain name assigned to the router.

Using the Configuration Menu (continued)

DHCP stands for *Dynamic Host Control Protocol*. The DI-784 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 DI-784. The DHCP Server will automatically allocate an unused IP Address from the IP Address pool to the requesting computer.

You must specify the starting and ending address of the IP Address pool.

Home > DHCP

The screenshot shows the configuration page for the DHCP server on a D-Link Air Premier AG 11a/11g Dualband Wireless 108Mbps Router. The page has a navigation bar with tabs for Home, Advanced, Tools, Status, and Help. On the left, there is a sidebar with buttons for Wizard, Wireless, WAN, LAN, and DHCP. The main content area is titled "DHCP Server" and contains the following settings:

- DHCP Server:** Enabled (radio button selected), Disabled (radio button unselected).
- Starting IP Address:** 192.168.0.100
- Ending IP Address:** 192.168.0.199
- Lease Time:** 1 Week (dropdown menu)
- Static DHCP:** Disabled (radio button selected), Enabled (radio button unselected).
- Name:** (text input field)
- IP:** 192.168.0. (text input field)
- MAC Address:** (text input field with dashes)
- DHCP Client:** winxp.00-50-BA-FF-FF-FE (dropdown menu) and Clone button

At the bottom right, there are three buttons: Apply (green checkmark), Cancel (orange X), and Help (red plus).

Below the settings, there are two tables:

Static DHCP Client List

| Host Name | IP Address | MAC Address |
|-----------|------------|-------------|
|-----------|------------|-------------|

Dynamic DHCP Client List

| Host Name | IP Address | MAC Address | Expired Time |
|-----------|---------------|-------------------|----------------------|
| winxp | 192.168.0.100 | 00-50-BA-FF-FF-FE | Apr/08/2003 00:00:17 |

DHCP Server-

Select **Enabled** or **Disabled**.

Starting IP Address-

The starting IP Address for the DHCP server's IP assignment.

Ending IP Address-

The ending IP Address for the DHCP server's IP assignment.

Lease Time-

The length of time of the DHCP lease.

Static DHCP-

Enable the Static DHCP server to assign the same IP Address to a MAC Address that you specify here. This prevents the problems sometimes encountered with changing IP Addresses.

Static & Dynamic DHCP Client Table-

Displays a list of Static and Dynamic DHCP clients assigned by the router.

Using the Configuration Menu (continued)

Advanced > Virtual Server



The screenshot shows the configuration interface for a D-Link DI-784 router. The top navigation bar includes 'Home', 'Advanced', 'Tools', 'Status', and 'Help'. The 'Advanced' tab is selected, and the 'Virtual Server' sub-tab is active. The page title is 'Virtual Server' and it explains that this feature allows Internet users to access LAN services. The configuration options include:

- Enabled/Disabled radio buttons (Enabled is selected).
- Name, Private IP, and Protocol Type (set to TCP) input fields.
- Private Port and Public Port input fields.
- Schedule options: Always (selected), or From time (00:00 AM) to (00:00 AM) on (Sun) to (Sun).

Below the configuration fields is a 'Virtual Servers List' table with columns for Name, Private IP, Protocol, and Schedule. The table lists various services like FTP, HTTP, HTTPS, DNS, SMTP, POP3, Telnet, IPsec, PPTP, and NetMeeting, all currently set to 'always' and disabled. Action icons (Apply, Cancel, Help) are provided for each row.

| Name | Private IP | Protocol | Schedule | |
|--|------------|---------------|----------|--|
| <input type="checkbox"/> Virtual Server FTP | 0.0.0.0 | TCP 21/21 | always | |
| <input type="checkbox"/> Virtual Server HTTP | 0.0.0.0 | TCP 80/80 | always | |
| <input type="checkbox"/> Virtual Server HTTPS | 0.0.0.0 | TCP 443/443 | always | |
| <input type="checkbox"/> Virtual Server DNS | 0.0.0.0 | UDP 53/53 | always | |
| <input type="checkbox"/> Virtual Server SMTP | 0.0.0.0 | TCP 25/25 | always | |
| <input type="checkbox"/> Virtual Server POP3 | 0.0.0.0 | TCP 110/110 | always | |
| <input type="checkbox"/> Virtual Server Telnet | 0.0.0.0 | TCP 23/23 | always | |
| <input type="checkbox"/> IPsec | 0.0.0.0 | UDP 500/500 | always | |
| <input type="checkbox"/> PPTP | 0.0.0.0 | TCP 1723/1723 | always | |
| <input type="checkbox"/> NetMeeting | 0.0.0.0 | TCP 1720/1720 | always | |

The DI-784 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 DI-784 firewall feature filters out unrecognized packets to protect your LAN network so all computers networked with the DI-784 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 DI-784 redirects the external service request to the appropriate server within the LAN network.

Using the Configuration Menu (continued)

Advanced > Virtual Server *continued*

The DI-784 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.

| | |
|------------------------|---|
| Virtual Server- | Select Enabled or Disabled . |
| Name- | Enter the name referencing the virtual service. |
| Private IP- | The server computer in the LAN (Local Area Network) that will be providing the virtual services. |
| Protocol Type- | The protocol used for the virtual service. |
| Private Port- | The port number of the service used by the Private IP computer. |
| Public Port- | The port number on the WAN (Wide Area Network)side that will be used to access the virtual service. |
| Schedule- | The schedule of time when the virtual service will be enabled. The schedule may be set to Always , which will allow the particular service to always be enabled. If it is set to Time , select the time frame for the service to be enabled. If the system time is outside of the scheduled time, the service will be disabled. |

Example #1:

If you have a Web server that you wanted Internet users to access at all times, you would need to enable it. Web (HTTP) server is on LAN (Local Area Network) computer 192.168.0.25. HTTP uses port 80, TCP.

Name: Web Server

Private IP: 192.168.0.25

Protocol Type: TCP

Private Port: 80

Public Port: 80

Schedule: always

Using the Configuration Menu (continued)

Advanced > Virtual Server *continued*

| Virtual Servers List | | | | |
|---|--------------|-----------|----------|---|
| Name | Private IP | Protocol | Schedule | |
| <input checked="" type="checkbox"/> Virtual Server HTTP | 192.168.0.25 | TCP 80/80 | always |   |



Click on this icon to edit the virtual service



Click on this icon to delete the virtual service

Example #2:

If you have an FTP server that you wanted Internet users to access by WAN port 2100 and only during the weekends, you would need to enable it as such. FTP server is on LAN computer 192.168.0.30. FTP uses port 21, TCP.

Name: FTP Server
Private IP: 192.168.0.30
Protocol Type: TCP
Private Port: 21
Public Port: 2100

Schedule: From: 01:00AM to 11:00PM, Sat to Sun

All Internet users who want to access this FTP Server must connect to it from port 2100. This is an example of port redirection and can be useful in cases where there are many of the same servers on the LAN network.

Using the Configuration Menu (continued)

Advanced > Applications

The screenshot shows the D-Link configuration interface for the DI-784 router. The 'Advanced' tab is selected, and the 'Applications' sub-tab is active. The 'Special Application' section is currently empty, with fields for Name, Trigger Port, Trigger Type (set to TCP), Public Port, and Public Type (set to TCP). Below this is a table of predefined special applications.

| NAME | Trigger | Public | | |
|--|---------|---|--|--|
| <input type="checkbox"/> Battle.net | 6112 | 6112 | | |
| <input type="checkbox"/> Dialpad | 7175 | 51200-51201,51210 | | |
| <input type="checkbox"/> ICUF II | 2019 | 2000-2038,2050-2051,2069,2085,3010-3030 | | |
| <input type="checkbox"/> MSN Gaming Zone | 47624 | 2300-2400,28800-29000 | | |
| <input type="checkbox"/> PC-to-Phone | 12053 | 12120,12122,24150-24220 | | |
| <input type="checkbox"/> QuickTime 4 | 554 | 6970-6999 | | |

Some applications require multiple connections, such as Internet gaming, video conferencing, Internet telephony and others. These applications have difficulties working through NAT (Network Address Translation). Special Applications makes some of these applications work with the DI-784. 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 public ports associated with the trigger port to open them for inbound traffic.

The DI-784 provides some predefined applications in the table on the bottom of the web page. Select the application you want to use and enable it.

Note! Only one PC can use each Special Application tunnel.

Name: This is the name referencing the special application.

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

Trigger Type: This is the protocol used to trigger the special application.

Public Port: This is the port number on the WAN 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.

Public Type: This is the protocol used for the special application.

Using the Configuration Menu (continued)

Advanced > Filters > IP Filters

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11a/11g Dualband Wireless 108Mbps Router

DI-784

Virtual Server
Applications
Filters
Firewall
DMZ
Performance

Home **Advanced** Tools Status Help

Filters
Filters are used to allow or deny LAN users from accessing the Internet.

IP Filters URL Blocking
 MAC Filters Domain Blocking

IP Filters
Use IP Filters to deny LAN IP addresses access to the Internet.

Enabled Disabled

IP: [] - []

Port: [] - []

Protocol Type: **TCP**

Schedule: Always
 From time [00]:[00] AM to [00]:[00] AM
day: [Sun] to [Sun]

IP Filter List

| IP Range | Protocol | Schedule | |
|----------|-----------|----------|--------------------------|
| * * | TCP 20-21 | always | <input type="checkbox"/> |
| * * | TCP 80 | always | <input type="checkbox"/> |
| * * | TCP 443 | always | <input type="checkbox"/> |
| * * | UDP 53 | always | <input type="checkbox"/> |
| * * | TCP 25 | always | <input type="checkbox"/> |
| * * | TCP 110 | always | <input type="checkbox"/> |
| * * | ICMP 8 | always | <input type="checkbox"/> |
| * * | TCP 23 | always | <input type="checkbox"/> |

Filters are used to deny or allow LAN (Local Area Network) computers from accessing the Internet. The DI-784 can be setup to deny internal computers by their IP or MAC addresses. The DI-784 can also block users from accessing restricted web sites.

IP Filters-

Use IP Filters to deny LAN IP Addresses from accessing the Internet. You can deny specific port numbers or all ports for the specific IP Address.

IP-

The IP Address of the LAN computer that will be denied access to the Internet.

Port-

The single port or port range that will be denied access to the Internet.

Protocol Types-

Select the protocol type.

Schedule-

This is the schedule of time when the IP Filter will be enabled.

Using the Configuration Menu

Advanced > Filters > URL Blocking

The screenshot shows the configuration interface for a D-Link DI-784 router. The top navigation bar includes 'Home', 'Advanced' (selected), 'Tools', 'Status', and 'Help'. The main content area is titled 'Filters' and contains the following elements:

- Filters:** A section explaining that filters are used to allow or deny LAN users from accessing the Internet. It includes radio buttons for 'IP Filters', 'URL Blocking' (selected), 'MAC Filters', and 'Domain Blocking'.
- URL Blocking:** A section explaining that it blocks URLs containing keywords listed below. It includes radio buttons for 'Enabled' and 'Disabled' (selected).
- Keyword Input:** A text input field for entering keywords, with a 'Delete' button to its right.
- Buttons:** 'Apply', 'Cancel', and 'Help' buttons at the bottom right, each with a corresponding icon (checkmark, X, and plus sign).

The left sidebar contains navigation buttons for 'Virtual Server', 'Applications', 'Filters' (highlighted in yellow), 'Firewall', 'DMZ', and 'Performance'. The router model 'DI-784' and 'Air Premier AG' are also visible at the top.

URL Blocking is used to deny LAN computers from accessing specific web sites. A URL is a specially formatted text string that defines a location on the Internet. If any part of the URL contains the blocked word, the site will not be accessible and the web page will not display.

Filters-

Select the filter you wish to use; in this case, **URL Blocking** was chosen.

URL Blocking-

Select Enabled or Disabled.

Keywords-

Block URLs which contain the keywords listed below. Enter the keywords in this space.

Using the Configuration Menu

Advanced > Filters > MAC Filters



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

Filters-

Select the filter you wish to use; in this case, **MAC filters** was chosen.

MAC Filters-

Choose to **Disable** MAC filters, or choose to **allow** or **deny** MAC addresses listed below.

Name-

Enter the name here.

MAC Address-

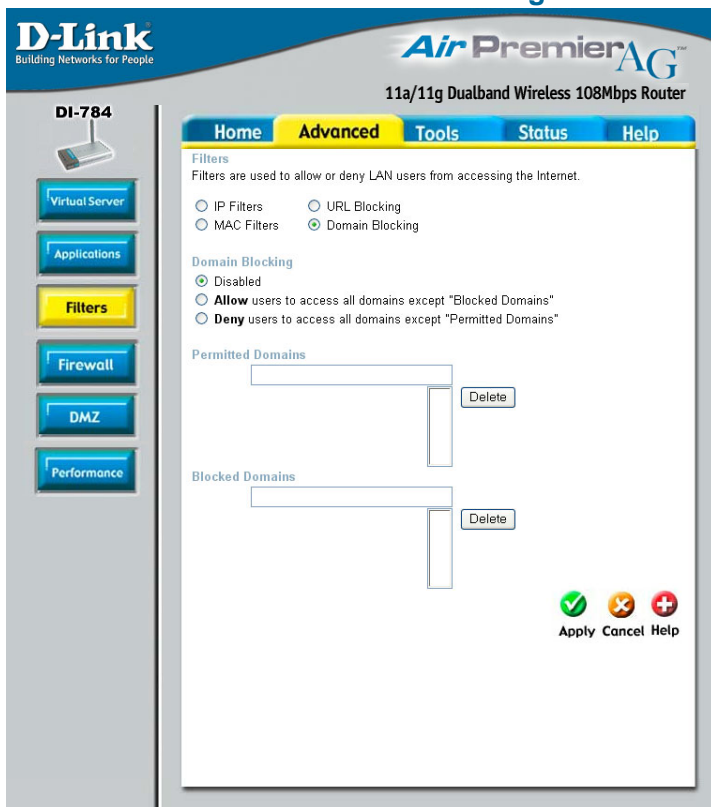
Enter the MAC Address of the client that will be allowed or denied access.

DHCP Client-

Select a DHCP client from the pull-down list; click **Clone** to copy that MAC Address.

Using the Configuration Menu (continued)

Advanced > Filters > Domain Blocking



Domain Blocking is used to allow or deny LAN (Local Area Network) computers from accessing specific domains on the Internet. Domain blocking will deny all requests to a specific domain such as http and ftp. It can also allow computers to access specific sites and deny all other sites.

Filters-

Select the filter you wish to use; in this case, **Domain Blocking** was chosen.

Domain Blocking

Disabled-

Select **Disabled** to disable **Domain Blocking**.

Allow-

Allows users to access all domains except **Blocked Domains**.

Deny-

Denies users access to all domains except **Permitted Domains**.

Permitted Domains-

Enter the **Permitted Domains** in this field.

Blocked Domains-

Enter the **Blocked Domains** in this field.

Using the Configuration Menu (continued)

Advanced > Firewall

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11a/11g Dualband Wireless 108Mbps Router

DI-784

Home Advanced Tools Status Help

Firewall Rules
Firewall Rules can be used to allow or deny traffic from passing through the DI-784.

Enabled Disabled

Name:

Action: Allow Deny

Interface: IP Range Start: IP Range End: Protocol: Port Range:

Source: *

Destination: * TCP -

Schedule: Always
 From time 00 : 00 AM to 00 : 00 AM
day Sun to Sun

Apply Cancel Help

| ActionName | SourceDestination | Protocol |
|--|------------------------|-----------------|
| <input checked="" type="checkbox"/> Allow Allow to Ping WAN port | WAN,*LAN,192.168.0.1 | ICMP 8 |
| <input checked="" type="checkbox"/> Allow msmgs (192.168.0.100:8572) 452 | WAN,*LAN,192.168.0.100 | UDP 8572-45281 |
| <input checked="" type="checkbox"/> Allow msmgs (192.168.0.100:10120) 17 | WAN,*LAN,192.168.0.100 | TCP 10120-17639 |
| <input checked="" type="checkbox"/> Deny Default | *,* LAN,* | IP (0),* |
| <input checked="" type="checkbox"/> Allow Default | LAN,* *,* | IP (0),* |

Firewall Rules is an advanced feature used to deny or allow traffic from passing through the DI-784. It works in the same way as IP Filters with additional settings. You can create more detailed access rules for the DI-784. When virtual services are created and enabled, it will also display in Firewall Rules. Firewall Rules contains all network firewall rules pertaining to IP (Internet Protocol).

In the Firewall Rules List at the bottom of the screen, the priorities of the rules are from top (highest priority) to bottom (lowest priority.)

Note: The DI-784 MAC Address filtering rules have precedence over the Firewall Rules.

- Firewall Rules-** Enable or disable the Firewall Rules.
- Name-** Enter a name for the rule.
- Action-** Allow or deny IP traffic through the router.
- Source-** Enter the IP Address range.
- Destination-** Enter the IP Address range, the Protocol, and the Port Range.
- Schedule-** Select Always or enter the Time.

Using the Configuration Menu (continued)

Advanced > DMZ

The screenshot shows the web interface of a D-Link router. At the top left is the D-Link logo with the tagline "Building Networks for People". To the right is the product name "Air Premier AG" and the model "11a/11g Dualband Wireless 108Mbps Router". Below the product name is a navigation menu with tabs for "Home", "Advanced" (which is selected), "Tools", "Status", and "Help". On the left side, there is a vertical sidebar with a router icon labeled "DI-784" and several menu items: "Virtual Server", "Applications", "Filters", "Firewall", "DMZ" (highlighted in yellow), and "Performance". The main content area is titled "DMZ" and contains the following text: "DMZ (Demilitarized Zone) is used to allow a single computer on the LAN to be exposed to the Internet." Below this text are two radio buttons: "Enabled" (unselected) and "Disabled" (selected). Underneath is a label "IP Address" followed by the text "192 . 168 . 0 ." and a small input box containing the number "0". At the bottom right of the main content area are three buttons: a green checkmark icon labeled "Apply", an orange 'X' icon labeled "Cancel", and a red plus sign icon labeled "Help".

If you have a client PC that cannot run Internet applications properly from behind the DI-784, then you can set the client up to unrestricted Internet access. It allows a computer to be exposed to the Internet. This feature is useful for gaming purposes. Enter the IP Address of the internal computer that will be the DMZ host. Adding a client to the DMZ (Demilitarized Zone) may expose your local network to a variety of security risks, so only use this option as a last resort.

DMZ-

Enable or **disable** the DMZ. The DMZ (Demilitarized Zone) allows a single computer to be exposed to the Internet.

IP Address-

Enter the **IP Address** of the computer to be in the **DMZ**.

Using the Configuration Menu (continued)

Advanced > Performance > 802.11a

Wireless

Performance-

Select **802.11a** or **802.11g**.

Here, **802.11a** has been chosen. This screen displays the wireless performance features of the Access Point portion of the DI-784.

Data Rate-

Auto is the default selection. Select from the drop down menu for your selection.

Transmit Power-

Full is the default selection. Select from the drop down menu for your selection.

Beacon interval-

Beacons are packets sent by the DI-784 to synchronize a wireless network. Specify a value. **100** is the default setting and is recommended.

RTS Threshold-

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

Fragmentation-

This value should also remain at its default setting of **2346**. If you experience a high packet error rate, you may slightly increase your Fragmentation value within the range of 256-2346. Setting the Fragmentation value too low may result in poor performance.

DTIM interval-

(**D**elivery **T**raffic **I**ndication **M**essage) **1** is the default setting. A DTIM is a countdown informing clients of the next window for listening to broadcast and multicast messages.

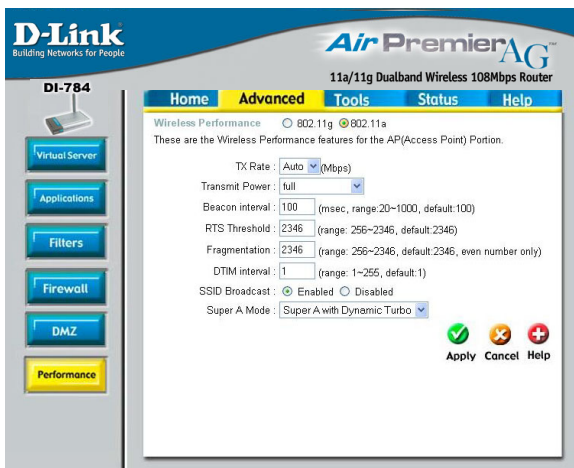
Authentication-

Open System - Select **Open system** or **Shared Key**
The DI-784 will be visible to all devices on the network. This is the default setting

Shared Key - In this mode, in order to access the DI-784 on the network, the device must be listed in the MAC Address Control List

SSID Broadcast-

Choose **Enabled** to broadcast the SSID across the network. All devices on a network must share the same SSID (Service Set Identifier) to establish communication. Choose **Disabled** if you do not wish to broadcast the SSID over the network.



Using the Configuration Menu (continued)

Advanced > Performance > 802.11a (Continued)

Super A Mode-

Super A is a group of performance enhancement features that increase end user application throughput in an 802.11a network. Super A is backwards compatible to standard 802.11a devices. For top performance, all wireless devices on the network should be super A capable. Select either Disabled, Super A without Turbo, Super A with Dynamic Turbo, or Super A with Static Turbo.

Disabled-

Standard 802.11a support, no enhanced capabilities.

Super A without Turbo-

Capable of Packet Bursting, FastFrames, Compression, and no Turbo mode.

Super A with Dynamic Turbo-

Capable of Packet Bursting, FastFrames, Compression, and Dynamic Turbo. This setting is backwards compatible with non-Turbo (legacy) devices. Dynamic Turbo mode is only enabled when all nodes on the wireless network is Super A with Dynamic Turbo enabled.

Super A with Static Turbo-

Capable of Packet Bursting, FastFrames, Compression, and Static Turbo. This setting is not backwards compatible with non-Turbo (legacy) devices. Static turbo mode is always on and is only enabled when all nodes on the wireless network is Super A with Static Turbo enabled.

Wireless Performance-

Select **802.11a** or **802.11g**. **802.11g** is selected here. Displayed in this window are the Wireless Performance features for the Access Point portion of the DI-784.

TX Rates-

Auto is the default selection. Select from the drop down menu for your selection.

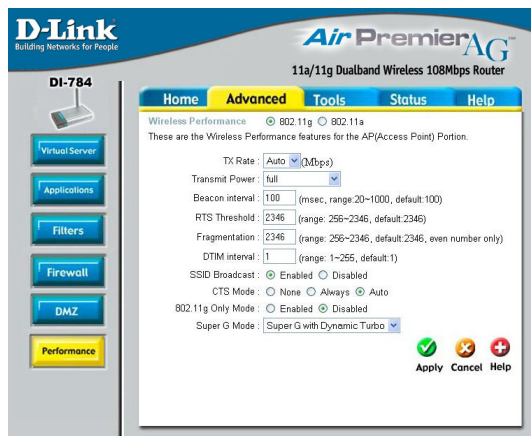
Transmit Power-

Full is the default selection. Select from the drop down menu for your selection.

Beacon interval-

Beacons are packets sent by the DI-784 to synchronize a wireless network. Specify a value. **100** is the default setting and is recommended.

Advanced > Performance > 802.11g



Using the Configuration Menu (continued)

Advanced > Performance > 802.11g (Continued)

- RTS Threshold-** This value should remain at its default setting of **2346**. If inconsistent data flow is a problem, only a minor modification should be made.
- Fragmentation-** This value should also remain at its default setting of **2346**. If you experience a high packet error rate, you may slightly increase your Fragmentation value within the range of 256-2346. Setting the Fragmentation value too low may result in poor performance.
- 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.
- Authentication-** Select **Open system** or **Shared Key**
- Open System -** The DI-784 will be visible to all devices on the network. This is the default setting
 - Shared Key -** In this mode, in order to access the DI-784 on the network, the device must be listed in the MAC Address Control List
- SSID Broadcast-** Choose **Enabled** to broadcast the SSID across the network. All devices on a network must share the same SSID (Service Set Identifier) to establish communication. Choose **Disabled** if you do not wish to broadcast the SSID over the network.
- Super G Mode-** Super G is a group of performance enhancement features that increase end user application throughput in an 802.11g network. Super G is backwards compatible to standard 802.11g devices. For top performance, all wireless devices on the network should be Super G capable. Select either Disabled, Super G without Turbo, Super G with Dynamic Turbo, or Super G with Static Turbo.
- Disabled-** Standard 802.11g support, no enhanced capabilities.
 - Super G without Turbo-** Capable of Packet Bursting, FastFrames, Compression, and no Turbo mode.
 - Super G with Dynamic Turbo-** Capable of Packet Bursting, FastFrames, Compression, and Dynamic Turbo. This setting is backwards compatible with non-Turbo (legacy) devices. Dynamic Turbo mode is only enabled when all nodes on the wireless network is Super G with Dynamic Turbo enabled.
 - Super G with Static Turbo-** Capable of Packet Bursting, FastFrames, Compression, and Static Turbo. This setting is not backwards compatible with non-Turbo (legacy) devices. Static turbo mode is always on and is only enabled when all nodes on the wireless network is Super G with Static Turbo enabled.

Using the Configuration Menu (continued)

Advanced > Performance > 802.11g (continued)

CTS Mode-

CTS (Clear To Send) is a function used to minimize collisions among wireless devices on a wireless local area network (LAN). CTS will make sure the wireless network is clear before a wireless client attempts to send wireless data. Enabling CTS will add overhead and may lower wireless throughput.

None- CTS is typically used in a pure 802.11g environment. If CTS is set to "None" in a mixed mode environment populated by 802.11b clients, wireless collisions may occur frequently.

Always- CTS will always be used to make sure the wireless LAN is clear before sending data.

Auto- CTS will monitor the wireless network and automatically decide whether to implement CTS based on the amount of traffic and collisions that occurs on the wireless network.

802.11g only mode- Select this mode to restrict your network to only those devices that employ the 802.11g standard. Enabling this mode will ensure that you maintain the highest connectivity rate, unhampered by any connection to an 802.11b device.

Tools > Admin

Administrator Login Name-

user (lower case) is the **default** login name for the user account. The user account has read-only access to the router.

User Login Name-

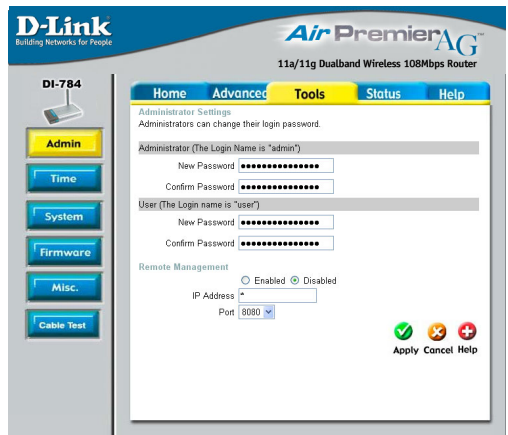
admin (lower case) is the **default** login name for the admin account. The admin account has read/write access to the router.

Admin Password-

The **default** setting is blank - no password. To change the password, enter and confirm the new password.

User Password-

The **default** setting is blank - no password. To change the password, enter and confirm the new password.



Using the Configuration Menu (continued)

Tools> Admin (continued)

Remote Management

Remote Management allows the DI-784 to be configured from the Internet by a web browser. A username and password is still required to access the Web-Management interface. In general, only a member of your network can browse the built-in web pages to perform “Administrator” tasks. This feature enables you to perform “Administrator” tasks from the remote (Internet) host.

IP Address: Internet IP Address of the computer that has access to the Router. It is not recommended that you set the IP Address to * (star), because this allows any Internet IP Address to access the Router, which could result in a loss of security for your network. If you elect to enable **Remote Management**, make sure to enter the IP Address of the remote computer allowed to configure the DI-784.

Port: For security purposes, select a separate port number used to access the Router. (The following is an example only; you may use a different port number.)

Example: <http://x.x.x.x:8080> where x.x.x.x is the WAN IP Address of the Router and 8080 is the port used for the Web-Management interface.

Tools > Time

The screenshot shows the configuration interface for a D-Link Air Premier AG 11a/11g Dualband Wireless 108Mbps Router. The page is titled "Tools > Time" and features a navigation menu with "Home", "Advanced", "Tools", "Status", and "Help". The "Tools" menu is selected, and the "Time" sub-menu is active. The main content area is titled "Time" and contains the following settings:

- Set the DI-784 system time.**
- Local Time:** Apr/01/2002 00:17:53
- Time Zone:** (GMT-08:00) Pacific Time (US & Canada)
- Default NTP Server:** (optional)
- Set the Time:** Year: 2002, Month: Apr, Day: 01, Hour: 00, Minute: 17, Second: 53. A "Set Time" button is present.
- Daylight Saving:** Disabled (radio button selected). Start: Jan 01, End: Jan 01.

At the bottom right of the configuration area, there are three buttons: "Apply" (green checkmark), "Cancel" (orange X), and "Help" (red plus sign).

Time settings-

In this window you can choose the **time zone**; **set the time**; and **enable** or **disable** *Daylight Savings Time*.

Default NTP Server-

NTP is short for *Network Time Protocol*. NTP synchronizes computer clock times in a network of computers. This field is optional.

Using the Configuration Menu (continued)

Tools > System

The screenshot shows the web interface for a D-Link DI-784 Air Premier AG 11a/11g Dualband Wireless 108Mbps Router. The interface has a blue header with the D-Link logo and product name. Below the header is a navigation menu with tabs for Home, Advanced, Tools (selected), Status, and Help. On the left side, there is a vertical menu with buttons for Admin, Time, System (highlighted in yellow), Firmware, Misc., and Cable Test. The main content area is titled 'System Settings' and contains three sections: 'Save Settings To Local Hard Drive' with a 'Save' button; 'Load Settings From Local Hard Drive' with a text input field, a 'Browse...' button, and a 'Load' button; and 'Restore To Factory Default Settings' with a 'Restore' button. A red 'Help' icon is located in the bottom right corner of the main content area.

System Settings

Save Settings to Local Hard Drive-

Click **Save** to save the current settings to the local Hard Drive.

Load Settings from Local Hard Drive-

Click **Browse** to find the settings, then click **Load**.

Restore to Factory Default Settings-

Click **Restore** to restore the factory default settings.

Using the Configuration Menu (continued)

Tools > Firmware

The screenshot shows the web interface of a D-Link Air Premier AG 11a/11g Dualband Wireless 108Mbps Router. The top navigation bar includes 'Home', 'Advanced', 'Tools' (highlighted), 'Status', and 'Help'. On the left sidebar, there are buttons for 'Admin', 'Time', 'System', 'Firmware' (highlighted), 'Misc.', and 'Cable Test'. The main content area is titled 'Firmware Upgrade' and contains the following text: 'There may be new firmware for your DI-784 to improve functionality and performance. [Click here to check for an upgrade on our support site.](#) To upgrade the firmware, locate the upgrade file on the local hard drive with the Browse button. Once you have found the file to be used, click the Apply button below to start the firmware upgrade.' Below this text, it displays 'Current Firmware Version: 0.01' and 'Firmware Date: Tue, 18 Mar 2003'. There is an empty text input field followed by a 'Browse...' button. At the bottom right, there are three buttons: 'Apply' (with a green checkmark icon), 'Cancel' (with a red X icon), and 'Help' (with a red plus icon).

Firmware Upgrade-

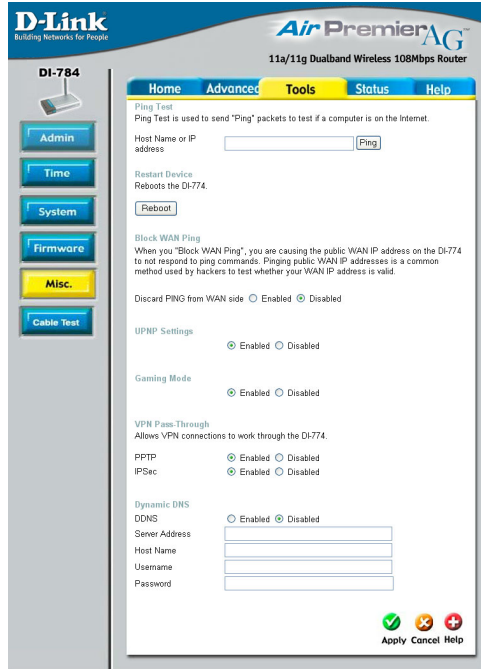
Click on the link in this screen to find out if there is an updated firmware; if so, download the new firmware to your hard drive.

Browse-

After you have downloaded the new firmware, click **Browse** in this window to locate the firmware update on your hard drive. Click **Apply** to complete the firmware upgrade.

Using the Configuration Menu (continued)

Tools > Misc



DDNS-
Dynamic Domain Name System is a method to keep domain names linked to changing IP Addresses. In this way, changing IP Addresses (e.g., via DHCP) will not interfere with network connectivity.

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**.

Restart Device-

Click **Reboot** to restart the DI-784.

Block WAN Ping-

If you choose to block WAN Ping, the WAN IP Address of the DI-784 will not respond to pings. Blocking the Ping may provide some extra security from hackers.

Discard Ping from WAN side-

Click **Enabled** to block the WAN ping.

VPN Pass Through-

The DI-784 supports VPN (Virtual Private Network) pass-through for both PPTP (Point-to-Point Tunneling Protocol) and IPsec (IP Security). Once VPN pass-through is enabled, there is no need to open up virtual services. Multiple VPN connections can be made through the DI-784. This is useful when you have many VPN clients on the LAN network.

PPTP- select **Enabled** or **Disabled**

IPSec- select **Enabled** or **Disabled**

DDNS-

Fill in the required fields to use the Dynamic Domain Name Service (DDNS) feature.

Using the Configuration Menu (continued)

Tools > Cable Test

The screenshot shows the configuration interface for a D-Link DI-784 router. The top navigation bar includes 'Home', 'Advanced', 'Tools' (highlighted), 'Status', and 'Help'. The 'Cable Test' section is titled 'Virtual Cable Tester (VCT)'. It displays a table of ports and their link statuses:

| Ports | Link Status | |
|-------|-------------|---|
| WAN | | Disconnected <input type="button" value="More Info"/> |
| LAN1 | | Connected <input type="button" value="More Info"/> |
| LAN2 | | Disconnected <input type="button" value="More Info"/> |
| LAN3 | | Disconnected <input type="button" value="More Info"/> |
| LAN4 | | Disconnected <input type="button" value="More Info"/> |

At the bottom right of the interface, there are 'Refresh' and 'Help' buttons.

Cable Test is an advanced feature that integrates a LAN cable tester on every Ethernet port on the router. Through the graphical user interface (GUI), **Cable Test** can be used to remotely diagnose and report cable faults such as opens, shorts, swaps, and impedance mismatch. This feature significantly reduces service calls and returns by allowing users to easily troubleshoot their cable connections.

Ports – The Ethernet port names associated to the physical ports.

Link Status – The current link status of the Ethernet cable connected to the respective Ethernet port.

More Info – Click on **More Info** for detailed information about the cable link status.

Refresh – Click on **Refresh** to run the Cable test. Allow the router a few seconds to complete the test.

Using the Configuration Menu (continued)

Status > Device Info

The screenshot shows the 'Status > Device Info' page for a D-Link Air Premier AG 11a/11g Dualband Wireless 108Mbps Router. The page has a blue header with the D-Link logo and 'Building Networks for People'. The router model 'DI-784' is shown in the top left. The main navigation bar includes 'Home', 'Advanced', 'Tools', 'Status', and 'Help'. The 'Status' tab is selected. The page displays device information for LAN, WAN, and two wireless networks (802.11g and 802.11a). The LAN section shows MAC Address 00:11:22:33:44:56, IP Address 192.168.0.1, Subnet Mask 255.255.255.0, and DHCP Server Enabled. The WAN section shows MAC Address 00:11:22:33:44:56, Connection DHCP Client Disconnected, IP Address 0.0.0.0, Subnet Mask 0.0.0.0, and Default Gateway 0.0.0.0. The Wireless 802.11g section shows MAC Address 00:03:2F:12:34:56, SSID default, Channel 1, and WEP Disabled. The Wireless 802.11a section shows MAC Address 00:80:C8:2A:24:F1, SSID default, Channel 52, Turbo Mode Disabled, and WEP Disabled. A red plus icon and 'Help' link are at the bottom right.

Device Information- This screen displays information about the DI-784.

Status > Log

The screenshot shows the 'Status > Log' page for the same D-Link router. The page has a blue header with the D-Link logo and 'Building Networks for People'. The router model 'DI-784' is shown in the top left. The main navigation bar includes 'Home', 'Advanced', 'Tools', 'Status', and 'Help'. The 'Status' tab is selected. The page displays a log of activities. The log title is 'View Log' and the description is 'View Log displays the activities occurring on the DI-784. Click on Log Settings for advance features.' Below the description are navigation buttons: 'First Page', 'Last Page', 'Previous', 'Next', 'Clear', 'Log Settings', and 'Help'. The log content is as follows:

| Time | Message | Source | Destination | Note |
|----------------------|-----------------------|--------|-------------|-------------------|
| Apr/01/2002 00:24:02 | Wireless PC connected | | | 00-40-05-B7-56-8F |
| Apr/01/2002 00:24:01 | DHCP Discover | | | |
| Apr/01/2002 00:24:00 | Wireless PC connected | | | 00-40-05-B7-56-8F |
| Apr/01/2002 00:23:59 | Wireless PC connected | | | 00-40-05-B7-56-8F |
| Apr/01/2002 00:23:54 | Wireless PC connected | | | 00-40-05-B7-56-8F |
| Apr/01/2002 00:23:52 | Wireless PC connected | | | 00-40-05-B7-56-8F |
| Apr/01/2002 00:23:52 | DHCP Discover | | | |
| Apr/01/2002 00:23:50 | Wireless PC connected | | | 00-40-05-B7-56-8F |
| Apr/01/2002 00:23:48 | Wireless PC connected | | | 00-40-05-B7-56-8F |
| Apr/01/2002 00:23:48 | DHCP Discover | | | |

View Log-

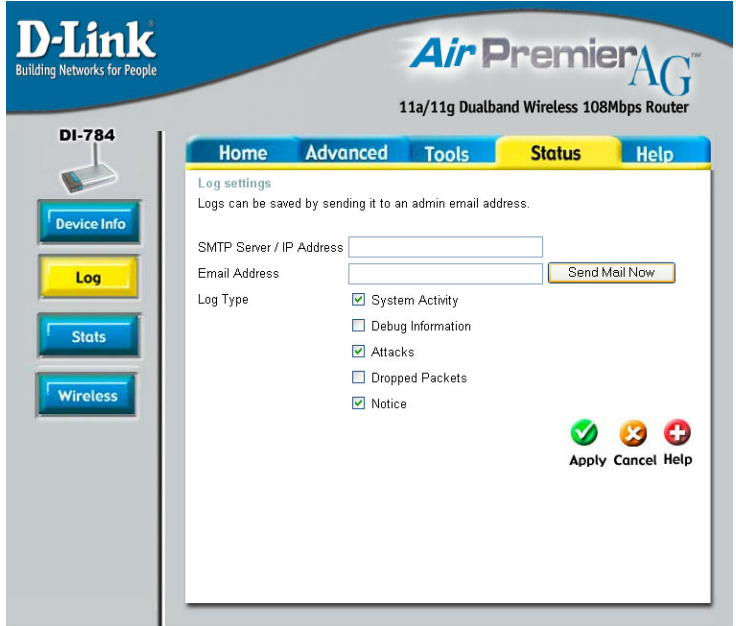
This screen displays the activity on the DI-784.

Log Settings-

For advanced features, click on **Log Settings**.

Using the Configuration Menu (continued)

Status > Log > Log Settings



SMTP Server/ IP Address-

Enter the proper SMTP Server information or the IP Address.

Email Address-

Enter the email address of the recipient who will receive the email logs.

Log Type-

The administrator can specify which surveillance they want to log. Check mark the box for specific activities.

Using the Configuration Menu (continued)

Status > Stats

D-Link
Building Networks for People

Air Premier AG
11a/11g Dualband Wireless 108Mbps Router

DI-784

Device Info
Log
Stats
Wireless

Home Advanced Tools **Status** Help

Traffic Statistics
Traffic Statistics display Receive and Transmit packets passing through the DI-784.

Refresh Reset

| | Receive | Transmit |
|--------------|--------------|--------------|
| WAN | 0 Packets | 114 Packets |
| LAN | 4769 Packets | 5973 Packets |
| WIRELESS 11g | 94 Packets | 1019 Packets |
| WIRELESS 11a | 0 Packets | 1559 Packets |

Help

Traffic Statistics-

Displays the receive and transmit packets that are passing through the DI-784. Click on **Refresh**, for the most recent information. Click **Reset** to reset the counters back to zero.

Status > Wireless

D-Link
Building Networks for People

Air Premier AG
11a/11g Dualband Wireless 108Mbps Router

DI-784

Device Info
Log
Stats
Wireless

Home Advanced Tools **Status** Help

Connected Wireless Client List
The Wireless Client table below displays Wireless clients Connected to the AP (Access Point).

| Connected Time | MAC Address | Mode |
|----------------------|-------------------|---------|
| Apr/01/2002 00:25:24 | 00-40-05-E7-56-8F | 2.4 GHz |
| Apr/01/2002 00:23:06 | 00-90-4B-B0-FD-84 | 2.4 GHz |

Help

Connected Wireless Client List-

Displays the wireless clients that are connected to the Access Point function of the DI-784.

Using the Configuration Menu (continued)

Help

D-Link
Building Networks for People

Air Premier AG™
11a/11g Dualband Wireless 108Mbps Router

DI-784

Menu

Home **Advanced** **Tools** **Status** **Help**

Home

- [Setup Wizard](#)
- [Wireless Settings](#)
- [WAN Settings](#)
- [LAN Settings](#)
- [DHCP Server](#)

Advanced

- [Virtual Server](#)
- [Special Applications](#)
- [Filters](#)
- [Firewall Rules](#)
- [DMZ](#)
- [Wireless Performance](#)

Tools

- [Administrator Settings](#)
- [System Time](#)
- [System Settings](#)
- [Firmware Upgrade](#)
- [Miscellaneous Items](#)

Status

- [Device Information](#)
- [Log](#)
- [Traffic Statistics](#)
- [Connected Wireless Client List](#)

FAQs

Help-

Displays the complete **Help** menu. For help at anytime, click the **Help** tab in the Configuration menu.

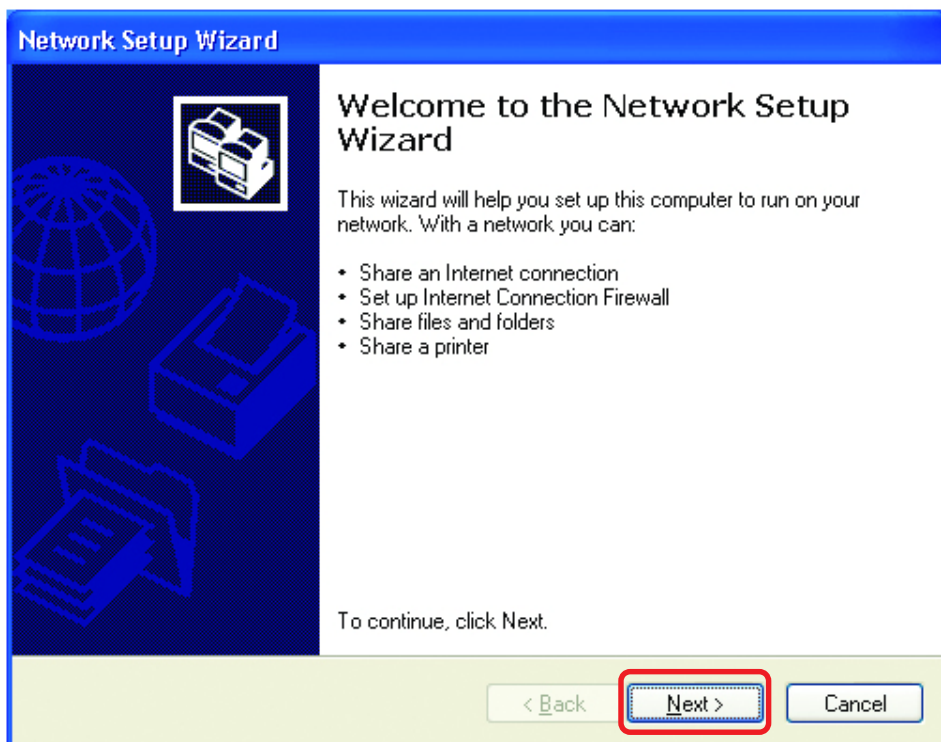
Networking Basics

Using the Network Setup Wizard in Windows XP

In this section you will learn how to establish a network at home or work, using **Microsoft Windows XP**.

Note: Please refer to websites such as <http://www.homenethelp.com> and <http://www.microsoft.com/windows2000> for information about networking computers using Windows 2000, ME or 98.

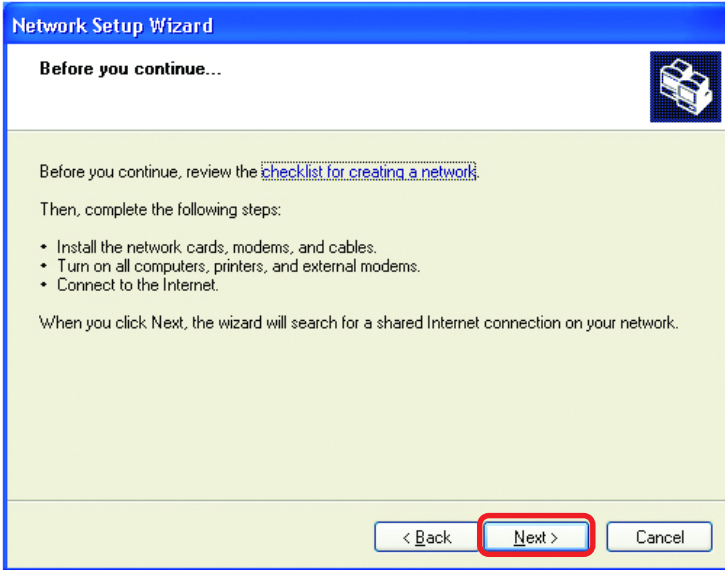
Go to **Start>Control Panel>Network Connections**
Select **Set up a home or small office network**



When this screen appears, **Click Next**.

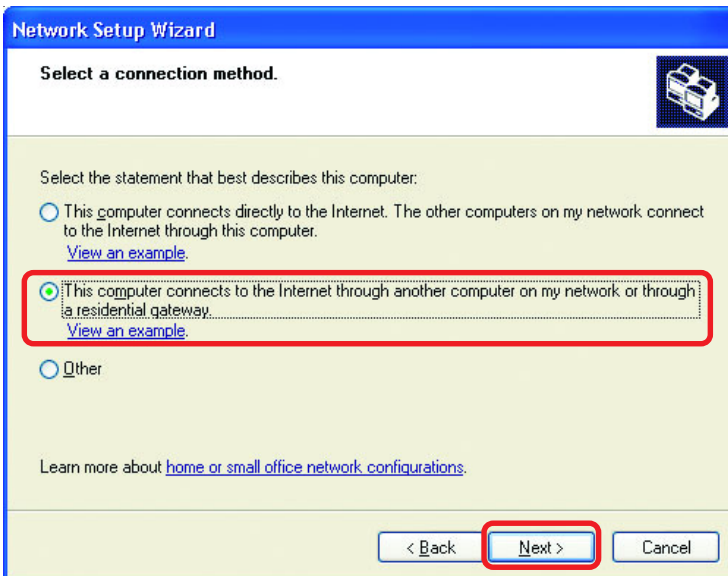
Networking Basics

Please follow all the instructions in this window:



Click **Next**

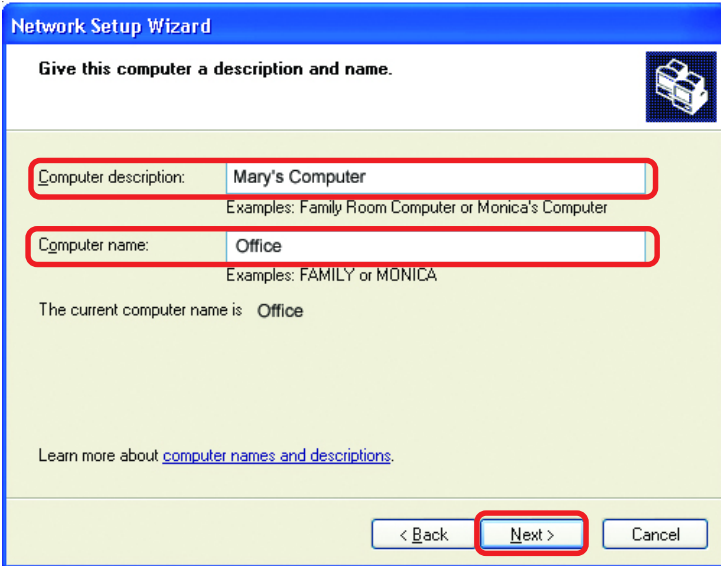
In the following window, select the best description of your computer. If your computer connects to the internet through a gateway/router, select the second option as shown.



Click **Next**

Networking Basics

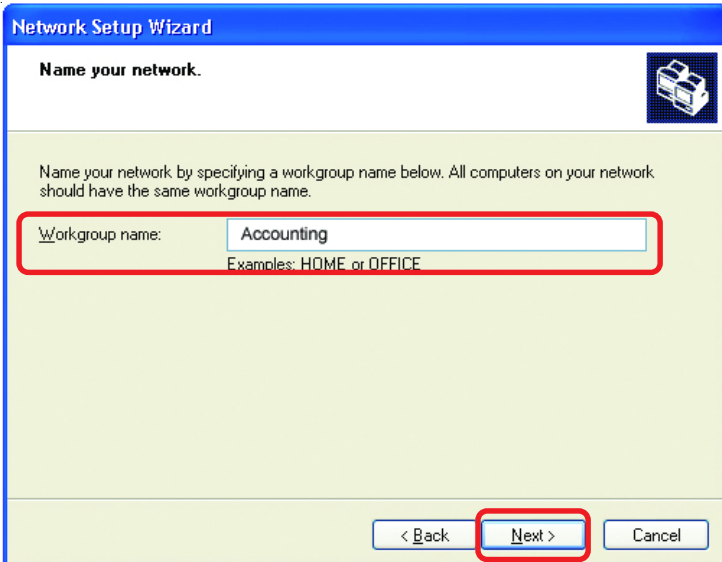
Enter a **Computer description** and a **Computer name** (optional.)



The screenshot shows the 'Network Setup Wizard' dialog box. The title bar reads 'Network Setup Wizard'. The main heading is 'Give this computer a description and name.' Below this, there are two text input fields. The first is labeled 'Computer description:' and contains the text 'Mary's Computer'. Below it, examples are listed: 'Examples: Family Room Computer or Monica's Computer'. The second field is labeled 'Computer name:' and contains the text 'Office'. Below it, examples are listed: 'Examples: FAMILY or MONICA'. Below the fields, it says 'The current computer name is Office'. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a red rectangle.

Click **Next**

Enter a **Workgroup** name. All computers on your network should have the same **Workgroup** name.

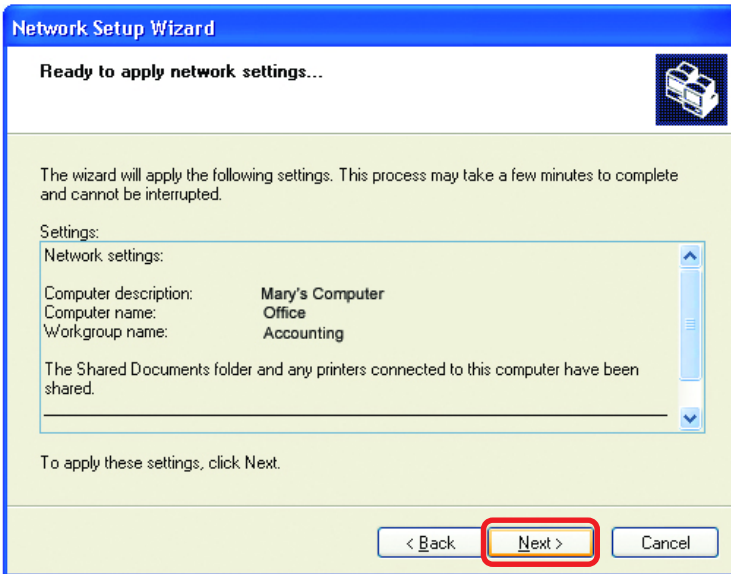


The screenshot shows the 'Network Setup Wizard' dialog box. The title bar reads 'Network Setup Wizard'. The main heading is 'Name your network.' Below this, there is a text input field labeled 'Workgroup name:' containing the text 'Accounting'. Below the field, examples are listed: 'Examples: HOME or OFFICE'. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a red rectangle.

Click **Next**

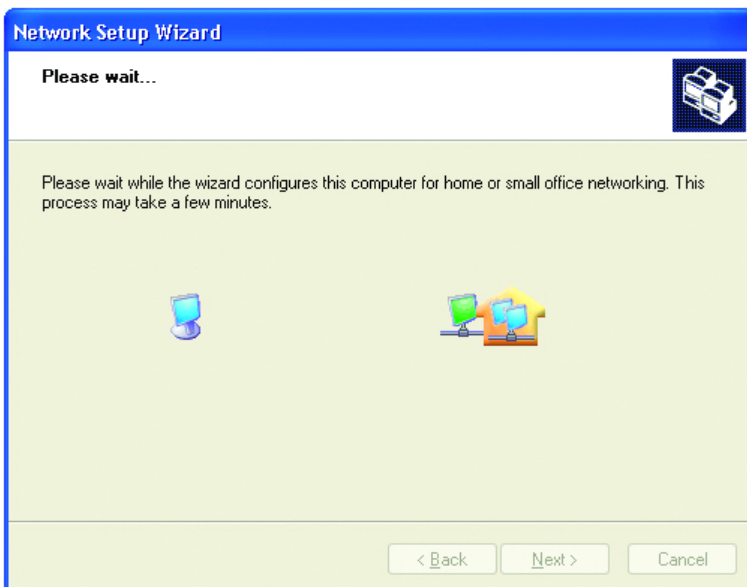
Networking Basics

Please wait while the **Network Setup Wizard** applies the changes.



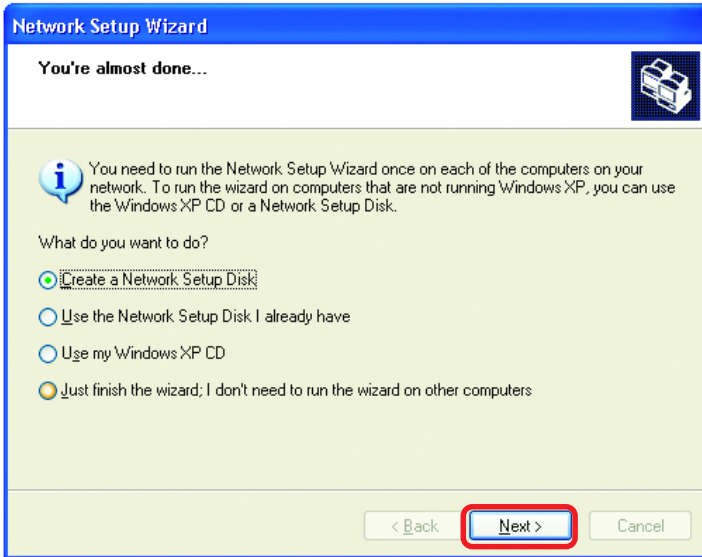
When the changes are complete, click **Next**.

Please wait while the **Network Setup Wizard** configures the computer. This may take a few minutes.

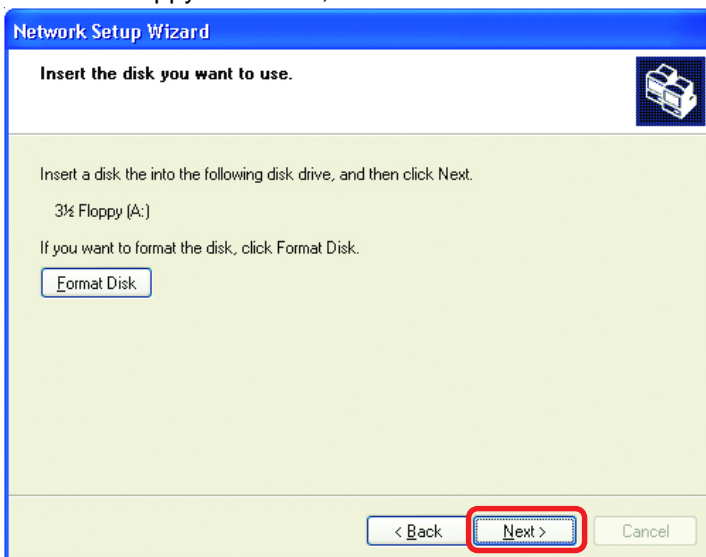


Networking Basics

In the window below, select the option that fits your needs. In this example, **Create a Network Setup Disk** has been selected. You will run this disk on each of the computers on your network. Click **Next**.



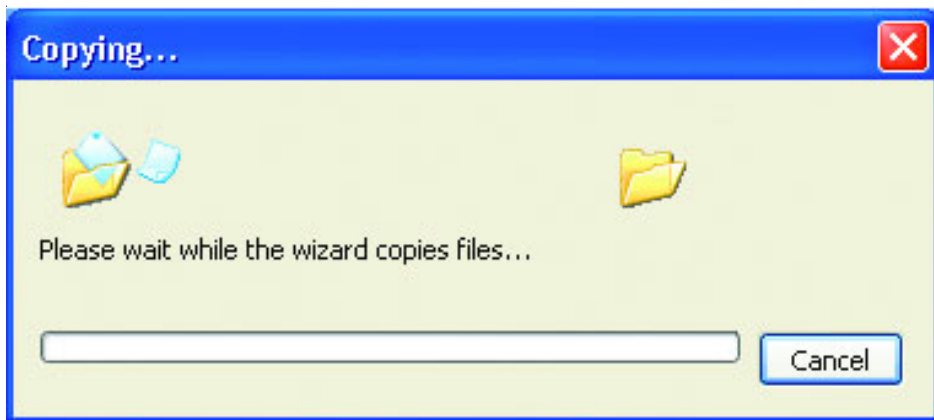
Insert a disk into the Floppy Disk drive, in this case drive A.



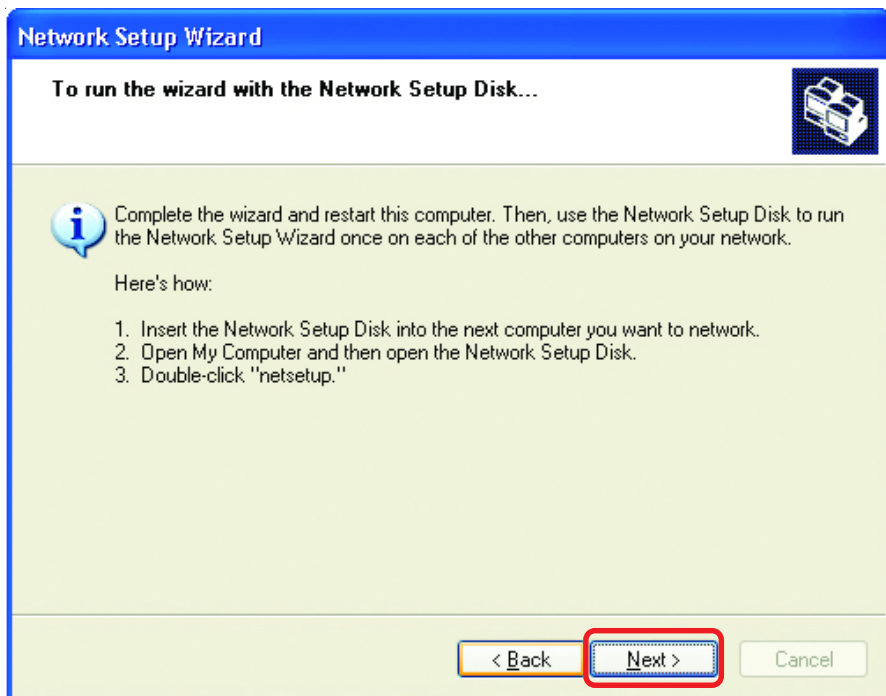
Format the disk if you wish, and click **Next**.

Networking Basics

Please wait while the **Network Setup Wizard** copies the files.

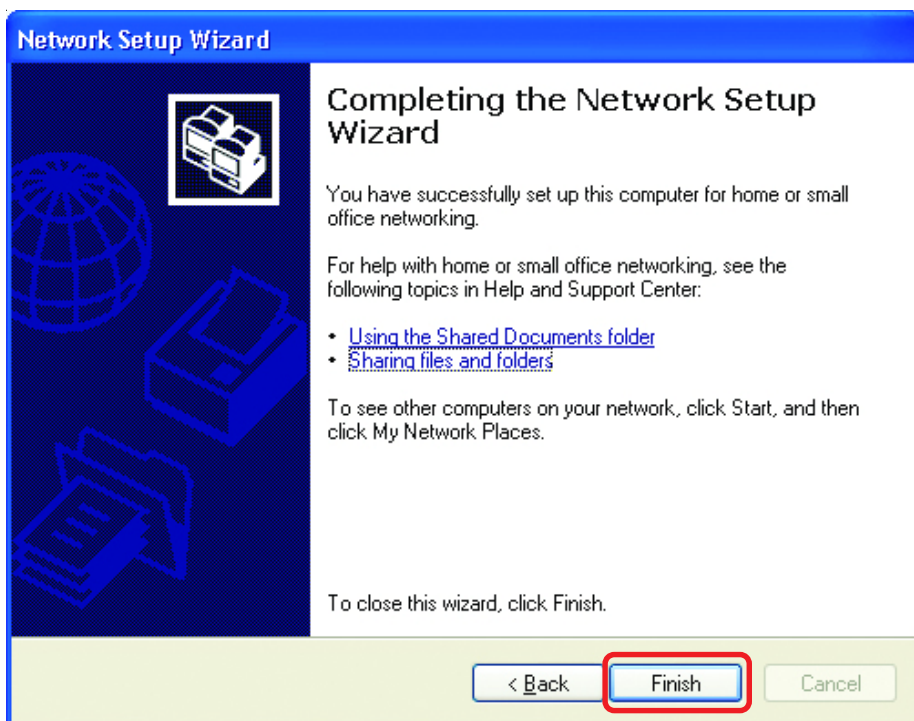


Please read the information under **Here's how** in the screen below. After you complete the **Network Setup Wizard** you will use the **Network Setup Disk** to run the **Network Setup Wizard** once on each of the computers on your network. To continue click **Next**.

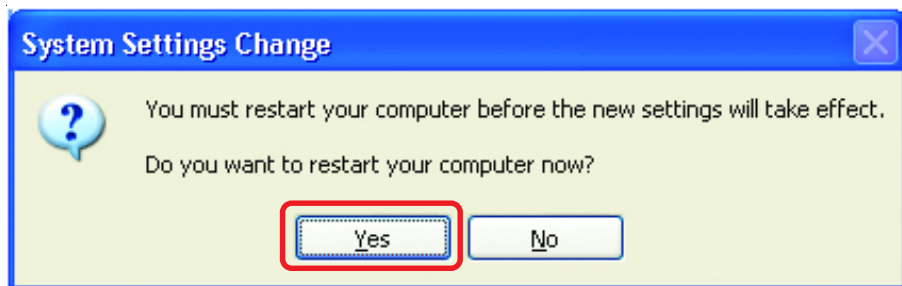


Networking Basics

Please read the information on this screen, then click **Finish** to complete the **Network Setup Wizard**.



The new settings will take effect when you restart the computer. Click **Yes** to restart the computer.



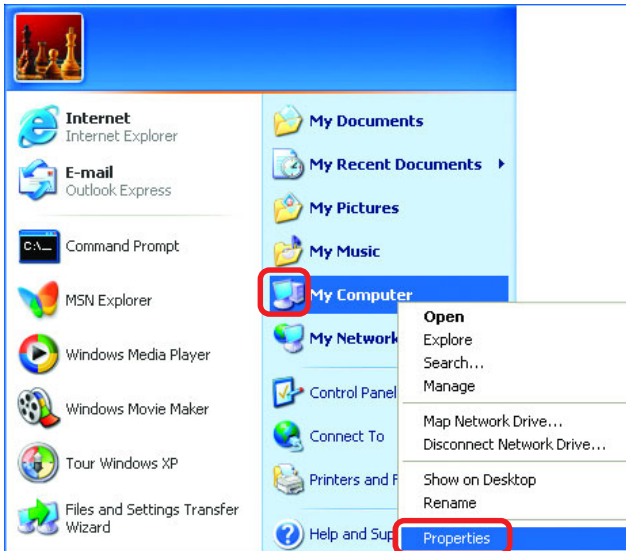
You have completed configuring this computer. Next, you will need to run the **Network Setup Disk** on all the other computers on your network. After running the **Network Setup Disk** on all your computers, your new wireless network will be ready to use.

Networking Basics

Naming your Computer

To name your computer, please follow these directions: In **Windows XP**:

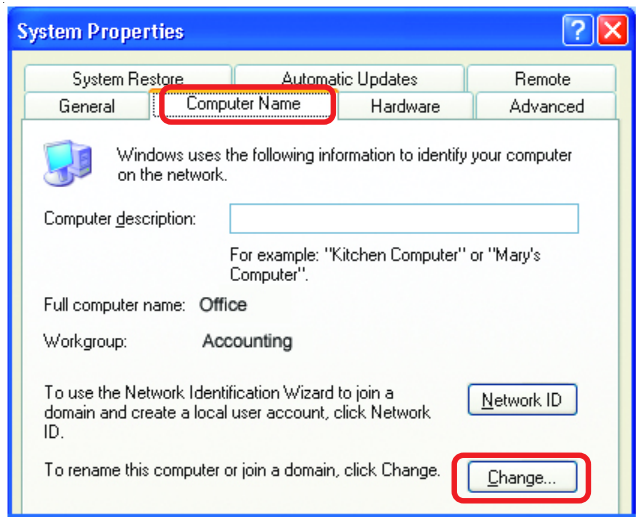
- Click **Start** (in the lower left corner of the screen)
- **Right-click** on **My Computer**
- Select **Properties** and click



- Select the **Computer Name Tab** in the System Properties window.

- You may enter a **Computer Description** if you wish; this field is optional.

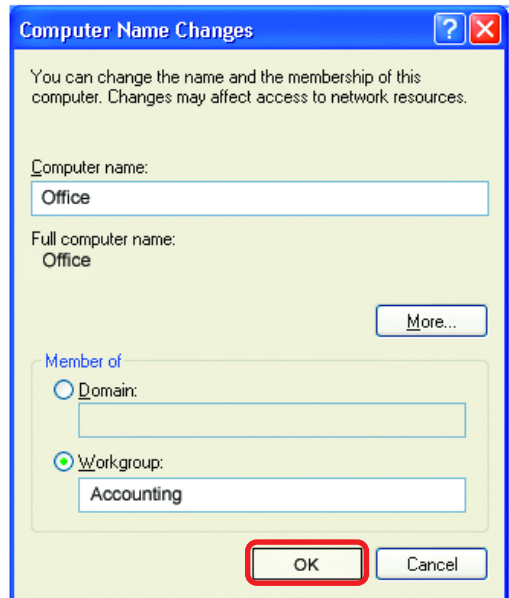
- To rename the computer and join a domain, Click **Change**.



Networking Basics

Naming your Computer

- In this window, enter the **Computer name**
- Select **Workgroup** and enter the name of the **Workgroup**
- All computers on your network must have the same **Workgroup** name.
- Click **OK**



Checking the IP Address in Windows XP

The wireless adapter-equipped computers in your network must be in the same IP Address range (see Getting Started in this manual for a definition of IP Address Range.) To check on the IP Address of the adapter, please do the following:

- Right-click on the **Local Area Connection icon** in the task bar
- Click on **Status**



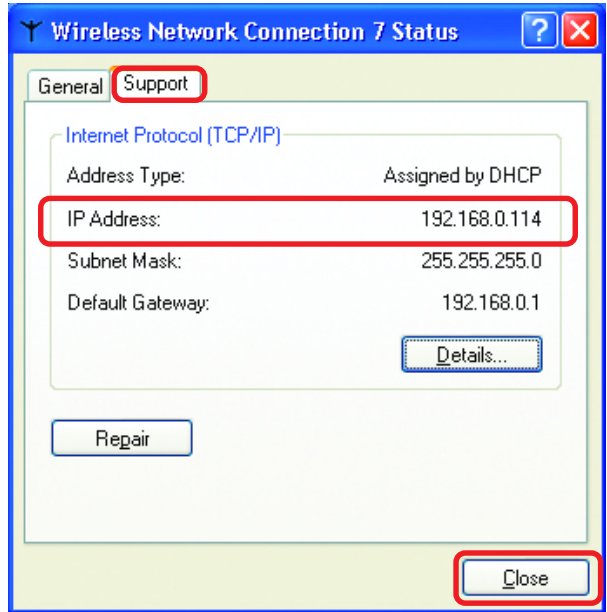
Networking Basics

Checking the IP Address in Windows XP

This window will appear.

- Click the **Support** tab

- Click **Close**



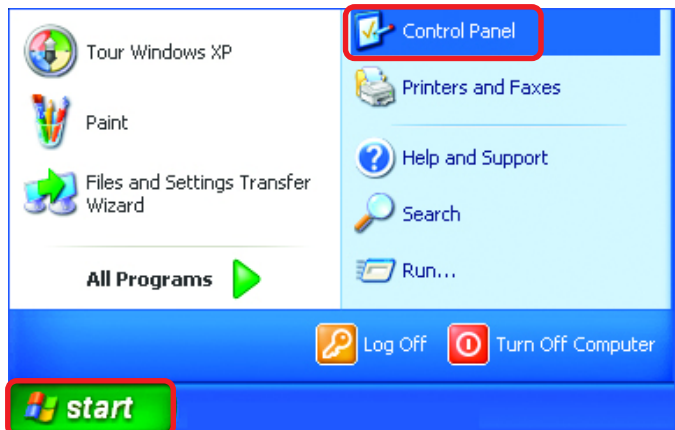
Assigning a Static IP Address in Windows XP/2000

Note: Residential Gateways/Broadband Routers will automatically assign IP Addresses to the computers on the network, using DHCP (Dynamic Host Configuration Protocol) technology. If you are using a DHCP-capable Gateway/Router you will not need to assign Static IP Addresses.

If you are not using a DHCP capable Gateway/Router, or you need to assign a Static IP Address, please follow these instructions:

- Go to **Start**

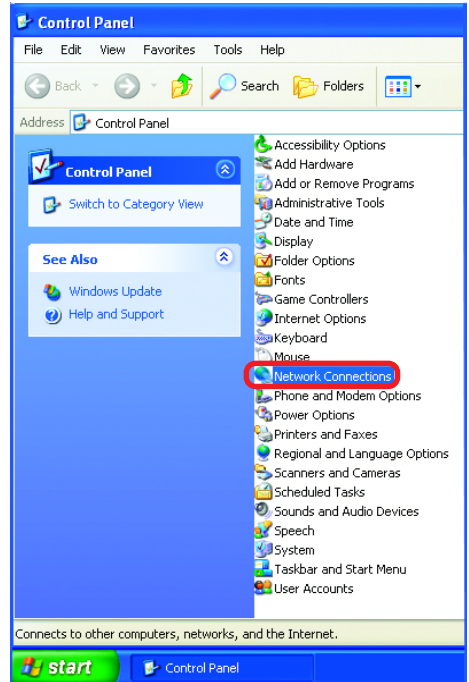
- Double-click on **Control Panel**



Networking Basics

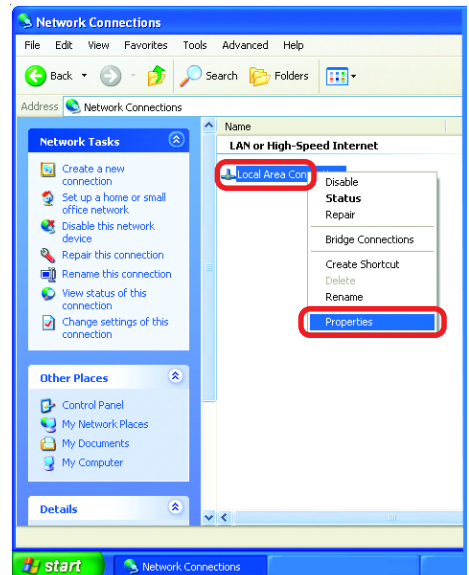
Assigning a Static IP Address in Windows XP/2000

- Double-click on **Network Connections**



- Right-click on **Local Area Connections**

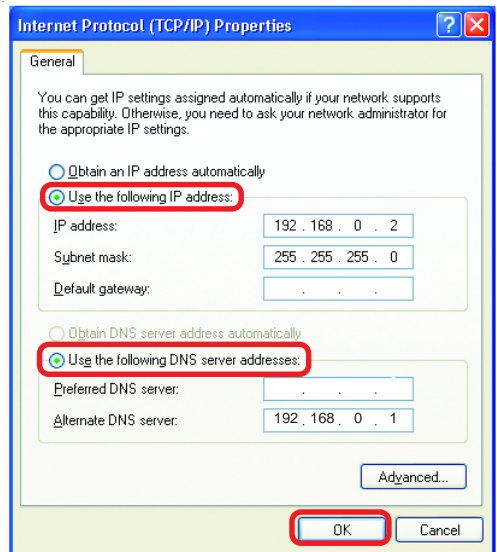
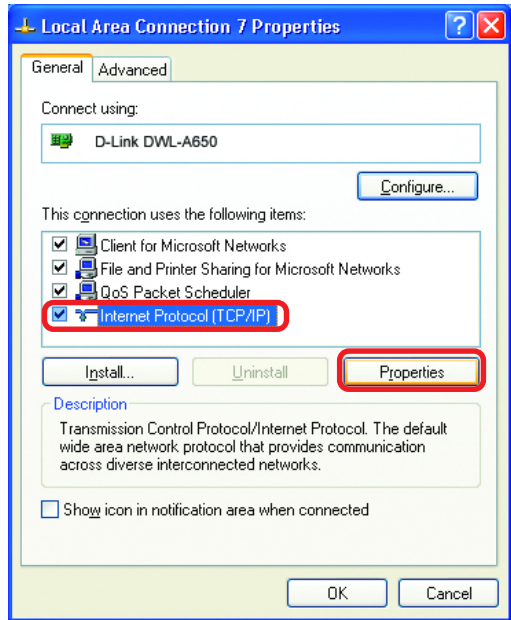
- Double-click on **Properties**



Networking Basics

Assigning a Static IP Address in Windows XP/2000

- Click on **Internet Protocol (TCP/IP)**
- Click **Properties**
- Select **Use the following IP address** in the **Internet Protocol (TCP/IP) Properties** window (shown below)
- Input your **IP address and subnet mask**. (The IP Addresses on your network must be within the same range. For example, if one computer has an IP Address of 192.168.0.2, the other computers should have IP Addresses that are sequential, like 192.168.0.3 and 192.168.0.4. The subnet mask must be the same for all the computers on the network.)
- Enter the **IP Address of the Default Gateway** (in this case it is **192.168.0.1** for the **DI-784**)
- Input your **DNS server address**.



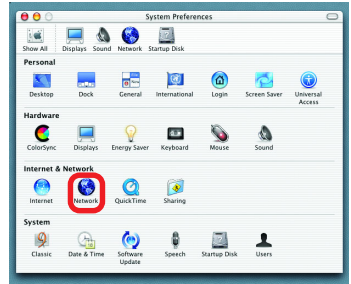
The DNS server address will be supplied by your ISP (Internet Service Provider). If the DNS Server address is not available from your ISP, you may input 192.168.0.1 in this field.

- Click **OK**

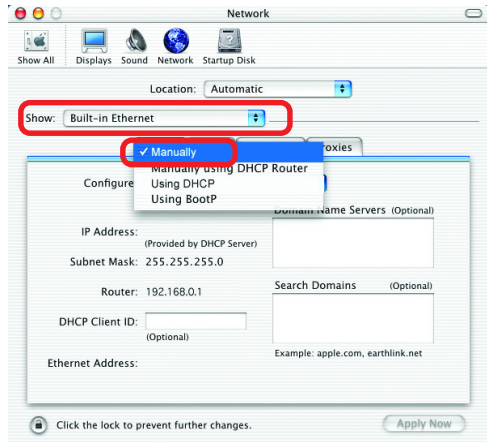
Networking Basics

Assigning a Static IP Address with Macintosh OS X

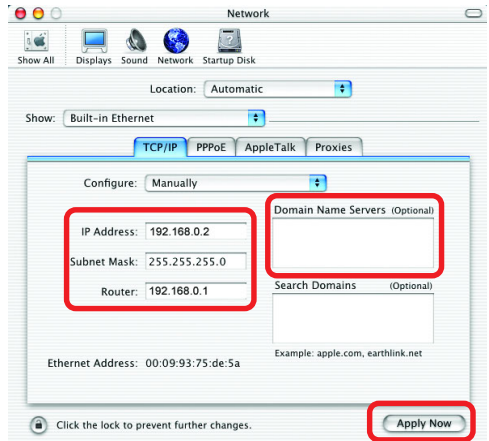
- Go to the **Apple Menu** and select **System Preferences**
- Click on **Network**



- Select **Built-in Ethernet** in the **Show** pull-down menu
- Select **Manually** in the **Configure** pull-down menu



- Input the **Static IP Address**, the **Subnet Mask** and the **Router IP Address** in the appropriate fields
- Input the **Domain Name Server** address. Your ISP (Internet Service Provider) will provide the IP address of the DNS Server. If the DNS Server address is not available from your ISP, you may input 192.168.0.1 in this field.

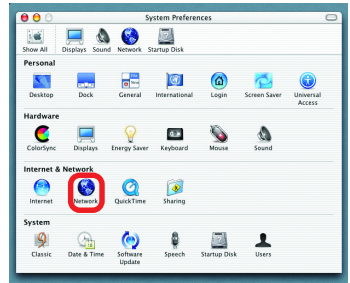


- Click **Apply Now**

Networking Basics

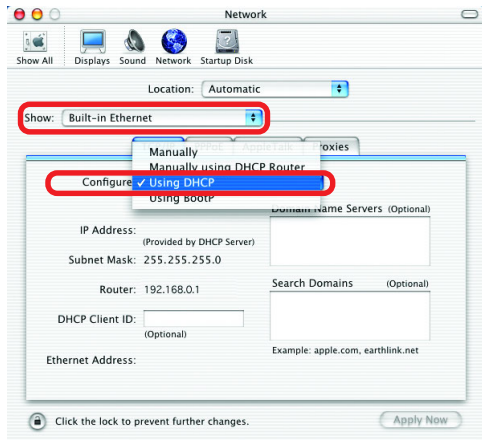
Selecting a Dynamic IP Address with Macintosh OS X

- Go to the **Apple Menu** and select **System Preferences**



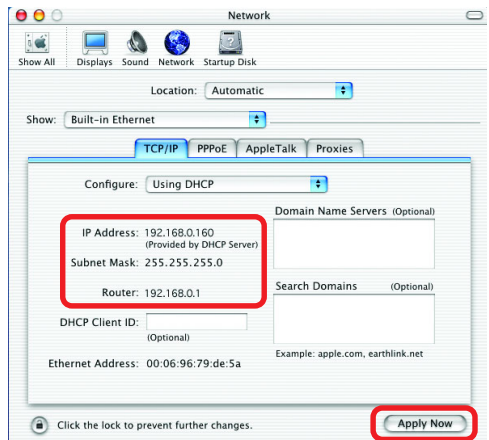
- Click on **Network**

- Select **Built-in Ethernet** in the **Show** pull-down menu



- Select **Using DHCP** in the **Configure** pull-down menu

- Click **Apply Now**

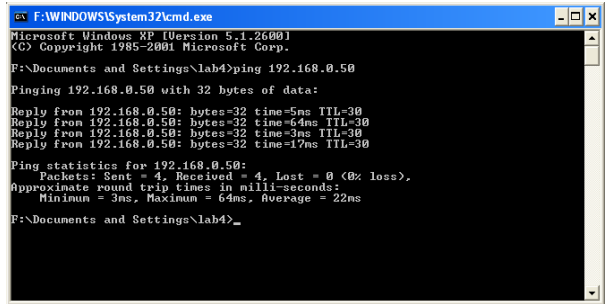


- The **IP Address**, **Subnet mask**, and the **Router's IP Address** will appear in a few seconds

Networking Basics

Checking the Wireless Connection by Pinging in Windows XP and 2000

- Go to **Start > Run >** type **cmd**. A window similar to this one will appear. Type **ping xxx.xxx.xxx.xxx**, where **xxx** is the **IP Address** of the Wireless Router or Access Point. A good wireless connection will show four replies from the Wireless Router or Access Point, as shown.



```
F:\WINDOWS\System32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

F:\Documents and Settings\lab4>ping 192.168.0.50

Pinging 192.168.0.50 with 32 bytes of data:

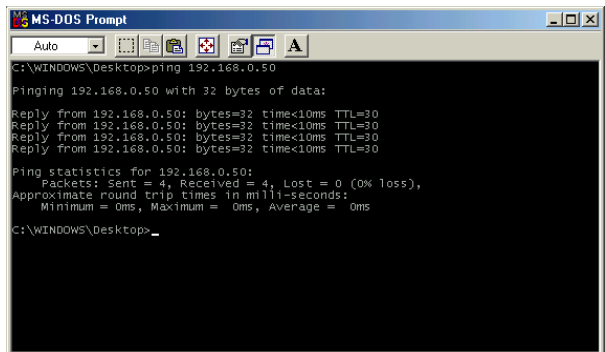
Reply from 192.168.0.50: bytes=32 time=5ms TTL=30
Reply from 192.168.0.50: bytes=32 time=64ms TTL=30
Reply from 192.168.0.50: bytes=32 time=3ms TTL=30
Reply from 192.168.0.50: bytes=32 time=17ms TTL=30

Ping statistics for 192.168.0.50:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 3ms, Maximum = 64ms, Average = 22ms

F:\Documents and Settings\lab4>
```

Checking the Wireless Connection by Pinging in Windows Me and 98

- Go to **Start > Run >** type **command**. A window similar to this will appear. Type **ping xxx.xxx.xxx.xxx** where **xxx** is the **IP Address** of the Wireless Router or Access Point. A good wireless connection will show four replies from the wireless router or access point, as shown.



```
MS-DOS Prompt
Auto
C:\WINDOWS\Desktop>ping 192.168.0.50

Pinging 192.168.0.50 with 32 bytes of data:

Reply from 192.168.0.50: bytes=32 time<10ms TTL=30
Reply from 192.168.0.50: bytes=32 time<10ms TTL=30
Reply from 192.168.0.50: bytes=32 time<10ms TTL=30
Reply from 192.168.0.50: bytes=32 time<10ms TTL=30

Ping statistics for 192.168.0.50:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\WINDOWS\Desktop>
```

Troubleshooting

This Chapter provides solutions to problems that can occur during the installation and operation of the DI-784 Wireless Broadband Router. We cover various aspects of the network setup, including the network adapters. Please read the following if you are having problems.

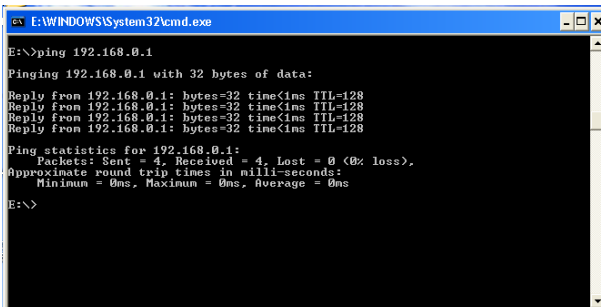
Note: *It is recommended that you use an Ethernet connection to configure the DI-784 Wireless Broadband Router.*

1.The computer used to configure the DI-784 cannot access the Configuration menu.

- Check that the **Ethernet LED** on the DI-784 is **ON**. If the **LED** is not **ON**, check that the cable for the Ethernet connection is securely inserted.
- Check that the Ethernet Adapter is working properly. Please see item 3 (***Check that the drivers for the network adapters are installed properly***) in this **Troubleshooting** section to check that the drivers are loaded properly.
- Check that the **IP Address** is in the same range and subnet as the DI-784. Please see ***Checking the IP Address in Windows XP*** in the **Networking Basics** section of this manual.

Note: *The IP Address of the DI-784 is 192.168.0.1. All the computers on the network must have a unique IP Address in the same range, e.g., 192.168.0.x. Any computers that have identical IP Addresses will not be visible on the network. They must all have the same subnet mask, e.g., 255.255.255.0*

- Do a **Ping test** to make sure that the DI-784 is responding. Go to **Start>Run>Type Command>Type ping 192.168.0.1**. A successful ping will show four replies.



```
E:\WINDOWS\system32\cmd.exe
E:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time<1ms TTL=128
Reply from 192.168.0.1: bytes=32 time<1ms TTL=128
Reply from 192.168.0.1: bytes=32 time<1ms TTL=128
Reply from 192.168.0.1: bytes=32 time<1ms TTL=128

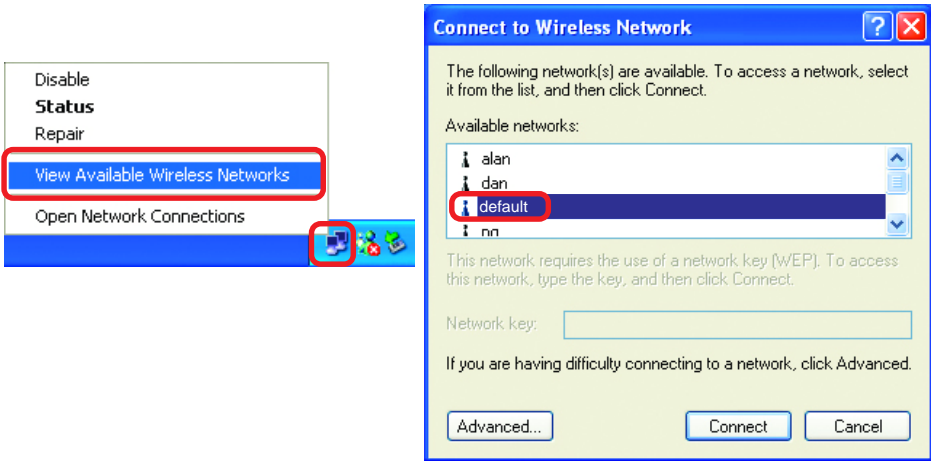
Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
E:\>
```

Note: If you have changed the default IP Address, make sure to ping the correct IP Address assigned to the DI-784.

Troubleshooting

2. The wireless client cannot access the Internet in the Infrastructure mode.

Make sure the wireless client is associated and joined with the correct Access Point. To check this connection: **Right-click** on the **Local Area Connection icon** in the taskbar > select **View Available Wireless Networks**. The **Connect to Wireless Network** screen will appear. Please make sure you have selected the correct available network, as shown in the illustrations below.

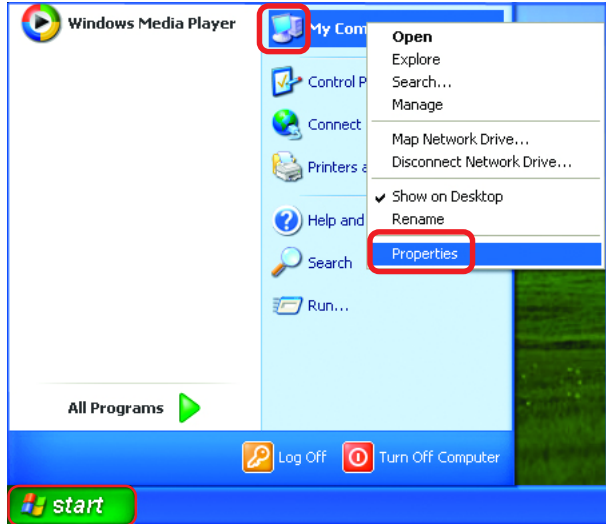


- Check that the **IP Address** assigned to the wireless adapter is within the same **IP Address range** as the access point and gateway. (*Since the DI-784 has an IP Address of 192.168.0.1, wireless adapters must have an IP Address in the same range, e.g., 192.168.0.x. Each device must have a unique IP Address; no two devices may have the same IP Address. The subnet mask must be the same for all the computers on the network.*) To check the **IP Address** assigned to the wireless adapter, **double-click** on the **Local Area Connection icon** in the taskbar > select the **Support** tab and the **IP Address** will be displayed. (*Please refer to **Checking the IP Address** in the **Networking Basics** section of this manual.*)
- If it is necessary to assign a **Static IP Address** to the wireless adapter, please refer to the appropriate section in **Networking Basics**. If you are entering a **DNS Server address** you must also enter the **Default Gateway Address**. (*Remember that if you have a DHCP-capable router, you will not need to assign a Static IP Address. See **Networking Basics: Assigning a Static IP Address**.*)

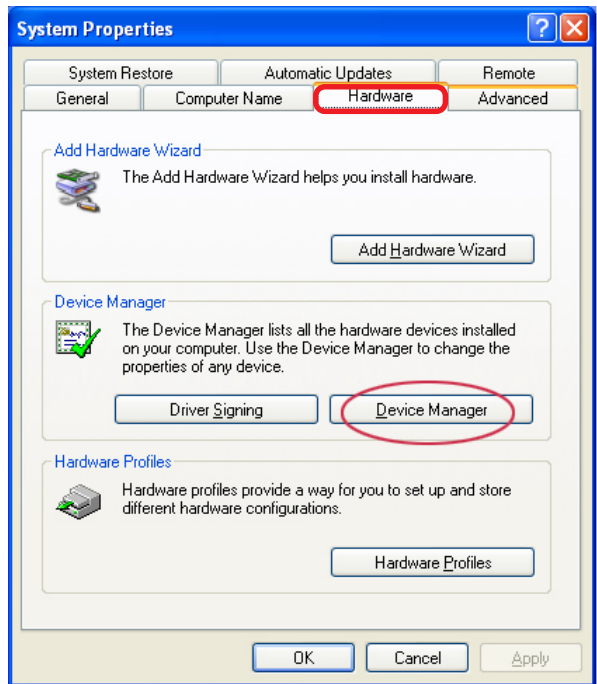
Troubleshooting

3. Check that the drivers for the network adapters are installed properly.

You may be using different network adapters than those illustrated here, but this procedure will remain the same, regardless of the type of network adapters you are using.



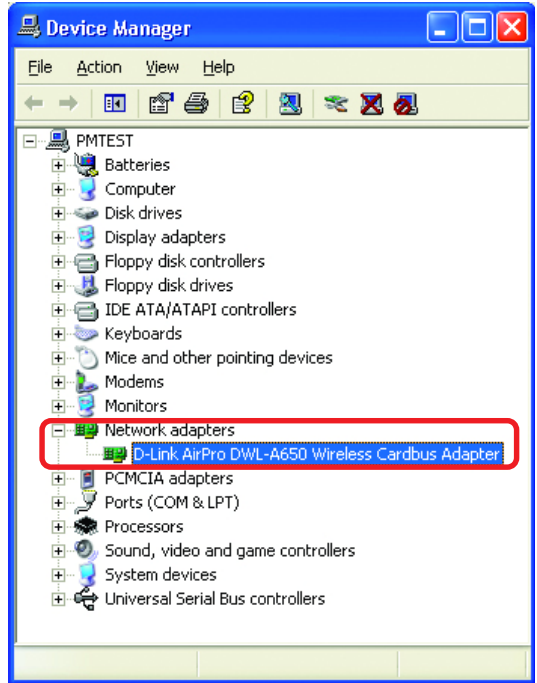
- Select the Hardware Tab



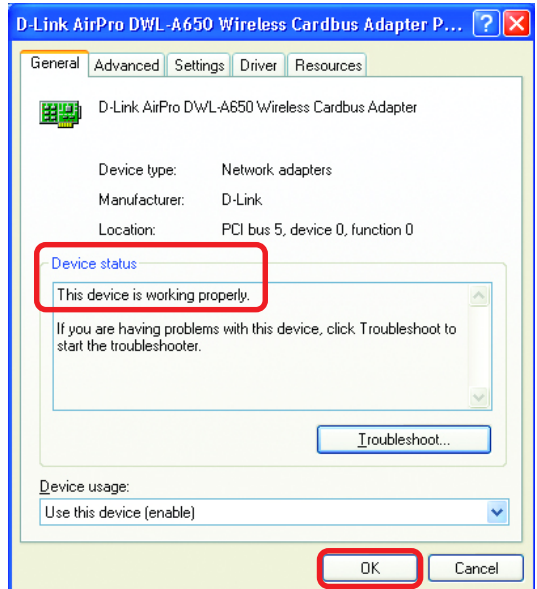
- Click Device Manager

Troubleshooting

- Double-click on **Network Adapters**
- Right-click on **D-Link AirPro DWL-A650 Wireless Cardbus Adapter** (In this example, the DWL-A650 is used; you may be using another network adapter, but the procedure will remain the same.)
- Select **Properties** to check that the drivers are installed properly



- Look under **Device Status** to check that the device is working properly



- Click **OK**

Troubleshooting

4. What variables may cause my wireless products to lose reception?

D-Link products let you access your network from virtually anywhere you want. However, the positioning of the products within your environment will affect the wireless range. Please refer to **Installation Considerations** in the **Wireless Basics** section of this manual for further information about the most advantageous placement of your D-Link wireless products.

5. Why does my wireless connection keep dropping?

- Antenna Orientation- Try different antenna orientations for the DI-784. Try to keep the antenna at least 6 inches away from the wall or other objects.
- If you are using 2.4GHz cordless phones, X-10 equipment or other home security systems, ceiling fans, and lights, your wireless connection will degrade dramatically or drop altogether. Try changing the Channel on your Router, Access Point and Wireless adapter to a different Channel to avoid interference.
- Keep your product away (at least 3-6 feet) from electrical devices that generate RF noise, like microwaves, Monitors, electric motors, etc.

6. Why can't I get a wireless connection?

To establish a wireless connection, while enabling Encryption on the DI-784, you must also enable encryption on the wireless client.

- For 802.11a, the Encryption settings are: 64, 128 or 152 bit. Make sure that the encryption bit level is the same on the Router and the Wireless Client.
- For 802.11g, the Encryption settings are: 64, 128, or 152 bit. Make sure that the encryption bit level is the same on the Router and the Wireless Client.

Make sure that the SSID on the Router and the Wireless Client are exactly the same. If they are not, wireless connection will not be established. Please note that there are two separate SSIDs for 802.11a and 802.11g. The default SSID for both 802.11a and 802.11g is **default**.

Troubleshooting

7. Resetting the DI-784 to Factory Default Settings

After you have tried other methods for troubleshooting your network, you may choose to **Reset** the DI-784 to the factory default settings. Remember that D-Link *Air Premier AG* products network together, out of the box, at the factory default settings.



To hard-reset the D-Link *Air Premier AG* DI-784 to Factory Default Settings, please do the following:

- Locate the **Reset** button on the back of the DI-784.
- Use a paper clip to press the **Reset** button.
- Hold for about 10 seconds and then release.
- After the DI-784 reboots (this may take a few minutes) it will be reset to the factory **Default** settings.

Technical Specifications

Standards:

- IEEE 802.11g
- IEEE 802.11b
- IEEE 802.11a
- IEEE 802.3 and IEEE 802.3u

VPN Pass Through/Multi-Sessions:

- PPTP
- L2TP
- IPSec

Advanced Firewall Features:

- Supports NAT with VPN pass-through, for added security
- MAC Filtering
- IP Filtering
- URL Filtering
- Domain Blocking
- Scheduling

Device Management:

- Web-based -Internet Explorer v6 or later; Netscape Navigator v6 or later; or other Java-enabled browsers
- DHCP Server and Client

Wireless Data Rates* with Automatic Fallback:

- D-Link 108 AG 108Mbps
- 54Mbps
- 48Mbps
- 36Mbps
- 24Mbps
- 18Mbps
- 12Mbps
- 11Mbps
- 9Mbps
- 6Mbps
- 5.5Mbps
- 2Mbps
- 1Mbps

Technical Specifications (continued)

Security:

- 64-, 128-, 152-WEP
- WPA -Wi-Fi Protected Access (WEP with TKIP, MIC, IV Expansion, Shared Key Authentication)

Media Access Control:

- CSMA/CA with ACK

Wireless Frequency Range:

- 2.400GHz to 2.500GHz
- 5.150GHz to 5.850GHz

Wireless Operating Range:

- Indoors: Up to 328 feet (100 meters)

Modulation Technology:

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

Receiver Sensitivity:

- 54Mbps OFDM, 10% PER, -73dBm
- 48Mbps OFDM, 10% PER, -76dBm
- 36Mbps OFDM, 10% PER, -82dBm
- 24Mbps OFDM, 10% PER, -85dBm
- 18Mbps OFDM, 10% PER, -88dBm
- 12Mbps OFDM, 10% PER, -89dBm
- 11Mbps CCK, 8% PER, -91dBm
- 9Mbps OFDM, 10% PER, -90dBm
- 6Mbps OFDM, 10% PER, -91dBm
- 5.5Mbps CCK, 8% PER, -92dBm
- 2Mbps QPSK, 8% PER, -93dBm
- 1Mbps BPSK, 8% PER, -94dBm

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

Technical Specifications (continued)

Wireless Transmit Power:

- 15dBm \pm 2dB

LEDs:

- Power
- Status
- WAN
- WLAN (Wireless Connection) - 802.11a, 802.11g
- Local Network (Ports 1-4)

External Antenna Type:

- Single Non-Detachable Antenna

Operating Temperature:

- 32°F to 131°F (0°C to 55°C)

Humidity:

- 95% maximum (non-condensing)

Power Input:

- Ext. Power Supply DC 5V, 3.0A
- 100-240V~50-60Hz

Safety and Emissions:

- FCC

Dimensions:

- L = 7.56 inches (192mm)
- W = 4.65 inches (118mm)
- H = 1.22 inches (31mm)

Weight:

- 10.8 oz. (0.3kg)

Warranty:

- 3 years

Frequently Asked Questions

Why can't I access the web based configuration?

When entering the IP Address of the DI-784 (192.168.0.1), you are not connecting to the Internet or have to be connected to the Internet. The device has the utility built-in to a ROM chip in the device itself. Your computer must be on the same IP subnet to connect to the web-based utility.

To resolve difficulties accessing a web utility, please follow the steps below.

Step 1 Verify physical connectivity by checking for solid link lights on the device. If you do not get a solid link light, try using a different cable or connect to a different port on the device if possible. If the computer is turned off, the link light may not be on.

What type of cable should I be using?

The following connections require a Crossover Cable:

- Computer to Computer
- Computer to Uplink Port
- Computer to Access Point
- Computer to Print Server
- Computer/XBOX/PS2 to DWL-810
- Computer/XBOX/PS2 to DWL-900AP+
- Uplink Port to Uplink Port (hub/switch)
- Normal Port to Normal Port (hub/switch)

The following connections require a Straight-through Cable:

- Computer to Residential Gateway/Router
- Computer to Normal Port (hub/switch)
- Access Point to Normal Port (hub/switch)
- Print Server to Normal Port (hub/switch)
- Uplink Port to Normal Port (hub/switch)

Rule of Thumb:

"If there is a link light, the cable is right."

Frequently Asked Questions (continued)

Why can't I access the web based configuration? (continued)

What type of cable should I be using? (continued)

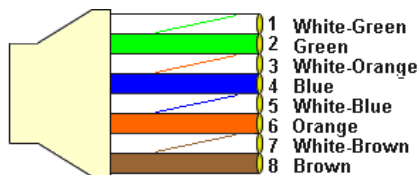
What's the difference between a crossover cable and a straight-through cable?

The wiring in crossover and straight-through cables are different. The two types of cable have different purposes for different LAN configurations. EIA/TIA 568A/568B define the wiring standards and allow for two different wiring color codes as illustrated in the following diagram.

**The wires with colored backgrounds may have white stripes and may be denoted that way in diagrams found elsewhere.*

How to tell straight-through cable from a crossover cable:

The main way to tell the difference between the two cable types is to compare the wiring order on the ends of the cable. If the wiring is the same on both sides, it is straight-through cable. If one side has opposite wiring, it is a crossover cable.



568A CABLE END



568B CABLE END

All you need to remember to properly configure the cables is the pinout order of the two cable ends and the following rules:

A straight-through cable has identical ends

A crossover cable has different ends

It makes no functional difference which standard you follow for straight-through cable ends, as long as both ends are the same. You can start a crossover cable with either standard as long as the other end is the other standard. It makes no functional difference which end is which. The order in which you pin the cable is important. Using a pattern other than what is specified in the above diagram could cause connection problems.

When to use a crossover cable and when to use a straight-through cable:

Computer to Computer – Crossover

Computer to an normal port on a Hub/Switch – Straight-through

Computer to an uplink port on a Hub/Switch - Crossover

Hub/Switch uplink port to another Hub/Switch uplink port – Crossover

Hub/Switch uplink port to another Hub/Switch normal port - Straight-through

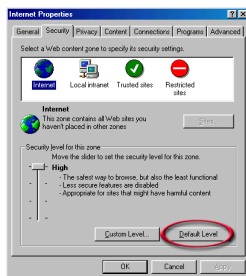
Frequently Asked Questions (continued)

Why can't I access the web based configuration? (continued)

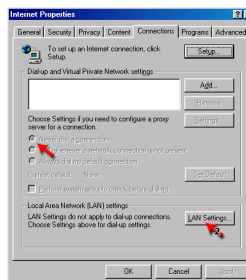
Step 2 Disable any internet security software running on the computer. Software firewalls like Zone Alarm, Black Ice, Sygate, Norton Personal Firewall, etc. might block access to the configuration pages. Check the help files included with your firewall software for more information on disabling or configuring it.

Step 3 Configure you internet settings.

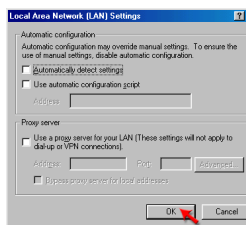
Go to **Start>Settings>Control Panel**. Double click the **Internet Options** icon. From the **Security** tab, click the button to restore the settings to their defaults.



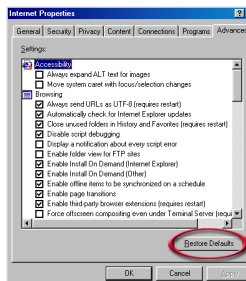
Click to the **Connection** tab and set the dial-up option to **Never Dial a Connection**. Click the **LAN Settings** button.



Nothing should be checked. Click **OK**.



Go to the **Advanced** tab and click the button to restore these settings to their defaults.



Click **OK**. Go to the desktop and close any open windows.

Frequently Asked Questions (continued)

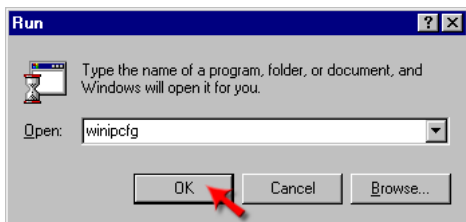
Why can't I access the web based configuration? (continued)

Step 4 Check your IP Address. Your computer must have an IP Address in the same range as the device you are attempting to configure. Most D-Link devices use the 192.168.0.X range.

How can I find my IP Address in Windows 95, 98, or ME?

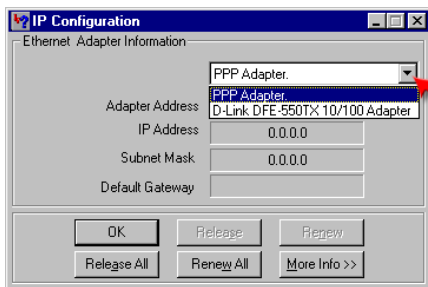
Step 1 Click on **Start**, then click on **Run**.

Step 2 The Run Dialogue Box will appear. Type **winipcfg** in the window as shown then click **OK**.



Step 3 The **IP Configuration** window will appear, displaying your **Ethernet Adapter Information**.

- Select your adapter from the drop down menu.
- If you do not see your adapter in the drop down menu, your adapter is not properly installed.



Step 4 After selecting your adapter, it will display your IP Address, subnet mask, and default gateway.

Step 5 Click **OK** to close the IP Configuration window.

Frequently Asked Questions (continued)

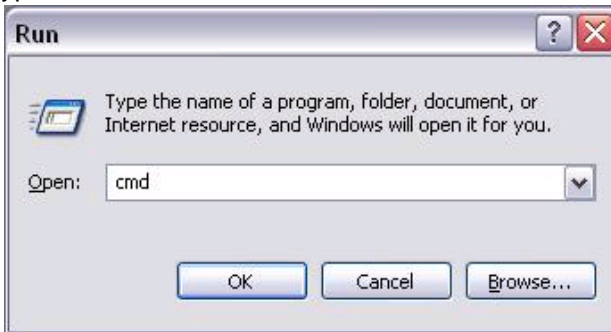
Why can't I access the web based configuration? (continued)

Step 4 (continued) Check your IP Address. Your computer must have an IP Address in the same range of the device you are attempting to configure. Most D-Link devices use the 192.168.0.X range.

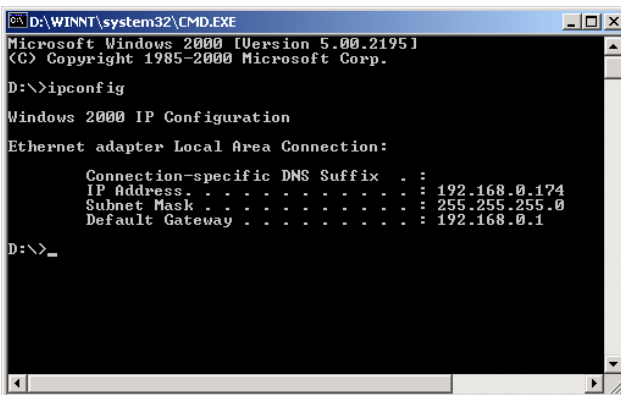
How can I find my IP Address in Windows 2000/XP?

Step 1 Click on **Start** and select **Run**.

Step 2 Type **cmd** then click **OK**.



Step 3 From the Command Prompt, enter **ipconfig**. It will return your IP Address, subnet mask, and default gateway.



Step 4 Type **exit** to close the command prompt.

Frequently Asked Questions (continued)

Why can't I access the web based configuration? (continued)

Step 4 (continued) Check your IP Address. Your computer must have an IP Address in the same range of the device you are attempting to configure. Most D-Link devices use the 192.168.0.X range.

How can I assign a Static IP Address in Windows XP?

Step 1

Click on **Start > Control Panel > Network and Internet Connections > Network connections.**

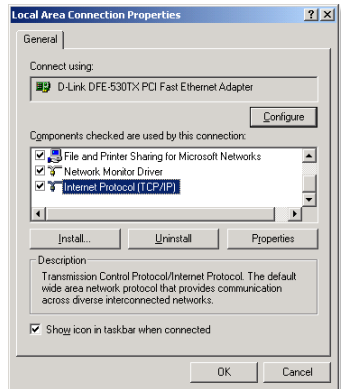
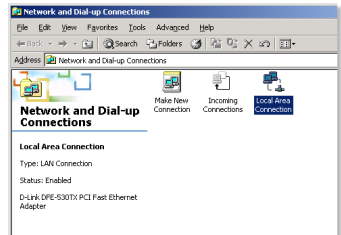
Step 2 See [Step 2](#) for Windows 2000 and continue from there.

How can I assign a Static IP Address in Windows 2000?

Step 1 Right-click on **My Network Places** and select **Properties.**

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

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



Frequently Asked Questions (continued)

Why can't I access the web based configuration? (continued)

How can I assign a Static IP Address in Windows 2000? (continued)

Click **Use the following IP Address** and enter an IP Address that is on the same subnet as 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 = 2-99. Make sure that the number you choose is not in use on the network.

Set the **Default Gateway** to be the same as the LAN IP Address of your router (192.168.0.1).

Set the **Primary DNS** to be the same as the LAN IP Address of your router (192.168.0.1).

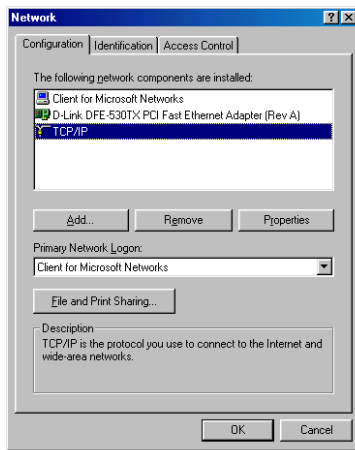
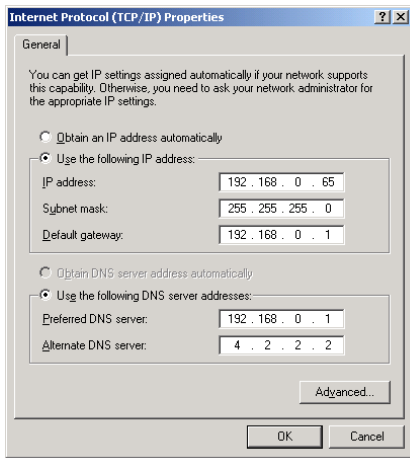
The **Secondary DNS** is not needed or enter a DNS server from your ISP.

Click **OK** twice. You may be asked if you want to reboot your computer. Click **Yes**.

How can I assign a Static IP Address in Windows 98/Me?

Step 1 From the desktop, right-click on the **Network Neighborhood** icon (Win ME - My Network Places) and select **Properties**

Highlight **TCP/IP** and click the **Properties** button. If you have more than 1 adapter, then there will be a TCP/IP "Binding" for each adapter. Highlight **TCP/IP > (your network adapter)** and then click **Properties**.



Frequently Asked Questions (continued)

Why can't I access the web based configuration? (continued)

How can I assign a Static IP Address in Windows 98/Me? (continued)

Step 2 Click **Specify an IP Address**.

Enter in an IP Address that is on the same subnet as 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 between 2-99. Make sure that the number you choose is not in use on the network.

Step 3 Click on the **Gateway** tab.

Enter the LAN IP Address of your router here (192.168.0.1).

Click **Add** when finished.

Step 4 Click on the **DNS Configuration** tab.

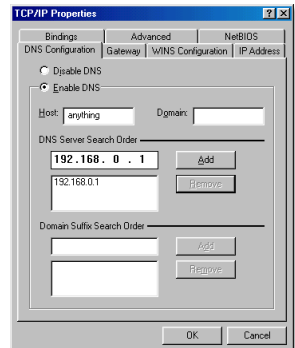
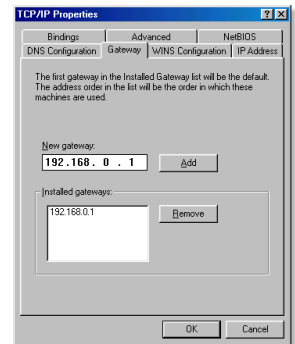
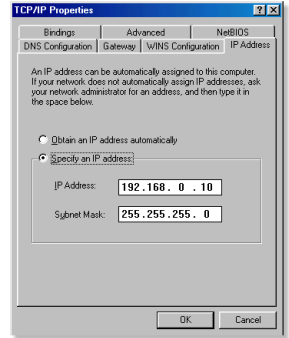
Click **Enable DNS**. Type in a **Host** (can be any word). Under DNS server search order, enter the LAN IP Address of your router (192.168.0.1). Click **Add**.

Step 5 Click **OK** twice.

When prompted to reboot your computer, click **Yes**.

After you reboot, the computer will now have a static, private IP Address.

Step 5 Access the web management. Open your web browser and enter the IP Address of your D-Link device in the address bar. This should open the login page for the web management. Follow instructions to login and complete the configuration.



Frequently Asked Questions (continued)

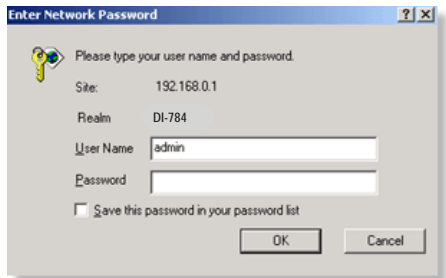
How can I setup my router to work with a Cable modem connection?

Dynamic Cable connection

(IE ATnT-BI, Cox, Adelphia, Rogers, Roadrunner, Charter, and Comcast).

Note: Please configure the router with the computer that was last connected directly to the cable modem.

Step 1 Log into the web based configuration by typing in the IP Address of the router (default:192.168.0.1) in your web browser. The username is **admin** (all lowercase) and the password is **blank** (nothing).



Step 2 Click the **Home** tab and click the **WAN** button. Dynamic IP Address is the default value, however, if Dynamic IP Address is not selected as the WAN type, select Dynamic IP Address by clicking on the radio button. Click **Clone Mac Address**. Click on **Apply** and then **Continue** to save the changes.

D-Link
Building Networks for People

Air Premier AG
11a/11g Dualband Wireless 108Mbps Router

DI-784

Wizard
Wireless
WAN
LAN
DHCP

Home Advanced Tools Status Help

WAN Settings
Please select the appropriate option to connect to your ISP.

- Dynamic IP Address Choose this option to obtain an IP address automatically from your ISP. (For most Cable modem users)
- Static IP Address Choose this option to set static IP information provided to you by your ISP.
- PPPoE Choose this option if your ISP uses PPPoE. (For most DSL users)
- Others PPTP and BigPond Cable
 - PPTP (for Europe use only)

Dynamic IP

Host Name (optional)

MAC Address - - - - - (optional)

Clone MAC Address

Primary DNS Address

Secondary DNS Address (optional)

MTU

Apply **Cancel** **Help**

Frequently Asked Questions (continued)

How can I setup my router to work with a Cable modem connection? (continued)

Step 3 Power cycle the cable modem and router:

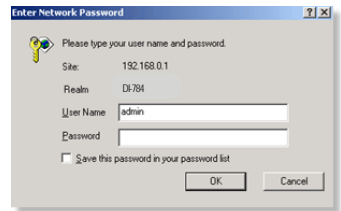
Turn the cable modem off (first) . Turn the router off Leave them off for 2 minutes.** Turn the cable modem on (first). Wait until you get a solid cable light on the cable modem. Turn the router on. Wait 30 seconds.

** If you have a Motorola (Surf Board) modem, leave off for at least 5 minutes.

Step 4 Follow step 1 again and log back into the web configuration. Click the **Status** tab and click the **Device Info** button. If you do not already have a public IP Address under the **WAN** heading, click on the **DHCP Renew** and **Continue** buttons.

Static Cable Connection

Step 1 Log into the web based configuration by typing in the IP Address of the router (default:192.168.0.1) in your web browser. The username is **admin** (all lowercase) and the password is **blank** (nothing).

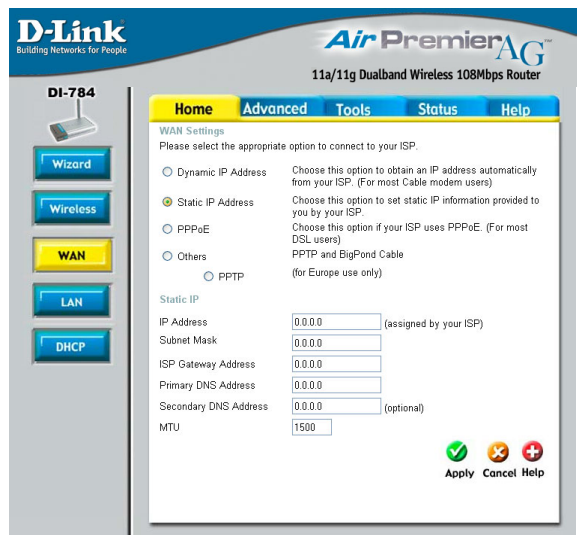


Step 2 Click the **Home** tab and click the **WAN** button. Select **Static IP Address** and enter your static settings obtained from the ISP in the fields provided.

If you do not know your settings, you must contact your ISP.

Step 3 Click on **Apply** and then click **Continue** to save the changes.

Step 4 Click the **Status** tab and click the **Device Info** button. Your IP Address information will be displayed under the **WAN** heading.



Frequently Asked Questions (continued)

How can I setup my router to work with Earthlink DSL or any PPPoE connection?

Make sure you disable or uninstall any PPPoE software such as WinPoet or Internet 300 from your computer or you will not be able to connect to the Internet.

Step 1 Upgrade Firmware if needed.

(Please visit the D-Link tech support website at: <http://support.dlink.com> for the latest firmware upgrade information.)

Step 2 Take a paperclip and perform a hard reset. With the unit on, use a paperclip and hold down the reset button on the back of the unit for 10 seconds. Release it and the router will recycle, the lights will blink, and then stabilize.

Step 3 After the router stabilizes, open your browser and enter 192.168.0.1 into the address window and hit the **Enter** key. When the password dialog box appears, enter the username **admin** and leave the password blank. Click **OK**.

If the password dialog box does not come up repeat **Step 2**.

Note: Do not run Wizard.

Step 4 Click on the **WAN** tab on left-hand side of the screen. Select **PPPoE**.

Step 5 Select **Dynamic PPPoE** (unless your ISP supplied you with a static IP Address).

Step 6 In the username field enter **ELN/username@earthlink.net** and your password, where username is your own username.

For SBC Global users, enter **username@sbcglobal.net**.

For Ameritech users, enter **username@ameritech.net**.

For BellSouth users, enter **username@bellsouth.net**.

For Mindspring users, enter **username@mindspring.com**.

For most other ISPs, enter **username**.

Step 7 **Maximum Idle Time** should be set to zero. Set **MTU** to 1492, unless specified by your ISP, and set **Autoreconnect** to **Enabled**.

Note: If you experience problems accessing certain websites and/or email issues, please set the MTU to a lower number such as 1472, 1452, etc. Contact your ISP for more information and the proper MTU setting for your connection.

Frequently Asked Questions (continued)

How can I setup my router to work with Earthlink DSL or any PPPoE connection? (continued)

Step 8 Click **Apply**. When prompted, click **Continue**. Once the screen refreshes, unplug the power to the D-Link router.

Step 9 Turn off your DSL modem for 2-3 minutes. Turn back on. Once the modem has established a link to your ISP, plug the power back into the D-Link router. Wait about 30 seconds and log back into the router.

Step 10 Click on the **Status** tab in the web configuration where you can view the device info. Under **WAN**, click **Connect**. Click **Continue** when prompted. You should now see that the device info will show an IP Address, verifying that the device has connected to a server and has been assigned an IP Address.

Can I use my D-Link Broadband Router to share my Internet connection provided by AOL DSL Plus?

In most cases yes. AOL DSL+ may use PPPoE for authentication bypassing the client software. If this is the case, then our routers will work with this service. Please contact AOL if you are not sure.

To set up your router:

Step 1 Log into the web-based configuration (192.168.0.1) and configure the WAN side to use PPPoE.

Step 2 Enter your screen name followed by @aol.com for the user name. Enter your AOL password in the password box.

Step 3 You will have to set the MTU to 1400. AOL DSL does not allow for anything higher than 1400.

Step 4 Apply settings.

Step 5 Recycle the power to the modem for 1 minute and then recycle power to the router. Allow 1 to 2 minutes to connect.

If you connect to the Internet with a different internet service provider and want to use the AOL software, you can do that without configuring the router's firewall settings. You need to configure the AOL software to connect using TCP/IP.

Go to <http://www.aol.com> for more specific configuration information of their software.

Frequently Asked Questions (continued)

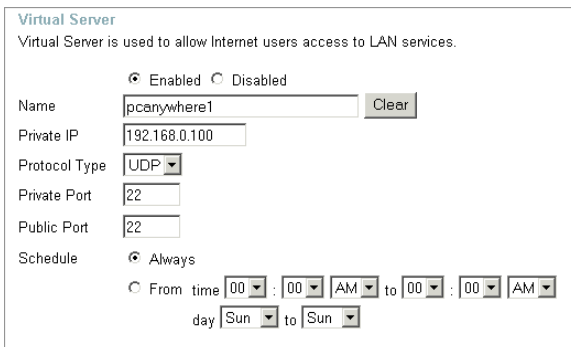
How do I open ports on my router?

To allow traffic from the internet to enter your local network, you will need to open up ports or the router will block the request.

Step 1 Open your web browser and enter the IP Address of your D-Link router (192.168.0.1). Enter username (admin) and your password (blank by default).

Step 2 Click on **Advanced** on top and then click **Virtual Server** on the left side.

Step 3 Check **Enabled** to activate entry.



The screenshot shows the 'Virtual Server' configuration page. At the top, it says 'Virtual Server is used to allow Internet users access to LAN services.' Below this, there are two radio buttons: 'Enabled' (selected) and 'Disabled'. The form fields are: 'Name' with the value 'pccnywhere1' and a 'Clear' button; 'Private IP' with the value '192.168.0.100'; 'Protocol Type' with a dropdown menu set to 'UDP'; 'Private Port' with the value '22'; 'Public Port' with the value '22'; and 'Schedule' with 'Always' selected. There are also options for 'From time' (00:00 AM) and 'to' (00:00 AM) with day dropdowns set to 'Sun'.

Step 4 Enter a name for your virtual server entry.

Step 5 Next to **Private IP**, enter the IP Address of the computer on your local network that you want to allow the incoming service to.

Step 6 Choose **Protocol Type** - either TCP, UDP, or both. If you are not sure, select both.

Step 7 Enter the port information 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 WAN side, and the private port is the port being used by the application on the computer within your local network.

Step 8 Enter the **Schedule** information.

Step 9 Click **Apply** and then click **Continue**.

Note: Make sure DMZ host is disabled. If DMZ is enabled, it will disable all Virtual Server entries.

Because our routers use NAT (Network Address Translation), you can only open a specific port to one computer at a time. For example: If you have 2 web servers on your network, you cannot open port 80 to both computers. You will need to configure 1 of the web servers to use port 81. Now you can open port 80 to the first computer and then open port 81 to the other computer.

Frequently Asked Questions (continued)

What is DMZ?

Demilitarized Zone:

In computer networks, a DMZ (demilitarized zone) is a computer host or small network inserted as a neutral zone between a company's private network and the outside public network. It prevents outside users from getting direct access to a server that has company data. (The term comes from the geographic buffer zone that was set up between North Korea and South Korea following the UN police action in the early 1950s.) A DMZ is an optional and more secure approach to a firewall and effectively acts as a proxy server as well.

In a typical DMZ configuration for a small company, a separate computer (or host in network terms) receives requests from users within the private network for access to Web sites or other companies accessible on the public network. The DMZ host then initiates sessions for these requests on the public network. However, the DMZ host is not able to initiate a session back into the private network. It can only forward packets that have already been requested.

Users of the public network outside the company can access only the DMZ host. The DMZ may typically also have the company's Web pages so these could be served to the outside world. However, the DMZ provides access to no other company data. In the event that an outside user penetrated the DMZ hosts security, the Web pages might be corrupted but no other company information would be exposed. D-Link, a leading maker of routers, is one company that sells products designed for setting up a DMZ.

How do I configure the DMZ Host?

The DMZ feature allows you to forward all incoming ports to one computer on the local network. The DMZ, or Demilitarized Zone, will allow the specified computer to be exposed to the Internet. DMZ is useful when a certain application or game does not work through the firewall. The computer that is configured for DMZ will be completely vulnerable on the Internet, so it is suggested that you try opening ports from the Virtual Server or Firewall settings before using DMZ.

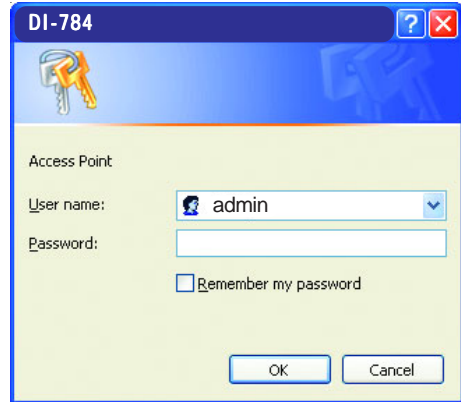
Step 1 Find the IP address of the computer you want to use as the DMZ host.

To find out how to locate the IP Address of the computer in Windows XP/2000/ME/9x or Macintosh operating systems please refer to Step 4 of the first question in this section (Frequently Asked Questions).

Frequently Asked Questions (continued)

How do I configure the DMZ Host? (continued)

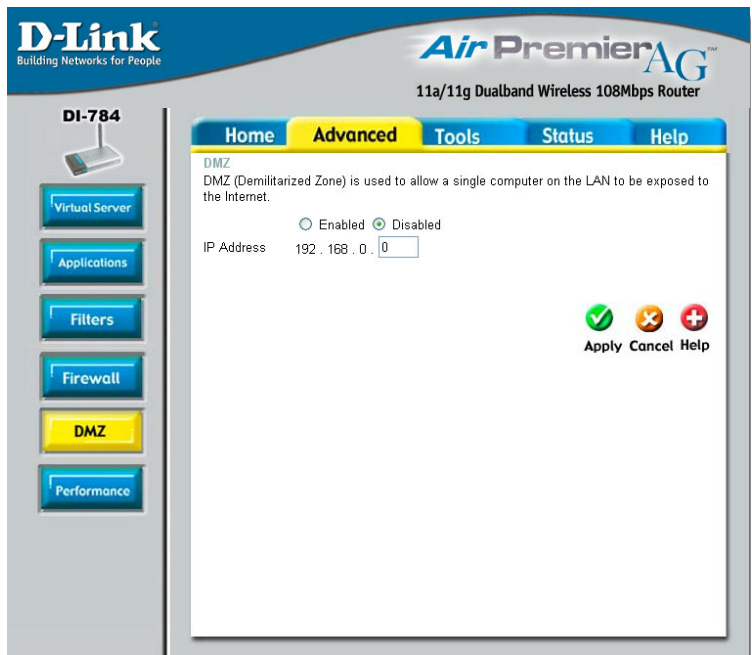
Step 2 Log into the web based configuration of the router by typing in the IP Address of the router (default:192.168.0.1) in your web browser. The username is **admin** (all lowercase) and the password is **blank** (nothing)



Step 3 Click the **Advanced** tab and then click on the **DMZ** button. Select **Enable** and type in the IP Address you found in step 1.

Step 4 Click **Apply** and then **Continue** to save the changes.

Note: When DMZ is enabled, Virtual Server settings will still be effective. Remember, you cannot forward the same port to multiple IP Addresses, so the Virtual Server settings will take priority over DMZ settings.



Frequently Asked Questions (continued)

How do I open a range of ports on my router using Firewall rules?

Step 1 Access the router's web configuration by entering the router's IP Address in your web browser. The default IP Address is **192.168.0.1**. Login using your password. The default username is "**admin**" and the password is blank.

If you are having difficulty accessing web management, please see the first question in this section.

Step 2 From the web management Home page, click the **Advanced** tab then click the **Firewall** button.

Step 3 Click on **Enabled** and type in a name for the new rule.

Step 4 Choose **WAN** as the **Source** and enter a range of IP Addresses out on the internet that you would like this rule applied to. If you would like this rule to allow all internet users to be able to access these ports, then put an **Asterisk** in the first box and leave the second box empty.

The screenshot shows the D-Link Air Premier AG router's web configuration page. The page title is "D-Link Building Networks For People" and "Air Premier AG 11a/11g Dualband Wireless 108Mbps Router". The navigation tabs are "Home", "Advanced", "Tools", "Status", and "Help". The "Advanced" tab is selected, and the "Firewall" button is highlighted in the left sidebar. The main content area is titled "Firewall Rules" and shows the configuration for a rule on the "DI-784" router. The rule is currently disabled. The configuration fields are: Name (empty), Action (Allow/Deny), Source (Interface: WAN, IP Range Start: *, IP Range End:), Destination (Interface: LAN, IP Range Start: *, IP Range End:), Protocol (TCP), and Port Range (empty). The schedule is set to "Always". Below the configuration fields is a "Firewall Rules List" table with columns for ActionName, SourceDestination, and Protocol. The table contains several rules, including "Allow Allow to Ping WAN port", "Allow msmgs (192.168.0.100:8572) 452", "Allow msmgs (192.168.0.100:10120) 17", "Deny Default", and "Allow Default".

| ActionName | SourceDestination | Protocol |
|--|--------------------------------------|-----------------|
| <input checked="" type="checkbox"/> Allow Allow to Ping WAN port | WAN,*LAN,192.168.0.1 | ICMP,8 |
| <input checked="" type="checkbox"/> Allow msmgs (192.168.0.100:8572) 452 | WAN,*LAN,192.168.0.100UDP,8572-45281 | |
| <input checked="" type="checkbox"/> Allow msmgs (192.168.0.100:10120) 17 | WAN,*LAN,192.168.0.100 | TCP,10120-17639 |
| <input checked="" type="checkbox"/> Deny Default | *,* LAN,* | IP (0),* |
| <input checked="" type="checkbox"/> Allow Default | LAN,* * | IP (0),* |

Step 5 Select **LAN** as the **Destination** and enter the IP Address of the computer on your local network that you want to allow the incoming service to. This will not work with a range of IP Addresses.

Step 6 Enter the port or range of ports that are required to be open for the incoming service.

Step 7 Click **Apply** and then click **Continue**.

Note: Make sure DMZ host is disabled.

Because our routers use NAT (Network Address Translation), you can only open a specific port to one computer at a time. For example: If you have 2 web servers on your network, you cannot open port 80 to both computers. You will need to configure 1 of the web servers to use port 81. Now you can open port 80 to the first computer and then open port 81 to the other computer.

Frequently Asked Questions (continued)

What are virtual servers?

A Virtual Server is defined as a service port, and all requests to this port will be redirected to the computer specified by the server IP. For example, if you have an FTP Server (port 21) at 192.168.0.5, a Web server (port 80) at 192.168.0.6, and a VPN server at 192.168.0.7, then you need to specify the following virtual server mapping table:

| Server Port | Server IP | Enable |
|-------------|-------------|--------|
| 21 | 192.168.0.5 | X |
| 80 | 192.168.0.6 | X |
| 1723 | 192.168.0.7 | X |

How do I use *PC Anywhere* with my router?

You will need to open 3 ports in the Virtual Server section of your D-Link router.

Step 1 Open your web browser and enter the IP Address of the router (192.168.0.1).

Step 2 Click on **Advanced** at the top and then click **Virtual Server** on the left side.

Step 3 Enter the information as seen below. The **Private IP** is the IP Address of the computer on your local network that you want to connect to.

Step 4 The first entry will read as shown here:

Step 5 Click **Apply** and then click **Continue**.

Virtual Server
Virtual Server is used to allow Internet users access to LAN services.

Enabled Disabled

Name:

Private IP:

Protocol Type:

Private Port:

Public Port:

Schedule: Always

From time : AM to : AM
day to

Frequently Asked Questions (continued)

How do I use *PC Anywhere* with my router? (continued)

Step 6 Create a second entry as shown here:

Virtual Server
Virtual Server is used to allow Internet users access to LAN services.

Enabled Disabled

Name

Private IP

Protocol Type

Private Port

Public Port

Schedule Always

From time : AM to : AM
day to

Step 7 Click **Apply** and then click **Continue**.

Step 8 Create a third and final entry as shown here:

Virtual Server
Virtual Server is used to allow Internet users access to LAN services.

Enabled Disabled

Name

Private IP

Protocol Type

Private Port

Public Port

Schedule Always

From time : AM to : AM
day to

Step 9 Click **Apply** and then click **Continue**.

Step 10 Run *PCAnywhere* from the remote site and use the WAN IP Address of the router, not your computer's IP Address.

Frequently Asked Questions (continued)

How can I use eDonkey behind my D-Link router?

You must open ports on your router to allow incoming traffic while using eDonkey.

eDonkey uses three ports (4 if using CLI):

4661 (TCP) To connect with a server

4662 (TCP) To connect with other clients

4665 (UDP) To communicate with servers other than the one you are connected to.

4663 (TCP) *Used with the command line (CLI) client when it is configured to allow remote connections. This is the case when using a Graphical Interface (such as the Java Interface) with the client.

Step 1 Open your web browser and enter the IP Address of your router (192.168.0.1). Enter username (admin) and your password (leave blank).

Step 2 Click on **Advanced** and then click **Firewall**.

Step 3 Create a new firewall rule:

Click **Enabled**.

Enter a name (edonkey).

Click **Allow**.

Next to Source, select **WAN** under interface. In the first box, enter an *. Leave the second box empty.

Next to Destination, select **LAN** under interface. Enter the IP Address of the computer you are running eDonkey from. Leave the second box empty. Under Protocol, select *. In the port range boxes, enter **4661** in the first box and then **4665** in the second box. Click

Always or set a schedule.

Step 4 Click **Apply** and then **Continue**.

D-Link
Building Networks for People

Air Premier AG
11a/11g Dualband Wireless 108Mbps Router

DI-784

Virtual Server
Applications
Filters
Firewall
DMZ
Performance

Home **Advanced** Tools Status Help

Firewall Rules
Firewall Rules can be used to allow or deny traffic from passing through the DI-784.

Enabled Disabled

Name: edonkey [Clear]

Action: Allow Deny

Source: Interface: WAN IP Range Start: * IP Range End: Protocol: Port Range: 4661 - 4665

Destination: Interface: LAN IP Range Start: 192.168.0.100 IP Range End: * Protocol: Port Range: 4661 - 4665

Schedule: Always
 From time: 00:00 AM to 00:00 AM
day: Sun to Sun

Firewall Rules List

| ActionName | SourceDestination | Protocol | Apply | Cancel | Help |
|---|--------------------------------|------------------------|-----------------|--------|------|
| <input checked="" type="checkbox"/> Allow | Allow to Ping WAN port | WAN,*LAN,192.168.0.1 | ICMP,8 | | |
| <input checked="" type="checkbox"/> Allow | mmsgs (192.168.0.100:8572) 452 | WAN,*LAN,192.168.0.100 | UDP,8572-45281 | | |
| <input checked="" type="checkbox"/> Allow | mmsgs (192.168.0.100:10120) 17 | WAN,*LAN,192.168.0.100 | TCP,10120-17639 | | |
| <input checked="" type="checkbox"/> Deny | Default | *,* LAN,* | IP (0),* | | |
| <input checked="" type="checkbox"/> Allow | Default | LAN,*,* | IP (0),* | | |

Frequently Asked Questions (continued)

How do I set up my router for SOCOM on my Playstation 2?

To allow you to play SOCOM and hear audio, you must download the latest firmware for the router (if needed), enable Game Mode, and open port 6869 to the IP Address of your Playstation.

Step 1 Upgrade firmware (follow link above).

Step 2 Open your web browser and enter the IP Address of the router (192.168.0.1). Enter username (admin) and your password (blank by default).

Step 3 Click on the **Advanced** tab and then click on **Virtual Server** on the left side.

Step 4 You will now create a new Virtual Server entry. Click **Enabled** and enter a name (socom). Enter the IP Address of your Playstation for **Private IP**.

Step 5 For **Protocol Type** select Both. Enter **6869** for both the **Private Port** and **Public Port**. Click **Always**. Click **Apply** to save changes and then **Continue**

D-Link
Building Networks for People

Air Premier AG™
11a/11g Dualband Wireless 108Mbps Router

DI-784

Virtual Server

Applications

Filters

Firewall

DMZ

Performance

Home Advanced Tools Status Help

Virtual Server

Virtual Server is used to allow Internet users access to LAN services.

Enabled Disabled

Name:

Private IP:

Protocol Type:

Private Port:

Public Port:

Schedule: Always

From time : AM to : AM

day to

Virtual Servers List

| Name | Private IP | Protocol | Schedule | |
|--|------------|---------------|----------|---|
| <input type="checkbox"/> Virtual Server FTP | 0.0.0.0 | TCP 21/21 | always | <input type="button" value="Up"/> <input type="button" value="Down"/> |
| <input type="checkbox"/> Virtual Server HTTP | 0.0.0.0 | TCP 80/80 | always | <input type="button" value="Up"/> <input type="button" value="Down"/> |
| <input type="checkbox"/> Virtual Server HTTPS | 0.0.0.0 | TCP 443/443 | always | <input type="button" value="Up"/> <input type="button" value="Down"/> |
| <input type="checkbox"/> Virtual Server DNS | 0.0.0.0 | UDP 53/53 | always | <input type="button" value="Up"/> <input type="button" value="Down"/> |
| <input type="checkbox"/> Virtual Server SMTP | 0.0.0.0 | TCP 25/25 | always | <input type="button" value="Up"/> <input type="button" value="Down"/> |
| <input type="checkbox"/> Virtual Server POP3 | 0.0.0.0 | TCP 110/110 | always | <input type="button" value="Up"/> <input type="button" value="Down"/> |
| <input type="checkbox"/> Virtual Server Telnet | 0.0.0.0 | TCP 23/23 | always | <input type="button" value="Up"/> <input type="button" value="Down"/> |
| <input type="checkbox"/> IPSec | 0.0.0.0 | UDP 500/500 | always | <input type="button" value="Up"/> <input type="button" value="Down"/> |
| <input type="checkbox"/> PPTP | 0.0.0.0 | TCP 1723/1723 | always | <input type="button" value="Up"/> <input type="button" value="Down"/> |
| <input type="checkbox"/> NetMeeting | 0.0.0.0 | TCP 1720/1720 | always | <input type="button" value="Up"/> <input type="button" value="Down"/> |

Step 6 Click on the **Tools** tab and then **Misc** on the left side.

Step 7 Make sure **Gaming Mode** is Enabled. If not, click **Enabled**. Click **Apply** and then **Continue**.

Frequently Asked Questions (continued)

How can I use Gamespy behind my D-Link router?

Step 1 Open your web browser and enter the IP Address of the router (192.168.0.1). Enter admin for the username and your password (blank by default).

Step 2 Click on the Advanced tab and then click Virtual Server on the left side.

Step 3 You will create 2 entries.

Step 4 Click Enabled and enter Settings:

NAME - Gamespy1

PRIVATE IP - The IP Address of your computer that you are running Gamespy from.

PROTOCOL TYPE - Both

PRIVATE PORT - 3783

PUBLIC PORT - 3783

SCHEDULE - Always.

Click **Apply** and then **continue**

Step 5 Enter 2nd entry:

Click Enabled

NAME - Gamespy2

PRIVATE IP - The IP Address of your computer that you are running Gamespy from.

PROTOCOL TYPE - Both

PRIVATE PORT - 6500

PUBLIC PORT - 6500

SCHEDULE - Always.

Click **Apply** and then **continue**.

The screenshot shows the D-Link Air Premier AG router's web interface. The 'Advanced' tab is selected, and the 'Virtual Server' page is open. The 'Virtual Server' section is enabled. The configuration for 'gamespy1' is as follows:

- Name: gamespy1
- Private IP: 192.168.0.100
- Protocol Type: TCP
- Private Port: 3783
- Public Port: 3783
- Schedule: Always

The 'Virtual Servers List' table is shown below:

| Name | Private IP | Protocol | Schedule |
|--|------------|---------------|----------|
| <input type="checkbox"/> Virtual Server FTP | 0.0.0.0 | TCP 21/21 | always |
| <input type="checkbox"/> Virtual Server HTTP | 0.0.0.0 | TCP 80/80 | always |
| <input type="checkbox"/> Virtual Server HTTPS | 0.0.0.0 | TCP 443/443 | always |
| <input type="checkbox"/> Virtual Server DNS | 0.0.0.0 | UDP 53/53 | always |
| <input type="checkbox"/> Virtual Server SMTP | 0.0.0.0 | TCP 25/25 | always |
| <input type="checkbox"/> Virtual Server POP3 | 0.0.0.0 | TCP 110/110 | always |
| <input type="checkbox"/> Virtual Server Telnet | 0.0.0.0 | TCP 23/23 | always |
| <input type="checkbox"/> IPSec | 0.0.0.0 | UDP 500/500 | always |
| <input type="checkbox"/> PPTP | 0.0.0.0 | TCP 1723/1723 | always |
| <input type="checkbox"/> NetMeeting | 0.0.0.0 | TCP 1720/1720 | always |

The screenshot shows the D-Link Air Premier AG router's web interface. The 'Advanced' tab is selected, and the 'Virtual Server' page is open. The 'Virtual Server' section is enabled. The configuration for 'gamespy2' is as follows:

- Name: gamespy2
- Private IP: 192.168.0.100
- Protocol Type: Both
- Private Port: 6500
- Public Port: 6500
- Schedule: Always

The 'Virtual Servers List' table is shown below:

| Name | Private IP | Protocol | Schedule |
|--|------------|---------------|----------|
| <input type="checkbox"/> Virtual Server FTP | 0.0.0.0 | TCP 21/21 | always |
| <input type="checkbox"/> Virtual Server HTTP | 0.0.0.0 | TCP 80/80 | always |
| <input type="checkbox"/> Virtual Server HTTPS | 0.0.0.0 | TCP 443/443 | always |
| <input type="checkbox"/> Virtual Server DNS | 0.0.0.0 | UDP 53/53 | always |
| <input type="checkbox"/> Virtual Server SMTP | 0.0.0.0 | TCP 25/25 | always |
| <input type="checkbox"/> Virtual Server POP3 | 0.0.0.0 | TCP 110/110 | always |
| <input type="checkbox"/> Virtual Server Telnet | 0.0.0.0 | TCP 23/23 | always |
| <input type="checkbox"/> IPSec | 0.0.0.0 | UDP 500/500 | always |
| <input type="checkbox"/> PPTP | 0.0.0.0 | TCP 1723/1723 | always |
| <input type="checkbox"/> NetMeeting | 0.0.0.0 | TCP 1720/1720 | always |

Frequently Asked Questions (continued)

How do I configure my router for KaZaA and Grokster?

The following is for KaZaA, Grokster, and others using the FastTrack P2P file sharing system.

In most cases, you do not have to configure anything on the router or on the Kazaa software. If you are having problems, please follow steps below:

Step 1 Enter the IP Address of your router in a web browser (192.168.0.1).

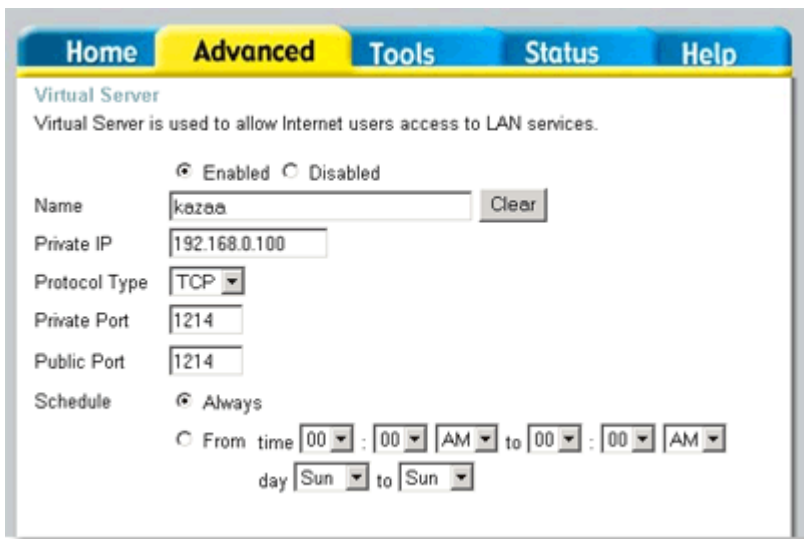
Step 2 Enter your username (admin) and your password (blank by default).

Step 3 Click on Advanced and then click Virtual Server.

Step 4 Click Enabled and then enter a Name (kazaa for example).

Step 5 Enter the IP Address of the computer you are running KaZaA from in the Private IP box. Select TCP for the Protocol Type.

Step 6 Enter 1214 in the Private and Public Port boxes. Click Always under schedule or set a time range. Click Apply.



The screenshot shows a web interface for configuring a Virtual Server. At the top, there are navigation tabs: Home, Advanced (highlighted in yellow), Tools, Status, and Help. Below the tabs, the page title is "Virtual Server" and a subtitle reads "Virtual Server is used to allow Internet users access to LAN services." The configuration options are as follows:

- Enabled: Enabled Disabled
- Name:
- Private IP:
- Protocol Type:
- Private Port:
- Public Port:
- Schedule: Always
- From time: : AM to : AM day to

Make sure that you did not enable proxy/firewall in the KaZaA software.

Frequently Asked Questions (continued)

How do I configure my router to play Warcraft 3?

You must open ports on your router to allow incoming traffic while hosting a game in Warcraft 3. To play a game, you do not have to configure your router.

Warcraft 3 (Battlenet) uses port 6112.

For the DI-604, DI-614+, DI-624, DI-754, DI-764, or DI-784:

Step 1 Open your web browser and enter the IP Address of your router (192.168.0.1). Enter username (admin) and your password (leave blank).

Step 2 Click on **Advanced** and then click **Virtual Server**.

Step 3 Create a new entry: Click **Enabled**. Enter a name (warcraft3). Private IP - Enter the IP Address of the computer you want to host the game. Select **Both** for Protocol Type Enter **6112** for both Private Port and Public Port Click **Always** or set a schedule.

Step 4 Click **Apply** and then **Continue**.

The screenshot shows the D-Link Air Premier AG router's web interface. The 'Virtual Server' configuration page is active, showing a form for adding a new entry. The 'Name' field is 'warcraft3', 'Private IP' is '192.168.0.100', 'Protocol Type' is 'Both', 'Private Port' is '6112', and 'Public Port' is '6112'. The 'Schedule' is set to 'Always'. A table below shows a list of other virtual servers.

| Name | Private IP | Protocol | Schedule |
|--|------------|---------------|----------|
| <input type="checkbox"/> Virtual Server FTP | 0.0.0.0 | TCP 21/21 | always |
| <input type="checkbox"/> Virtual Server HTTP | 0.0.0.0 | TCP 80/80 | always |
| <input type="checkbox"/> Virtual Server HTTPS | 0.0.0.0 | TCP 443/443 | always |
| <input type="checkbox"/> Virtual Server DNS | 0.0.0.0 | UDP 53/53 | always |
| <input type="checkbox"/> Virtual Server SMTP | 0.0.0.0 | TCP 25/25 | always |
| <input type="checkbox"/> Virtual Server POP3 | 0.0.0.0 | TCP 110/110 | always |
| <input type="checkbox"/> Virtual Server Telnet | 0.0.0.0 | TCP 23/23 | always |
| <input type="checkbox"/> IPSec | 0.0.0.0 | UDP 500/500 | always |
| <input type="checkbox"/> PPTP | 0.0.0.0 | TCP 1723/1723 | always |
| <input type="checkbox"/> NetMeeting | 0.0.0.0 | TCP 1720/1720 | always |

Note: If you want multiple computers from you LAN to play in the same game that you are hosting, then repeat the steps above and enter the IP Addresses of the other computers. You will need to change ports. Computer #2 can use port 6113, computer #3 can use 6114, and so on.

You will need to change the port information within the Warcraft 3 software for computers #2 and up.

Configure the Game Port information on each computer:

Start Warcraft 3 on each computer, click **Options** > **Gameplay**. Scroll down and you should see **Game Port**. Enter the port number as you entered in the above steps.

Frequently Asked Questions (continued)

How do I use NetMeeting with my D-Link router?

Unlike most TCP/IP applications, NetMeeting uses **DYNAMIC PORTS** instead of STATIC PORTS. That means that each NetMeeting connection is somewhat different than the last. For instance, the HTTP web site application uses port 80. NetMeeting can use any of over 60,000 different ports.

All broadband routers using (only) standard NAT and all internet sharing programs like Microsoft ICS that use (only) standard NAT will NOT work with NetMeeting or other h.323 software packages.

The solution is to put the router in DMZ.

Note: A few hardware manufacturers have taken it on themselves to actually provide H.323 compatibility. This is not an easy task since the router must search each incoming packet for signs that it might be a netmeeting packet. This is a whole lot more work than a router normally does and may actually be a **weak point in the firewall**. D-Link is not one of the manufacturers.

To read more on this visit <http://www.HomenetHelp.com>

How do I set up my router to use iChat? -for Macintosh users-

You must open ports on your router to allow incoming traffic while using iChat.

iChat uses the following ports: 5060 (UDP) 5190 (TCP) File Sharing 16384-16403 (UDP) To video conference with other clients

Step 1 Open your web browser and enter the IP Address of your router (192.168.0.1). Enter username (admin) and your password (leave blank).

Step 2 Click on **Advanced** and then click **Firewall**.

Frequently Asked Questions (continued)

How do I set up my router to use iChat? -for Macintosh users- (continued)

Step 3 Create a new firewall rule:

- Click **Enabled**.
- Enter a name (ichat1).
- Click **Allow**.
- Next to Source, select **WAN** under interface.
- In the first box, enter an *.
- Leave the second box empty.
- Next to Destination, select **LAN** under interface.
- Enter the IP Address of the computer you are running iChat from.

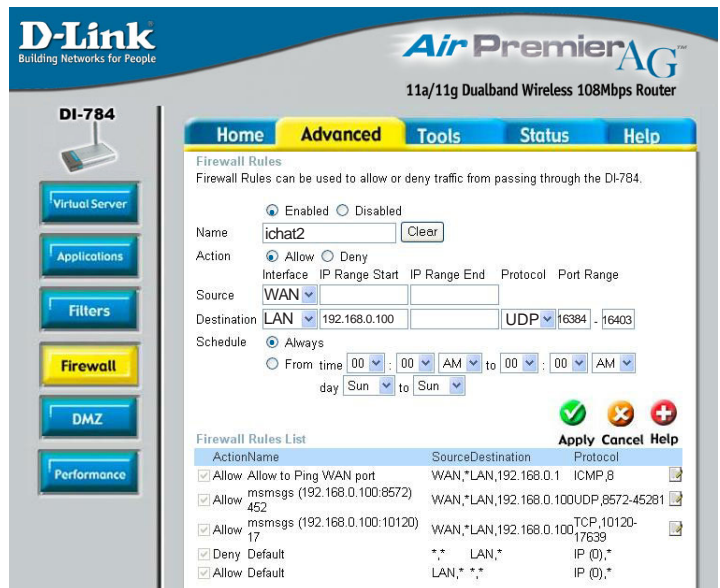


Leave the second box empty. Under Protocol, select **UDP**. In the port range boxes, enter **5060** in the first box and leave the second box empty.

Click **Always** or set a schedule.

Step 4 Click **Apply** and then **Continue**.

Step 5 Repeat steps 3 and 4 enter **ichat2** and open ports **16384-16403** (UDP).



Frequently Asked Questions (continued)

How do I set up my router to use iChat? -for Macintosh users- (continued)

For File Sharing:

Step 1 Click on **Advanced** and then **Virtual Server**.

Step 2 Check **Enabled** to activate entry.

Step 3 Enter a name for your virtual server entry (ichat3).

Step 4 Next to Private IP, enter the IP Address of the computer on your local network that you want to allow the incoming service to.

Step 5 Select **TCP** for Protocol Type.

Step 6 Enter **5190** next to Private Port and Public Port.

Step 7 Click **Always** or configure a schedule.

Step 8 Click **Apply** and then **Continue**.

The screenshot shows the D-Link Air Premier AG 11a/11g Dualband Wireless 108Mbps Router configuration interface. The 'Advanced' tab is selected, and the 'Virtual Server' section is active. The 'Virtual Server' section is titled 'Virtual Server is used to allow Internet users access to LAN services.' The 'Enabled' radio button is selected. The 'Name' field contains 'ichat3'. The 'Private IP' field contains '192.168.0.100'. The 'Protocol Type' is set to 'TCP'. The 'Private Port' and 'Public Port' fields both contain '5190'. The 'Schedule' is set to 'Always'. Below the configuration fields is a table of 'Virtual Servers List'.

| Name | Private IP | Protocol | Schedule | |
|--|------------|---------------|----------|--|
| <input type="checkbox"/> Virtual Server FTP | 0.0.0.0 | TCP 21/21 | always | |
| <input type="checkbox"/> Virtual Server HTTP | 0.0.0.0 | TCP 80/80 | always | |
| <input type="checkbox"/> Virtual Server HTTPS | 0.0.0.0 | TCP 443/443 | always | |
| <input type="checkbox"/> Virtual Server DNS | 0.0.0.0 | UDP 53/53 | always | |
| <input type="checkbox"/> Virtual Server SMTP | 0.0.0.0 | TCP 25/25 | always | |
| <input type="checkbox"/> Virtual Server POP3 | 0.0.0.0 | TCP 110/110 | always | |
| <input type="checkbox"/> Virtual Server Telnet | 0.0.0.0 | TCP 23/23 | always | |
| <input type="checkbox"/> IPsec | 0.0.0.0 | UDP 500/500 | always | |
| <input type="checkbox"/> PPTP | 0.0.0.0 | TCP 1723/1723 | always | |
| <input type="checkbox"/> NetMeeting | 0.0.0.0 | TCP 1720/1720 | always | |

If using Mac OS X Firewall, you may need to temporarily turn off the firewall in the Sharing preference pane on both computers.

To use the Mac OS X Firewall, you must open the same ports as in the router:

Step 1 Choose **Apple menu > System Preferences**.

Step 2 Choose **View > Sharing**.

Step 3 Click the **Firewall** tab.

Step 4 Click **New**.

Step 5 Choose **Other** from the Port Name pop-up menu.

Step 6 In the Port Number, Range or Series field, type in: **5060, 16384-16403**.

Step 7 In the Description field type in: **iChat AV**

Step 8 Click **OK**.

Frequently Asked Questions (continued)

How do I send or receive a file via iChat when the Mac OS X firewall is active? -for Macintosh users- Mac OS X 10.2 and later

The following information is from the online Macintosh AppleCare knowledge base:

“iChat cannot send or receive a file when the Mac OS X firewall is active in its default state. If you have opened the AIM port, you may be able to receive a file but not send them.

In its default state, the Mac OS X firewall blocks file transfers using iChat or America Online AIM software. If either the sender or receiver has turned on the Mac OS X firewall, the transfer may be blocked.

The simplest workaround is to temporarily turn off the firewall in the Sharing preference pane on both computers. This is required for the sender. However, the receiver may keep the firewall on if the AIM port is open. To open the AIM port:

Step 1 Choose Apple menu > System Preferences.

Step 2 Choose View > Sharing.

Step 3 Click the Firewall tab.

Step 4 Click New.

Step 5 Choose AOL IM from the Port Name pop-up menu. The number 5190 should already be filled in for you.

Step 6 Click OK.

If you do not want to turn off the firewall at the sending computer, a different file sharing service may be used instead of iChat. The types of file sharing available in Mac OS X are outlined in technical document 106461, "Mac OS X: File Sharing" in the *AppleCare Knowledge base* online.

Note: If you use a file sharing service when the firewall is turned on, be sure to click the Firewall tab and select the service you have chosen in the "Allow" list. If you do not do this, the firewall will also block the file sharing service. “

Frequently Asked Questions (continued)

What is NAT?

NAT stands for **Network Address Translator**. It is proposed and described in RFC-1631 and is used for solving the IP Address depletion problem. Each NAT box has a table consisting of pairs of local IP Addresses and globally unique addresses, by which the box can “translate” the local IP Addresses to global address and vice versa. Simply put, it is a method of connecting multiple computers to the Internet (or any other IP network) using one IP Address.

D-Link’s broadband routers support NAT. With proper configuration, multiple users can access the Internet using a single account via the NAT device.

For more information on RFC-1631: The IP Network Address Translator (NAT), visit <http://www.faqs.org/rfcs/rfc1631.html>

Technical Support

You can find software updates and user documentation on the D-Link website.

D-Link provides free technical support for customers within the United States and within Canada for the duration of the warranty period on this product.

U.S. and Canadian customers can contact D-Link technical support through our web site, or by phone.

Tech Support for customers within the United States:

D-Link Technical Support over the Telephone:

(877) 453-5465

24 hours a day, seven days a week.

D-Link Technical Support over the Internet:

<http://support.dlink.com>

email: support@dlink.com

Tech Support for customers within Canada:

D-Link Technical Support over the Telephone:

(800) 361-5265

Monday to Friday 7:30am to 12:00am EST

D-Link Technical Support over the Internet:

<http://support.dlink.ca>

email: support@dlink.ca

When contacting technical support, please provide the following information:

- *Serial number of the unit*
- *Model number or product name*
- *Software type and version number*

Warranty

(USA only)

Subject to the terms and conditions set forth herein, D-Link Systems, Inc. (“D-Link”) provides this Limited warranty for its product only to the person or entity that originally purchased the product from:

- D-Link or its authorized reseller or distributor and
- Products purchased and delivered within the fifty states of the United States, the District of Columbia, U.S. Possessions or Protectorates, U.S. Military Installations, addresses with an APO or FPO.

Limited Warranty: D-Link warrants that the hardware portion of the D-Link products described below will be free from material defects in workmanship and materials from the date of original retail purchase of the product, for the period set forth below applicable to the product type (“Warranty Period”), except as otherwise stated herein.

3-Year Limited Warranty for the Product(s) is defined as follows:

- Hardware (excluding power supplies and fans) Three (3) Years
- Power Supplies and Fans One (1) Year
- Spare parts and spare kits Ninety (90) days

D-Link’s sole obligation shall be to repair or replace the defective Hardware during the Warranty Period at no charge to the original owner or to refund at D-Link’s sole discretion. Such repair or replacement will be rendered by D-Link at an Authorized D-Link Service Office. The replacement Hardware need not be new or have an identical make, model or part. D-Link may in its sole discretion replace the defective Hardware (or any part thereof) with any reconditioned product that D-Link reasonably determines is substantially equivalent (or superior) in all material respects to the defective Hardware. Repaired or replacement Hardware will be warranted for the remainder of the original Warranty Period from the date of original retail purchase. If a material defect is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to repair or replace the defective Hardware, the price paid by the original purchaser for the defective Hardware will be refunded by D-Link upon return to D-Link of the defective Hardware. All Hardware (or part thereof) that is replaced by D-Link, or for which the purchase price is refunded, shall become the property of D-Link upon replacement or refund.

Limited Software Warranty: D-Link warrants that the software portion of the product (“Software”) will substantially conform to D-Link’s then current functional specifications for the Software, as set forth in the applicable documentation, from the date of original retail purchase of the Software for a period of ninety (90) days (“Warranty Period”), provided that the Software is properly installed on approved hardware and operated as contemplated in its documentation. D-Link further warrants that, during the Warranty Period, the magnetic media on which D-Link delivers the Software will be free of physical defects. D-Link’s sole obligation shall be to replace the non-conforming Software (or defective media) with software that substantially conforms to D-Link’s functional specifications for the Software or to refund at D-Link’s sole discretion. Except as otherwise agreed by D-Link in writing, the replacement Software is provided only to the original licensee, and is subject to the terms and conditions of the license granted by D-Link for the Software. Software will be warranted for the remainder of the original Warranty Period from the date or original retail purchase. If a material non-conformance is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to replace the non-conforming Software, the price paid by the original licensee for the non-conforming Software will be refunded by D-Link; provided that the non-conforming Software (and all copies thereof) is first returned to D-Link. The license granted respecting any Software for which a refund is given automatically terminates.

Non-Applicability of Warranty: The Limited Warranty provided hereunder for hardware and software of D-Link’s products will not be applied to and does not cover any refurbished product and any product purchased through the inventory clearance or liquidation sale or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product and in that case, the product is being sold “As-Is” without any warranty whatsoever including, without limitation, the Limited Warranty as described herein, notwithstanding anything stated herein to the contrary.

Submitting A Claim: The customer shall return the product to the original purchase point based on its return policy. In case the return policy period has expired and the product is within warranty, the customer shall submit a claim to D-Link as outlined below:

- The customer must submit with the product as part of the claim a written description of the Hardware defect or Software nonconformance in sufficient detail to allow D-Link to confirm the same.
- The original product owner must obtain a Return Material Authorization (“RMA”) number from the Authorized D-Link Service Office and, if requested, provide written proof of purchase of the product (such as a copy of the dated purchase invoice for the product) before the warranty service is provided.
- After an RMA number is issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be prominently marked on the outside of the package. Do not include any manuals or accessories in the shipping package. D-Link will only replace the defective portion of the Product and will not ship back any accessories.
- The customer is responsible for all in-bound shipping charges to D-Link. No Cash on Delivery (“COD”) is allowed. Products sent COD will either be rejected by D-Link or become the property of D-Link. Products shall be fully insured by the customer. D-Link will not be held responsible for any packages that are lost in transit to D-Link. The repaired or replaced packages will be shipped to the customer via UPS Ground or any common carrier selected by D-Link, with shipping charges prepaid. Expedited shipping is available if shipping charges are prepaid by the customer and upon request.
- Return Merchandise Ship-To Address
USA: 17595 Mt. Herrmann, Fountain Valley, CA, 92708
Canada: 2180 Winston Park Drive, Oakville, ON, L6H 5W1 (Visit <http://www.dlink.ca> for detailed warranty information within Canada)

D-Link may reject or return any product that is not packaged and shipped in strict compliance with the foregoing requirements, or for which an RMA number is not visible from the outside of the package. The product owner agrees to pay D-Link’s reasonable handling and return shipping charges for any product that is not packaged and shipped in accordance with the foregoing requirements, or that is determined by D-Link not to be defective or non-conforming.

What Is Not Covered: This limited warranty provided by D-Link does not cover: Products, if in D-Link’s judgment, have been subjected to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed; Initial installation, installation and removal of the product for repair, and shipping costs; Operational adjustments covered in the operating manual for the product, and normal maintenance; Damage that occurs in shipment, due to act of God, failures due to power surge, and cosmetic damage; Any hardware, software, firmware or other products or services provided by anyone other than D-Link; Products that have been purchased from inventory clearance or liquidation sales or other sales in which D-Link, the sellers, or the liquidators expressly disclaim their warranty obligation pertaining to the product. Repair by anyone other than D-Link or an Authorized D-Link Service Office will void this Warranty.

Disclaimer of Other Warranties: EXCEPT FOR THE LIMITED WARRANTY SPECIFIED HEREIN, THE PRODUCT IS PROVIDED “AS-IS” WITHOUT ANY WARRANTY OF ANY KIND WHATSOEVER INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. IF ANY IMPLIED WARRANTY CANNOT BE DISCLAIMED IN ANY TERRITORY WHERE A PRODUCT IS SOLD, THE DURATION OF SUCH IMPLIED WARRANTY SHALL BE LIMITED TO NINETY (90) DAYS. EXCEPT AS EXPRESSLY COVERED UNDER THE LIMITED WARRANTY PROVIDED HEREIN, THE ENTIRE RISK AS TO THE QUALITY, SELECTION AND PERFORMANCE OF THE PRODUCT IS WITH THE PURCHASER OF THE PRODUCT.

LIABILITY OF D-LINK UNDER THIS WARRANTY IS LIMITED TO THE PURCHASE PRICE OF THE PRODUCT COVERED BY THE WARRANTY. THE FOREGOING EXPRESS WRITTEN WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ANY OTHER WARRANTIES OR REMEDIES, EXPRESS, IMPLIED OR STATUTORY.

Governing Law: This Limited Warranty shall be governed by the laws of the State of California. Some states do not allow exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the foregoing limitations and exclusions may not apply. This limited warranty provides specific legal rights and the product owner may also have other rights which vary from state to state.

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

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

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

For detailed warranty outside the United States, please contact corresponding local D-Link office.

FCC Caution:

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment; such modifications could void the user's authority to operate the equipment.

(1) The devices are restricted to indoor operations within the 5.15 to 5.25GHz range. (2) For this device to operate in the 5.15 to 5.25GHz range, the devices must use integral antennas.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this equipment must be installed to provide a separation distance of at least eight inches (20 cm) from all persons.

This equipment must not be operated in conjunction with any other antenna.

Registration

Register your D-Link product online at <http://support.dlink.com/register/>