

GN-B41G
54Mbps Wireless
Broadband Router

User's Manual

www.gigabyte.com.tw
Revision 1.1

GN-B41G Wireless Broadband Router

Federal Communication Commission Interference Statement

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

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

FCC Caution: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user authority to operate this equipment.

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

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter

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Chapter 1 Introduction

Overview

Thank you for purchasing the GN-B41G 54Mbps Wireless Router. With the advantages of 54 Mbps high-speed wireless data rates and 4-ports 10/100 wired Ethernet, the GN-B41G is the ideal networking device for you to share a broadband connection in your home or office. The GN-B41G gives you a simple, cost-effective wireless networking solution.

Providing transmission speeds of up to 54Mbps, the GN-B41G allows users to share network resources, retrieve emails, download large files, conduct a video conference, and distribute or display digital photos, videos or MP3 files. Furthermore, the router supports up to 128-bit WEP encryption to safeguard your privacy on-line. To get the most from your GN-B41G Wireless Broadband Router, please read through this manual completely

Features

- ▶▶ Compliant with 802.11g and 802.11b standards.
- ▶▶ Supports WPA, 64/128 bit WEP data encryption.
- ▶▶ Enhanced firewall protection to prevent network intrusion.
- ▶▶ High speed data rates of up to 54Mbps.
- ▶▶ Built-in router configuration software - Smart Setup II.
- ▶▶ Built-in DHCP software eliminates IP conflicts - Smart DHCP
- ▶▶ Supports MSN Messenger and UPnP.
- ▶▶ Web-based router configuration and management utility

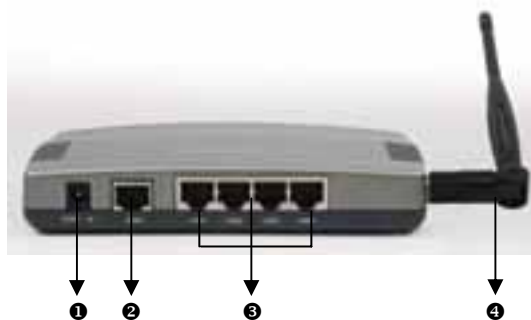
Package Contents

Please check that the GN-B41G package contents include:

- GN-B41G 54Mbps Wireless Broadband Router
- Power adapter (5V DC, 2.0A)
- GN-B41G Resource CD
- GN-B41G Quick Installation Guide
- Smart Setup II Installation Guide
- Cat. 5 Ethernet cable – 6ft (1.8m)

If there is any missing or damaged accessory, please contact your local distributor or dealer immediately. If a replacement unit is needed, please return the device with the original packing material, otherwise the warranty will be voided.

GN-B41G Rear Panel



❶ Power Socket

This sockets connects to the GN-B41G power adapter.

❷ One Ethernet WAN Port

Connect your DSL or cable modem to the router through this Internet port.

❸ Four 10/100Mbps LAN Ports

Use these Ethernet LAN ports to connect the router to local PCs.

❹ Antenna

The dipole-type antenna is removable

GN-B41G Front Panel



- Viewed from right to left, the table below describes the LEDs on the front panel of the GN-B41G. All LEDs are green when lit.

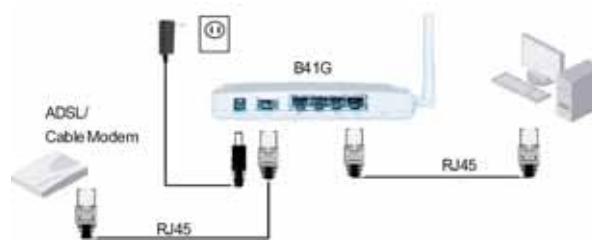


LED	STATUS	DESCRIPTION
Power	On	Power is supplied to router
	Off	Power is NOT supplied to router
WLAN	Flashing	Data is being transmitted wirelessly.
WAN	On	WAN port has detected a link with a DSL / Cable modem.
	Flashing	Data is being transmitted / received through WAN port.
LAN	On	LAN port has detected a link with a 10/100Mbps device
	Flashing	Data is being transmitted / received through LAN port.



Chapter 2 Quick Installation

Your Gigabyte GN-B41G Wireless Broadband Router has a built-in software application called Smart Setup II that will auto-configure your router for Internet access.



1. Please refer to diagram above to connect your router to your network.
2. Power on your computer and launch either Internet Explorer or Netscape Navigator.
3. Based on your Internet service, you may be required to enter your ISP account's username and password or other additional information as prompted. See below for screenshots.

- **Dynamic IP Address** If you use a dynamic IP address, you can directly connect to Internet without extra configuration.
- **PPPoE** If you use a PPPoE connection, please enter your ISP user ID and password.



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- **Static IP address** If you use a static IP address, please enter your WAN IP address, WAN subnet Mask, WAN Gateway, and DNS information provided by your ISP.



4. Once you have entered your information, click the **Finish** button to automatically complete router setup and close the web browser window. You are now connected to the Internet and may re-launch your browser..

Note: Gigabyte's Smart Setup II wireless router configuration software is designed to automatically detect your ISP connection type. However, to configure your router manually, please refer to **Chapter 5 – GN-B41G Basic Configuration** in this manual..

Chapter 3 Connecting the GN-B41G

What You Will Need

Please prepare the following before you begin connecting your GN-B41G:

1. Have active Internet service provided through either ADSL or cable Modem.
2. Valid ISP user account and password.

Hardware Requirements

Before setting up the GN-B41G, each computer on your network must have an installed Ethernet network card and an Ethernet cable. If you want to connect wirelessly each desktop computer or laptop requires a wireless network adapter installed.

System Requirements

- Windows, Macintosh or Linux Operating System
- Support HTTP standard Javascript-enabled browser, for examples, Microsoft Internet Explorer or Netscape Navigator 4.0 or above.

Internet Configuration

To successfully connect your GN-B41G to the Internet, you may need one or more of the following configuration parameters associated with your ISP account:

- ❖ Host and Domain Names
- ❖ ISP User ID and password
- ❖ ISP Domain Name Server (DNS)
- ❖ Fixed IP address or known as Static IP address
- ❖ Subnet Mask
- ❖ Default Gateway

Making a Wired Connection

- Step 1. Turn off all the hardware devices in your network, including the ADSL/Cable modem by unplugging their power supply.
- Step 2. Connect the Ethernet cable of your ADSL/Cable modem to the WAN port of the GN-B41G.
- Step 3. Connect one end of a new Ethernet cable to a LAN port in the rear panel of the GN-B41G to the 10/100 Ethernet port of your computer.. (NOTE: It does not matter which numbered LAN port is selected).
- Step 4. Plug the power adapter cord into the router's power jack and then plug the power adapter into a power outlet.
- Step 5. Turn on your ADSL/Cable modem. After verifying all the connections, proceed to **Chapter 4 – Configuring the PCs**.

Making a Wireless Connection

- Step 1. Turn off all the hardware devices in your network, including the ADSL/Cable modem by unplugging their power supply.
- Step 2. Connect the Ethernet cable of your ADSL/Cable modem to the WAN port of the GN-B41G.
- Step 3. Plug the power adapter cord into the router's power jack and then plug the power adapter into a power outlet.
- Step 4. Turn on your ADSL/Cable modem. After verifying all the connections, proceed to **Chapter 4 – Configuring the PCs**

Note: If using a wireless connection, please refer to the user manual of the wireless adapter to install. The SSID of the wireless adapter and the GN-B41G should be identical. The default SSID assigned to the GN-B41G is **GIGABYTE** . (WARNING: The SSID field is case sensitive, so for example "a" is different from "A").

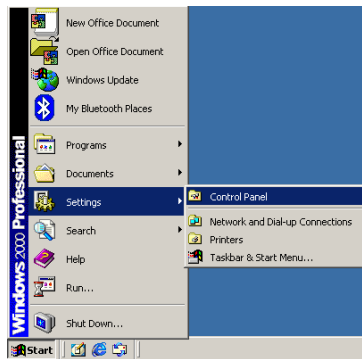
Chapter 4 Configuring the PCs

Overview

Before your GN-B41G Wireless Broadband Router can communicate with a computer, the PC's network settings must be configured. The instructions set forth in this chapter will guide you on setting-up the necessary PC network settings based on the type of Windows operating system installed. In general, Windows® 98/Me/2000/XP comes with the necessary TCP/IP protocol support pre-installed. Make sure that an Ethernet or wireless adapter has been successfully installed in the PC before proceeding with configuration.

Configuring Settings Under Windows 2000

- Step 1. Click the **Start** button. Select **Settings** and then click the **Control Panel** icon.

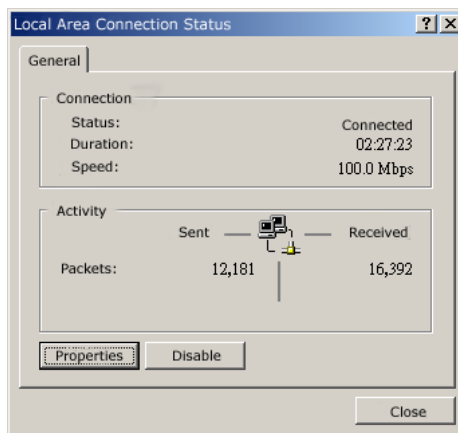


- Step 2. Double-click the **Network and Dial-up Connection** icon.

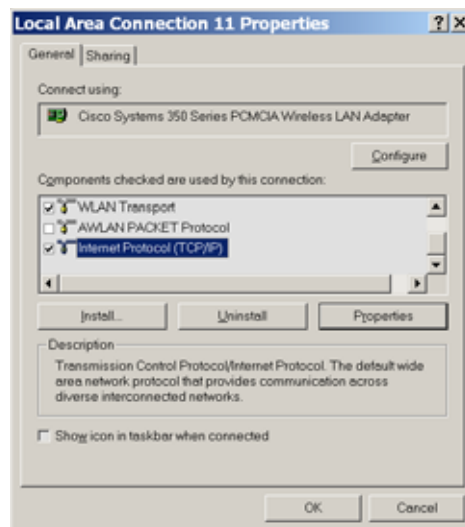
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- Step 3. Double-click the **Local Area Connection** icon, and then the **Properties** button.

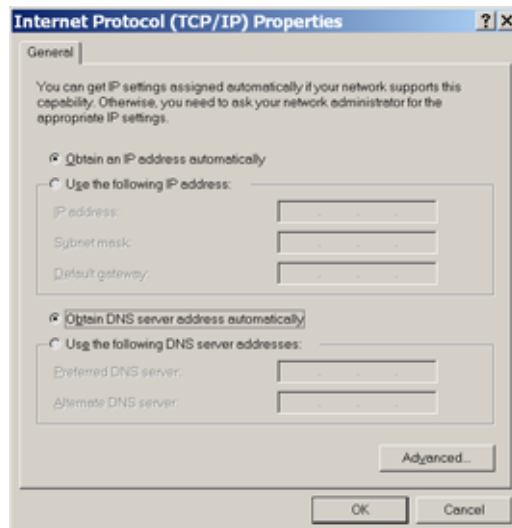


- Step 4. The **Local Area Connection Properties** window will appear. For the applicable Ethernet / wireless adapter, make sure that there is a check in the **Internet Protocol (TCP/IP)** checkbox, then double-click on **Internet Protocol (TCP/IP)**.



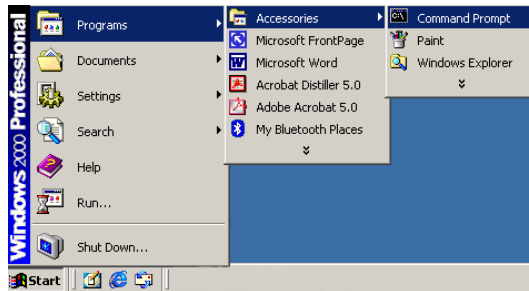
GN-B41G Wireless Broadband Router

- Step 5. Select both the **Obtain IP address automatically** and **Obtain DNS server address automatically** options and then click **OK**. Continue clicking on the **OK** button to complete the PC configuration.

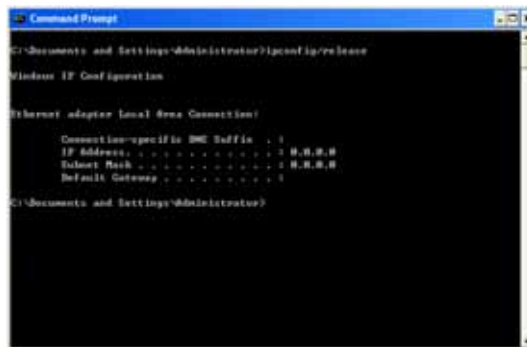


Your computer has been configured to obtain an IP address automatically from the GN-B41G. To configure an IP address manually, continue to Step 6, otherwise you may now skip ahead to Step 10.

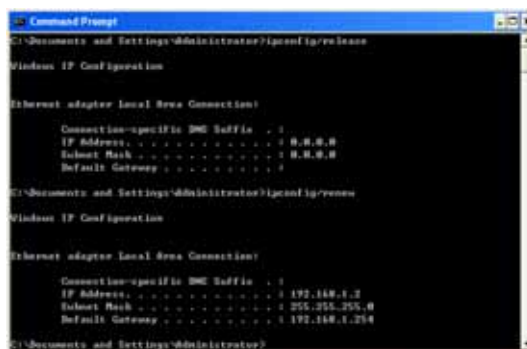
Step 6. Click the **Start** button. Select **Programs** , then **Accessories** and then click **Command Prompt**.



Step 7. At the command prompt, type **“ipconfig/release”** and press the **ENTER** key..



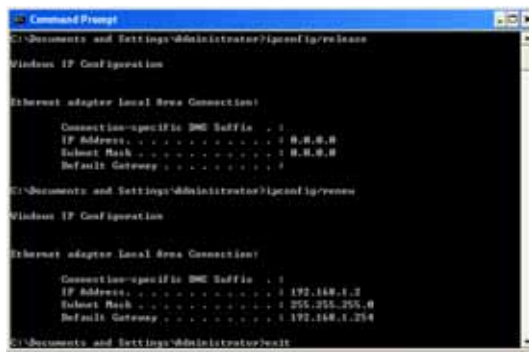
Step 8. At the next command prompt, type **“ipconfig/renew”** and press the **ENTER** key..



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Note: If the IP address of your GN-B41G, for example, is 192.168.1.254, your computer's IP address must be 192.168.1.x, where x is anything between 1 and 253. (Note: Each computer in a network has one unique IP located within this range. The default gateway must be 192.168.1.254).

Step 9. At the command prompt, type in "exit" and then press the **ENTER** key to exit and close the window.



```
C:\Documents and Settings\Administrator\ipconfig /renew

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix . : 
    IP Address . . . . . : 192.168.1.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.254

C:\Documents and Settings\Administrator\ipconfig /renew

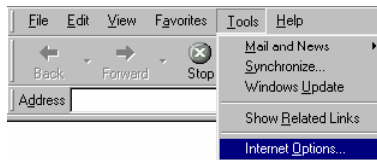
Windows IP Configuration

Ethernet adapter Local Area Connection:

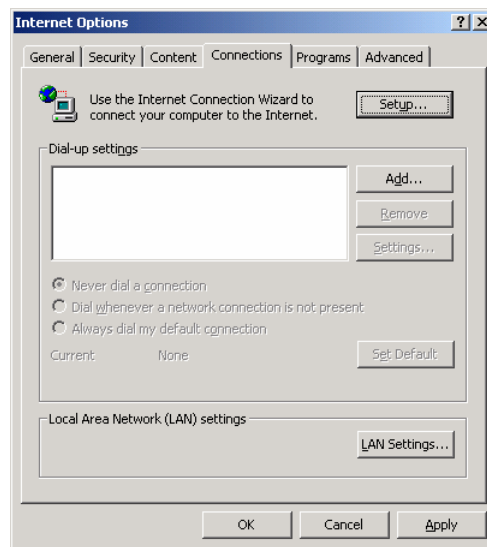
    Connection-specific DNS Suffix . : 
    IP Address . . . . . : 192.168.1.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.254

C:\Documents and Settings\Administrator>exit
```

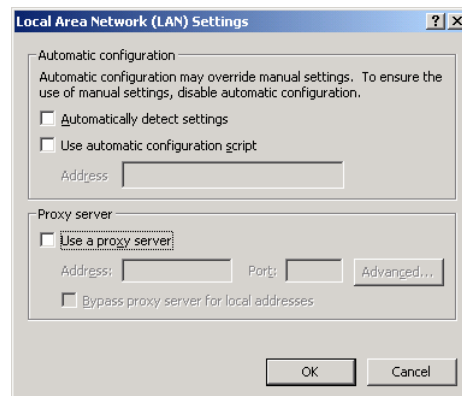
Step 10. Open **Internet Explorer**. From the menu select **Tools** and then click **Internet Options**. A dialog box appears.



- Step 11. From the **Internet Options** window, click the **Connections** tab, and then click the **LAN Settings** button (see figure below).



- Step 12. Now verify that none of the checkboxes have been ticked, and click on the **OK** button. Go to **Chapter 5 – Basic GN-B41G Configuration Settings**.

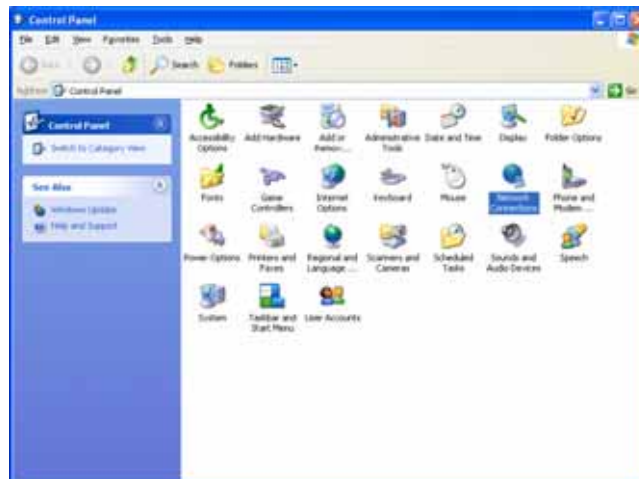


Configuring Settings Under Windows XP

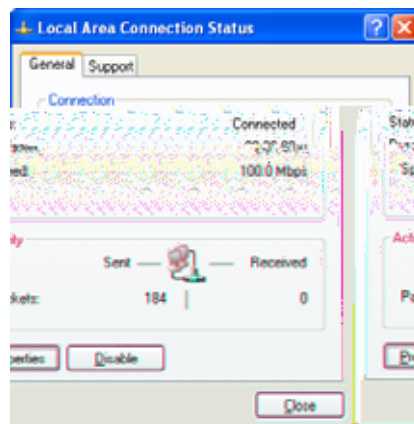
Step 1. Click the **Start** button and then the **Control Panel** icon.



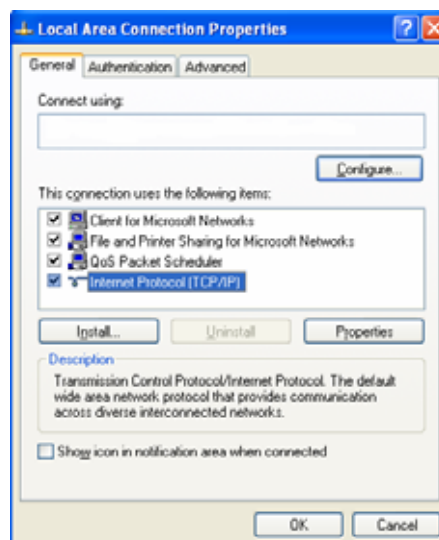
Step 2. Double-click the **Network Connections** icon.



- Step 3. Double-click the **Local Connections** icon, and then click on the **Properties** button.

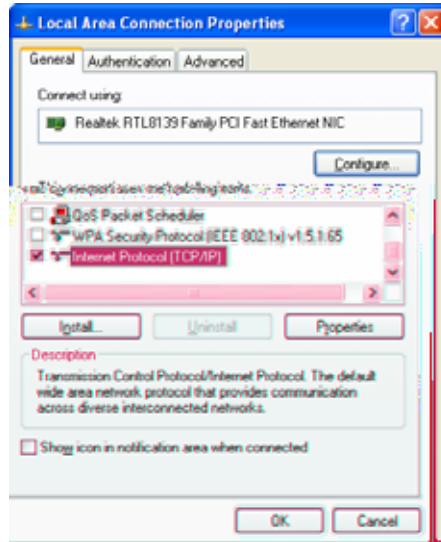


- Step 4. The **Local Area Connection Properties** window will appear. For the applicable Ethernet / wireless adapter, make sure that there is a check in the **Internet Protocol (TCP/IP)** checkbox, then double-click on **Internet Protocol (TCP/IP)**..



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- Step 5. Select both the **Obtain IP address automatically** and **Obtain DNS server address automatically**, options and then click **OK**. Continue clicking on the **OK** button to complete the PC configuration.



Your computer has been configured to obtain an IP address automatically from the GN-B41G. To configure an IP address manually, continue to Step 6, otherwise you may now skip ahead to Step 10.

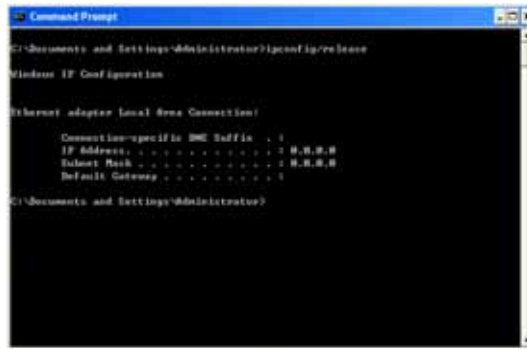
- Step 6. Click the **Start** button. Select **Programs**, then **Accessories** and then click **Command Prompt**.



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GN-B41G Wireless Broadband Router

- Step 7. At the command prompt, type “**ipconfig/release**” and press the **ENTER** key..



```
Command Prompt
C:\Documents and Settings\Administrator>ipconfig/release

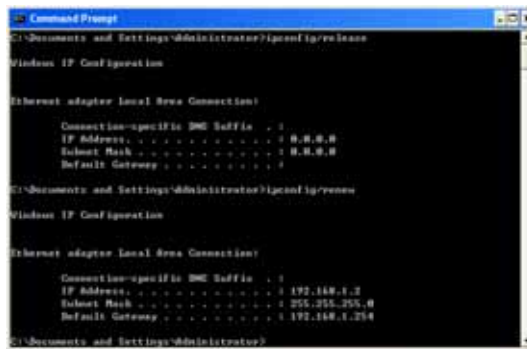
Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : H.H.H.H
    Subnet Mask . . . . . : H.H.H.H
    Default Gateway . . . . . : 

C:\Documents and Settings\Administrator>
```

- Step 8. At the next command prompt, type “**ipconfig/renew**” and press the **ENTER** key..



```
Command Prompt
C:\Documents and Settings\Administrator>ipconfig/release

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : H.H.H.H
    Subnet Mask . . . . . : H.H.H.H
    Default Gateway . . . . . : 

C:\Documents and Settings\Administrator>ipconfig/renew

Windows IP Configuration

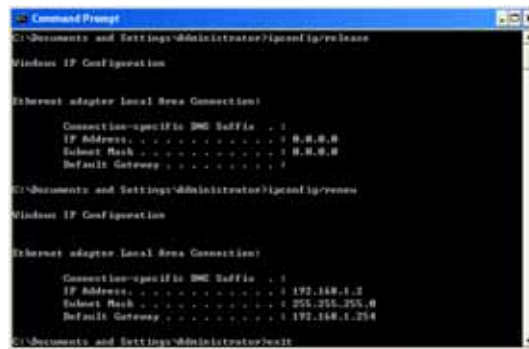
Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : 192.168.1.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.254

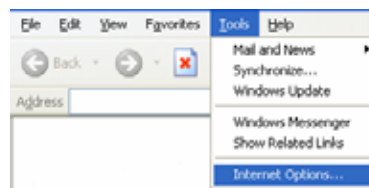
C:\Documents and Settings\Administrator>
```

Note: If the IP address of your GN-B41G, for example, is 192.168.1.254, your computer’s IP address must be 192.168.1.x, where x is anything between 1 and 253. (Note: Each computer in a network has one unique IP located within this range. The default gateway must be 192.168.1.254).

- Step 9. At the command prompt, type in “**exit**” and then press the **ENTER** key to exit and close the window.

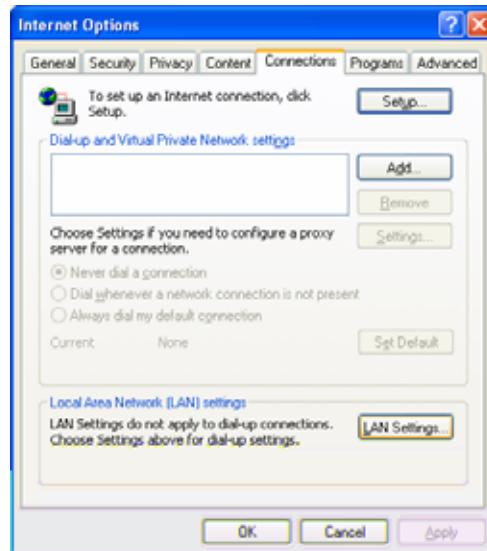


- Step 10. Open **Internet Explorer**. From the menu select **Tools** and then click **Internet Options**. A dialog box appears.

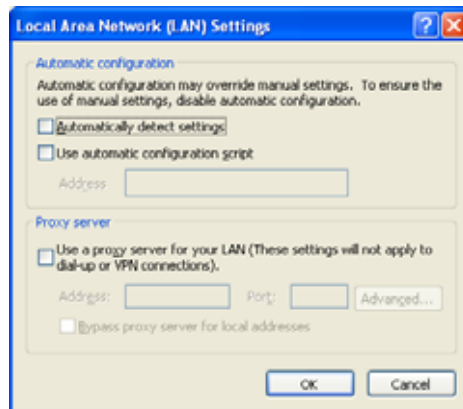


- Step 11. From the **Internet Options** window, click the **Connections** tab, and then click the **LAN Settings** button (see figure below).

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- Step 12. Now verify that none of the checkboxes have been ticked, and click on the **OK** button. Go to **Chapter 5 - Basic GN-B41G Configuration Settings**.

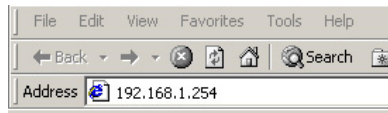


Chapter 5 Basic GN-B41G Settings

You can change the settings of your GN-B41G wireless router using an Internet browser (Internet Explorer or Netscape Navigator) to access the web-based utility.

Login GN-B41G

Step 1. In the address bar of your browser, type “**192.168.1.254**” and then press the **ENTER** key.



Note: If you have more than one Router or the IP is duplicated on the same subnet, please refer to the following priority table to change your IP in order.

Priority 1	“192.168.1.254”, “255.255.255.0”, “192.168.1.1”, “192.168.1.33”
Priority 2	“192.168.2.254”, “255.255.255.0”, “192.168.2.1”, “192.168.2.33”
Priority 3	“172.16.1.254”, “255.255.255.0”, “172.16.1.1”, “172.16.1.33”
Priority 4	“172.17.1.254”, “255.255.255.0”, “172.17.1.1”, “172.17.1.33”
Priority 5	“10.1.1.254”, “255.255.255.0”, “10.1.1.1”, “10.1.1.33”
Priority 6	“10.2.1.254”, “255.255.255.0”, “10.2.1.1”, “10.2.1.33”

Step 2. When the password page appears, use **admin** as the default User Name and default Password. Then click the **OK** button.



Step 3. Once you have logged in successfully, you will see the GN-B41G homepage in your browser window. If this is the first time configuring your router, click the **Smart Setup** button from the side menu. This will launch GIGABYTE's unique router setup utility **Smart Setup** which will automatically detect your Internet connection type. (Refer to the **Using Smart Setup** section in Chapter 5 of this manual).

If you wish to configure your router's Internet setup manually, click the **Setup Wizard** button from the side menu. This Wizard will guide you through setting the necessary parameters .



Using Smart Setup

Your GN-B41G Wireless Router has built-in software – **Smart Setup** – that can automatically detect your Internet connection type. Either a PPOE, Dynamic IP or Static IP will be detected, and the appropriate screen will appear prompting you to enter basic ISP account information.

- Step 1. From the menu on the left, click on the **Smart Setup** button to begin detecting your Internet connection type.



- Step 2. If you have a **PPPoE** type connection, a screen will appear prompting you to enter the User Name and Password provided by your ISP.



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- Step 3. If you are connecting through a **Dynamic IP** address, no further action is required. Please click the **OK** button on the warning window.



- Step 4. If you have a **Static IP** address, a screen will appear prompting you to enter your WAN IP address, WAN subnet mask, WAN gateway, and DSN infor

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Note: An error message will appear if **Smart Setup** cannot detect your Internet connection type. Please verify that the cable from your ADSL/Cable modem to your router is properly connected.



Using Setup Wizard

To manually configure your router's Internet connection, click on the **Setup Wizard** button.

The LAN Setup Screen

- Step 1. Each field on the LAN Setup screen is set to a default value, so it is not necessary to make any modifications. If you wish to change any of the default values, simply highlight and enter the new setting.



LAN IP Address & Subnet Mask Fields

The values in these fields are the router's IP address and Subnet Mask respectively. The default values are 192.168.1.254 for the IP address, and 255.255.255.0 for the Subnet Mask.

DHCP Setup Field

- ❖ **Enable** Select this option to activate the DHCP function of your GN-B41G, automatically assigning IP addresses to all the computers in your network.
- ❖ **Disable** Select this option to de-activate the DHCP function of your GN-B41G. (ie. you have to manually assign different IP addresses to all the computers in your network).

DHCP Start Address/End Address Fields

When the DHCP feature is enabled, your GN-B41G will assign IP addresses to computers on your network that are between the Start Address value and the End Address value.

For example: Assuming that the start address is 192.168.1.1 and end address is 192.168.1.50, the assigned IP address will be between 192.168.1.1 and 192.168.1.50.

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Note: The default IP address of your Router is 192.168.1.254.

Click the **Next** button to continue GN-B41G configuration.

Step 2. Please choose your Internet connection (WAN) type from the list.



- **PPPoE:** If your broadband ISP service is charged by the hour, please select this item, click the **Next** button and then **go to Step 3** of this section
- **Dynamic IP Address:** If your broadband ISP service is a 'fixed-connection', but you do not have a static IP, please select this item, click the **Next** button and then **go to Step 7** of this section.
- **Static IP Address:** If your broadband ISP service is a 'fixed-connection' and a static IP has been assigned, please select this item, click the **Next** button and then **go to Step 11** of this section.
- **PPPoE Unnumber:** If you use PPPoE Unnumber, please select this item, click the **Next** button and then **go to Step 15** of this section.

Connection Type - PPPoE

- Step 3. On the **PPPoE** screen, enter your User Name and Password as provided by your ISP. Click the **Finish** button to continue with setup.



- Step 4. A screen with the message **Setup Completed** appears. Click the **Reboot** button to restart your router so that the settings take effect.



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- Step 5. While the router is rebooting, the screen will display the time remaining.



- Step 6. Once your router has successfully rebooted, it will load the main page of the GN-B41G configuration utility. You are now able to browse the Internet!



Note: If you are configuring the GN-B41G using a wireless connection (ie. wireless adapter), further steps to complete the setup may be required. Please refer to **Chapter 6 Advanced Setup** for details.

Connection Type - Dynamic IP Address

- Step 7. On the **Dynamic IP Address** screen, type in the information provided by your ISP, and then click the **Finish** button to continue with router setup.



- Step 8. A screen with the message **Setup Completed** appears. Click the **Reboot** button to restart your router so that the settings take effect



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- Step 9. While the router is rebooting, the screen will display the time remaining.



- Step 10. Once your router has successfully rebooted, it will load the main page of the GN-B41G configuration utility. You are now able to browse the Internet!



Note: If you are configuring the GN-B41G using a wireless connection (ie. wireless adapter), further steps to complete the setup may be required. Please refer to **Chapter 6 Advanced Setup** for details.

Connection Type - Static IP Address

Step 11. On the **Static IP Address** screen, type in the information provided by your ISP, and then click the **Finish** button to continue with router setup.

Note: If your ISP has assigned you several IP addresses, please select and enter only one.



Step 12. A screen with the message **Setup Completed** appears. Click the **Reboot** button to restart your router so that the settings take effect



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Step 13. While the router is rebooting, the screen will display the time remaining.



Step 14. Once your router has successfully rebooted, it will load the main page of the GN-B41G configuration utility. You are now able to browse the Internet!



Note: If you are configuring the GN-B41G using a wireless connection (ie. wireless adapter), further steps to complete the setup may be required Please refer to **Chapter 6 Advanced Setup** for details

Connection Type - PPPoE Unnumber

Step 15. On the **PPPoE Unnumber** screen, type in the information provided by your ISP, and then click the **Finish** button to continue with router setup.

Note: If your ISP has assigned you several IP addresses, please select and enter only one



Step 16. A screen with the message **Setup Completed** appears. Click the **Reboot** button to restart your router so that the settings take effect



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Step 17. While the router is rebooting, the screen will display the time remaining.



Step 18. Once your router has successfully rebooted, it will load the main page of the GN-B41G configuration utility. You are now able to browse the Internet!



Note: If you are configuring the GN-B41G using a wireless connection (ie. wireless adapter), further steps to complete the setup may be required Please refer to **Chapter 6 Advanced Setup** for details

The Status Page

On the **Status** page the router's current connection and configuration information is displayed.



■ LAN Ethernet Status



- MAC** This field displays the MAC address of the GN-B41G as seen on your wireless network.
- MTU** This specifies the maximum size of the packet permitted for Internet transmission.
- Rx packets** The number of data packets received by the router.
- Tx packets** The number of data packets transmitted by the router.
- Rx bytes** The current bandwidth (receive) on the LAN port.
- Rx bytes** The current bandwidth (transmit on the LAN port).

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■ WAN Ethernet Status



MAC The field displays the MAC address used by the WAN port of the router.

MTU The maximum size of the packet sent from your computer to the Internet.

Rx packets The number of received packets of this port after resetting or manually initial.

Tx packets The number of transmitted packets of this port after resetting or manually initial.

Rx bytes The current bandwidth (receive) on the WAN port.

Rx bytes The current bandwidth (transmit) on the WAN port.

■ Wireless Status



MAC The field displays the MAC address used by the router when wireless.

Rx packets The number of received packets of this wireless port after resetting or manually initial.

Tx packets The number of transmitted packets of this wireless port after resetting or manually initial.

Rx bytes The current reception bandwidth on the Wireless LAN.

Rx bytes The current transmission bandwidth on the Wireless LAN.

■ **ARP Table**

The **ARP Table** displays the associated MAC address and IP address.



■ **DHCP Lease Table**

The **DHCP Lease Table** displays the associated IP assignment .



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■ Routing Table

The **Routing Table** displays the GN-B41G routing details.



The screenshot shows the GIGABYTE web interface with the 'Routing Table' page selected. The table displays the following information:

Destination	Network	Gateway	Metric	UPnP/Port
192.168.1.0	255.255.255.0		0	LAN

■ UPnP Port Mapping Table

The **UPnP Port Mapping Table** displays the GN-B41G port mapping and UPnP details.



The screenshot shows the GIGABYTE web interface with the 'UPnP Port Mapping Table' page selected. The table displays the following information:

Port Mapping Range	UPnP Action	Time	Internal	External	Internal Port	External Port	Protocol	UPnP/Port

The Logout Page

When you have completed making modifications to the configuration settings of your GN-B41G, please click the **Logout** button to end your session.

Note: You will be automatically logged out of the GN-B41G Configuration Utility if your system remains idle for more than 5 minutes.



Chapter 6 Advanced GN-B41G Settings

In this chapter, you will find descriptions for configuring the advanced settings of the GN-B41G wireless broadband router.

The Network Configuration Screen

The **Network Configuration** screen consists of three areas: **LAN Configuration**, **WAN Configuration** and **Session Configuration**.

The LAN Configuration Tab



- **LAN Configuration**

Allows you to modify the LAN parameters.

- **Force IP-MAC Mapping**

Allows you to assign a specific IP address to a specific computer on the network.

Verify the settings, then to apply these to your router, click the **Submit** button..

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The WAN Configuration Tab



This window displays the settings of WAN connections that are available. 06275 480 12975 a

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A screen based on the Internet (WAN) connection type you selected will appear and provide parameter fields.

WAN Configuration Tab – Dynamic IP Address



- **ISP Name, Host Name, Gateway, DNS1 and NS2 Address, DNS Domain Name**

Enter the information provided by your ISP.

- **MTU (Maximum Transmission Unit)**

The largest packet unit is sent from your computer to the network. Any message larger than MTU will be divided into smaller packets before being sent. Please keep the default setting (1500), except for special occasion.

- **NAT Setup**

The Network Address Translation (NAT) is a standard that allows multiple computers on a private network to share a single IP address.

Universal Plug and Play (UPnP) is a technology based on Internet standards and technologies, such as TCP/IP, HTTP, and XML, that allows devices on a network to automatically connect with other devices.

■ **UPnP Delete Time**

Select the duration that UPnP will be active. Default setting is 0.

Note: If the WAN IP address and LAN IP address obtained from DHCP server are from the same subnet, the LAN IP address will *automatically* change to another subnet and reboot the router.

Verify the settings. Then to apply these to your router, click the **Finish** button

WAN Configuration Tab - PPPoE



■ **ISP Name, User ID, Password, Service Name, AC Name, DNS1 and DNS2 Address, DNS Domain Name**

Enter the information provided by your ISP.

■ **Authentication Type**

Select one of the following authentication settings: **Auto**, **CHAP** or **PAP**. The default setting is “**Auto**” (automatic authentication).

Challenge Handshake Authentication Protocol(CHAP) is the most common authentication method using PPP dialup method. With CHAP, the server will send a challenging signal to a remote Router, which will send back an encryption key.

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Password Authentication Protocol (PAP) is a simple PPP authentication protocol allowing a Router to send a simple user ID and password to another Router for authentication. PAP has been defined in RFC1334.

■ **Connection**

Automatic When the GN-B41G is powered on, it automatically establishes a connection with the network. If the link becomes disconnected for any reason, the GN-B41G will re-connect automatically.

Manual When you click "connection", the system will establish a connection to the network. If the link becomes disconnected for any reason, the GN-B41G will **not** re-connect automatically.

■ **Dial on Demand**

Enable When there is no Internet activity for a period, the WAN connection will automatically end. If a browser is launched again, the GN-B41G will automatically connect to Internet.

Disable When there is no Internet activity for a period, the WAN connection will automatically end. If a browser is launched again, the GN-B41G will **not** automatically connect to Internet.

WAN Configuration Tab - Static IP Address

WAN Configuration Tab - PPPoE Unnumber

PPPoE Unnumbered is a PPPoE service provided by an ISP. When using PPPoE Unnumbered, you can have more than one Global IP address, of which the number can be 8 or 16 addresses according to the ISP service policy. Among these Global IP addresses, one is used as Router's WAN IP address and the others can be used by the downstream of the Router.



- ***ISP Name, User ID, Password, Service Name, AC Name, DNS1 and DNS2, DNS Domain Name, WAN IP Address, WAN Subnet Mask***

Enter the information provided by your ISP.

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The Session Configuration Tab

The **Session Configuration** screen displays the settings of the **Main Session** and **Backup Session**.



Select a WAN connection type for the Main Session from the drop-down menu and select Backup Session type. The Backup Session will become active if the Main Session fails to establish a connection to the Internet.

In the event that neither the Main Session nor the Backup Session can successfully establish a connection with your ISP, the following process will apply:

- Automatic: Main -> Backup -> Main -> Backup (attempts to establish connection are repeated until successful)
- Manual: Main -> Backup (Backup Session attempts only once)

Note: The Backup Session can have a specific LAN type connection assigned.

The Wireless Configuration Screen

The **Wireless Configuration** screen allows you how to configure the Router's WLAN function.

The 802.11g Tab



- **Region**

Indicates the geographical region you are in. Verify that the region indicated is correct. If not, please contact your local distributor or dealer immediately.

- **HW Info**

Displays the wireless chipset.

- **RF Type**

Select the radio frequency (RF) standard or 'wireless mode' from the drop-down list.

- **Channel**

The router has channel 6 as the default channel. The channel can be changed (if there are other wireless networks operating in your area) by selecting a channel from the drop-down list.

- **SSID**

The SSID (Service Set Identifier) is the name of your wireless network. The SSID is up to 32 ASCII characters in length and case sensitive (ie. Letters in upper case "A~Z" and lower case "a~z" are unique). The default SSID is "GIGABYTE". To change the SSID, type in the SSID

you want to use in the SSID field and click **Submit**. If you make a change to the SSID, any wireless devices on your network must also be reconfigured to connect to the new network name.

■ **Rate**

Select a wireless data transmission rate from the drop-down list. The default setting **auto/best** automatically detects and sets the optimum transmission rate.

■ **Hidden SSID**

For security purposes, you may choose to hide your network's SSID by selecting **enable** from the drop-down list. This will prevent computers scanning for the presence of wireless networks to detect your network name. The default setting is **disable**.

■ **Authentication Type**

Select an authentication type from the drop-down list. The default setting is **Open System**.

Open System: The sender and the receiver do NOT share a secret key. Each party generates its own key-pair and asks the receiver to accept a randomly generated key. Once accepted, this key will only be used for a short period of time. Afterwards, a new key will be generated and agreed upon.

Shared Key: Authentication is based upon a secret key shared by both the sender and the receiver. If **Shared Key** is selected, you cannot choose the WEP **disable** option.

WPA Pre-shared key:, The WPA Pre-shared Key authentication standard uses a password or "key" between 8 and 32 characters. This encryption key is changed after every dialog box using the Temporary Key Integrity Protocol (TKIP), which allows users to change keys based on dialog box and automatically synchronize keys between devices on the network. The TKIP encryption algorithm is stricter than the one used by WEP but is based on the same standard.

WPA: The 802.1X authentication protocol, allows users to authenticate wireless network access through a RADIUS Server and is a required by WPA standard. If no RADIUS Server exists in your network environment, you still can

use WPA through the use of WPA Pre-shared Key.

■ **WEP Key**

The GN-B41G supports two WEP standards:
64-bit, 128-bit. Select either **64-bits** or **128-bits** from the drop-down list activate WEP encryption. The **64-bits** encryption uses 40 bits as a secret key, (user-defined) and the remaining 24 bits are reserved. The **128-bits** encryption uses 104 bits as a secret key, (user-defined) and the remaining 24 bits are reserved.

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The MAC Access Control Tab



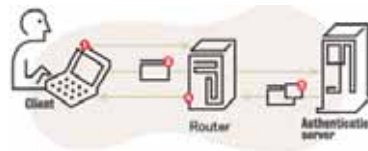
The **MAC Access Control** screen allows you to specify the Media Access Controller (MAC) address of up to 32 devices on your network. Only those devices listed in the table will have access to transmit data through the GN-B41G. The default setting is **Disable**.

The Radius Server Configuration Tab



A Radius Server provides a centralized, server-based authentication of client access to the network.

- 1) A user will send a "start" message to a Router, which requests the identity of the user.
- 2) The user transmits a packet with identity information, and the Router forwards this packet to an authentication server.
- 3) The authentication server sends an "accept" packet to the Router.
- 4) Router will put the user port in authorized status and allows data transmission.



- **RADIUS Server IP**

Assign an IP address for the RADIUS Server.

- **RADIUS Server Port**

Enter a value within the range 1~65536 for the port.

- **Shared Secret**

Enter a password up to 256 characters (uppercase "A~Z", lowercase "a~z" or numeric "0~9") in length.

Verify the settings, then to apply these to your network, click the **Submit** button.

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The WDS Tab



Wireless Distribution System (WDS) technology enables several access points to increase the coverage of a wireless network. Although enterprises or home users can reduce most wiring problems by using access points that support WDS, they still need cables to connect external ISP.

Advantages of WDS:

1. **Greater Convenience:** It eliminates wiring headaches and connects all devices wirelessly except for the connection between ISP and the Router in the networking environment.
2. **Extended Range:** It can increase the network coverage through the deployment of additional access points directly where they are needed.

Note: Your GN-B41G can only create a WDS environment with a GIGABYTE Access Point (models: GN-A17GU, GN-A11G).

The Static Routing Table Screen

The **Static Routing Table** displays the GN-B41G routing settings. To add or modify, enter a value into the field and click the **Submit** button.



- **Destination IP**

Enter the Destination IP address that will be assigned to a specific network or host.

- **Netmask**

Enter the netmask associated with the Destination IP.

- **Gateway**

Enter an IP address that will be assigned to the interface connecting to subnets.

- **Metric**

The "**Metric**" value is a number between 1 and 15 that represents the number of Routers between your network and the destination. Generally, setting the Metric value as either 2 or 3 is sufficient for most applications. If this is a direct connection, please set the value to 1. The default setting is 1.

The Virtual Server Screen

The **Virtual Server** screen allows you to manage the virtual server settings of the GN-B41G. There are two virtual server options: router has only one IP address or router has multiple IP addresses (8 or 16 in most instances). If you have only one IP address click on the **PPPoE/DHCP/Static** tab. If you have multiple IP addresses, click on the **PPPoE Unnumber** tab. The DMZ Support tab allows you to enable a Demilitarized Zone (Zone) on your network.

The DMZ Tab



With a firewall setup, it is necessary to configure a Demilitarized Zone (DMZ) when you want to execute some Internet applications (e.g. Internet games, video conferencing, or VPN connections) or create a server connecting to the Internet through the Intranet. The DMZ feature allows you to specify the IP address of the computer that will be placed outside the firewall of your network. Enter the IP Address of your computer (eg. 192.168.1.2) into the LAN IP Address field and click the **Submit** button.

The PPPoE/DHCP/Static Tab



A Virtual Server allows computers on the WAN side of the network to connect with a PC server on the LAN side of the network. For example, a PC on the LAN side with an IP address of 192.168.1.1 and the following virtual server settings:

- ▶▶ Protocol: TCP
- ▶▶ Port: 21
- ▶▶ Virtual Server IP: 192.168.1.1
- ▶▶ Enable: enable

Now, any PC on the WAN side of the network can connect to the internal FTP server (192.168.1.1) using the IP address on the WAN end of the GN-B41G.

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The PPPoE Unnumber Tab



In instances where multiple global IP addresses exist each IP address requires its own setting.

Note: Your ISP may provide you with a list of “Global IP”, for example **61.222.10.1 ~ 61.222.10.7**

For example, a PC on the LAN side with an IP address 192.168.1.1 and the following settings:

- ▶▶ Global IP: 61.222.10.2
- ▶▶ Protocol: TCP
- ▶▶ Port: 21
- ▶▶ Virtual Server IP: 192.168.1.1
- ▶▶ Enable: enable

Now, the PC with the Global IP 61.222.10.2 is able to connect to the internal FTP server (192.168.1.1) using the IP address at the WAN end of FTP GN-B41G.

The Firewall Rule Screen

The Firewall Rule screen displays your network security settings. Use this screen to create network security policies to prevent unauthorized access to your network.

The Security Configuration Tab

Select security configuration options from this page including **Security One-Touch Setting**, **Stealth Mode** and **Unlawful Computer Access Detection**.



Note: When any item in Security One-touch setting combined with “**The full state packet inspection is used**” under the **Unlawful Computer Access Detection** group are checked, the **URL Blocking** feature becomes unavailable.

The VPN Pass Through Tab



A Virtual Private Network (VPN) is a type of secured private network connection, built upon publicly-accessible infrastructure such as the Internet. Typically, VPNs employ a certain combination of encryption, digital certificates, strict user authentication and access control to provide security to the data they deliver. They usually provide connectivity to various devices behind a gateway or firewall.

The GN-B41G supports Internet-industry standard technologies to provide open and interoperable VPN solutions, including Internet Protocol Security (IPSec), Layer 2 Tunneling Protocol (L2TP) and Point-to-Point Tunneling Protocol (PPTP).

■ ***PPTP Pass Through setting***

Point-to-Point Tunneling Protocol (PPTP) allows you to establish a connection to an enterprise network. With PPTP, if your device is located within a local network, you can share files and other data.

■ ***IPSec Pass Through setting***

IP Security (IPSec) provides authentication and encryption. Since it is mainly a Layer 3 technology, it can secure all data on the network. It has become a standard protocol used with Virtual Private Networks (VPNs).

■ ***L2TP Pass Through setting***

Layer 2 Tunneling Protocol (L2TP) is an extension of the Point-to-Point Tunneling Protocol and is also used to establish virtual private networks.

If administrators allow a host to enable VPN pass through in the configuration, the Router will automatically set up a virtual server and firewall for this host. All VPN packets will be transparent and redirected to this host. Even if a VPN server is located on the LAN or at WAN side of the network, a VPN pass through functions normally. For different VPN pass through settings, only one host can be configured as a “pass through”.

The Static Rule Tab

The Static Rule screen allows you to manually edit the firewall rule table, thereby helping to protect your network from external attacks as well as provide a method to restrict Internet access to users on your network. Additionally, it can filter out specific packets to trigger the Router to place an outgoing connection.



To edit the current settings, click the **Add** button. The following screen will appear.



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- **Rule Number (No.)**

Enter a number for the rule between 1 and 64. Rules are ranked in priority based on their number in descending order, so that rule 1 is given the highest priority and rule 64 the lowest priority.

- **Policy**

Select the **accept** or **drop** policy option.

- **Direction**

Specify the packet flow direction according to data filtering rule.

- W->L:** WAN to LAN, filtering incoming packets
- L->W:** LAN to WAN, filtering outgoing packets

- **Protocol**

Select a setting from the drop-down list to specify the protocol (s) for the static rule.

- **Log**

Enable or disable the log feature.

The DNS Configuration Screen



■ **DNS Relay**

When DNS query packets are received by the GN-B41G a response signal is sent to the host that sends the DNS query packet. Then, users have to set the IP address of the Router as the IP address of DNS. The default value of DNS relay is **Enable**.

■ **Dynamic DNS**

The GN-B41G offers a **Dynamic Domain Name Server** service that allows you to assign a fixed host and domain name to a dynamic Internet IP address. This gives Internet users the ability to connect with a virtual sever using a URL, rather than with an IP address. Before using this feature, please register an account with the dynamic DNS service. (<http://www.dyndns.org>)

1. Select either to **Disable** or **Enable** the Dynamic DNS service.
2. Select the name of your dynamic DNS service provider.
3. Enter the Domain Name (or Host Name) provided by your dynamic DNS provider.
4. Enter the Login Name (or User Name) and Password for your dynamic DNS account.
5. If your dynamic DNS provider allows using wildcards in resolving your URL, you may select **Enable** to activate this function.

The URL Blocking Configuration Screen

The URL Blocking Configuration screen allows you to restrict access based upon specific web addresses and/or keywords.



1. To activate the **URL Blocking** feature, select the **Enable** option.
2. Then enter the keyword or domain in the Keyword field that you wish to block.

Verify the settings and click the **Submit** button to accept these settings. To apply these settings, it is necessary to reboot the GN-B41G.

Note: The URL Blocking feature will not be enabled if any item in Security One-touch setting and “**The full state packet inspection is used**” under the **Unlawful Computer Access Detection** group are checked.

Chapter 7 Using Management Tools

The instructions in this chapter will help you how to use the management tools of the web-based utility to effectively manage your GN-B41G wireless broadband router.

The PPP Monitor Screen

The **PPP Monitor** screen displays the WAN (Internet) connection status. Click the **Disconnect** button to end your current session. Click the **Connect** button to re-connect to an ISP.



The Reboot Screen

The Reboot screen allows you to reboot the GN-B41G.



The Initialization Screen

The **Initialization** screen allows you to reset the GN-B41G back to its original factory settings. To initialize the router, use the tip of a pencil or a paperclip to press the **init** button (located on the bottom of the unit).



The Change Password Screen

The **Change Password** screen allows the administrator to create a new password for the GN-B41G. To change an existing password, enter your account and new password and after re-typing the password to confirm, click the **Submit** button.

Note: Remember to enter this *new* password when logging into the GN-B41G.



The Change WAN MAC Screen

The **Change WAN MAC** screen allows you to assign a new MAC address. If your ISP asks you to use the original MAC address, choose the **Assign WAN MAC** option and enter a new WAN MAC address in the **New WAN MAC Address** field and click the **Submit** button. If you want to restore the factory default MAC address, choose the **Restore Default WAN MAC** option and click the **Submit** button.



The Upgrade Firmware Screen

The Upgrade Firmware screen allows you to update the current GN-B41G firmware to the latest version directly from the Gigabyte website. Click the **Browse** button to locate the firmware file that you wish to update and then click **Upgrade**.



The Backup / Restore Screen

The **Backup / Restore** screen allows you to save the current configuration settings of the GN-B41G as a temp file onto your computer. To revert the GN-B41G to previously saved configuration settings, click the **Browse** to locate the saved file. Then, click the **Restore** button.



The Log Information Screen

The GN-B41G can keep logs of firewall activity, WAN connections and UPnP logs. Click on **Firewall Log**, **WAN Connection** or **UPnP Log** to view the list.

The Firewall Log Tab



The WAN Connection Tab



The UPnP Log Tab



The Save Maintenance Screen

The Save Maintenance screen allows you to save logs and status information as a file which can then be sent to the Technical Support team at GIGABYTE.



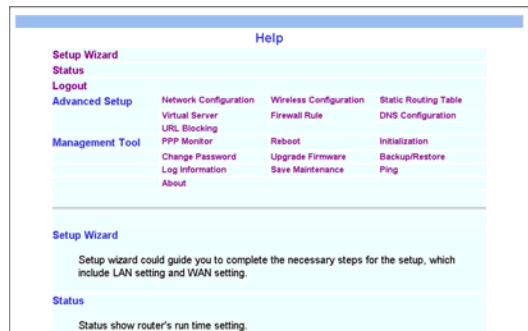
The Ping Screen

The **Ping** screen allows you to perform a test to determine whether a particular IP address is online.



The Help Screen

The **Help** screen is where you can access online guide to assist in configuring the GN-B41G.



The About Screen

The **About** screen displays the model name and firmware version of the router.



Chapter 8 Troubleshooting

This sections provides solutions to common problems that may occur during installation, configuration or use of the GN-B41G.

Q: I can't remember the password or IP address of the router.

A: You can create a new new password by pressing the "Init" button on the bottom of the router. The Router will reboot and all settings will be restored to their default values.

Q: I can't connect to the Internet

A:

1. Check that the power cord is connected properly, and the router's power LED is lit green.
2. Verify that all the configuration settings are correct.
3. Check that your ADSL/Cable Modem is operating normally, and/or you have ISP service available.
4. Check that all network cabling is properly connected.

Q: I can't access the GN-B41G Web Configuration Utility.

A:

1. Please check the Ethernet between the PC and the Router is properly connected.
2. Make sure your computer's IP address is on the subnet where the Router locates.
3. Make sure you are using the correct login information.

Q: Where in the network do I connect the router?

A: In a typical environment, the GN-B41G is installed between ADSL/Cable Modem and LAN. Plug the Router into the Ethernet port of ADSL or Cable Modem.

Q: Can the GN-B41G work as a DHCP server?

A: Yes. GN-B41G has a built-in DHCP server function so that apart from all the standard DHCP functions, it helps prevent IP conflicts.

Q: What is WEP?

A: Wired Equivalent Privacy (WEP) is a security mechanism defined within the 802.11 standard. It is designed to make the link integrity of the wireless medium equal to wired cable. Data privacy mechanism based on a 40 bits (128 bit optional) shared key algorithm, as described in the IEEE 802.11 standard.

Q: What is the IEEE802.11g standard?

A: The IEEE 802.11g standard specifies data rates of up to 54 Mbps/s in the 2.45-GHz band. It uses Orthogonal Frequency Division Multiplexing (OFDM), which is provided by this standard and is compatible with 802.11b standard offering speeds of about 11 Mbps/s. This standard uses Complementary Code Keying (CCK) modulation. Both 11g and 11b can operate at a range of up to 300 feet.

Appendix A: Glossary

ADSL

Asymmetric digital subscriber line (ADSL) is a new modem technology that converts existing twisted-pair telephone lines into access paths for high-speed communication of various sorts.

Auto-MDI/MDIX

On a network hub or switch, an auto-MDI/MDIX port automatically senses if it needs to act as a MDI or MDIX port. The auto-MDI/MDIX capability eliminates the need for crossover cables.

Auto-negotiate

To automatically determine the correct setting. The term is often used with communications and networking

DHCP

The Dynamic Host Configuration Protocol (DHCP) is an Internet protocol for automating the configuration of computers that use TCP/IP. DHCP can be used to automatically assign IP addresses, to deliver TCP/IP stack configuration parameters such as the subnet mask and default router, and to provide other configuration information such as the addresses for printer, time and news servers.

DMZ

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 stores company data. Typically, the DMZ contains devices accessible to Internet traffic, such as Web (HTTP) servers, FTP servers, SMTP (e-mail) servers and DNS servers.

DNS

The Domain Name System (DNS) is a distributed Internet directory service. DNS is used mostly to translate between domain names and IP addresses, and to control Internet email delivery. Most Internet services rely on DNS to work. If DNS fails, web sites cannot be located and email delivery service will be suspended.

Dynamic IP Address

An IP address is automatically assigned to a user's AP in a TCP/IP network typically by a DHCP server.

Firewall

A system designed to prevent unauthorized access to or from a private network. Firewalls can be implemented in both hardware and software, or a combination of both. Firewalls are frequently used to prevent unauthorized Internet users from accessing private networks connected to the Internet, especially intranets. All messages entering or leaving the intranet pass through the firewall, which examines each message and blocks those that do not meet the specified security criteria.

Gateway

A device, usually a Router, that connects hosts on a local network to other networks.

IP Address

Every PC on the Internet has a unique identifying number, called an IP Address. A typical IP address looks like this: 216.27.61.137

IPSec

IPSec stands for IP Security. It provides authentication and encryption over the Internet. It functions at Layer 3 and thus secures everything on the network. It has become a standard protocol used for virtual private networks (VPNs).

MAC Address

On a local area network (LAN) or other network, the MAC (Media Access Control) address is your computer's unique hardware number. Usually written as: 01:23:45:67:89:ab

MTU

The size in bytes of the largest packet that can be sent or received.

NAT

A technique by which several hosts share a single IP address for accessing to the Internet.

Ping (Packet Internet Groper)

A utility to determine whether a specific IP address is accessible. It works by sending a packet to the specified address and waiting for a reply. PING is used primarily to troubleshoot Internet connections.

SSID

SSID is the name representing the Router in WLAN.

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PPPoE

Point-to-Point over Ethernet is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.

Router

A device that forwards data packets along networks. A router is connected to at least two networks, commonly two LANs or WANs or a LAN and its ISP network. Routers are located at gateways, the places where two or more networks connect.

Subnet Mask

A mask used to determine which subnet an IP address belongs to. An IP address has two components, the network address and the host address. Subnetting enables the network administrator to further divide the host part of the address into two or more subnets.

TCP/IP

TCP/IP (Transmission Control Protocol/Internet Protocol), the suite of communications protocols used to connect hosts on the Internet.

VPN

Virtual private networks are secured private network connections, built on top of publicly accessible infrastructure, such as the Internet or the public telephone network. VPNs typically employ some combination of encryption, digital certificates, strong user authentication and access control to provide security to the traffic they carry. They usually provide connectivity to many machines behind a gateway or firewall.

WAN

Wide Area Network, a communication network that covers a relatively broad geographic area, consisting of two or more LANs. Broadband communication over the WAN is often through public networks such as the ADSL or Cable systems, or through leased lines or satellites. To simplify it, please image network as a WAN.

WEP

WEP (Wired Equivalent Privacy) is a data privacy mechanism based on a 64/128-bit shared key algorithm, as described in the IEEE 802.11 standard.

Appendix B: Specifications

General	
Standards	IEEE802.3(10Base-T), IEEE802.3u(100Base-TX), IEEE802.11b/g(Wireless)
Ports / Buttons	LAN – 4 ports 10/100 Ethernet (auto-MDIX), RJ-45 WAN - 10/100 Ethernet (auto-MDIX), RJ-45 One Init (Reset) button
Power	External: 5V DC, 2A
Wireless	
Frequency Band	2412 ~ 2483 MHz (subject to local regulation)
Modulation Technology	OFDM and DSSS
Modulation Techniques	64QAM, 16QAM, QPSK, BPSK, DBPSK, DQPSK, CCK
Data Rates	54, 48, 36, 18, 12, 11, 9, 6, 5.5, 2, 1 Mbps (auto fallback)
Output power	20 dBm @ Nominal Temp Range
Receive Sensitivity	-68 dBm @ 54Mbps data rate at nominal temperature
Antenna	One external antenna
Wireless Range	<i>Outdoor:</i> 100 to 300m <i>Indoor:</i> 30 to 100m
Regulatory and Environmental Compliance	
EMC certification	FCC part (USA) CE(Europe)
Temperature Range	<i>Operating:</i> 0 to 40 °C, <i>Storage:</i> -20 to 65 °C
Humidity	10% ~ 85% Non-condensing
Protocols	
Routing Protocols	Dynamic, Static Routing with TCP/IP NAT, PPTP, PPPoE VPN Pass-Through (IPSec, L2TP) DHCP (Client & Server)
Security	64/128 bit WEP; WPA-PSK; WPA
Mechanical	
LEDs	Power/Status; WLAN; LAN (1-4); WAN
Gross Weight	240± 5g
Dimensions	110mm x 160mm x 25mm

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