DG-HR3420

300Mbps WI-FI BROADBAND 3G HOME ROUTER

WITH USB PORT

User Manual

V1.0

2014-09-10

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Trademarks:

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacturer must therefore be allowed at all times to ensure the safe use of the equipment.

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1. Product Introduction

1-1 Introduction and Safety Information

Thank you for purchasing DG-HR3420 300Mbps 802.11n Wireless Broadband Home Router! DG-HR3420 is the best choice for Small office / Home office users, all computers and network devices can share a single xDSL / cable modem internet connection at high speed. Easy install procedures allow computer users to setup a network environment in very short time - within minutes, even inexperienced users. When the number of your computers and network-enabled devices grow, you can also expand the number of network slots by simply connecting a hub or switch, to extend the scope of your network.

All computers and IEEE 802.11b/g/n wireless-enabled network devices including PDA, cellular phone, game console and more can connect to this wireless router without additional cabling. With a compatible wireless card installed in your PC, you can transfer files up to 300Mbps (transfer data rate).

Other features of this router include:

- High Internet Access throughput.
- Wireless speed up to 300Mbps.
- Allows multiple users to share a single Internet line.
- Shares a single Cable or xDSL internet connection.
- Access private LAN servers from the internet.
- Four wired LAN ports (10/100M) and one WAN port (10/100M).
- Works with IEEE 802.11b/g/n wireless LAN devices.
- Supports DHCP (Server/Client) for easy IP-address setup.
- Supports multiple wireless modes like: AP, Wireless Bridge and Universal Repeater.
- Advanced network and security features like: Special Applications, QoS, DMZ, Virtual Servers, Access Control, Firewall.
- Allows you to monitor the router's status like: DHCP Client Log, System Log, Security Log and Device/Connection Status.
- Easy to use Web-based GUI for network configuration and management purposes.
- Remote management function allows configuration and upgrades from a remote computer (over the Internet).
- Provides Auto MDI / MDI-X function for all wired Ethernet ports.

1-2 Safety Information

In order to keep the safety of users and your properties, please follow the safety instructions as mentioned below:

1. This router is designed for indoor use only; **DO NOT** place this router outdoor.
2. **DO NOT** place this router close to a hot or humid area, like kitchen or bathroom. Also, do not leave this router in the car during summer.
3. **DO NOT** pull any connected cable with force; disconnect it from the router first.
4. If you want to place this Router at a height or mount on the wall, please make sure it is firmly secured. Falling from a height would damage the router and its accessories and warranty will be void.
5. Accessories of this router, like antenna and power supply, are dangerous to small children. **KEEP THIS ROUTER OUT OF REACH OF CHILDREN**.
6. The Router will get heated up when used for long time (This is normal and is not a malfunction). **DO NOT** put this Access Point on paper, cloth, or other flammable materials.
7. There's no user-serviceable part inside the router. If you find that the router is not working properly, please contact your dealer of purchase and ask for help. **DO NOT** disassemble the router, warranty will be void.
8. If the router falls into water when it's powered, **DO NOT** use your hands to pick it up. Switch the electrical power off before you do anything, or contact an experienced electrical technician for help.
9. If you smell something strange, or even see some smoke coming out from the router or power supply, remove the power supply or switch the electrical power off immediately, and call the dealer of purchase for help.

1-3 System Requirements

- Notebook or desktop computer with network adapter (wired/wireless)
- Internet connection, provided by xDSL or cable modem with a RJ-45 Ethernet port.
- Windows 98/ME/2000/XP/Vista
- Web browser (Microsoft Internet Explorer 4.0 or above, Netscape Navigator 4.7 or above, Opera web browser, or Safari web browser).
- An available AC power socket (100 – 240V, 50/60Hz)

1-4 Package Contents

Before you start using this router, please check if there's anything missing in the package, and contact your dealer of purchase to claim for missing items:

- DG-HR3420 Wireless Broadband Home Router
- Power adapter (5V DC, 1.5 A)
- Rubber Feet (4 Nos.)
- Quick Installation Guide
- Installation Guide CD (includes User Manual & QIG)
- Patch Cord (1 No.)
- USB extension cable (1 no.)

2. Hardware Installation

2-1 Get Familiar with your new wireless broadband router

2-1-1 Front Panel

LED Name	LED Status	Indication
Power (PWR)	On	Router is switched on and correctly powered.
WAN	On	WAN port is connected.
	Off	WAN port is not connected.
	Blinking	WAN activity (transferring or receiving data).
LAN(1-4)	On	LAN port is connected.

	Off	LAN port is not connected.
	Blinking	LAN activity (transferring or receiving data).
WLAN	On	Wireless network is switched on.
	Off	Wireless network is switched off.
	Blinking	Wireless LAN activity (transferring or receiving data).
WPS	On	A wireless device has been successfully added to the network by WPS function.
	Off	WPS process is not initiated.
	Blinking	A wireless device is connecting to the network by WPS function.
USB	On	USB Device is connected
	Off	USB Device is not connected

2-1-2 Back Panel

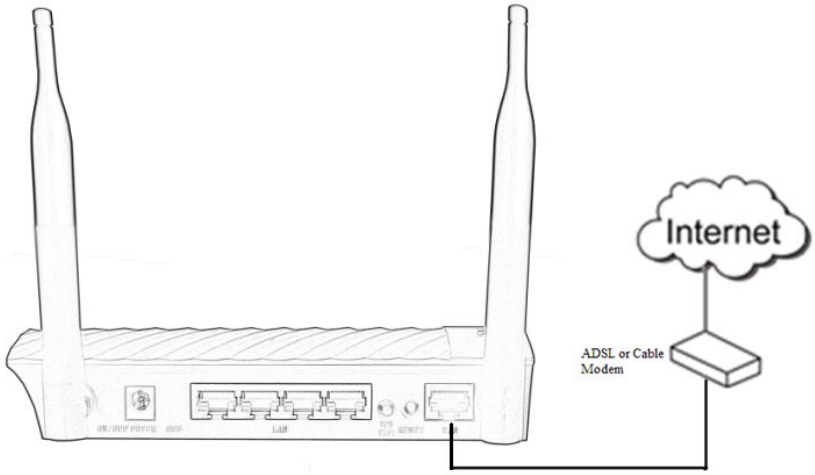
Interfaces	Description
Antennas	These antennas are 5dBi dipole omnidirectional antennas.
Power on/off button	Press this button to power on/off the router.
Power	The Power socket is where you will connect the power adapter. Please use the power adapter provided with this Wireless Router.
LAN (1 – 4)	Local Area Network (LAN) ports 1 to 4.
WPS/WIFI	The WPS/WIFI button has two functions: WPS: Press this button for more than 5 seconds to initiate WPS. WIFI: Press this button for less than 5 seconds to enable WLAN.
Reset	Reset the router to factory default settings (clear all settings). Press this button and hold for approximately 5 seconds to restore all settings to factory defaults.
WAN	Wide Area Network (WAN / Internet) port.
USB Port	To connect compatible USB Devices (3G Dongle, USB Mass Storage)

2-2 Typical install

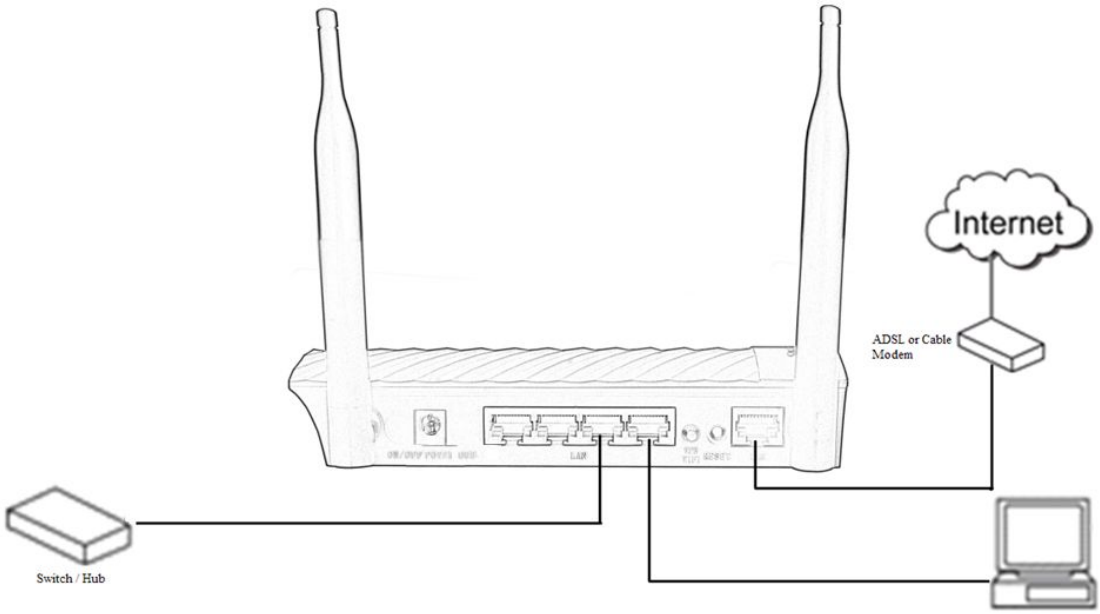
Hardware Installation:

Please follow the below mentioned instructions to build the network connection between your new WIRELESS router and your computers, network devices:

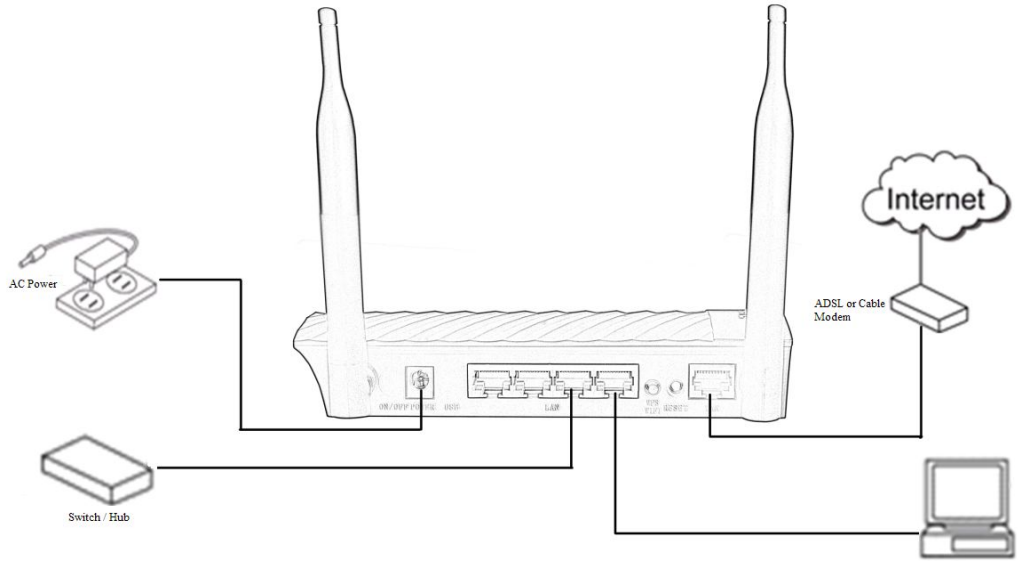
1. Connect your xDSL / cable modem to the WAN port of the router by an Ethernet cable.



2. Connect all your computers, network devices (switch / hub) to the LAN port of the router.



3. Connect the power adapter (5V DC / 1.5A) to the wall socket, and then connect it to the '**Power**' socket of the router.



3. Please check all LEDs on the front panel. Power LED '**PWR**' should be steadily ON, WAN and LAN LEDs should be ON. Check if the computer/network device connected to the respective port of the router is powered ON and correctly connected. If power LED '**PWR**' is not ON, or any LED you expected is not ON, please recheck the cabling.

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3. Quick Install Guide

3-1 Connecting to wireless broadband router by web browser

After the network connection is setup, next step is to setup the router with proper network parameters, so it can work properly in your network environment.

Please use the web browser to configure the router. A computer with wired Ethernet connection to the router is required for this first-time configuration.

Before you start to configure the router (**default IP 192.168.1.1**), please configure the IP address of the computer in the same network class as that of the router.

Set the Network Configurations:

1. On your computer desktop right click "**My Network Places**" and select "**Properties**".

2. Right click "**local Area Network Connection**" and select "**Properties**".

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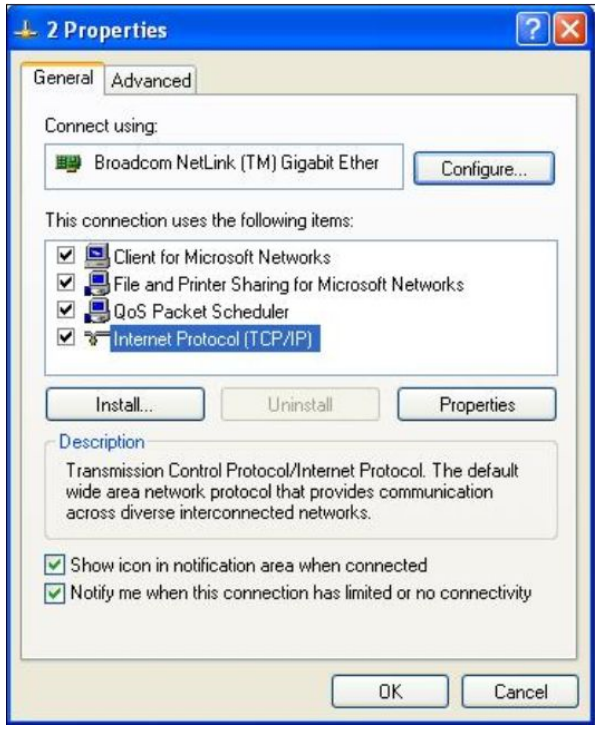
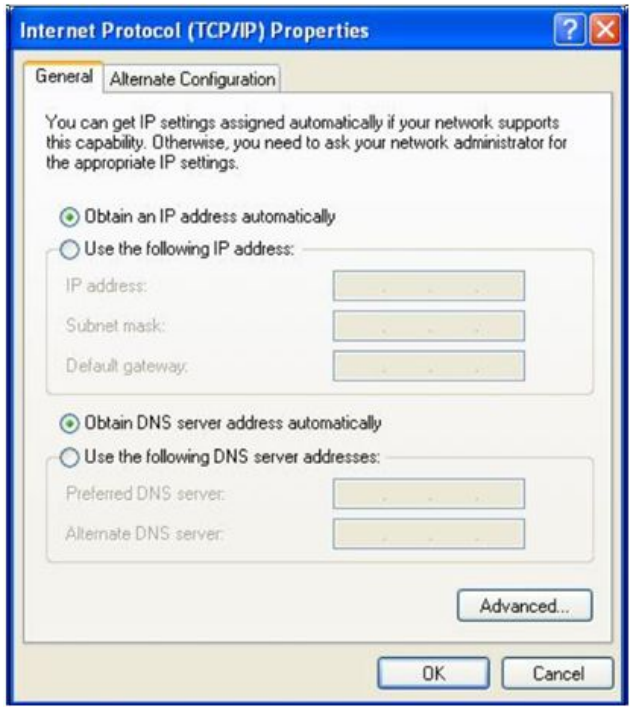
3. Select "**Internet Protocol (TCP/IP)**" and click "**Properties**".



4. Select "**Obtain an IP address automatically**" or select "**Use the following IP address(S)**".
   A. Select "**Obtain an IP address automatically**" and "**Obtain DNS server address automatically**". Click "**OK**".



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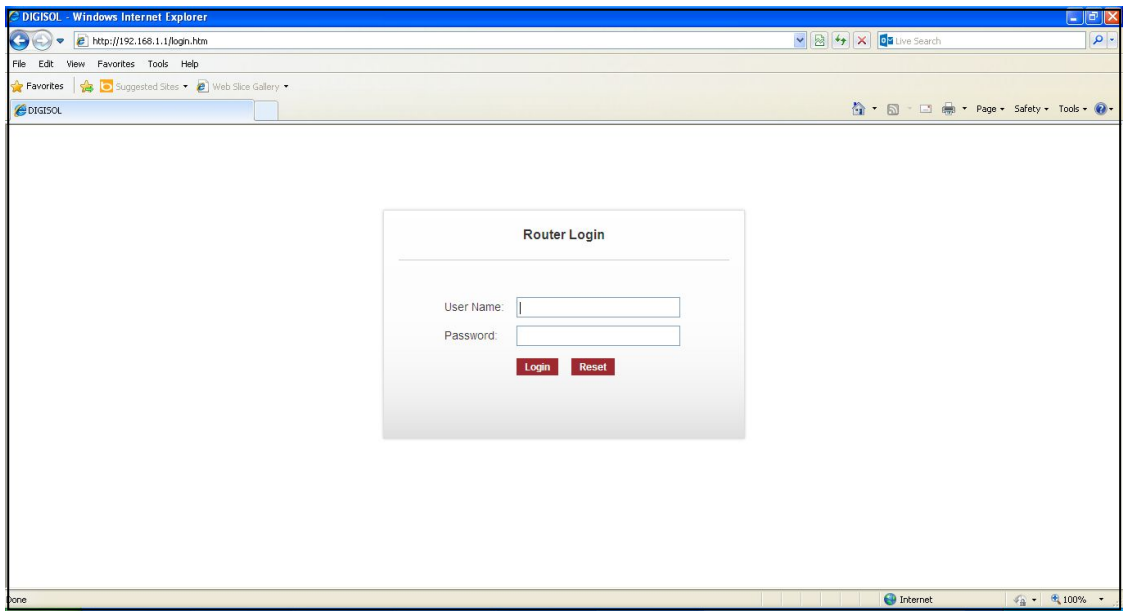
B. "**Use the following IP address (S)**"
IP Address: 192.168.1.XXX (XXX is a number from 2~254)
Subnet Mask: 255.255.255.0
Gateway: 192.168.1.1
DNS Server: You need to input the DNS server address provided by your ISP. Otherwise, you can use the Router's default gateway as the DNS proxy server.

Click "**OK**" to save the configurations.

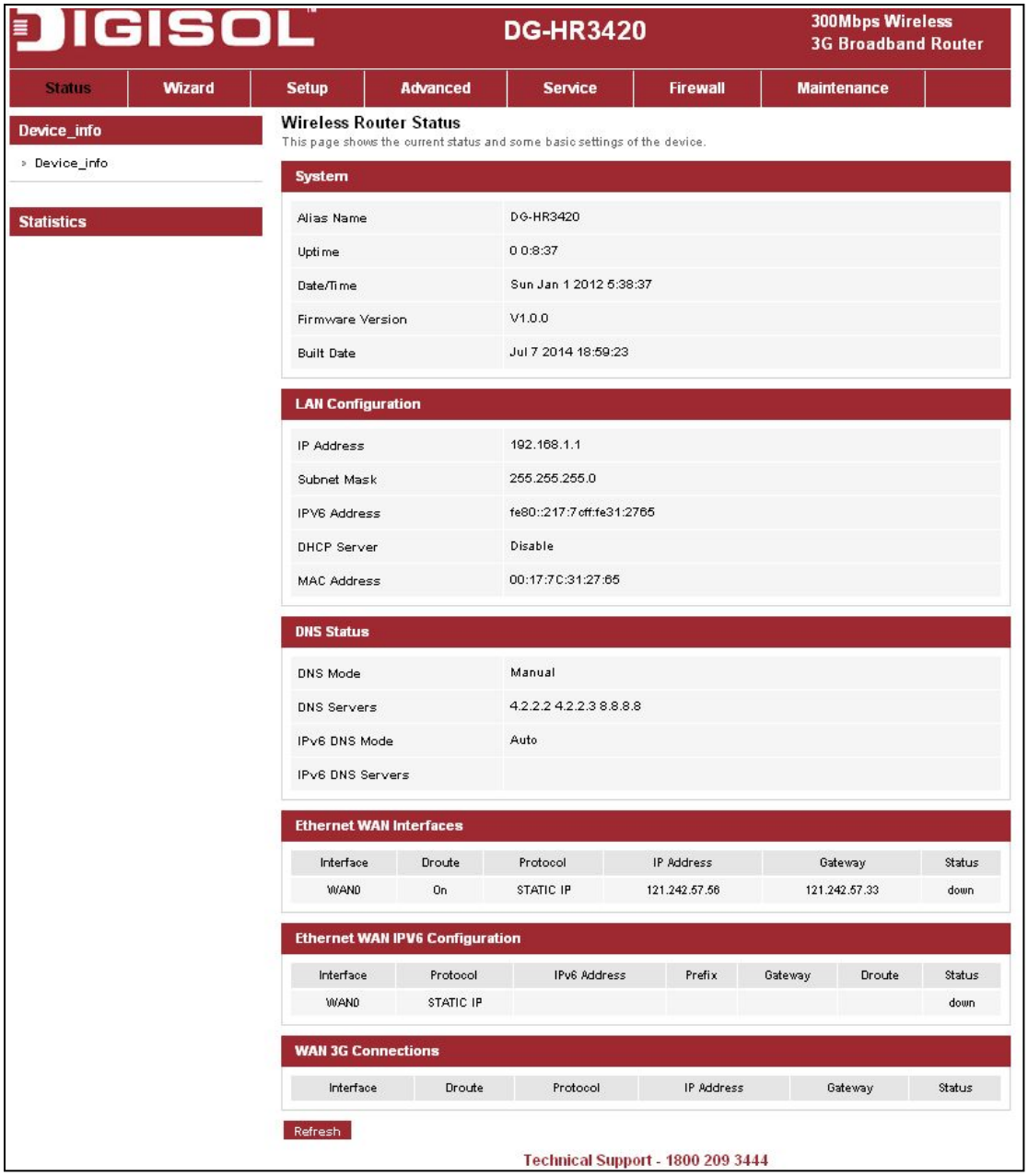
3-2 Getting Started

Connecting the router's management interface by web browser:
After you assign an IP address to the computer, open the web browser, and type the IP address of the router in the address bar as '**http://192.168.1.1**'.

The following message should be shown:



Please input user name and password in the field respectively, default user name is '**admin**', and default password is '**1234**', then press '**Login**' button, and you can see the web management interface of this router:



NOTE: If you can't see the web management interface, and you're being prompted to input user name and password again, it means you did not input username and password correctly. Please retype user name and password again.

TIP: This page shows the current status and some basic settings of the device.

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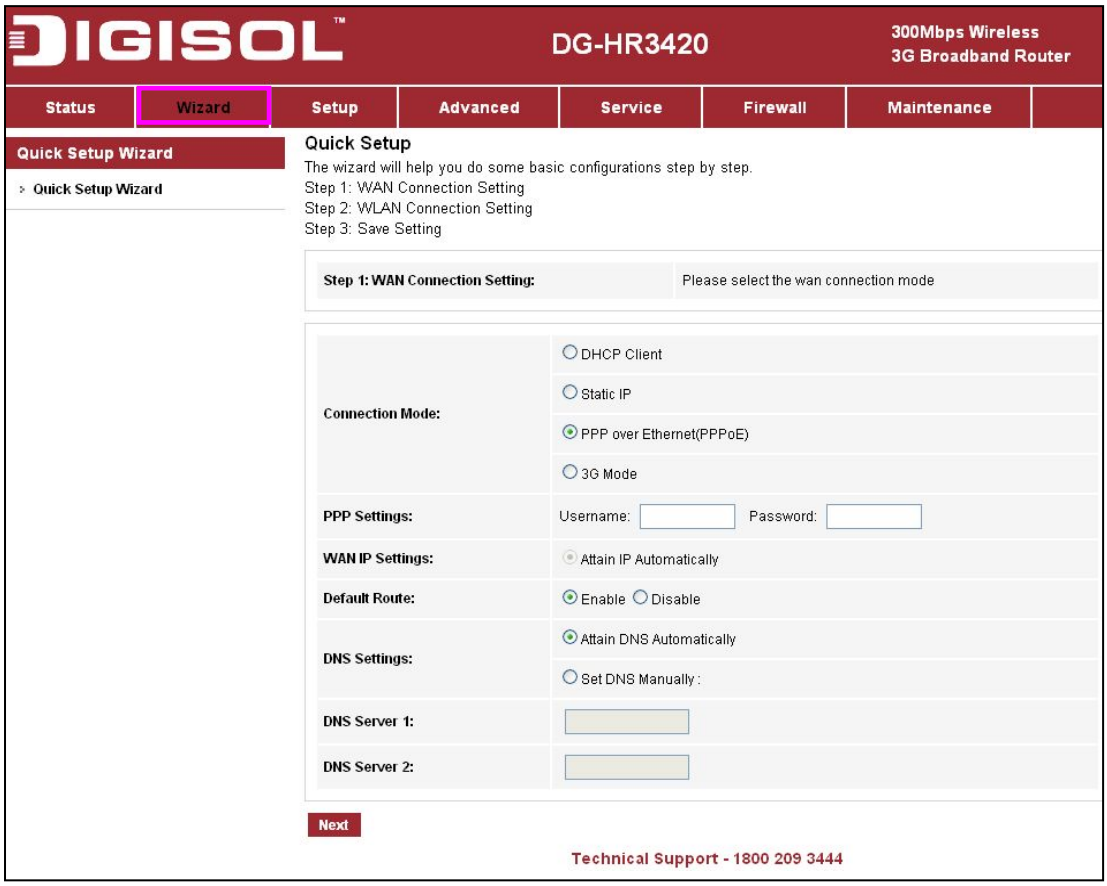
3-3 Using Wizard

This router provides a '**Quick Setup Wizard**' procedure, which will help you to complete all the required settings you need to access the Internet in very short time. Please follow the instructions mentioned below to complete the '**Quick Setup**':

Please go to Quick Setup Wizard menu by clicking on '**Wizard**' button.



Please follow the steps and complete the router configuration.

Step 1 WAN Connection Setting:

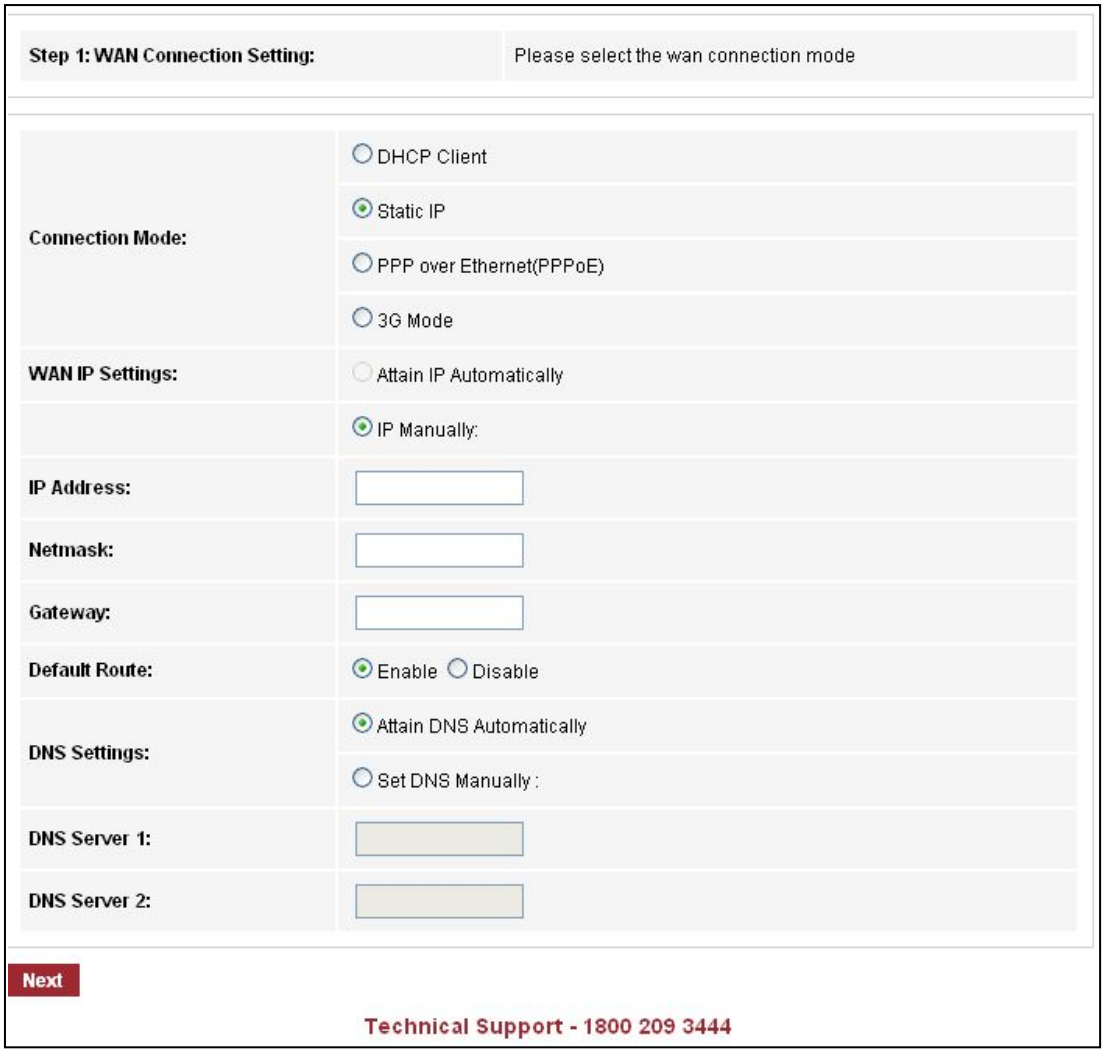
1) If "**DHCP**" option is selected the following screen will appear.

Here is the description of every setup item:

Parameter	Description
Connection Mode	Mode of WAN connection.
WAN IP Settings	Under DHCP Mode, the Router will obtain the IP address on WAN port.
DNS Settings	You can either attain DNS automatically or set DNS manually.
DNS Server1/2	User can define the DNS server address.

After the settings are done click on "**Next**".

2) If "**Static IP**" is selected, the following screen will appear.

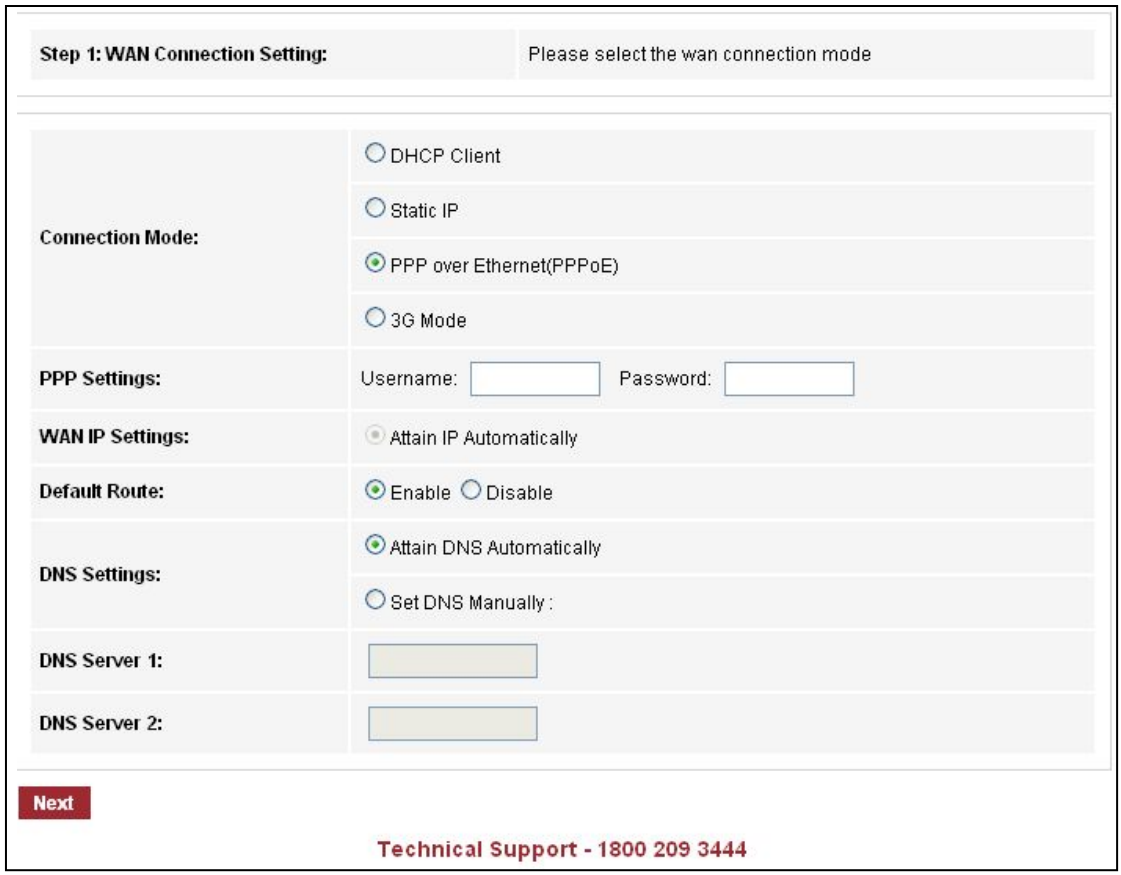


Here is the description of every setup item:

Parameter	Description
Connection Mode	Select the mode of WAN connection.
IP address	Enter the IP address.
Net mask	Enter the net mask.
Gateway	Enter the gateway.
Default Route	Enable or Disable the default route.
DNS Settings	You can either attain DNS automatically or Set DNS manually.
DNS Server1/2	User can define the DNS server address.

After the settings are done click on "**Next**".

3) If "**PPPoE**" is selected, the following screen will appear.



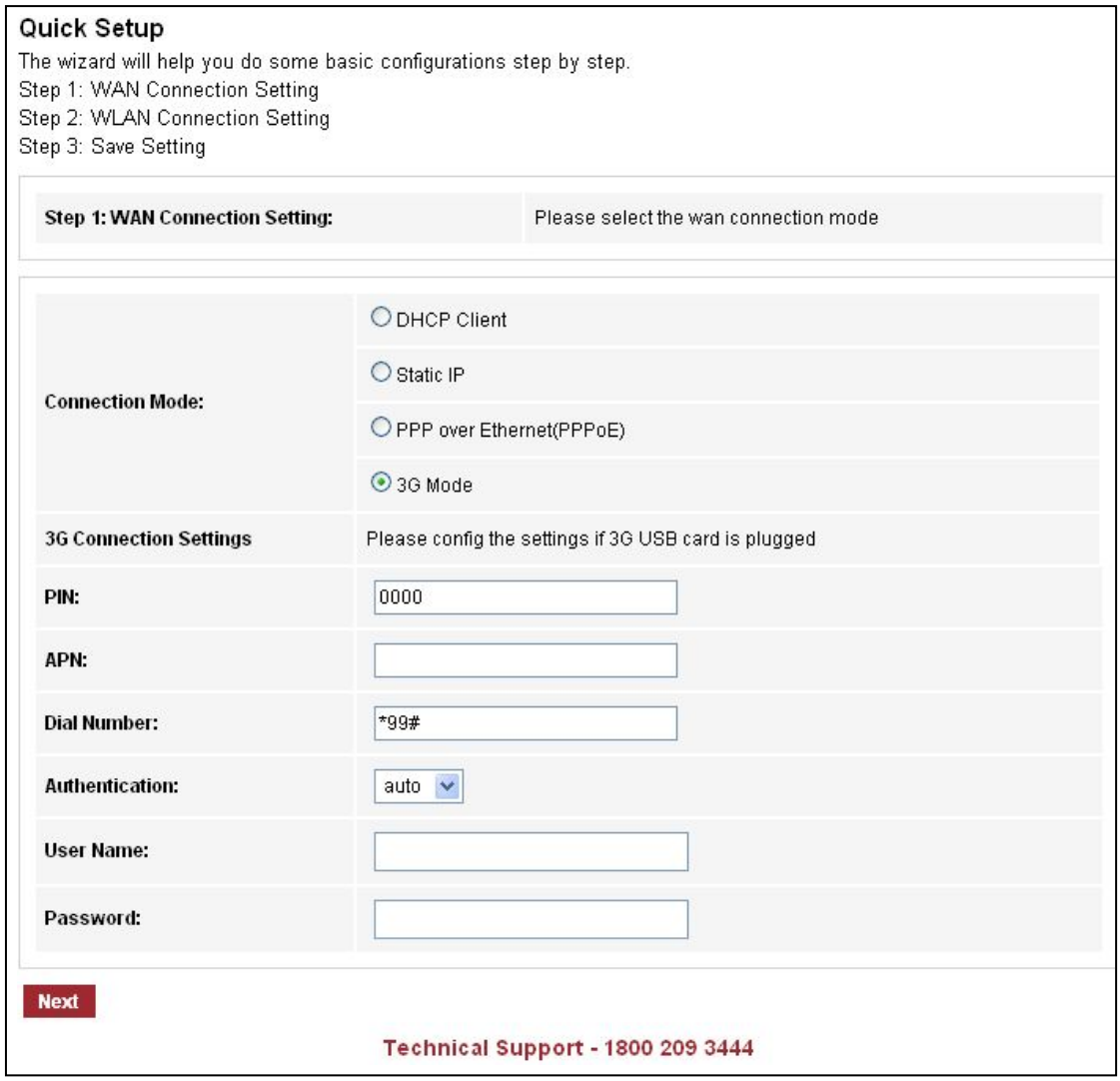
Here is the description of every setup item:

Parameter	Description
Connection Mode	Select the mode of WAN connection.
PPP Settings	Enter the user name and password assigned by your Internet service provider here.
WAN IP Settings	The Router will obtain the IP address from the ISP.
Default Route	Enable or Disable the default route.
DNS Settings	You can either attain DNS automatically or Set DNS manually.
DNS Server1/2	User can define the DNS server address.

After the settings are done click on "**Next**".

4) 3G

Router will support only compatible USB 3G Dongles and the support list can be downloaded from www.digisol.com or call 1800 209 3444 or email to helpdesk@smartlink.co.in



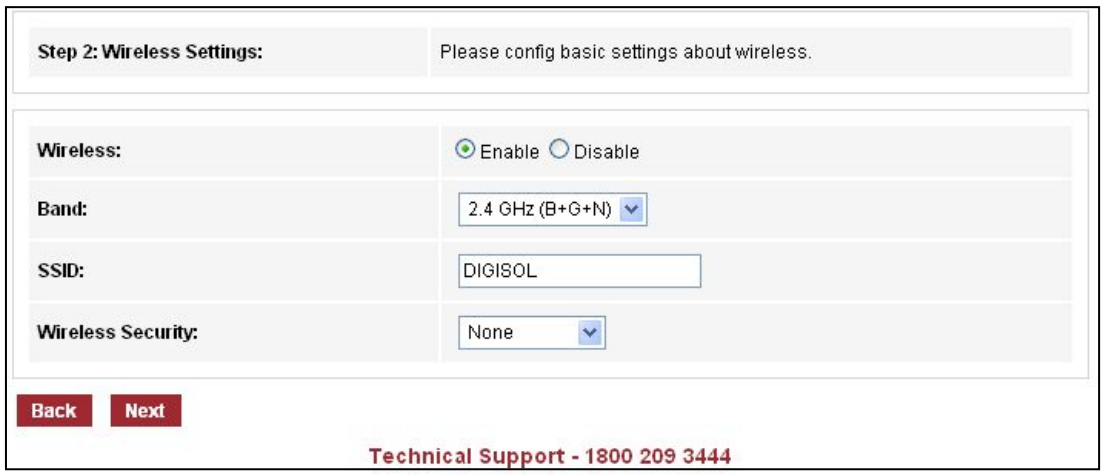
Here is the description of every setup item:

Parameter	Description
PIN	Enter the Pin – Check with 3G Service provider.
APN	Enter the APN - Check with 3G Service provider.
Dial Number	Enter the dial number e.g. *99#, #777 etc. as per ISP.

User Name	Enter username – Check with 3G service provider.
Password	Enter password – Check with 3G service provider.

After the settings are done click on "**Next**".

Step 2: Wireless Settings

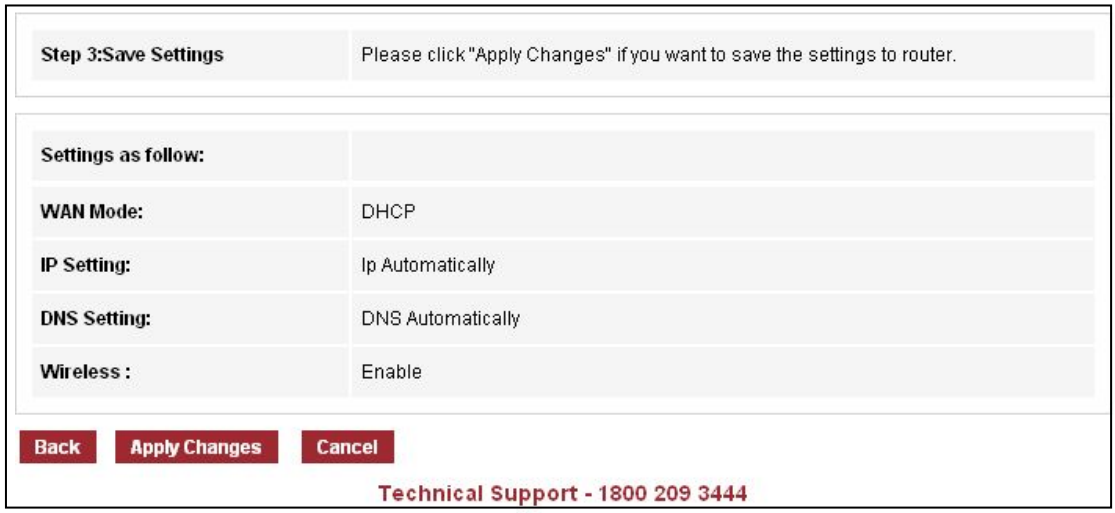


Here is the description of every setup item:

Parameter	Description
Wireless	You can enable or disable wireless.
Band	You can select the appropriate band setting form the list.
SSID	This is the name of wireless network. Input the SSID name.
Wireless Security	If the access point enables wireless security, you have to follow the same settings in order to access the access point.

After the settings are done click on "**Next**".

Step 3: Save Settings



Here is the description of every setup item:

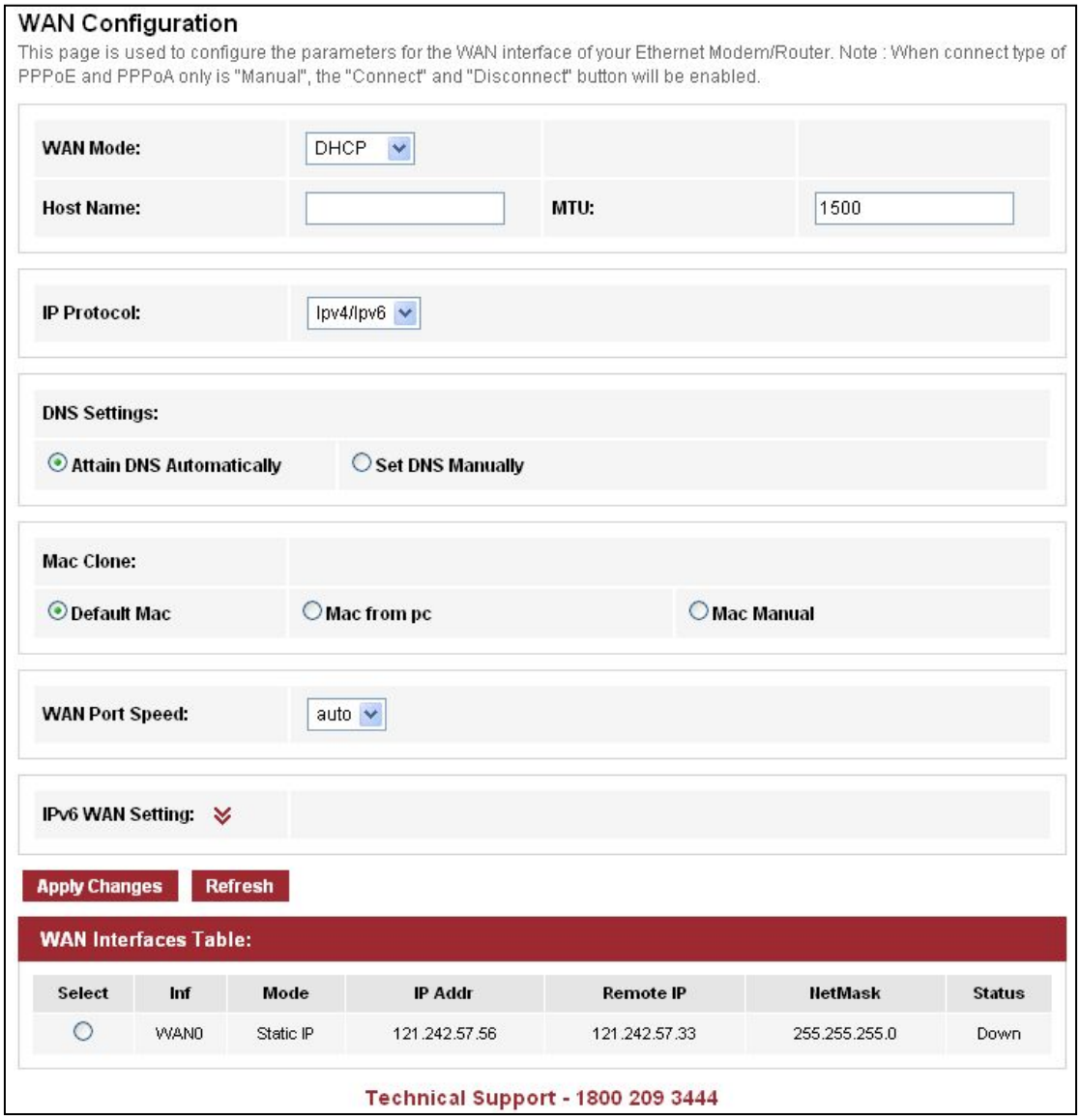
Parameter	Description
WAN Mode	The selected WAN mode will appear here.
IP Setting	IP setting as configured will be displayed here.
DNS Setting	DNS Setting as configured will appear here.
Wireless	Enable or Disable will appear for wireless.

To apply the changes, click on "**Apply Changes**". To cancel the changes, click on "**Cancel**". To go back to the previous screen click on "**Back**".

3-4 Using Setup

Step 1 Setup WAN Connection Type:

Below given '**WAN Connection Type**' screen will appear.



Please choose the broadband (Internet connection) type you're using in this page. There are three types of Internet connection DHCP, Static IP and PPPoE.

If you're not sure, please contact your Internet service provider. A wrong Internet connection type will cause connection problem, and you will not be able to connect to the internet.

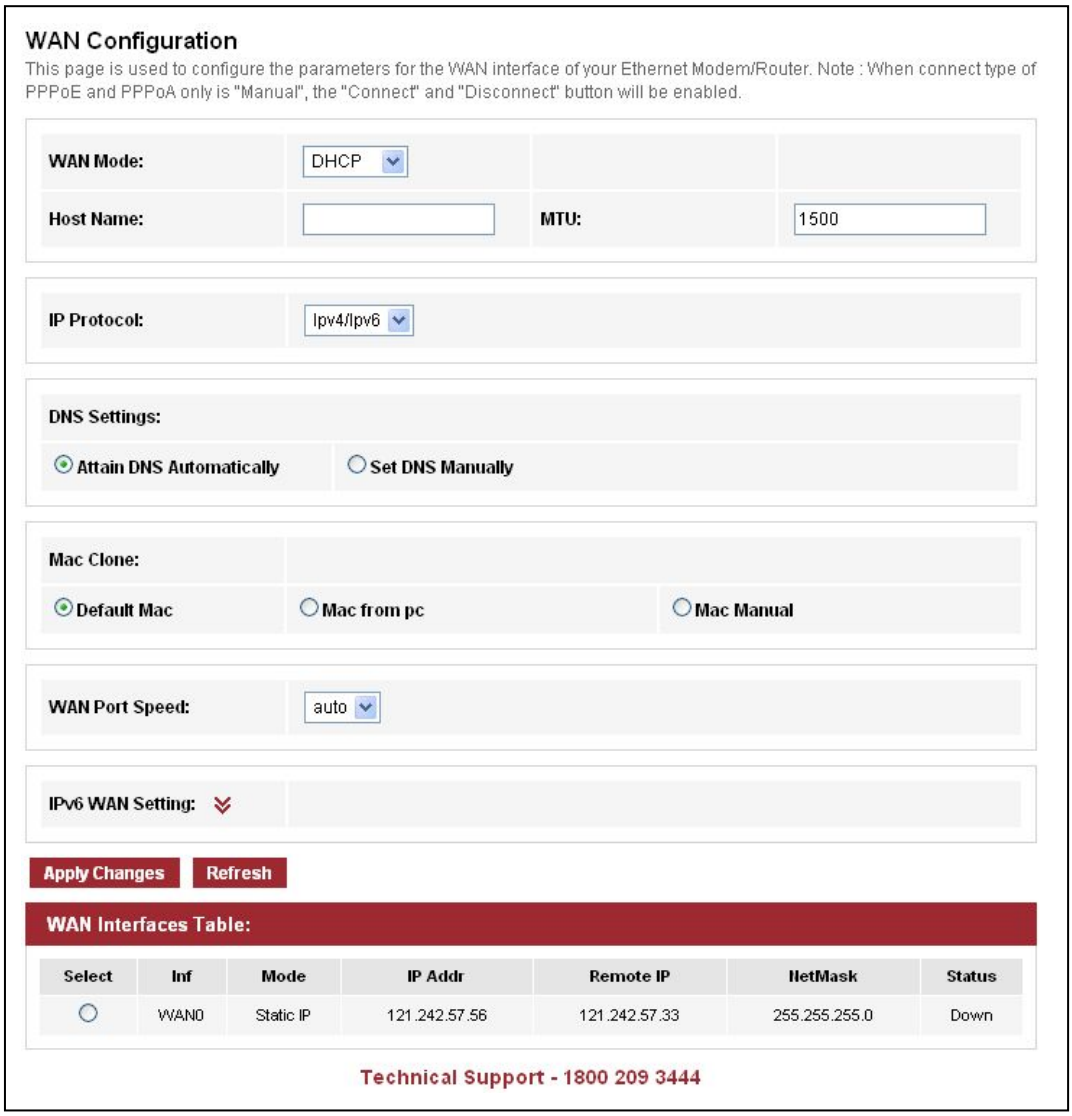
If you want to go back to previous step, please press '**Back**' button.

NOTE: Some service providers use 'DHCP' (Dynamic Host Configuration Protocol) to assign IP address to your router. In this case, you can choose 'Dynamic IP' as Internet connection type.

A) Setup procedure for 'DHCP':

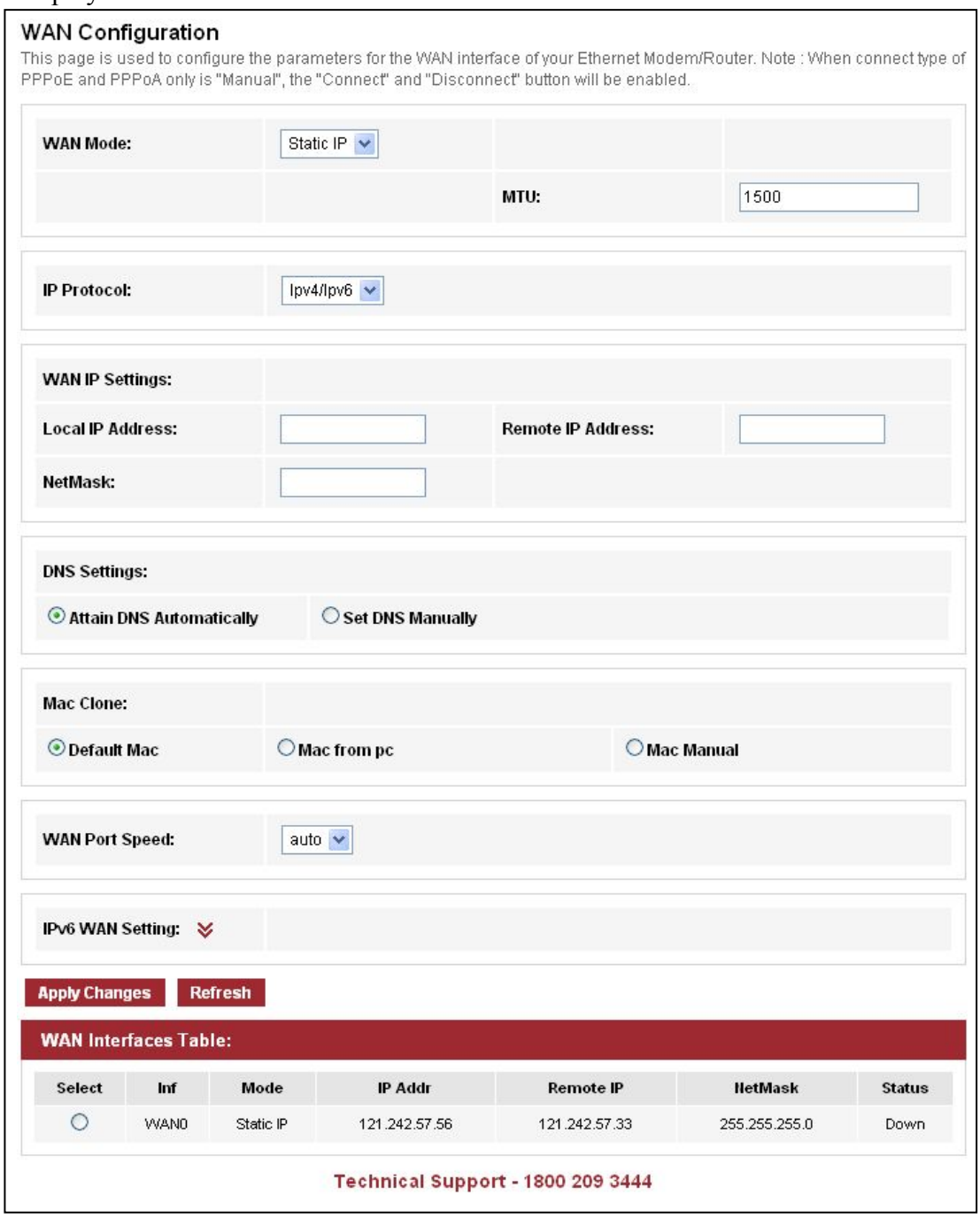
Select DHCP to obtain IP Address information automatically from your ISP.

Usually Cable Modem and the router will automatically obtain an IP address from the DHCP server.



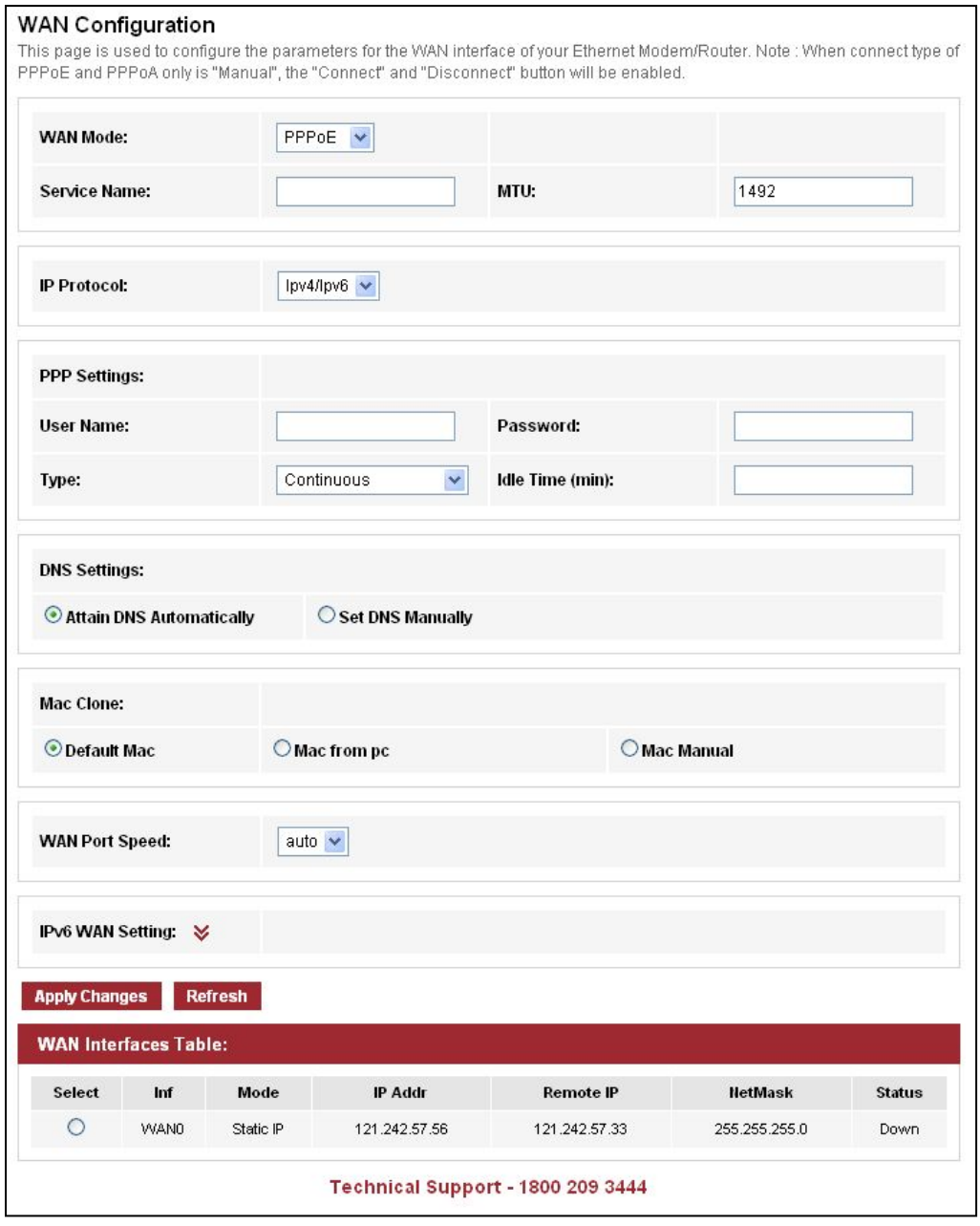
B) Setup procedure for 'Static IP':

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



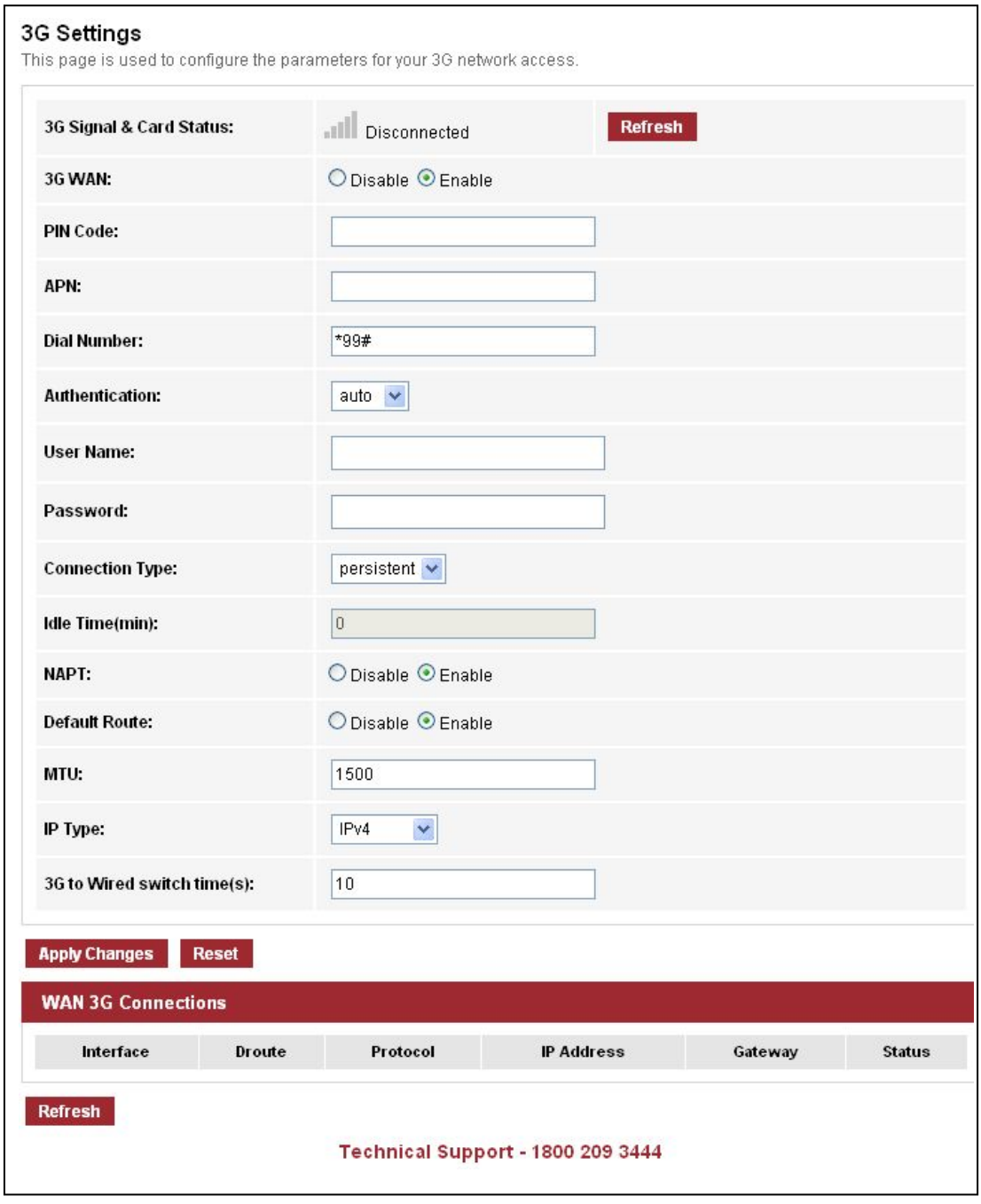
C) Setup procedure for 'PPPoE':

Choose PPPoE. (Point to Point Protocol over Ethernet) If your ISP uses a PPPoE connection it will provide you with a username and password. This option is typically used for DSL services. Below given screen will be displayed.



Step 2 Setup 3G Connection Type:

This page is used to configure the parameters for your 3G network access.



Here is the description of every setup item:

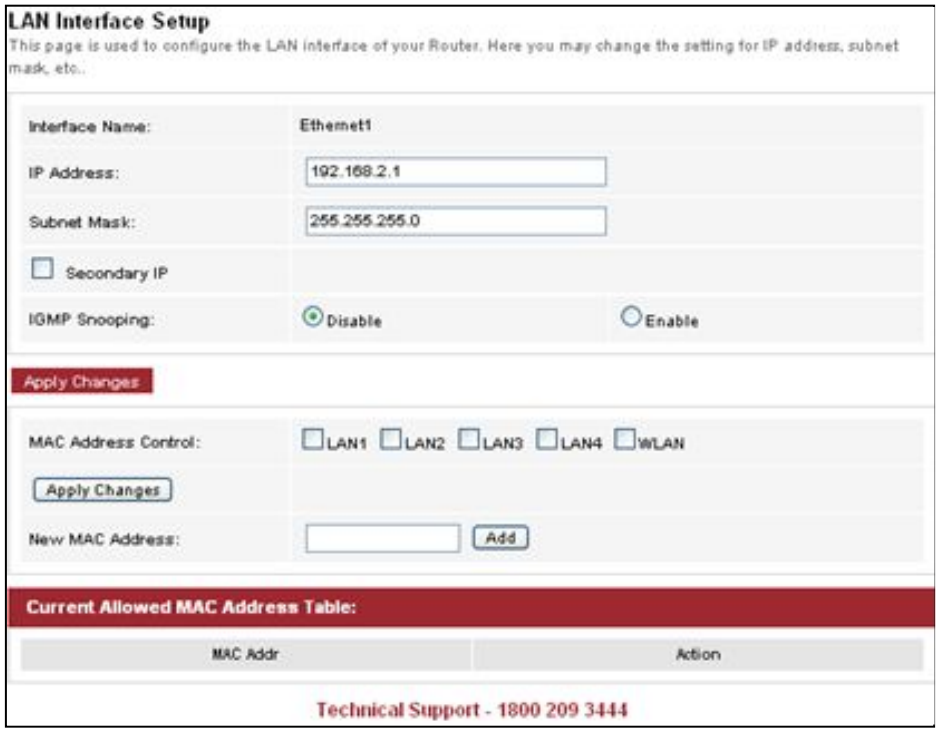
Parameter	Description
PIN Code	Enter the Pin code – Check with 3G Service provider.
APN	Enter the APN - Check with 3G Service provider.
Dial Number	Enter the dial number e.g: *99#, #777 etc. as per ISP.
User Name	Enter username – Check with 3G service provider.
Password	Enter password – Check with 3G service provider.
Connection type	Persistent means Automatic dial & Manual means manual dial.
Idle time	Please set the time in minutes if connection type is manual mode.
NAPT	Enable/Disable Network Address Port Translation.
Default Route	Enable/ Disable default route.
MTU	Set Maximum Transfer Unit.Default value is 1500.
IP Type	Select IPv4 or IPv6 or Both.
3G to wired switch time(s)	Set the time in seconds.

Note: WAN Fail over to 3G mode functions only when the RJ-45 WAN port is physically down or the cable is unplugged.

To apply the changes, click on "**Apply Changes**". To cancel the changes, click on "**Reset**".

Step 3 Setup LAN:

Below given '**LAN**' screen will appear.



Here is the description of every setup item:

Parameter	Description
IP address	Enter the LAN IP address.
Subnet Mask	Enter the subnet mask.
Secondary IP	Secondary IP address of any subnet can be added to manage the router.
IGMP Snooping	If enabled, the router will listen to the IGMP traffic or conversations between the hosts and routers on the network.
MAC Address Control	Using this feature the LAN clients are allowed and disallowed access to internet on the selected LAN/WLAN port.
MAC Address Table	The MAC address listed will be allowed to access the internet.

When you finish with all settings, press '**Next**'; if you want to go back to previous menu, click '**Back**'.

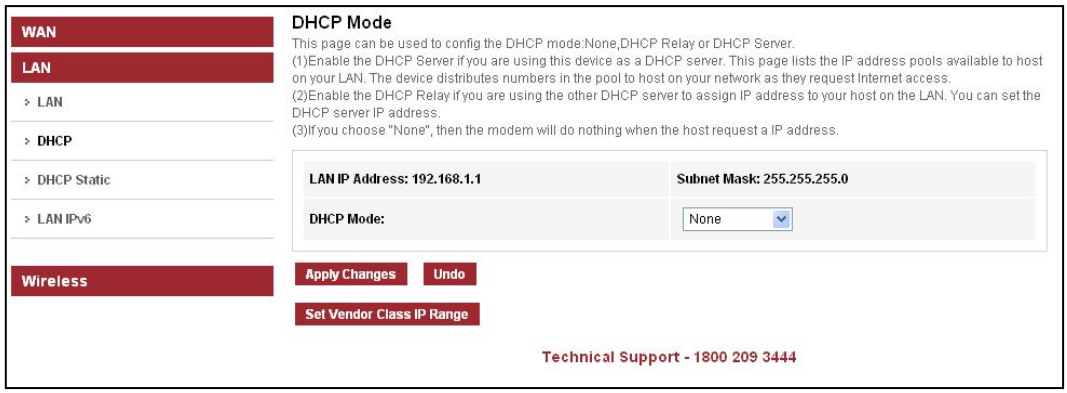
A) DHCP MODE

This page can be used to configure the DHCP mode. DHCP relay or DHCP server.

1) Enable the DHCP server if you are using this device as DHCP server. This page lists the IP address pools available to host on your LAN. The device distributes numbers in the pool to host on your network as they request internet access.

2) Enable the DHCP Relay if you are using the other DHCP server to assign IP address to your host on the LAN. You can set the DHCP server IP address.

3) If you choose "None", then the modem will do nothing when the host requests an IP address.

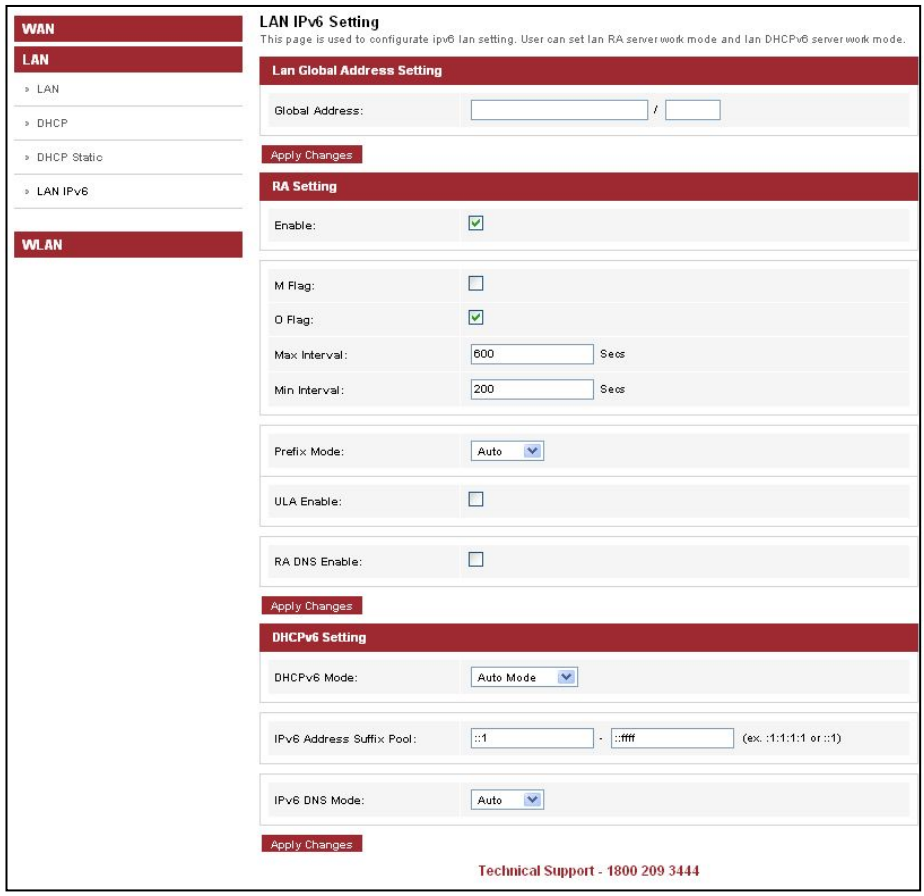


B) DHCP Static

This page lists the fixed IP/MAC address on your LAN. The device distributes the number configured to hosts on your network as they request internet access.

C) LAN IPv6

This page is used to configure IPv6 LAN settings. User can set RA server work mode and LAN DHCPv6 server work mode.



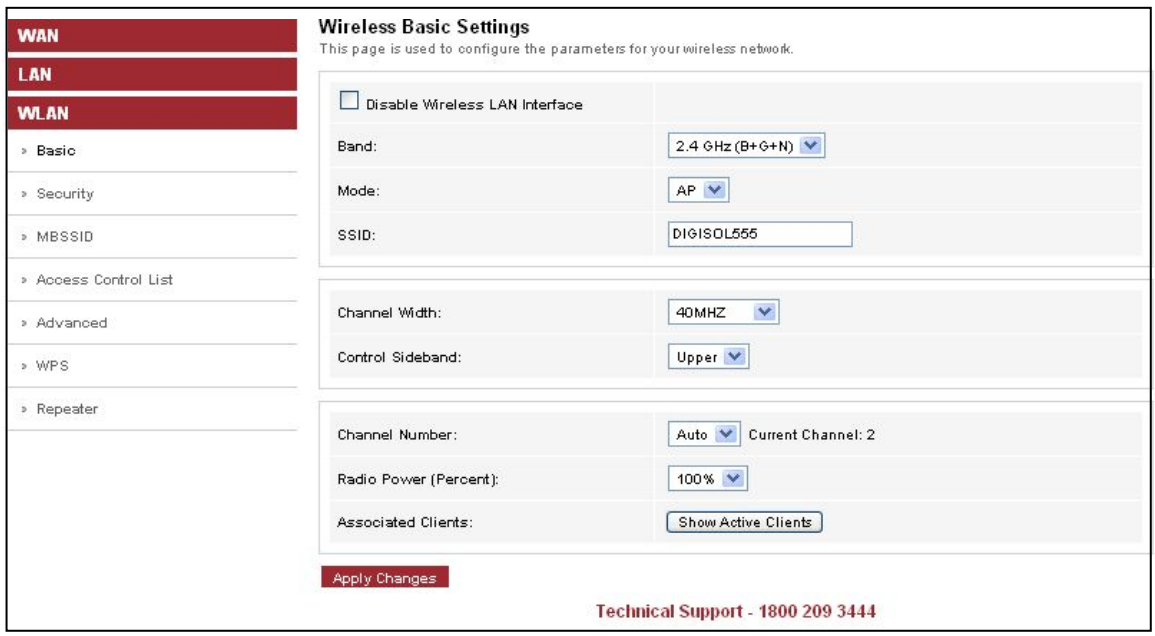
Here is the description of every setup item:

Parameter	Description
Global Address	Specify the LAN global ipv6 address, which may be assigned by ISP.
RA Setting	
Enable	Enable or disable the Router Advertisement feature.
M Flag	Enable or disable the “Managed address configuration” flag in RA packet.
O Flag	Enable or disable the “Other configuration” flag in RA packet.
Max interval	The maximum time allowed between sending unsolicited multicast Router Advertisements from the interface, in seconds. **Note: The Max Interval must not be less than 4 seconds and not greater than 1800 seconds.**

Min Interval	The minimum time allowed between sending unsolicited multicast Router Advertisements from the interface, in seconds. **Note: The Min Interval must not be less than 3 seconds and not greater than 0.75 * Max Interval.**
Prefix Mode	Specify the RA feature prefix mode: "Auto": The RA prefix will use WAN dhcp-pd prefix. "Manual": User will specify the prefix Address, Length, Preferred time and Valid time.
DHCPv6 Setting	
DHCPv6 Mode	Specify the dhcpv6 server mode: "None": Close dhcpv6 server. "Manual": dhcpv6 server is opened and user specifies the dhcpv6 server address pool and other parameters. "Auto": dhcpv6 server is opened and it can use Wan dhcp-pd prefix to generate address pool.

Step 4 Wireless Setup:

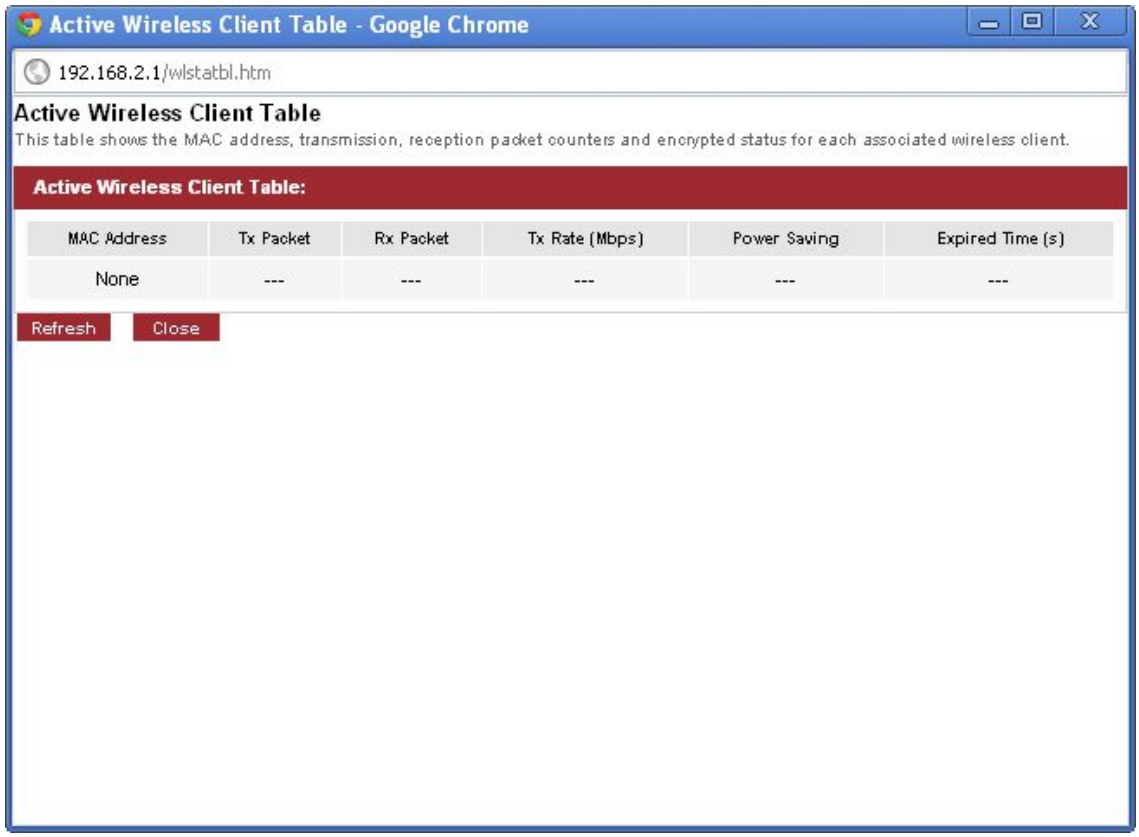
This page is used to configure the parameters for your wireless network.



Here is the description of every setup item:

Parameter	Description
Band	Select the appropriate radio band. The default setting is 2.4GHz (B+G+N).
Mode	Select the desired mode.
SSID	This is the name of wireless network. Input the SSID name.

Channel width	Select any channel width from the pull-down list.
Control sideband	There are two bands upper and lower. The upper band comprises of channel numbers from 5 to 11. The lower band comprises of channel numbers from1 to 7.
Channel number	Select the channel number form the list. You can choose any channel number you want to use, and almost all wireless clients can locate the channel you are using automatically without any problem. However, it is still useful to remember the channel number you use, some wireless client supports manual channel number select, and this would help in certain scenario when there is some radio communication problem.
Radio Power (Percent)	You can choose the transmission power of the radio signal. The default one is 100%. It is recommended to choose the default value 100%.
Associated clients	Click '**Show Active Clients**' button, then an "**Active Wireless Client Table"** will pop up. You can see the status of all active wireless stations that are connected to the access point.



When you finish with all settings, press '**Apply changes**'.

Security Setup: This page allows you to set up the wireless security. Turn ON WEP or WPA by using encryption keys could prevent any unauthorized access to your wireless network.

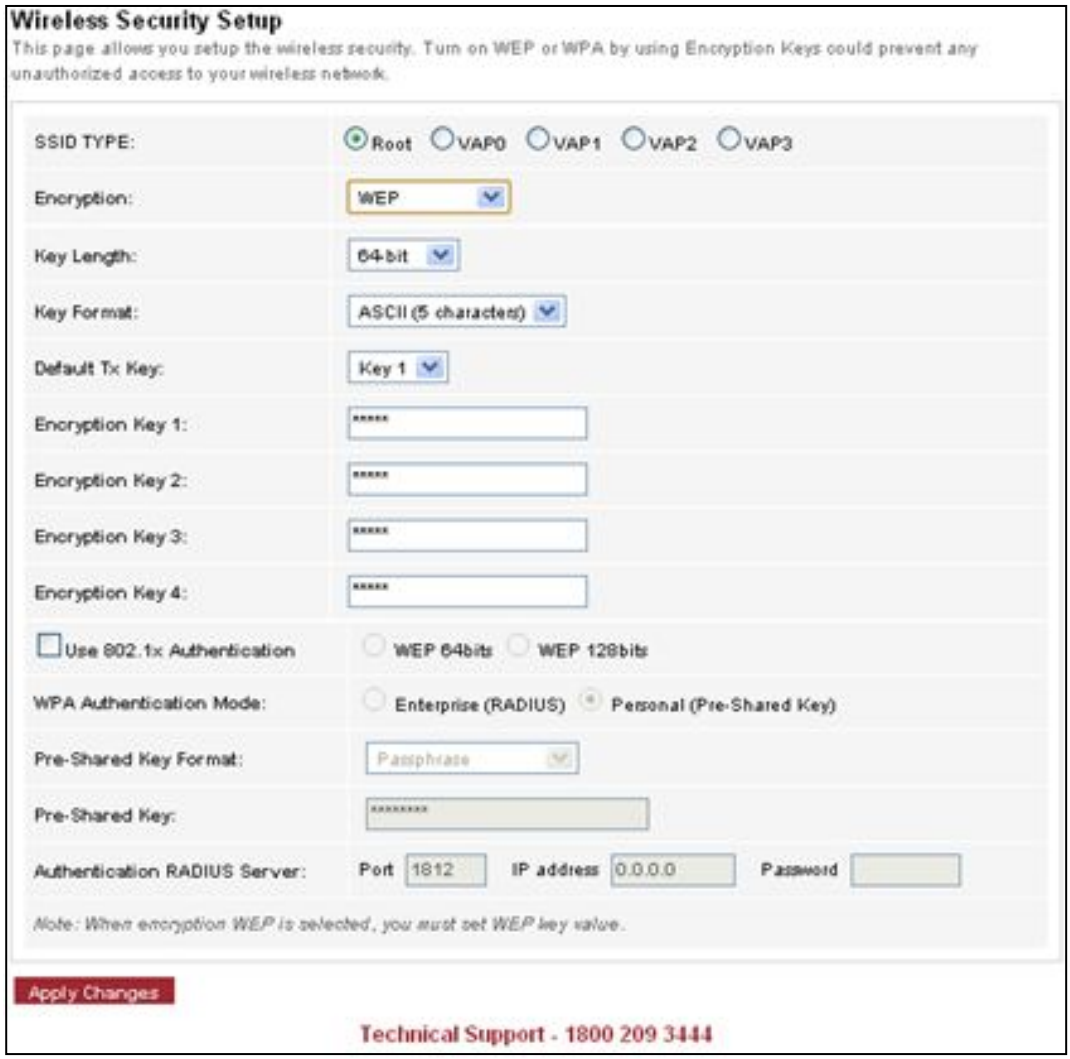
Here is the description of every setup item:

Parameter	Description
SSID Type	Select the SSID type.
Encryption	Select the encryption type from the list.
Use 802.1x Authentication	Select the check box to enable 802.1x authentication.
WPA-Authentication Mode	Select Personal (Pre-Shared Key), enter the pre-shared key in the Pre-Shared Key field. Select Enterprise (RADIUS), enter the port, IP address and password of the Radius server. You need to enter the username and password provided by the Radius server when the wireless client connects the router. If the encryption is set to WEP, the router uses 802.1x authentication, which is Radius authentication.
Pre-shared key format	Select HEX or Pass phrase key type.
Pre-shared key	Enter an encryption key.
Authentication Radius Server	Enter the port, IP address and password of the Radius server.

When you finish with all settings, press '**Apply changes**'.

Encryption options available:

WEP



Here is the description of every setup item:

Parameter	Description
Key length	There are two types of WEP key lengths: 64-bit and 128-bit. Using'128-bit' is safer than '64-bit', but will reduce some data transfer performance.
Key format	There are two types of key formats: ASCII and Hex. When you select a key format, the number of characters of key will be displayed. For example, if you select '64-bit' as key

	length, and 'Hex' as key format, you'll see the message at the right of 'Key Format' is Hex (10 characters), which means the length of WEP key is 10 characters.
Default Tx key	You can set the WEP key here.
Encryption keys 1-4	Input WEP key characters here, the number of characters must be the same as the number displayed at 'Key Format' field. You can use any alphanumerical characters (0-9, a-z and A-Z) if you select 'ASCII' key format, and if you select 'Hex' as key format, you can use characters 0-9, a-f and A-F.
Use 802.1x authentication	IEEE 802.1x is an authentication protocol. Every user must use a valid account to login to this wireless router before accessing the wireless LAN. The authentication is processed by a RADIUS server. This mode only authenticates user by IEEE 802.1x, but it does not encrypt the data during communication. If there is a RADIUS server in your environment, please enable this function. Check this box and another sub-menu will appear:
Pre-Shared key format	Select the type of pre-shared key, you can select pass phrase (8 or more alphanumerical characters, up to 63), or Hex (64 characters of 0-9 and a-f).
Pre-Shared key	Please input the WPA pass phrase here. It is not recommended to use a word that can be found in a dictionary due to security reason.

When you finish with all settings, press '**Apply changes**'.

WPA (TKIP) / WPA2 (TKIP)

Here is the description of every setup item:

Parameter	Description
Use 802.1x Authentication	IEEE 802.1x is an authentication protocol. Every user must use a valid account to login to this wireless router before accessing the wireless LAN. The authentication is processed by a RADIUS server. This mode only authenticates user by IEEE 802.1x, but it does not encrypt the data during communication. If there is a RADIUS server in your environment, please enable this function. Check this box and another sub-menu will appear:
Pre-shared Key Format	Select the type of pre-shared key, you can select Pass phrase (8 or more alphanumerical characters, up to 63), or Hex (64 characters of 0-9 and a-f).
Pre-shared Key	Please input the WPA pass phrase here. It is not recommended to use a word that can be found in a dictionary due to security reason.
Authentication RADUIS server	If you have a RADIUS server, this router can work with it and provide safer wireless authentication.

When you finish with all settings, press '**Apply changes**'.

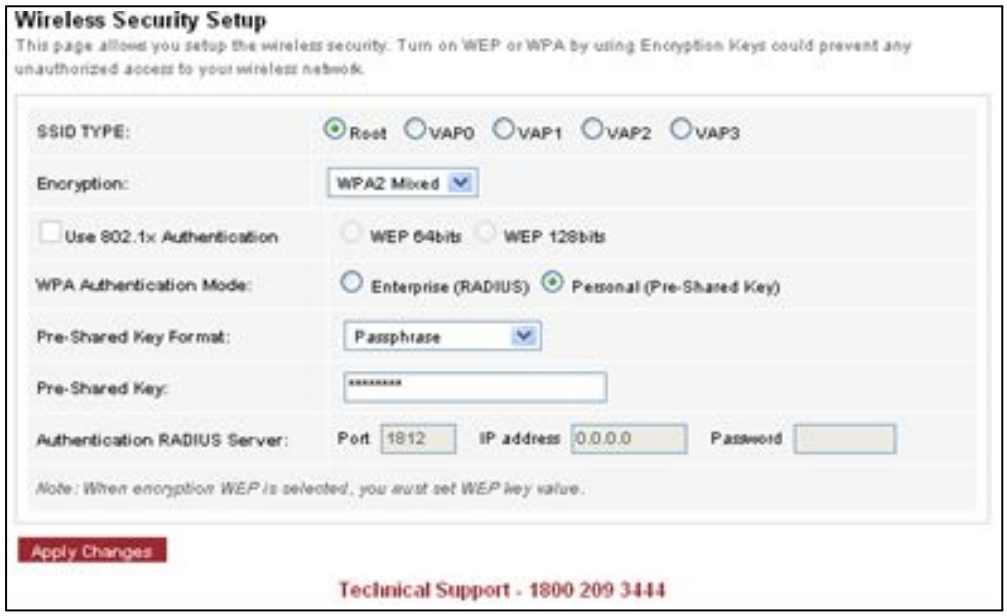
WPA (AES) / WPA2 (AES)

Here is the description of every setup item:

Parameter	Description
Use 802.1x Authentication	IEEE 802.1x is an authentication protocol. Every user must use a valid account to login to this wireless router before accessing the wireless LAN. The authentication is processed by a RADIUS server. This mode only authenticates user by IEEE 802.1x, but it does not encrypt the data during communication. If there is a RADIUS server in your environment, please enable this function. Check this box and another sub-menu will appear:
Pre-shared Key Format	Select the type of pre-shared key, you can select Pass phrase (8 or more alphanumerical characters, up to 63), or Hex (64 characters of 0-9 and a-f).
Pre-shared Key	Please input the WPA pass phrase here. It is not recommended to use a word that can be found in a dictionary due to security reason.
Authentication Radius server	If you have a RADIUS server, this router can work with it and provide safer wireless authentication.

When you finish with all settings, press '**Apply changes**'.

WPA2 Mixed



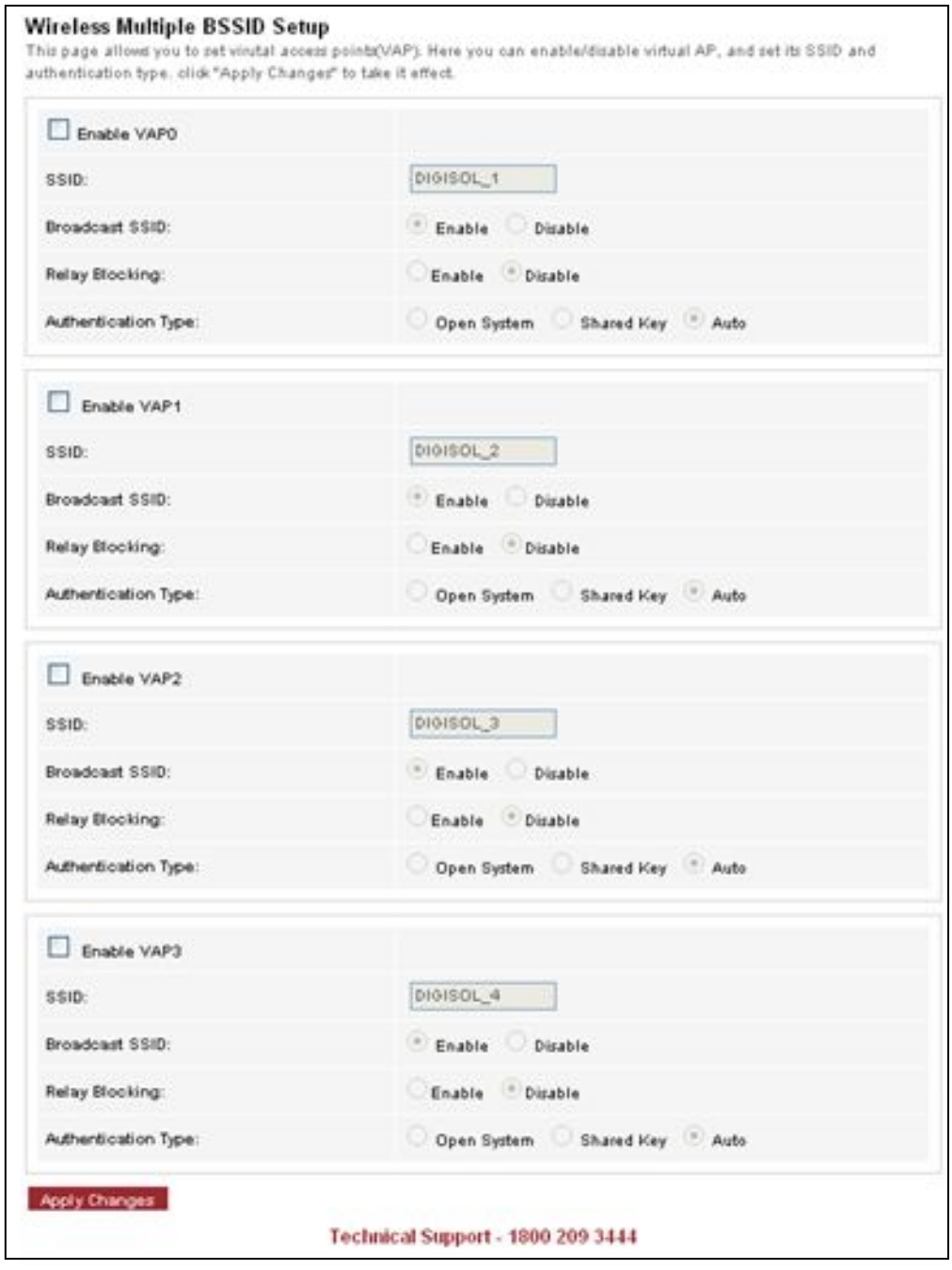
Here is the description of every setup item:

Parameter	Description
Use 802.1x Authentication	IEEE 802.1x is an authentication protocol. Every user must use a valid account to login to this wireless router before accessing the wireless LAN. The authentication is processed by a RADIUS server. This mode only authenticates user by IEEE 802.1x, but it does not encrypt the data during communication. If there is a RADIUS server in your environment, please enable this function. Check this box and another sub-menu will appear:
Pre-shared Key Format	Select the type of pre-shared key, you can select Pass phrase (8 or more alphanumerical characters, up to 63), or Hex (64 characters of 0-9 and a-f).
Pre-shared Key	Please input the WPA pass phrase here. It is not recommended to use a word that can be found in a dictionary due to security reason.
Authentication Radius server	If you have a RADIUS server, this router can work with it and provide safer wireless authentication.

When you finish with all settings, press '**Apply changes**'.

MBSSID: Here we provide several guest networks for your guests to use your router to surf the Internet temporary. You can configure your SSID, security options and so on. Guests can only access your router if you enable your guest network.

Choose menu "**Wireless→MBSSID**", below given screen will be displayed.



Access Control List:

You can specify what kind of service should be enabled in WAN on this page. Packets available in the ACL list or from IP specified can enter the AP Router.

Choose menu "**Wireless→Access Control List**", below given screen will be displayed.

Advanced:

Here is the description of every setup item:

Parameter	Description
Fragment Threshold	Used to fragment packets which help improve performance in the presence of radio frequency (RF) interference.
RTS Threshold	Determines the packet size of a transmission through the use of the router to help control traffic flow.
Beacon Interval	Set the beacon interval of wireless radio. Do not modify default value if you don't know what it is, default value is 100.
DTIM Interval	Set the DTIM period of wireless radio. Do not modify default value if you don't know what it is, default value is 1.
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, it's not necessary to change this value unless you know what will happen after modification.
Preamble Type	This is the length of the CRC (Cyclic Redundancy Check) block for communication between the router and wireless clients. High network traffic areas should select Short preamble type.
Broadcast SSID	Decide if the wireless router will broadcast its own ESSID or not. You can hide the ESSID of your wireless router (set the option to 'Disable'), so only people those who know the ESSID of your wireless router can get connected.
Relay Blocking	Wireless isolation. Once this field is Enabled, the wireless clients that are connected to the router cannot intercommunicate.
Ethernet to Wireless Blocking	When enabled, the wireless network can communicate with the Ethernet network or not.
WiFi Multicast to Unicast	Enable it to use unicast to transmit multicast packets.
Aggregation	It is applied when the destination end of all MPDU are for one STA.
Short GI	It is not recommended to enable GI in obvious environment of Multi-path effect.

When you finish with all settings, press '**Apply changes**'.

WPS

Through this process, you can easily add wireless clients to the network without the need for any specific configuration, such as SSID, security mode or password.

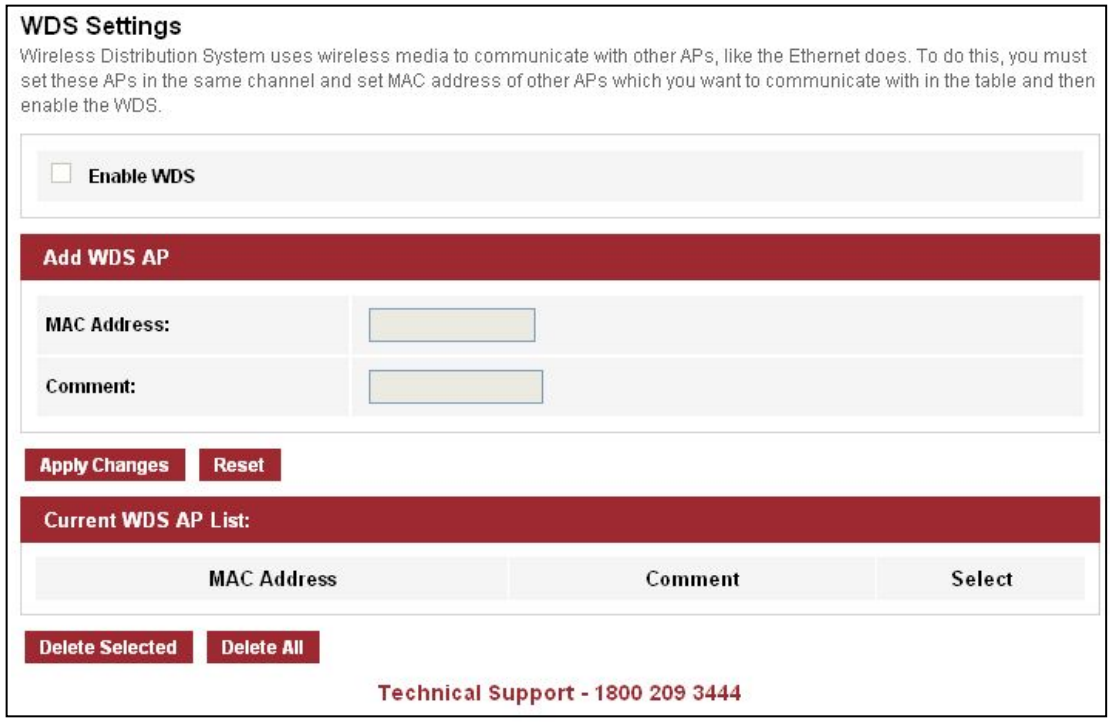
Choose menu "**Wireless→WPS**", below given screen will be displayed.

WPS (Wi-Fi Protected Setup) is an easy way to connect to a wireless router.
To use the wizard to add a wireless client to WPS-enabled wireless router, the client must support WPS.
Check the user manual or the box of the wireless client to confirm whether it supports the WPS.
If the wireless client does not support WPS, you must configure it manually.
You can add wireless client by PIN mode. If you use PIN mode, you should input client PIN code. Meanwhile you should start client WPS process. You can find client PIN code on client manager.

WDS

Wireless Distribution System uses wireless media to communicate with other APs, like the Ethernet does. To do this, you must set these APs in the same channel and set MAC address of other APs which you want to communicate with in the table and then enable the WDS. This page also allows you to setup the wireless security for WDS. When enabled, you must make sure each WDS device has adopted the same encryption algorithm and Key.

Choose menu "**Wireless→WDS**", below given screen will be displayed.

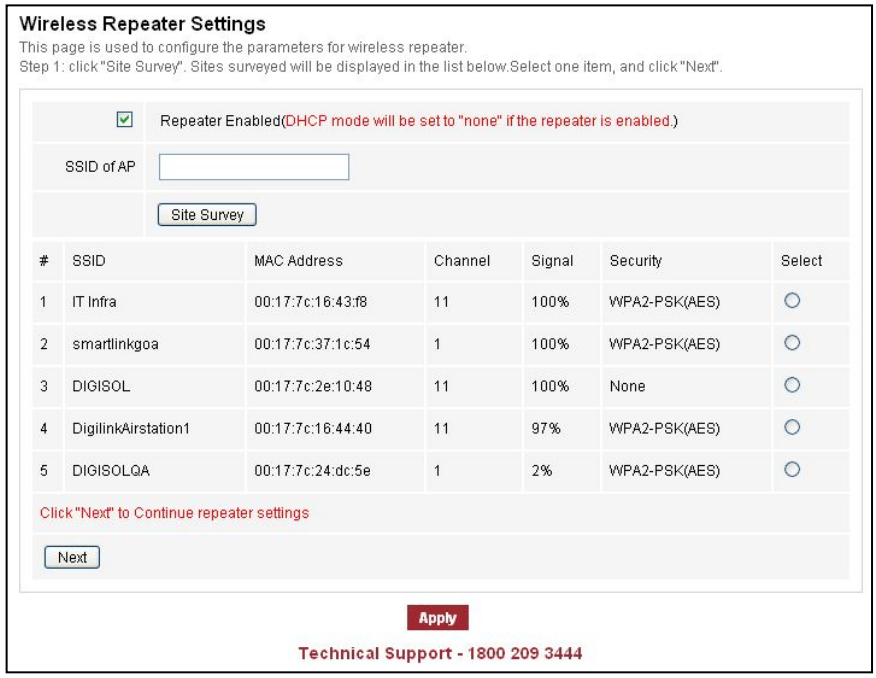


Here is the description of every setup item:

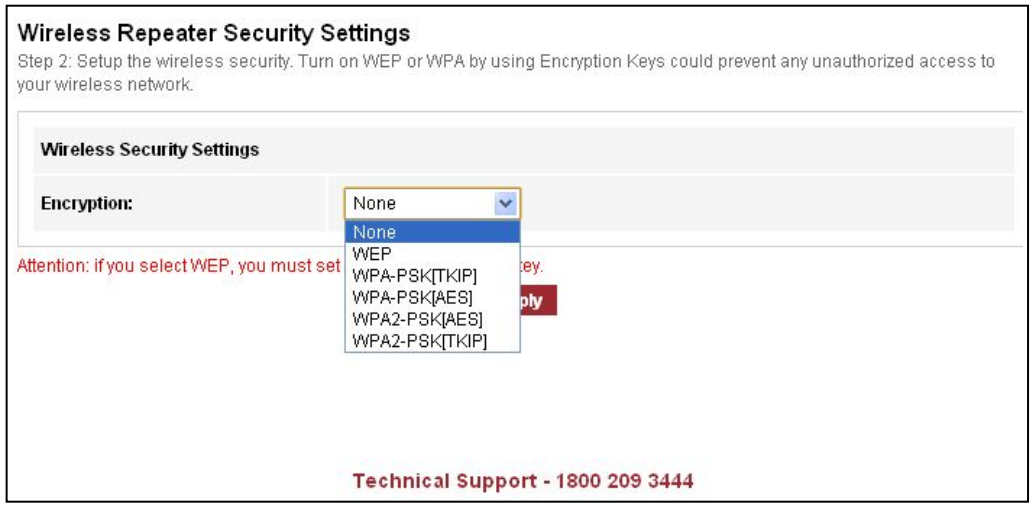
Parameter	Description
MAC Address	Input the MAC address of other wireless routers.
Comment	You can add some comment for this item.

Repeater

This feature is used to configure the parameters for wireless repeater.
Click "**Site survey**". Wireless networks will be displayed in the list below. Select one network and click "**Next**".



Click on "**Next**". The following screen will appear.



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3-5 Advanced

Click '**Advanced**' menu on the top of web management interface, and the following message will be displayed on your web browser:

Static Route

Here is the description of every setup item:

Parameter	Description
Enable	Select the check box to enable routing.
Destination	Enter the IP address of the destination device.
Subnet Mask	Enter the subnet mask of the destination device.
Next Hop	Enter the IP address of the next hop in the IP route to the destination device.
Metric	The metric cost for the destination.
Interface	The interface for the specified route.
Static Route Table	Lists the routing information here.

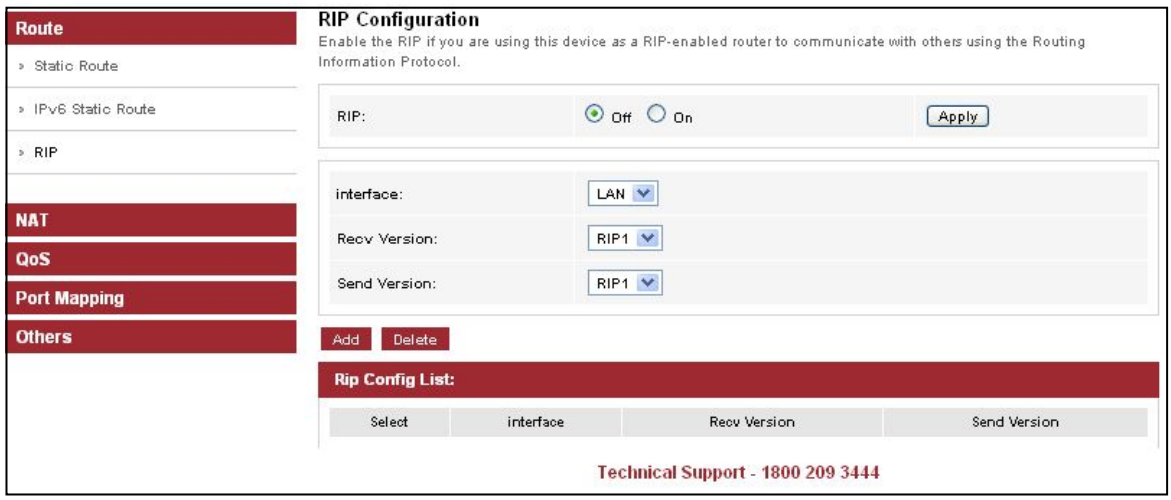
IPv6 Static Route

Here is the description of every setup item:

Parameter	Description
Destination	Enter the IP address of the destination device.
Prefix Length	Enter the prefix length of the IPv6 address.
Next Hop	Enter the IP address of the next hop in the IP route to the destination device.
Interface	The interface for the specified route.
IPv6 Static Route Table	Lists the routing information here.

RIP

Enable the RIP if you are using this device as a RIP-enabled router to communicate with others using the Routing Information Protocol.



Here is the description of every setup item:

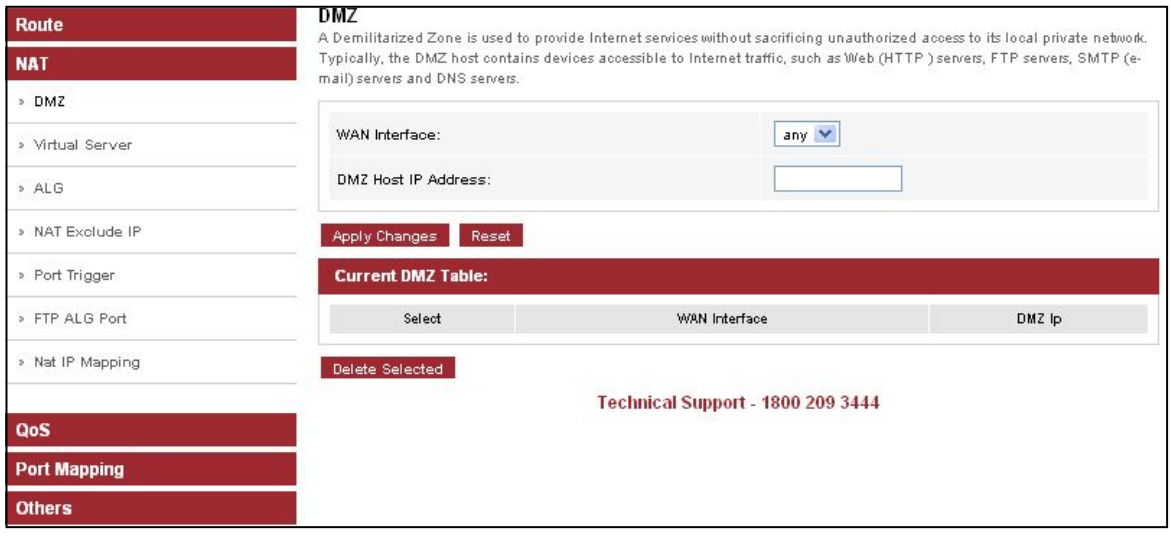
Field	Description
RIP	Select On. The router communicates with other RIP-enabled devices.
Apply	Click it to save the settings of this page.
Interface	Choose the router interface that uses RIP.
Receive Version	Choose the interface version that receives RIP messages. You can choose RIP1, RIP2, or Both. Choose RIP1 indicates that the router receives RIP v1 messages. Choose RIP2 indicates that the router receives RIP v2 messages. Choose Both indicates that the router receives RIP v1 and RIP v2 messages.
Send Version	The working mode for sending RIP messages. You can choose RIP1 or RIP2. Choose RIP1 indicates the router broadcasts RIP1 messages only. Choose RIP2 indicates the router multicasts RIP2 messages only.
Add	Click it to add the RIP interface to the Rip Config List.
Delete	Select a row in the Rip Config List and click it to delete the row.

NAT

DMZ

A Demilitarized Zone is used to provide Internet services without sacrificing unauthorized access to its local private network. Typically, the DMZ host contains devices accessible to Internet traffic, such as Web (HTTP) servers, FTP servers, SMTP (e-mail) servers and DNS servers.

Choose menu "**Advanced→DMZ**", below given screen will be displayed.



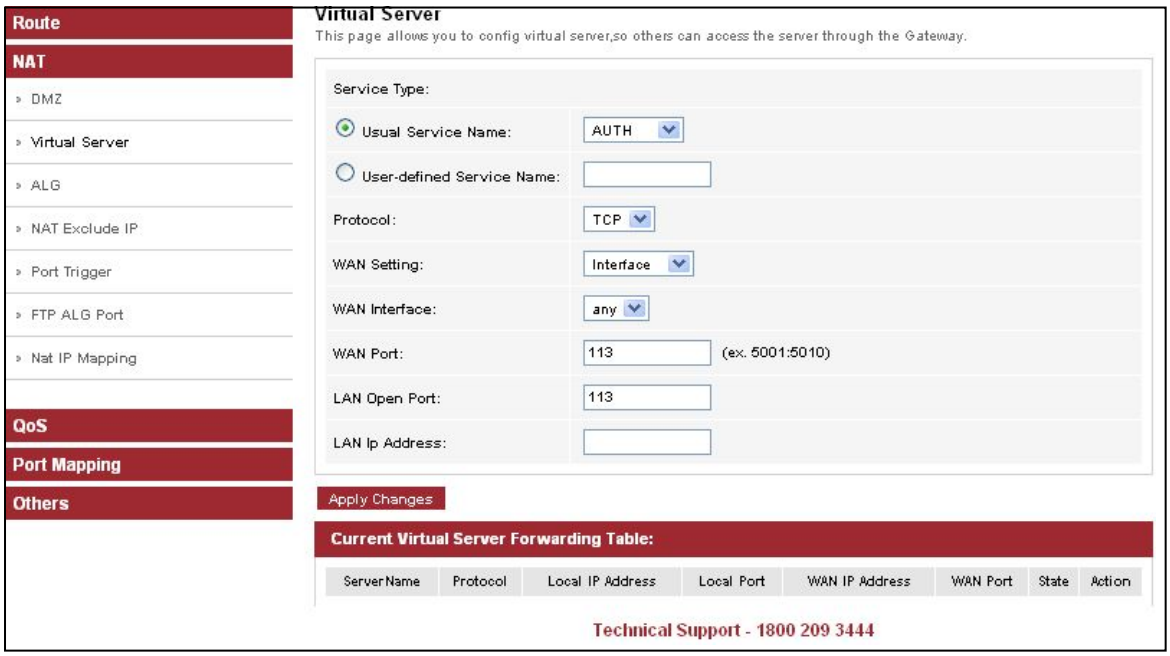
Here is the description of every setup item:

Parameter	Description
WAN Interface	Select the WAN interface from the drop down list.
DMZ Host IP Address	Enter DMZ host IP Address. Specify the LAN IP address of the PC on which you want to have unrestricted Internet communication.

Virtual Server

The page allows you to configure virtual server, so others can access the server through the Gateway.

Choose menu "**Advanced→Virtual Server**", below given screen will be displayed.

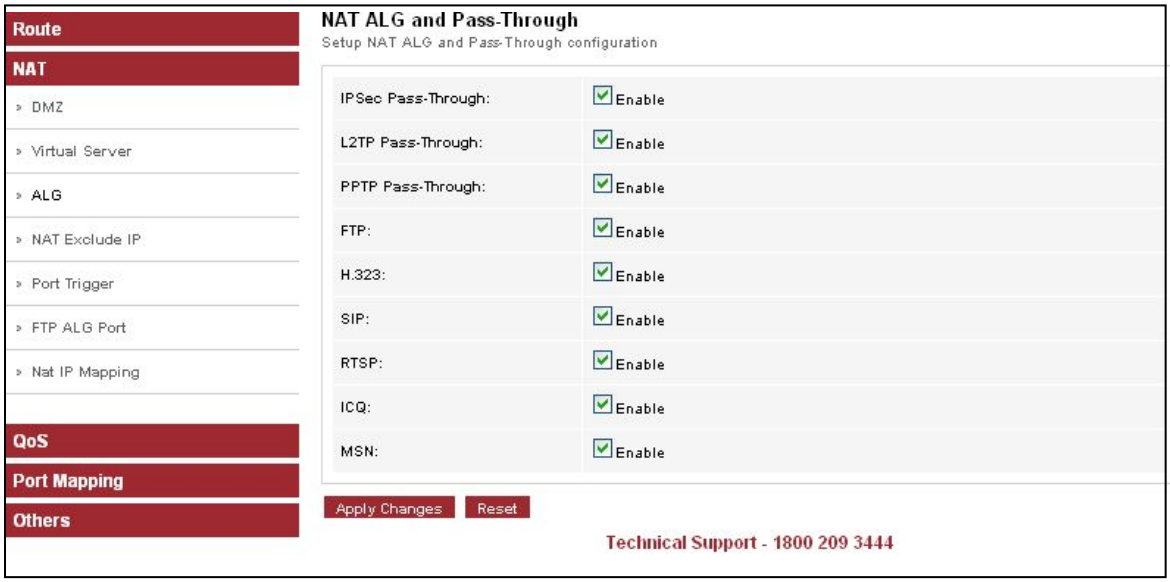


Here is the description of every setup item:

Parameter	Description
Usual Service Name	You can choose the type for the Usual Application Name on the pull-down list.
User-defined Service Name	Enter a name for the rule.
Protocol	The protocol used for this application, either TCP, UDP.
WAN Port	Enter the port that you want to open next to WAN port.
LAN Open Port	Enter the port that you want to open next to LAN port.
LAN IP Address	Enter the IP address of the computer on your local network that you want to allow the incoming service to.

ALG

This feature sets up NAT ALG and Pass-Through configuration. Application Layer Gateway (ALG) is a special function of this router. It includes many preset routing rules for numerous applications which require special support. With these supports, those applications which required special support will be able to work with NAT architecture.

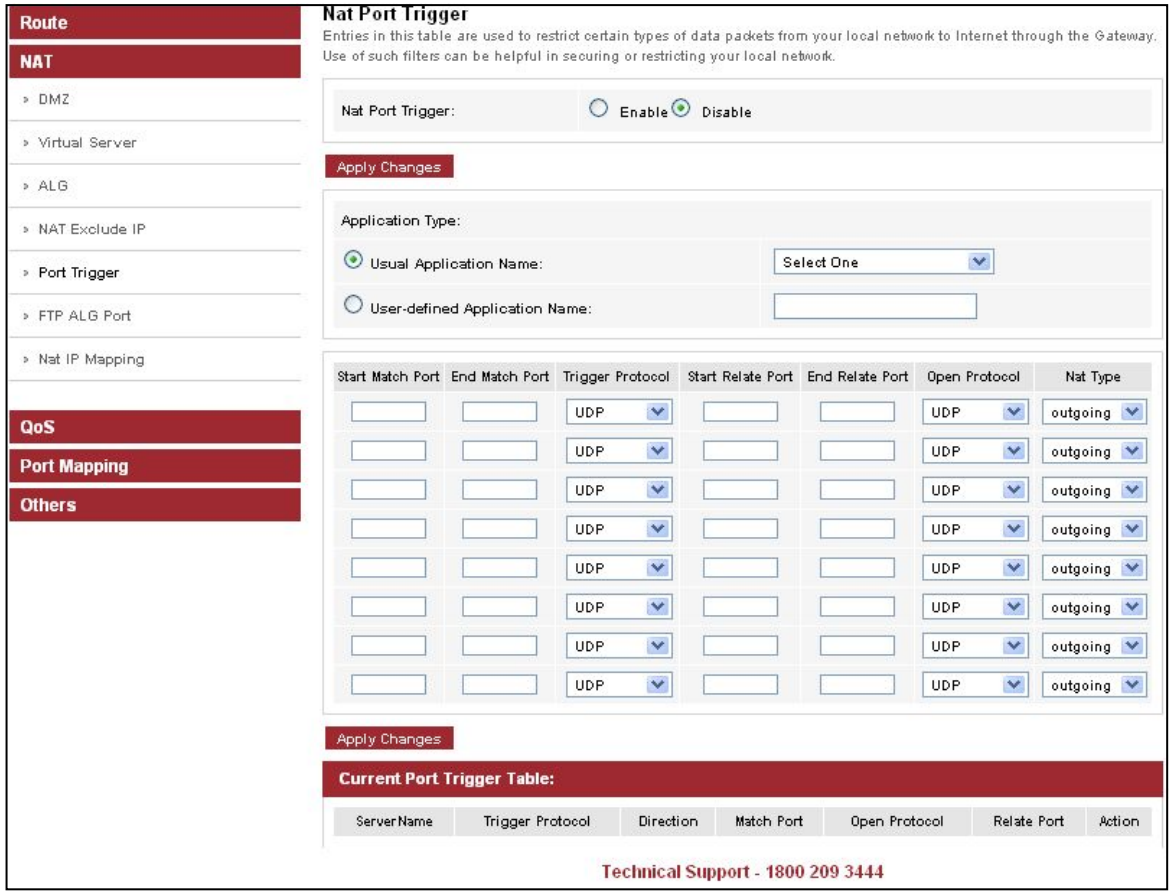


NAT EXCLUDE IP

This page is used to configure some source IP address which use the purge route mode when you access internet through the specified interface.

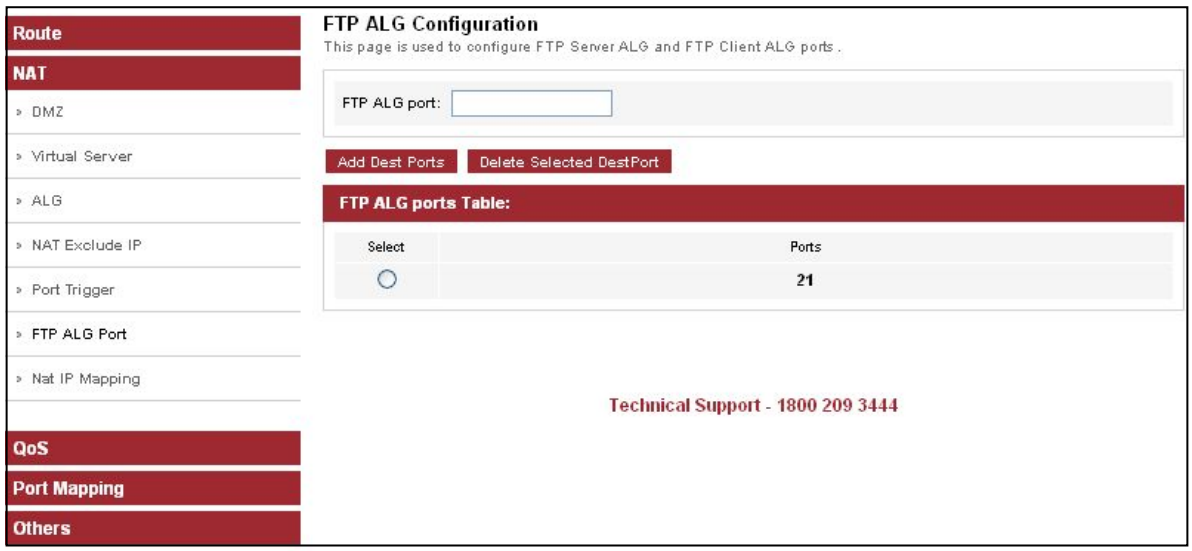
NAT PORT TRIGGER

Entries in this table are used to restrict certain types of data packets from your local network to Internet through the Gateway. Use of such filters can be helpful in securing or restricting your local network.



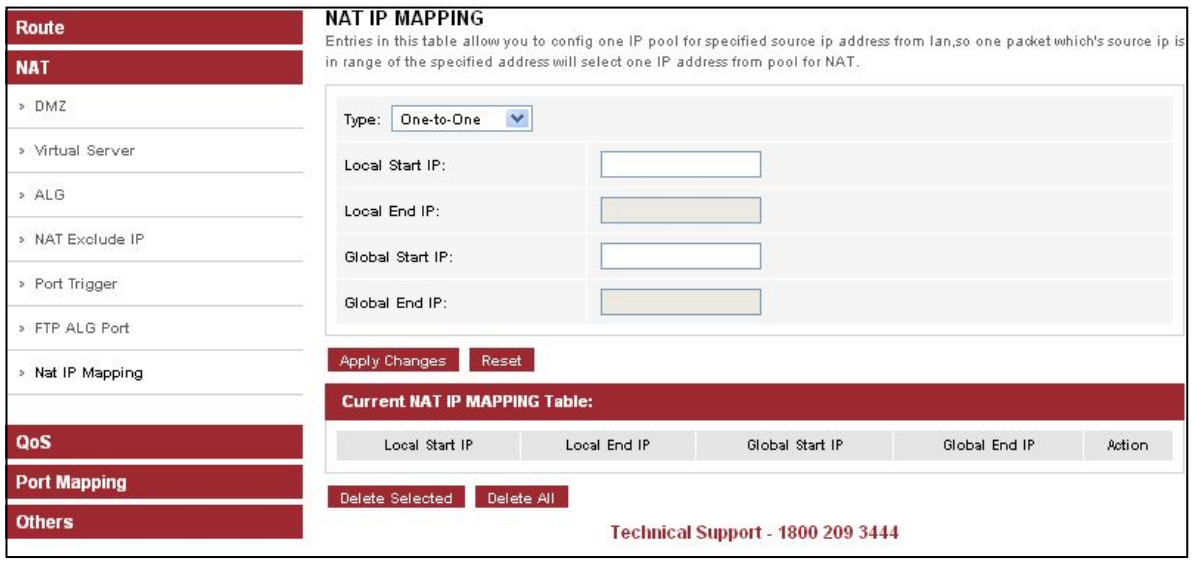
FTP ALG PORT

This page is used to configure FTP Server ALG and FTP Client ALG ports.



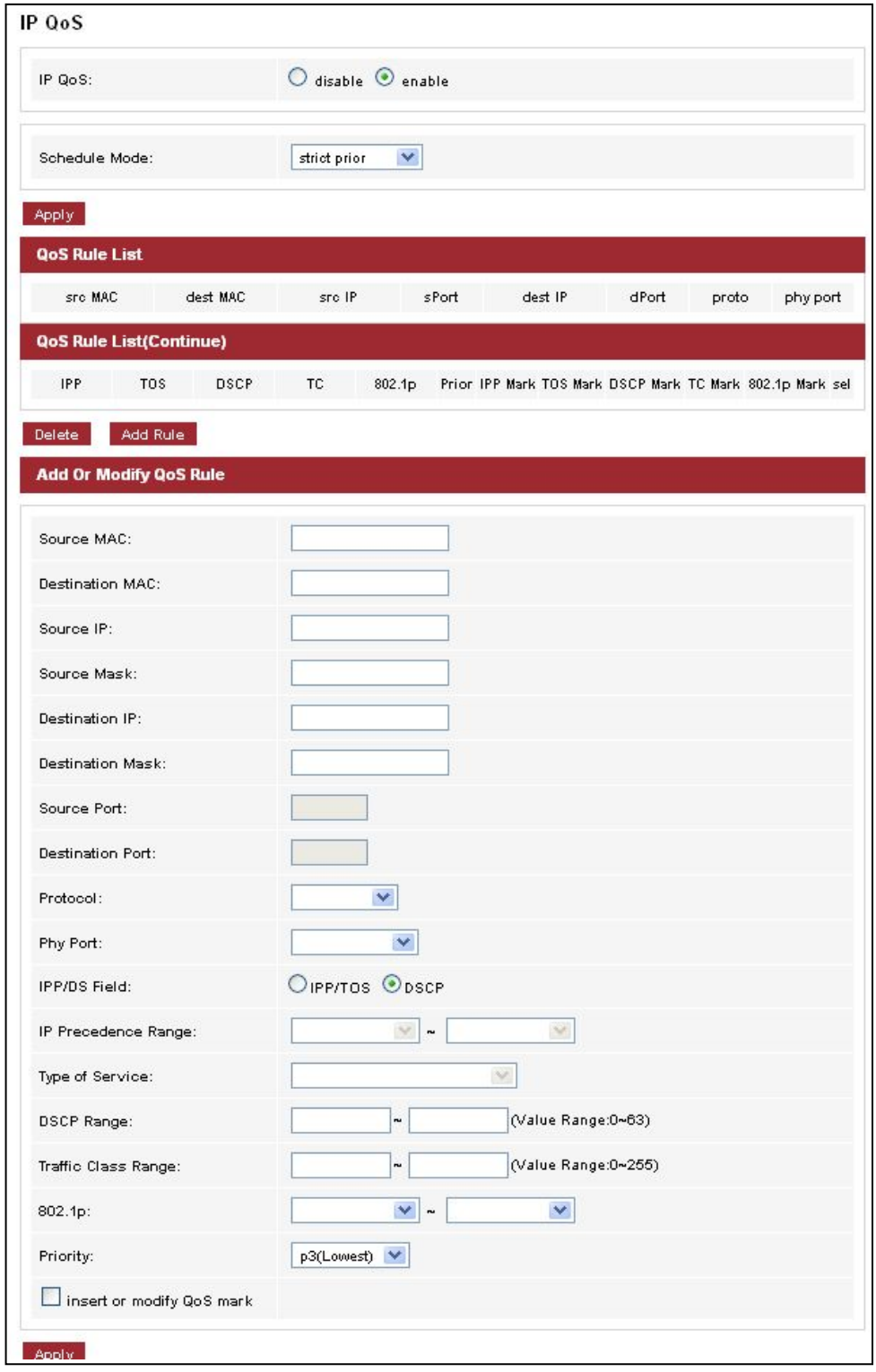
NAT IP MAPPING

Entries in this table allow you to configure one IP pool for specified source IP address from LAN, so one packet whose source IP is in range of the specified address will select one IP address from pool for NAT.



QOS

You can enable or disable IP QoS. Click enable and click "**Add Rule**", the following screen will appear.



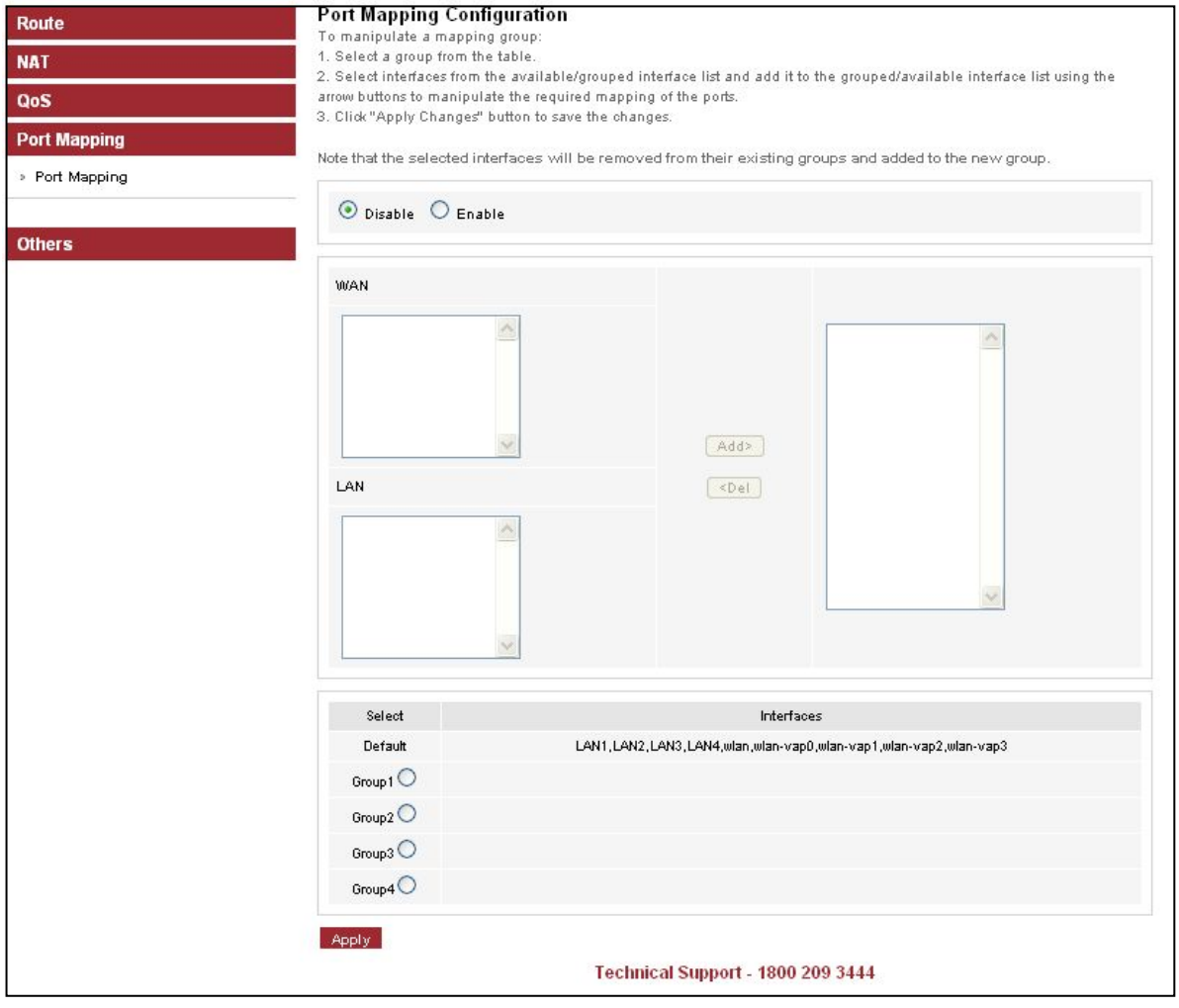
The following table describes the parameters and buttons of this page:

Field	Description
IP QoS	Select to enable or disable IP QoS function. You need to enable IP QoS if you want to configure the parameters of this page.
Schedule Mode	You can choose strict prior or WFQ (4:3:2:1).
Source MAC	The MAC address of the source data packet.
Destination MAC	The MAC address of the Destination data packet.
Source IP	The IP address of the source data packet.
Source Mask	The subnet mask of the source IP address.
Destination IP	The IP address of the destination data packet.
Destination Mask	The subnet mask of the destination IP address.
Source Port	The port of the source data packet.
Destination Port	The port of the destination data packet.
Protocol	The protocol responds to the IP QoS rules. You can choose TCP, UDP, or ICMP.
Phy Port	The LAN interface responds to the IP QoS rules.
802.1p	You can choose from 0 to 7.
Set priority	The priority of the IP QoS rules. P0 is the highest priority and P3 is the lowest.

Port Mapping

To manipulate a mapping group:
1. Select a group from the table.
2. Select interfaces from the available/grouped interface list and add it to the grouped/available interface list using the arrow buttons to manipulate the required mapping of the ports.
3. Click "**Apply Changes**" button to save the changes.

Note that the selected interfaces will be removed from their existing groups and added to the new group.



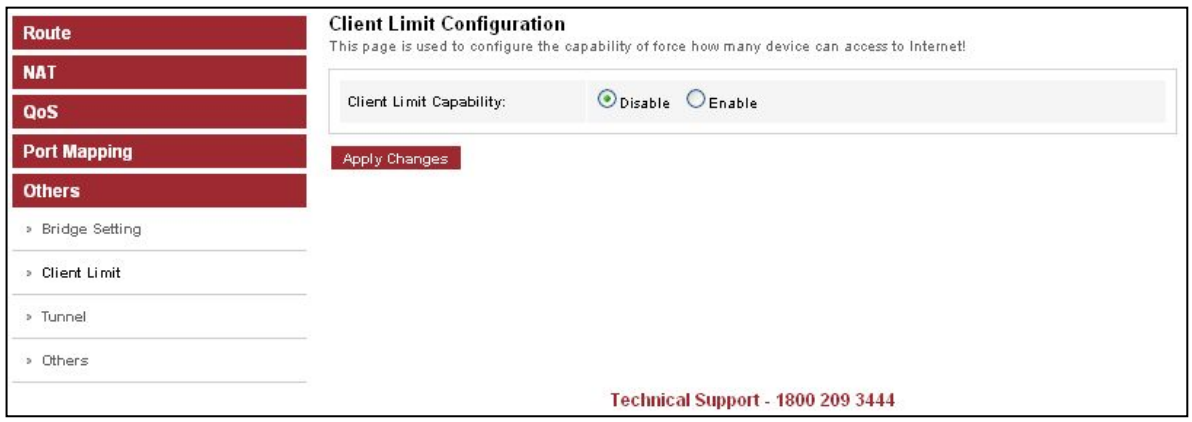
Others

Bridge Setting

This page is used to configure the bridge parameters. Here you can change the settings or view some information on the bridge and its attached ports.

Client Limit

This page is used to configure how many devices can access to Internet which limits the internet users connectivity to the router.



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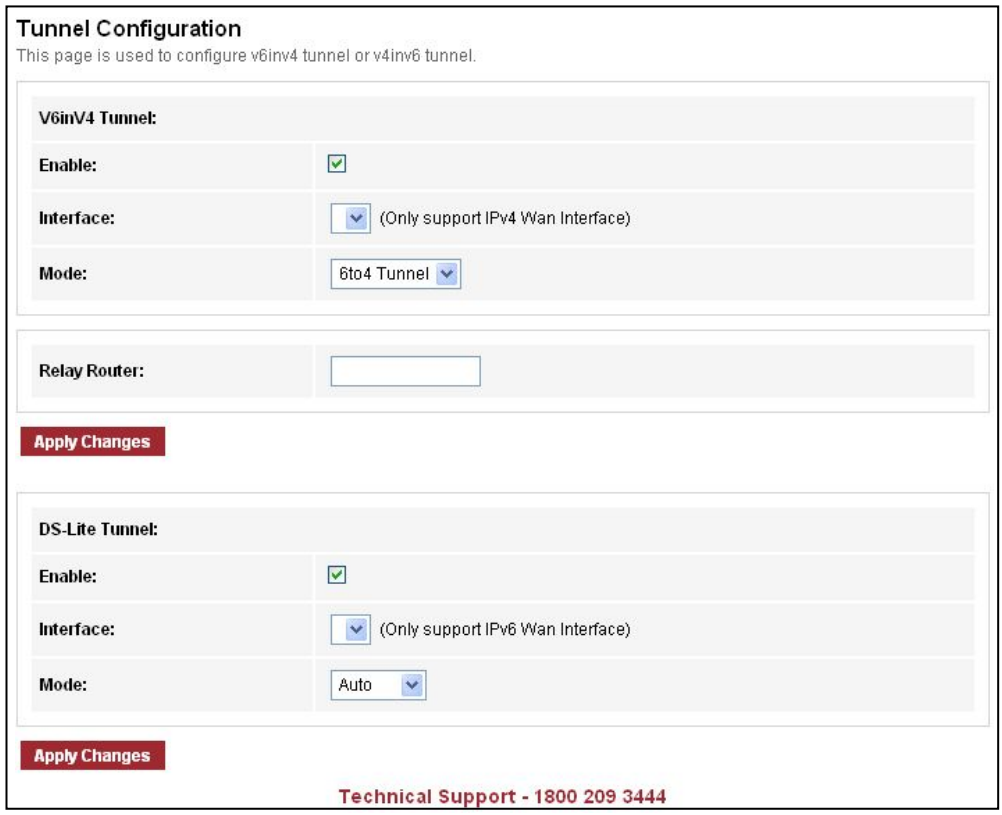
Tunnel

This page is used to configure v6inv4 tunnel or v4inv6 tunnel.



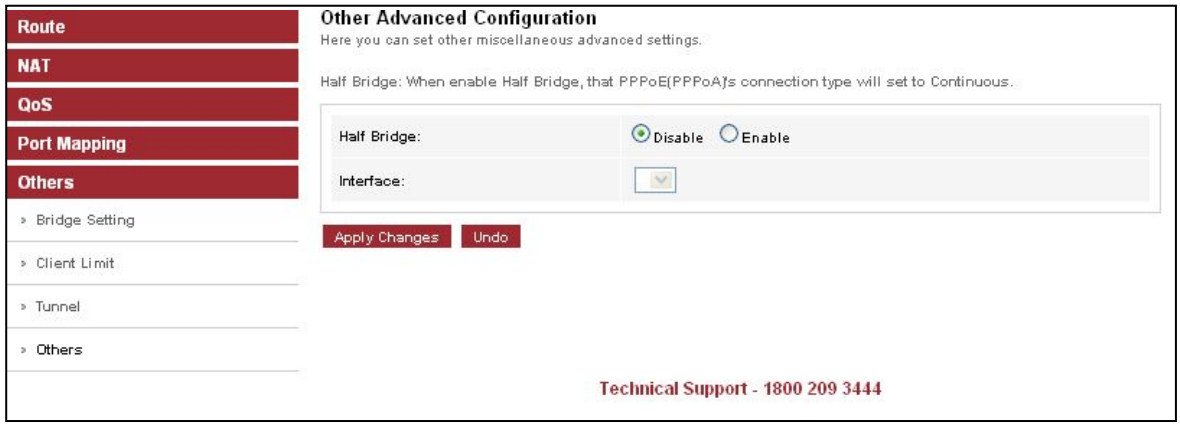
The following table describes the parameters and buttons of this page:

Parameters	Description
Enable	Enable or disable the DS-Lite tunnel.
Interface	Select current wan interface used as tunnel interface.
Mode: 6to4 Tunnel	Select 6to4 Tunnel or 6th Tunnel.

Others

Here you can set other miscellaneous advanced settings.

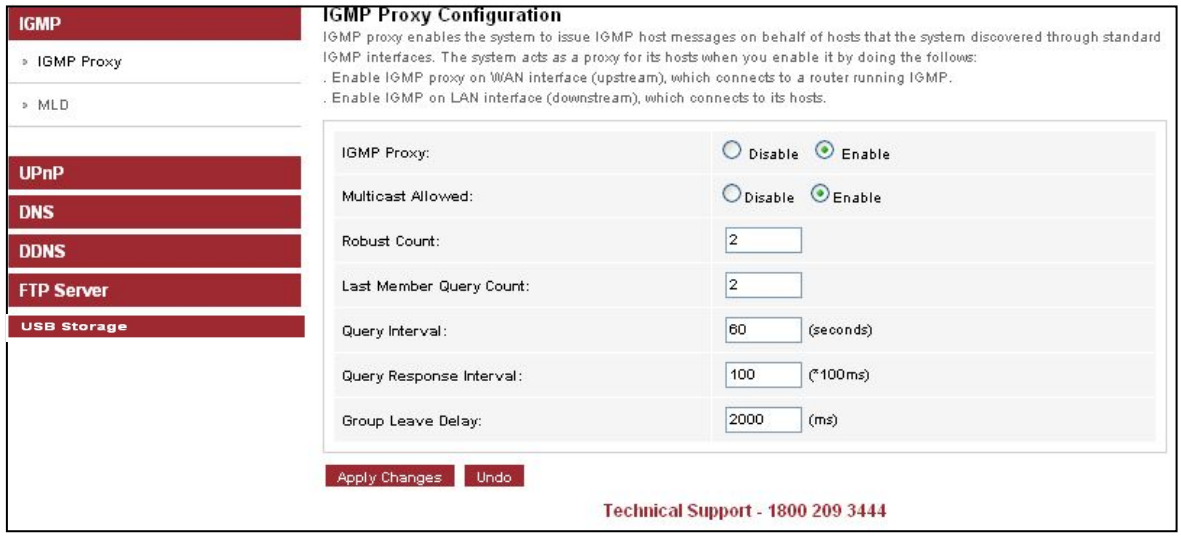
Half Bridge when enabled, the PPPoE (PPPoA)'s connection type will set to Continuous.



3-6 Service

IGMP

IGMP proxy enables the system to issue IGMP host messages on behalf of hosts that the system discovered through standard IGMP interfaces. The system acts as a proxy for its hosts when you enable it by doing the following:

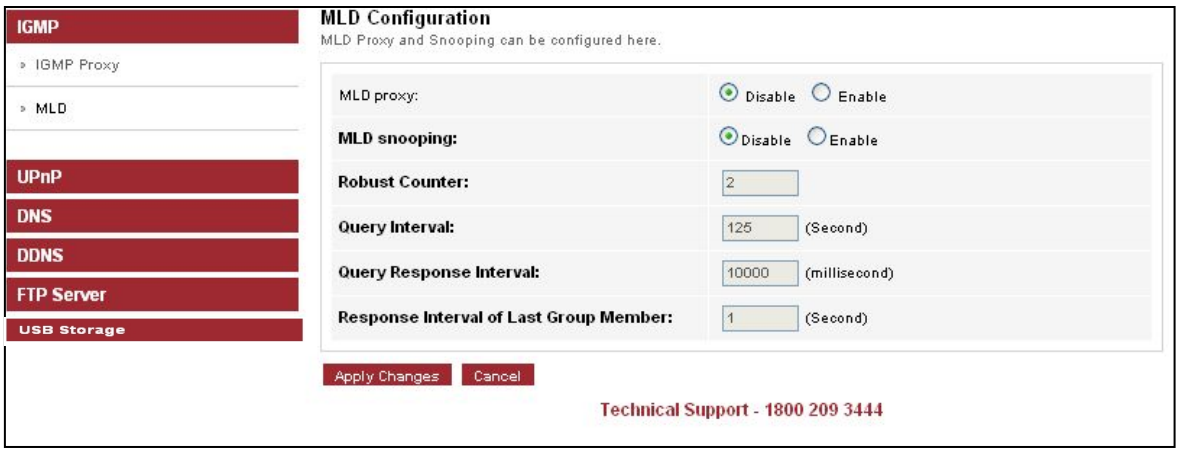


Here is the description of every setup item:

Parameter	Description
IGMP Proxy	The Router will act as an IGMP proxy for hosts if enabled.
Multicast Allowed	Enable or Disable the multicast packets.
Robust Count	The Robust Count allows tuning for expected packet loss on a network. By default, the value is set to 2.
Last member query count	This parameter indicates last member query interval. It is the maximum response time in seconds for an IGMP host in reply to group-specific queries.
Query Interval	This parameter indicates the query interval. It is the interval in seconds (s) between general queries sent by the querier.
Query Response Interval	This parameter indicates the query response interval. It is the maximum response time in seconds for an IGMP host in reply to general queries.
Group Leave Delay	The message is sent when a host leaves a group.

MLD

MLD Proxy and Snooping can be configured here.



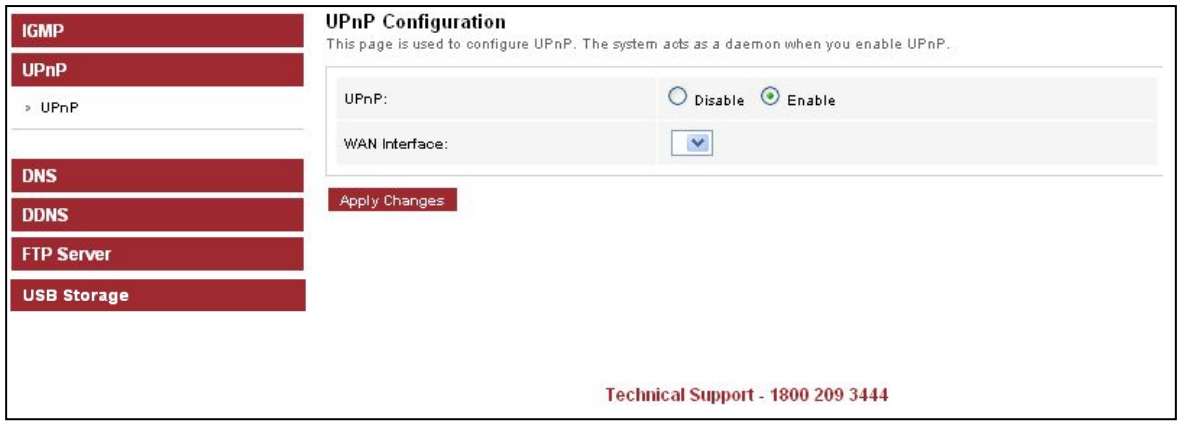
Here is the description of every setup item:

Parameter	Description
MLD Snooping	With MLD snooping, IPv6 multicast data is selectively forwarded to a list of ports that want to receive the data, instead of being flooded to all ports.
Robust Counter	The Robust Count allows tuning for expected packet loss on a network.

Query Interval	This parameter indicates the query interval. It is the interval in seconds between general queries sent by the querier.
Query Response Interval	This parameter indicates the query response interval. It is the maximum response time in seconds for an MLD host in reply to general queries.
Response interval of last group member	Default value is 1 second.

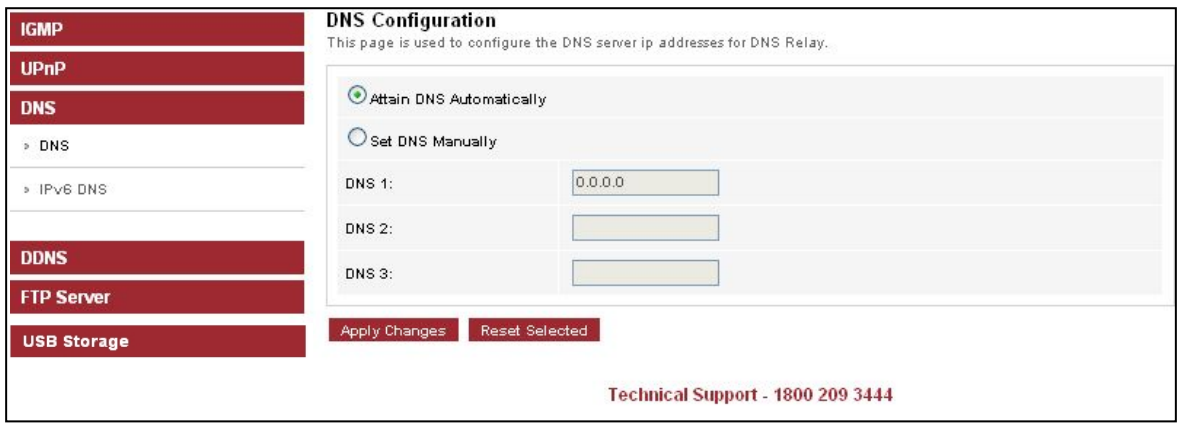
UPnP

This page is used to configure UPnP. The system acts as a daemon when you enable UPnP.



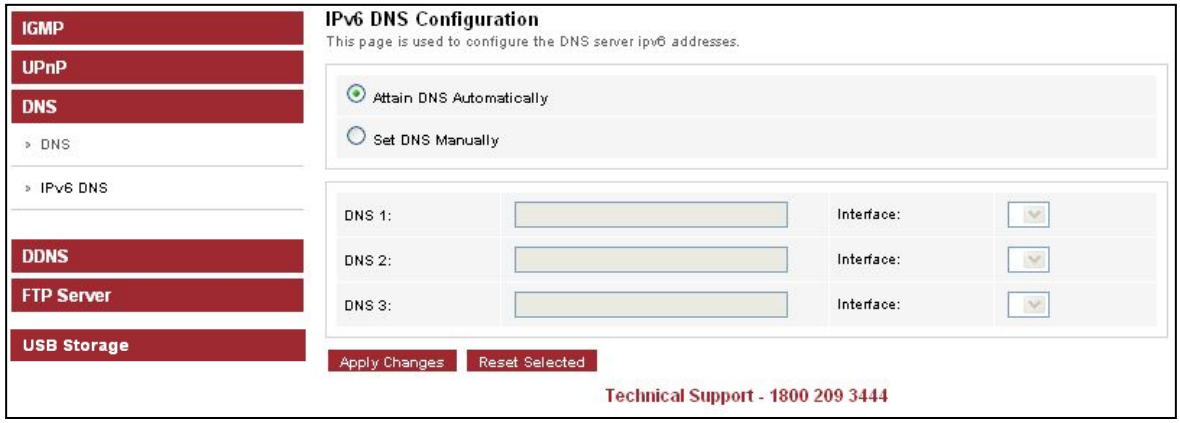
DNS

This page is used to configure the DNS server IP addresses for DNS Relay.



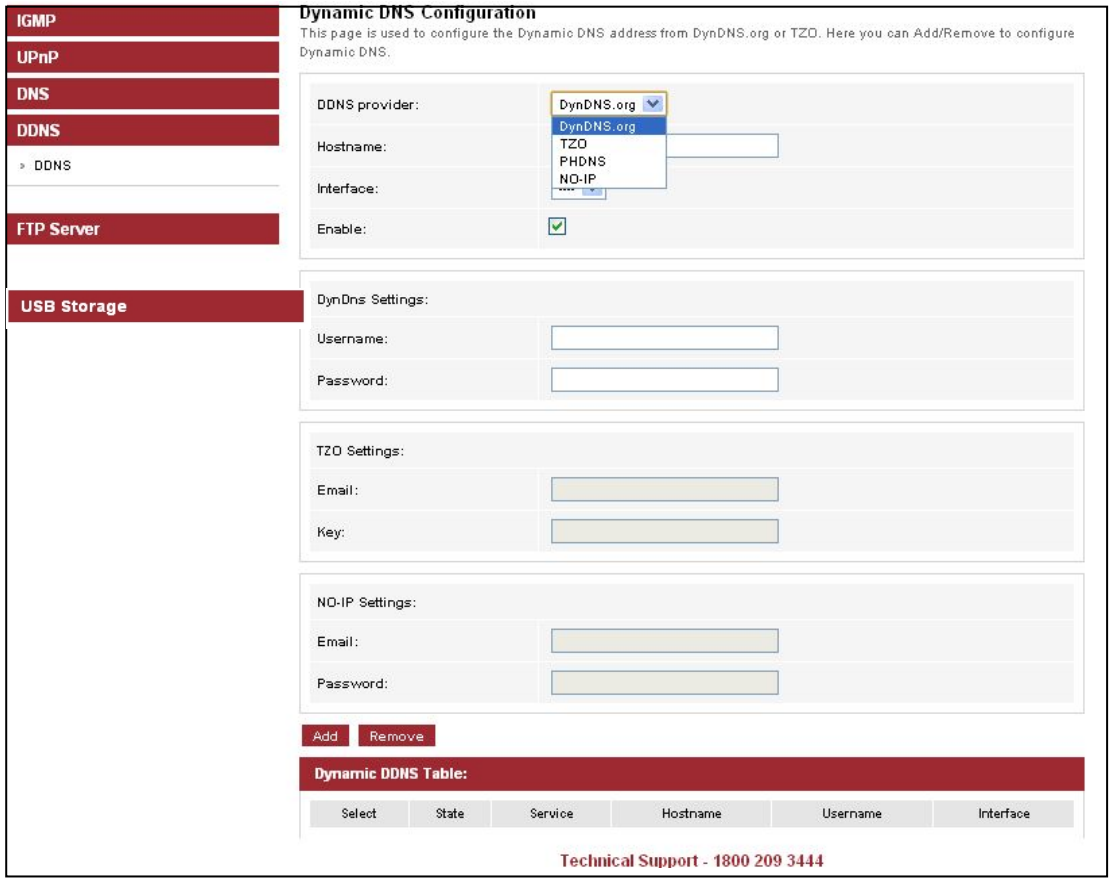
IPv6 DNS

This page is used to configure the DNS server ipv6 addresses.



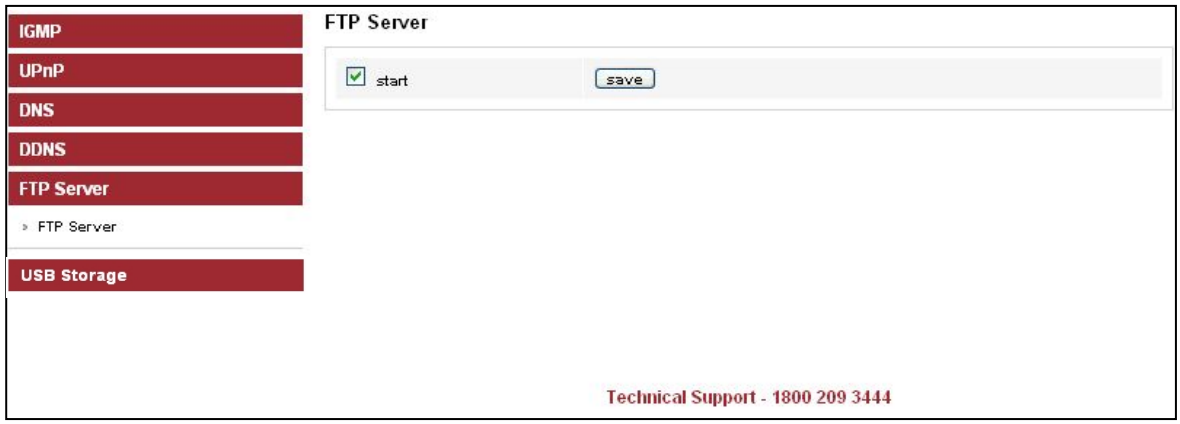
DDNS

This page is used to configure the Dynamic DNS address from DynDNS.org, TZO, PHDNS or NO-IP. Here you can Add/Remove to configure Dynamic DNS.



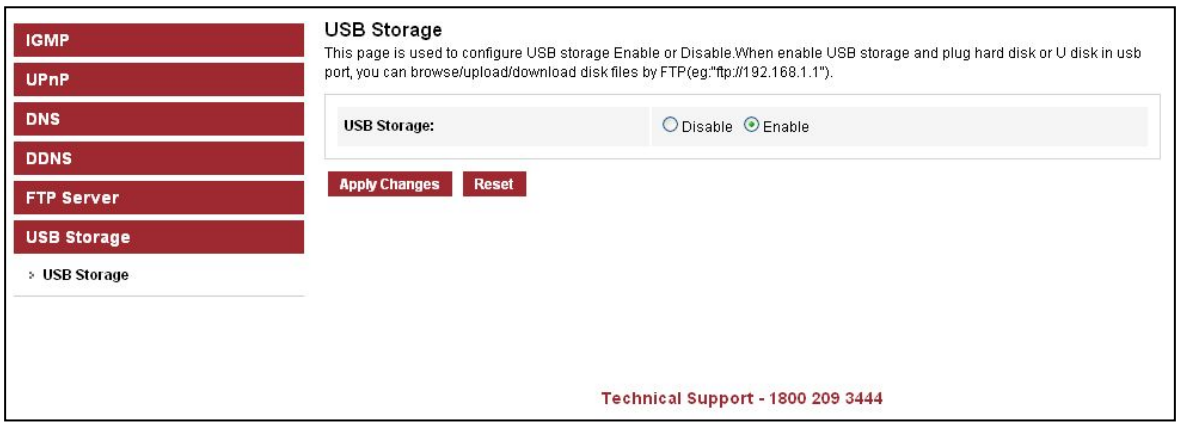
FTP Server

Check start to start the FTP server.



USB Storage

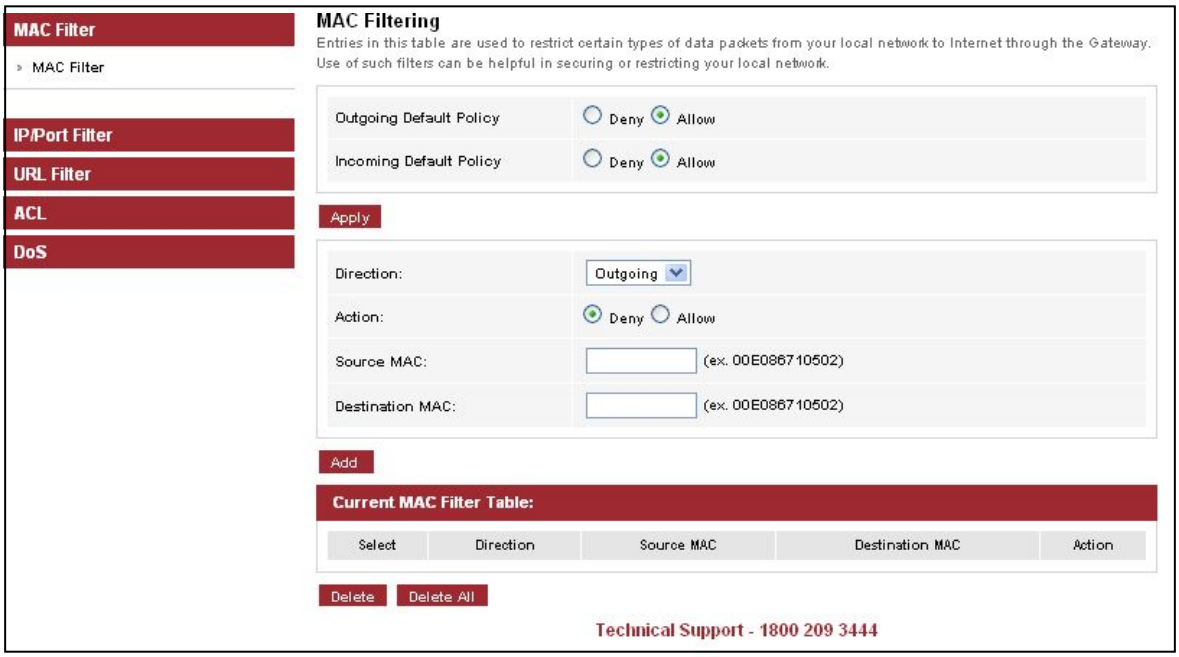
This page is used to configure USB storage Enable or Disable. When enable USB storage and plug hard disk or USB disk in USB port, you can browse/upload/download disk files by FTP (eg:"ftp://192.168.1.1").



Firewall

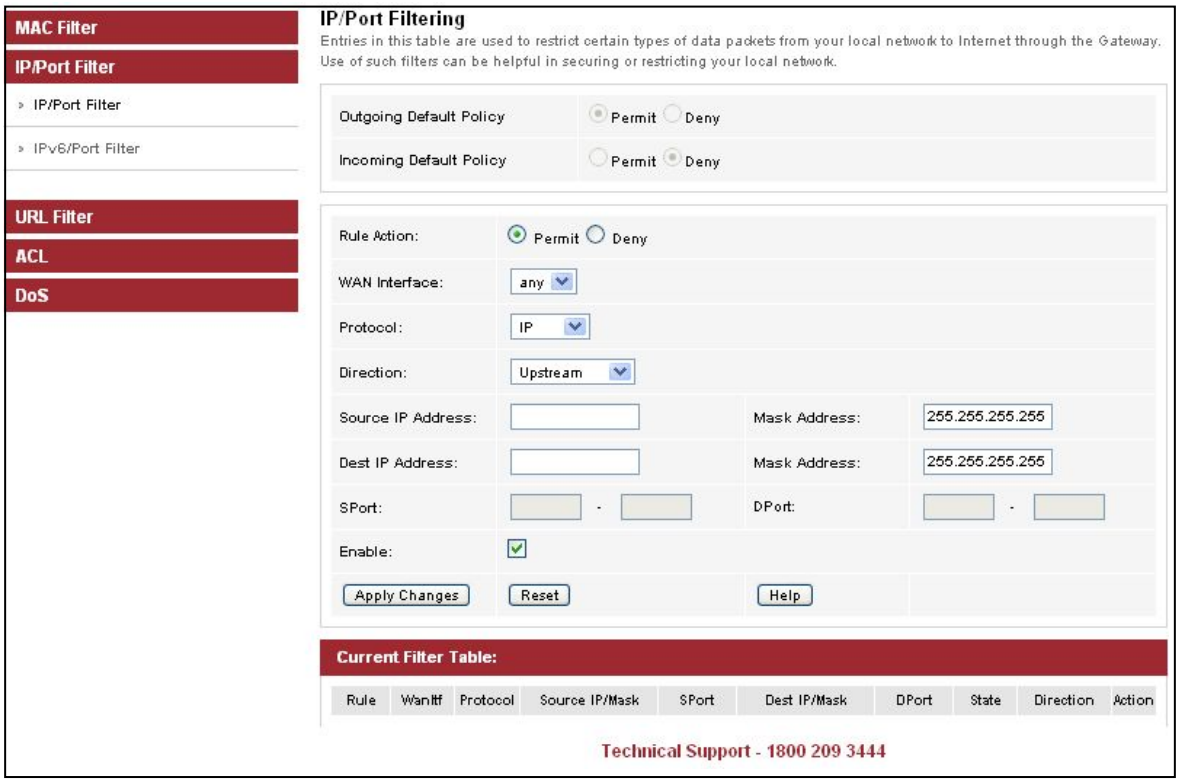
MAC Filtering

Entries in this table are used to restrict certain types of data packets from your local network to Internet through the Gateway. Use of such filters can be helpful in securing or restricting your local network.



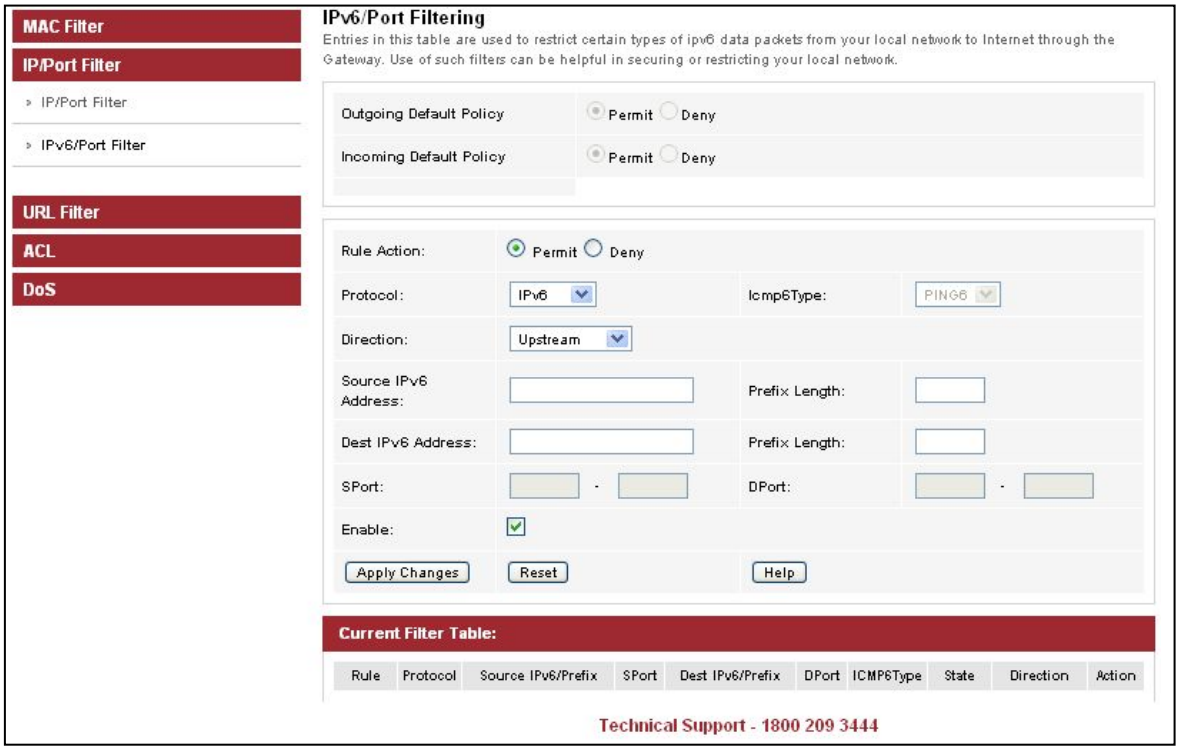
IP/Port Filter

Entries in this table are used to restrict certain types of data packets from your local network to Internet through the Gateway. Use of such filters can be helpful in securing or restricting your local network.



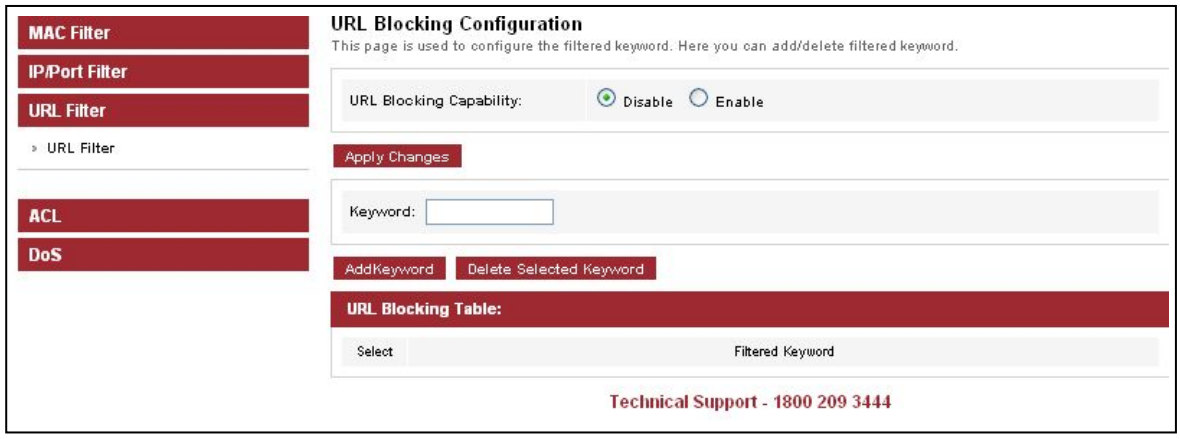
IPv6/Port Filter

Entries in this table are used to restrict certain types of ipv6 data packets from your local network to Internet through the Gateway. Use of such filters can be helpful in securing or restricting your local network.



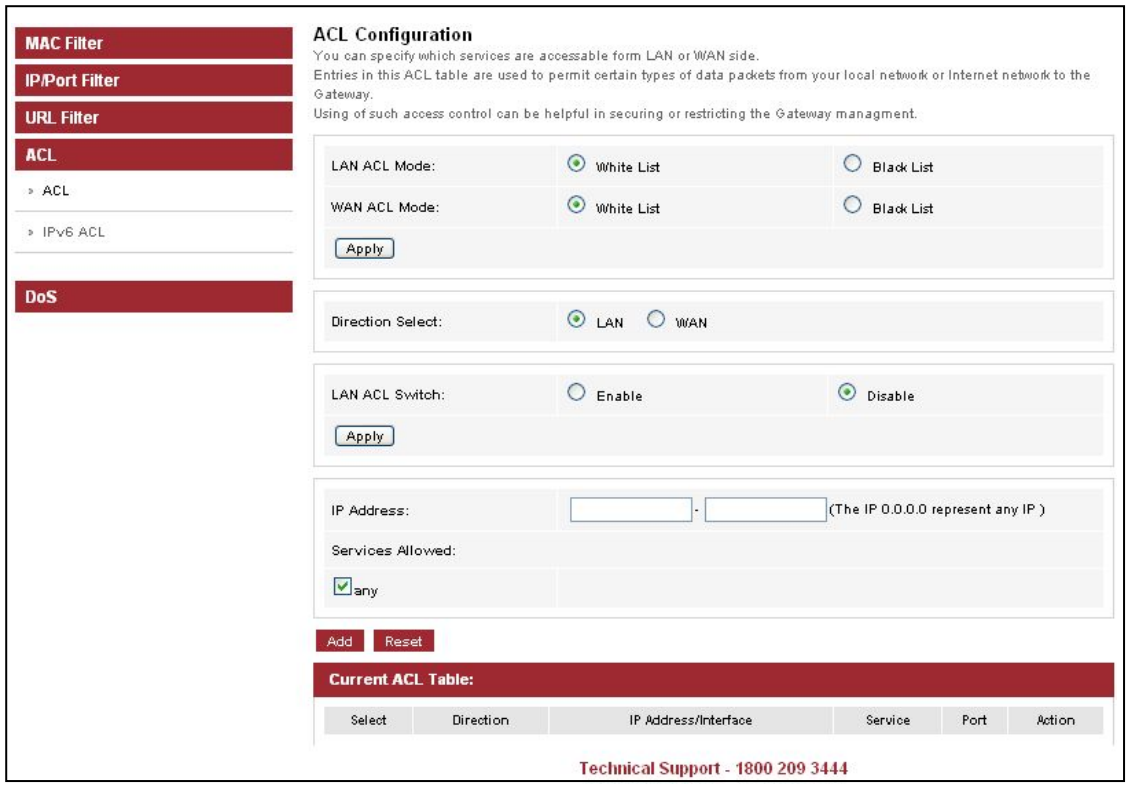
URL Filter

This page is used to configure the filtered keyword. Here you can add/delete filtered keyword.



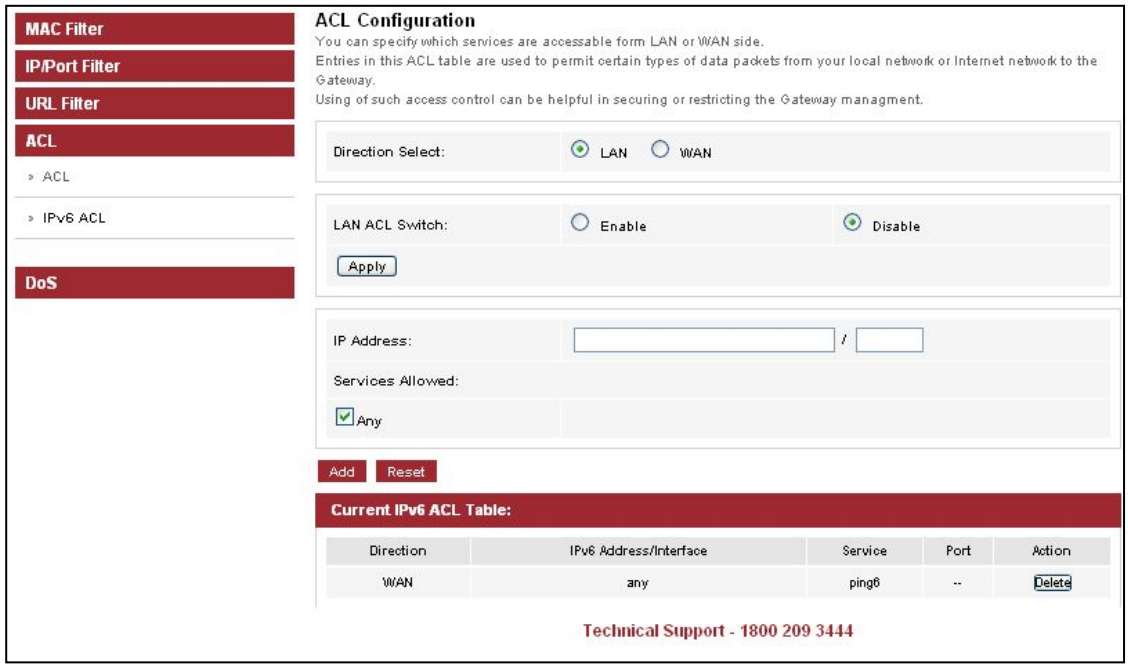
ACL

You can specify which services are accessible form LAN or WAN side. Entries in this ACL table are used to permit certain types of data packets from your local network or Internet network to the Gateway.
Using of such access control can be helpful in securing or restricting the Gateway management.



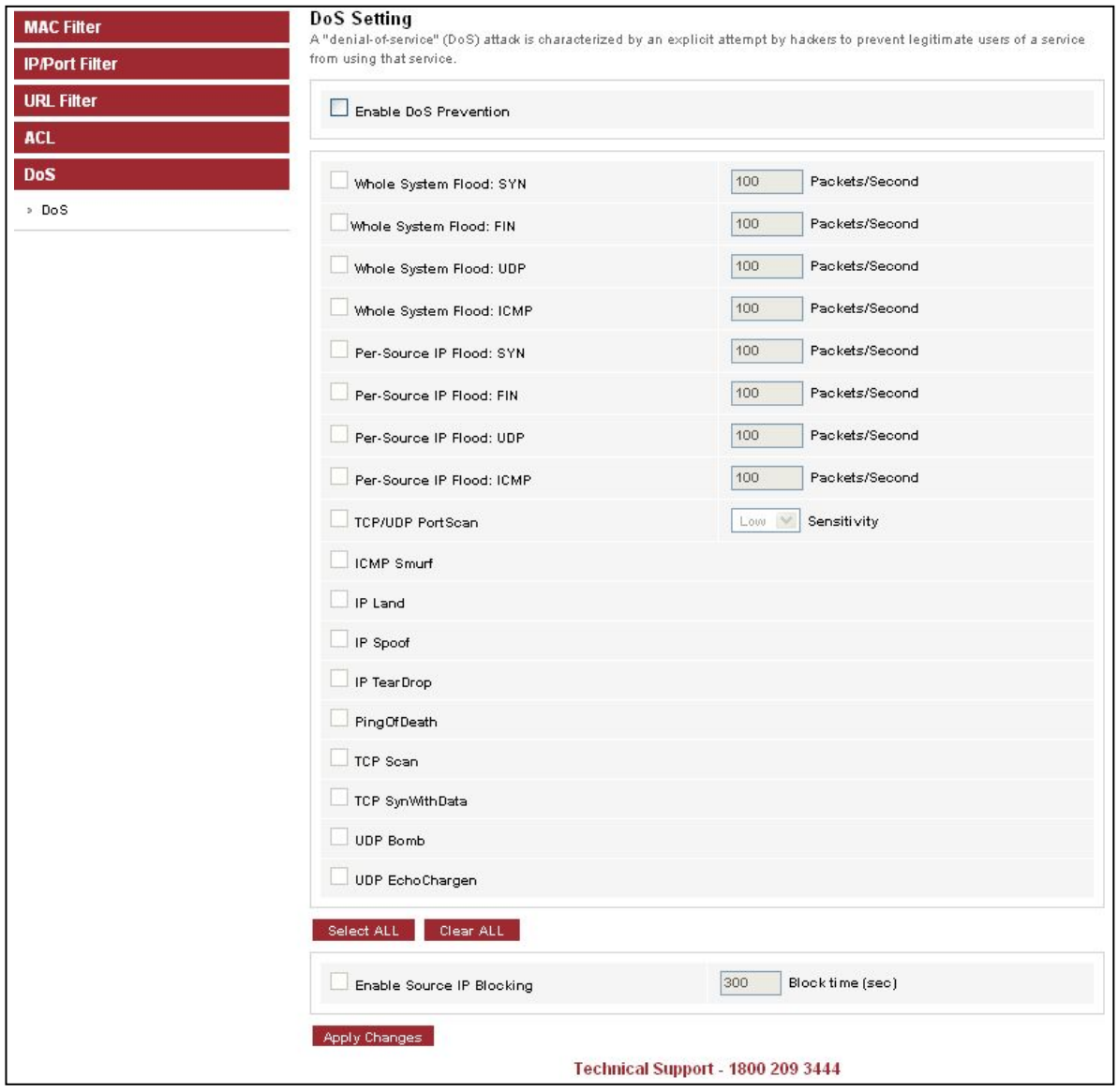
IPv6 ACL

You can specify which services are accessible form LAN or WAN side.
Entries in this ACL table are used to permit certain types of data packets from your local network or Internet network to the Gateway.
Using of such access control can be helpful in securing or restricting the Gateway management.



DoS

A "denial-of-service" (DoS) attack is characterized by an explicit attempt by hackers to prevent legitimate users of a service from using that service.
Denial of Service (DoS) is a common attack measure, by transmitting a great amount of data or request to your Internet IP address and server, the Internet connection will become very slow, and server may stop responding because it is not capable to handle too much traffic.



3-7 Maintenance

Firmware Update

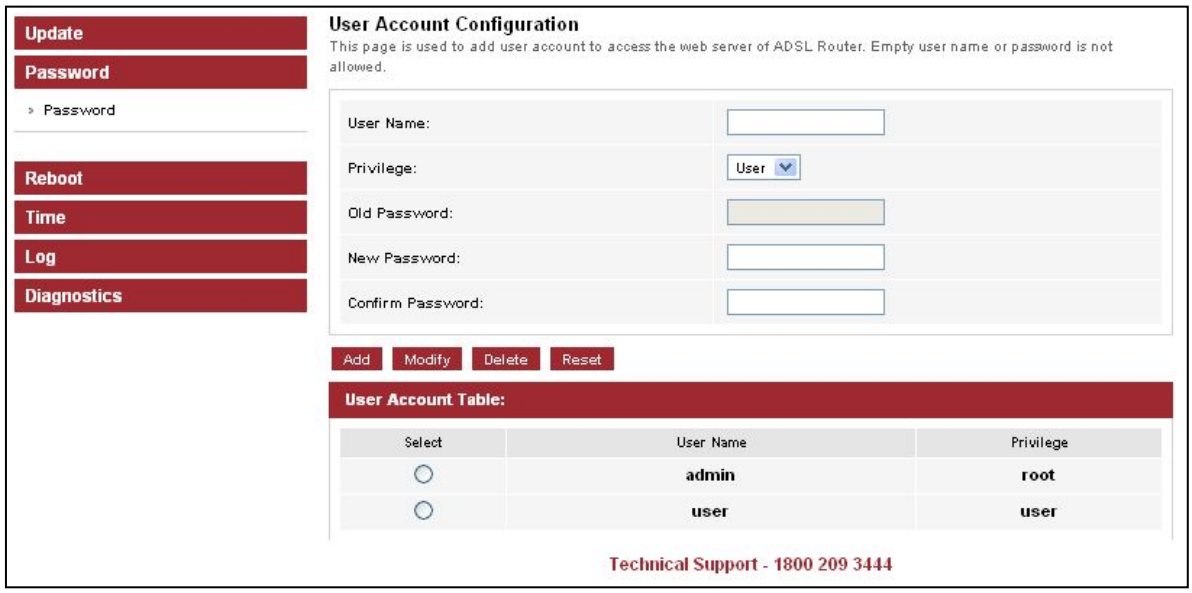
This page allows you to upgrade the Router firmware to new version. Please note, do not power off the device during the upload because it may crash the system.

Backup/Restore

Once the router is configured you can save the configuration settings to a configuration file on your hard drive. You also have the option to load configuration settings.

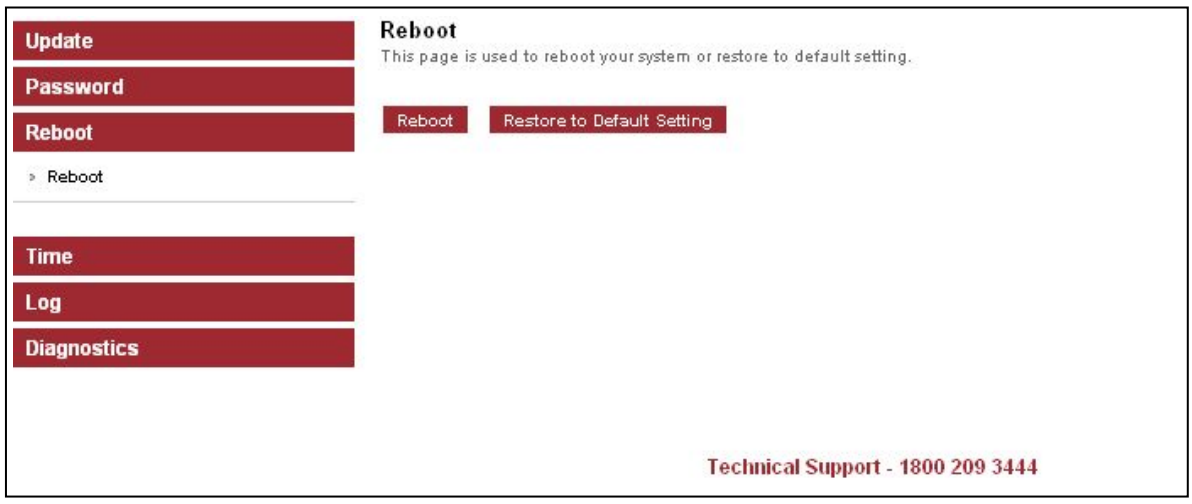
Password

This page is used to add user account to access the web server of Router. Empty user name or password is not allowed.



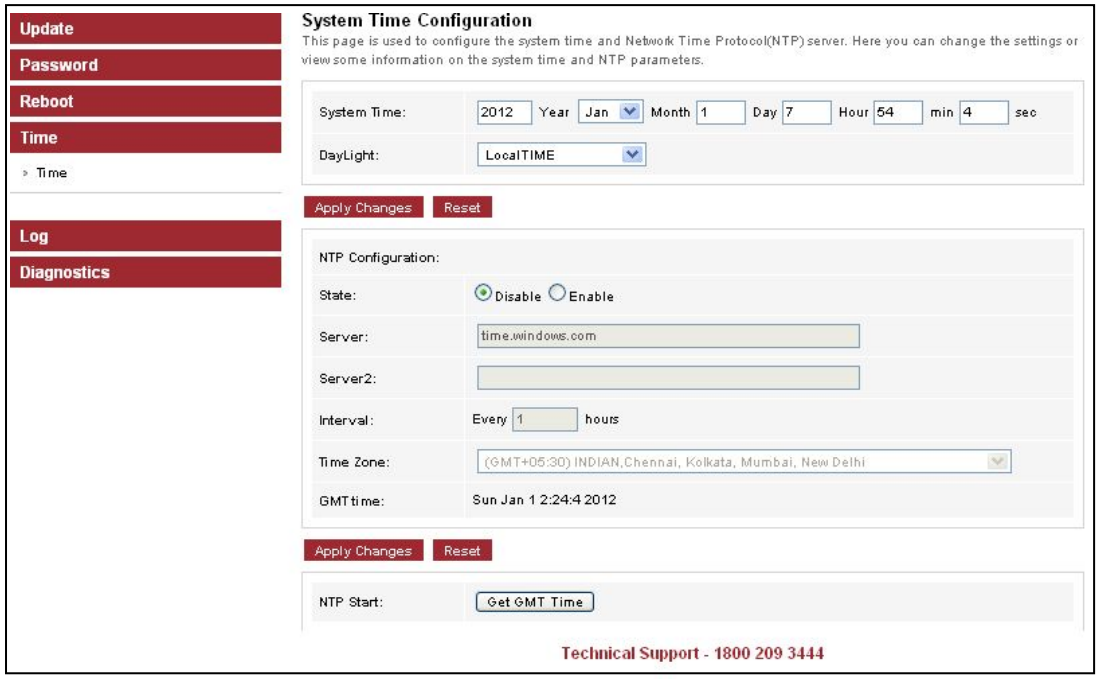
Reboot

This page is used to reboot your system or restore to default setting.



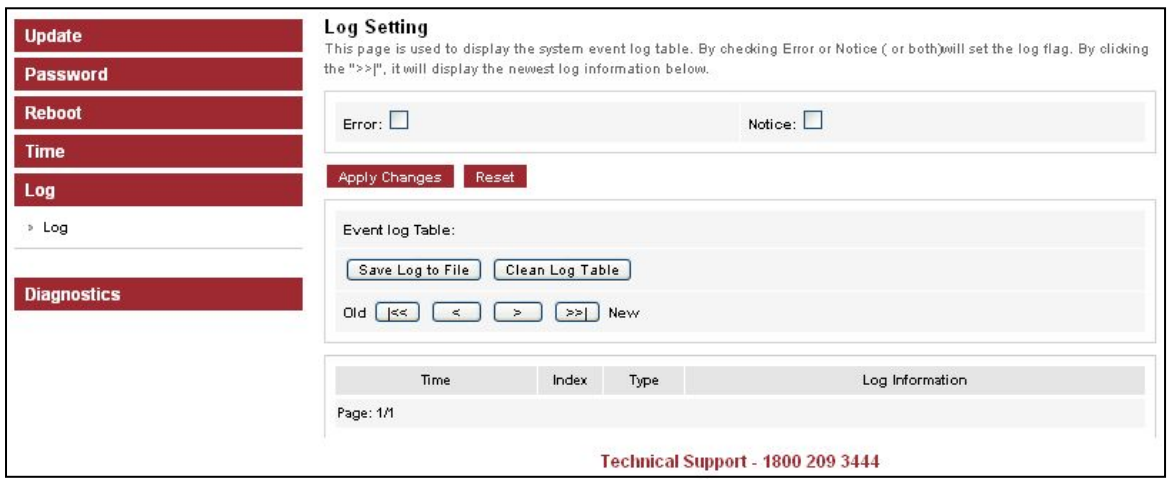
Time

This page is used to configure the system time and Network Time Protocol (NTP) server. Here you can change the settings or view some information on the system time and NTP parameters.



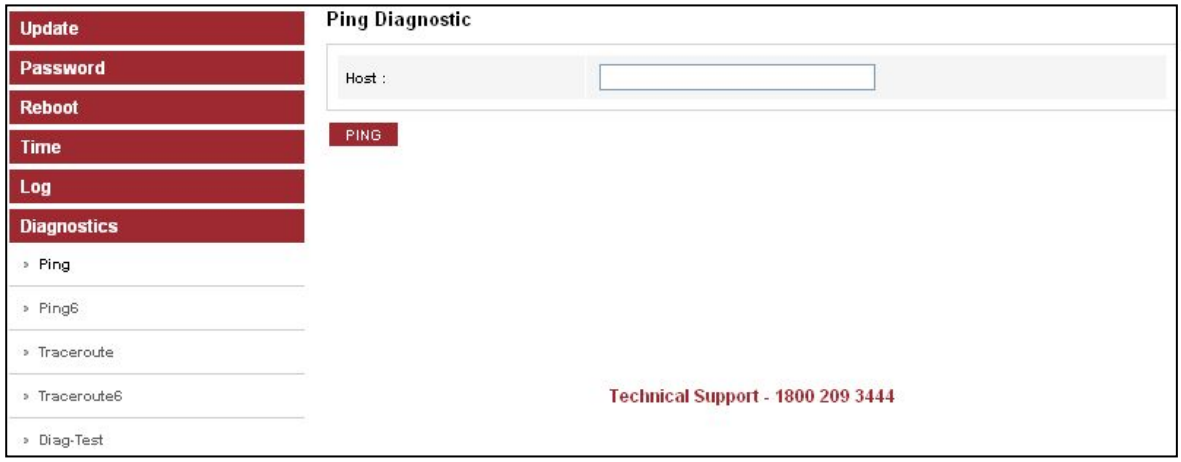
Log

This page is used to display the system event log table. By checking Error or Notice (or both) will set the log flag. By clicking the ">>|", it will display the newest log information below.



Diagnostics

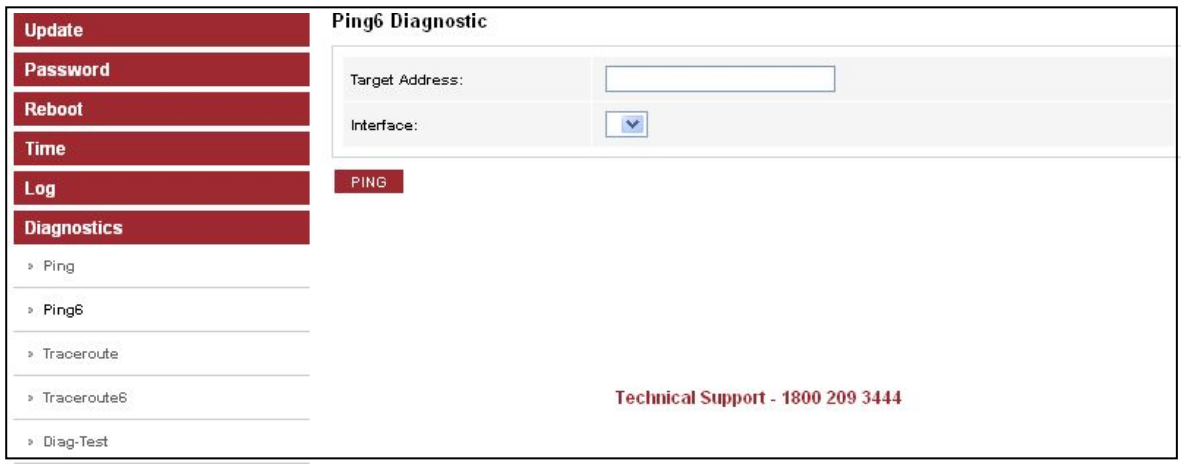
A) Ping



The following table describes the parameters and buttons of this page:

Field	Description
Host	Enter the valid IP address or domain name.
Ping	Click it to start to Ping.

B) Ping6

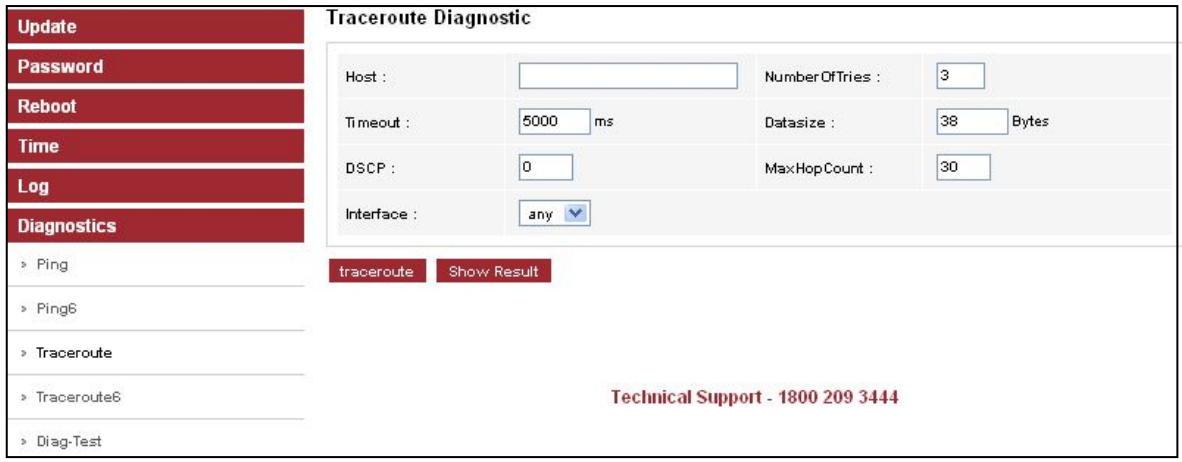


The following table describes the parameters and button of this page:

Field	Description
Target Address	Enter an IP address for Ping6 diagnostic.
Interface name	Enter an interface through which the Ping6 diagnostic is performed.

C) Traceroute Diagnostic

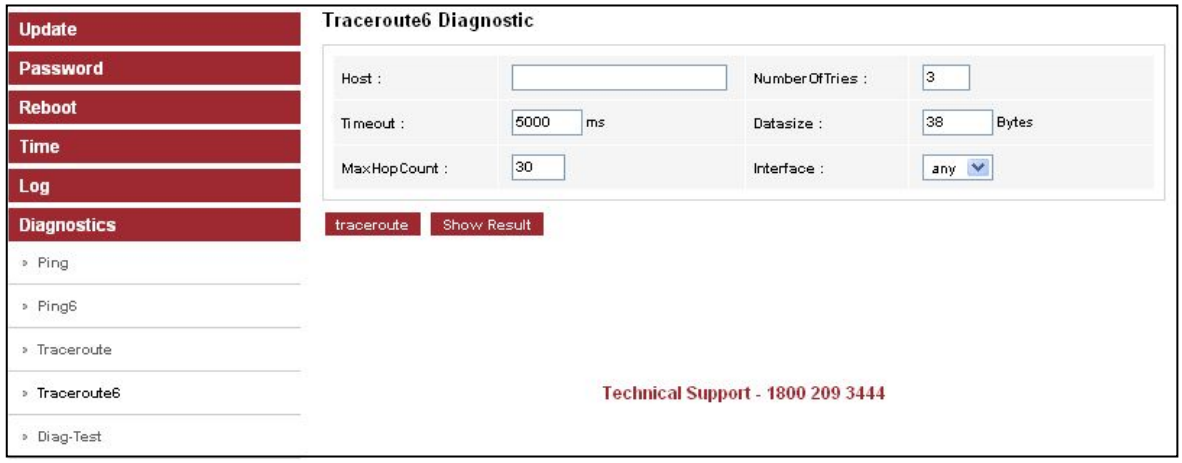
Click **Traceroute** in the left pane, and the following page appears. By Traceroute Diagnostic, you can track the route path of information flow from your computer to the other side host.



Here is the description of every setup item:

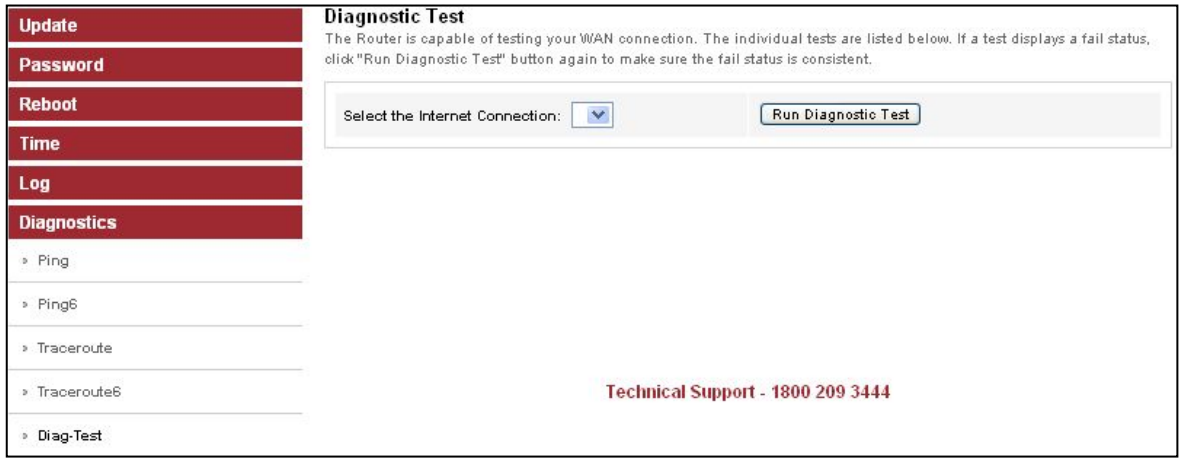
Parameters	Description
Host	Enter the destination host address for diagnosis.
NumberOfTries	Number of repetitions.
Timeout	Put in the timeout value.
Data size	Packet size.
DSCP	Differentiated Services Code Point, you should set a value between 0-63.
MaxHopCount	Maximum number of routes.
Interface	Select the interface.
Traceroute	Click start traceroute.

D) Traceroute6



E) Diag-Test

The Router is capable of testing your WAN connection. The individual tests are listed below. If a test displays a fail status, click "**Run Diagnostic Test**" button again to make sure the fail status is consistent.



Click "**Run Diagnostic Test**" to start testing.

4. Appendix

- **Hardware Specifications**
  - Flash: 2MB
  - SDRAM: 16MB
  - Antenna: Two fixed 5 dBi antenna
  - WPS/WLAN Push Button
  - Factory reset button
  - 1 * USB 2.0 Port

- **Network Ports**
  - 1 * 10/100Mbps UTP WAN Port
  - 4 * 10/100Mbps UTP LAN Ports

- **Status LED**
  - Power, WAN, LAN (1-4), WLAN, WPS, USB

- **Standards Compliance**
  - IEEE802.3 10 Base-T Ethernet
  - IEEE802.3u 100 Base-TX Fast Ethernet
  - IEEE802.11b, IEEE802.11g, IEEE802.11n

- **Frequency Band**
  - 2.4000 ~ 2.4835 GHz

- **WLAN Data Transfer Rates**
  - IEEE802.11b up to 11Mbps
  - IEEE802.11g up to 54Mbps
  - IEEE802.11n up to 300Mbps

- **Wireless Output Power**
  - IEEE802.11b: 23 +/- 1 dBm
  - IEEE802.11g: 19 +/- 1 dBm
  - IEEE802.11n: 18 +/- 1 dBm

- **Environmental Specifications**
  - Operating temperature: 0 to 40°C
  - Storage Temperature: -40 to 70°C
  - Operating Humidity: 10 % to 90 %
  - Storage Humidity: 5% to 95%

- **Power Supply**
  - 5V DC, 1.5 A Switching Power Adapter

- **Dimensions**
  - Net:(LxWxH) 168 x 110 x 30 mm
  - Gross: (LxWxH) 205 x 210 x 52 mm

- **Weight**
  - Net: 175 gms
  - Gross: 396 gms

5. Glossary

Default Gateway (Router): Every non-router IP device needs to configure a default gateway IP address. When the device sends out an IP packet, if the destination is not on the same network, the device has to send the packet to its default gateway, which will then send it to the destination.

DHCP: Dynamic Host Configuration Protocol. This protocol automatically gives every computer on your home network an IP address.

DNS Server IP Address: DNS stands for Domain Name System, which allows Internet servers to have a domain name (such as www.Broadbandrouter.com) and one or more IP addresses (such as 192.34.45.8). A DNS server keeps a database of Internet servers and their respective domain names and IP addresses, so that when a domain name is requested (as in typing "Broadbandrouter.com" into your Internet browser), the user is sent to the proper IP address. The DNS server IP address used by the computers on your home network is the location of the DNS server your ISP has assigned to you.

DSL Modem: DSL stands for Digital Subscriber Line. A DSL modem uses your existing phone lines to transmit data at high speeds.

Ethernet: A standard for computer networks. Ethernet networks are connected by special cables and hubs, and move data around at up to 10/100 million bits per second (Mbps).

Idle Timeout: Idle Timeout is designed so that after there is no traffic on the Internet for a pre-configured amount of time, the connection will automatically get disconnected.

IP Address and Network (Subnet) Mask: IP stands for Internet Protocol. An IP address consists of a series of four numbers separated by periods, which identifies a single, unique Internet computer host in an IP network. Example: 192.168.1.1. It consists of 2 portions: the IP network address and the host identifier.

The IP address is a 32-bit binary pattern, which can be represented as four cascaded decimal numbers separated by ".": aaa.aaa.aaa.aaa, where each "aaa" can be anything from 000 to 255, or as four cascaded binary numbers separated by ".": bbbbbbbb.bbbbbbbb.bbbbbbbb.bbbbbbbb, where each "b" can be either 0 or 1.

A network mask is also a 32-bit binary pattern, and consists of consecutive leading 1's followed by consecutive trailing 0's, such as 11111111.11111111.11111111.00000000. Therefore sometimes a network mask can also be described simply as "x" number of leading 1's.
When both are represented side by side in their binary forms, all bits in the IP address that correspond to 1's in the network mask become part of the IP network address, and the remaining bits correspond to the host ID.

For example, if the IP address for a device is, in its binary form, 11011001.10110000.10010000.00000111, and if its network mask is,
11111111.11111111.11110000.00000000
It means the device's network address is
11011001.10110000.10010000.00000000, and its host ID is,
00000000.00000000.00000000.00000111. This is a convenient and efficient method for routers to route IP packets to their destination.

ISP Gateway Address: (see ISP for definition). The ISP Gateway Address is an IP address for the Internet router located at the ISP's office.

ISP: Internet Service Provider. An ISP is a business that provides connectivity to the Internet for individuals and other businesses or organizations.

LAN: Local Area Network. A LAN is a group of computers and devices connected together in a relatively small area (such as home or office). Your home network is considered a LAN.

MAC Address: MAC stands for Media Access Control. A MAC address is the hardware address of a device connected to a network. MAC address is a unique identifier for a device with an Ethernet interface. It is comprised of two parts: 3 bytes of data that correspond to the Manufacturer ID (unique for each manufacturer), plus 3 bytes that are often used as the product's serial number.

NAT: Network Address Translation. This process allows all the computers on your home network to use one IP address. Using the broadband router's NAT capability, you can access Internet from any computer on your home network without having to purchase more IP addresses from your ISP.

Port: Network Clients (LAN PC) uses port numbers to distinguish one network application/protocol over another. Below is a list of common applications and protocol/port numbers:

Application	Protocol	Port Number
Telnet	TCP	23
FTP	TCP	21
SMTP	TCP	25
POP3	TCP	110
H.323	TCP	1720
SNMP	UDP	161
SNMP Trap	UDP	162
HTTP	TCP	80
PPTP	TCP	1723
PC Anywhere	TCP	5631
PC Anywhere	UDP	5632

PPPoE: (Point-to-Point Protocol over Ethernet.) Point-to-Point Protocol is a secure data transmission method originally created for dial-up connections; PPPoE is for Ethernet connections. PPPoE relies on two widely accepted standards, Ethernet and the Point-to-Point Protocol. It is a communication protocol for transmitting information over Ethernet between different manufacturers.

Protocol: A protocol is a set of rules for interaction agreed upon between multiple parties so that when they interface with each other based on such a protocol, the interpretation of their behavior is well defined and can be made objectively, without confusion or misunderstanding.

Router: A router is an intelligent network device that forwards packets between different networks based on network layer address information such as IP addresses.

Subnet Mask: A subnet mask, which may be a part of the TCP/IP information provided by your ISP, is a set of four numbers (e.g. 255.255.255.0) configured like an IP address. It is used to create IP address numbers used only within a particular network (as opposed to valid IP address numbers recognized by the Internet, which must be assigned by InterNIC).

TCP/IP, UDP: Transmission Control Protocol/Internet Protocol (TCP/IP) and Unreliable Datagram Protocol (UDP). TCP/IP is the standard protocol for data transmission over the Internet. Both TCP and UDP are transport layer protocols. TCP performs proper error detection and error recovery, and thus is reliable. UDP on the other hand is not reliable. They both run on top of the IP (Internet Protocol), a network layer protocol.

WAN: Wide Area Network. A network that connects computers located in geographically separate areas (e.g. different buildings, cities, countries). The Internet is a wide area network.

Web-based management Graphical User Interface (GUI): Many devices support a graphical user interface that is based on the web browser. This means the user can use the familiar Netscape or Microsoft Internet Explorer to Control/configure or monitor the device being managed.

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