NetCommWireless

ADSL2+ Wireless N300 Modem Router

NB604N

USER GUIDE

Note: This document is subject to change without notice.

Save Our Environment
When this equipment has reached the end of its useful life, it must be taken to a recycling centre and processed separately from domestic waste.

The cardboard box, the plastic contained in the packaging, and the parts that make up this device can be recycled in accordance with regionally established regulations. Never dispose of this electronic equipment along with your household waste. You may be subject to penalties or sanctions under the law. Instead, ask for disposal instructions from your municipal government.

Please be responsible and protect our environment.

This guide covers the following products:
NetComm Wireless NB604N ADSL2+ Wireless N300 Modem Router

DOCUMENT VERSION	DATE
1.0 - Initial document release	4 April 2012
1.1 – Updated to latest style, added QoS setup example and updated FAQs.	7 August 2014

Table 1 - Document Revision History

NetCommWireless

Table of contents

Overview

Introduction

This guide provides information related to the installation, operation, and use of the NB604N.

Target audience

The individual reading this guide is presumed to have a basic understanding of telecommunications terminology and concepts.

Prerequisites

Before continuing with the installation of your NB604N, please confirm that you comply with the minimum system requirements below.

- An activated ADSL/ADSL2/ADSL2+ broadband service.
- Computer with Windows, Macintosh, or Linux-based operating systems with a working Ethernet adapter with TCP/IP Protocol installed.
- A Web Browser such as Internet Explorer, Google Chrome, Mozilla Firefox, Opera, Safari etc.
- Wireless Computer System Requirements:
  - Computer with a working 802.11b, 802.11g or 802.11n wireless adapter.

Notation

The following symbols are used in this guide:

Indicates a note requiring attention.

Indicates a note providing a warning.

Indicates a note providing useful information.

Product introduction

Product overview

- Connects you to high-speed ADSL2+ broadband.
- Creates a powerful wireless hotspot supporting multiple WiFi devices.
- Includes 4 Ethernet LAN ports for multiple wired connections.
- Wireless N access point for speeds of up to 300Mbps*.
- USB port to connect an external hard drive.
- IPv6 Support.
- Advanced security.
- Simple setup.

* Speeds are dependent on network coverage. See your 3G provider coverage maps for more details. The total number of WiFi users can also affect data speeds. Maximum wireless signal rate and coverage values are derived from IEEE Standard 802.11g and 802.11n specifications. Actual wireless speed and coverage are dependent on network and environmental conditions included but not limited to volume of network traffic, building materials and construction/layout.

Package contents

The NB604N package consists of:

- 1 x NetComm Wireless NB604N ADSL2+ Wireless N300 Modem Router
- 1 x 12VDC~1.5A Power Adapter
- 1 x RJ-45 Ethernet Cable
- 1 x RJ-11 Telephone Cable
- 1 x Quick Setup Guide
- 1 x Warranty Card

If any of these items are missing or damaged, please contact NetComm Wireless Support immediately by visiting the NetComm Wireless Support website at: support.netcommwireless.com

Product features

The NetComm NB604N ADSL2+ Wireless N300 Modem Router allows you to connect to a broadband Internet service and share the connection with multiple users as well as including a host of other features that exist to make your experience as seamless as possible.

With a built-in Wireless N access point providing speeds of up to 300Mbps, multiple users are able to connect any Internet enabled device to the NB604N without wires and access the Internet from a location convenient to them. On top of this, the NB604N also comes with a built-in 4 port Ethernet switch, allowing for other devices to access the Internet over a wired connection.

The NB604N also offers IPv6 support, the latest generation of Internet addressing. This means the NB604N is future proofed against the upcoming exhaustion of the IPv4 address space.

The NetComm NB604N ADSL2+ Wireless N300 Modem Router has a number of handy features that assist in delivering you the best possible user experience. These include a WPS push button that allows for an easy set-up of your wireless network, a push button to easily turn your wireless signal on and off, advanced security options to ensure your network remains safe and an easy to navigate web interface if you need to change any settings.

Physical dimensions and indicators

LED indicators

The NB604N has been designed to be placed on a desktop. All of the cables exit from the rear for better organization. The display is visible on the front of the NB604N to provide you with information about network activity and the device status. See below for an explanation of each of the indicator lights.

LED INDICATOR	ICON	COLOUR	DEFINITION
Power		Off	Router is not powered on
		Red	Router is starting up
		Green	Router is operating normally
DSL		Off	Router is not connected to an xDSL service
		Green	Router is connected to an xDSL service
		Flashing	Router is connecting to an xDSL service
Internet		Off	Router is not connected to the Internet
		Red	Router is unable to connect to the internet with the current configuration details
		Green	Router is connected to the internet
		Flashing	Data is being transmitted or received via the Internet connection
LAN1-LAN4		Off	No device connected to the LAN port
		Green	Device connected to the LAN port
		Flashing	Data is being transmitted or received on the LAN port
WLAN		Off	WiFi function is disabled
		Green	WiFi function is enabled
		Flashing	Data is being transmitted or received via the WiFi network
WPS		Off	WPS function is disabled
		Green	WPS function is enabled
		Flashing	WPS function is attempting to connect to a device
USB		Off	No USB device is plugged in
		Green	USB device plugged in
		Flashing	Data is being transmitted or received from the attached USB device

Physical dimensions

The following table lists the physical dimensions of the NB604N.

NB604N DIMENSIONS	
Length	194 mm
Height	36 mm
Depth (with antennas at 90 degrees)	153 mm
Weight	340 grams

NB604N default settings

The following tables list the default settings for the NB604N.

LAN (MANAGEMENT)	
Static IP Address	192.168.1.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1

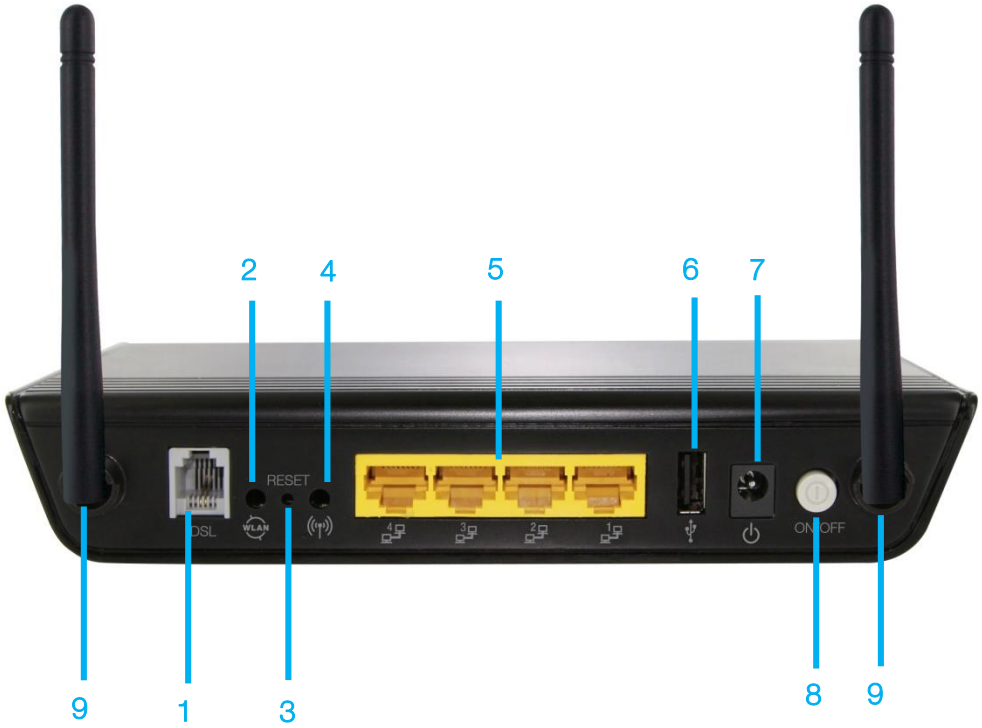
WIRELESS (WIFI)	
SSID	NetComm Wireless
Security	WPA2-PSK
Security Key	a1b2c3d4e5

NB604N WEB INTERFACE ACCESS	
Username	admin
Password	Admin

Interfaces

Rear

The following interfaces are available on the NB604N:



NUMBER	INTERFACE	DESCRIPTION
1	DSL	Use the provided RJ-11 cable to connect the router to the telephone line operating your xDSL service.
2	WLAN	Press this button to enable or disable the WiFi function of the NB604N.
3	RESET	Hold down the reset button for 10 seconds or more to reset the NB604N to factory default settings.
4	WPS	Press this button to enable the WPS push-button connect function.
5	LAN 1-4	Attach Ethernet based devices to these RJ-45 ports..
6	USB	Attach an external USB storage device to share content with connected devices.
7	Power jack	Connect the supplied DC 12V 1.5A Power Adapter
8	Power button	Press to turn the NB604N on or off
9	Antennas	WiFi Antennas

Safety and product care

With reference to unpacking, installation, use and maintenance of your electronic device, the following basic guidelines are recommended:

- Do not use or install this product near water to avoid fire or shock hazard. For example, near a bathtub, kitchen sink, laundry tub, or near a swimming pool. Also, do not expose the equipment to rain or damp areas (e.g. a wet basement).
- Do not connect the power supply cord on elevated surfaces. Allow it to lie freely. There should be no obstructions in its path and no heavy items should be placed on the cord. In addition, do not walk on, step on or mistreat the cord.
- To safeguard the equipment against overheating, make sure that all openings in the unit that offer exposure to air are unobstructed.

WARNING
Disconnect the power line from the device before servicing.

Transport and handling

When transporting the NB604N, it is recommended to return the product in the original packaging. This ensures the product will not be damaged.

In the event the product needs to be returned, ensure it is securely packaged with appropriate padding to prevent damage during courier transport.

Installing the NB604N

Placement of your NB604N

The wireless connection between your NB604N and your WiFi devices will be stronger the closer your connected devices are to your NB604N. Your wireless connection and performance will degrade as the distance between your NB604N and connected devices increases. This may or may not be directly noticeable, and is greatly affected by the individual installation environment.

If you have concerns about your network's performance that might be related to range or obstruction factors, try moving the computer to a position between three to five meters from the NB604N in order to see if distance is the problem.

Note: While some of the items listed below can affect network performance, they will not prohibit your wireless network from functioning; if you are concerned that your network is not operating at its maximum effectiveness, this checklist may help.

If you experience difficulties connecting wirelessly between your WiFi Devices and your NB604N, please try the following steps:

- In multi-storey homes, place the NB604N on a floor that is as close to the centre of the home as possible. This may mean placing the NB604N on an upper floor.
- Try not to place the NB604N near a cordless telephone that operates at the same radio frequency as the NB604N (2.4GHz).

Avoid obstacles and interference

Avoid placing your NB604N near devices that may emit radio "noise," such as microwave ovens. Dense objects that can inhibit wireless communication include:

- Refrigerators
- Washers and/or dryers
- Metal cabinets
- Large aquariums
- Metallic-based, UV-tinted windows
- If your wireless signal seems weak in some spots, make sure that objects such as those listed above are not blocking the signal's path (between your devices and the NB604N).

Cordless phones

If the performance of your wireless network is impaired after considering the above issues, and you have a cordless phone:

- Try moving cordless phones away from your NB604N and your wireless-enabled computers.
- Unplug and remove the battery from any cordless phone that operates on the 2.4GHz band (check manufacturer's information). If this fixes the problem, your phone may be interfering with the NB604N.
- If your phone supports channel selection, change the channel on the phone to the farthest channel from your wireless network. For example, change the phone to channel 1 and move your NB604N to channel 11. See your phone's user manual for detailed instructions.
- If necessary, consider switching to a 900MHz or 5GHz cordless phone.

Choose the "Quietest" channel for your wireless network

In locations where homes or offices are close together, such as apartment buildings or office complexes, there may be wireless networks nearby that can conflict with your wireless network. Use the Site Survey capabilities found in the Wireless Utility of your wireless adapter to locate any other wireless networks that are available (see your wireless adapter's user manual), and switch your Router and computers to a channel as far away from other networks as possible.

Experiment with more than one of the available channels, in order to find the clearest connection and avoid interference from neighbouring cordless phones or other wireless devices.

Hardware installation

1. Connect the power adapter to the Power socket on the back of the NB604N.
2. Plug the power adapter into the wall socket and switch on the power.
3. Wait approximately 60 seconds for the NB604N to power up.

Connecting via a cable

1. Connect the yellow Ethernet cable provided to one of the ports marked 'LAN' at the back of the NB604N.
2. Connect the other end of the yellow Ethernet cable to your computer.
3. Wait approximately 30 seconds for the connection to establish.
4. Open your Web browser, and enter http://192.168.1.1 into the address bar and press enter.
5. Follow the steps to set up your NB604N.

Connecting wirelessly

1. Ensure Wi-Fi is enabled on your device (e.g. computer/laptop/smartphone).
2. Scan for wireless networks in your area and connect to the network name that matches the Wireless network name configured on the NB604N.

Note: The default Wireless network name is "NetComm Wireless" and the default security key is "a1b2c3d4e5"

3. When prompted for your wireless security settings, enter the Wireless security key configured on the NB604N.
4. Wait approximately 30 seconds for the connection to establish.
5. Open your Web browser, and enter http://192.168.1.1 into the address bar and press Enter.
6. Follow the steps to set up your NB604N.

Configuring the NB604N

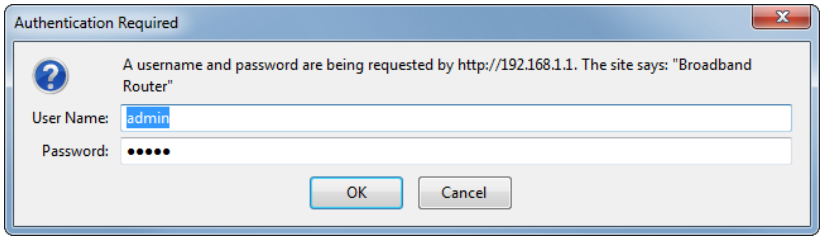
Web-based configuration interface

The NB604N features a web-based configuration interface allowing you to easily view and configure the settings of the router.

Logging in to the web-based configuration interface

To log in to the web-based configuration interface:

1. Open a web browser (e.g. Internet Explorer/Firefox/Safari) and navigate to http://192.168.1.1
2. In the User Name field, enter **admin** and in the Password field, enter **admin**.



Navigating the web-based configuration interface

The web-based configuration interface consists of a menu placed on the left side of the screen and offers the following items:

These functions vary from viewing statistics and information about your NB604N to changing router's configuration. Click on a menu item to access the respective page.

Device Info

The device info menu provides information and statistics about the NB604N and the currently configured network connections and hosts.

Summary

The summary page provides an overview of the current operating parameters used by your NB604N. You can use this check your firmware version or network connection information, such as your current Internet IP address or Internet connection speed as shown below.

Device Info

Board ID:	96328ang
Build Timestamp:	120308_1654
Manufacturer:	NetComm Wireless Limited
Product Class:	NB604N
Serial Number:	120324002393
Software Version:	GAN5.CZ56T-B-NC.AU-R4B010.EN(NB604N)
Bootloader (CFE) Version:	1.0.37-106.24
DSL PHY and Driver Version:	A2pD035l.d23c
Wireless Driver Version:	5.60.120.11.cpe4.406

This information reflects the current status of your WAN connection.

Line Rate - Upstream (Kbps):	0
Line Rate - Downstream (Kbps):	0
LAN IPv4 Address:	192.168.1.1
Default Gateway:	
Primary DNS Server:	0.0.0.0
Secondary DNS Server:	0.0.0.0
LAN IPv6 Address:	fe80::1
Default IPv6 Gateway:	
Primary IPv6 DNS Server:	0.0.0.0
Secondary IPv6 DNS Server:	0.0.0.0
Date/Time:	Thu Jan 1 01:38:21 1970

WAN

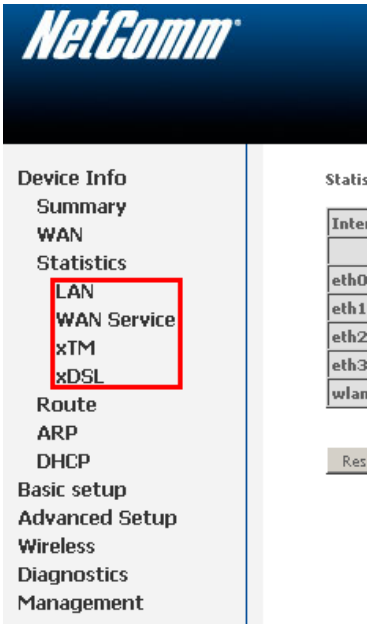
The WAN page displays a summary of the WAN connection settings and your WAN IP address (if applicable).

WAN Info

Interface	Description	Type	VlanMuxId	Igmp	NAT	Firewall	Status	IPv4 Address	IPv6 Address
atm1	IPTV	Bridge	Disabled	Disabled	Disabled	Disabled	Unconfigured	0.0.0.0	
ppp0	pppoe_0_8_35	PPPoE	Disabled	Enabled	Enabled	Enabled	Unconfigured	0.0.0.0	

Statistics

Statistical information is provided and displayed broken down by network connection and type of connection. Please see the following pages for an explanation of each these items.



LAN

The LAN page displays information about computers or devices connected to the NB604N either by an Ethernet cable or via wireless.

Statistics -- LAN

Interface	Received				Transmitted			
	Bytes	Pkts	Errs	Drops	Bytes	Pkts	Errs	Drops
eth0	2322	15	0	0	3322	15	0	0
eth1	0	0	0	0	0	0	0	0
eth2	0	0	0	0	0	0	0	0
eth3	0	0	0	0	0	0	0	0
wlan	0	0	0	0	0	0	0	0

Reset Statistics

WAN Service

The WAN page displays information about the WAN connection in use by the NB604N. An entry will be shown for each configured connection.

Statistics -- WAN

Interface	Description	Received				Transmitted			
		Bytes	Pkts	Errs	Drops	Bytes	Pkts	Errs	Drops
atm1	IPTV	0	0	0	0	0	0	0	0
ppp0	pppoe_0_8_35	0	0	0	0	0	0	0	0

Reset Statistics

xTM

The Asynchronous Transfer Mode (ATM) page shows information about the currently configured ATM interface.

Interface Statistics

Port Number	In Octets	Out Octets	In Packets	Out Packets	In OAM Cells	Out OAM Cells	In ASM Cells	Out ASM Cells	In Packet Errors	In Cell Errors

Reset

xDSL

The xDSL page shows information about the currently configured xDSL connection and connection conditions.

Statistics -- xDSL

Synchronized Time:		
Number of Synchronizations:	0	
Mode:		
Traffic Type:		
Status:	Disabled	
Link Power State:	L3	
	Downstream	Upstream
Line Coding(Trellis):		
SNR Margin (0.1 dB):		
Attenuation (0.1 dB):		
Output Power (0.1 dBm):		
Attainable Rate (Kbps):		
Rate (Kbps):		
Super Frames:		
Super Frame Errors:		
RS Words:		
RS Correctable Errors:		
RS Uncorrectable Errors:		
HEC Errors:		
OCD Errors:		
LCD Errors:		
Total Cells:		
Data Cells:		
Bit Errors:		
Total ES:		
Total SES:		
Total UAS:		

xDSL BER Test | Reset Statistics

Route

The Route page lists the current routing table entries.

Device Info -- Route

Flags: U - up, ! - reject, G - gateway, H - host, R - reinstate

D - dynamic (redirect), M - modified (redirect).

Destination	Gateway	Subnet Mask	Flag	Metric	Service	Interface
192.168.1.0	0.0.0.0	255.255.255.0	U	0		br0

ARP

The Address Resolution Protocol (ARP) page shows the current ARP table entries.

Device Info -- ARP

IP address	Flags	HW Address	Device
192.168.1.100	Complete	00:40:f4:b3:d8:8e	br0

DHCP

The DHCP page lists the current DHCP leases in use on the NB604N.

Device Info -- DHCP Leases

Hostname	MAC Address	IP Address	Expires In

Basic Setup

Quick Setup

The Quick Setup page is used to quickly and easily configure your Internet connection.

1. Enter the username provided by your Internet Service Provider (ISP) in the PPP Username field.
2. Enter the password provided by your ISP in the PPP Password field.
3. Click **Apply/Save**.
4. Click **Next** and view your connection information. The NB604N will then automatically attempt to connect using the details you entered.

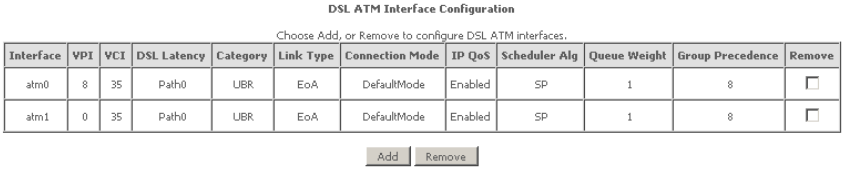
Advanced Setup

The Advanced Setup page provides configuration options for other network and connection based functions of the NB604N. Please see the following pages for an explanation of these functions.

Layer 2 Interface

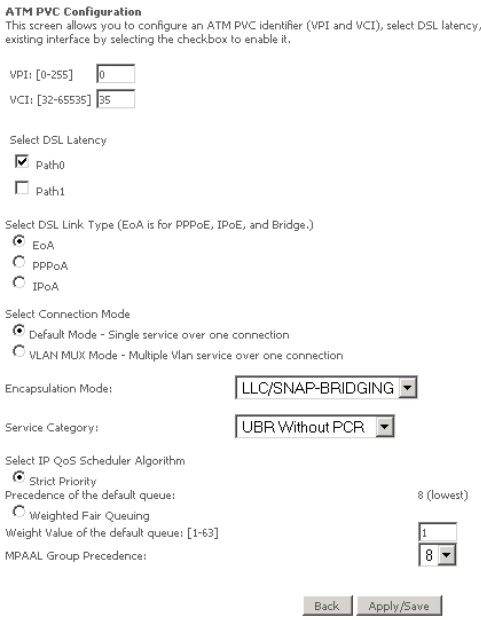
The Layer 2 Interface pages allow you to add or remove ATM interfaces and configure the behaviour of the Ethernet ports.

ATM Interface



To remove a currently configured ATM Interface, Click the remove checkbox corresponding to the chosen interface and click Remove.

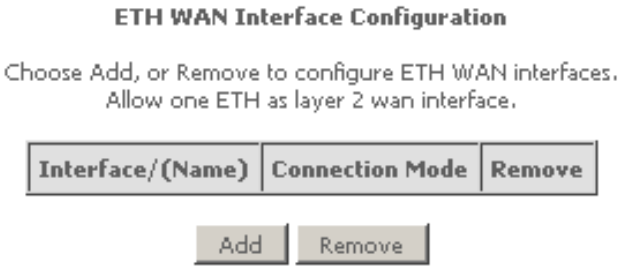
To Add a new Interface, click the add button and enter the appropriate configuration information as shown below:



PARAMETER	DEFINITION
VPI/VCI	Enter the PVC identifier for your service. This will usually be 8/35 for users in Australia. For New Zealand users the VPI will usually be 0 and the VCI will usually be 100.
DSL Latency	Select the DSL latency path you wish to use.
DSL Link Type	Select the type of connection – PPPoE (EoA), PPPoA or IPoA
Connection Mode	Select the type of connection.
Encapsulation Mode	Select the type of encapsulation utilised by your service. Options include LLC/SNAP-BRIDGING or VC/MUX.
QoS Settings	Select the appropriate Quality of Service settings to apply to this connection

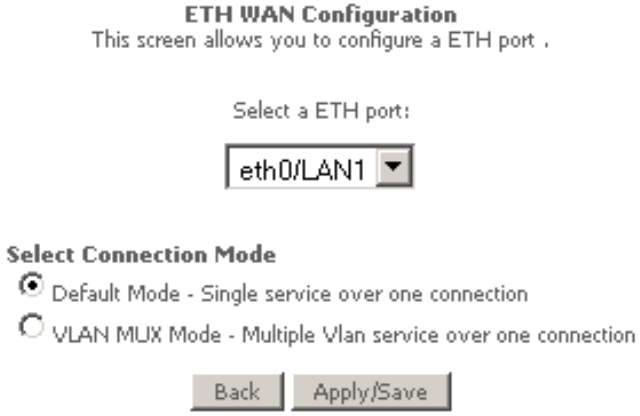
Click **Apply/Save** to save the new Interface.

ETH Interface



To remove a currently configured ATM Interface, Click the remove checkbox corresponding to the chosen interface and click **Remove**.

To Add a new Interface, click the **Add** button and select the appropriate configuration options as shown below:

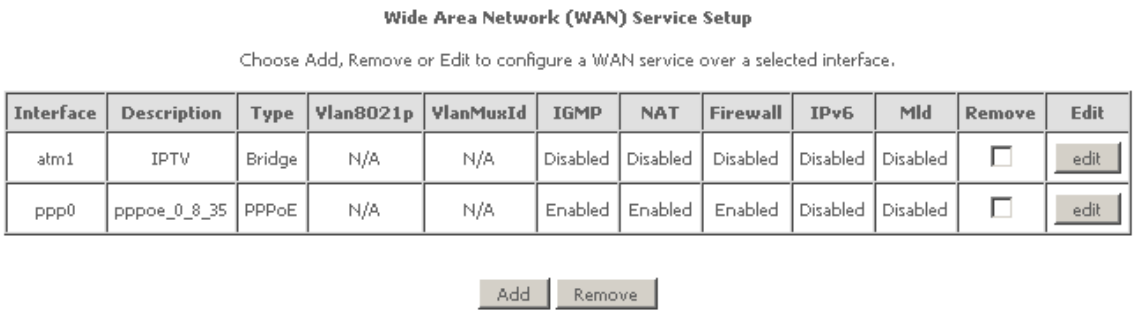


PARAMETER	DEFINITION
ETH Port	Select the Ethernet port to apply the configuration to.
Connection Mode	Select the connection mode. (VLAN MUX is typically used to access services such as IPTV)

Click **Apply/Save** to save the new Interface.

WAN Service

This screen provides a summary of the current WAN interfaces you have configured. If you have connected the NB604N to an ADSL connection through the ADSL Quick Setup interface, details of the connection will be summarized here. You can also add or remove WAN Services.



Wide Area Network (WAN) Service Setup

Choose Add, Remove or Edit to configure a WAN service over a selected interface.

Interface	Description	Type	Vlan8021p	VlanMuxId	IGMP	NAT	Firewall	IPv6	Mld	Remove	Edit
atm1	IPTV	Bridge	N/A	N/A	Disabled	Disabled	Disabled	Disabled	Disabled	☐	edit
ppp0	pppoe_0_8_35	PPPoE	N/A	N/A	Enabled	Enabled	Enabled	Disabled	Disabled	☐	edit

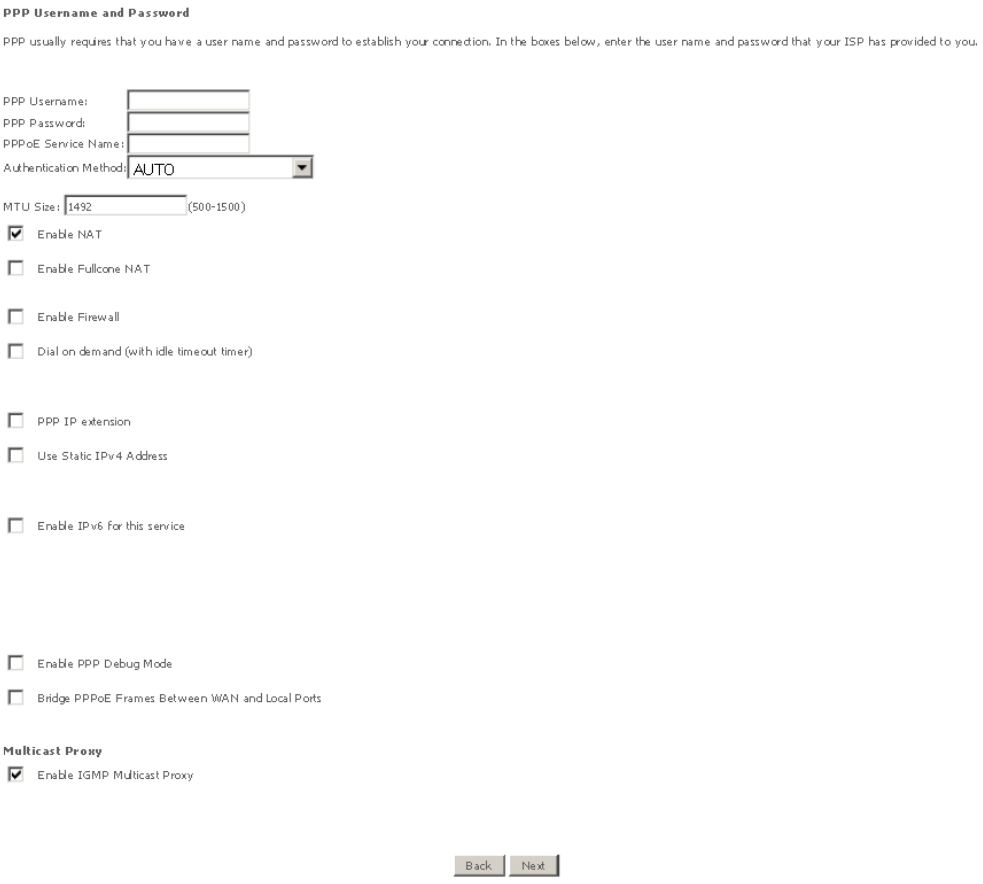
Add Remove

To remove a currently configured WAN Service, Click the remove checkbox corresponding to the chosen service and click Remove.

To create a new WAN Service connection:

1. Click **Add**.
2. Select a currently unused ATM interface
3. Select the connection type and enter a description for the WAN Service.
4. Select to enable IPv6 support for the connection (if needed).
5. Enter the connection settings applicable for the connection type.

In the case of a PPPoE connection, the following options are available:



PPP Username and Password

PPP usually requires that you have a user name and password to establish your connection. In the boxes below, enter the user name and password that your ISP has provided to you.

PPP Username:
PPP Password:
PPPoE Service Name:
Authentication Method: AUTO

MTU Size: 1492 (500-1500)

☑ Enable NAT

☐ Enable Fullcone NAT

☐ Enable Firewall

☐ Dial on demand (with idle timeout timer)

☐ PPP IP extension

☐ Use Static IPv4 Address

☐ Enable IPv6 for this service

☐ Enable PPP Debug Mode

☐ Bridge PPPoE Frames Between WAN and Local Ports

Multicast Proxy

☑ Enable IGMP Multicast Proxy

Back Next

PARAMETER	DEFINITION
PPP Username and Password	The username and password required to access the service
PPPoE Service Name	A name to identify the configured service
Authentication Method	Select the authentication method in use on the service
MTU	Set the Maximum Transmit Unit (MTU) size for the connection
Enable NAT	Select to enable or disable Network Address Translation (NAT) for this connection
Enable Fullcone NAT	Select to enable Fullcone NAT on the connection.
Dial on Demand	Select to enable dial on demand mode. Enter the idle time to wait before disconnecting the service.
PPP IP Extension	Select to enable PPP IP Extension on the connection
Static IPv4 Address	Enter a static IP Address to utilise with the connection
Enable IPv6	Select to enable IPv6 support for the connection. This enables the NB604N to Request Prefix Delegation and request an IPv6 Address.
Enable IGMP Multicast Proxy	Enable IGMP Proxy mode on the connection. This is commonly used for IPTV.
Enable MLD Multicast Proxy	Enable MLD Proxy mode. This is the IPv6 equivalent of IGMP proxy mode.

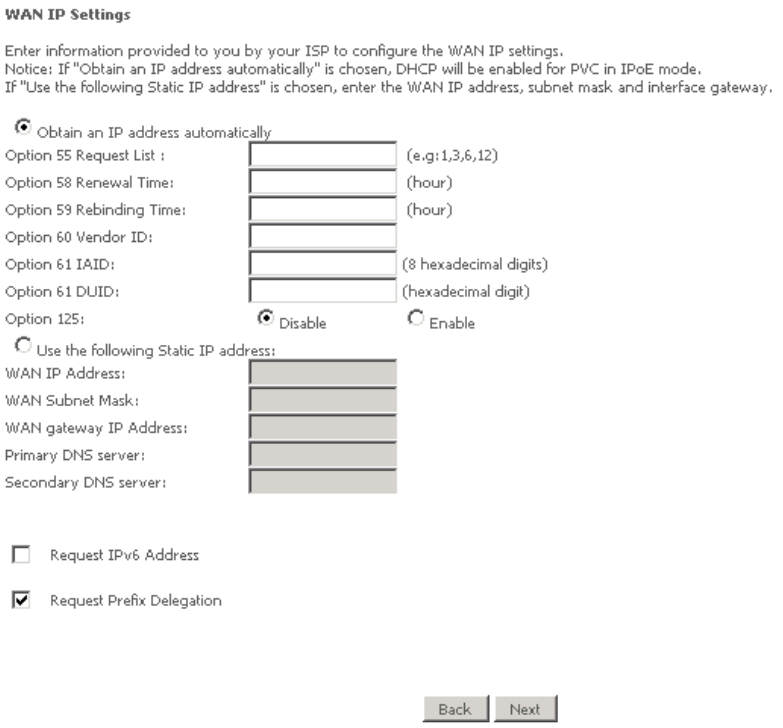
Click **Next** once the connection configuration details have been entered.

(a) Select the Default Gateway Interface to use for the connection and click Next

(b) Select the DNS Server Interface to use for the connection and click Next

(c) Review the configured functions of the connection and click Save/Apply to save the new WAN Service connection.

In the case of an IP over Ethernet connection, the following options are available:



PARAMETER	DEFINITION
Obtain an IP Address automatically	Select to use DHCP for the connection. The DHCP options can then be set.
	Option 55 – Set the DHCP Parameter request List
	Option 58 – Set the length of time between DHCP lease renewals
	Option 59 – Set the length of time between DHCP rebinding
	Option 60 – Set the DHCP VCI
	Option 61 (IAID) – Set the DHCP Identity Association ID
	Option 61 (DUID) – Set the DHCP Unique Identifier
	Option 125 – Set to enable or disable DHCP Vendor-Identifying Vendor Options
Use the following Static IP Address	Select to use a Static IP Address for the connection
WAN IP Address	Enter the Static IP Address to use for the connection
WAN Subnet Mask	Enter the subnet mask to use for the connection
WAN gateway IP Address	Enter the gateway IP address to use for the connection
Primary DNS Server	Enter the Primary DNS server to use for the connection
Secondary DNS Server	Enter the secondary DNS server to use for the connection
Request IPv6 Address	Select to request an IPv6 on the connection
Request Prefix Delegation	Select to request IPv6 Prefix Delegation for the connection

Click **Next** once the connection configuration details have been entered.

(a) Select to enable NAT, Fullcone NAT or the builtin Firewall function for the connection

(b) Select to enable IGMP Multicast mode for the connection and click Next

(c) Select the Default Gateway Interface to use for the connection and click Next

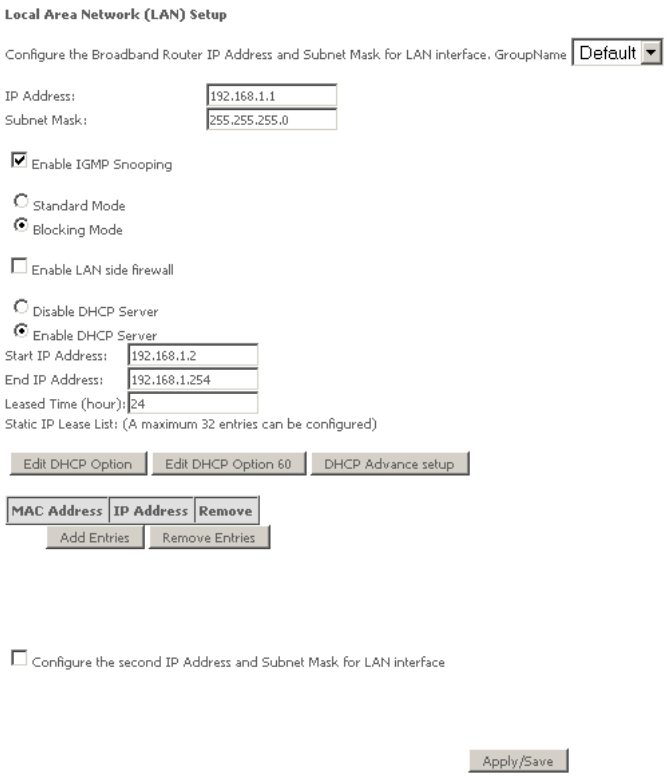
(d) Select the DNS Server Interface to use for the connection and click Next

(e) Review the configured functions of the connection and click Save/Apply to save the new WAN Service connection.

In the case of a bridged connection, click **Save/Apply** to save the new WAN Service connection.

LAN

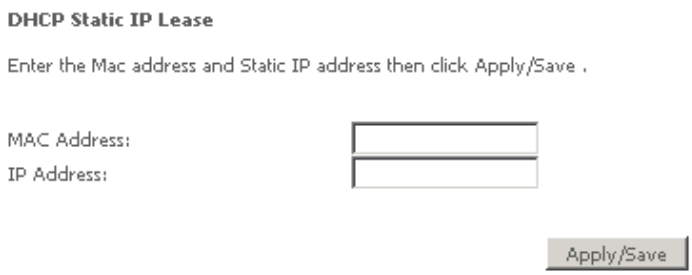
The LAN window allows you to modify the settings for your local area network (LAN).



The following options are available to configure:

PARAMETER	DEFINITION
IP Address	Enter the IP Address to use for the NB604N
Subnet Mask	Enter the subnet mask
Enable IGMP Snooping	Enable IGMP Snooping and select the IGMP Snooping mode to use
Enable LAN side Firewall	Enable the LAN side firewall to restrict traffic between LAN hosts
Enable DHCP Server	Select to enable or disable the DHCP server and enter the start and end address for the DHCP IP Address pool.
Configure the second IP Address	This option enables you to set a secondary IP Address for the NB604N

You can also reserve DHCP Addresses for specific hosts as shown below:



To set a DHCP reservation, enter the MAC Address of the chosen host and IP to use and then click Apply/Save.

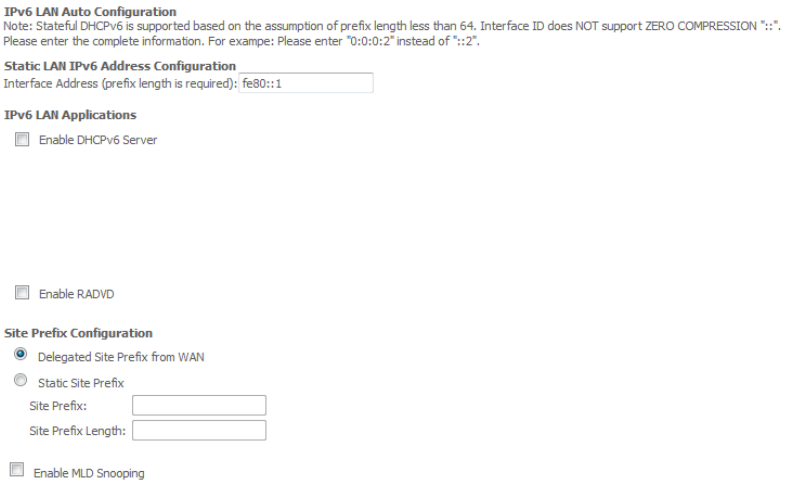
The NB604N enables you to set the DHCP options which are provided to hosts attempting to connect to the DHCP server.

These options should not normally need to be set or changed.

Click Apply/Save to save the new LAN configuration settings.

IPv6 Autoconfig

The NB604N offers a stateless IPv6 Autoconfig function for IPv6 enabled devices connected via the LAN.



The following auto configuration options are available:

PARAMETER	DEFINITION
Interface Address	Set the IPv6 Address of the NB604N
Enable DHCPv6 Server	Select to enable the stateless DHCPv6 Server
Enable RADVD	Select to enable the Router Advertisement Daemon
Site Prefix Configuration	Select to use either the Site Prefix as supplied by the WAN connection or manually enter the Site Prefix and Site Prefix Length
Enable MLD Snooping	Select to enable MLD Snooping and the MLD Snooping mode to use

Click **Save/Apply** to save the new IPv6 Autoconfig settings.

NAT

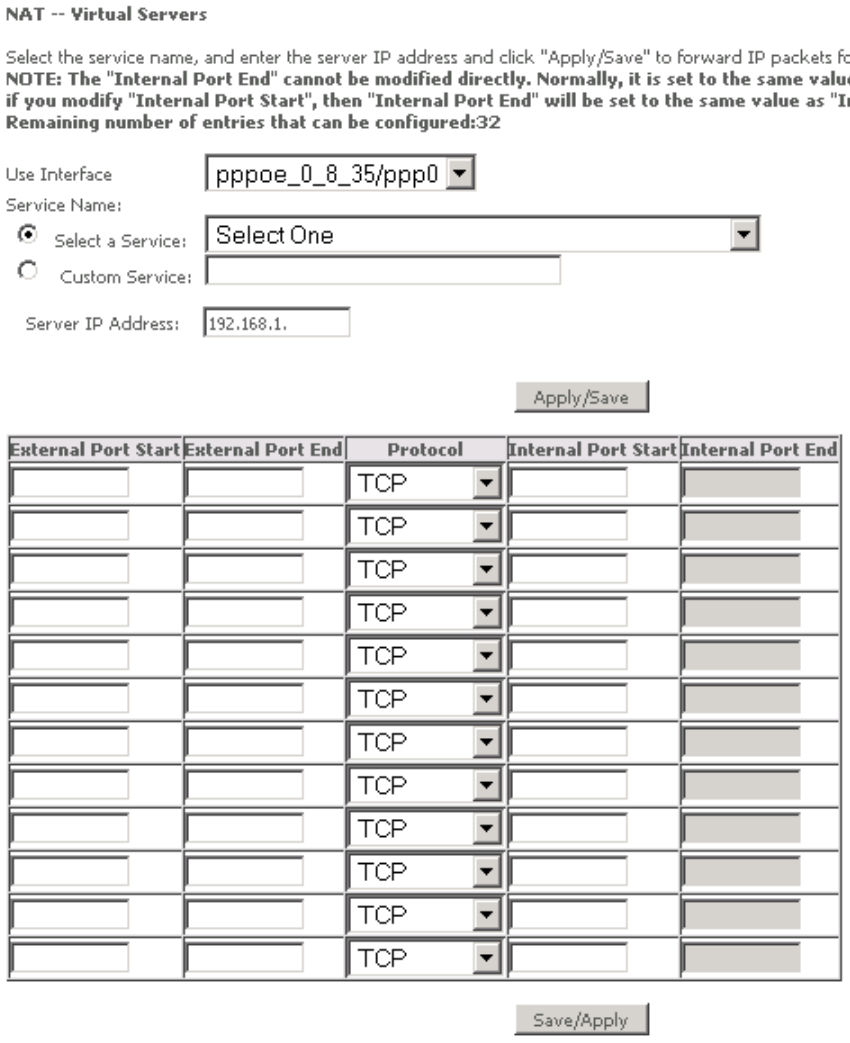
NAT stands for Network Address Translation, a process which converts private IP addresses of a computer on the internal private network to one or more public IP addresses for the Internet. NAT changes the packet headers to the new address and keeps track of each session; when packets come back from the Internet, it performs the reverse conversion to the IP address of the client machine.

Virtual Servers

Virtual Server allows you to direct incoming traffic from the Internet to a specific computer in your local network. A maximum 32 entries can be configured.

Click **Add** to create a Virtual Server.

As an example, to setup a web server on a computer using 192.168.1.88 as its IP Address, select HTTP as Service and enter 192.168.1.88 as the Server IP Address. Otherwise if the service you want to setup is not available from the Select a Service drop-down list, you can define your own Virtual Server.



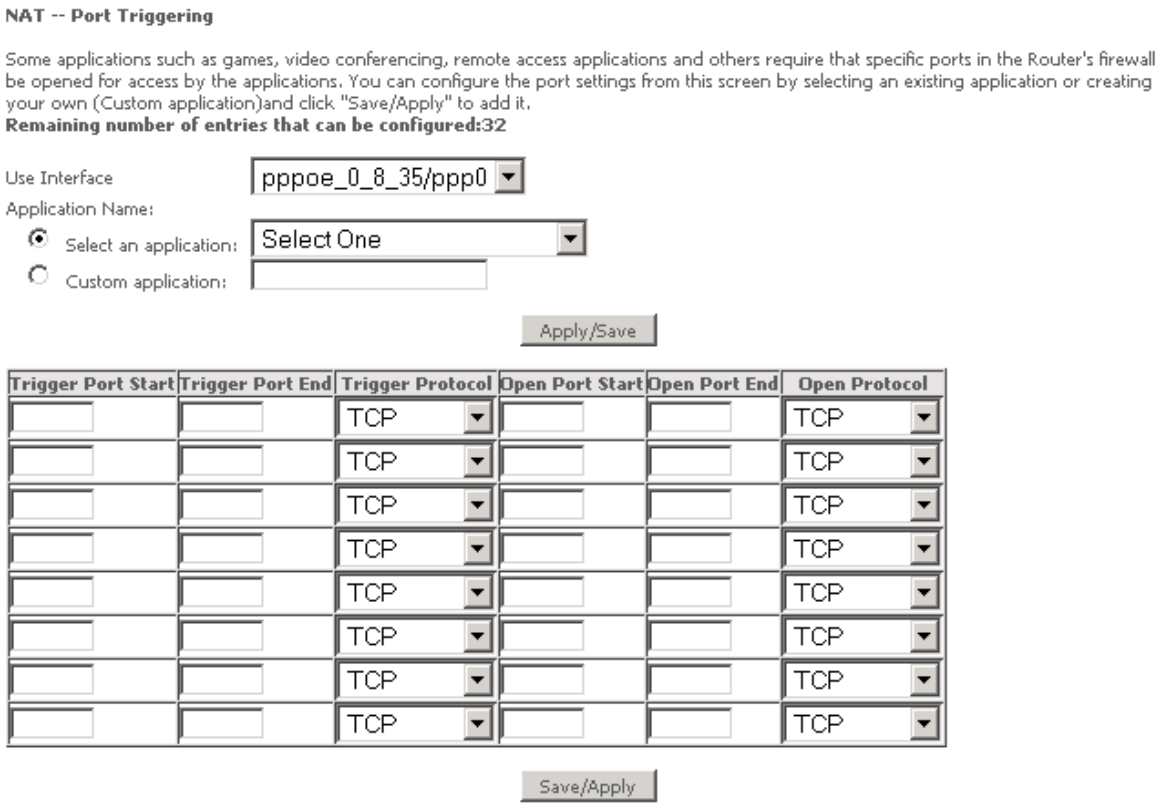
1. Enter the IP Address to forward the incoming connections to.
2. Enter the External Port range for the incoming connections
3. Select the appropriate protocol
4. Enter the Internal Port Range

Click **Save/Apply** to save the new Virtual Server configuration settings.

Port Triggering

Some applications require that the specific ports in the router's firewall be opened for access by the remote parties. For instance, an application uses port 25 for requests and port 113 for replies. If a computer on the LAN connects to port 25 on a remote server hosting this application, using Port Triggering on the router, incoming connections to port 113 (from the remote server) could be redirected to the PC which initiated the request. A maximum of 32 entries can be configured.

Click **Add** to setup Port Triggering.

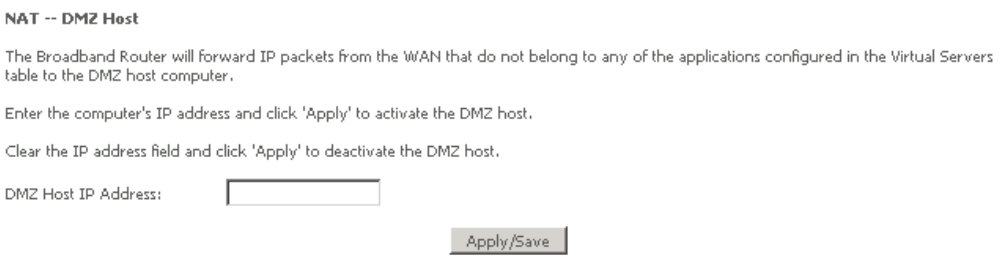


1. Enter the External Port range for the incoming connections
2. Select the appropriate protocol
3. Enter the Internal Port Range

Click **Save/Apply** to save the new Port Trigger configuration settings.

DMZ Host

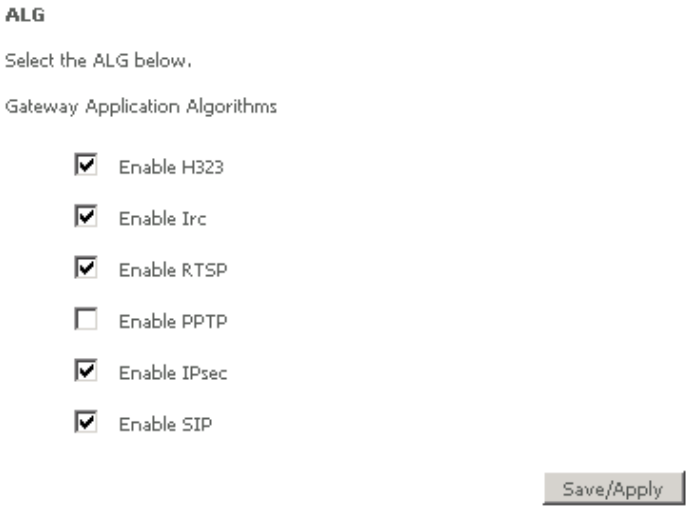
If a computer is assigned as a DMZ Host, it will receive all the data from the Internet that does not belong to the list of applications configured as a Virtual Server. Enter the LAN IP address of the PC you wish to set as DMZ Host in the DMZ Host IP Address. If you need to disable the DMZ Host, just clear the DMZ Host IP Address field, and then click Save/Apply.



Please note: The DMZ exposes your computer to the Internet. Ensure appropriate steps are taken to protect it.

ALG

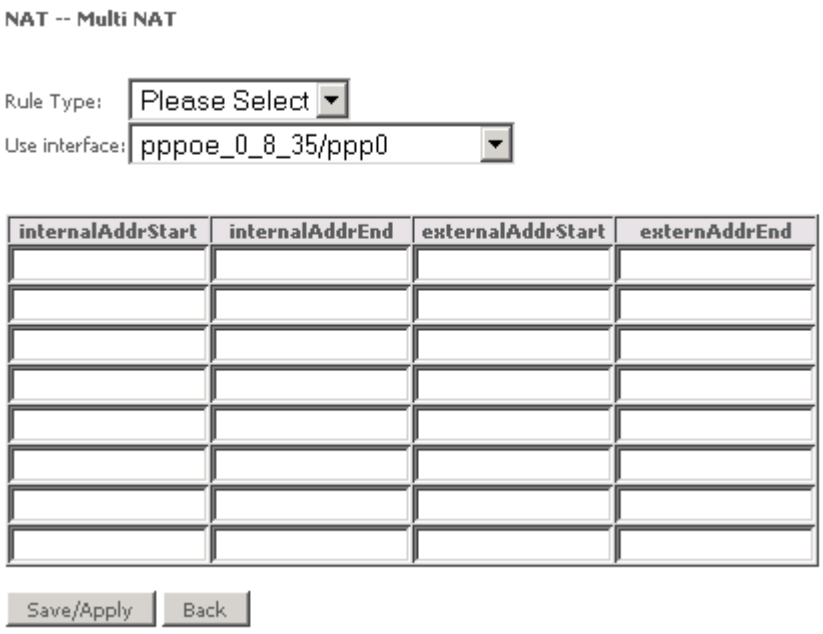
An Application Layer Gateway (ALG) allows two or more simultaneous NAT connections to be made by clients through this router. Select the specific ALG NAT functions to enable and click Save/Apply.



Multi NAT

Multi NAT enables the NB604N to support a number of different NAT types such as:

- One to One
- One to Many
- Many to One
- Many to Many



1. Select the type of NAT to use from the Rule Type dropdown menu.
2. Select the interface to apply the NAT rule to
3. Enter the appropriate Internal Address Start and Internal Address End
4. Enter the appropriate External Address Start and External Address End
5. Click Save/Apply to save the new Multi NAT configuration settings.

Security

IP Filtering

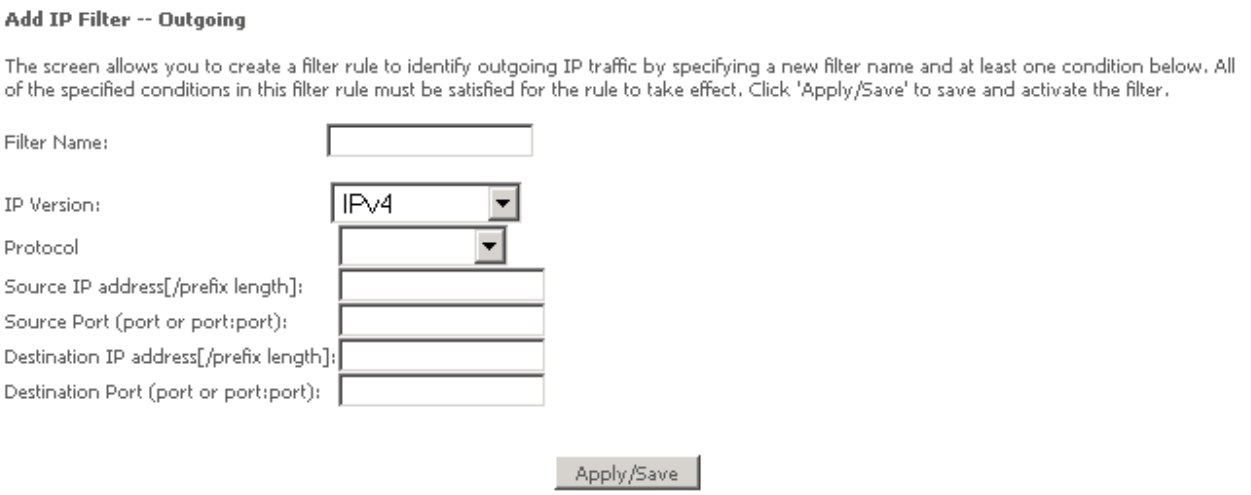
The router supports IP Filtering which allows you to easily set up rules to control incoming and outgoing Internet traffic. The router provides two types of IP filtering: Outgoing IP Filtering and Incoming IP Filtering.

Outgoing IP Filtering

By default, the router allows all outgoing Internet traffic from the LAN but by setting up Outgoing IP Filtering rules, you can block some users and/or applications from accessing the Internet.

To delete the rule, click Remove checkbox next to the selected rule and click Remove.

To create a new outgoing IP filter, click Add. The Add IP Filter-Outgoing page will be displayed.



Enter the following parameters:

PARAMETER	DEFINITION
Filter Name	Enter a name to identify the filtering rule.
IP Version	Select the IP version to apply the filter to.
Protocol	Select the protocol type to block
Source IP Address/Subnet Mask	Enter the IP Address of the PC on the LAN to block
Source Port	Enter the port number used by the application to block
Destination IP Address/Subnet Mask	Enter the IP Address of the Remote Server to which connections should be blocked
Destination Port	Enter the destination port number used by the application to block

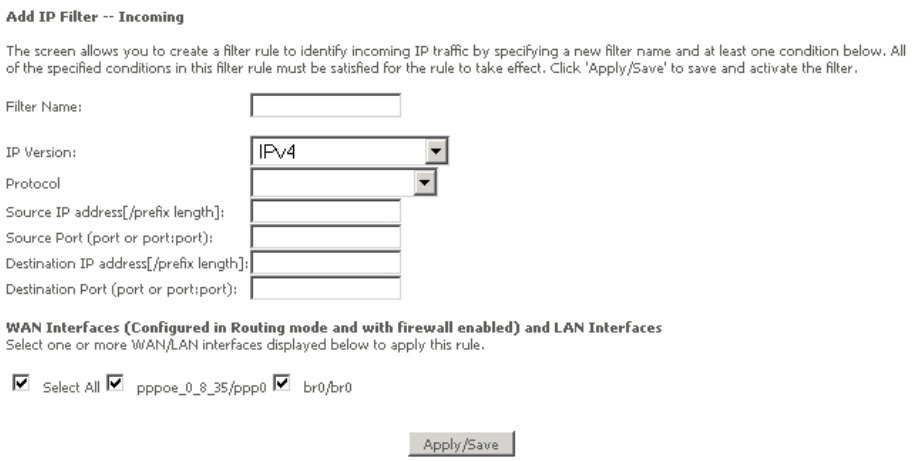
Click **Save/Apply** to take effect the settings. The new rule will then be displayed in the Outgoing IP Filtering table list.

Incoming IP Filtering

By default, when NAT is enabled, all incoming IP traffic from WAN is blocked except for responses to requests from the LAN. However, some incoming traffic from the Internet can be accepted by setting up Incoming IP Filtering rules.

To delete the rule, click Remove checkbox next to the selected rule and click Remove.

To create a new incoming IP filter, click Add. The Add IP Filter-Incoming page will be displayed.



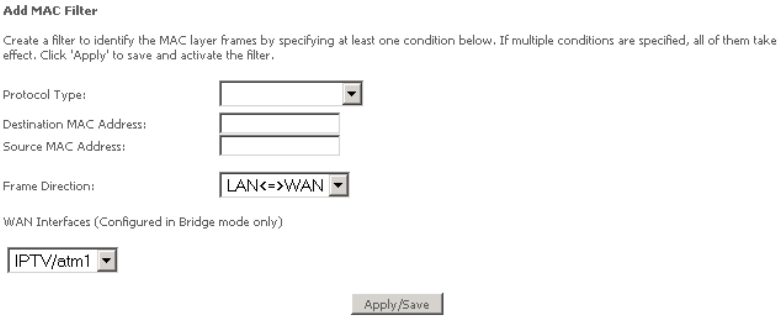
Enter the following parameters:

PARAMETER	DEFINITION
Filter Name	Enter a name to identify the filtering rule
IP Version	Select the IP version to apply the filter to
Protocol	Select the protocol type to allow
Source IP Address/Subnet Mask	Enter the IP Address of the Remote Server from which to allow connections
Source Port	Enter the port number used by the application to allow
Destination IP Address/Subnet Mask	Enter the IP Address of the PC on the LAN to which connections should be allowed
Destination Port	Enter the destination port number used by the application to allow
WAN Interface	Select the WAN Interface to apply the filter to

Click Save/Apply to take effect the settings. The new rule will then be displayed in the Incoming IP Filtering table list.

MAC Filtering

The NB604N offers the ability to utilise MAC Address filtering on ATM PVCs. You can elect to block or allow connections based on MAC Address criteria. The default policy is to allow connections which match the criteria. Click Add to enter a new MAC Address filter.



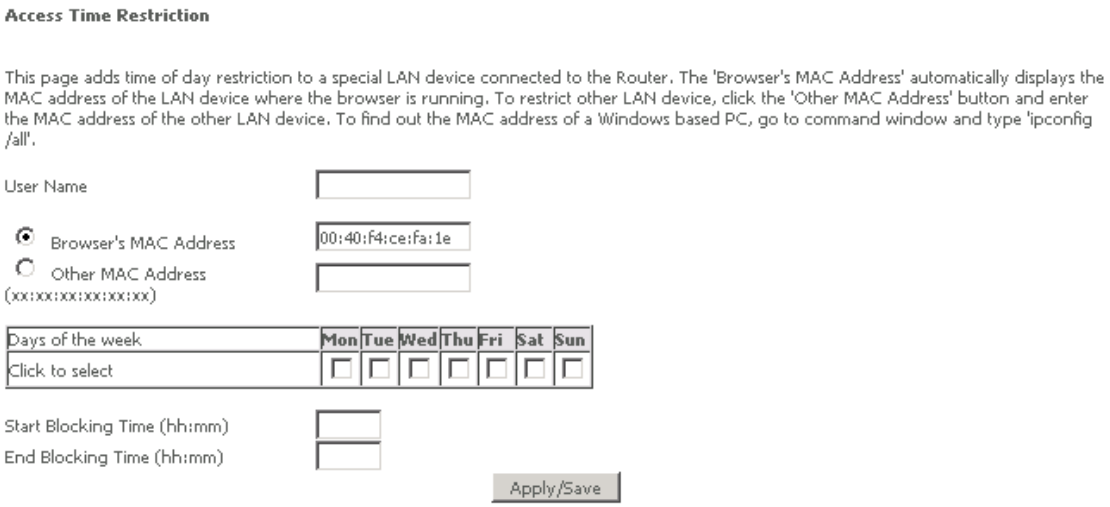
1. Enter the Protocol type to apply the filter to
2. Enter the Source and Destination MAC Address
3. Enter the direction of the traffic to filter
4. Select the WAN interface to apply to the filter to.
5. Click **Apply/Save** to save the new MAC filtering configuration.

Parental Control

Parental Control allows you to apply router access restrictions among LAN devices within specific times in a day. A maximum of 16 restriction rules can be created.

To delete a restriction, click **Remove** checkbox next to the selected restriction and click Remove.

To add restrictions, click **Add**. This opens the Time of Day Restriction page. Click Start to enable a restriction or click Stop to disable the rule.



Enter the following parameters:

PARAMETER	DEFINITION
User Name	Enter a name to identify the Parental Control rule
Browser's MAC Address (or Other MAC Address)	Enter the MAC Address of the device restrict.
Days of the Week	Click to select the days of the week on which to apply the restriction.
Start Blocking Time (hh:mm)	Enter the time when the restriction will be enabled (00:00 to 23:59).
End Blocking Time (hh:mm)	Enter the time when the restriction will be disabled (00:00 to 23:59).

Click **Apply/Save** to save the new Access Time Restriction rule.

URL Filter

The NB604N offers the ability to block or allow specific URLs based on filter rules.

To delete a filter, click the Remove checkbox next to the selected filter and click Remove.

Click **Add** to add a new URL filter.

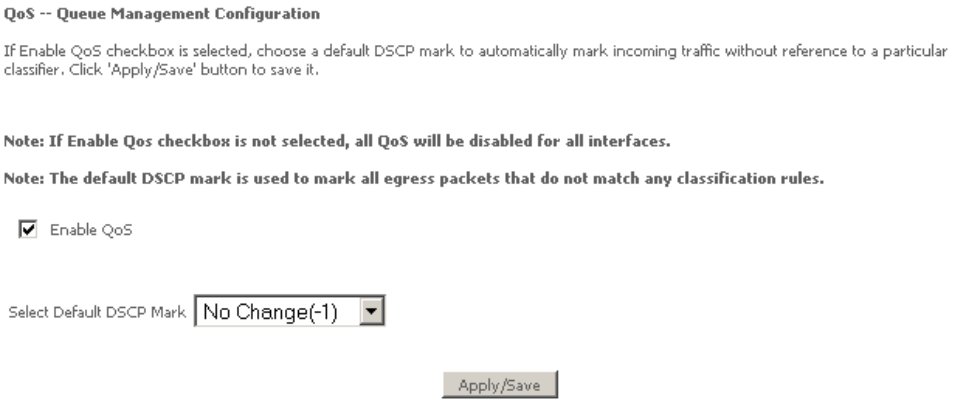
1. Enter the URL (and port if needed) to be filtered
2. Click **Apply/Save** to save the new MAC filtering configuration.

Quality of Service

Quality of Service allows certain applications to gain priority over other applications in where a continuous flow of data packets is required. For example if someone is talking on a VoIP call and someone else starts downloading a large file the VoIP call traffic will gain priority over the download so they VoIP call will go uninterrupted.

QoS gives you the capability to specify the level of priority to be provided for specific applications. By default, QoS is not enabled.

After enabling QoS, select the appropriate default DSCP mark from the dropdown menu to apply to network traffic.

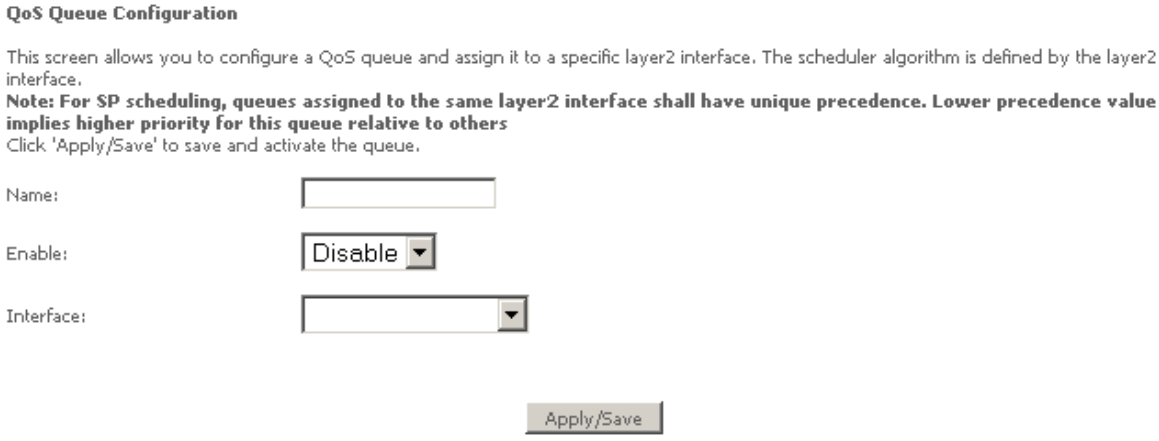


Queue Configuration

The QoS Queue Configuration page enables you to define different QoS configuration rules for different types of traffic.

To delete a QoS queue, click the Remove checkbox next to the selected queue and click Remove.

Click **Add** to create a QoS Queue Configuration.



Enter the following parameters:

PARAMETER	DEFINITION
Name	Enter a name for the QoS queue configuration
Enable	Select to enable or disable the entered QoS queue configuration
Interface	Select the interface to apply the QoS queue configuration to.

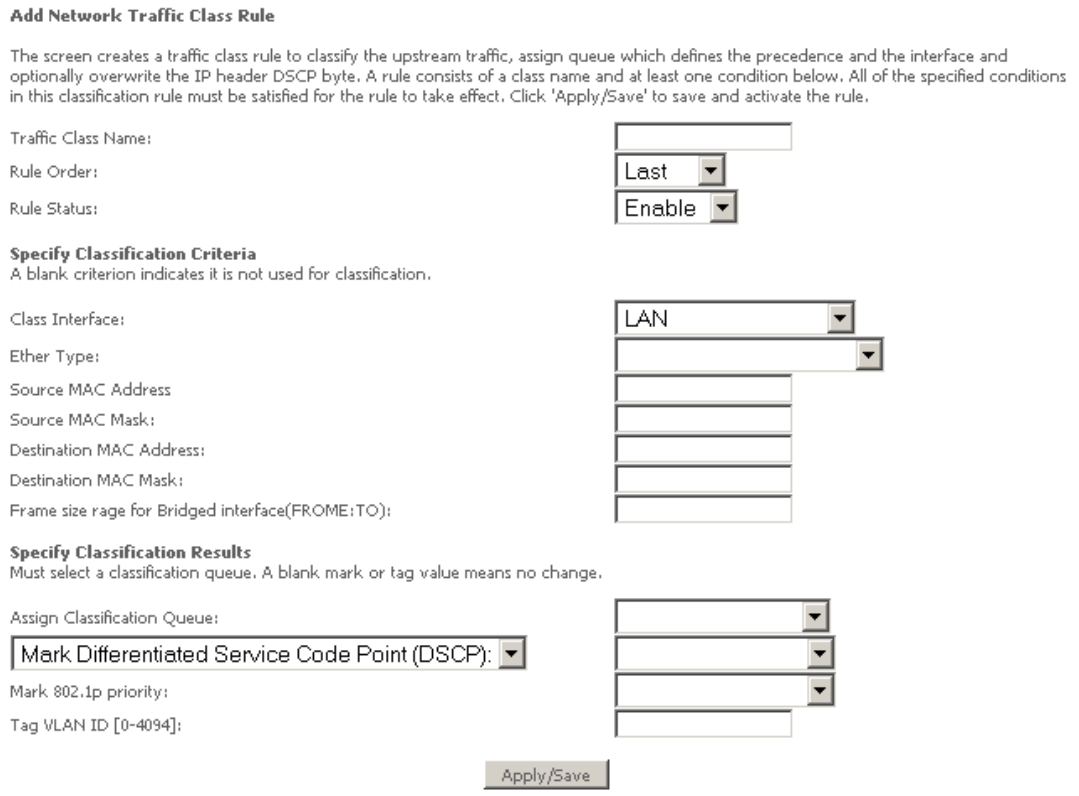
Click **Apply/Save** to save the new QoS Queue configuration settings.

QoS Classification

You can add or remove QoS Classification rules.

To delete a QoS classification rule, click the Remove checkbox next to the selected classification rule and click Remove.

Click **Add** to create a Network Traffic Class Rule.



Enter the following appropriate parameters for the entered QoS classification:

PARAMETER	DEFINITION
Traffic Class Name	Enter a name to identify the entered QoS classification rule
Rule Order	Select the QoS classification rule order
Rule Status	Select to enable or disable the entered QoS classification rule
Class Interface	Select the interface to apply the entered QoS classification to
Ether Type	Select the type of Ethernet traffic to apply the entered QoS classification to
Source MAC Address	Enter the source MAC address to apply the entered QoS classification to
Destination MAC Address	Enter the destination MAC address to apply the entered QoS classification to
Destination MAC Mask	Enter the destination MAC Mask to apply the entered QoS classification to
Frame size Range for Bridged Interface	Enter the size range for packets to which the entered QoS classification will be applied to
Assign Classification Queue	Select the appropriate interface classification queue to apply the entered QoS classification to
DSCP or TOS Marking options	Select to use DSCP or TOS marking for the entered QoS classification
Mark 802.1p priority	Select the priority the entered QoS classification will have applied to it
Tag VLAN ID	Enter the VLAN tag ID to apply the entered QoS classification to

Click **Apply/Save** to save the new QoS Classification configuration settings.

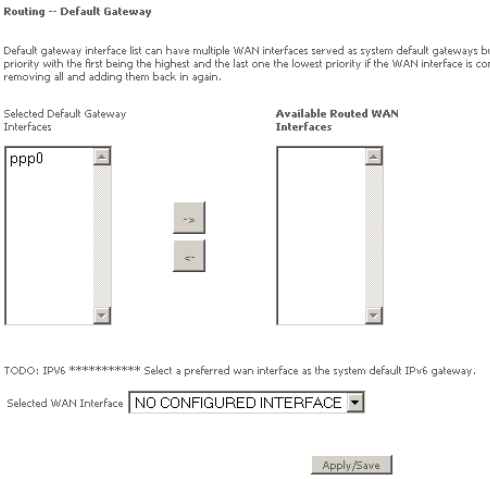
Routing

Default Gateway

The router will accept the first received Default Gateway assignment from one of the PPPoA, PPPoE or DHCP enabled PVC(s).

Alternatively, you can manually select which service you would like to use as a default gateway.

Select from the list of configured WAN Services as displayed below.



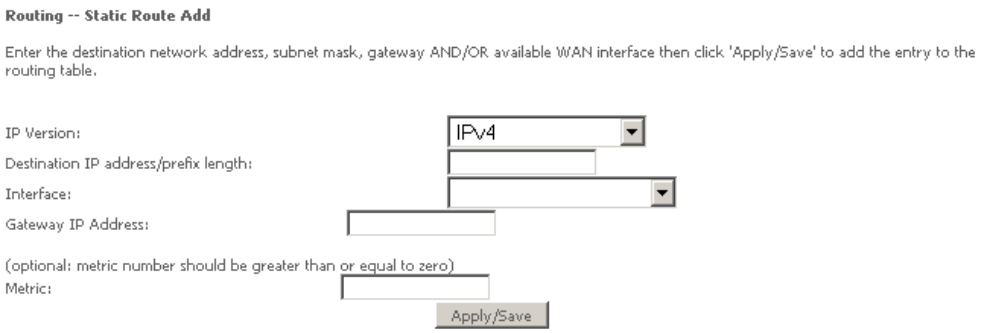
After selecting the applicable WAN Service interface, click Apply/Save to save the new default gateway settings.

Static Route

Use this if your LAN consists of multiple subnets and you want to manually define the path to transmit data on.

To delete a static route, click the Remove checkbox next to the selected static route and click Remove.

To create a new Static Route, click Add. The Routing-Static Route Add page will shows up.



Enter the following parameters to enter a new Static Route:

PARAMETER	DEFINITION
IP Version	Select the IP Version to apply the static route to.
Destination IP Address/Prefix length	Enter the destination IP Address / IPv6 prefix length to apply the static route to.
Interface	Select the interface to apply the static route to.
Gateway IP Address	If you wish to use a specific gateway to reach the destination network, enter the IP address of the gateway.
Metric	Enter the metric (traffic priority/weighting) to be applied to the static route.

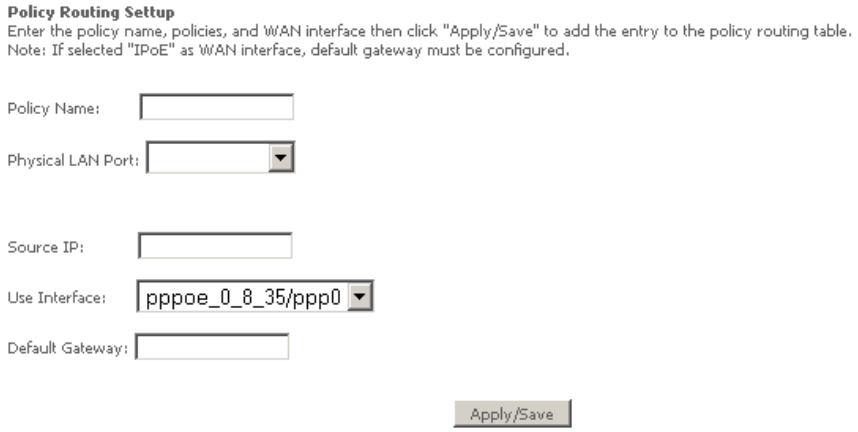
Click **Save/Apply** to save the new static route entry.

Policy Routing

Policy Routing enables you to specify specific rules under which a route will be utilised.

To delete a route policy, click the Remove checkbox next to the selected policy and click Remove.

To add a new routing policy, click **Add**.



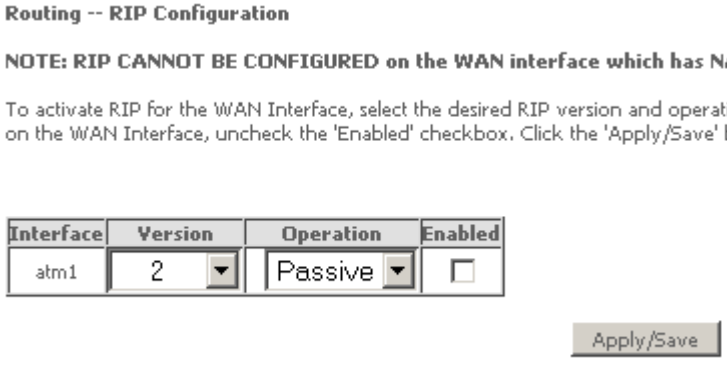
Enter the following parameters:

PARAMETER	DEFINITION
Policy Name	Enter a name to identify the routing policy
Physical LAN Port	Enter the physical port to apply the routing policy to
Source IP	Enter the source address of traffic to apply the routing policy to
Use Interface	Enter the interface to apply the routing policy to
Default Gateway	Enter the default gateway to use with the routing policy.

Click **Save/Apply** to save the new routing policy entry.

RIP

The Routing Information Protocol (RIP) is a distance based routing protocol and uses hop counts as a routing metric. RIP can only be used on WAN connections which do not utilise NAT.



Select the RIP version and Operation mode to use with the specified WAN service interface.

Click **Apply/Save** to save the new RIP configuration settings.

DNS

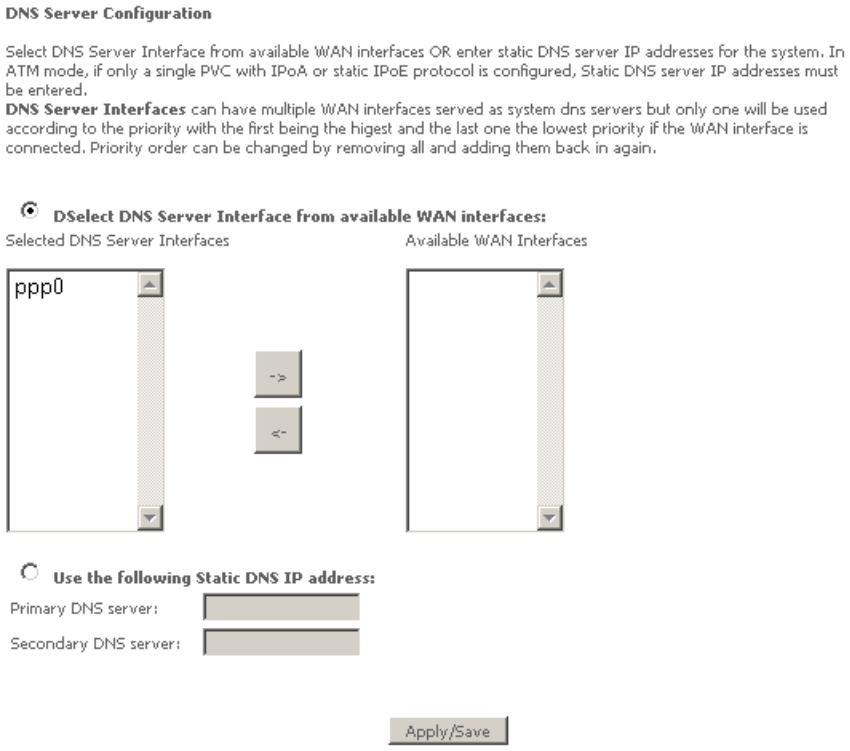
DNS Server

DNS (Domain Name System) is an Internet service that translates domain names into IP addresses. Because domain names are alphabetic, they are easier to remember. However, the Internet is based on IP addresses. Therefore, each time you type a domain name, a DNS service must translate the name into the corresponding IP address.

For example, the domain name www.example.com might translate to 198.105.232.4. The DNS system consists of a network of DNS servers. If one DNS server does not know how to translate a particular domain name, it asks another one and so on until the correct IP address is returned.

If you select the Enable Automatic Assigned DNS checkbox in your WAN service connection, the router will receive and use the DNS Server assigned by your ISP. The DNS Server configuration page enables you to select which configured WAN Service DNS option will be used.

To use your preferred DNS servers instead, enable the 'Use the following Static DNS IP Address' option and enter in the IP address of your Primary DNS server. Adding a Secondary DNS server is optional.



Click **Apply/Save** to save the new DNS Server Configuration settings.

Dynamic DNS

The router offers a Dynamic Domain Name System (DDNS) feature. DDNS lets you assign a fixed host and domain name to a dynamic Internet IP Address. It is useful when you are hosting your own website, FTP server, or other server behind the router.

Before using this feature, you need to sign up for DDNS service providers. The router supports these popular Dynamic DNS service providers:

- www.dyndns.org
- www.tzo.com

To delete a Dynamic DNS entry, click the Remove checkbox next to the selected Dynamic DNS entry and click Remove.

Click **Add** to create a Dynamic DNS setting.

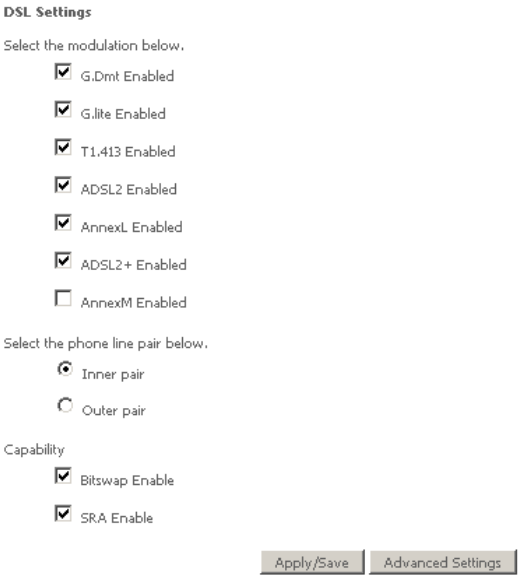
Enter the following parameters:

PARAMETER	DEFINITION
D-DNS Provider	Select to utilise either the DynDNS.org or TZO dynamic DNS service.
Hostname	Enter your DynDNS hostname.
Interface	Select the interface information to update the DynDNS service with.
DynDNS Settings	Enter the account details of your selected dynsmic DNS service.

Click **Apply/Save** to save the new dynamic DNS service configuration settings.

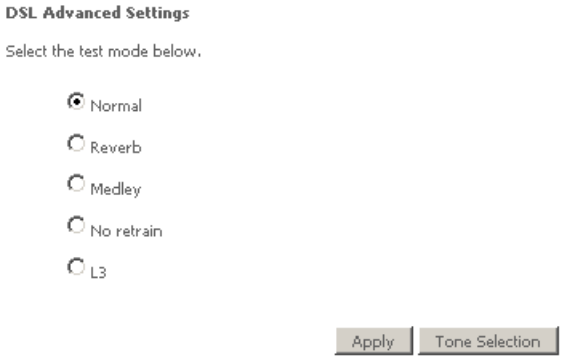
DSL

The DSL page allows you to select the modulation, the phone line pair and the capability.



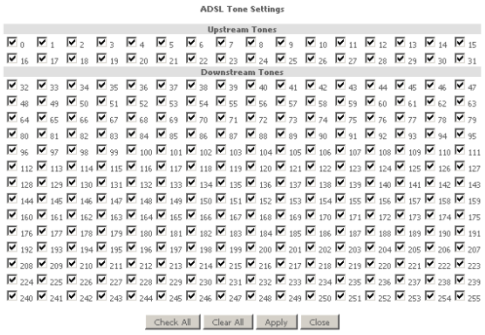
Select applicable DSL service settings required for your xDSL service and click **Apply/Save** to save the new DSL service settings.

You can also configure the DSL test mode which can improve your DSL connection speeds or throughput. Select the DSL test mode applicable to your DSL service.



Click **Apply/Save** to save the new DSL test mode configuration settings.

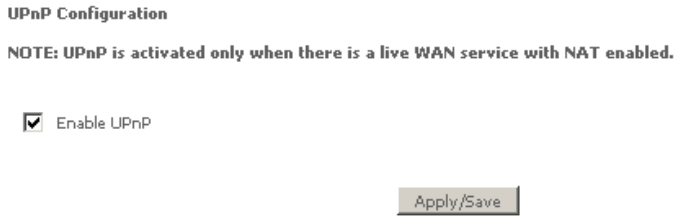
As part of configuring the DSL test mode, you can also manually select which tone frequencies the NB604N will use when establishing a connection to a DSL service. Click 'Tone Selection' and enable or disable the applicable frequencies. By default, all frequencies are enabled.



Click **Apply** to save the new Tone selection configuration settings.

UPnP

The NB604N supports UPnP on WAN Services with NAT enabled. Select to enable or disable UPnP support and click Apply/Save to save the new UPnP configuration settings.



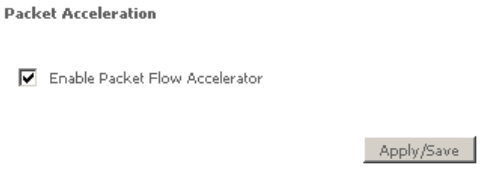
DNS Proxy

The DNS Proxy function enables the NB604N to perform as a forwarding DNS server which an associated DNS Host entry and Domain name entry. This means you can utilise the default address 'NB604N' or 'NB604N.home' to access the NB604N management console.

Enter your selected hostname and domain name for the DNS Proxy function and click Apply/Save to save the new DNS Proxy configuration settings.

Packet Acceleration

Packet acceleration uses a number of methods to try and reduce the latency experienced on some DSL services. These can range from utilising locally terminated TCP connections to Fast Connection Setup.



Select to enable or disable Packet Acceleration and click Apply/Save to save the new packet acceleration configuration settings.

Storage Service

The Storage Service options enable you to manage attached USB Storage devices and create accounts to access the data stored on the attached USB device.

Storage Device Info

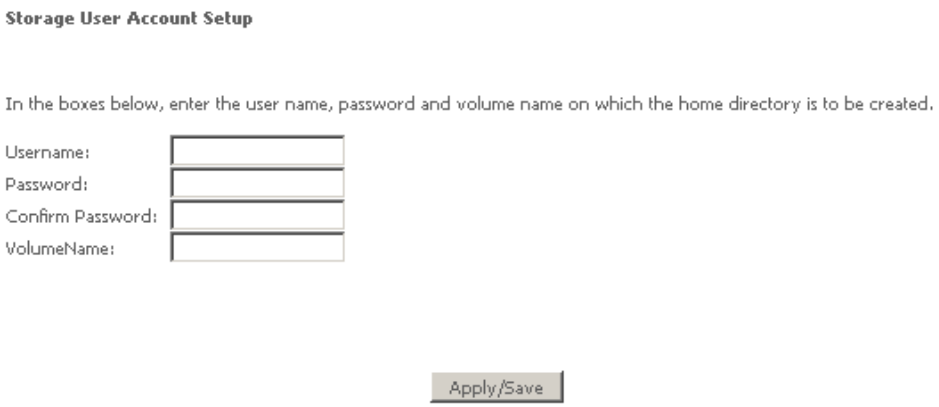
The storage device info page displays information about the attached USB Storage device.

User Accounts

User accounts are used to restrict access to the attached USB Storage device.

To delete a User account entry, click the **Remove** checkbox next to the selected account entry and click Remove.

Click **Add** to create a user account.



Enter the following parameters:

PARAMETER	DEFINITION
Username	Enter the username to use when accessing the USB Storage device.
Password	Enter the password to use when accessing the USB Storage device. Re-enter the password in the Confirm Password field.
VolumeName	Enter the VolumeName on which the home directory is to be created.

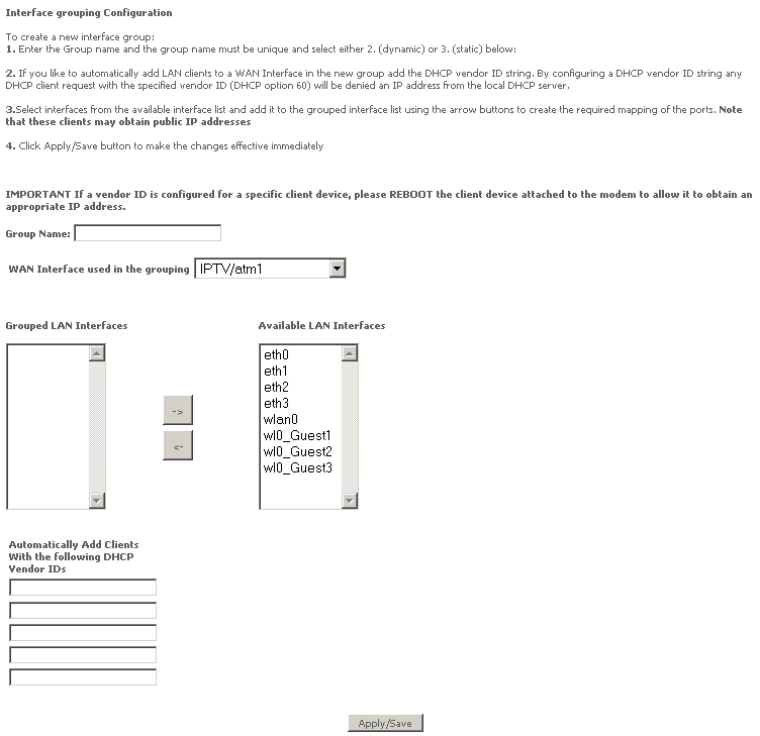
Click **Apply/Save** to save the new user account configuration settings.

Interface Grouping

Port Mapping allows you to create groups composed of the various interfaces available in your router. These groups then act as separate networks.

To delete an Interface group entry, click the Remove checkbox next to the selected group entry and click Remove.

Click **Add** to create an Interface group.



Enter the following parameters:

PARAMETER	DEFINITION
Group Name	Enter a name to identify the interface group
WAN Interface used	Select which WAN interface to use for the group
Available Interfaces	Select which LAN interfaces will be used by the group
DHCP Vendor IDs	Enter specific Vendor IDs to identify devices to automatically take part in the group

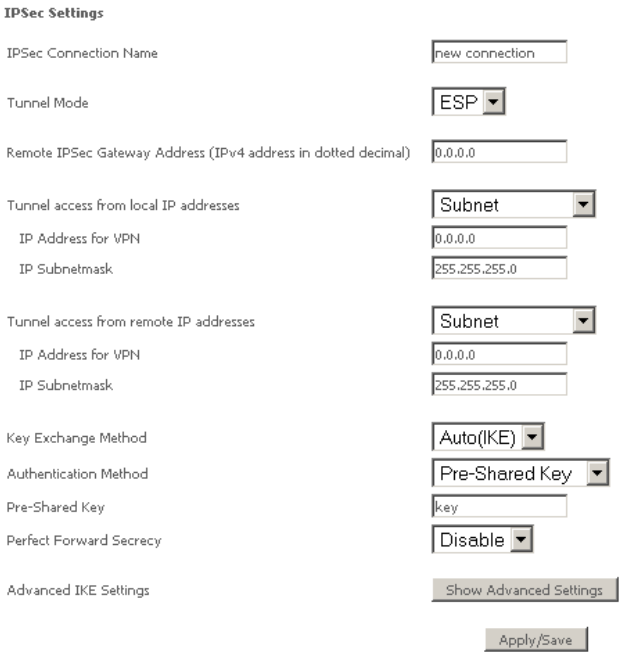
Click **Apply/Save** to save the Interface grouping configuration settings.

IPSec

The NB604N offers IPSec VPN tunnel functionality.

To delete an IPSec entry, click the **Remove** checkbox next to the selected IPSec tunnel entry and click Remove.

Click **Add** to create a new IPSec tunnel connection.



Enter the following parameters:

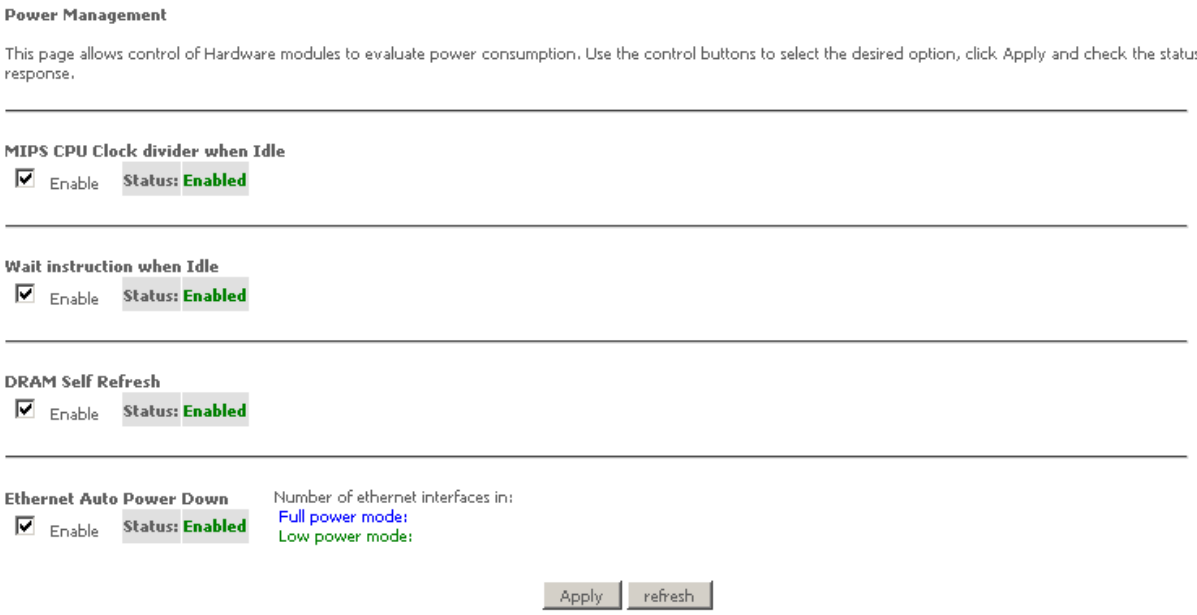
PARAMETER	DEFINITION
IPSec Connection Name	Enter a name to identify the IPSec tunnel
Tunnel Mode	Select the applicable IPSec tunnel mode
Remote IPSec Gateway	Enter the IP Address of the IPSec server to connect to
Tunnel access from Local	Select which remote addresses local IPSec connections are able to access
IP Address from VPN	Enter the IP Address to be used locally for the IPSec tunnel
Subnet mask for VPN	Enter the subnet mask to be used locally for the IPSec tunnel
Tunnel Access from Remote	Select which local addresses remote IPSec connections are able to access
IP Address for VPN	Enter the IP Address to be used on the remote end for the IPSec tunnel
Subnet mask for VPN	Enter the subnet mask to be used on the remote end for the IPSec tunnel
Key Exchange Method	Select the type of IPSec exchange is to be used on the IPSec tunnel
Authentication Method	Select the applicable authentication for the IPSec tunnel
Pre-Shared Key	Enter the pre-shared key (if applicable) to grant access to the IPSec tunnel
Perfect Forward Secrecy	Select to use Perfect Forward Secrecy during key exchange for the IPSec tunnel
Advanced IKE Settings	Configure advanced IKE settings for the IPSec tunnel such as the encryption method or key life time

After entering the required IPSec tunnel service settings, click **Apply/Save** to save the new IPSec Tunnel configuration settings.

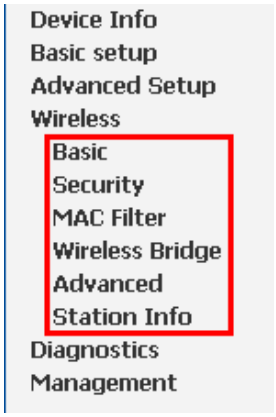
Power Management

The power management page enables you to control the green aspects of the NB604N.

You can enable or disable the power management features by selecting or unselecting the different power management functions as necessary and then click Apply to save these settings.

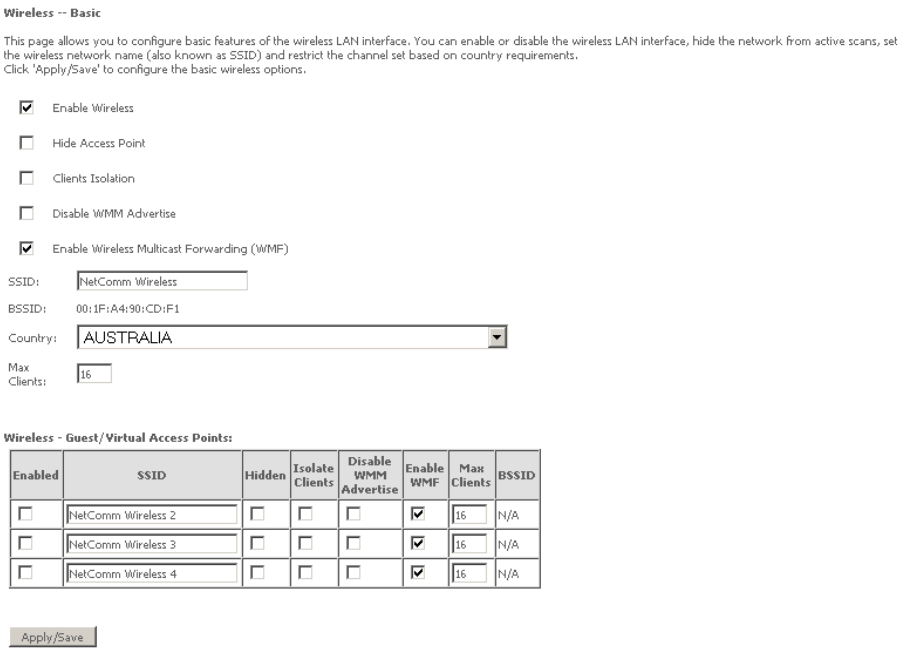


Wireless



Basic

The Wireless Basic page allows you to enable the wireless network and configure its basic settings.



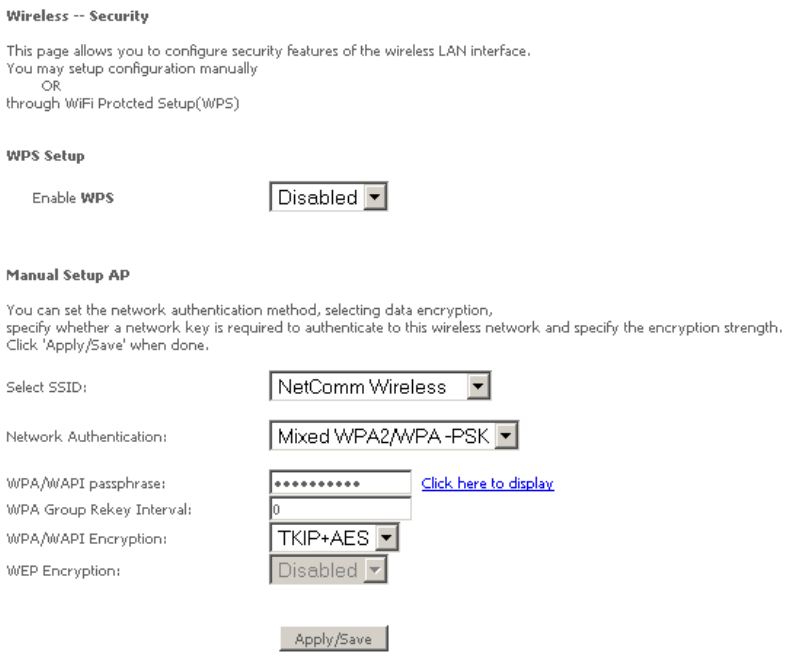
The following parameters are available:

PARAMETER	DEFINITION
Enable Wireless	Select to enable or disable the wireless network function
Hide Access Point	Select to hide or display the wireless network when an SSID scan is performed
Clients Isolation	Select to prevent clients on the wireless network being able to access each other
Disable WMM Advertise	Select to prevent the NB604N advertising its WMM function
Enable Multicast Forwarding (WMF)	Select to enable Wireless Multicast Forwarding. This can reduce latency and improve throughput for wireless clients
Max Clients	Enter the maximum number of wireless clients able to connect to the wireless network
Wireless Guest Network	Select to enable a separate Wireless Guest network, the same options are available for a Guest network as with the main system wireless network.

Click **Apply/Save** to save the new wireless configuration settings.

Security

The NB604N supports all encryptions within the 802.11 standard. The factory default is WPA2-PSK. The NB604N also supports WPA, WPA-PSK, WPA2, WPA2-PSK. You can also select to enable WPS mode.



The following parameters are available:

PARAMETER	DEFINITION
Enable WPS	Select to enable or disable the WPS function of the NB604N.
Select SSID	Select the SSID to apply the security settings to.
Network Authentication	Select the Wireless security type to use with the wireless network.
WPA/WAPI passphrase	Enter the security key to use with the wireless network.
WPA Group Rekey Interval	Enter the group rekey interval. This should not need to changed.
WPA/WAPI Encryption	Select the type of encryption to use on the wireless network.
WEP Encryption	Select to utilise WEP encryption on the wireless network connection.

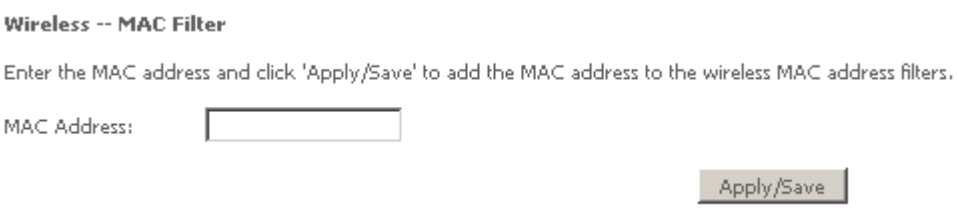
Click **Apply/Save** to save the new wireless security configuration settings.

MAC Filter

MAC Filter allows you to add or remove the MAC Address of devices which will be allowed or denied access to the wireless network. Select to either allow or deny access to the MAC addresses listed.

To delete a MAC filter entry, click the Remove checkbox next to the selected filter entry and click Remove.

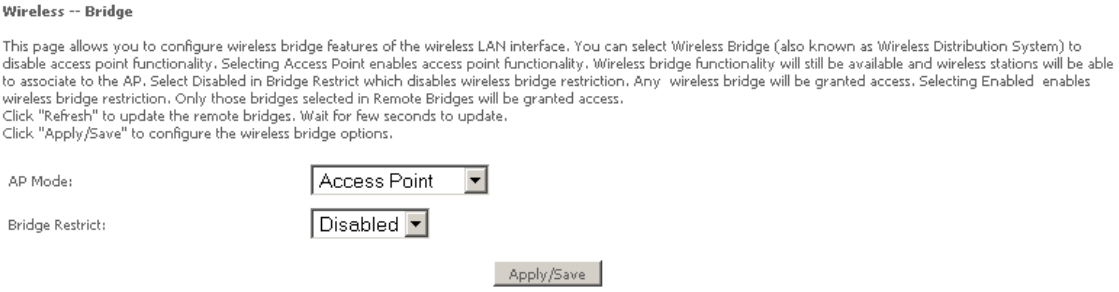
Click Add to add a MAC Address Filter.



Enter the MAC Address to be filtered and click **Apply/Save** to save the new MAC Address filter settings.

Wireless Bridge

Wireless Bridge allows you to configure the router's access point as a bridge.

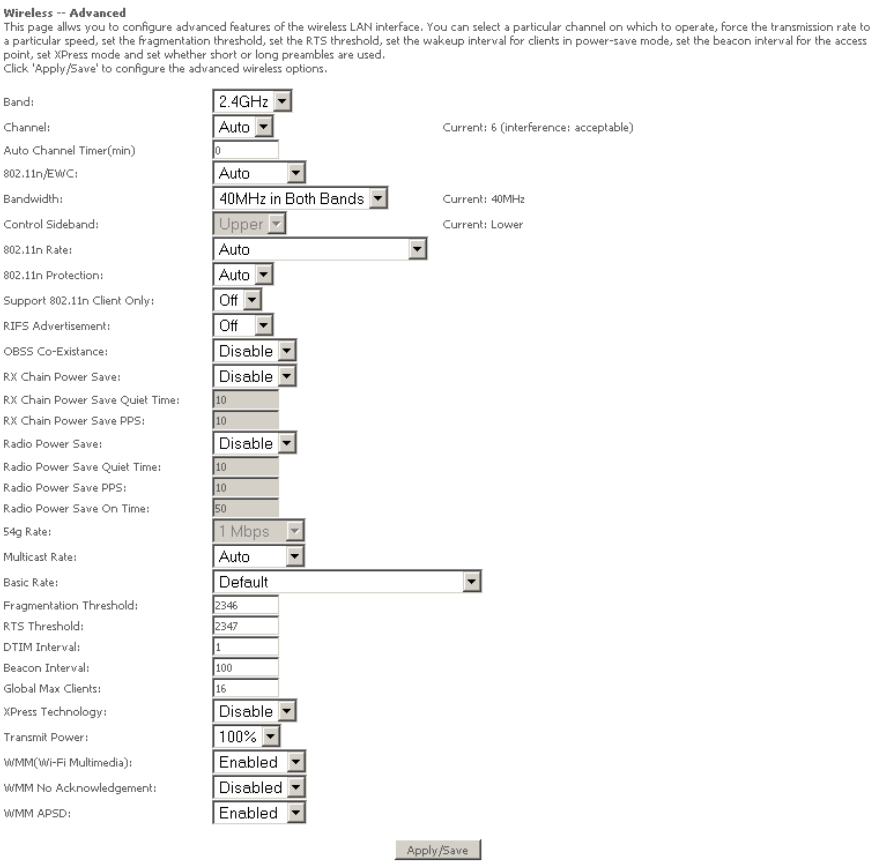


Select the mode for the Wireless Access Point built into the NB604N. When selecting 'Wireless Bridge' mode, you can also specifiy which wireless networks will be allowed to connect to the NB604N by using the 'Bridge Restrict' option and then entering the applicable MAC Addresses of the other wireless access points.

Click **Apply/Save** to save the new wireless bridge configuration settings.

Advanced

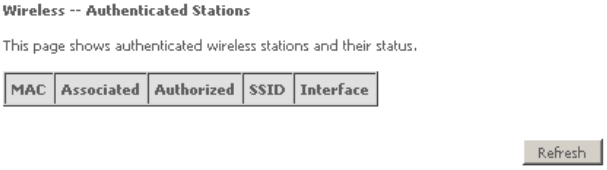
Advanced Wireless allows you to configure detailed wireless network settings such as the band, channel, bandwidth, transmit power and preamble settings.



Click **Apply/Save** to save any changes to the wireless network settings configuration.

Station Info

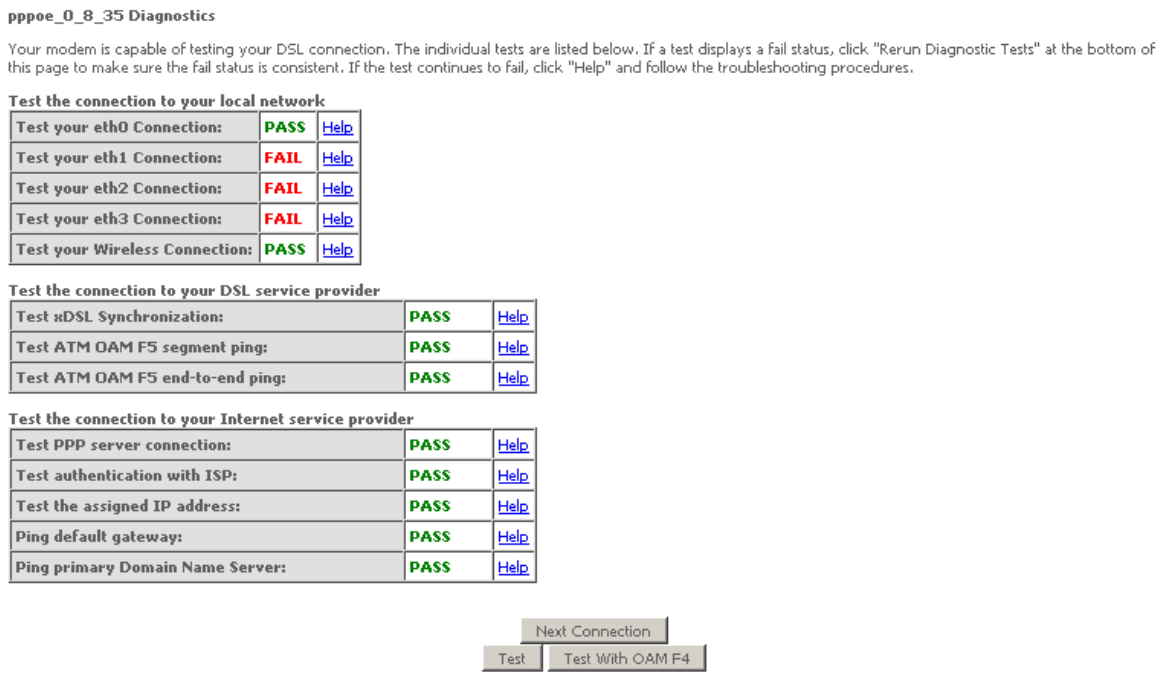
This page shows the MAC address of authenticated wireless stations that are connected to the NB340N and their status



Diagnostics

The router has a diagnostic feature to test your DSL connection. You can use the diagnostic menu to perform the following test functions from the router.

- Testing the connection to your local network
- Testing the connection to your DSL service provider.
- Testing the connection to your Internet service provider.



pppoe_0_8_35 Diagnostics

Your modem is capable of testing your DSL connection. The individual tests are listed below. If a test displays a fail status, click "Rerun Diagnostic Tests" at the bottom of this page to make sure the fail status is consistent. If the test continues to fail, click "Help" and follow the troubleshooting procedures.

Test the connection to your local network

Test your eth0 Connection:	PASS	Help
Test your eth1 Connection:	FAIL	Help
Test your eth2 Connection:	FAIL	Help
Test your eth3 Connection:	FAIL	Help
Test your Wireless Connection:	PASS	Help

Test the connection to your DSL service provider

Test xDSL Synchronization:	PASS	Help
Test ATM OAM F5 segment ping:	PASS	Help
Test ATM OAM F5 end-to-end ping:	PASS	Help

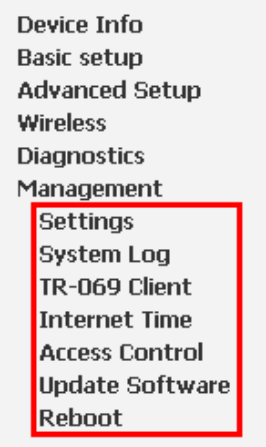
Test the connection to your Internet service provider

Test PPP server connection:	PASS	Help
Test authentication with ISP:	PASS	Help
Test the assigned IP address:	PASS	Help
Ping default gateway:	PASS	Help
Ping primary Domain Name Server:	PASS	Help

Next Connection | Test | Test With OAM F4

Click **Next Connection** to run diagnostics on the next configured WAN Service connection or click **Test with OAM F4** to retest the current WAN Service connection.

Management



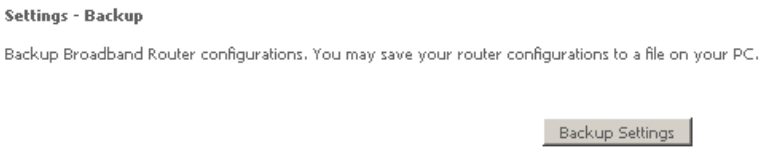
Settings

You can choose to:

- Backup the settings as a configuration file stored onto your PC
- Update the current settings from a previously saved configuration file
- Erase the current settings and restore the default factory values

Backup

To back up the settings as a configuration file saved on your PC, click Backup Settings.



Select the folder where you want to save the file and key in the file name under which you want to save the settings.

Update

To import a previously saved configuration file from your PC and update the settings of your router, click Browse to locate the binary (.BIN or .IMG) upgrade file.

Then click **Update Settings**.

Restore Default

To restore your router to its factory default settings, click Restore Default Settings. When prompted, click OK.
Upon clicking OK, you will be prompted to follow the instruction as shown below.

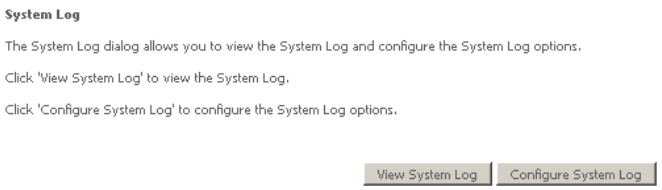
Broadband Router Restore

The Broadband Router configuration has been restored to default settings and the router is rebooting.

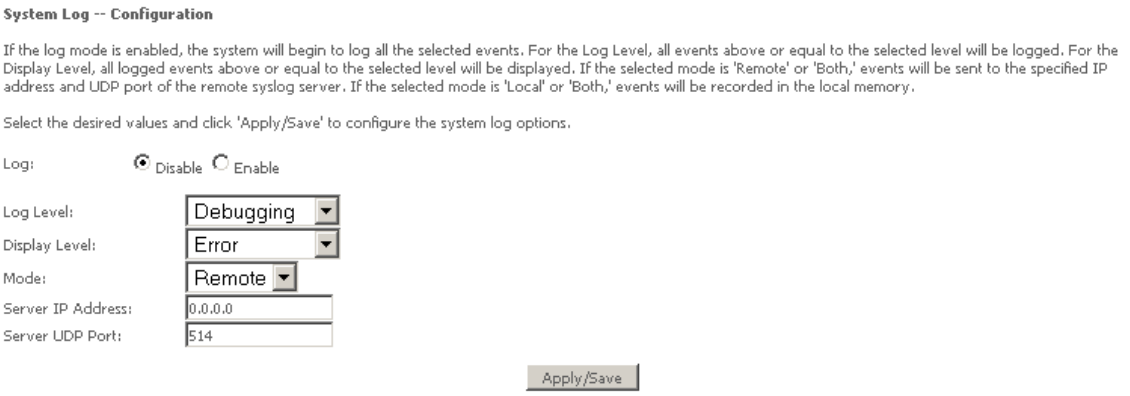
Close the Broadband Router Configuration window and wait for 2 minutes before reopening your web browser. If necessary, reconfigure your PC's IP address to match your new configuration.

System Log

This feature provides you a comprehensive list of log entries reporting events which you have configured for viewing. The amount of information displayed depends on the logging options selected.



To view the log, click **View System Log**.
You can click **Configure System Log** to set the level of logging and whether or not a remote syslog server should be used.

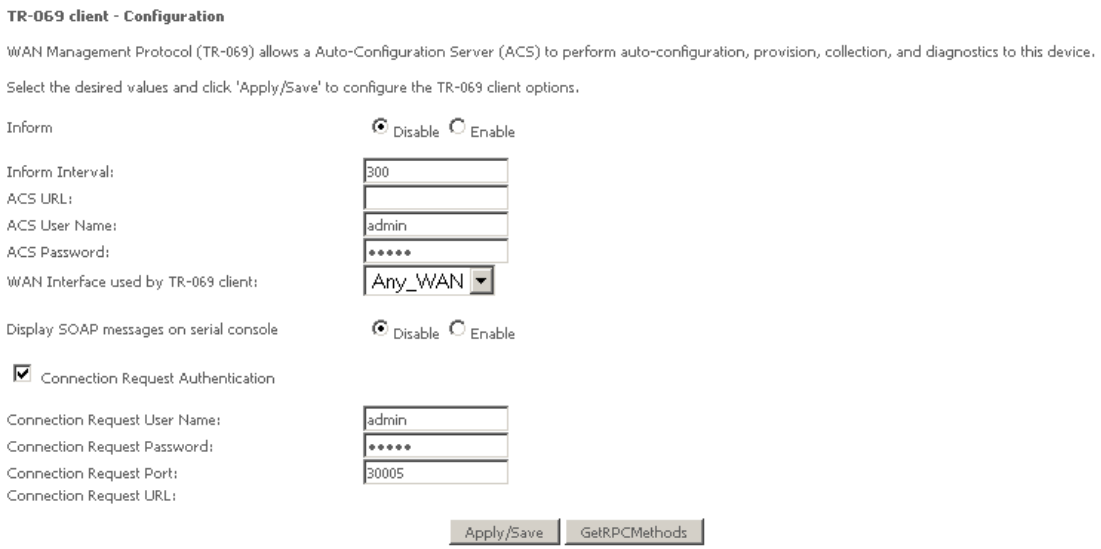


If a remote system log server is to be used, enter the IP address and port the remote syslog server is running on.

Click **Apply/Save** to save the new system log configuration settings.

TR-069 Client

As a TR-069 capable router, the Internet service provider can remotely update the settings of the device.

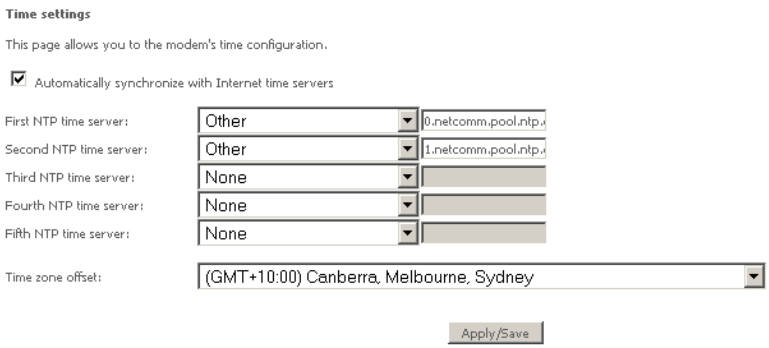


These settings should not be changed unless directed to do so by your Internet Service Provider.

Click **Apply/Save** to save the new TR-069 configuration settings.

Internet Time

Enable Internet Time to automatically synchronize your time with an Internet based time server. You can use up to 5 NTP servers.



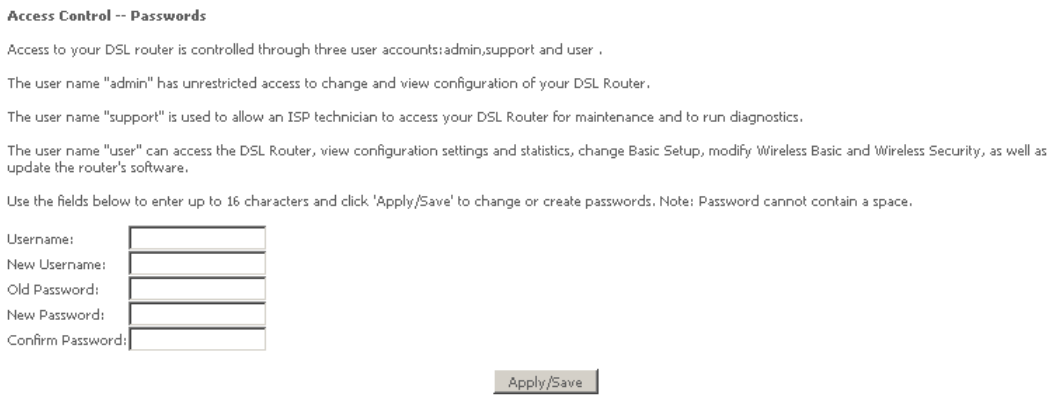
Enter your select NTP server to use for time synchronisation, select your time zone and then click Apply/Save to save the new Internet Time settings.

Access Control

This feature enables you manage the user access rights for remote access management based on the Services being used, IP addresses and Passwords.

Passwords

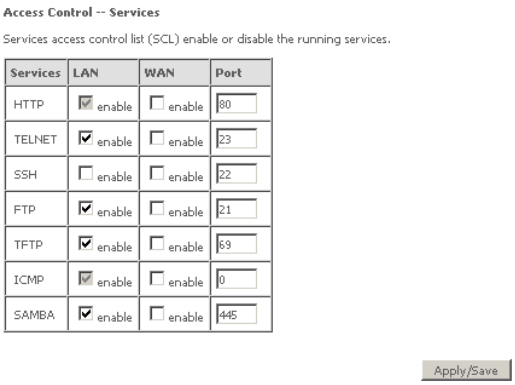
When you configure the router through an Internet browser, the system requires you to enter your user name and password to validate your access permission. By default, the Username is set to “admin” and the Password to “admin”. You can change both the user and password is required.



Click **Apply/Save** to save the new user account name or password configuration settings.

Services Control

Select which Services to allow, which ports the services are available on and whether to allow this access from the LAN or the WAN side connection.



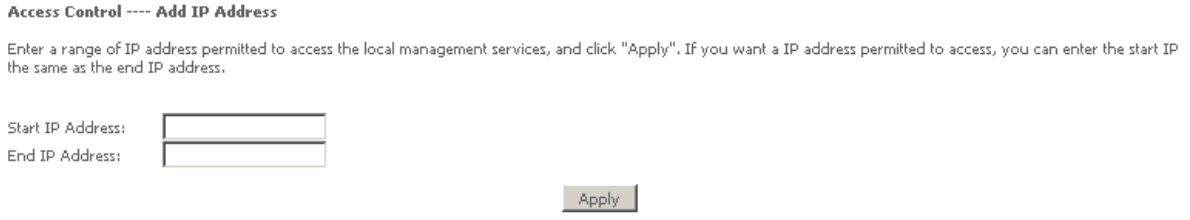
Click **Apply/Save** to save the new Services control configuration settings.

IP Restriction

The IP restriction page enables you to set a list of IP Addresses able to access the Management Console.

To delete an IP restriction entry, click the Remove checkbox next to the IP restriction entry and click Remove.

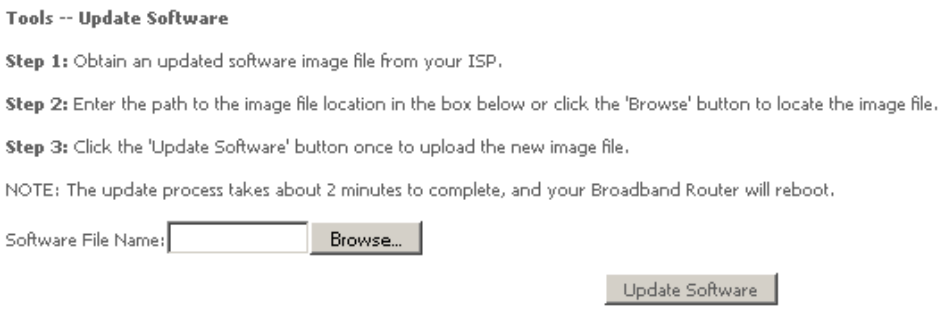
Click **Add** to add a new IP restriction.



Enter the Start and End IP address range and click Apply to save the new IP Restriction configuration settings.

Update Software

The router's software is stored in the FLASH memory and can be upgraded as new software is released.



Click **Browse** to locate the software file and then click Update Software.

Reboot

This feature allows the router to enable new network configuration to take effect or to clear problems with the modem router's network connection.

Appendix: Quality of Service setup example

The following Quality of Service (QoS) settings offer a basic setup example, setting up 2 devices connecting to an NB604N router, one with the highest priority for data and the other with the lowest priority for data. All other data packet traffic through the router assumes a default best effort setting.

Quality of Service refers to the reservation of bandwidth resources on the NB604N router to provide different priorities to different applications, users or data flows or to guarantee a certain level of performance to a data flow.

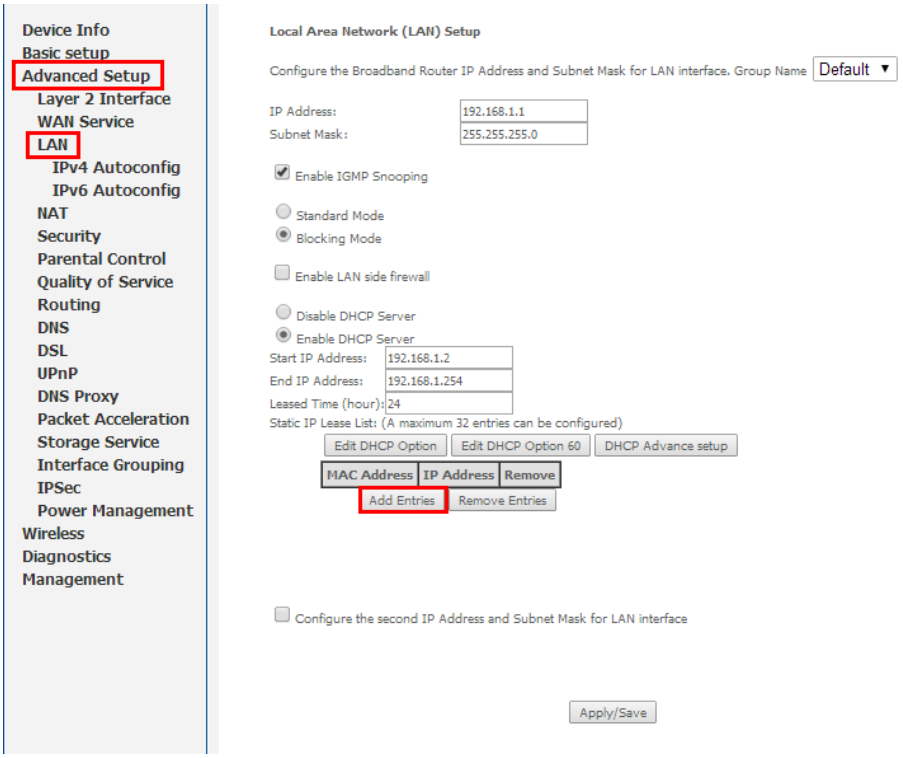
In this implementation, QoS employs DSCP (Differentiated Services Code Point), a computer networking architecture that specifies a simple, scalable and course-grained mechanism for classifying and managing network traffic.

This example guide sets up QoS with two devices (PC and laptop) connecting via Ethernet cable to an NB604N router. One device (PC) is assigned high priority traffic while the other device (laptop) is assigned a low priority. Before Quality of Service can be implemented, the first step involves reserving an IP address for each device, identified by their unique MAC addresses.

Reserving IP addresses

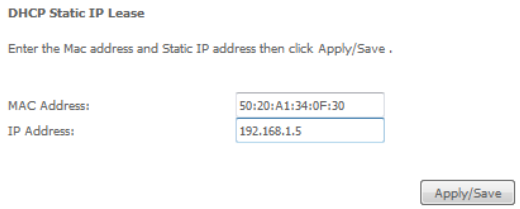
It is necessary to reserve an IP address for each of the devices connecting to the NB604N router so that QoS settings can be managed for each device.

1. Navigate to http://192.168.20.1 in a web browser.
2. When prompted, enter `admin` as both the username and password.
3. Select **Advanced Setup > LAN**

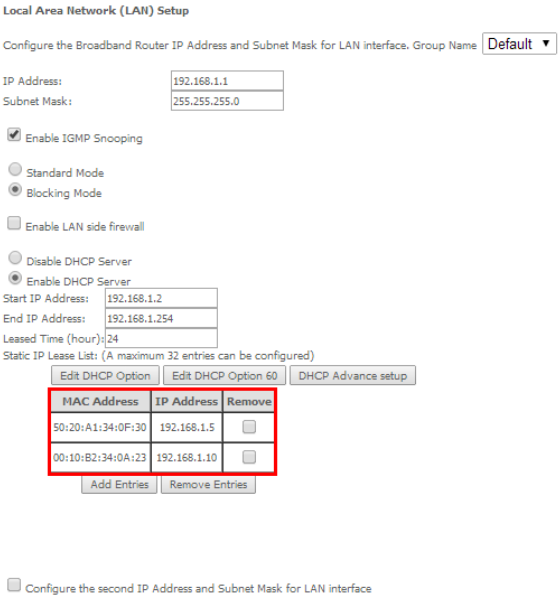


4. Click the **Add Entries** button.

5. Enter the MAC address of the computer/device you are connecting to the router. The MAC address os a 12 character set of numbers and letters (A-F), with every 2 characters separated by a colon.
6. Enter the IP address of the computer/device. This is the local address in the range of 192.168.1.x where x = a number between 2 and 254.

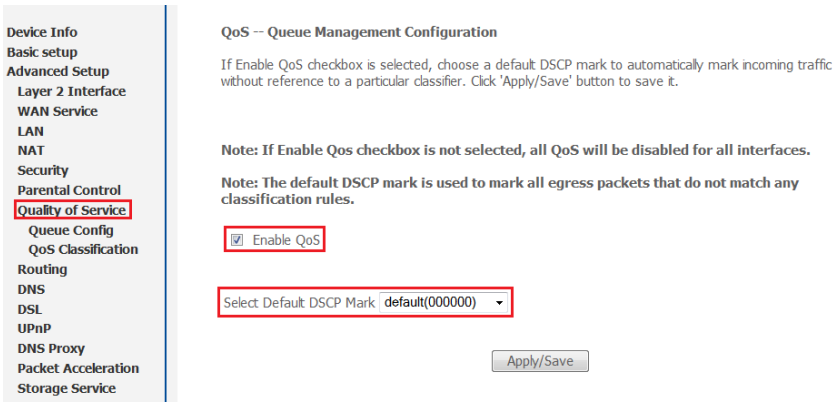


7. Click the **Apply/Save** button.
8. Complete steps 4 through 7 for each device connected to the NB604N router. Each entry will be listed in the Static IP Lease List as shown below.



QoS configuration settings

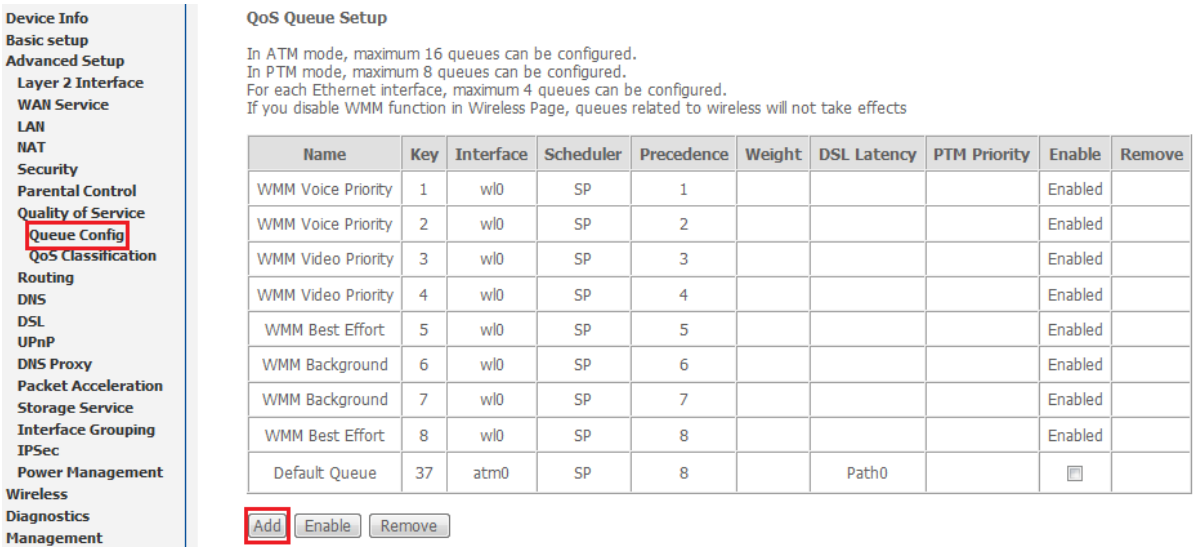
1. Select **Advanced Setup > Quality of Service**



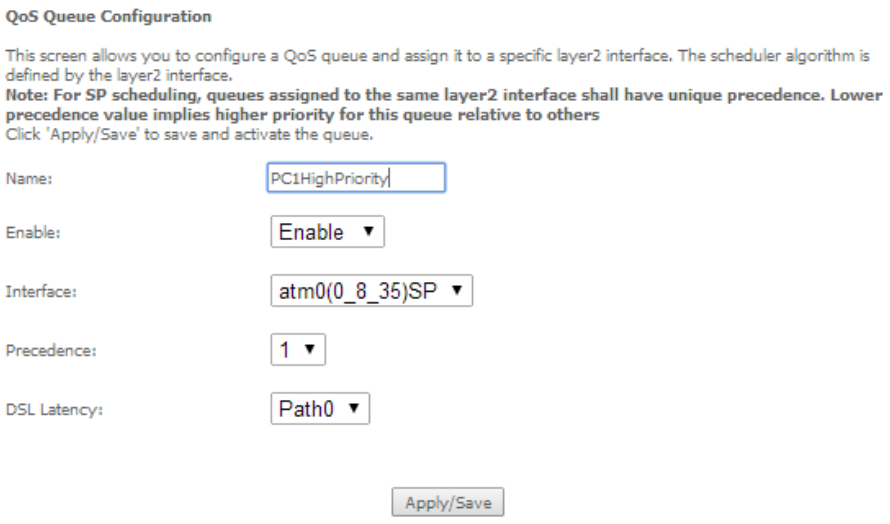
2. Select the **Enable QoS** option.
3. Select the **Default DSCP Mark** as **default(000000)**.
4. Click the **Apply/Save** button.

High priority QoS queue configuration

1. Select **Advanced > Quality of Service > Queue Config**.



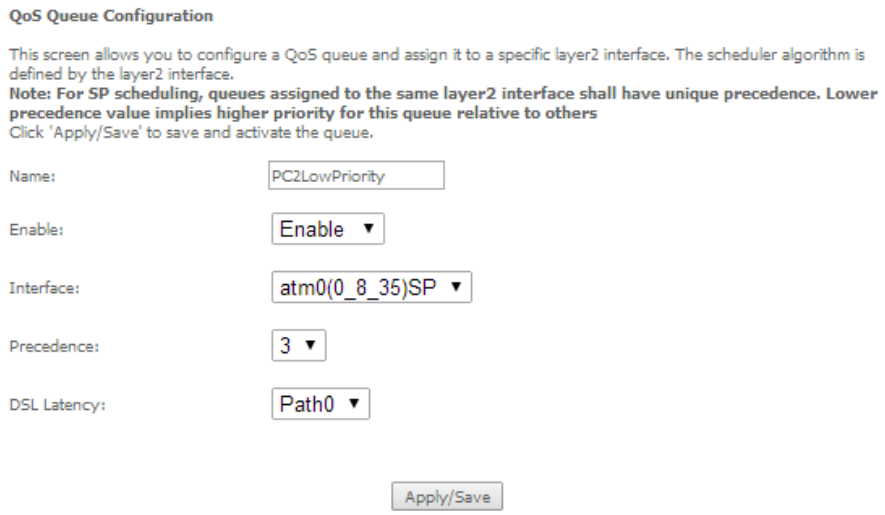
2. Click the **Add** button.



3. Enter a name of 15 characters or less to reflect the device that will have high priority QoS, e.g. PC1HighPriority.
4. Set the Enable option to **Enable**.
5. Set the Interface (Australian customers use **atm0(0_8_35)**, NZ customers use **atm0(0)0)100)**).
6. Enter a **Precedence**. For the highest priority, set it to **1**. For the lowest priority use **3**.
7. Set the **DSL Latency** as **Path0**.
8. Click the **Save/Apply** button.

Low priority QoS queue configuration

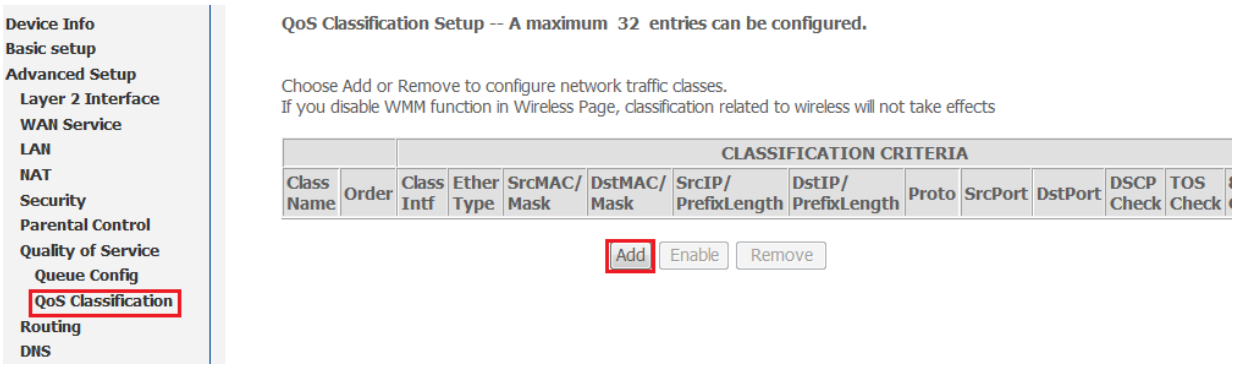
1. Select **Advanced > Quality of Service > Queue Config**.
2. Click the **Add** button.



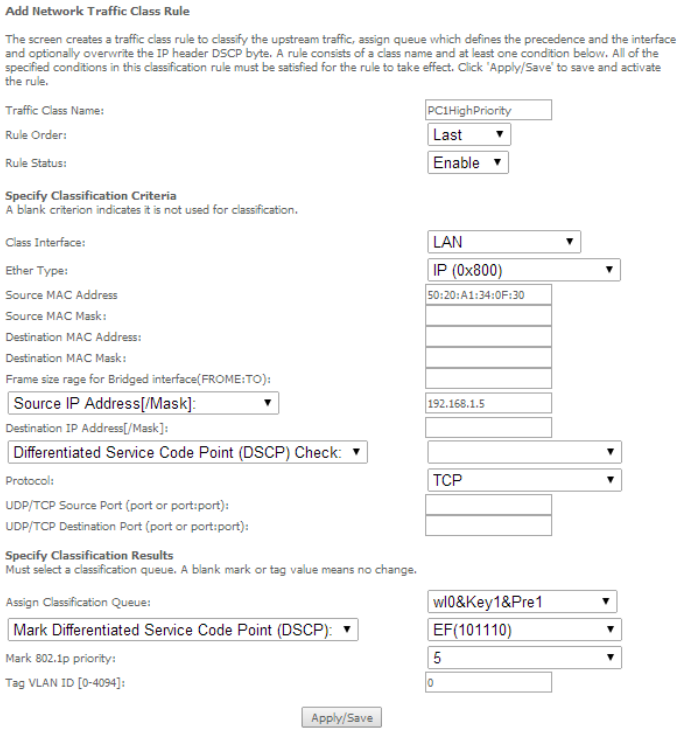
3. Enter a name of 15 characters or less to reflect the device that will have low priority QoS e.g. PC2LowPriority.
4. Set the Enable option to **Enable**.
5. Set the Interface (Australian customers use **atm0(0_8_35)**, NZ customers use **atm0(0)0)100)**).
6. Enter a **Precedence**. For the lowest priority, set it to **3**. For the highest priority use **1**.
7. Set the **DSL Latency** as **Path0**.
8. Click the **Save/Apply** button.

High priority QoS classification

1. Select **Advanced > Quality of Service > QoS Classification**.



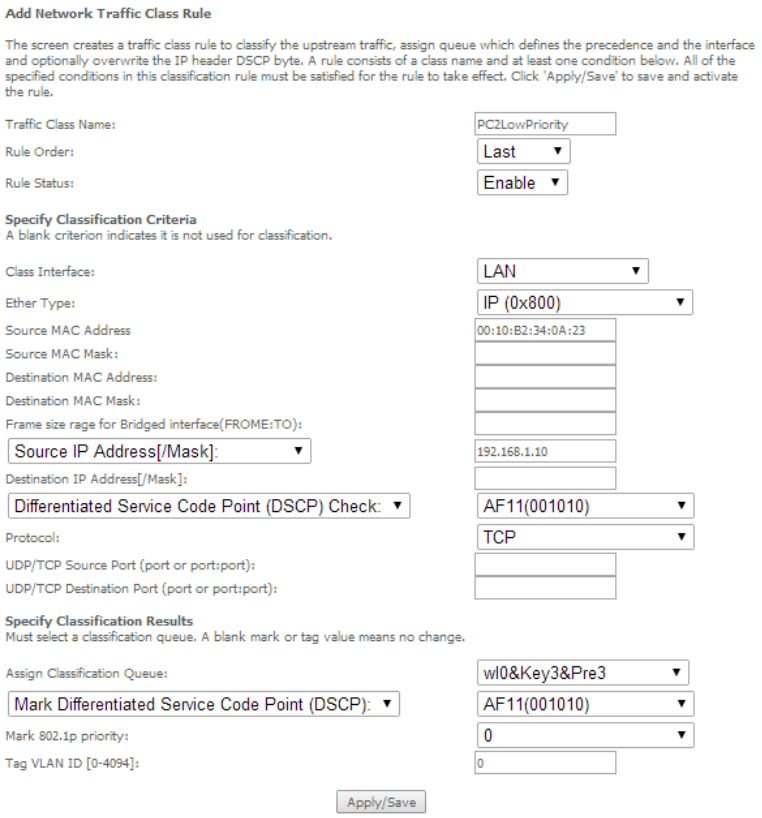
2. Click the **Add** button.



3. Enter a **Traffic Class Name** reflecting the High Priority QoS rule, e.g. PC1HighPriority.
4. Leave the **Rule Order** as **Last**.
5. Set the **Rule Status** to **Enable**.
6. Set the Class Interface according to how the device connects to the router. In the example above, **LAN** is selected. Other options are **Wireless**, **Local** and **USB**.
7. Set the **Ether Type** to **IP(0x800)**. Other options include ARP(0x8086), Ipv6(0x86DD), PPPoE_DISC(0x8863), 8865(0x8865), 8866(0x8866), 8021Q(0x8100).
8. Enter the **Source MAC Address** of the device, the unique 12 character signature with every 2 characters separated by a colon(:), that you previously entered to reserve the device's IP address.
9. Enter the **Source IP Address** of the device that you previously entered into the Static IP Lease List, in the range of 192.168.1.x In the example above the IP address is 192.168.1.5.
10. Enter a **Destination MAC Address** if the connection is to a single device. This is useful for VPN connections. If you wish the destination MAC address to be any address leave the field blank.
11. Enter a **Destination IP Address** if the connection is to a single device. This is useful for VPN connections. If you wish the destination IP address to be any address leave the field blank.
12. Enter a **Destination Subnet Mask** if you have entered a Destination MAC address and Destination IP address. This would normally be 255.255.255.0 unless your system administrator advises otherwise. If you have not entered a Destination MAC or IP address leave the field blank.
13. Set the **Differentiated Service Code Point** (DSCP) Check to **EF(101110)**.
14. Set the **Protocol** to **TCP**. Other options include UDP, ICMP or IGMP.
15. Set "**Assign Classification Queue**" to Priority 1 (in the example above pppoa0&atm0&Path0&Key38&Pre1). Other options or priority 2 and 3. Priority 1 gives the highest priority with priority 3 being the lowest.
16. Set **Mark Differentiated Service Code Point** (DSCP) as **EF(101110)**.
17. Set **Mark 802.1p Priority** as **5**. In the scale 0-7, 0 is best effort, 6 and 7 are reserved for networking performance so set 5 as the highest priority.
18. Click the **Apply/Save** button.

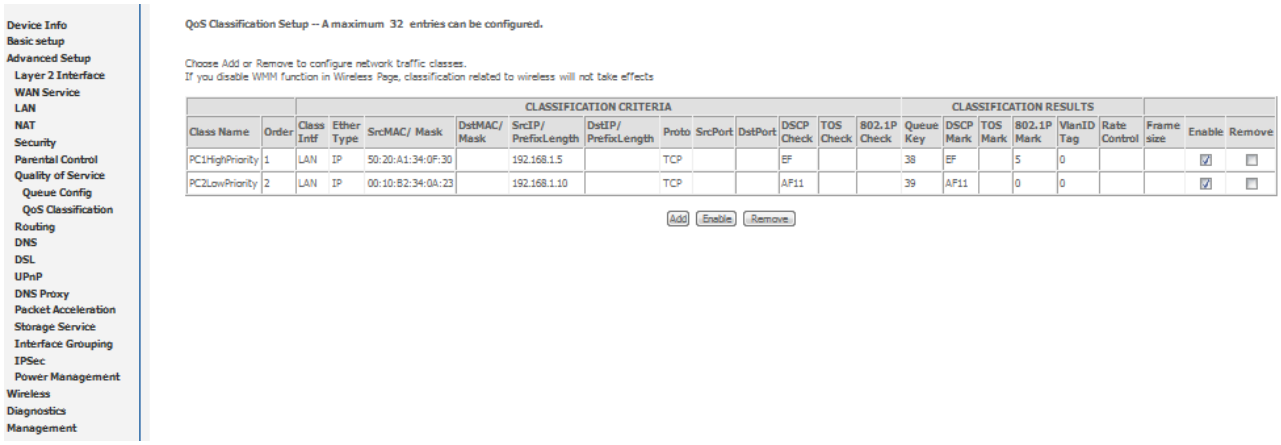
Low priority QoS classification

1. Select **Advanced > Quality of Service > QoS Classification.**
2. Click the **Add** button.



3. Enter a **Traffic Class Name** reflecting the High Priority QoS rule; eg. **PC2LowPriority.**
4. Leave the **Rule Order** as **Last**.
5. Set the **Rule Status** to **Enable**.
6. Set the Class Interface according to how the device connects to the router. In the example above **LAN** is selected. Other options are **Wireless**, **Local** and **USB**.
7. Set the **Ether Type** to **IP(0x800)**. Other options include ARP(0x8086), Ipv6(0x86DD), PPPoE_DISC(0x8863), 8865(0x8865), 8866(0x8866), 8021Q(0x8100).
8. Enter the **Source MAC Address** of the device, the unique 12 character signature with every 2 characters separated by a colon(:), that you previously entered to reserve the device's IP address.
9. Enter the **Source IP Address** of the device that you previously entered into the Static IP Lease List, in the range of 192.168.1.x. In the example above the IP address is 192.168.1.10.
10. Enter a **Destination MAC Address** if the connection is to a single device. This is useful for VPN connections. If you wish the destination MAC address to be any address leave the field blank.
11. Enter a **Destination IP Address** if the connection is to a single device. This is useful for VPN connections. If you wish the destination IP address to be any address leave the field blank.
12. Enter a **Destination Subnet Mask** if you have entered a Destination MAC address and Destination IP address. This would normally be 255.255.255.0 unless your system administrator advises otherwise. If you have not entered a Destination MAC or IP address leave the field blank.
13. Set the **Differentiated Service Code Point (DSCP)** Check to **AF11(001010).**
14. Set the **Protocol** to **TCP**. Other options include UDP, ICMP or IGMP.
15. Set "**Assign Classification Queue**" to Priority 3 (in the example above pppoa0&atm0&Path0&Key39&Pre3). Other options are priority 1 and 2. Priority 1 gives the highest priority with priority 3 being the lowest.
16. Set **Mark Differentiated Service Code Point (DSCP)** as **AF11(001010).**

17. Set **Mark 802.1p Priority** as **0**. In the scale 0-7, 0 is best effort, 6 and 7 are reserved for networking performance so set 0 as the lowest priority.
18. Click the **Apply/Save** button.
19. You now have 2 Quality of Service rules implemented for 2 devices connecting to the NB604N router.



20. Select **Management** > **Reboot**. Click the **Reboot** button to restart the router and save the new settings.
21. To test your Quality of Service settings try running speed-tests (http://speedtest.net) on both PCs/devices **simultaneously**.

FAQ

Q: I cannot access the web-based configuration interface.

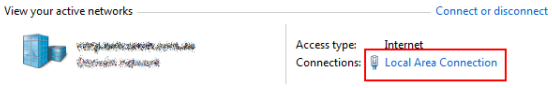
The default IP address of the unit is 192.168.1.1. If you have changed the IP address of the router, use that address instead. If you have changed the IP address of the router and can't remember it, you can reset the router to factory default settings by holding the reset button down for more than 10 seconds and then trying to connect using the default IP address.

Follow the instructions in the Configuring the NB604N section in order to log in. If you are still unable to log in, check that your device is on the same subnet as the router's Ethernet port, i.e. if the IP address of the router is 192.168.1.1 then your device should have an IP address of 192.168.1.X where X is a number between 2 and 255. Also check that you do not have some anti-virus software running on your computer which could prevent your browser from accessing the web-based configuration pages.

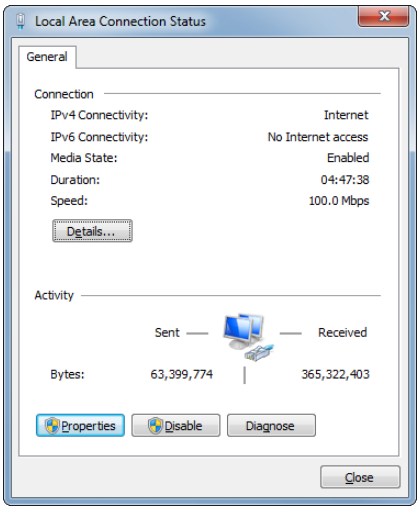
By default, most Ethernet devices are set to behave as a DHCP client and obtain an IP address automatically. This means that they will receive an IP address from the router within the DHCP range specified on the router and hence gain network access.

For example, to configure a Windows 7 computer as a DHCP client:

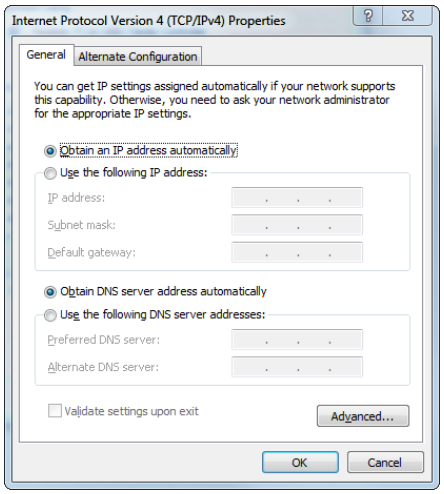
1. Click **Start > Control Panel > Network and Sharing Center**. Select the **Local Area Connection** link.



2. Click the **Properties** button



3. Select Internet Protocol Version 4 (TCP/IPv4) and then click the Properties button.
4. Ensure that **Obtain an IP address automatically** and **Obtain DNS server address automatically** are selected. Click the **OK** button, then click the **OK** button on the Local Area Connection Properties window. Finally, click the **Close** button on the Local Area Connection Status window.



Q: The Internet LED on the front of the router is flashing red.

This typically means that the NB604N was unable to authenticate the DSL account with the service provider. Confirm with your Internet Service Provider that your account has been activated and is not locked and check that you have entered the correct username and password in the PPP Username and PPP Password fields under Basic Setup.

Q: The router was connected but cannot get back online.

Verify your DSL service is active and that the telephone line has been connected securely.

Q: My wireless device won't connect to the NB604N.

To connect a wireless device to the router, follow the steps in the Establishing a wireless connection section. If you still can't connect, verify the Wireless network function is enabled, that you are entering the correct Wireless Security key and you are able to see the Wireless network when performing an SSID scan.

Q: The router has an internet connection but my connected device cannot access the internet.

Verify your PC or device is on the same subnet as the router and that DHCP is enabled.

Q: I cannot access any attached USB Storage.

Verify that you have created an appropriate user account and granted the required access permissions for the volume.

Troubleshooting

Using the indicator lights (LEDs) to Diagnose Problems

The LEDs are useful aides for finding possible problem causes.

Power LED

The Power LED does not light up.

STEP	CORRECTIVE ACTION
1	Make sure that the NB604N power adaptor is connected to the device and plugged in to an appropriate power source. Use only the supplied power adaptor.
2	Check that the NB604N and the power source are both turned on and device is receiving sufficient power.
3	Turn the NB604N off and on.
4	If the error persists, you may have a hardware problem. In this case, you should contact technical support.

Web Configuration

I cannot access the web configuration pages.

STEP	CORRECTIVE ACTION
1	Make sure you are using the correct IP address of the NB604N. You can check the IP address of the device from the Network Setup configuration page.
2	Check that you have enabled remote administration access. If you have configured an inbound packet filter, ensure your computer's IP address matches it.
3	Your computer's and the NB604N's IP addresses must be on the same subnet for LAN access. You can check the subnet in use by the router on the Network Setup page.
4	If you have changed the devices IP address, then enter the new one as the URL you enter into the address bar of your web browser.
5	If you are still not able to access the web configuration pages, reset the router to the factory default settings by pressing the reset button for 3 seconds and then releasing it. When the Power LED begins to blink, the defaults have been restored and the NB604N restarts. Navigate to 192.168.20.1 in your web browser and enter "admin" (without the quotes) as the username and password.

The web configuration does not display properly.

STEP	CORRECTIVE ACTION
1	Delete the temporary web files and log in again. In Internet Explorer, click Tools, Internet Options and then click the Delete Files ... button. When a Delete Files window displays, select Delete all offline content and click OK. (Steps may vary depending on the version of your Internet browser.)

Login Username and Password

I forgot my login username and/or password.

STEP	CORRECTIVE ACTION
1	Press the Reset button for 3 seconds, and then release it. When the Power LED begins to blink, the defaults have been restored and the NB604N restarts. You can now login with the factory default username and password "admin" (without the quotes)
2	It is highly recommended to change the default username and password. Make sure you store the username and password in a safe place.

WLAN Interface

I cannot access the NB604N from the WLAN or ping any computer on the WLAN.

STEP	CORRECTIVE ACTION
1	Check the Wi-Fi LED on the front of the unit and verify the WLAN is enabled as per the LED Indicator section.
2	If you are using a static IP address for the WLAN connection, make sure that the IP address and the subnet mask of the NB604N and your computer(s) are on the same subnet. You can check the routers configuration from the Network Setup page.

Additional product information

Establishing a wireless connection

Windows XP (Service Pack 3)

1. Open the Network Connections control panel (Start -> Control Panel -> Network Connections):
2. Right-click on your Wireless Network Connection and select View Available Wireless Networks:
3. Select the wireless network listed on your included wireless security card and click Connect.
4. Enter the network key (refer to the included wireless security card for the default wireless network key).
5. The connection will show Connected.

Windows Vista

1. Open the Network and Sharing Center (Start > Control Panel > Network and Sharing center).
2. Click on "Connect to a network".
3. Choose "Connect to the Internet" and click on "Next".
4. Select the wireless network listed on your included wireless security card and click Connect.
5. Enter the network key (refer to the included wireless security card for the default wireless network key).
6. Select the appropriate location. This will affect the firewall settings on the computer.
7. Click on both "Save this network" and "Start this connection automatically" and click "Next".

Windows 7

1. Open the Network and Sharing Center (Start > Control Panel > Network and Sharing center).
2. Click on "Change Adapter settings" on the left-hand side.
3. Right-click on "Wireless Network Connection" and select "Connect / Disconnect".
4. Select the wireless network listed on your included wireless security card and click Connect.
5. Enter the network key *(*refer to the included wireless security card for *the default wireless network key)*.
6. You may then see a window that asks you to "Select a location for the 'wireless' network". Please select the "Home" location.
7. You may then see a window prompting you to setup a "HomeGroup". Click "Cancel" on this.
8. You can verify your wireless connection by clicking the "Wireless Signal" indicator in your system tray.
9. After clicking on this, you should see an entry matching the SSID of your NB604N with "Connected" next to it.

Mac OSX 10.6

1. Click on the Airport icon on the top right menu.
2. Select the wireless network listed on your included wireless security card and click Connect.
3. On the new window, select “Show Password”, type in the network key (refer to the included wireless security card for the default wireless network key) in the Password field and then click on OK.
4. To check the connection, click on the Airport icon and there should be a tick on the wireless network name.

Note: For other operating systems, or if you use a wireless adaptor utility to configure your wireless connection, please consult the wireless adapter documentation for instructions on establishing a wireless connection.

Technical data

The following table lists the hardware specifications of the NB604N.

MODEL	NB604N
DDR SDRAM	64MB DDR2
Serial Flash	4 MB/8 MB/16 MB
Modem Chipset	BCM63281
ADSL Compliance	• G.992.1 (T1.413) • G.992.2 (G.dmt), G.lite • G.992.3 (G.bis/ADS L2) • G.992.5 (ADSL2+) • Annex L (reach extended ADSL2)
LED Indicators	Power, DSL, Internet, LAN1 – LAN4, WLAN, WPS, USB
Operating Temperature	0 ~ 40 degrees Celsius (operating temperature)
Power input	12VDC – 1.5A
Dimensions & Weight	181 mm (L) x 137 mm (H) x 34 mm (W) 250 grams
Regulatory Compliancy	A-Tick

Electrical specifications

It is recommended that the NB604N be powered by the supplied 12VDC/1.5A power supply. A replacement power supply is available from the NetComm Online shop.

Environmental specifications / tolerances

The NB604N housing enables it to operate over a wide variety of temperatures from 0˚C ~ 40˚C.

Legal & regulatory information

1. Intellectual property rights

All intellectual property rights (including copyright and trade mark rights) subsisting in, relating to or arising out this Manual are owned by and vest in NetComm Limited (ACN 002490486) (NetComm) (or its licensors). This Manual does not transfer any right, title or interest in NetComm's (or its licensors') intellectual property rights to you.

You are permitted to use this Manual for the sole purpose of using the NetComm product to which it relates. Otherwise no part of this Manual may be reproduced, stored in a retrieval system or transmitted in any form, by any means, be it electronic, mechanical, recording or otherwise, without the prior written permission of NetComm.

NetComm is a trademark of NetComm. All other trademarks are acknowledged to be the property of their respective owners.

2. Customer information

The Australian Communications & Media Authority (ACMA) requires you to be aware of the following information and warnings:

1. This unit may be connected to the Telecommunication Network through a line cord which meets the requirements of the AS/CA S008-2011 Standard.
2. This equipment has been tested and found to comply with the Standards for C-Tick and or A-Tick as set by the ACMA. These standards are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio noise and, if not installed and used in accordance with the instructions detailed within this manual, may cause interference to radio communications. However, there is no guarantee that interference will not occur with the installation of this product in your home or office. If this equipment does cause some degree of interference to radio or television reception, which can be determined by turning the equipment off and on, we encourage the user to try to correct the interference by one or more of the following measures:
   - Change the direction or relocate the receiving antenna.
   - Increase the separation between this equipment and the receiver.
   - Connect the equipment to an alternate power outlet on a different power circuit from that to which the receiver/TV is connected.
   - Consult an experienced radio/TV technician for help.
3. This equipment incorporates a radio transmitting device, in normal use a separation distance of 20cm will ensure radio frequency exposure levels complies with Australian and New Zealand standards.
4. The power supply that is provided with this unit is only intended for use with this product. Do not use this power supply with any other product or do not use any other power supply that is not approved for use with this product by NetComm. Failure to do so may cause damage to this product, fire or result in personal injury.

3. Consumer protection laws

Australian and New Zealand consumer law in certain circumstances implies mandatory guarantees, conditions and warranties which cannot be excluded by NetComm and legislation of another country's Government may have a similar effect (together these are the Consumer Protection Laws). Any warranty or representation provided by NetComm is in addition to, and not in replacement of, your rights under such Consumer Protection Laws.

If you purchased our goods in Australia and you are a consumer, you are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. If you purchased our goods in New Zealand and are a consumer you will also be entitled to similar statutory guarantees.

4. Product warranty

All NetComm products have a standard one (1) year warranty from date of purchase, however, some products have an extended warranty option (refer to packaging and the warranty card) (each a **Product Warranty**). To be eligible for the extended warranty option you must supply the requested warranty information to NetComm within 30 days of the original purchase by registering online via the NetComm web site at www.netcomm.com.au. For all Product Warranty claims you will require proof of purchase. All Product Warranties are in addition to your rights and remedies under applicable Consumer Protection Laws which cannot be excluded (see Section 3 above).

Subject to your rights and remedies under applicable Consumer Protection Laws which cannot be excluded (see Section 3 above), the Product Warranty is granted on the following conditions:

1. the Product Warranty extends to the original purchaser (you / the customer) and is not transferable;
2. the Product Warranty shall not apply to software programs, batteries, power supplies, cables or other accessories supplied in or with the product;
3. the customer complies with all of the terms of any relevant agreement with NetComm and any other reasonable requirements of NetComm including producing such evidence of purchase as NetComm may require;
4. the cost of transporting product to and from NetComm's nominated premises is your responsibility;
5. NetComm does not have any liability or responsibility under the Product Warranty where any cost, loss, injury or damage of any kind, whether direct, indirect, consequential, incidental or otherwise arises out of events beyond NetComm's reasonable control. This includes but is not limited to: acts of God, war, riot, embargoes, acts of civil or military authorities, fire, floods, electricity outages, lightning, power surges, or shortages of materials or labour; and
6. the customer is responsible for the security of their computer and network at all times. Security features may be disabled within the factory default settings. NetComm recommends that you enable these features to enhance your security.

Subject to your rights and remedies under applicable Consumer Protection Laws which cannot be excluded (see Section 3 above), the Product Warranty is automatically voided if:

1. you, or someone else, use the product, or attempt to use it, other than as specified by NetComm;
2. the fault or defect in your product is the result of a voltage surge subjected to the product either by the way of power supply or communication line, whether caused by thunderstorm activity or any other cause(s);
3. the fault is the result of accidental damage or damage in transit, including but not limited to liquid spillage;
4. your product has been used for any purposes other than that for which it is sold, or in any way other than in strict accordance with the user manual supplied;
5. your product has been repaired or modified or attempted to be repaired or modified, other than by a qualified person at a service centre authorised by NetComm; or
6. the serial number has been defaced or altered in any way or if the serial number plate has been removed.

5. Limitation of liability

This clause does not apply to New Zealand consumers.

Subject to your rights and remedies under applicable Consumer Protection Laws which cannot be excluded (see Section 3 above), NetComm accepts no liability or responsibility, for consequences arising from the use of this product. NetComm reserves the right to change the specifications and operating details of this product without notice.

If any law implies a guarantee, condition or warranty in respect of goods or services supplied, and NetComm's liability for breach of that condition or warranty may not be excluded but may be limited, then subject to your rights and remedies under any applicable Consumer Protection Laws which cannot be excluded, NetComm's liability for any breach of that guarantee, condition or warranty is limited to: (i) in the case of a supply of goods, NetComm doing any one or more of the following: replacing the goods or supplying equivalent goods; repairing the goods; paying the cost of replacing the goods or of acquiring equivalent goods; or paying the cost of having the goods repaired; or (ii) in the case of a supply of services, NetComm doing either or both of the following: supplying the services again; or paying the cost of having the services supplied again.

To the extent NetComm is unable to limit its liability as set out above, NetComm limits its liability to the extent such liability is lawfully able to be limited.

Contact

Address: NetComm Wireless Limited Head Office
PO Box 1200, Lane Cove NSW 2066 Australia
P: +61(0)2 9424 2070 F: +61(0)2 9424 2010
E: sales@netcomm.com.au
W: www.netcommwireless.com