3G9W – HSPA 7.2 Mbps Wi-Fi Router

User Guide

Thank you for purchasing NetComm's HSPA Wi-Fi Router

Preface

The purpose of this manual is to provide you detailed information on the installation, operation and application of your HSPA 7.2Mbps Wi-Fi Router.

Important Notice and Safety Precaution

- Before servicing or disassembling this equipment, always disconnect all power or telephone lines from the device.
- Use an appropriate power supply, preferably the supplied power adapter, with an output of DC 12V 1.5A
- Do not operate the device near flammable gas or fumes. Turn off the device when you are near a petrol station, fuel depot or chemical plant/depot. Operation of such equipment in potentially explosive atmospheres can represent a safety hazard.
- The device and antenna shall be used only with a minimum of 20 cm from human body.
- The operation of this device may affect medical electronic devices, such as hearing aids and peacemakers.

Table of Contents

Introduction

Introduction

With the increasing popularity of the 3G standard worldwide, this HSPA 7.2Mbps Wi-Fi Router provides you with triple-band coverage through expanding cellular networks throughout the world.

By following the simple step-by-step instructions found on the Connection Manager USB key, you can share your connection with multiple wireless and wired devices using the 3G network.

Integrating a Sierra Wireless HSPA module, this Router downloads turbo speeds of up to 7.2Mbps.

This Router also provides state-of-the-art security features such as Wi-Fi Protected Access (WPA) data encryption, Firewall and Virtual Private Networks (VPN) pass through.

1.1 Features

- This HSPA 7.2Mbps Wi-Fi Router allows you to share your 3G connection with multiple wireless or wired devices
- Provides you with worldwide coverage through triple-band HSUPA/HSDPA/UMTS (850 / 1900 / 2100 MHz), quad-band EDGE/GSM (850 / 900 / 1800 / 1900 MHz)
- Embedded multi-mode HSUPA/HSDPA/UMTS/EDGE/GPRS/GSM module
- Integrated 802.11g/54Mbps AP (backward compatible with 802.11b)
- Wi-Fi Protected Access (WPA)/ Wi-Fi Protected Access 2 (WPA2) and 802.1x wireless encryption
- Static route/ Routing Information Protocol (RIP)/RIP v2 routing functions
- Media Access Control (MAC) address and IP filtering
- Network Address Translation (NAT)/ Port Address Translation (PAT)
- Supports Universal Plug and Play (UPnP) and Internet Group Management Protocol (IGMP) snooping
- Supports Virtual Private Network (VPN) Pass-Through
- Dynamic Host Configuration Protocol (DHCP) Server/Relay/Client
- Domain Name System (DNS) Proxy and Dynamic Domain Name System (DDNS)
- Web-based Management
- Command Line Interface (CLI) command interface via Telnet
- Configuration backup and restoration
- Remote configuration
- Router and 3G module firmware upgrade

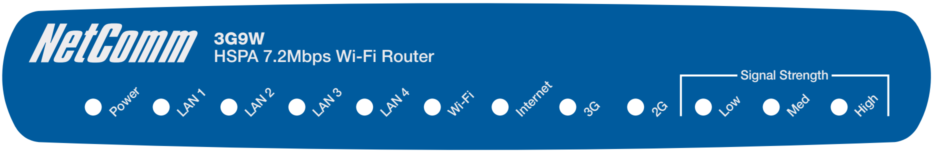
1.2 Package Contents

Your package contains the following:

- 3G9W - HSPA 7.2Mbps Wi-Fi Router
- Printed Quick Start Guide
- User Guide - On CD
- Ethernet Cable
- 2 x 3G Antenna
- Power Supply

1.3 LED Indicators

The front panel LED indicators are shown in this illustration and followed by detailed explanations in the table below.

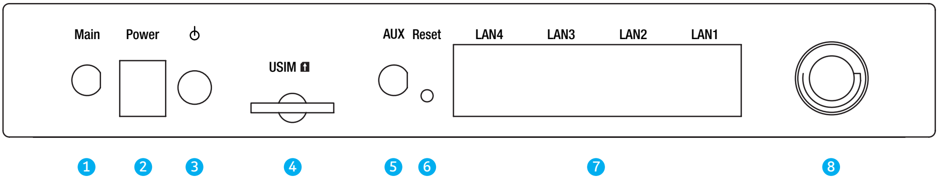


LED	Color	Mode	Description
POWER	Green	On	Power on
		Off	Power off
LAN 1~4	Green	On	Powered device connected to the associated port (includes devices with wake-on-LAN capability where a slight voltage is supplied to an Ethernet connection)
		Off	No activity, modem powered off, no cable or no powered device connected to the associated port
		Blink	LAN activity present (traffic in either direction)
Wi-Fi	Green	On	The wireless module is ready.
		Off	The wireless module is not installed.
		Blink	Data being transmitted or received over Wi-Fi.
Internet	Green	Blink	Internet connection established.
		Off	No connection to the internet or router powered off
3G	Green	On	Internet connection established.
		Blink	Connecting with UMTS cellular station
		Off	No connection with UMTS cellular station, no activity or router powered off.
2G	Green	On	Internet connection established.
		Blink	Connecting to an EDGE, GPRS or GSM cellular station
		Off	No connection with EDGE, GPRS or GSM cellular station, no activity or router powered off.
Low	Green	On	Low signal strength
		Off	No activity, router powered off or on other signal strength
Med	Green	On	Medium signal strength
		Off	No activity, router powered off or on other signal strength
High	Green	On	High signal strength
		Off	No activity, router powered off or on other signal strength

NOTE: The six LEDs on the right side of the front panel display (Internet, 3G, 2G, Low, Med, High) will cycle on and off if PIN code protection is activated. In this case, you should consult section 4.2.1 PIN Code Protection (page 21) for further instructions.

1.4 Rear Panel

The rear panel contains the ports for data and power connections.



(1) Main 3G Antenna (removable, SMA connection)

(2) Power jack for DC power input (12VDC / 1.5A).

(3) Power button

(4) USIM card slot

(5) Aux 3G Antenna (removable, SMA connection)

(6) Reset button

(7) Four RJ-45 Ethernet LAN ports

(8) 2dBi wireless Antenna (fixed)

Quick Setup

Quick Setup

2.1 Setup Procedure

These steps explain how to quickly setup your router:

1: Attach the two 3G antennas provided to the ports marked Main and AUX on the back of the router. The antennas should be screwed in a clockwise direction.

2: Insert your SIM card (until you hear a click) into the USIM slot at the back of the Router.

3: Connect the yellow networking cable to one of the yellow ports found at the back of the Router.

4: Connect the other end of the yellow networking cable to the port on your computer.

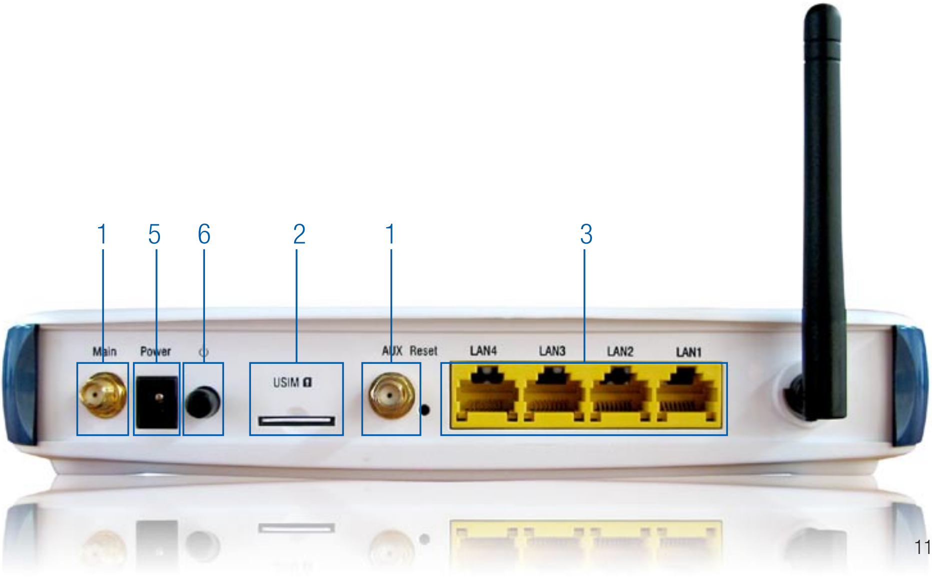
5: Connect the power adapter to the Power socket on the back of the Router.

6: Plug the power adapter into the wall socket and press the power button into the ON position (in).

7: Configure the router through the Web User Interface (WUI).

NOTE: Chapters 3 through 8 explain how to setup and use the WUI

8: Save the router configuration and reboot (see section 6.4).



Web User Interface

Web User Interface

This section describes how to access the device via the web user interface using a web browser such as Microsoft Internet Explorer (version 5.0 or later).

3.1 Default Settings

The following are the default settings for the device.

- Local (LAN) access (username: admin, password: admin)
- Remote (WAN) access (username: support, password: support)
- User access (username: user, password: user)
- LAN IP address: 192.168.1.1
- WAN IP address: none
- Remote WAN access: disabled
- NAT and firewall: enabled
- Dynamic Host Configuration Protocol (DHCP) server on LAN interface: enabled

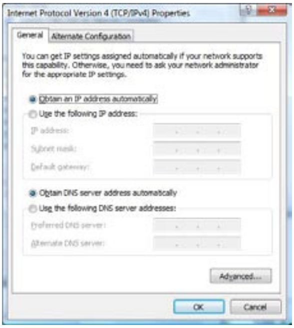
Technical Note:

During power on, the device initializes all settings to default values. It will then read the configuration profile from the permanent storage section of flash memory. The default attributes are overwritten when identical attributes with different values are configured. The configuration profile in permanent storage can be created via the web user interface or telnet user interface, or other management protocols. The factory default configuration can be restored either by pushing the reset button for more than five seconds until the power indicates LED blinking or by clicking the Restore Default Configuration option in the Restore DefaultSettings screen.

3.2 TCP/IP Settings

DHCP Mode

When your Router powers up, the Dynamic Host Configuration Protocol DHCP server (on the device) will start automatically. To set your PC for DHCP mode, check the Internet Protocol properties of your Local Area Connection. You can set your PC to DHCP mode by selecting Obtain an IP address automatically in the dialog box shown below.



Internet Protocol Version 4 (TCP/IPv4) Properties

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically
○ Use the following IP address:
IP address: . . .
Subnet mask: . . .
Default gateway: . . .

● Obtain DNS server address automatically
○ Use the following DNS server addresses:
Preferred DNS server: . . .
Alternate DNS server: . . .

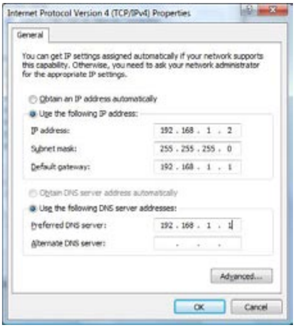
STATIC IP Mode

To configure your Router manually, your PC must have a static IP address within the Router's subnet. The following steps show how to configure your PC IP address using subnet 192.168.1.x. The following assumes you are running Windows XP.

1: From the Network Connections window, open Local Area Connection (You may also access this screen by double-clicking the Local Area Connection icon on your taskbar). Click the Properties button.

2: Select Internet Protocol (TCP/IP) and click the Properties button. The screen should now display as below. Change the IP address to the domain of 192.168.1.x (1<x<254) with subnet mask of 255.255.255.0. Set the default router and DNS server to the router's IP address.

NOTE: The IP address of the router is 192.168.1.1 (default), so the PC must be set with a different IP. In the case below, the PC's IP address is set as 192.168.1.2



Internet Protocol Version 4 (TCP/IPv4) Properties

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically
● Use the following IP address:
IP address: 192 . 168 . 1 . 2
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 1 . 1

○ Obtain DNS server address automatically
● Use the following DNS server addresses:
Preferred DNS server: 192 . 168 . 1 . 1
Alternate DNS server: . . .

3: Click OK to submit the settings.

3.3 Login Procedure

To login to the web interface, follow the steps below:

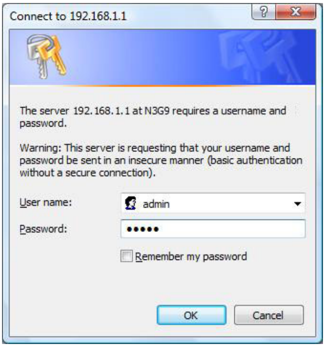
NOTE: The default settings can be found in 3.1 Default Settings.

1: Open a web browser and enter the default IP address for the Router in the Web address field. In this case http://192.168.1.1.

NOTE: For local administration (i.e. LAN access), the PC running the browser must be attached to the Ethernet, and not necessarily to the device. For remote access, use the WAN IP address shown on the WUI Homepage screen and login with remote username and password.

2: A dialog box will appear, as illutstrated below. Enter the default username and password, as defined in section 3.1 Default Settings.

Click OK to continue.



The server 192.168.1.1 at N3G9 requires a username and password.

Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).

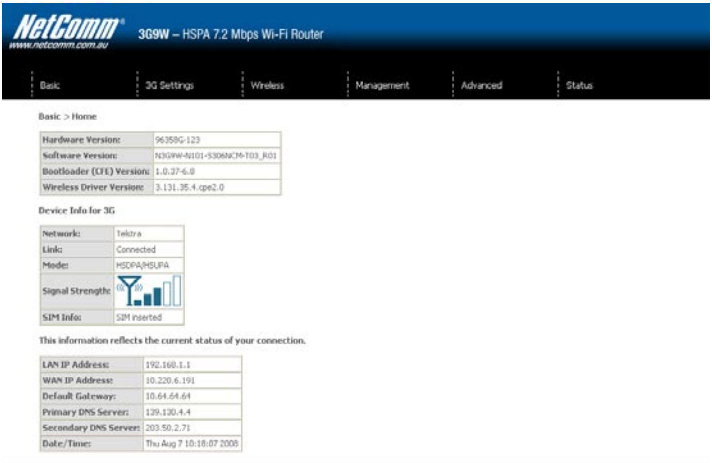
User name: admin

Password: •••••

□ Remember my password

NOTE: The login password can be changed later (see 7.3.3 Passwords)

3: After successfully logging in for the first time, you will reach this screen.



Basic > Home

Hardware Version:	96358G-123
Software Version:	N3G9W-N101-S306NCM-T03_R01
Bootloader (CFE) Version:	1.0.37-6.0
Wireless Driver Version:	3.131.35.4.cpe2.0

Device Info for 3G

Network:	Telstra
Link:	Connected
Mode:	HSDPA/HSUPA
Signal Strength:	
SIM Info:	SIM inserted

This information reflects the current status of your connection.

LAN IP Address:	192.168.1.1
WAN IP Address:	10.220.6.191
Default Gateway:	10.64.64.64
Primary DNS Server:	139.130.4.4
Secondary DNS Server:	203.50.2.71
Date/Time:	Thu Aug 7 10:18:07 2008

3.4 Web User Interface Homepage

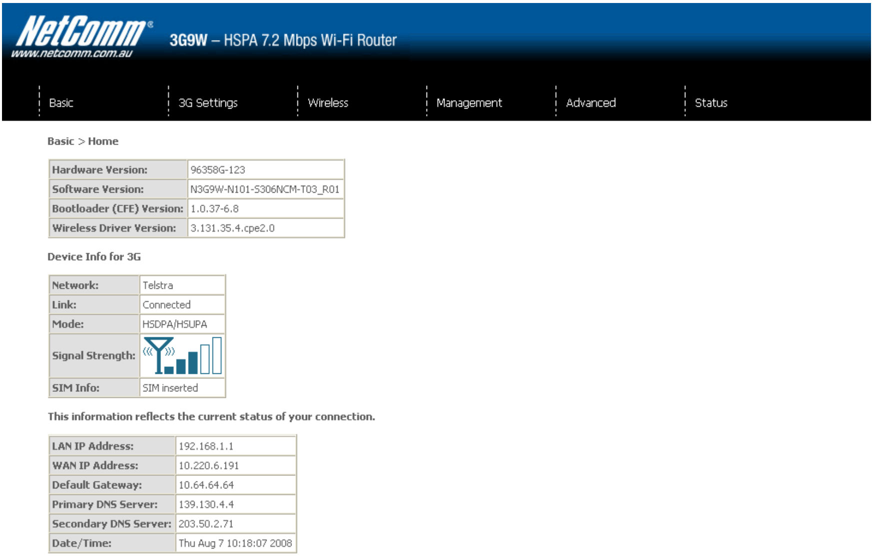
The web user interface (WUI) is divided into two window panels, the main menu (on the top) and the display screen (on the bottom). The main menu has the following options: Basic, 3G Settings, Wireless, Management, Advanced and Status.

Selecting one of these options will open a submenu with more options. Basic is discussed below while subsequent chapters introduce the other main menu selections.

NOTE: The menu options available within the web user interface are based upon the device configuration and user privileges (i.e. local or remote).

BASIC / HOME

The Basic / Home screen is the WUI homepage and the first selection on the main menu. It provides information regarding the firmware, 3G, and IP configuration.



Basic > Home

Hardware Version:	96358G-123
Software Version:	N3G9W-N101-S306NCM-T03_R01
Bootloader (CFE) Version:	1.0.37-6.8
Wireless Driver Version:	3.131.35.4.cpe2.0

Device Info for 3G

Network:	Telstra
Link:	Connected
Mode:	HSDPA/HSUPA
Signal Strength:	📶
SIM Info:	SIM inserted

This information reflects the current status of your connection.

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Primary DNS Server:	139.130.4.4
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Date/Time:	Thu Aug 7 10:18:07 2008

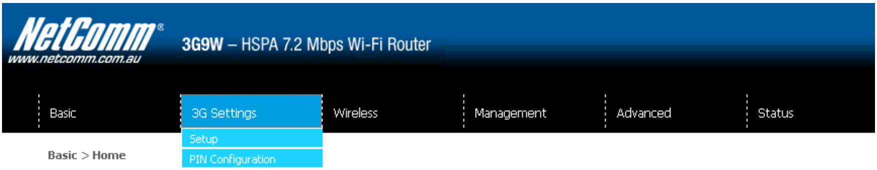
The following table provides further details.

Fields	Description
Software version	The software version of the device.
Bootloader version	The bootloader version of the device.
Wireless driver version	The wireless driver version of the wireless module.
Network	The name of or other reference to the mobile network operator.
Link	Shows the connection status of the current 3G connection.
Mode	The radio access technique currently used to enable internet access. It can be HSUPA, HSDPA, UMTS, EDGE, GPRS or Disconnected.
Signal strength	The mobile network (UMTS or GSM) signal quality available at the device location. This signal quality affects the performance of the unit. If two or more bars are green, the connection is usually acceptable.
SIM info	Shows the SIM card status on the device.
LAN IP Address	Shows the IP address for LAN interface.
WAN IP Address	Shows the IP address for WAN interface.
Default Gateway	Shows the IP address of the default gateway for the WAN interface.
Primary DNS Server	Shows the IP address of the primary DNS server.
Secondary DNS server	Shows the IP address of the secondary DNS server.
Date/Time	The time according to the device’s internal clock

3G Settings

3G Settings

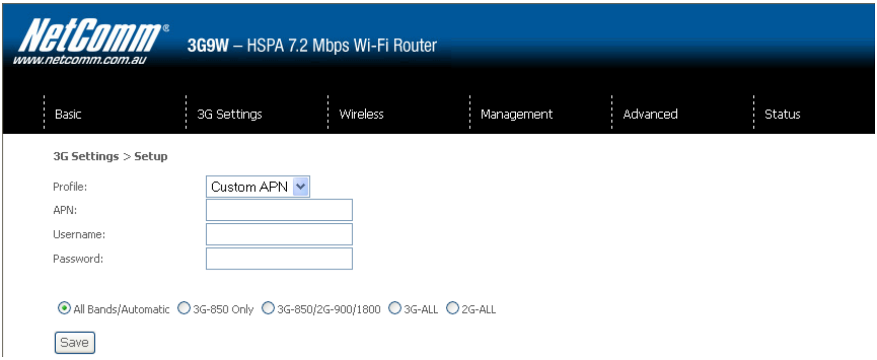
This menu includes 3G service Setup and PIN Configuration.



NOTE: Sections 8.3 and 8.4.2 also provide information about the 3G service.

4.1 3G Service Setup

Select your 3G service settings according to predefined or custom profiles. Setup instructions are provided in the following sections for your assistance.



3G Settings > Setup

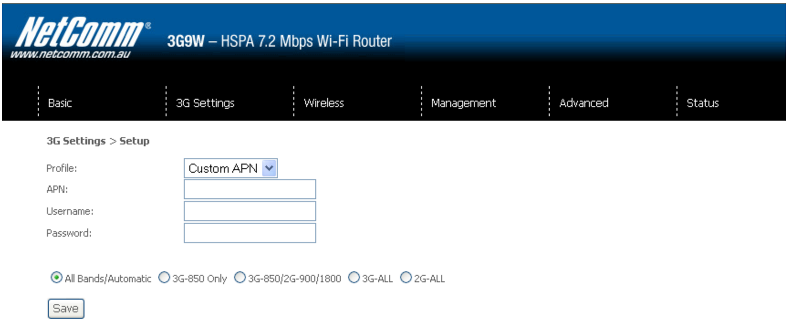
Profile:	Custom APN
APN:	
Username:	
Password:	

● All Bands/Automatic ○ 3G-850 Only ○ 3G-850/2G-900/1800 ○ 3G-ALL ○ 2G-ALL

4.1.1 Profile Setup

Your Service Provider will provide the information required to complete the first time setup instructions below. This includes profile, username and password. Only complete those steps for which you have information and skip the others.

1. If your SIM card is not inserted into the gateway, then do so now.
2. Type the APN in the APN field. If you have not received a username and password, leave these fields empty.

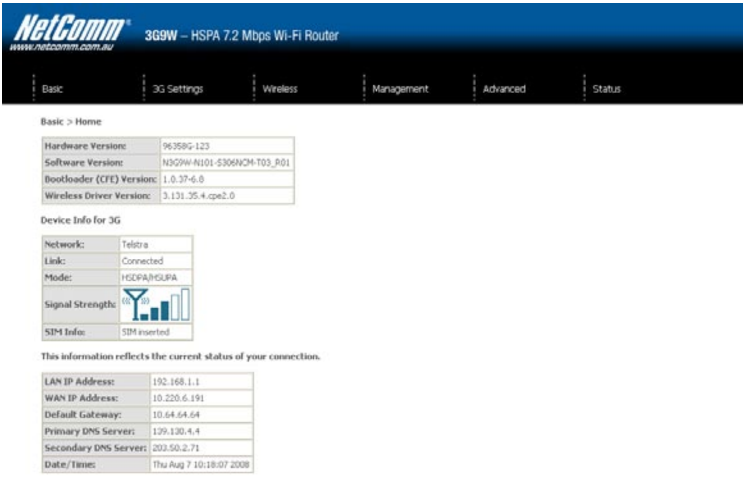


3G Settings > Setup

Profile:	Custom APN
APN:	
Username:	
Password:	

● All Bands/Automatic ○ 3G-850 Only ○ 3G-850/2G-900/1800 ○ 3G-ALL ○ 2G-ALL

3. Click the Save button to save the new settings and reboot the Gateway. .
4. After reboot, the Device Info for 3G network box in the WUI Basic screen should indicate an active connection, as shown below. The 3G and Internet LEDs on the front panel of the Gateway should also be blinking.



Basic > Home

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Default Gateway:	10.64.64.64
Primary DNS Server:	139.130.4.4
Secondary DNS Server:	203.50.2.71
Date/Time:	Thu Aug 7 10:18:07 2008

If the LEDs are off, then either your profile settings are incorrect, the SIM card is not working or the service network is unavailable. In either case, contact Technical Support for further instructions.

NOTE: If the LEDs light in an on/off pattern moving from left to right this indicates that your SIM is PIN Locked, please lee PIN Lock Off on page 21 for instruction on how to fix this

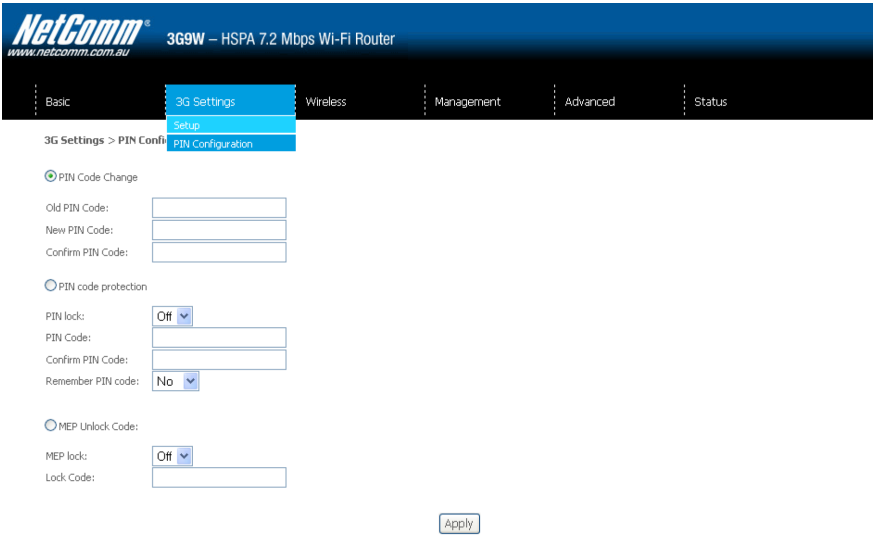
4.2 PIN Configuration

This screen allows for changes to the 3G SIM card PIN code protection settings.

NOTE: If you have entered the incorrect PIN 3 times, your SIM card will be locked for your security. Please call your 3G Provider for assistance.

4.2.1 PIN Code Protection

PIN code protection prevents the use of a SIM card by unauthorized persons. To use the 3G internet service with this router however, the PIN code protection must be disabled. If the SIM card inserted into the Router is locked with a PIN code, the web user interface will display the following screen after login.



● PIN Code Change

Old PIN Code:

New PIN Code:

Confirm PIN Code:

○ PIN code protection

PIN lock: Off

PIN Code:

Confirm PIN Code:

Remember PIN code: No

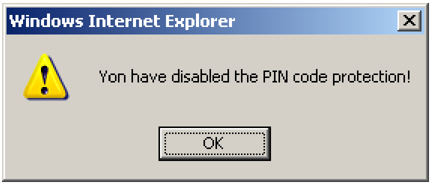
○ MEP Unlock Code:

MEP lock: Off

Lock Code:

PIN Lock Off

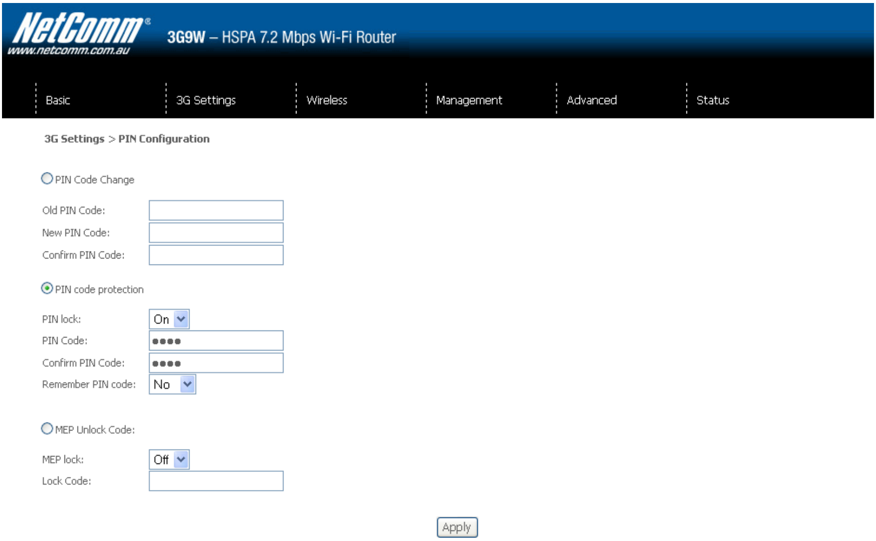
If you wish to connect to the Internet using a PIN locked SIM card, you must first turn PIN code protection **Off**. Select PIN lock **Off**, enter the PIN Code and click **Save/Apply**. The following dialog box should now appear.



Yon have disabled the PIN code protection!

PIN Lock On

After you are finished using your SIM card for Internet service, you may wish to lock it again. In this case, first go to the 3G Settings - PIN Configuration screen, as shown below. Select PIN lock **On**, enter the PIN Code and click **Save/Apply**.



3G Settings > PIN Configuration

○ PIN Code Change

Old PIN Code:
New PIN Code:
Confirm PIN Code:

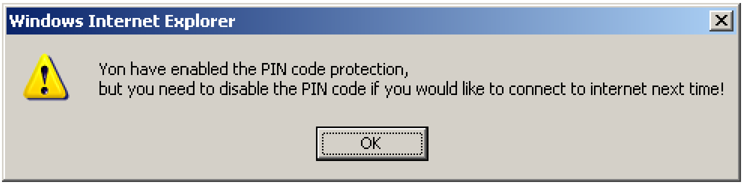
● PIN code protection

PIN lock: On
PIN Code: ••••
Confirm PIN Code: ••••
Remember PIN code: No

○ MEP Unlock Code:

MEP lock: Off
Lock Code:

After you do so, the following dialog box should appear.



Yon have enabled the PIN code protection,
but you need to disable the PIN code if you would like to connect to internet next time!

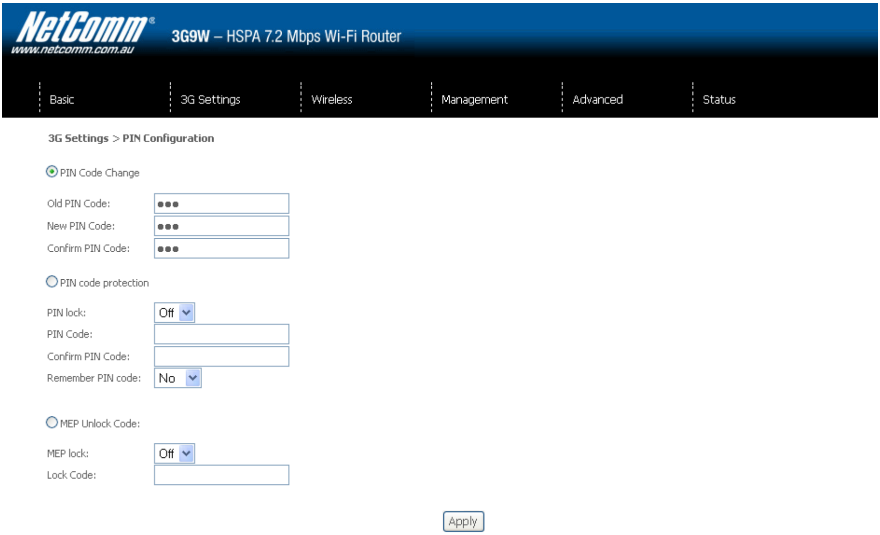
You can now return your SIM card to your cellular phone or other mobile device.

NOTE: If the dialog box fails to appear, check your PIN code before trying again. Keep in mind you only have 3 attempts before your SIM card is locked. Contact your 3G provider if you require assistance.

4.2.2 PIN Code Change

If you wish to change your PIN code for greater security, enable the PIN Code protection. Go to the previous section and follow the procedure listed under **PIN Lock On**.

After locking the SIM card, select **PIN Code Change** and enter your Old and New PIN codes in the fields provided and click **Save/Apply**.



3G Settings > PIN Configuration

● PIN Code Change

Old PIN Code:	●●●
New PIN Code:	●●●
Confirm PIN Code:	●●●

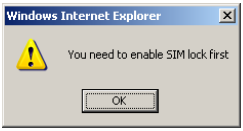
○ PIN code protection

PIN lock:	Off
PIN Code:	
Confirm PIN Code:	
Remember PIN code:	No

○ MEP Unlock Code:

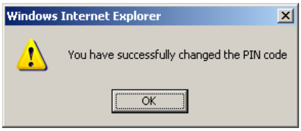
MEP lock:	Off
Lock Code:	

NOTE: If you forget to change the PIN Code without first turning on PIN lock protection, you will see this dialog box as a helpful reminder.



You need to enable SIM lock first

NOTE: If your PIN Code change request was successful the following dialog box will display.



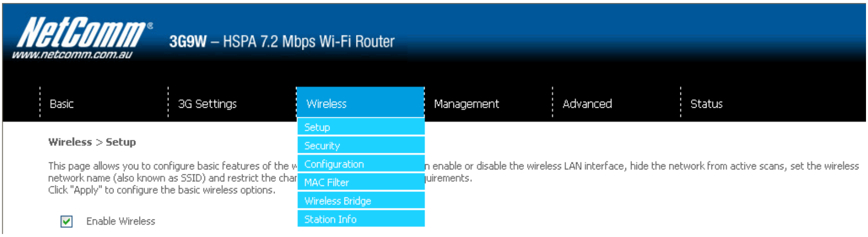
You have successfully changed the PIN code

Wireless

Wireless

The Wireless submenu provides access to Wireless Local Area Network (LAN) configuration settings including:

- Wireless network name
- Channel restrictions (based on country)
- Security
- Access point or bridging behaviour
- Station information



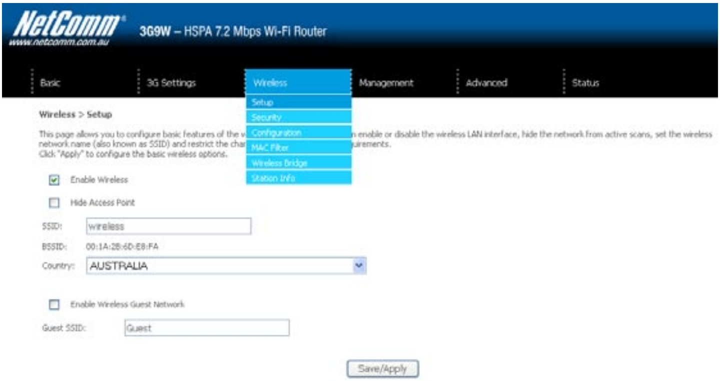
Wireless > Setup

This page allows you to configure basic features of the w... n enable or disable the wireless LAN interface, hide the network from active scans, set the wireless network name (also known as SSID) and restrict the char... uirements.
Click "Apply" to configure the basic wireless options.

☑ Enable Wireless

5.1 Setup

This screen allows you to configure basic features of the wireless LAN interface. You can enable or disable the wireless LAN interface, hide the network from active scans, set the wireless network name (also known as SSID) and restrict the channel set based on country requirements. The Wireless Guest Network function adds extra networking security when connecting to remote hosts.



Wireless > Setup

This page allows you to configure basic features of the w… n enable or disable the wireless LAN interface, hide the network from active scans, set the wireless network name (also known as SSID) and restrict the char… uirements.
Click "Apply" to configure the basic wireless options.

☑ Enable Wireless

□ Hide Access Point

SSID: wireless

BSSID: 00:1A:2B:6D:E8:FA

Country: AUSTRALIA

□ Enable Wireless Guest Network

Guest SSID: Guest

Option	Description
Enable Wireless	A checkbox that enables (default) or disables the wireless LAN interface. When selected, the Web UI displays Hide Access point, SSID, BSSID and Country settings.
Hide Access Point	Select Hide Access Point to protect the access point from detection by wireless active scans. To check AP status in Windows XP, open Network Connections from the start Menu and select View Available Network Connections. If the access point is hidden, it will not be listed there. To connect a client to a hidden access point, the station must add the access point manually to its wireless configuration.
SSID **[1-32 characters]**	Sets the wireless network name. SSID stands for Service Set Identifier. All stations must be configured with the correct SSID to access the WLAN. If the SSID does not match, that user will not be granted access.
BSSID	The BSSID is a 48bit identity used to identify a particular BSS (Basic Service Set) within an area. In Infrastructure BSS networks, the BSSID is the MAC (Media Access Control) address of the AP (Access Point) and in Independent BSS or ad hoc networks, the BSSID is generated randomly.
Country	A drop-down menu that permits worldwide and specific national settings. Each country listed below enforces specific regulations limiting channel range: • USA = worldwide • Australia/Japan = 1-14 • Jordan = 10-13 • Israel = 1-13
Wireless Guest Network	The Guest SSID (Virtual Access Point) can be enabled by selecting the Enable Wireless Guest Network checkbox. Rename the Wireless Guest Network as you wish. NOTE: Remote wireless hosts cannot scan Guest SSIDs.

5.2 Security

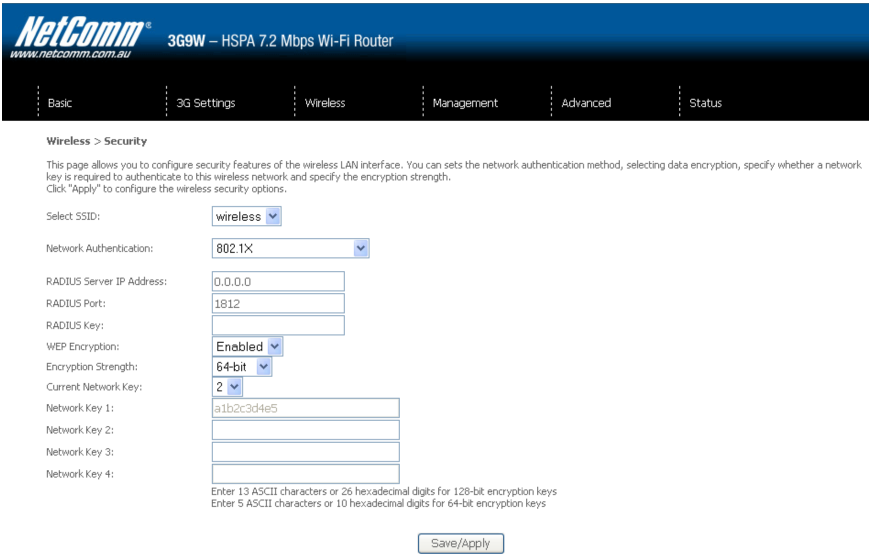
This Router includes a number of security options that provides you with a secure connection to a 3G network.

State-of-the art security includes:

- WEP / WPA / WPA2 data encryption
- SPI Firewall
- VPN Pass-Through
- MAC address IP filtering
- Authentication protocols – PAP / CHAP

You can authenticate or encrypt your service on the Wired Equivalent Privacy (WEP) algorithm, which provides protection against unauthorized access such as eavesdropping.

The following screen appears when Security is selected. The Security page allows you to configure security features of your Router's wireless LAN interface. You can set the network authentication method, select data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.



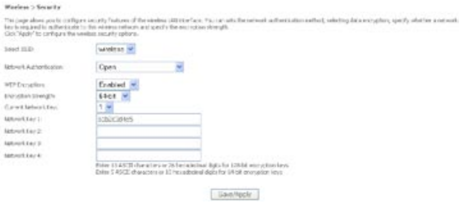
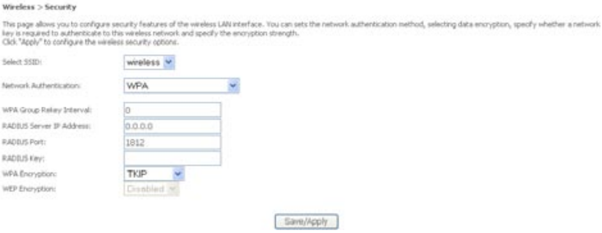
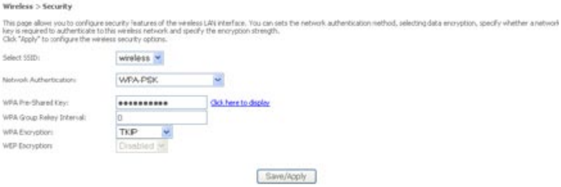
Wireless > Security

This page allows you to configure security features of the wireless LAN interface. You can sets the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.
Click "Apply" to configure the wireless security options.

Select SSID:	wireless
Network Authentication:	802.1X
RADIUS Server IP Address:	0.0.0.0
RADIUS Port:	1812
RADIUS Key:	
WEP Encryption:	Enabled
Encryption Strength:	64-bit
Current Network Key:	2
Network Key 1:	a1b2c3d4e5
Network Key 2:	
Network Key 3:	
Network Key 4:	

Enter 13 ASCII characters or 26 hexadecimal digits for 128-bit encryption keys
Enter 5 ASCII characters or 10 hexadecimal digits for 64-bit encryption keys

Click **Save/Apply** to configure the wireless security options.

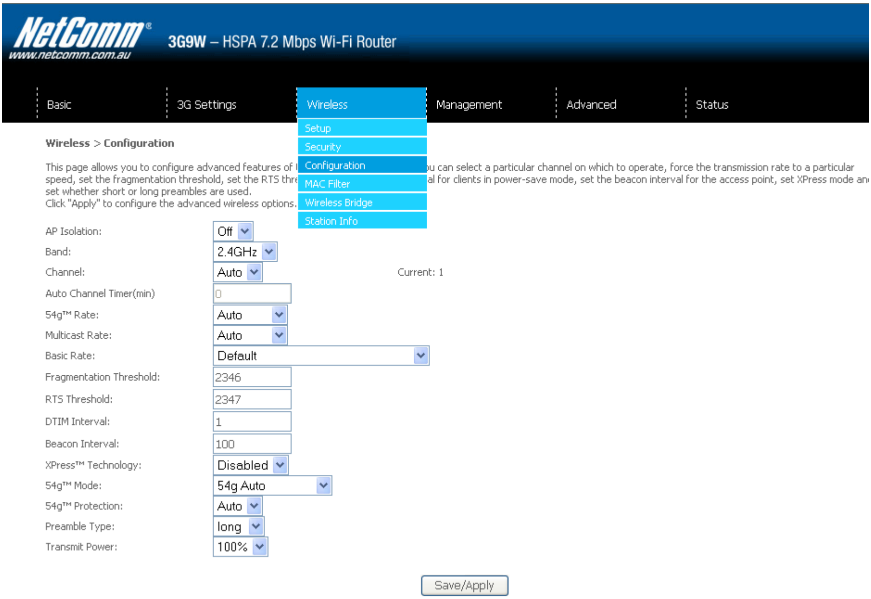
Select SSID	Your Service Set Identifier (SSID), sets your Wireless Network Name. You can connect multiple devices including Laptops, Desktop PCs and PDAs to your Wireless Router. To get additional devices connected, scan for a network, and locate the SSID shown on your Wireless Security Card. If the SSID does not match, access is denied.
Network Authentication	This option is used for authentication to the wireless network. Each authentication type has its own settings as illustrated below. For example, selecting 802.1X authentication will reveal the RADIUS Server IP address, Port and Key fields. WEP Encryption will also be enabled.  Wireless > Security This page allows you to configure security features of the wireless LAN interface. You can sets the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength. Click "Apply" to configure the wireless security options. Select SSID: wireless Network Authentication: Open WEP Encryption: Enabled Encryption Strength: 64-bit Current Network Key: 1 Network Key 1: [illegible] Network Key 2: Network Key 3: Network Key 4: Enter 13 ASCII characters or 26 hexadecimal digits for 128-bit encryption keys Enter 5 ASCII characters or 10 hexadecimal digits for 64-bit encryption keys The settings for WPA authentication are shown below.  Wireless > Security This page allows you to configure security features of the wireless LAN interface. You can sets the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength. Click "Apply" to configure the wireless security options. Select SSID: wireless Network Authentication: WPA WPA Group Rekey Interval: 0 RADIUS Server IP Address: 0.0.0.0 RADIUS Port: 1812 RADIUS Key: WPA Encryption: TKIP WEP Encryption: Disabled  Wireless > Security This page allows you to configure security features of the wireless LAN interface. You can sets the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength. Click "Apply" to configure the wireless security options. Select SSID: wireless Network Authentication: WPA-PSK WPA Pre-Shared Key: •••••••••• Click here to display WPA Group Rekey Interval: 0 WPA Encryption: TKIP WEP Encryption: Disabled
WEP Encryption	This option indicates whether data sent over the network is encrypted. The same network key is used for data encryption and network authentication. Whilst four network keys can be defined, only one can be used at any one time. Use the network key found in the drop down list.
Encryption Strength	This drop-down list box will display when WEP Encryption is enabled. The key strength is proportional to the number of binary bits comprising the key. This means that keys with a greater number of bits have a greater degree of security and are considerably more difficult to crack. Encryption strength can be set to either 64-bit or 128-bit. A 64-bit key is equivalent to 5 ASCII characters or 10 hexadecimal numbers. A 128-bit key contains 13 ASCII characters or 26 hexadecimal numbers. FYI: Each key contains a 24-bit header (an initiation vector) which enables parallel decoding of multiple streams of encrypted data.

5.3 Configuration

The following screen appears when you select Configuration. This screen allows you to control the following advanced features of the Wireless Local Area Network (WLAN) interface:

- Select the channel which you wish to operate from
- Force the transmission rate to a particular speed
- Set the fragmentation threshold
- Set the RTS threshold
- Set the wake-up interval for clients in power-save mode
- Set the beacon interval for the access point
- Set Xpress mode
- Program short or long preambles

Click **Save/Apply** to set the advanced wireless configuration.



Wireless > Configuration

This page allows you to configure advanced features of ‹ ›u can select a particular channel on which to operate, force the transmission rate to a particular speed, set the fragmentation threshold, set the RTS thre‹ ›al for clients in power-save mode, set the beacon interval for the access point, set XPress mode an‹ › set whether short or long preambles are used.
Click "Apply" to configure the advanced wireless options.

AP Isolation:	Off	
Band:	2.4GHz	
Channel:	Auto	Current: 1
Auto Channel Timer(min)	0	
54g™ Rate:	Auto	
Multicast Rate:	Auto	
Basic Rate:	Default	
Fragmentation Threshold:	2346	
RTS Threshold:	2347	
DTIM Interval:	1	
Beacon Interval:	100	
XPress™ Technology:	Disabled	
54g™ Mode:	54g Auto	
54g™ Protection:	Auto	
Preamble Type:	long	
Transmit Power:	100%	

Option	Description
AP Isolation	Select On or Off. By enabling this feature, wireless clients associated with the Access Point can be linked.
Band	The new amendment allows IEEE 802.11g units to fall back to speeds of 11 Mbps, so IEEE 802.11b and IEEE 802.11g devices can coexist in the same network. The two standards apply to the 2.4 GHz frequency band. IEEE 802.11g creates data-rate parity at 2.4 GHz with the IEEE 802.11a standard, which has a 54 Mbps rate at 5 GHz. (IEEE 802.11a has other differences compared to IEEE 802.11b or g, such as offering more channels.)
Channel	Allows selection of a specific channel (1-14) or Auto mode.
Auto Channel Timer (min)	The Auto Channel times the length it takes to scan in minutes.
54g Rate	In Auto (default) mode, your Router uses the maximum data rate and lowers the data rate dependent on the signal strength. The appropriate setting is dependent on signal strength. Other rates are discrete values between 1 to 54 Mbps.
Multicast Rate	Setting for multicast packet transmission rate. (1-54 Mbps)
Basic Rate	Sets basic transmission rate.
Fragmentation Threshold	A threshold (in bytes) determines whether packets will be fragmented and at what size. Packets that exceed the fragmentation threshold of an 802.11 WLAN will be split into smaller units suitable for the circuit size. Packets smaller than the specified fragmentation threshold value however are not fragmented. Values between 256 and 2346 can be entered but should remain at a default setting of 2346. Setting the Fragmentation Threshold too low may result in poor performance.
RTS Threshold	Request To Send (RTS) specifies the packet size that exceeds the specified RTS threshold, which then triggers the RTS/CTS mechanism. Smaller packets are sent without using RTS/CTS. The default setting of 2347 (max length) will disables the RTS Threshold.
DTIM Interval	Delivery Traffic Indication Message (DTIM) is also known as Beacon Rate. The entry range is a value between 1 and 65535. A DTIM is a countdown variable that informs clients of the next window for listening to broadcast and multicast messages. When the AP has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. AP Clients hear the beacons and awaken to receive the broadcast and multicast messages. The default is 1.
Beacon Interval	The amount of time between beacon transmissions in is milliseconds. The default is 100 ms and the acceptable range is 1 – 65535. The beacon transmissions identify the presence of an access point. By default, network devices passively scan all RF channels listening for beacons coming from access points. Before a station enters power save mode, the station needs the beacon interval to know when to wake up to receive the beacon.
Xpress™ Technology	Broadcom's Xpress™ Technology is compliant with draft specifications of two planned wireless industry standards. It has been designed to improve wireless network efficiency. Default is disabled.

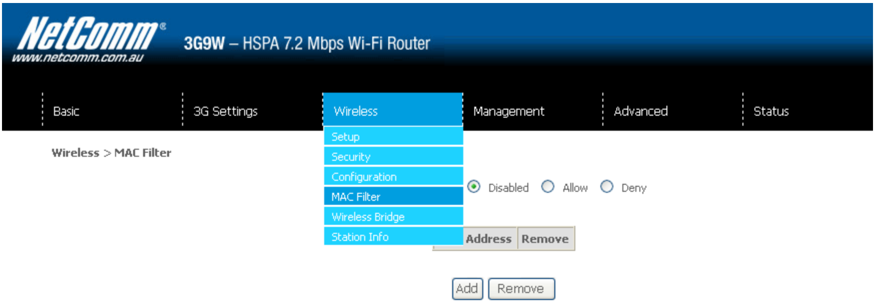
Option	Description
54g Mode	Select Auto mode for greatest compatibility. Select Performance mode for the fastest performance among 54g certified equipment. Select LRS mode if you are experiencing difficulty with legacy 802.11b equipment. If this does not work, you may also try 802.11b only mode.
54g Protection	In Auto mode, the router will use RTS/CTS to improve 802.11g performance in mixed 802.11g/802.11b networks. Turning protection Off will maximize 802.11g throughput under most conditions.
Preamble Type	Short preamble is intended for applications where maximum throughput is desired but it does not work with legacy equipment. Long preamble works with the current 1 and 2 Mbit/s DSSS specification as described in IEEE Std 802.11-1999
Transmit Power	Set the power output (by percentage) as desired.

5.4 MAC Filter

This screen appears when Media Access Control (MAC) Filter is selected. This option allows access to be restricted based upon the unique 48-bit MAC address.

To add a MAC Address filter, click the **Add** button shown below.

To delete a filter, select it from the table below and click the **Remove** button.



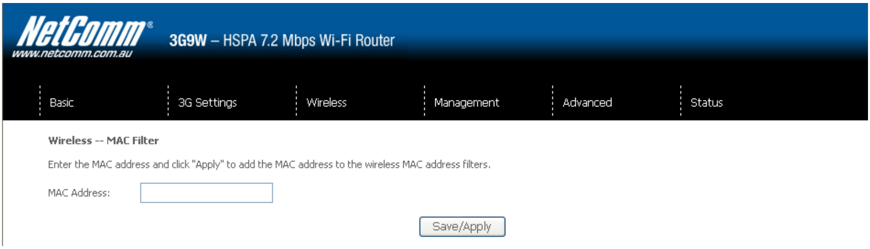
Wireless > MAC Filter

● Disabled ○ Allow ○ Deny

MAC Address	Remove

Option	Description
MAC Restrict Mode	**Disabled** – Disables MAC filtering **Allow** – Permits access for the specified MAC addresses. NOTE: Add a wireless device's MAC address before clicking the Allow radio button or else you will need to connect to the Router's web user interface using the supplied yellow Ethernet cable and add the wireless device's MAC address. **Deny** – Rejects access for the specified MAC addresses
MAC Address	Lists the MAC addresses subject to the MAC Restrict Mode. The Add button prompts an entry field that requires you type in a MAC address in a two-character, 6-byte convention: xx:xx:xx:xx:xx:xx where xx are hexadecimal numbers. A maximum of 60 MAC addresses can be added.

Enter the MAC address on the screen below and click **Save/Apply**.


NetComm® www.netcomm.com.au
3G9W – HSPA 7.2 Mbps Wi-Fi Router
Basic
3G Settings
Wireless
Management
Advanced
Status
Save/Apply

Wireless -- MAC Filter

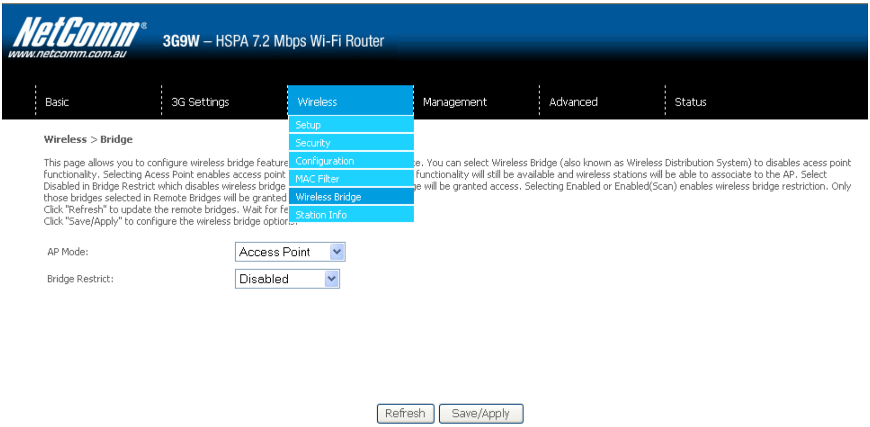
Enter the MAC address and click "Apply" to add the MAC address to the wireless MAC address filters.

MAC Address:

5.5 Wireless Bridge

The following screen appears when selecting Wireless Bridge, and goes into a detailed explanation of how to configure wireless bridge features of the wireless LAN interface.

Click **Save/Apply** to implement new configuration settings.



Wireless > Bridge

This page allows you to configure wireless bridge feature e. You can select Wireless Bridge (also known as Wireless Distribution System) to disables acess point
functionality. Selecting Acess Point enables access point functionality will still be available and wireless stations will be able to associate to the AP. Select
Disabled in Bridge Restrict which disables wireless bridge ge will be granted access. Selecting Enabled or Enabled(Scan) enables wireless bridge restriction. Only
those bridges selected in Remote Bridges will be granted
Click "Refresh" to update the remote bridges. Wait for fe
Click "Save/Apply" to configure the wireless bridge option.

AP Mode:	Access Point
Bridge Restrict:	Disabled

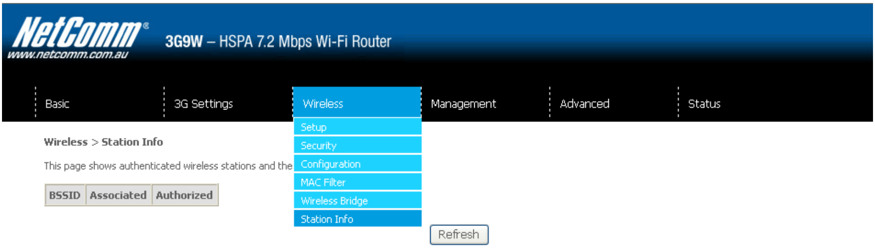
Refresh Save/Apply

Feature	Options
AP Mode	Selecting **Wireless Bridge** (Wireless Distribution System) disables Access Point (AP) functionality while selecting **Access Point** enables AP functionality. In **Access Point** mode, wireless bridge functionality will still be available and wireless stations will be able to associate to the AP.
Bridge Restrict	Selecting **Disabled** in Bridge Restrict disables Wireless Bridge restriction, which means that any wireless bridge will be granted access. Selecting Enabled or Enabled (Scan) allows wireless bridge restriction. Only those bridges selected in Remote Bridges will be granted access. Click **Refresh** to update the station list when Bridge Restrict is enabled.

5.6 Station Info

The following screen appears when you select Station Info, and shows authenticated wireless stations and their status.

Click the **Refresh** button to update the list of stations in the WLAN.



Wireless > Station Info

This page shows authenticated wireless stations and the

BSSID	Associated	Authorized

BSSID	The BSSID is a 48-bit identity used to identify a particular BSS (Basic Service Set) within an area. In Infrastructure BSS networks, the BSSID is the MAC (Media Access Control) address of the AP (Access Point); and in Independent BSS or ad hoc networks, the BSSID is generated randomly.
Associated	Lists all the stations that are associated with the Access Point, along with the amount of time since packets were transferred to and from each station. If a station is idle for too long, it is removed from this list.
Authorized	Lists those devices with authorized access.

Management

Management

The Management menu has the following maintenance functions and processes:

6.1 Device Settings

6.2 Access Control

6.3 Simple Network Time Protocol (SNTP)

6.4 Save and Reboot

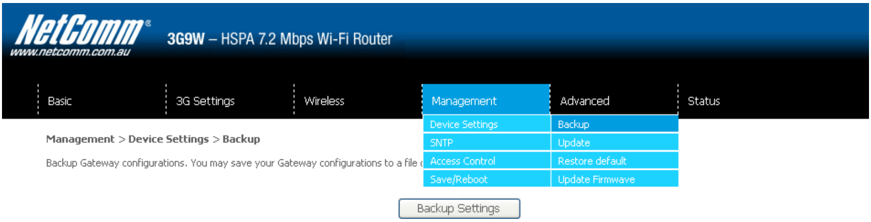
6.1 Device Settings

The Device Settings screens allow you to backup, retrieve and restore the default settings of your Router. It also provides a function for you to update your Routers firmware.

6.1.1 Backup Settings

The following screen appears when Backup is selected. Click the Backup Settings button to save the current configuration settings.

You will be prompted to define the location of a backup file to save to your PC.

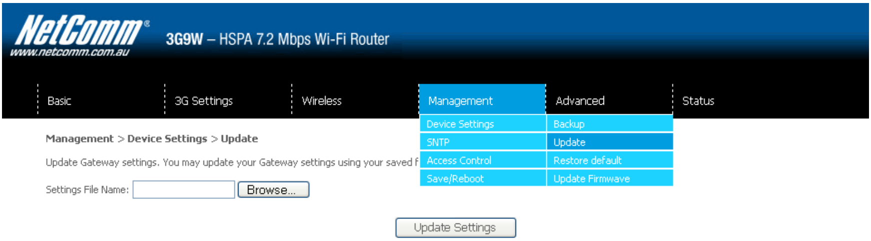


Management > Device Settings > Backup

Backup Gateway configurations. You may save your Gateway configurations to a file c

6.1.2 Update Settings

The following screen appears when selecting Update from the submenu. By clicking on the Browse button, you can locate a previously saved filename as the configuration backup file. Click on the Update settings to load it.



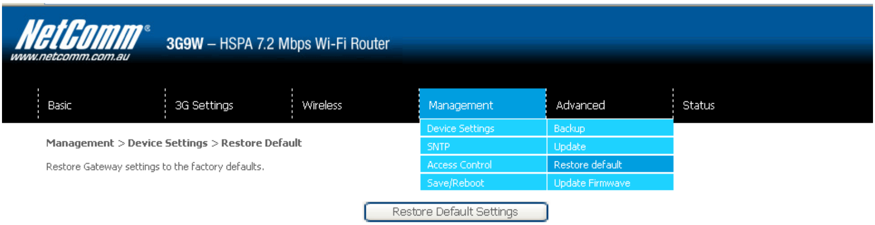
Management > Device Settings > Update

Update Gateway settings. You may update your Gateway settings using your saved f

Settings File Name:

6.1.3 Restore Default

The following screen appears when selecting Restore Default. By clicking on the Restore Default Settings button, you can restore your Routers default firmware settings. To restore system settings, reboot your Router.

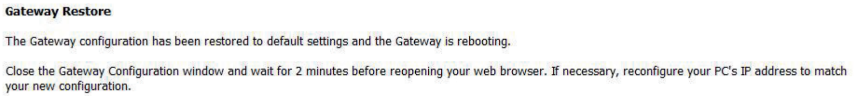


Management > Device Settings > Restore Default

Restore Gateway settings to the factory defaults.

NOTE: The default settings can be found in section 3.1 Default Settings.

Once you have selected the Restore Default Settings button, the following screen will appear. Close the window and wait 2 minutes before reopening your browser. If required, reconfigure your PCs IP address to match your new configuration(see section 3.2 TCP/IP Settings for details).



Gateway Restore

The Gateway configuration has been restored to default settings and the Gateway is rebooting.

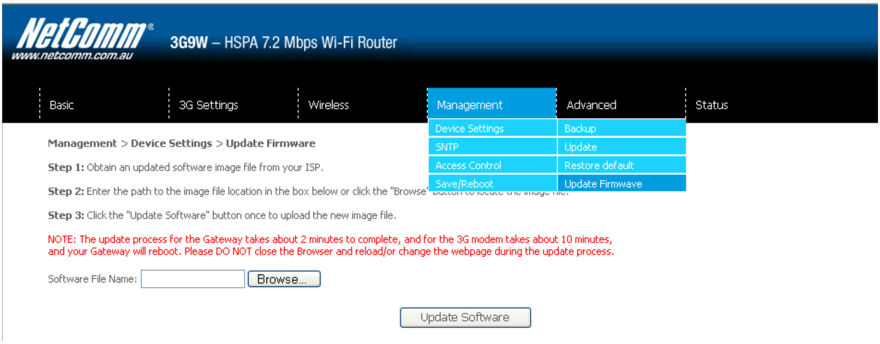
Close the Gateway Configuration window and wait for 2 minutes before reopening your web browser. If necessary, reconfigure your PC's IP address to match your new configuration.

After a successful reboot, the browser will return to the Device Info screen. If the browser does not refresh to the default screen, close and restart the browser.

NOTE: The Restore Default function has the same effect as the reset button. The device board hardware and the boot loader support the reset to default button. If the reset button is continuously pushed for more than 5 seconds (and not more than 12 seconds), the boot loader will erase the configuration settings saved on flash memory.

6.1.4 Update Firmware

The following screen appears when selecting Update Firmware. By following this screens steps, you can update your Routers firmware. Manual device upgrades from a locally stored file can also be performed using the following screen.



Management > **Device Settings** > **Update Firmware**

Step 1: Obtain an updated software image file from your ISP.

Step 2: Enter the path to the image file location in the box below or click the "Browse" button to locate the image file.

Step 3: Click the "Update Software" button once to upload the new image file.

NOTE: The update process for the Gateway takes about 2 minutes to complete, and for the 3G modem takes about 10 minutes, and your Gateway will reboot. Please DO NOT close the Browser and reload/or change the webpage during the update process.

Software File Name: [Browse...]

[Update Software]

1: Obtain an updated software image file

2: Enter the path and filename of the firmware image file in the Software File Name field or click the Browse button to locate the image file.

3: Click the Update Software button once to upload and install the file.

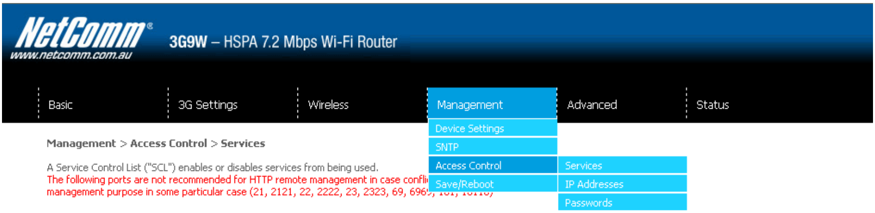
NOTE: The update process will take about 2 minutes to complete. The Router will reboot and the browser window will refresh to the default screen upon successful installation.
It is recommended that you compare the Software Version at the top of the Basic screen (WUI homepage) with the firmware version installed, to confirm the installation was successful.

6.2 Access Control

The Access Control option found in the Management drop down menu, configures access related parameters in the following three areas:

- Services
- IP Addresses
- Passwords

Access Control is used to control local and remote management settings for your Router.

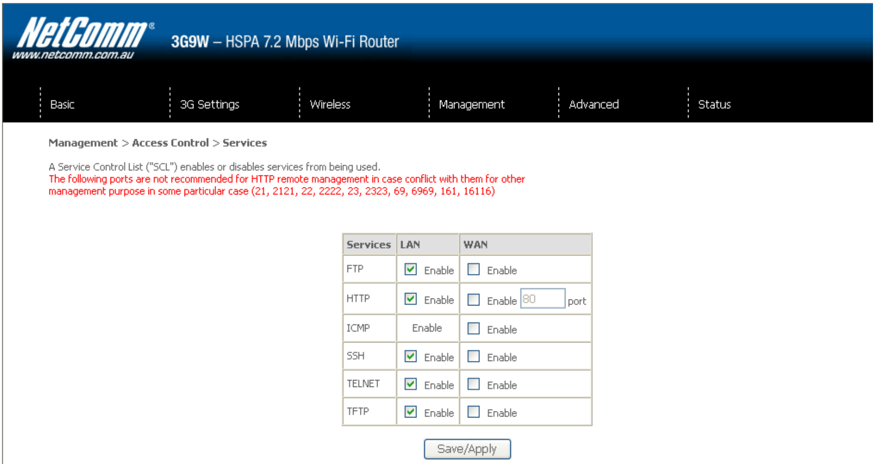


Management > Access Control > Services

A Service Control List ("SCL") enables or disables services from being used.
The following ports are not recommended for HTTP remote management in case confli
management purpose in some particular case (21, 2121, 22, 2222, 23, 2323, 69, 696

6.2.1 Services

The Service Control List (SCL) allows you to enable or disable your Local Area Network (LAN) or Wireless Area Network (WAN) services by ticking the checkbox as illustrated below. These access services are available: FTP, HTTP, ICMP, SSH, TELNET, and TFTP. Click Save/Apply to continue.



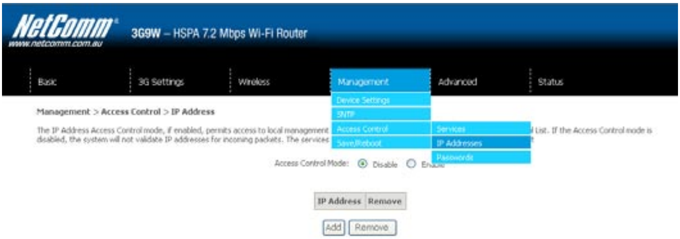
Management > Access Control > Services

A Service Control List ("SCL") enables or disables services from being used.
The following ports are not recommended for HTTP remote management in case conflict with them for other management purpose in some particular case (21, 2121, 22, 2222, 23, 2323, 69, 6969, 161, 16116)

Services	LAN	WAN
FTP	☑ Enable	□ Enable
HTTP	☑ Enable	□ Enable 80 port
ICMP	Enable	□ Enable
SSH	☑ Enable	□ Enable
TELNET	☑ Enable	□ Enable
TFTP	☑ Enable	□ Enable

6.2.2 IP Address

The IP Address option limits local access by IP address. When the Access Control Mode is enabled, only the IP addresses listed here can access the device. Before enabling Access Control Mode, add IP addresses with the Add button.



Management > Access Control > IP Address

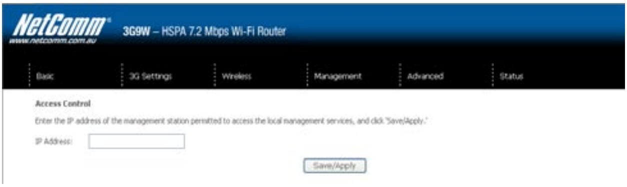
The IP Address Access Control mode, if enabled, permits access to local management … List. If the Access Control mode is disabled, the system will not validate IP addresses for incoming packets. The services …

Access Control Mode: ● Disable ○ Enable

IP Address	Remove

Add Remove

On this screen, enter the IP address of a local PC which you wish to allow permission. Click Save/Apply to continue.



Access Control

Enter the IP address of the management station permitted to access the local management services, and click 'Save/Apply.'

IP Address:

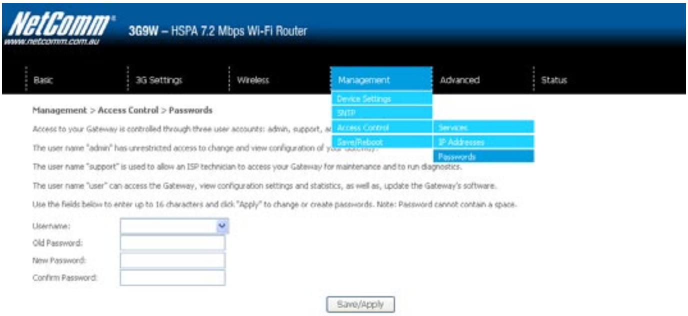
Save/Apply

6.2.3 Passwords

The Passwords option configures your account access password for your Router. Access to the device is limited to the following three user accounts:

- **admin** is to be used for local unrestricted access control
- **support** is to be used for remote maintenance of the device
- **user** is to be used to view information and update device firmware

Use the fields illustrated in the screen below to change or create your password. Passwords must be 16 characters or less with no spaces. Click Save/Apply to continue.



Management > Access Control > Passwords

Access to your Gateway is controlled through three user accounts: admin, support, a…

The user name "admin" has unrestricted access to change and view configuration of your Gateway.

The user name "support" is used to allow an ISP technician to access your Gateway for maintenance and to run diagnostics.

The user name "user" can access the Gateway, view configuration settings and statistics, as well as, update the Gateway's software.

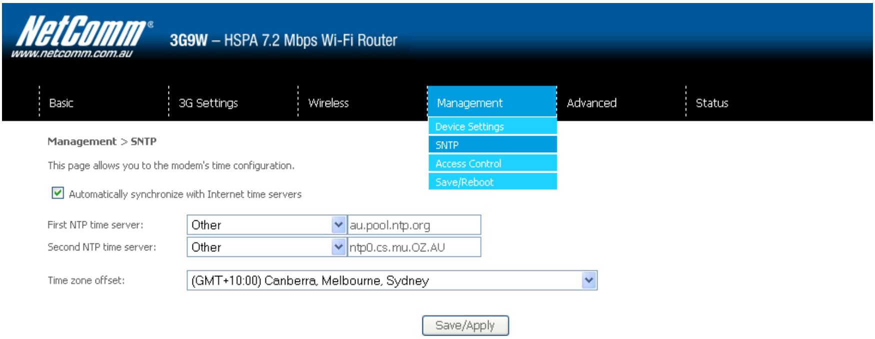
Use the fields below to enter up to 16 characters and click "Apply" to change or create passwords. Note: Password cannot contain a space.

Username:
Old Password:
New Password:
Confirm Password:

Save/Apply

6.3 Simple Network Time Protocol (SNTP)

This screen allows you to configure the time settings of your Router. To automatically synchronize with Internet timeservers, tick the box as illustrated below.



Management > SNTP

This page allows you to the modem's time configuration.

☑ Automatically synchronize with Internet time servers

First NTP time server: Other au.pool.ntp.org

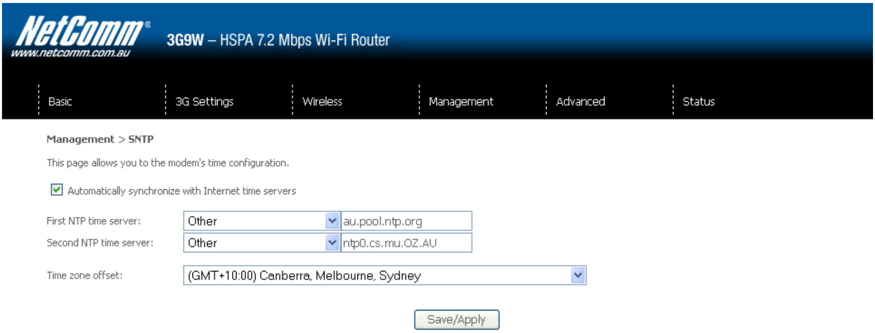
Second NTP time server: Other ntp0.cs.mu.OZ.AU

Time zone offset: (GMT+10:00) Canberra, Melbourne, Sydney

The following options should now appear (see screenshot below):

First NTP timeserver:	Select the required server.
Second NTP timeserver:	Select second timeserver, if required.
Time zone offset:	Select the local time zone.

Configure these options and then click Save/Apply to activate.



Management > SNTP

This page allows you to the modem's time configuration.

☑ Automatically synchronize with Internet time servers

First NTP time server: Other au.pool.ntp.org

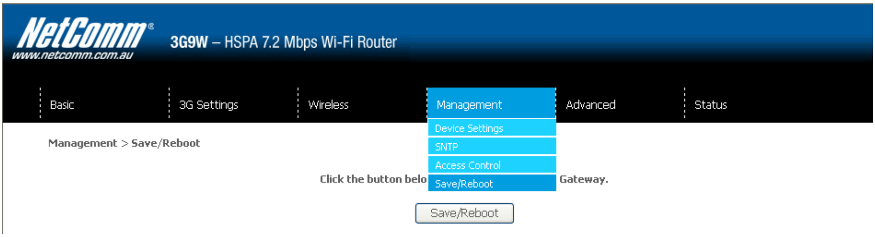
Second NTP time server: Other ntp0.cs.mu.OZ.AU

Time zone offset: (GMT+10:00) Canberra, Melbourne, Sydney

NOTE: SNTP must be activated to use Parental Control (section 7.3.2).

6.4 Save and Reboot

This function saves the current configuration settings and reboots your Router.



Management > Save/Reboot

Click the button belo Gateway.

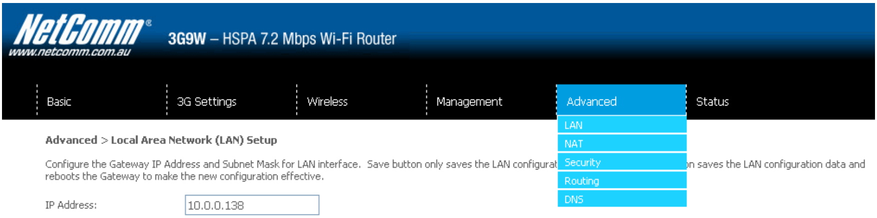
NOTE1: It may be necessary to reconfigure your TCP/IP settings to adjust for the new configuration. For example, if you disable the Dynamic Host Configuration Protocol (DHCP) server you will need to apply Static IP settings.

NOTE2: If you lose all access to your web user interface, simply press the reset button on the rear panel for 5-7 seconds to restore default settings.

Advanced Setup

Advanced Setup

This chapter explains advanced setup for your Router:



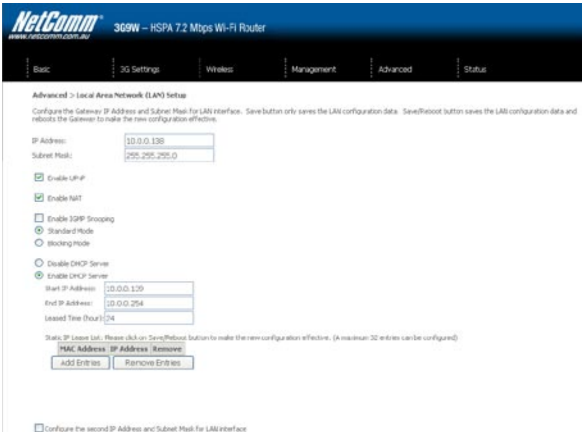
Advanced > Local Area Network (LAN) Setup

Configure the Gateway IP Address and Subnet Mask for LAN interface. Save button only saves the LAN configurat … n saves the LAN configuration data and reboots the Gateway to make the new configuration effective.

IP Address: 10.0.0.138

7.1 Local Area Network (LAN)

This screen allows you to configure the Local Area Network (LAN) interface on your Router.



Advanced > Local Area Network (LAN) Setup

Configure the Gateway IP Address and Subnet Mask for LAN interface. Save button only saves the LAN configuration data. Save/Reboot button saves the LAN configuration data and reboots the Gateway to make the new configuration effective.

IP Address: 10.0.0.138
Subnet Mask: 255.255.255.0

☑ Enable UPnP

☑ Enable NAT

☐ Enable IGMP Snooping
● Standard Mode
○ Blocking Mode

○ Disable DHCP Server
● Enable DHCP Server
Start IP Address: 10.0.0.139
End IP Address: 10.0.0.254
Leased Time (hour): 24

Static IP Lease List: Please click on Save/Reboot button to make the new configuration effective. (A maximum 32 entries can be configured)

MAC Address	IP Address	Remove

Add Entries | Remove Entries

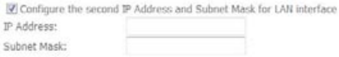
☐ Configure the second IP Address and Subnet Mask for LAN interface

See the field descriptions below for more details.

Option	Description
IP Address	Enter the IP address for the LAN interface
Subnet Mask	Enter the subnet mask for the LAN interface
Enable UPnP	Tick the box to enable Universal Plug and Play
Enable Internet Group Management Protocol (IGMP) Snooping	Enable by ticking the box **Standard Mode**: In standard mode, multicast traffic will flood to all bridge ports when no client subscribes to a multicast group. **Blocking Mode**: In blocking mode, the multicast data traffic will be blocked. When there are no client subscriptions to a multicast group, it will not flood to the bridge ports.
Dynamic Host Configuration Protocol (DHCP) Server	Select Enable DHCP server and enter your starting and ending IP addresses and the lease time. This setting configures the router to automatically assign IP, default gateway and DNS server addresses to every DHCP client on your LAN

Configure a second IP address by ticking the checkbox shown below and enter the following information:

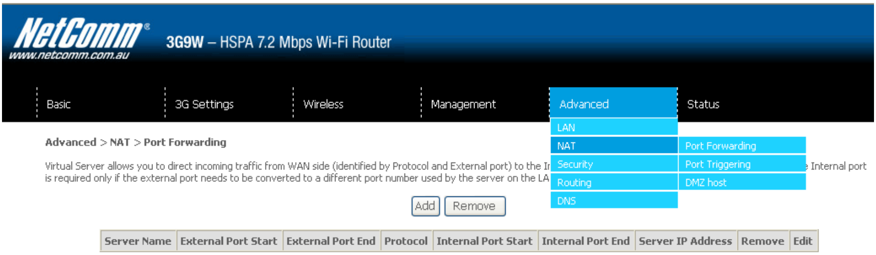
IP Address:	Enter the secondary IP address for the LAN interface.
Subnet Mask:	Enter the secondary subnet mask for the LAN interface.



☑ Configure the second IP Address and Subnet Mask for LAN interface
IP Address:
Subnet Mask:

NOTE: The Save button saves new settings to allow continued configuration, while the Save/Reboot button not only saves new settings but also reboots the device to apply the new configuration (i.e. all new settings).

7.2 Network Address Translation (NAT)



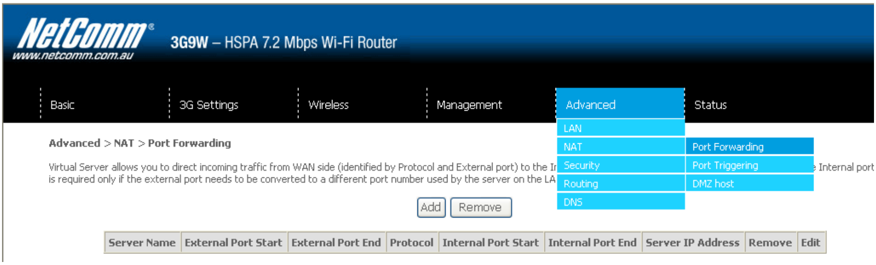
Advanced > NAT > Port Forwarding

Virtual Server allows you to direct incoming traffic from WAN side (identified by Protocol and External port) to the Ir e Internal port is required only if the external port needs to be converted to a different port number used by the server on the LA

Server Name	External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End	Server IP Address	Remove	Edit

7.2.1 Port Forwarding

Port Forwarding allows you to direct incoming traffic from the Internet side (identified by Protocol and External port) to the internal server with a private IP address on the LAN side. The Internal port is required only if the external port needs to be converted to a different port number used by the server on the LAN side. A maximum of 32 entries can be configured.

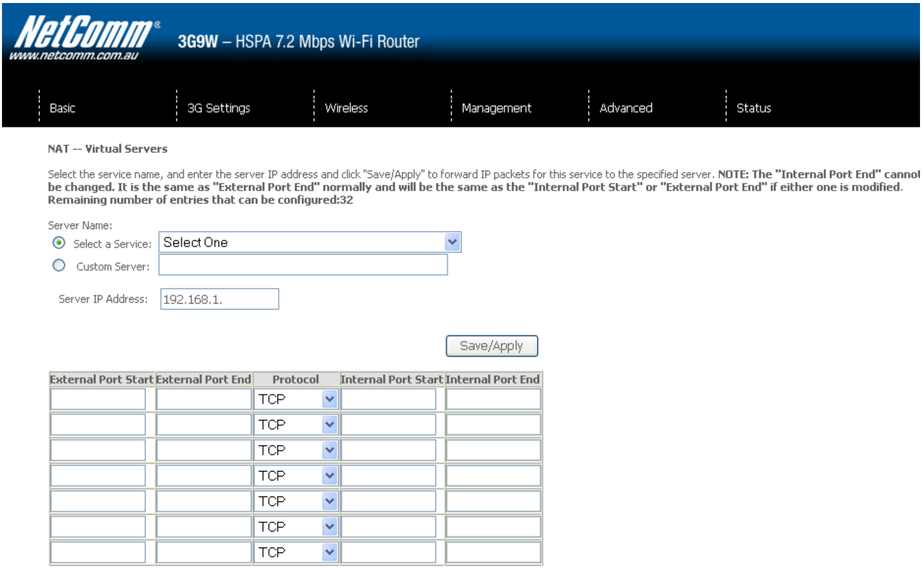


Advanced > NAT > Port Forwarding

Virtual Server allows you to direct incoming traffic from WAN side (identified by Protocol and External port) to the Ir e Internal port is required only if the external port needs to be converted to a different port number used by the server on the LA

Server Name	External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End	Server IP Address	Remove	Edit

To add a Virtual Server, click the Add button. The following screen will display.



NAT -- Virtual Servers

Select the service name, and enter the server IP address and click "Save/Apply" to forward IP packets for this service to the specified server. **NOTE: The "Internal Port End" cannot be changed. It is the same as "External Port End" normally and will be the same as the "Internal Port Start" or "External Port End" if either one is modified. Remaining number of entries that can be configured:32**

Server Name:

● Select a Service: Select One

○ Custom Server:

Server IP Address: 192.168.1.

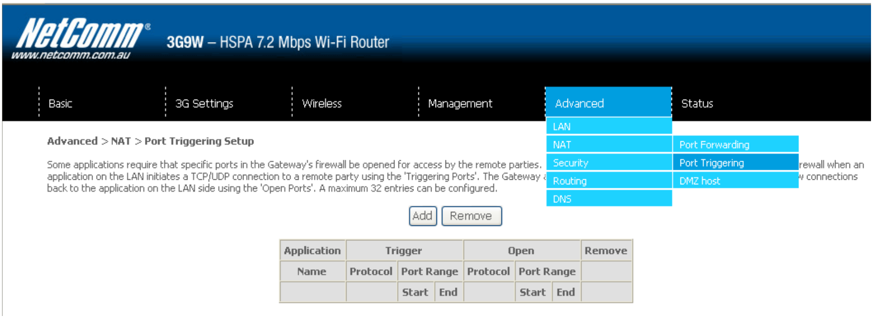
Save/Apply

External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		

Options	Description
Select a Service **Or** **Custom Server**	User should select the service from the list. Or Create a customer server and enter a name for the server
Server IP Address	Enter the IP address for the server.
External Port Start	Enter the starting external port number (when you select Custom Server). When a service is selected the port ranges are automatically configured.
External Port End	Enter the ending external port number (when you select Custom Server). When a service is selected the port ranges are automatically configured.
Protocol	User can select from: TCP, TCP/UDP or UDP.
Internal Port Start	Enter the internal port starting number (when you select Custom Server). When a service is selected the port ranges are automatically configured
Internal Port End	Enter the internal port ending number (when you select Custom Server). When a service is selected the port ranges are automatically configured.

7.2.2 Port Triggering

Some applications require specific ports in the Router’s firewall to be open for access by remote parties. Port Triggering opens up the ‘Open Ports’ in the firewall when an application on the LAN initiates a TCP/UDP connection to a remote party using the ‘Triggering Ports’. The Router allows the remote party from the WAN side to establish new connections back to the application on the LAN side using the ‘Open Ports’. A maximum 32 entries can be configured.

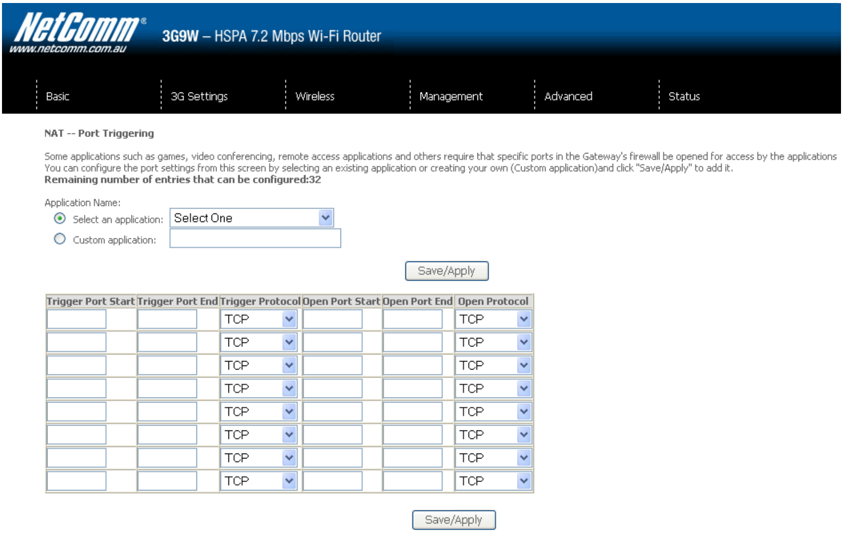


Advanced > NAT > Port Triggering Setup

Some applications require that specific ports in the Gateway's firewall be opened for access by the remote parties. rewall when an application on the LAN initiates a TCP/UDP connection to a remote party using the 'Triggering Ports'. The Gateway a w connections back to the application on the LAN side using the 'Open Ports'. A maximum 32 entries can be configured.

Application	Trigger			Open			Remove
Name	Protocol	Port Range		Protocol	Port Range		
		Start	End		Start	End	

To add a Trigger Port, simply click the Add button. The following will be displayed.



NAT -- Port Triggering

Some applications such as games, video conferencing, remote access applications and others require that specific ports in the Gateway's firewall be opened for access by the applications You can configure the port settings from this screen by selecting an existing application or creating your own (Custom application)and click "Save/Apply" to add it.
Remaining number of entries that can be configured:32

Application Name:
● Select an application: Select One
○ Custom application:

Trigger Port Start	Trigger Port End	Trigger Protocol	Open Port Start	Open Port End	Open Protocol
		TCP			TCP
		TCP			TCP
		TCP			TCP
		TCP			TCP
		TCP			TCP
		TCP			TCP
		TCP			TCP
		TCP			TCP

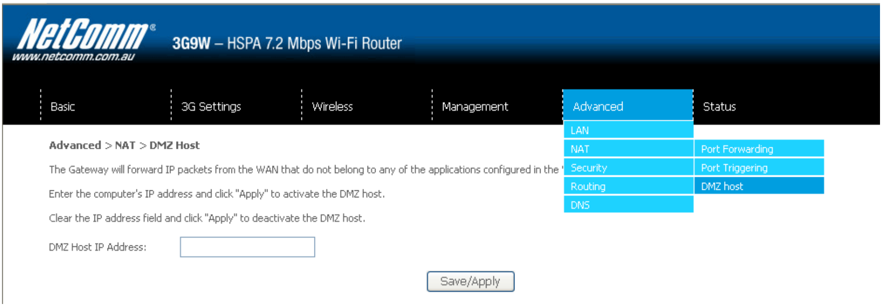
Options	Description
Select an Application **or** **Custom Application**	User should select the application from the list. or User can enter the name of their choice.
Trigger Port Start	Enter the starting trigger port number (when you select custom application). When an application is selected, the port ranges are automatically configured.
Trigger Port End	Enter the ending trigger port number (when you select custom application). When an application is selected, the port ranges are automatically configured.
Trigger Protocol	TCP, TCP/UDP or UDP.
Open Port Start	Enter the starting open port number (when you select custom application). When an application is selected, the port ranges are automatically configured.
Open Port End	Enter the ending open port number (when you select custom application). When an application is selected, the port ranges are automatically configured.
Open Protocol	TCP, TCP/UDP or UDP.

7.2.3 Demilitarized (DMZ) Host

Your Router will forward IP packets from the Wireless Area Network (WAN) that do not belong to any of the applications configured in the Virtual Servers table to the DMZ host computer.

Enter the computer's IP address and click **Apply** to activate the DMZ host.

Clear the IP address field and click **Apply** to deactivate the DMZ host.



Advanced > NAT > DMZ Host

The Gateway will forward IP packets from the WAN that do not belong to any of the applications configured in the '

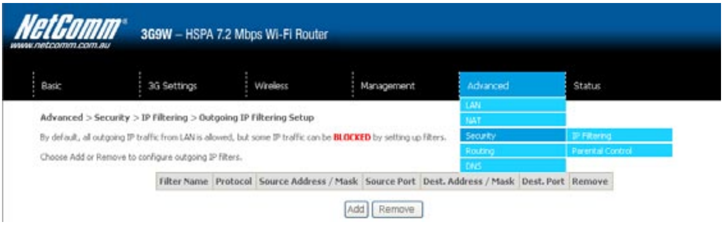
Enter the computer's IP address and click "Apply" to activate the DMZ host.

Clear the IP address field and click "Apply" to deactivate the DMZ host.

DMZ Host IP Address:

7.3 Security

Your Router can be secured with **IP Filtering** or **Parental Control** functions.



Advanced > Security > IP Filtering > Outgoing IP Filtering Setup

By default, all outgoing IP traffic from LAN is allowed, but some IP traffic can be **BLOCKED** by setting up filters.

Choose Add or Remove to configure outgoing IP filters.

Filter Name	Protocol	Source Address / Mask	Source Port	Dest. Address / Mask	Dest. Port	Remove

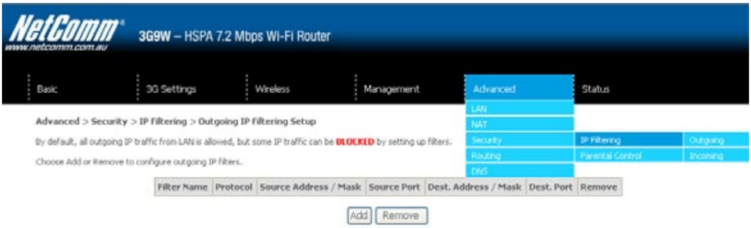
Add Remove

7.3.1 IP Filtering

The IP Filtering screen sets filter rules that limit incoming and outgoing IP traffic. Multiple filter rules can be set with at least one limiting condition. All conditions must be fulfilled when individual IP packets pass filter.

Outgoing IP Filter

The default setting for Outgoing traffic is **ACCEPTED**. Under this condition, all outgoing IP packets that match the filter rules will be **BLOCKED**.



Advanced > Security > IP Filtering > Outgoing IP Filtering Setup

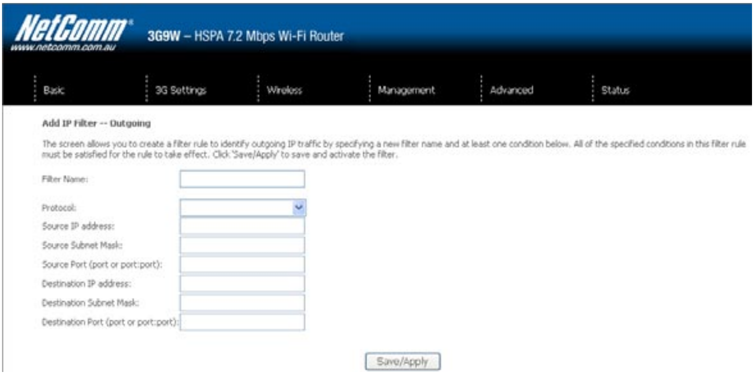
By default, all outgoing IP traffic from LAN is allowed, but some IP traffic can be **BLOCKED** by setting up filters.

Choose Add or Remove to configure outgoing IP filters.

Filter Name	Protocol	Source Address / Mask	Source Port	Dest. Address / Mask	Dest. Port	Remove

Add Remove

To add a filtering rule, click the **Add** button. The following screen will display.



Add IP Filter -- Outgoing

The screen allows you to create a filter rule to identify outgoing IP traffic by specifying a new filter name and at least one condition below. All of the specified conditions in this filter rule must be satisfied for the rule to take effect. Click 'Save/Apply' to save and activate the filter.

Filter Name:

Protocol:

Source IP address:

Source Subnet Mask:

Source Port (port or port:port):

Destination IP address:

Destination Subnet Mask:

Destination Port (port or port:port):

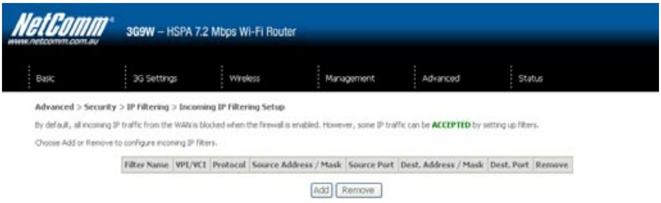
Save/Apply

Options	Description
Filter Name	The filter rule label
Protocol	TCP, TCP/UDP, UDP or ICMP
Source IP address	Enter source IP address
Source Subnet Mask	Enter source subnet mask
Source Port **(port or port:port)**	Enter source port number or port range
Destination IP address	Enter destination IP address
Destination Subnet Mask	Enter destination subnet mask
Destination port **(port or port:port)**	Enter destination port number or range

Click **Save/Apply** to save and activate the filter.

Incoming IP Filter

The default setting for all Incoming traffic is **BLOCKED**. Under this condition only those incoming IP packets that match the filter rules will be **ACCEPTED**.



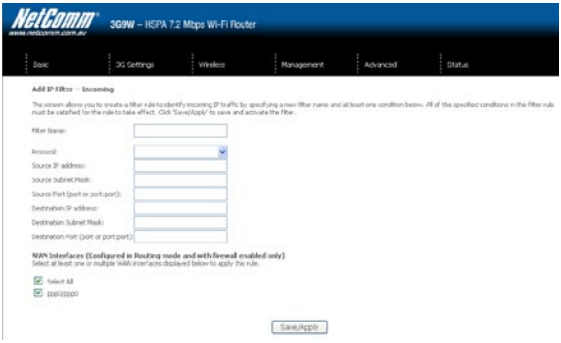
Advanced > Security > IP Filtering > Incoming IP Filtering Setup

By default, all incoming IP traffic from the WAN is blocked when the firewall is enabled. However, some IP traffic can be ACCEPTED by setting up filters.

Choose Add or Remove to configure incoming IP filters.

Filter Name	VPI/VCI	Protocol	Source Address / Mask	Source Port	Dest. Address / Mask	Dest. Port	Remove

To add a filtering rule, click the **Add** button. The following screen will display.



Add IP Filter -- Incoming

The screen allows you to create a filter rule to identify incoming IP traffic by specifying a new filter name and at least one condition below. All of the specified conditions in this filter rule must be satisfied for the rule to take effect. Click 'Save/Apply' to save and activate the filter.

Filter Name:

Protocol:

Source IP address:

Source Subnet Mask:

Source Port (port or port:port):

Destination IP address:

Destination Subnet Mask:

Destination Port (port or port:port):

WAN Interfaces (Configured in Routing mode and with firewall enabled only)

Select at least one or multiple WAN interfaces displayed below to apply this rule.

☑ Select All

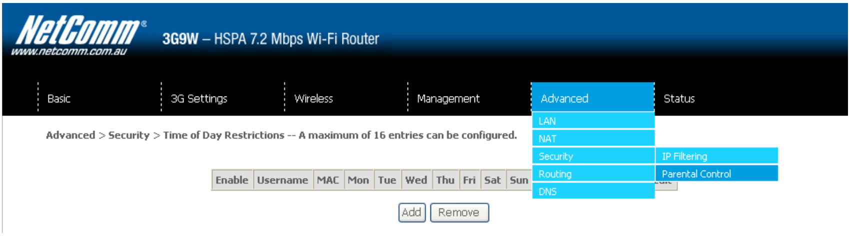
☑ ppp0/ppp0

Please refer to the Outgoing IP Filter table for field descriptions.

Click **Save/Apply** to save and activate the filter.

7.3.2 Parental Control

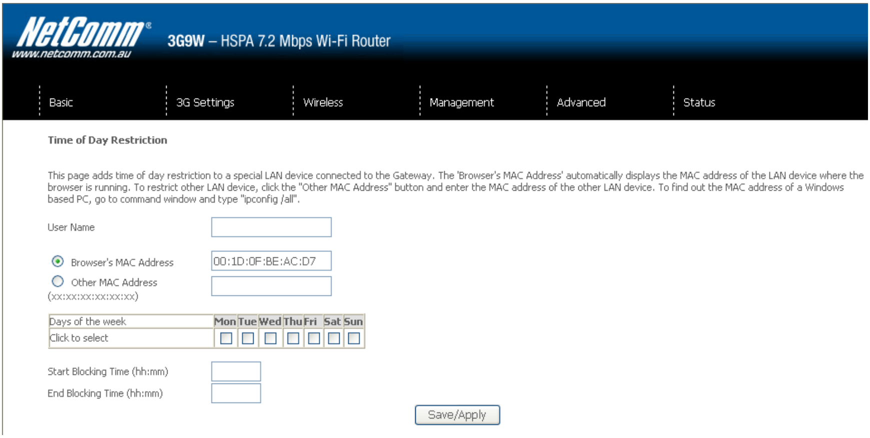
This Parental Control allows you to restrict access from a Local Area Network (LAN) to an outside network through the Router on selected days at certain times. Make sure to activate the Internet Time server synchronization as described in section 6.3 SNTP, so that the scheduled times match your local time.



Advanced > Security > Time of Day Restrictions -- A maximum of 16 entries can be configured.

Enable	Username	MAC	Mon	Tue	Wed	Thu	Fri	Sat	Sun

Click Add to display the following screen.



Time of Day Restriction

This page adds time of day restriction to a special LAN device connected to the Gateway. The 'Browser's MAC Address' automatically displays the MAC address of the LAN device where the browser is running. To restrict other LAN device, click the "Other MAC Address" button and enter the MAC address of the other LAN device. To find out the MAC address of a Windows based PC, go to command window and type "ipconfig /all".

User Name

● Browser's MAC Address 00:1D:0F:BE:AC:D7

○ Other MAC Address
(xx:xx:xx:xx:xx:xx)

Days of the week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Click to select	□	□	□	□	□	□	□

Start Blocking Time (hh:mm)

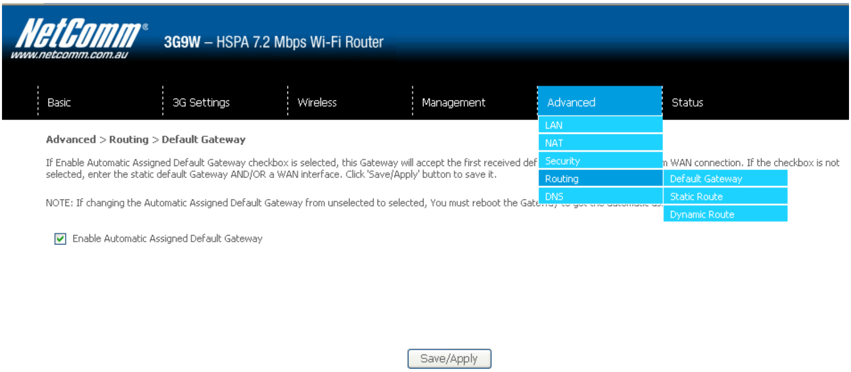
End Blocking Time (hh:mm)

See instructions below and click **Save/Apply** to apply the settings.

Options	Description
User Name	A user-defined label for this restriction
Browser's MAC Address	MAC address of the PC running the browser
Other MAC Address	MAC address of another LAN device
Days of the Week	The days the restrictions apply.
Start Blocking Time	The time the restrictions start
End Blocking Time	The time the restrictions end.

7.4 Routing

Default Gateway, **Static Route** and **Dynamic Route** settings can be found in the Routing link as illustrated below.



Advanced > Routing > Default Gateway

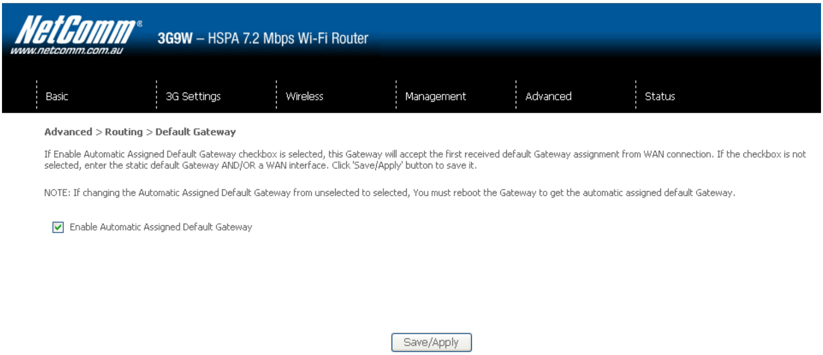
If Enable Automatic Assigned Default Gateway checkbox is selected, this Gateway will accept the first received def n WAN connection. If the checkbox is not selected, enter the static default Gateway AND/OR a WAN interface. Click 'Save/Apply' button to save it.

NOTE: If changing the Automatic Assigned Default Gateway from unselected to selected, You must reboot the Gat

☑ Enable Automatic Assigned Default Gateway

7.4.1 Default Gateway

If the **Enable Automatic Assigned Default Gateway** checkbox is selected, this device will accept a default Gateway assignment. If the checkbox is not selected, a field will appear allowing you to enter the static default gateway and/or WAN interface, then click **Save/Apply**.



Advanced > Routing > Default Gateway

If Enable Automatic Assigned Default Gateway checkbox is selected, this Gateway will accept the first received default Gateway assignment from WAN connection. If the checkbox is not selected, enter the static default Gateway AND/OR a WAN interface. Click 'Save/Apply' button to save it.

NOTE: If changing the Automatic Assigned Default Gateway from unselected to selected, You must reboot the Gateway to get the automatic assigned default Gateway.

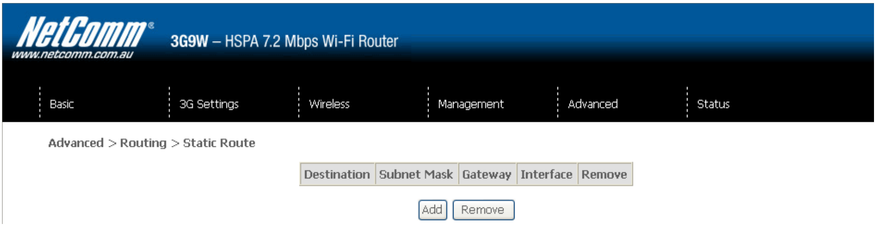
☑ Enable Automatic Assigned Default Gateway

NOTE: After enabling the Automatic Assigned Default Gateway, you must re-boot the Router to activate the assigned default Gateway.

7.4.2 Static Route

The Static Route screen displays the configured static routes.

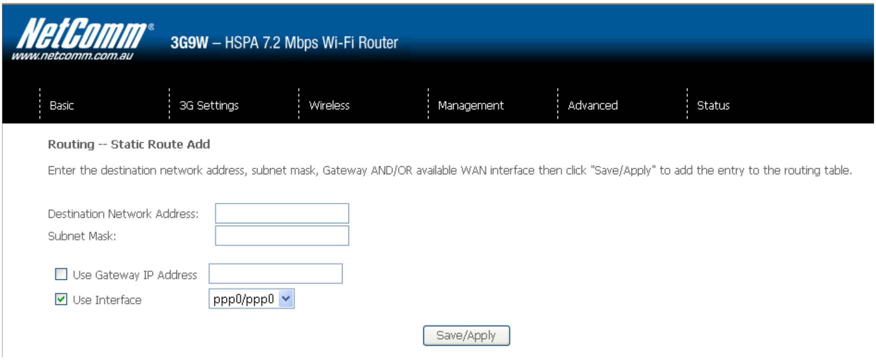
Click the Add or Remove buttons to change settings.


NetComm® www.netcomm.com.au
3G9W – HSPA 7.2 Mbps Wi-Fi Router
Basic
3G Settings
Wireless
Management
Advanced
Status
Add
Remove

Advanced > Routing > Static Route

Destination	Subnet Mask	Gateway	Interface	Remove

Click the Add button to display the following screen.


NetComm® www.netcomm.com.au
3G9W – HSPA 7.2 Mbps Wi-Fi Router
Basic
3G Settings
Wireless
Management
Advanced
Status
Save/Apply

Routing -- Static Route Add

Enter the destination network address, subnet mask, Gateway AND/OR available WAN interface then click "Save/Apply" to add the entry to the routing table.

Destination Network Address:
Subnet Mask:

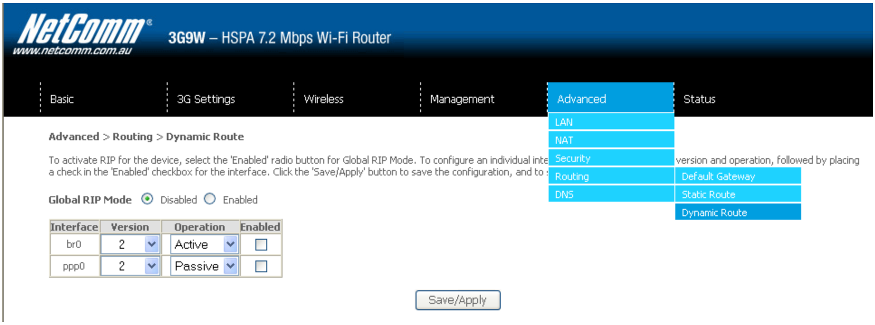
□ Use Gateway IP Address
☑ Use Interface ppp0/ppp0

Enter Destination Network Address, Subnet Mask, Gateway IP Address and/or WAN Interface. Then click Save/Apply to add the entry to the routing table.

7.4.3 Dynamic Route

To activate this option, select the Enabled radio button for Global RIP Mode.

To configure an individual interface, select the desired RIP version and operation, followed by placing a check in the Enabled checkbox for that interface. Click Save/Apply to save the configuration and to start or stop dynamic routing.



Advanced > Routing > Dynamic Route

To activate RIP for the device, select the 'Enabled' radio button for Global RIP Mode. To configure an individual inte version and operation, followed by placing a check in the 'Enabled' checkbox for the interface. Click the 'Save/Apply' button to save the configuration, and to s

Global RIP Mode ● Disabled ○ Enabled

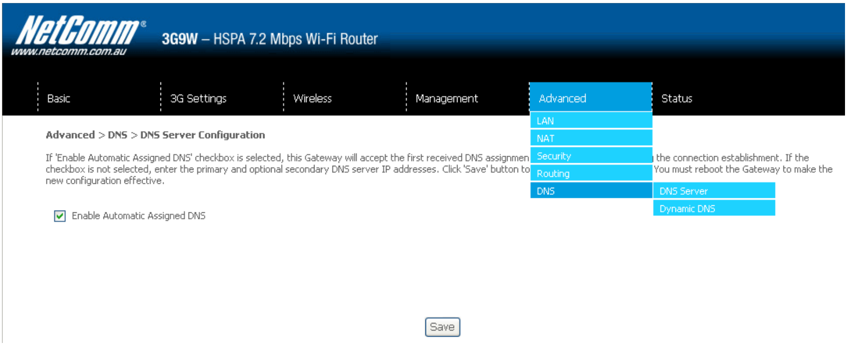
Interface	Version	Operation	Enabled
br0	2	Active	□
ppp0	2	Passive	□

Save/Apply

7.5 Domain Name Servers (DNS)

7.5.1 DNS Server Configuration

If the Enable Automatic Assigned DNS checkbox is selected, this device will accept the first received DNS assignment from the Wireless Area Network (WAN) interface during the connection process. If the checkbox is not selected, a field will appear allowing you to enter the primary and optional secondary DNS server IP addresses. Click on **Save** to apply.



Advanced > DNS > DNS Server Configuration

If 'Enable Automatic Assigned DNS' checkbox is selected, this Gateway will accept the first received DNS assignmen the connection establishment. If the checkbox is not selected, enter the primary and optional secondary DNS server IP addresses. Click 'Save' button to You must reboot the Gateway to make the new configuration effective.

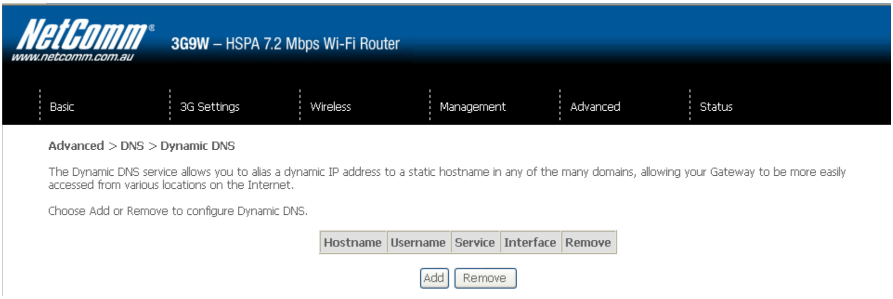
☑ Enable Automatic Assigned DNS

Save

NOTE: Click the Save button to save the new configuration. To make the new configuration effective, reboot your Router.

7.5.2 Dynamic DNS

The Dynamic DNS service allows a dynamic IP address to be aliased to a static hostname in any of a selection of domains, allowing the router to be more easily accessed from various locations on the internet.



Advanced > DNS > Dynamic DNS

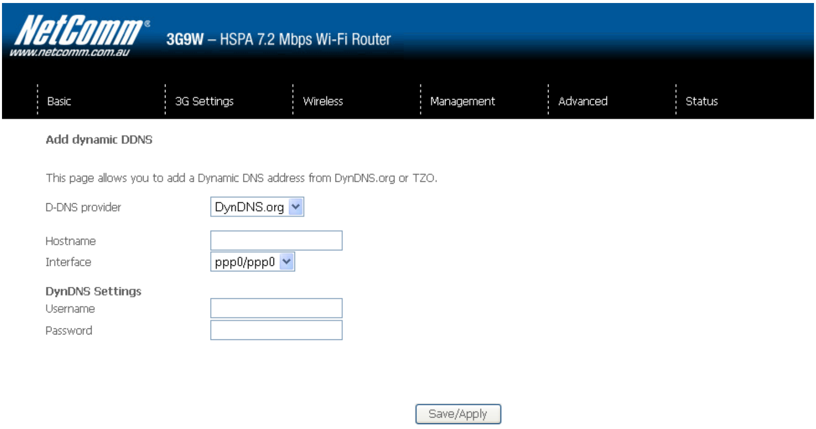
The Dynamic DNS service allows you to alias a dynamic IP address to a static hostname in any of the many domains, allowing your Gateway to be more easily accessed from various locations on the Internet.

Choose Add or Remove to configure Dynamic DNS.

Hostname	Username	Service	Interface	Remove

Note: The Add/Remove buttons will be displayed only if the router has been assigned an IP address from the remote server.

To add a dynamic DNS service, click the Add button and this screen will display.



Add dynamic DDNS

This page allows you to add a Dynamic DNS address from DynDNS.org or TZO.

D-DNS provider: DynDNS.org

Hostname:

Interface: ppp0/ppp0

DynDNS Settings

Username:

Password:

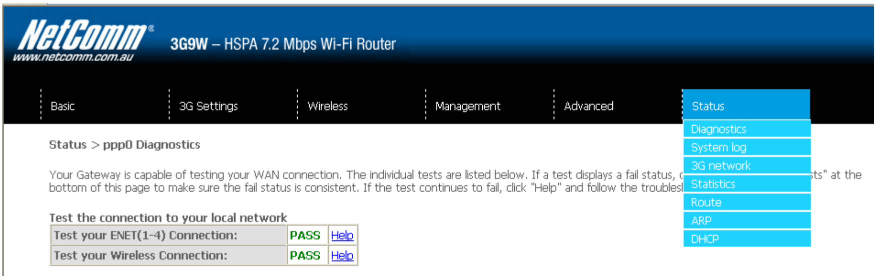
Options	Descriptions
D-DNS provider	Select a dynamic DNS provider from the list.
Hostname	Enter the name for the dynamic DNS server.
Interface	Select the interface from the list.
Username	Enter the username for the dynamic DNS server.
Password	Enter the password for the dynamic DNS server.

Status

Status

The Status menu has the following submenus:

- Diagnostics
- System Log
- 3G network
- Statistics
- Route
- ARP
- DHCP



Status > ppp0 Diagnostics

Your Gateway is capable of testing your WAN connection. The individual tests are listed below. If a test displays a fail status, c ts" 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 troublesl

Test the connection to your local network

Test your ENET(1-4) Connection:	PASS	Help
Test your Wireless Connection:	PASS	Help

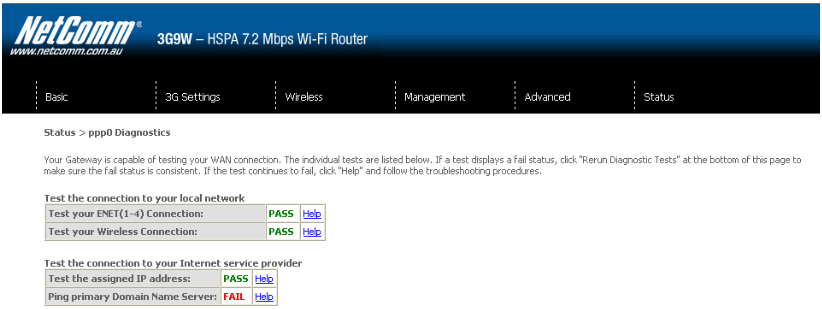
8.1 Diagnostics

The Diagnostics menu provides feedback on the connection status of the device. The individual tests are listed below. If a test displays a fail status:

1: Click on the **Help link**

2: Now click **Re-run Diagnostic Tests** at the bottom of the screen to re-test and confirm the error

3: If the test continues to fail, follow the troubleshooting procedures in the Help screen.



Status > ppp0 Diagnostics

Your Gateway is capable of testing your WAN 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 ENET(1-4) Connection:	PASS	Help
Test your Wireless Connection:	PASS	Help

Test the connection to your Internet service provider

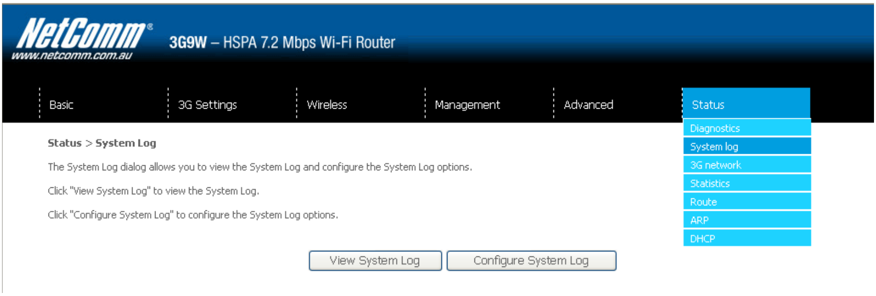
Test the assigned IP address:	PASS	Help
Ping primary Domain Name Server:	FAIL	Help

Test	Description
ENET Connection	**Pass**: Indicates that the Ethernet interface from your computer is connected to the LAN port of this Router. **Fail**: Indicates that the Router does not detect the Ethernet interface on your computer.
Wireless connection	**Pass**: Indicates that the wireless card is ON. **Down**: Indicates that the wireless card is OFF.
Ping Default Gateway	**Pass**: Indicates that the Router can communicate with the first entry point to the network. It is usually the IP address of the ISP's local Gateway. **Fail**: Indicates that the Router was unable to communicate with the first entry point on the network, and it may not have an effect on your Internet connectivity. If this test fails and you can access the Internet, there is no need to troubleshoot this issue.
Ping Primary Domain Name Server	**Pass**: Indicates that the Router can communicate with the primary Domain Name Server (DNS). **Fail**: Indicates that the Router was unable to communicate with the primary Domain Name Server (DNS). It may not have an effect on your Internet connectivity. Therefore if this test fails but you are still able to access the Internet, there is no need to troubleshoot this issue.

8.2 System Log

This function allows you to view system events and configure related options. Follow the steps below to enable and view the System Log.

1: Click Configure System Log to continue.



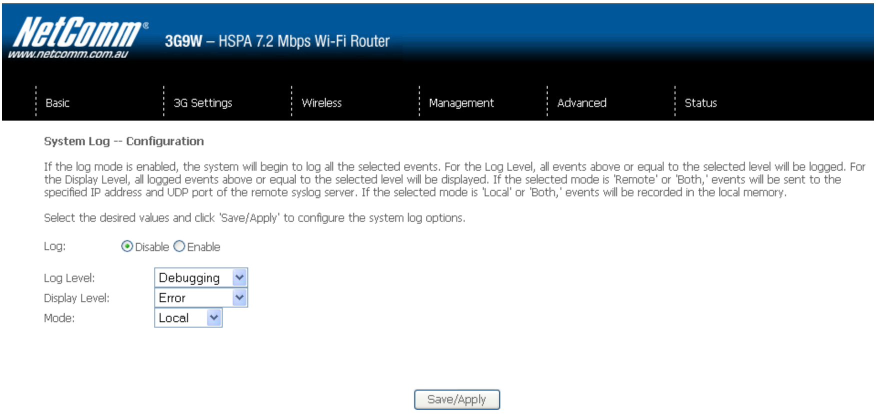
Status > System Log

The System Log dialog allows you to view the System Log and configure the System Log options.

Click "View System Log" to view the System Log.

Click "Configure System Log" to configure the System Log options.

2: Select the system log options (see table below) and click Save/Apply.



System Log -- Configuration

If the log mode is enabled, the system will begin to log all the selected events. For the Log Level, all events above or equal to the selected level will be logged. For the Display Level, all logged events above or equal to the selected level will be displayed. If the selected mode is 'Remote' or 'Both,' events will be sent to the specified IP address and UDP port of the remote syslog server. If the selected mode is 'Local' or 'Both,' events will be recorded in the local memory.

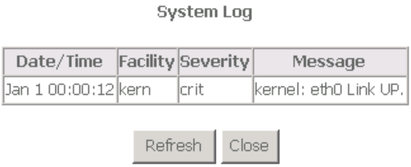
Select the desired values and click 'Save/Apply' to configure the system log options.

Log: ● Disable ○ Enable

Log Level: Debugging
Display Level: Error
Mode: Local

Option	Description
Log	Indicates whether the system is currently recording events. You can enable or disable event logging. By default, it is disabled.
Log level	Allows you to configure the event level and filter out unwanted events below this level. The events ranging from the highest critical level "Emergency" down to this configured level will be recorded to the log buffer on the Router's SDRAM. When the log buffer is full, the newest event will wrap up to the top of the log buffer and overwrite the oldest event. By default, the log level is "Debugging", which is the lowest critical level. The log levels are defined as follows: Emergency is the most serious event level, whereas Debugging is the least important. For instance, if the log level is set to Debugging, all the events from the lowest Debugging level to the most critical level Emergency level will be recorded. If the log level is set to Error, only Error and the level above will be logged.
Display Level	Allows you to select the logged events and displays on the View System Log window for events of this level and above to the highest Emergency level.
Mode	Allows you to specify whether events should be stored in the local memory, be sent to a remote syslog server, or to both simultaneously. If remote mode is selected, the view system log will not be able to display events saved in the remote syslog server. When either Remote mode or Both mode is configured, the WEB UI will prompt the you to enter the Server IP address and Server UDP port.

3: Click View System Log. The results are displayed as follows.

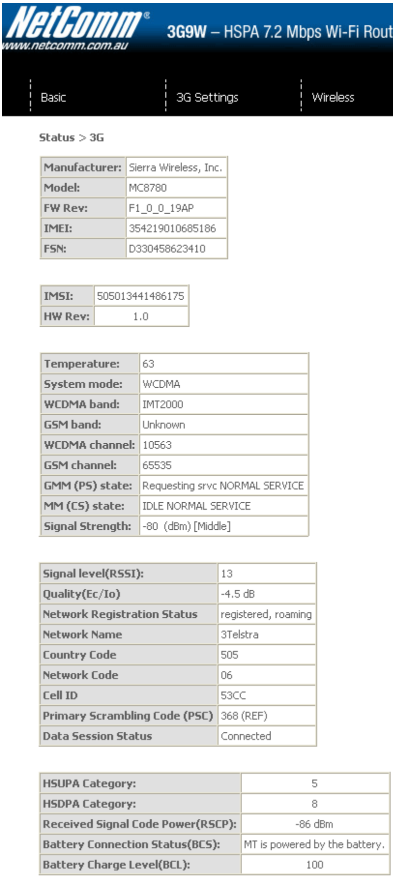


System Log

Date/Time	Facility	Severity	Message
Jan 1 00:00:12	kern	crit	kernel: eth0 Link UP.

8.3 3G Status

Select this option for detailed status information on your Routers 3G connection.



Status > 3G

Manufacturer:	Sierra Wireless, Inc.
Model:	MC8780
FW Rev:	F1_0_0_19AP
IMEI:	354219010685186
FSN:	D330458623410

IMSI:	505013441486175
HW Rev:	1.0

Temperature:	63
System mode:	WCDMA
WCDMA band:	IMT2000
GSM band:	Unknown
WCDMA channel:	10563
GSM channel:	65535
GMM (PS) state:	Requesting srvc NORMAL SERVICE
MM (CS) state:	IDLE NORMAL SERVICE
Signal Strength:	-80 (dBm) [Middle]

Signal level(RSSI):	13
Quality(Ec/Io)	-4.5 dB
Network Registration Status	registered, roaming
Network Name	3Telstra
Country Code	505
Network Code	06
Cell ID	53CC
Primary Scrambling Code (PSC)	368 (REF)
Data Session Status	Connected

HSUPA Category:	5
HSDPA Category:	8
Received Signal Code Power(RSCP):	-86 dBm
Battery Connection Status(BCS):	MT is powered by the battery.
Battery Charge Level(BCL):	100

Consult the table on the next page for detailed field descriptions.

Status	Description
Manufacturer	The manufacturer of the embedded 3G module.
Model	The model name of the embedded 3G module.
FW Rev.	The firmware version of the 3G module.
IMEI	The IMEI (International Mobile Equipment Identity) is a 15 digit number that is used to identify a mobile device on a network.
FSN	Factory Serial Number of the 3G module.
IMSI	The IMSI (International Mobile Subscriber Identity) is a unique 15-digit number used to identify an individual user on a GSM or UMTS network.
HW Rev.	The hardware version of the 3G module.
Temperature	The temperature of the 3G module in degrees Celsius.
System Mode	WCDMA/Europe CDMA 2000 / America
WCDMA band	The 3G radio frequency band which supports tri-band UTMS/HSDPA/HSUPA frequencies (850/1900/2100 MHz), IMT2000 is 2100 MHz, WCDMA800 is 850 MHz, WCDMA1900 is 1900 MHz.
GSM band	The 2G radio frequency band which supports Quad-band GSM/GRPS frequencies, including GSM850, GSM900, DCS1800, PCS1900 with each number representing the respective frequency in MHz.
WCDMA channel	The 3G channel.
GSM channel	The 2G channel.
GSM (PS) state	Packet Switching state
MM (CS) state	Circuit Switching state
Signal Strength	The 3G/2G service signal strength in dBm.

Signal level in dBm	-109 ~ -103	-101 ~ -93	-91 ~ -87	-85 ~ -79	-77 ~ -52
5 Signal bars	▨				
	▨	▨			
	▨	▨	▨		
	▨	▨	▨	▨	
	▨	▨	▨	▨	▨
LED	Low		Medium		High

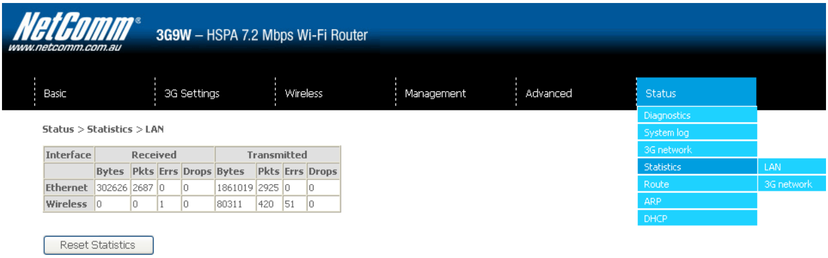
<table>
<tr><th>Status</th><th>Description</th></tr>
<tr><td><b>Signal Level (RSSI)</b></td><td>3G Radio Signal Strength Index
<table>
<tr><td>Value</td><td>2 ~ 5</td><td>6 ~ 10</td><td>11 ~ 13</td><td>14 ~ 17</td><td>18 ~ 31</td><td>99</td></tr>
<tr><td>Signal level in dBm</td><td>-109 ~ -103</td><td>-101 ~ -93</td><td>-91 ~ -87</td><td>-85 ~ -79</td><td>-77 ~ -52</td><td>unknown</td></tr>
<tr><td rowspan="5">5 Signal bars</td><td>■</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>■</td><td>■</td><td></td><td></td><td></td><td></td></tr>
<tr><td>■</td><td>■</td><td>■</td><td></td><td></td><td></td></tr>
<tr><td>■</td><td>■</td><td>■</td><td>■</td><td></td><td></td></tr>
<tr><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td><td></td></tr>
<tr><td>LED</td><td colspan="2">Low</td><td colspan="2">Medium</td><td>High</td><td></td></tr>
</table>
</td></tr>
<tr><td><b>Quality (Ec/lo)</b></td><td>The total energy per chip per power density (Ec/lo) value of the active set's three strongest cells.</td></tr>
<tr><td><b>Network Registration Status</b></td><td>Should display as registered with a valid unlocked SIM card.</td></tr>
<tr><td><b>Network Name</b></td><td>The 3G internet Service Provider.</td></tr>
<tr><td><b>Country & Network Codes</b></td><td>Each country and network has a unique code.</td></tr>
<tr><td><b>Cell ID</b></td><td>The network information for the “serving” cell ID.</td></tr>
<tr><td><b>Primary Scrambling Code (PSC)</b></td><td>The PSC of the reference WCDMA cell</td></tr>
<tr><td><b>Data Session Status</b></td><td>Connected or Disconnected</td></tr>
<tr><td><b>HSUPA/HSDPA Categories</b></td><td>The HSUPA/HSDPA categories correspond to different data transmission rates with higher numbers generally indicating faster rates</td></tr>
<tr><td><b>Received Signal Code Power (RSCP)</b></td><td>The RSCP of the active set's three strongest cells</td></tr>
<tr><td><b>Battery Connection Status (BCS)</b></td><td>BCS of the MT (Mobile Termination)</td></tr>
<tr><td><b>Battery Charge Level (BCL)</b></td><td>BCL of the MT (Mobile Termination)</td></tr>
</table>

8.4 Statistics

These screens provide detailed information for:

- Local Area Network (LAN) and Wireless Local Area Network (WLAN)
- 3G Interfaces

NOTE: These statistics page refresh every 15 seconds.

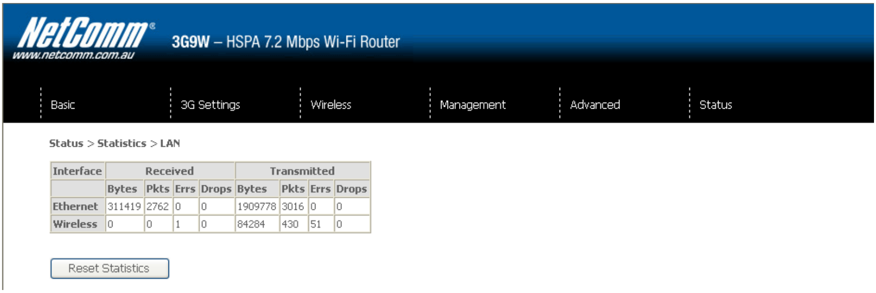


Status > Statistics > LAN

Interface	Received				Transmitted			
	Bytes	Pkts	Errs	Drops	Bytes	Pkts	Errs	Drops
Ethernet	302626	2687	0	0	1861019	2925	0	0
Wireless	0	0	1	0	80311	420	51	0

8.4.1 LAN Statistics

This screen displays statistics for the Ethernet and Wireless LAN interfaces.



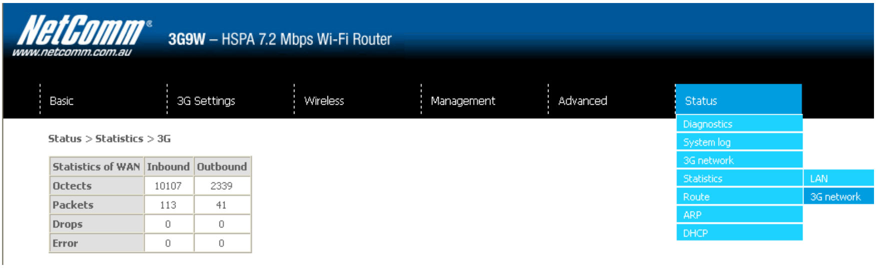
Status > Statistics > LAN

Interface	Received				Transmitted			
	Bytes	Pkts	Errs	Drops	Bytes	Pkts	Errs	Drops
Ethernet	311419	2762	0	0	1909778	3016	0	0
Wireless	0	0	1	0	84284	430	51	0

Interface	Shows connection interfaces	
Received/Transmitted	Bytes	Rx/TX (receive/transmit) packet in bytes
	Pkts	Rx/TX (receive/transmit) packets
	Errs	Rx/TX (receive/transmit) packets with errors
	Drops	Rx/TX (receive/transmit) packets dropped

8.4.2 3G Statistics

Click 3G network in the Statistics submenu to display the screen below.



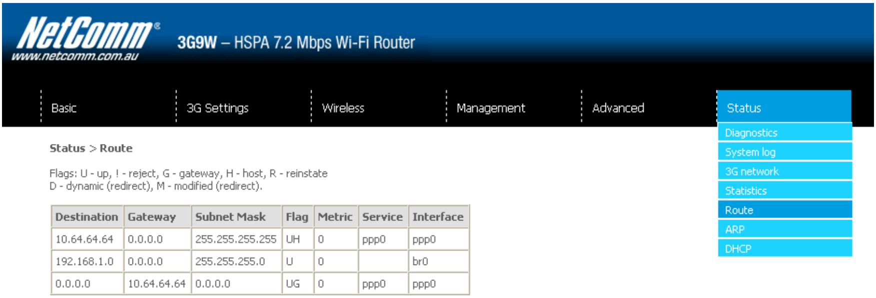
Status > Statistics > 3G

Statistics of WAN	Inbound	Outbound
Octects	10107	2339
Packets	113	41
Drops	0	0
Error	0	0

Service	Shows the service type	
Inbound	Octets	Number of received octets over the interface.
	Packets	Number of received packets over the interface.
	Drops	Received packets which are dropped.
	Error	Received packets which are errors.
Outbound	Octets	Number of Transmitted octets over the interface.
	Packets	Number of Transmitted packets over the interface.
	Drops	Transmitted packets which are dropped
	Error	Transmitted packets which are errors.

8.5 Route

Select Route to display the paths the Router has found.



Status > Route

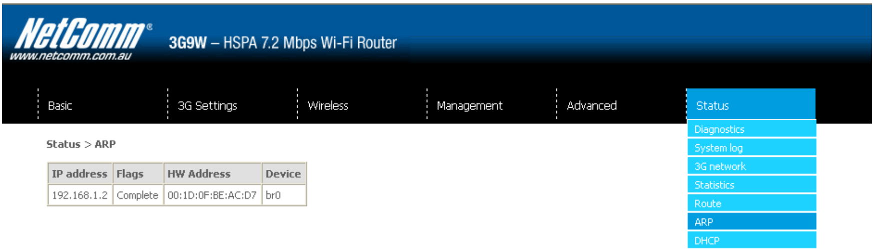
Flags: U - up, ! - reject, G - gateway, H - host, R - reinstate
D - dynamic (redirect), M - modified (redirect).

Destination	Gateway	Subnet Mask	Flag	Metric	Service	Interface
10.64.64.64	0.0.0.0	255.255.255.255	UH	0	ppp0	ppp0
192.168.1.0	0.0.0.0	255.255.255.0	U	0		br0
0.0.0.0	10.64.64.64	0.0.0.0	UG	0	ppp0	ppp0

Field	Description
Destination	Destination network or destination host
Gateway	Next hop IP address
Subnet Mask	Subnet Mask of Destination
Flag	U: route is up !: reject route G: use gateway H: target is a host R: reinstate route for dynamic routing D: dynamically installed by daemon or redirect M: modified from routing daemon or redirect
Metric	The 'distance' to the target (usually counted in hops). It is not used by recent kernels, but may be needed by routing daemons.
Service	Shows the name for WAN connection
Interface	Shows connection interfaces

8.6 ARP

Click ARP to display the ARP information.



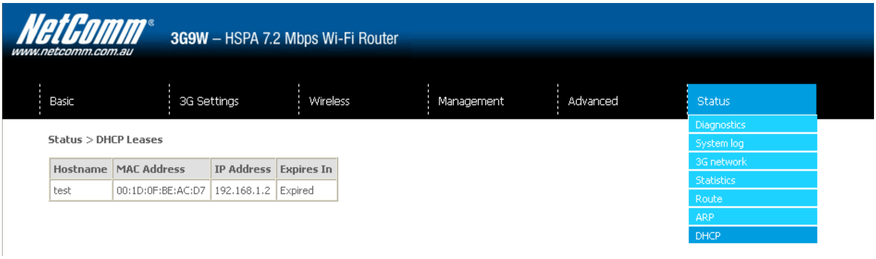
Status > ARP

IP address	Flags	HW Address	Device
192.168.1.2	Complete	00:1D:0F:BE:AC:D7	br0

Field	Description
IP address	Shows IP address of host pc
Flags	Complete Incomplete Permanent Publish
HW Address	Shows the MAC address of host pc
Device	Shows the connection interface

8.7 Dynamic Host Configuration Protocol (DHCP)

Click DHCP to display the DHCP information.



Status > DHCP Leases

Hostname	MAC Address	IP Address	Expires In
test	00:1D:0F:BE:AC:D7	192.168.1.2	Expired

Field	Description
Hostname	Shows the device/host/PC network name
MAC Address	Shows the Ethernet MAC address of the device/host/PC
IP address	Shows IP address of device/host/PC
Expires In	Shows how much time is left for each DHCP Lease

CLI commands Via Telnet

CLI commands via Telnet

Show all CLI commands

Description: List all available CLI commands that the 3G router supports.

Synopsis: help | ?

Example:

```
> help
?
help
logout
reboot
atm
ddns
dumpcfg
ping
sntp
sysinfo
tftp
wlan
sierra
qos
version
build
```

End the telnet session

Description: End the telnet session

Synopsis: logout

Example:

```
> logout
```

Reset/reboot device

Description: To reboot the router.

Synopsis: reboot

Example:

```
> reboot
```

Radio Signal Strength

Description: Display the 3G radio signal strength.

Synopsis: sierra show --signal

Example:

```
> sierra show --signal
    signal: 23
```

Note: Signal value is explain in the table below

Value	**2 ~ 5**	**6 ~ 10**	**11 ~ 13**	**14 ~ 17**	**18 ~ 31**	**99**
Signal level in dBm	-109 ~ -103	-101 ~ -93	-91 ~ -87	-85 ~ -79	-77 ~ -52	unknown
5 Signal bars	■					
	■	■				
	■	■	■			
	■	■	■	■		
	■	■	■	■	■	
LED	**Low**		**Medium**		**High**	

Radio Band

Description: Display the 3G band

Synopsis: sierra show --band

Example:

```
> sierra show --band
  band:  IMT2000
```

Note: IMT2000 is band 2100 and WCDMA800 is band 850

Connection status

Description: Display the 3G network connection status

Synopsis: sierra show –link

sierra show --gstatus

Examples:

```
> sierra show --link
  link: Connected
> sierra show --gstatus
  Current Time:  450                       Temperature: 45
  Bootup Time:   1                         Mode:        ONLINE
  System mode:   WCDMA                     PS state:    Attached
  WCDMA band:    WCDMA800                  GSM band:    Unknown
  WCDMA channel: 4436                      GSM channel: 65535
  GMM (PS) state:REGISTERED   NORMAL SERVICE
  MM (CS) state: IDLE                      NORMAL SERVICE

  WCDMA L1 State:L1M_FACH                  RRC State:   CELL_FACH
  RX level (dBm):-90
```

IMSI & IMEI read

Description: Display the IMSI and IMEI value

Synopsis:

```
sierra show --imsi
sierra show --imei
```

Example:

```
> sierra show --imsi
    imsi: 466974800524867
> sierra show --imei
    IMEI: 354219010024303
```

Wireless LAN mode set and read

Description: Allows user to configure the Wireless LAN interfaces on the 3G router.

This command can be use to configure basic feature, security feature, wireless bridge feature and MAC filter features of the wireless LAN interface.

Synopsis:

```
> wlan
wlan command usage :
    wlan config [option]
    wlan security [option]
    wlan macfilter [option]
    wlan wds [option]
    wlan info [option]
    wlan –help
```

Each option will be explained separately below.

Note: The settings changed from these commands take effect immediately and will be updated on the web page

1. Please enable the wireless BEFORE changing other wireless settings.
2. The wlan command will save the configuration into flash memory and the new settings will be saved.

Since the settings changed from wlan command take effect immediately, it is not recommended to modify the wireless settings through the Web UI at the same time.

Configure basic Wireless LAN features

Description: Configure basic wireless LAN features such as enable or disable the wireless LAN interface, hide the network from active scans, set the wireless network name (also known as SSID) and restrict the channel set based on country requirements.

Synopsis:

```
wlan config [--enable <0|1>] [--hide <0|1>]
    [--ssid <ssidStr>] [--country <countryStr>]
    [--isolate <0|1>]
    [--channel <channelVal>] [--rate <rateVal>]
    [--mrate <rateVal>]
    [--rts <rtsThreshold>] [--frag <fragThreshold>]
    [--dtim <dtimInterval>] [--beacon <beaconInterval>]
    [--xpress <on|off>] [--gmode <auto|performance|lrs|802.11b>]
    [--gprotect <off|auto>] [--preamble <long|short>]
```

Options:

--enable <0|1>

Description: Enable or disable wireless LAN interface.

Valid value: 0 or 1

0 – disabled the wireless LAN interface.

1 – enabled the wireless LAN interface.

Default value: 1

--hide <0|1>

Description: Hide wireless LAN network name (SSID).

Valid value: 0 or 1

0 – not hide wireless LAN SSID.

1 – hide wireless LAN SSID

Default value: 0

--ssid <ssidStr>

Description: Set Wireless LAN network name (SSID).

Valid value: 32 characters string

--country <countryStr>

Description: Set Wireless LAN Country, only accept abbreviation.

Valid value: 2 or 3 characters string (AUSTRALIA is abbreviated to AU).

--isolate <0|1>

Description: Set wireless devices isolation. When enabled, wireless devices connected to the router will not be able to communicate to each other

Valid value: 0 or 1

0 – not isolate wireless devices.

1 – isolate wireless devices

Default value: 0

--channel <channelVal>

Description: Set the wireless LAN channel.

Valid value: 0~14

0 means auto select channel.

Default value: 0

--rate <rateVal>

Description: Set the wireless LAN data rate.

Valid value: 0, 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54 (Mbps)

0 means auto

Default value: 0

--mrate <rateVal>

Description: Set the wireless LAN Multicast rate.

Valid value: 0, 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54 (Mbps)

0 means auto

Default value: 0

--rts <rtsThreshold>

Description: Set the wireless LAN RTS threshold.

Valid value: 0~2347

Default value: 2347

--frag <fragThreshold>

Description: Set the wireless LAN fragment threshold.

Valid value: 256~2346

Default value: 2346

--dtim <dtimInterval>

Description: Set the wireless LAN DTIM interval.

Valid value: 1~255

Default value: 1

--beacon <beaconInterval>

Description: Set the wireless LAN beacon interval.

Valid value: 1~65535

Default value: 100

--xpress <on|off>

Description: Enable or disable the xpress feature

Valid value: on / off

Default value: off

--gmode <auto|performance|lrs|802.11b>

Description: Set the wireless LAN G mode

Default value: auto

--gprotect <off|auto>

Description: Enable or disable the gprotect feature

Default value: auto

--preamble <long|short>

Description: Set the wireless LAN preamble

Default value: long

Example 1:

User wants to enable the wireless LAN, configure the wireless LAN network name (SSID) as “TestAP”, configure wireless LAN channel to 5 and then hide the SSID:

```
wlan config --enable 1
wlan config --ssid “TestAP”
wlan config --channel 5 --hide 1
```

Or merge the above commands

```
wlan config --enable 1 --ssid “TestAP” --channel 5 --hide 1
```

Configure wireless LAN security

Description: Enable or disable and configure the wireless LAN security. This router supports different types of security such as: WEP, 802.1X, WPA and WPA2.

Synopsis:

```
wlan security open
    [--wep <enabled|disabled>] [--keybit <64|128>]
            [--nkey1 <keyStr>] [--nkey2 <keyStr>]
    [--nkey3 <keyStr>] [--nkey4 <keyStr>]
    [--keyidx <1|2|3|4>]
wlan security shared (wep have to enable)
    [--wep <enabled|disabled>] [--keybit <64|128>]
    [--nkey1 <keyStr>] [--nkey2 <keyStr>]
    [--nkey3 <keyStr>] [--nkey4 <keyStr>]
    [--keyidx <1|2|3|4>]
wlan security radius (wep have to enable)
    [--rasip <serverIp>] [--raspt <portVal>] [--raskey <"raskeyStr">]
    [--wep <enabled|disabled>] [--keybit <64|128>]
    [--nkey2 <keyStr>] [--nkey3 <keyStr>]
    [--keyidx <2|3>]
wlan security wpa / wpa2 / wpa2mix
    [--wlPreauth <0|1>] [--wlNetReauth <interval>]
    [--wpaenc <tkip|aes|tkip+aes>] [--rekey <interval>]
    [--rasip <serverIp>] [--raspt <portVal>] [--raskey <"raskeyStr">]
    [--wep <enabled|disabled>] [--keybit <64|128>]
    [--nkey2 <keyStr>] [--nkey3 <keyStr>]
    [--keyidx <2|3>]
wlan security psk / psk2 / psk2mix
    [--wpaenc <tkip|aes|tkip+aes>] [--rekey <interval>]
    [--pskey <"pskeyStr">]
    [--wep <enabled|disabled>] [--keybit <64|128>]
    [--nkey2 <keyStr>] [--nkey3 <keyStr>]
    [--keyidx <2|3>]
```

Options:

--wep <enabled|disabled>

Description: enable or disable WEP encryption

--keybit <64|128>

Description: Set the WEP encryption strength

--nkey1 <keyStr>

--nkey2 <keyStr>

--nkey3 <keyStr>

--nkey4 <keyStr>

Description: Set the WEP key.

Note: 5 ASCII characters or 10 hexadecimal digits for 64-bit encryption keys.
13 ASCII characters or 26 hexadecimal digits for 128-bit encryption keys

--keyidx <1|2|3|4>

Description: Set the current WEP Key index.

--rasip <serverIp>

Description: Set the RADIUS server IP address.

--raspt <portVal>

Description: Set the RADIUS server port.

Valid value: 1~65535

Default value: 1812

--raskey <raskeyStr>

Description: Set the RADIUS Key.

Valid value: string of 79 characters.

--wpaenc <tkip|aes|tkip+aes>

Description: Set the WPA encryption

--rekey <interval>

Description: Set the Group Rekey Interval

Default value: 0

--pskey <"pskeyStr">

Description: Set the WPA Pre-Shared Key

Valid value: string of 8 ~ 63 characters.

Note:

1. wlPreauth can only be used with WPA2.
2. When using WPA-PSK or WPA2-PSK, WPA Pre-Shared Key (pskey) must be set first.
3. WEP MUST be enable when security is set to shared / 802.1X radius security mode.
4. WEP MUST be disable when security is set to WPA/WPA-PSK security mode
5. When setting keyidx to N for WEP key, ensure that the nkeyN field has a string value.
6. Always issue a complete security command. For example, once WEP is enabled, it will still be enabled even after changing the security mode, until the command "--wep disabled" is received by the router.

Example 2:

After setting up the wireless configuration in example 1, the user wants to configure the wireless LAN security.

Scenario 1:

WPA2 with Radius server IP address of 172.16.2.199

```
wlan security wpa2 --rasip 172.16.2.199 --wlPreauth 1
```

Scenario 2:

WPA-PSK with "123456789" as the passkey.

```
wlan security psk --pskey "123456789" --wpaenc aes --wep disabled
```

Scenario 3:

802.1X with Radius server IP of 172.16.2.199 and RADIUS key as "whatever"

```
wlan security radius --rasip 172.16.2.199 --raskey "whatever" --wep enabled
```

Configure wireless LAN MAC filter

Description: Enable, disable and configure the wireless LAN MAC filter feature. This feature enables the router to allow or deny connection from wireless client based on the MAC address.

Synopsis:

```
wlan macfilter          [--mode <disabled|allow|deny>]
     [--add <MACaddress>]
     [--remove <MACaddress>]
```

Options:

--mode <disabled|allow|deny>

Description: Disable and set the wireless LAN MAC filter mode.

Valid Value:

Disabled: disable wireless LAN MAC filter

Allow: only allow access to wireless client with the MAC address listed in the router

Deny: allow all wireless client to connect unless the MAC address is listed in the router

Default Value: disabled

--add <MACaddress>

Description: add one MAC Address entry

--remove <MACaddress>

Description: remove one MAC Address entry

Note: The setting of the MAC filter takes effect immediately. When setting up this feature through the wireless interface, be careful of blocking the computer.

Changing the mode will make the MAC address list be reserved.

To see the list of MAC addresses, use the command “wlan info –macfilter”.

Example 3:

After Example 2, the user want to allow only wireless client with MAC address of 00:11:22:33:44:55 to be able to connect to the router

```
wlan macfilter --mode allow --add 00:11:22:33:44:55
```

Following the command above, if the user wants to deny wireless client with MAC address of 00:11:22:33:44:55 to be able to connect to the AP.

```
wlan macfilter --mode deny
```

Configure Wireless Bridge (Wireless Distribution System/WDS)

Description: configure the wireless bridge

Synopsis:

```
wlan wds [--mode <ap|wds>] [--restrict <enabled|disabled>]
     [--rmac1 <MACaddress>] [--rmac2 <MACaddress>]
     [--rmac3 <MACaddress>] [--rmac4 <MACaddress>]
```

Options:

--mode <ap|wds>

Description: configure wireless AP mode.

Default value: ap

--restrict <enabled|disabled>

Description: enable or disable bridge restrict mode.

Default value: disabled

--rmac1 <MACaddress>

--rmac2 <MACaddress>

--rmac3 <MACaddress>

--rmac4 <MACaddress>

Description: set remote bridge MAC address

Note: The "--restrict" option have to be enable before setting any restrict MAC address (--rmac1~4) or the restrict MAC address setting will be ignored.

The behavior of WDS is similar to connecting two or more AP using a hub. However, please be aware of the IP assignment to prevent assigning two or more hosts / STAs to the same IP address. To avoid IP address conflict, only enable DHCP server in one router and disable the other router DHCP server.

WDS CLI (command line interface) does NOT support Enable(Scan) mode in Bridge Restrict while using WUI (Web UI) does. When Bridge Restrict set to Enable(Scan) mode in WUI, the CLI will show Bridge Restrict disabled.

Example 4:

After example 3, the user want to connect another AP which has DHCP disabled and the MAC address is 00:12:34:56:78:9a

```
wlan wds --mode wds --restrict enabled --rmac1 00:12:34:56:78:9a
```

Show wireless LAN interface configurations

Description: show the current configuration of the wireless LAN interface

Synopsis:

```
        wlan info [--config] [--security]
            [--macfilter] [--wds] [--station]
```

Options:

--config

Description: display the list of parameters from config option

Example:

```
        > wlan info --config
            Wlan Config Info :

        Basic :
            wlan config enable = 1
            wlan config hide = 0
            wlan config ssid = Series7Wireless7890
            wlan config bssid = 00:11:22:33:44:56
            wlan config country = AU

        Advance :
            wlan config isolate = 0
            wlan config band = b
            wlan config channel = 0
            wlan config rate = 0
            wlan config mrate = 0
            wlan config brate = default
            wlan config rts = 2347
            wlan config frag = 2346
            wlan config dtim = 1
            wlan config beacon = 100
            wlan config xpress = off
            wlan config gmode = auto
            wlan config gprotect = auto
            wlan config preamble = long
```

--security

Description: display the list of parameters from security option

Example:

```
> wlan info --security
Wlan Security Info :
    wlan security auth mode = psk
    wlan security wpa = aes
    wlan security wpaGTKRekey = 0
    wlan security wpaPresharedKey = 1234567890
    wlan security Wepstate = disabled
    wlan security WepKeyBit = 128
    wlan security WepKey2 =
    wlan security WepKey3 =
    wlan security WepCurrentKeyindex = 1
```

--macfilter

Description: display the list of parameters from macfilter option

Example:

```
 > wlan info --macfilter
Wlan macfilter Info :
    wlan macfilter mode = disabled
    wlan macfilter entry :
```

--wds

Description: display the list of parameters from wds opiton

Example:

```
> wlan info --wds
Wlan wds Info :
    wlan wds mode = ap
    wlan wds restrict mode = disabled
```

--station

Description: display the list of authenticated wireless stations and their status

Example:

```
 > --wlan info --station
--wlan info --station: not found
```

Contact Information

If you have any technical difficulties with your product, please do not hesitate to contact NetComm's Customer Support Department.

Email: support@netcomm.com.au

www.netcomm.com.au

Note: NetComm Technical Support for this product only covers the basic installation and features outlined in the Quick Start Guide. For further information regarding the advanced features of this product, please refer to the configuring sections in the User Guide or contact a Network Specialist.

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