NETCOMM FIBRE SERIES

WiFi Data and VoIP Gateway NF1ADV

USER GUIDE

Copyright

⚠ Please note: This document is subject to change without notice.

Save Our Environment

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

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

Please be responsible and protect our environment.

This manual covers the following products:

NetComm NF1ADV

DOCUMENT VERSION	DATE
1.0 - Initial document release	02/02/2012

Table 1 - Document Revision History

Table of Contents

Overview

Introduction

This manual provides information related to the installation, operation, and utilization of the NF1ADV.

Target Users

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

Prerequisites

Before continuing with the installation of your NF1ADV, please confirm that you comply with the minimum system requirements below.

- Computer with Windows, Macintosh, or Linux-based operating systems with a working Ethernet adapter with TCP/IP Protocol installed.
- A Web Browser such as Internet Explorer, Netscape Navigator, Mozilla Firefox, Opera, Safari etc.
- Wireless Computer System Requirements:
    - Computer with a working 802.11b, 802.11g or 802.11n wireless adapter.

Notation

The following symbols are utilised in this user manual:

- ⚠
The following note requires attention

- ⚡
The following note provides a warning

- ℹ
The following note provides relevant information

Product Introduction

Product Overview

- ADSL2/2+ Integrated Access Device.
- 1 x 10/100/1000 Gigabit WAN port.
- 4 x 10/100 LAN Ethernet port.
- 2 x FXS Voice ports (circuit-switched).
- 1 x FXO port for PSTN calling.
- 802.11n up to 300Mbps Wireless[1] (Backward compatible with 802.11b/g).
- DECT CAT-iQ 2.0 base station with DECT association button.
- 2 x USB host ports supporting mass storage file sharing and print serving.
- WiFi Protected Setup (WPS) for wireless connectivity.
- VPN pass-through (PPTP, L2TP, IPSec).
- Browser based interface for configuration and management.

[1] Speeds are dependent on network coverage. See your MBB provider coverage maps for more details. The total number of WiFi users can also affect data speeds. The maximum wireless signal rate and coverage values are derived from IEEE Standard 802.11g and 802.11n specifications. The actual wireless speed and coverage are dependent on network and environmental conditions including but not limited to the volume of network traffic, building materials and construction/layout.

Package Contents

The NF1ADV package consists of:

- 1 x NF1ADV WiFi Data and VoIP Gateway.
- 1 x 12VDC~2.0A Power Adapter.
- 1 x RJ-45 Ethernet LAN Cable.
- 1 x RJ-11 phone Cable.
- Quick Setup Guide.
- Wireless Security Card.

If any of these items are missing or damaged, please contact NetComm customer care.

Product Features

Congratulations on your purchase of a NetComm NF1ADV WiFi Data and VoIP Gateway. This router is compliant with 802.11n offering speeds up to 6 times faster than standard 802.11g based routers while still being compatible with 802.11g & 802.11b devices. The NF1ADV is not only a Wireless Access Point, and using a Gigabit speed WAN port and doubling as a 4-port full-duplex Ethernet Switch, connects your wired-Ethernet devices together at incredible speeds.

With speeds of up to 300Mbps* the NetComm NF1ADV WiFi Data and VoIP Gateway uses advanced MIMO (Multi-Input, Multi-Output) technology to transmit multiple steams of data in a single wireless channel giving you seamless access to multimedia content. Robust RF signal travels farther, eliminates dead spots and extends network range. For data protection and privacy, the NF1ADV encodes all wireless transmissions with WEP, WPA, and WPA2 encryption.

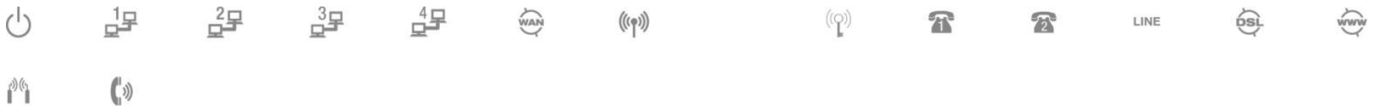
With inbuilt DHCP Server & powerful SPI firewall the NF1ADV protects your computers against intruders and most known Internet attacks but provides safe VPN pass-through. With incredible speed and QoS function of 802.11n, NF1ADV is ideal for media-centric applications like streaming video, gaming, and VoIP telephony allowing you to run multiple media-intense data streams through the network at the same time, with no degradation in performance.

The NetComm NF1ADV creates a secure WiFi network, providing Internet access to users and simultaneous phone service using your VoIP Service Provider's network. It incorporates a DECT base station for use with cordless phones. It also incorporates a WLAN 802.11b/g/n access point, one 10/100Mbps Ethernet port, one 10/100Mbps Ethernet WAN port and two phone ports for making and receiving telephone calls. It features the latest security options such as WPA and WPA2 data encryption, SPI (Stateful Packet Inspection) Firewall and VPN pass through.

Physical Dimensions and Indicators

LED Indicators

The NF1ADV has been designed to be placed on a desktop. All of the cables exit from the rear for better organization. The display is visible on the front of the NF1ADV to provide you with information about network activity and the device status. See below for an explanation of each of the indicator lights.



LED INDICATOR	ICON	DEFINITION
Power	⏻	The power LED will be a solid green light when the device is powered on. The power LED will flash during the device start up process.
LAN	🖧	The LAN LEDs will be a solid green light when a specific LAN connection is established. The LED flashes on LAN port traffic throughput.
WAN	WAN	WAN mode: The WAN LED lights up when the router is connected to the internet via an Ethernet WAN connection.
WiFi	((•))	The LED will show a solid green light when WLAN is enabled. The LED flashes on traffic throughput (data transfer).
WPS	((•))	The WPS LED will light up to indicate that the wireless signal has been configured using the WiFi Protected Setup option.
Phone1	☎1	A solid blue light appears when the analogue telephone connected to Line 1 is off-hook. The Line 1 LED will flash on an incoming call.
Phone 2	☎2	A solid green light appears when the analogue telephone connected to Line 2 is off-hook. The Line 2 LED will flash on an incoming call.
Line	LINE	The Line LED will be on when a line cable for PSTN calls is connected from the router to a phone port of an ADSL filter.
DSL	DSL	The DSL LED will flicker on and off when training for a DSL signal. When a DSL signal is detected the LED will be a solid green light.
WWW	WWW	The WWW LED will light up when there is a WAN connection through a fixed DSL connection.
DECT	📶	The DECT LED will light up when the NF1ADV is DECT registration mode
Page Register	📳	This Icon will light up when a DECT phone connected to the router is off hook. It will also flash on an incoming call.

Table 2 - LED Indicators

Integrated Interfaces

The following integrated interfaces are available on the rear of the NF1ADV:

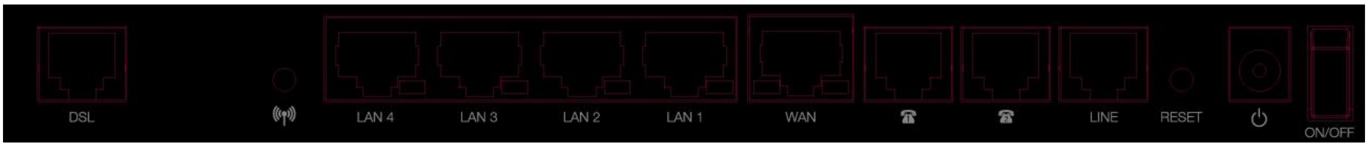


Figure 1: Rear Panel

INTERFACE	FUNCTION
DSL	The ADSL port for xDSL connectivity.
WPS	Hold and release this button for less than 10 seconds to enable the WPS (WiFi Protected System) push-button-connect function.
LAN 4	A LAN Port for wired Ethernet clients (Computers, Laptops, etc).
LAN 3	A LAN Port for wired Ethernet clients (Computers, Laptops, etc).
LAN 2	A LAN Port for wired Ethernet clients (Computers, Laptops, etc).
LAN 1	A LAN Port for wired Ethernet clients (Computers, Laptops, etc).
WAN	The WAN Ethernet port for a Fixed Line (ADSL/Cable/Satellite) connection to the internet.
Phone 1	The RJ-11 phone port provides a connection to a standard analogue telephone.
Phone 2	The RJ-11 phone port provides a connection to a standard analogue telephone
Line	The RJ-11 port provides a connection to your PSTN phone line for PSTN pass through calling.
Reset/	Hold this button down for over 10 seconds to reset the router to factory default settings.
Power	The power connector designed for use with a DC 12V 2A Power Adapter.
On/Off	The switch that can be used to power up or down the NF1ADV.

Table 3: Rear Panel Interface Connectors

NF1ADV Default Settings

The following tables list the default settings for the NF1ADV.

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

Table 4 - LAN Management Default Settings

WAN (INTERNET)	
WAN mode:	DHCP

Table 5 - WAN Port Default Settings

WIRELESS (WIFI)	
SSID:	(Refer to the included wireless security card)
Security:	Mixed WPA2/WPA-PSK
Security Key:	(Refer to the included wireless security card)

Table 6 – WiFi Default Settings

For security purposes, each NF1ADV comes with a unique SSID that varies by a 4 digit number at the end. e.g. SSID: “NetComm Wireless XXXX”

NF1ADV WEB INTERFACE ACCESS	
Username:	admin
Password:	admin

Table 7 - Web Interface Default Settings

Safety and Product Care

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

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

⚠ WARNING
Disconnect the power line from the device before servicing.

Transport and Handling

When transporting the NF1ADV, it is recommended to return the product in the original packaging. This ensures the product will not be damaged.

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

Installation and Configuration of the NF1ADV

Placement of your NF1ADV

The wireless connection between your NF1ADV and your WiFi devices will be stronger the closer your connected devices are to your NF1ADV. Your wireless connection and performance will degrade as the distance between your NF1ADV and connected devices increases. This may or may not be directly noticeable, and is greatly affected by the individual installation environment.

If you have concerns about your network's performance that might be related to range or obstruction factors, try moving the computer to a position between three to five meters from the NF1ADV in order to see if distance is the problem.

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

If you experience difficulties connecting wirelessly between your WiFi Devices and your NF1ADV, please try the following steps:

- In multi-storey homes, place the NF1ADV on a floor that is as close to the centre of the home as possible. This may mean placing the NF1ADV on an upper floor.
- Try not to place the NF1ADV near a cordless telephone that operates at the same radio frequency as the NF1ADV (2.4GHz).

Avoid obstacles and interference

Avoid placing your NF1ADV near devices that may emit radio "noise", such as microwave ovens. Dense objects that can inhibit wireless communication include:

- Refrigerators.
- Washers and/or dryers.
- Metal cabinets.
- Large aquariums.
- Metallic-based, UV-tinted windows.
- If your wireless signal seems weak in some spots, make sure that objects such as those listed above are not blocking the signal's path (between your wireless devices and the NF1ADV).

Cordless Phones

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

- Try moving cordless phones away from your NF1ADV and your wireless-enabled computers.
- Unplug and remove the battery from any cordless phone that operates on the 2.4GHz band (check manufacturer's information). If this fixes the problem, your phone may be interfering with the NF1ADV.
- If your phone supports channel selection, change the channel on the phone to the farthest channel from your wireless network. For example, change the phone to channel 1 and move your NF1ADV to channel 11. See your phone's user manual for detailed instructions.
- If necessary, consider switching to a 900MHz or 5GHz cordless phone.

Choose the "Quietest" Channel for your Wireless Network

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

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

Hardware installation

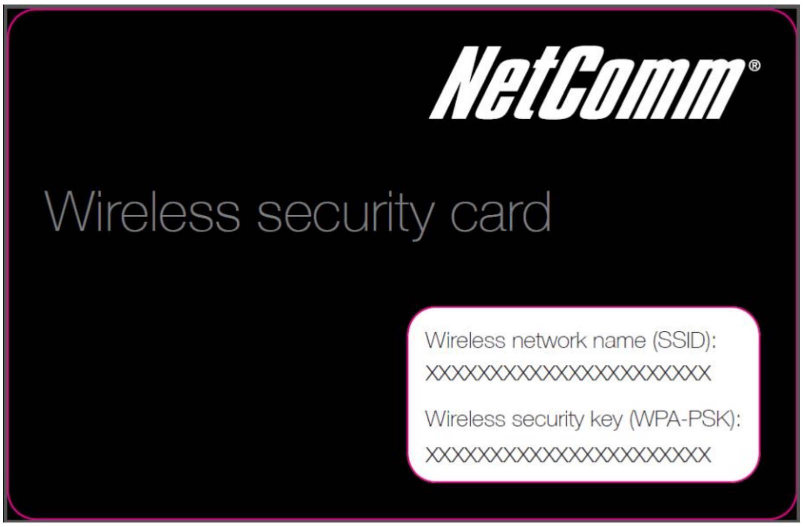
1. Insert an Ethernet LAN cable from the WAN port of the NF1ADV to a LAN port on your modem/switch/hub.
2. For VoIP functionality, connect a standard analogue telephone to one or both of the FXS ports labelled Phone 1 or Phone 2 using the RJ-11 Cable provided.
3. For PSTN pass-through connect an RJ-11 cable from any wall jack to the FXO Line port of the NF1ADV.
4. Connect the power adapter to the Power socket on the back of the NF1ADV.
5. Plug the power adapter into the wall socket and switch on the power.
6. Wait approximately 60 seconds for the NF1ADV to power up.

Connecting via an Ethernet cable

1. Connect the Ethernet cable provided to the port marked LAN at the back of the NF1ADV.
2. Connect the other end of the yellow Ethernet cable to your computer.
3. Wait approximately 30 seconds for the connection to establish.
4. Open your Web browser and type http://192.168.1.1 into the address bar and press enter.
5. Enter “admin” (without quotations) for both the Username and Password and click on the Login button.
6. Follow the steps of the start-up wizard to set up your NF1ADV.
7. After the setup process is completed, you will be connected to the Internet.

Connecting wirelessly

1. Ensure WiFi is enabled on your device (computer/laptop/Smartphone).
2. Scan for wireless networks in your area and connect to the network name that matches the Wireless network name found on the Wireless Security Card (included in the box).



NetComm®

Wireless security card

Wireless network name (SSID):
XXXXXXXXXXXXXXXXXXXXXX

Wireless security key (WPA-PSK):
XXXXXXXXXXXXXXXXXXXXXX

Figure 2 - Included Security Card

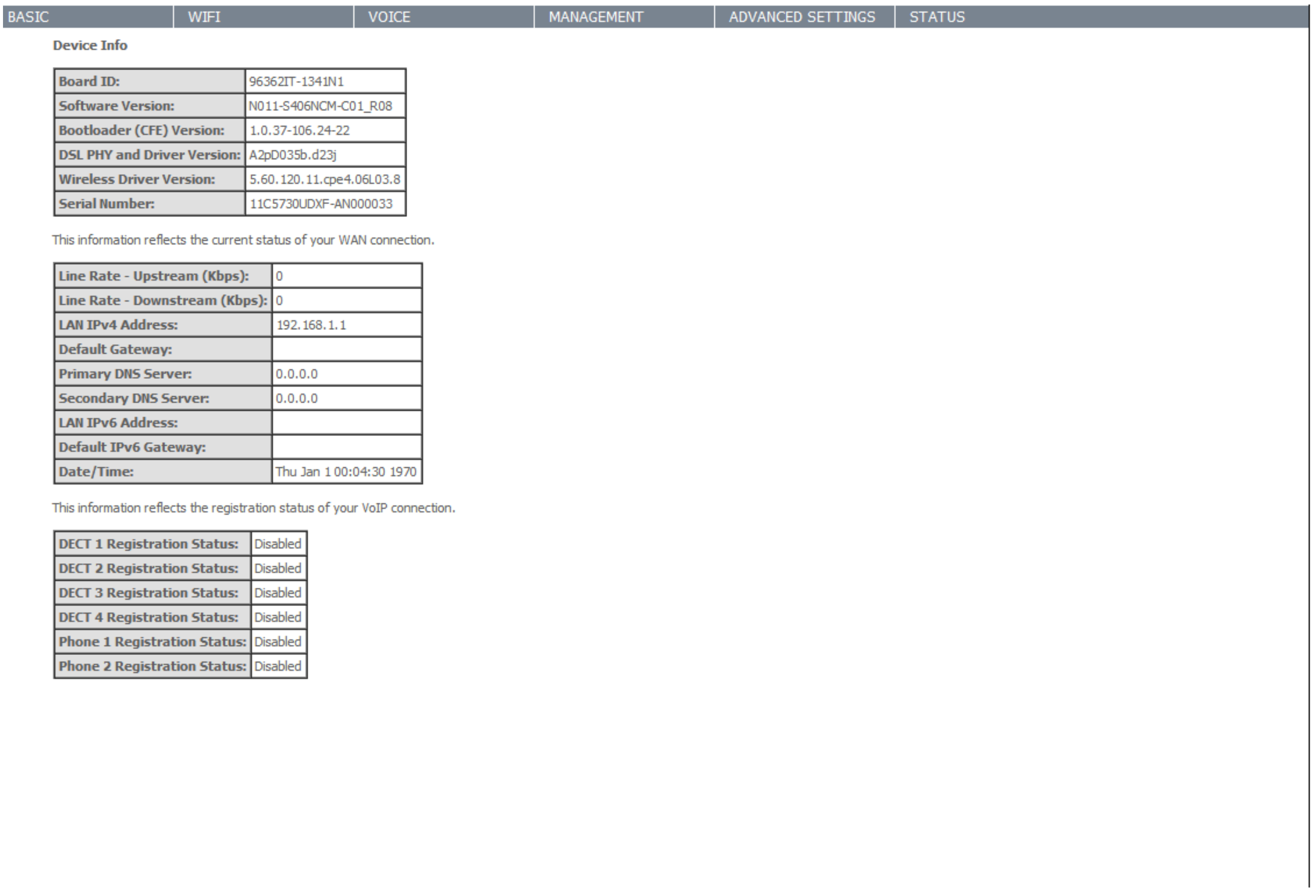
Please note: For security purposes, each NF1ADV has a unique SSID (such as NetComm Wireless XXXX) and Wireless Security Key. The included Wireless Security Card lists these fields instead of the xxxxx’s as shown in the screenshot above.

3. When prompted for your wireless security settings, enter the wireless security key listed on your Wireless Security Card.
4. Wait approximately 30 seconds for the connection to be established.
5. Open your Web browser and type http://192.168.1.1 into the address bar and press enter.
6. Enter “admin” (without quotations) as both the Username and Password and press the Login button.
7. Follow the steps to set up your NF1ADV.
8. After the setup process is completed, you will be connected to the Internet.
9. To connect additional devices via WiFi, repeat steps 1 through 4.

Basic

Home

The status page provides system related information and is displayed when you login to the NF1ADV console. By default, the status page will show Device Information including hardware types and on-board software, WAN Connection status, and VoIP connection status.



Device Info

Board ID:	96362IT-1341N1
Software Version:	N011-S406NCM-C01_R08
Bootloader (CFE) Version:	1.0.37-106.24-22
DSL PHY and Driver Version:	A2pD035b.d23j
Wireless Driver Version:	5.60.120.11.cpe4.06L03.8
Serial Number:	11C5730UDXF-AN000033

This information reflects the current status of your WAN connection.

Line Rate - Upstream (Kbps):	0
Line Rate - Downstream (Kbps):	0
LAN IPv4 Address:	192.168.1.1
Default Gateway:	
Primary DNS Server:	0.0.0.0
Secondary DNS Server:	0.0.0.0
LAN IPv6 Address:	
Default IPv6 Gateway:	
Date/Time:	Thu Jan 1 00:04:30 1970

This information reflects the registration status of your VoIP connection.

DECT 1 Registration Status:	Disabled
DECT 2 Registration Status:	Disabled
DECT 3 Registration Status:	Disabled
DECT 4 Registration Status:	Disabled
Phone 1 Registration Status:	Disabled
Phone 2 Registration Status:	Disabled

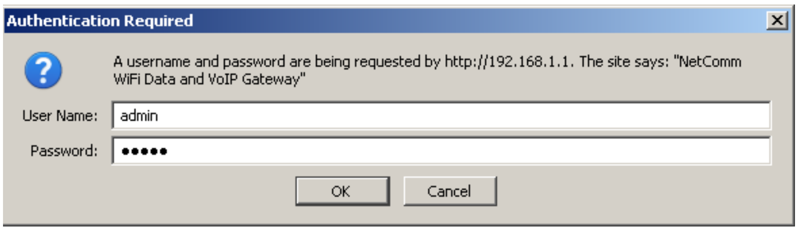
Figure 3: Basic - Home

ITEM	DEFINITION
Board ID	A unique ID assigned to the PCB (Printed Circuit Board).
Software Version	The current firmware version installed on the router.
Boot Loader (CFE) Version	The current boot loader installed on the router.
DSL PHY and Driver Version	The current line driver installed on the router.
Wireless Driver Version	The current wireless driver installed on the router.
Serial Number	The unique set of numbers assigned to the routers for identification purposes.
Line Rate – Upstream (Kbps)	The current upstream speed of the DSL connection in Kbps.
Line Rate – Downstream (Kbps)	The current upstream speed of the DSL connection in Kbps.
LAN IPv4 Address	The current version 4 IP address assigned to the router.
Default Gateway	The current default gateway of the WAN interface.
Primary DNS Server	The current primary DNS server in use
Secondary DNS Server	The current secondary DNS server is use.
LAN IPv6 Address	The current IPv6 IP address in use if assigned.
Default IPv6 Gateway	The current IPv6 default gateway if assigned.
Date/Time	The current date and time set on the router.
DECT 1-4 Registration Status	The status of the current cordless phones connected to the router.
Phone 1-2 Registration Status	The status of the current analog phones connected to the router.

Quick Setup Configuration Wizard

When you log in to NF1ADV for the first time, you will be presented with the Home page as shown in the screenshot below. Under the Basic menu is the Quick Setup wizard. You can use these steps to quickly configure the main functionality of the router and get an internet connection up and running. Configuring DSL connection requires a DSL cable to be connected to the router before the wizard can be completed. To configure quick setup please use the following steps.

1. Navigate to http://192.168.1.1 in a web browser.



Authentication Required

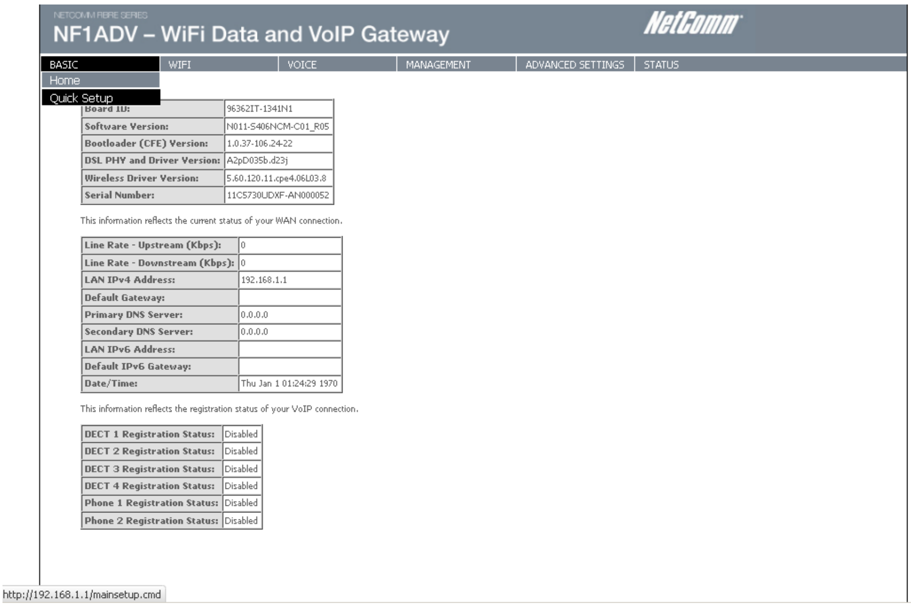
A username and password are being requested by http://192.168.1.1. The site says: "NetComm WiFi Data and VoIP Gateway"

User Name: admin

Password: •••••

Figure 4: Router Login

2. Enter "admin" for both the User name and the Password and press the OK button.



Board ID:	96362IT-1341N1
Software Version:	N011-S406NCM-C01_R05
Bootloader (CFE) Version:	1.0.37-106.24-22
DSL PHY and Driver Version:	A2pD035b.d23j
Wireless Driver Version:	5.60.120.11.cpe4.06L03.8
Serial Number:	11C5730UDXF-AN000052

This information reflects the current status of your WAN connection.

Line Rate - Upstream (Kbps):	0
Line Rate - Downstream (Kbps):	0
LAN IPv4 Address:	192.168.1.1
Default Gateway:	
Primary DNS Server:	0.0.0.0
Secondary DNS Server:	0.0.0.0
LAN IPv6 Address:	
Default IPv6 Gateway:	
Date/Time:	Thu Jan 1 01:24:29 1970

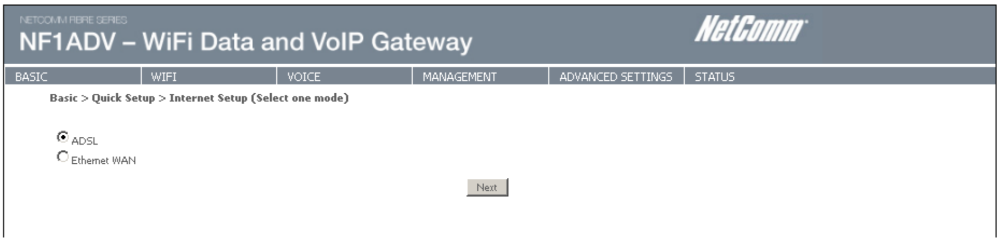
This information reflects the registration status of your VoIP connection.

DECT 1 Registration Status:	Disabled
DECT 2 Registration Status:	Disabled
DECT 3 Registration Status:	Disabled
DECT 4 Registration Status:	Disabled
Phone 1 Registration Status:	Disabled
Phone 2 Registration Status:	Disabled

http://192.168.1.1/mainsetup.cmd

Figure 5: Basic - Quick Setup

3. Select the Quick Setup option from the Basic menu.



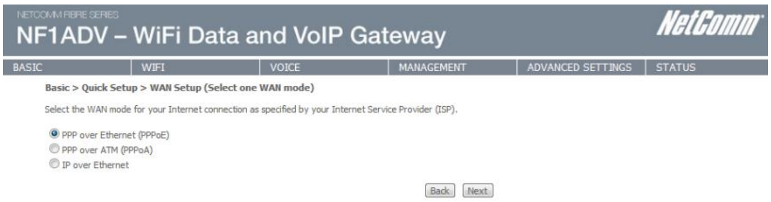
Basic > Quick Setup > Internet Setup (Select one mode)

● ADSL
○ Ethernet WAN

Figure 6: Quick Setup - Internet

4. Select the type of internet setup you wish the router to be configured with and press the Next button.

5. Select the WAN configuration for the NF1ADV to use and press the Next button.



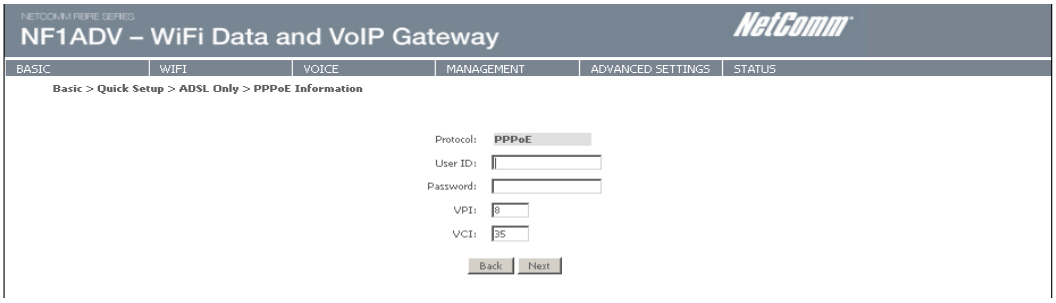
Basic > Quick Setup > WAN Setup (Select one WAN mode)

Select the WAN mode for your Internet connection as specified by your Internet Service Provider (ISP).

● PPP over Ethernet (PPPoE)
○ PPP over ATM (PPPoA)
○ IP over Ethernet

Figure 7: Quick Setup - WAN Setup

6. For configurations using PPPoE enter the broadband username and password. For Australia users set the VPI as 8 and the VCI as 35. For New Zealand users set the VPI as 0 and the VCI as 100. Press the Next button.

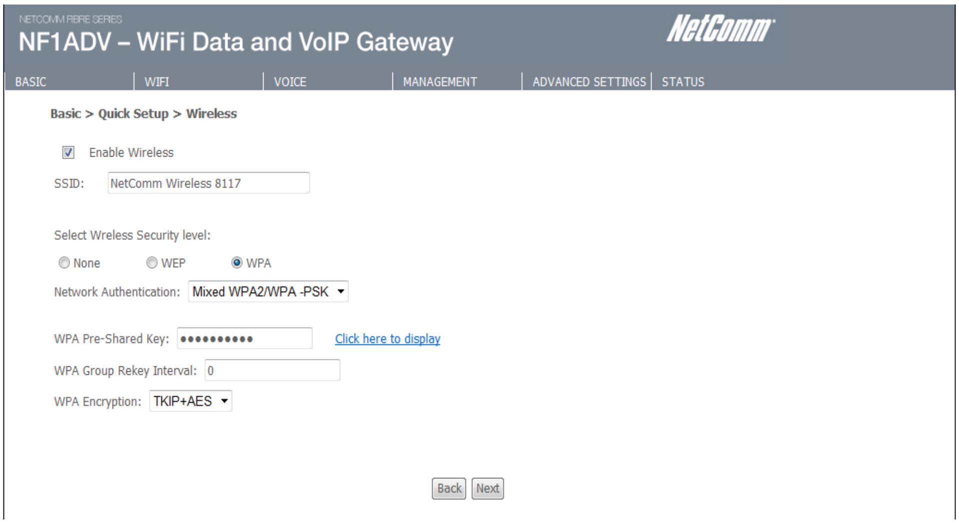


Basic > Quick Setup > ADSL Only > PPPoE Information

Protocol: PPPoE
User ID:
Password:
VPI: 8
VCI: 35

Figure 8: Quick Setup – PPPoE

7. The wireless function is set to “On” by default. Unticking the “Enable Wireless” option will disable the wireless functionality of the NF1ADV.



Basic > Quick Setup > Wireless

☑ Enable Wireless

SSID: NetComm Wireless 8117

Select Wireless Security level:

○ None ○ WEP ● WPA

Network Authentication: Mixed WPA2/WPA -PSK

WPA Pre-Shared Key: •••••••••• Click here to display

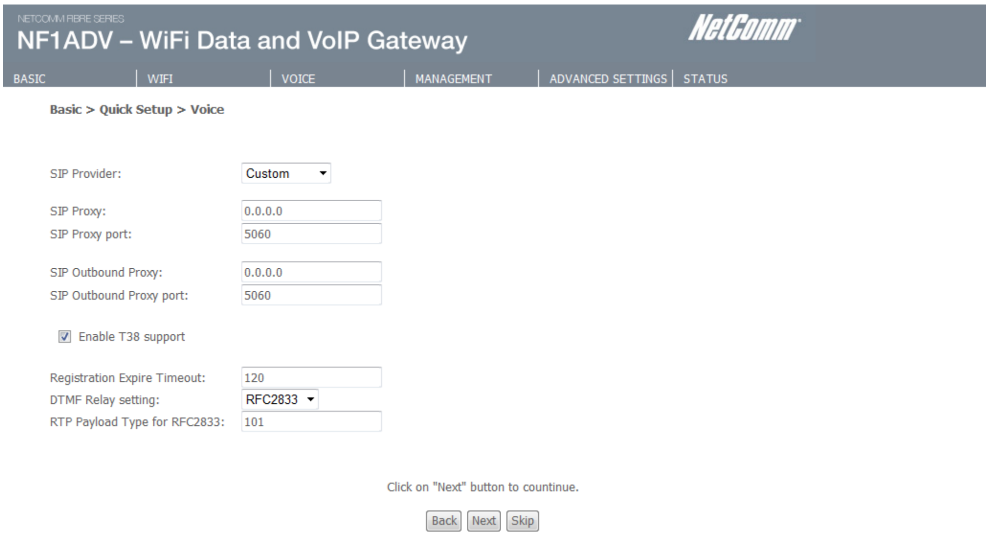
WPA Group Rekey Interval: 0

WPA Encryption: TKIP+AES

Figure 9: Quick Setup – Wireless

8. To configure the NF1ADV to use wireless, customize the SSID (wireless network name) to a name of your choice. Setting a strong wireless security level (such as WPA-PSK - AES) can prevent unauthorized access to your wireless network. Please enter the Security Key that you wish to use, or leave this field unchanged to use the default Security Key. Click “Next” to continue.

9. If you wish to use the NF1ADV for VoIP calling enter your SIP settings. You can enter your own SIP settings by selecting custom as the SIP provider or select from a number of pre-configured SIP settings for those users with accounts with MyNetFone, Engin, iiNet or iPrimus. Select Enable T38 support if you have a fax machine that is capable of using this specification enabling you to send faxes via VoIP connection. If you do not wish to use the NF1ADV with VoIP press the Skip button. When you have completed configuring this page press the Next button.



Basic > Quick Setup > Voice

SIP Provider:	Custom
SIP Proxy:	0.0.0.0
SIP Proxy port:	5060
SIP Outbound Proxy:	0.0.0.0
SIP Outbound Proxy port:	5060

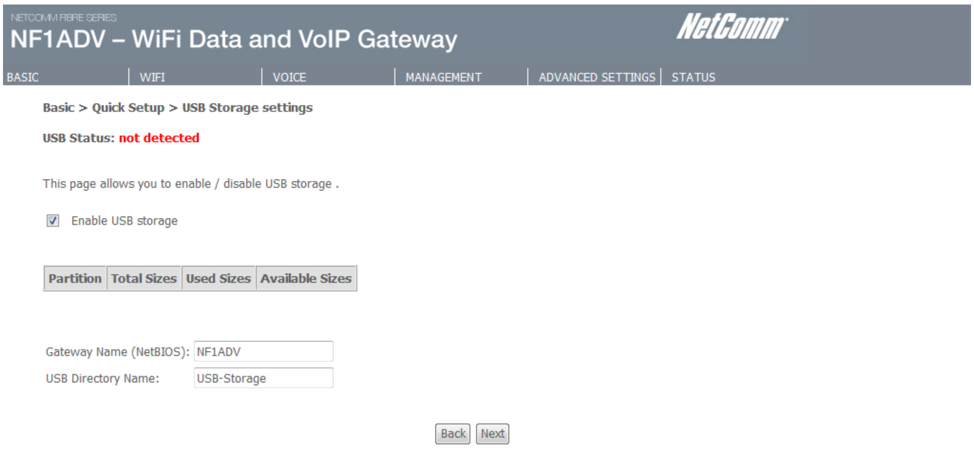
☑ Enable T38 support

Registration Expire Timeout:	120
DTMF Relay setting:	RFC2833
RTP Payload Type for RFC2833:	101

Click on "Next" button to countinue.

Figure 10: Quick Setup - VoIP

10. If you wish to configure the NF1ADV for USB storage select the “Enable USB Storage” option. The NetBIOS name and USB directory name will be configured by default but can be customized here if you wish. Press the Next button when you have completed this page.



Basic > Quick Setup > USB Storage settings

USB Status: not detected

This page allows you to enable / disable USB storage .

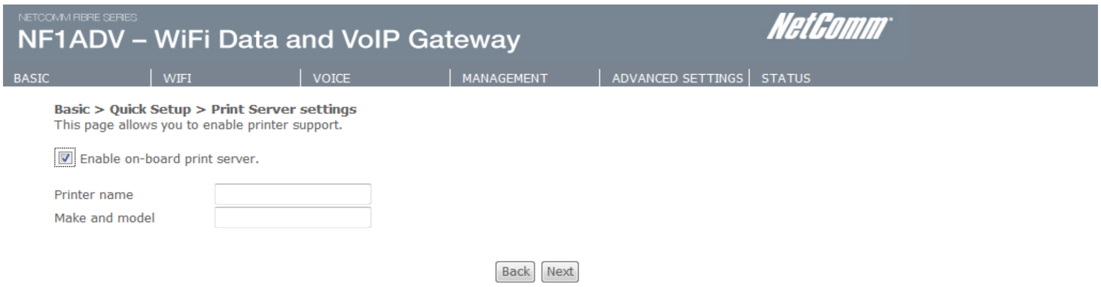
☑ Enable USB storage

Partition	Total Sizes	Used Sizes	Available Sizes

Gateway Name (NetBIOS):	NF1ADV
USB Directory Name:	USB-Storage

Figure 11: Quick Setup - USB Storage

11. If you wish to configure the NF1ADV as a Print Server select the “Enable on-board print server” option and enter the printer name and make and model into the appropriate fields. When you have completed these settings press the Next button.



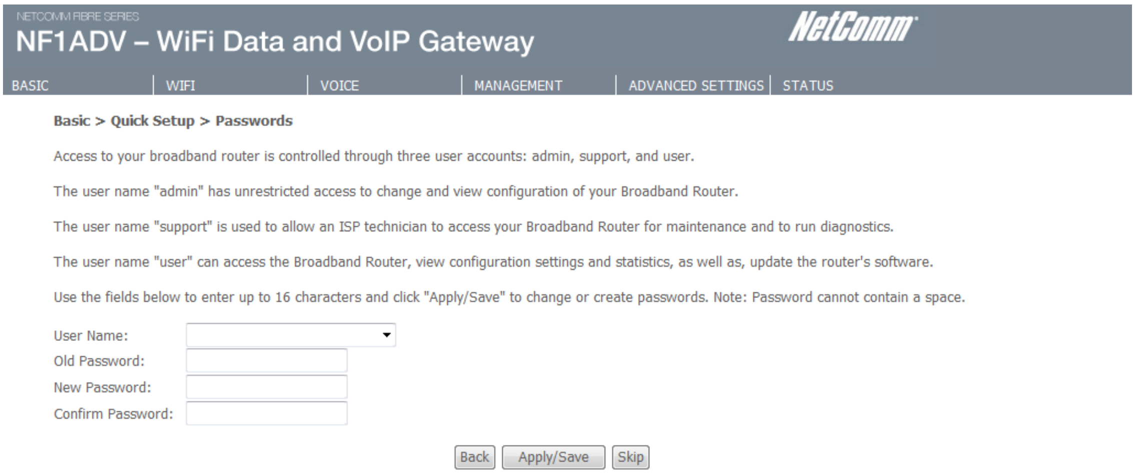
Basic > Quick Setup > Print Server settings
This page allows you to enable printer support.

☑ Enable on-board print server.

Printer name
Make and model

Figure 12: Quick Setup - Print Server

12. The Quick Setup – Passwords page allows you to customize the username and password required to administer your NF1ADV. It is recommended that you choose a unique password for added security. Please enter the username and password that you wish to use, or leave these fields unchanged to use the default username and password of “admin”. Click the “Apply/Save” button to continue or the “Skip” button to bypass making any password changes.



Basic > Quick Setup > Passwords

Access to your broadband router is controlled through three user accounts: admin, support, and user.

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

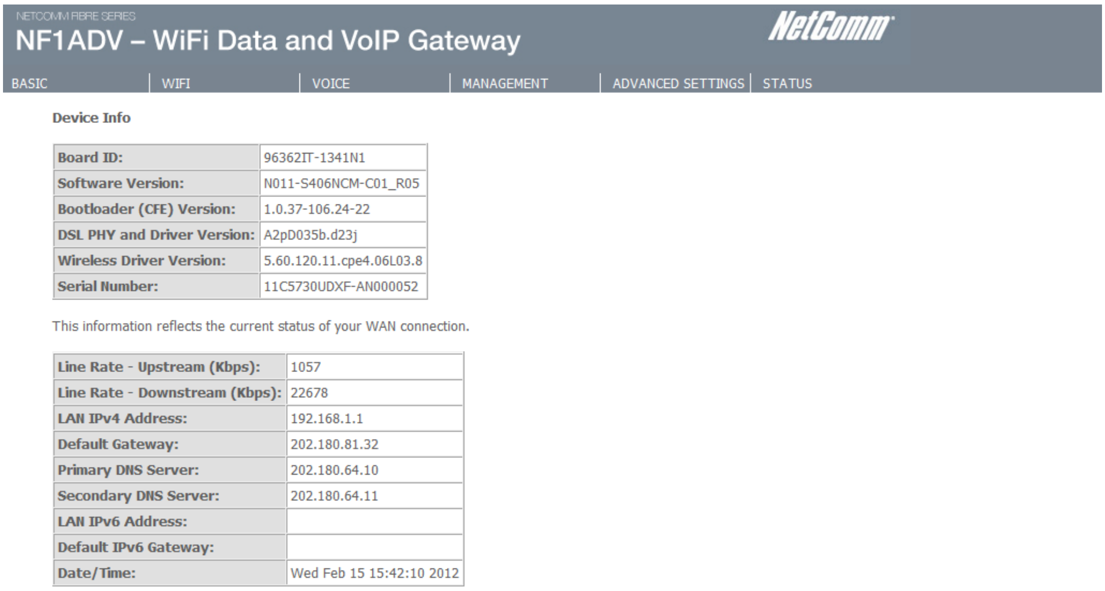
The user name "support" is used to allow an ISP technician to access your Broadband Router for maintenance and to run diagnostics.

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

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

User Name:
Old Password:
New Password:
Confirm Password:

13. You will be directed back to the Basic – Home page.



Device Info

Board ID:	96362IT-1341N1
Software Version:	N011-S406NCM-C01_R05
Bootloader (CFE) Version:	1.0.37-106.24-22
DSL PHY and Driver Version:	A2pD035b.d23j
Wireless Driver Version:	5.60.120.11.cpe4.06L03.8
Serial Number:	11C5730UDXF-AN000052

This information reflects the current status of your WAN connection.

Line Rate - Upstream (Kbps):	1057
Line Rate - Downstream (Kbps):	22678
LAN IPv4 Address:	192.168.1.1
Default Gateway:	202.180.81.32
Primary DNS Server:	202.180.64.10
Secondary DNS Server:	202.180.64.11
LAN IPv6 Address:	
Default IPv6 Gateway:	
Date/Time:	Wed Feb 15 15:42:10 2012

Figure 13: Basic - Home

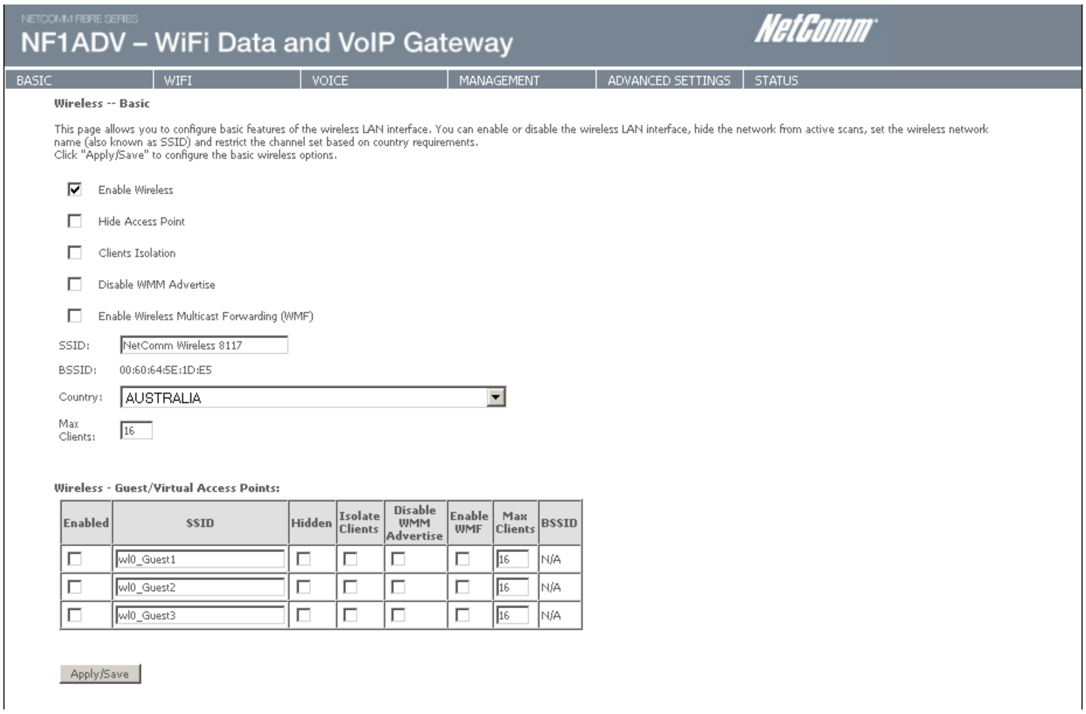
WiFi

Setup

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

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

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 the 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 -- Basic

This page 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.
Click "Apply/Save" to configure the basic wireless options.

☑ Enable Wireless

□ Hide Access Point

□ Clients Isolation

□ Disable WMM Advertise

□ Enable Wireless Multicast Forwarding (WMF)

SSID: NetComm Wireless 8117

BSSID: 00:60:64:5E:1D:E5

Country: AUSTRALIA

Max Clients: 16

Wireless - Guest/Virtual Access Points:

Enabled	SSID	Hidden	Isolate Clients	Disable WMM Advertise	Enable WMF	Max Clients	BSSID
□	wl0_Guest1	□	□	□	□	16	N/A
□	wl0_Guest2	□	□	□	□	16	N/A
□	wl0_Guest3	□	□	□	□	16	N/A

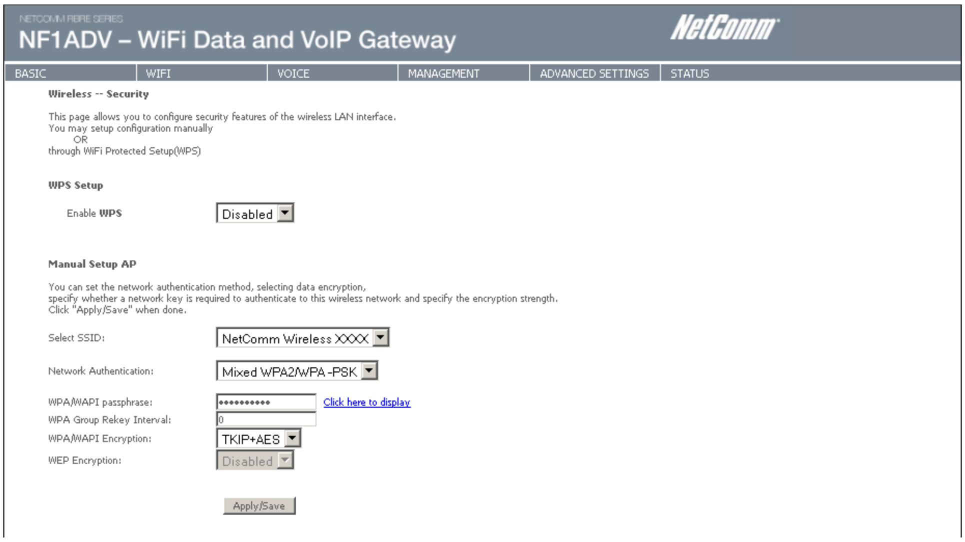
Figure 14: Wireless - Setup

FIELD	DESCRIPTION
Enable Wireless	A checkbox that enables (default) or disables the wireless LAN interface.
Hide Access Point	Select Hide Access Point to protect the access point from detection by wireless active scans. To check AP status in Windows, 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 wireless client to a hidden access point, the user must add the access point SSID manually to its wireless configuration.
Clients Isolation	This field stops clients PC from detecting one another in My Network Places or Network Neighbourhood and prevents one wireless client communicating with another wireless client.
Disable WMM Advertise	This checkbox give you the option to disable WiFi Multimedia (WMM) Advertise. WMM is a standard created to define quality of service (QoS) in WiFi networks. Do not select this option unless your network administrator advises you to.
Enable Wireless Multicast Forwarding (WMF)	Often used in multi-media streaming Wireless Multicast Forwarding (WMF) is a method of sending IP datagrams to multiple receivers in a single transmission.
SSID [1-32 characters]	SSID (Service Set Identifier) sets the wireless network name. All wireless devices attempting to connect with the router must be configured with the correct SSID to access the WLAN. If the SSID does not match, the wireless device will not be granted network 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 enforces specific regulations limiting channel range. For Australia and New Zealand channels are limited to numbers 1-13.
Max Clients	The maximum number of wireless clients that can be connected to the NF1ADV at any one time.
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.

Security

Wireless Security settings are used to prevent unauthorized connections to your network. This can be as basic as a neighbouring user who detects and is able to connect through your wireless network, right through to actual malicious interference or 'hacking'. Whatever the case, it is a good practice to be aware of and to use wireless network security to safeguard your data and your network.



NF1ADV – WiFi Data and VoIP Gateway

Wireless -- Security

This page allows you to configure security features of the wireless LAN interface.
You may setup configuration manually
OR
through WiFi Protected Setup(WPS)

WPS Setup

Enable **WPS**: Disabled

Manual Setup AP

You can set 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/Save" when done.

Select SSID: NetComm Wireless XXXX

Network Authentication: Mixed WPA2/WPA -PSK

WPA/WAPI passphrase: ••••••••••

WPA Group Rekey Interval: 0

WPA/WAPI Encryption: TKIP+AES

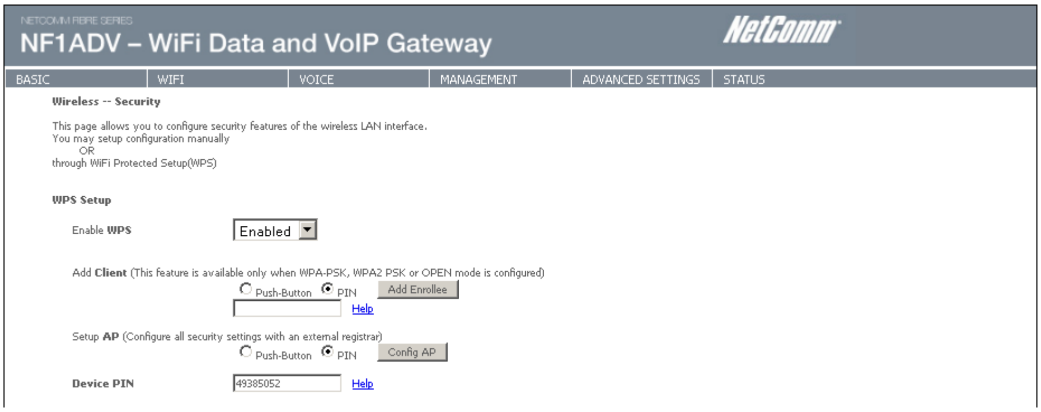
WEP Encryption: Disabled

Figure 15: Wireless - Security

FIELD	DESCRIPTION
Select SSID	Pre- configured to the default SSID of the NetComm Wireless settings. This field can be changed in the Wireless > Settings section.
Network Authentication	The type of wireless security you prefer to use can be set using this field. NOTE: The wireless security types available are listed in the order of level of security from least (top) to most (bottom).
WPA/WAP! Passphrase	The case sensitive wireless password of your choice should be at least 8 characters in length up to a maximum of 63 characters with both numbers and letters.
WPA Group Rekey Interval	The Group Key (Group Transient Key) is a shared key among all Supplicants connected to the same AP, and is used to secure multicast/broadcast traffic. It is not used for normal unicast traffic. A Pairwise Transient Key secures the unicast traffic. Group Key Renewal controls how often the Group Transient Key is changed. The Group Key Renewal does not control the update period for the Pairwise Transient Key. The Pairwise Transient Key is changed each time the Supplicant authenticates, or re-authenticates.
WPA/WAPI Encryption	The type of WPA encryption the wireless security will use.
WEP Encryption	The option to use WEP encryption when the network authentication is set to Open. This is a less secure type of encryption than WPA-PSK.

WPS

WiFi Protected Setup is a simplified method of connecting a wireless client to a wireless access point. The connection can be set either by pressing a button or through the use of a pin number. It is designed as a quick and simple solution to setup wireless connectivity.



Wireless -- Security

This page allows you to configure security features of the wireless LAN interface.
You may setup configuration manually
OR
through WiFi Protected Setup(WPS)

WPS Setup

Enable **WPS** Enabled

Add **Client** (This feature is available only when WPA-PSK, WPA2 PSK or OPEN mode is configured)
○ Push-Button ● PIN [Add Enrollee]
Help

Setup **AP** (Configure all security settings with an external registrar)
○ Push-Button ● PIN [Config AP]

Device PIN 49385052 Help

Figure 16: Wireless - WPS

FIELD	DESCRIPTION
Enable WPS	Use this field to enable the WPS settings.
Add Client	Select Push-Button or PIN as the means for the wireless client to connect to the router. Then press the “Add Enrollee” button.
Setup AP	Select Push-Button or PIN as the means for the Access Point (the router) to connect to a wireless client. If selecting PIN mode make a note of the current PIN. Then press the “Config AP” button.

Figure 17: Wireless - WPS Settings

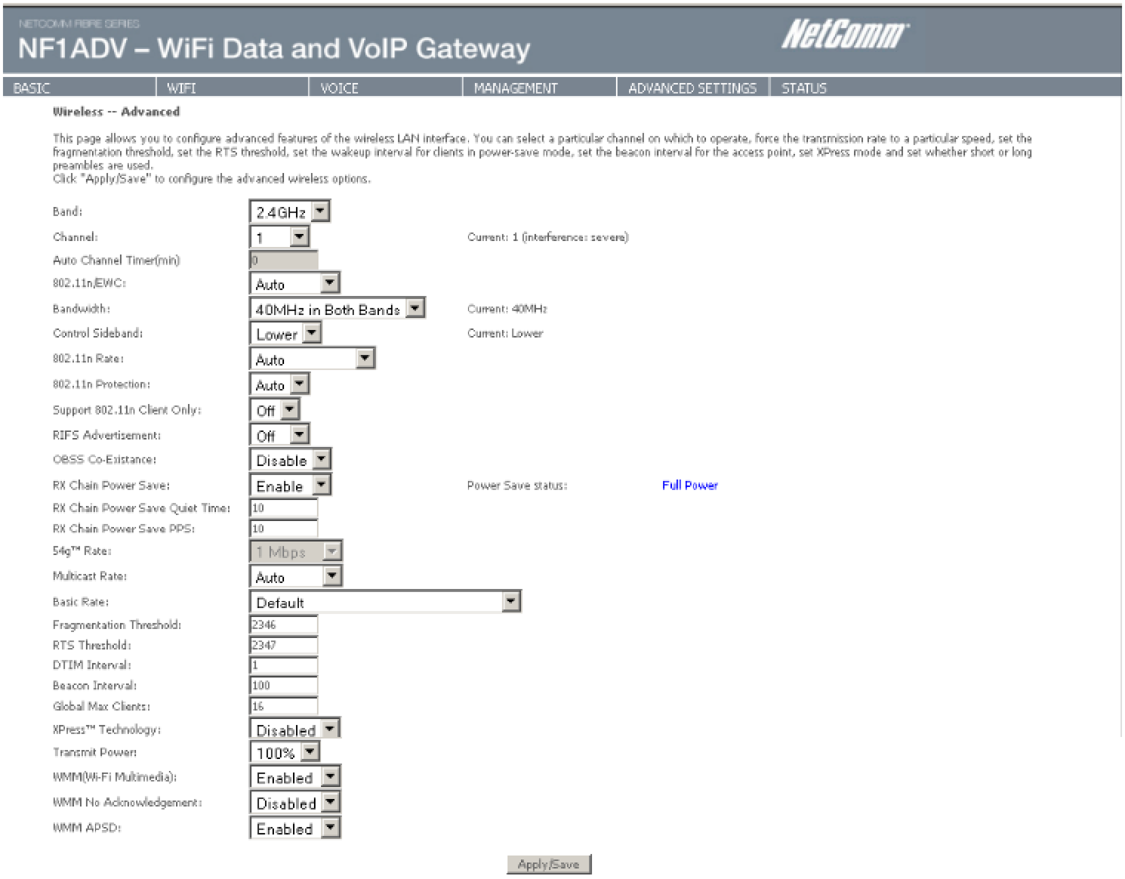
Configuration – Advanced Wireless Settings

This screen allows you to control the following advanced features of the Wireless Local Area Network (WLAN) interface:

- Select the wireless channel which you wish the router to operate from.
- Force the transmission rate to a particular speed.
- Set the fragmentation threshold. This can be used to improve throughput in noisy or congested situations.
- Set the RTS threshold. RTS stands for “Request to Send”. This parameter controls what size data packet the low level RF protocol issues to an RTS packet. The default is 2346.
- Set the wake-up interval for wireless clients using power-save mode.
- Set the beacon interval for the access point.
- Set Xpress mode.

Please see the Table below for an explanation of the configuration wireless settings.

Click the Apply/Save button to set any changes to the configuration settings.



Wireless -- Advanced

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

Band:	2.4GHz		
Channel:	1	Current: 1 (interference: severe)	
Auto Channel Timer(min)	0		
802.11n/EWC:	Auto		
Bandwidth:	40MHz in Both Bands	Current: 40MHz	
Control Sideband:	Lower	Current: Lower	
802.11n Rate:	Auto		
802.11n Protection:	Auto		
Support 802.11n Client Only:	Off		
RIFS Advertisement:	Off		
OBSS Co-Existance:	Disable		
RX Chain Power Save:	Enable	Power Save status:	Full Power
RX Chain Power Save Quiet Time:	10		
RX Chain Power Save PPS:	10		
54g™ Rate:	1 Mbps		
Multicast Rate:	Auto		
Basic Rate:	Default		
Fragmentation Threshold:	2346		
RTS Threshold:	2347		
DTIM Interval:	1		
Beacon Interval:	100		
Global Max Clients:	16		
XPress™ Technology:	Disabled		
Transmit Power:	100%		
WMM(Wi-Fi Multimedia):	Enabled		
WMM No Acknowledgement:	Disabled		
WMM APSD:	Enabled		

Figure 18: Wireless – Advanced

FIELD	DESCRIPTION
Band	The frequency of the wireless network. 2.4GHz is standard.
Channel	Allows selection of a specific channel (1-9) or Auto mode.
Auto Channel Timer	The Auto Channel sets the length of time it takes to scan a channel in minutes.
802.11n/EWC	An equipment interoperability standard setting based on IEEE 802.11n Draft 2.0 and Enhanced Wireless Consortium (EWC).
Bandwidth	Drop-down menu specifies the following bandwidth: 20MHz in Both Bands and 40 MHz in Both Bands.
Control Sideband	Displays which sideband the access point is using for the control channel, either Upper or Lower.
802.11n Rate	Drop-down menu specifies the following fixed rates. The maximum rate for bandwidth, 20MHz, is 130Mbps and the maximum bandwidth, 40MHz, is 270Mbps.

802.11n Protection	Turn off for maximized throughput. Turn on for greater security.
Support 802.11n Client Only	The option to provide wireless Internet access only to clients who are operating at 802.11n speeds.
RIFS Advertisement	Reduced Inter Frame Spacing (RIFS) is a required 802.11n feature that improves performance by reducing the amount of dead time required between transmissions. We recommend this option Off unless your network administrator advises otherwise.
OBSS Co-Existence	Overlapping Basic Service Sets (OBSS) co-existence provides a method for basic service sets to share a single frequency.
Rx Chain Power Save	This option provides a means to save power on the receiving wireless signal.
Rx Chain Power Save Quiet Time	The time interval before Rx Chain Power Save is implemented.
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 value 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.
Global Max Clients	Here you have the option of setting the limit of the number of clients who can connect to your wireless network.
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. The default value is disabled.
Transmit Power	The option of decreasing the transmitting power of your wireless signal
WMM (WiFi Multimedia)	WMM is a standard created to define quality of service (QoS) in WiFi networks. WMM adds prioritized capabilities to WiFi networks and optimizes their performance when multiple concurring applications, each with different latency and throughput requirements, compete for network resources.
WMM No Acknowledgement	WMM No Acknowledgement gives you the option of whether to send acknowledgement frames with WMM data packets.
WMM APSD	WMM Automatic Power Save Delivery, a feature of that allows the router to save power. This option is enabled by default.

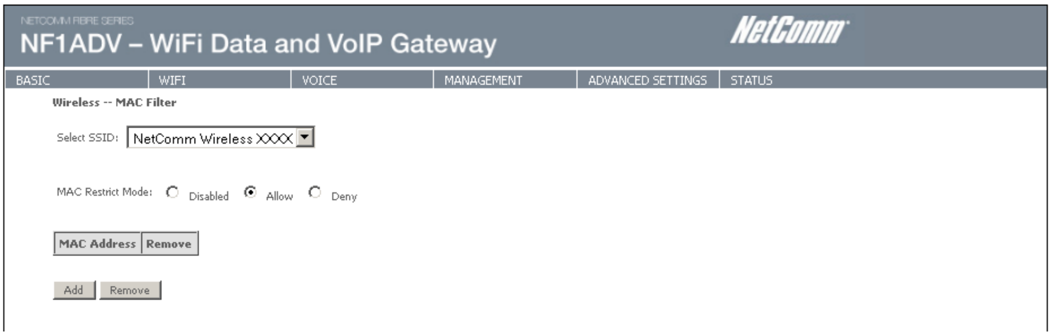
Table 8: Advanced - Wireless - Advanced Settings

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 of a wireless device's network card.

Setting the MAC restrict mode to Allow will allow only those wireless devices listed in the MAC filter table to connect to the router. All other wireless devices will not be able to connect via wireless to the router. Similarly, setting the MAC restrict mode to Deny will deny only those wireless devices listed in the MAC filter table to connect to the router. All other wireless devices will be able to connect with the router via wireless.

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.



NETCOMM FIBRE SERIES

NF1ADV – WiFi Data and VoIP Gateway

Wireless -- MAC Filter

Select SSID: NetComm Wireless XXXX

MAC Restrict Mode: ○ Disabled ● Allow ○ Deny

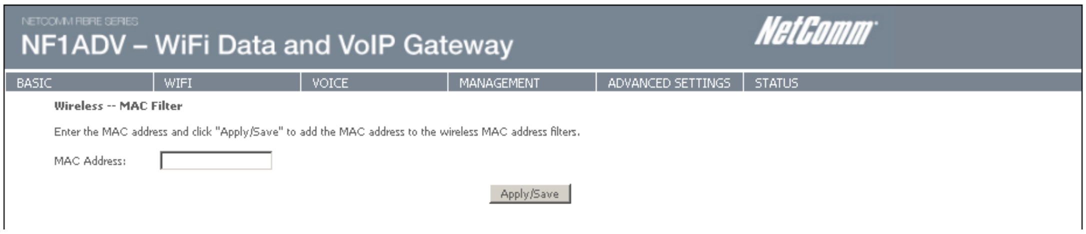
MAC Address	Remove

Figure 19: Wireless - MAC Filter

FIELD	DESCRIPTION
MAC Restrict Mode	Disabled – Disables MAC filtering. Allow – allows only those wireless devices listed in the MAC filter table to connect to the router. All other wireless devices will not be able to connect via wireless to the router. 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. All other wireless devices will be able to connect to the router via wireless.
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.

Table 9: Wireless - MAC Filter Settings

Enter the MAC address on the screen below using the following format: xx:xx:xx:xx:xx:xx



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NF1ADV – WiFi Data and VoIP Gateway

Wireless -- MAC Filter

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

MAC Address:

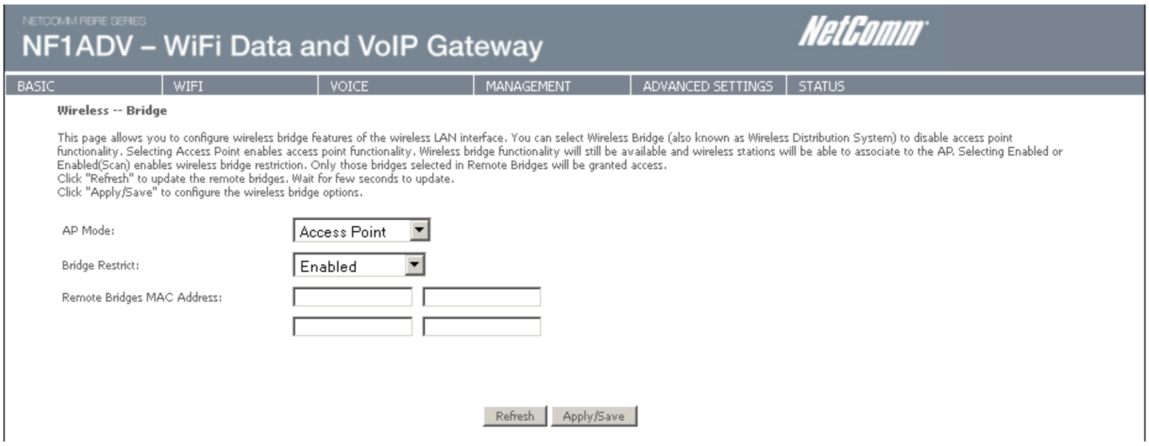
Figure 20: Wireless - Add MAC Filter

Press the Apply/Save button to save the MAC address to the MAC filter list.

Wireless Bridge

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

Click the Apply/Save button to implement new configuration settings.



Wireless -- Bridge

This page allows you to configure wireless bridge features of the wireless LAN interface. You can select Wireless Bridge (also known as Wireless Distribution System) to disable access point functionality. Selecting Access Point enables access point functionality. Wireless bridge functionality will still be available and wireless stations will be able to associate to the AP. Selecting Enabled or Enabled(Scan) enables wireless bridge restriction. Only those bridges selected in Remote Bridges will be granted access.
Click "Refresh" to update the remote bridges. Wait for few seconds to update.
Click "Apply/Save" to configure the wireless bridge options.

AP Mode: Access Point

Bridge Restrict: Enabled

Remote Bridges MAC Address:

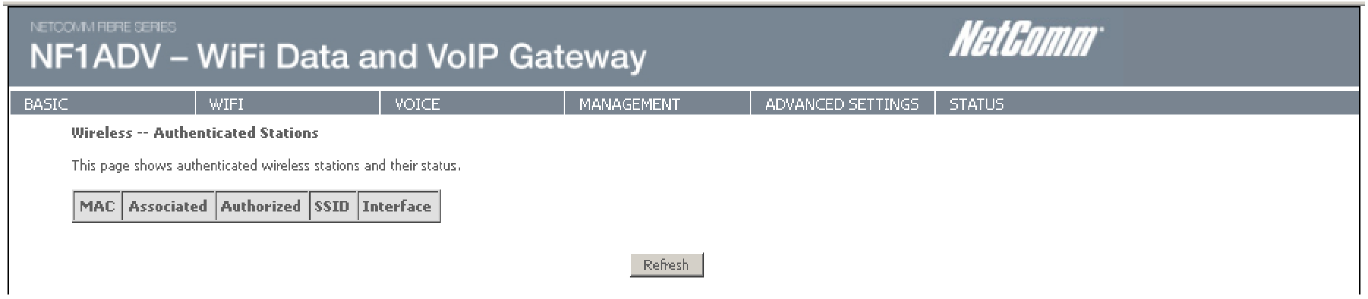
Figure 21: Wireless - Wireless Bridge

FIELD	DESCRIPTION
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 the Wireless Bridge restriction, which means that any wireless bridge will be granted access. Selecting Enabled or Enabled (Scan) turns the wireless bridge restriction on. Only those bridges selected in Remote Bridges will be granted access. Click Refresh to update the station list when Bridge Restrict is enabled.

Table 10: Wireless - Wireless Bridge

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 -- Authenticated Stations

This page shows authenticated wireless stations and their status.

MAC	Associated	Authorized	SSID	Interface

Figure 22: Wireless - Station Info

FIELD	DESCRIPTION
MAC	The MAC address of any connected wireless client.
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.
SSID	The SSID(Service Set Identifier) of your wireless network.
Interface	The wireless interface being used to connect to the network.

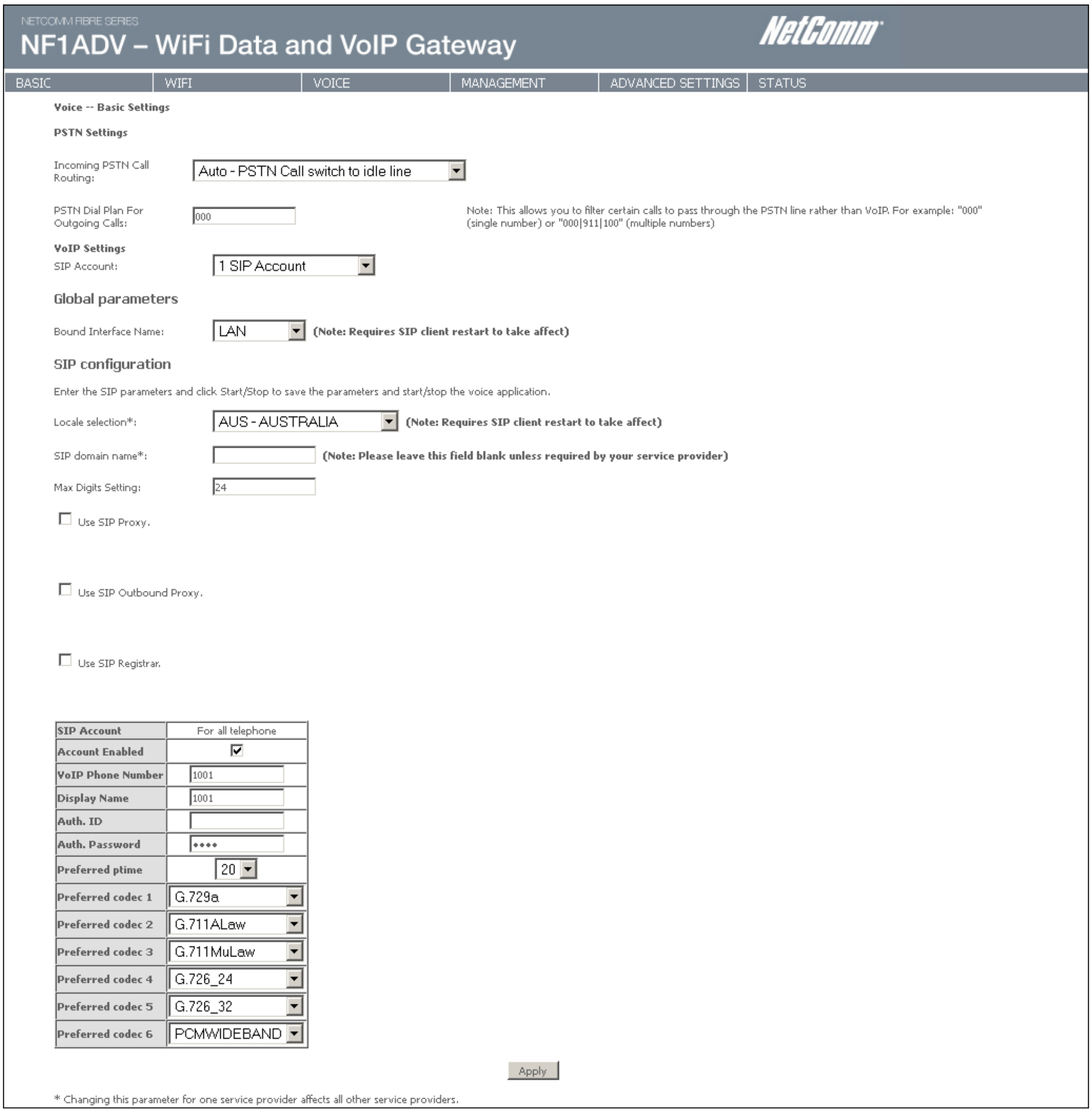
Table 11: Wireless - Station Info Settings

Voice

This section explains how to configure the VoIP settings of the NF1ADV.

SIP Basic Setting

The SIP Settings page is where you enter your VOIP service settings as supplied by your VOIP service provider (VSP). If you are unsure about a specific setting or have not been supplied information for a particular field, please contact your VOIP service provider to verify if this setting is needed or not.



Voice -- Basic Settings

PSTN Settings

Incoming PSTN Call Routing: Auto - PSTN Call switch to idle line

PSTN Dial Plan For Outgoing Calls: 000

Note: This allows you to filter certain calls to pass through the PSTN line rather than VoIP. For example: "000" (single number) or "000|911|100" (multiple numbers)

VoIP Settings

SIP Account: 1 SIP Account

Global parameters

Bound Interface Name: LAN **(Note: Requires SIP client restart to take affect)**

SIP configuration

Enter the SIP parameters and click Start/Stop to save the parameters and start/stop the voice application.

Locale selection*: AUS - AUSTRALIA **(Note: Requires SIP client restart to take affect)**

SIP domain name*: **(Note: Please leave this field blank unless required by your service provider)**

Max Digits Setting: 24

□ Use SIP Proxy.

□ Use SIP Outbound Proxy.

□ Use SIP Registrar.

SIP Account	For all telephone
Account Enabled	☑
VoIP Phone Number	1001
Display Name	1001
Auth. ID	
Auth. Password	••••
Preferred ptime	20
Preferred codec 1	G.729a
Preferred codec 2	G.711ALaw
Preferred codec 3	G.711MuLaw
Preferred codec 4	G.726_24
Preferred codec 5	G.726_32
Preferred codec 6	PCMWIDEBAND

* Changing this parameter for one service provider affects all other service providers.

Figure 23: VoIP - SIP Basic Setting

The individual fields shown above on the SIP Basic Settings page are explained in the table (*Table 12: Advanced – VoIP - SIP Basic Settings*) on the following page.

OPTION	DEFINITION
PSTN SETTINGS	
Incoming PSTN Call Routing	There are two options for how PSTN or non-VoIP calls will be routed. They are: • Auto – PSTN Call Switch to Idle Line. The PSTN call will be directed to any available handset. • Line - PSTN Call Switch to Physical Line. A small combo box appears for the router administrator to select a handset to receive all PSTN phone calls.
PSTN Dial Plan For Outgoing Calls	This field numbers can be entered as a prefix that will be automatically dialed before the user dials a phone number when using the PSTN line to make a phone call. To use the PSTN line to make a phone call dial ## and then the phone number.
VoIP SETTINGS	
SIP Account	This field gives the option of selecting a single VoIP account configuration or multiple VoIP account configurations. Please note multiple VoIP accounts can only be configured using one VoIP Service Provider.
Bound interface Name	Select the Interface that the VoIP account will use to make a connection to the VoIP Service Provider.
SIP SETTINGS	
Locale Selection	The locale selection establishes the type of codec and the dial and ring tones for a given country.
SIP Domain Name	Enter the SIP domain name or IP address of your VoIP Service Provider here.
Max Digits Setting	Enter the maximum number of digits that a phone number can have.
Use SIP Proxy	Select this option if required by your VoIP Service Provider. Enter the SIP Proxy Domain Name and SIP Proxy Port which is typically 5060.
Use SIP Outbound Proxy	Select this option if required by your VoIP Service Provider. Enter the SIP Proxy Domain Name and SIP Proxy Port which is typically 5060.
Use SIP Registrar	Select this option if required by your VoIP Service Provider. Enter the SIP Proxy Domain Name and SIP Proxy Port which is typically 5060.
Account Enabled	Use this option to enable or disable the VoIP account.
VoIP Phone Number	Enter the VoIP phone number as supplied to you by your VoIP Service Provider.
Display Name	Enter the Display Name as supplied to you by your VoIP Service Provider. This can be your VoIP Phone Number.
Auth ID	Enter the Authorisation ID as supplied to you by your VoIP Service Provider.
Auth Password	Enter the Authorisation Password as supplied to you by your VoIP Service Provider.
Preferred ptime	The 'Preferred ptime' is the time delay in milliseconds between voice packets sent. You may wish to change this setting depending on the account performance.
Preferred Codec 1 – 6	A codec is a method of compressing speech. More compression requires less bandwidth but can sound worse. Typically, a phone will have a preferred codec, but will work with others. Use the codec recommended by your service provider.

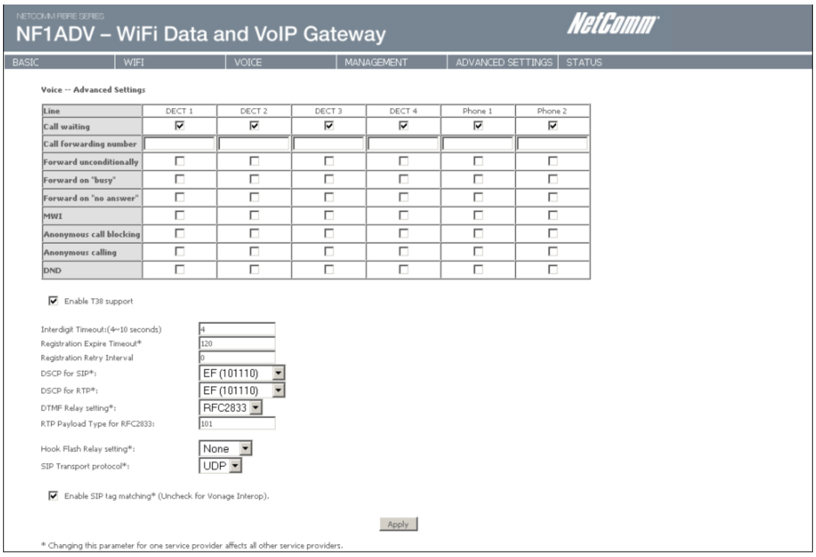
Table 13: Advanced – VoIP – SIP Basic Settings

After entering your VoIP settings press the Apply button. Select Management > Save/Reboot and press the Reboot button. Once the router restarts if there is a valid internet connection and the VoIP account settings are valid the VoIP service will start.

To check if the VoIP service is working check your phone handset for a dial tone or navigate to Basic > Home and check that the DECT and Phone registration status is displaying “Up” in the router web interface.

SIP Advanced

The SIP Advanced page allows you to configure settings that your VoIP service provider has enabled on your SIP account and if you have the appropriate call features and other functionality on your cordless or corded phone handsets.



NETCOMM FIBRE SERIES

NF1ADV – WiFi Data and VoIP Gateway

Voice -- Advanced Settings

Line	DECT 1	DECT 2	DECT 3	DECT 4	Phone 1	Phone 2
Call waiting	☑	☑	☑	☑	☑	☑
Call forwarding number						
Forward unconditionally	□	□	□	□	□	□
Forward on "busy"	□	□	□	□	□	□
Forward on "no answer"	□	□	□	□	□	□
MWI	□	□	□	□	□	□
Anonymous call blocking	□	□	□	□	□	□
Anonymous calling	□	□	□	□	□	□
DND	□	□	□	□	□	□

☑ Enable T38 support

Interdigit Timeout:(4~10 seconds) 4
Registration Expire Timeout* 120
Registration Retry Interval 0
DSCP for SIP*: EF (101110)
DSCP for RTP*: EF (101110)
DTMF Relay setting*: RFC2833
RTP Payload Type for RFC2833: 101

Hook Flash Relay setting*: None
SIP Transport protocol*: UDP

☑ Enable SIP tag matching* (Uncheck for Vonage Interop).

* Changing this parameter for one service provider affects all other service providers.

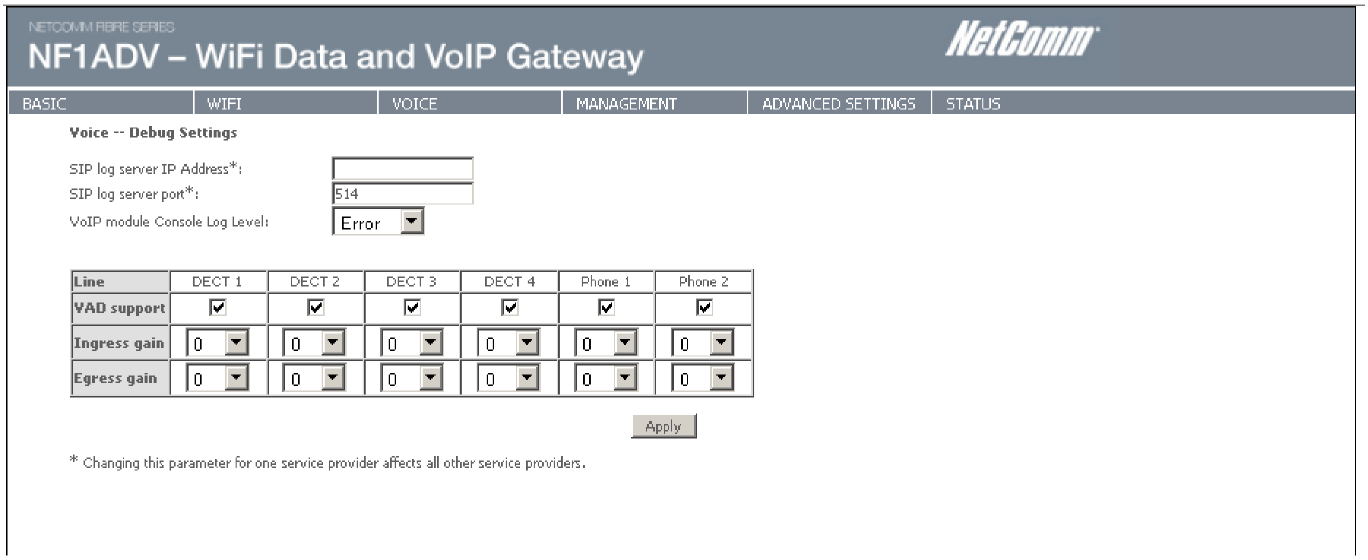
Figure 24: VoIP - Advanced - Service Provider

OPTION	DEFINITION
Call Waiting	Select this option for your phone if your VoIP Service Provider has enabled Call Waiting on your SIP account.
Call Forwarding Number	Enter the phone number to be forwarded to if your VoIP Service Provider has enabled Call Waiting on your SIP account and you wish to use this feature.
Forward Unconditionally	Select this option if your VoIP Service Provider has enabled Call Forwarding on your SIP account and you wish to use this feature.
Forward On “Busy”	Select this option if your VoIP Service Provider has enabled Call Forwarding on your SIP account and you wish to use this feature.
Forward On “No Answer”	Select this option if your VoIP Service Provider has enabled Call Forwarding on your SIP account and you wish to use this feature.
MWI (Message Waiting Indicator)	Select this option if your VoIP Service Provider has enabled MWI (Message Waiting Indicator) on your SIP account and you wish to use this feature.
Anonymous Call Blocking	Select this option if your VoIP Service Provider has enabled Anonymous Call Blocking on your SIP account and you wish to use this feature.
Anonymous Calling	Select this option if your VoIP Service Provider has enabled Anonymous Calling on your SIP account and you wish to use this feature.
DND (Do Not Disturb)	Select this option if your VoIP Service Provider has enabled DND (Do Not Disturb) on your SIP account and you wish to use this feature.
Enable T38 Support	Select this function if you wish to send or receive faxes via VoIP and have a fax machine capable of using the T38 fax over VoIP protocol.
Interdigit Timeout	The time in seconds before which a number must be dialed or become an invalid number.
Registration Expire Timeout	The time in minutes for the SIP registered will be renewed.
Registration Retry Interval	The time in minutes before the SIP settings will attempt to be registered.
DSCP for SIP	DSCP (Differentiated Services Code Point) for SIP (Session Initiation Protocol) relates to QoS (Quality of Service) settings. Only use this field if directed by your network administrator.
DSCP for RTP	DSCP (Differentiated Services Code Point) for RTP (Real Time Protocol) relates to QoS (Quality of Service) settings. Only use this field if directed by your network administrator.
DTMF Relay Settings	Dual-tone Multi-frequency Relay (DTMF) is the mechanism whereby a local Voice over IP (VOIP) gateway listens for DTMF digits (during a call), and then sends them uncompressed as either RTP or H.245 packets to the remote VOIP gateway, which regenerates DTMF digits and prevents digit loss due to compression.
RTP Payload Type for RFC2833	The Real Time Protocol Payload type for RFC2833. RFC2833 is a standards-based mechanism used to send DTMF digits in-band (RTP) that is supported by many vendors in the industry.
Hook Flash Relay Setting	A hookflash is a brief interruption in the loop current on loopstart trunks that the attached system does not interpret as a call disconnect. Once the PBX or PSTN senses the hookflash, it generally puts the current call on hold and provides a secondary dial tone or access to other features such as transfer or call waiting access. A hookflash is done by momentarily pressing down the cradle on a telephone. Some telephone handsets have a button called 'flash' or 'recall' that sends a 'timed loop break', or 'calibrated flash' which is a hookflash that has a precise timing.
SIP Transport Protocol	The protocol used to transport SIP traffic. This is almost always UDP.
Enable SIP Tag Matching	Select this option to enable SIP Tag Matching.

Table 14: VoIP - Advanced - Service Provider

SIP Debug Settings

This page allows you to set the IP address where the SIP Log data for the router VoIP account settings will be sent to and the port number through which it will be sent.



Voice -- Debug Settings

SIP log server IP Address*:

SIP log server port*: 514

VoIP module Console Log Level: Error

Line	DECT 1	DECT 2	DECT 3	DECT 4	Phone 1	Phone 2
VAD support	☑	☑	☑	☑	☑	☑
Ingress gain	0	0	0	0	0	0
Egress gain	0	0	0	0	0	0

* Changing this parameter for one service provider affects all other service providers.

Figure 25: VoIP - Debug Settings

OPTION	DEFINITION
SIP Log Server IP Address	Enter the IP address where the SIP Log data for the router's currently saved VoIP account settings will be sent to.
SIP Log Server port	Enter the port to be used for transmitting the SIP Log data for the router's currently saved VoIP account settings.
VoIP Module Console Log Level	Select the type of debug messages you would like to receive. The options are: • Error. Only error messages will be logged. • Notice. Only Notice messages will be logged. • Debug. All messages will be logged.
VAD Support	Select to enable Voice Activated Dialing for a given phone handset.
Ingress Gain	The incoming signal amplitude can be controlled with this field. Combined with the Egress gain a ratio can be expressed of input to output. The Ingress Gain setting can help improve the quality of the VoIP line, and can influence call volumes and help eliminate echoes.
Egress Gain	The outgoing signal amplitude can be controlled with this field. Combined with the Ingress gain a ratio can be expressed of input to output. The Egress Gain setting can help improve the quality of the VoIP line, and can influence call volumes and help eliminate echoes.

Table 15: VoIP - Debug Settings

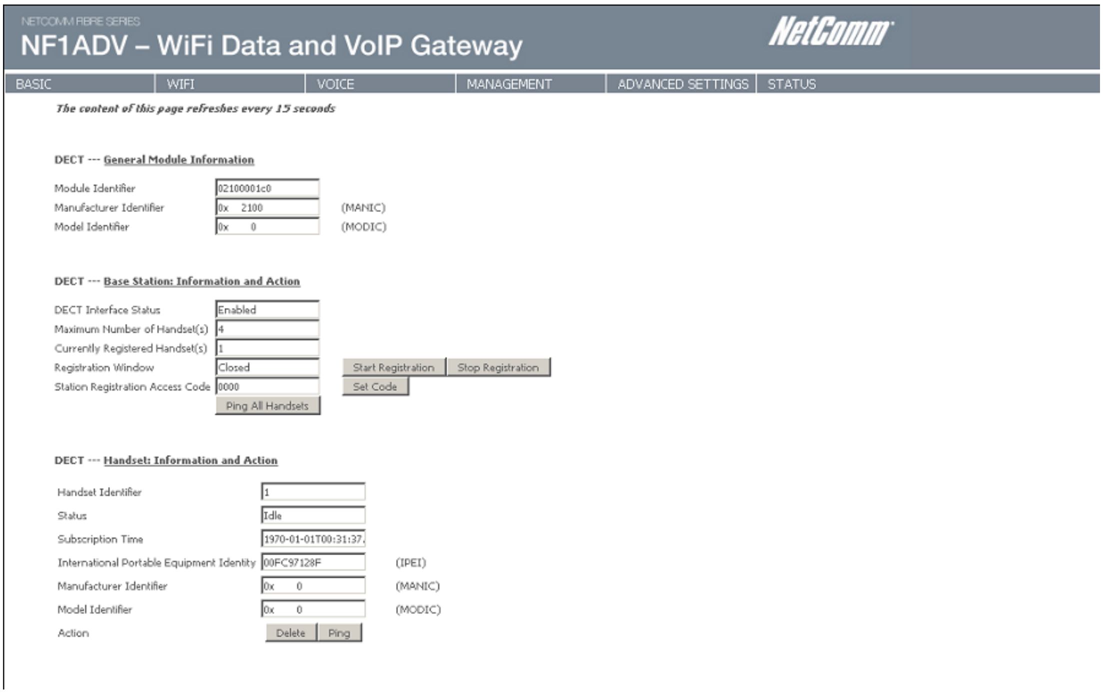
Adjusting Call Quality with the Ingress/Egress Gain Settings

If your call quality is poor with heavy echo and lag times try setting the Ingress Gain value to less than 0. With less ingress the sound volume will be lower but should reduce line echo. The optimum quality to try to attain is clarity of audio signal both incoming and outgoing, with good call volume and little perceived echo or distortion. However the values to use will vary and are dependent on network bandwidth, associated hardware and software codecs used.

- Carry out test call trials starting with both the Ingress and Egress Gain set to about –10. Values of -1 to -11 should provide a clear audio stream with low echo and distortion.
- Continue to lower the value one setting at a time, using increments of two or three.
- Make test calls until the echo is moderated.

DECT

The NF1ADV DECT settings page displays status information and allows for DECT cordless phones to be registered to the router's on-board DECT base station. The NF1ADV can function as a DECT (Digital Enhanced Cordless Telecommunications) base station for up to 4 cordless phones for both VoIP or PSTN calling.



The content of this page refreshes every 15 seconds

DECT --- General Module Information

Module Identifier: 02100001c0
Manufacturer Identifier: 0x 2100 (MANIC)
Model Identifier: 0x 0 (MODIC)

DECT --- Base Station: Information and Action

DECT Interface Status: Enabled
Maximum Number of Handset(s): 4
Currently Registered Handset(s): 1
Registration Window: Closed
Station Registration Access Code: 0000

DECT --- Handset: Information and Action

Handset Identifier: 1
Status: Idle
Subscription Time: 1970-01-01T00:31:37.
International Portable Equipment Identity: 00FC97128F (IPEI)
Manufacturer Identifier: 0x 0 (MANIC)
Model Identifier: 0x 0 (MODIC)
Action

Figure 26: VoIP – DECT

OPTION	DEFINITION
DECT – General Module Information	
Module Identifier	The MAC address of the DECT base station.
Manufacturer Identifier	This is an 8 bit unique ID of the DECT base station in the form of an EMC (Equipment Manufacturer Code).
Model Identifier	This is an8 bit model ID that is unique for the DECT base station model and associated firmware version.
DECT – Base Station: Information and Action	
DECT Interface Status	This field shows whether the DECT base station is enabled or disabled.
Maximum Number of Handsets	This field shows the number of DECT cordless phones that can be connected to the DECT base station at one time.
Currently Registered handsets	This field shows the number of DECT cordless phones that can are currently connected to the DECT base station.
Registration Window	Use this field when registering a DECT cordless phone to the router.
Station Registration Access Code	To set the access code, enter 4 numbers and press the Set Code button. Only DECT cordless phones that use the correct access code can connect to the DECT base station and so use your network bandwidth. We recommend not using the default "0000" value.
DECT – Handset: Information and Action	
Handset Identifier	This field shows the DECT handset number as set in the DECT base station settings on handset was registration.
Status	This field shows the current status of the DECT handset connection.
Subscription Time	This field shows the date and time that the DECT handset was connected.
International Portable Equipment Identity (IPEI)	A 36 bit unique identifier of the DECT handset.
Manufacturer Identifier	This is an 8 bit unique ID of the DECT handset in the form of an EMC (Equipment Manufacturer Code).
Model Identifier	This is an8 bit model ID that is unique for the DECT handset model and associated firmware version.

Table 16: VoIP - DECT Settings

Connecting a Cordless Phone to the DECT Base Station

1. In the NF1ADV web interface select VOICE > DECT.
2. Set a 4 digit Station Registration Access Code and press the Set Code button.
3. On your DECT cordless phone navigate to the Base Registration Setting in the Advanced Settings.
4. If prompted set the DECT phone to handset “X” where “X” is the number of DECT handsets + 1 that are already connected to the NF1ADV DECT base station.
5. Press the DECT button on the router for 5 seconds or press the Start Registration button in the DECT page of the NF1ADV web interface.
6. If the router detects the phone correctly you should now be prompted for a registration pin on the DECT handset. Enter the Station registration Access Code you set in Step 2 into the Cordless Phone and press Ok or Apply.
7. The cordless phone will give recognition that it is connected to the router’s DECT base station in the form of an audio beep or test message in the handset’s interface.
8. Press the Ping All Handsets button to verify the handset is connected to the base station. The DECT phone should produce a series of audio sounds if the DECT phone is still communicating with the NF1ADV DECT base station.

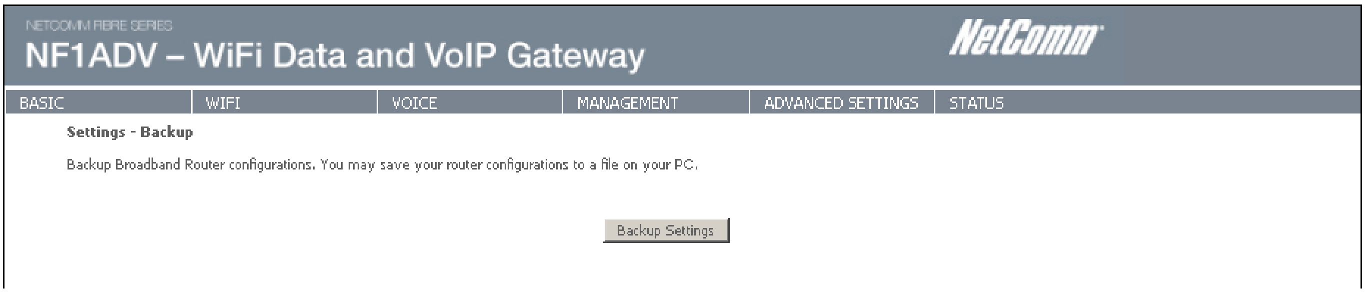
Management

Device Settings

The Device Settings screens allow you to back up, retrieve and restore the default settings of your Router. It also provides a function for you to update your router's firmware.

Backup

The following screen appears when Backup is selected. Click the Backup Settings button to save the current configuration settings. You will be prompted for the location to save the backup file to on your PC.



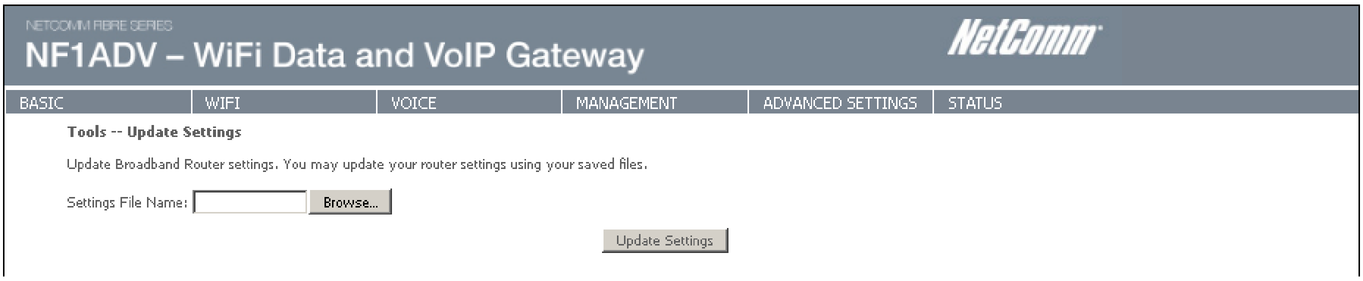
Settings - Backup

Backup Broadband Router configurations. You may save your router configurations to a file on your PC.

Figure 27: Management - Device Settings – Backup

Update Settings

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



Tools -- Update Settings

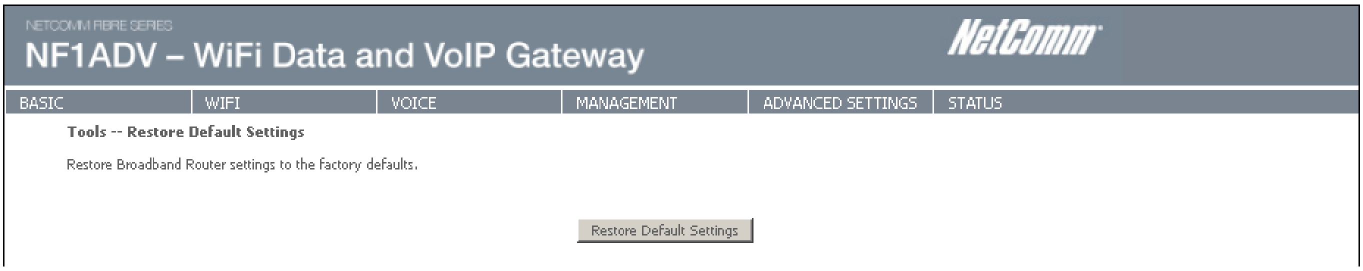
Update Broadband Router settings. You may update your router settings using your saved files.

Settings File Name:

Figure 28: Management - Device Settings - Update Settings

Restore Default

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



Tools -- Restore Default Settings

Restore Broadband Router settings to the factory defaults.

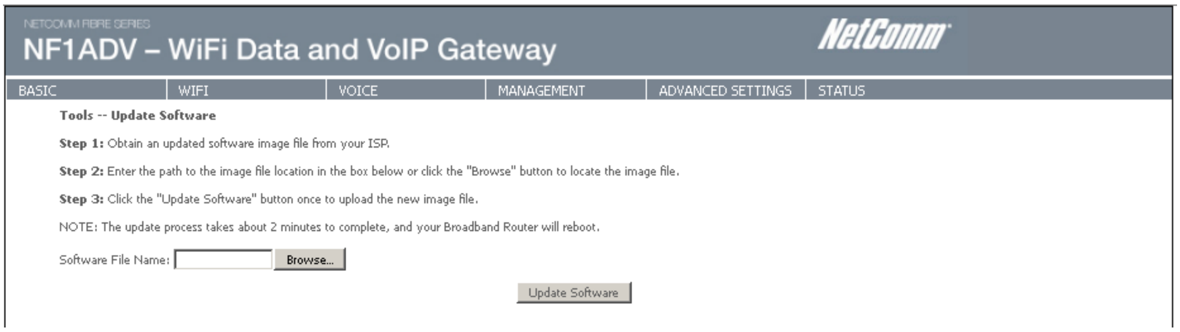
Figure 29: Management - Device Settings - Restore Default Settings

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.

Update Firmware

The following screen appears when selecting the Update Firmware option from the Management > Device Settings menu. 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.

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.



Tools -- Update Software

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.

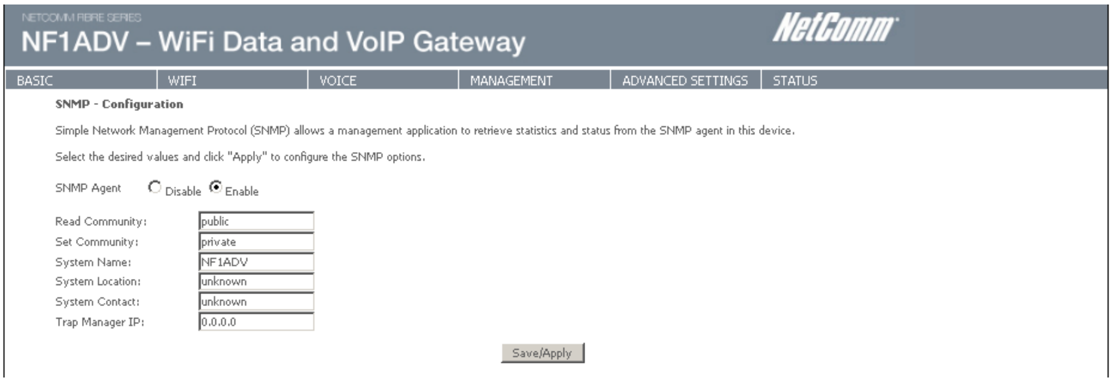
NOTE: The update process takes about 2 minutes to complete, and your Broadband Router will reboot.

Software File Name:

Figure 30: Management - Device Settings - Update Software

SNMP

The Simple Network Management Protocol (SNMP) allows a network administrator to monitor a network by retrieving settings on remote network devices. To do this, the administrator typically runs an SNMP management station program such as MIB browser on a local host to obtain information from the SNMP agent, in this case the NF1ADV (if SNMP is enabled). An SNMP 'community' performs the function of authenticating SNMP traffic. A 'community name' acts as a password that is typically shared among SNMP agents and managers.



SNMP - Configuration

Simple Network Management Protocol (SNMP) allows a management application to retrieve statistics and status from the SNMP agent in this device.

Select the desired values and click "Apply" to configure the SNMP options.

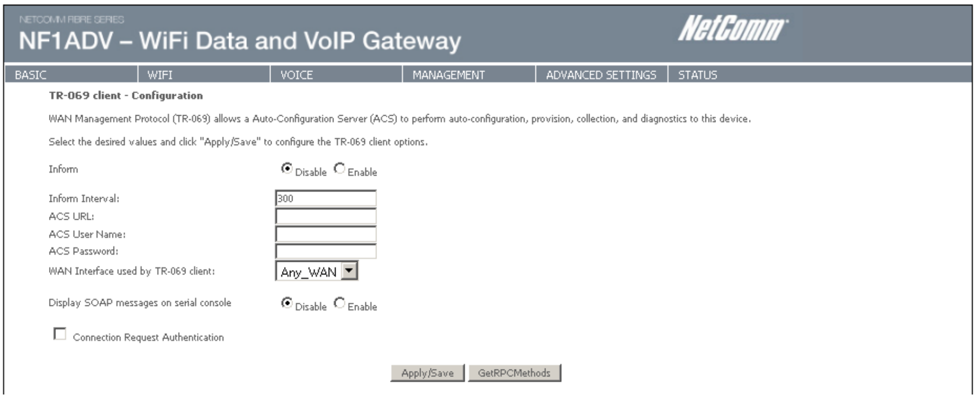
SNMP Agent ○ Disable ● Enable

Read Community:	public
Set Community:	private
System Name:	NF1ADV
System Location:	unknown
System Contact:	unknown
Trap Manager IP:	0.0.0.0

Figure 31: Management - Device Settings – SNMP

TR-069 Client

TR-069 enables provisioning, auto-configuration or diagnostics to be automatically performed on your router if supported by your Internet Service Provider (ISP).



TR-069 client - Configuration

WAN Management Protocol (TR-069) allows a Auto-Configuration Server (ACS) to perform auto-configuration, provision, collection, and diagnostics to this device.

Select the desired values and click "Apply/Save" to configure the TR-069 client options.

Inform ● Disable ○ Enable

Inform Interval: 300
ACS URL:
ACS User Name:
ACS Password:
WAN Interface used by TR-069 client: Any_WAN

Display SOAP messages on serial console ● Disable ○ Enable

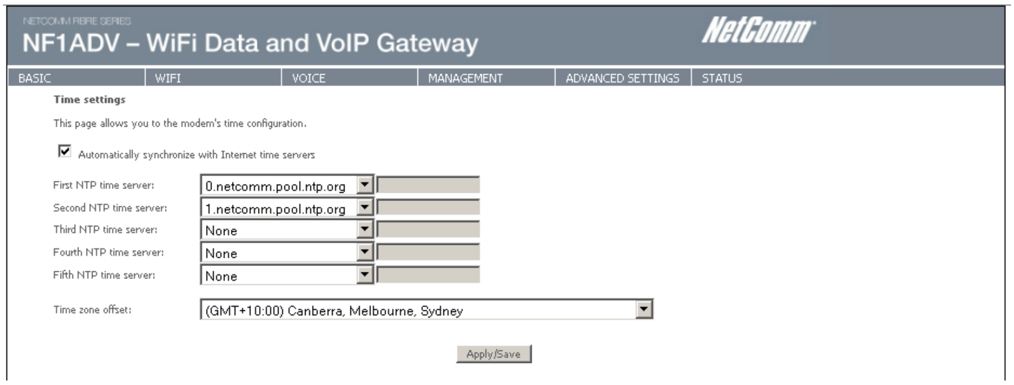
□ Connection Request Authentication

Figure 32: Management - TR-069

FIELD	DESCRIPTION
Inform	Set to enable to activate TR-069 client settings.
Inform interval	Time in seconds that data is sent to the Auto-Configuration Server (ACS).
ACS URL	The address where the ACS server is located.
ACS User Name	The user name to access the ACS server.
ACS Password	The password to access the ACS server.
WAN Interface used by TR-069 Client	The connection used to send and receive data to the ACS server.

SNTP

This interface allows you to configure the time settings of the NF1ADV.



Time settings

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

☑ Automatically synchronize with Internet time servers

First NTP time server: 0.netcomm.pool.ntp.org
Second NTP time server: 1.netcomm.pool.ntp.org
Third NTP time server: None
Fourth NTP time server: None
Fifth NTP time server: None

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

Figure 33: Management – SNTP

FIELD	DESCRIPTION
First NTP Time Server	Select the required internet time server.
Second NTP Time Server	Select a second time server if required.
Time Zone Offset	Set the local time zone.

Table 17: Management – SNTP

NOTE: SNTP must be activated to use Parental Control.

Access Control

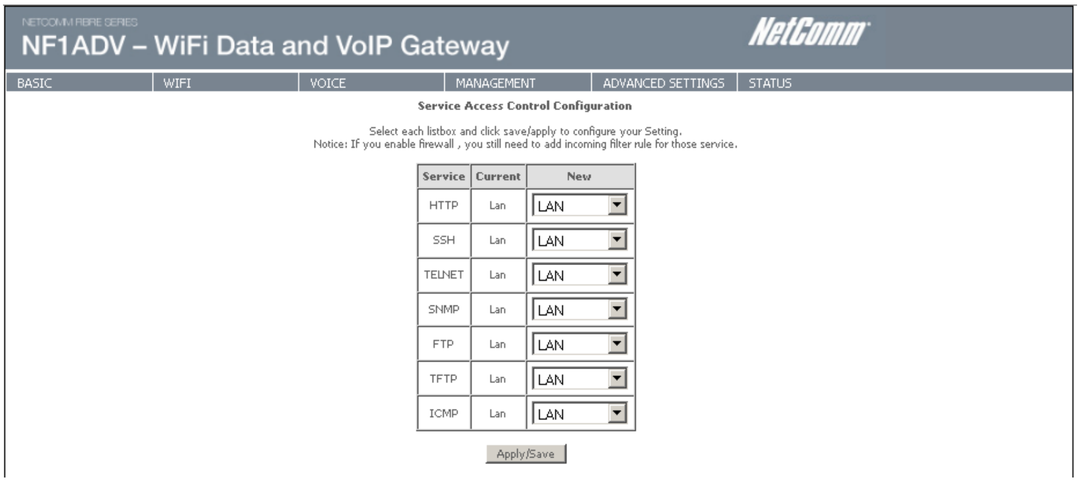
The Access Control option found in the Management drop down menu configures access related parameters in the following three areas:

- Services
- Passwords

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

Services

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



Service Access Control Configuration

Select each listbox and click save/apply to configure your Setting.
Notice: If you enable firewall , you still need to add incoming filter rule for those service.

Service	Current	New
HTTP	Lan	LAN
SSH	Lan	LAN
TELNET	Lan	LAN
SNMP	Lan	LAN
FTP	Lan	LAN
TFTP	Lan	LAN
ICMP	Lan	LAN

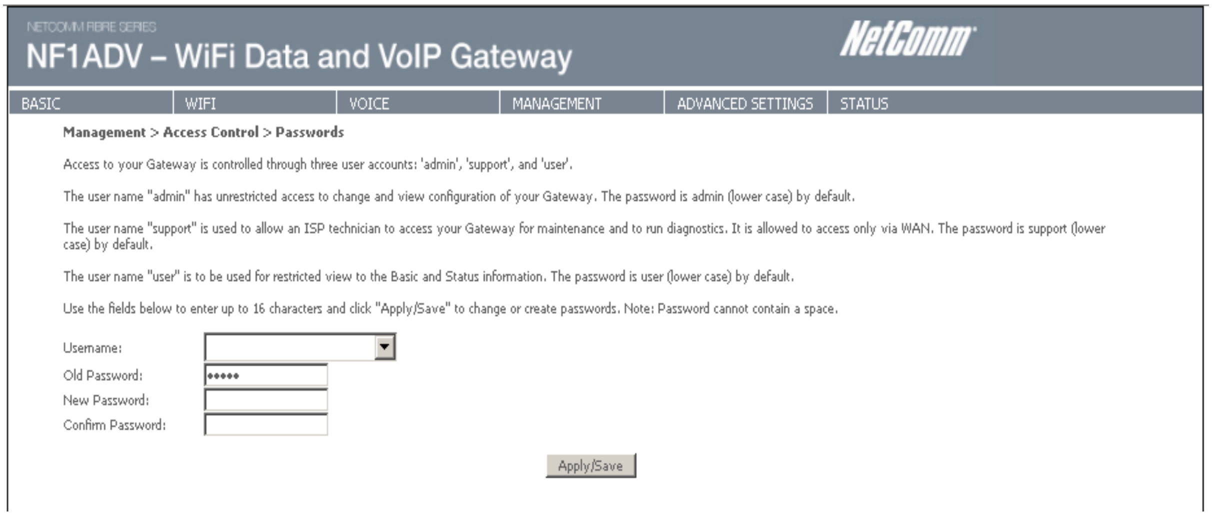
Figure 34: Management - Access Control – Services

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 the Apply/Save button after making any changes to continue.



Management > Access Control > Passwords

Access to your Gateway is controlled through three user accounts: 'admin', 'support', and 'user'.

The user name "admin" has unrestricted access to change and view configuration of your Gateway. The password is admin (lower case) by default.

The user name "support" is used to allow an ISP technician to access your Gateway for maintenance and to run diagnostics. It is allowed to access only via WAN. The password is support (lower case) by default.

The user name "user" is to be used for restricted view to the Basic and Status information. The password is user (lower case) by default.

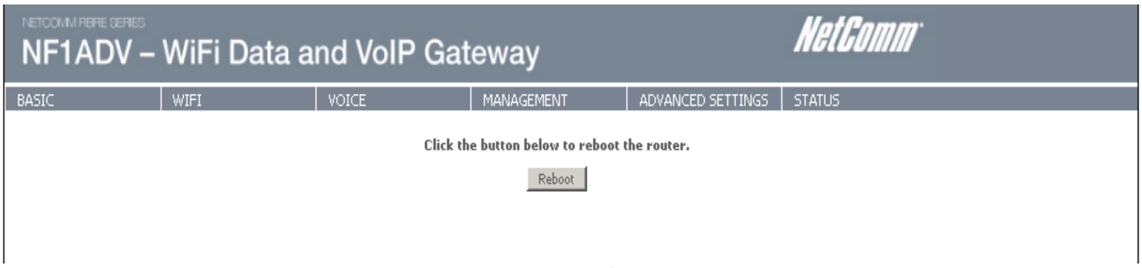
Use the fields below to enter up to 16 characters and click "Apply/Save" to change or create passwords. Note: Password cannot contain a space.

Username:	
Old Password:	•••••
New Password:	
Confirm Password:	

Figure 35: Management - Access Control - Passwords

Save/Reboot

This option saves the current configuration settings and reboots the NF1ADV router.



Click the button below to reboot the router.

Figure 36: Management - Save/Reboot

NOTE 1: 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.

NOTE 2: 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.

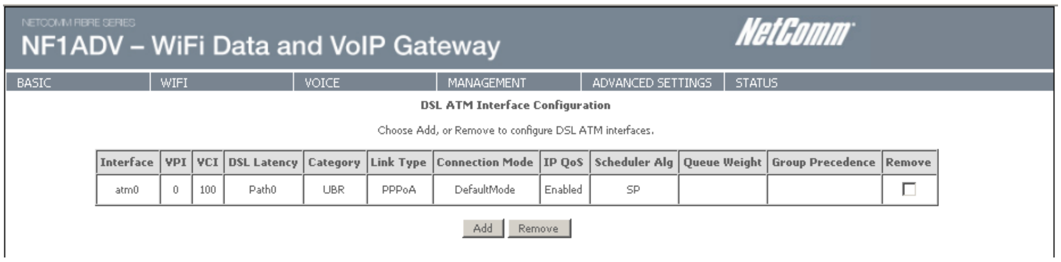
Advanced Settings

Layer 2 Interface

Layer 2 refers to the data link layer of the Open Systems Interconnection model (OSI model) which provides the functional and procedural means to transfer data between network entities and to detect and possibly correct errors that may occur in the physical layer.

ATM Interface

The ATM interface page shows the settings of all available DSL ATM interfaces.



DSL ATM Interface Configuration

Choose Add, or Remove to configure DSL ATM interfaces.

Interface	VPI	VCI	DSL Latency	Category	Link Type	Connection Mode	IP QoS	Scheduler Alg	Queue Weight	Group Precedence	Remove
atm0	0	100	Path0	UBR	PPPoA	DefaultMode	Enabled	SP			□

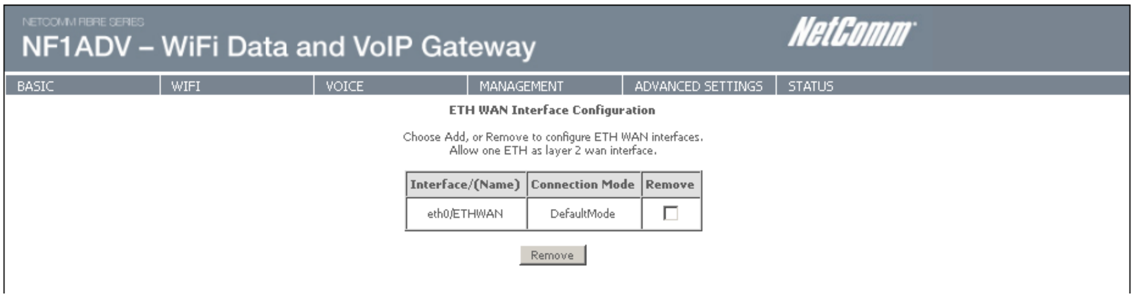
Figure 37: Advanced - Layer 2 Interface - ATM Interface

FIELD	DESCRIPTION
Interface	This field shows the interface name.
VPI	This field shows the Virtual Path Identifier (VPI) value. For most Australia connections the VPI is 8, for most new Zealand connections the VPI is 0.
VCI	This field shows the Virtual Channel Identifier (VCI) value. For most Australia connections the VCI is 35, for most new Zealand connections the VCI is 100.
DSL Latency	The value of the DSL Latency.
Category	This field shows the ATM service classes.
Link Type	This field shows the type of link in use.
Connection Mode	This field shows the selected mode of connection.
QoS	This field shows the status of the Quality of Service (QoS) function.
Remove	Select this field to remove the ATM configuration.

Figure 38: Advanced - Layer 2 Interface - ATM Interface Settings

Ethernet WAN Interface

This page allows you to configure the Ethernet WAN Interface settings.



ETH WAN Interface Configuration

Choose Add, or Remove to configure ETH WAN interfaces.
Allow one ETH as layer 2 wan interface.

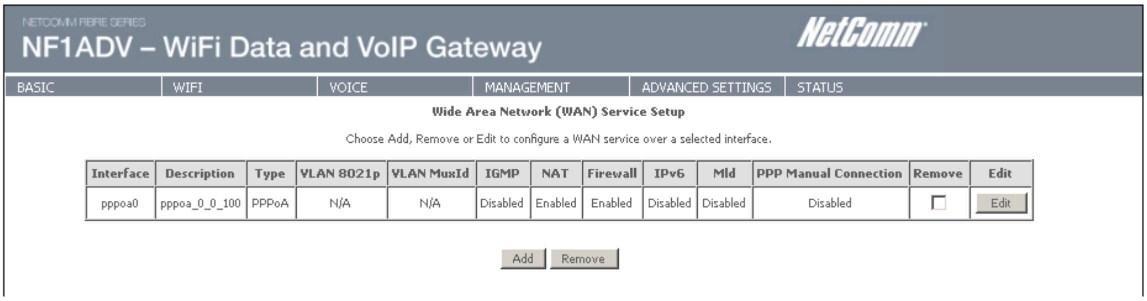
Interface/(Name)	Connection Mode	Remove
eth0/ETHWAN	DefaultMode	□

Figure 39: Advanced - Layer 2 Interface - Ethernet WAN Interface

WAN Service

Select WAN Service from the Advanced menu to display the status of all configured PVC(s).

A new PVC can be added or an existing entry can be edited from this page.



Wide Area Network (WAN) Service Setup

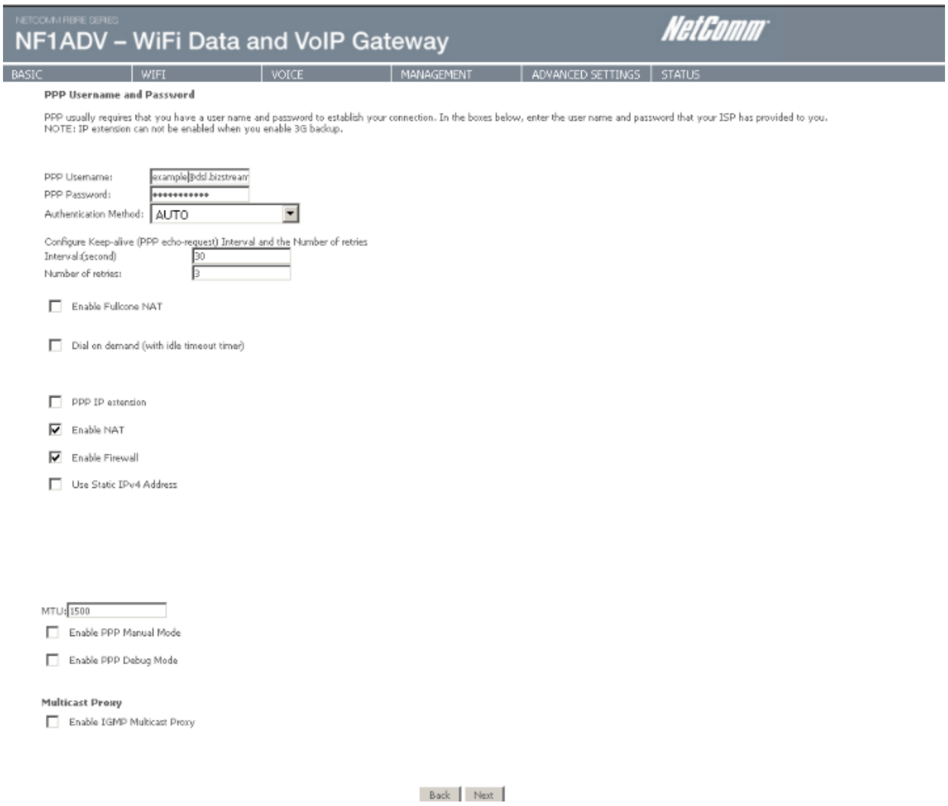
Choose Add, Remove or Edit to configure a WAN service over a selected interface.

Interface	Description	Type	VLAN 8021p	VLAN MuxId	IGMP	NAT	Firewall	IPv6	Mld	PPP Manual Connection	Remove	Edit
pppoa0	pppoa_0_0_100	PPPoA	N/A	N/A	Disabled	Enabled	Enabled	Disabled	Disabled	Disabled	□	Edit

Figure 40: Advanced - WAN Service

FIELD	DESCRIPTION
Interface	This field shows the interface name that the PVC uses.
Description	A descriptive name assigned to the PVC.
Type	This field shows what type of connection the PVC is.
VLAN802.1p	The VLAN tag of the PVC (if applicable).
VLANMuxID	The MUX Server ID of the selected PVC.
IGMP	This field indicates whether IGMP multicast traffic is enabled or disabled for the selected PVC.
NAT	This field indicates whether Network Address Translation (NAT) is enabled or disabled.
Firewall	This field indicates whether the inbuilt firewall is enabled or disabled for the selected PVC.
IPv6	The status of Internet Protocol (IP) version 6 configuration on the WAN Service.
Mld	Multicast Listener Discovery (MLD) is a component of the Internet Protocol version 6 (IPv6) suite. MLD is used by IPv6 routers for discovering multicast listeners on attached links, much like IGMP is used in IPv4. The protocol is embedded in ICMPv6 instead of using a separate protocol.
PPP Manual Connection	This field advises whether the Point to Point Protocol is Manually configured.

Table 18: Advanced - WAN Service Settings



NETCOMM FIBRE SERIES
NF1ADV – WiFi Data and VoIP Gateway
NetComm
BASIC | WIFI | VOICE | MANAGEMENT | ADVANCED SETTINGS | STATUS

PPP Username and Password

PPP usually requires that you have a user name and password to establish your connection. In the boxes below, enter the user name and password that your ISP has provided to you.
NOTE: IP extension can not be enabled when you enable 3G backup.

PPP Username: example@dsl.bizstream
PPP Password: ••••••••••••
Authentication Method: AUTO

Configure Keep-alive (PPP echo-request) Interval and the Number of retries
Interval (second) 30
Number of retries: 3

□ Enable Fullcone NAT

□ Dial on demand (with idle timeout timer)

□ PPP IP extension

☑ Enable NAT

☑ Enable Firewall

□ Use Static IPv4 Address

MTU: 1500

□ Enable PPP Manual Mode

□ Enable PPP Debug Mode

Multicast Proxy

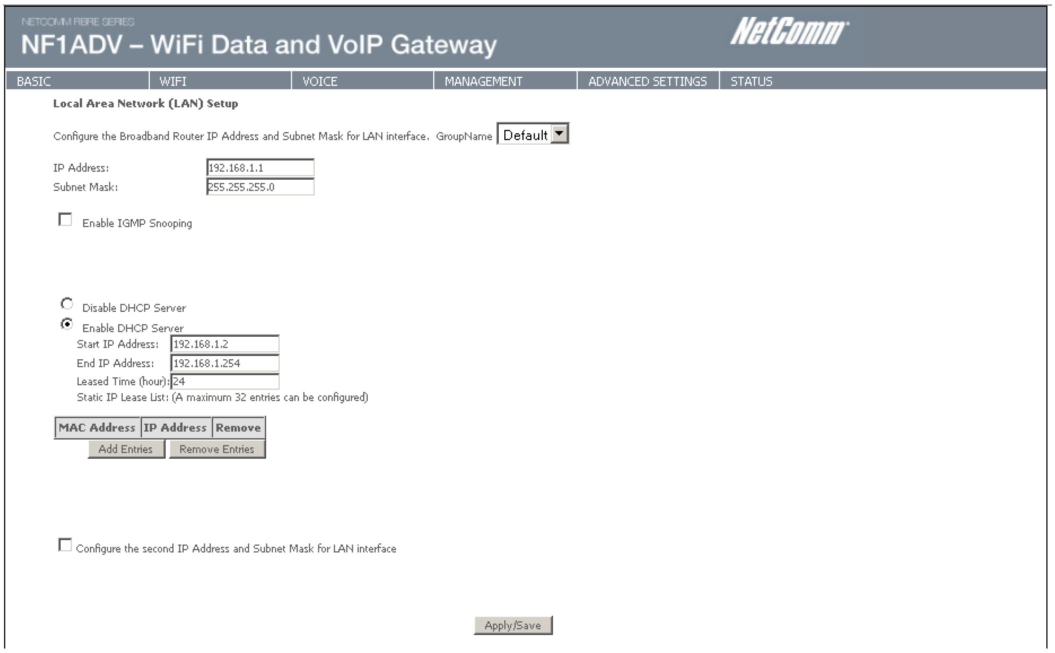
□ Enable IGMP Multicast Proxy

Figure 41: Advanced - WAN Service - PPP Settings

FIELD	DESCRIPTION
PPP Username	Enter your broadband username as supplied by your Internet Service Provider (ISP) into this field.
PPP Password	Enter your broadband password as supplied by your Internet Service Provider (ISP) into this field.
Authentication Method	The type of authentication the connection uses. If you are unsure which option to use select the AUTO option.
Interval(seconds)	Enter the interval in seconds that connection will be tested for the keep alive function.
Number of Retries	Enter the number of retries the router keep alive function will make if the connection fails.
Enable Fullcone NAT	Enable 1 to 1 mapping of an IP address and port to an internal host.
Dial on Demand (with idle timeout timer)	With this field selected the router will Initiate an internet connection when data traffic bound for the internet passes through the router.
PPP IP Extension	Enable PPP IP Extension for this connection (if supported by your ISP).
Enable NAT	Enable Network Address Translation (NAT) for this connection. This field is required for the DHCP server to be configured.
Enable Firewall	Enable the inbuilt firewall for this connection.
Use Static IPv4 Address	Use a Static IP Address (as supplied by your ISP) for this connection.
MTU	Set the MTU (Maximum Transmit Unit) size.
Enable PPP Manual Mode	Use this field to configure and initiate a PPP connection manually.
Enable PPP Debug Mode	Enable extended PPP logging for this connection.
Enable IGMP Multicast Proxy	Enable IPV6 IGMP Multicast support for the WAN service.

LAN

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



Local Area Network (LAN) Setup

Configure the Broadband Router IP Address and Subnet Mask for LAN interface. GroupName Default ▾

IP Address: 192.168.1.1

Subnet Mask: 255.255.255.0

□ Enable IGMP Snooping

○ Disable DHCP Server

● Enable DHCP Server

Start IP Address: 192.168.1.2

End IP Address: 192.168.1.254

Leased Time (hour): 24

Static IP Lease List: (A maximum 32 entries can be configured)

MAC Address	IP Address	Remove

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

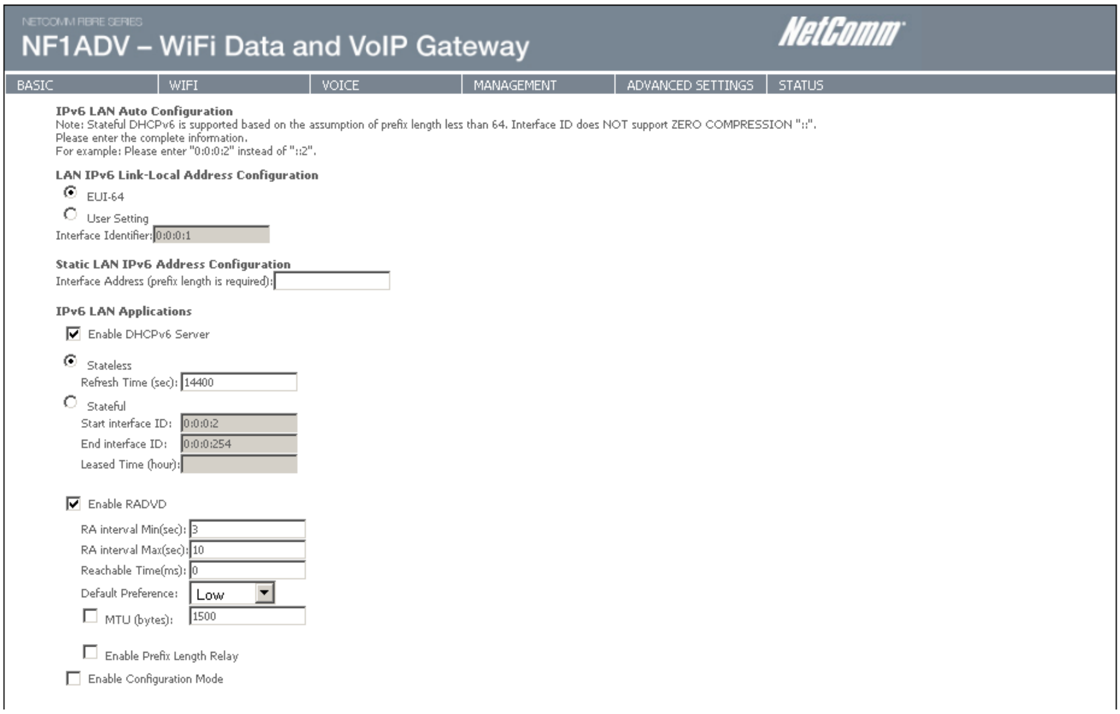
Figure 42: Advanced – LAN

See the field descriptions below for more details.

FIELD	DESCRIPTION
Group Name	Select the Group Name if configured.
IP Address	The IP address of the LAN interface.
Subnet Mask	Enter the subnet mask for the LAN interface.
Enable IGMP Snooping	Enable by ticking the box. Standard Mode: In standard mode multicast traffic will broadcast 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 broadcast to the bridge ports.
Disable DHCP Server	This option disables the DHCP server and should only be selected when using a Static IP address.
Enable DHCP Server	On selecting this field enter the start IP address and the end IP address as well as the lease time. With the DHCP server enabled the router automatically assigns the IP address, subnet mask, default gateway and DNS server addresses to all DHCP clients connecting to the router.
Configure the Second IP Address and Subnet Mask for LAN interface	Use this option to configure a second IP address for a second LAN interface. Enter the IP address and subnet mask of the secondary LAN connection.

IPv6 LAN Auto Configuration

This page can be used to configure the router for IPv6 use.



NETCOMM FIBRE SERIES

NF1ADV – WiFi Data and VoIP Gateway

IPv6 LAN Auto Configuration

Note: Stateful DHCPv6 is supported based on the assumption of prefix length less than 64. Interface ID does NOT support ZERO COMPRESSION "::".
Please enter the complete information.
For example: Please enter "0:0:0:2" instead of "::2".

LAN IPv6 Link-Local Address Configuration

● EUI-64

○ User Setting

Interface Identifier: 0:0:0:1

Static LAN IPv6 Address Configuration

Interface Address (prefix length is required):

IPv6 LAN Applications

☑ Enable DHCPv6 Server

● Stateless

Refresh Time (sec): 14400

○ Stateful

Start interface ID: 0:0:0:2

End interface ID: 0:0:0:254

Leased Time (hour):

☑ Enable RADVD

RA interval Min(sec): 3

RA interval Max(sec): 10

Reachable Time(ms): 0

Default Preference: Low

□ MTU (bytes): 1500

□ Enable Prefix Length Relay

□ Enable Configuration Mode

Figure 43: Advanced - IPv6

OPTION	DEFINITION
LAN IPv6 Link-Local Address Configuration	EUI-64 – A 64-bit Global Identifier (EUI-64™) standard for use with the IPv6 Protocol. User Setting – User defined IPv6 Address
Static LAN IPv6 Address Configuration	Enter a static IPv6 address for the router if one has been assigned to you by your Internet Service Provider.
IPv6 LAN Application	Enable IPv6 DHCP server
Stateless address autoconfiguration	IPv6 hosts can configure themselves automatically when connected to a routed IPv6 network using Internet Control Message Protocol version 6 (ICMPv6) router discovery messages. This type of configuration is suitable for small organizations and individuals. It allows each host to determine its address from the contents of received user advertisements. It makes use of the IEEE EUI-64 standard to define the network ID portion of the address.
Stateful Address Configuration	This configuration requires some human intervention as it makes use of the Dynamic Host Configuration Protocol for IPv6 (DHCPv6) for installation and administration of nodes over a network. The DHCPv6 server maintains a list of nodes and the information about their state to know the availability of each IP address from the range specified by the network administrator.
Enable RADVD	The Router Advertisement Daemon (radvd) is an open-source software product that implements link-local advertisements of IPv6 router addresses and IPv6 routing prefixes using the Neighbor Discovery Protocol (NDP) as specified in RFC 2461. The Router Advertisement Daemon is used by system administrators in stateless auto-configuration methods of network hosts on Internet Protocol version 6 networks. When IPv6 hosts configure their network interfaces, they broadcast router solicitation (RS) requests onto the network to discover available routers. The radvd software answers requests with router advertisement (RA) messages. In addition, radvd periodically broadcasts RA packets to the attached link to update network hosts. The router advertisement messages contain the routing prefix used on the link, the link maximum transmission unit (MTU), and the address of the responsible default router.

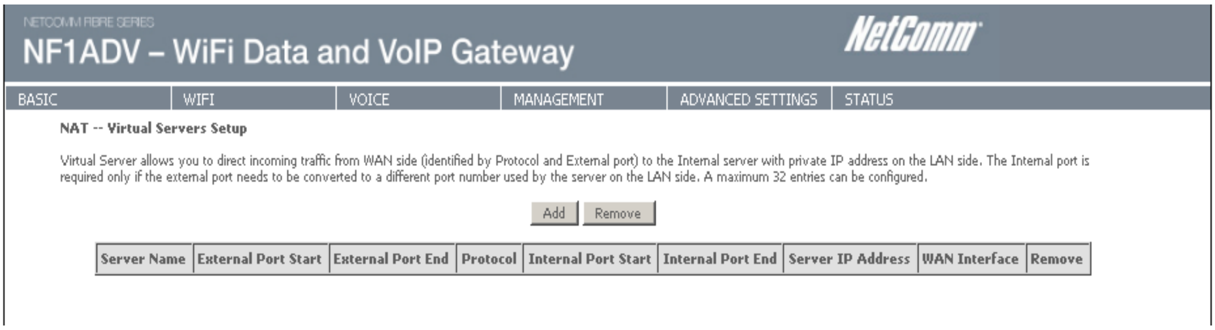
Table 19 Advanced - IPv6 Configuration Settings:

NAT

Network address translation (NAT) is the process of modifying IP address information in IP packet headers while in transit through the router.

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.



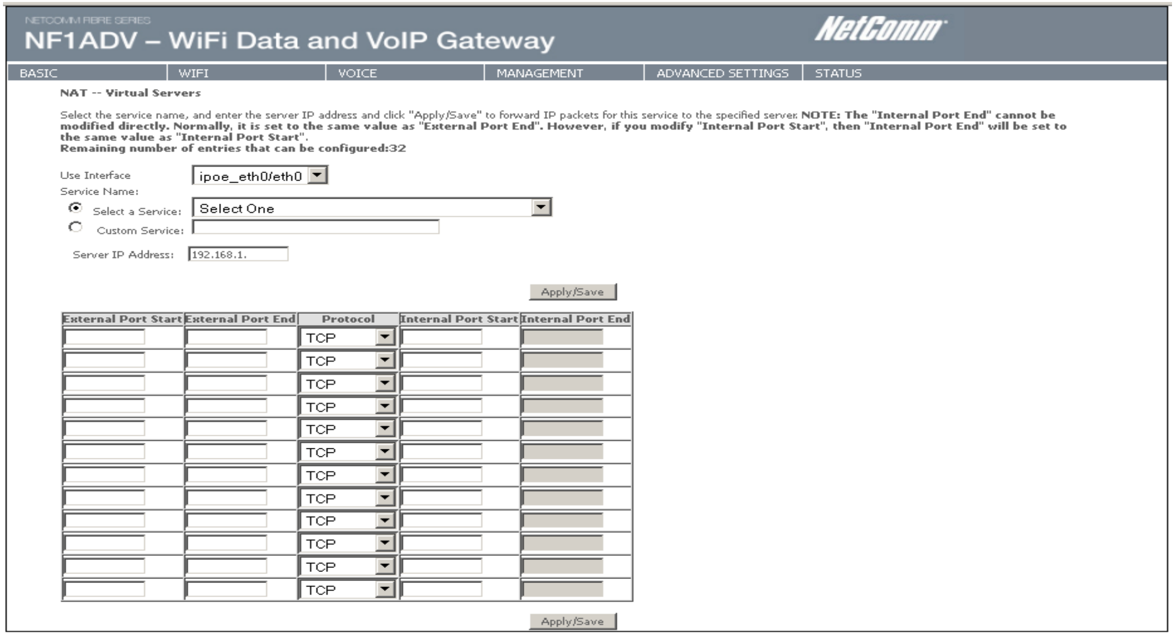
NAT -- Virtual Servers Setup

Virtual Server allows you to direct incoming traffic from WAN side (identified by Protocol and External port) to the Internal server with 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 32 entries can be configured.

Server Name	External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End	Server IP Address	WAN Interface	Remove

Figure 44: Advanced - NAT - Virtual Server

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 "Apply/Save" to forward IP packets for this service to the specified server. **NOTE: The "Internal Port End" cannot be modified directly. Normally, it is set to the same value as "External Port End". However, if you modify "Internal Port Start", then "Internal Port End" will be set to the same value as "Internal Port Start".**
Remaining number of entries that can be configured:32

Use Interface: ipoe_eth0/eth0
Service Name:
● Select a Service: Select One
○ Custom Service:
Server IP Address: 192.168.1.

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

Figure 45: Advanced - NAT - Add Virtual Server

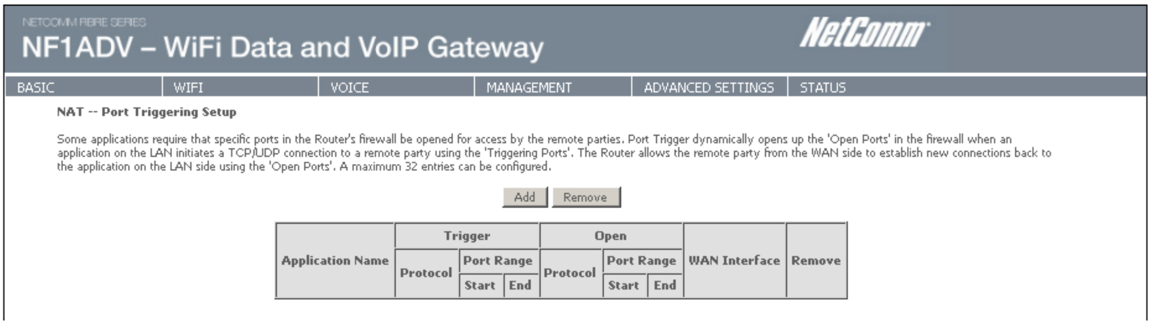
FIELD	DESCRIPTION
Select a Service or custom Server	Select a pre-configured port forwarding rule or choose custom server to create your own port forwarding rule.
Server IP Address	Enter the IP address of the local server.
External Port Start	Enter the starting external port number (when custom server is selected). When a service is connected this field will be completed automatically.
External Port End	Enter the ending external port number (when custom server is selected). When a service is connected this field will be completed automatically.
Protocol	Options include TCP, UDP or TCP/UDP.
Internal Port Start	Enter the starting internal port number (when custom server is selected). When a service is connected this field will be completed automatically.
Internal Port End	Enter the ending internal port number (when custom server is selected). When a service is connected this field will be completed automatically.

Table 20: Advanced - NAT - Add Virtual Server Settings

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.



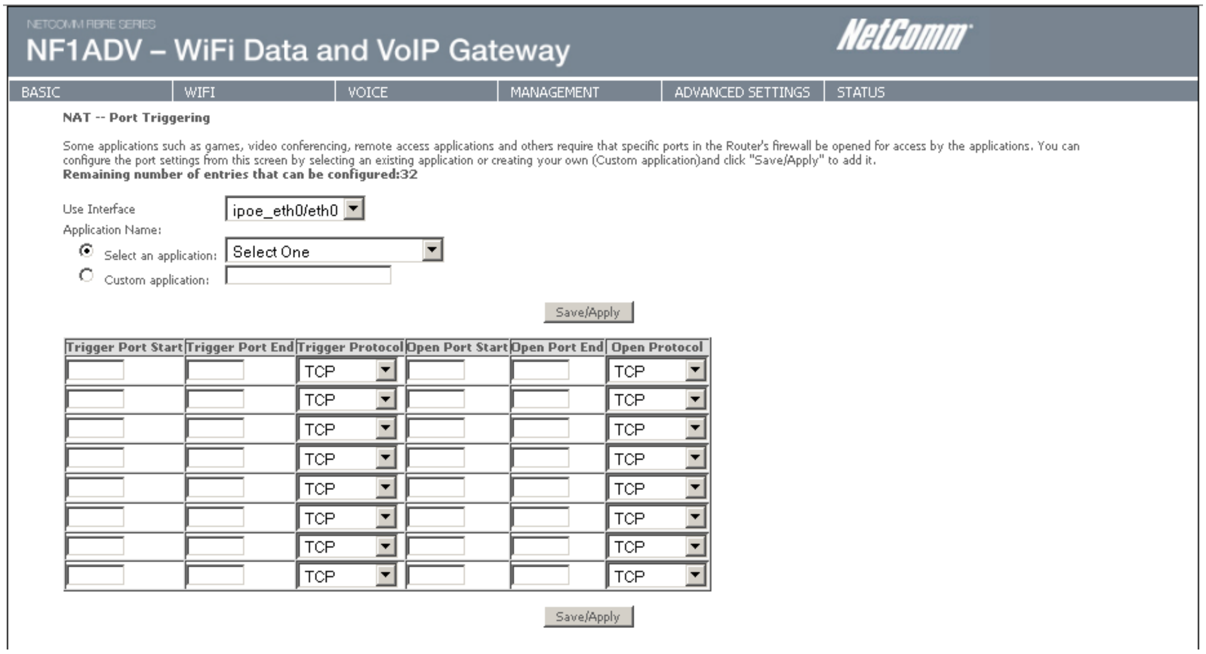
NAT -- Port Triggering Setup

Some applications require that specific ports in the Router's firewall be opened for access by the remote parties. Port Trigger dynamically 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.

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

Figure 46: Advanced - NAT - Port Triggering Setup

To add a Trigger Port, press the Add button. The following screen will be displayed.



NAT -- Port Triggering

Some applications such as games, video conferencing, remote access applications and others require that specific ports in the Router'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

Use Interface: ipoe_eth0/eth0

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

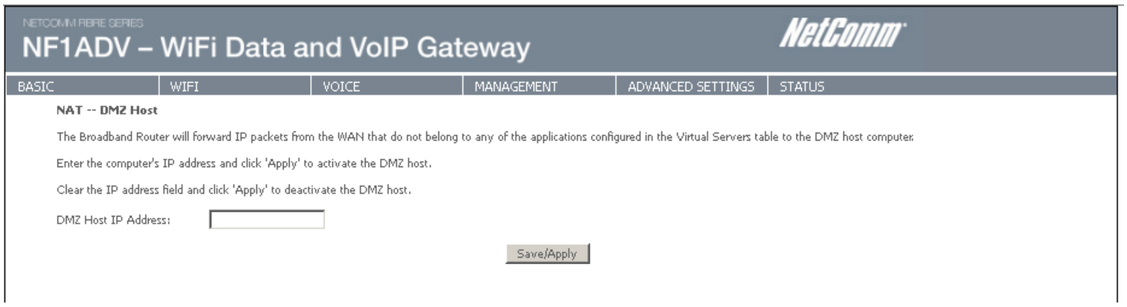
Figure 47: Advanced - NAT - Add Port Trigger

FIELD	DESCRIPTION
Select an Application or Custom Application	A user can select a pre-configured application from the list or select the Custom Application option to create custom application settings.
Trigger Port Start	Enter the starting trigger port number (when you select Custom Application). When an application is selected the port range values are automatically entered.
Trigger Port End	Enter the ending trigger port number (when you select Custom Application). When an application is selected the port range values are automatically entered.
Trigger Protocol	Options include TCP, UDP or TCP/UDP.
Open Port Start	Enter the starting open port number (when you select Custom Application). When an application is selected the port range values are automatically entered.
Open Port End	Enter the ending open port number (when you select Custom Application). When an application is selected the port range values are automatically entered.
Open Protocol	Options include TCP, UDP or TCP/UDP.

DMZ Host

The NF1ADV will forward IP packets from the Wide 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. To deactivate the DMZ Host function clear the IP address field and press the Save/Apply button.



NAT -- DMZ Host

The Broadband Router will forward IP packets from the 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.

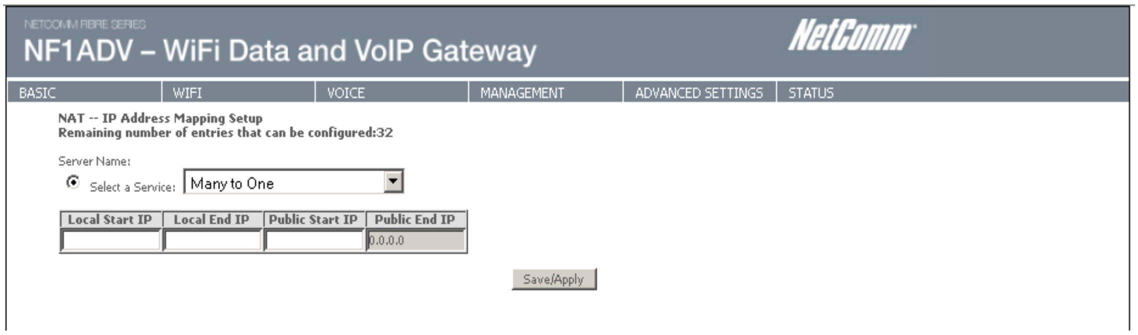
Clear the IP address field and click 'Apply' to deactivate the DMZ host.

DMZ Host IP Address:

Figure 48: Advanced - NAT - DMZ Host

IP Address Mapping

This feature allows the one or many LAN devices to be mapped to one or many WAN IP addresses.



NAT -- IP Address Mapping Setup
Remaining number of entries that can be configured:32

Server Name:

● Select a Service: Many to One

Local Start IP	Local End IP	Public Start IP	Public End IP
			0.0.0.0

Figure 49: Advanced - NAT - IP Address Mapping

OPTION	DEFINITION
Select a Service	Options include: One to One, Many to One, Many to Many(overload), Many to Many(no overload)
Local Start IP	The start IP address of a local IP address range.
Local End IP	The end IP address of a local IP address range. If you wish to use a single local IP address only, enter the same IP address as the Local Start IP field into this field.
Public Start IP	The start IP address of a public/WAN IP address range.
Public End IP	The send IP address of a public/WAN IP address range. If you wish to use a single public IP address, enter the same IP address as the Local Start IP field into this field.

Figure 50: Advanced - NAT - IP Address Mapping Settings

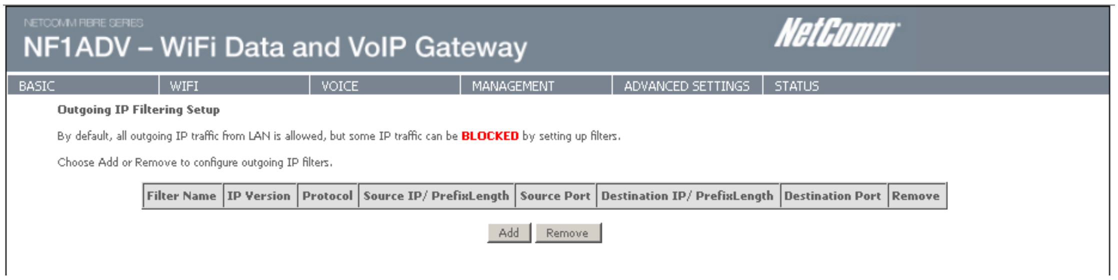
Security

IP Filtering

The IP Filtering function 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 for individual IP packets to pass through the 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.



Outgoing IP Filtering Setup

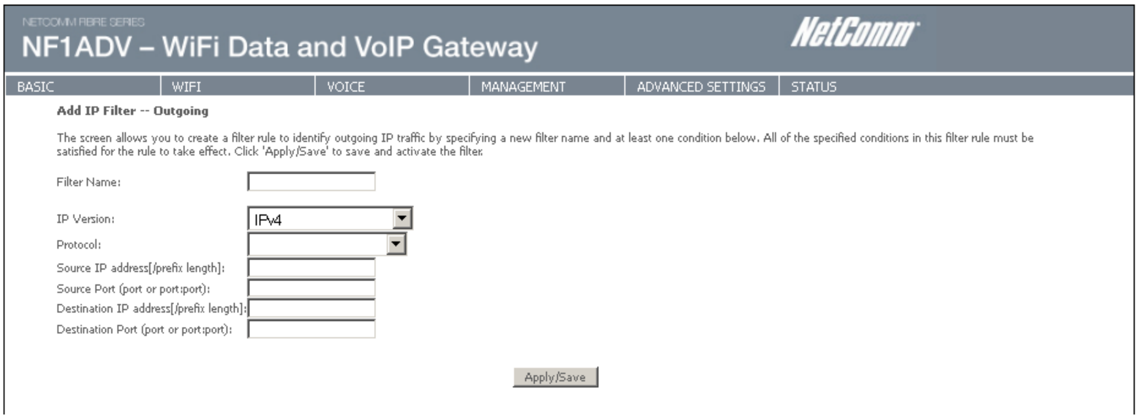
By default, all outgoing IP traffic from LAN is allowed, but some IP traffic can be **BLOCKED** by setting up filters.

Choose Add or Remove to configure outgoing IP filters.

Filter Name	IP Version	Protocol	Source IP/ PrefixLength	Source Port	Destination IP/ PrefixLength	Destination Port	Remove

Figure 51: Advanced - Security - IP Filter – Outgoing

To add an outgoing IP filtering rule, click the Add button. The following screen will be displayed.



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 'Apply/Save' to save and activate the filter.

Filter Name:

IP Version: IPv4

Protocol:

Source IP address[/prefix length]:

Source Port (port or port:port):

Destination IP address[/prefix length]:

Destination Port (port or port:port):

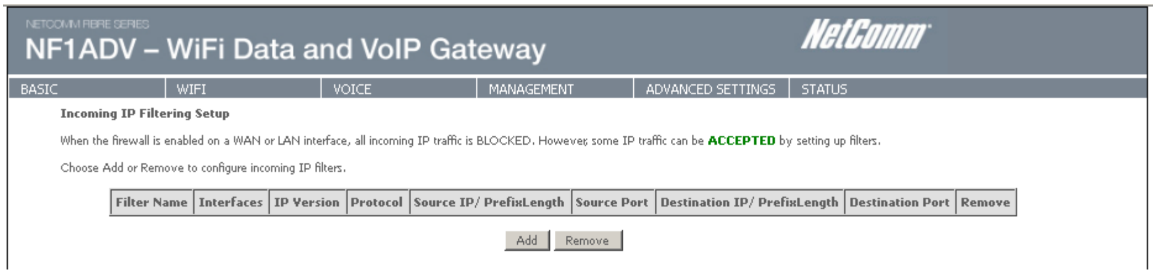
Figure 52: Advanced - Security - IP Filter - Add Outgoing

FIELD	DESCRIPTION
Filter Name	The filter rule descriptive name.
IP Version	Select the IP Address protocol (IPv4 or IPv6).
Protocol	Options include TCP, UDP, TCP/UDP or ICMP Source IP Address.
Source IP Address	Enter the local source IP address from where the data originates.
Source Port (port or port:port)	Enter the source port number or port range for the filter rule.
Destination IP Address	Enter the destination IP address.
Destination Port (port or port:port)	Enter the destination port number or port range for the filter rule.

Table 21: Advanced - Security - IP Filter - Add Outgoing IP Filter Settings

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.



Incoming IP Filtering Setup

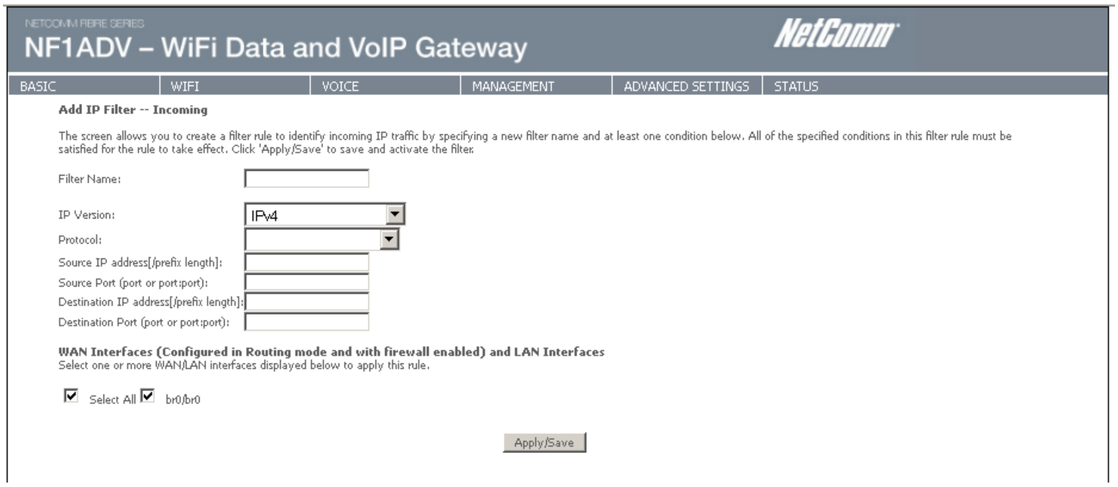
When the firewall is enabled on a WAN or LAN interface, all incoming IP traffic is BLOCKED. However, some IP traffic can be **ACCEPTED** by setting up filters.

Choose Add or Remove to configure incoming IP filters.

Filter Name	Interfaces	IP Version	Protocol	Source IP/ PrefixLength	Source Port	Destination IP/ PrefixLength	Destination Port	Remove

Figure 53: Advanced – Security – IP Filter – Incoming

To add an incoming IP 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 'Apply/Save' to save and activate the filter.

Filter Name:

IP Version: IPv4

Protocol:

Source IP address[/prefix length]:

Source Port (port or port:port):

Destination IP address[/prefix length]:

Destination Port (port or port:port):

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

Select one or more WAN/LAN interfaces displayed below to apply this rule.

☑ Select All ☑ br0/br0

Figure 54: Advanced - Security - IP Filter - Add Incoming IP Filter

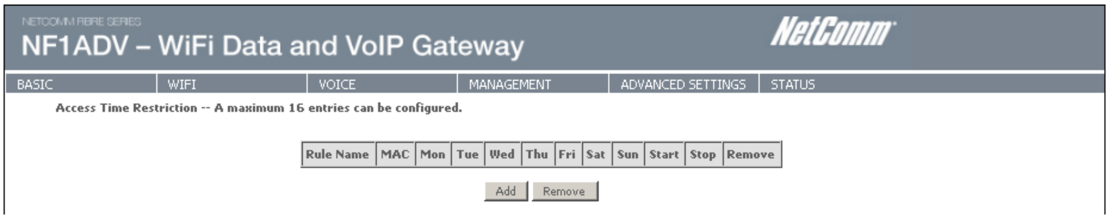
Please refer to the Outgoing IP Filter table for field descriptions.
Click the Apply/Save button to save and activate the filter.

Parental Control

The Parental Control feature allows you to take advanced measures to ensure the computers connected to the LAN are used only when and how you decide.

Time Restriction

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

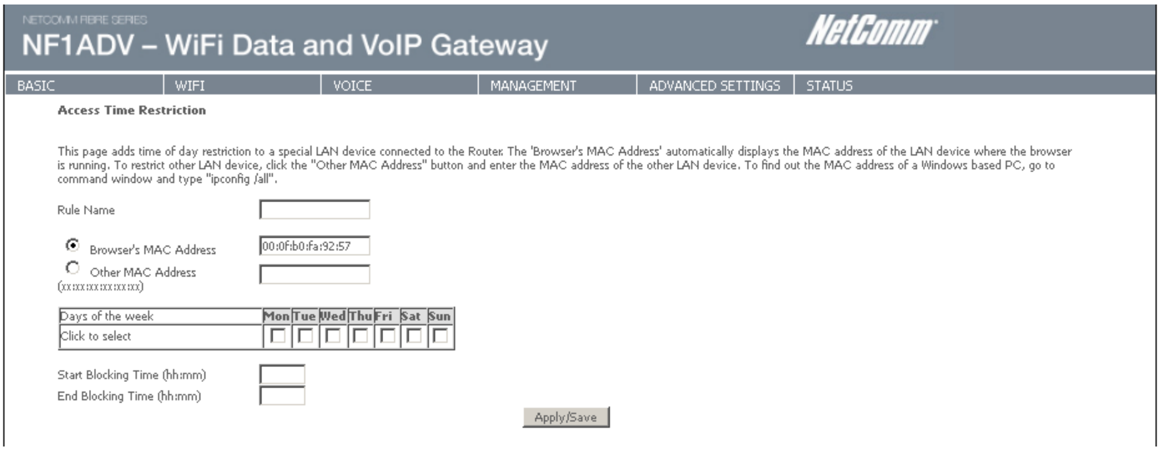


Access Time Restriction -- A maximum 16 entries can be configured.

Rule Name	MAC	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Start	Stop	Remove

Figure 55: Advanced - Parental Control – Time Restriction

To add a time restriction rule press the Add button. The following screen will appear.



Access Time Restriction

This page adds time of day restriction to a special LAN device connected to the Router. 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".

Rule Name

● Browser's MAC Address 00:0f:b0:fa:92:57
○ 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)

Figure 56: Advanced - Parental Control - Add Time Restriction

See the instructions below. Press the Apply/Save button to save a time restriction rule.

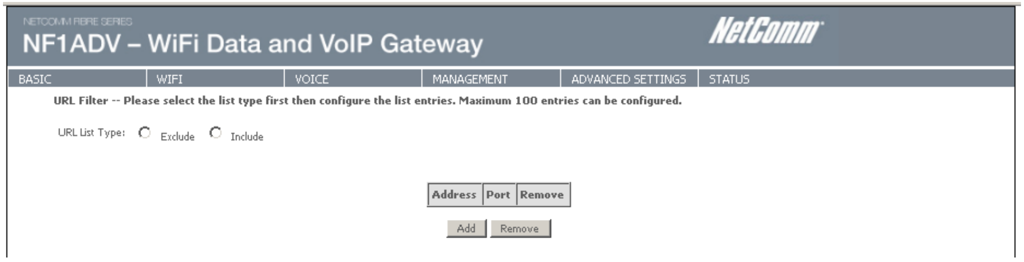
FIELD	DESCRIPTION
Rule Name	A user defined name for the time restriction rule.
Browser's MAC Address	The MAC address of the network card of the computer running the browser.
Other MAC Address	The MAC address of a second LAN device or network card.
Days of the Week	The days of the week for which the rules apply.
Start Blocking Time	The time of day when the restriction starts.
End blocking time	The time of day when the restriction ends.

Table 22: Advanced - Parental Control - Add Time Restriction Settings

URL Filter

With the URL filter, you are able to add certain websites or URLs to a safe or blocked list. This will provide you added security to ensure any website you deem unsuitable will not be able to be seen by anyone who is accessing the Internet via the NF1ADV.

Select the 'To block' or 'To allow' option and then click Add to enter the URL you wish to add to the URL Filter list.



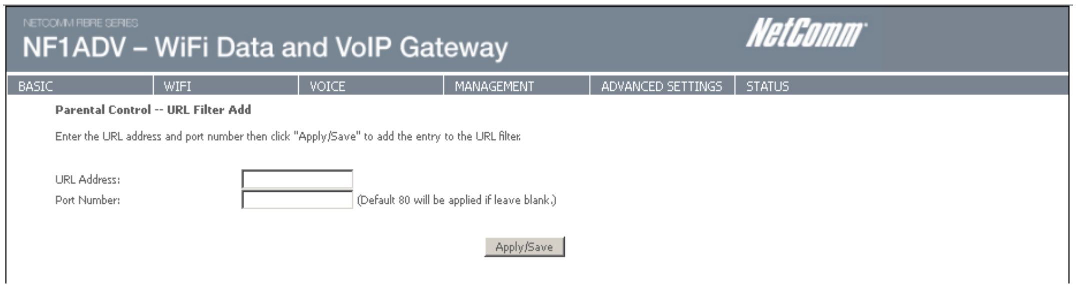
URL Filter -- Please select the list type first then configure the list entries. Maximum 100 entries can be configured.

URL List Type: ○ Exclude ○ Include

Address	Port	Remove

Figure 57: Advanced - Parental Control - URL Filter

Once you have chosen to add a URL to the list you will be prompted to enter the address. Simply type it in and select the Apply/Save button.



Parental Control -- URL Filter Add

Enter the URL address and port number then click "Apply/Save" to add the entry to the URL filter.

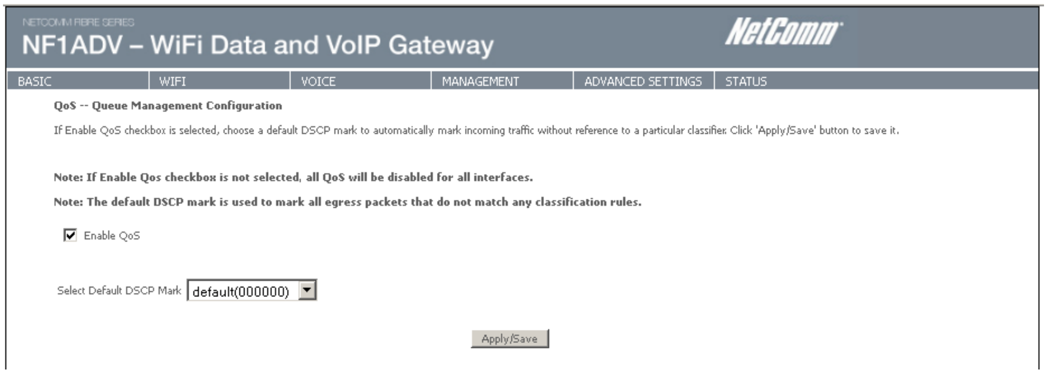
URL Address:

Port Number: (Default 80 will be applied if leave blank.)

Figure 58: Advanced - Parental Control - Add URL Filter

Quality of Service

Quality of Service offers a defined level of performance in a data communications system - for example the ability to guarantee that video traffic is given priority over other network traffic to ensure that video streaming is not disrupted by other network requirements. This means that should you be streaming video and someone else in the house starts downloading a large file, the download won't disrupt the flow of video data.



QoS -- Queue Management Configuration

If Enable QoS checkbox is selected, choose a default DSCP mark to automatically mark incoming traffic without reference to a particular classifier. Click 'Apply/Save' button to save it.

Note: If Enable Qos checkbox is not selected, all QoS will be disabled for all interfaces.

Note: The default DSCP mark is used to mark all egress packets that do not match any classification rules.

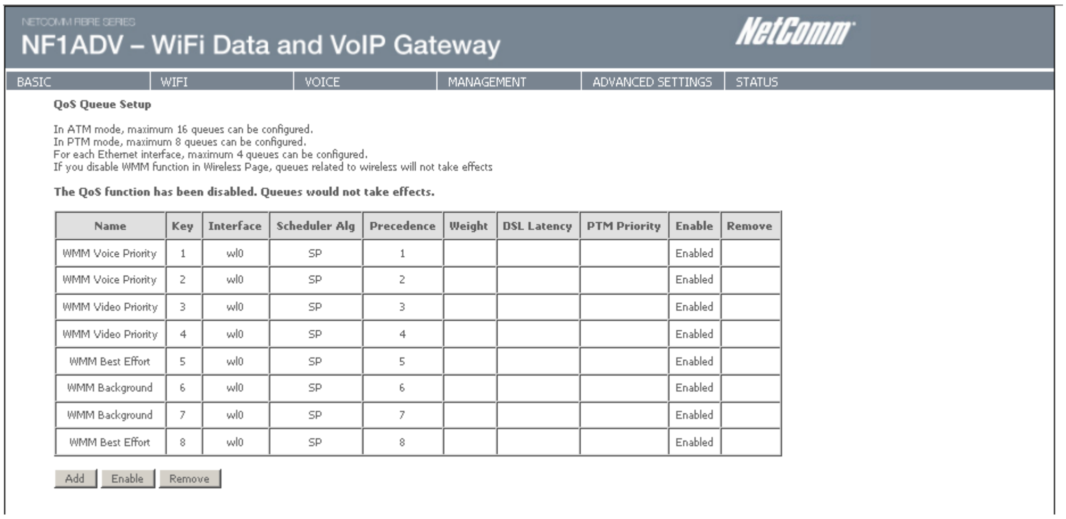
☑ Enable QoS

Select Default DSCP Mark: default(000000)

Figure 59: Advanced - Enable QoS

To enable QoS select the Enable QoS checkbox, and set the Default DSCP (Differentiated Services Code Point) Mark. Then press the Apply/Save button.

Queue Setup



QoS Queue Setup

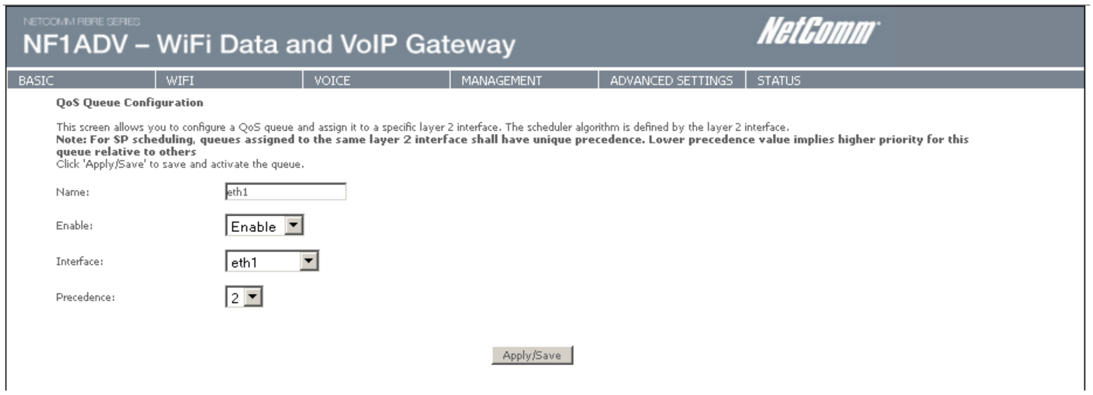
In ATM mode, maximum 16 queues can be configured.
In PTM mode, maximum 8 queues can be configured.
For each Ethernet interface, maximum 4 queues can be configured.
If you disable WMM function in Wireless Page, queues related to wireless will not take effects

The QoS function has been disabled. Queues would not take effects.

Name	Key	Interface	Scheduler Alg	Precedence	Weight	DSL Latency	PTM Priority	Enable	Remove
WMM Voice Priority	1	wl0	SP	1				Enabled	
WMM Voice Priority	2	wl0	SP	2				Enabled	
WMM Video Priority	3	wl0	SP	3				Enabled	
WMM Video Priority	4	wl0	SP	4				Enabled	
WMM Best Effort	5	wl0	SP	5				Enabled	
WMM Background	6	wl0	SP	6				Enabled	
WMM Background	7	wl0	SP	7				Enabled	
WMM Best Effort	8	wl0	SP	8				Enabled	

Figure 60: Advanced - QoS Queue Setup

Click the Add button to add a QoS Queue. The following screen will be displayed.



QoS Queue Configuration

This screen allows you to configure a QoS queue and assign it to a specific layer 2 interface. The scheduler algorithm is defined by the layer 2 interface.
Note: For SP scheduling, queues assigned to the same layer 2 interface shall have unique precedence. Lower precedence value implies higher priority for this queue relative to others
Click 'Apply/Save' to save and activate the queue.

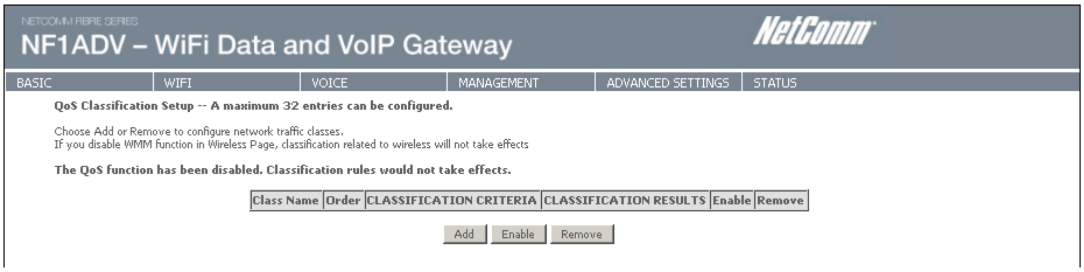
Name:	eth1
Enable:	Enable
Interface:	eth1
Precedence:	2

Figure 61: Advanced - QoS - Add QoS Queue

The above screen allows you to configure a QoS queue entry and assign it to a specific network interface. Each of the queues can be configured for a specific precedence. The queue entry configured here will be used by the classifier to place ingress packets appropriately.

NOTE: Precedence level 1 relates to higher priority while precedence level 3 relates to lower priority.

QoS Classification



QoS Classification Setup -- A maximum 32 entries can be configured.

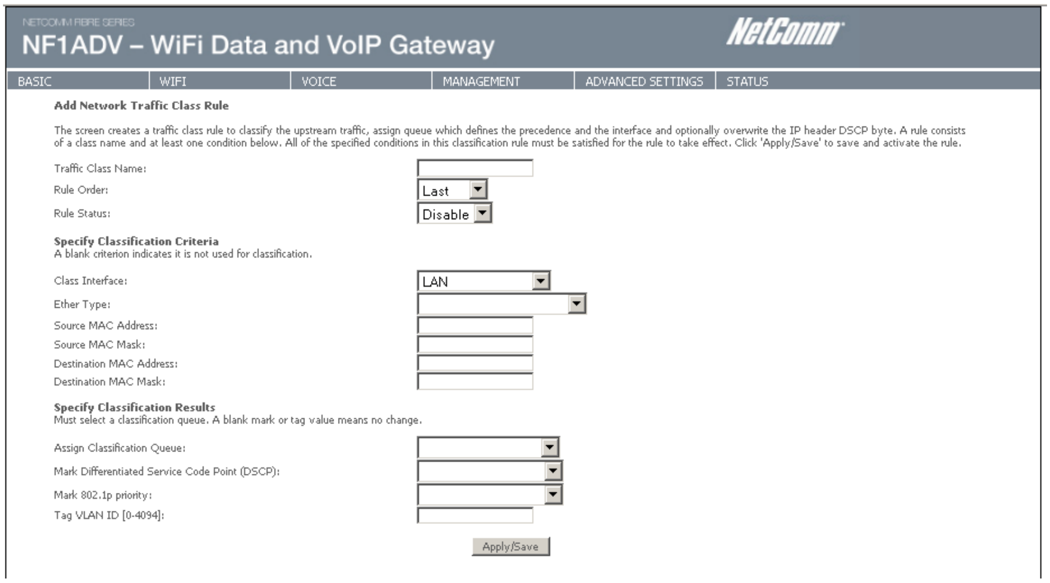
Choose Add or Remove to configure network traffic classes.
If you disable WMM function in Wireless Page, classification related to wireless will not take effects

The QoS function has been disabled. Classification rules would not take effects.

Class Name	Order	CLASSIFICATION CRITERIA	CLASSIFICATION RESULTS	Enable	Remove

Figure 62: Advanced - QoS Classification Setup

Click the Add button to configure network traffic classes.



Add Network Traffic Class Rule

The screen creates a traffic class rule to classify the upstream traffic, assign queue which defines the precedence and the interface and optionally overwrite the IP header DSCP byte. A rule consists of a class name and at least one condition below. All of the specified conditions in this classification rule must be satisfied for the rule to take effect. Click 'Apply/Save' to save and activate the rule.

Traffic Class Name:
Rule Order: Last
Rule Status: Disable

Specify Classification Criteria
A blank criterion indicates it is not used for classification.

Class Interface: LAN
Ether Type:
Source MAC Address:
Source MAC Mask:
Destination MAC Address:
Destination MAC Mask:

Specify Classification Results
Must select a classification queue. A blank mark or tag value means no change.

Assign Classification Queue:
Mark Differentiated Service Code Point (DSCP):
Mark 802.1p priority:
Tag VLAN ID [0-4094]:

Figure 63: Advanced - Add QoS Network Traffic Classification

The above screen creates a traffic class rule to classify the upstream traffic, assign queuing priority and optionally overwrite the IP header TOS (type of service) byte. A rule consists of a class name and at least one condition. All of the specified conditions in this classification rule must be satisfied for the rule to take effect.

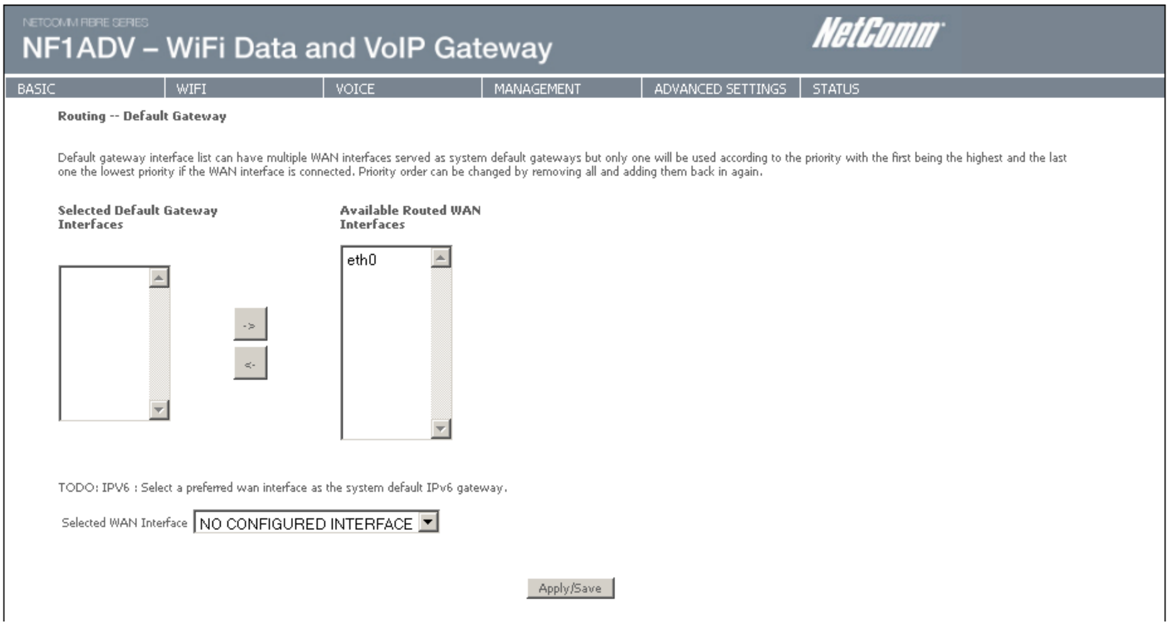
Click the Apply/Save button to save and activate the rule.

Routing

The Default Gateway, Static Route, Policy Routing and Dynamic Route settings can be found in the Routing option of the Advanced menu.

Default Gateway

Select your preferred WAN interface from the available options.



Routing -- Default Gateway

Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the highest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

Selected Default Gateway Interfaces

Available Routed WAN Interfaces

eth0

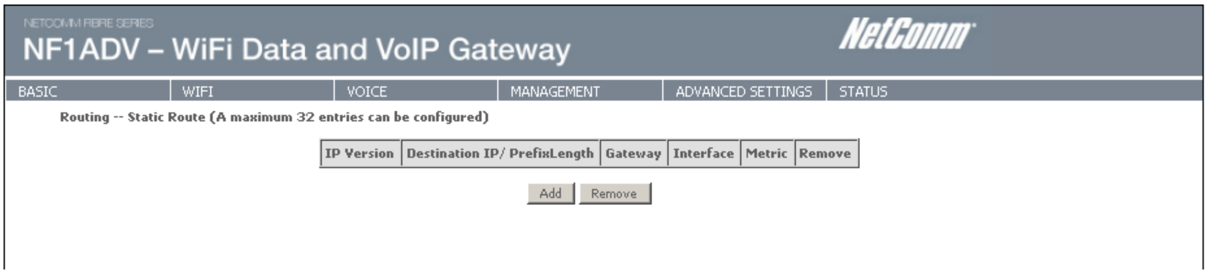
TODO: IPV6 : Select a preferred wan interface as the system default IPv6 gateway.

Selected WAN Interface: NO CONFIGURED INTERFACE

Figure 64: Advanced - Routing - Default Gateway

Static Route

The Static Route screen displays the configured static routes. Click the Add or Remove buttons to change settings.

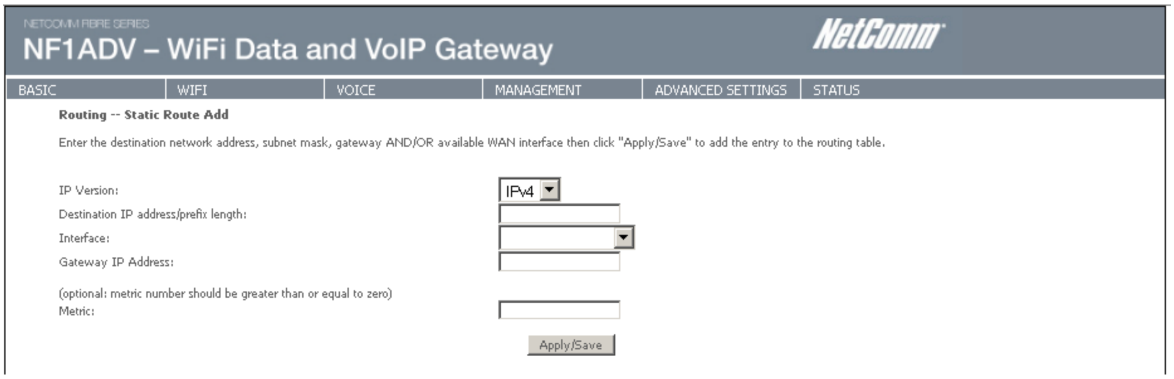


Routing -- Static Route (A maximum 32 entries can be configured)

IP Version	Destination IP/ PrefixLength	Gateway	Interface	Metric	Remove

Figure 65: Advanced - Routing - Static Route

To add a static route rule click the Add button. The following screen will be displayed.



Routing -- Static Route Add

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

IP Version: IPv4

Destination IP address/prefix length:

Interface:

Gateway IP Address:

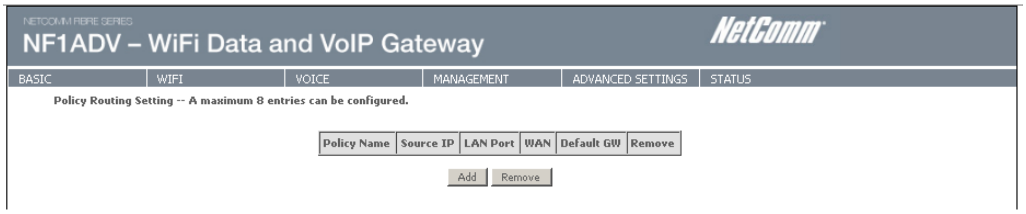
(optional: metric number should be greater than or equal to zero)
Metric:

Figure 66: Advanced - Routing - Add Static Route

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

Policy Routing

This function allows you to add policy rules to certain situations.

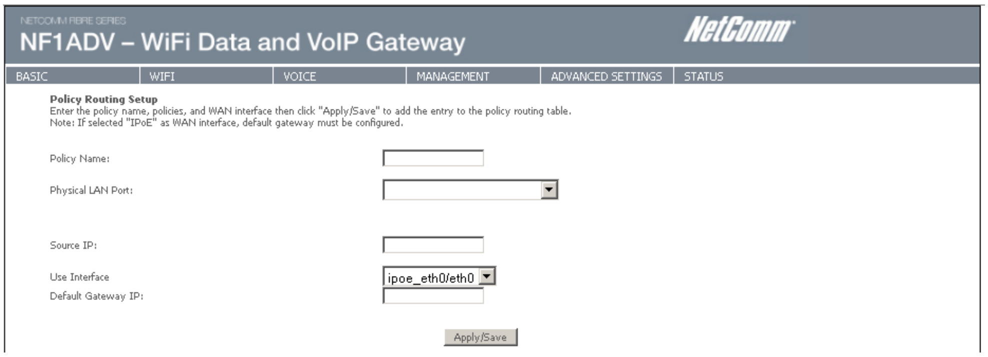


Policy Routing Setting -- A maximum 8 entries can be configured.

Policy Name	Source IP	LAN Port	WAN	Default GW	Remove

Figure 67: Advanced - Routing - Policy Routing

Click the Add button to add a policy rule. The following screen will be displayed.



Policy Routing Setup
Enter the policy name, policies, and WAN interface then click "Apply/Save" to add the entry to the policy routing table.
Note: If selected "IPoE" as WAN interface, default gateway must be configured.

Policy Name:

Physical LAN Port:

Source IP:

Use Interface ipoe_eth0/eth0

Default Gateway IP:

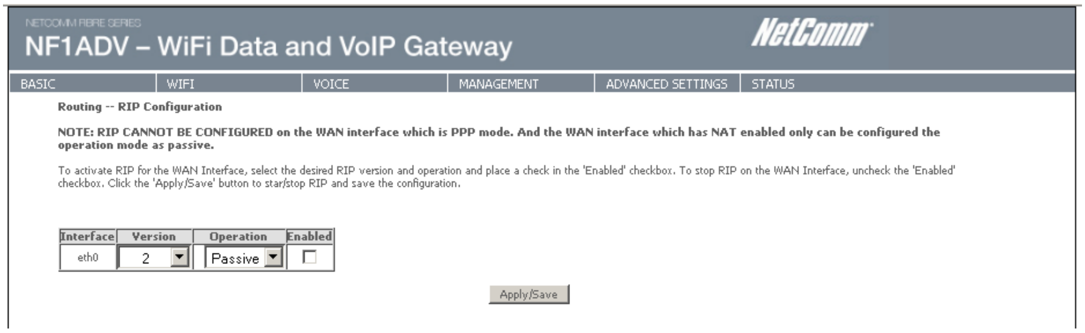
Figure 68: Advanced - Routing - Add Policy Route

Enter a, select the LAN port to be used, enter the source IP address

FIELD	DESCRIPTION
Policy Name	A user defined name for the policy route.
Physical LAN Port	The LAN port to be used for the policy.
Source IP	The IP address of the LAN device involved with the policy.
Use Interface	Select the Interface that the policy will employ.
Gateway	Enter the gateway address.

RIP (Routing Information Protocol)

To activate this option, select the Enabled checkbox.
To configure an individual interface, select the desired RIP version and operation, and enter a check in the Enabled checkbox for that interface. Click Apply/Save to save the configuration.



Routing -- RIP Configuration

NOTE: RIP CANNOT BE CONFIGURED on the WAN interface which is PPP mode. And the WAN interface which has NAT enabled only can be configured the operation mode as passive.

To activate RIP for the WAN Interface, select the desired RIP version and operation and place a check in the 'Enabled' checkbox. To stop RIP on the WAN Interface, uncheck the 'Enabled' checkbox. Click the 'Apply/Save' button to star/stop RIP and save the configuration.

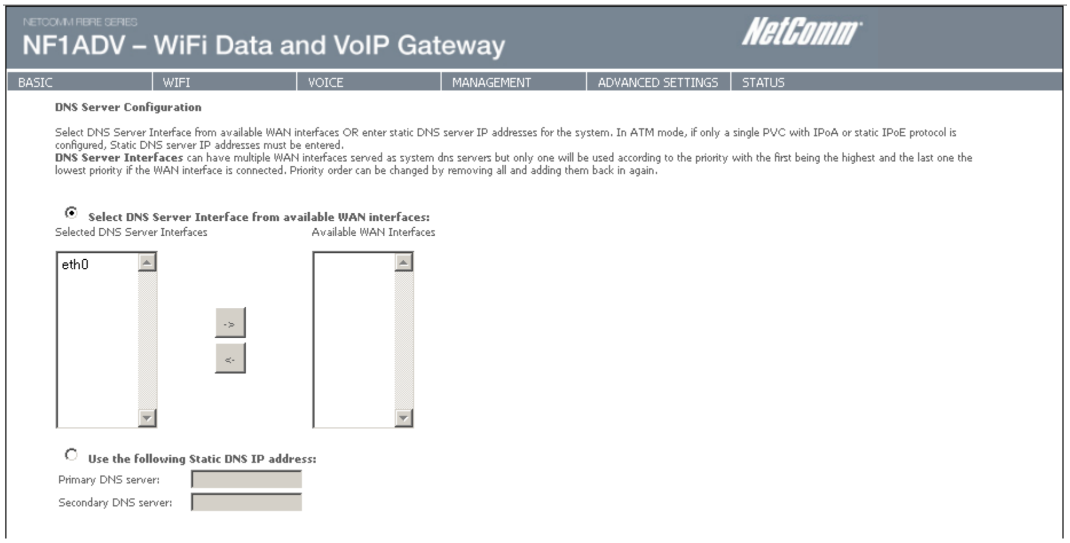
Interface	Version	Operation	Enabled
eth0	2	Passive	☐

Figure 69: Advanced - Routing - RIP

DNS

DNS Server

This page allows the user to enable automatic DNS settings detected from the Internet Service Provider or specify their own DNS server address manually.



NETCOMM FIBRE SERIES

NF1ADV – WiFi Data and VoIP Gateway

DNS Server Configuration

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the highest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

● **Select DNS Server Interface from available WAN interfaces:**

Selected DNS Server Interfaces: eth0

Available WAN Interfaces:

○ **Use the following Static DNS IP address:**

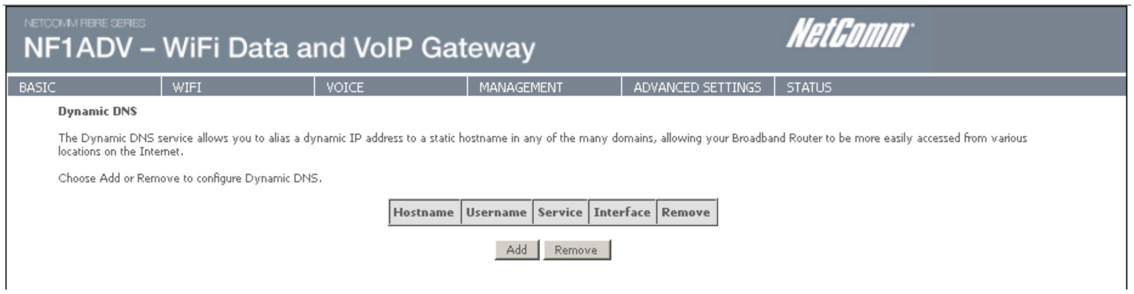
Primary DNS server:

Secondary DNS server:

Figure 70: Advanced - DNS Server

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.



NETCOMM FIBRE SERIES

NF1ADV – WiFi Data and VoIP Gateway

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 Broadband Router to be more easily accessed from various locations on the Internet.

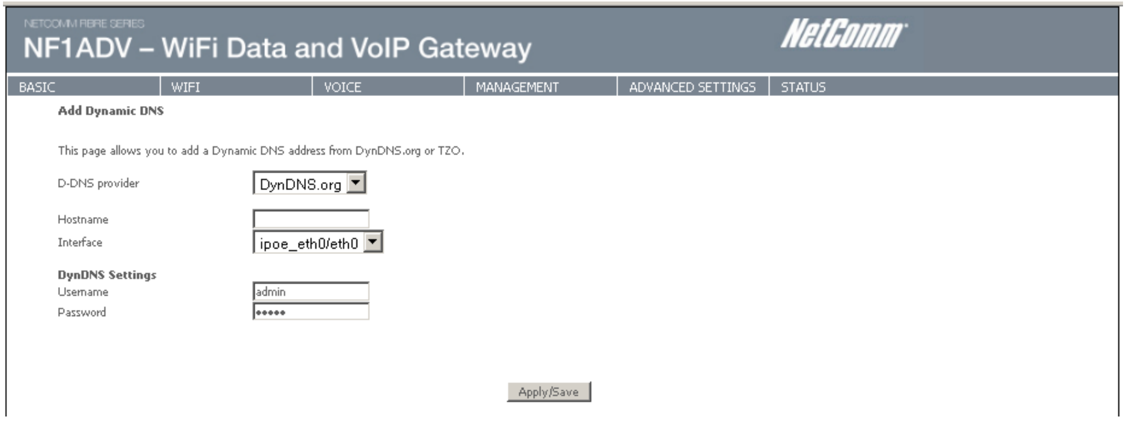
Choose Add or Remove to configure Dynamic DNS.

Hostname	Username	Service	Interface	Remove

Figure 71: Advanced - DNS - Dynamic DNS

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 the following screen will display.



NETCOMM FIBRE SERIES

NF1ADV – WiFi Data and VoIP Gateway

Add Dynamic DNS

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

D-DNS provider: DynDNS.org

Hostname:

Interface: ipoe_eth0/eth0

DynDNS Settings

Username: admin

Password: •••••

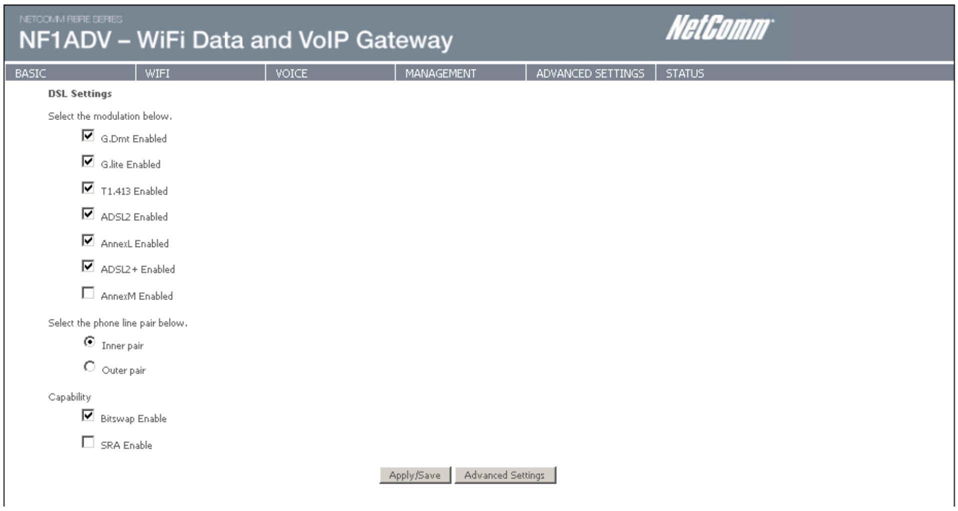
Figure 72: Advanced - DNS - Add Dynamic DNS Account

FIELD	DESCRIPTION
D-DNS Provider	Select the dynamic DNS provider from the list.
Host Name	The name of the dynamic DNS provider.
Interface	Select the interface from the list.
Username	Enter the Dynamic DNS account username.
Password	Enter the Dynamic DNS account password.

Table 23: Advanced - DNS - Add Dynamic DNS Account Settings

DSL

This page allows the user to modify the DSL modulation settings on the unit. By changing the settings, the user can specify which DSL modulation that the modem will use.



DSL Settings

Select the modulation below.

☑ G.Dmt Enabled
☑ G.lite Enabled
☑ T1.413 Enabled
☑ ADSL2 Enabled
☑ AnnexL Enabled
☑ ADSL2+ Enabled
☐ AnnexM Enabled

Select the phone line pair below.

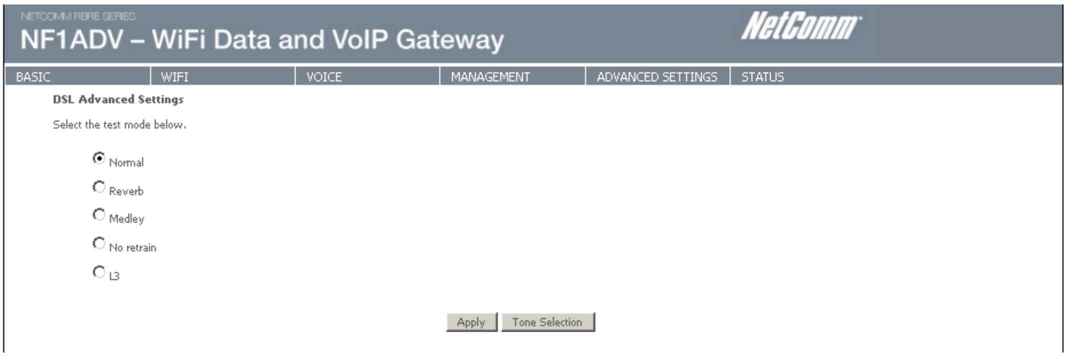
● Inner pair
○ Outer pair

Capability

☑ Bitswap Enable
☐ SRA Enable

Figure 73: Advanced – DSL

For advanced DSL options press the Advanced Settings button.



DSL Advanced Settings

Select the test mode below.

● Normal
○ Reverb
○ Medley
○ No retrain
○ L3

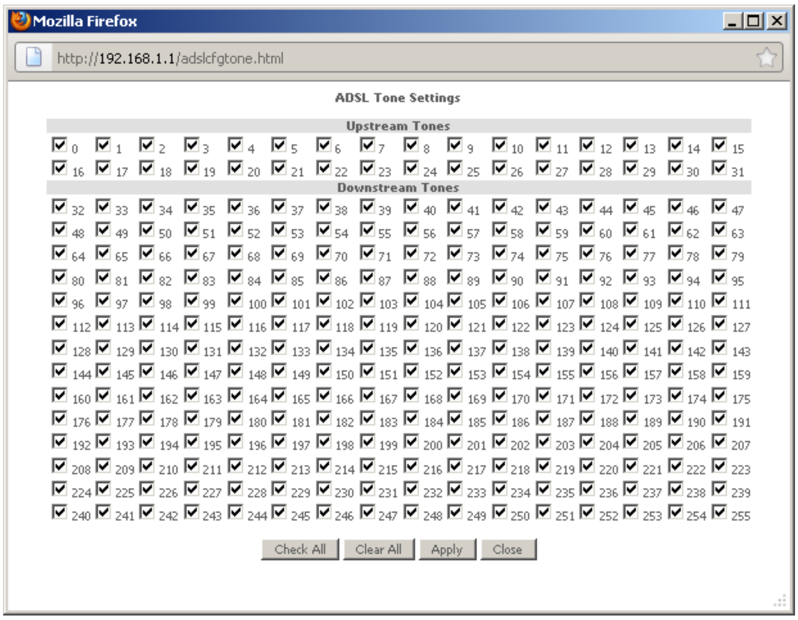
Figure 74: Advanced - DSL - Advanced DSL Settings

The DSL advanced settings relate to test mode settings. The default selection is ‘Normal’.

ADSL Tone Settings

For ADSL Tone Settings select the ‘Tone Selection’ button on the DSL Advanced Settings page.

The frequency band of ADSL is split up into 256 separate tones, each spaced 4.3125kHz apart. With each tone carrying separate data, the technique operates as if 256 separate routers were running in parallel. The tone range is from 0 to 31 for upstream traffic and from 32 to 255 for downstream traffic. Do not change these settings unless you are directed by your Internet Service Provider.



ADSL Tone Settings

Upstream Tones

☑ 0 ☑ 1 ☑ 2 ☑ 3 ☑ 4 ☑ 5 ☑ 6 ☑ 7 ☑ 8 ☑ 9 ☑ 10 ☑ 11 ☑ 12 ☑ 13 ☑ 14 ☑ 15
☑ 16 ☑ 17 ☑ 18 ☑ 19 ☑ 20 ☑ 21 ☑ 22 ☑ 23 ☑ 24 ☑ 25 ☑ 26 ☑ 27 ☑ 28 ☑ 29 ☑ 30 ☑ 31

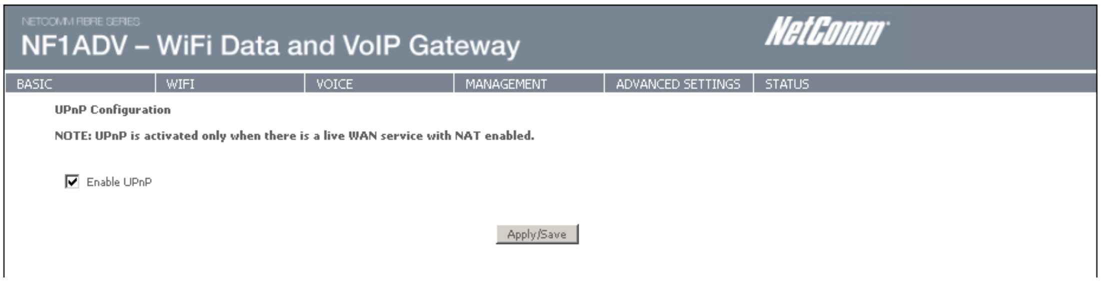
Downstream Tones

☑ 32 ☑ 33 ☑ 34 ☑ 35 ☑ 36 ☑ 37 ☑ 38 ☑ 39 ☑ 40 ☑ 41 ☑ 42 ☑ 43 ☑ 44 ☑ 45 ☑ 46 ☑ 47
☑ 48 ☑ 49 ☑ 50 ☑ 51 ☑ 52 ☑ 53 ☑ 54 ☑ 55 ☑ 56 ☑ 57 ☑ 58 ☑ 59 ☑ 60 ☑ 61 ☑ 62 ☑ 63
☑ 64 ☑ 65 ☑ 66 ☑ 67 ☑ 68 ☑ 69 ☑ 70 ☑ 71 ☑ 72 ☑ 73 ☑ 74 ☑ 75 ☑ 76 ☑ 77 ☑ 78 ☑ 79
☑ 80 ☑ 81 ☑ 82 ☑ 83 ☑ 84 ☑ 85 ☑ 86 ☑ 87 ☑ 88 ☑ 89 ☑ 90 ☑ 91 ☑ 92 ☑ 93 ☑ 94 ☑ 95
☑ 96 ☑ 97 ☑ 98 ☑ 99 ☑ 100 ☑ 101 ☑ 102 ☑ 103 ☑ 104 ☑ 105 ☑ 106 ☑ 107 ☑ 108 ☑ 109 ☑ 110 ☑ 111
☑ 112 ☑ 113 ☑ 114 ☑ 115 ☑ 116 ☑ 117 ☑ 118 ☑ 119 ☑ 120 ☑ 121 ☑ 122 ☑ 123 ☑ 124 ☑ 125 ☑ 126 ☑ 127
☑ 128 ☑ 129 ☑ 130 ☑ 131 ☑ 132 ☑ 133 ☑ 134 ☑ 135 ☑ 136 ☑ 137 ☑ 138 ☑ 139 ☑ 140 ☑ 141 ☑ 142 ☑ 143
☑ 144 ☑ 145 ☑ 146 ☑ 147 ☑ 148 ☑ 149 ☑ 150 ☑ 151 ☑ 152 ☑ 153 ☑ 154 ☑ 155 ☑ 156 ☑ 157 ☑ 158 ☑ 159
☑ 160 ☑ 161 ☑ 162 ☑ 163 ☑ 164 ☑ 165 ☑ 166 ☑ 167 ☑ 168 ☑ 169 ☑ 170 ☑ 171 ☑ 172 ☑ 173 ☑ 174 ☑ 175
☑ 176 ☑ 177 ☑ 178 ☑ 179 ☑ 180 ☑ 181 ☑ 182 ☑ 183 ☑ 184 ☑ 185 ☑ 186 ☑ 187 ☑ 188 ☑ 189 ☑ 190 ☑ 191
☑ 192 ☑ 193 ☑ 194 ☑ 195 ☑ 196 ☑ 197 ☑ 198 ☑ 199 ☑ 200 ☑ 201 ☑ 202 ☑ 203 ☑ 204 ☑ 205 ☑ 206 ☑ 207
☑ 208 ☑ 209 ☑ 210 ☑ 211 ☑ 212 ☑ 213 ☑ 214 ☑ 215 ☑ 216 ☑ 217 ☑ 218 ☑ 219 ☑ 220 ☑ 221 ☑ 222 ☑ 223
☑ 224 ☑ 225 ☑ 226 ☑ 227 ☑ 228 ☑ 229 ☑ 230 ☑ 231 ☑ 232 ☑ 233 ☑ 234 ☑ 235 ☑ 236 ☑ 237 ☑ 238 ☑ 239
☑ 240 ☑ 241 ☑ 242 ☑ 243 ☑ 244 ☑ 245 ☑ 246 ☑ 247 ☑ 248 ☑ 249 ☑ 250 ☑ 251 ☑ 252 ☑ 253 ☑ 254 ☑ 255

Figure 75: Advanced - DSL - ADSL Tone Settings

UPnP

Universal Plug and Play (UPnP) is a set of networking protocols that can allow networked devices, such as computers, printers, WiFi access points and mobile phones to automatically detect each other's presence on the network and establish functional network services for data sharing, communications, and entertainment.



UPnP Configuration

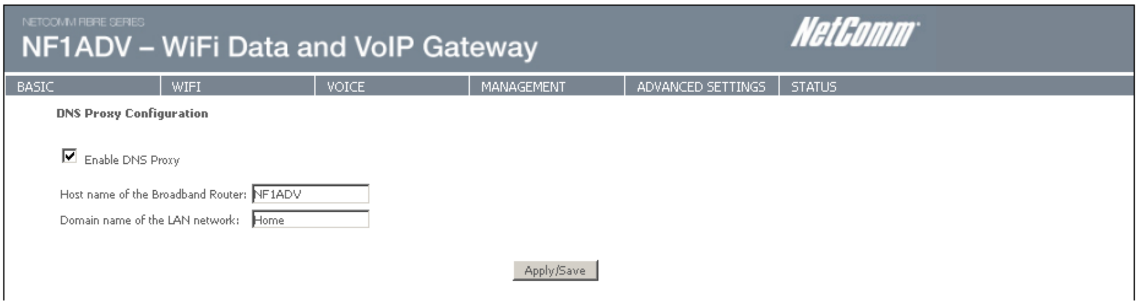
NOTE: UPnP is activated only when there is a live WAN service with NAT enabled.

☑ Enable UPnP

Figure 76: Advanced – UPnP

DNS Proxy

To enable DNS Proxy settings, tick the corresponding checkbox and then enter host and Domain name, as in the example shown below. Click Apply/Save to continue.



DNS Proxy Configuration

☑ Enable DNS Proxy

Host name of the Broadband Router: NF1ADV

Domain name of the LAN network: Home

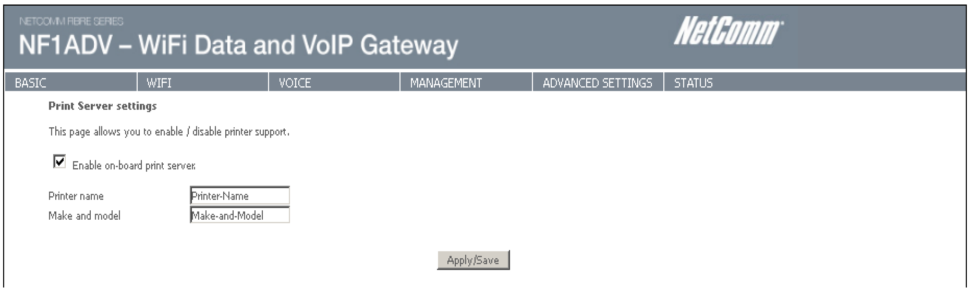
Figure 77: Advanced - DNS Proxy

The Host Name and Domain name are combined to form a unique label that is mapped to the router IP address. This can be used to access the user interface of the router with a local name rather than by using the router IP address.

Print Server

This page allows you to enable or disable the USB port of the NF1ADV to be used as a print server.

Please see Appendix B for more details on setting up your router to work with Print Server functionality.



Print Server settings

This page allows you to enable / disable printer support.

☑ Enable on-board print server.

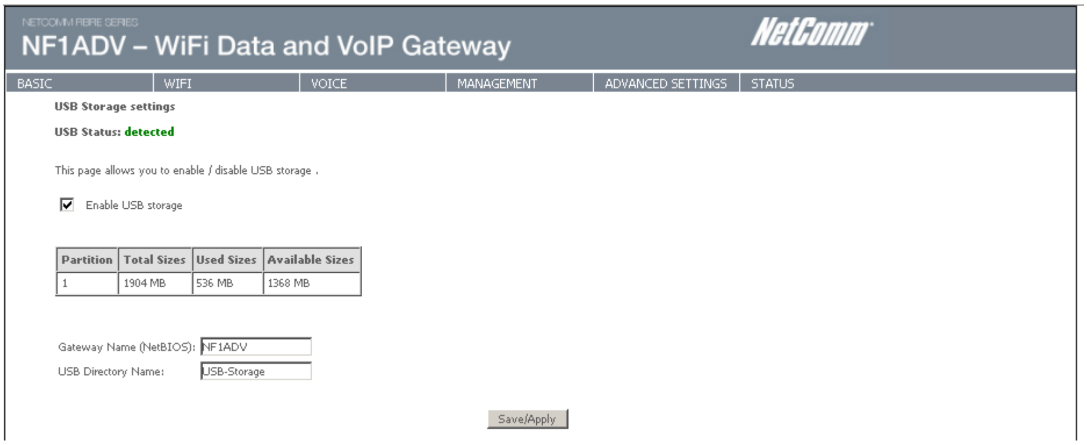
Printer name	Printer-Name
Make and model	Make-and-Model

Apply/Save

Figure 78: Advanced - Print Server

Storage Service

This page allows you to enable or disable the USB ports of the NF1ADV so it can be used as a mass storage server.
Please see Appendix C for more details on setting up your router to work with Storage Server functionality.



USB Storage settings

USB Status: detected

This page allows you to enable / disable USB storage .

☑ Enable USB storage

Partition	Total Sizes	Used Sizes	Available Sizes
1	1904 MB	536 MB	1368 MB

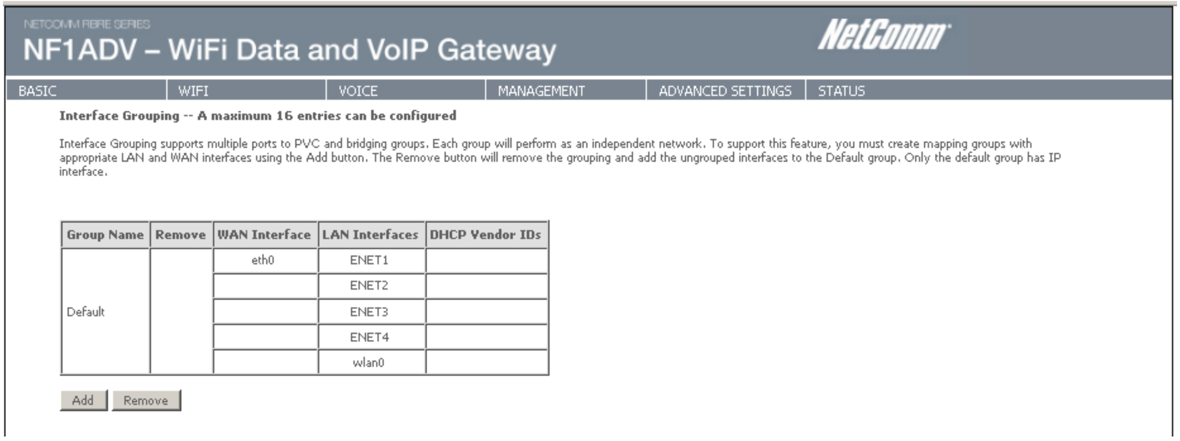
Gateway Name (NetBIOS):	NF1ADV
USB Directory Name:	USB-Storage

Save/Apply

Figure 79: Advanced - USB Storage

Interface Grouping

Interface grouping supports multiple ports to PVC and bridge groups. Each group performs as an independent network. To use this feature, you must create mapping groups with appropriate LAN and WA N interfaces using the Add button.
The Remove button removes mapping groups, returning the ungrouped interfaces to the default group. Only the default group has an IP interface.



Interface Grouping -- A maximum 16 entries can be configured

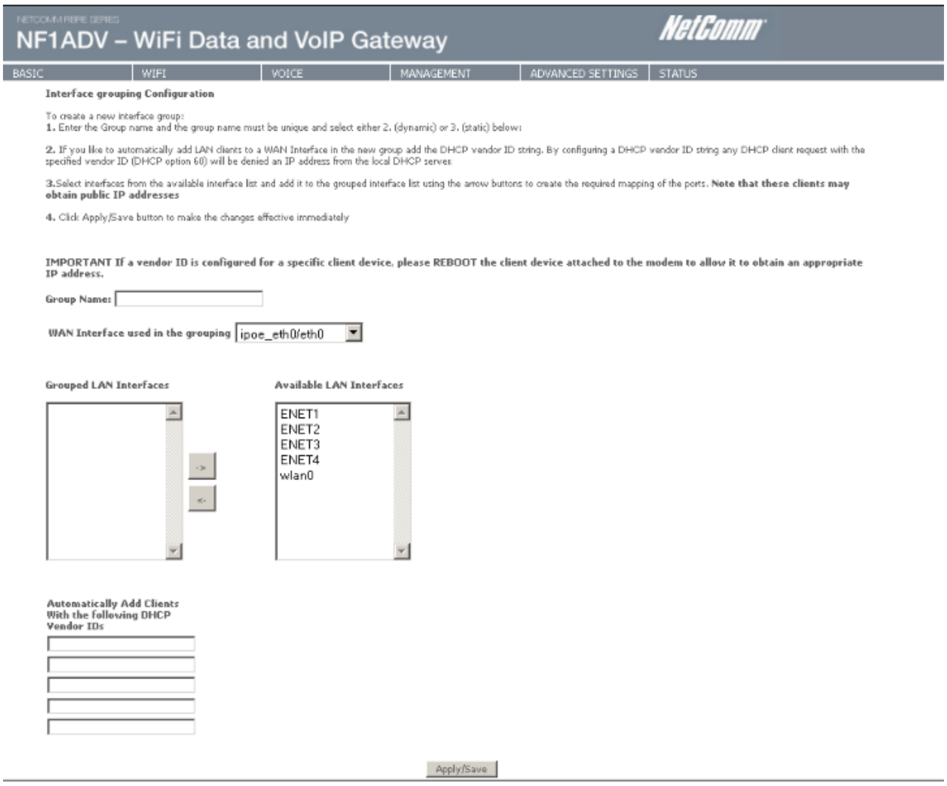
Interface Grouping supports multiple ports to PVC and bridging groups. Each group will perform as an independent network. To support this feature, you must create mapping groups with appropriate LAN and WAN interfaces using the Add button. The Remove button will remove the grouping and add the ungrouped interfaces to the Default group. Only the default group has IP interface.

Group Name	Remove	WAN Interface	LAN Interfaces	DHCP Vendor IDs
Default		eth0	ENET1	
			ENET2	
			ENET3	
			ENET4	
			wlan0	

Add Remove

Figure 80: Advanced - Interface Grouping

To add an Interface Group, click the Add button. The following screen will appear. It lists the available and grouped interfaces. Follow the instructions shown below:



Interface grouping Configuration

To create a new interface group:
1. Enter the Group name and the group name must be unique and select either 2. (dynamic) or 3. (static) below:

2. If you like to automatically add LAN clients to a WAN Interface in the new group add the DHCP vendor ID string. By configuring a DHCP vendor ID string any DHCP client request with the specified vendor ID (DHCP option 60) will be denied an IP address from the local DHCP server.

3.Select interfaces from the available interface list and add it to the grouped interface list using the arrow buttons to create the required mapping of the ports. **Note that these clients may obtain public IP addresses**

4. Click Apply/Save button to make the changes effective immediately

IMPORTANT If a vendor ID is configured for a specific client device, please REBOOT the client device attached to the modem to allow it to obtain an appropriate IP address.

Group Name:

WAN Interface used in the grouping ipoe_eth0/eth0

Grouped LAN Interfaces

Available LAN Interfaces
ENET1
ENET2
ENET3
ENET4
wlan0

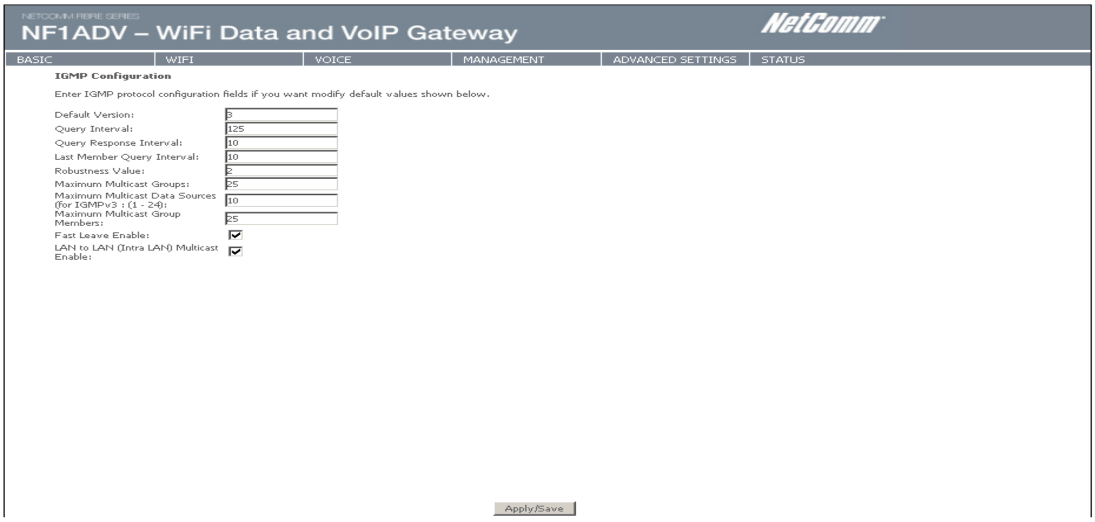
Automatically Add Clients With the following DHCP Vendor IDs

Figure 81: Advanced - Add Interface Grouping

Automatically Add Clients with the following DHCP Vendor IDs
Add support to automatically map LAN interfaces to PVC's using DHCP vendor ID (option 60). The local DHCP server will decline and send the requests to a remote DHCP server by mapping the appropriate LAN interface. This will be turned on when Interface Grouping is enabled.
Press the Apply/Save button to save any changes to the configuration settings.

Multicast – IGMP Configuration

The Internet Group Management Protocol (IGMP) is a communications protocol used by hosts and adjacent routers on IP networks to establish multicast group memberships. IGMP is a protocol only used on the network between a host and the router. It allows a host to inform the router whenever that host needs to join or leave a particular multicast group. IGMP provides for more efficient allocation of resources when used with online gaming and video streaming.



IGMP Configuration

Enter IGMP protocol configuration fields if you want modify default values shown below.

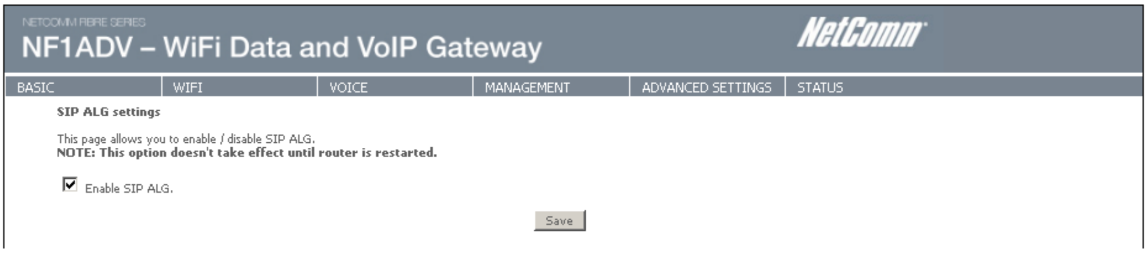
Default Version:	3
Query Interval:	125
Query Response Interval:	10
Last Member Query Interval:	10
Robustness Value:	2
Maximum Multicast Groups:	25
Maximum Multicast Data Sources (for IGMPv3 : (1 - 24):	10
Maximum Multicast Group Members:	25
Fast Leave Enable:	☑
LAN to LAN (Intra LAN) Multicast Enable:	☑

Figure 82: Advanced - IGMP Configuration

FIELD	DEFINITION
Default Version	The version IGMP in use by the router.
Query Interval	The hosts on the segment report their group membership in response to the router's queries. The query interval timer is also used to define the amount of time a router will store particular IGMP state if it does not hear any reports on the group. The query interval is the time in seconds between queries sent from the router to IGMP hosts.
Query Response Interval	When a host receives the query packet, it starts counting to a random value, less the maximum response time. When this timer expires, the host replies with a report, provided that no other host has responded yet. This accomplishes two purposes: a) Allows controlling the amount of IGMP reports sent during a time window. b) Engages the report suppression feature, which permits a host to suppress its own report and conserve bandwidth.
Last Member Query Interval	IGMP uses this value when router hears IGMP Leave report. This means that at least one host wants to leave the group. After router receives the Leave report, it checks that the interface is not configured for IGMP Immediate Leave (single-host on the segment) and if not, it sends out an out-of-sequence query.
Robustness Value	The robustness variable is a way of indicating how susceptible the subnet is to lost packets. IGMP can recover from robustness variable minus 1 lost IGMP packets. You can also click the scroll arrows to select a new setting. The robustness variable should be set to a value of 2 or greater. The default robustness variable value is 2.
Maximum Multicast Groups	The maximum number of multicast groups that the router can control at any one time.
Maximum Multicast Data Sources	The maximum number of data sources a multicast group can have.
Maximum Multicast Group Members	The maximum number of hosts a multicast group can have.
Fast Leave Enable	With IGMP fast-leave processing, which means that the router immediately removes the interface attached to a receiver upon receiving a Leave Group message from a IGMP host.
LAN to LAN (Intra LAN) multicast	Multicasting across a LAN is enabled.

SIP ALG

The SIP Application Layer Gateway (ALG) provides functionality to allow VoIP traffic to pass both from the private to public and public to private side of the firewall when using Network Address and Port Translation (NAPT). SIP ALG inspects and modifies SIP traffic to allow SIP traffic to pass through the firewall.



SIP ALG settings

This page allows you to enable / disable SIP ALG.
NOTE: This option doesn't take effect until router is restarted.

☑ Enable SIP ALG.

Figure 83: Advanced - SIP ALG

Status

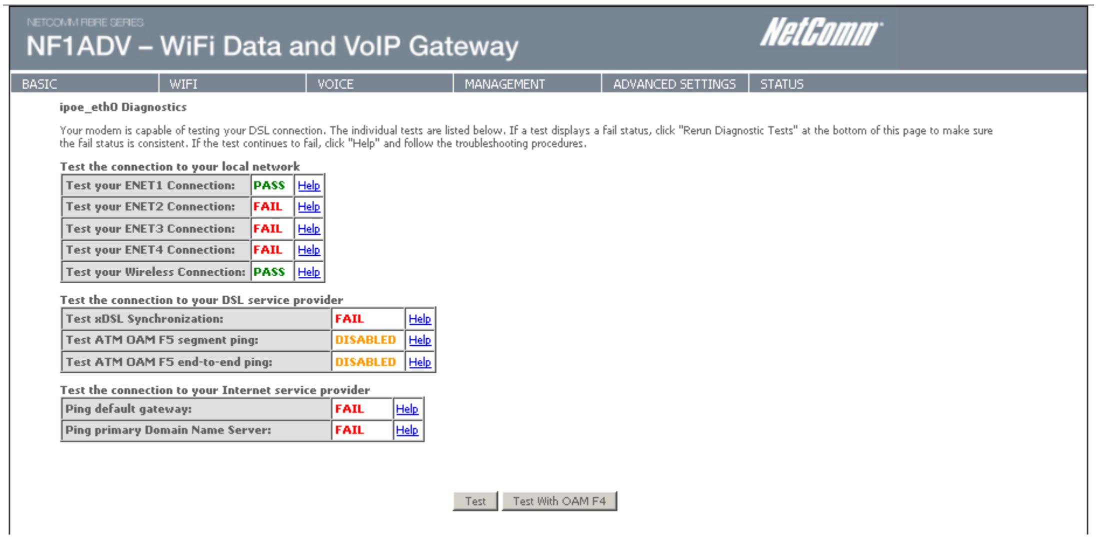
The Status menu has the following submenus:

- Diagnostics
- WAN
- System Log
- Statistics
- Route
- ARP
- DHCP

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 and follow the troubleshooting procedures in the Help screen that appears.
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, contact Technical Support.



ipoe_eth0 Diagnostics

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

Test the connection to your local network

Test your ENET1 Connection:	PASS	Help
Test your ENET2 Connection:	FAIL	Help
Test your ENET3 Connection:	FAIL	Help
Test your ENET4 Connection:	FAIL	Help
Test your Wireless Connection:	PASS	Help

Test the connection to your DSL service provider

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

Test the connection to your Internet service provider

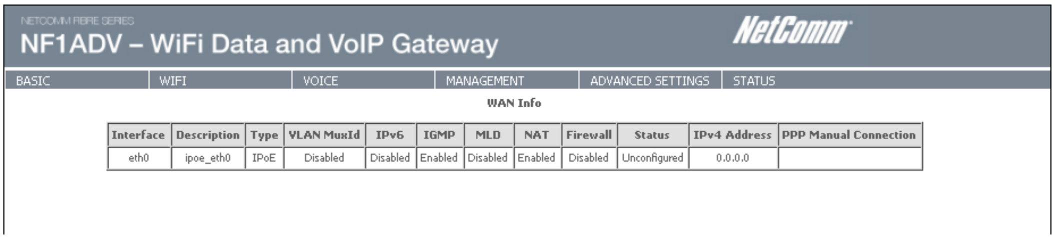
Ping default gateway:	FAIL	Help
Ping primary Domain Name Server:	FAIL	Help

Figure 84: Status – Diagnostics

FIELD	DESCRIPTION
ENET Connection	Pass: Indicates the Ethernet connection to your computer is connected to the LAN port of the router. Fail: Indicates that the router does not detect the Ethernet interface of your computer.
Test your Wireless Connection	Pass: Indicates that the wireless card is switched ON. Fail: Indicates that the wireless card is switched OFF.
Test the Assigned IP Address	Pass: Indicates that the modem has received a valid IP address from the PPP server. Fail: Indicates that the modem has not received a valid IP address from the PPP server.
Ping Primary Domain Name Server	Pass: Indicates that the router can communicate with the DNS server. Fail: Indicates that the router was unable to communicate with the primary Domain Name Server (DNS). This may not have an effect on your internet connection. Therefore if this test fails but you are still able to connect to the internet there is no need to troubleshoot this issue.

WAN

The WAN page details the configuration of the router’s WAN connections.



WAN Info

Interface	Description	Type	VLAN MuxId	IPv6	IGMP	MLD	NAT	Firewall	Status	IPv4 Address	PPP Manual Connection
eth0	ipoe_eth0	IPoE	Disabled	Disabled	Enabled	Disabled	Enabled	Disabled	Unconfigured	0.0.0.0	

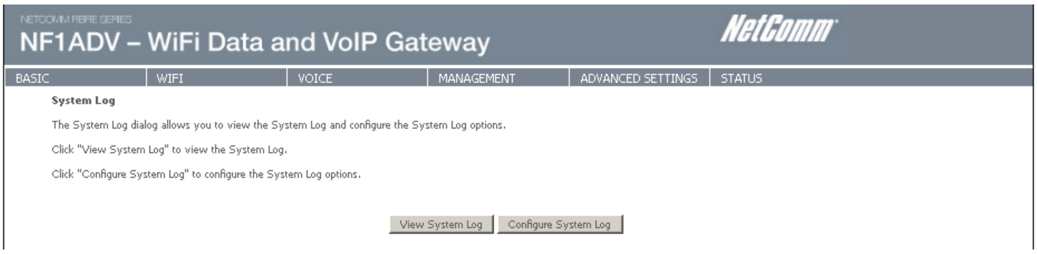
Figure 85: Status - WAN

FIELD	DESCRIPTION
Interface	The Interface of the WAN connection.
Description	The description of the WAN connection.
Type	The type of WAN connection.
VLAN MuxId	Details the status of VLAN MuxId if used.
IPv6	Details whether IPv6 is used or not with the WAN connection.
IGMP	Details the status of IGMP on each WAN connection. IGMP is only used with IP v4 connections.
MLD	Details whether Multicast Listener Discovery (MLD) protocol, the IPv6 variant of IGMP is enabled.
NAT	The NAT status of the WAN connection.
Firewall	The status of the router firewall across the WAN connection.
Status	The status of the WAN connection.
IPv4 Address	The current IP v4 address of the WAN connection.
PPP Manual Connection	This field advises if the WAN connection is configured as a PPP Manual Connection.

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.



System Log

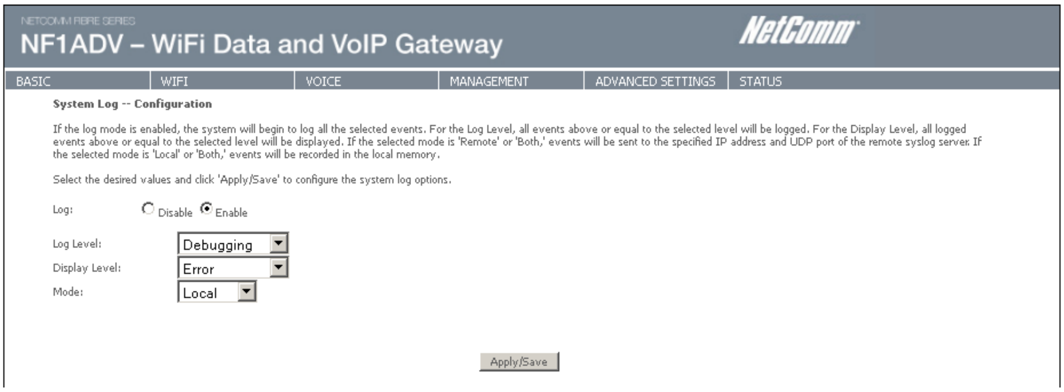
The System Log dialog allows you to view the System Log and configure the System Log options.

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

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

Figure 86: Status - System Log

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



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 'Apply/Save' to configure the system log options.

Log: ○ Disable ● Enable

Log Level: Debugging

Display Level: Error

Mode: Local

Figure 87: Status - Configure System Log

FIELD	DESCRIPTION
Log	Indicates whether the system is currently recording events. System logging can be disabled or enabled. By default system logging is disabled.
Log Level	Allows you to configure the event level and filter out unwanted events below this level. The events range from the highest level “Emergency” down to the lowest “Debugging” level and are stored in the router’s SDRAM memory. When the log buffer is full the newest event will wrap up to the top of the log buffer and overwrite the lowest 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 to the highest Emergency level will be recorded. If the log level is set to Error level only error level logs will be able to be viewed.
Display	Allows you to select the log events and displays in the View System Log window. For events from debugging level and above to the highest Emergency level.
Level	Allows you to select the logged events and display in the View system Log window, per log level.
Mode	Allows you to specify whether events should be stored in local memory, be sent to a remote system log server or both simultaneously. If remote mode is selected the view system log windows will not be able to display events saved to the remote system log server. When either Remote mode or both mode are selected you will be prompted for the system log server IP address and UDP port.

Table 24: Status - Configure System Log Settings

Statistics

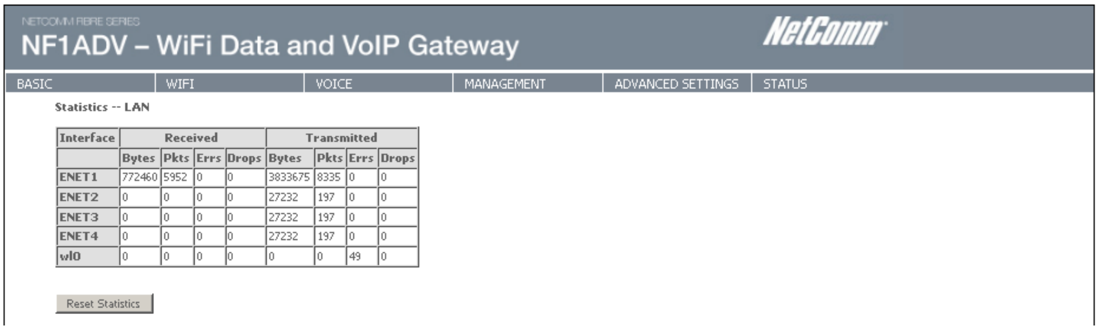
These screens provide detailed information for:

- Local Area Network (LAN),
- Wide Area Network (WAN) Service,
- xTM
- xDSL Service

NOTE: These statistics pages refresh every 15 seconds.

LAN

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



Statistics -- LAN

Interface	Received				Transmitted			
	Bytes	Pkts	Errs	Drops	Bytes	Pkts	Errs	Drops
ENET1	772460	5952	0	0	3833675	8335	0	0
ENET2	0	0	0	0	27232	197	0	0
ENET3	0	0	0	0	27232	197	0	0
ENET4	0	0	0	0	27232	197	0	0
wl0	0	0	0	0	0	0	49	0

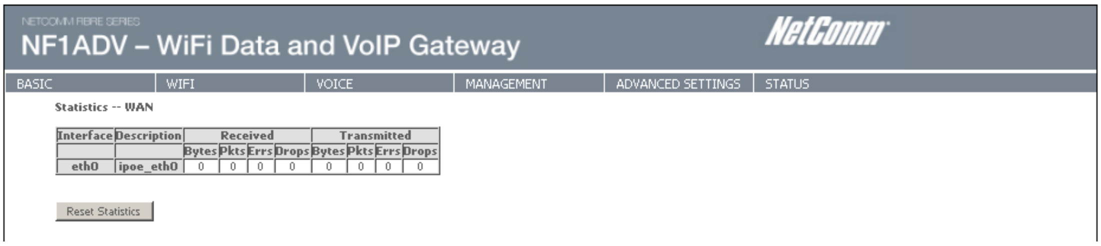
Figure 88: Status – LAN

INTERFACE	DESCRIPTION	
Received/Transmitted	Bytes	Rx/Tx (receive/transmit) packets in bytes.
	Pkts	Rx/Tx (receive/transmit) packets.
	Errs	Rx/Tx (receive/transmit) packets with errors.
	Drops	Rx/Tx (receive/transmit) packets with drops.

Table 25: Status- LAN Settings

WAN Service

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



Statistics -- WAN

Interface	Description	Received				Transmitted			
		Bytes	Pkts	Errs	Drops	Bytes	Pkts	Errs	Drops
eth0	ipoe_eth0	0	0	0	0	0	0	0	0

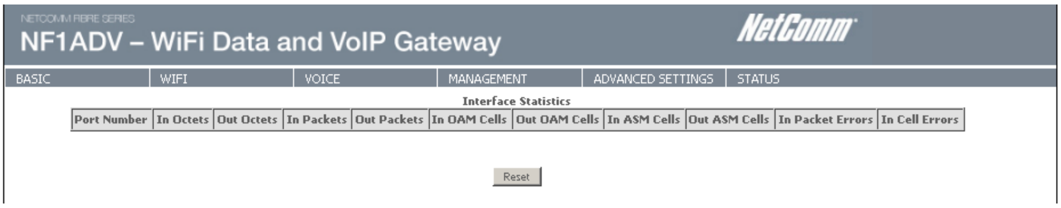
Figure 89: Status - WAN Service

INTERFACE	DESCRIPTION	
Received/Transmitted	Bytes	Rx/Tx (receive/transmit) packets in bytes.
	Pkts	Rx/Tx (receive/transmit) packets.
	Errs	Rx/Tx (receive/transmit) packets with errors.
	Drops	Rx/Tx (receive/transmit) packets with drops.

Table 26: Status - WAN Service Settings

xTM

The xTM statistics page shows the details of the xTM interface.



Interface Statistics

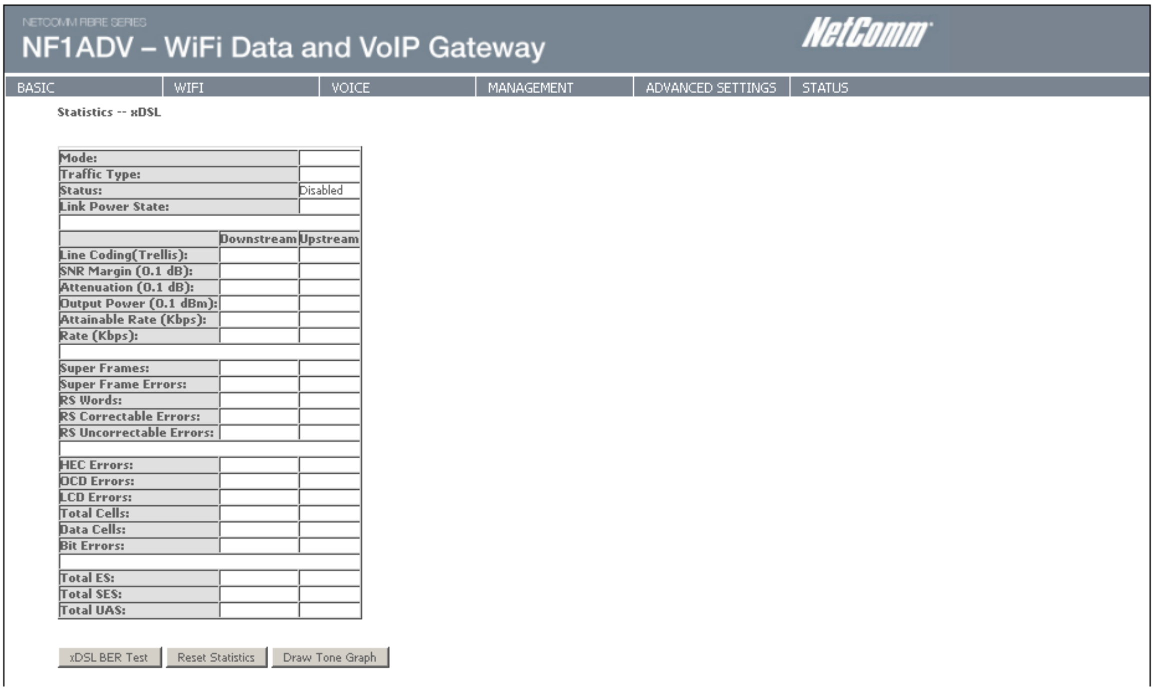
Port Number	In Octets	Out Octets	In Packets	Out Packets	In OAM Cells	Out OAM Cells	In ASM Cells	Out ASM Cells	In Packet Errors	In Cell Errors

Figure 90: Status – xTM

FIELD	DESCRIPTION
Port Number	The port number used by the xTM interface.
In Octets	The number of data packets in octets received over the ATM interface.
Out Octets	The number of data packets in octets transmitted over the ATM interface.
In Packets	The number of data packets received over the ATM interface.
Out Packets	The number of data packets transmitted over the ATM interface.
In OAM Cells	Operation, Administration, and Maintenance (OAM) Cell is the ATM Forum specification for cells used to monitor virtual circuits.
Out OAM Cells	Operation, Administration, and Maintenance (OAM) Cell is the ATM Forum specification for cells used to monitor virtual circuits.
In ASM Cells	The number of Any Source Multicast (ASM) cells received over the interface.
Out ASM Cells	The number of Any Source Multicast (ASM) cells transmitted over the interface.
In Packets Errors	The number of packets with errors detected over the xTM interface.
In Cell Errors	The number of cells with errors detected over the xTM interface.

xDSL

The following graphic shows the ADSL Network Statistics screen. The Reset button (located at the bottom of the screen) can be used to reset statistics. The bit error rate can be tested by clicking the ADSL BER Test button.



Statistics -- xDSL

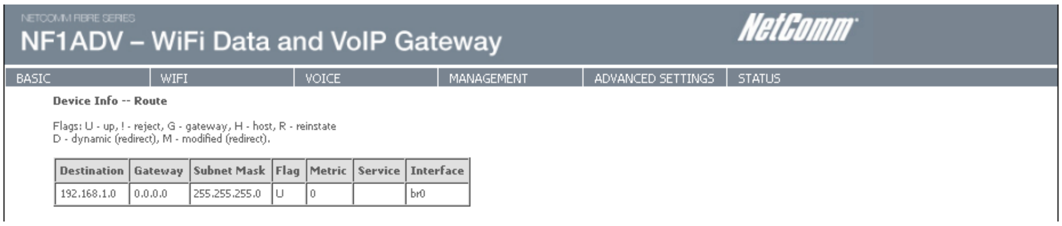
Mode:	
Traffic Type:	
Status:	Disabled
Link Power State:	

	Downstream	Upstream
Line Coding(Trellis):		
SNR Margin (0.1 dB):		
Attenuation (0.1 dB):		
Output Power (0.1 dBm):		
Attainable Rate (Kbps):		
Rate (Kbps):		
Super Frames:		
Super Frame Errors:		
RS Words:		
RS Correctable Errors:		
RS Uncorrectable Errors:		
HEC Errors:		
OCD Errors:		
LCD Errors:		
Total Cells:		
Data Cells:		
Bit Errors:		
Total ES:		
Total SES:		
Total UAS:		

Figure 91: Status - xDSL

Route

Select Route to display the paths the Router has found.



Device Info -- Route

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

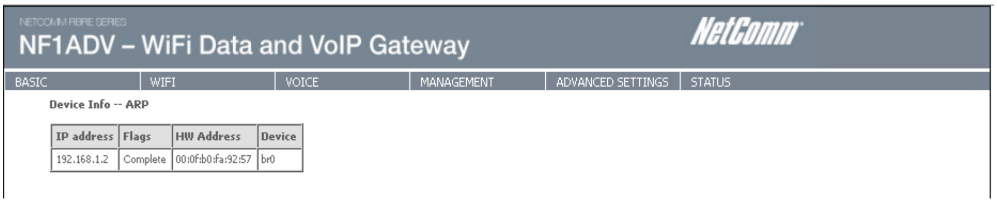
Destination	Gateway	Subnet Mask	Flag	Metric	Service	Interface
192.168.1.0	0.0.0.0	255.255.255.0	U	0		br0

Figure 92: Status - Route

ARP

Click ARP to display the ARP information.

This option can be used to determine which IP address / MAC address is assigned to a particular host. This can be useful when setting up URL filtering, Time of Day filtering or Static DHCP addressing.



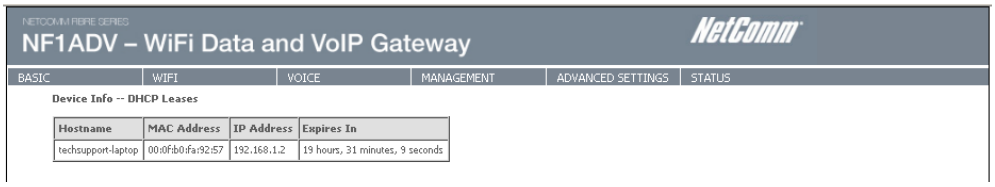
Device Info -- ARP

IP address	Flags	HW Address	Device
192.168.1.2	Complete	00:0f:b0:fa:92:57	br0

Figure 93: Status –ARP

DHCP

Click DHCP to display the DHCP information.



Device Info -- DHCP Leases

Hostname	MAC Address	IP Address	Expires In
techsupport-laptop	00:0f:b0:fa:92:57	192.168.1.2	19 hours, 31 minutes, 9 seconds

Figure 94: Status – DHCP

You can use this to determine when a specific DHCP lease will expire, or to assist you with setting up Static DHCP addressing.

Additional Product Information

Establishing a wireless connection

Windows XP (Service Pack 2)

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

Windows Vista

9. Open the Network and Sharing Center (Start > Control Panel > Network and Sharing center).
10. Click on "Connect to a network".
11. Choose "Connect to the Internet" and click on "Next".
12. Select the wireless network listed on your included wireless security card and click Connect.
13. Enter the network key (refer to the included wireless security card for the default wireless network key).
14. Select the appropriate location. This will affect the firewall settings on the computer.
15. Click on both "Save this network" and "Start this connection automatically" and click "Next".

Windows 7

16. Open the Network and Sharing Center (Start > Control Panel > Network and Sharing center).
17. Click on "Change Adapter settings" on the left-hand side.
18. Right-click on "Wireless Network Connection" and select "Connect / Disconnect".
19. Select the wireless network listed on your included wireless security card and click Connect.
20. Enter the network key (refer to the included wireless security card for the default wireless network key).
21. You may then see a window that asks you to "Select a location for the 'wireless' network". Please select the "Home" location.
22. You may then see a window prompting you to setup a "HomeGroup". Click "Cancel" on this.
23. You can verify your wireless connection by clicking the "Wireless Signal" indicator in your system tray.
24. After clicking on this, you should see an entry matching the SSID of your NF1ADV with "Connected" next to it.

Mac OSX 10.6

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

Please note: For any other operating system (Windows 98SE, Windows ME, Windows 2000 etc.) or if you use a wireless adaptor utility to configure your wireless connection, please consult the wireless adapter documentation for additional information.

Troubleshooting

Using the indicator lights (LEDs) to Diagnose Problems

The LEDs are useful aides for finding possible problem causes.

Power LED

The Power LED does not light up.

STEP	CORRECTIVE ACTION
1	Make sure that the NF1ADV power adaptor is connected to the device and plugged in to an appropriate power source. Use only the supplied power adaptor.
2	Check that the NF1ADV and the power source are both turned on and device is receiving sufficient power.
3	Turn the NF1ADV off and on.
4	If the error persists, you may have a hardware problem. In this case, you should contact technical support.

Web Configuration

I cannot access the web configuration pages.

STEP	CORRECTIVE ACTION
1	Make sure you are using the correct IP address of the NF1ADV. You can check the IP address of the device from the Network Setup configuration page.
2	Check that you have enabled remote administration access. If you have configured an inbound packet filter, ensure your computer's IP address matches it.
3	Your computer's and the NF1ADV's IP addresses must be on the same subnet for LAN access. You can check the subnet in use by the router on the Network Setup page.
4	If you have changed the devices IP address, then enter the new one as the URL you enter into the address bar of your web browser.

The web configuration does not display properly.

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

Login Username and Password

I forgot my login username and/or password.

STEP	CORRECTIVE ACTION
1	Press the Reset button for ten seconds, and then release it. When the Power LED begins to blink, the defaults have been restored and the NF1ADV restarts. You can now login with the factory default username and password "admin" (without the quotes)
2	It is highly recommended to change the default username and password. Make sure you store the username and password in a safe place.

WLAN Interface

I cannot access the NF1ADV from the WLAN or ping any computer on the WLAN.

STEP	CORRECT ACTION
1	If you are using a static IP address for the WLAN connection, make sure that the IP address and the subnet mask of the NF1ADV and your computer(s) are on the same subnet. You can check the routers configuration from the Network Setup page.

Using the NF1ADV to make and receive telephone calls

The NF1ADV provides circuit switched voice services via two telephony line interfaces offering the ability to make and receive telephone calls via a regular analogue telephone using the local voice network.

Please note: Please refer to your mobile service provider for activation of your voice service and information about the call charges that apply.

It's important to note that the NF1ADV has two separate line interfaces that share a single outbound/inbound telephone line. This means that handset(s) connected via one port will not be able to use the line at the same time as handsets connected via the other port.

If a call is already in progress via the first port, the user on the handset(s) connected to the second port will receive a busy signal. Incoming calls will ring and can be answered on either port, however once a call is answered from one port, handset(s) on the second port will receive a busy signal.

Handset requirements

The NF1ADV allows you to make telephone calls over the VoIP network using a standard analogue telephone via the built in RJ-11 Phone ports and up to 4 cordless phones using the built in DECT module . Please refer to the documentation provided by the manufacturer of your analogue or cordless telephone for assistance with the operation of your telephone handset.

Maximum REN Loading

Please note that each of the line interfaces on the NF1ADV is capable of supporting multiple analogue telephones connected via splitters. The ringer equivalence number (REN) for each line is 5. Therefore, a maximum of 5 handsets each with a REN number of 1 can be connected to each line port.

Before you start make any phone call, make sure you checked the following:

1. You have a WAN connection to the internet.
2. Your NF1ADV is powered on and in running condition.
3. Your SIP settings have successfully registered to your VoIP provider's network.
4. A working analogue telephone connected into either the Line 1 or Line 2 port.
5. You hear the dial tone and the Phone 1 or 2 LED on the front of your NF1ADV should light up after lifting the handset.

How to place a call

To make a call, simply lift the handset and dial the number following the instructions provided by your telephone handset manufacturer.

How to receive a call

When an incoming call is received, both Line 1 and Line 2 lights will start flashing and any phones connected to the NF1ADV will ring. Answer the telephone following the instructions provided by your telephone handset manufacturer to conduct the call.

Please note: If the call is answered from a telephone connected to Line 1, telephones connected to Line 2 will receive an engaged tone for the duration of the call.

If there is no phone connected to the NF1ADV, all incoming calls will be transferred to Voicemail (if enabled on the device).

Answering an incoming call when on a call

Call waiting enables a 2nd incoming call to be received while you are on a call. To answer a call waiting call, perform a hook-flash (briefly depressing the hook button). The incoming call should then be answered. Upon hanging up or performing another hook-flash, you will be returned to the original telephone call.

Accessing voicemail

To access your voicemail, please dial *98 and follow the voice prompts.

Call feature codes

Quick Reference Table

The NF1ADV supports a number of call feature codes for supplementary services.

FEATURE	ACTIVATION	DEACTIVATION	STATUS
Caller ID	#31# (to block an individual call)	*31# (to unblock an individual call)	N/A
Call Waiting	*43#	#43#	*#43#
Call Forwarding Unconditional	*21*<Directory Number>#	#21#	*#21#
Call Forwarding No Answer	*61*<Directory Number>#	#61#	*#61#
Call Forwarding Busy	*67*<Directory Number>#	#67#	*#67#
Call Forwarding Unreachable	*62*<Directory Number>#	#62#	*#62#

Table 27 - Additional Product Information - Call Feature Codes Quick Reference

Caller ID

Caller ID transmits a caller's number to the called party's telephone equipment when the call is being set up but before the call is answered. Where available, caller ID can also provide a name associated with the calling telephone number.

- To force Caller ID to be blocked for an outbound call, dial #31# followed by the number you wish to dial.
- To force Caller ID to be unblocked for an outbound call, dial *31# and then dial the number.

Call Waiting

Call waiting allows for indication and answering of an incoming telephone whilst an existing call is underway.

- To disable call waiting, dial #43#, and hang up after you hear 2 high pitch beeps.
- To enable call waiting, dial *43#, and hang up after you hear 2 low pitch beeps.
- To check the status of Call Waiting, dial *#43# or view the advanced status page of the management console.
  - Call waiting is disabled if you hear 2 high pitch beeps.
  - Call waiting is enabled if you hear 2 low pitch beeps.

Call forwarding (or call diverting), is a feature that allows an incoming call to be redirected to another number depending on the circumstances at the time of receiving the call.

Please note: The Call Waiting feature will automatically turn off if you enable Call forwarding. Call Waiting will need to be enabled again after Call Forwarding is disabled.

Call Forwarding Unconditional

Call forwarding Unconditional will divert all incoming calls to a phone number that you desire.

- To enable Call Forwarding Unconditional, dial *21*<Directory Number>#
  (Where directory number is the number you wish to forward calls to)
- Hang up after you hear 2 low pitch beeps.
- To disable Call Forwarding Unconditional, dial #21#
- Hang up after you hear 2 high pitch beeps.
- To check the status of Call Forwarding Unconditional, dial *#21# or view the advanced status page of the management console.
  - Call Forwarding Unconditional is disabled if you hear 2 high pitch beeps.
  - Call Forwarding Unconditional is enabled if you hear 2 low pitch beeps.

Call Forwarding No Answer

Call forwarding No Answer will divert all incoming calls to a phone number that you desire only if the incoming call is not answered.

- To enable Call Forwarding No Answer, dial *61*<Directory Number>#
  (Where directory number is the number you wish to forward calls to)
- Hang up after you hear 2 low pitch beeps.
- To disable Call Forwarding No Answer, dial #61#
- Hang up after you hear 2 high pitch beeps.
- To check the status of Call Forwarding No Answer, dial *#61# or view the advanced status page of the management console.
  - Call Forwarding No Answer is disabled if you hear 2 high pitch beeps.
  - Call Forwarding No Answer is enabled if you hear 2 low pitch beeps.

Call Forwarding Busy

Call forwarding busy will divert all incoming calls to a phone number that you desire only if your telephone is busy on another call.

- To enable Call Forwarding Busy, dial *67*<Directory Number># (Where the directory number is the number you wish to forward calls to).
- Hang up after you hear 2 low pitch beeps.
- To disable Call Forwarding Busy, dial #67#
- Hang up after you hear 2 high pitch beeps.
- To check the status of Call Forwarding Busy, dial *#67# or view the advanced status page of the management console.
    - Call Forwarding Busy is disabled if you hear 2 high pitch beeps.
    - Call Forwarding Busy is enabled if you hear 2 low pitch beeps.

Call Forwarding Not Reachable

Call forwarding busy will divert all incoming calls to a phone number that you desire only if your telephone is unreachable by the network.

- To enable Call Forwarding Not Reachable dial *62*<Directory Number>#
  (Where directory number is the number you wish to forward calls to)
- Hang up after you hear 2 low pitch beeps.
- To disable Call Forwarding Not Reachable, dial #62#, Hang up after you hear 2 high pitch beeps.
- To check the status of Call Forwarding Not Reachable, dial *#62# or view the advanced status page of the management console.
    - Call Forwarding No Answer is disabled if you hear 2 high pitch beeps.
    - Call Forwarding No Answer is enabled if you hear 2 low pitch beeps.

Conference Call

A conference call can be achieved by performing a hook-flash and then by dialling the third party. Wait for the third party to answer your call and then perform another hook-flash to conference all the parties together.

Please note: In order to activate a conference call, you will need to have originated both calls.

Troubleshooting

What do I do if I have no dial tone?
Please follow the procedure listed below:

1. Check to make sure the phone is plugged into your NF1ADV on either Line 1 port or Line 2 port.
2. Check to make sure you are using the correct cable (Cat-3 UTP Telephone Cable with RJ-11 plugs).
3. Check to make sure the line light on the front panel of the NF1ADV turns solid blue if you lift the handset.
4. Check to make sure the blue MBB indication light on the front of the NF1ADV is blinking.
5. Check to make sure your MBB SIM card is activated and inserted into your NF1ADV properly.
6. Check and see if you get the dial tone after rebooting your NF1ADV.

I have noise interference during telephone calls. How can I fix this?
To resolve this issue, try the following:

- Verify that the RJ-11 cable is securely connected and not damaged.
- Try to remove any telephone splitters from the connection between your phone and the NF1ADV.
- Try rebooting your NF1ADV.

Technical Data

The following table lists the hardware specifications of the NF1ADV.

MODEL	NF1ADV
CPU	Broadcom BCM6362
Connectivity	10/100 Ethernet LAN x 4, 10/100/1000 Ethernet WAN x 1, WLAN, RJ-11 x 3
Antenna connector	Onboard
LED Indicators	Power, WiFi, WPS, Wireless Bridge, WWW, WAN, LAN, Voice, DSL, DECT, Line
Operating Temperature	0 ~ 50 degrees Celsius (operating temperature)
Power input	12VDC – 2.0A
Dimensions & Weight	133 mm (L) x 137 mm (H) x 34 mm (W) 250 grams
Voice	1 x FXO port, 2 x FXS ports, 1 x DECT module
Storage/ Print Server	2 x USB 2.0 ports
Regulatory Compliancy	PTCRB FCC IC ROHS UL

Table 28: NF1ADV Technical Specifications

Electrical Specifications

A suitable power supply is available on request or via direct purchase from the NetComm Online shop. It is recommended that the NF1ADV be powered using the 12VDC/2.0A power supply which is included with the device.

Environmental Specifications / Tolerances

The NF1ADV is able to operate over a wide variety of temperatures from 0°C ~ 50°C (ambient).

FAQ

1. I cannot seem to access the web page interface.

   The default IP address of the unit is 192.168.1.1, so first try to open a web browser to this address. Also check that your laptop/ PC is using the same subnet as the router's Ethernet port. i.e An IP address has been assigned to your computer in the range of 192.168.1.x where x can equal 2 – 254.

2. The router has a connection but cannot access the internet

   Check that DNS Proxy is enabled by clicking on the LAN link on the configuration interface. Make sure that the DHCP DNS server address 1 IP address is set to the same address as that of the Ethernet port.

3. Can I make PSTN calls from the NF1ADV?

   Yes. By connecting a regular landline (Analogue) telephone to the port labelled Phone 1 using the RJ-11 Cable provided. To activate the phone jacks in your home or office connect an RJ-11 Cable from the port labelled "Line" to any wall jack. When you lift the receiver you will hear a dial tone and can place your call. Dial ## before the number you wish to be connected to, and the PSTN call will be placed.

4. Is the NF1ADV secure; can other people access my wireless network?

   The NF1ADV comes configured with WPA2-PSK WiFi security enabled. When you first access the Internet, type 192.168.1.1 into the address bar, the wizard will pop up to configure your computer to connect with the wireless security settings of your choice (please see the Quick Start Guide for more information on connecting your data devices to the NF1ADV). Only people you allow access to, will be able to connect to the NF1ADV ensuring your connection is secure and safe.

5. Can I change the name and password of my wireless network?

   Yes. You can change your NF1ADV settings from the browser user interface by typing 192.168.1.1 into the address bar of your Web browser. You can change the WiFi network name or SSID (Service Set Identifier), WiFi security standard (WPA, WPA2, WEP) and your WiFi password.

6. How do I share my Internet connection, using the NF1ADV, with other users?

   Provide the SSID (Service Set Identifier) and WiFi network password of your NF1ADV for any users you want to share your WiFi Internet connection with. Each user will need to select the NF1ADV's SSID, on their WiFi enabled computer or device and enter the network password you provide.

7. What is the difference between upload and download speeds and why do they differ?

   Upload is when you send information (e.g. emails) from your computer and download is when you receive information via the Internet. The speeds at which upload and download operate depend on the way you use the Internet and the size of files you send and receive.

8. Do I need to attach an antenna on this device?

   No. The NF1ADV comes equipped with an onboard WLAN antenna.

9. I have lost the security card that came with the setup instructions. What can I do?

   If you have lost your security card, and forgotten the wireless security details (SSID and WiFi network password), there is a label attached to the base of your NF1ADV with all your original security details. If the label is unreadable or has been removed, the WiFi network password can be viewed or reset by logging in to the Management Console using an Ethernet Cable connected to the LAN port of the NF1ADV.

10. I forgot my Management Console password. What can I do?

    If you have forgotten your Management Console password and cannot access the Web user interface, you will need to reset your NF1ADV back to factory default settings. To reset your device press and hold the reset button on the back of your NF1ADV for 10-15 seconds until all the indicator lights on the unit flash to indicate the device is reset. After a reset, use the default WiFi settings (SSID and WPA key) which can be found on the base of your NF1ADV. (Note - this will also reset any custom settings and passwords you may have already set up).

11. Can I use the NF1ADV overseas?

    Yes. The NF1ADV is equipped for most overseas xDSL services and connections.

Appendix A: Tables

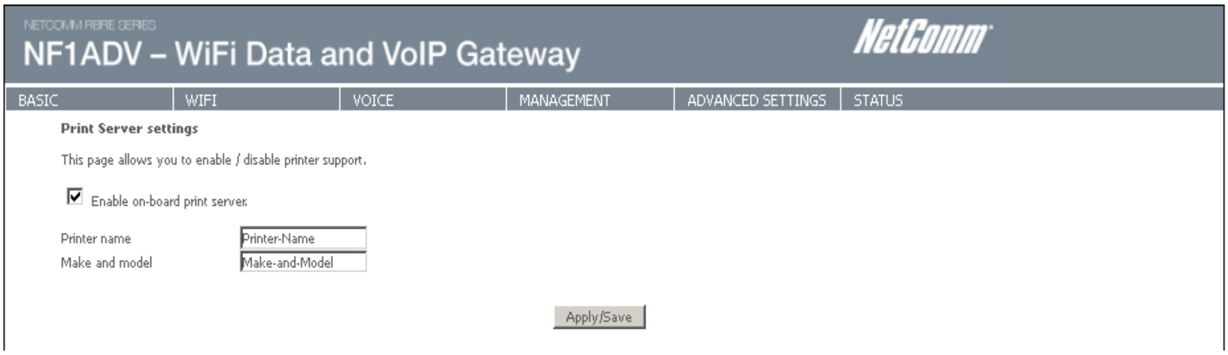
Appendix B: Print Server

These steps explain the procedure for enabling the Print Server.

1. Enable Print Server from the Advanced menu in the Web User Interface of the router.
2. Select Enable on-board print server checkbox and enter the printer name and make and model.

NOTE: The Printer name can be any text string up to 40 characters. The Make and model can be any text string up to 128 characters.

3. Press the Apply/Save button to save the new settings.



Print Server settings

This page allows you to enable / disable printer support.

☑ Enable on-board print server.

Printer name: Printer-Name
Make and model: Make-and-Model

Figure 95: Advanced - Print Server Settings

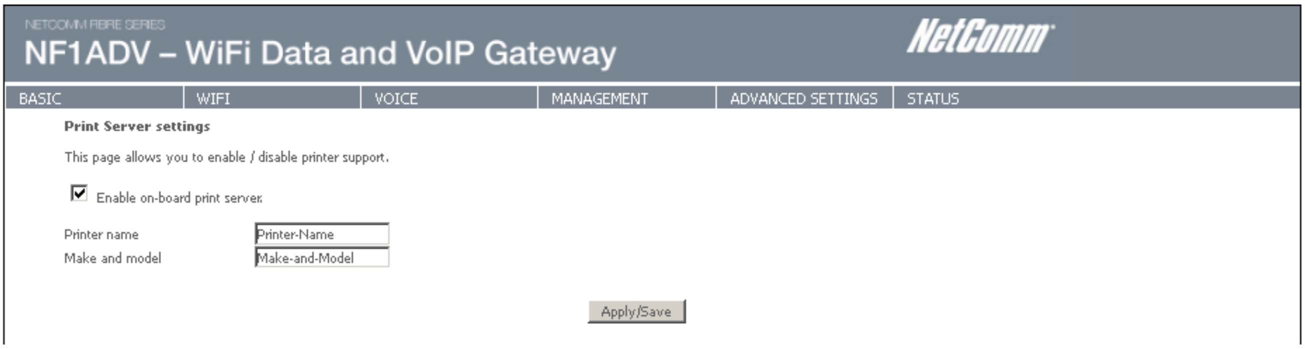
For Windows Vista/7

These steps explain the procedure for enabling the Printer Server.

4. Enable Print Server from Web User Interface.

Select Enable on-board print server checkbox and enter the printer name and make and model.

NOTE: The Printer name can be any text string up to 40 characters. The Make and model can be any text string up to 128 characters.



Print Server settings

This page allows you to enable / disable printer support.

☑ Enable on-board print server.

Printer name: Printer-Name
Make and model: Make-and-Model

Figure 96: Advanced - Print Server Settings

5. Go to the control panel, and select ‘Printers’ if you are using Windows Vista or select “Devices and Printers” if you are using Windows 7.

12. Once in the ‘Printers’ page, click the ‘Add a printer’ button as shown below.

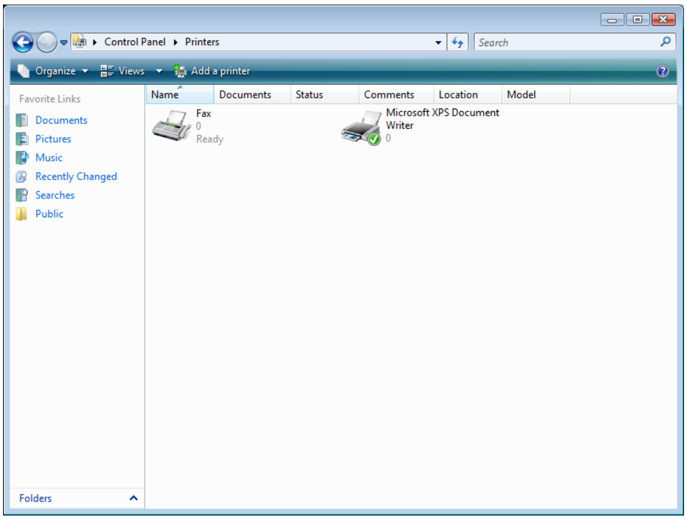
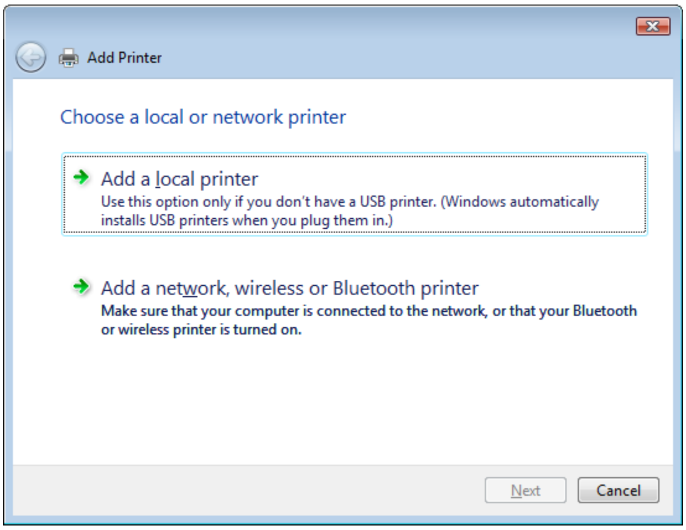


Figure 97: Windows 7 - Control Panel – Printers

13. Select the ‘Add a network, wireless or Bluetooth printer’ option.



Add Printer

Choose a local or network printer

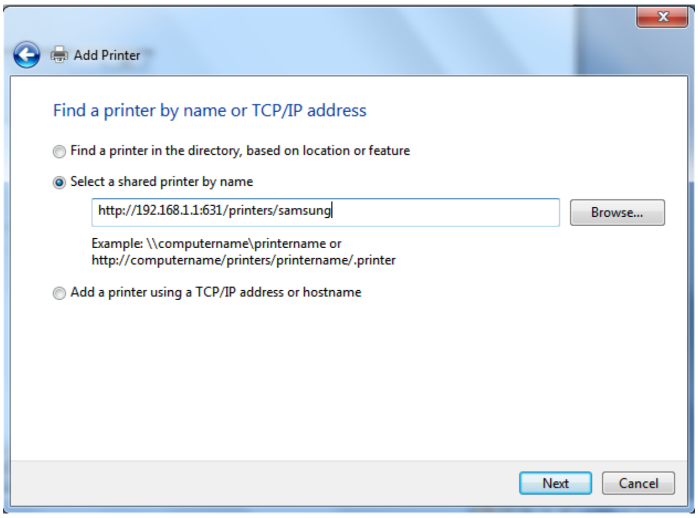
Add a local printer
Use this option only if you don't have a USB printer. (Windows automatically installs USB printers when you plug them in.)

Add a network, wireless or Bluetooth printer
Make sure that your computer is connected to the network, or that your Bluetooth or wireless printer is turned on.

Figure 98: Windows 7 - Add Printer

14. Click on the radio-button labelled ‘**Select a shared printer by name’**, and type “http://192.168.1.1:631/printers/Printer_Name” in the box below. Ensure the printer name is the name you entered in step 1 Click ‘Next’.

NOTE: The PrinterName must be the same as the printer name entered into the Printer section of Dual-3G29WN2.



Add Printer

Find a printer by name or TCP/IP address

○ Find a printer in the directory, based on location or feature

● Select a shared printer by name

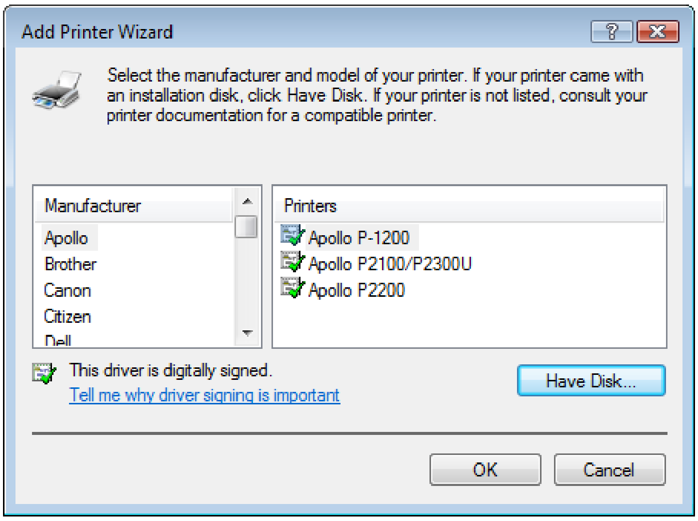
http://192.168.1.1:631/printers/samsung

Example: \\computername\printername or
http://computername/printers/printername/.printer

○ Add a printer using a TCP/IP address or hostname

Figure 99: Windows 7 - Add Shared Printer Name

15. Next, select the driver that came with your printer. Browse through the list to select your printer driver, or click ‘Have Disk’ if you have your printer driver installation media.



Add Printer Wizard

Select the manufacturer and model of your printer. If your printer came with an installation disk, click Have Disk. If your printer is not listed, consult your printer documentation for a compatible printer.

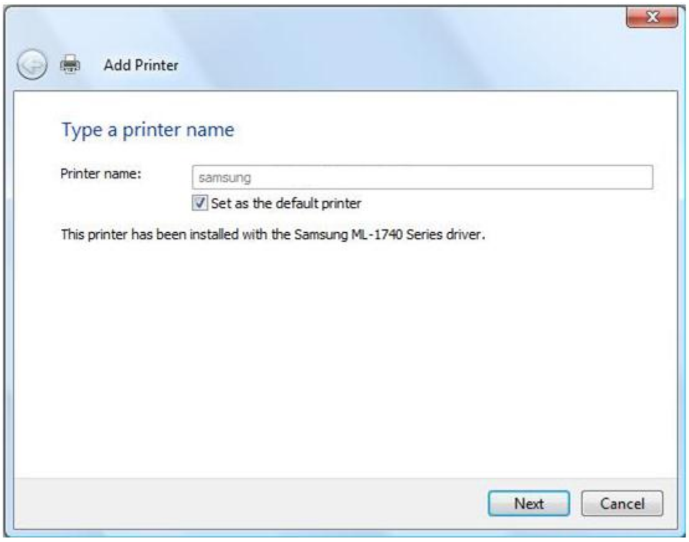
Manufacturer
Apollo
Brother
Canon
Citizen
Dell

Printers
Apollo P-1200
Apollo P2100/P2300U
Apollo P2200

This driver is digitally signed.
Tell me why driver signing is important

Figure 100: Add Printer Drivers

16. Choose whether you want this printer to be the default printer, and then click ‘Next’.



Add Printer

Type a printer name

Printer name: samsung

☑ Set as the default printer

This printer has been installed with the Samsung ML-1740 Series driver.

Figure 101: Add Printer Name

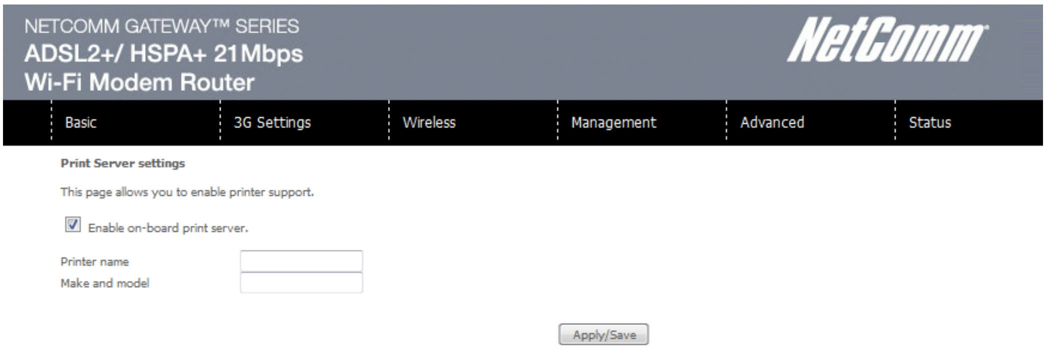
17. Click ‘Finish’. Your device is now configured and ready for use.

For MAC OSX

These steps explain the procedure for enabling the Printer Server and setting up a printer for the Mac OSX operating system.

1. Enable Print Server from Web User Interface.

Select Enable on-board print server checkbox and enter the printer name and make and model.
NOTE: The Printer name can be any text string up to 40 characters. The Make and model can be any text string up to 128 characters.



Print Server settings

This page allows you to enable printer support.

☑ Enable on-board print server.

Printer name

Make and model

Apply/Save

Figure 102: Enable Print Server

2. To set up your printer, check the Apple menu and select the "System Preferences" option. In the System Preferences menu click on the "Print & Fax" option.

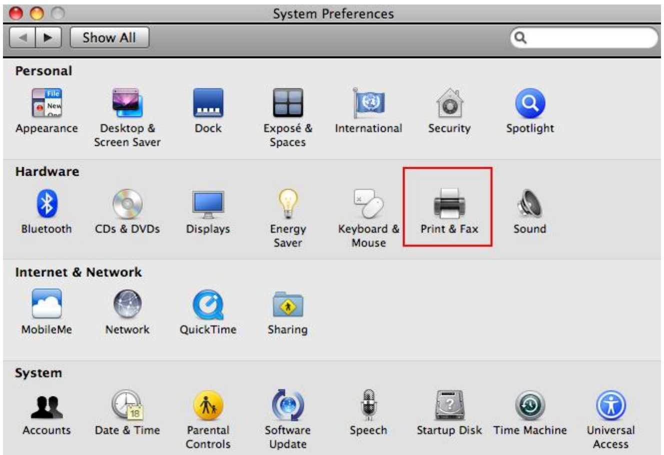
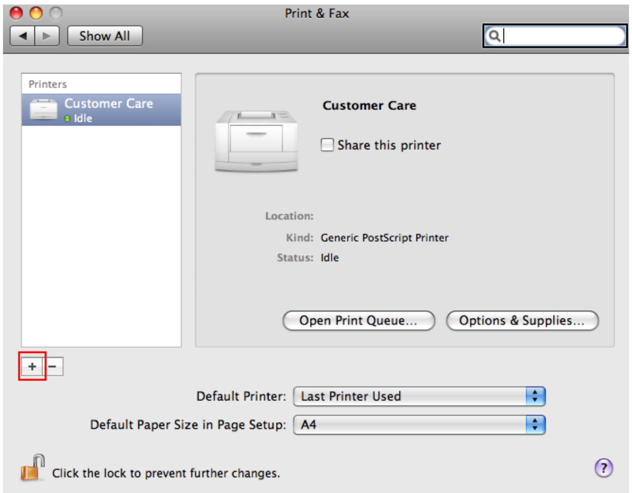


Figure 103: System Preferences

3. With your Printer driver installed, please add your printer from the Print &Fax menu.



Customer Care
Idle

Customer Care

□ Share this printer

Location:
Kind: Generic PostScript Printer
Status: Idle

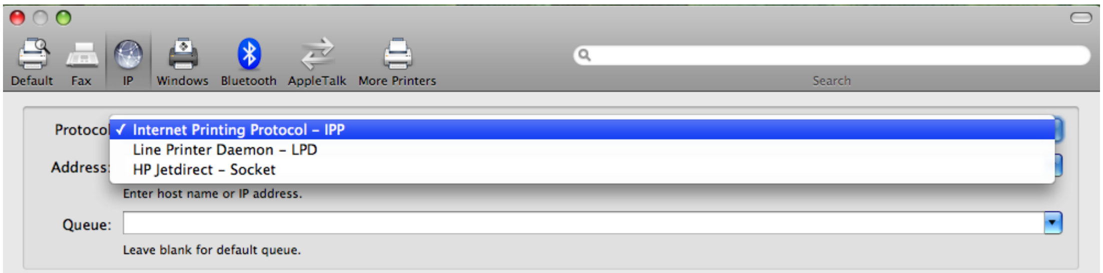
Default Printer: Last Printer Used

Default Paper Size in Page Setup: A4

Click the lock to prevent further changes.

Figure 104: Print & Fax Menu

4. Mouse over to the Protocol drop down list and select Internet Printing Protocol – IPP.



Protocol: ✓ Internet Printing Protocol – IPP

Line Printer Daemon – LPD

HP Jetdirect – Socket

Address:

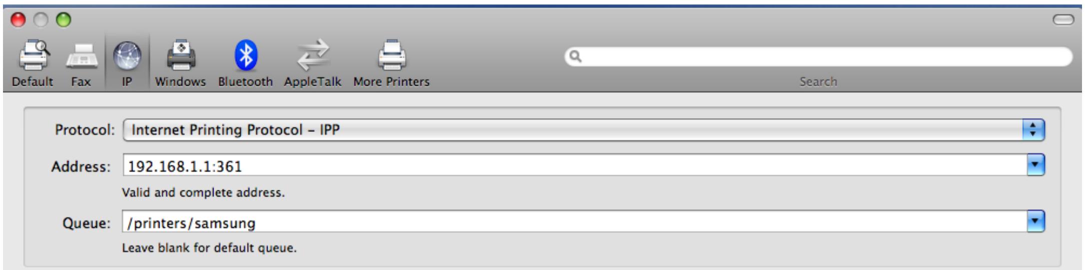
Enter host name or IP address.

Queue:

Leave blank for default queue.

Figure 105: Internet Printing Protocol

5. Input the Address field with "192.168.1.1:631" and the Queue with "/printers/PrinterName"



Protocol: Internet Printing Protocol – IPP

Address: 192.168.1.1:361

Valid and complete address.

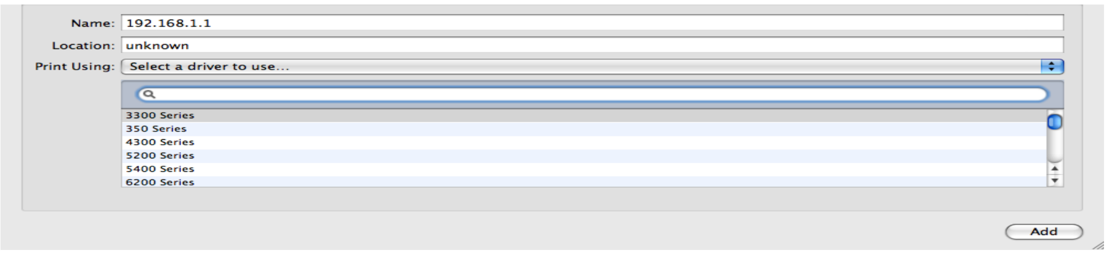
Queue: /printers/samsung

Leave blank for default queue.

Figure 106: Add Printer Path

NOTE: The Printer Name must be the same as the printer name entered into the Printer section of Dual-3G29WN2.

6. From the "Print Using" drop down list and select your corresponding printer driver.



Name: 192.168.1.1

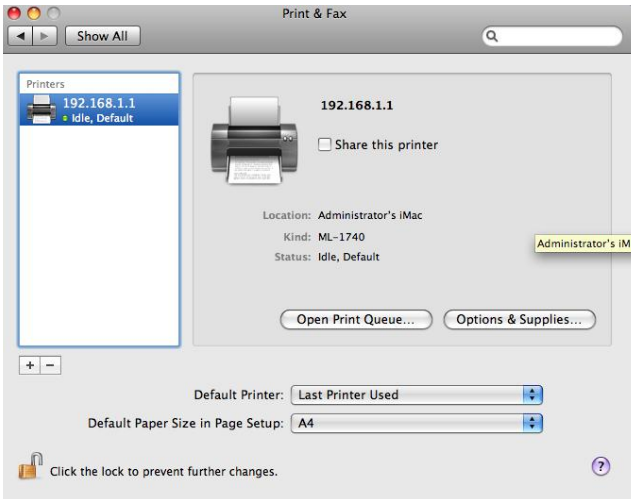
Location: unknown

Print Using: Select a driver to use...

3300 Series
350 Series
4300 Series
5200 Series
5400 Series
6200 Series

Figure 107: Add Printer Driver

7. Click Add and check the printer status.



192.168.1.1
Idle, Default

192.168.1.1

□ Share this printer

Location: Administrator's iMac

Kind: ML-1740

Status: Idle, Default

Default Printer: Last Printer Used

Default Paper Size in Page Setup: A4

Click the lock to prevent further changes.

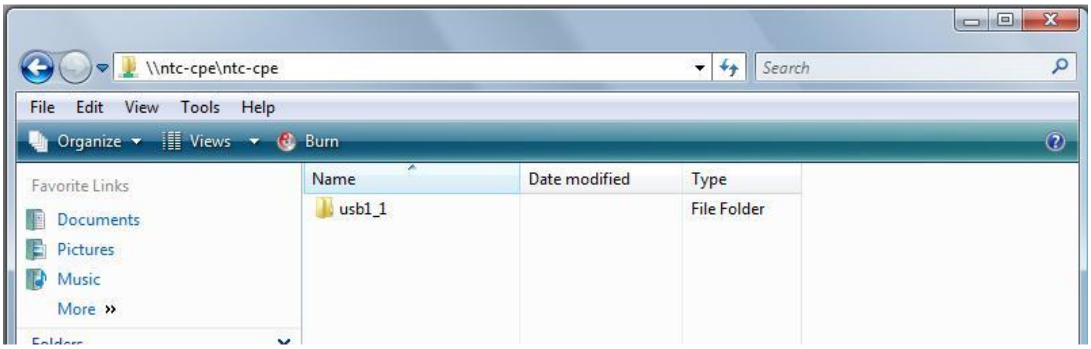
Figure 108: Check Printer Status

Appendix C: Samba Server

For Windows Vista/7

8. Open a web-browser (such as internet Explorer, Firefox or Safari).

9. Type in the address \\ “NetbiosName”\ “DirectoryName” \   (eg \\ntc-cpe\ntc-cpe).



\\ntc-cpe\ntc-cpe

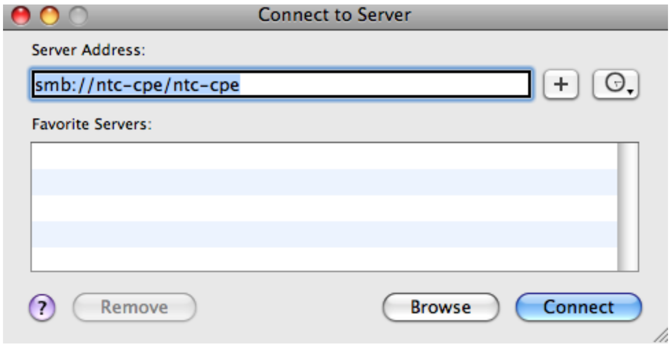
Name	Date modified	Type
usb1_1		File Folder

Figure 109: Access USB Drive

Note: There are no username and password required to access the USB drive, the user will be able to read/write the folder/files in the USB drive.

For MAC OSX

10. Click the finder icon in the Dock.
11. Choose Connect to Server from the Go menu.
12. In the address field of the Connect to Server dialog, type in the URL Smb:// “NetbiosName”/“DirectioryName” (eg smb://ntc-cpe/ntc-cpe) .



Server Address: smb://ntc-cpe/ntc-cpe

Figure 110: USB Drive Access with Mac

13. Select the Connect button to connect your USB driver.

Legal & Regulatory Information

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FCC Regulations:

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

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The antenna(s) used for this transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

RF Exposure Information

This device meets the government's requirements for exposure to radio waves. This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.
This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

Contact

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