Telstra Smart Modem Gen 2 LH1000

Disclaimer

This is not an official document. I am not employed by Telstra nor am I an IT professional. I don't guarantee the accuracy of it content. What worked for me might not work for you.

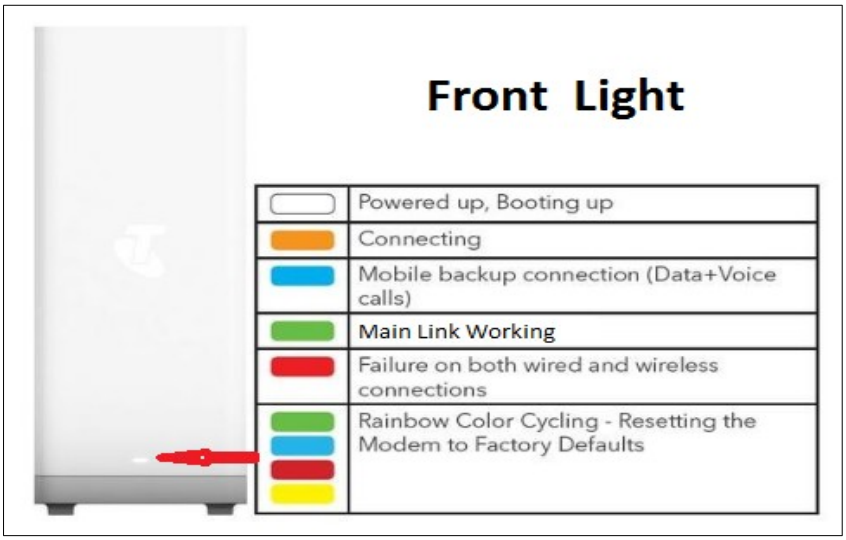
Table of Contents

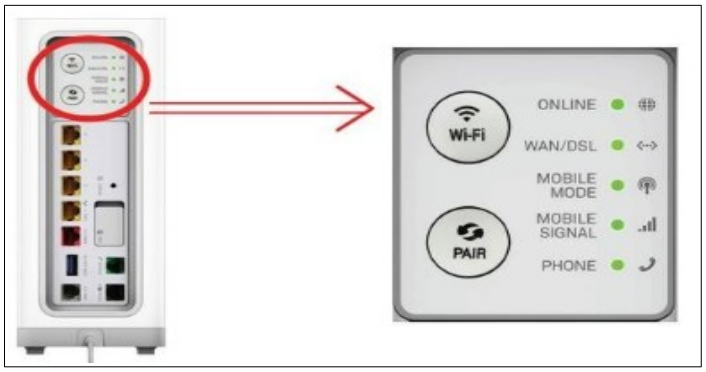
NB: 1. There are two version of the GEN 2 modem this document is for the Arcadyan version. There is a link to the Technicolor version of the Gen 2 modem (DJA0231) in this post.

2. Document needs to be downloaded for internal links to work.
3. IP Address of my Modem has been changed to 192.168.178.1 to match the old modem.

Version 1.6, Last updated 30/09/2020

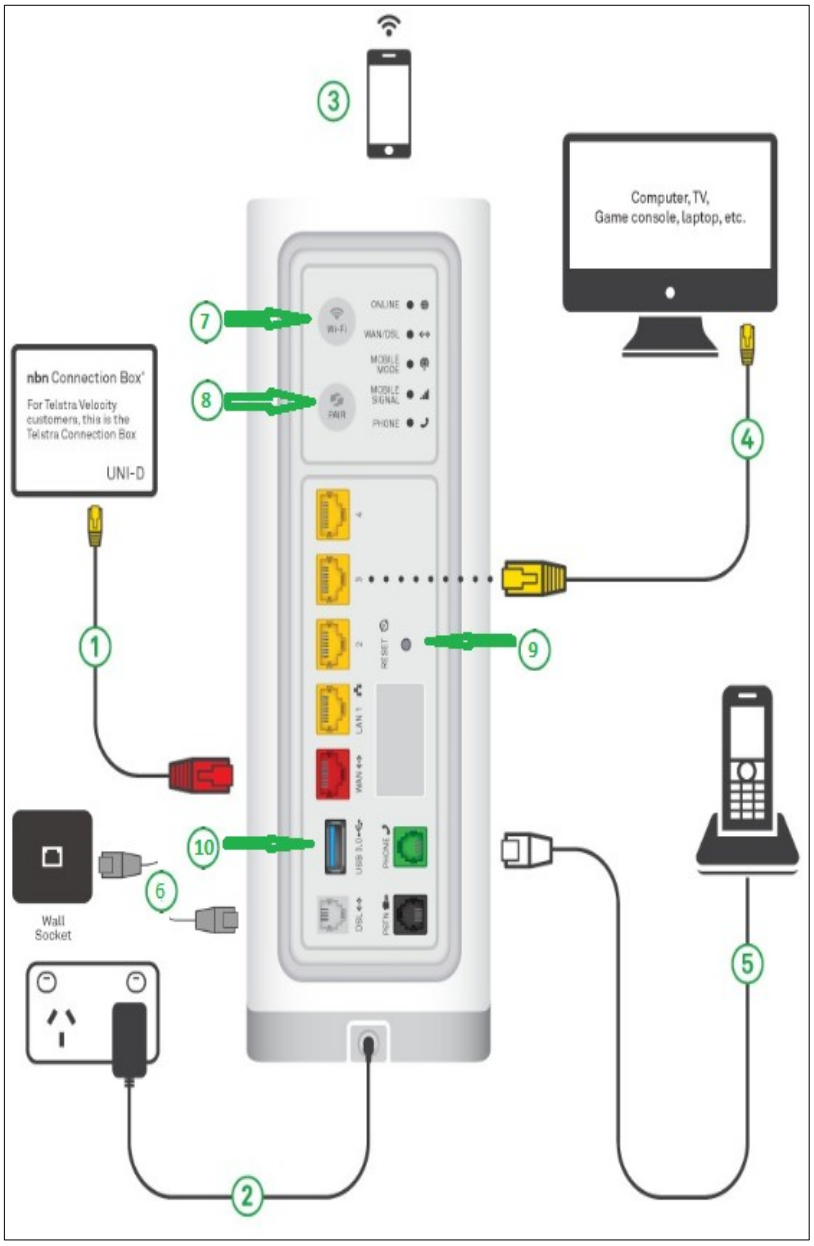
1. Lights





Online LED (Broadband)	Solid Green	Physical WAN port connected successfully or Mobile Broadband is active. Authentication of username and password is successful and a public IP address has been assigned.
	Solid Orange	Authentication of username and password in progress
	Solid Red	Physical WAN port is connected but authentication of username and password was unsuccessful.
	Off	Physical WAN port is not connected or Mobile Broadband not active.
WAN LED	Solid Green	WAN port is connected successfully to DSL or NBN
	Slow Flashing	Initializing WAN-DSL interface
	Quick Flashing	In progress, WAN-DSL interface connecting
	Off	Physical WAN port is not connected.
Mobile Mode	Solid Green	Main link Faulty Modem on 4G Backup
	Off	4G Backup not in use
Mobile Signal	Solid Green	Great signal strength Note: More lighted LEDs indicates stronger signal.
	Solid Orange	Good signal strength
	Solid Red	Limited access - Please move the Modem for stronger signal strength on mobile backup connection.
Phone Led	Off	SIP not registered or PSTN port not connected
	Solid Green	SIP registered or voltage detected on PSTN
	Flashing	Phone Ringing or incoming or outgoing call
	Solid Orange	SOS calls only
	Solid Red	Fault

2. Modem Connections and Buttons



1. Gigabit WAN port for connection to NBN connection Box (FTTP FTTC and Fixed Wireless) NBN Cable Modem (NBN HFC), Cable Adaptor (Telstra Cable) or Optical terminating equipment (Telstra Velocity).
2. Power
3. Devices connected to Moem by Wi-Fi. (Default SSID and Wi-Fi password located on label base of Modem
4. Four Gigabit LAN port for connecting devices with Ethernet ports
5. RJ12 phone port for normal phones. Maximum load 3 REN
6. DSL Port connected directly to phone socket for FTTN. and FTTB connections and to phone socket via ADSL Filter / Splitter for ADSL connections
7. WiFi On Off Button
   Off: All Wi-Fi Bands turned off.
   Green: At least one Wi-Fi Band is turned on.
   Press To toggle all Wi-Fi Bands Off.
   Press again to turn all Wi-Fi Bands On.
8. Pair Button
   Off: No DECT handset paired to Modem.
   Green: DECT handset registered to modem or WPS device successfully paired to modem in last 15 minutes.
   Green Flashing twice per second: Ready to pair with handset or WiFi device
   Red Blinking: Registration unsuccessful
   Green Flashing once per two seconds: Paging paired handsets
   To pair a handset or connect to a WPS enabled Wi-Fi device press for 5 seconds. The light will **Flashing Green twice per second** for 2 minutes. During this time the modem can be paired with a handset or connect to a WPS enabled Wi-Fi device.
   To page paired handset press for less than two seconds.
9. Reset Button
   Use a paper clip and press for at least10 seconds to reset Modem. Modem will reboot setting all settings to factory defaults.
10. USB 3.0 Port for connecting USB flash drives and external hard drives the files of which can be accessed by devices connected to modem's LAN using DLNA or SMB

3. Login and Home Screen

Open a Web browser and type 192.168.0.1 into the address bar and press enter.

The The modem Login screen loads in the Web browser..

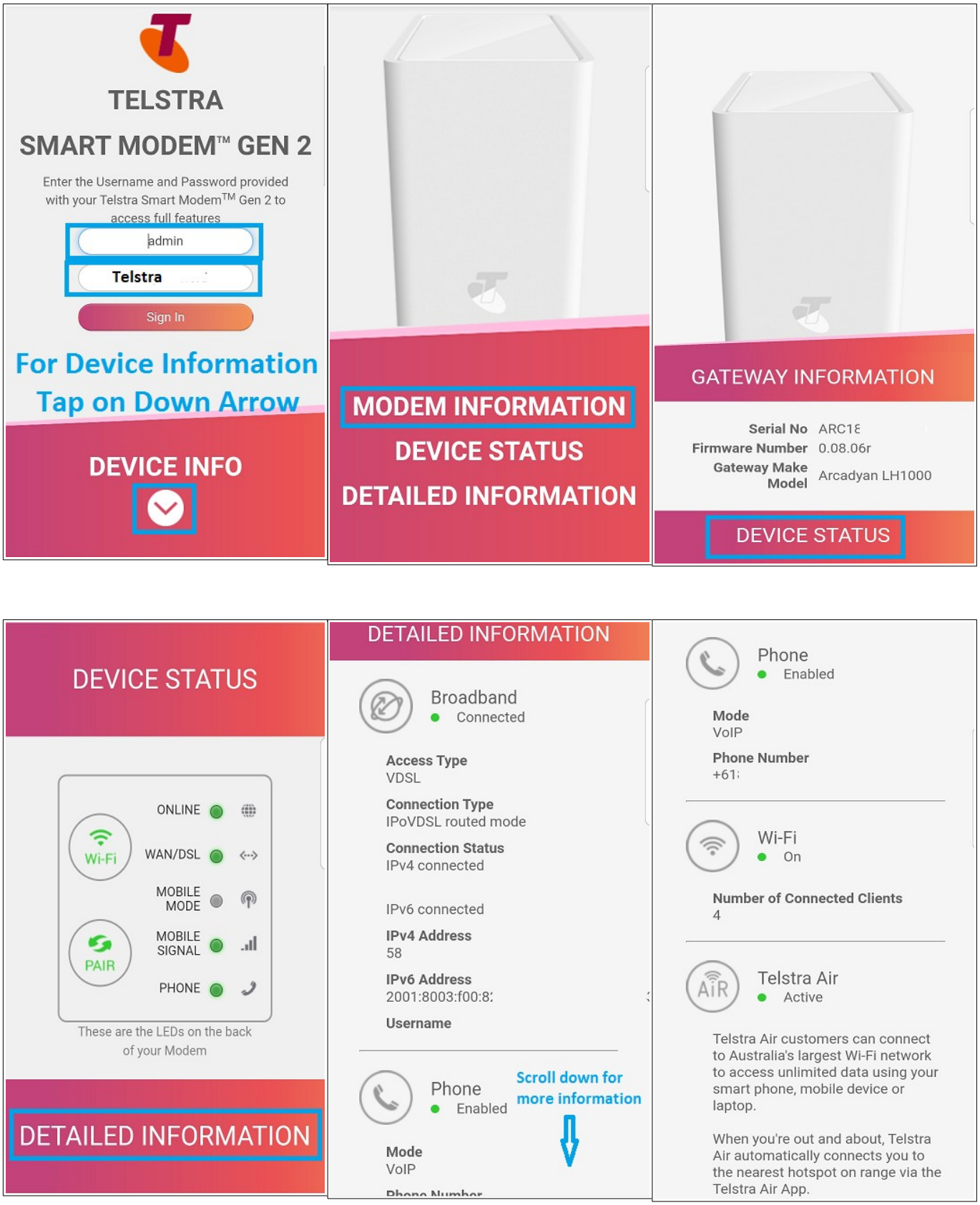
To view more information select the more info link bottom centre of page

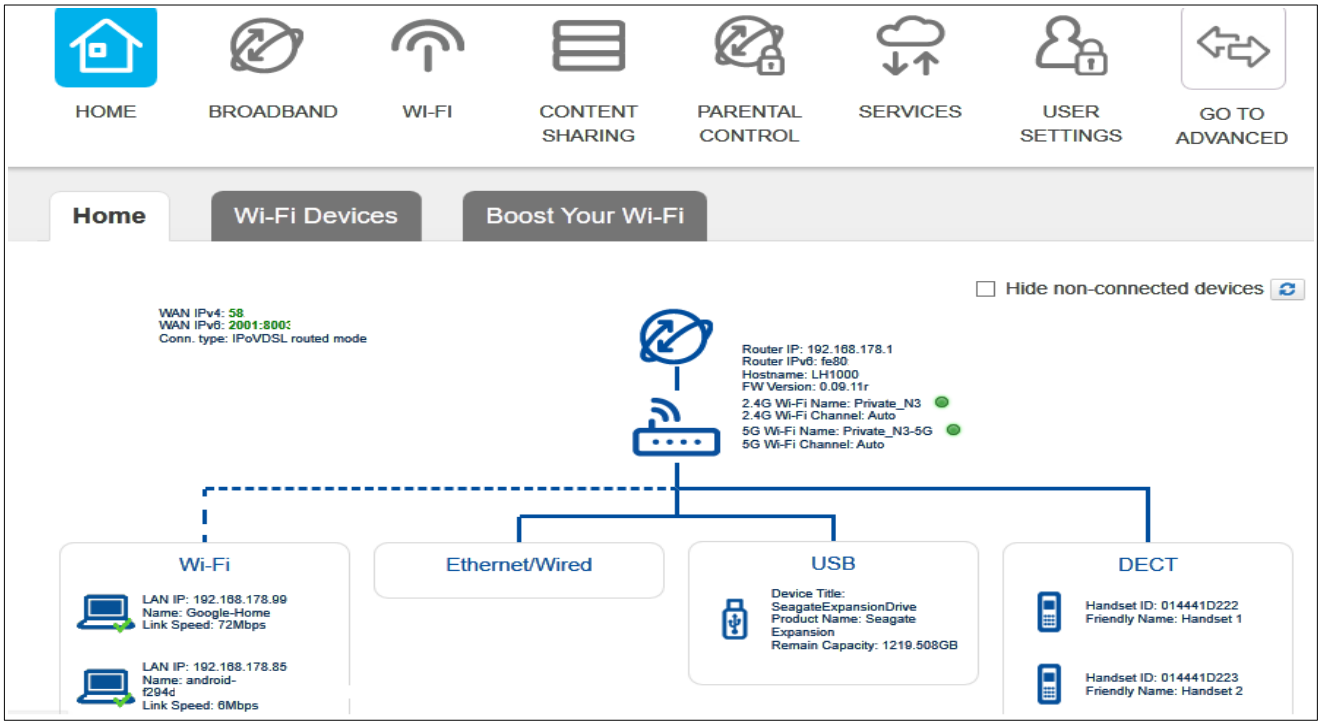
The default password is Telstra.

Enter password and select sign in.

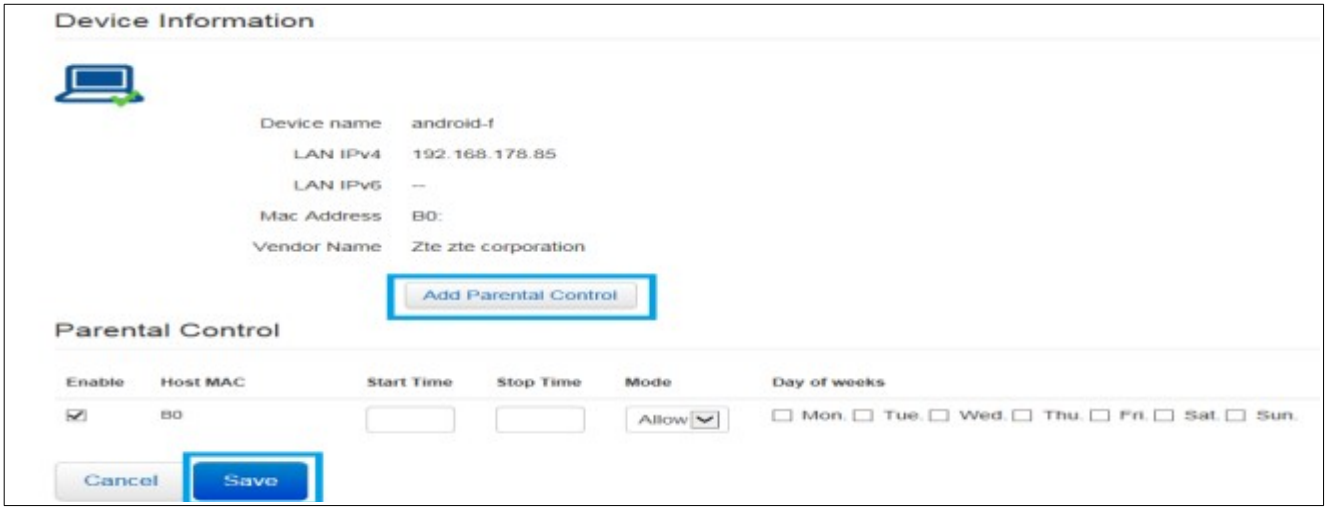
The modems Basic Home page will open in your browser.

Log in Page on Smart device with small screen



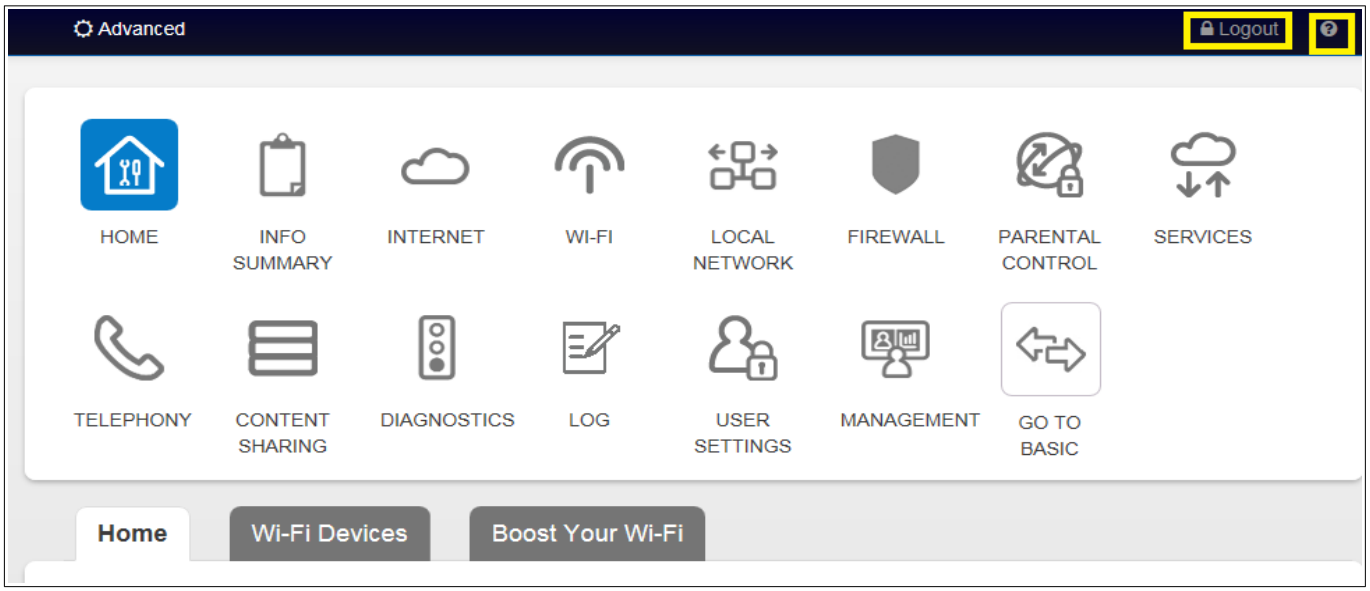


To learn more about a device or add parental controls to a device connected to WiFi or LAN, or to learn more about a connected USB drive or paired handset click on the device, USB drive or handset.



The WiFi Tab shows a list of WiFi connected devices

Clicking on “Go To Advanced” top right displays the Advanced Home page



Clicking on “Go To Basic” takes you back to Basic Home screen.

To log out click on the Logout top right of screen

For Help click on the Question mark icon top right of screen.

4. Change Modem’s Login Password

The Modem’s default password is Telstra. It is recommend after log in to the modem you change the password. If you forget the password modem will need to be reset to factory defaults

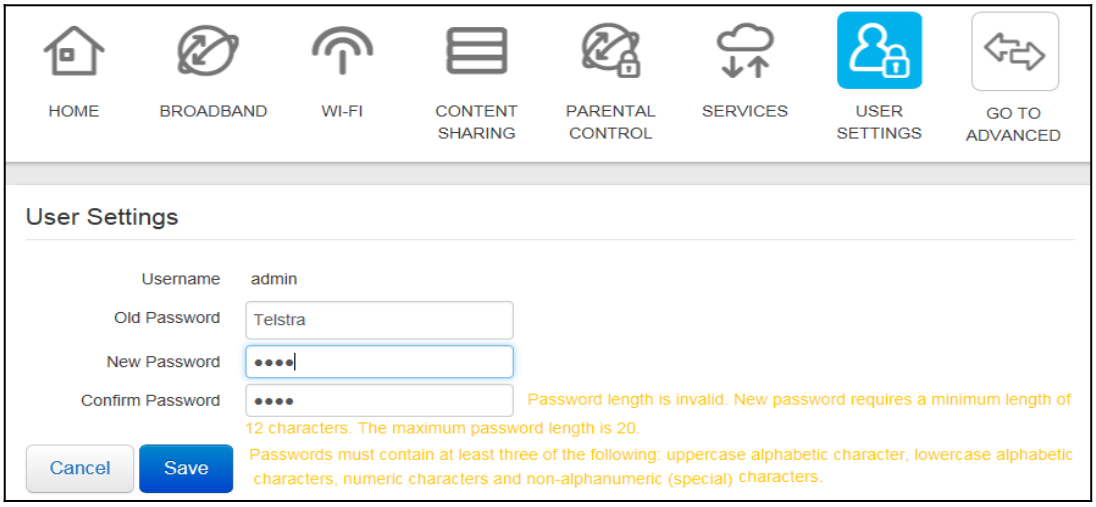
Click on ‘User Settings”

Enter the old password in “Old Password” Box

Enter a new password in “New Password” Box

Enter the same password in “Confirm Password” Box and click on Save

Password must contain at least 12 alphanumeric characters including both upper and lower case letters, at least one number and at least one special character such as !@#$%^&*()_-?~



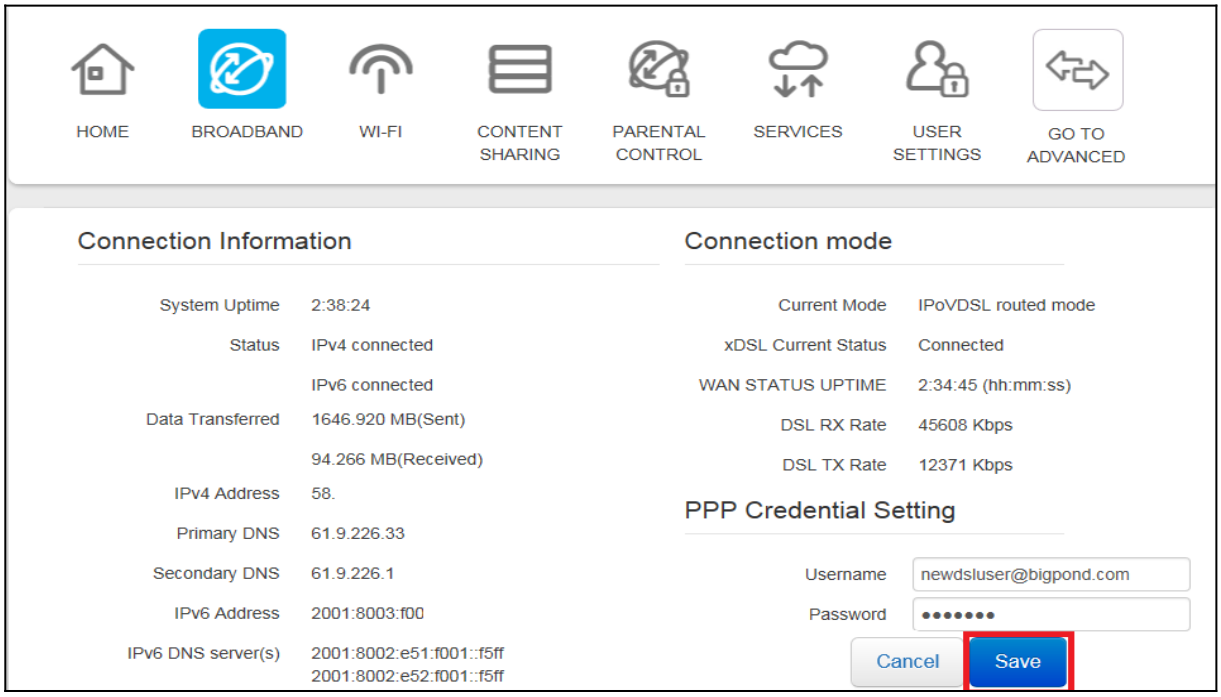
5. Telstra's Internet User Name and Password

If WAN /DSL Light is green and the On Line light doesn't turn green these are the first settings you should check if you have a **non** NBN service.

Click on Broadband

The User Name is the one provided by Telstra for the internet connection. Example someone@bigpond.com. It is usually is but might not be the same as your Telstra My Account User Name and Password.

Enter username and password and click on save.



6. Parental Control

Log in to modem and click on Parental Control

Toggle "Enable Parental" Controls to on

Start Entering devices MAC address, a list of connected devices is displayed, select device.

Enter start time and end time.

Select whether rule blocks access during time period or allows access.

If "Allow" is selected device will only be allowed access on the days selected only between the times selected.

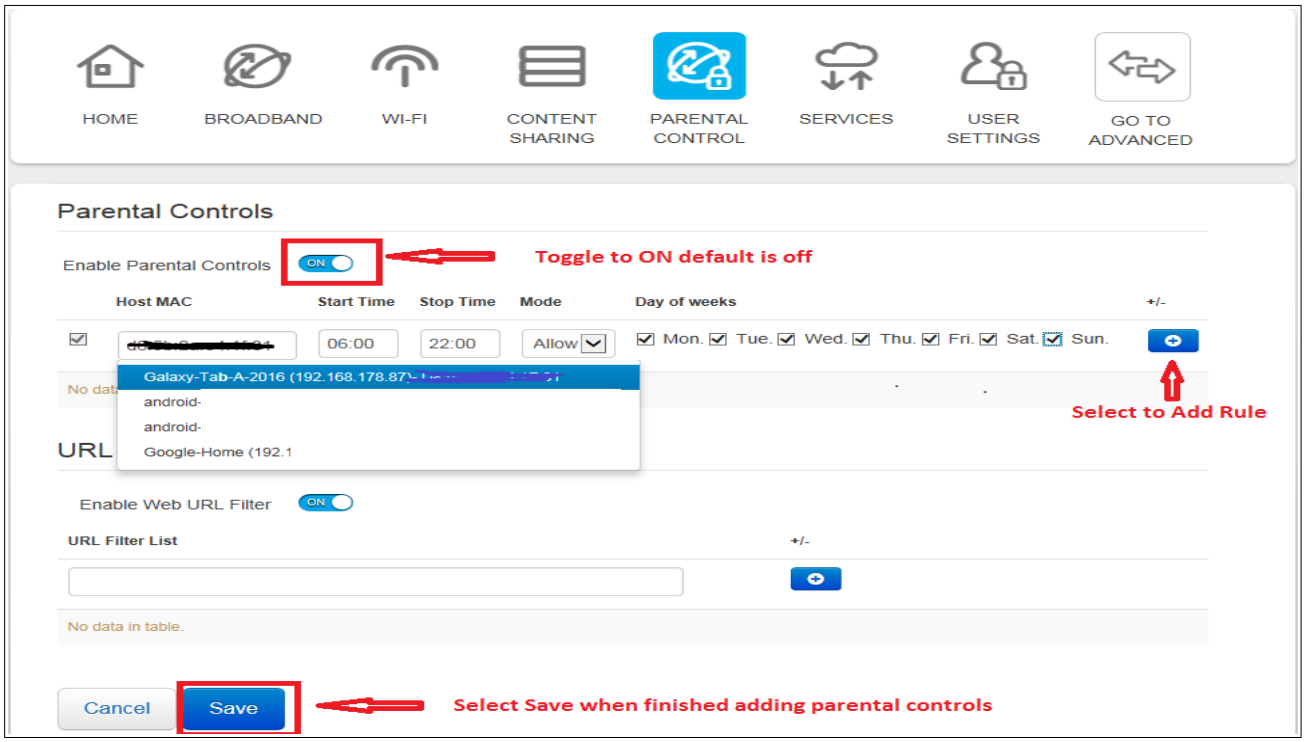
If "Block" is selected device will only be blocked access during time and day off week in rule.

Select days of week rule applies to.

Select Add (+ icon right of rule) when all details entered.

Only one rule can be entered per device.

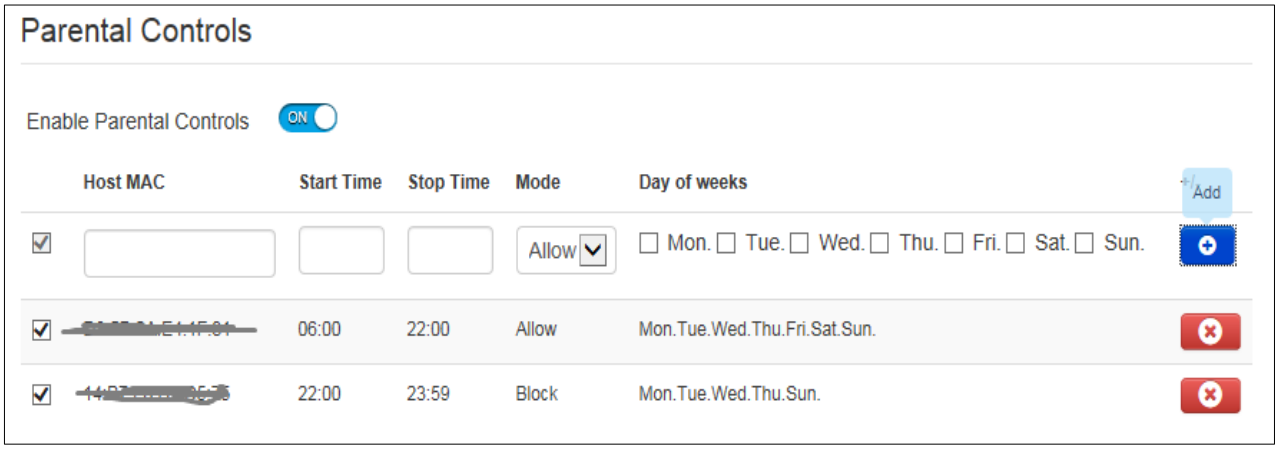
Click on Save when all rules have been entered.



The image below shows two Time of day rules.

The first allows internet access between 6:00 am and 10:00 pm on Monday to Sunday. Internet is blocked at all other times.

The second blocks internet access between 10:00 pm and midnight Mondays, Tuesdays, Wednesdays, Thursdays, and Sundays



To delete a rule click on Delete the cross icon on the RHS of the rule. Note clicking on “x” (delete) deletes rule immediately with no confirmation message.

Time of day rules only effect internet access they don’t prevent devices connecting to modem’s WiFi.

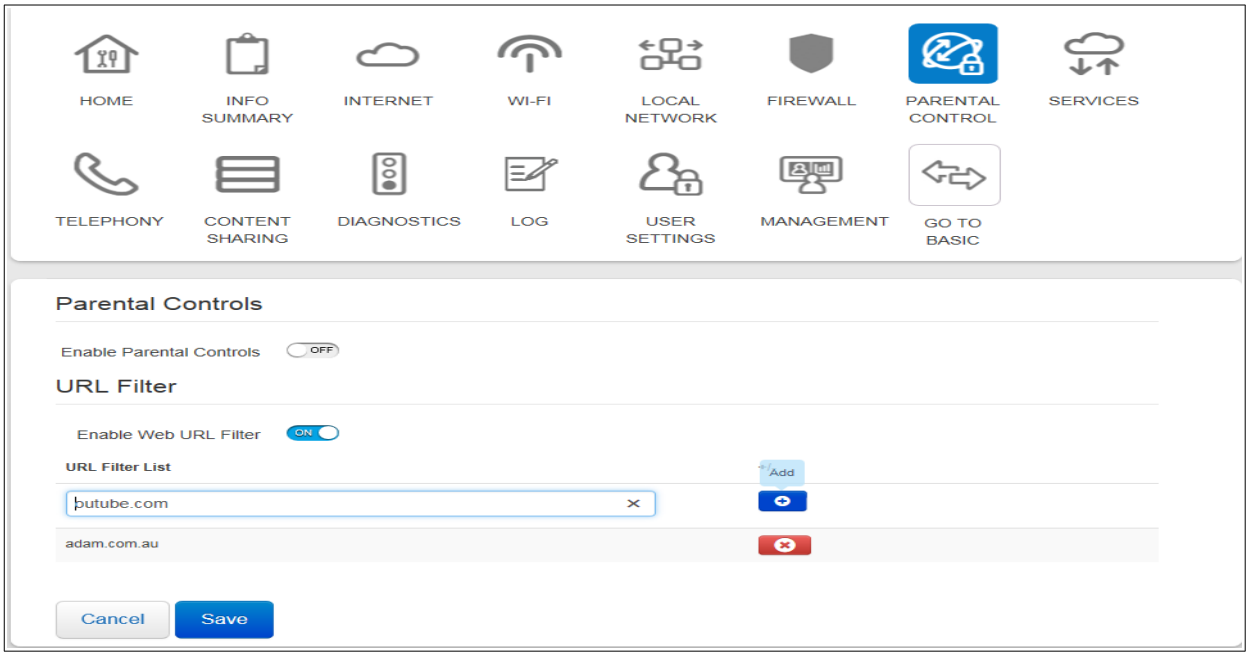
Parental Controls Site Blocking

Log into Modem and go to Parental Controls

Ensure “Enable Web URL” filter is on

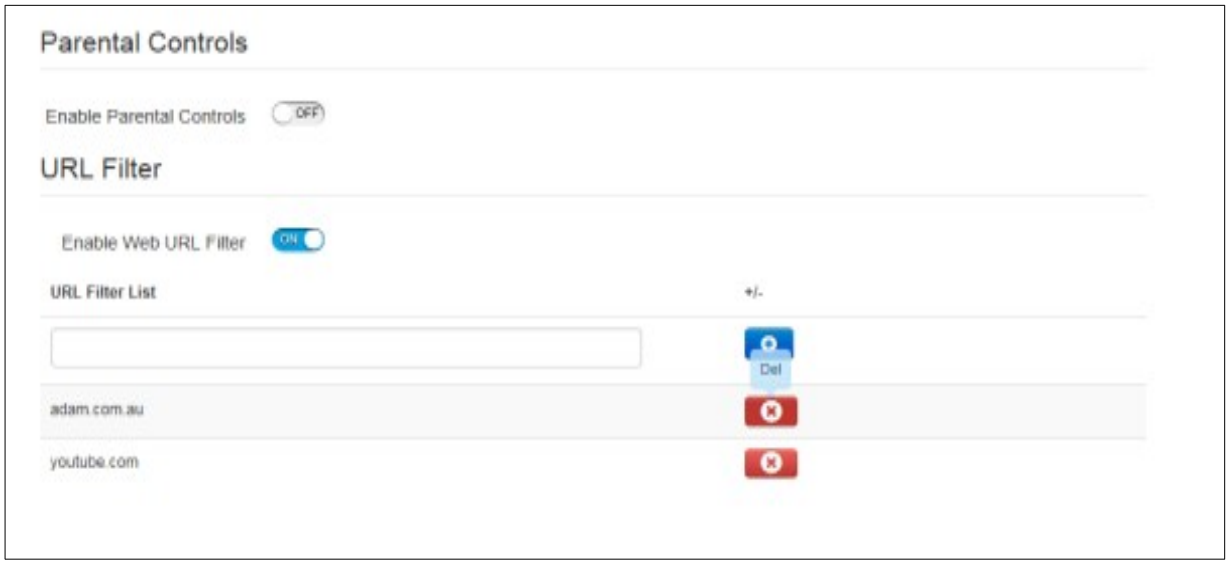
Enter URL off site you wish to block and click on add (+ icon RHS of rule)

When all sites you wish to block have been entered click on save.



To delete a site click on delete (Cross icon RHS of rule). Site will be deleted immediately.

Click on save to save changes



7. Connecting Wi-Fi Devices.

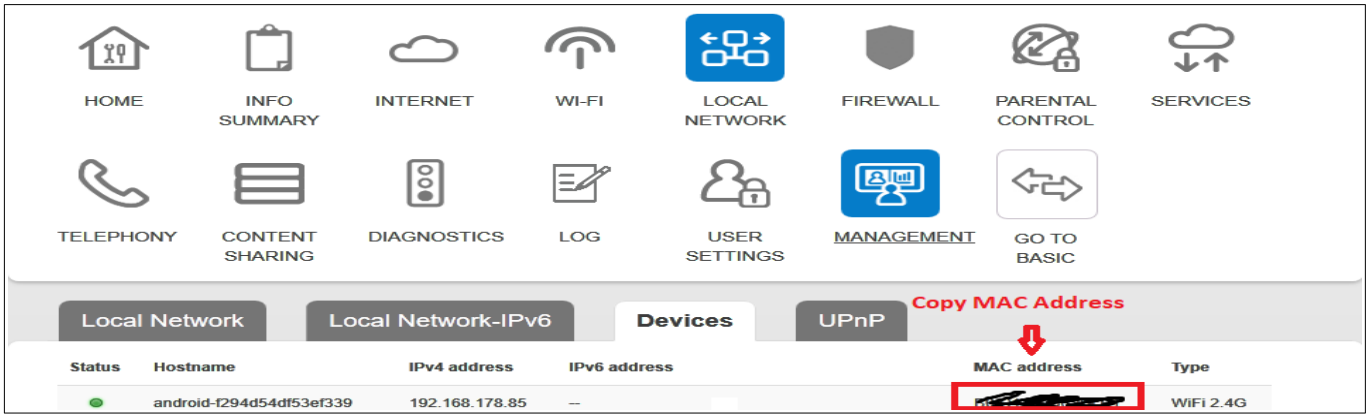
1. Using WPS
   Press and hold the Pair button on the back of the modem for at least 5 seconds.
   The light will flash for 3 minutes during this time a WPS device can be connected,
   Follow the instructions supplied with the Wi-Fi device.

   By default WPS is enabled but it can be fisabled by removing the tick next to WPS in the modems WiFi settings (See Change Wi-Fi SSID and Password).

2. Manually using SSID and Network Key.
   There is a label with the SSID and Network key located on the bottom of the modem.
   The SSID and Network key are also displayed on the WiFi settings page of the modem.
   Follow the Wi-Fi device's instructions for manually connecting to a Wi-Fi network.

8. Address Reservation.

Hint Before reserving an IP open a new WEB browser tab, log into modem and go to Go To Advanced > Local Network > Devices. You will be able to copy MAC address and paste them into the IP address reservation table.



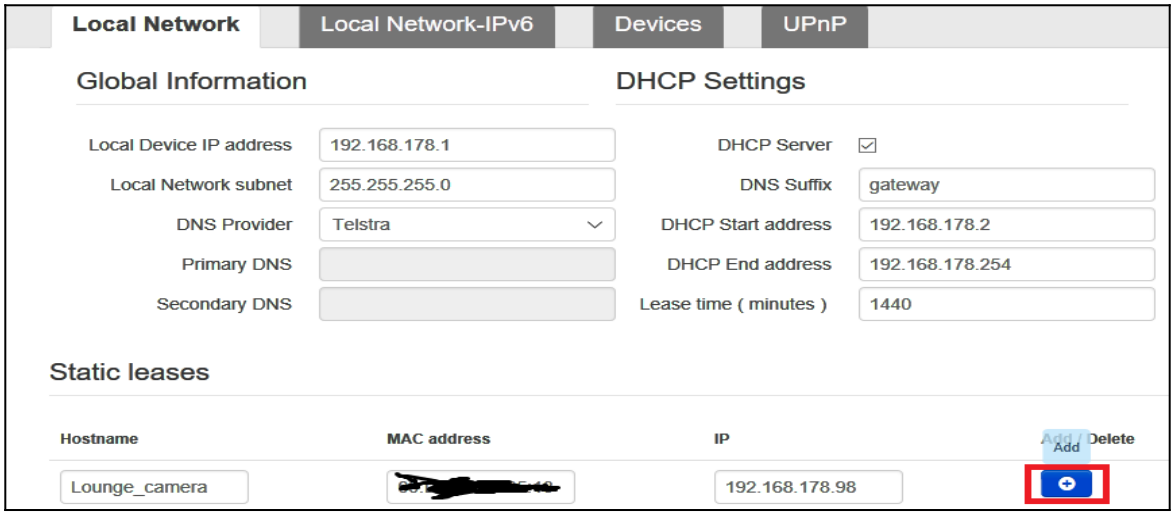
To reserve a LAN IP address for device. (Static IP address) log into modem and go to Go to Advance > Local Network

Fill in the host name.

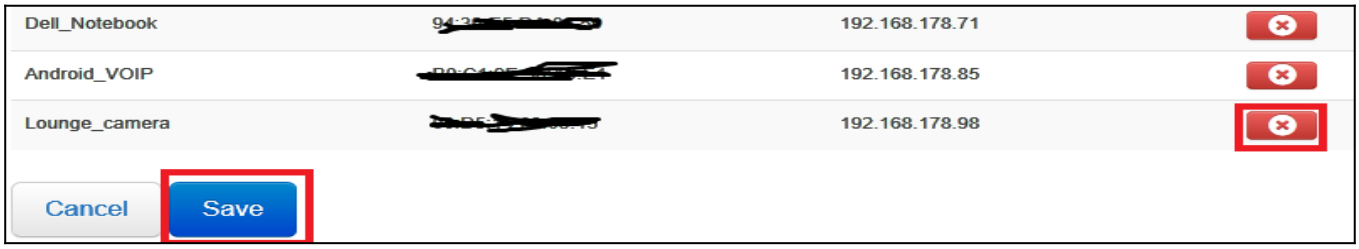
Paste the MAC address or type in the MAC address of the device.

Enter the IP address to use. It can be the same as the devices existing IP address or a new IP address can be used as long as it is within the LAN IP address range of the modem.

Click on Add (+ icon right hand side of IP column)



Repeat for all required static leases.



To delete a static lease click on delete (x icon right hand side of static lease)

Once all static leases have been entered click on save

For static leases to take effect disconnect and reconnect devices with static lease.

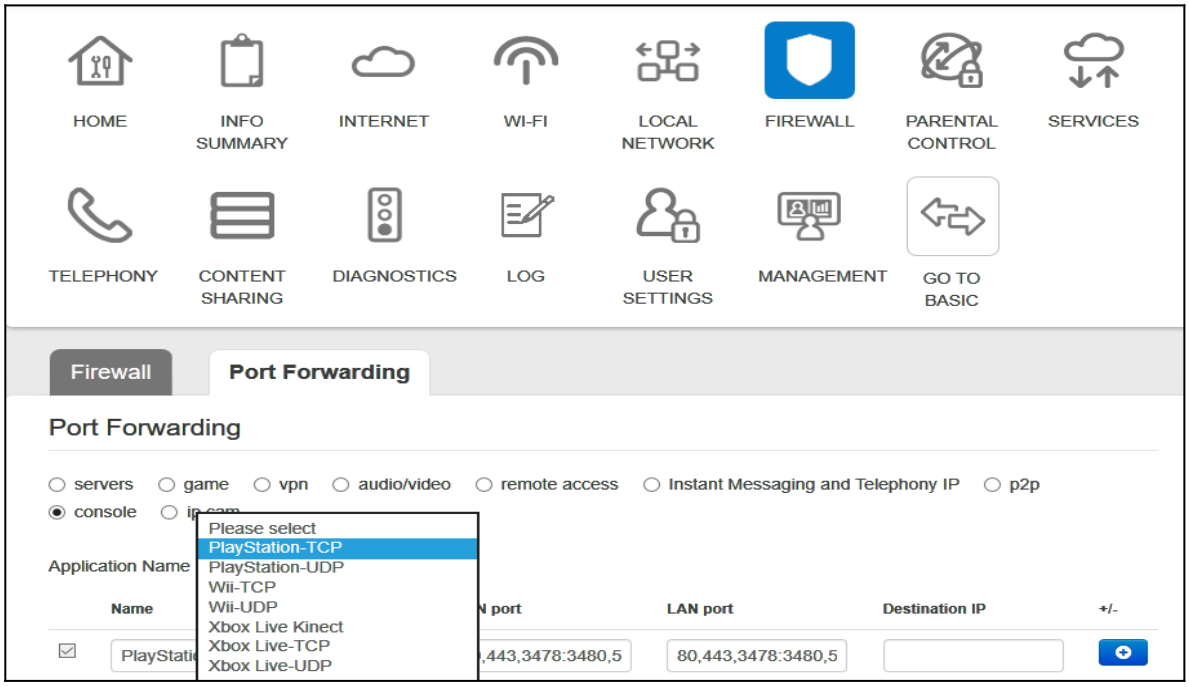
9. Port Forwarding

For port forwarding to work you need a fixed IP LAN address. (See Address Reservation for how to do this)

Log in to Modem and go to Go To Advanced > Firewall > Port Forwarding

If adding a standard port select the type of App, Service or Device and then select Device, Service or app from drop down “Application name”.

The name protocol and ports will automatically be filled in.



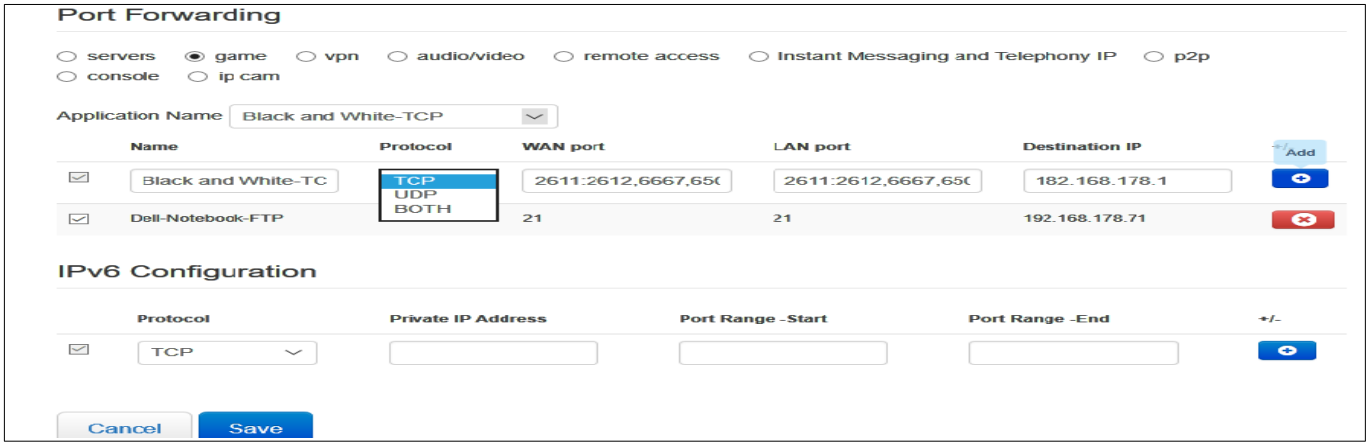
If mapping a non standard port leave choice settings on default, fill in name and ports manually and select protocol. If unsure of protocol select both.

Type port number in WAN port and LAN port field. Best to use same port number. If there is a range of ports enter the first and last port numbers separated by a colon (eg 45:55). If two or more ports separate ports with a comma.

Enter LAN IP address of device. A list of all currently connected device will be displayed.

Click on add

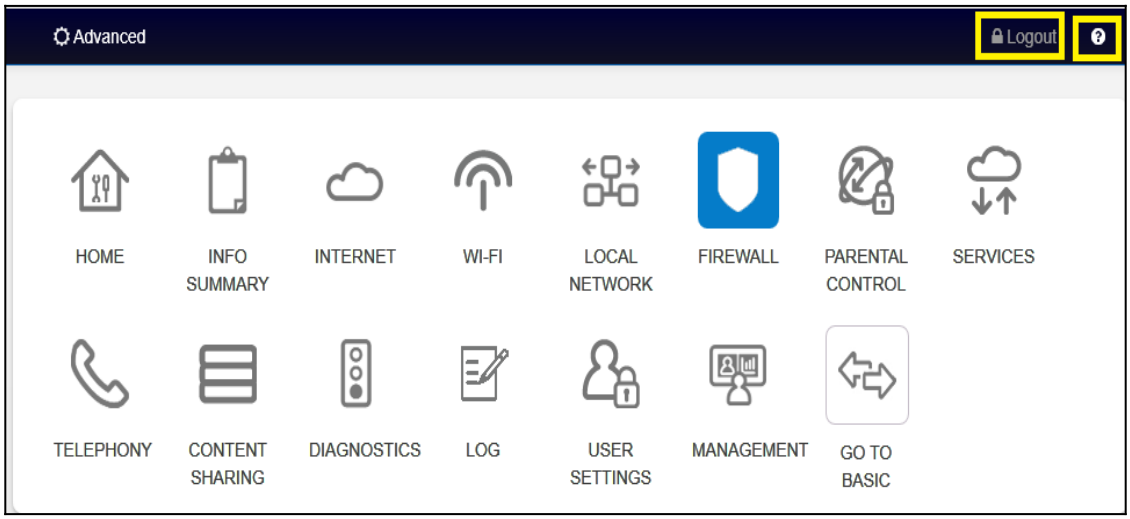
Click on save when all rules have been entered.



The port forwarding tool at http://www.yougetsignal.com/tools/open-ports/ can be used to check if the port is open.

10. Inbuilt Help

At the Top right of Modem's home page is a **Logout** icon and **help** icon (?).



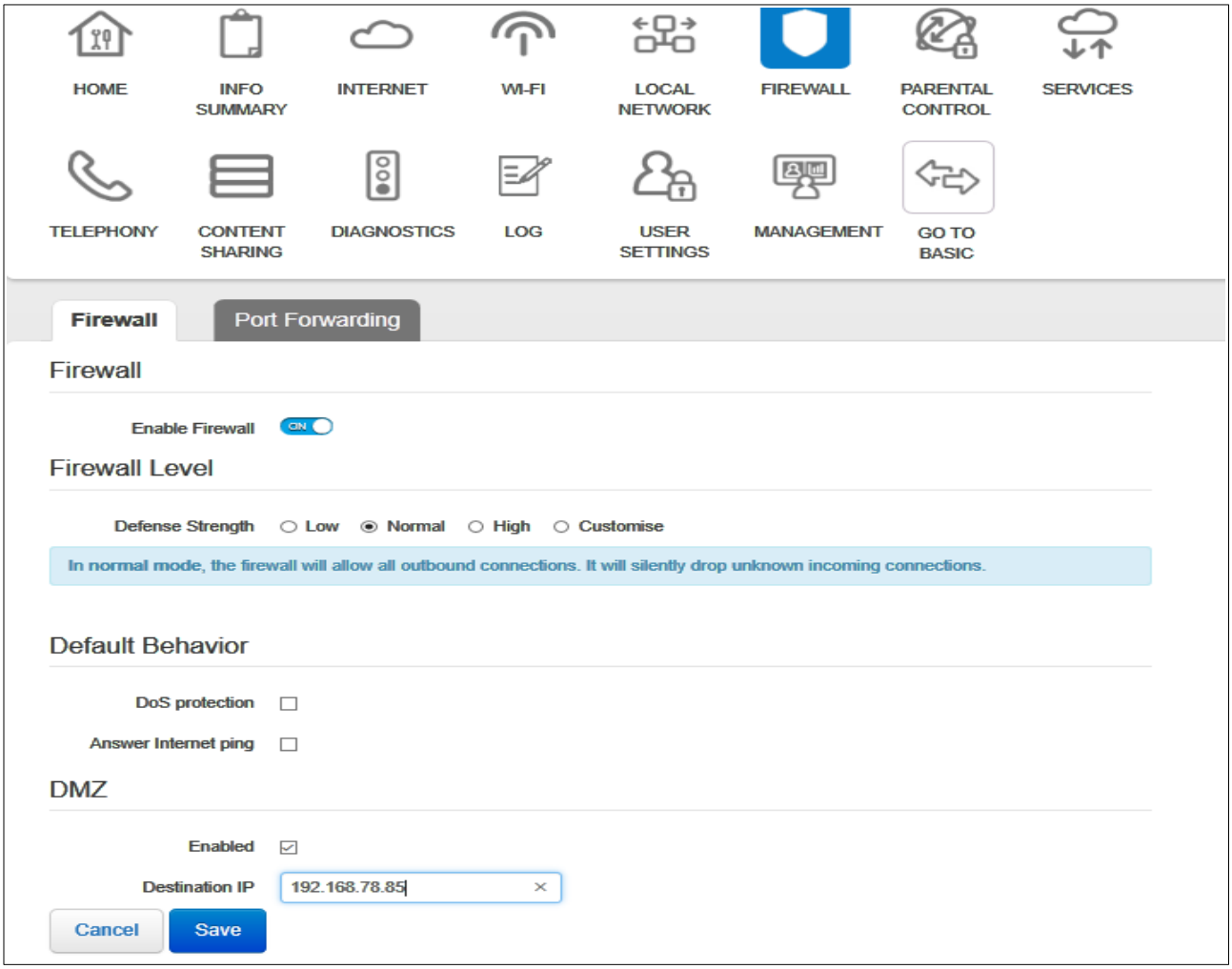
Clicking on the help icon opens the help pdf at its index page.

Index

Clicking on any of the headings opens the relevant help page.

11. Firewall

Go to Go to Advanced > Firewall > Firewall



The default Fire wall setting is normal.

Select the level of protection required and click on save.

By default “Answer internet ping” is disable. If you are running ping test from a remote site enable this setting.

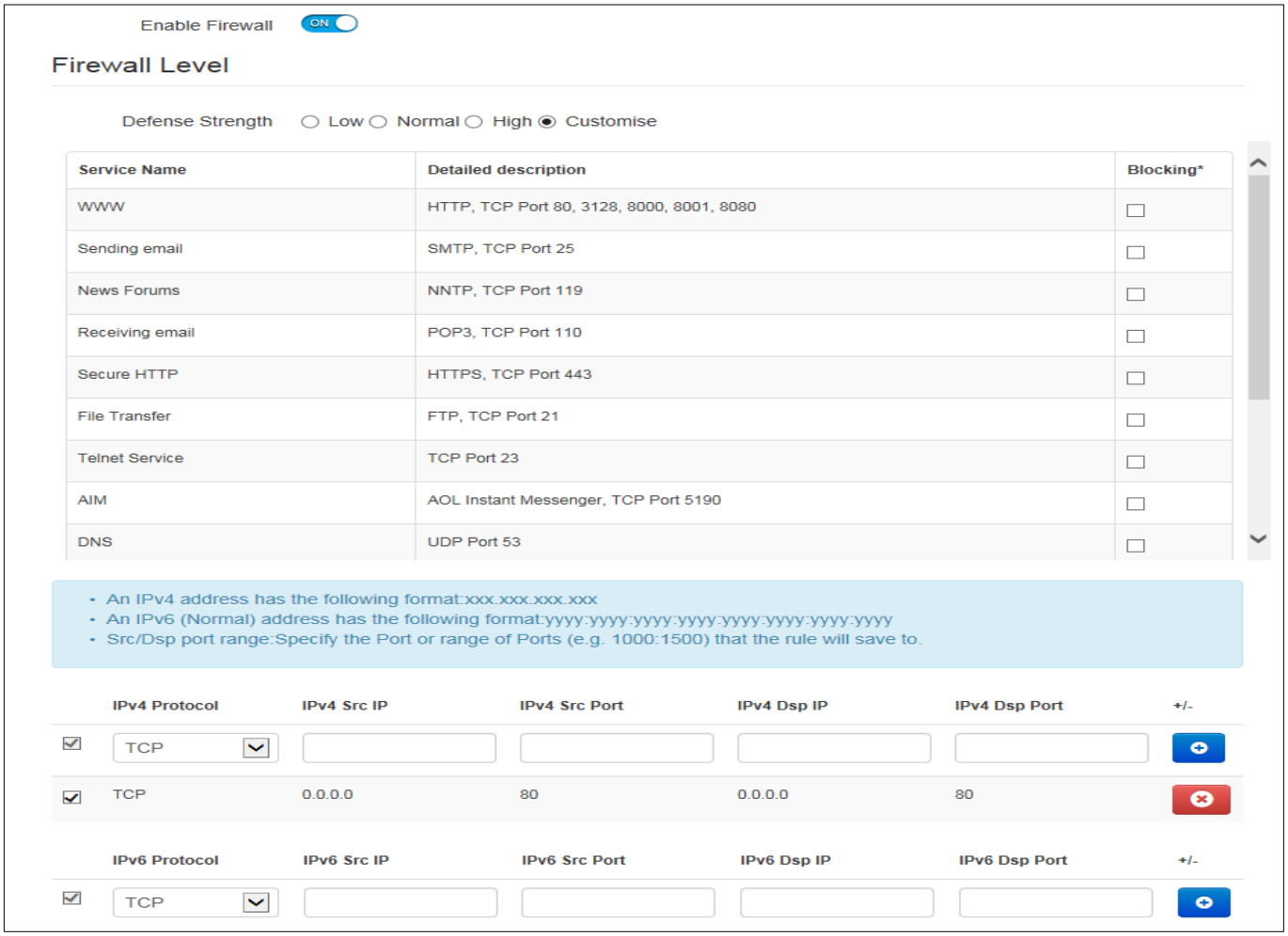
DMZ by default is disabled.

To enable DMZ place tick next to enabled and enter LAN IPv4 address off device that you want to put in the modem’s DMZ. All incoming traffic to a device in the modem’s DMZ is not blocked by firewall except for incoming traffic to a port that has a port forwarding rule set in the modem’s Port forwarding settings.

If Customise is selected can

- Select individual outgoing services to block.
  To block the outgoing service place tick next to service and select save.

- You can also select custom rules of protocol, Ports and Source and or destination IPv4 and or IPv6 address. At present I have been unable to work out whether these custom rules block or allow traffic through firewall.

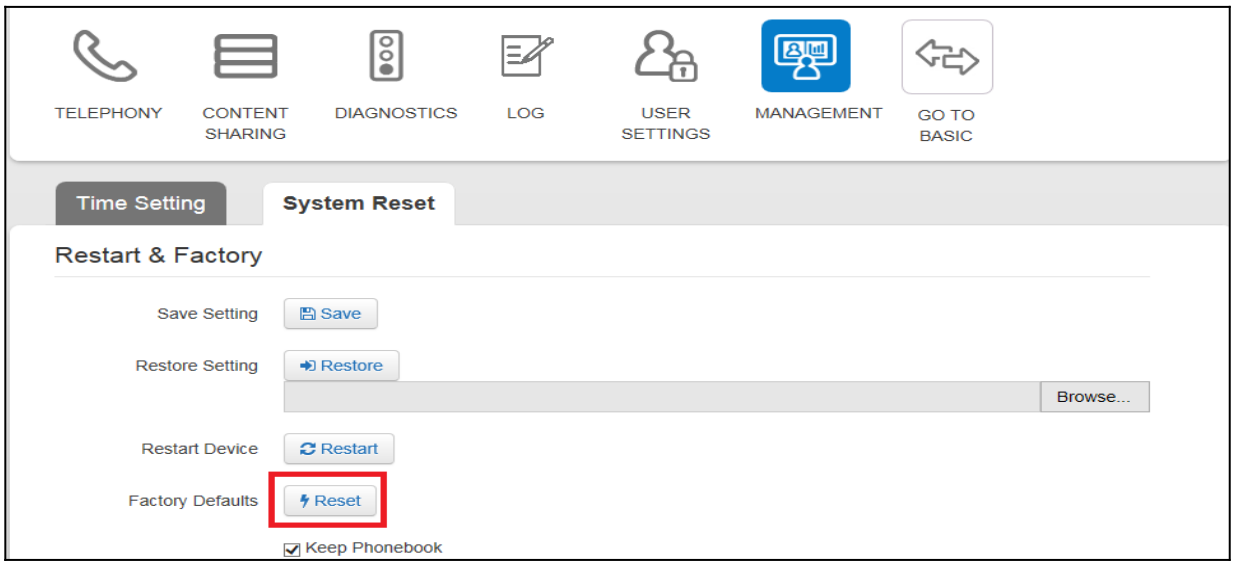


12. Reset Modem.

There are two methods for resetting the modem.

1. Using a paper clip press the modem's reset button for at least 10 seconds. The reset button is located on back of modem near LAN port 2.

2. Log into the modem, go to Advanced > Management >
   Ticking "Retain Contacts" will retain contact information in phone book.
   Click on reset
   Modem will reboot. Front light will cycle through the colours of the rainbow.



There is also an option to restart modem without doing a factory reset
To restart modem press restart button.

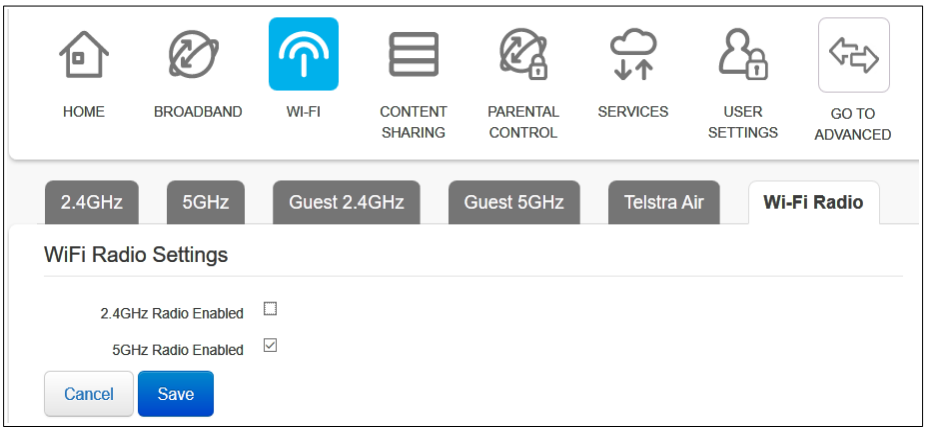
13. Turn Wi-Fi OFF or ON.

There are two methods

1. Wi-Fi Switch back of modem
   To turn Wi-Fi of press the Wi-Fi switch located on back of modem for a couple of seconds. The light will turn off indicating all Wi-Fi bands have been turned Off

   To turn Wi-Fi back on pressing the Wi-Fi button for a few seconds the light turns green.

2. GUI interface.
   Connect to Modem via a LAN port.
   Log into the modem and click on Wi-Fi
   Click on WiFi Radio
   Click on the Enabled box to remove or place tick in the box for the Wi-Fi band or bands you wish to turn Off or On.
   Click on Save
   This will turns Off or On all WiFi Networks on that band including Telstra Air and FON
   Individual WiFi networks can be turned On or Off by going to the respective network tab.



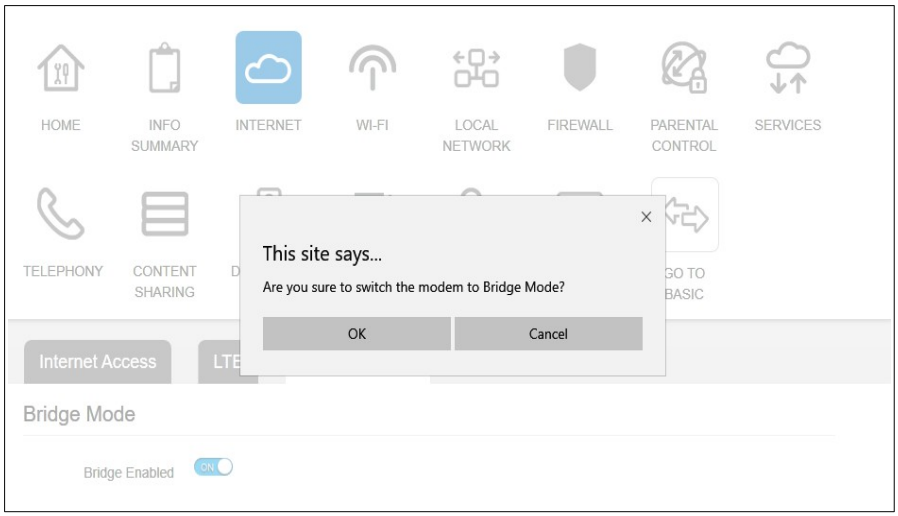
14. Bridge Mode.

Log into the modem and go to “Go To Advanced: > Local Network > Local Network-IPv6.

Remove Tick next to IPv6 Enabled.

“Go To Advanced” > Internet > WAN Services Tab

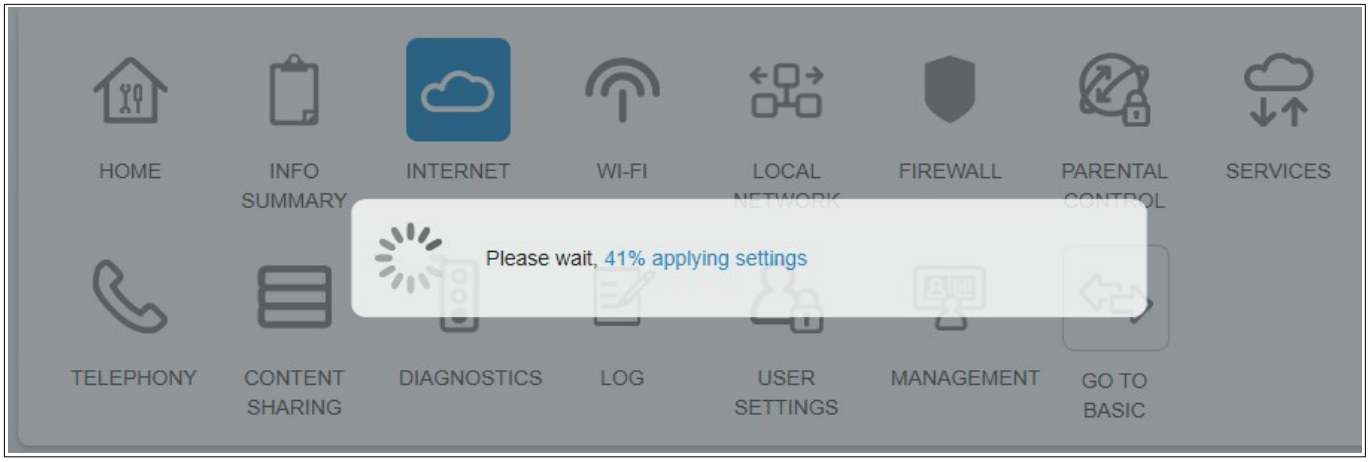
Before Bridging Modem Turn off WiFi section 13 to prevent WiFi devices grabbing public IP address



Click on Bridge Mode switch to toggle it on.

Click on Ok in the dialogue box that appears.

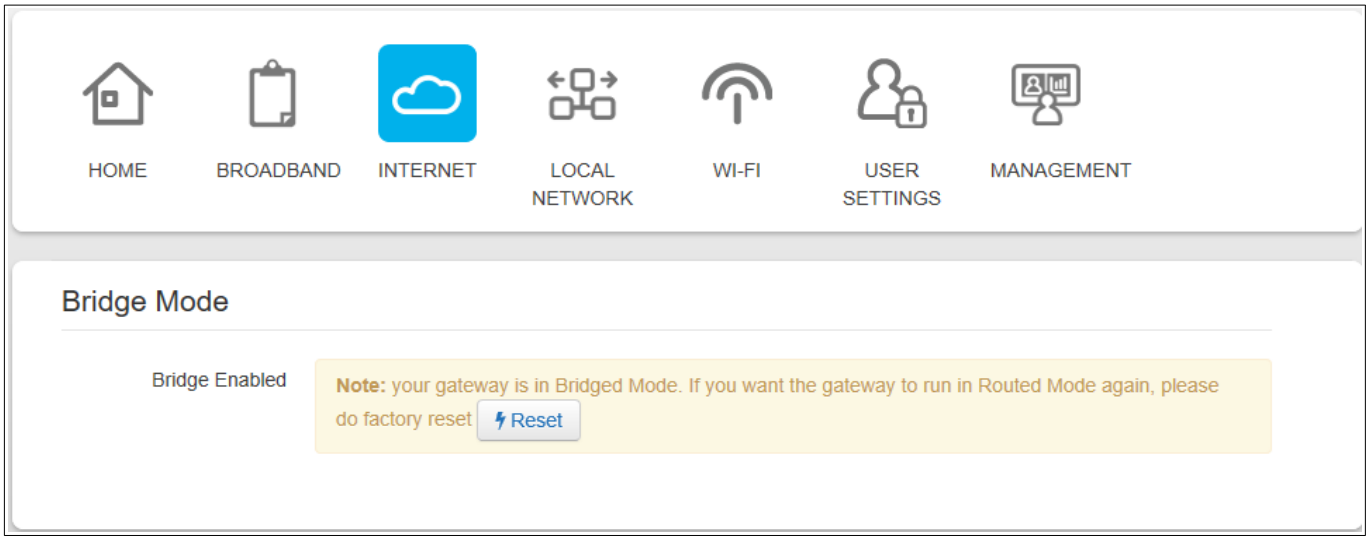
Click on Ok in next dialogue box that appears. If you are two slow in clicking OK modem will return to home page without Bridging modem. You should see countdown dialogue box as in image below.



Modem will reboot.

When Modem has rebooted phone light will be orange, Link light and Front light will be green, Wireless Signal light will be Off, Red Orange or green depending on mobile signal strength. All other lights will be off.

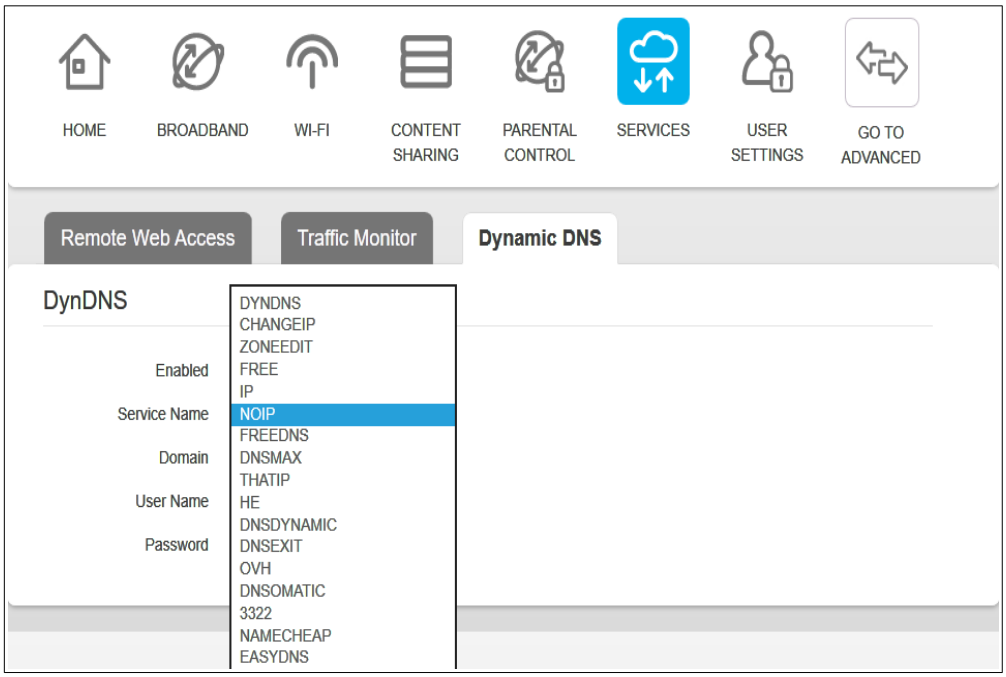
To access modems GUI in Bridge set up a static IP on a device in the same subset as modem and connect to one of modem's LAN ports. Image below shows settings available in Bridge mode.



Note: In bridge mode the phone and backup 4G will no longer work, and a factory reset is require to disable bridge mode resulting in loss of all settings.

15. Dynamic DNS

To set up DNS go to Services > Dynamic DNS



Place tick in box next to enabled.

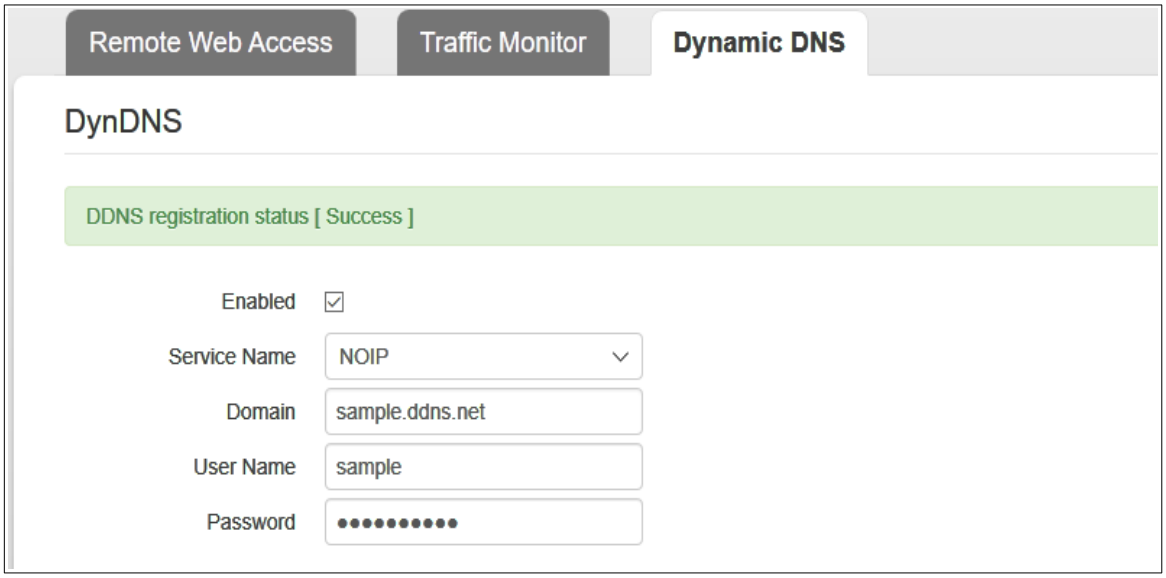
Select provider from drop down list.

Enter the DDNS URL without the http:// in domain box

Enter the DDNS Username.

Enter the password.

Click on Save.



If successful DDNS registration status (Success) is displayed above Enabled.

16. Register and De-Register a DECT Handset

Can only register DECT CAT-iq2.0 handset. Not all DECT will pair with modem.

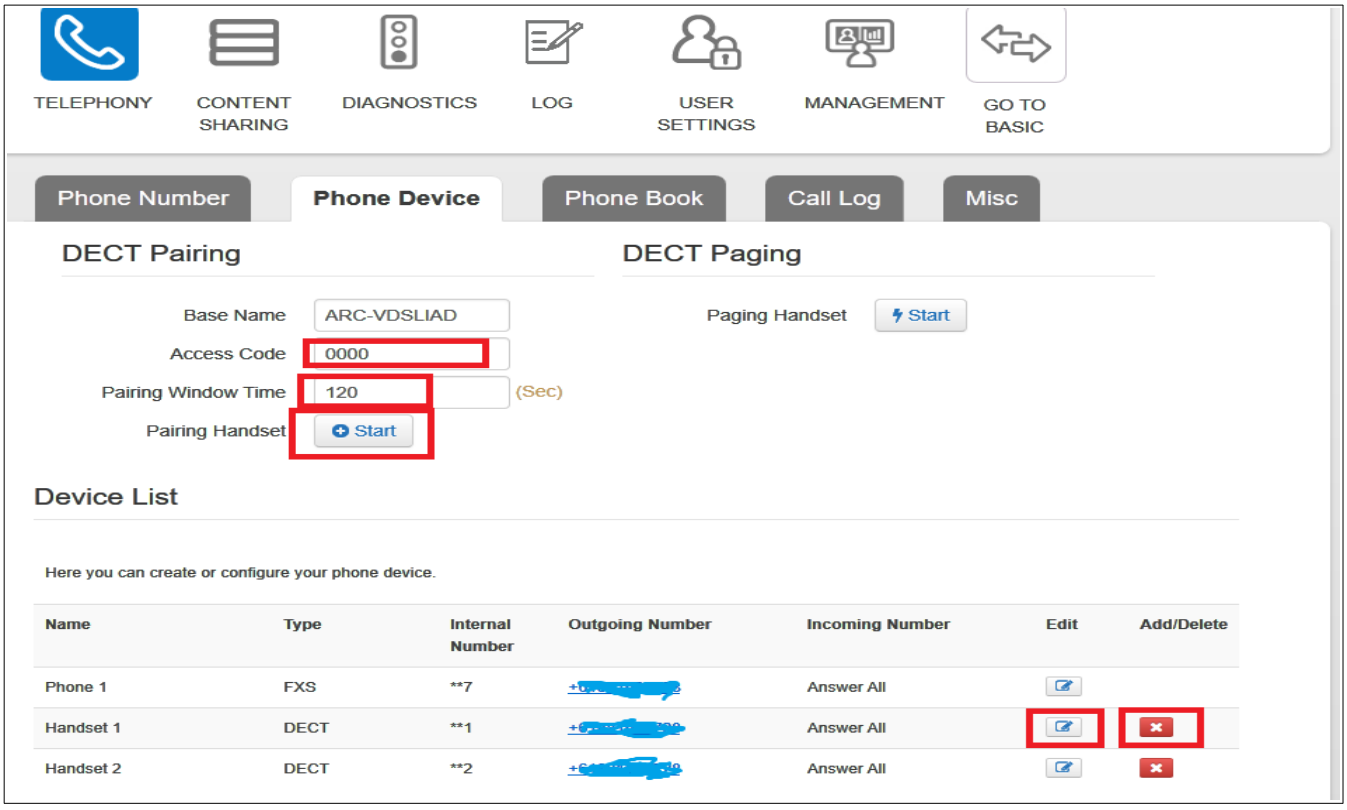
Press the Pair button on the back of the modem for at least five seconds. The button will starts flashing Green. The button will flash Green for 2 minutes.

While button is flashing the modem is ready to pair with the handset.

Follow the handset's documentation for pairing the handset. (Default Pin is 0000)

When the handset is paired the Pair light will turn green, If unsuccessful pair light will turn red.

Can also pair handset and change pin from within GUI (Go to Advanced > Telephony > Phone Device)



To register or pair a handset click on "Pairing Handset" Start

To change pin number enter new number in Access Code and save settings.

To change pairing time change number of seconds in Pairing Window Time.

To de-register (un-pair) a handset log into the modem and go to Advanced > Telephony > Phone Devices.

Click on the cross right hand side of handset and click Ok in the dialogue box that pops up.

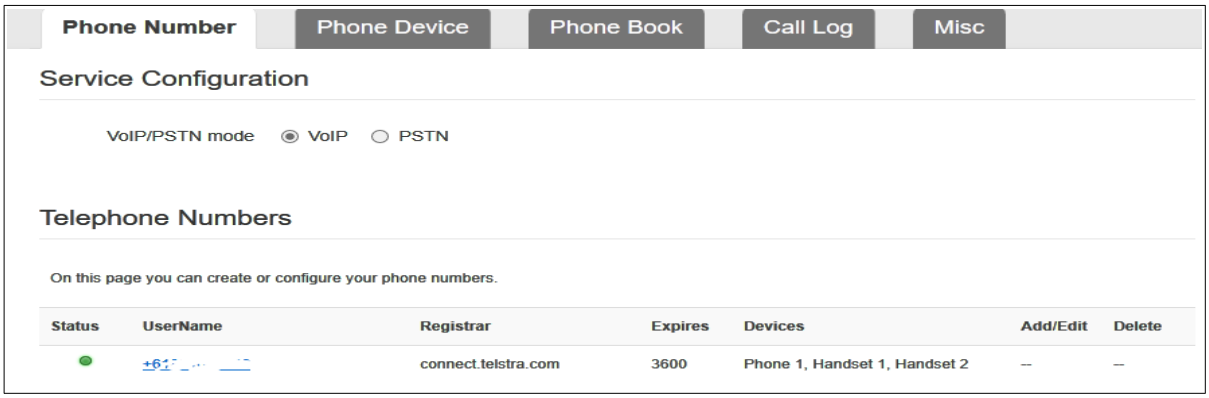
To page a handset press pair button on back of modem for less than 2 seconds. To stop paging press pair button again.

To page Handsets from within the GUI press "Paging Handsets" Start.

17. Telephony (Phone No, Phone book & Call log)

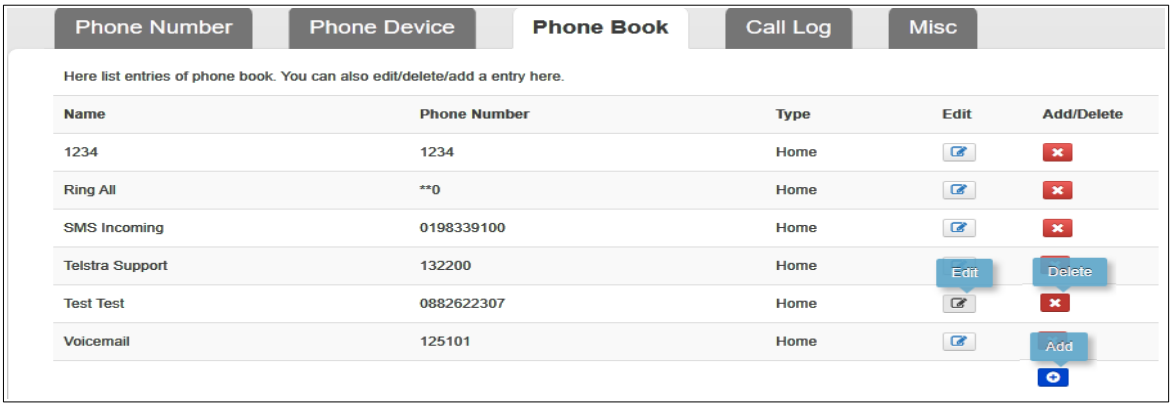
Log in to Modem and go to Go To Advanced > Telephony > Phone Number

The status of the phone service is displayed.

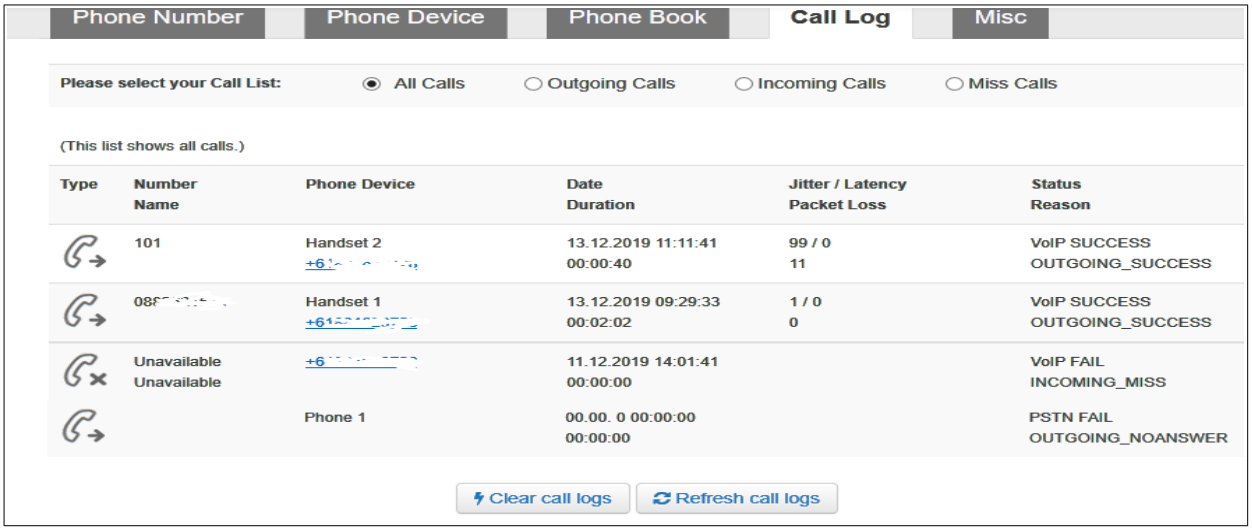


Go to Phone book tab to display modem's phone book.

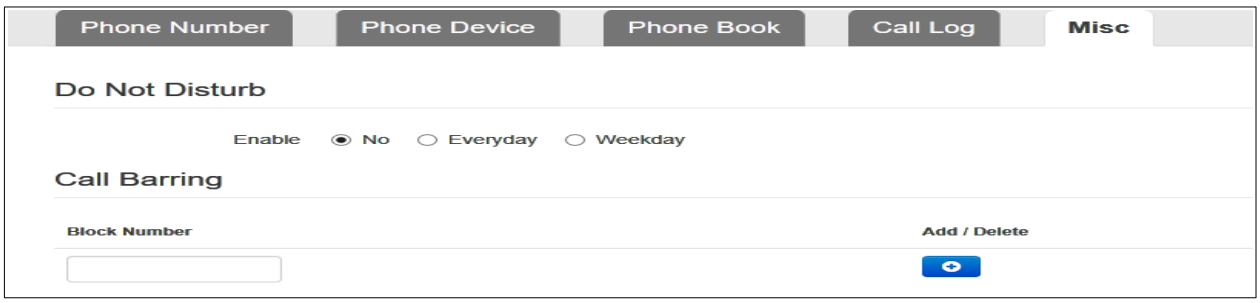
You can edit, delete and add phone numbers to phone book but I have yet to discover how to use phone book to make a call.



To view modem's call log go to the Call Log Tab

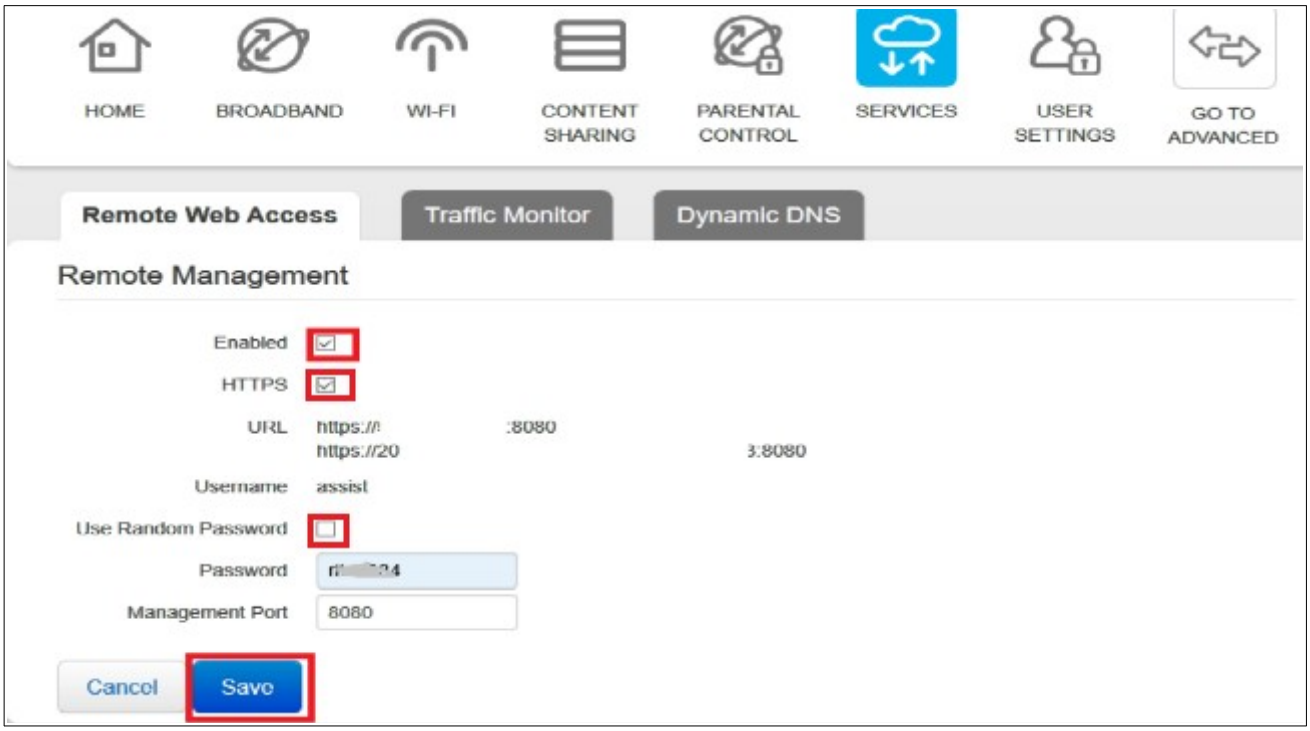


The Misc Tab is were you can add phone numbers you wish to block.



18. Remote Web Access.

To turn Remote Web Access on log into modem and go to Services > Remote Web Access



Place a tick next to “Enabled”

Place Tick next to “HTTPS” if you wish to to use secure login.

To use your own password remove tick from “Use Random password” and enter password in password box.

Default Management port is 8080 but you can enter another port number.

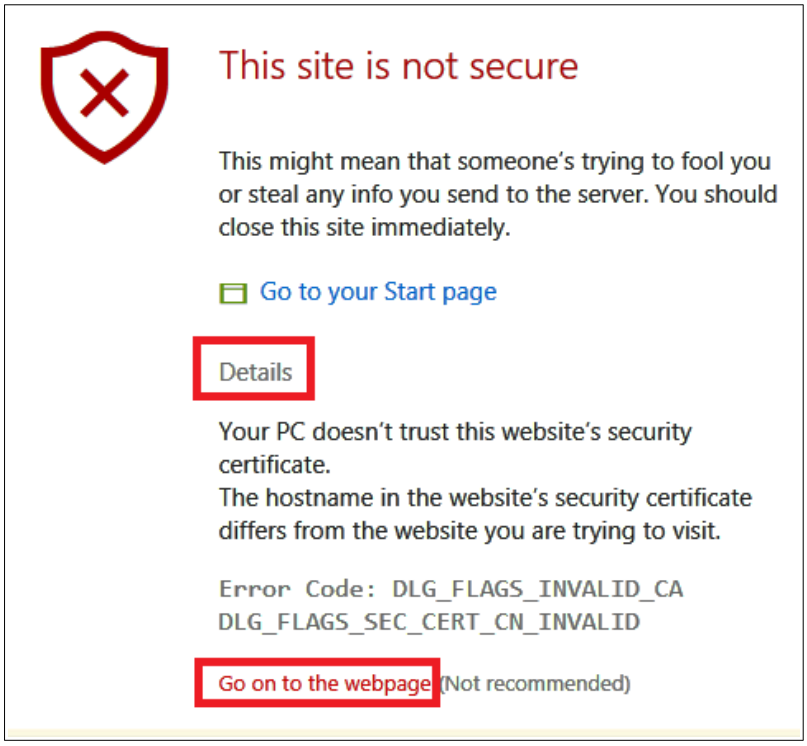
Save Settings

To connect remotely open a browser and navigate to the URL

If HTTPS is used a warning message will be displayed.

Below is the warning message displayed using the Edge Browser.

Click on “Details” and then click on “Go on to WEB page” to display modem’s log in screen.



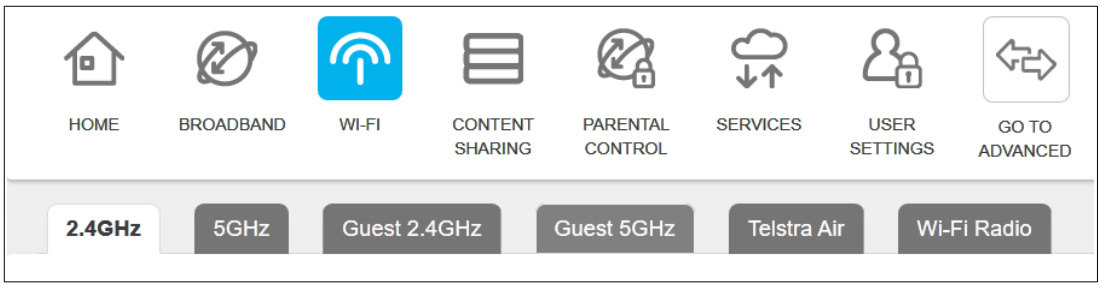
Use the user name assist and the password displayed in the Password box to log in to GUI of modem.

NB: Remote Web access turns of if modem reboots.
Remote Web access locks up and requires reboot to fix if modem switches to 4G backup and then back to main link.

19. Wi-Fi MAC Filtering

Log into modem, go to WiFi

Select Access Point

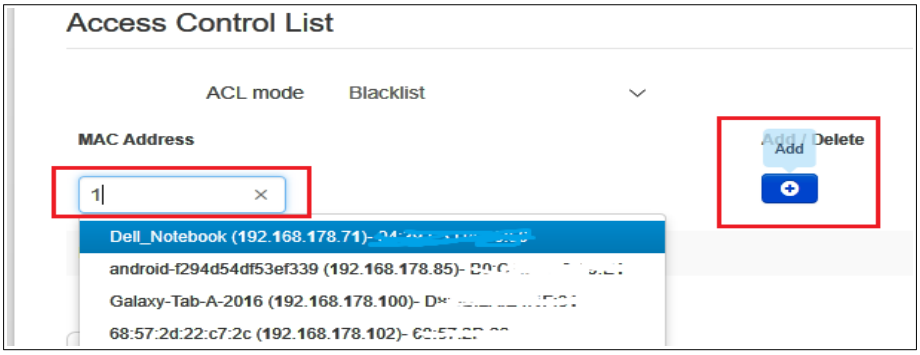


Scroll down to Access Control List

There are two Modes:

1. Blacklist: Listed devices will not be able to connect to WiFi
2. White list: Only devices in list will be able to connect to WiFi.

Select mode



Enter 1 into Mac Address box

A drop down menu will open listing all devices that have been connected to modem.

Select the device you wish to add to list and click on + icon (add).

Note If using White list and using WiFi to connect to modem make sure the device you are using is the first device added to list.

Repeat for all devices that are to be added to list.

When all devices have been added to list click on save.

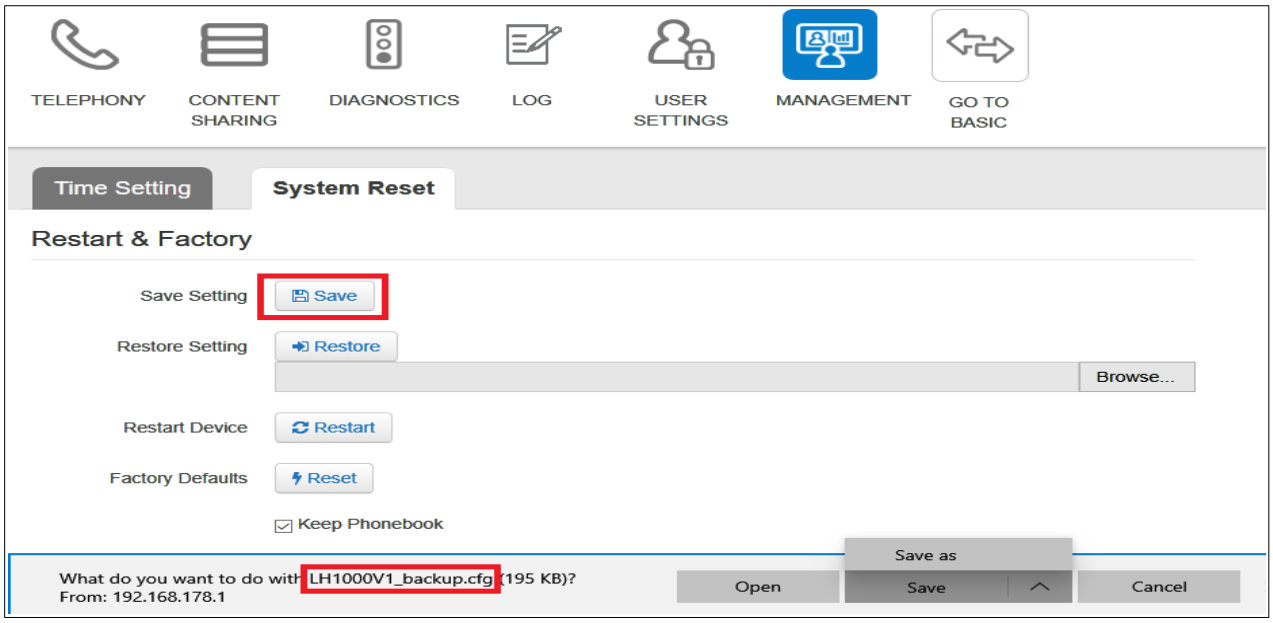
Repeat for all Access Points. (5GHz, Guest 2.4GHz and Guest 5GHz)

20. Backup and Restore Modem Settings

To backup modem settings go to Go to Advanced > Management > System Reset

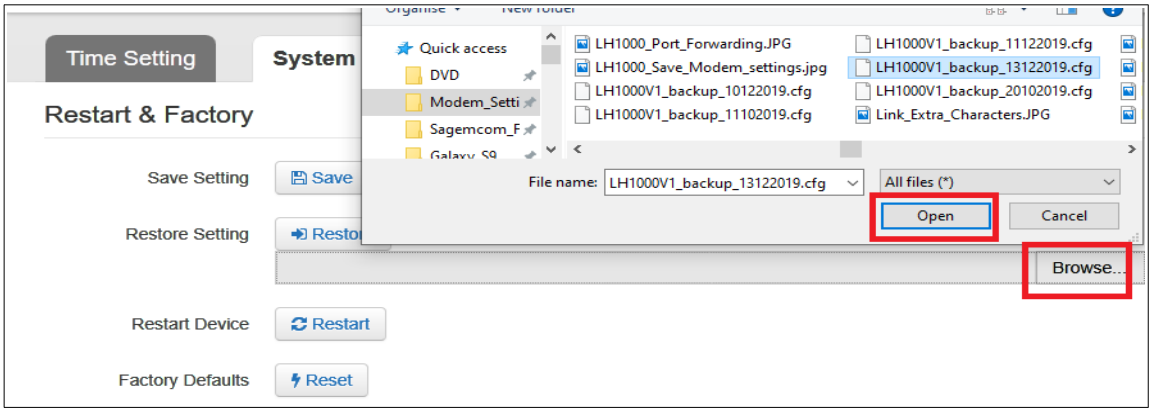
Select “Save”

The modem settings will be saved to a file called LH1000V1-backup.cfg



To restore settings select “Browse”

Navigate to and select the previously saved LH1000V1-backup.cfg file



Select “Open”

Select “Restore”

Modem will reboot and previously saved settings will be restored.

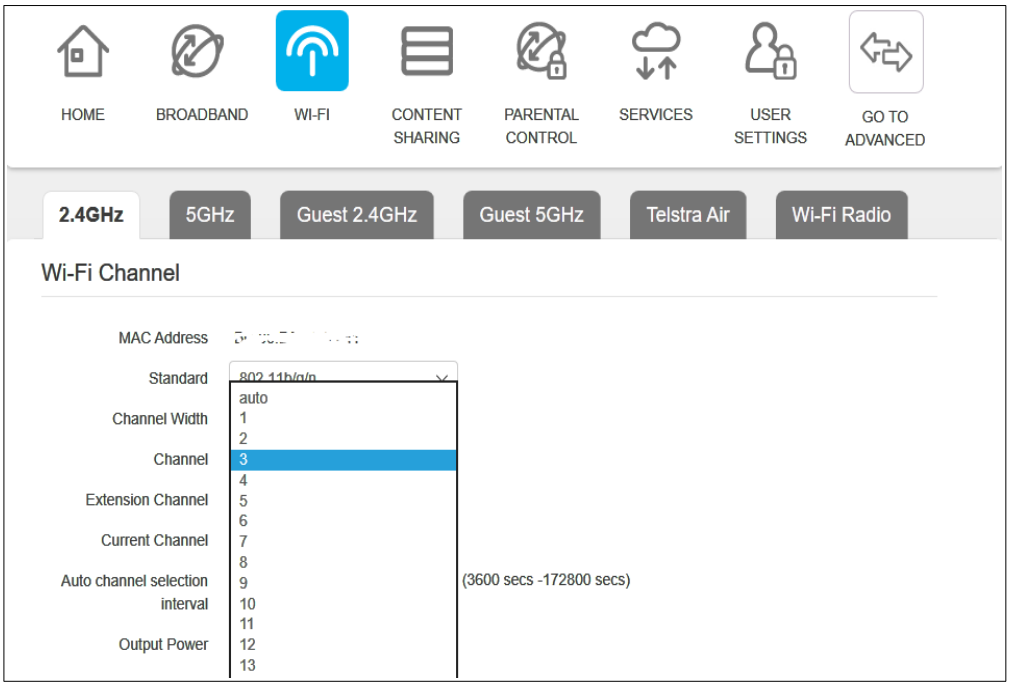
21. Change Wi-Fi Channel, SSID or Password.

Log into modem and go to Wi-Fi

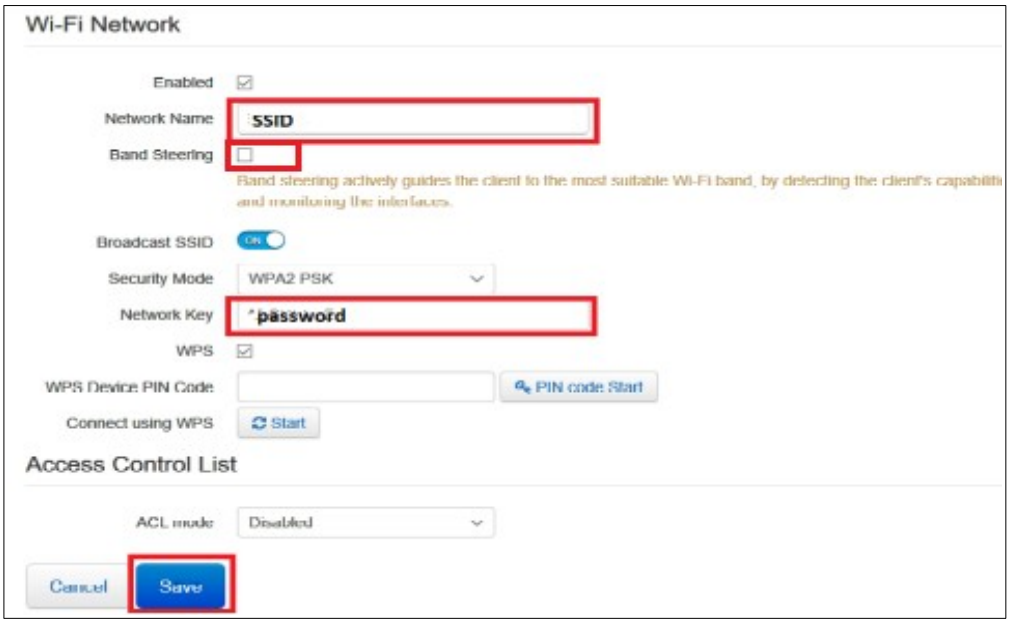
Select WiFi Band you wish to change channel on.

Current channel in use is displayed, select channel you wish to use and save settings.

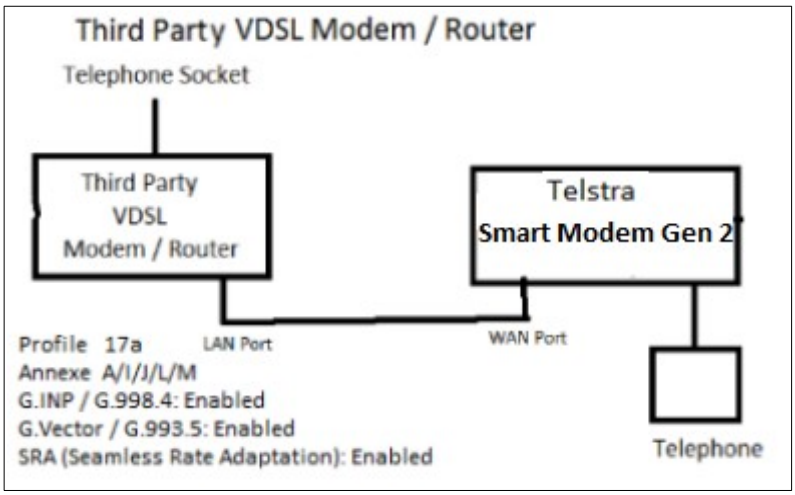
To aid in selecting a channel that has least interference from neighbouring networks use WiFi scanning tool (Go to Advanced > Diagnostics > WiFi)



To change WiFi SSID and WiFi password select the required network.
Enter the new SSID in Network name field.
Enter new password in the Network Key field.
Note To us separate SSID for 5G Band, "Band Steering" must be turned of in 2.4G Band tab.
When all changes have been made select save.



22. Third Party VDSL Modem Router



Connect as per diagram.

No special settings required in Telstra Smart Modem Gen 2.

Turn Wi-Fi Off on Telstra Smart Modem Gen 2.

In third party modem set connection type as DSL and no login ID or password required (IPOE).
If you have trouble with phone change SIP/ALG settings and or set a static address for Smart Modem in Third party VDSL and port forwarding (TCP/UDP 5060-5061, 3478 and UDP 5004, 10000-20000) to Smart Modem Modem

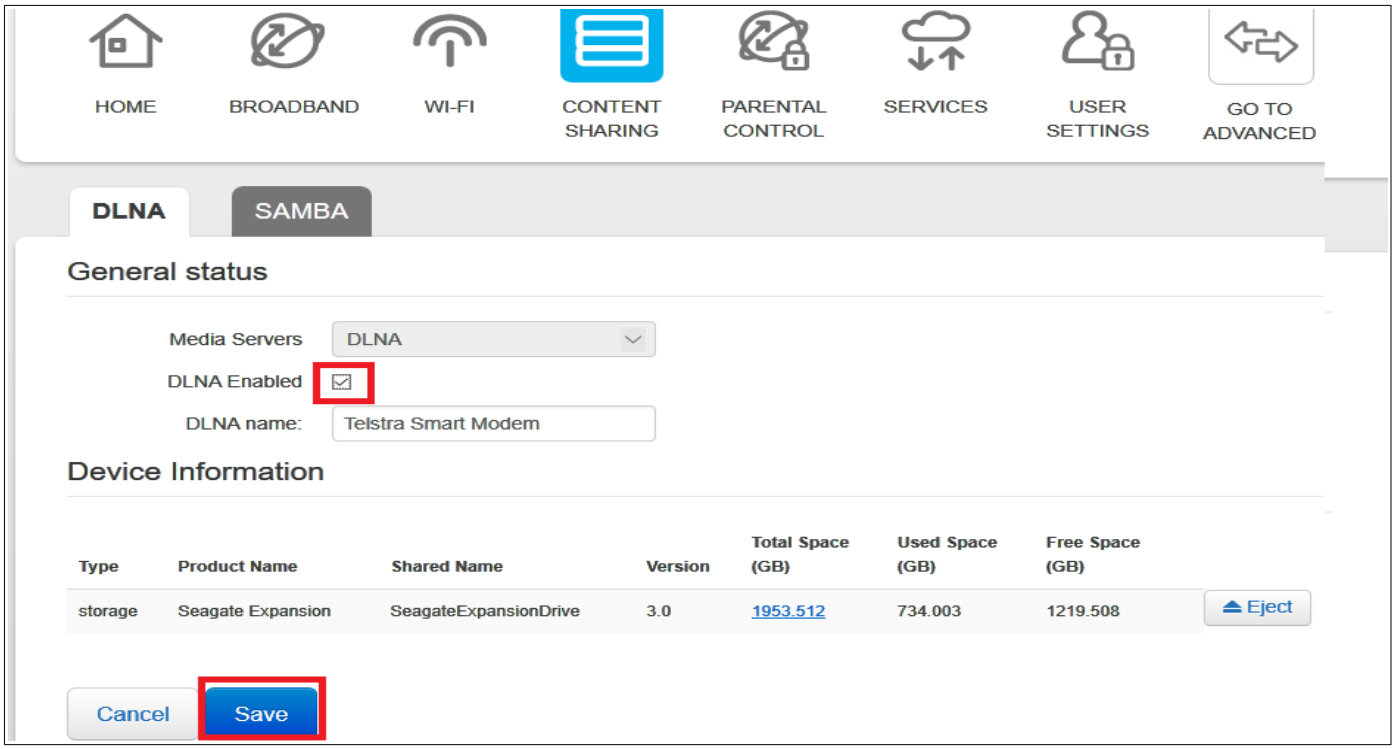
Note Before using this set up Smart Modem must be connected directly to NBN to enable registration of VOIP in Modem.

23. DLNA Server and USB Mass Storage.

The Modem acts as DLNA server for media files on drives connected to USB ports.

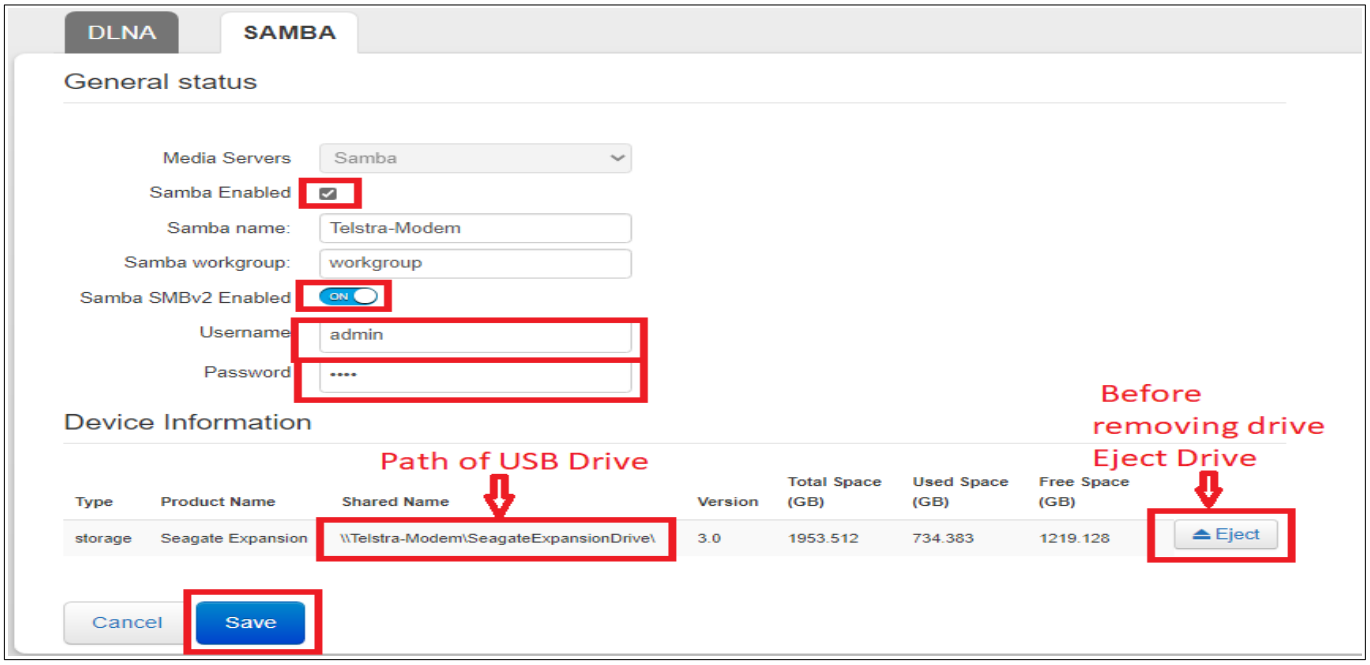
A powered USB Hub can be plugged into the USB port to allow the connection of several drives

To turn DLNA on or off go to Content Sharing > DLNA and place or remove tick next to “DLNA Enabled” and click on save.



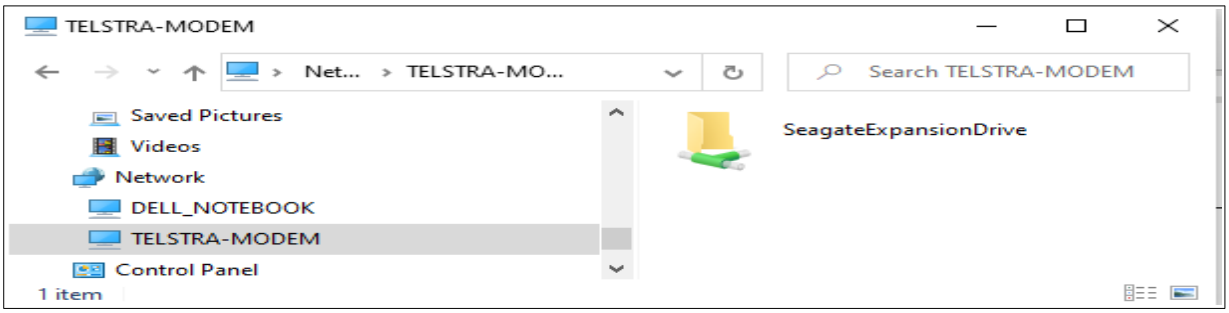
Mass Storage

To turn File sharing on or off go to Content Sharing > Samba and place or remove tick next to “SMBA Enabled” and click on save. By default modem uses SMB 1.0 but can enable SMBv2.



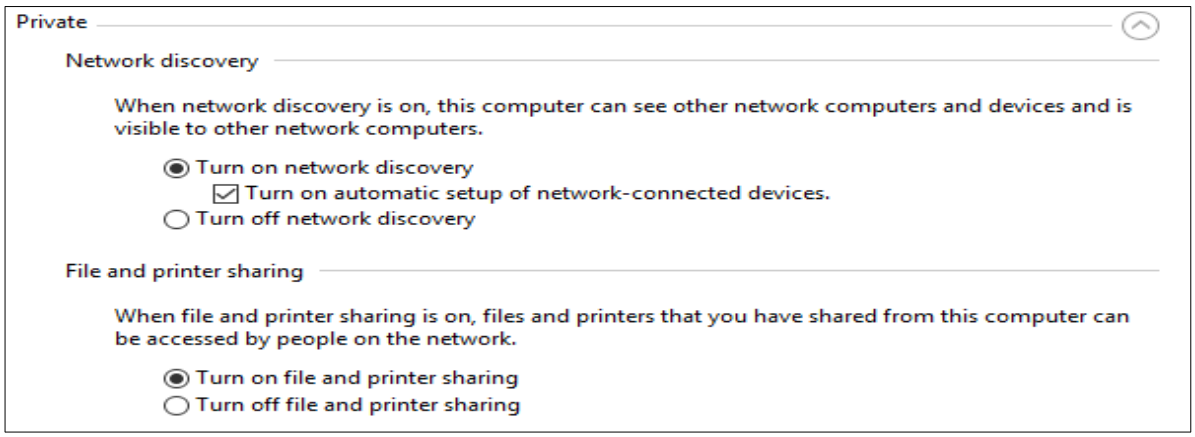
Before removing a USB drive click on Eject

On a Windows PC can connect to drives connected to the USB ports by opening File Explorer and typing the address shown at the bottom right of the Content sharing page into the address bar of File explorer. (Your address will be different depending on IP address off you modem and the name of the attached USB drive)



If you cannot access the drive check that Network is set to Private, Network Discovery is on and SMB 1.0 file sharing support is enabled

To check Network discovery is on
Go to Control Panel > All Control Panel Items > Network and Sharing Centre > \Advanced sharing settings and “Turn on Network Discovery” and “Turn on File and Printer Sharing”



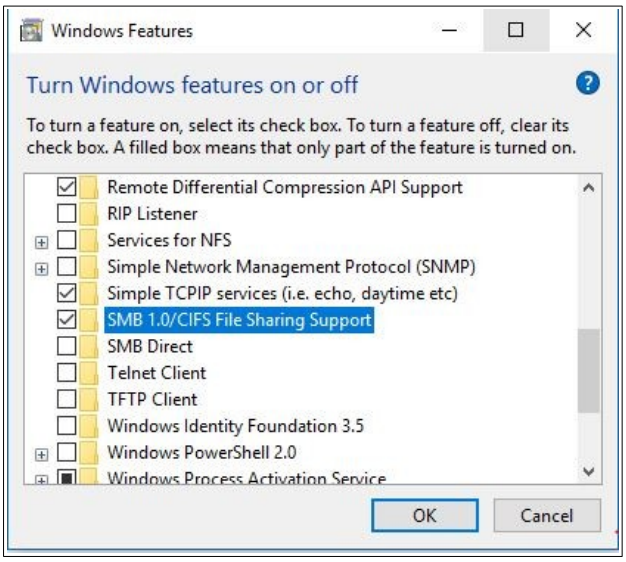
If SMBv2 is disabled ensure that SMB 1.0 file sharing support is on by.

Clicking on Start

Start typing Turn Windows Features On or Off

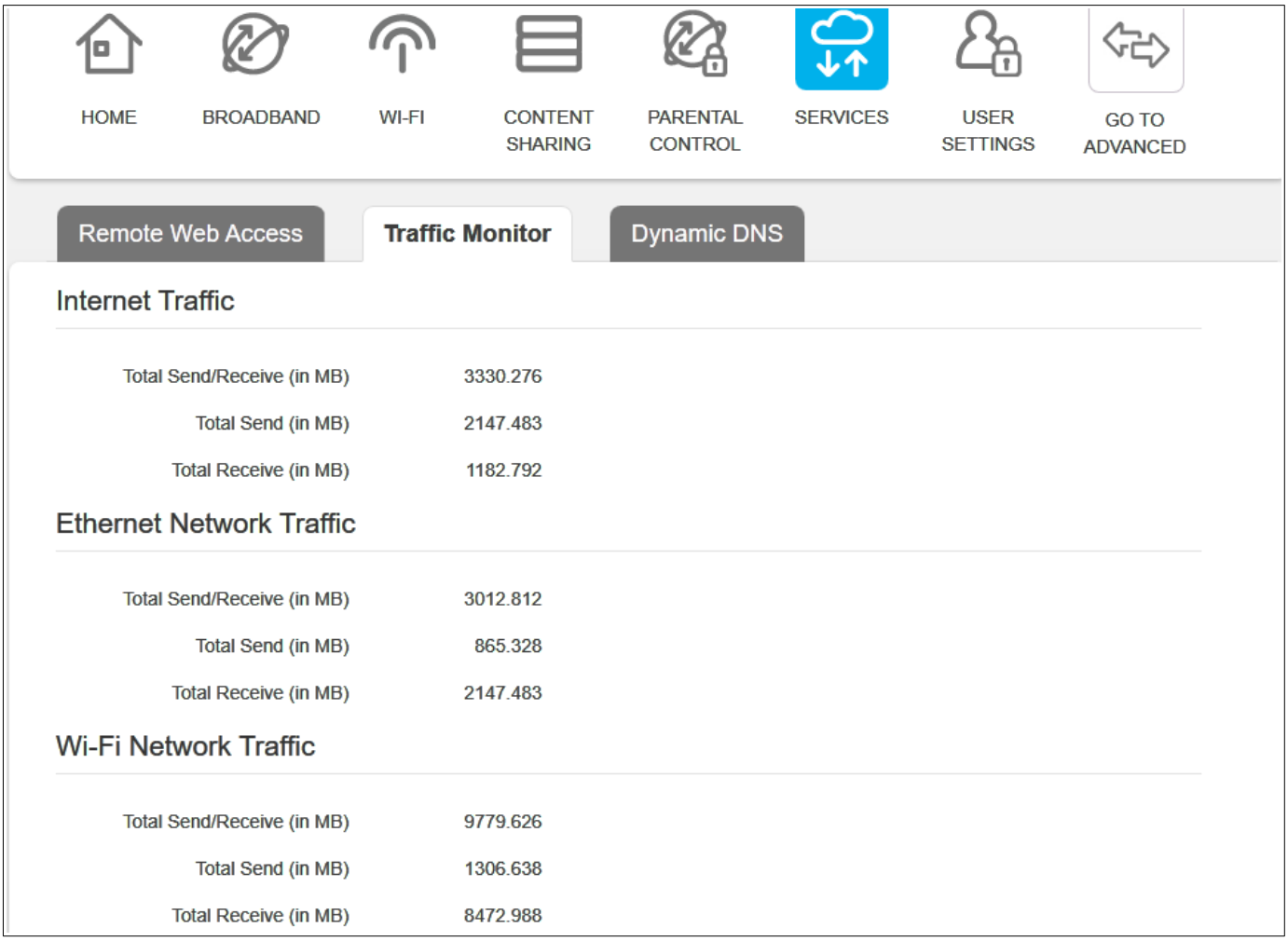
When “Turn Windows Features On or Off” appears in list of suggestion click on it.

Scroll down to “SMB 1.0 file sharing support” and place a tick in the box.



24. Traffic Monitor

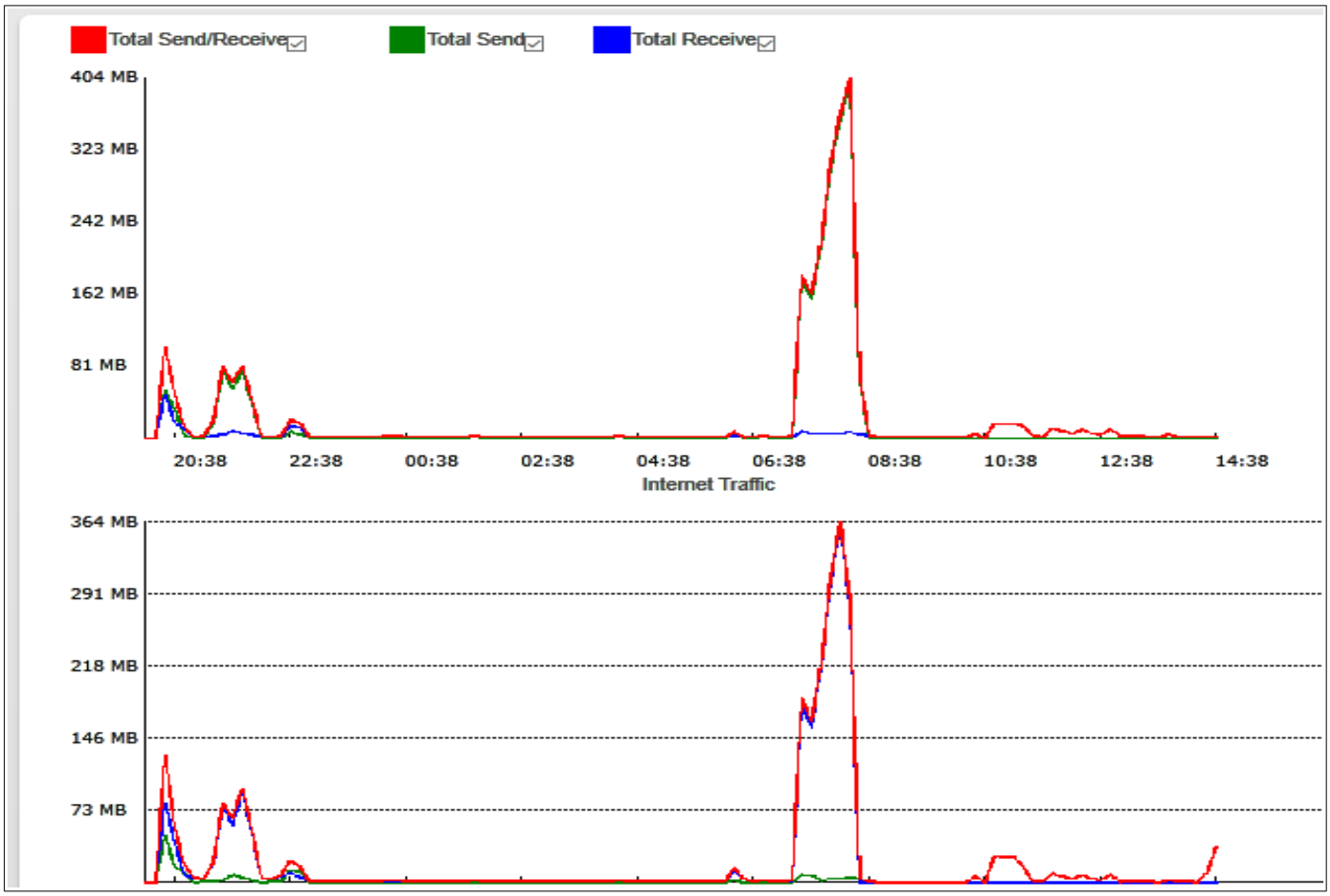
To view traffic meters log into Modem and go to > Services > Traffic Monitor



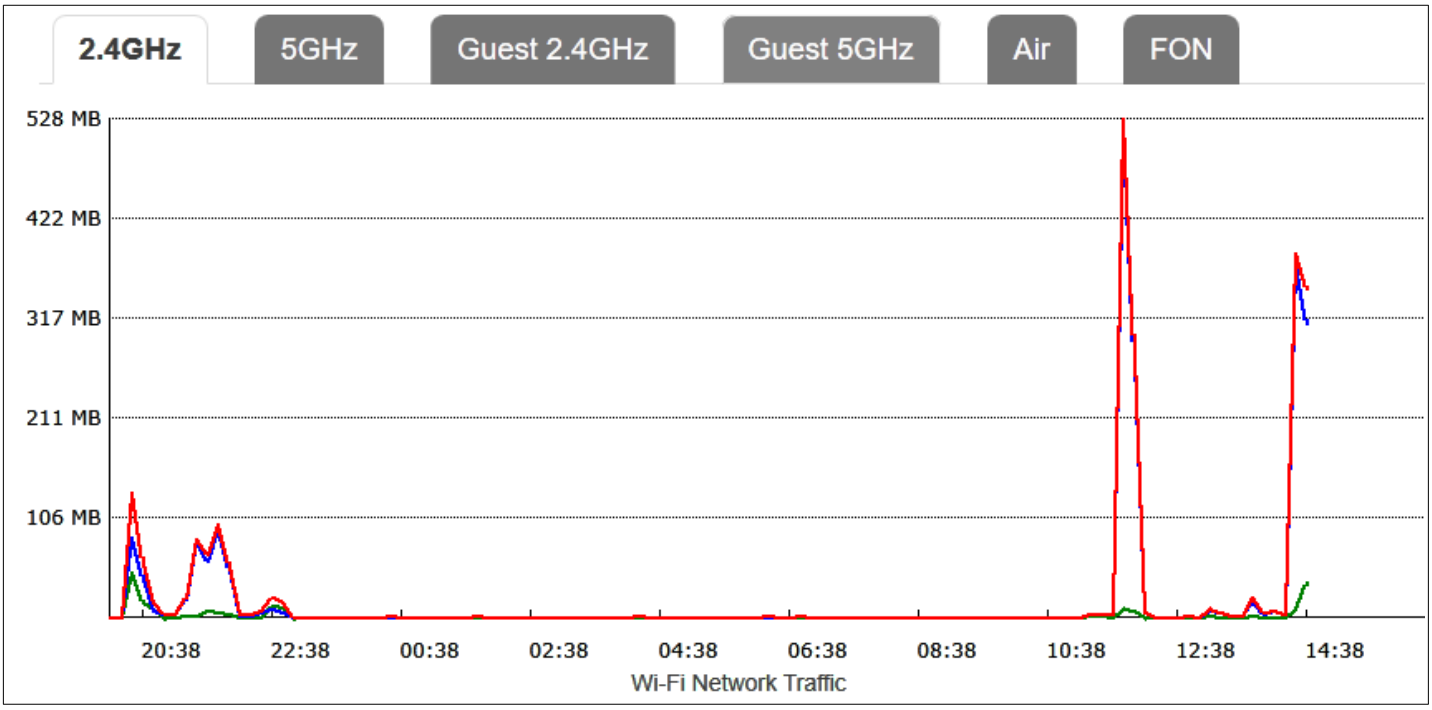
The traffic data figures are for the data transmitted and received since modem was rebooted.

The Internet data figures are for the connection currently in use. (DSL port, WAN port or LTE)

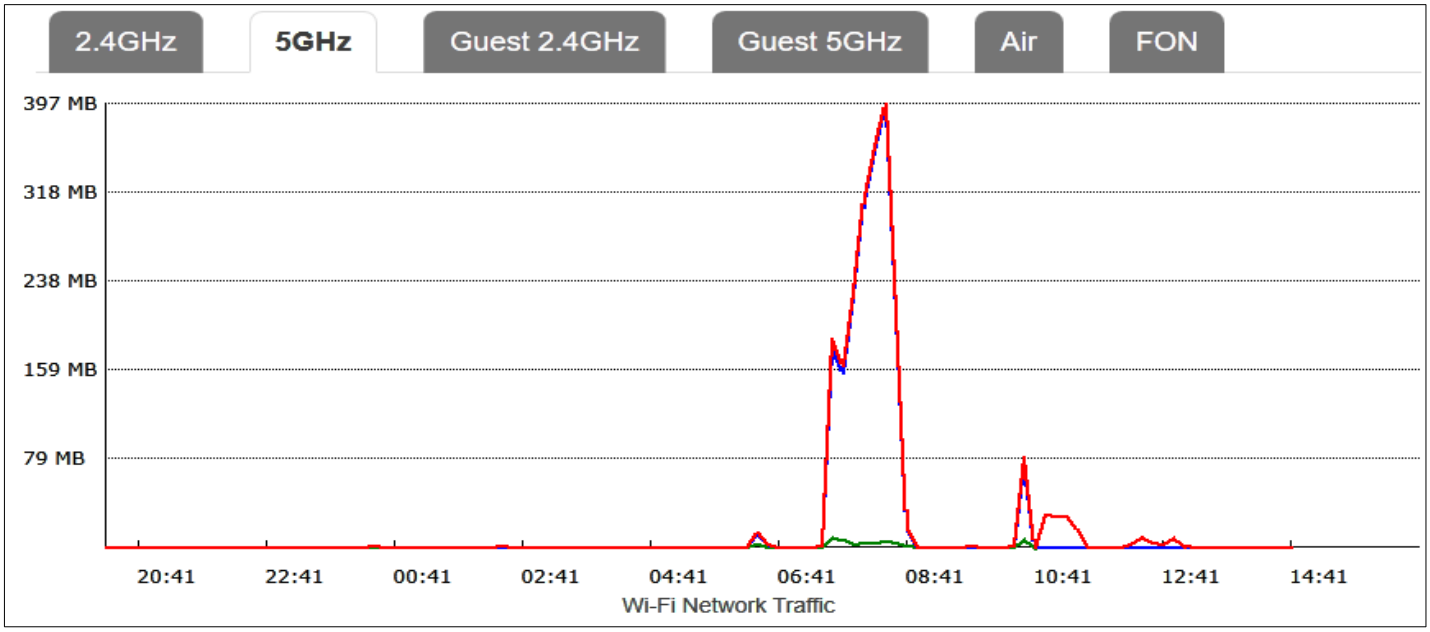
Internet and LAN Ethernet Traffic past 24 hours Graph



2.4G WiFi Band Traffic past 24 hours Graph



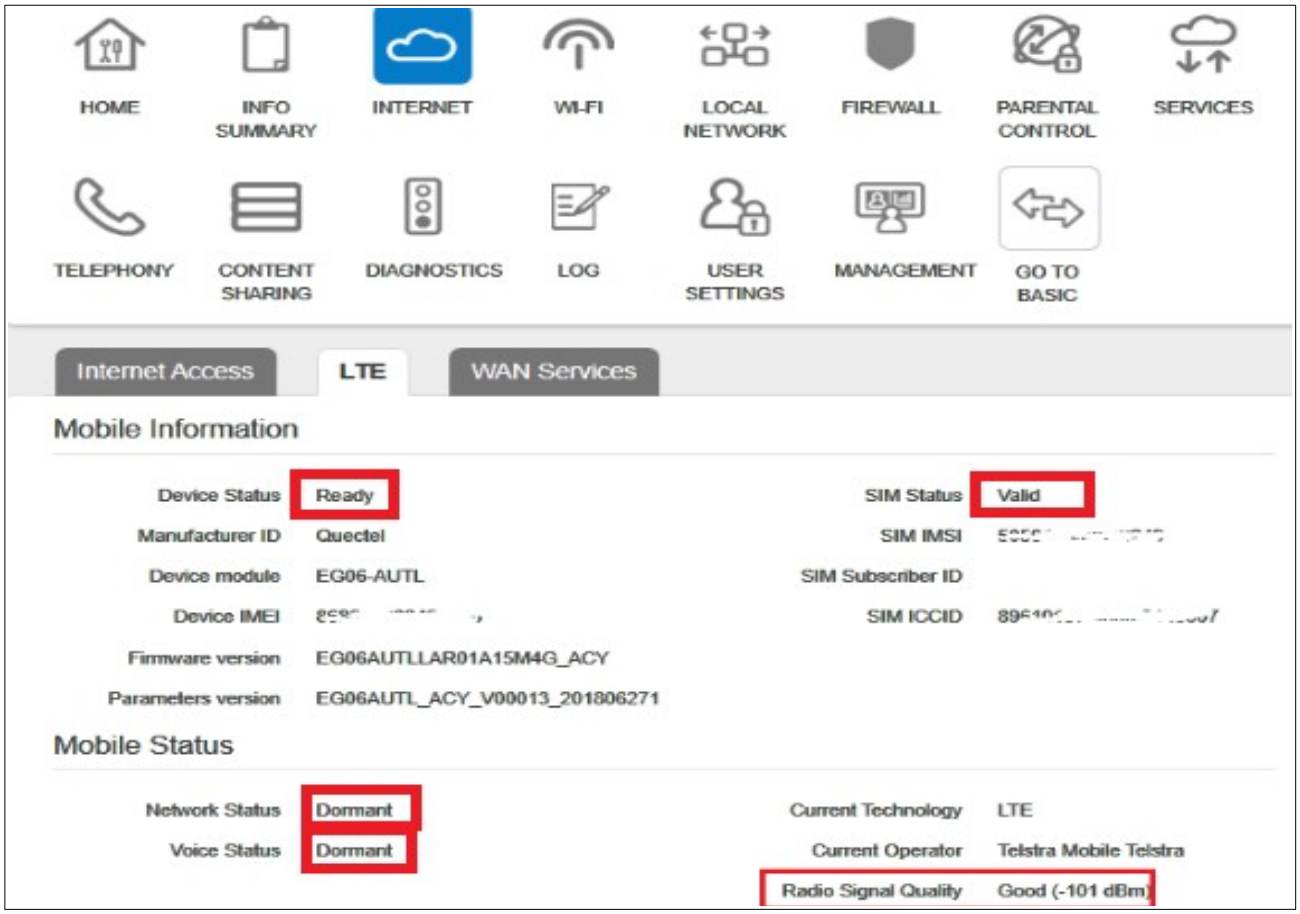
5G WiFi Band Traffic past 24 hours Graph



The data graphs show the rate of data transmitted or received over the last 24 hours. From what I can determine the data graph measure the bytes transmitted or received over a 10 minute period. The 10 minute periods start from when modem was last rebooted.

25. 4G Cellular Backup

Log into Modem and go to Go to Advanced > Internet > LTE >



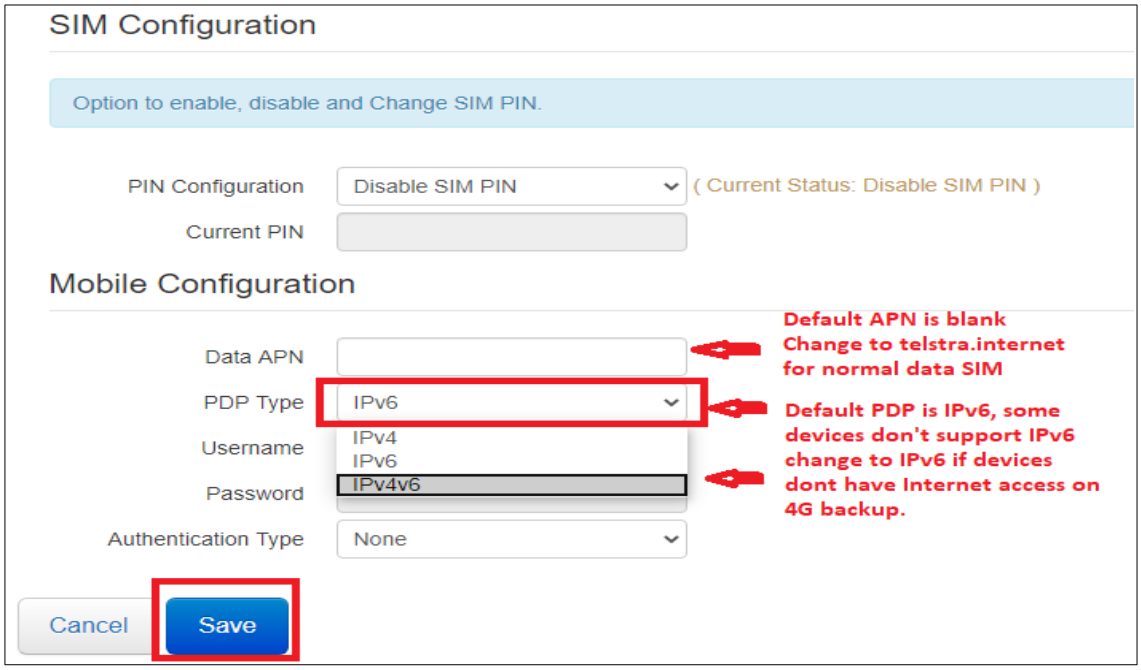
The image above shows status of 4G backup when 4G back ready but not in use.

When main link is down Mobile Status and Voice status will change from Dormant to Up

Image above shows 4G connected.

Radio Signal Quality 4G/LTE (RSRP)

- -70dBm to -90dBm is a strong signal with fast data speeds. Stronger signals are possible. **(Green)**
- -91dBm to -105dBm is a good signal with fast data speeds **(Green)**
- -106dBm to -112dBm is fair but useful and fast and reliable data speeds may be attained **(Orange)**
- -113dBm to -125dBm reliable data, but performance may be slower and latency increased **(Red)**
- -126dBm to -136dBm performance will drop dramatically
- -136dBm to -140dBm disconnection

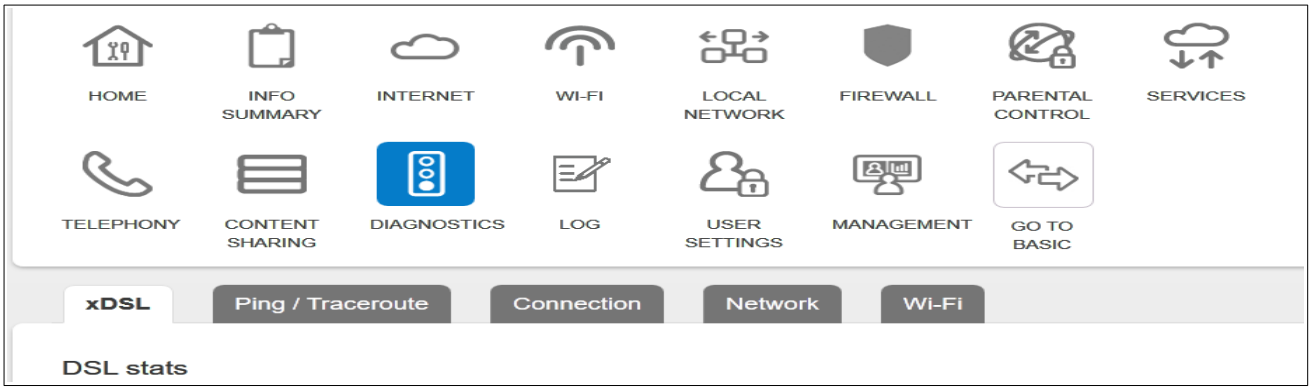


Data APN is normally blank change to telstra.internet if you want to use modem as a 4G modem with normal Telstra data SIM.

Default PDP is set to IPv6. Some devices don’t support IPv6. If some devices don’t have Internet when modem switches to 4G back change to IPv4v6

26. Diagnostics (Fault Finding)

To view diagnostic information log in to modem and go to Go to Advanced > Diagnostics



Statistics for VDSL or ADSL connections

Log into modem and go to Go to Advanced > Diagnostics > xDSL

DSL stats

Parameters	Total	Current Quarter	Previous Quarter	Current Day	Previous Day	Since Sync
Downstream FEC	20985	19	156	1421	7801	20985
Upstream FEC	21624	8	0	231	20021	21624
Downstream CRC	0	0	0	0	0	0
Upstream CRC	0	0	0	0	0	0
Downstream ES	0	0	0	0	0	0
Upstream ES	0	0	0	0	0	0
Downstream SES	0	0	0	0	0	0
Upstream SES	0	0	0	0	0	0
Downstream UAS	150	150	0	0	0	0
Upstream UAS	150	150	0	0	0	0
Downstream LOS	0	0	0	0	0	0
Upstream LOS	0	0	0	0	0	0
Downstream LOF	0	0	0	0	0	0
Upstream LOF	0	0	0	0	0	0
Downstream LOM	0	0	0	0	0	0
Upstream LOM	0	0	0	0	0	0

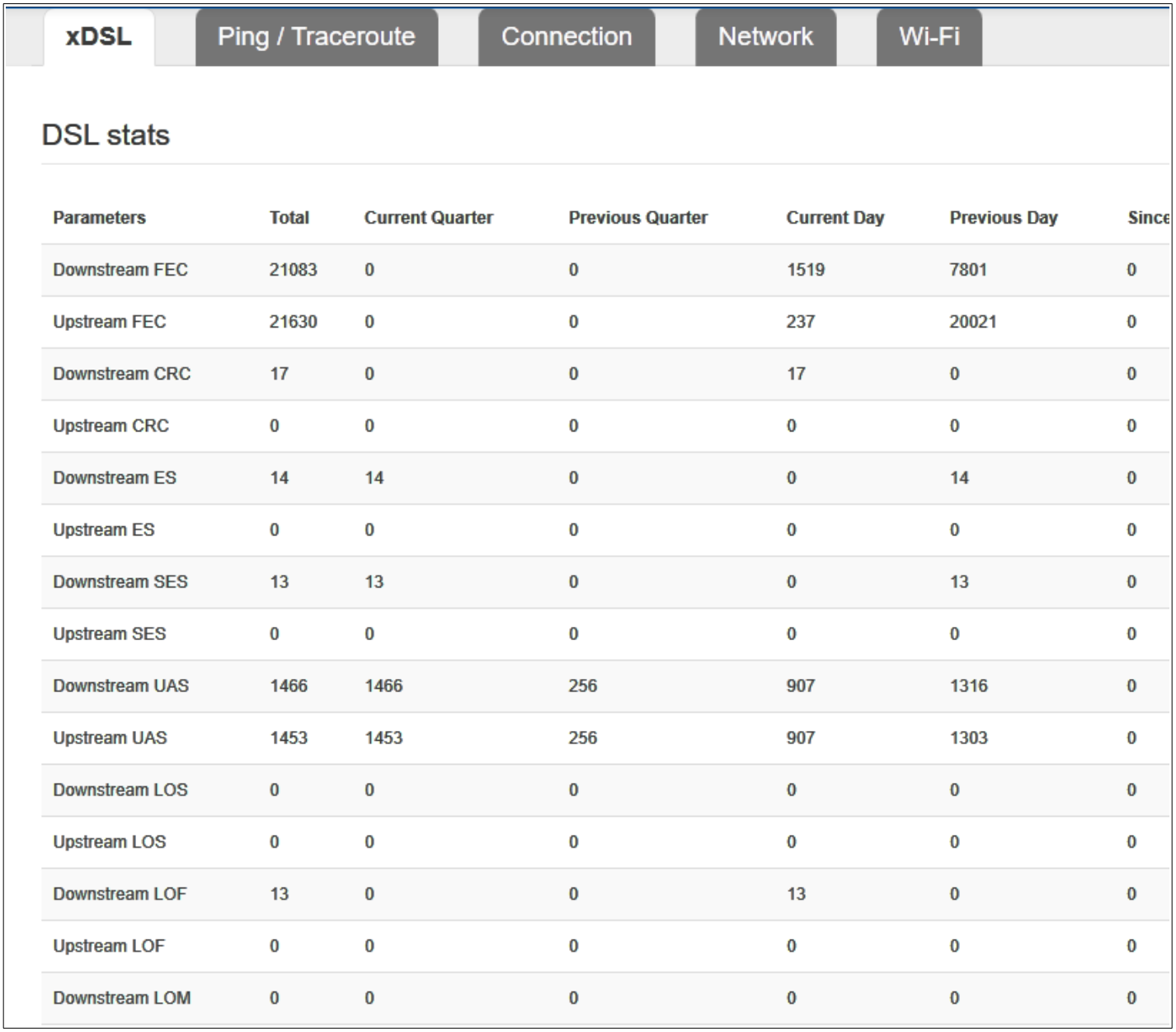
Above is an example of a normal DSL link

1. Forward Error Correction, FEC: Number of errors that were detected and can be corrected by the error correction bits in the data packet without requiring data re transmission.
2. Cyclic Redundancy Correction, CRC: A CRC error indicates that part of the data packet is so

corrupt that it cannot be corrected by error correction bits and requires re transmission.

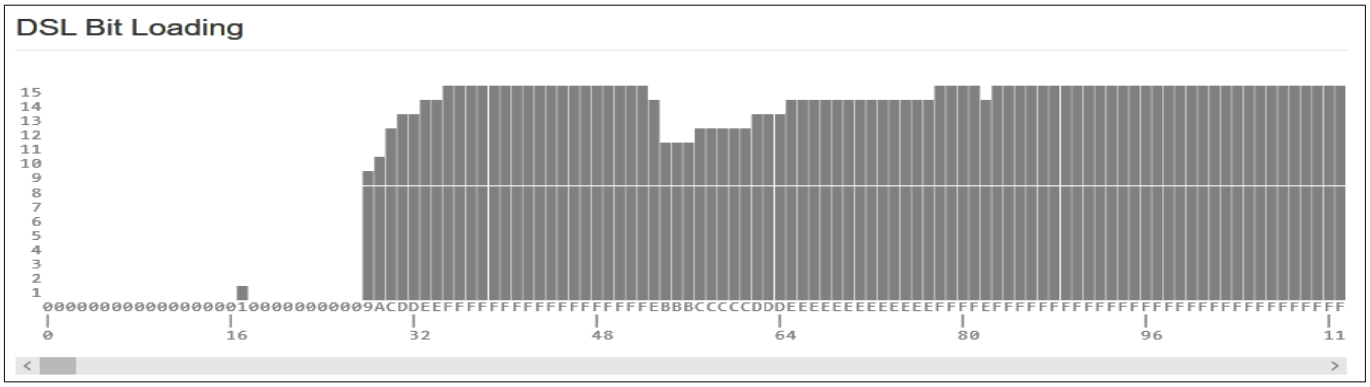
3. Errored Seconds, ES: The number of seconds during which an CRC error was detected
4. Severely Errored Seconds SES: The number of seconds during which 30% or more of the data blocks had CRC errors
5. Unavailable Seconds UAS: The number of seconds the link was unable to transmit or receive data. Usually indicate loss of the link.
6. Loss of Sync, LOS: Number of times Node or modem has lost sync
7. Loss of Framing, LOF: Number of times there has been a loss of frame error.
8. Loss of Margin, LOM: Number of times Signal to noise margin is to small for signal to be accurately detected due to high noise or high attenuation.

Below is an example of a DSL link which has just recovered from link loss.



Parameters	Total	Current Quarter	Previous Quarter	Current Day	Previous Day	Since
Downstream FEC	21083	0	0	1519	7801	0
Upstream FEC	21630	0	0	237	20021	0
Downstream CRC	17	0	0	17	0	0
Upstream CRC	0	0	0	0	0	0
Downstream ES	14	14	0	0	14	0
Upstream ES	0	0	0	0	0	0
Downstream SES	13	13	0	0	13	0
Upstream SES	0	0	0	0	0	0
Downstream UAS	1466	1466	256	907	1316	0
Upstream UAS	1453	1453	256	907	1303	0
Downstream LOS	0	0	0	0	0	0
Upstream LOS	0	0	0	0	0	0
Downstream LOF	13	0	0	13	0	0
Upstream LOF	0	0	0	0	0	0
Downstream LOM	0	0	0	0	0	0

DSL Bit Loading



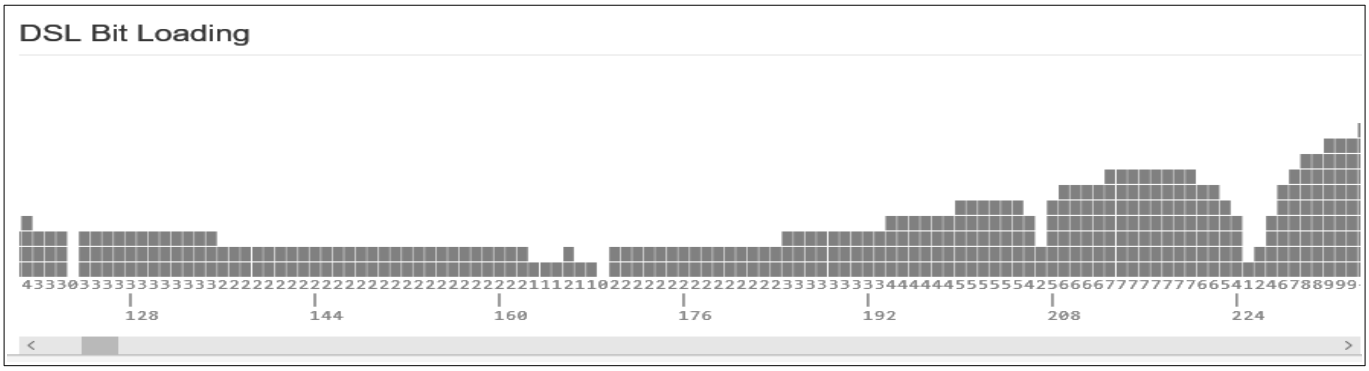
The frequency bandwidth of the link is is divided into tones of 4.3125 Khz bandwidth.

The tones are displayed along the horizontal axis.

Each tone can carry up to 56kbps of data.

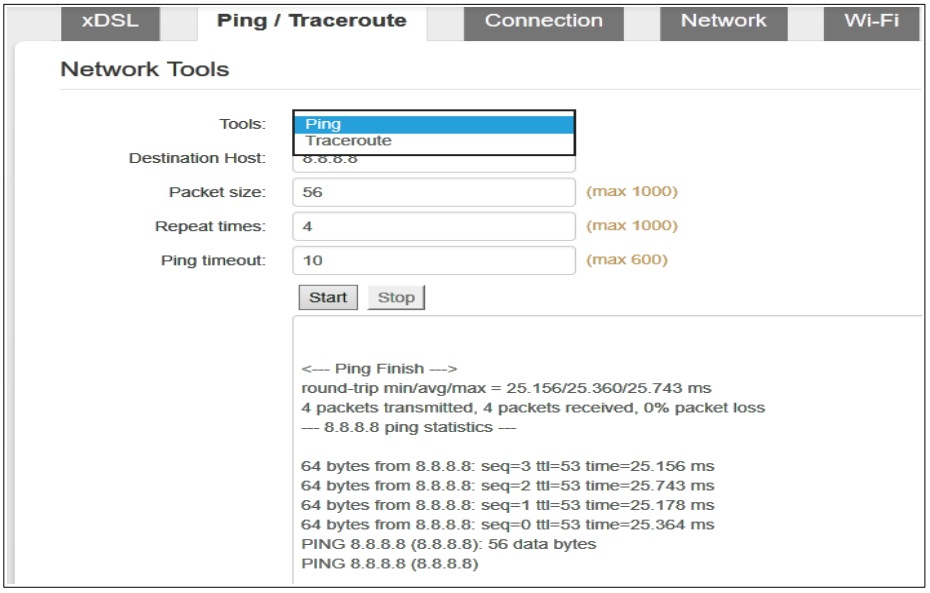
On a perfect line each tone would carry 56kbps of data at lower frequencies end of the spectrun. As the frequency increases the number of bits per second will gradually decrease.

If there is noise on the line at a particular frequency the bits per tone will be less at that frequency as shown in image below.



Ping / Traceroute Tab

To ping an IP address or URL enter the IP address or URL and select start.

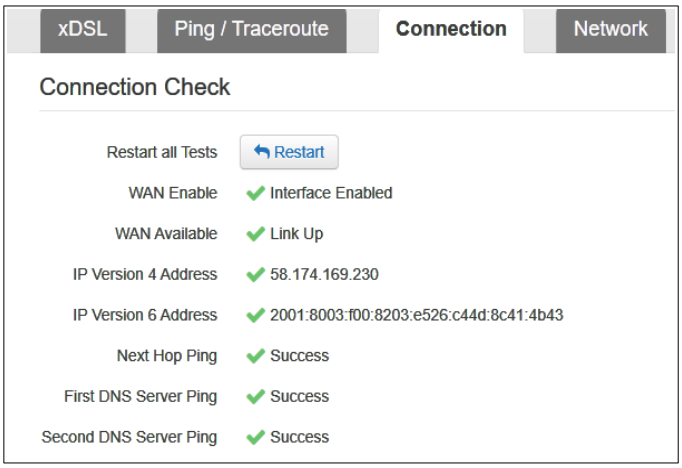


To trace a route Select Trace route from tools menu.

Enter the URL or IP address and press start.

Connection Tab

Should see all green ticks. Any read crosses indicates a fault with link.

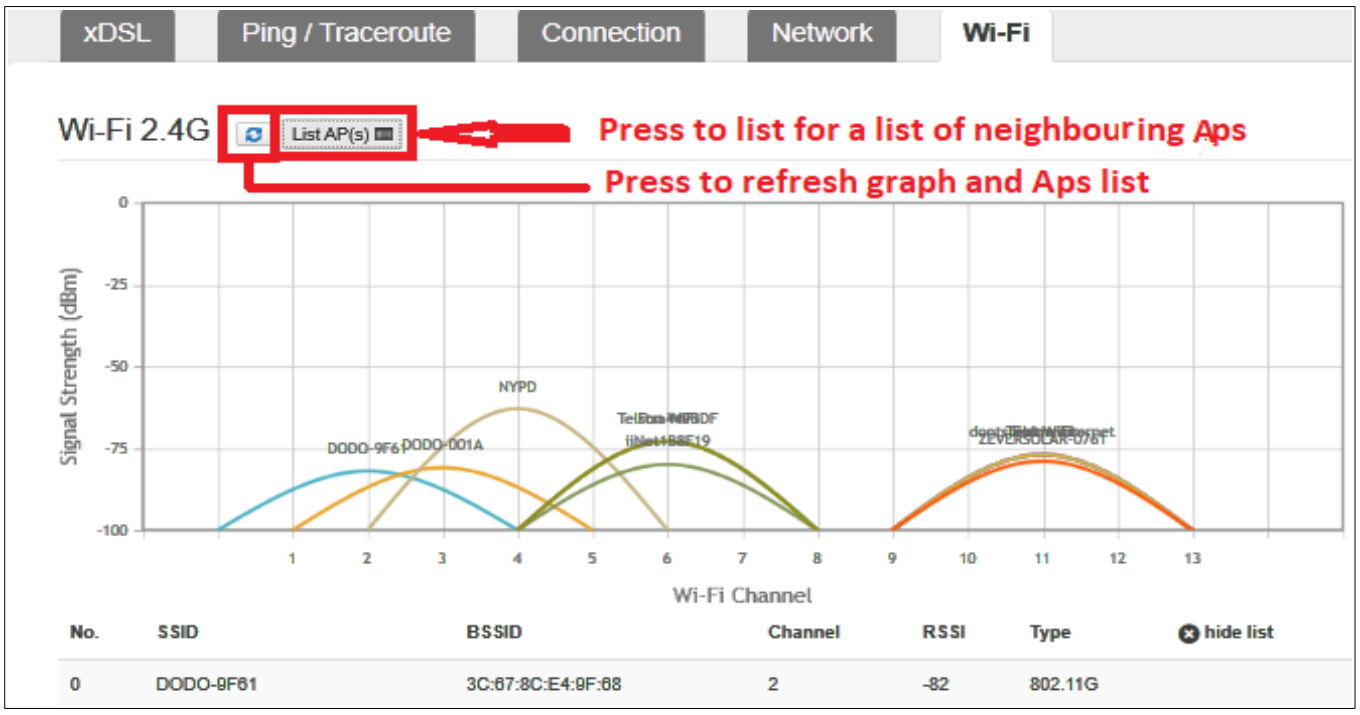


WiFi Tab

The WiFi graph shows a graph of neighbouring WiFi networks.

This graph is useful for selecting a WiFi channel which has the least interference from neighbouring WiFi networks.

To list the Access points press the List AP(s) This will show a list of the neighbouring AP(s), their SSID, BSSID, Channel, power level (RSSI) and WiFi Standard of AP

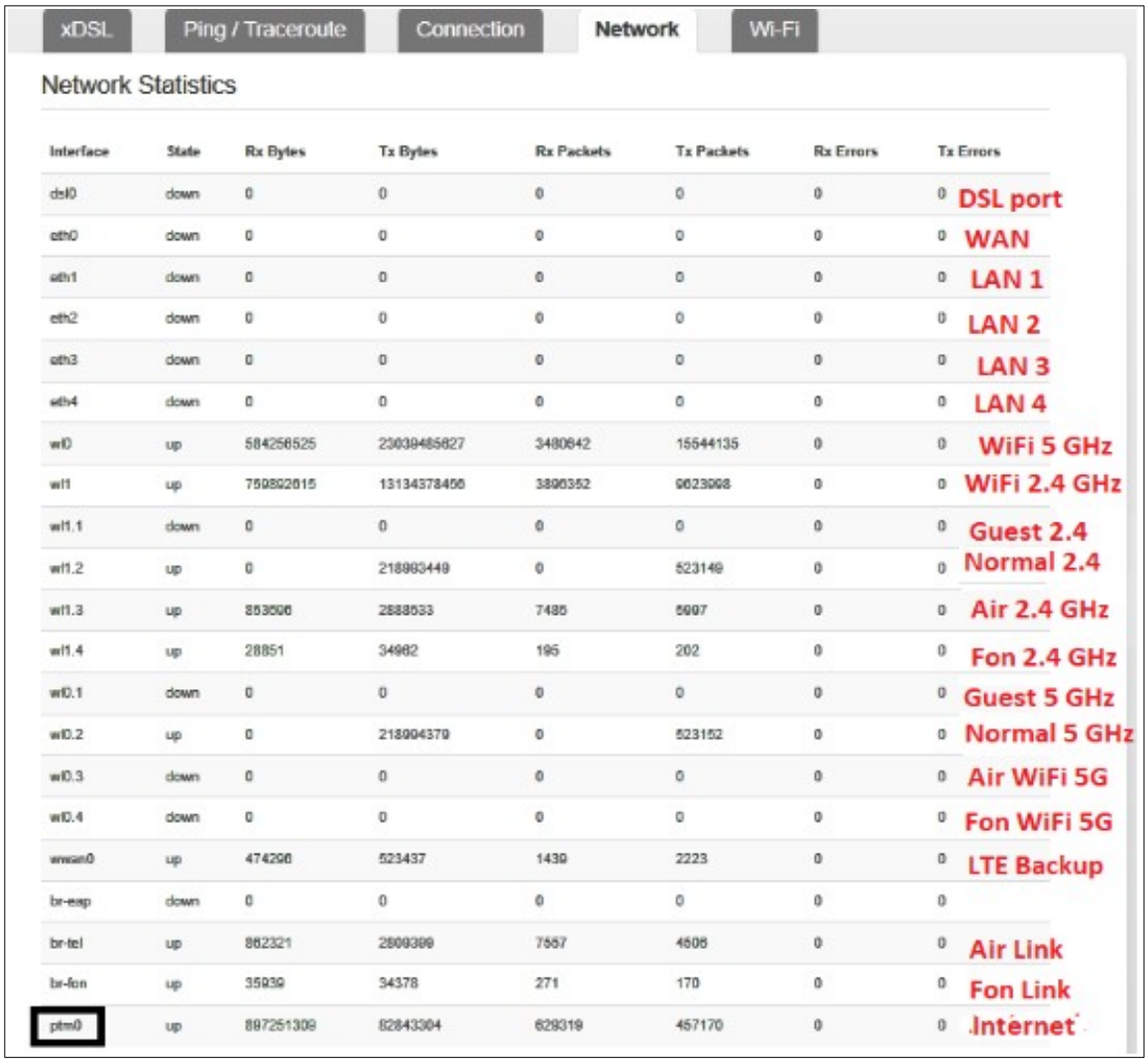


Network

Shows the stats of all the modem ports plus WiFi, LTE and virtual connections.

There seems to be heaps of discrepancy between the stats displayed and what one would expect.

- I have FTTN connection yet there is no data on DSL port
- wl0 and wl1 data is much greater than the sum of wl0.1-4 and wl1.1-4
- wl0.2 (Normal 5 GHz) and wl1.2 (Normal 2.4 GHz) show no receive data)



NB: ptm0 changes to Dac when modem on LTE backup.

Log

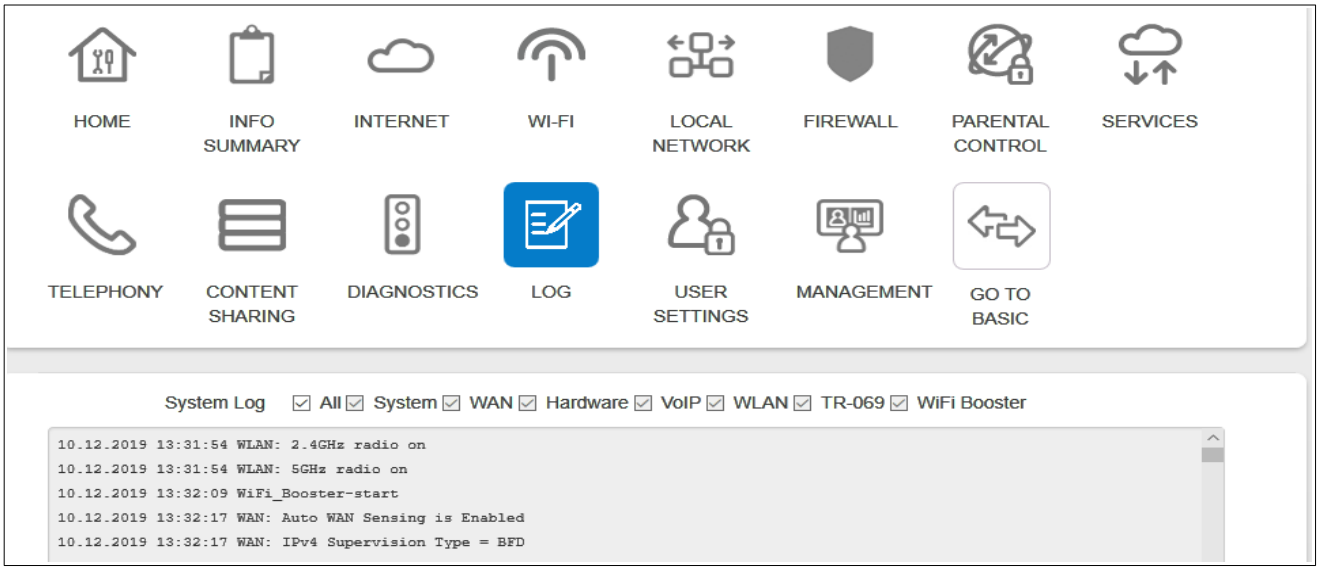
To open Log go to Go to Advanced > Log

The log shows all events since modem was last reset.

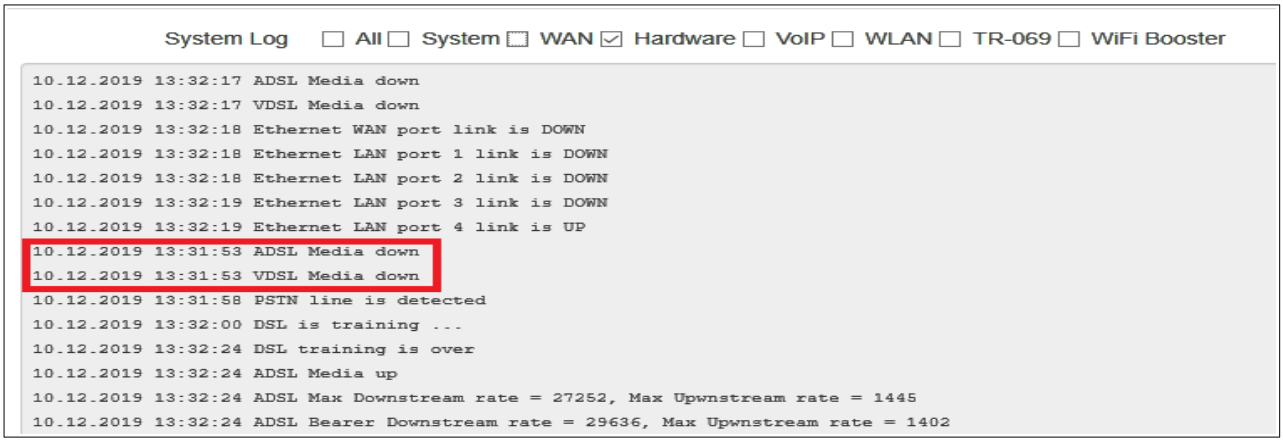
The log shows events that have occurred in the last 15-50 minutes

Across the top of the events log are the types of events.

To filtered events by type remove tick next to all and remove tick from the types events you want to filter out.

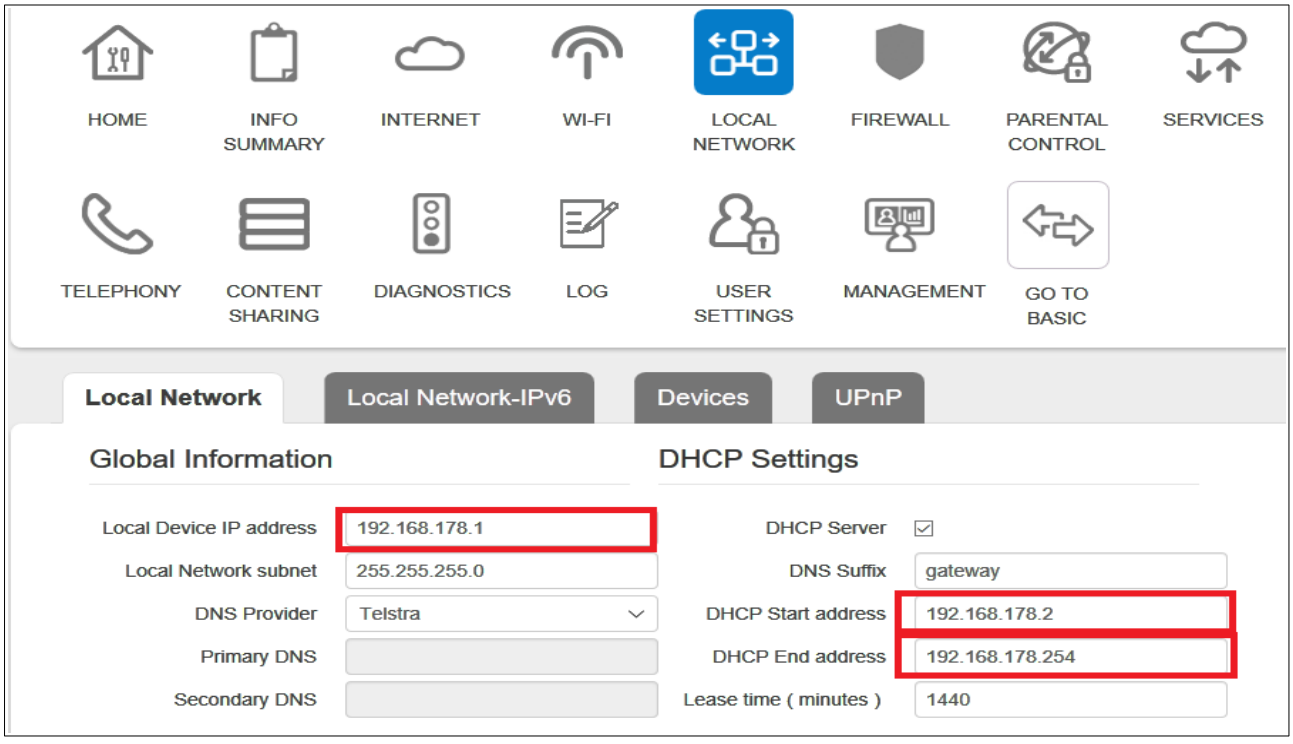


The log is a useful tool for tracking down faults. For example the events in the log below indicate a problem with the DSL link.



27. Change IP Address of Modem

To change LAN IP address of modem Go to Go to Advanced > Local Network > Local Network



Type in New IP Address in the “Local Device IP address” box.

Change the DHCP Start and End address so that in same subset as Modems IP address. (First three group of integers are the same.

Scroll down to bottom of page and Click on Save.

Disconnect and reconnect to modem and log in using modem’s new IP address.

28. Modem’s Firmware Software

The modem’s firmware number is displayed on left hand side of log in page.

The Firmware / Software can not be updated manually. When a new Firmware / Software becomes available it is pushed out to the Modem between Midnight and 6.00am. The Modem must be connected during this period to receive any Firmware / Software update.

F/W **0.05.04r** initial firmware.

F/W **06.07r** released March 2019

F/W **v07.05r** released April 2019
- Bug fixes mostly for DNS, DHCP, and memory leaks.
- Bandsteering fix for older devices
- Fixing and additions in prep for a new product out soon

F/W **0.08.06r** August 2019
- Large change/fix update
- Majority DECT/VOIP/PSTN/VoLTE fixes
- New Broadcom DSL patch
- Various general bug fixes

F/W **0.09.11r** November 2019
- NAT Loopback Implementation
- Static reserve address amount increase
- Booster UI improvements
- UPNP GUI Page improvements
- Memory Leak fix

- Synology samba WiFi access fix
- Some GUI bug fixes
- 40MHz channel width is now the default for 2.4ghz
- DNS list updates
- Less log spam
- TR-069 fixes

F/W **0.10.05r** March 2020

- Support for SMB 2.0
- Maximum number of port forwarding rules increased to more than 10.

F/W **0.11.08r** June 2020

Only installed on a few modems before being withdrawn.

F/W **0.11.11r** July 2020

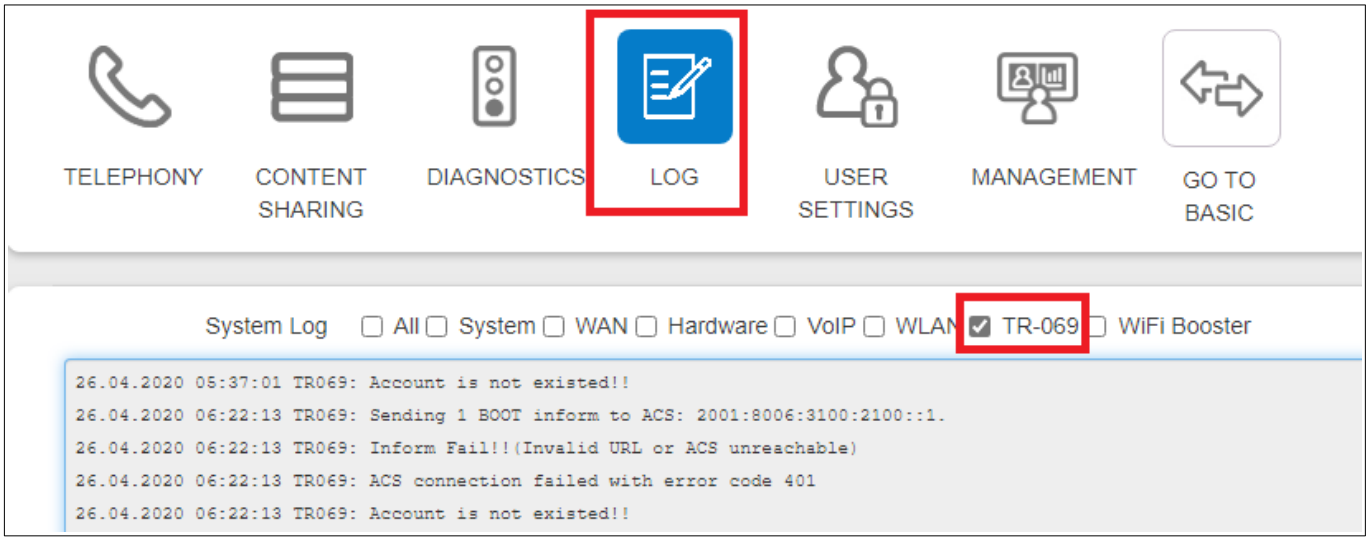
- Maximum number of LAN static leases has been increased to 64. (Those above 10 now work whereas before you could set more than 10 but only the first 10 worked)
- Maximum number of port forwarding rules has been increased to 64. (Those above 10 now work whereas before you could set more than 10 but it was hit and miss as to weather the rules above 10 worked)
- NAT loop back works providing the port forwarding has been set up manually. If port forwarding is set up using UPNP NAT loop back does not work.
- Wi-Fi PMF (Protected Management Frame) added.

F/W **0.12.09r** September 2020

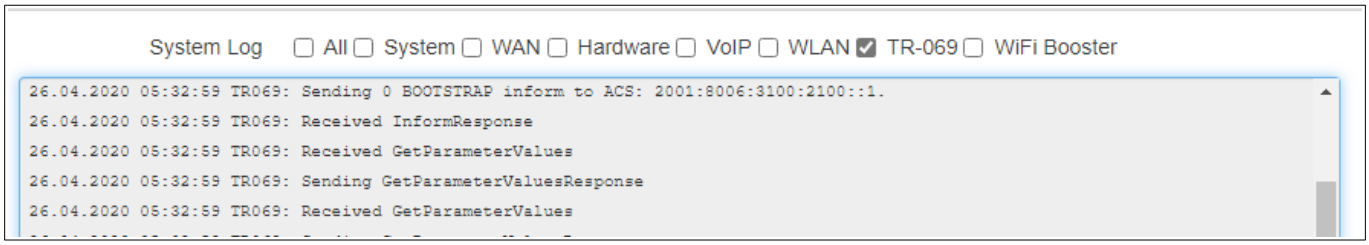
- Protected Management Frames (PMF) turned on by default
- Game Optimiser function added.

If Firmware is not up to date check log (Go to Advanced > Log) for TR-069 error code 401 which indicates maintenance server can not communicate with modem. If TR-069 error try factory resetting modem and if you have a backed up modem settings don't load backup until firmware has updated.

Modem Unable to communicate with maintenance server,



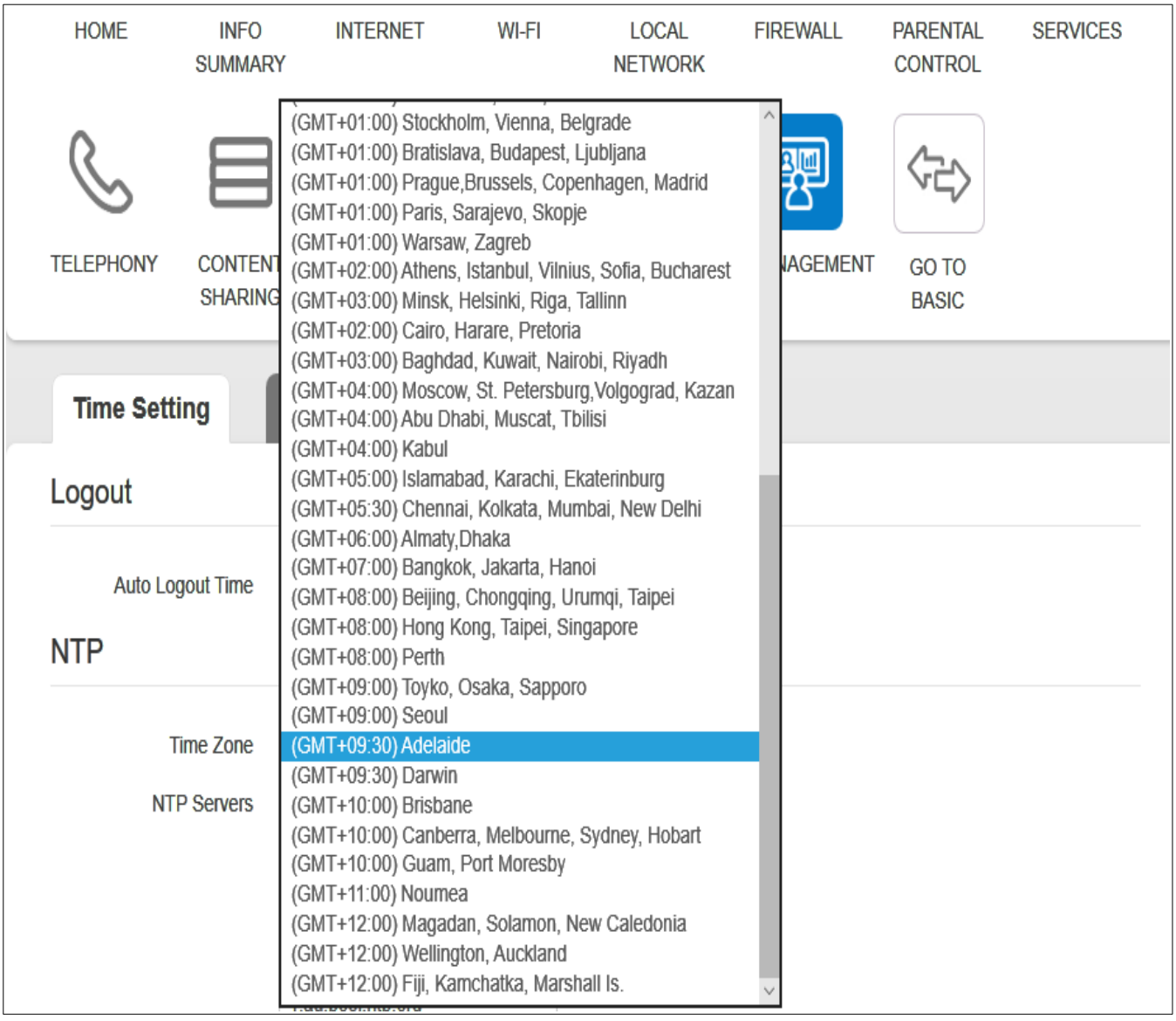
Modem successful communicates with maintenance server,



29. Modem's Time Settings

To change Modem's time settings log in to modem and go to Go to Advanced > Management > Time Setting.

Select Time zone from drop down list and save settings.



There is also an option to change the Time of the modem's auto logout. Default is 30 minutes. If zero is entered auto logout is disabled.

30. Connecting USB printer (Windows 10).

Note: Only printer function works on multi function devices.

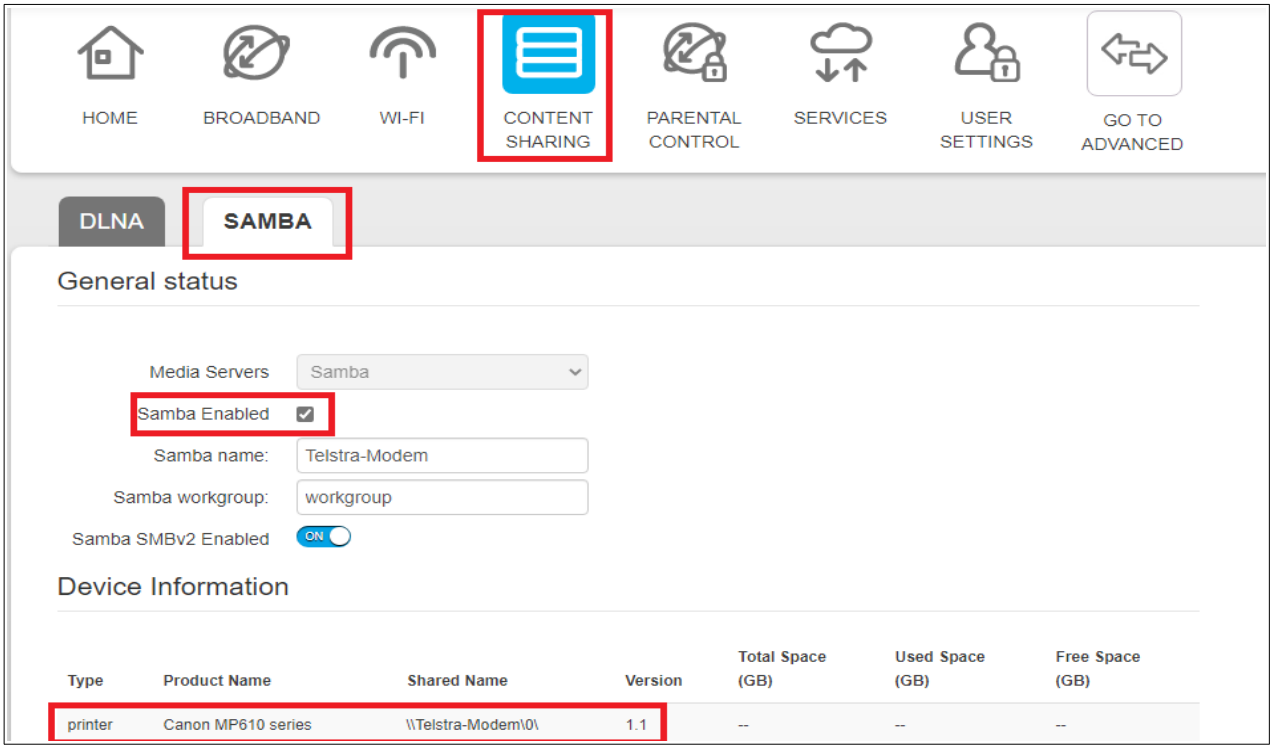
USB printer can be connected to USB port on the Modem and can be accessed from devices connected to by LAN or WiFi to the modem.

Plug the USB printer into the USB port on the Modem.

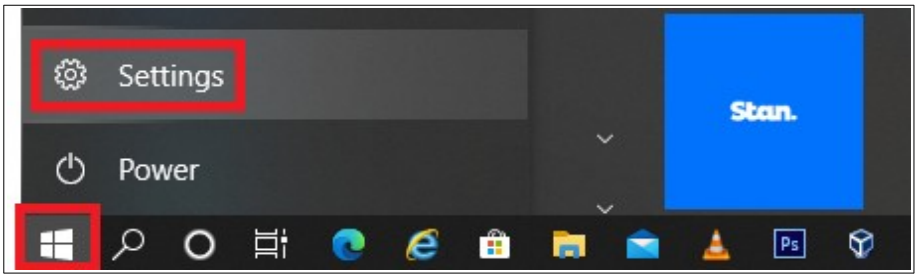
Log into Modem and go to Content Sharing > SMBA

If printer is recognised its name will be displayed under Product Name.

Make sure Enabled is ticked.

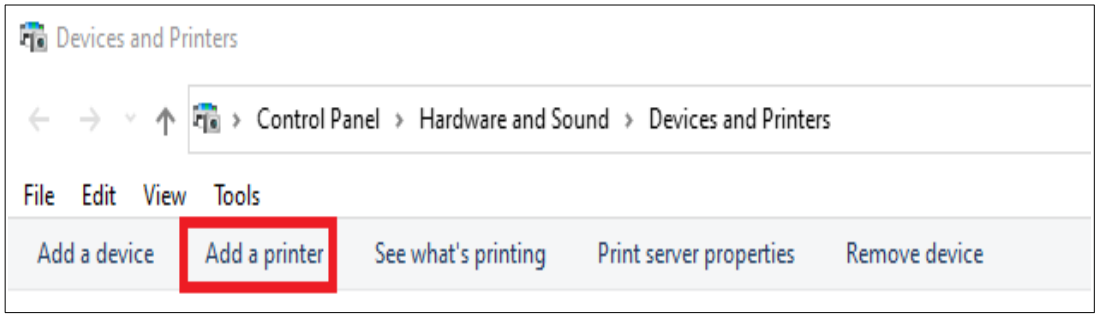


On a Windows 10 PC go to Start > Settings.

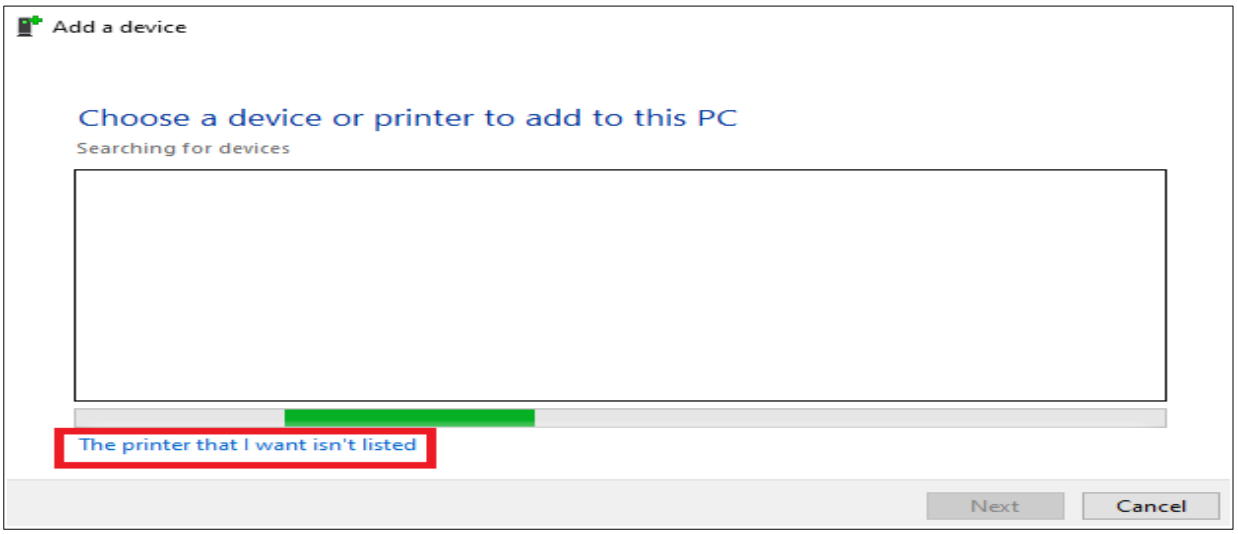


Go to Devices > Devices and Printers.

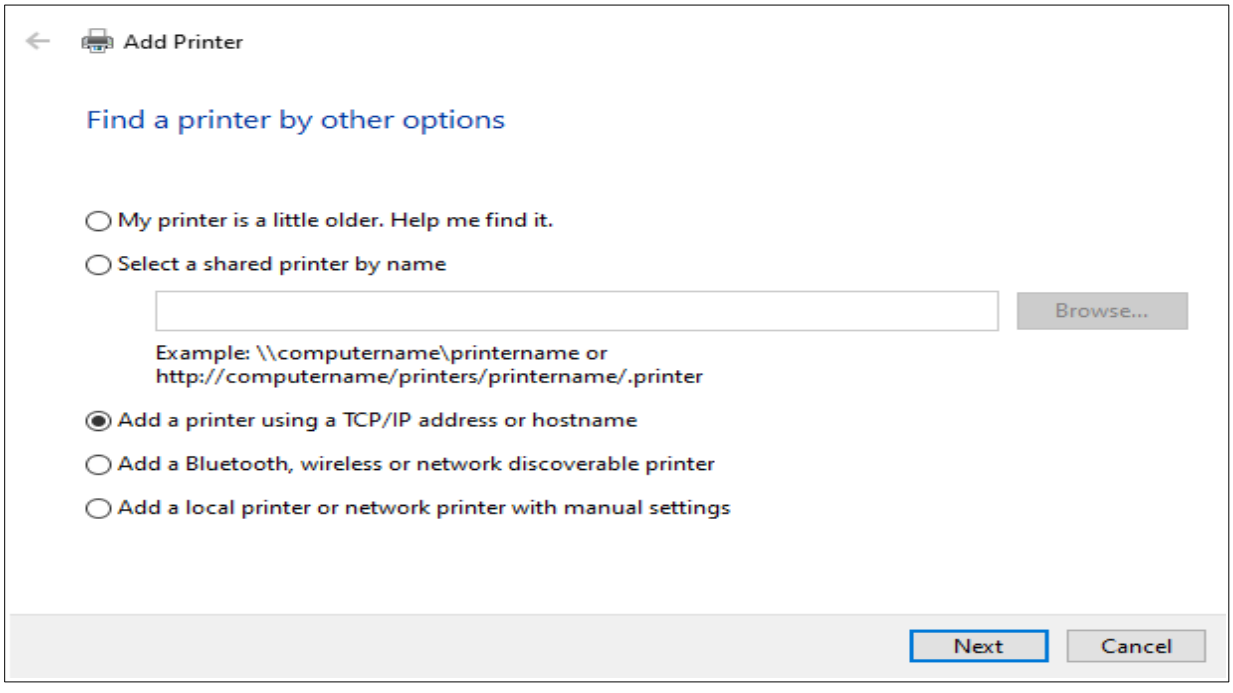
Select Add a printer



Select “The printer I wanted is not in the list” and select Next



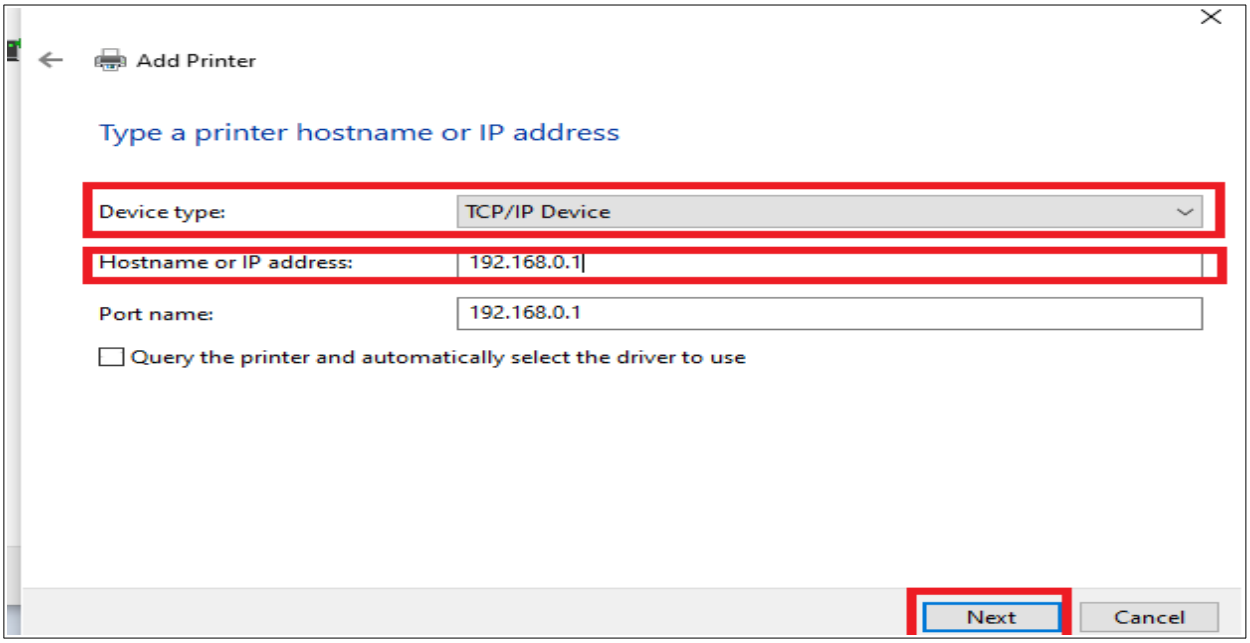
Select “Add printer using TCP/IP Address or Host name” and then select next



Select TCP/IP as Device Type.

Enter the LAN IP address of the modem. By default it will be 182.168.0.1

Select Next

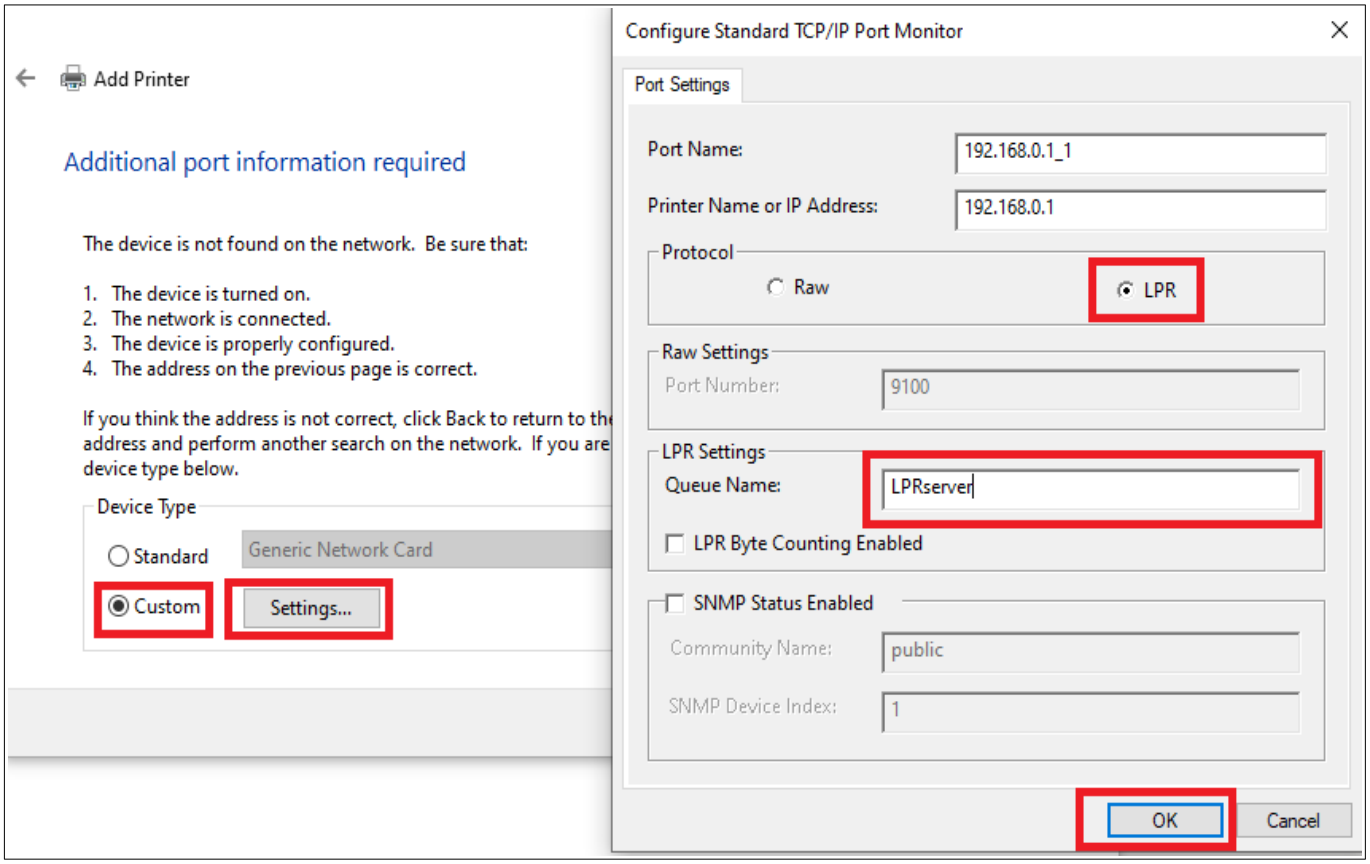


Select Custom and then select Settings

Change Protocol to LPR

Enter a Que Name. I used LPRserver

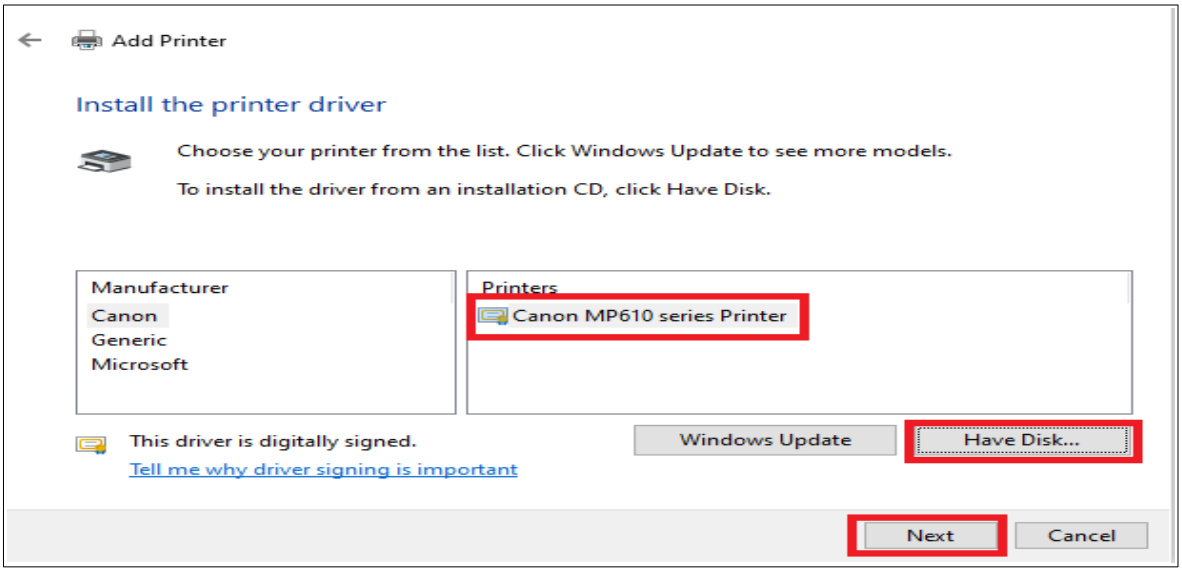
Click on OK and then click on next.



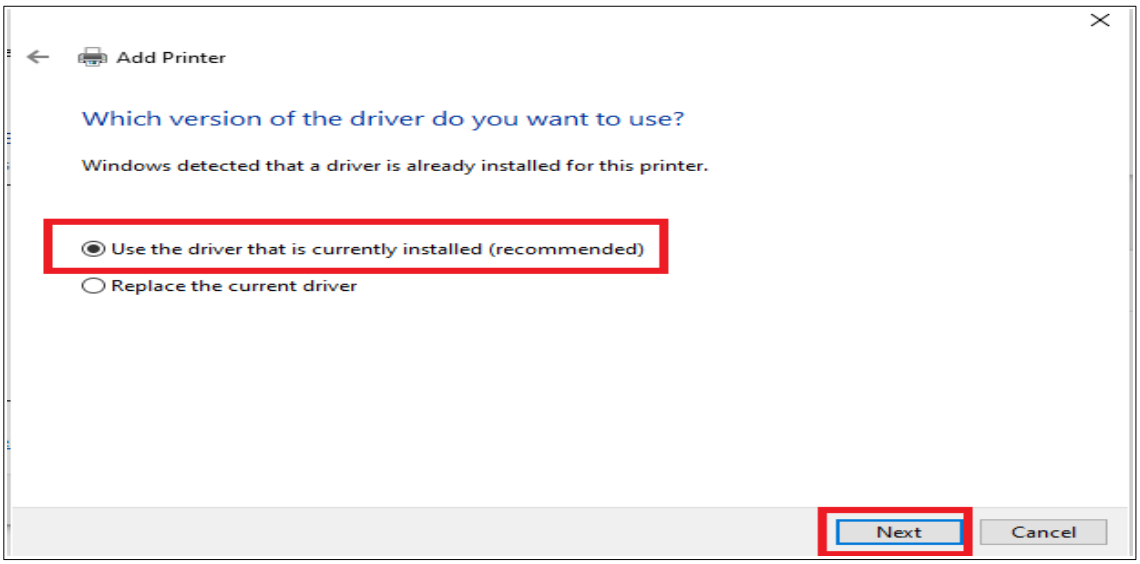
Select your printer. The printer will only appear in list if it has been previously installed.

If printer was not previously installed select Have disk, locate and install driver.

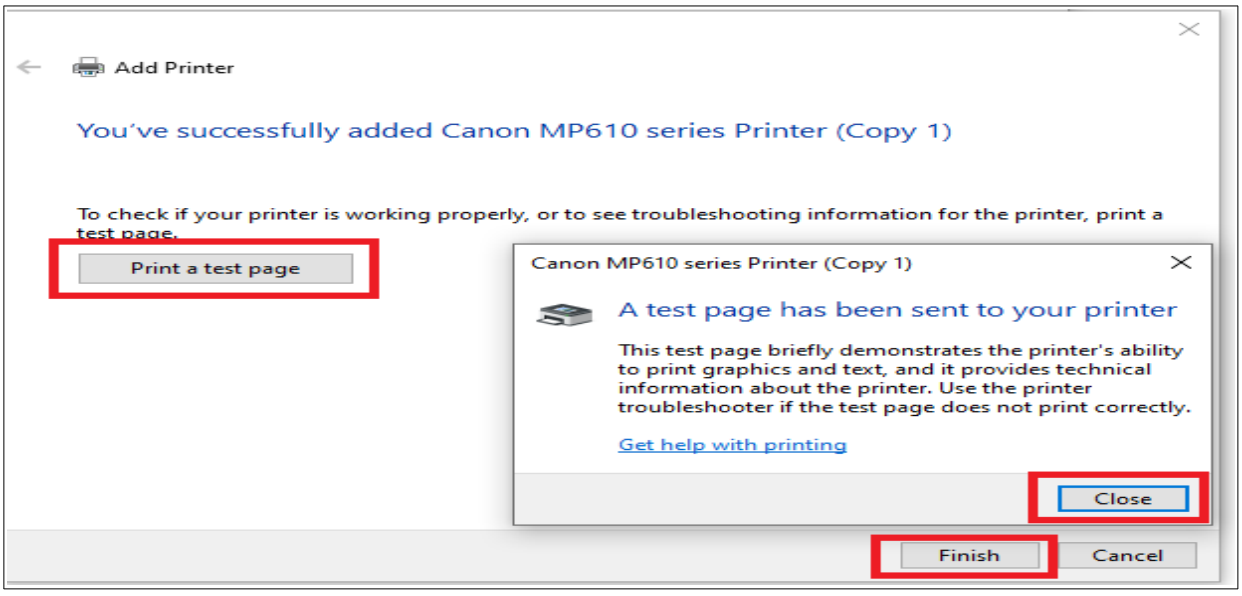
Click Next.



Select “Use the driver that is currently installed” and select next.



Select all default on the following dialogue boxes and if successful should be able to print a Test page.



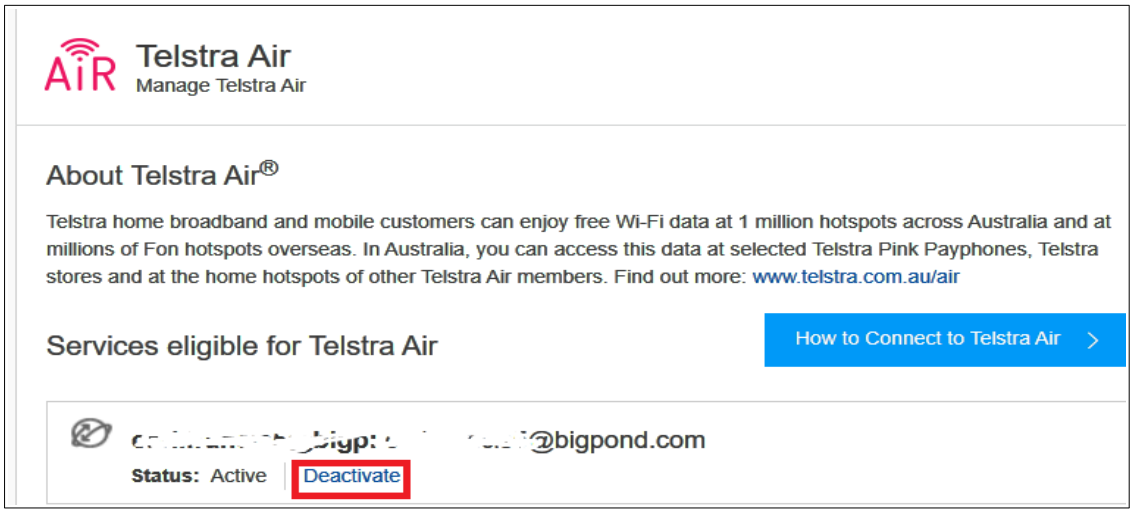
31. Telstra Air.

By default your Broadband connection has Telstra Air enable and while WiFi is on the modem will transmit the Telstra Air SSID and Fon SSID making your modem a Telstra Air and Fon Hot spot.

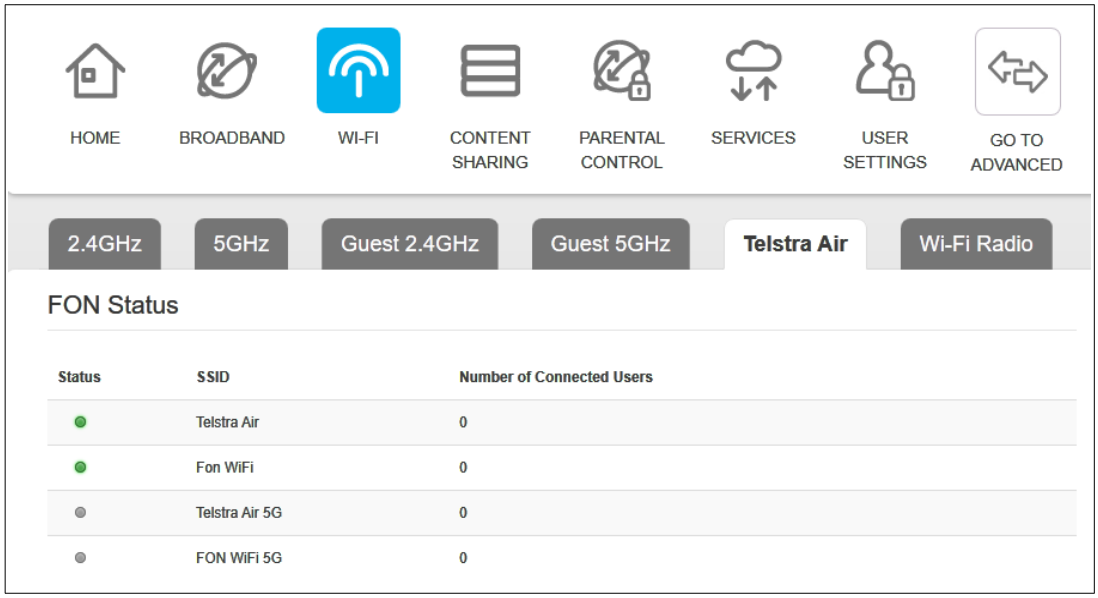
Any traffic on the Hot spot is

- Completely isolated from your local network.
- Limited to 1 device.
- Speed is caped at 1.5 Mbps
- Data used is not measured.

To disable Telstra Air logging into Telstra My Account, scrolling down to Telstra Air, goining to Manage and then clicking on deactivate.



To view the Status of Telstra Air and Fon log into the modem and go to WiFi > Telstra Air



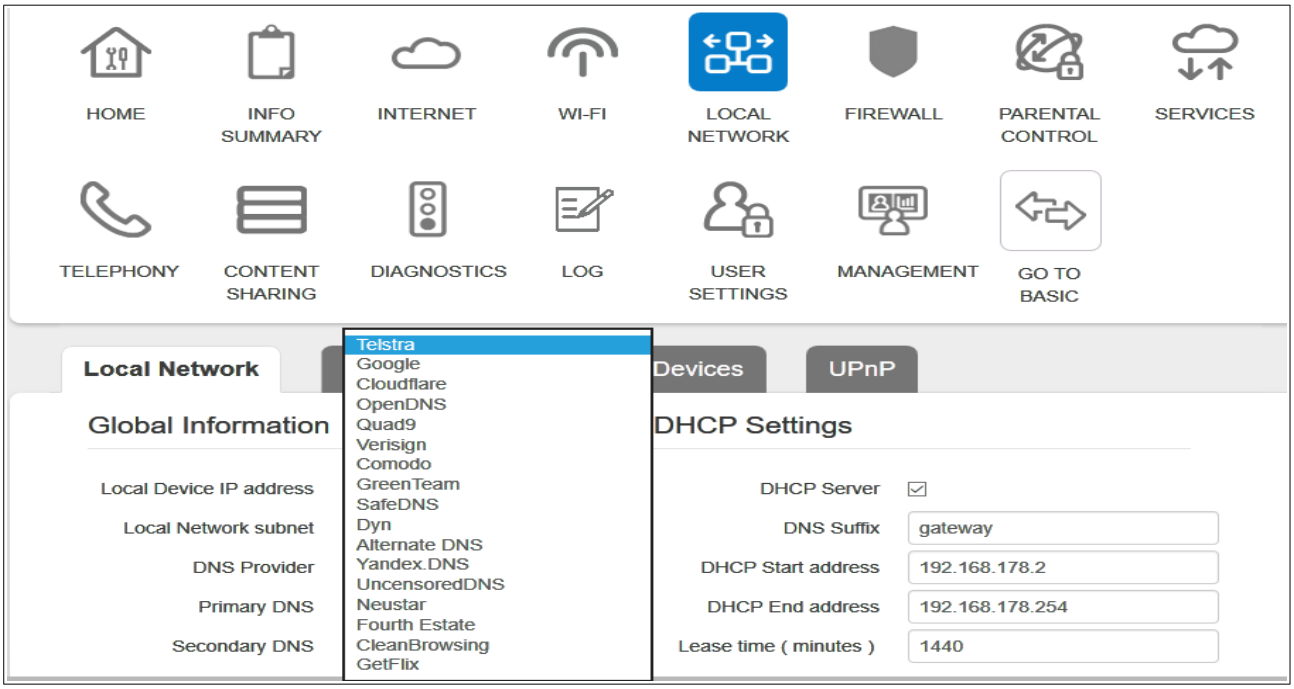
This page shows the status of the Telstra Air and Fon Networks (Green is working) and the number of connected devices.

32. DNS Selection

By default the modem uses Telstra as the DNS but has the option to select other DNS providers from a drop down list.

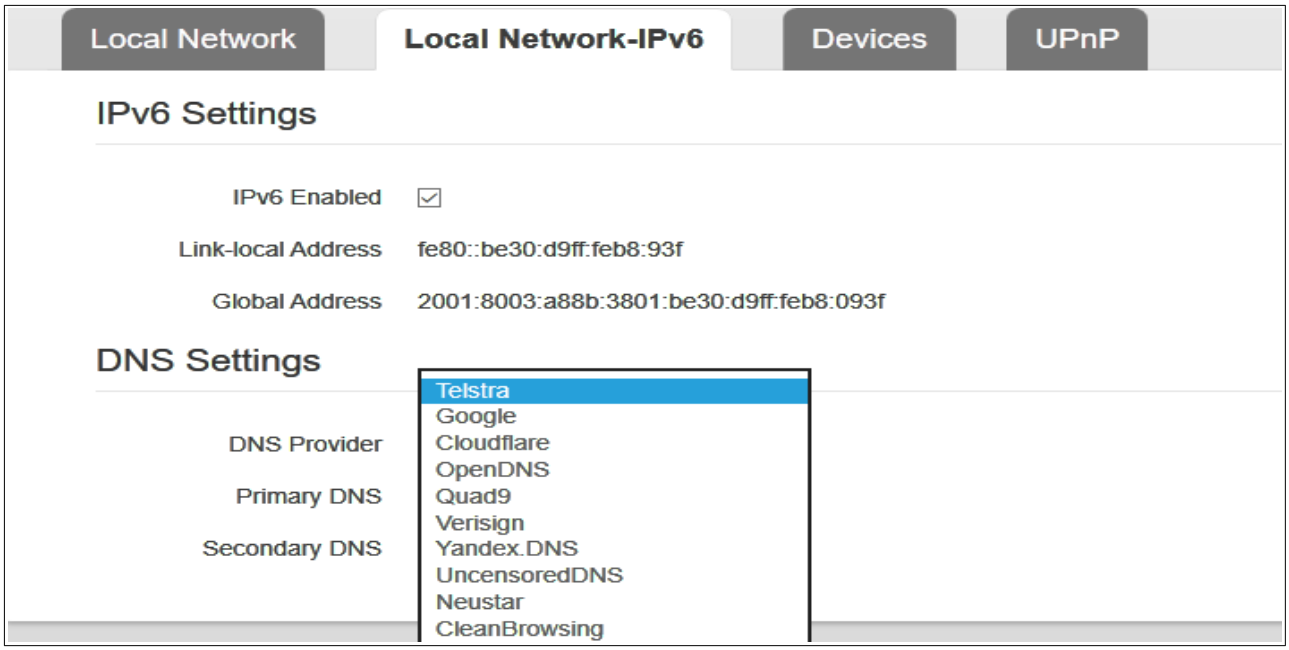
To use a non Telstra IPv4 DNS log into the modem and go to Go to Advanced > Local Network >Local Network.

Select DNS using drop down list and save settings.



To select and IPv6 DNS go to the Local Network IPv6 tab (Both IPv6 and IPv4 should be changed)

Select IPv6 DNS service from drop down menu and save settings.



For new DNS settings to take effect either reboot modem or disconnect and then reconnect all devices.

33. Telstra Smart WiFi Booster Gen 2

To pair a Booster with the modem

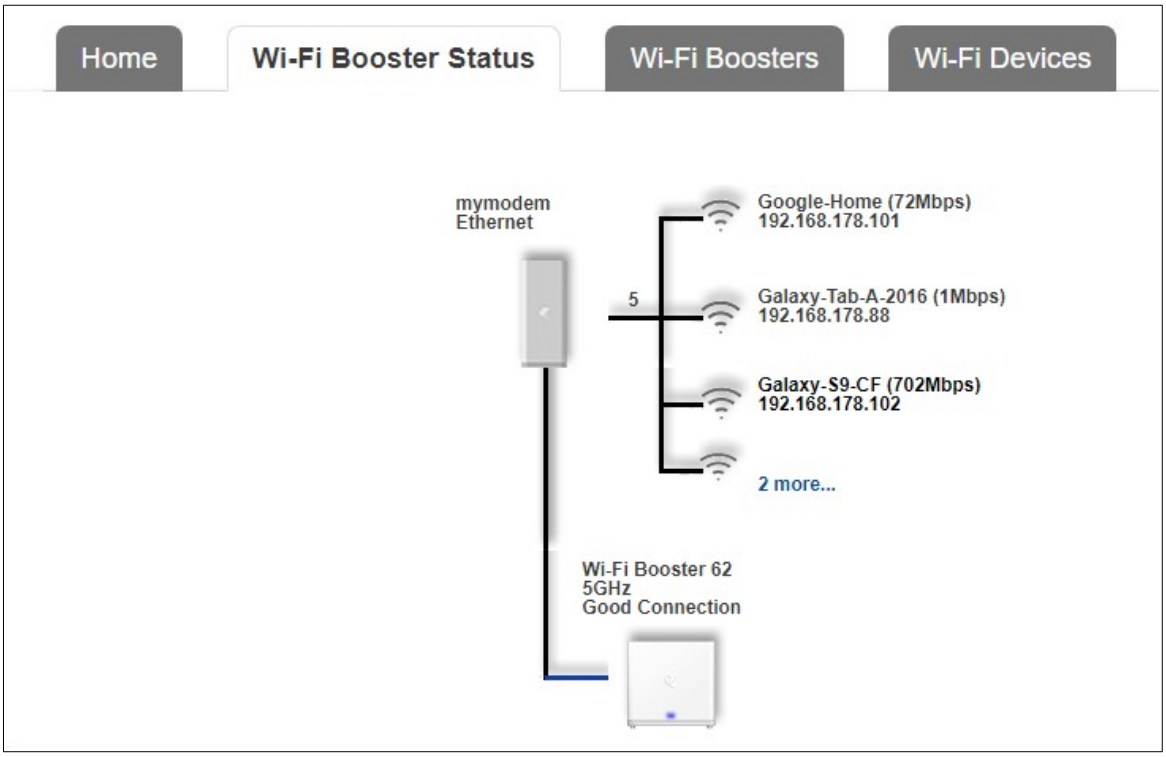
Turn Booster on and wait for front light to turn red.

Press pair button on back of modem for 5 seconds. Pair light will flash green at rate of twice per second.

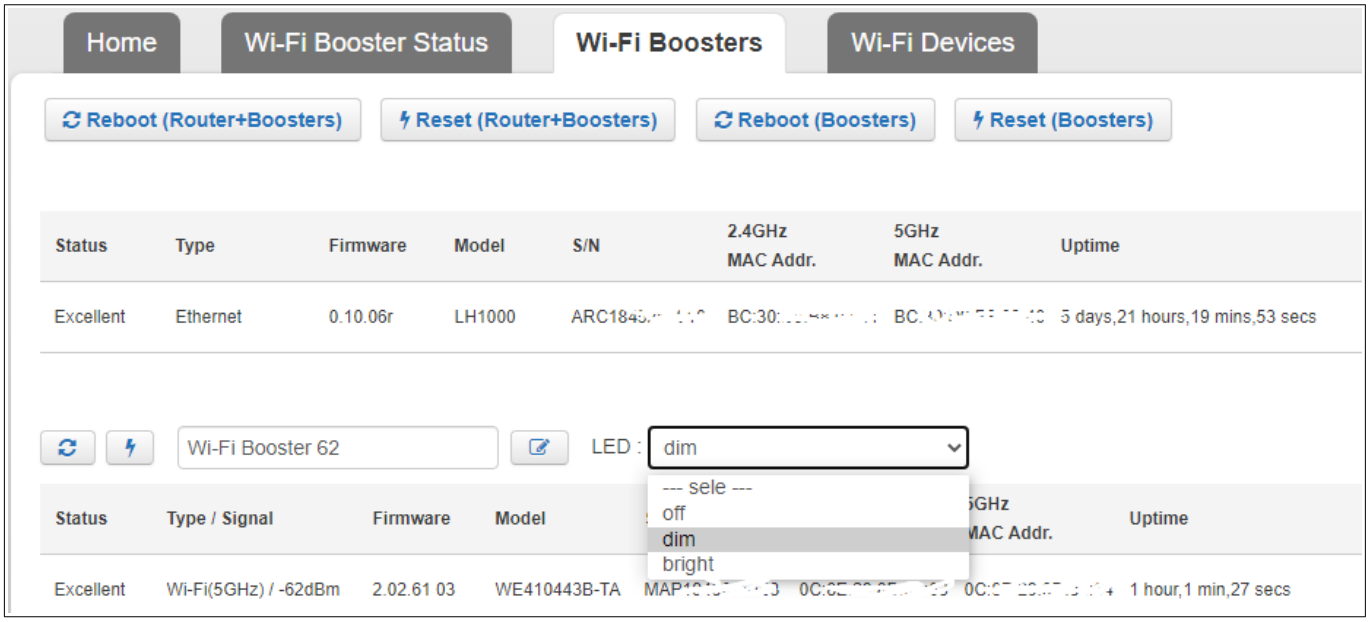
Press pair button on back of booster for 5 seconds. Front light will flash orange and turn blue when connected to modem.

On my first attempt front light flashed blue and purple after flashing orange and then turned red. Had to try a second time.

When Booster is paired there is an extra Booster Status Tab on the Modem's Home page.



Taping on the Wi-Fi Booster Icon takes you to this page.



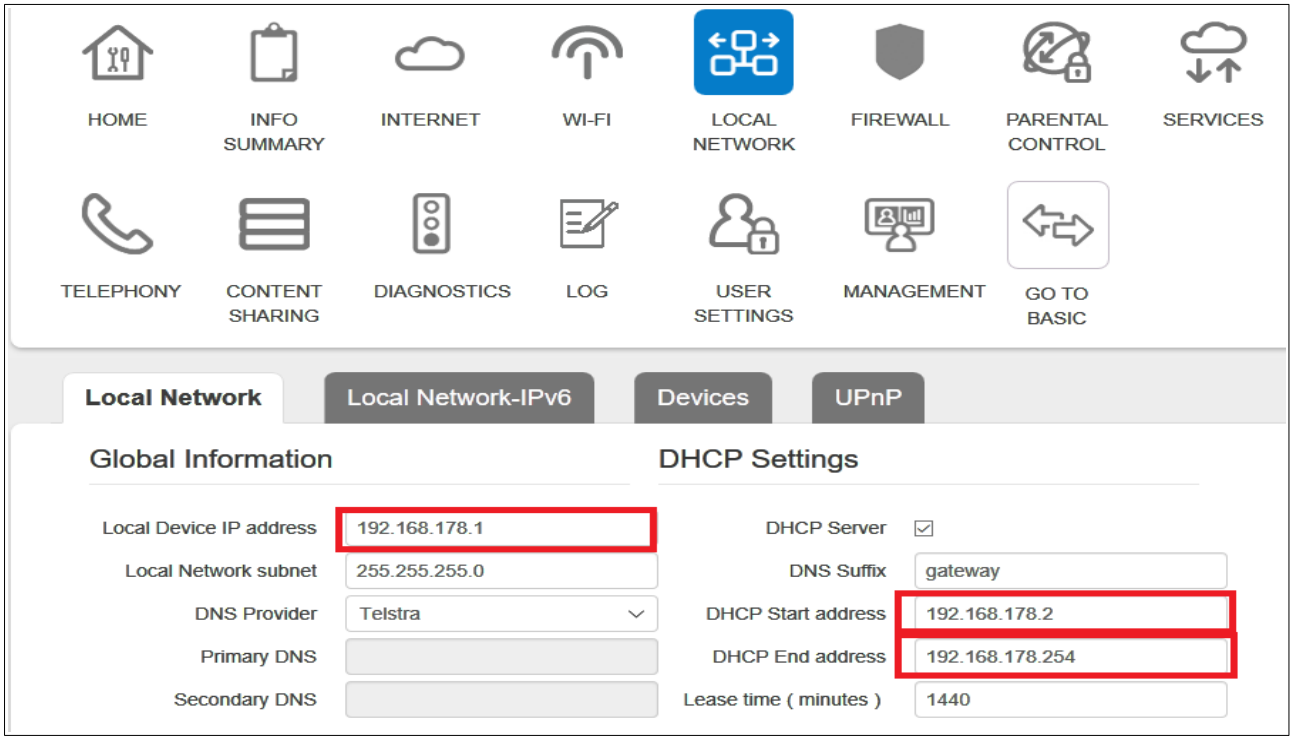
34. Modem as Access point

Since Firmware update 0.11.11r this modem can no longer be used as a proper access. Points it can be used as a second router which means that there will be two separate networks. Devices connected to modem will also have double NAT which could cause some Internet apps or device not to work correctly

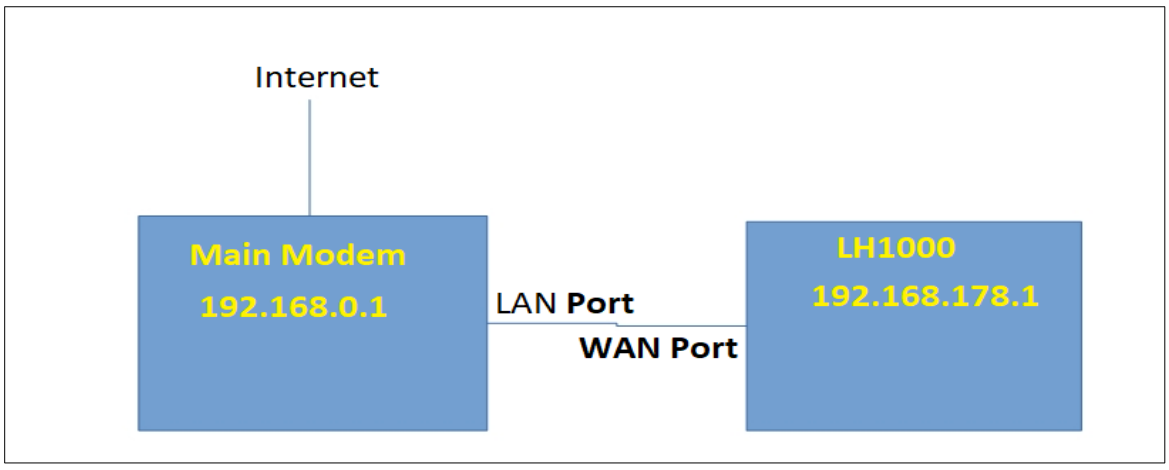
1. Remove SIM card from back off modem.

2. Open a Web browser on device connected to modem and go to http://192.168.0.1, password is Telstra.

3. Go to Advanced > Local Network > Local Network, change the LAN IPv4 address so that it is not within the same subset as main modem. In the image below my main modem has a LAN IP address of 192.168.0.1 so I changed the LAN IP address of LH1000 192.168.178.1.



7. Connect WAN port of LH1000 to LAN port of main modem.



35. Enable Guest WiFi

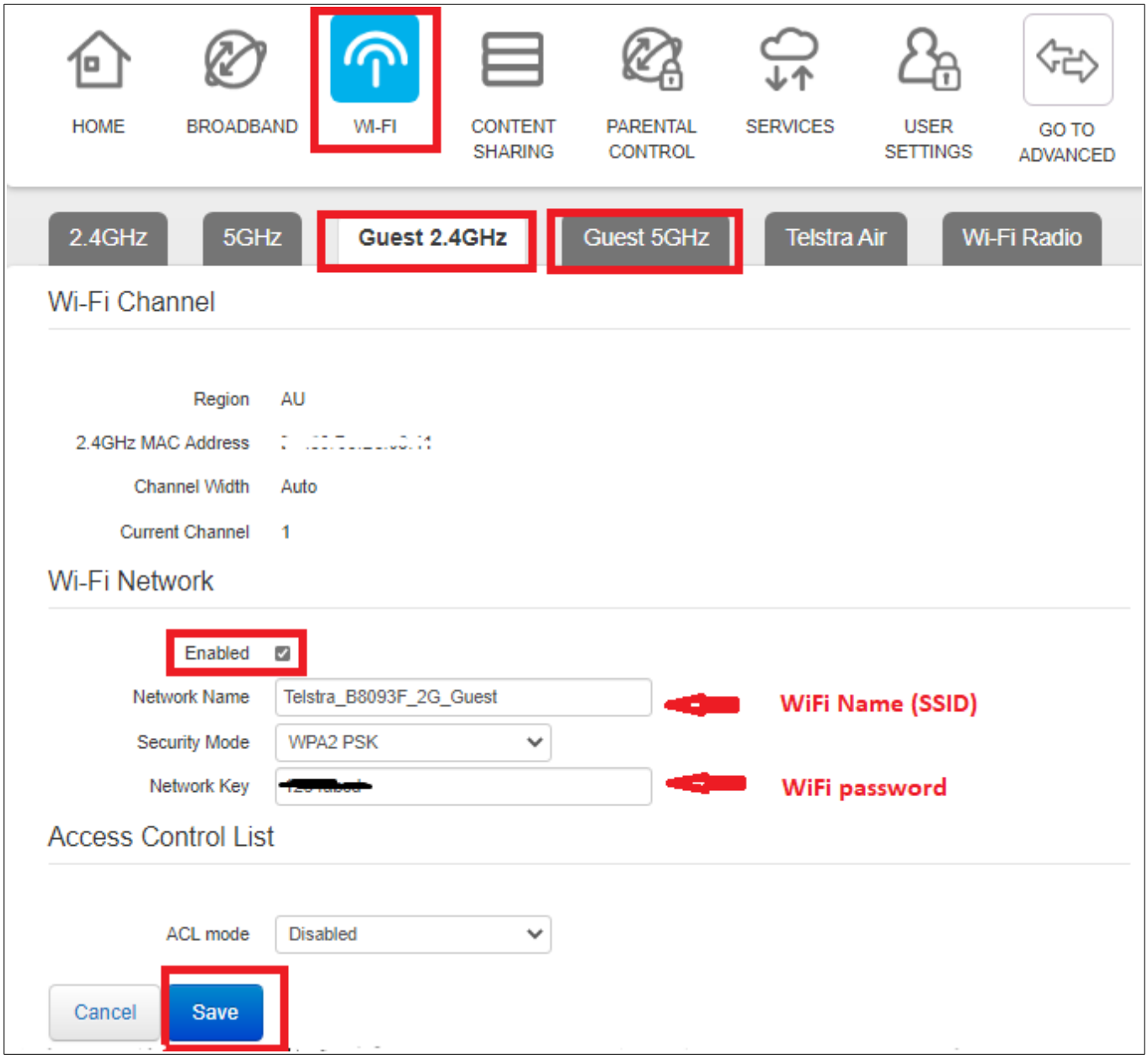
Open a Web browser on device connected to modem and go to http://192.168.0.1, password is Telstra.

Go to WiFi.

Select the Guest 2.4 GHz Tab.

Tick Enabled

Save settings.



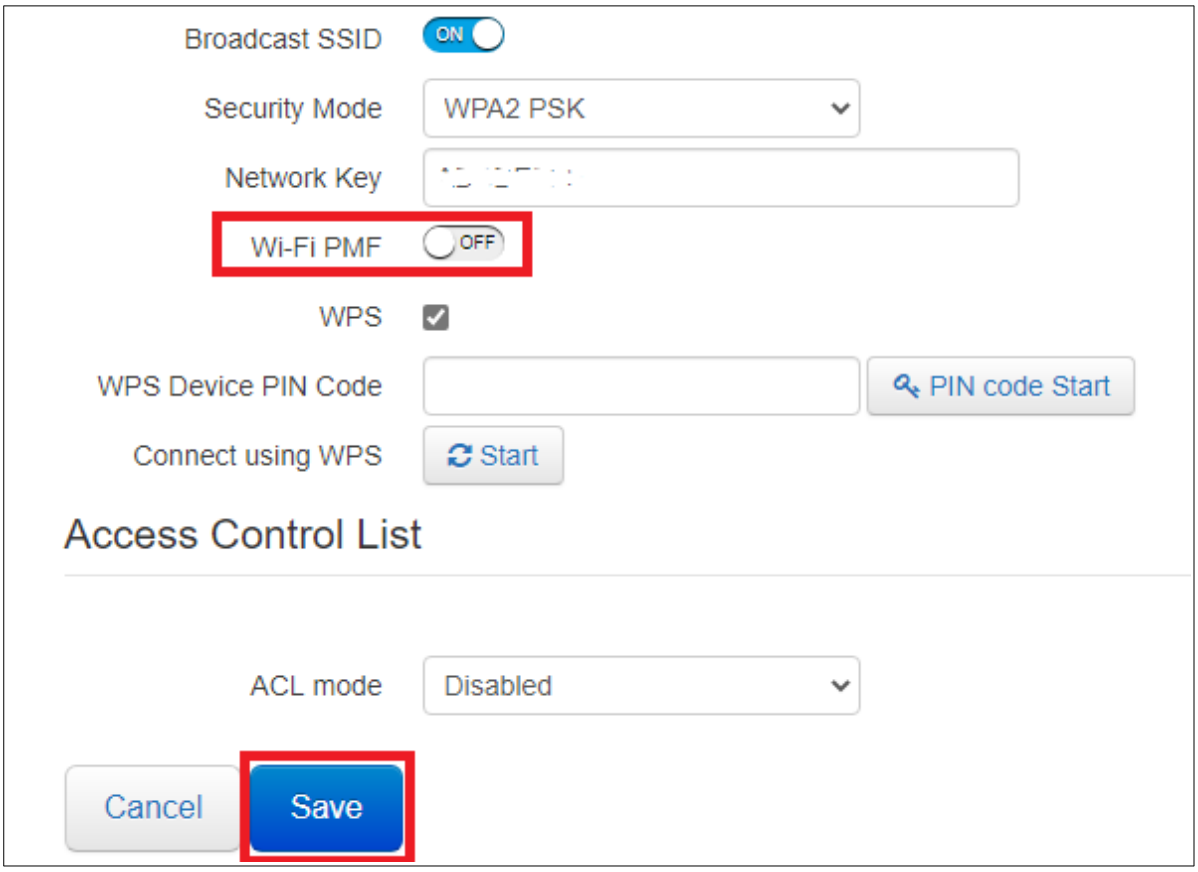
Repeat for the Guest 5 GHz Tab.

36. WiFi Protected Management Frames (PMF)

The WiFi security of the modem was enhanced with the addition of Protected Management Frames in firmware update 0.11.11r. PMF was turned on by default in firmware update 0.12.9r Protected Management Frames (PMF) is a standard defined by WiFi Alliance to enhance WiFi connection safety. It provides unicast and multicast management actions and frames a secure method with WPA2/WPA3, which can improve packet privacy protection. It causes problems with some devices manly old devices that only support the 2.4 GHz WiFi band. Some of the problems are:

1. Device want connect modem's WiFi common error is wrong password.
2. Devices connect but don't have a valid IPv4 address.
3. Causes windows to crash with blue screen of death.
4. Causes some android devices to reboot when WiFi on modem is turned off and then back on.
5. Some devices connect Okay but loose connection intermittently.

If some of your device experience any of the above problems suggest you turn PMF off by logging into modem, go WiFi, scroll down to WiFi PMF, set to off and save settings. If the problem occurs with 5 GHz devices repeat for the 5 GHz WiFi network.



36. Specifications

Integrated LTE Module:

- **Quectel EC-25-AUTL (CAT-4)**
- External SIM slot

Main Chipset:

- BCM63138

Memory

- Non-Service-Affecting Platform Software upgrades (dual bank memory)
- 1GB RAM (DDR3)
- 512 MB Flash (2x256 Dual Bank)

Wireless capability:

- IEEE 802.11n 2.4 GHz using 2x2 BRCM 4360 maximum 26dBm (b11, g54, N450)
- IEEE 802.11ac 5 GHz using 4x4 BRCM 4366 maximum 30dBm (a54, N600. AC1733)

Ethernet Capability:

- 1xGigabit Ethernet WAN port
- 4x10/100Mbps/1Gigabit LAN ports

USB Master Capability

- x1 USB 3.0 Interfaces (1000mA)
- Hard Disk (FAT32 EXT2)
- NTFS, HFS+ supported
- Maximum Disk Size 2TB
- DLNA and SMBA 1.0
- USB HUB

ADSL, ADSL2, ADSL2+ compliance:

- (Maximum Rate: 24 Mbps for downstream and 3 Mbps upstream)

VDSL2 compliance

- ITU G.993.2
- SOS
- SRA
- INM
- Up to 17 MHz profiles (POTS)
- ITU-T G.993.5 (G.vector)
- ITU-T G.998.4 (G.inp)
- G.Fast g.9700, g.9701

DECT

- CAT-iq™ 2.0 certification
- Up to 5 paired DECT handsets
- Up to 4 simultaneous DECT communication links

Voice

- 1 FXS ports with PSTN pass-through when operating in analogue voice mode
- 1 FXO port for PSTN requires external filter
- FXS 3 REN Equivalence

Temperature:

- 0° - 45° C (32 - 113 F) & Humidity: 20% to 80%

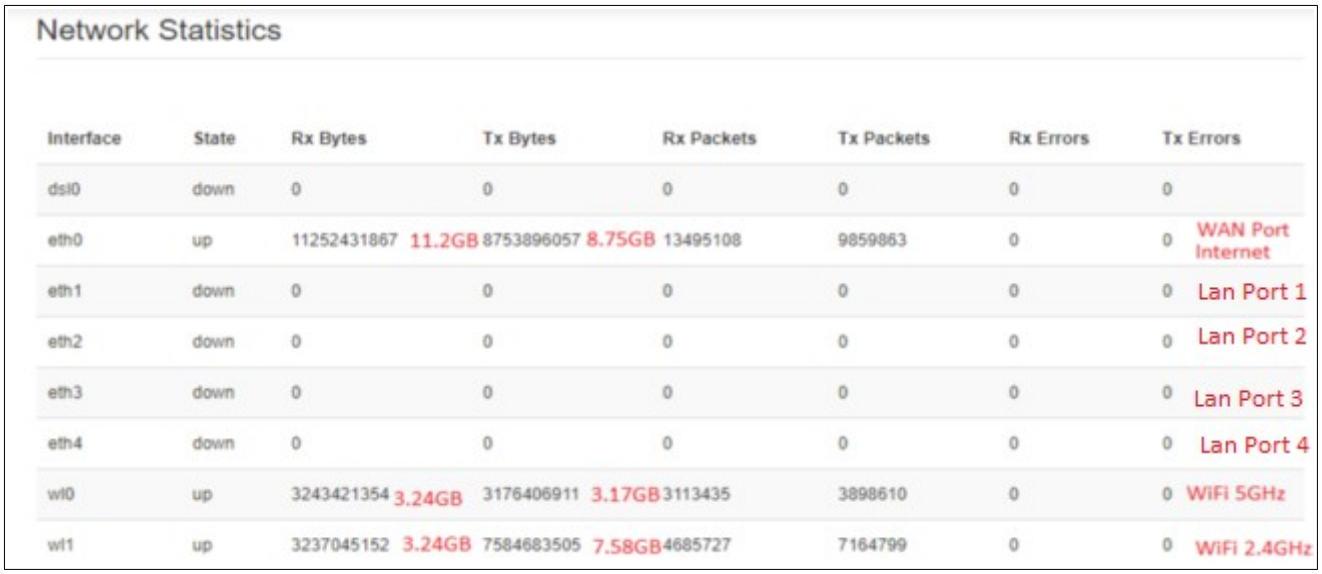
Power:

- Power consumption 10.6 Watts with no drive attached to USB port.
- Power consumption 12.6 Watts with USB hard drive connected.
- Power factor 0.48
- Volt Amps VA 24

37. Known Limitations and Bugs.

1. Modem has a tendency to log users out when saving setting changes without saving the settings.
2. NAT loop back only works on devices that have a port forwarding rule set up in modem. NAT loop back doesn’t work if devices or apps use UPNP to open ports.
3. Can only set up one parental control time of day rule per device.

4. USB drives attached to modem can not be accessed using FTP
5. Modem does not show ports opened by UPNP.
6. 4G backup mode only works on 4G not 3G, speed limited to 25 Mbps down 3 Mbps up
7. No settings in modem for VPN.
8. Modem does not display detailed DSL status information (Max link speed, Current Link speed, Output power, Link Attenuation and Noise Margin)
9. Modem's ports and link stats are inaccurate (See Diagnostics > Network) (Go to Advanced > Diagnostic > Network tab)
10. Number of Blocked sites in Parental controls limited to 30.
11. Parental Control permitted times rules appear to trigger on Eastern States Time (EST), for WST the times need to be offset by 2 hours (NB: the timezone is set correctly in the "Management" tab).
12. DNS is not fully configurable. Can only select from a list of preset DNS services.
13. After Firmware update 0.12.09r GUI restart no longer works (Go to Advanced > Management > System Reset).
14. After Firmware update 0.12.09r can not use same forwarding port on LAN.
15. After Firmware update 0.12.09r remote management no longer works.
16. Traffic meters and graphs reversed (Services > Traffic Monitor). See images below
17. Ethernet Traffic Meter and Traffic Graph records traffic when no devices connected to any LAN port. See image below no LAN or WAN port connected.
18. Meters only record and graphs only plot data below 2.148 Giga bytes in either send or receive directions for each interface (See Images below).
19. Meters and graphs for Ethernet and Internet connection only record and plot data when total send plus receive data is below 4.295 Giga Bytes. (See Images below)
20. Meters and graphs for Ethernet and Internet connection only record and plot data when total send plus receive data is below 8.661 Giga Bytes. (See Images below)
21. When DSL link re synchronises after a dropout the internet traffic starts recording and resetting and the Internet graph records data even when no data is used. (See Images below)
22. Discrepancies in the DSL link stats (Go to Advanced > Diagnostics >xDSL tab). Some off the readings are appearing in wrong columns. See last image.



Remote Web Access | Traffic Monitor | Dynamic DNS

Internet Traffic

Traffic Meters showing Maximum data that will be recorded in each direction and on each interface.

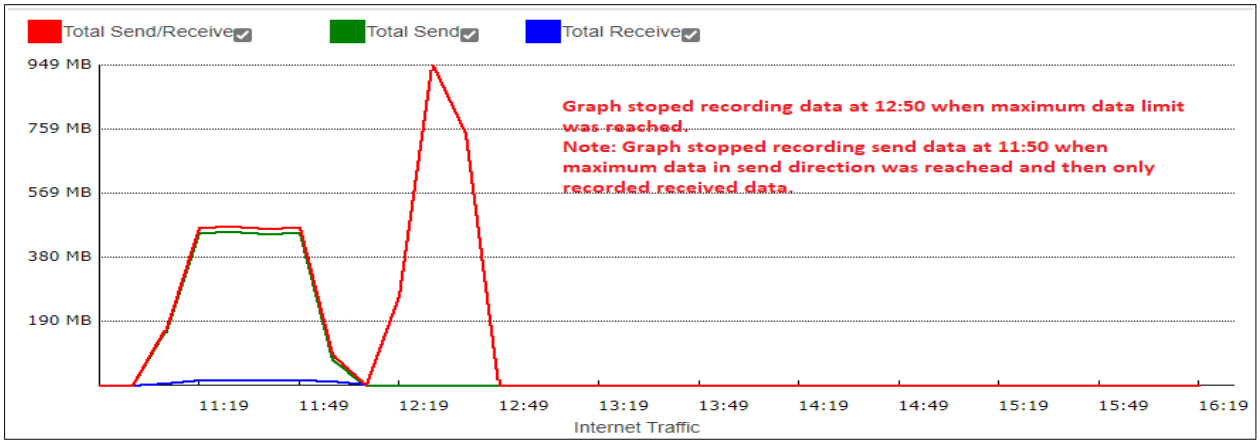
Total Send/Receive (in MB)	4294 967
Total Send (in MB)	2147 483
Total Receive (in MB)	2147 483

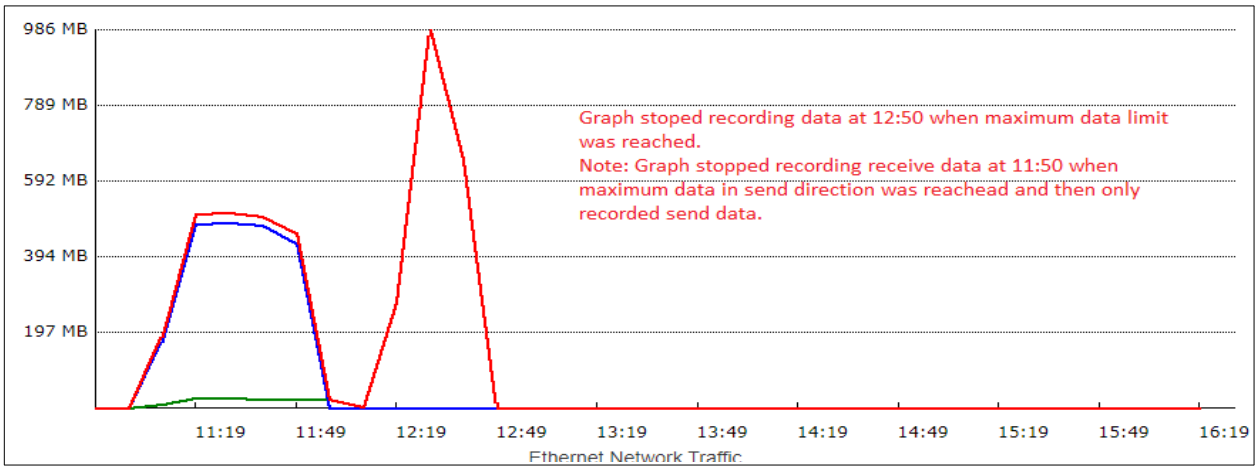
Ethernet Network Traffic

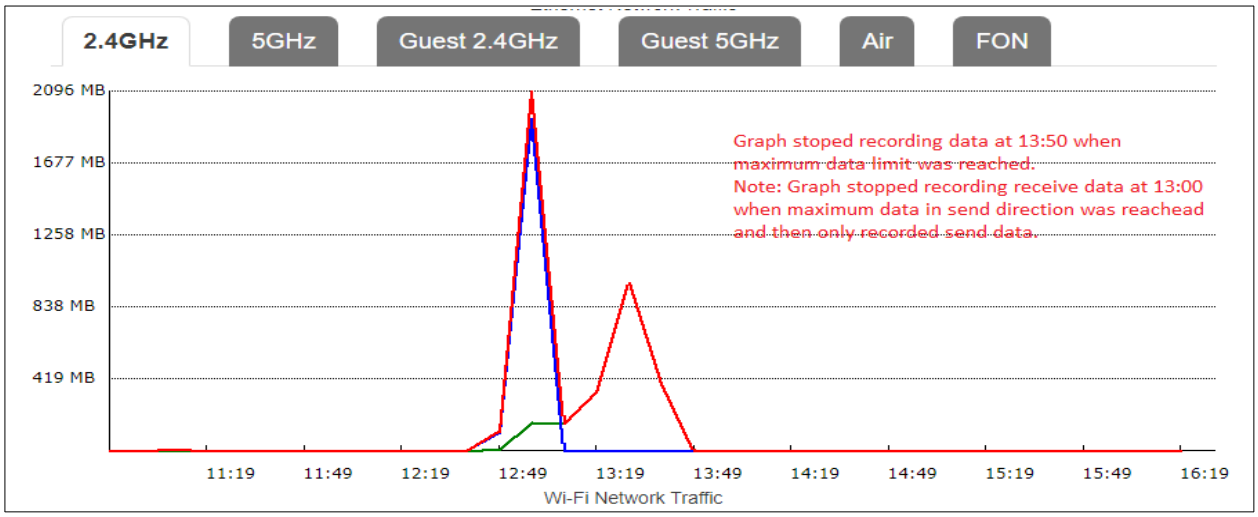
Total Send/Receive (in MB)	4294 967
Total Send (in MB)	2147 483
Total Receive (in MB)	2147 483

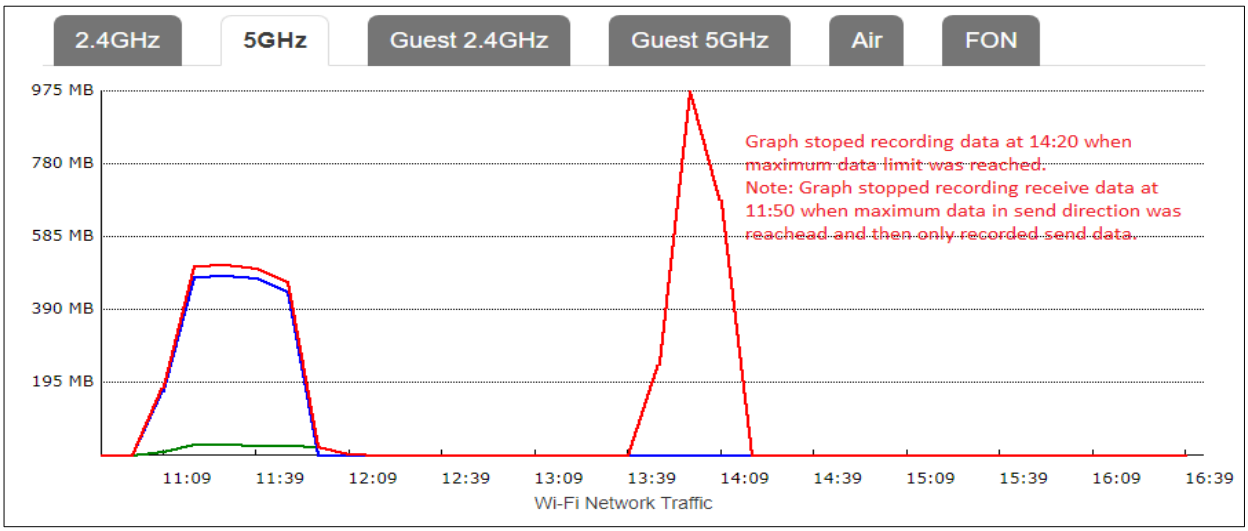
Wi-Fi Network Traffic

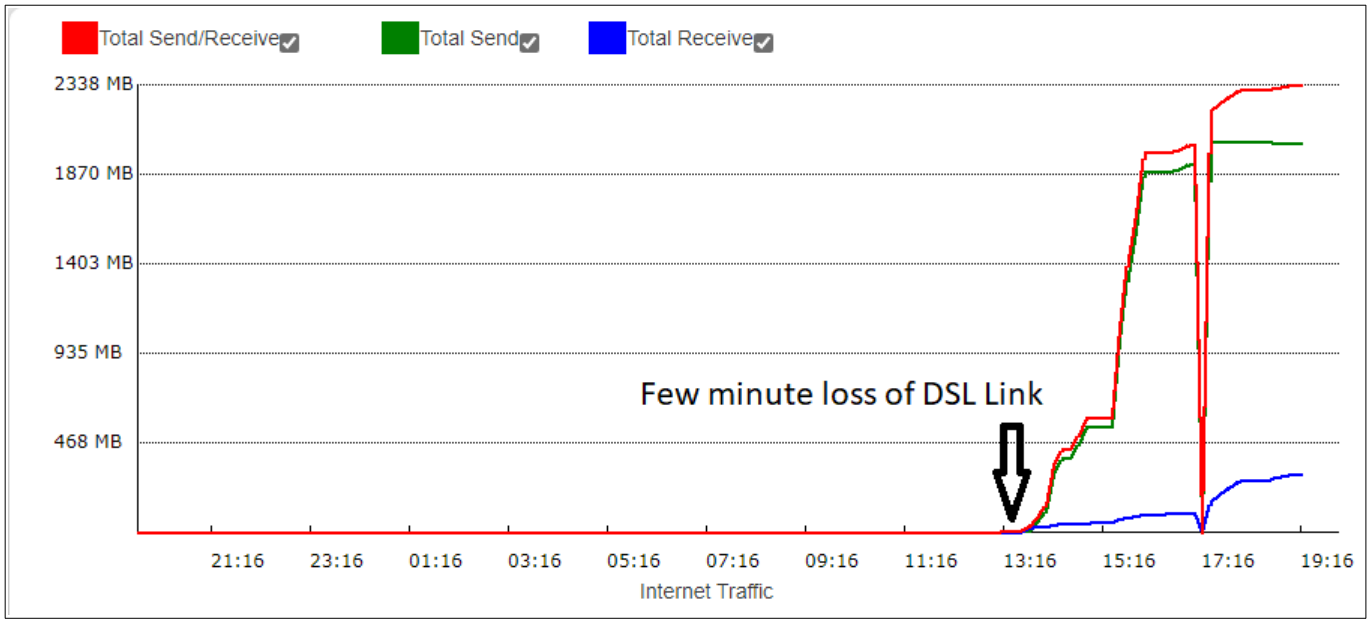
Total Send/Receive (in MB)	8610 489
Total Send (in MB)	4294 975
Total Receive (in MB)	4315 514






2.4GHz
5GHz
Guest 2.4GHz
Guest 5GHz
Air
FON
2096 MB
1677 MB
1258 MB
838 MB
419 MB
Graph stoped recording data at 13:50 when maximum data limit was reached.
Note: Graph stopped recording receive data at 13:00 when maximum data in send direction was reachead and then only recorded send data.
11:19
11:49
12:19
12:49
13:19
13:49
14:19
14:49
15:19
15:49
16:19
Wi-Fi Network Traffic


2.4GHz
5GHz
Guest 2.4GHz
Guest 5GHz
Air
FON
975 MB
780 MB
585 MB
390 MB
195 MB
Graph stoped recording data at 14:20 when maximum data limit was reached.
Note: Graph stopped recording receive data at 11:50 when maximum data in send direction was reachead and then only recorded send data.
11:09
11:39
12:09
12:39
13:09
13:39
14:09
14:39
15:09
15:39
16:09
16:39
Wi-Fi Network Traffic


Total Send/Receive
Total Send
Total Receive
2338 MB
1870 MB
1403 MB
935 MB
468 MB
Few minute loss of DSL Link
21:16
23:16
01:16
03:16
05:16
07:16
09:16
11:16
13:16
15:16
17:16
19:16
Internet Traffic

xDSL | Ping / Traceroute | Connection | Network | Wi-Fi

This image was taken about 60 minutes after a link failure.
Errors in current quarter instead of Current day.

DSL stats

Parameters	Total	Current Quarter	Previous Quarter	Current Day	Previous Day	Since Sync
Downstream FEC	1051993	8	52	19007	33689	43559
Upstream FEC	22173	2	0	329	310	475
Downstream CRC	19	0	0	0	10	2
Upstream CRC	23	0	0	0	0	0
Downstream ES	21	21	0	0	0	16
Upstream ES	6	6	0	0	0	0
Downstream SES	13	13	0	0	0	13
Upstream SES	3	3	0	0	0	0
Downstream UAS	24849	24849	549	900	24849	0
Upstream UAS	24849	24849	549	900	24849	0
Downstream LOS	0	0	0	0	0	0
Upstream LOS	0	0	0	0	0	0
Downstream LOF	13	0	0	0	13	0
Upstream LOF	0	0	0	0	0	0
Downstream LOM	0	0	0	0	0	0
Upstream LOM	0	0	0	0	0	0