



Virtual Access GW1000 Series Router Quick Start Guide

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1 Preface

1.1 About this document

This Quick Start Guide describes:

- How to set up a GW1000 Series router
- How to configure a 3G/4G connection, and
- How to configure a WiFi connection.

Images in this document show the GW1040 model. LEDS on other models may vary.

1.2 Safety instructions

The router is complicated electronic equipment that may be repaired only by authorised and qualified personnel.

- Do not try to open or repair the router yourself.
- Do not place the router in a damp or humid place.
- Do not stack the router.
- The router should be used in a sheltered area, within a temperature range of 0°C to 40°C.
- Do not expose the router to direct sunlight.

HIGH VOLTAGES

Under no circumstances is the router to be operated with the cover removed.

DANGEROUS SUBSTANCES

Semiconductor devices contain dangerous substances, such as beryllium and arsenic. Electronic devices must not be opened. If they become damaged, they must only be handled using protective gloves. If the substances inside the electronic devices come into contact with broken skin or wounds, hospital care must be sought immediately. Electronic components must be disposed of as hazardous toxic waste and must not be incinerated.

1.3 Wireless safety

Wireless routers incorporate a wireless radio module. Ensure the antenna is positioned at least one metre away from you and other people in normal operation.

If in a hospital or health care facility, do not use the router in areas where guidelines to switch off mobiles phones are posted. Medical equipment may be sensitive to RF energy.

The operation of cardiac pacemakers, other implanted medical equipment and hearing aids can be affected by interference from wireless routers when placed close to the device. People with pacemakers are advised to keep the wireless router away from the pacemaker while it is on.

Do not operate your wireless router in the presence of flammable gases, fumes or potentially explosive atmospheres. Wireless routers should not be used anywhere that blasting operations are taking place.

Wireless routers operate using radio signals and cellular networks cannot be guaranteed to connect in all possible conditions. Therefore, you should not rely solely on any wireless device for life-critical communications.

1.4 Product disposal



The United Kingdom and Republic of Ireland are under an obligation to minimise the disposal of Waste Electrical and Electronic Equipment (WEEE) in domestic waste and encourage recycling, recovery and environmentally sound disposal. Virtual Access is committed to promoting the reuse, recycling and recovery of WEEE by contributing to the appropriate compliance schemes.

Our product packaging is marked with the crossed out wheeled bin symbol to indicate that the product must not be disposed of in domestic waste but disposed of through an approved WEEE take back scheme. For details of your local collection facilities, please contact your local authority.

Virtual Access WEEE registration number: WEE/CA2530XZ.

2 Introduction

The GW1000 Series router can contain either a 3G or 4G wireless modem. The modem together with a SIM card establishes a WAN connection to the Internet or private network.

3G is the third generation of mobile phone standards and technology. It is based on the International Telecommunication Union (ITU) family of standards under the International Mobile Telecommunications programme, IMT-2000.

3G and 4G technologies enable network operators to offer users a wider range of more advanced services while achieving greater network capacity through improved spectral efficiency. Services include wide-area wireless voice telephony, video calls, and broadband wireless data, all in a mobile environment.

Data bearers are frame protocols that transport data streams. The GSM (3G) modem supports GPRS, EDGE, HSDPA, HSUPA, UMTS and CSD. The 4G modem supports 4G frequencies and falls over to 3G, GPRS and EDGE technologies.

2.1 4G LTE

4G LTE is the fourth generation of mobile communication technology standards. It is a successor to 3G and provides greater bandwidth.

2.2 GPRS

GPRS (General Packet Radio Service) uses packet-switched technology to transmit small bursts of data. The 3G or 4G modem on the GW1000 Series supports multi-slot class 6, which allows a maximum data rate of 384Kbps class 3. The maximum data rate available to the 3G or 4G modem depends on provisioning by the network operator.

2.3 HSPA+

High-Speed Packet Access + is an improvement on UMTS with achievable download speeds of 21Mbps.

2.4 HSDPA

HSDPA (High-Speed Downlink Packet Access) uses circuit-switched technology to transmit data at speeds of up to 7.2Mbps.

2.5 HSUPA

HSUPA (High-Speed Uplink Packet Access) is a 3G mobile protocol with uplink speeds of 5.76Mbps.

2.6 UMTS

UMTS (Universal Mobile Telecommunications System) is a third generation technology providing higher transfer rates.

2.7 EDGE

EDGE uses the same frequencies as GPRS but offers better speeds. It is used when the signal strength for 3G or 4G is not sufficient.

2.8 CSD in EGSM900/GSM1800 MHz

CSD (Circuit-Switched Data) mode enables the 3G modem to transmit data over the EGSM (Extended Global System for Mobile communications) frequency or the GSM frequency. The modem behaves as a dual-band mobile phone behaves.

3 Getting started

3.1 Serial number

When you receive your GW1000 Series router package retain the outer packaging. The label containing the model number, serial number (S/N) and part number (P/N) is located on the side of the packaging box.

Each GW1000 Series router is assigned a unique serial number. Record your device serial number on your warranty card or somewhere you can easily access it. You must reference your unique serial number (S/N) when you contact your distributor or Virtual Access support for installation and configuration confirmation or should you request service on the device.



Figure 1: Example of a GW1000 label showing the serial number

Unpack the contents. There is a matching label located on the bottom of the router.

3.2 Inserting the SIM card

1. Ensure the unit is powered off.
2. Hold the SIM card with the chip side facing down and the cut corner top left.
3. Gently push the SIM card into SIM slot 1 until it clicks in.
4. To remove the SIM card, gently push the SIM card. The card will click out.

3.3 Connecting the antenna

The GW1000 Series router is shipped with one antenna suitable for the model you ordered. If you require antenna diversity, contact your reseller.

Screw the antenna into the MAIN SMA connector located on the rear of the GW1000.

3.3.1 Antenna diversity

The GW1000 Series router has a MAIN connector and an AUX and GPS connector for connection of a second antenna to allow for antenna diversity. Antenna diversity helps improve the quality and reliability of a wireless link by mitigating problems associated with multipath distortion.

Multipath distortion is a form of RF interference that occurs when a radio signal has more than one path between the receiver and the transmitter. It commonly occurs when there is no clear line of sight between the transmitter and receiver and instead the signal is reflected off hard surfaces such as shelves, ceilings and walls.

4 GW1000 Series LED behaviour

4.1 Main LED behaviour

There are five LEDs on the GW1000.



Figure 2: LEDs on the GW1000 Series router

4.2 Power and configuration LED

The power and configuration LED flashes or is solid depending on the router's status.

LED	Colour	Status
PWR CONFIG	Green flashing quickly	Unit is booting from power on
	Green flashing slowly	Unit is in recovery mode
	Green flashing quickly	Unit is in factory config
	Green on	Unit is in either config 1 or config2

Table 1: Power/config LED colours and status descriptions

4.3 SIM LED

The SIM LED flashes or is solid depending on which SIM is in use and its status.

LED	Colour	Status
SIM	Green on	Using SIM Connected to network.
	Green flashing	Using SIM Attempting to connect to network.

Table 2: SIM LED colours and status descriptions

4.4 Signal strength LEDs

There are two signal strength LEDs. They are both green.


LEDs	Colour	Status
	Green Off/off	No signal detected.
	Green flashing Off/on	Low signal strength.
	Green flashing On/off	Medium signal strength.
	Green On/on	Good signal strength.

Table 3: Signal strength LED status descriptions

4.5 WiFi LED

The WiFi LED indicator is blue.


LED	Colour	Status
	On	WiFi is enabled.
	Flashing	Data activity on WiFi interface.

Table 4: WiFi LED status description

4.6 Ethernet port LED behaviour

The Ethernet port has two LEDs: a LINK LED (green) and an ACT LED (amber). When looking at the port, the LED on the left hand side is the LINK LED, and the ACT LED is on the right hand side.



Figure 3: Ethernet LED on the rear of the GW1000 Series router

Link LED (green)	Off	No physical Ethernet link detected
	On	Physical Ethernet link detected
ACT LED (amber)	Off	No data is being transmitted/received over the link
	Flashing	Data is being transmitted/ received over the link

Table 5: The Ethernet LEDs activity descriptions

5 Configuring the GW1000 Series router for 3G/4G access

1. Ensure the SIM is inserted into SIM 1 slot and that the power is connected to the router.
2. To connect to the router's web page, either set your computer network interface card to point to 192.168.100.1/24 as a gateway or set the card to receive an IP via DHCP.
3. When the router has booted up, browse to 192.168.100.1 and enter the default user name and password.

User name: root

Password: admin

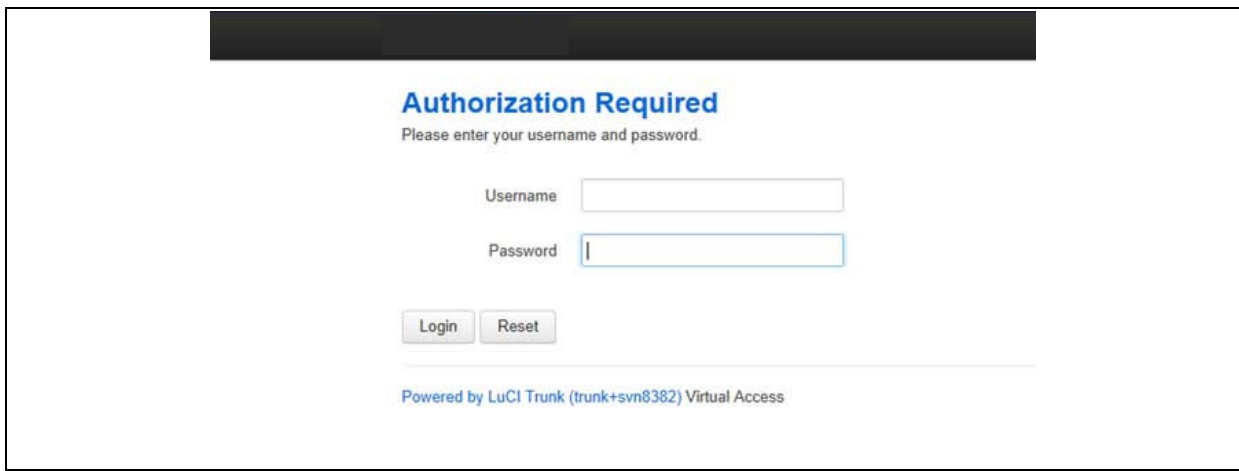


Figure 4: The GW1041 login page

4. Click **Login**.

If the router is operating in its factory configuration mode, a warning message appears explaining that after you have made changes, you must switch the router to config 1 for the changes to take effect.

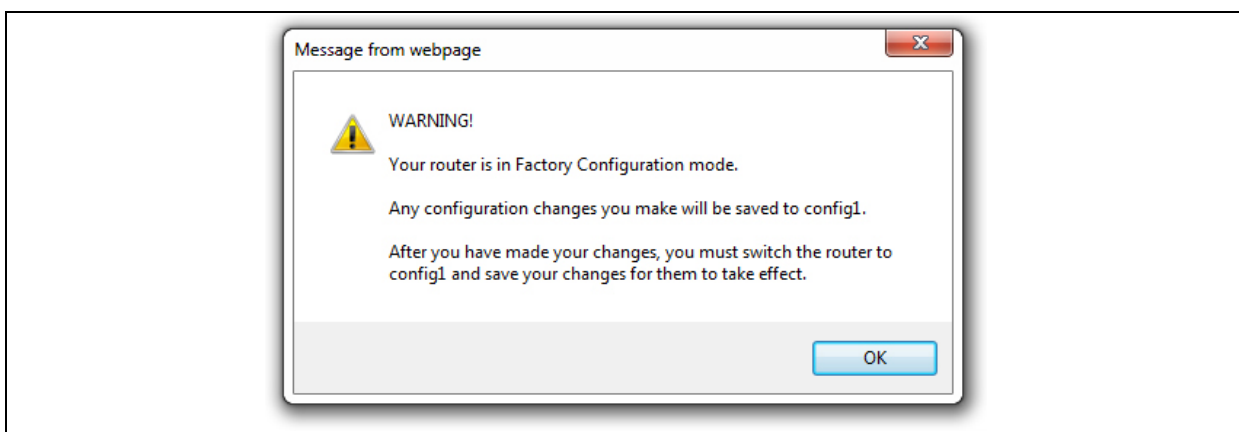


Figure 5: The router is operating in factory configuration mode

5. Read the message and click **OK**.
6. To configure any relevant interface, go to the top menu, select **Network -> Interfaces**.



Figure 6: The GW1000 Series router interfaces menu

7. Click **Edit** on WAN or LAN to make your changes. For WAN connectivity, the Common Configuration page appears.

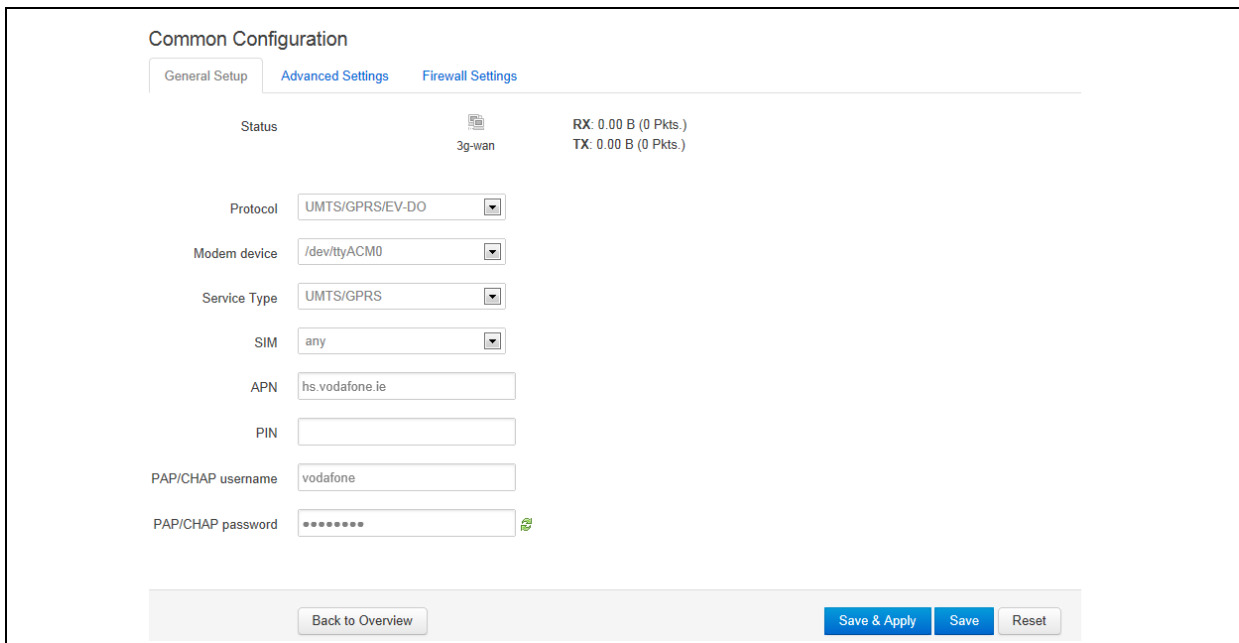


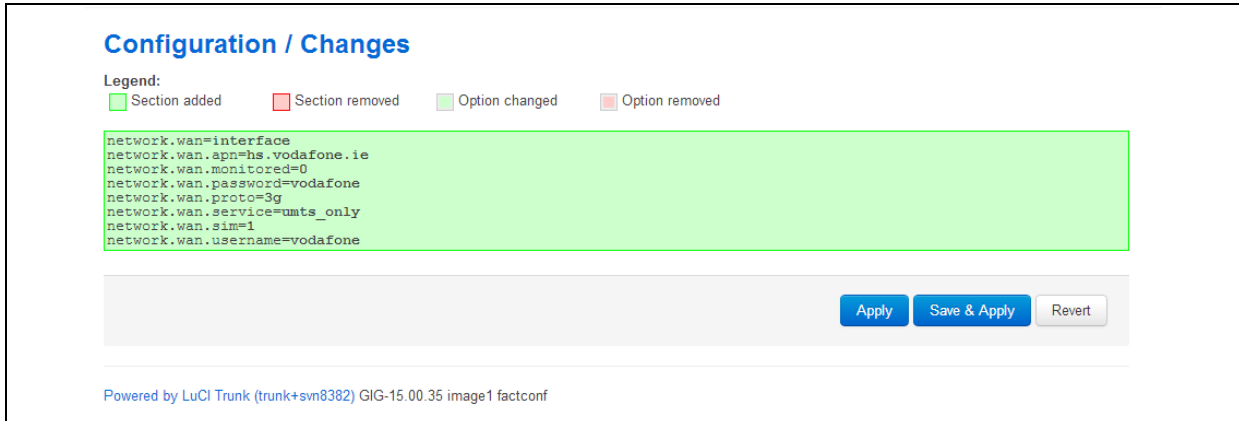
Figure 7: The common connectivity page

8. Ensure you have selected the General Setup tab.
9. For single SIM implementation, in the SIM drop down menu, select **SIM 1**.
10. Enter the APN information and the PAPI/CHAP username and password.
11. Click **Save & Apply**.
12. To enable a 3G/4G connection to connect on boot up, select the **Advanced Settings** tab.
13. Select **Bring up on boot**.
14. Click **Save**.
15. When you have made all your changes, you can view a change summary by clicking **UNSAVED CHANGES** in the top menu.



Figure 8: The unsaved changes button in the top menu

A list of unsaved changes appears.



16. To save the changes, click **Save & Apply**.

17. When the changes have been saved, you can switch the router's configuration file to config1.

18. Click **System -> Backup/Flash Firmware**.

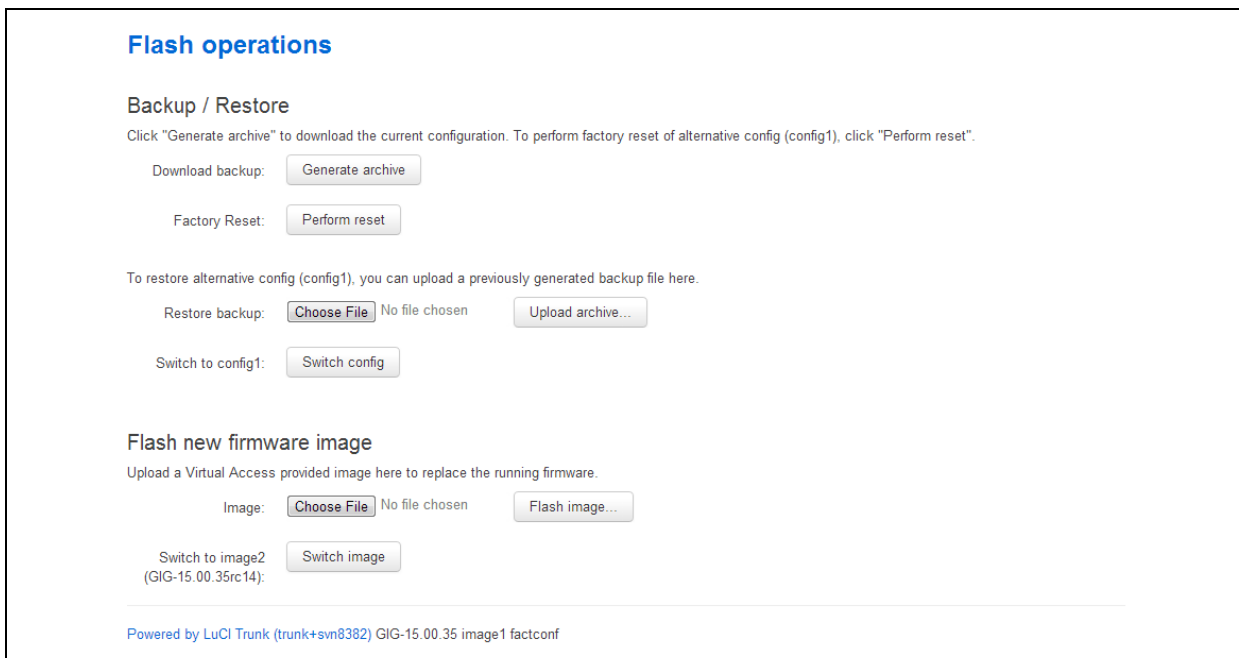


Figure 9: The flash operations page

19. In the Flash operations page, click **Switch config**. A rebooting message appears.

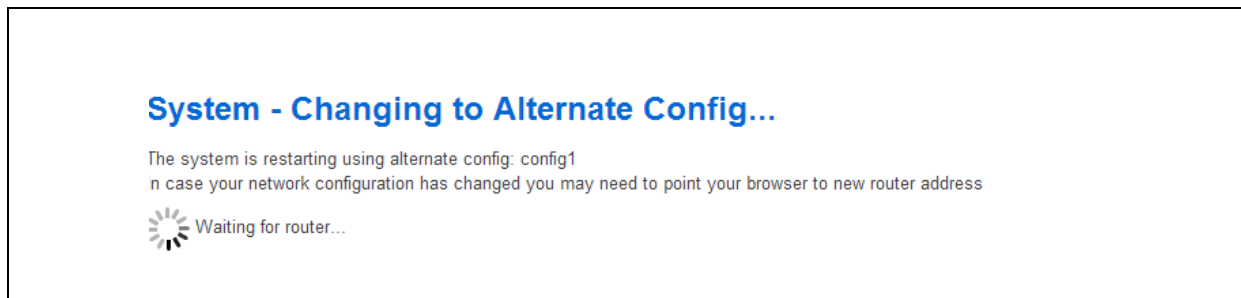


Figure 10: The rebooting message

The router will reboot into config1.

20. To check for connectivity, return to the top menu, and select **Network -> Interfaces**. The WAN interface will show receive and transmit packets and an IP address.

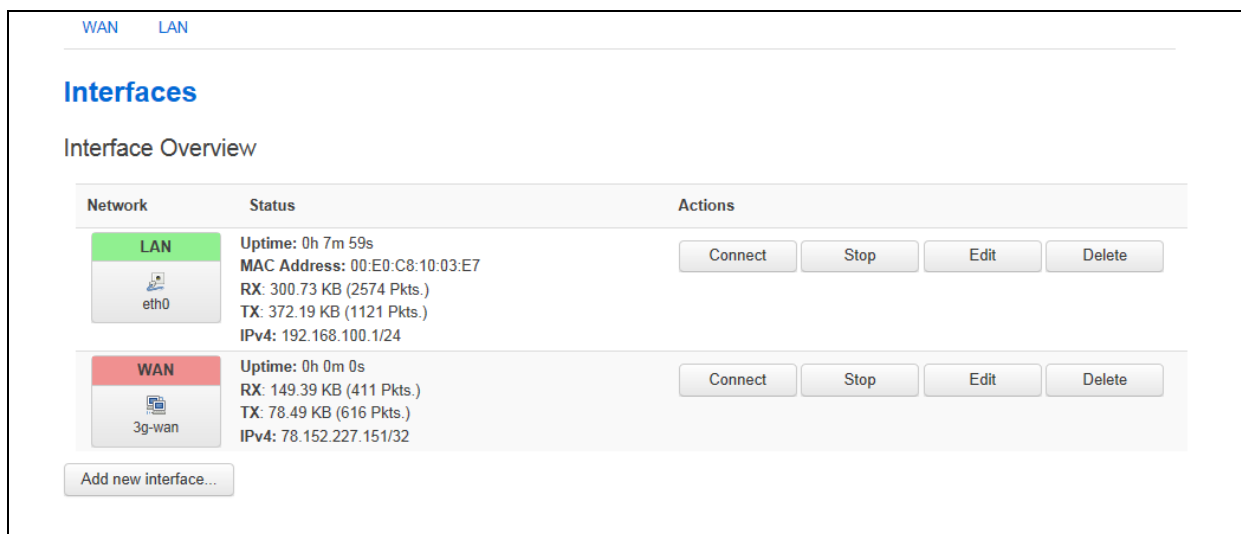


Figure 11: The interfaces overview page

21. To view 3G/4G connectivity information, select **Status -> Mobile Stats**. The Mobile/3G information page appears.

Mobile/3G Information

The mobile module is reporting the following information.

Area Code	8CA2
Cell ID	000BAA7E
Data Network Status	1, Home network
GPS Position	n/a
GPS Status	n/a
IMEI	n/a
IMSI	n/a
Last Network Error	n/a
Network Status	1, Home network
Operator	0,0,"O2 IRL",2
Phone Number	n/a
SIM In	yes
SIM Slot	1
SIM1 ICCID	8935302102100237914
SIM2 ICCID	n/a
Signal (dBm)	-67
Tech Code	6
Technology	UTRAN w/HSUPA and HSDPA
Temperature (C)	37

Figure 12: The mobile/3G information page

6 Configuring WiFi

This section explains how to configure WiFi on a Virtual Access router using the web interface or via UCI.

6.1 Configuring WiFi through the web interface

WiFi can act as an Access Point (AP) to another device in the network or it can act as a client to an existing AP.

You can configure WiFi in AP mode in two different ways:

- on an existing interface, or
- on a new interface.

6.2 Configuring WiFi in AP mode on an existing Ethernet interface

In the top menu, select **Network -> Interfaces**. The Interface Overview page appears.





Interface Overview		
Network	Status	Actions
3G  3g-3G	RX: 0.00 B (0 Pkts.) TX: 0.00 B (0 Pkts.)	<input type="button" value="Connect"/> <input type="button" value="Stop"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>
PPPOE  pppoe-PPPoE	RX: 0.00 B (0 Pkts.) TX: 0.00 B (0 Pkts.)	<input type="button" value="Connect"/> <input type="button" value="Stop"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>
WCLIENT  Client "VAWireless"	Uptime: 0h 2m 16s MAC Address: 92:A4:DE:8A:0F:53 RX: 170.72 KB (1630 Pkts.) TX: 11.27 KB (89 Pkts.) IPv4: 10.1.9.6/16	<input type="button" value="Connect"/> <input type="button" value="Stop"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>
LAN  br-lan	Uptime: 0h 3m 17s MAC Address: 00:E0:C8:10:10:A9 RX: 92.33 KB (667 Pkts.) TX: 102.80 KB (694 Pkts.) IPv4: 192.168.6.3/24	<input type="button" value="Connect"/> <input type="button" value="Stop"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>

Figure 13: The interface overview page

In the interface overview page, click **Edit** to select the Ethernet interface that will be bridged into the router's WiFi AP. The Common Configuration page appears.

In the Common Configuration page select the **Physical Settings** tab.

Common Configuration

General Setup
Advanced Settings
Physical Settings
Firewall Settings

Bridge interfaces creates a bridge over specified interface(s)

Enable STP Enables the Spanning Tree Protocol on this bridge

Interface

- Ethernet Adapter: "base0"
- Ethernet Adapter: "eth0" (lan)
- Ethernet Adapter: "eth1"
- Ethernet Adapter: "eth2"
- Ethernet Adapter: "eth3" (lan3)
- Ethernet Adapter: "lo" (loopback)
- Ethernet Adapter: "nas0" (PPPoE)
- Custom Interface:

Figure 6: The common configuration physical settings page

Select **Bridge Interfaces**.

In the Interface fields, you will see the interface that you are working on is already selected.

Name	Type	Required	Default	Description
Bridge Interfaces	Check box	Yes	Unchecked	Creates a bridge over specified interfaces.
Enable STP	Check box	Yes	Unchecked	Enables STP
Interface	Check box	N/A	Unchecked	Selects the interface for WiFi.

Scroll to the bottom of the page and click **Save**.

In the top menu, select **Network -> WiFi**.

The Wireless Overview page appears.

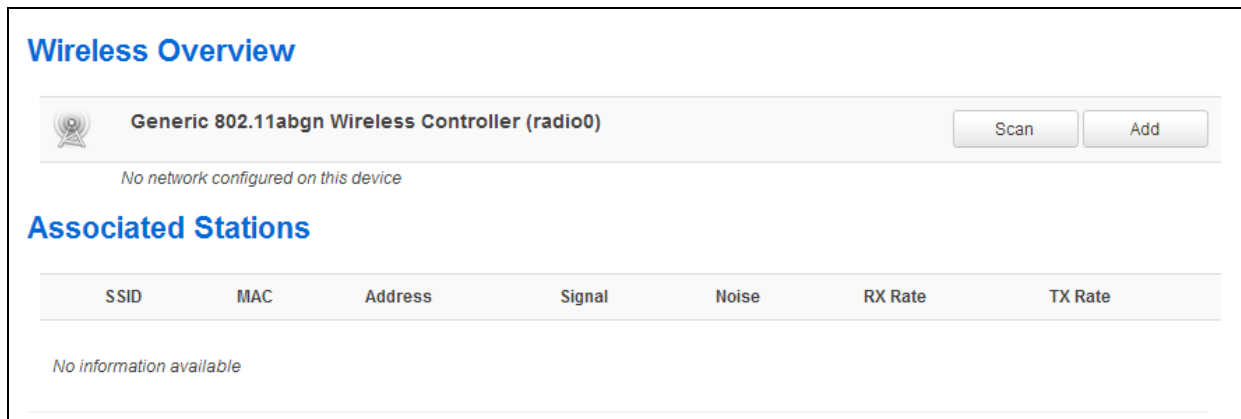


Figure 14: The wireless overview page

To create a new WiFi interface, click **Add**. The Wireless Network page appears.

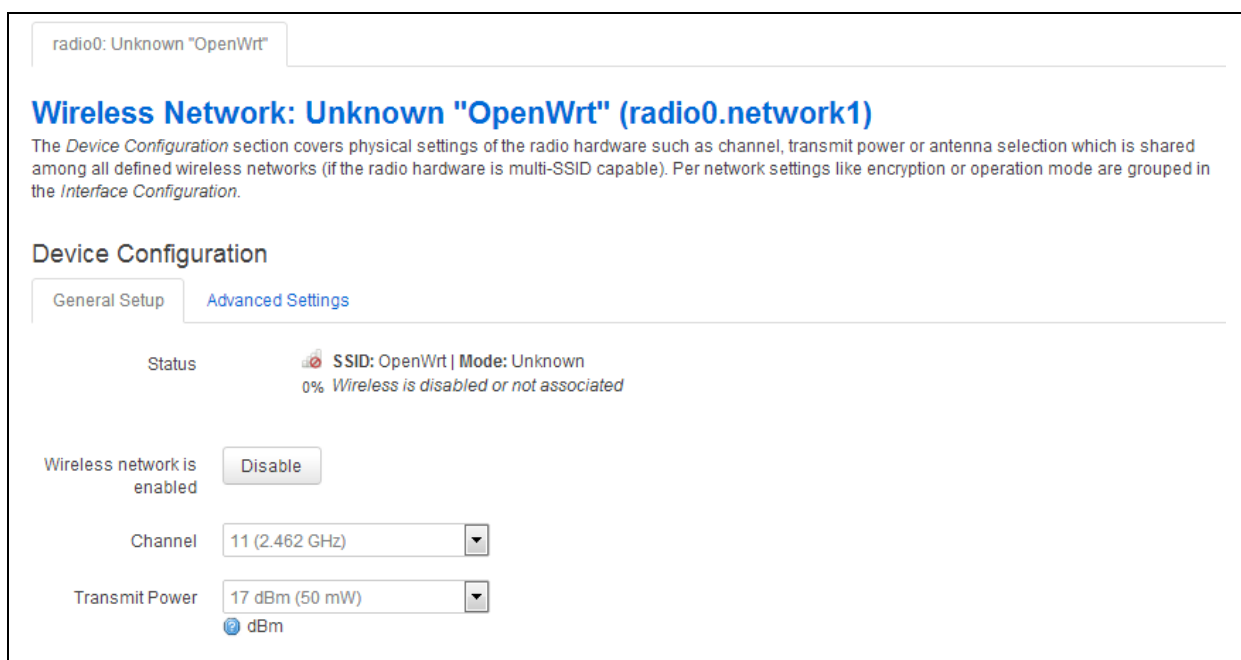


Figure 15: The wireless network page

In the **Device Configuration** section, ensure you have selected the General Setup tab.

In the Channel drop down menu, select the channel you require.

In the Transmit Power drop down menu, select the power rating you require.

Name	Type	Required	Default	Description
Channel	Drop down menu	Yes	11 (2.462 GHz)	Available channels are within range 1-11
Transmit Power	Drop down menu	Yes	17 dBm (50 mW)	Available range 0 dBm(1 mW) – 17dBm(50 mW)

Scroll down to the Interface Configuration section.

The screenshot shows the 'Interface Configuration' page with three tabs: 'General Setup', 'Wireless Security', and 'MAC-Filter'. The 'General Setup' tab is active. The 'ESSID' field contains the text 'Test'. The 'Mode' dropdown menu is set to 'Access Point'. Under the 'Network' section, there are radio buttons for '3G:', 'PPPoE:', 'lan:', 'lan3:', 'loopback:', and 'unspecified -or- create:'. The 'lan:' option is selected. Below the network options, there is a blue information icon and a text box that reads: 'Choose the network you want to attach to this wireless interface. Select unspecified to not attach any network or fill out the create field to define a new network.' At the bottom left, there is a 'Hide ESSID' checkbox which is unchecked. At the bottom right, there are three buttons: 'Save & Apply' (highlighted in blue), 'Save', and 'Reset'.

Figure 16: The interface configuration page

Ensure the General Setup tab is selected.

In the ESSID field, type **[name of the wireless local area network]**

In the Mode drop down menu, select **Access Point**.

Select one of the Ethernet interfaces to which the WiFi AP mode will be bridged.

Name	Type	Required	Default	Description
ESSID	Drop down menu	Yes	Blank	Extended Service Set Identification. The name of the wireless local area network
Mode	Drop down menu	Yes	Access Point	Selects Access Point mode.

Click **Save**.

Select the **Wireless Security** tab.

Interface Configuration

General Setup | **Wireless Security** | MAC-Filter

Encryption: WPA2-PSK

Cipher: auto

Key:

Save & Apply | Save | Reset

Figure 17: The encryption drop-down menu

In the Encryption drop-down menu, select the encryption key.

In the Cipher drop-down menu, select the cipher type.

Create an encryption key.

Click **Save & Apply**.

6.3 Configuring WiFi in AP mode on a new interface

In the top menu, select **Network -> Wifi**. The Wireless Overview page appears.

radio0: Master "Test_LS"

Wireless Overview

Generic 802.11abgn Wireless Controller (radio0) [Scan] [Add]

SSID: Test_LS | Mode: Master
67% Wireless is disabled or not associated [Enable] [Edit] [Remove]

Associated Stations

SSID	MAC	Address	Signal	Noise	RX Rate	TX Rate
Test_LS	08:ED:B9:01:61:AD	192.168.6.109	-63 dBm	-95 dBm	65.0 Mbit/s, MCS 7, 20MHz	26.0 Mbit/s, MCS 3, 20MHz

Figure 18: The wireless overview page

Click **Add** to create a new WiFi interface.

radio0: Unknown "OpenWrt"

Wireless Network: Unknown "OpenWrt" (radio0.network1)

The *Device Configuration* section covers physical settings of the radio hardware such as channel, transmit power or antenna selection which is shared among all defined wireless networks (if the radio hardware is multi-SSID capable). Per network settings like encryption or operation mode are grouped in the *Interface Configuration*.

Device Configuration

General Setup Advanced Settings

Status 📶 **SSID: OpenWrt | Mode: Unknown**
0% *Wireless is disabled or not associated*

Wireless network is enabled Disable

Channel 11 (2.462 GHz) ▼

Transmit Power 17 dBm (50 mW) ▼
🔊 dBm

Figure 19: The wireless network page

In the Device Configuration section, ensure the General Setup tab is selected.

In the Channel drop down menu, select the channel you require.

In the Transmit Power drop down menu, select the power rating you require.

Name	Type	Required	Default	Description
Channel	Drop down menu	Yes	11 (2.462 GHz)	Available channels are within range 1-11
Transmit Power	Drop down menu	Yes	17 dBm (50 mW)	Available range 0 dBm(1 mW) – 17dBm(50 mW)

In the Interface Configuration section, make sure the General Setup tab is selected.

Interface Configuration

General Setup
Wireless Security
MAC-Filter

ESSID

Mode

Network

- PPPAdsl:
- dialin:
- dialout:
- lan:
- lan2:
- lan3:
- lan4:
- loopback:
- wan:
- wan1:
- unspecified -or- create:

Figure 20: The interface configuration page

In the ESSID field, type **[name of the wireless local area network]**

In the Mode drop down menu, select **Access Point**.

In the unspecified –or- create: filed, type the name of the new WiFi interface.

Name	Type	Required	Default	Description
ESSID	Drop down menu	Yes	Blank	Extended Service Set Identification. The name of the wireless local area network
Mode	Drop down menu	Yes	Access Point	Selects Access Point mode.

Select the **Wireless Security** tab.

Interface Configuration

General Setup | **Wireless Security** | MAC-Filter

Encryption: WPA2-PSK

Cipher: auto

Key:

Save & Apply | Save | Reset

Figure 21: The encryption drop down menu

In the Encryption drop down menu, select the encryption key. When you have entered the encryption type, the Cipher and Key fields appear.

In the Cipher drop down menu, select the cipher type.

Create an encryption key.

Click **Save**.

In the top menu, select **Network -> Interfaces**. The Interfaces Overview page appears.

LOOPBACK lo	Uptime: 16h 21m 30s MAC Address: 00:00:00:00:00:00 RX: 997.36 KB (8351 Pkts.) TX: 997.36 KB (8351 Pkts.) IPv4: 127.0.0.1/8 IPv6: 0:0:0:0:0:0:1/128	Connect	Stop	Edit	Delete
NEWLAN Unknown "OpenWrt"	MAC Address: 00:00:00:00:00:00 RX: 0.00 B (0 Pkts.) TX: 0.00 B (0 Pkts.)	Connect	Stop	Edit	Delete
WAN 3g-wan	RX: 0.00 B (0 Pkts.) TX: 0.00 B (0 Pkts.)	Connect	Stop	Edit	Delete

Figure 22: The interface overview page showing the newly created interface

Click **Edit** on the newly created interface.

Ensure you have selected the General Setup tab.


In the Protocol drop down menu, select **Static Address**. A 'Switch Protocol' button appears.

Interfaces - NEWLAN

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation `INTERFACE.VLANNR` (e.g.: `eth0.1`).

Common Configuration

General Setup

Status  Unknown "OpenWrt" **MAC Address:** 00:00:00:00:00:00
RX: 0.00 B (0 Pkts.)
TX: 0.00 B (0 Pkts.)


Protocol

Really switch protocol?

Figure 23: The new interface page

Click **Switch Protocol**. The new interface configuration page appears.

General Setup **Advanced Settings** Physical Settings Firewall Settings

Status  Unknown "OpenWrt" **MAC Address:** 00:00:00:00:00:00
RX: 0.00 B (0 Pkts.)
TX: 0.00 B (0 Pkts.)


Protocol

IPv4 address

IPv4 netmask

IPv4 gateway

IPv4 broadcast

Use custom DNS servers 

Accept router advertisements

Send router solicitations

IPv6 address

Figure 24: The new interface page

Name	Type	Required	Default	Description
Protocol	Drop down menu	Yes	Static Address	
IPv4 address	Numeric Value	Yes	N/A	IP address assigned to this interface
IPv4 netmask	Numeric	Yes	N/A	IP netmask assigned to this

	Value			interface
IPv4 gateway	Numeric Value	No	N/A	
IPv4 broadcast	Numeric Value	No	N/A	
Use custom DNS servers	String	No	N/A	DNS server IP address
Accept router advertisements	Check box	No	N/A	
Send router solicitations	Check box	No	N/A	

Type in the Static IP address.

Type in the Network Mask.

Click **Save & Apply**.

Note: The router will now start the network package. It may take up to one minute for connectivity to the router to be restored.

6.4 Configuring WiFi in client mode

In the top menu, select **Network ->Wifi**. The Wireless Overview page appears.

Wireless Overview

Generic 802.11abgn Wireless Controller (radio0) Scan Add

No network configured on this device

Associated Stations

SSID	MAC	Address	Signal	Noise	RX Rate	TX Rate
<i>No information available</i>						

Figure 25: The wireless overview page

Click **Add** to create a new WiFi Client interface. The Wireless Network page appears.

radio0: Unknown "OpenWrt"

Wireless Network: Unknown "OpenWrt" (radio0.network1)

The *Device Configuration* section covers physical settings of the radio hardware such as channel, transmit power or antenna selection which is shared among all defined wireless networks (if the radio hardware is multi-SSID capable). Per network settings like encryption or operation mode are grouped in the *Interface Configuration*.

Device Configuration

General Setup Advanced Settings

Status 📶 SSID: OpenWrt | Mode: Unknown
0% Wireless is disabled or not associated

Wireless network is enabled

Channel 11 (2.462 GHz) ▼

Transmit Power 17 dBm (50 mW) ▼
🔊 dBm

Figure 26: The wireless network page

In the Device Configuration section, ensure the General Setup tab is selected.

In the Channel drop down menu, select the channel you require.

In the Transmit Power drop down menu, select the power rating you require.

Name	Type	Required	Default	Description
Channel	Drop down menu	Yes	11 (2.462 GHz)	Available channels are within range 1-11
Transmit Power	Drop down menu	Yes	17 dBm (50 mW)	Available range 0 dBm(1 mW) – 17dBm(50 mW)

In the Interface Configuration section, make sure the General Setup tab is selected.

Interface Configuration

General Setup
Wireless Security

ESSID

Mode

BSSID

Network

- PPPAdsl:
- dialin:
- dialout:
- lan:
- lan2:
- lan3:
- lan4:
- loopback:
- newlan:
- wan:
- wan1:
- unspecified -or- create:

In the ESSID field, type **[name of the wireless local area network]**.

In the Mode drop down menu, select **Client**.

In the unspecified –or- create: field, type the name of the new WiFi interface.

Name	Type	Required	Default	Description
ESSID	Drop down menu	Yes	Blank	Extended Service Set Identification. The name of the wireless local area network
Mode	Drop down menu	Yes	Access Point	Selects mode.

Select the **Wireless Security** tab.

Interface Configuration

General Setup | **Wireless Security** | MAC-Filter

Encryption: WPA2-PSK

Cipher: auto

Key: *****

Save & Apply | Save | Reset

Figure 27: The wireless page interface configuration section

In the Encryption drop down menu, select the encryption key. When you have entered the encryption type, the Cipher and Key fields appear.

In the Cipher drop down menu, select the cipher type.

Create an encryption key.

Click **Save**.

In the top menu, select **Network -> Interfaces**. The Interfaces Overview page appears.

Network	Status	Actions
PPPADSL pppoe-PPPADsl	Uptime: 0h 7m 54s RX: 10.75 KB (139 Pkts.) TX: 8.29 KB (101 Pkts.) IPv4: 172.22.100.5/32	<input type="button" value="Connect"/> <input type="button" value="Stop"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>
WCLIENT Unknown "VA-Wireless"	MAC Address: 00:00:00:00:00:00 RX: 0.00 B (0 Pkts.) TX: 0.00 B (0 Pkts.)	<input type="button" value="Connect"/> <input type="button" value="Stop"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Edit this interface"/>

Figure 28: The interface overview page showing the newly created interface

Click **Edit** on the newly created interface. The Interfaces - WCLIENT page appears.

Interfaces - WCLIENT

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation `INTERFACE.VLANNR` (e.g.: `eth0.1`).

Common Configuration

General Setup

Status	 Unknown "VA-Wireless"	MAC Address: 00:00:00:00:00:00 RX: 0.00 B (0 Pkts.) TX: 0.00 B (0 Pkts.)
Protocol	<input style="width: 100%;" type="text" value="DHCP client"/>	
Really switch protocol?	<input type="button" value="Switch protocol"/>	

IP-Aliases

This section contains no values yet

Back to Overview
Save & Apply
Save
Reset

Figure 29: The WClient interfaces page

In the Protocol drop down menu, select **DHCP client**. A 'Switch Protocol' button appears.

Click **Switch Protocol**.

Click **Save & Apply**.

Note: The router will now restart the network package. It may take up to one minute for connectivity to the router to be restored.

6.5 Diagnostics for WiFi AP mode

To check for any hosts associated with WiFi AP, in the top menu, select **Network -> WiFi**. The Wireless Overview page appears.

The screenshot shows the 'Wireless Overview' page for 'radio0: Master "Test_LS"'. It features a 'Generic 802.11abgn Wireless Controller (radio0)' with buttons for 'Scan', 'Add', 'Enable', 'Edit', and 'Remove'. The status indicates 'SSID: Test_LS | Mode: Master' and '67% Wireless is disabled or not associated'. Below this is the 'Associated Stations' table:

SSID	MAC	Address	Signal	Noise	RX Rate	TX Rate
Test_LS	08:ED:B9:01:61:AD	192.168.6.109	-63 dBm	-95 dBm	65.0 Mbit/s, MCS 7, 20MHz	26.0 Mbit/s, MCS 3, 20MHz

Figure 30: The wireless overview page showing associated hosts

6.6 Diagnostics for WiFi client mode

To check for connectivity, in the top menu, select **Network -> Interfaces**. The WCLIENT interface will show receive and transmit packets and an IP address.

The screenshot shows the 'Interface Overview' page with a table of network interfaces:

Network	Status	Actions
3G 3g-3G	RX: 0.00 B (0 Pkts.) TX: 0.00 B (0 Pkts.)	Connect Stop Edit Delete
PPPOE pppoe-PPPoE	RX: 0.00 B (0 Pkts.) TX: 0.00 B (0 Pkts.)	Connect Stop Edit Delete
WCLIENT Client "VAWireless"	Uptime: 0h 2m 16s MAC Address: 92:A4:DE:8A:0F:53 RX: 170.72 KB (1630 Pkts.) TX: 11.27 KB (89 Pkts.) IPv4: 10.1.9.6/16	Connect Stop Edit Delete
LAN br-lan	Uptime: 0h 3m 17s MAC Address: 00:E0:C8:10:10:A9 RX: 92.33 KB (667 Pkts.) TX: 102.80 KB (694 Pkts.) IPv4: 192.168.6.3/24	Connect Stop Edit Delete

Figure 31: The interface overview page showing WClient stats

6.7 Configuring WiFi via UCI

6.7.1 Configuring Wi-Fi in AP mode on an existing Ethernet interface

The configuration files are stored on:

- Network file /etc/config/network
- Wireless file /etc/config/wireless

To view the configuration file, use the command:

uci export network

```
package network
config interface 'lan'
    option ifname 'eth0'
    option proto 'static'
    option ipaddr '192.168.100.1'
    option netmask '255.255.255.0'
    option type 'bridge'
```

uci export wireless

```
package wireless

config wifi-device 'radio0'
    option type 'mac80211'
    option channel '11'
    option phy 'phy0'
    option hwmode '11ng'
    option htmode 'HT20'
    list ht_capab 'SHORT-GI-40'
    list ht_capab 'TX-STBC'
    list ht_capab 'RX-STBC1'
    list ht_capab 'DSSS_CCK-40'
    option txpower '17'
    option country 'US'

config wifi-iface
    option device 'radio0'
    option mode 'ap'
    option disabled '1'
    option ssid 'Test_AP'
    option network 'lan'
    option encryption 'psk'
    option key 'secretkey'
```

To view UCI commands, type:

uci show network

```
network.lan=interface
network.lan.ifname=eth0
network.lan.proto=static
network.lan.ipaddr=192.168.6.1
network.lan.netmask=255.255.255.0
network.lan.type=bridge
```

uci show wireless

```
wireless.radio0=wifi-device
wireless.radio0.type=mac80211
wireless.radio0.channel=11
wireless.radio0.phy=phy0
wireless.radio0.hwmode=11ng
wireless.radio0.htmode=HT20
wireless.radio0.ht_capab=SHORT-GI-40 TX-STBC RX-STBC1 DSSS_CCK-40
wireless.radio0.txpower=17
wireless.radio0.country=US
wireless.@wifi-iface[0]=wifi-iface
wireless.@wifi-iface[0].device=radio0
wireless.@wifi-iface[0].mode=ap
wireless.@wifi-iface[0].disabled=1
wireless.@wifi-iface[0].ssid=Test_AP
wireless.@wifi-iface[0].network=lan
wireless.@wifi-iface[0].encryption=psk
wireless.@wifi-iface[0].key=secretkey
```

6.7.2 Configuring WiFi on a new interface

uci export network

```
package network
config interface 'newlan'
    option proto 'static'
    option ipaddr '192.168.111.1'
    option netmask '255.255.255.0'
```

uci export wireless


```
package wireless

config wifi-device 'radio0'
    option type 'mac80211'
    option channel '11'
    option phy 'phy0'
    option hwmode '11ng'
    option htmode 'HT20'
    list ht_capab 'SHORT-GI-40'
    list ht_capab 'TX-STBC'
    list ht_capab 'RX-STBC1'
    list ht_capab 'DSSS_CCK-40'
    option txpower '17'
    option country 'US'

config wifi-iface
    option device 'radio0'
    option mode 'ap'
    option disabled '1'
    option ssid 'Test_AP'
    option network 'newlan'
    option encryption 'psk'
    option key 'secretkey'
```

To view UCI commands, type:

uci show network

```
network.newlan=interface
network.newlan.proto=static
network.newlan.ipaddr=192.168.111.1
network.newlan.netmask=255.255.255.0
```

uci show wireless

```
wireless.radio0=wifi-device
wireless.radio0.type=mac80211
wireless.radio0.channel=11
wireless.radio0.phy=phy0
wireless.radio0.hwmode=11ng
wireless.radio0.htmode=HT20
wireless.radio0.ht_capab=SHORT-GI-40 TX-STBC RX-STBC1 DSSS_CCK-40
wireless.radio0.txpower=17
wireless.radio0.country=US
wireless.@wifi-iface[0]=wifi-iface
wireless.@wifi-iface[0].device=radio0
wireless.@wifi-iface[0].mode=ap
wireless.@wifi-iface[0].disabled=1
wireless.@wifi-iface[0].ssid=Test_AP
wireless.@wifi-iface[0].network=newlan
wireless.@wifi-iface[0].encryption=psk
wireless.@wifi-iface[0].key=secretkey
```

6.8 Configuring WiFi in client mode

uci export network

```
package network
config interface 'WCLIENT'
    option proto 'dhcp'
```

uci export wireless

```
package wireless
config wifi-device 'radio0'
    option type 'mac80211'
    option channel '11'
    option phy 'phy0'
    option hwmode '11ng'
    option htmode 'HT20'
```

```
list ht_capab 'SHORT-GI-40'  
list ht_capab 'TX-STBC'  
list ht_capab 'RX-STBC1'  
list ht_capab 'DSSS_CCK-40'  
option txpower '17'  
option country 'US'  
  
config wifi-iface  
    option device 'radio0'  
    option ssid 'Remote-AP'  
    option mode 'sta'  
    option network 'WCLIENT'  
    option encryption 'psk2'  
    option key 'testtest'
```

To view UCI commands, type:

uci show network

```
network.WCLIENT=interface  
network.WCLIENT.proto=dhcp
```

uci show wireless

```
wireless.radio0=wifi-device  
wireless.radio0.type=mac80211  
wireless.radio0.channel=11  
wireless.radio0.phy=phy0  
wireless.radio0.hwmode=11ng  
wireless.radio0.htmode=HT20  
wireless.radio0.ht_capab=SHORT-GI-40 TX-STBC RX-STBC1 DSSS_CCK-40  
wireless.radio0.txpower=17  
wireless.radio0.country=US  
wireless.@wifi-iface[0]=wifi-iface  
wireless.@wifi-iface[0].device=radio0  
wireless.@wifi-iface[0].ssid=Remote-AP
```

```
wireless.@wifi-iface[0]=wifi-iface  
wireless.@wifi-iface[0].device=radio0  
wireless.@wifi-iface[0].ssid=Remote-AP  
wireless.@wifi-iface[0].mode=sta  
wireless.@wifi-iface[0].network=WCLIENT  
wireless.@wifi-iface[0].encryption=psk2  
wireless.@wifi-iface[0].key=testtest
```

1 7: Configuring WiFi

This section explains how to configure WiFi on a Virtual Access router using the web interface or via UCI.

1.1 Configuring WiFi through the web interface

WiFi can act as an Access Point (AP) to another device in the network or it can act as a client to an existing AP.

You can configure WiFi in AP mode in two different ways:

- on an existing interface, or
- on a new interface.

1.2 Configuring WiFi in AP mode on an existing Ethernet interface

In the top menu, select **Network -> Interfaces**. The Interface Overview page appears.

7 Firmware updates information

To obtain firmware updates for your GW1000 Series router, contact your reseller.

8 Troubleshooting

Problem	Possible causes	Solution
I cannot access the GW1000	The configured IP address or subnet, or both on your PC is incorrect.	Change the IP on your PC to contact the GW1000 on 192.168.100.1/24
	The GW1000 is not running its factory configuration.	Check the config LED status. Flashing indicates its running its factory configuration. If it is solid, hold in the reset button for between 3 and 15 seconds and then release.
I cannot access the WAN network after manual configuration	The SIM is not inserted.	Power off the GW1000, insert the SIM card and then power on the GW1000.
	The APN is incorrect.	Check you have configured the correct APN.
	SIM username or password, or both are incorrect.	Check the correct SIM username and password settings.
	There is a connection failure.	Check the status of Connection Monitor. From the Start page, browse to >Advanced > Connection monitor .
The router performance is slow.	There is poor 4G/3G signal strength.	Check the signal strength. From the Start page, browse to Status > Mobile Stats . Move the GW1000 to a better location and recheck signal strength.