



USER MANUAL

SP420

4x4 Dual Band
802.11ac Wave 2 Outdoor Access Point



Revision: 4.0.0.3

TABLE OF CONTENTS

Chapter 1. Introduction	1
1.1. Product Description	1
1.2. Features.....	1
Chapter 2. Hardware Components	2
2.1. Package Contents	2
2.2. Installation Requirements.....	2
2.3. Physical Ports.....	2
2.4. LED Indicator.....	3
Chapter 3. Hardware Installation	4
3.1. Mounting the Access Point on the Pole.....	4
3.2. Two-dimensional Mounting Kit (Optional accessory SP-MKM5)	4
3.2.1. Pole-Mount	4
3.2.2. Wall-Mount	5
3.3. Anti-theft Steel Rope (Optional accessory_SP-CBM5)	5
3.4. Grounding Connection & Protect from Lightning.....	6
3.5. Safety Notice.....	6
3.6. Installing a Waterproof Cable Gland for Ethernet Port.....	7
3.7. Installing a Waterproof Cable Gland for Fiber Port of SP420-F (Optional accessory_ SP-WP-CM28SFP).....	7
3.8. Powering the Access Point.....	7
Chapter 4. The HTTP Interface	8
4.1. Login to the HTTP Interface.....	8
4.2. Thin AP Mode.....	8
4.2.1. Access point Configuration.....	8
4.2.2. Status	9
4.2.2.1. Overview.....	9
4.2.2.2. General.....	10
4.2.2.3. System Log.....	11
4.2.3. System.....	11
4.2.3.1. AP Mode.....	11
4.2.3.2. Reboot.....	11
4.3. Fat AP Mode.....	11
4.3.1. Status	12
4.3.1.1. Overview.....	12
4.3.1.2. Firewall.....	13
4.3.1.3. Routes.....	13
4.3.1.4. System Log.....	13
4.3.2. System.....	15
4.3.2.1. System.....	15
4.3.2.2. Administration.....	15
4.3.2.3. Scheduled Tasks.....	16
4.3.2.4. Backup / Flash Firmware	16
4.3.3. Network	17
4.3.3.1. Interfaces.....	17
4.3.3.2. Wifi.....	43

4.3.3.4. Static Routes	58
4.3.3.5. Diagnostics	59
4.3.3.6. Firewall	61
4.3.3.7. Bluetooth.....	64
4.3.3.8. Externalvlan	64
Chapter 5. Technical Specifications	65
Chapter 6. Appendix	67
6.1. Warranty	67
6.1.1. General Warranty	67
6.1.2. Warranty Conditions.....	67
6.1.3. Disclaimer.....	67
6.2. Compliance Information.....	68
6.2.1. RF Exposure Warning	68
6.2.2. CE Marking	68
6.2.3. RoHS/WEEE Compliance Statement.....	68
6.3. Declaration of Conformity	68
6.4. Optional Accessories.....	69
6.5. Contact Information.....	69

Chapter 1. INTRODUCTION

This guide is intended for network administrators and other IT networking professionals responsible for installing and managing the SP420 Series using the HTTP interface. The SP420 series will simply be referred to as the AP within this guide. This guide is written in a way that assumes that users already have the experience and knowledge of Ethernet and modern networking principles for LANs (Local Area Networks) and WLANs (Wireless LANs).

1.1. Product Description

The SP420 series are dual-band 4x4 Wave 2 outdoor APs (Access Points) that supports the IEEE 802.11ac standard and can provided wireless data rates up to 2.3 Gbps and optimizing the 2.4 GHz and 5 GHz frequency bands.

Standards	IEEE 802.11a/b/g/n/ac	
Radio Chains	2.4 GHz: 4x4:4 5GHz: 4x4:4	
Antenna	SP420	SP420-F
	2.4 GHz: 5dBi (Embedded) 5GHz: 5dBi (Embedded)	2.4 GHz: 5dBi (Embedded) 5GHz: 5dBi (Embedded)
Antenna Type	2.4/5GHz: Omni antenna	
Interface	2 x 1GbE RJ45 port 1 x Ground terminal	1 x 1GbE RJ45 port 1 x 1GbE SFP 1 x Ground terminal

1.2. Features

MU-MIMO Technology - Supports four spatial streams, to maximize throughput for high-density applications.

PoE Out - Powering a device such as an IP camera or a VoIP product for fast deployment.

Location Service - Integrated Bluetooth Low Energy (BLE) 4.1 radio to enable location tracking and wayfinding.

Wi-Fi SON - Accelerates the connection speed between devices, providing users with quick installation and easy deployment capabilities

Robust Product Design - Encased with IP67-rated and scale-level 14 windproof robust design that can withstand harsh environments.

Fiber Connector (SP420-F) - Adopts fiber cable for farther deployment and cost-effective applications.

Chapter 2. HARDWARE COMPONENTS

2.1. Package Contents



One outdoor access point



One clamp



One waterproof cable gland



One ground wire



One mounting bracket
+ Four screws



One waterproof cable gland for
fiber port

Note: SP420 provides two waterproof cable glands, and SP420-F provides one waterproof cable gland and one waterproof cable gland for fiber port.

2.2. Installation Requirements

TERMS OF USE: All Ethernet cabling runs must use CAT5e, 24AWG (or above) Shielded Twisted Pair (STP) cabling. It is the professional installer’s responsibility to follow local country regulations, including operation within legal frequency channels, output power, indoor cabling requirements, and Dynamic Frequency Selection (DFS) requirements.

Note: Be sure that grounding is available and that it must comply with local and national electrical codes. For additional lightning protection, use lightning rods and lightning arrestors.

2.3. Physical Ports

The following physical ports are available on the SP420 /SP420-F.



	SP420	SP420-F
Fiber Port	-	1
WAN/PoE In Port	1	1
LAN Port	1	-
Grounding	1	1

Port	Description
Fiber Port	Fiber port is used in a point-to-point fiber run to an outdoor 802.11n wireless access point.
WAN/PoE In Port	The WAN/PoE In port operates at 10/100/1000 Mbps at supports an RJ45 connection. Supporting PoE In, the AP can receive power through the WAN port from PSE (Power Sourcing Equipment), rendering the need for a power supply into the power port unnecessary.
LAN Port	The LAN/PoE Out port operates at 10/100/1000 Mbps at supports an RJ45 connector. Supporting PoE Out, the LAN port can supply PoE power to PDs (Powered Devices) plugged into the LAN port. Up to 11.5 Watts output power can be supplied.
Grounding	Access point that can't find its way to local earth ground will transfer to the interior equipment over the communication and power cable.

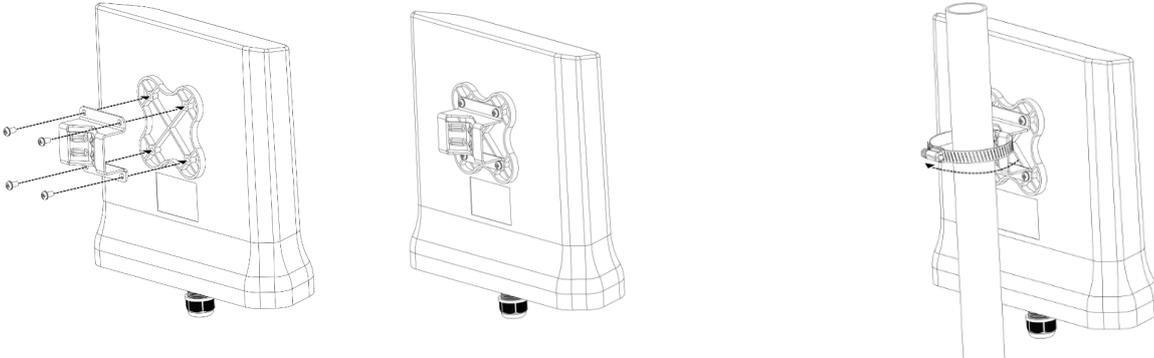
2.4. LED Indicator

Color	Indicator	Behavior	Description
Red	PWR	Off	Power / system off
		Steady	Power / system on
	WLAN	Off	2G and 5G WLAN interface disabled
		Steady	2G or 5G WLAN interface enabled
		Flashing	Sending / receiving data
	WAN	Off	No internet connection detected
		Steady	Internet connection detected
		Flashing	Sending / receiving data

Chapter 3. HARDWARE INSTALLATION

3.1. Mounting the Access Point on the Pole

- ① Place the mounting bracket to the device using four screws (included in the packaging). Securely tighten the screws.
- ② Attach the clamp to encircle pole and the mounting bracket. Securely tighten the clamp.



Note: Avoid having obstacles or metal plates surround the access point.

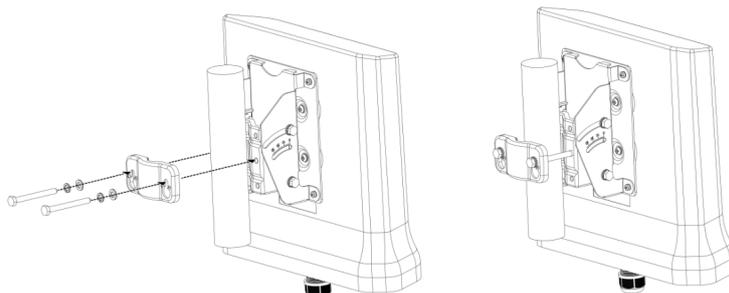
3.2. Two-dimensional Mounting Kit (Optional accessory SP-MKM5)

3.2.1. Pole-Mount

- ① Attach the intermediate steel plate to the device using four M5 screws (included in the packaging). Securely tighten the screws.
- ② Attach the two-dimensional mounting bracket to the intermediate steel plate using four M4 screws (included in the packaging). Securely tighten the screws.



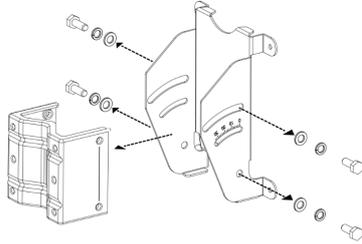
- ③ Attach the pole-supported bracket and align the area where the flat head screws will be attached. Insert two flat head screws into two-dimensional mounting bracket, and tighten them approximately.



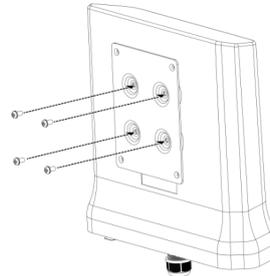
Note: The pole-supported bracket can accommodate up to 6 cm (2.36") in diameter.

3.2.2. Wall-Mount

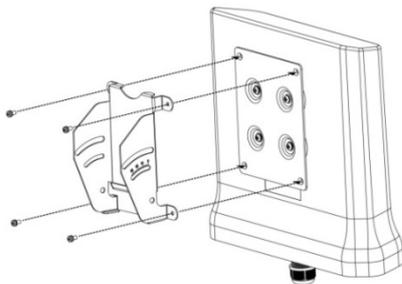
① Separate it into two parts: half-mounting bracket and M-type bracket and unscrew four hex head machine bolts on the two-dimensional mounting bracket.



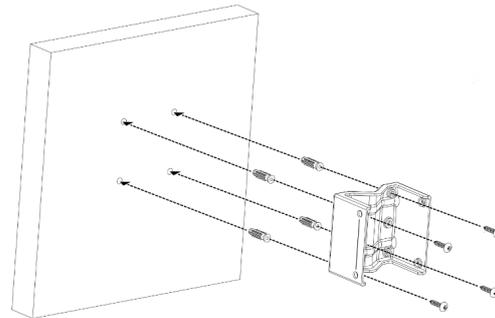
② Attach the intermediate steel plate to the device using four M5 screws (included in the packaging). Securely tighten the screws.



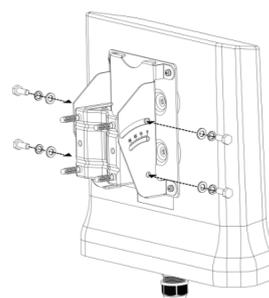
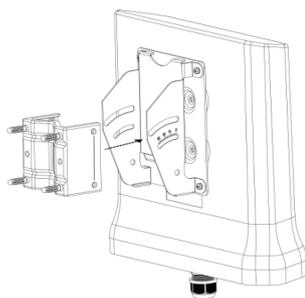
③ Attach half-mounting bracket to the device with intermediate steel plate using four M4 screws (included in the packaging). Securely tighten the screws.



④ Attach M-type bracket to the device onto the wall, using four M5 screws + screw anchors (included in the packaging). Securely tighten the screws.



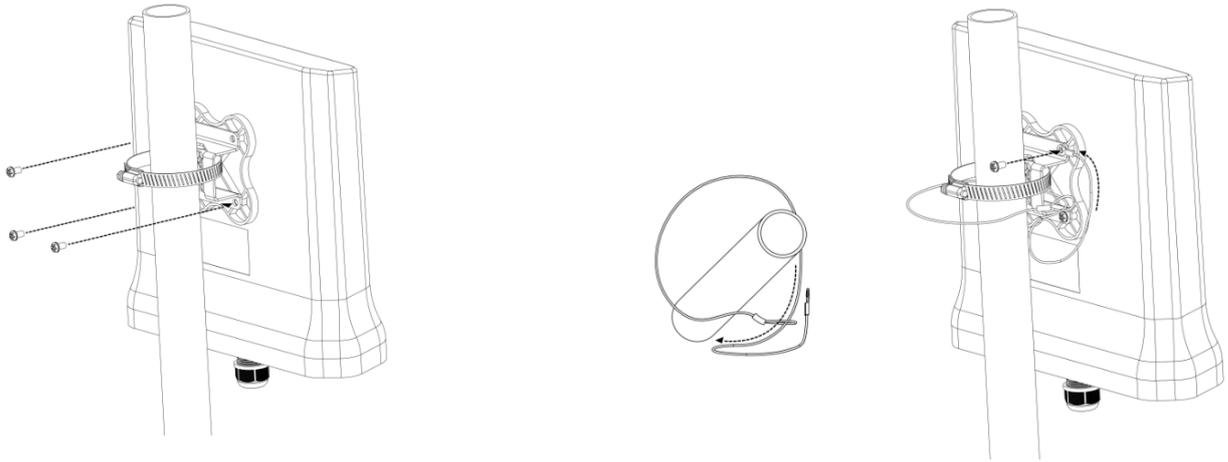
⑤ Attach half-mounting bracket to the M-type bracket, then screw four hex head machine bolts. Securely tighten the screws.



3.3. Anti-theft Steel Rope (Optional accessory_SP-CBM5)

① Insert three anti-theft screws (included in the packaging) to the device through the mounting bracket. Securely tighten these three screws. Attach the clamp to encircle pole and the mounting bracket. Securely tighten the clamp.

② Firstly, encircle the Anti-theft steel rope as following left diagram, then encircle on the pole. Secondly, insert the last anti-theft screw (included in the packaging) to the device with anti-theft steel rope. Securely tighten the screw.

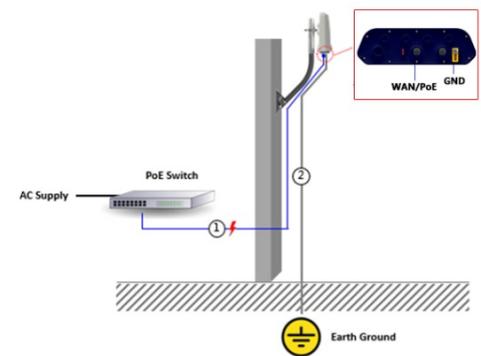


3.4. Grounding Connection & Protect from Lightning

1. Make your device GND port connect to ground wire.
2. The ground wire connects to the earth. In addition, the grounding wire meets to 6-AWG copper grounding wire.



Note: Be sure that grounding is available and that it must comply with local and national electrical codes. For additional lightning protection, use lightning rods and lightning arrestors.

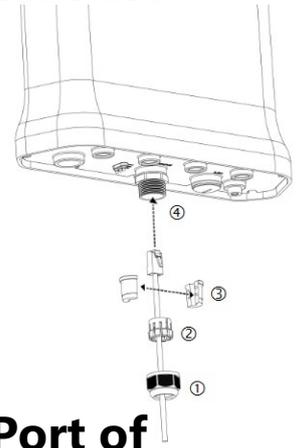


3.5. Safety Notice

1. Do not install the device close to any electrical grounding device or lightning protection system. Place the device's own grounding and lightning protection system apart from any electrical grounding device and lightning protection system as far as possible.
2. Protect components from electrostatic discharge: Please wear an ESD wrist strap or handle the power adapter by its edge and do not touch any component or printed circuit boards, especially for module device.
3. Make sure to keep the temperature and humidity of the installation location at an optimal level.
4. An excellent grounding system guarantees the stable operation of device, as well as to protect device from lightning, interference and electrostatic discharges.
5. If installed outdoors, the device may be damaged by lightning. We recommend that you install additional lightning protection devices if necessary, considering the conditions in your area.
6. Supply stable power to the device. Unstable power may cause the device to malfunction. The device supports PoE power supply and is recommended if the device is installed near grid lines within less than 100 meters radius.

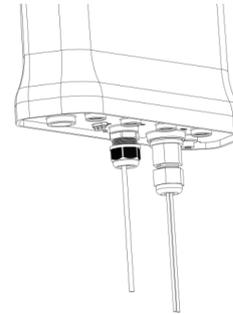
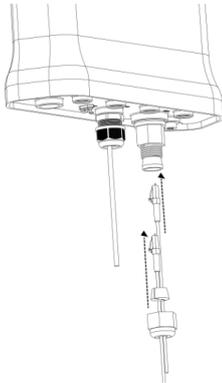
3.6. Installing a Waterproof Cable Gland for Ethernet Port (Optional accessory_ SP-WP-CM20)

- ① Dismantle all the components of waterproof cable gland, and plug the cable through it. Thread and assemble one by one: (1) sealing nut (2) plastic ring (3) rubber (4) locking nut. Securely tighten all the components.



3.7. Installing a Waterproof Cable Gland for Fiber Port of SP420-F (Optional accessory_ SP-WP-CM28SFP)

- ① Dismantle all the components of waterproof cable gland, and plug the cable through it. ② Assemble all the components together; securely tighten the main unit and the sealing nut.



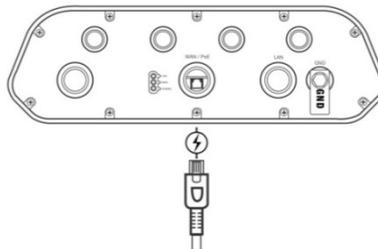
Note: For **SP420-F** fiber port version, it is not available for PoE Out function.



Note: For **SP420-F**, it is recommended to purchase 1000BASE-SX SFP transceiver module, and fiber patch cord for fiber port connection.

3.8. Powering the Access Point

Connect the PoE cable into the WAN/PoE IN port of the device, then it will power on.



Note: Please wait for 5-10 seconds while powering on.



Note: For PoE Out applications, the LAN port provides DC 48V, Max. 208mA, and up to 10W power supply. The positive side of the 48V is connected to pin 4 and 5, the negative side is connected to pin 7 and 8.



Warning: Do **NOT** attempt to connect any **non-PoE** devices to LAN port and make sure the input power should comply with PoE Out standard.

Chapter 4. THE HTTP INTERFACE

The AP can be configured through its supported software interface HTTP. The HTTP interface can be accessed using any standard web browsing software through any network. This chapter explains all the elements that are available on the HTTP interface of the AP.



Note: The default Username is **root** and Password is **password**.



Note: Click the  icon to add a new entry. Click the  icon to remove an entry.

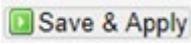


Note: Click  Reset button to return the parameters on the page to their previously saved state.



Note: Click  Save button to accept and save the modifications made on the page.



Note: Click  Save & Apply button to save and apply the modifications made on the page.

4.1. Login to the HTTP Interface

- ① To access the HTTP interface on the AP, enter the IP address of the AP into the web browser's address bar and press the Enter key.
- ② Enter the Username and Password in the respective textboxes and click the Login button. To return the information, displayed in the textboxes to the defaults, click the Reset button.
- ③ In a default access point configuration, the SP420 series default AP mode is TAP mode.

4.2. Thin AP Mode

The procedure for completing the access point's essential configuration depends on whether you want it to be managed by wireless LAN controllers (WLC).

To configure the access point to be managed by the WLC, you must ensure that the APs will be able to locate and connect to the WLC when powered on. When connected to the network, each AP is assigned a valid IP address.

4.2.1. Access point Configuration

In a default access point configuration, the access point default AP mode is TAP mode, and obtains IP addresses from DHCP Option 43 protocol.



Note: In TAP mode, the AP must be able to go with Wireless LAN Controllers (WLCs) for bulk configuration and performing other commands of access points. Please refer to WLC QSG for settings first, then go back to finish the AP configuration.

https://www.zcom.com.tw/index/downloads?keyword=&material_type=49

- Step 1. Power on the access point. As the status of LED indicator from flashing change to steady red, the connection is successful.

 **Note:** Please make sure DHCP server is enabled on the network once accomplished WLC settings. The access point must receive its IP address through DHCP server.

 **Note:** Switching from DHCP to assign a static IP address or DNS and L2 discovery mode to the access point, please refer to the user manual for more information.

https://www.zcom.com.tw/index/downloads?keyword=&material_type=25

If the access point cannot connect to the WLC by DHCP broadcast, please refer to the following optional settings.

Optional: Set up a static IP address

 **Note:** The following procedure assumes that Windows 10 is the operating system. Procedures for other operating systems are similar.

- Step 1. On your computer, configure your network adapter from the "Local Area Connection" settings as follows:
 - Start→Control Panel→Network & Internet→Change Adapter Options→Ethernet
- Step 2. Edit the TCP/IPv4 address setting as follows:
 - Properties→Internet Protocol Version 4 (TCP/IPv4)
- Step 3. Select "Use the following IP address" and make the following entries:
 - IP address: 192.168.1.168 (or any available address in the 192.168.1.x network, except 192.168.1.1)
 - Subnet mask: 255.255.255.0Leave the "Default gateway" and "DNS server" fields empty.
- Step 4. Click "OK" to save your changes.

Login into the access point

- Step 5. Launch a Web browser; type default URL <https://192.168.1.1> to connect to the access point. When a security alert dialog box appears, click OK/Yes to proceed.
- Step 6. When login page appears, enter the following: Username: **root**/Password: **password**
- Step 7. Click login.

Customizing the Wireless Settings

On the Web interface menu, Select Status→General in the menu bar. Check your switchmod item to select "Connect with via IP", and setup your WLC IP address on "Wireless Switch Address 1".

 **Note:** IP address of WLC needs to be assigned (ex. 192.168.1.228) while on operation.

4.2.2. Status

4.2.2.1. Overview

This page is used to provide an overview of the software settings and status of the AP. The following parameters are available in this section:

Parameter	Description
Kernel Version	Displays the Linux kernel version.
Load Average	Displays the average system load calculated over a given period of time of 1, 5 and 15 minutes.

The following parameters are available in this section:

Parameter	Description
Total Available	Displays the total memory supported by the AP in kilobytes and percentage.
Free	Displays the free memory on the AP in kilobytes and percentage.
Cached	Displays the cached memory on the AP in kilobytes and percentage.
Buffered	Displays the buffered memory on the AP in kilobytes and percentage.

The following parameters are available in this section:

Parameter	Description
IPv4 WAN Status	Displays the IPv4 WAN (Wide Area Network) connection status.
Active Connections	Displays the number of active network connections in integers and percentage.

4.2.2.2. General

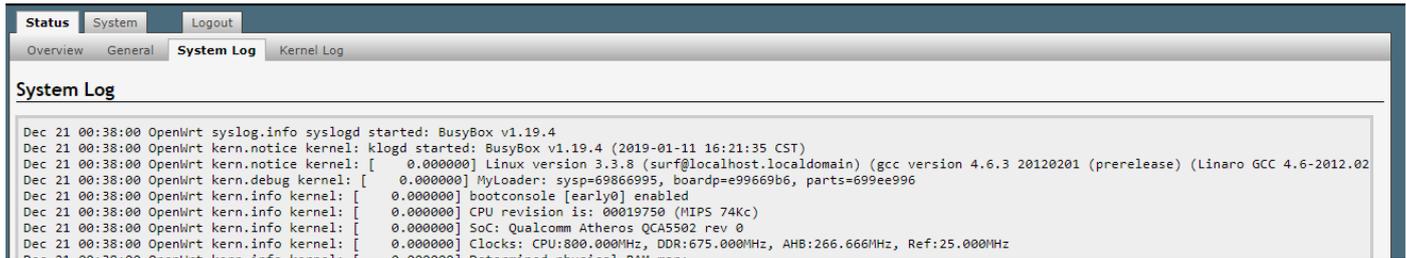
Next click the General Button. Once login, first assign a fixed IP address or a DHCP IP to the AP under Current IP Setting. Under Wireless Switch Setting, select Connect with Wireless Switch via IP and input the IP address of the AP access controller, then click save & apply to take effect.

Parameter	Description
ipMod	Displays basic mode information of the ipMod. IPv4 – Select IPv4 mode. IPv6 - Select IPv6 mode. Auto – Auto detected if it is IPv4 or IPv6.
DHCP Client	Choose the DHCP Client, which is Close, or Open by default it will be Open.
Default Gateway	Enter the IPv4 address of the gateway for the interface.
Primary/Secondary DNS Server	Enter primary/secondary DNS server. (if require the second one)
IPv6 Address	Enter the IPv6 address.
IPv6 Prefix	Enter the IPv6 prefix IP address.
Default Gateway	Enter the IPv6 address of the gateway for the interface.
IPv6 Primary/Secondary DNS Server	Enter primary/secondary DNS server. (if require the second one)
Switch mod	Displays basic information of the switch mod: Connect with via DHCP – connect the AP via DHCP of the network or provided by the Access controller DHCP IP address. IP – Connect the AP via Access controller IP address. DNS - Displays the MAC address of the interface.

Parameter	Description
Wireless Switch Address 1/2/3/4	Enter wireless access controller IPv4 IP address.
Wireless Switch IPv6 Address1/2/3/4	Enter wireless access controller IPv6 IP address.
Wireless Switch Name1/2/3/4	Enter access controller DNS value.
Management VLAN ID	Enter specific management VLAN ID which is providing from the Network.

4.2.2.3. System Log

This page is used to display the system log on the AP. Information on this page is useful for troubleshooting.



```

Dec 21 00:38:00 OpenWrt syslog.info syslogd started: BusyBox v1.19.4
Dec 21 00:38:00 OpenWrt kern.notice kernel: klogd started: BusyBox v1.19.4 (2019-01-11 16:21:35 CST)
Dec 21 00:38:00 OpenWrt kern.notice kernel: [ 0.000000] Linux version 3.3.8 (surf@localhost.localdomain) (gcc version 4.6.3 20120201 (prerelease) (Linaro GCC 4.6-2012.02
Dec 21 00:38:00 OpenWrt kern.debug kernel: [ 0.000000] MyLoader: syp=69866995, boardp=e99669b6, parts=699ee996
Dec 21 00:38:00 OpenWrt kern.info kernel: [ 0.000000] bootconsole [early0] enabled
Dec 21 00:38:00 OpenWrt kern.info kernel: [ 0.000000] CPU revision is: 00019750 (MIPS 74Kc)
Dec 21 00:38:00 OpenWrt kern.info kernel: [ 0.000000] SoC: Qualcomm Atheros QCA5502 rev 0
Dec 21 00:38:00 OpenWrt kern.info kernel: [ 0.000000] Clocks: CPU:800.000MHz, DDR:675.000MHz, AHB:266.666MHz, Ref:25.000MHz

```

4.2.3. System

4.2.3.1. AP Mode

This page is used to displayed and changed AP modes.

- Thin AP - Specifies to use and configure this AP with a wireless controller in the network. The wireless controller will be responsible for the configuration of this AP. Only a few functions are available to be configured on this AP in this mode.
- Fat AP - Specifies to use and configure this AP without a wireless controller in the network. More functions are available to be configured on this AP in this mode.

4.2.3.2. Reboot

Click the Perform reboot link to reboot the device any unsaved configuration.

4.3. Fat AP Mode

A FAT AP is suitable for family and small-scaled networks and provides full features. This Fat AP is wireless equipment used to control and manage wireless clients. A FAT AP may support both 2.4GHz and 5GHz band in a single logic management domain. This Fat AP is used for wireless terminals to access a wired network; also it can communicate the bridge between the wireless clients and wired network. Before configuring the fat AP make sure that AP is in fat AP mode. If the AP is in Thin AP mode, please change into Fat AP mode and precede the following essential configuration.

4.3.1. Status

4.3.1.1. Overview

This page is used to provide an overview of the software settings and status of the AP. Please refer to page [錯誤! 尚未定義書籤](#). The following parameters are available in the DHCP Leases:

Parameter	Description
Hostname	Displays the hostnames of active DHCP clients connected to the AP. DHCP stands for Dynamic Host Configuration Protocol.
IPv4 Address	Displays the IP addresses of active DHCP clients connected to the AP. IP stands for Internet Protocol.
MAC Address	Displays the MAC addresses of active DHCP clients connected to the AP. MAC stands for Medium Access Control.
Lease Time Remaining	Displays the DHCP lease time remaining for the DHCP clients connected to the AP.

The following parameters are available in the DHCPv6 Leases:

Parameter	Description
Hostname	Displays the hostnames of active DHCPv6 clients connected to the AP.
IPv6 Address	Displays the IPv6 addresses of active DHCPv6 clients connected to the AP.
DUID	Displays the DUID (DHCP Unique Identifier) of active DHCPv6 clients connected to the AP.

The following parameters are available in the Wireless section:

Parameter	Description
Generic 802.11bgn Wireless Controller (wifi0)/(wifi1)	<p>Displays information about the generic 802.11bgn wireless controller (wifi0)/(wifi1).</p> <p>SSID - Displays the SSID (Service Set Identifiers) for this wireless interface. Click on the hyperlink to configure this wireless interface. For more information, refer to Wireless Overview on page 43.</p> <p>Mode - Displays the mode of the wireless interface.</p> <p>Channel - Displays the wireless channel (frequency) hosted by this wireless interface.</p> <p>TX Power - Display the Wi-Fi transmit power from this wireless interface.</p> <p>Bitrate - Display the bitrate provided through this wireless interface.</p>

The following parameters are available in the Associated Stations section:

Parameter	Description
Network	Click on the hyperlink to configure this wireless interface. For more information, refer to Wireless Overview on page 43.
RX Rate	Displays the RX (receiving) data rate provided to/from the associated wireless station.
TX Rate	Displays the TX (transmitting) data rate provided to/from the associated wireless station.

4.3.1.2. Firewall

4.3.1.2.1. IPv4/IPv6 Firewall

This page is used to display the detailed status of the IPv4 firewall features provided on the AP.

4.3.1.3. Routes

This page is used to display the IPv4/IPv6 routing information. The following parameters are available in this section:

Parameter	Description
IPv4 Address	Displays the IPv4 address of the ARP (Address Resolution Protocol) entry.
MAC Address	Displays the MAC address of the ARP entry.
Interface	Displays the physical interface that the ARP entry resides on.

The following parameters are available in the Active IPv4/IPv6 Routes section:

Parameter	Description
Network	Displays the physical or logical interface the active IPv4/IPv6 route resides on.
Target	Displays the target IPv4 network range of the active IPv4/IPv6 route.
IPv4/IPv6 Gateway	Displays the IPv4 gateway address used by the active IPv4/IPv6 route.
Metric	Displays the metric used by the active IPv4/IPv6 route.

4.3.1.4. System Log

This page is used to display the system log on the AP. Information on this page is useful for troubleshooting.

4.3.1.5. Kernel Log

This page is used to display the kernel log on the AP. Information on this page is useful for troubleshooting.

4.3.1.6. Realtime Graphs

4.3.1.6.1. Load

This page is used to display the load graph in real time. The following parameters are available in the Realtime Load section:

Parameter	Description
1/5/15 Minute Load	Displays the 1/5/15-minute load in real time. <ul style="list-style-type: none"> • Average - Displays the average measurement for the 1/5/15-minute load. • Peak - Displays the peak measurement for the 1-minute load.

4.3.1.6.2. Traffic

This page is used to display the inbound and outbound data traffic graph for each physical and logical interface in real time.

The following parameters are available in bond0/br-lan/eth0/eth0.1/eth0.2/milreg section:

Parameter	Description
Inbound	Displays the inbound data traffic measurement (kilobits and kilobytes per second) in real time. <ul style="list-style-type: none"> • Average - Displays the average measurement for inbound data traffic. • Peak - Displays the peak measurement for inbound data traffic.
Outbound	Displays the outbound data traffic measurement (kilobits and kilobytes per second) in real time. <ul style="list-style-type: none"> • Average - Displays the average measurement for outbound data traffic. • Peak - Displays the peak measurement for outbound data traffic.

4.3.1.6.3. Wireless

This page is used to display the wireless signal strength and noise graph in real time. The following parameters are available in signal strength and noise measurement section:

Parameter	Description
Signal/Noise	Displays the wireless signal strength and noise measurement (decibel-milliwatts) on the wireless interface in real time. <ul style="list-style-type: none"> • Average - Displays the average value on the wireless interface. • Peak - Displays the peak value on the wireless interface.

The following parameters are available in this section:

Parameter	Description
Phy Rate	Displays the physical wireless data rate (megabytes per second) through the wireless interface in real time. <ul style="list-style-type: none"> • Average - Displays the average physical wireless data rate through the wireless interface. • Peak - Displays the peak physical wireless data rate through the wireless interface.

4.3.1.6.4. Connections

This page is used to display a graphical overview of active network connections in real time. The following parameters are available in UDP/TCP/Other section:

Parameter	Description
UDP/TCP/Other	<p>Displays the number of UDP (User Datagram Protocol)/TCP (Transmission Control Protocol) and other (other than TCP/UDP) network connections in real time.</p> <ul style="list-style-type: none"> • Average - Displays the average number of UDP network connections. • Peak - Displays the peak number of UDP network connections.

Network	Protocol	Source	Destination	Transfer
IPv4	TCP	192.168.1.14:64336	OpenWrt.lan:80	665.00 B (3 Pkts.)
IPv4	UDP	OpenWrt.lan:138	192.168.1.255:138	472.00 B (2 Pkts.)
IPv4	UDP	192.168.1.14:52286	OpenWrt.lan:53	72.00 B (1 Pkts.)
IPv4	UDP	192.168.1.14:62436	OpenWrt.lan:53	66.00 B (1 Pkts.)
IPv4	UDP	192.168.1.14:52286	OpenWrt.lan:53	62.00 B (1 Pkts.)

The following parameters are available in this section:

Parameter	Description
Network/Protocol	Display the network/Protocol used by the active network connection.
Source/Destination	Displays the source/destination IP address and TCP/UDP port number of the active network connection.
Transfer	Displays the transfer data rate (bytes and packets) of the active network connection.

4.3.2. System

4.3.2.1. System

This page is used to display and configure basic system settings like the logging and the date/time settings.

4.3.2.2. Administration

4.3.2.2.1. Router Password

This page is used to change the password for accessing on the AP.

4.3.2.2.2. SSH Access

The following parameters are available in this section:

Parameter	Description
Port	Enter the TCP/UDP port number for the SSH connection. The default port number is 22.

4.3.2.3. Scheduled Tasks

4.3.2.3.1. Task Specification

Each line is a separate task written in the specification:

```

* * * * * command to execute
-----
| | | | |
| | | | | ----- Day of week (0 - 6) (Sunday =0)
| | | | | ----- Month (1 - 12)
| | | | | ----- Day (1 - 31)
| | | | | ----- Hour (0 - 23)
| | | | | ----- Minute (0 - 59)

```

4.3.2.3.2. Crontab Examples

A line in crontab file like below removes the tmp files from /home/someuser/tmp each day at 6:30 PM.

```
30 18 * * * rm /home/someuser/tmp/*
```

4.3.2.4. Backup / Flash Firmware

This page is used to backup/restore the configuration or to update the firmware on the AP. A factory reset of the software configuration can also be performed on this page.

4.3.3. Network

4.3.3.1. Interfaces

Interfaces | Wifi | DHCP and DNS | Static Routes | Diagnostics | Firewall | Bluetooth | ExternalVlan

WAN | LAN

Interfaces

Interface Overview

Network	Status	Actions
LAN (br-lan)	Uptime: 1h 42m 30s MAC-Address: 30:49:30:00:11:F0 RX: 1.71 MB (20933 Pkts.) TX: 2.69 MB (11180 Pkts.) IPv4: 192.168.1.100/24	Connect Stop Edit Delete
WAN (eth0.2)	Uptime: 0h 0m 0s MAC-Address: 30:49:30:00:11:F0 RX: 0.00 B (0 Pkts.) TX: 22.70 KB (64 Pkts.)	Connect Stop Edit Delete

Add new interface...

After clicking the Add new interface button, the following page will appear:

Interfaces | Wifi | DHCP and DNS | Static Routes | Diagnostics | Firewall | Bluetooth | ExternalVlan

Create Interface

Name of the new interface:

Protocol of the new interface:

Create a bridge or a bonding over multiple interfaces:

Interface type to use for this network:

Name of bonding interface, example : bond0:

Cover the following interfaces:

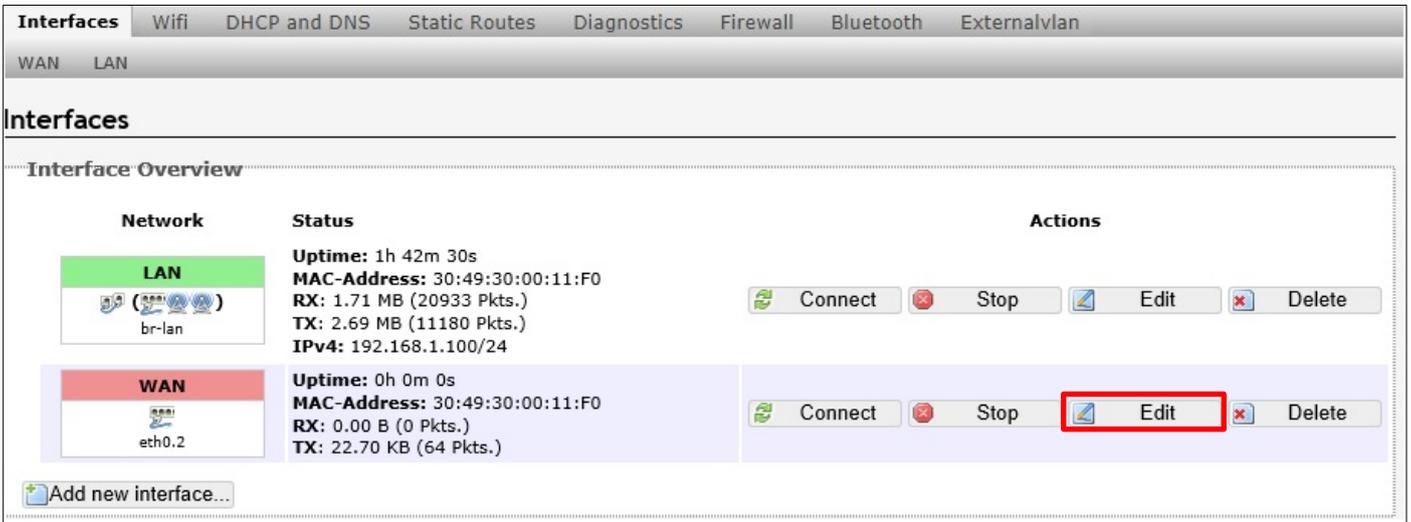
- Ethernet Adapter: "bond0"
- Ethernet Switch: "eth0"
- VLAN Interface: "eth0.1" ([lan](#))
- VLAN Interface: "eth0.2" ([wan](#))
- Ethernet Adapter: "miireg"
- Wireless Network: Unknown "OpenWrt" ([lan](#))
- Wireless Network: Unknown "OpenWrt" ([lan](#))
- Custom Interface:

Back to Overview Submit

To configure the WAN/LAN interfaces, click the Edit button.

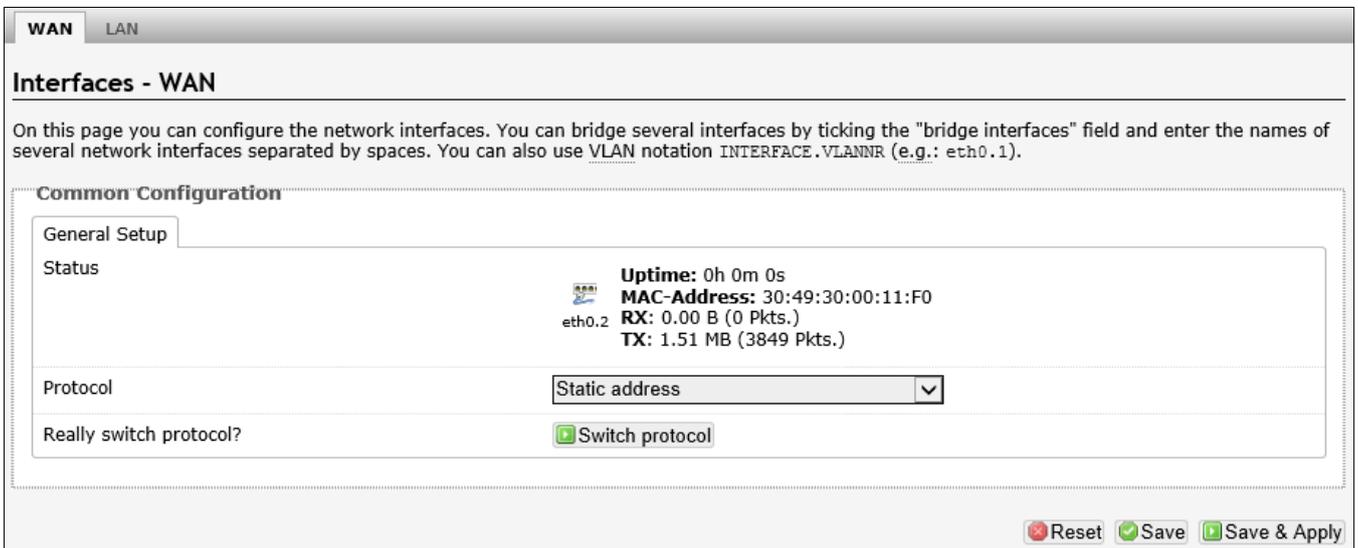


Note: The following web page take WAN interfaces for example, LAN interfaces are similar.



4.3.3.1.1. Static Address

This page is used to display and configure the WAN interface settings.



The following parameters are available in this section:

Parameter	Description
Status	Displays basic status information of the interface. <ul style="list-style-type: none"> • Port - Displays the interface name. For example, "eth0.2". • Uptime - Displays the how long the interface is active. • MAC Address - Displays the MAC address of the interface. • RX - Displays the RX (receiving) data rate through the interface. • TX - Displays the TX (transmitting) data rate through the interface.

After clicking the Switch protocol button, the following will appear:

4.3.3.1.1.1. General Setup

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Physical Settings
Firewall Settings

Status
Uptime: 0h 0m 0s
MAC-Address: 30:49:30:00:11:F0
eth0.2 **RX:** 0.00 B (0 Pkts.)
TX: 2.03 MB (5182 Pkts.)

Protocol	Static address ▼
IPv4 address	<input style="width: 90%;" type="text"/>
IPv4 netmask	<input style="width: 90%;" type="text" value="255.255.255.0"/> ▼
IPv4 gateway	<input style="width: 90%;" type="text"/>
IPv4 broadcast	<input style="width: 90%;" type="text"/>
Use custom DNS servers	<input style="width: 90%;" type="text"/> +
Accept router advertisements	<input type="checkbox"/>
Send router solicitations	<input checked="" type="checkbox"/>
IPv6 address	<input style="width: 90%;" type="text"/>
IPv6 gateway	<input style="width: 90%;" type="text"/>

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.
Use custom DNS servers	Enter the IPv4 address or domain name of the DNS (Domain Name System) server for the WAN connection here. More than one entry can be created.
Accept router advertisements	Select this option to accept router advertisement on this interface.
Send router solicitations	Select this option to send router solicitations from this interface. Note: This option is only available if Accept router advertisements are enabled.
IPv6 address/gateway	Note: This option is only available if Accept router advertisements are enabled.

4.3.3.1.1.2. Advanced Settings

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Physical Settings
Firewall Settings

Bring up on boot	<input type="checkbox"/>
Override MAC address	<input style="width: 80%;" type="text" value="30:49:30:00:11:F0"/>
Override MTU	<input style="width: 80%;" type="text" value="1500"/>
Use gateway metric	<input style="width: 80%;" type="text" value="0"/>

The following parameters are available in this section:

Parameter	Description
Bring up on boot	Select this option to bring up this interface when the device rebooted.
Override MAC address	Enter a MAC address here to override the default MAC address for this interface.
Override MTU	Enter the MTU (Maximum Transmission Unit) value here to override the default MTU value used on this interface.
Use gateway metric	Enter the metric for the gateway here.

4.3.3.1.1.3. Physical Settings

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Physical Settings
Firewall Settings

Bridge interfaces	<input checked="" type="checkbox"/> creates a bridge over specified interface(s)
Enable STP	<input type="checkbox"/> Enables the Spanning Tree Protocol on this bridge
Interface	<input type="checkbox"/> Ethernet Adapter: "bond0" <input type="checkbox"/> Ethernet Switch: "eth0" <input type="checkbox"/> VLAN Interface: "eth0.1" <input checked="" type="checkbox"/> VLAN Interface: "eth0.2" (wan) <input type="checkbox"/> Ethernet Adapter: "miireg" <input type="checkbox"/> Wireless Network: Unknown "OpenWrt" <input type="checkbox"/> Wireless Network: Unknown "OpenWrt" <input type="checkbox"/> Custom Interface: <input style="width: 80%;" type="text"/>

The following parameters are available in this section:

Parameter	Description
Bridge interfaces	Select this option to bridge this interface with another interface.
Enable STP	Note: This option is only available if Bridge interfaces are enabled.
Interface	If desired, select and enter a Custom Interface name in the textbox provided. Note: Multiple selections are only available when the Bridge interfaces

Parameter	Description
	option is selected. Normally, only one interface can be selected here.

4.3.3.1.1.4. Firewall Settings

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Physical Settings
Firewall Settings

Create / Assign firewall-zone

lan:

wan:

unspecified -or- create:

Choose the firewall zone you want to assign to this interface. Select *unspecified* to remove the interface from the associated zone or fill out the *create* field to define a new zone and attach the interface to it.

The following parameters are available in this section:

Parameter	Description
Create / Assign firewall-zone	Select the firewall zone that is assigned to this interface. Select unspecified to remove the interface from a firewall zone. To create a new firewall zone, enter the name of the new firewall zone in the space provided.

DHCP Server

General Setup
Advanced Settings

Ignore interface Disable DHCP for this interface.

Start
 Lowest leased address as offset from the network address.

Limit
 Maximum number of leased addresses.

Leasetime
 Expiry time of leased addresses, minimum is 2 Minutes (2m).

The following parameters are available in this section:

Parameter	Description
Start	Enter the starting IPv4 address in the DHCP pool here.
Limit	Enter the maximum number of IPv4 addresses allowed in the DHCP pool here.
Lease time	Enter the lease time for DHCP clients here. The lease time can be in minutes, for example, 2m. The lease time can be in hours, for example, 12h.

DHCP Server

General Setup | **Advanced Settings**

Dynamic DHCP Dynamically allocate DHCP addresses for clients. If disabled, only clients having static leases will be served.

Force Force DHCP on this network even if another server is detected.

IPv4-Netmask
 Override the netmask sent to clients. Normally it is calculated from the subnet that is served.

DHCP-Options
 Define additional DHCP options, for example "6,192.168.2.1,192.168.2.2" which advertises different DNS servers to clients.

The following parameters are available in this section:

Parameter	Description
Dynamic DHCP	When not selected, only statically assigned DHCP clients will be served.
Force	Select this option to force the DHCP server function on the AP to assign IPv4 addresses to DHCP clients on the network even if another DHCP server is detected.
DHCP Options	Enter the DHCP Option string for DHCP clients here.

4.3.3.1.2. DHCP Client

WAN | LAN

Interfaces - WAN

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

Uptime: 0h 0m 0s
MAC-Address: 30:49:30:00:11:F0
RX: 0.00 B (0 Pkts.)
TX: 2.03 MB (5182 Pkts.)

Protocol DHCP client

Really switch protocol?

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.

After clicking the Switch protocol button, the following will appear:

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Physical Settings
Firewall Settings

Status

Uptime: 0h 0m 0s
MAC-Address: 30:49:30:00:11:F0
RX: 0.00 B (0 Pkts.)
TX: 1.51 MB (3843 Pkts.)

Protocol DHCP client ▼

Hostname to send when requesting DHCP OpenWrt

Accept router advertisements

Send router solicitations

Reset
 Save
 Save & Apply

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.
Hostname to send when requesting DHCP	Enter the hostname that is sent when requesting DHCP here.
Accept router advertisements	Select this option to accept router advertisement on this interface.
Send router solicitations	Select this option to send router solicitations from this interface. Note: This option is only available if Accept router advertisements are enabled.

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Physical Settings
Firewall Settings

Bring up on boot

Use broadcast flag Required for certain ISPs, e.g. Charter with DOCSIS 3

Use default gateway If unchecked, no default route is configured

Use DNS servers advertised by peer If unchecked, the advertised DNS server addresses are ignored

Use custom DNS servers

Use gateway metric

Client ID to send when requesting DHCP

Vendor Class to send when requesting DHCP

Override MAC address

Override MTU

Reset
 Save
 Save & Apply

The following parameters are available in this section:

Parameter	Description
Bring up on boot	Select this option to bring up this interface when the device rebooted.
Use broadcast flag	Select this option to use the broadcast flag on this interface.
Use default gateway	Select this option to use the DHCP assigned default gateway on this interface.
Use DNS servers advertised by peer	Select this option to use the DHCP assigned DNS server addresses on this interface.
Use custom DNS servers	Enter the IP address or domain name for a custom DNS server here. More than one entry can be created.
Use gateway metric	Enter the metric for the gateway here.
Client ID/Vendor Class to send when requesting DHCP	Enter the ID/vendor class of the DHCP client that is sent when the DHCP service is requested here.
Override MAC address/MTU	Enter a MAC address/ MTU value here to override the default MAC address/MTU value for this interface.

WAN
LAN

Interfaces - WAN

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
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: "bond0"
- Ethernet Switch: "eth0"
- VLAN Interface: "eth0.1" ([lan](#))
- VLAN Interface: "eth0.2" ([wan](#))
- Ethernet Adapter: "miireg"
- Wireless Network: Unknown "OpenWrt" ([lan](#))
- Wireless Network: Unknown "OpenWrt" ([lan](#))
- Custom Interface:

✖ Reset
✔ Save
✔ Save & Apply

The following parameters are available in this section:

Parameter	Description
Bridge interfaces	Select this option to bridge this interface with another interface.
Enable STP	Select this option to enable the STP function on this interface. Note: This option is only available if Bridge mode is enabled.
Interface	Select the physical interface that will be associated with this interface configuration here. If desired, select and enter a Custom Interface name in the textbox provided. Note: Multiple selections are only available when the Bridge interfaces option is selected. Normally, only one interface can be selected here.

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Physical Settings
Firewall Settings

Create / Assign firewall-zone

lan: lan:

wan: wan:

unspecified -or- create:

Choose the firewall zone you want to assign to this interface. Select *unspecified* to remove the interface from the associated zone or fill out the *create* field to define a new zone and attach the interface to it.

Reset
Save
Save & Apply

The following parameters are available in this section:

Parameter	Description
Create / Assign firewall-zone	Please refer to page 21.

4.3.3.1.3. Unmanaged

WAN
LAN

Interfaces - WAN

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

Uptime: 0h 0m 0s
MAC-Address: 30:49:30:00:11:F0
eth0.2 **RX:** 0.00 B (0 Pkts.)
TX: 1.49 MB (3796 Pkts.)

Protocol Unmanaged

Really switch protocol? Switch protocol

Reset
Save
Save & Apply

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.

After clicking the Switch protocol button, the following will appear:

WAN LAN

Interfaces - WAN

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 | **Advanced Settings** | Physical Settings | Firewall Settings

Status Uptime: 0h 0m 0s

eth0.2 MAC-Address: 30:49:30:00:11:F0

RX: 0.00 B (0 Pkts.)

TX: 2.03 MB (5182 Pkts.)

Protocol Unmanaged

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.
Protocol	For this section, we'll discuss the Unmanaged option.

WAN LAN

Interfaces - WAN

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 | **Advanced Settings** | Physical Settings | Firewall Settings

Bring up on boot

The following parameters are available in this section:

Parameter	Description
Bring up on boot	Select this option to bring up this interface when the device rebooted.

WAN LAN

Interfaces - WAN

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 | **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: "bond0"
- Ethernet Switch: "eth0"
- VLAN Interface: "eth0.1"
- VLAN Interface: "eth0.2" (wan)
- Ethernet Adapter: "miireg"
- Wireless Network: Unknown "OpenWrt"
- Wireless Network: Unknown "OpenWrt"
- Custom Interface:

The following parameters are available in this section:

Parameter	Description
Bridge interfaces	Select this option to bridge this interface with another interface.
Enable STP	Select this option to enable the STP function on this interface. Note: This option is only available if Bridge interfaces are enabled.
Interface	Select the physical interface that will be associated with this interface configuration here. If desired, select and enter a Custom Interface name in the textbox provided. Note: Multiple selections are only available when the Bridge interfaces option is selected. Normally, only one interface can be selected here.

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Physical Settings
Firewall Settings

Create / Assign firewall-zone

lan: lan:

wan: wan:

unspecified -or- create:

Choose the firewall zone you want to assign to this interface. Select *unspecified* to remove the interface from the associated zone or fill out the *create* field to define a new zone and attach the interface to it.

The following parameters are available in this section:

Parameter	Description
Create / Assign firewall-zone	Please refer to page 21.

4.3.3.1.4. PPP

WAN
LAN

Interfaces - WAN

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

eth0.2

Uptime: 0h 0m 0s

MAC-Address: 30:49:30:00:11:F0

RX: 0.00 B (0 Pkts.)

TX: 1.49 MB (3785 Pkts.)

Protocol PPP

Really switch protocol? Switch protocol

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.

After clicking the Switch protocol button, the following will appear common configuration settings:

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.
Protocol	For this section, we'll discuss the PPP (Point-to-Point Protocol) option.
Modem device	Select the modem for this interface here. Select the custom option to manually enter the modem device string here.
PAP/CHAP username	Enter the PAP/CHAP username for the PPP account here. PAP stands for Password Authentication Protocol. CHAP stands for Challenge-Handshake Authentication Protocol.
PAP/CHAP password	Enter the PAP/CHAP password for the PPP account here.

The following parameters are available in this section:

Parameter	Description
Bring up on boot	Select this option to bring up this interface when the device rebooted.
Enable IPv6 negotiation on the PPP link	Select this option to enable IPv6 negotiation on the PPP link.
Use default gateway	Select this option to use the DHCP assigned default gateway on this interface.
Use gateway metric	Enter the metric for the gateway here.
Use DNS servers advertised by peer	Select this option to use the DHCP assigned DNS server addresses on this interface.
Use custom DNS servers	More than one entry can be created.
LCP echo failure threshold	The peer will be presumed to be dead after the given amount of LCP echo failures are reached. Enter 0 to ignore failures.
LCP echo interval	LCP echo request are sent at this specified interval. This function is only effective in conjunction with the failure threshold function.
Inactivity timeout	The connection is closed after the inactivity timer reached the timeout value. Enter 0 to never timeout the connection.
Override MTU	Enter the MTU value here to override the default MTU value used on this interface.

The following parameters are available in this section:

Parameter	Description
Create / Assign firewall-zone	Please refer to page 21.

4.3.3.1.5. PPTP

WAN LAN

Interfaces - WAN

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

Uptime: 0h 0m 0s
 eth0.2 MAC-Address: 30:49:30:00:11:F0
 RX: 0.00 B (0 Pkts.)
 TX: 1.48 MB (3775 Pkts.)

Protocol: PPTP

Really switch protocol? Switch protocol

Reset Save Save & Apply

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.

After clicking the Switch protocol button, the following will appear:

WAN LAN

Interfaces - WAN

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 | Advanced Settings | Firewall Settings

Status

pptp-wan RX: 0.00 B (0 Pkts.)
 TX: 0.00 B (0 Pkts.)

Protocol: PPTP

Protocol support is not installed Install package "ppp-mod-pptp"

VPN Server

PAP/CHAP username

PAP/CHAP password

The following parameters are available in this section:

Parameter	Description
Status	Displays basic status information of the interface. <ul style="list-style-type: none"> Port - Displays the interface name. For example, "eth0.2". RX - Displays the RX (receiving) data rate through the interface. TX - Displays the TX (transmitting) data rate through the interface.
Protocol support is not installed	Click the Install package button to install the package needed for this protocol.

Parameter	Description
VPN Server	Enter the IP address or domain name of the VPN server here.
PAP/CHAP username/password	Enter the PAP/CHAP username/password for the PPTP account here.

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Firewall Settings

Bring up on boot	<input checked="" type="checkbox"/>	
Use default gateway	<input checked="" type="checkbox"/>	? If unchecked, no default route is configured
Use gateway metric	<input type="text" value="0"/>	
Use DNS servers advertised by peer	<input type="checkbox"/>	? If unchecked, the advertised DNS server addresses are ignored
Use custom DNS servers	<input type="text" value=""/>	+
LCP echo failure threshold	<input type="text" value="0"/>	? Presume peer to be dead after given amount of LCP echo failures, use 0 to ignore failures
LCP echo interval	<input type="text" value="5"/>	? Send LCP echo requests at the given interval in seconds, only effective in conjunction with failure threshold
Inactivity timeout	<input type="text" value="0"/>	? Close inactive connection after the given amount of seconds, use 0 to persist connection
Override MTU	<input type="text" value="1500"/>	
Additional command line arguments for PPP	<input type="text" value=""/>	+

The following parameters are available in this section:

Parameter	Description
Bring up on boot	Select this option to bring up this interface when the device rebooted.
Use default gateway	Select this option to use the DHCP assigned default gateway on this interface.
Use gateway metric	Enter the metric for the gateway here.
Use DNS servers advertised by peer	Select this option to use the DHCP assigned DNS server addresses on this interface.
Use custom DNS servers	Enter the IP address or domain name for a custom DNS server here. More than one entry can be created.
LCP echo failure threshold	The peer will be presumed to be dead after the given amount of LCP echo failures are reached. Enter 0 to ignore failures.
LCP echo interval	LCP echo request are sent at this specified interval. This function is only effective in conjunction with the failure threshold function.
Inactivity timeout	The connection is closed after the inactivity timer reached the timeout value. Enter 0 to never timeout the connection.
Override MTU	Enter the MTU value here to override the default MTU value used on this interface.
Additional command line arguments for PPP	Enter additional command line arguments for PPP here.

WAN LAN

Interfaces - WAN

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 | **Advanced Settings** | Firewall Settings

Create / Assign firewall-zone

lan: lan: 

wan: wan: 

unspecified -or- create:

 Choose the firewall zone you want to assign to this interface. Select *unspecified* to remove the interface from the associated zone or fill out the *create* field to define a new zone and attach the interface to it.

The following parameters are available in this section:

Parameter	Description
Create / Assign firewall-zone	Please refer to page 21.

4.3.3.1.6. PPPoE

WAN LAN

Interfaces - WAN

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 | **Advanced Settings** | Firewall Settings

Status

 **Uptime:** 0h 0m 0s
 eth0.2 **MAC-Address:** 30:49:30:00:11:F0
RX: 0.00 B (0 Pkts.)
TX: 1.45 MB (3697 Pkts.)

Protocol: PPPoE 

Really switch protocol?

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.

After clicking the Switch protocol button, the following will appear:

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Physical Settings
Firewall Settings

Status	<div style="display: flex; align-items: center;"> <div> <p>RX: 0.00 B (0 Pkts.)</p> <p>pppoe-wan TX: 0.00 B (0 Pkts.)</p> </div> </div>
Protocol	<input type="text" value="PPPoE"/>
PAP/CHAP username	<input type="text"/>
PAP/CHAP password	<input type="password"/> 🔒
Access Concentrator	<input type="text" value="auto"/> <div style="font-size: small; margin-top: 2px;"> 🔗 Leave empty to autodetect </div>
Service Name	<input type="text" value="auto"/> <div style="font-size: small; margin-top: 2px;"> 🔗 Leave empty to autodetect </div>

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Physical Settings
Firewall Settings

Bring up on boot	<input checked="" type="checkbox"/>
Enable IPv6 negotiation on the PPP link	<input type="checkbox"/>
Use default gateway	<input checked="" type="checkbox"/> 🔗 If unchecked, no default route is configured
Use gateway metric	<input type="text" value="0"/>
Use DNS servers advertised by peer	<input type="checkbox"/> 🔗 If unchecked, the advertised DNS server addresses are ignored
Use custom DNS servers	<input type="text"/> 🔗
LCP echo failure threshold	<input type="text" value="0"/> <div style="font-size: small; margin-top: 2px;"> 🔗 Presume peer to be dead after given amount of LCP echo failures, use 0 to ignore failures </div>
LCP echo interval	<input type="text" value="5"/> <div style="font-size: small; margin-top: 2px;"> 🔗 Send LCP echo requests at the given interval in seconds, only effective in conjunction with failure threshold </div>
Inactivity timeout	<input type="text" value="0"/> <div style="font-size: small; margin-top: 2px;"> 🔗 Close inactive connection after the given amount of seconds, use 0 to persist connection </div>
Override MTU	<input type="text" value="1500"/>

The following parameters are available in this section:

Parameter	Description
Bring up on boot	Select this option to bring up this interface when the device rebooted.
Enable IPv6 negotiation on the PPP link	Select this option to enable IPv6 negotiation on the PPP link.

Parameter	Description
Use default gateway	Select this option to use the DHCP assigned default gateway on this interface.
Use gateway metric	Enter the metric for the gateway here.
Use DNS servers advertised by peer	Select this option to use the DHCP assigned DNS server addresses on this interface.
Use custom DNS servers	Enter the IP address or domain name for a custom DNS server here. More than one entry can be created.
LCP echo failure threshold	The peer will be presumed to be dead after the given amount of LCP echo failures are reached. Enter 0 to ignore failures.
LCP echo interval	LCP echo request are sent at this specified interval. This function is only effective in conjunction with the failure threshold function.
Inactivity timeout	The connection is closed after the inactivity timer reached the timeout value. Enter 0 to never timeout the connection.
Override MTU	Enter the MTU value here to override the default MTU value used on this interface.

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Physical Settings
Firewall Settings

Interface

- Ethernet Adapter: "bond0"
- Ethernet Switch: "eth0"
- VLAN Interface: "eth0.1"
- VLAN Interface: "eth0.2" (wan)
- Ethernet Adapter: "miireg"
- Wireless Network: Unknown "OpenWrt"
- Wireless Network: Unknown "OpenWrt"
- Custom Interface:

The following parameters are available in this section:

Parameter	Description
Interface	Select the physical interface that will be associated with this interface configuration here. If desired, select and enter a Custom Interface name in the textbox provided.

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Physical Settings
Firewall Settings

Create / Assign firewall-zone

lan: lan:

wan: wan:

unspecified -or- create:

Choose the firewall zone you want to assign to this interface. Select *unspecified* to remove the interface from the associated zone or fill out the *create* field to define a new zone and attach the interface to it.

The following parameters are available in this section:

Parameter	Description
Create / Assign firewall-zone	Please refer to page 21.

4.3.3.1.7. PPPoATM

WAN
LAN

Interfaces - WAN

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

Uptime: 0h 0m 0s
eth0.2 **MAC-Address:** 30:49:30:00:11:F0
RX: 0.00 B (0 Pkts.)
TX: 1.46 MB (3718 Pkts.)

Protocol PPPoATM

Really switch protocol? Switch protocol

✖ Reset
✔ Save
📌 Save & Apply

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.

After clicking the Switch protocol button, the following will appear:

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Firewall Settings

Status
RX: 0.00 B (0 Pkts.)
TX: 0.00 B (0 Pkts.)

pppoa-wan

Protocol PPPoATM

Protocol support is not installed
 Install package "ppp-mod-pppoa"

PPPoA Encapsulation VC-Mux

ATM device number 0

ATM Virtual Channel Identifier (VCI) 35

ATM Virtual Path Identifier (VPI) 8

PAP/CHAP username

PAP/CHAP password

The following parameters are available in this section:

Parameter	Description
Status	Displays basic status information of the interface. <ul style="list-style-type: none"> Port - Displays the interface name. For example, "eth0.2". RX - Displays the RX (receiving) data rate through the interface. TX - Displays the TX (transmitting) data rate through the interface.
Protocol support is not installed	Click the Install package button to install the package needed for this protocol.
PPPoA Encapsulation	Select the PPPoA encapsulation method here. Options to choose from are VC-Mux (Virtual Circuit Multiplexing) and LLC (Logical Link Control).
ATM device number	Enter the ATM device number here.
ATM Virtual Channel Identifier (VCI)	Enter the VCI (Virtual Channel Identifier) for the PPPoA account here.
ATM Virtual Path Identifier (VPI)	Enter the VPI (Virtual Path Identifier) for the PPPoA account here.
PAP/CHAP username/password	Enter the PAP/CHAP username/password for the PPPoA account here.

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Firewall Settings

Bring up on boot	<input checked="" type="checkbox"/>
Enable IPv6 negotiation on the PPP link	<input type="checkbox"/>
Use default gateway	<input checked="" type="checkbox"/> <small>ⓘ If unchecked, no default route is configured</small>
Use gateway metric	<input type="text" value="0"/>
Use DNS servers advertised by peer	<input type="checkbox"/> <small>ⓘ If unchecked, the advertised DNS server addresses are ignored</small>
Use custom DNS servers	<input type="text" value=""/> <small>+</small>
LCP echo failure threshold	<input type="text" value="0"/> <small>ⓘ Presume peer to be dead after given amount of LCP echo failures, use 0 to ignore failures</small>
LCP echo interval	<input type="text" value="5"/> <small>ⓘ Send LCP echo requests at the given interval in seconds, only effective in conjunction with failure threshold</small>
Inactivity timeout	<input type="text" value="0"/> <small>ⓘ Close inactive connection after the given amount of seconds, use 0 to persist connection</small>
Override MTU	<input type="text" value="1500"/>

The following parameters are available in this section:

Parameter	Description
Bring up on boot	Select this option to bring up this interface when the device rebooted.
Enable IPv6 negotiation on the PPP link	Select this option to enable IPv6 negotiation on the PPP link.
Use default gateway	Select this option to use the DHCP assigned default gateway on this interface.
Use gateway metric	Enter the metric for the gateway here.
Use DNS servers advertised by peer	Select this option to use the DHCP assigned DNS server addresses on this interface.
Use custom DNS servers	More than one entry can be created.
LCP echo failure threshold	The peer will be presumed to be dead after the given amount of LCP echo failures are reached. Enter 0 to ignore failures.
LCP echo interval	LCP echo request are sent at this specified interval. This function is only effective in conjunction with the failure threshold function.
Inactivity timeout	The connection is closed after the inactivity timer reached the timeout value. Enter 0 to never timeout the connection.
Override MTU	Enter the MTU value here to override the default MTU value used on this interface.

WAN | LAN

Interfaces - WAN

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 | **Advanced Settings** | Firewall Settings

Create / Assign firewall-zone

lan: lan:

 wan: wan:

 unspecified -or- create:

Choose the firewall zone you want to assign to this interface. Select *unspecified* to remove the interface from the associated zone or fill out the *create* field to define a new zone and attach the interface to it.

The following parameters are available in this section:

Parameter	Description
Create / Assign firewall-zone	Please refer to page 21.

4.3.3.1.8. UMTS/GPRS/EV-DO

WAN | LAN

Interfaces - WAN

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 | **Advanced Settings** | Firewall Settings

Status

Uptime: 0h 0m 0s
MAC-Address: 30:49:30:00:11:F0
RX: 0.00 B (0 Pkts.)
TX: 1.46 MB (3733 Pkts.)

Protocol: UMTS/GPRS/EV-DO

Really switch protocol? Switch protocol

Reset Save Save & Apply

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.

After clicking the Switch protocol button, the following will appear:

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Firewall Settings

Status

3g-wan

RX: 0.00 B (0 Pkts.)

TX: 0.00 B (0 Pkts.)

Protocol

UMTS/GPRS/EV-DO
▼

Protocol support is not installed

▶ Install package "comgt"

Missing protocol extension for proto "3g"

cannot open /usr/lib/luas/luci/model/cbi/admin_network/proto_3g.lua: No such file or directory

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.
Protocol	For this section, we'll discuss the UMTS/GPRS/EV-DO option. UMTS stands for Universal Mobile Telecommunications System. GPRS stands for General Packet Radio Service. EV-DO stands for Evolution-Data Optimized.
Protocol support is not installed	Click the Install package button to install the package needed for this protocol.
Missing protocol extension for proto "3g"	Displays the missing protocol extension for the proto "3g".

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Firewall Settings

Bring up on boot

The following parameters are available in this section:

Parameter	Description
Bring up on boot	Select this option to bring up this interface when the device rebooted.

WAN LAN

Interfaces - WAN

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 | **Advanced Settings** | Firewall Settings

Create / Assign firewall-zone

lan: lan:

wan: wan:

unspecified -or- create:

Choose the firewall zone you want to assign to this interface. Select *unspecified* to remove the interface from the associated zone or fill out the *create* field to define a new zone and attach the interface to it.

The following parameters are available in this section:

Parameter	Description
Create / Assign firewall-zone	Please refer to page 21.

4.3.3.1.9. L2TP

WAN LAN

Interfaces - WAN

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 | **Advanced Settings** | Firewall Settings

Status

Uptime: 0h 0m 0s
MAC-Address: 30:49:30:00:11:F0
RX: 0.00 B (0 Pkts.)
TX: 1.47 MB (3745 Pkts.)

Protocol: L2TP

Really switch protocol? Switch protocol

Reset Save Save & Apply

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.

After clicking the Switch protocol button, the following will appear:

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Firewall Settings

Status

Protocol L2TP

Protocol support is not installed

L2TP Server

PAP/CHAP username

PAP/CHAP password

RX: 0.00 B (0 Pkts.)

TX: 0.00 B (0 Pkts.)

i2tp-wan

L2TP

Install package "xl2tpd"

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.
Protocol support is not installed	Click the Install package button to install the package needed for this protocol.
L2TP Server	Enter the IP address or domain name of the L2TP server here.
PAP/CHAP username/password	Enter the PAP/CHAP username/password for the L2TP account here.

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Firewall Settings

Bring up on boot

Enable IPv6 negotiation on the PPP link

Use default gateway If unchecked, no default route is configured

Use gateway metric

Use DNS servers advertised by peer If unchecked, the advertised DNS server addresses are ignored

Use custom DNS servers

Override MTU

LCP echo failure threshold Presume peer to be dead after given amount of LCP echo failures, use 0 to ignore failures

LCP echo interval Send LCP echo requests at the given interval in seconds, only effective in conjunction with failure threshold

L2TPv3 encapsulation mode UDP

Additional command line arguments for PPP

The following parameters are available in this section:

Parameter	Description
Bring up on boot	Select this option to bring up this interface when the device rebooted.
Enable IPv6 negotiation on the PPP link	Select this option to enable IPv6 negotiation on the PPP link.
Use default gateway	Select this option to use the DHCP assigned default gateway on this interface.
Use gateway metric	Enter the metric for the gateway here.
Use DNS servers advertised by peer	Select this option to use the DHCP assigned DNS server addresses on this interface.
Use custom DNS servers	Enter the IP address or domain name for a custom DNS server here. More than one entry can be created.
Override MTU	Enter the MTU value here to override the default MTU value used on this interface.
LCP echo failure threshold	The peer will be presumed to be dead after the given amount of LCP echo failures are reached. Enter 0 to ignore failures.
LCP echo interval	LCP echo request are sent at this specified interval. This function is only effective in conjunction with the failure threshold function.
L2TPv3 encapsulation mode	Select the L2TP (Version 3) encapsulation mode here. Options to choose from are UDP and IP.
Additional command line arguments for PPP	Enter additional command line arguments for PPP here.

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Firewall Settings

Create / Assign firewall-zone

lan: lan:

wan: wan:

unspecified -or- create:

? Choose the firewall zone you want to assign to this interface. Select *unspecified* to remove the interface from the associated zone or fill out the *create* field to define a new zone and attach the interface to it.

The following parameters are available in this section:

Parameter	Description
Create / Assign firewall-zone	Please refer to page 21.

4.3.3.1.10. DSLite

WAN
LAN

Interfaces - WAN

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

eth0.2

Uptime: 0h 0m 0s
MAC-Address: 30:49:30:00:11:F0
RX: 0.00 B (0 Pkts.)
TX: 1.47 MB (3753 Pkts.)

Protocol DSLite ▼

Really switch protocol? Switch protocol

Reset
Save
Save & Apply

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.

After clicking the Switch protocol button, the following will appear:

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Firewall Settings

Status

dslite-wan

RX: 0.00 B (0 Pkts.)
TX: 0.00 B (0 Pkts.)

Protocol DSLite ▼

Protocol support is not installed Install package "dslite"

Local IPv6 address

Peer IPv6 address

Tunnel address

IPv4 netmask ▼

The following parameters are available in this section:

Parameter	Description
Status	Please refer to page 18.
Protocol support is not installed	Click the Install package button to install the package needed for this protocol.
Local/Peer IPv6 address	Enter the local/peer IPv6 address here.
Tunnel address	Enter the IPv4 tunnel address for DS-Lite here.
IPv4 netmask	Select the IPv4 netmask for DS-Lite here. Select the custom option to manually enter the IPv4 netmask.

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Firewall Settings

Bring up on boot

Use MTU on tunnel interface

Use TTL on tunnel interface

The following parameters are available in this section:

Parameter	Description
Bring up on boot	Select this option to bring up this interface when the device rebooted.
Use MTU on tunnel interface	Enter the MTU value for the tunnel interface here.
Use TTL on tunnel interface	Enter the TTL (Time To Live) value for the tunnel interface here.

WAN
LAN

Interfaces - WAN

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
Advanced Settings
Firewall Settings

Create / Assign firewall-zone

lan: lan:

wan: wan:

unspecified -or- create:

Choose the firewall zone you want to assign to this interface. Select *unspecified* to remove the interface from the associated zone or fill out the *create* field to define a new zone and attach the interface to it.

The following parameters are available in this section:

Parameter	Description
Create / Assign firewall-zone	Please refer to page 21.

4.3.3.2. Wifi

4.3.3.2.1. Wireless Overview

This page is used to display and configure the 802.11 wireless settings.

The following parameters are available in this section:

Parameter	Description
Generic Atheros 802.11bgn (wifi0)	<p>Displays information about the generic Atheros IEEE 802.11bgn (wifi0) interface.</p> <ul style="list-style-type: none"> • Channel - Displays the wireless channel number and frequency. • Bitrate - Displays the current data rate (in megabits per second) through the wireless interface. • SSID - Displays the SSID hosted by the wireless interface. • Mode - Displays the configuration mode of the wireless interface. • BSSID - Displays the BSSID (Basic Service Set Identifier) hosted by the wireless interface. • Encryption - Displays the wireless encryption used on the wireless interface.
Generic Atheros 802.11a/n (wifi1)	<p>Displays information about the generic Atheros IEEE 802.11a/n (wifi1) interface.</p> <ul style="list-style-type: none"> • Channel - Displays the wireless channel number and frequency. • Bitrate - Displays the current data rate (in megabits per second) through the wireless interface. • SSID - Displays the SSID hosted by the wireless interface. • Mode - Displays the configuration mode of the wireless interface. • BSSID - Displays the BSSID hosted by the wireless interface. • Encryption - Displays the wireless encryption used on the wireless interface.

After clicking the Scan button in the Generic Atheros 802.11bgn (wifi0) entry, the following will appear:

Join Network: Wireless Scan

36%	corega Channel: 11 Mode: Master BSSID: E4:BE:ED:5F:03:53 Encryption: WEP	Join Network
100%	Schuster (2G) Channel: 10 Mode: Master BSSID: 78:54:2E:FF:D1:10 Encryption: mixed WPA/WPA2 - PSK	Join Network
59%	Lee Benson Channel: 1 Mode: Master BSSID: B8:55:10:DA:E6:48 Encryption: mixed WPA/WPA2 - PSK	Join Network
45%	Anycast-ddc0e1 Channel: 1 Mode: Master BSSID: 86:26:BD:40:C5:F8 Encryption: WPA2 - PSK	Join Network
0%	SMC Channel: 2 Mode: Master BSSID: 6C:19:8F:E3:83:59 Encryption: mixed WPA/WPA2 - PSK	Join Network
32%	pdawn Channel: 6 Mode: Master BSSID: 38:2C:4A:6B:90:58 Encryption: WPA2 - PSK	Join Network
25%	HUAWEI-B315-4960 Channel: 1 Mode: Master BSSID: C4:07:2F:09:49:60 Encryption: WPA2 - PSK	Join Network
19%	Lin Channel: 6 Mode: Master BSSID: 00:22:B0:97:D7:37 Encryption: mixed WPA/WPA2 - PSK	Join Network
19%	DSL-6641K Channel: 11 Mode: Master BSSID: 14:D6:4D:48:D7:FD Encryption: WPA - PSK	Join Network

[Back to overview](#) [Repeat scan](#)

After clicking the Scan button in the Generic Atheros 802.11an (wifi1) entry, the following will appear:

Join Network: Wireless Scan

100%	Schuster (5G) Channel: 149 Mode: Master BSSID: 78:54:2E:FF:D1:12 Encryption: mixed WPA/WPA2 - PSK	Join Network
------	---	------------------------------

[Back to overview](#) [Repeat scan](#)

4.3.3.2.1.1. Generic Atheros 802.11bgn (wifi0)

Click Add button, after clicking the Edit button in the Generic Atheros 802.11bgn (ath0) entry, the following will appear:

Wireless Network: Master "OpenWrt" (ath0)

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 100% **Mode:** Master | **SSID:** OpenWrt
BSSID: 00:02:03:04:05:06 | **Encryption:** mixed WPA/WPA2 PSK (TKIP)
Channel: 11 (2.462 GHz) | **Tx-Power:** 26 dBm
Signal: -95 dBm | **Noise:** -95 dBm
Bitrate: 0.3 Mbit/s | **Country:** 00

Wireless network is enabled [Disable](#)

Channel: auto

Transmit Power: 26 dBm

The following parameters are available in this section:

Parameter	Description
-----------	-------------

Parameter	Description
Status	<p>Displays a summary of the wireless configuration on this wireless interface.</p> <ul style="list-style-type: none"> • Signal Strength - Displays the wireless signal strength. • Mode - Displays the wireless operating mode of the wireless interface. • SSID - Displays the SSID hosted by the wireless interface. • BSSID - Displays the BSSID hosted by the wireless interface. • Encryption - Displays the wireless encryption used on the wireless interface. • Channel - Displays the wireless channel number and frequency. • TX-Power - Displays the TX (transmit) power of the wireless interface. • Signal - Displays the wireless signal strength (in dBm) on the wireless interface. • Noise - Displays the wireless noise level (in dBm) on the wireless interface. • Bitrate - Displays the active data bitrate (in megabits per second) through the wireless interface. • Country - Display the country setting on the wireless interface.
Wireless network is enabled	Displays the current status of the wireless interface.
Channel	<p>Select the wireless channel for the wireless interface here. The range is from 1 (2.412 GHz) to 11 (2.462 GHz).</p> <p>Select the auto option to allow the AP to automatically determine the best wireless channel for this interface.</p> <p>Select the custom option to manually entry the channel number.</p>
Transmit Power	Select the wireless transmit power for the interface here. Options to choose from are 0 dBm, 6 dBm, 10 dBm, 14 dBm, 18 dBm, 22 dBm, 26 dBm, and 30 dBm.

Device Configuration

General Setup | **Advanced Settings**

Mode:

HT mode:

Country Code:

The following parameters are available in this section:

Parameter	Description
Mode	Select the wireless mode on this interface here. Options to choose from are auto, 802.11b, 802.11g, and 802.11g+n.
HT mode	Select the HT mode here. Options to choose from are 20MHz, 40MHz 2nd channel below, 40MHz 2nd channel above, and 80MHz.
Country Code	Enter the country code here.

Interface Configuration

General Setup | Wireless Security | MAC-Filter | Advanced Settings

ESSID: OpenWrt

Mode: Access Point

Network: lan: wan: create:

Choose the network(s) you want to attach to this wireless interface or fill out the create field to define a new network.

Hide ESSID:

The following parameters are available in this section:

Parameter	Description
ESSID	Enter the ESSID (Extended SSID) here.
Mode	Select the wireless mode for the interface here. Options to choose from are Access Point .
Network	Select the network interface to attach to this wireless interface here. Select the <i>create</i> option to enter and create and new network interface.
Hide ESSID	Select this option to hide the ESSID from wireless clients. Wireless clients will not be able to detect this interface by simply scanning for available wireless networks.

Interface Configuration

General Setup | Wireless Security | MAC-Filter | Advanced Settings

Encryption: No Encryption

The following parameters are available in this section:

Parameter	Description
Encryption	Select the wireless encryption for this interface here. Options to choose from are No Encryption, WPA-PSK, WPA2-PSK, and WPA-PSK/WPA2-PSK Mixed Mode. WPA stands for Wi-Fi Protected Access. WPA2 stands for Wi-Fi Protected Access II. PSK stands for Pre-Shared Key.

Interface Configuration

General Setup | Wireless Security | MAC-Filter | Advanced Settings

Encryption: WPA-PSK

Cipher: Force TKIP

Key:

The following parameters are available in this section:

Parameter	Description
Encryption	After selecting the WPA-PSK option, the following settings are available.

Parameter	Description
Cipher	Select the cipher method here. Options to choose from are Force TKIP (Temporal Key Integrity Protocol).
Key	Enter the WPA passphrase here.

The following parameters are available in this section:

Parameter	Description
Encryption	After selecting the WPA2-PSK option, the following settings are available.
Cipher	Select the cipher method here. Options to choose from are Force CCMP (AES). CCMP stands for CCM Mode Protocol. CCM stands for Counter with CBC-MAC. CBC-MAC stands for Cipher Block Chaining Message Authentication Code. AES stands for Advanced Encryption Standard.
Key	Enter the WPA2 passphrase here.

The following parameters are available in this section:

Parameter	Description
Encryption	After selecting the WPA-PSK/WPA2-PSK Mixed Mode option, the following settings are available.
Cipher	Select the cipher method here. Options to choose from are Force TKIP and CCMP (AES).
Key	Enter the WPA/WPA2 passphrase here.

The following parameters are available in this section:

Parameter	Description
MAC Address Filter	Select to enable or disable MAC address filtering here. Options to choose

Parameter	Description
	from are disable, allow listed only, and allow all except listed.

Interface Configuration

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

MAC-Address Filter: Allow listed only

MAC-List:

The following parameters are available in this section:

Parameter	Description
MAC Address Filter	After selecting the Allow listed only option, the following setting is available.
MAC List	Select the MAC address that is allowed access to the wireless interface here. Select custom option to manually enter the MAC address here.

Interface Configuration

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

MAC-Address Filter: Allow all except listed

MAC-List:

The following parameters are available in this section:

Parameter	Description
MAC Address Filter	After selecting the Allow all except listed option, the following setting is available.
MAC List	Select the MAC address that is denied access to the wireless interface here. Select custom option to manually enter the MAC address here.

Interface Configuration

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

802.11h:

Separate Clients: Disable
 Prevents client-to-client communication

UAPSD Enable:

Multicast Rate:

Fragmentation Threshold(1-2346):

RTS/CTS Threshold(0-2346):

WMM Mode:

Reset Save Save & Apply

The following parameters are available in this section:

Parameter	Description
802.11h	Select this option to enable 802.11h amendment here.
Separate Clients	Select to enable the function that separates client-to-client communication here.

Parameter	Description
UAPSD Enable	Select to enable the UAPSD (Unscheduled Automatic Power Save Delivery) function here.
Multicast Rate	Enter the multicast rate here.
Fragmentation Threshold	The range is from 1 to 2346.
RTS/CTS Threshold	The range is from 0 to 2346.
WMM Mode	Select this option to enable the WMM (Wi-Fi Multimedia) mode here.

4.3.3.2.1.2. Generic Atheros 802.11an (wifi1)

After clicking the Edit button in the Generic Atheros 802.11an (ath1) entry, the following will appear:

Wireless Network: Master "OpenWrt" (ath1)

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

Mode: Master | **SSID:** OpenWrt
BSSID: 12:34:56:78:90:12 | **Encryption:** None
Channel: 36 (5.180 GHz) | **Tx-Power:** 26 dBm
Signal: -97 dBm | **Noise:** -95 dBm
Bitrate: 1.7 Mbit/s | **Country:** 00

Wireless network is enabled Disable

Channel auto

Transmit Power 26 dBm
dBm

The following parameters are available in this section:

Parameter	Description
Status	<p>Displays a summary of the wireless configuration on this wireless interface.</p> <ul style="list-style-type: none"> • Signal Strength - Displays the wireless signal strength. • Mode - Displays the wireless operating mode of the wireless interface. • SSID - Displays the SSID hosted by the wireless interface. • BSSID - Displays the BSSID hosted by the wireless interface. • Encryption - Displays the wireless encryption used on the wireless interface. • Channel - Displays the wireless channel number and frequency. • TX-Power - Displays the TX (transmit) power of the wireless interface. • Signal - Displays the wireless signal strength (in dBm) on the wireless interface. • Noise - Displays the wireless noise level (in dBm) on the wireless interface. • Bitrate - Displays the active data bitrate (in megabits per second) through the wireless interface. • Country - Display the country setting on the wireless interface.

Parameter	Description
Wireless network is enabled	Displays the current status of the wireless interface.
Channel	Select the wireless channel for the wireless interface here. The range is from 36 (5.180 GHz) to 165 (5.825 GHz). Select the auto option to allow the AP to automatically determine the best wireless channel for this interface. Select the custom option to manually entry the channel number.
Transmit Power	Select the wireless transmit power for the interface here. Options to choose from are 0 dBm, 6 dBm, 10 dBm, 14 dBm, 18 dBm, 22 dBm, 26 dBm, and 30 dBm.

Device Configuration

General Setup | **Advanced Settings**

Mode: 802.11ac

HT mode: 20MHz

Country Code:

The following parameters are available in this section:

Parameter	Description
Mode	Select the wireless mode on this interface here. Options to choose from are auto, 802.11a, 802.11a+n, and 802.11ac.
HT mode	Select the HT mode here. Options to choose from are 20MHz, 40MHz 2nd channel below, 40MHz 2nd channel above, and 80MHz.
Country Code	Enter the country code here.

Interface Configuration

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

ESSID: OpenWrt

Mode: Access Point

Network: lan:  wan:  create:

Choose the network(s) you want to attach to this wireless interface or fill out the create field to define a new network.

Hide ESSID:

The following parameters are available in this section:

Parameter	Description
ESSID	Enter the ESSID here.
Mode	Select the wireless mode for the interface here. Options to choose from are Access Point.
Network	Select the network interface to attach to this wireless interface here. Select the create option to enter and create and new network

Parameter	Description
	interface.
Hide ESSID	Select this option to hide the ESSID from wireless clients. Wireless clients will not be able to detect this interface by simply scanning for available wireless networks.

Interface Configuration

General Setup | Wireless Security | MAC-Filter | Advanced Settings

Encryption No Encryption

The following parameters are available in this section:

Parameter	Description
Encryption	Select the wireless encryption for this interface here. Options to choose from are No Encryption, WPA-PSK, WPA2-PSK, and WPA-PSK/WPA2-PSK Mixed Mode.

Interface Configuration

General Setup | Wireless Security | MAC-Filter | Advanced Settings

Encryption WPA-PSK

Cipher Force TKIP

Key

The following parameters are available in this section:

Parameter	Description
Encryption	After selecting the WPA-PSK option, the following settings are available.
Cipher	Select the cipher method here. Options to choose from are Force TKIP.
Key	Enter the WPA passphrase here.

Interface Configuration

General Setup | Wireless Security | MAC-Filter | Advanced Settings

Encryption WPA2-PSK

Cipher Force CCMP (AES)

Key

The following parameters are available in this section:

Parameter	Description
Encryption	After selecting the WPA2-PSK option, the following settings are available.
Cipher	Select the cipher method here. Options to choose from are Force CCMP (AES).
Key	Enter the WPA2 passphrase here.

Interface Configuration

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

Encryption: WPA-PSK/WPA2-PSK Mixed Mode

Cipher: Force TKIP and CCMP (AES)

Key:

The following parameters are available in this section:

Parameter	Description
Encryption	After selecting the WPA-PSK/WPA2-PSK Mixed Mode option, the following settings are available.
Cipher	Select the cipher method here. Options to choose from are Force TKIP and CCMP (AES).
Key	Enter the WPA/WPA2 passphrase here.

Interface Configuration

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

MAC-Address Filter: disable

The following parameters are available in this section:

Parameter	Description
MAC Address Filter	Select to enable or disable MAC address filtering here. Options to choose from are disable, allow listed only, and allow all except listed.

Interface Configuration

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

MAC-Address Filter: Allow listed only

MAC-List:

The following parameters are available in this section:

Parameter	Description
MAC Address Filter	After selecting Allow listed only option, the following setting is available.
MAC List	Select the MAC address that is allowed access to the wireless interface here. Select custom option to manually enter the MAC address here.

Interface Configuration

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

MAC-Address Filter: Allow all except listed

MAC-List:

The following parameters are available in this section:

Parameter	Description
MAC Address Filter	After selecting Allow all except listed option, the following setting is available.
MAC List	Select the MAC address that is denied access to the wireless interface here. Select custom option to manually enter the MAC address here.

Interface Configuration

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

802.11h

Separate Clients Disable
Prevents client-to-client communication

UAPSD Enable

Multicast Rate

Fragmentation Threshold(1-2346)

RTS/CTS Threshold(0-2346)

WMM Mode

Number of Spatial Streams

LDPC

RX STBC

TX STBC

The following parameters are available in this section:

Parameter	Description
802.11h	Select this option to enable 802.11h amendment here.
Separate Clients	Select to enable the function that separates client-to-client communication here.
UAPSD Enable	Select to enable the UAPSD function here.
Multicast Rate	Enter the multicast rate here.
Fragmentation Threshold	The range is from 1 to 2346.
RTS/CTS Threshold	The range is from 0 to 2346.
WMM Mode	Select this option to enable the WMM mode here.
Number of Spatial Streams	Enter the number of spatial streams here.
LDPC	Select this option to enable the LDPC function here.
RX STBC	Select this option to enable the RX (received) STBC (Space–Time Block Code) function here.
TX STBC	Select this option to enable the TX (transmitted) STBC function here.

4.3.3.2.1.3. Associated Stations

Associated Stations

SSID	MAC-Address	IPv4-Address	Signal	Noise	RX Rate	TX Rate
OpenWrt	00:00:00:00:00:00	?	-95 dBm	-95 dBm	0.0 Mbit/s	0.0 Mbit/s
OpenWrt	00:00:00:00:00:00	?	-95 dBm	-95 dBm	0.0 Mbit/s	0.0 Mbit/s

The following parameters are available in this section:

Parameter	Description
Signal Strength	Displays the signal strength of the associated wireless station.
SSID	Displays the SSID of the associated wireless station.
MAC Address	Displays the MAC address of the associated wireless station.
IPv4 Address	Displays the IPv4 address of the associated wireless station.
Signal	Displays the signal strength of the associated wireless station.
Noise	Displays the wireless signal noise of the associated wireless station.
RX Rate	Displays the RX (receiving) wireless data rate of the associated wireless station.
TX Rate	Displays the TX (transmitting) wireless data rate of the associated wireless station.

4.3.3.3. DHCP and DNS

This page is used to display and configure the DHCP server and DNS settings on the AP.

Interfaces Wifi **DHCP and DNS** Static Routes Diagnostics Firewall Bluetooth Externalvlan

DHCP and DNS

Dnsmasq is a combined DHCP-Server and DNS-Forwarder for NAT firewalls

Server Settings

General settings | Resolve and Hosts Files | TFTP Settings | Advanced Settings

Domain required Don't forward DNS-Requests without DNS-Name

Authoritative This is the only DHCP in the local network

Local server
Local domain specification. Names matching this domain are never forwarded and resolved from DHCP or hosts files only

Local domain
Local domain suffix appended to DHCP names and hosts file entries

Log queries Write received DNS requests to syslog

DNS forwardings
List of DNS servers to forward requests to

Rebind protection Discard upstream RFC1918 responses

Allow localhost Allow upstream responses in the 127.0.0.0/8 range, e.g. for RBL services

Domain whitelist
List of domains to allow RFC1918 responses for

The following parameters are available in this section:

Parameter	Description
Domain required	Select this option to stop forwarding DNS request without the DNS name.
Authoritative	Select this option to specify that this DHCP server is the only DHCP server on the local network.
Local server	Enter the domain specification of the local DHCP server here. Names matching this domain are never forwarded and resolved from DHCP or host files only.
Local domain	Enter the local domain here. The local domain suffix is appended to DHCP names and hosts file entries.
Log queries	Select this option to write received DNS requests to the syslog.
DNS forwardings	Enter the IP address or domain name of the DNS server to which DNS requests are forwarded to.

Parameter	Description
	More than one entry can be created.
Rebind protection	Select this option to discard upstream RFC 1918 (Address Allocation for Private Internets) responses.
Allow localhost	Select this option to allow upstream responses in the 127.0.0.0/8 (loopback purposes) range.
Domain whitelist	Enter the domain name that is whitelisted for RFC 1918 responses here. More than one entry can be created.

Server Settings

General settings | **Resolv and Hosts Files** | TFTP Settings | Advanced Settings

Use /etc/ethers Read /etc/ethers to configure the DHCP-Server

Leasefile file where given DHCP-leases will be stored

Ignore resolve file

Resolve file local DNS file

Ignore Hosts files

Additional Hosts files

The following parameters are available in this section:

Parameter	Description
Use / etc / ethers	Select this option to use / etc / ethers to configure the DHCP server here.
Leasefile	Enter the name and path where the DHCP lease file will be saved here.
Ignore resolve file	Select this option to ignore the resolve file.
Resolve file	Enter the name and path for the DNS file here.
Ignore Hosts files	Select this option to ignore hosts files.
Additional Hosts files	Enter the name and path of the additional hosts files here. More than one entry can be created.

Server Settings

General settings | Resolv and Hosts Files | **TFTP Settings** | Advanced Settings

Enable TFTP server

TFTP server root Root directory for files served via TFTP

Network boot image Filename of the boot image advertised to clients

The following parameters are available in this section:

Parameter	Description
Enable TFTP server	Select this option to enable the TFTP (Trivial File Transfer Protocol) server function here.
TFTP server root	Enter the TFTP server root directory here.
Network boot image	Enter the name of the boot image file that is advertised to client here.

Server Settings

General settings | **Resolv and Hosts Files** | TFTP Settings | Advanced Settings

Filter private	<input checked="" type="checkbox"/>	Do not forward reverse lookups for local networks
Filter useless	<input type="checkbox"/>	Do not forward requests that cannot be answered by public name servers
Localise queries	<input checked="" type="checkbox"/>	Localise hostname depending on the requesting subnet if multiple IPs are available
Expand hosts	<input checked="" type="checkbox"/>	Add local domain suffix to names served from hosts files
No negative cache	<input type="checkbox"/>	Do not cache negative replies, e.g. for not existing domains
Strict order	<input type="checkbox"/>	DNS servers will be queried in the order of the resolvfile
Bogus NX Domain Override	<input type="text" value="67.215.65.132"/>	List of hosts that supply bogus NX domain results
DNS server port	<input type="text" value="53"/>	Listening port for inbound DNS queries
DNS query port	<input type="text" value="any"/>	Fixed source port for outbound DNS queries
Max. DHCP leases	<input type="text" value="unlimited"/>	Maximum allowed number of active DHCP leases
Max. EDNS0 packet size	<input type="text" value="1280"/>	Maximum allowed size of EDNS.0 UDP packets
Max. concurrent queries	<input type="text" value="150"/>	Maximum allowed number of concurrent DNS queries

The following parameters are available in this section:

Parameter	Description
Filter private	Select this option not to forward reverse lookups for local networks.
Filter useless	Select this option not to forward requests that cannot be answered by public name servers.
Localize queries	Select this option to localize the hostname depending on the requesting subnet if multiple IP addresses are available.
Expand hosts	Select this option to add a local domain suffix to the names served from the hosts files.
No negative cache	Select this option not to cache negative replies.
Strict order	Select this option to only query DNS server in the order specified in the "resolvfile".
Bogus NX Domain Override	Enter the IP addresses of the host that supply bogus NX domain results here. More than one entry can be created.
DNS server port	Enter the TCP/UDP port number for the DNS server connection here. This port is used for inbound DNS queries.
DNS query port	Enter the TCP/UDP source port number for outbound DNS queries here.
Max. DHCP leases	Enter the maximum number of active DHCP leases allowed here.
Max. EDNS0 packet size	Enter the maximum size allowed for EDNS.0 (Extension mechanisms for DNS) UDP packets here.
Max. concurrent queries	Enter the maximum number of concurrent DNS queries allowed here.

Active DHCP Leases			
Hostname	IPv4-Address	MAC-Address	Leasetime remaining
There are no active leases.			

The following parameters are available in this section:

Parameter	Description
Hostname	Displays the hostname of the active DHCP lease.
IPv4/MAC Address	Displays the IPv4/MAC address of the active DHCP lease.
Leasetime remaining	Displays the lease time remaining for the active DHCP lease.

Active DHCPv6 Leases			
Hostname	IPv6-Address	DUID	Leasetime remaining
There are no active leases.			

The following parameters are available in this section:

Parameter	Description
Hostname/IPv6 Address/DUID/Leasetime remaining	Displays the hostname/IPv6 Address/DUID/ Leasetime remaining of the active DHCPv6 lease.

Static Leases

Static leases are used to assign fixed IP addresses and symbolic hostnames to DHCP clients. They are also required for non-dynamic interface configurations where only hosts with a corresponding lease are served. Use the *Add* Button to add a new lease entry. The *MAC-Address* identifies the host, the *IPv4-Address* specifies to the fixed address to use and the *Hostname* is assigned as symbolic name to the requesting host.

Hostname	MAC-Address	IPv4-Address	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="Delete"/>

The following parameters are available in this section:

Parameter	Description
Hostname/MAC Address/IPv4 Address	Enter the hostname/MAC Address/ IPv4 Address for the static DHCP client lease here.

4.3.3.4. Static Routes

This page is used to display and configure static IPv4/IPv6 routes on the AP.

Interfaces Wifi DHCP and DNS **Static Routes** Diagnostics Firewall Bluetooth ExternalVlan

Routes

Routes specify over which interface and gateway a certain host or network can be reached.

Static IPv4 Routes

Interface	Target	IPv4-Netmask	IPv4-Gateway	Metric	MTU	
	Host-IP or Network	if target is a network				
lan	192.168.0.14	255.255.255.0	192.168.0.1	10	1500	<input type="button" value="Delete"/>
lan	<input type="text"/>	<input type="text"/>	<input type="text"/>	0	1500	<input type="button" value="Delete"/>

The following parameters are available in this section:

Parameter	Description
Interface	Select the interface for the static IPv4 route here. Options to choose from are lan and wan.
Target	Enter the target IPv4 address or IPv4 network address for the static IPv4 route here.
IPv4 Netmask	Enter the IPv4 subnet mask for the static IPv4 route here.
IPv4 Gateway	Enter the IPv4 address of the gateway for the static IPv4 route here.
Metric/MTU	Enter the metric/MTU for the static IPv4 route here.

The following parameters are available in this section:

Parameter	Description
Interface	Select the interface for the static IPv6 route here. Options to choose from are lan and wan.
Target	Enter the target IPv6 address or network CIDR (Classless Inter-Domain Routing) for the static IPv6 route here.
IPv6 Gateway	Enter the IPv6 address of the gateway for the static IPv6 route here.
Metric/MTU	Enter the metric/MTU for the static IPv6 route here.

4.3.3.5. Diagnostics

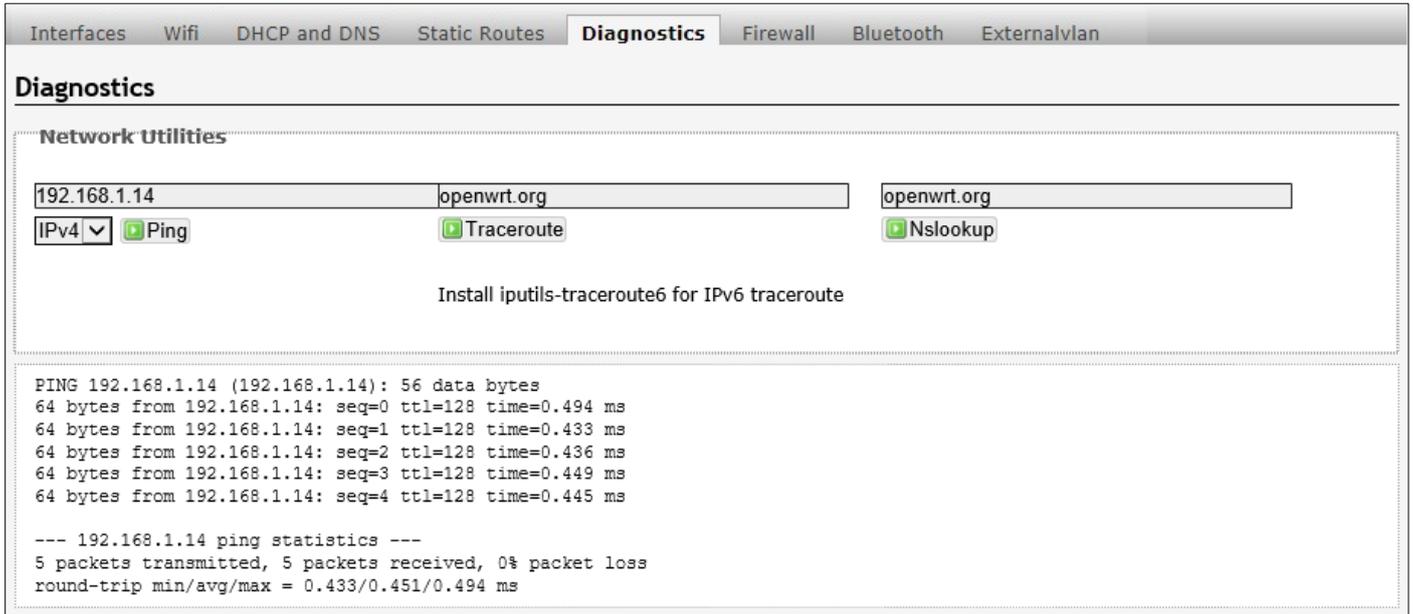
This page provides useful network utilities that can be used to troubleshoot network connectivity between the AP and other networking nodes.

The following parameters are available in this section:

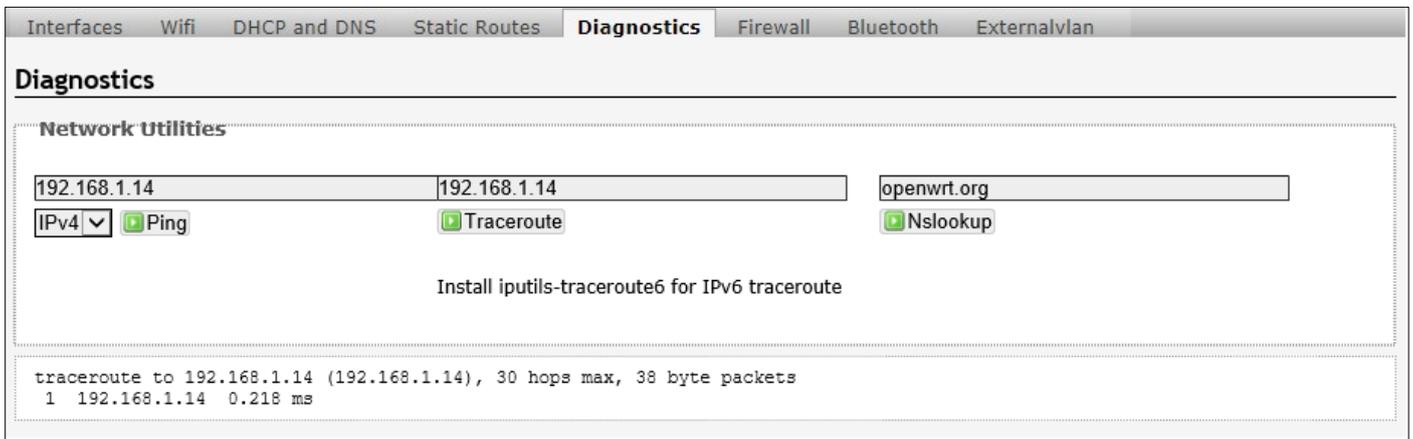
Parameter	Description
Ping	To use the ping utility, enter an IPv4/IPv6 address or domain name in the textbox and click the Ping button. The ping utility is used to send an ICMP request to nodes to probe if the node is active or not.
Traceroute	To use the traceroute utility, enter an IPv4 address or domain name in the textbox and click the Traceroute button. This is used to display the route across the IP network and measure the transit delays of

Parameter	Description
	packets from hop to hop.
Nslookup	To use the nslookup (name server lookup) utility, enter an IPv4 address or domain name in the textbox and click the Nslookup button. This is used to querying the DNS to obtain domain name mapping, IP address mapping, and/or DNS records.

After clicking the Ping button, the following page will appear:



After clicking the Traceroute button, the following page will appear:



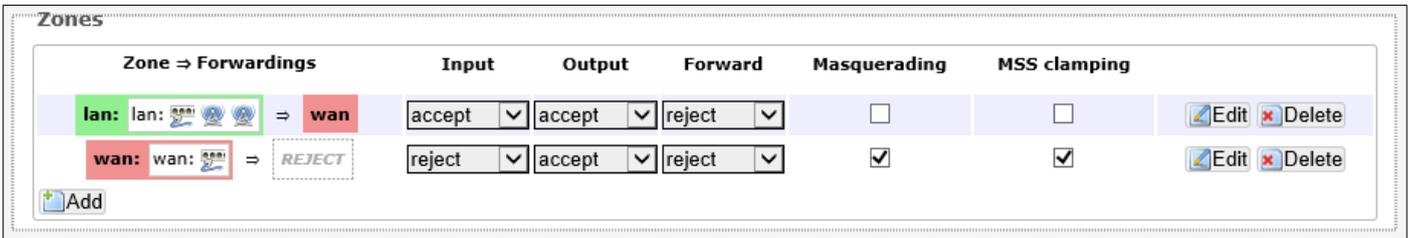
After clicking the Nslookup button, the following page will appear:

4.3.3.6. Firewall

This page is used to display and configure the firewall settings on the AP.

The following parameters are available in this section:

Parameter	Description
Enable SYN-flood protection	Select this option to enable the SYN-flood protection function. SYN stands for the synchronize step in the TCP three-way handshake.
Enable vap isolate	Select this option to enable the VAP (Virtual Access Point) isolate function.
Drop invalid packets	Select this option to enable the firewall function that will drop invalid received packets in the firewall zone.
Input	Select the input (incoming) action here. Options to choose from are reject, drop, and accept.
Output	Select the output (outgoing) action here. Options to choose from are reject, drop, and accept.
Forward	Select the forwarding action here. Options to choose from are reject, drop, and accept.

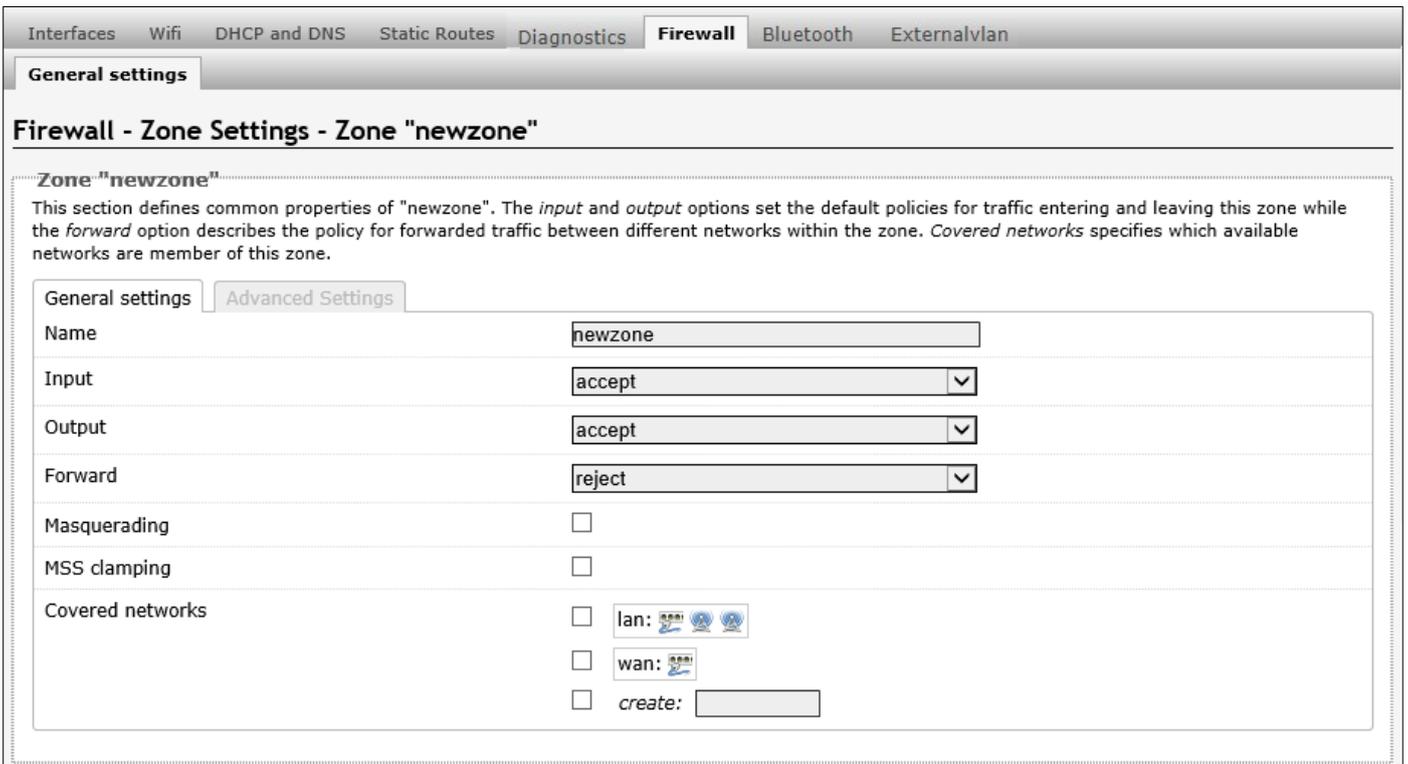


The following parameters are available in this section:

Parameter	Description
Zone → Forwarding	Displays the visual flow for the firewall zone here.

Click the Add/Edit/Delete button to add/ delete a new or modify the existing firewall zone.

After clicking the Add button, the following page will appear:



The following parameters are available in this section:

Parameter	Description
Name	Enter the name for the firewall zone here.
Input	Select the input (incoming) action here. Options to choose from are reject, drop, and accept.
Output	Select the output (outgoing) action here. Options to choose from are reject, drop, and accept.
Forward	Select the forwarding action here. Options to choose from are reject, drop, and accept.
Masquerading	Select this option to enable the masquerading function on the firewall zone.
MSS clamping	Select this option to enable the MSS clamping function on the firewall zone.
Covered networks	Select the interface that is included in this firewall zone here. Multiple interfaces can be selected. Select the create option to create a new interface for the firewall zone. Enter the name for the new interface in

Parameter	Description
	the space provided.

Zone "newzone"

This section defines common properties of "newzone". The *input* and *output* options set the default policies for traffic entering and leaving this zone while the *forward* option describes the policy for forwarded traffic between different networks within the zone. *Covered networks* specifies which available networks are member of this zone.

General settings | **Advanced Settings**

Restrict to address family: IPv4 and IPv6

Restrict Masquerading to given source subnets: 0.0.0.0/0

Restrict Masquerading to given destination subnets: 0.0.0.0/0

Force connection tracking:

Enable logging on this zone:

Limit log messages: 10/minute

The following parameters are available in this section:

Parameter	Description
Restrict to address family	Select the IP address family that will be restricted here. Options to choose from are IPv4 and IPv6, IPv4 only, and IPv6 only.
Restrict Masquerading to given source subnets	To restrict the masquerading function to a given source subnet, enter the IPv4 subnet of the source here. This option is not available for the IPv6 address family. More than one entry can be created.
Restrict Masquerading to given destination subnets	To restrict the masquerading function to a given destination subnet, enter the IPv4 subnet of the destination here. This option is not available for the IPv6 address family. More than one entry can be created.
Force connection tracking	Select this option to force connection tracking.
Enable logging on this zone	Select this option enable logging on this firewall zone.
Limit log messages	To limit log messages, enter the time limit here.

Inter-Zone Forwarding

The options below control the forwarding policies between this zone (newzone) and other zones. *Destination zones* cover forwarded traffic **originating from "newzone"**. *Source zones* match forwarded traffic from other zones **targeted at "newzone"**. The forwarding rule is *unidirectional*, e.g. a forward from lan to wan does *not* imply a permission to forward from wan to lan as well.

Allow forward to *destination zones*:

lan: lan:

wan: wan:

Allow forward from *source zones*:

lan: lan:

wan: wan:

The following parameters are available in this section:

Parameter	Description
Allow forward to destination zones	Select the destination zone here. Traffic is forwarded to this zone from the "newzone".

Parameter	Description
Allow forward from source zones	Select the source zone here. Traffic is forwarded from this zone to the "newzone".

4.3.3.7. Bluetooth

This page is used to display and configure the Bluetooth settings on the AP.

The screenshot shows the 'Bluetooth' configuration page. The navigation menu includes Status, System, Network, and Logout. Under the Network menu, there are sub-menus for Interfaces, Wifi, DHCP and DNS, Static Routes, Diagnostics, Firewall, Bluetooth, and Externalvlan. The Bluetooth page has a sub-menu for iBeacon. The iBeacon section includes a checkbox for 'iBeacon Enable', a text input for 'Uuid (e.g. 419c6385-c207-40a2-999a-f92c92b981ac)' with the value '419c6385-c207-40a2-999a-f92c92b981ac', and input fields for 'Major (0-65535)' (0), 'Minor (0-65535)' (1), 'TxPower (-128-127)' (-56), and 'Interval (32-16384)' (0). A 'Save & Apply' button is at the bottom left.

4.3.3.8. Externalvlan

This page is used to enable VLAN transparent transmission settings on the AP.

The screenshot shows the 'ExternalVLAN' configuration page. The navigation menu includes Status, System, Network, and Logout. Under the Network menu, there are sub-menus for Interfaces, Wifi, DHCP and DNS, Static Routes, Diagnostics, Firewall, Bluetooth, and Externalvlan. The ExternalVLAN page has a sub-menu for externalvlan. The externalvlan section includes a checkbox for 'Vlan Transparent Transmission' which is checked. A 'Save & Apply' button is at the bottom right.

Chapter 5. TECHNICAL SPECIFICATIONS

Physical			
Dimensions (L x W x H)	296 x 92 x 283 mm (11.65 x 3.62 x 11.41 in)	Weight	2000 grams (4.4 lbs.)
	SP420	SP420-F	
WAN/PoE In Port	One 10/100/1000 Mbps port	One 10/100/1000 Mbps port	
LAN Port	One 10/100/1000 Mbps port	One 10/100/1000 Mbps SFP	
Antenna	2.4GHz: Embedded 5dBi omni antennas 5GHz Embedded 5dBi omni antennas		
Power Supply	DC 48V, 0.5A PoE		
LAN/PoE Out	48V/10 Watts (Max.), Passive PoE (Pairs 4, 5+; 7, 8 Return), (SP420 Only)		
Power Consumption	Max. 13.5 Watts		

Wireless			
Frequency Bands		2.4GHz Radio	5GHz Radio
	US	2.412 – 2.462GHz	5.15GHz – 5.35GHz 5.47GHz – 5.85GHz
	EU	2.412 – 2.472GHz	5.15GHz – 5.35GHz 5.47GHz – 5.725GHz
	Japan	2.412 – 2.472GHz	5.15GHz – 5.35GHz 5.47GHz – 5.725GHz
	China	2.412 – 2.472GHz	5.15GHz – 5.35GHz 5.725GHz – 5.85GHz
	India	2.412 – 2.472GHz	5.15GHz – 5.35GHz 5.725GHz – 5.85GHz 5.85GHz – 5.875GHz
Operating Channels		2.4GHz Radio	5GHz Radio
	US	1 – 11	36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 132, 136, 140, 149, 153, 157, 161, 165
	EU	1 – 13	36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 132, 136, 140
	Japan	1 – 13	36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 132, 136, 140
	China	1 – 13	36, 40, 44, 48, 52, 56, 60, 64, 149, 153, 157, 161, 165
India	1 – 13	36, 40, 44, 48, 52, 56, 60, 64, 149, 153, 157, 161, 165, 169, 173	
Bandwidth Rate	2.4GHz: 20 / 40 MHz 5GHz: 20 / 40 / 80 MHz		
Wireless Security	Security: Open System, 802.1x, WPA-PSK/WPA2-PSK WPA-Enterprise/WPA2-Enterprise		

Wireless	
	Extensible Authentication Protocol (EAP) types: EAP-Transport Layer Security (TLS) EAP-Tunneled TLS (TTLS) Protected EAP (PEAP) EAP-Subscriber Identity Module (SIM) *Above partial functions should be configured by Z-COM Wireless LAN Controllers (WLC)
Operating Mode	Thin AP (TAP) / Fat AP (FAP)
Wireless SSIDs	2.4 GHz (Up to 8 SSIDs), 5.8 GHz (Up to 8 SSIDs)

Bluetooth Low Energy	
BLE	4.1
Frequency	2400-2480MHz
Antenna	1.5dBi (Embedded)

Compliance Standards	
IEC/EN 60950	
EN55032 & EN55024	
EN 62311 & EN 50385	
WEEE & RoHS	
Radio approvals:	
EN 300 328, EN301 893 (Europe)	
EN 301 489-1 and -17 (Europe)	
SRRC (China)	
IEEE standards:	
IEEE 802.11a/b/g/n/ac	
IEEE 802.11d, e, h, i, j, k, r, u, v time stamp, w, and z standards	
IEEE 802.3i, u, ab	
IEEE 802.3af, at (Powered Device)	
Multimedia:	
Wi-Fi multimedia (WMM)	

Environmental		
	Temperature	Humidity
Operating	-40°C to 70°C (-40°F to 158°F)	10% to 90% (Non-condensing)
Storage	-40°C to 80°C (-40°F to 168°F)	10% to 90% (Non-condensing)

Chapter 6. APPENDIX

6.1. Warranty

6.1.1. General Warranty

The warranty period stated below replaces the warranty period as stated in the user manuals for the relevant Products. If there is no proof indicating the purchase date, the manufacture date shall be considered as the beginning of the warranty period. The Warranty extends only to the original end-user purchaser and is not transferable to anyone who obtains ownership of the Product from the original end-user purchaser.

1. Z-COM provides one year of conditional warranty depends on different models.
2. Lifetime warranty covers product itself, excluding consumable products, accessories, second-hand products, and software. Lifetime warranty is only effective when products are still in the Z-COM Product list. After the EOL (End of Life) announcement for any Products, the warranty will be one year from the date of such Product EOL announcement. To grant the lifetime warranty, Products should have a proof of purchase (such as the invoice or sales receipt) must be provided upon receiving warranty service. The standard warranty period for any Product had a proof of purchase shall be one year from the date of purchase or manufacture.
3. Products are considered as DOA (Dead on Arrival) after conclusive test within the first 30 days of its shipping date from Z-COM. After 30 days from the shipping date, defective products covered within the warranty are considered as RMA (Return Material Authorization).
4. Z-COM reserves the right to inspect all defective products which must be returned and paid shipping fee by purchasers.

6.1.2. Warranty Conditions

Warranty service will be excluded if following conditions occurred:

1. The product has been tampered, repaired and/or modified by non-authorized personnel
2. The SN (Serial Number) or MAC (Media Access Control) address has been changed, cancelled, or removed
3. The damage is caused by third party software or virus
4. The software loss or data loss that may occur during repair or replacement

6.1.3. Disclaimer

PRODUCTS ARE NOT WARRANTED TO OPERATE UNINTERRUPTED OR ERROR FREE. Z-COM NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE OR USE OF ITS PRODUCTS. Z-COM SHALL NOT BE LIABLE UNDER THIS WARRANTY IF ITS TESTING AND EXAMINATION DISCLOSE THE ALLEGED DEFECT IN THE PRODUCT DOES NOT EXIST OR WAS CAUSED BY CUSTOMER'S OR ANY THIRD PERSON'S MISUSE, NEGLIGENCE, IMPROPER INSTALLATION OR TESTING, UNAUTHORIZED ATTEMPTS TO REPAIR, OR ANY OTHER CAUSE BEYOND THE RANGE OF THE INTENDED USE, OR BY ACCIDENT, FIRE, LIGHTNING, FOREC MAJEURE EVENT OR ANY OTHER HAZARD. THE INFORMATION CONTAINED HEREIN IS SUBJECT TO CHANGE WITHOUT NOTICE.

6.2. Compliance Information

6.2.1. RF Exposure Warning

The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be located or operating in conjunction with any other antenna or transmitter.

6.2.2. CE Marking

CE marking on this product represents the product is in compliance with all directives that are applicable to it.



Note: This device meets Max. TX power limit per ETSI regulations.

6.2.3. RoHS/WEEE Compliance Statement



European Directive 2012/19/EU requires that the equipment bearing this symbol on the product and/ or its packaging must not be disposed of with unsorted municipal waste. The symbol indicates that this product should be disposed of separately from regular household waste streams. It is your responsibility to dispose of this and other electric and electronic equipment via designated collection facilities appointed by the government or local authorities. Correct disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about the disposal of your old equipment, please contact your local authorities, waste disposal service, or the shop where you purchased the product.

6.3. Declaration of Conformity

Hereby, Z-COM, Inc. declares that the radio devices are in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address:
https://www.zcom.com.tw/index/downloads?keyword=&material_type=56

6.4. Optional Accessories

PN	Item	Picture	SP420	SP420-F
SP-CBM5	Anti-theft steel rope + allen wrench + four screws		V	V
SP-MKM5	Two-dimensional mounting kit <ul style="list-style-type: none"> • Two-dimensional mounting bracket • Pole-supported bracket • Intermediate steel plate • Two flat head screws • Four self-tapping screws • Four screw anchors • Four machine screws (M4) • Four machine screws (M5) 		V	V
SP-WP-CM20	Waterproof cable gland		V	V
SP-WP-CM28SFP	Waterproof cable gland for fiber port			V
SP-48063-XX	48V PoE Injector + power cord		V	V

 **Note:** When ordering power adaptors, you must specify the destination region by indicating -US, -EU instead of -XX.

6.5. Contact Information

All information may be changed by Z-COM at any time without prior notice or explanation to the user. For further information please refer to our website: www.zcom.com.tw

