FLUIDMESH
NETWORKS

FM 1300 OTTO

User manual

Firmware Version 1.x

Manual version 1.0

WARNING

ONLY QUALIFIED PERSONNEL SHOULD INSTALL THIS UNIT. THE INSTALLATION SHOULD CONFORM TO ALL LOCAL CODES. IN SOME COUNTRIES, A CERTIFIED ELECTRICIAN MAY BE REQUIRED.

CAUTION

When open, the unit should not be dripping or splashing. No object filled with liquid shall be placed on the unit.
Radio should be installed in restricted access locations.

NOTICE TO USERS

1 Table of Contents

2 Manual Overview

This manual describes how to install and operate the Fluidmesh 1300 OTTO series products. More specifically, this manual contains a general overview of the Fluidmesh 1300 OTTO, in Section 4.1. Please refer to Fig. 2.1 for a representation of the product. This user's manual also includes a complete overview of the network architectures that can be created using Fluidmesh technology, discussed in Section 5. The Fluidmesh network addressing is described in Section 6. The use of Fluidmesh software plug-ins, their features, and their installation procedures in a network follow in Section 6.3. The FMQuadro is then described in Section 7.

Fig. 2.1 – FM1300 OTTO

3 Precautions

3.1 Fluidmesh Networks products are for Professional Use only

Fluidmesh Networks products have been designed with safety in mind. However, if not used properly, they can cause fires that may lead to serious bodily injuries. To avoid such accidents, make sure that you are properly qualified to install these products.

3.2 In case of breakdown

In case of system breakdown, discontinue use and immediately contact your authorized Fluidmesh Networks dealer or Fluidmesh Networks LLC directly.

3.3 In case of abnormal operations

If the unit emits smoke or an unusual smell, if water or other foreign matter enters the enclosure, or if your drop the unit or damage the enclosure, power off the unit immediately and contact your authorized Fluidmesh Networks dealer or Fluidmesh Networks LLC directly

4 Installation and System Set-Up

This section describes how to install and set up Fluidmesh products.

4.1   FM 1300 OTTO ports and cables

FM 1300 OTTO is designed and manufactured for backhauling mission-critical video, voice and data. The FM 1300 OTTO can be used to create point-to-point links with high throughput (see datasheet for details). The product features 1x IEEE802.4af Active PoE Gigabit Ethernet port.

Fig. 4.1 - Fluidmesh FM 1300 OTTO back panel

4.2   Status and Link LED

FM 1300 back panel (Fig. 4.1) hosts six (6) LEDs which can be used to check the unit and the link quality status. From the bottom up, the first 2 green LEDs indicate the unit power, the Ethernet port activity, respectively. The remaining 4 colored LEDs indicate the level of the link signal and can be used

for antenna alignment purposes. During the unit boot-up process, the LEDs indicate the boot status and can be used for problem detection. Specifically, the 4 colored LEDs light up in sequence from the leftmost one (red) to rightmost one (bright green). If the LEDs lighting up sequence does not complete, then an error has been detected during the booting process. Please refer to Table 3.5 for details.
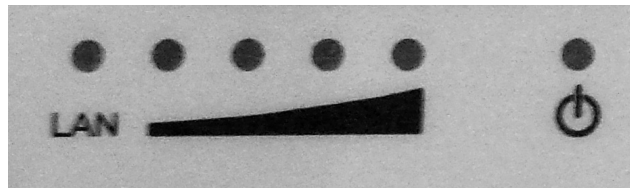

Fig. 4.2 - From Bottom Up Status LEDs, Link/Boot LEDs

LED # (Color)	Boot Status	Link Quality
1 (Red)	Booting core system	Poor/link absent
2 (Orange)	Booting wireless system	Fair
3 (Green)	Booting routing engine	Good
4 (Green)	Booting unit configuration	Very good

4.3   Shielded Cables

Please note that **only professional outdoor-rated shielded cables must be used**. Fig. 4.3 is an explanatory example of a proper termination of a shielded cable. The inner jacket must be placed to form a contact with the shielded Ethernet ports of the FM radio to prevent any ESD issue. Shielded RJ45 Ethernet connectors must also be used. Once the cabling is done properly, the RJ45 connectors can be plugged into the relative Ethernet port.

Fig. 4.3 - Shielded CAT5/6 connector

4.4   Factory Default Hardware Reset

The FM 1300 OTTO can be reset to factory default using the proper RESET button present on the back LEDs label. To reset the radio to factory default settings, <u>power up the unit and wait approximately 40 seconds for the unit to boot up</u>. Once the unit is up and running, press the reset button for at least 7 seconds. The radio will restore the factory default settings and automatically reboot. The LEDs will blink when the unit receives the reset to factory default signal. After the reset, the default IP address of 192.168.0.10/255.255.255.0 is restored and the administrator password is set to *admin*. The RESET button can also be used to reboot the unit when pressed for 1 second.

5 Fluidmesh Architecture Overview

FM1300 OTTO series can be used to create a Point-to-Point wireless bridge network architecture. A wireless bridge enables two local networks (i.e. network segments) to communicate with each other as depicted in Fig. 5.1.
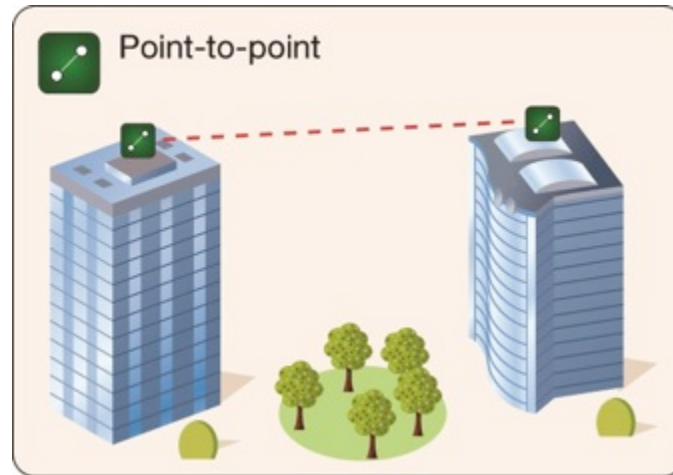
Fig. 5.1 - Point-to-Point network architecture

The wireless bridge is defined as "transparent" because its activity is transparent to the network hosts. In other words, the wireless bridge forwards packets from one network segment to the other according to a "forwarding table" which is built by learning the network topology from the analysis of the incoming traffic. In this configuration, no explicit interaction between the wireless bridge and the network hosts takes place. The two network segments, connected to both sides of the wireless bridge, will share the same IP addressing class. Thus, each network host must use a unique IP address, i.e., it is not allowed to have two devices sharing the same IP address.

6 Fluidmesh Network Addressing

6.1 Bridge IP Addressing

The FM unit can be operated in bridge mode to create a single point-to-point connection between two networks. Each FM unit is provided with a default IP address for its wired Ethernet port(s), which is: 192.168.0.10

No IP address is associated to the wireless interface.

When you set up a wireless bridge using two FM units for the first time, both units will have the same default IP address equal to 192.168.0.10. It is recommended to change the IP address of one of the two units in order to unambiguously address and configure the system avoiding confusion (see Figure 5.1).
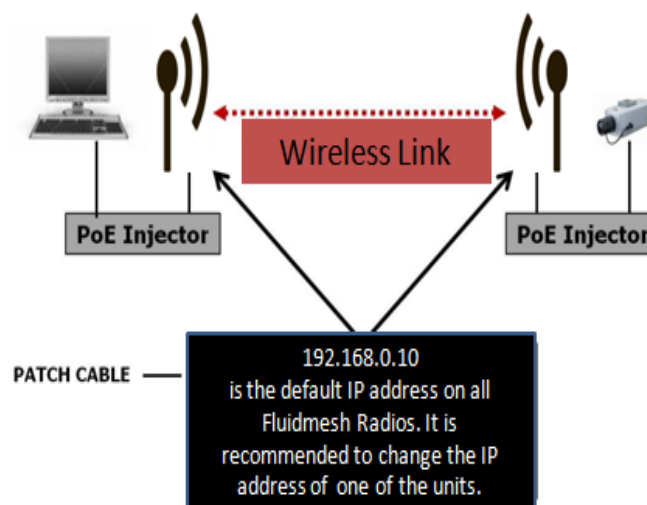

Figure 5.1: Wireless Network Architecture And Initial Bridge Configuration

6.1.1 Connecting and Configuring IP Devices and Cameras

The FM1300 OTTO features a single Gigabit Ethernet port. You should connect directly any device using an Ethernet cable to the PoE injector for FM1300 OTTO.
Use a patch Ethernet cable to connect the PoE injector to the FM unit.

The camera or the device attached to the FM unit should use an IP address belonging to the same class of the devices on the other network segment of the wireless bridge.

The default IP subnet is 192.168.0.0/255.255.255.0 and the default IP address of the radio is 192.168.0.10 / 255.255.255.0

6.2 Mesh Addressing

Regardless of its configuration, any FM unit comes from the factory with a unique unit ID with the following format:

5.a.b.c

where the triplet (a,b,c) unambiguously identifies the unit and cannot be changed. The unit ID is used to identify the units throughout the Web-based Graphical User Interface (GUI).
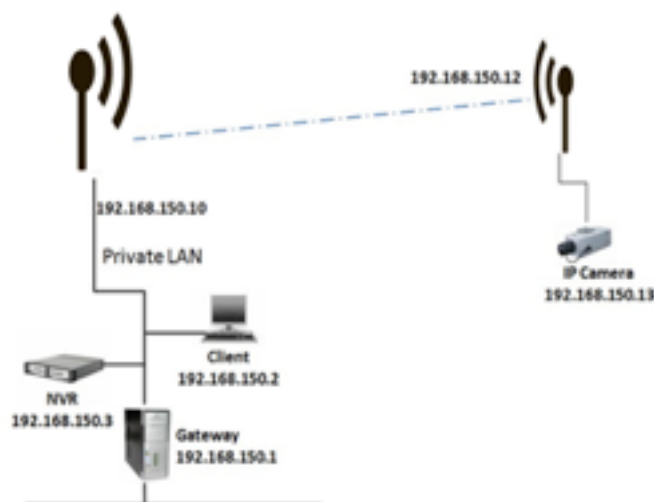
Fig. 6.1 - Fluidmesh Network Addressing

6.2.1   Network Addressing

The Fluidmesh layer 2 addressing allows configuring each FM unit and each device connected to the FM units according to the IP address class used within the private LAN to which the unit is connected. A sample network configuration is shown in Fig. 6.1.

The Fluidmesh network logically becomes part of the private LAN where (usually) the control room resides. Therefore, both the FM units and any other edge device should be provided with a private LAN IP address and will be accessed through that specified IP address.

Consider the example depicted in Fig. 6.1 where the private LAN IP address class is 192.168.150.0 with netmask 255.255.255.0. Each device is configured with an IP address belonging to this class. Please note that each IP address must be univocal within the entire network to avoid address conflicts. The **default IP address** of each FM unit is 192.168.0.10 with netmask 255.255.255.0. Finally, please note that the default factory-set 5.a.b.c unit IDs are still valid and used to unambiguously identify each FM unit.

6.2.2   Connecting and Configuring an Ethernet Edge-Device

The FM unit Ethernet ports can be used to connect all kinds of Ethernet edge devices (e.g. IP Cameras, Video-Servers, Wi-Fi Access Points, etc.). Any Ethernet device can be configured either manually or automatically through a DHCP server residing on the LAN network. The Fluidmesh network is totally transparent so DHCP requests and responses are forwarded transparently across the network.

A manual IP setting is recommended in any video-surveillance system where the cameras need to have a fixed custom IP address to be accessed by the video-recording software.

6.2.3   Software Plug-Ins

FM 1300 OTTO (part number FM-1300T-HW) allows user to purchase software-based Plug-ins to increase system's performances.

Part Number	Description
FM1300T-HW	Fluidmesh 1300 OTTO, Hardware. Including 30 Mbit/s Ethernet throughput
FM1300T-60	Enable 60Mbit/s Ethernet throughput in FM1300T Devices
FM1300T-120	Enable 120Mbit/s Ethernet throughput in FM1300T Devices
FM1300T-200	Enable 200Mbit/s Ethernet throughput in FM1300T Devices
FM1300T-300	Enable 300Mbit/s Ethernet throughput in FM1300T Devices
FM1300T-UN	Enable UNLIMITED Ethernet throughput (500 Mbit/sec) in FM1300T Devices

Tab. 6.1 - Software plugin upgrades

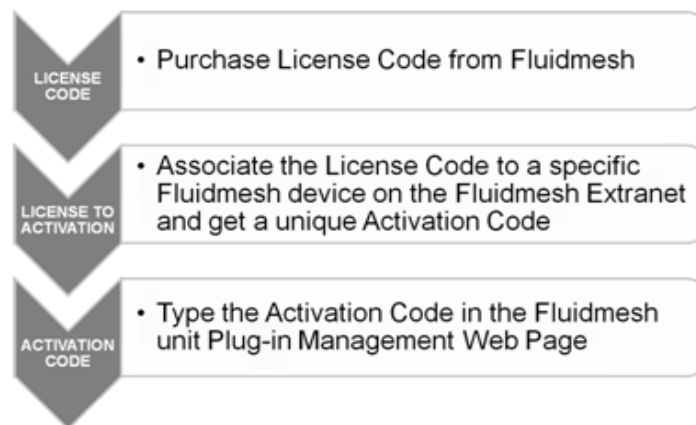## 6.3   Plug-In Activation/Deactivation Procedure

Fig. 6.2 - Plugin installation procedure

The Plug-in management procedure has been standardized for maximum flexibility. In order to activate a Plug-in:

1. **License purchase**: when you buy a Fluidmesh Plug-in, you will get a generic 16-digit License Code.
2. **License activation**: before using a License Code, it must be associated with a Fluidmesh device. This operation can be performed in the reserved area of the Fluidmesh website[1] (www.fluidmesh.com). To complete the operation you will need the License Code and the specific Fluidmesh Unit ID or Fluidmesh Product Serial Number, the website will return you a specific eight digit **Activation Code**.
3. **Device plugin activation**: enter your device's Web Interface under the Plugin Activation section and add the Activation Code. Please refer to Section 7.9.3 for further information.

Fig. 6.3 depicts the Fluidmesh Web extranet interface to generate Activation Codes available at

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[1] *In order to access the Fluidmesh extranet, users need to register on the Fluidmesh website at www.fluidmesh.com. Registration is free of charge.*

www.fluidmesh.com. As indicated, the License Code must be bound to the unit's unique ID (both the unit ID and the Serial Number are accepted).

To provide the maximum flexibility in the Plug-in management, Fluidmesh allows the deactivation of any installed Plug-in in order to transfer it to another Fluidmesh unit of the same model. In order to deactivate a plugin:

1. **Obtain the Deactivation Code**: enter your device's Web Interface and Remove/Deactivate plugins through the proper page (see the procedure described in Section 7.9.3). The Web Interface will disable the plugin and at the same time will provide you a **Deactivation Code**.
2. **Get a new License Code**: log into the reserved area on www.fluidmesh.com. Under the Code Deactivation page you can enter your Deactivation Code (see Fig. 6.4). The website will generate a new License Code. In order to use this License Code you must reactivate it (see Activation procedure).

Fig. 6.3 - Plug-in activation

Fig. 6.4 - Plugin deactivation

7 Web Based Interface and Configuration

Every FM unit can be configured and managed using a Web-based Graphical User Interface (GUI). By default, each FM unit is configured in **Bridge** Mode with the Bridge IP address 192.168.0.10 and netmask 255.255.255.0.

To change the settings on the units, you need to login to the Web-based interface.

7.1 Software and Hardware Requirements

To login to the Web GUI, you need a PC with a Web-browser, an Ethernet port, and an Ethernet cable.

Requirements List:
- Cat5 / 6 Ethernet cable with RJ45 connectors.

- PC with the following minimal characteristics:

    – Windows XP or Windows 2000. In this manual, we assume use of Windows XP and every instruction or screenshot is based on this assumption. The device can also be configured using other operating systems, such as Linux, MAC OS, or older versions of Windows.

    – Browser: in this manual, we suggest the of use of Chrome. A Fluidmesh device can also be configured using other browsers such as older versions of Internet Explorer, Firefox or Safari but the configuration using these browsers has not been thoroughly tested.

    – Wired Ethernet Network Card.

    – Hardware Requirements. Typical PC hardware allowing for proper operations of Windows XP and Microsoft Internet Explorer 6.

7.2 Logging into the Web-Based interface

Power up the device and wait for about one minute for the initialization to be completed. Connect an Ethernet cable with RJ45 connectors between a computer and the Fluidmesh device that you want to configure.

Configure the wired Ethernet port of your computer according to the default class "C" IP address of the device, e.g., IP: 192.168.0.30, Netmask: 255.255.255.0.

If you do not know how to configure your Windows PC, please refer to Section 8 where the manual IP configuration process is described. Disable the **Access the Internet using a proxy server** function. To disable this function, go to **Control Panel** > **Internet Options** > **Connections** > **LAN Settings** and uncheck the Enable box. Disable the wireless Wi-Fi card of your PC if present to avoid routing issues between the two network interfaces of your computer. Open a Web browser such as Internet Explorer and type the following URL:

http://192.168.0.10

Please use http:// for FM1300. A login form asking for a username and a password should appear as shown in Fig. 7.1.

To preserve the security of your system, make sure you change the default password once the entire installation is completed. In case the login form does not appear, please refer to Section 8.

The default username and password are:

Username: admin
Password: admin

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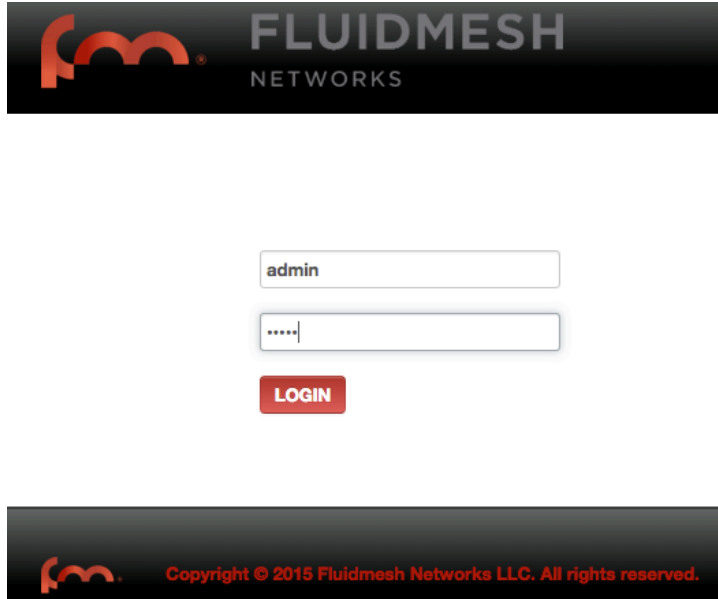
Fig. 7.1 - Login window

7.3   End-User License Agreement and Region of Operation

The first time you login, you will be asked to accept the terms of the end-user license agreement and select the country where you will be operating the unit. You must accept the terms of the license agreement in order to activate the device. If you do not wish to accept the terms of the license agreement, please turn off the unit and contact Fluidmesh Networks. Choosing a wrong country/regulatory domain setting may lead to an illegal wireless configuration.

Once the license is accepted, the unit can be configured.

Fig. 7.2 - End user license agreement

7.4   Configuration Wizard

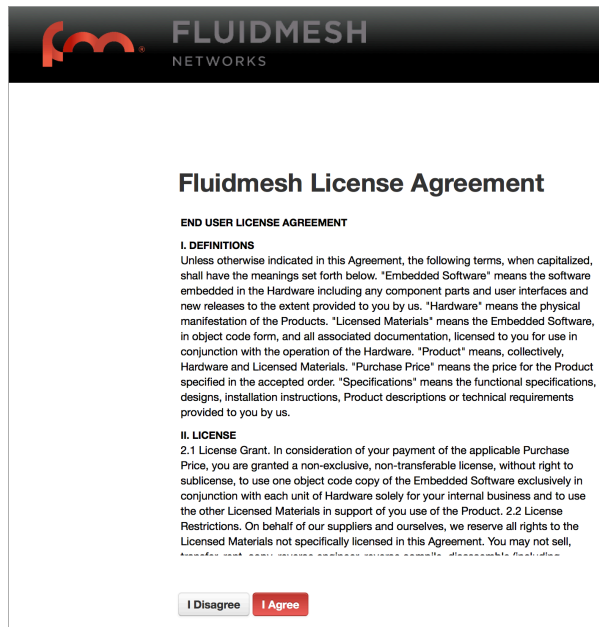The device is equipped with a Configuration Wizard to assist you during the first time configuration. The Wizard will guide you through the **Master/Slave** setup process that is **mandatory**. You can access Configuration Wizard clicking on the FM1300 OTTO label on the top bar of the GUI (see Fig. 7.3).
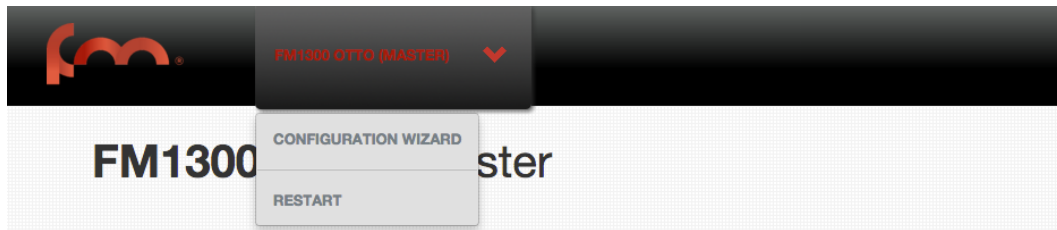
Fig. 7.3 - accessing Configuration Wizard

The following popup will appear (Fig. 7.4). Click **NEXT** in order to proceed.
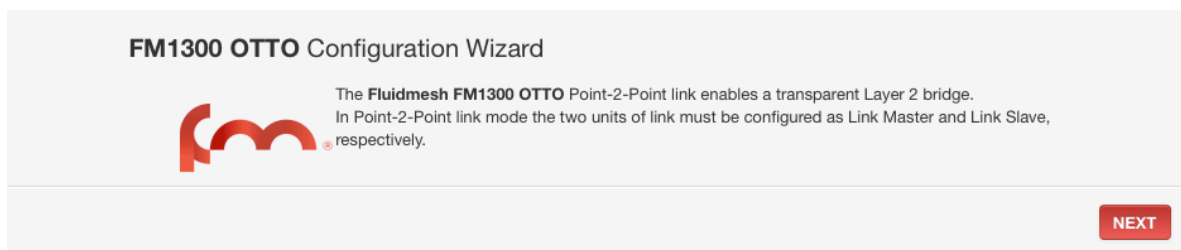
Fig. 7.4 - Wizard start screen

In the following step (Fig. 7.5) you must define if the radio will be **MASTER** or **SLAVE**. Here the "MASTER" option is selected. If you need to define the radio as a slave, please skip to Fig. 7.7, the same procedure applies but pictures will change accordingly. For a detailed description of General Settings please refer to par.7.8.1. Enter all the parameters and click **NEXT.**

Fig. 7.5 - Wizard MASTER general settings

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Now you can set the wireless parameters (Fig. 7.6), for a detailed description please refer to par.0. As you end up setting parameters click **SAVE** and the device will be ready.

Fig. 7.6 - Wizard MASTER wireless settings

The same procedure applies to SLAVE radios (Fig. 7.7). For a detailed description of General Settings please refer to par.7.8.1. Enter all the parameters and click **NEXT.**

Fig. 7.7 - Wizard SLAVE general settings

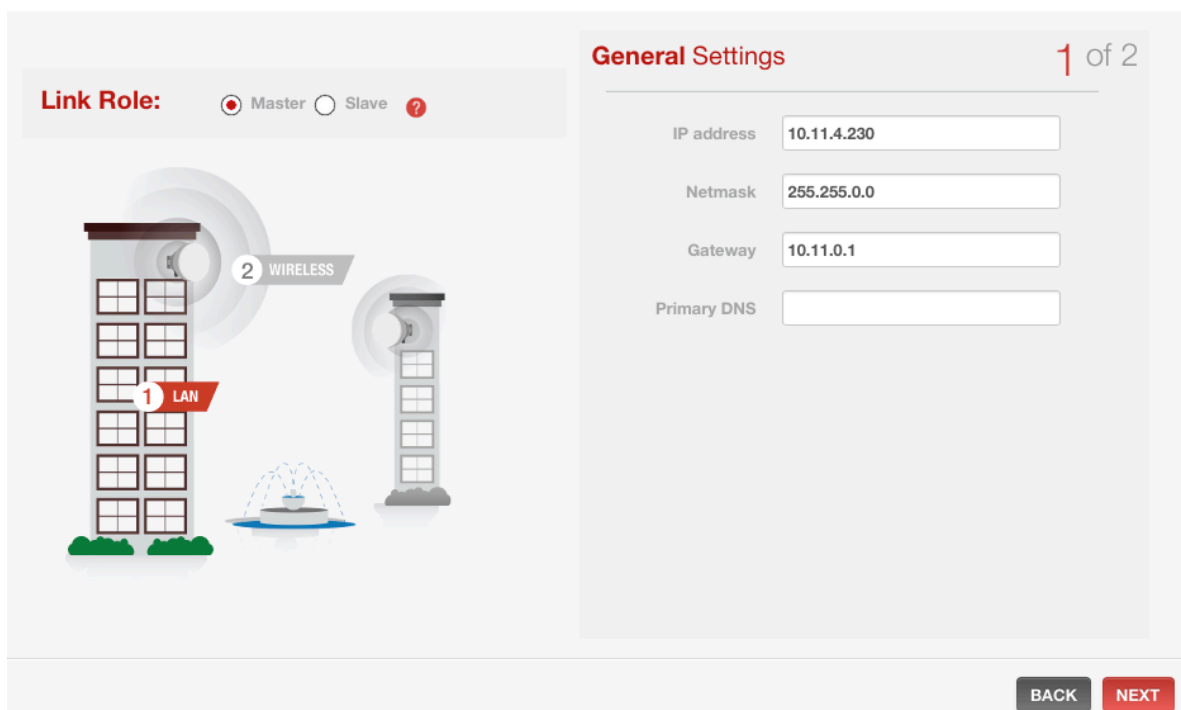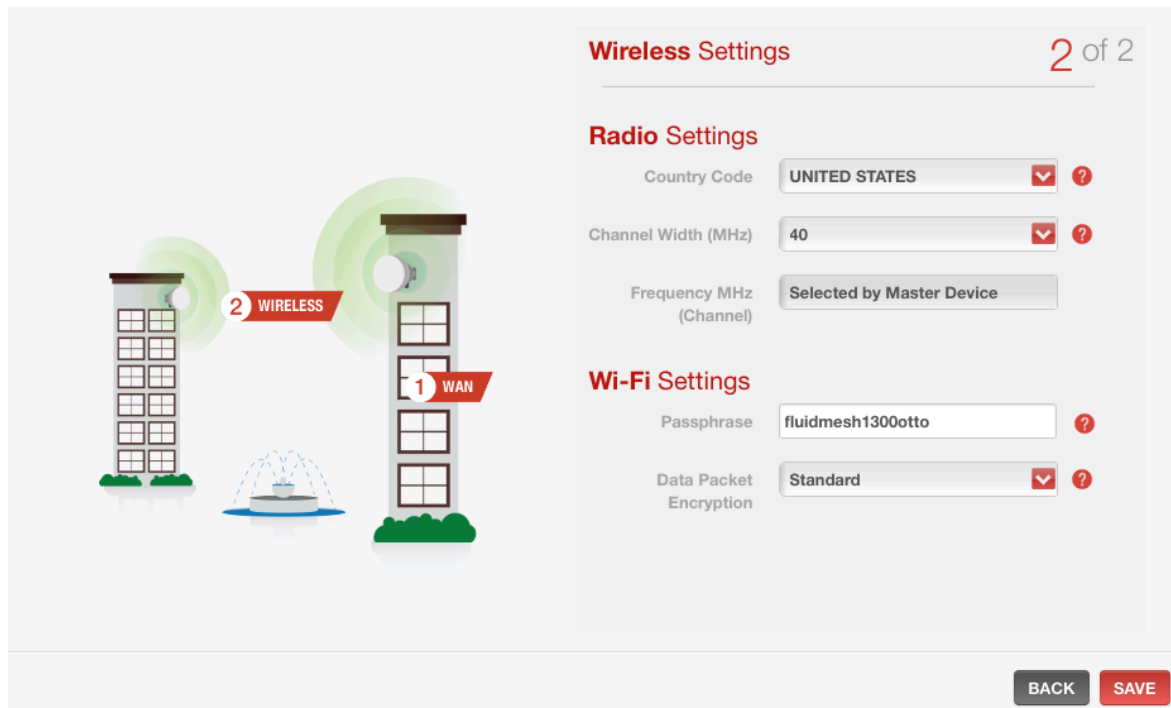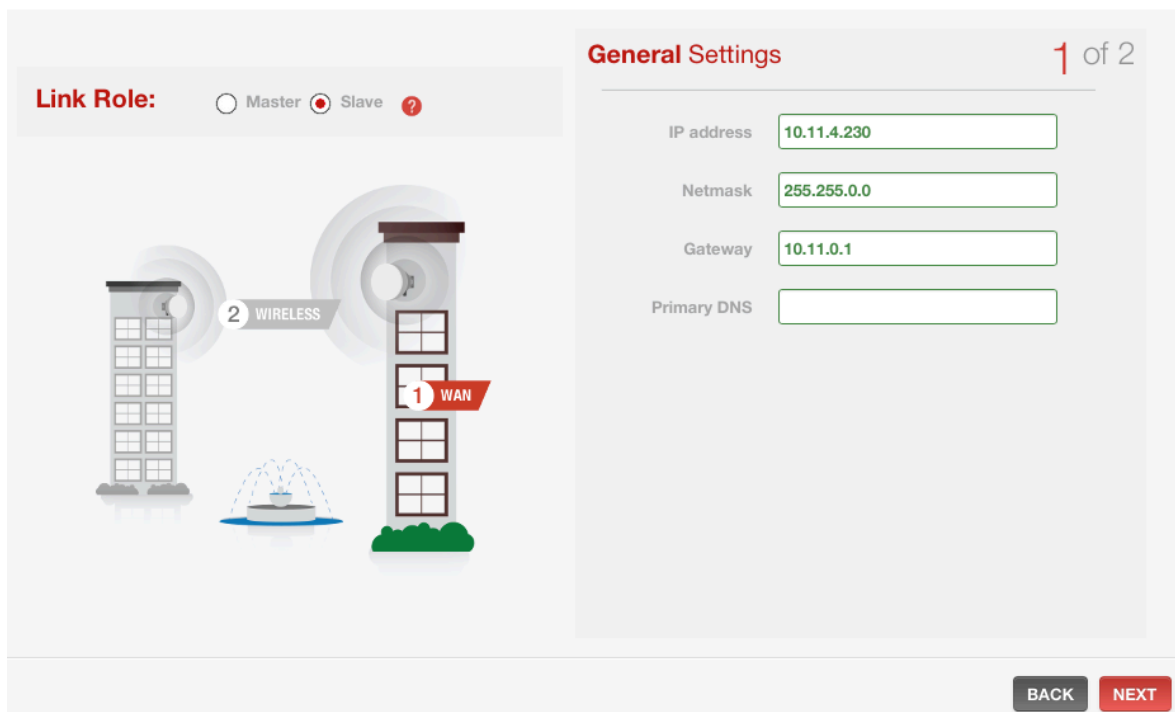Now you can set the wireless parameters (Fig. 7.8), for a detailed description please refer to par.0. Be sure to use the same **Passphrase** you set for the MASTER radio. As you end up setting parameters click **SAVE** and the device will be ready. Please note that the Frequency must not be set in SLAVE mode because the SLAVE unit will be synching with the MASTER unit with the same Passphrase.
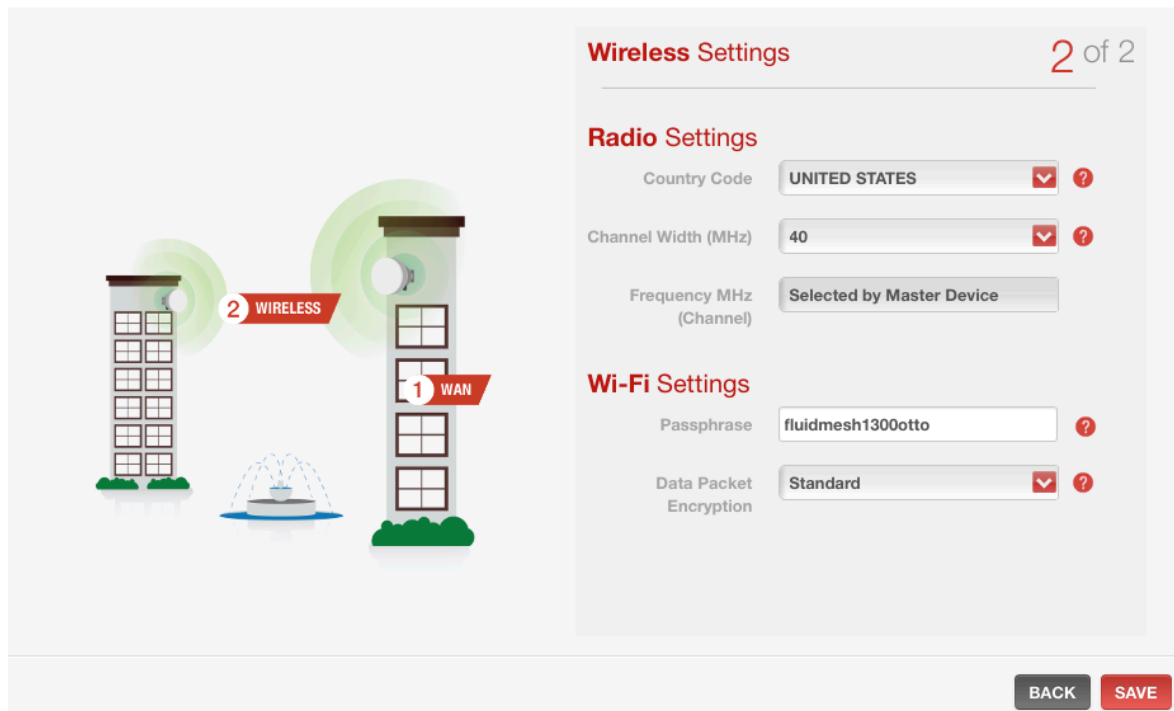
Fig. 7.8 - Wizard SLAVE wireless settings

7.5   Soft Restart

A Soft Restart command is available in the user interface for remote rebooting operations. To access it click on the FM1300 OTTO label (see Fig. 7.3) on the top bar of the GUI and then press **RESTART**, the device will be rebooted.

7.6   Web-Based interface menus

Once logged in, the **FMQuadro^{TM} dashboard** page will appear as shown in Fig. 7.9. Through this page you can see the main statistics of the unit and access four tabs:

- **FMQUADRO^{TM}**: dashboard containing unit's identification variables and performance statistics
- **SETTINGS**: configuration settings for the main parameters of the radio, such as wireless connection and IP
- **SERVICES**: network services settings (SNMP, routes etc.)
- **TOOLS**: set of diagnostic tools for installation troubleshooting
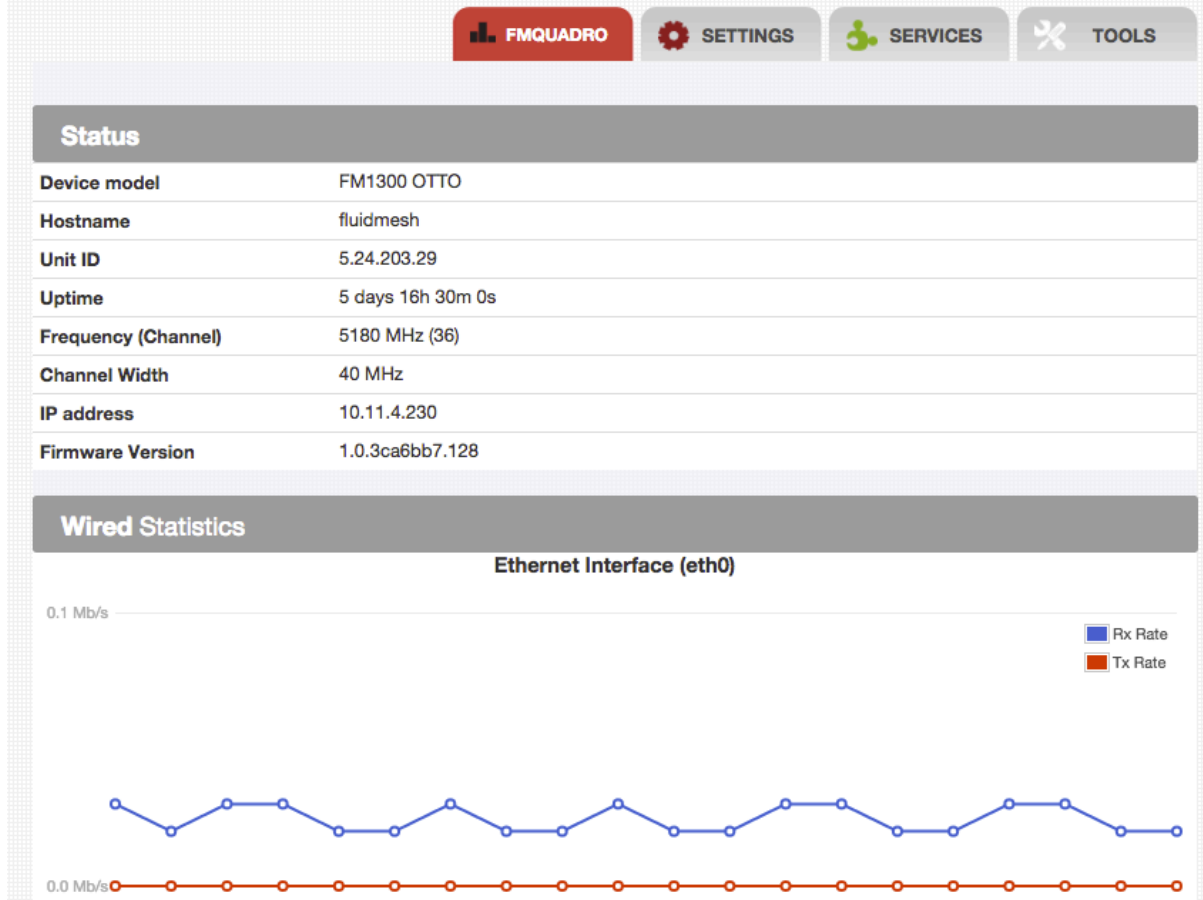
Fig. 7.9 - FMQuadro main window

7.7 FMQuadro^{TM}

Once logged into FM 1300 OTTO Web GUI, a dashboard reporting a complete summary of the status of the unit will be shown. The dashboard is divided in several sets of parameters:

- **Status**: general network, firmware and radio information
- **Wired Statistics**: Ethernet Gigabit port statistics, both TX and RX
- **Wireless Statistics**: wireless network information and bandwidth usage of each device belonging to the link using the same passphrase.

7.7.1 Status

The Status parameters include:

- **Device model**: unit's model description
- **Hostname**: human-readable name of the unit that can be set in the Settings > System page
- **Unit ID**: unique MeshID associated to the unit (see 6.1 for more information)
- **Uptime**: unit uptime from the last power-on/reset
- **Frequency (Channel)**: current frequency and channel in use
- **Channel Width**: current channel width in use
- **IP address**: current unit's IP address
- **Firmware version**: firmware currently running on this unit

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FM1300 OTTO Master

Status

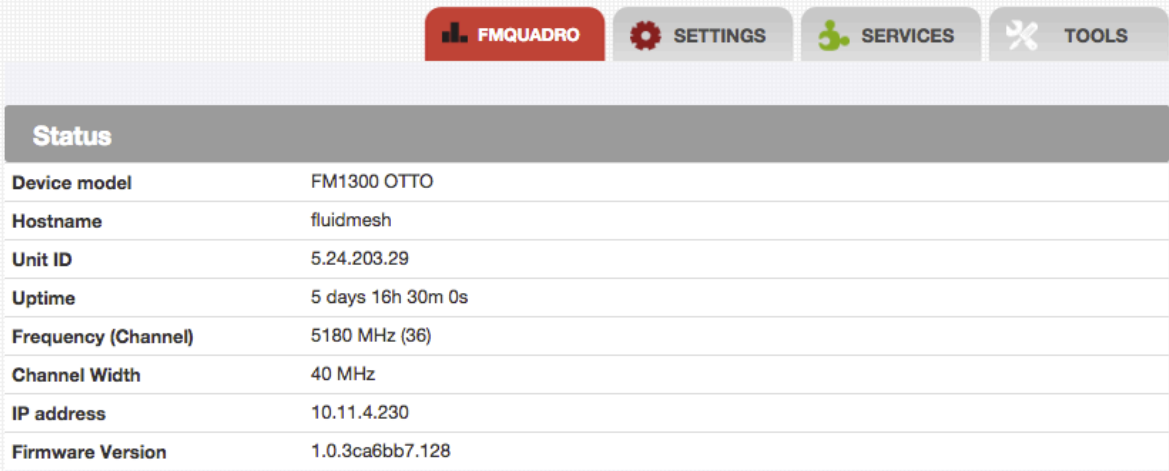|	
Device model	FM1300 OTTO
Hostname	fluidmesh
Unit ID	5.24.203.29
Uptime	5 days 16h 30m 0s
Frequency (Channel)	5180 MHz (36)
Channel Width	40 MHz
IP address	10.11.4.230
Firmware Version	1.0.3ca6bb7.128

Fig. 7.10 – FMQuadro - Status

7.7.2 Wired Statistics

The Wired Statistics graph reports the wired Ethernet utilization both in the TX and the RX directions in real-time. The real-time graph is updated each seconds reporting the instantaneous utilization of the port. Additional global statistic parameters are reported both in the TX and the RX directions:

- **Throughput**: instantaneous throughput traversing the port in both directions
- **Packets**: number of packets processed by the port in both directions
- **Errors**: number of errors seen on the port in both directions. Errors can be due to corrupted packets
- **Drops**: number of packets drops seen on the port in both directions
- **Overruns**: number of times when the Ethernet port capacity has been exceeded in both directions

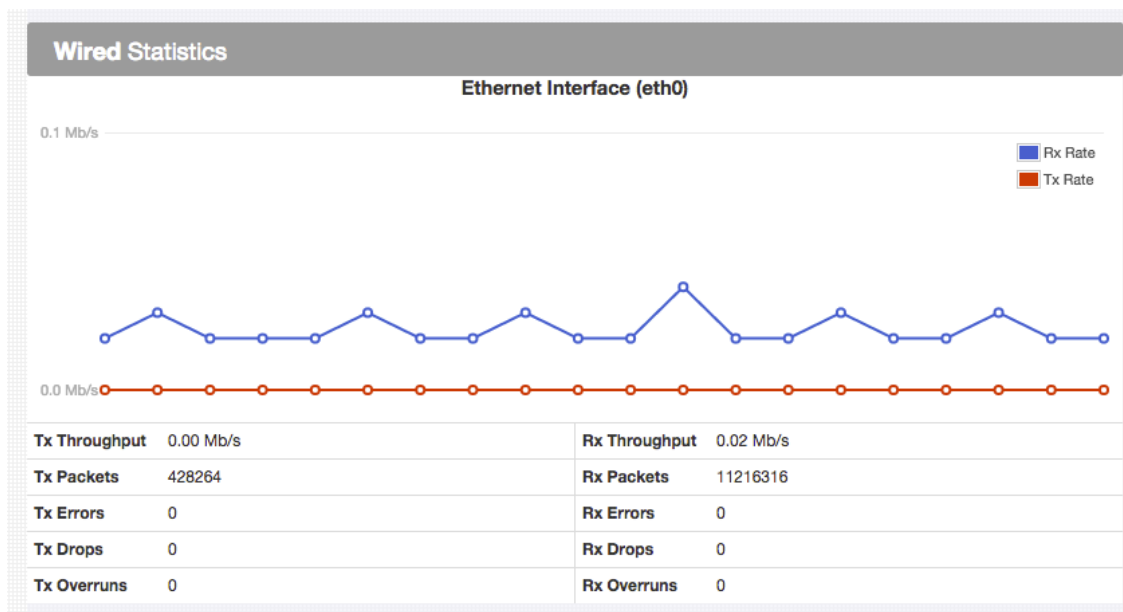|			
Tx Throughput	0.00 Mb/s	Rx Throughput	0.02 Mb/s
Tx Packets	428264	Rx Packets	11216316
Tx Errors	0	Rx Errors	0
Tx Drops	0	Rx Drops	0
Tx Overruns	0	Rx Overruns	0

Fig. 7.11 - FMQuadro - Wired Statistics

7.7.3   Wireless Statistics

This graph shows the throughput of going through the wireless interface in both directions. Graph is updated every seconds in real-time. Additional global statistic parameters are reported:

- **TX Throughput**: instantaneous throughput transmitted by the unit
- **RX Throughput**: instantaneous throughput received by the unit
- **Master Mac Address**: MAC address of the unit
- **Master IP:** IP address of the unit
- **Data Packet Encryption**: radio link encryption in use
- **Max Tx Modulation Rate**: maximum TX transmission rate
- **Max Rx Modulation Rate**: maximum RX transmission rate
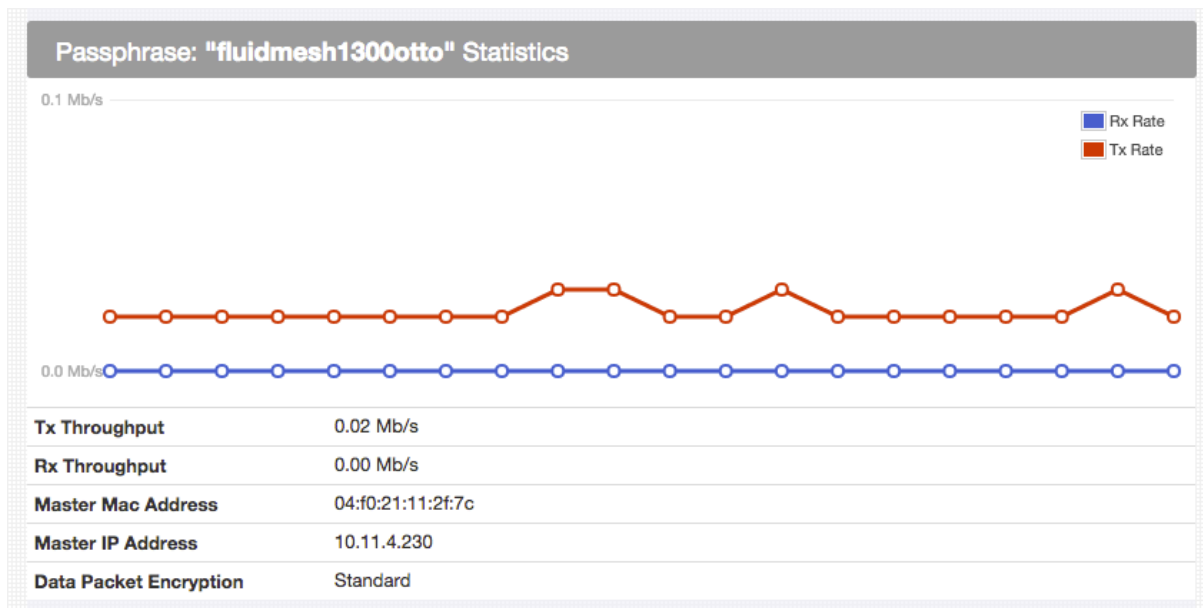
Fig. 7.12 - FMQuadro - Passphrase Statistics

7.7.4   Slave Radio Analytics (Master Only)

Slave radio analytics shows a pie-chart reporting the traffic divided per remote device connected. Clicking on each device's name you can access additional information:

- **MAC address**: the HW address of the station connected
- **RX rate**: rate of the traffic received by the station (downlink traffic)
- **TX rate**: rate of the traffic transmitted by the station (uplink traffic)
- **Signal strength**: level of the received signal
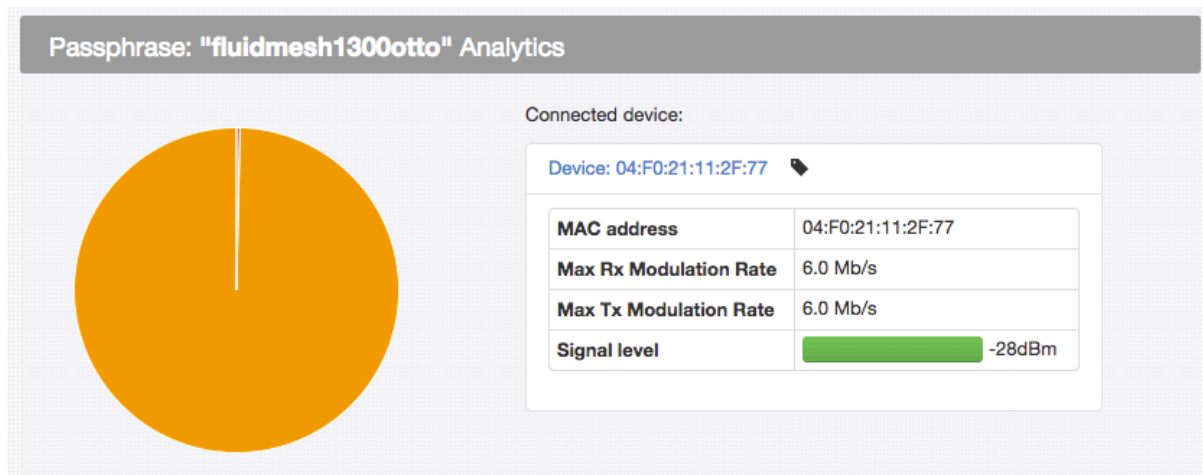
Fig. 7.13 - FMQuadro Passphrase Analytics

Clicking on the LABEL tag next to the device's MAC address it is possible to change the device's name.

Fig. 7.14 - changing device's name

7.8   Settings

This tab allows to set parameters related to the radio interface and general network parameters. It is divided in 3 sections:

- **GENERAL**: IP and general network parameters
- **WIRELESS**: wireless network settings (channel, bandwidth etc.)
- **SYSTEM**: admin settings, backup, restore and firmware upgrade utilities

7.8.1 General settings

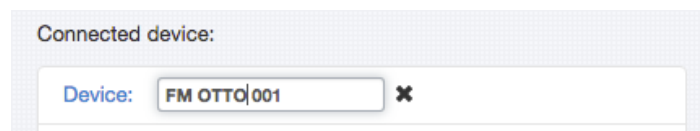*Fig. 7.15 - SETTINGS - General*
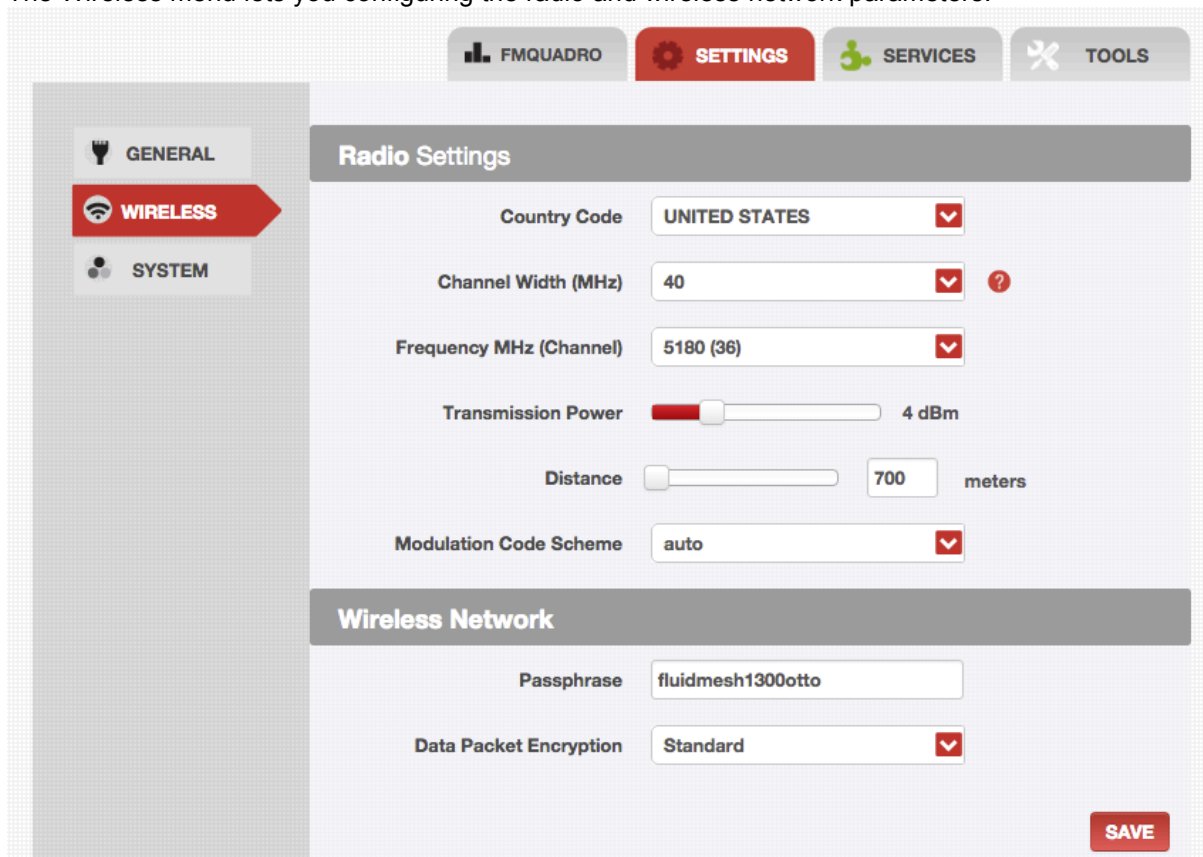
Here you can set:

- **IP Address:** the private IP address of the LAN interface.
- **Netmask:** the subnet mask of the private IP address of the LAN interface.
- **Gateway:** default gateway (if needed otherwise leave it blank)
- **Primary and Secondary DNS**: please refer to the network administrator in case it is needed to set these parameters manually.
- **MTU:** defines the size (in bytes) of the largest protocol data unit the interface can pass on.

Click on **SAVE** to store parameters.

7.8.2 Wireless settings

The Wireless menu lets you configuring the radio and wireless network parameters.

Fig. 7.16 - Wireless settings

Radio settings are:

- **Country Code**: it must be set according to the country of operation. To ensure device operation follows regulatory compliance rules, please make sure to select the correct country where the device will be used.
- **Channel Width**: this is the spectral width of the wireless channel. Supported widths are 20, 40 and 80MHz.
- **Frequency**: spectral operation frequency of the wireless channel.
- **Transmission Power:** the actual radio emitted power in dBm. Different countries have different regulation. The radio automatically obeys the regulation of the selected country.
- **Distance:** represents the estimated link distance.
- **Modulation Code Scheme**: defines the data rate (in Mbps) at which the device should transmit wireless packets. It is recommended to set it to "auto".

Wireless Network parameters:

- **Passphrase**: the shared passphrase is a shared secret word that must be set in every FM unit forming a wireless network. Any Fluidmesh device that does not have the correct passphrase will not be able to be part of the network. Different passphrases can also be used to create separate Fluidmesh networks in the same area and sharing the same frequencies. Passphrase secret is also used for setting the Fluidmesh proprietary encryption secret.
- **Data Packet Encryption**: supports proprietary protocol data encryption or AES (optional).

7.8.3 System settings

System settings allow to change user, password and performing normal backup and upgrade operations on the device.
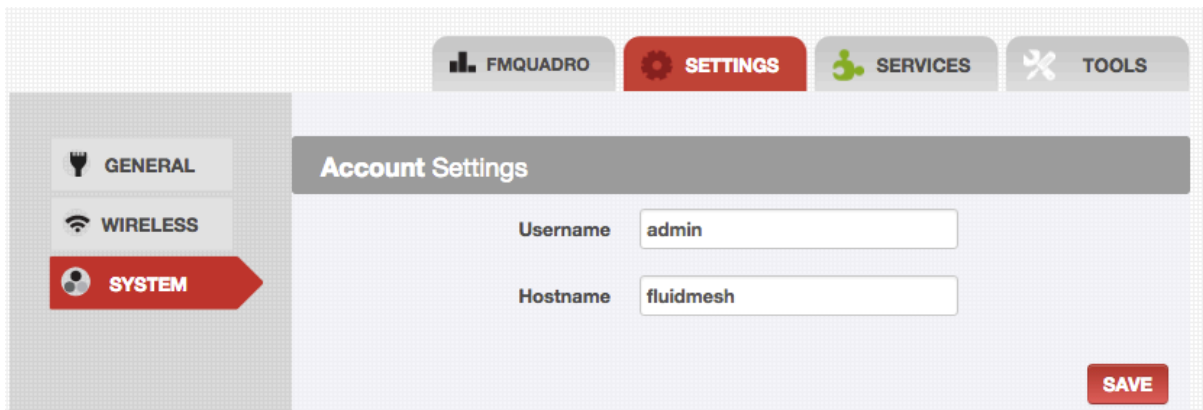
Fig. 7.17 - Account settings

Account Settings allows you to change your username and/or hostname simply inserting them and clicking the **SAVE** button.
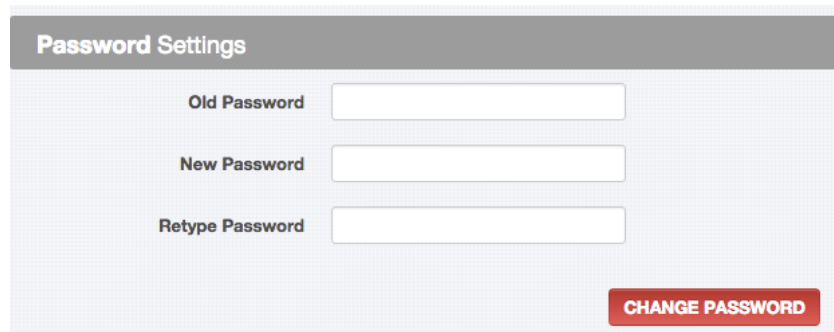
Fig. 7.18 - Password settings

Password settings is used to set a new password for the device. Default password is "admin".
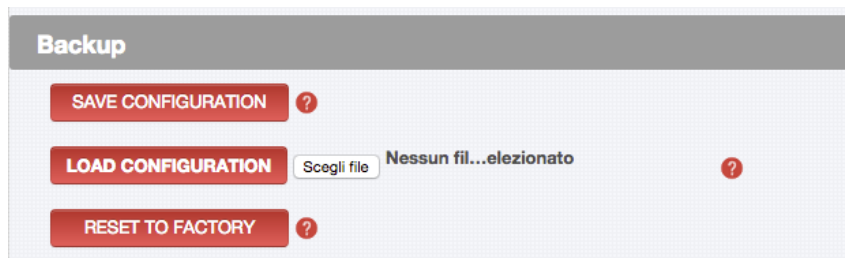
Fig. 7.19 - Configuration Restore, Backup and Load

Backup options:

- **SAVE CONFIGURATION**: clicking this button the web interface creates and downloads a configuration file (extension ".fm") containing current settings to your computer.
- **LOAD CONFIGURATION**: uploads a configuration file (extension ".fm") from your computer to the device in use.
- **RESET TO FACTORY**: restores default factory parameters.

Firmware upgrade: through the *firmware upgrade* tab (<mark>**Errore. L'origine riferimento non è stata trovata.**</mark>), you can upgrade the Firmware of the devices to the latest version available.

Fig. 7.20 - Firmware Upgrade

Upgrading a working system is always a delicate and somewhat risky operation. Fluidmesh discourages anybody from upgrading a functional system except if there is an issue to fix.

Recommended upgrading procedure for running systems:

1. Download the latest firmware release available for your hardware/firmware family from the Fluidmesh Website (*www.fluidmesh.com*[2])
2. Power off the whole network
3. Power on one device at a time
4. Connect directly to the Fluidmesh unit to be upgraded directly through an Ethernet cable
5. Write down the unit configuration (at least network settings and wireless settings)
6. Upgrade the device with the chosen firmware
7. Once the upgrade is completed, wait for the system to reboot.

WARNING: DO NOT RESTART OR POWER OFF THE UNIT WHILE UPGRADING THE FIRMWARE. RESTARTING OR POWERING OFF THE UNIT BEFORE THE UPGRADE IS COMPLETED MIGHT DAMAGE THE UNIT.

When the upgrade is completed, check the **Firmware Upgrade** page in order to make sure that the new firmware version was correctly up-dated. If the firmware version did not change, the upgrade process failed. In this case please repeat the upgrade procedure.

7.9   Services

This menu is used to access specific Network services settings and enable Fluidmesh plugins on your device.

7.9.1   Routes

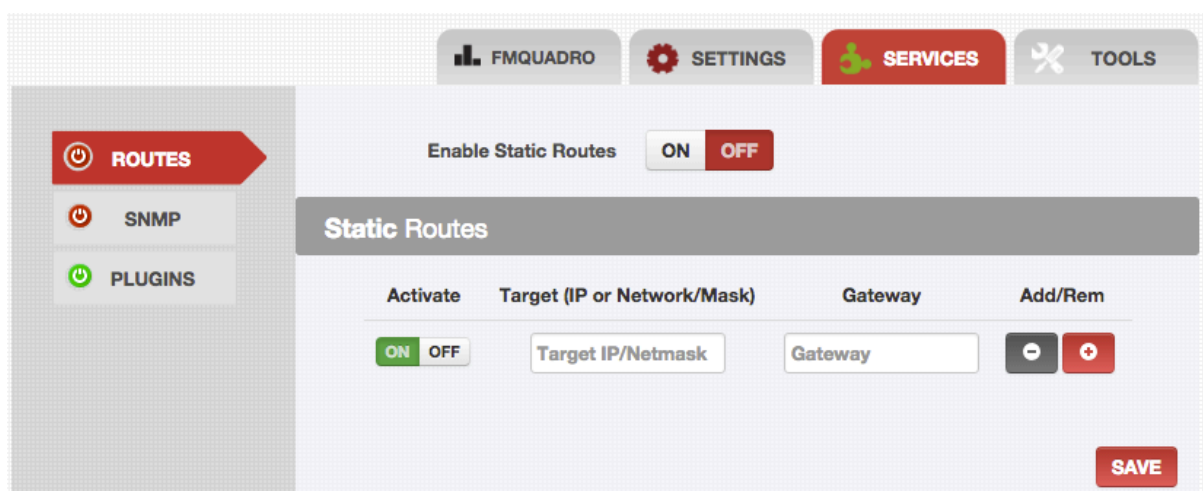*Fig. 7.21 - Routes setting*

Through the **Static Routes** page, it is possible to add static routing rules e.g. that target IP addresses pass through a specific gateway.

For each entry, a valid Target Network IP/Netmask and Gateway IP can be specified. Check the "ON"

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[2] *An approved Fluidmesh extranet account is required. Please register for an on-line account and contact Fluidmesh for approval.*

checkbox, in order to enable this rule.

7.9.2 SNMP
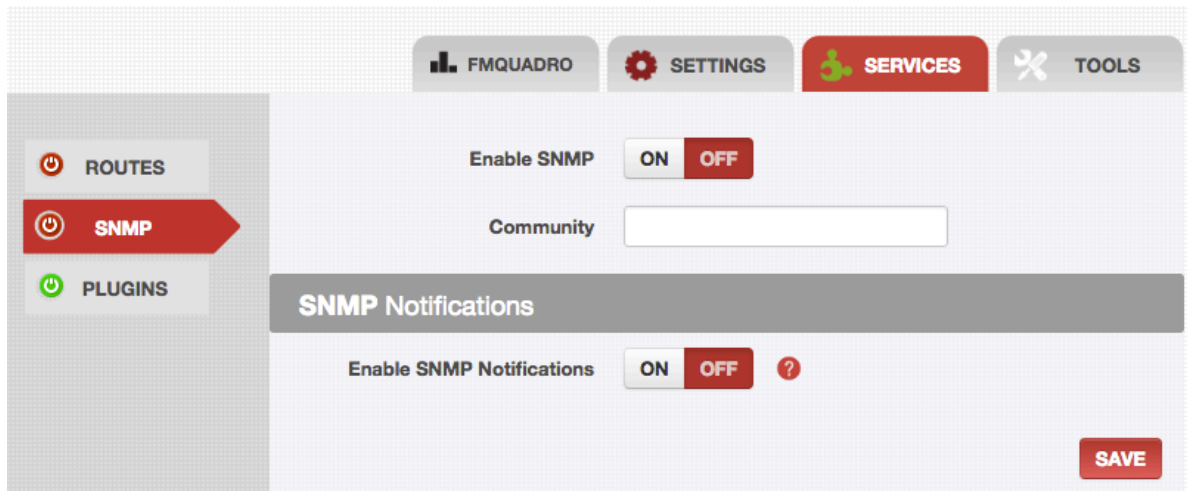
Fig. 7.22 - SNMP settings

Simple Network Monitor Protocol (SNMP) is used in network management systems to monitor network devices for conditions that require administrative attention. The SNMP agent allows communication to SNMP manager applications for network provisioning.

The SNMP page can be used to configure the SNMPv2c service to run on the unit. Both walkthrough and traps operations are supported. In case you are enabling traps (SNMP Notifications) on the unit, the SNMP will periodically send out monitoring information to the specified server IP address (NMS hostname) at a specified time interval. Please refer to the Fluidmesh MIB for more details about the SNMP information available for the Fluidmesh units.

- **Enable SNMP**: will enable the SNMP Agent.
- **Community**: specifies the SNMP community string. It is required to authenticate access to MIB objects and functions as embedded password. The device supports a Read-only community string that gives read access to authorized management servers to all the objects in the MIB. The default SNMP Community is "public".
- **Enable SNMP Notifications**: enables periodic transmission of SNMP traps

7.9.3 Plugins
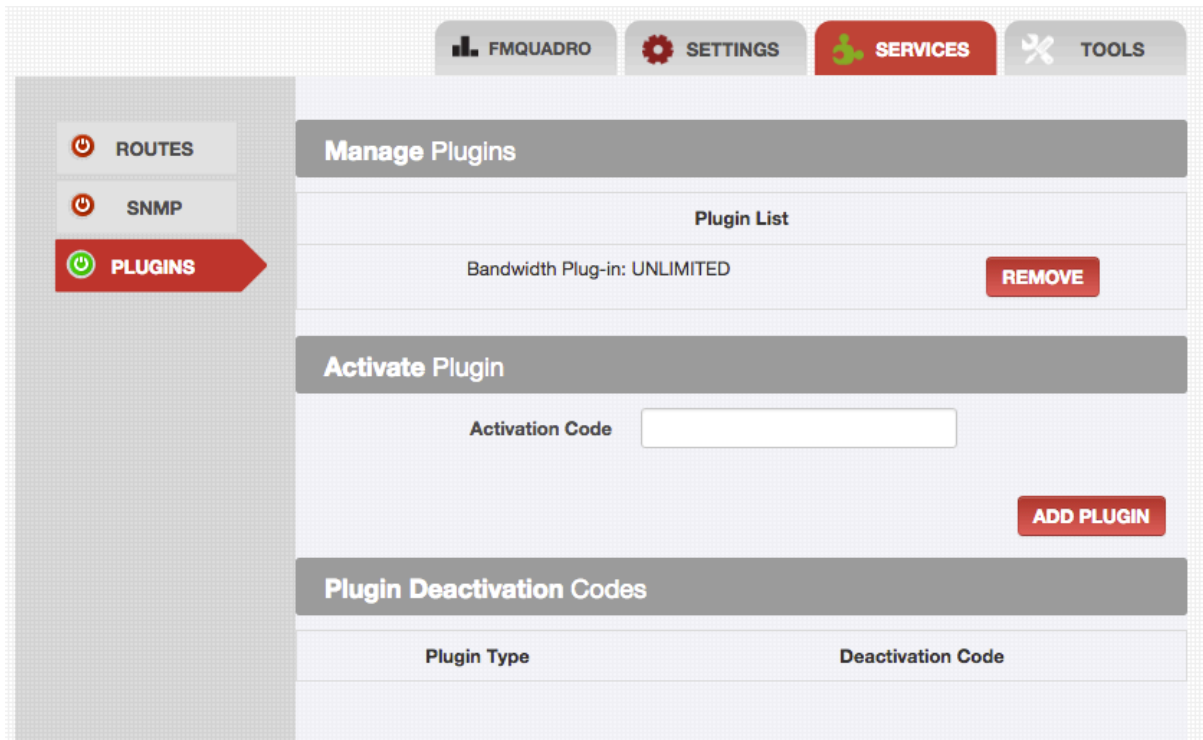
Fig. 7.23 - plugin Activation and Deactivation

Plugins are used to enable additional functions to your unit. In this page you can view, add or deactivate a plugin. If you don't have a plugin code please refer to the procedure indicated in Section 6.3.

- **Plugin List**: shows all the plugins that are active on the current unit
- **Activation code**: enter here the code to activate a new plugin
- **Deactivation code**: enter here the code to deactivate an existing plugin (this operation is useful for example to free a license for reuse on another unit).

7.10 Tools

The tools page contains a number of useful tool for testing or troubleshooting.

7.10.1 Ping
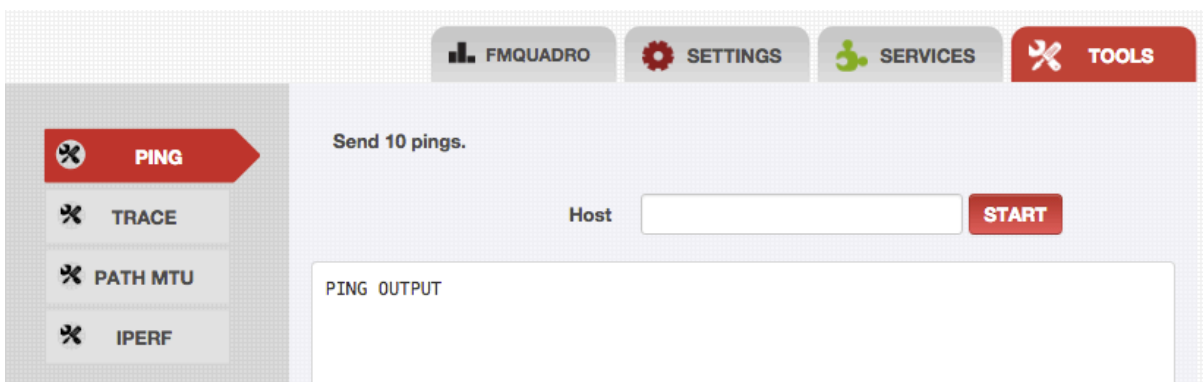
Fig. 7.24 - Ping tool

Ping commands can be run to test the if a specific IP address can be reached. Just enter the target address in the **Host** input box and press **START**. The **PING OUTPUT** textbox will return ping results.

7.10.2 Trace

Fig. 7.25 - Trace tool

Traceroute commands can be run to verify the path to reach a specific IP address.

7.10.3 Path MTU

Fig. 7.26 - Path MTU

Path MTU helps understanding the maximum transmission unit (MTU) size on the network path to the target IP (Host).

7.10.4 IPERF
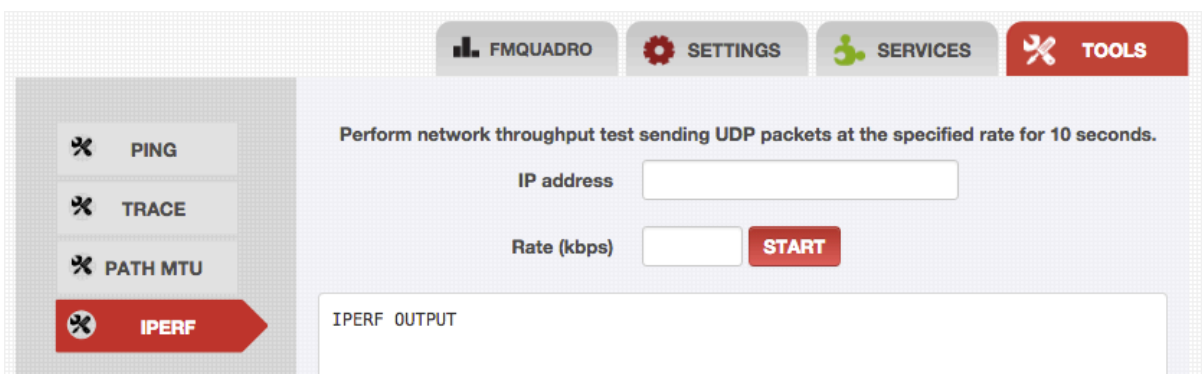
Fig. 7.27 - IPERF tool

Perform network throughput test sending UDP packets at the specified rate for 10 seconds.

8 Troubleshooting

The troubleshooting section will allow you to solve the most common problems encountered when configuring and installing Fluidmesh products.

8.1   I am unable to get the login screen

If you are unable to get the login form on your computer screen, you should check the following:

Is your computer set to a valid IP address? You should manually set the correct network settings as follows:

1. In Windows Explorer, right-click "My Network Places" and select Properties;

2. Right-click Local Area Network and select Properties;

3. Right-click Internet Protocol (TCP/IP) and select Properties;

4. Set the IP address to 192.168.0.30 (or any other IP address belonging to the subnet 192.168.0.0/255.255.255.0), Netmask to 255.255.255.0;

5. Click OK, then OK again.

Have you disabled the "Access the Internet using a proxy server" function? To disable the **Access the Internet using a proxy server** function, go to **Control Panel** > **Internet Options** > **Connections** > **LAN Settings** and uncheck the enable box.

8.2   I am unable to login to t he web-based interface

If you are unable to login to the Web-based interface, check your user name and password settings.

The user name cannot be changed by the user and corresponds to:

admin

The password can be changed, so make sure you are using the right password. The default password is:

admin

If you forgot the password, check Section 8.3 to fix the problem.

8.3   I forgot the Administrator password

If you forgot the password and need to access the Web-based interface, you must physically access the unit, open the enclosure in a weather-safe situation and reset to the factory default settings.

APPENDIX A

Federal Communication Commission Interference Statement

This equipment has been assembled with components that comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environement. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expenses.

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: to assure continued compliance, use only shielded interface cables when connecting to computer or peripheral devices. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Radiation Exposure Statement

This equipment has been assembled using components that comply with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.

This device has been assembled using components that comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Industry Canada

This Class B digital apparatus has been assembled using components that comply with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme a ́la norme NMB-003 du Canada.

The use of this device in a system operating either partially or completely outdoors may require the user to obtain a license for the system according to the Canadian regulations.

EC Declaration of Conformity

Fluidmesh Networks, Inc. declares under its sole responsibility that Fluidmesh 1100 series are compliant with the following Directives; and have been designed and manufactured to the following Specifications:

EMC	EN 61000-6-1; EN 61000-6-2; EN 61000-6-3; EN 61000-6-4; EN 489-17
R&TTE	EN 300 328-1 V. 1.3.1; EN 300 328-2 V. 1.2.1; EN 301 893-1 V. 1.2.1; EN 300 440-2 V. 1.3.1
Safety	EN 60950-1:2001

Caution: This equipment is intended to be use in all EU and EFTA countries. Outdoor use may be restricted to certain frequencies and/or may require a license for operation. Contact local Authority for procedure to follow.

Note:
Class A ITE is a category of all other ITE which satisfies the class A ITE but not the class B ITE limits. Such equipment should not be restricted in its sale but the following warning shall be included in the instruction for use:
WARNING: this is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

For more details on legal combinations of power levels and antennas, contact Fluidmesh Networks, Inc.

EMC	EN 61000-6-1; EN 61000-6-2; EN 61000-6-3; EN 61000-6-4; EN 489-17
R&TTE	EN 300 328-1 V. 1.3.1; EN 300 328-2 V. 1.2.1; EN 301 893-1 V. 1.2.1; EN 300 440-2 V. 1.3.1
Safety	EN 60950-1:2001

Caution: This equipment is intended to be use in all EU and EFTA countries. Outdoor use may be restricted to certain frequencies and/or may require a license for operation. Contact local Authority for procedure to follow.

Note:

For more details on legal combinations of power levels and antennas, contact Fluidmesh Networks, LLC.

Belgique

Dans le cas d'une utilisation privee, `a l'exterieur d'un batiment, au-dessus d'un espace public, aucun enregistrement n'est necessaire pour une dis-tance de moins de 300m. Pour une distance sup´erieure `a 300m un enregistrement aupr`es de l'IBPT est requise. Pour une utilisation publque a l'exterieur de batiments, une licence de l'IBPT est requise. Pour les enregistrements et licences, veuillez contacter l'IBPT.

France

Vous pouvez contacter l'Autorite de Regulation des Telecommunications (http://www.art-telecom.fr) pour de plus amples renseignements.

APPENDIX B

Contact Information

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