



## Document specifications


This document was completed for the **M2M Router PRO**<sup>®</sup> device and contains the detailed description of the device configuration which is necessary for the proper operation of the device.

When ordering, you can choose from 3G, 4G LTE and LTE 450 module versions with further optional additional boards (as DUAL SIM, WiFi, RS232/RS485, etc.) to the router. All of the listed settings are similar for the modem versions.

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# 1. Starting up the Router

## 1.1 Cable connection



1. **Mount** a 2G/3G or two LTE **SMA antenna** – according to the module type - to one of the **Antenna** titled SMA-M interfaces (in case of LTE module all the two antenna must be mounted).
2. If there is a WiFi module presented, then connect a WiFi antenna to the **WiFi** titled **antenna** connector.



3. **Insert an activated data SIM card** to the SIM holder, placed the chip-side up and the cutted edge towards to inside and push until it sleeves.
4. **Connect UTP cable to the RJ45 port (Ethernet** titled), the other side of the cable must be **plugged to the PC** or a current network device.

5. **The DHCP service is turned off for the router Ethernet interface**, by default. Therefore, **you have to configure an IP address for you PC, manually.**

Add for. e.g. the 192.168.127.10 IP address to your computer's Ethernet interface for connecting to the router.  
(If you have the WiFi onboard version of the router, then you can configure your router on WiFi (DHCP activated).

## 1.2 First starting of the router

1. **Plug the 12V DC power adapter chord to the POWER interface**, then **plug the adapter to the 230V** electrical network.
2. The **router** has a **pre-installed system** (contains uploaded firmware and system software). By plugging the power adapter to the 230V AC socket, the router begins to work, whereas its **LED signals** are showing the **current activity** during the operation.
3. When the router is booting, the upper **ST LED** will be flashing once per seconds with **green** light, which means that the system is loading the system. The system starting then takes about 2 minutes while it will be ready for usage.
4. When the **ST LED** will not flashing anymore (but the other LEDs are active), then the system is ready for operating. Then the **ST LED** will blink once in every 10 seconds. The router is available on the web user interface and operating well. Then the router is available on the web user interface and operating well.
5. In case of availability of the **WiFi** (if WiFi module is presented in the device) then the lower **WiFi LED** lighting continuously by **green** light. This assigns that the WiFi/Access Point is available for the connecting clients – for accessing the public Internet.
6. The mobile network availability is signed by the middle **Cell LED**. When the SIM card network registration was successfully performed by the modem, the middle LED lights continuously by **green**.
7. **As soon as you can, configure the internet settings of the wireless module (SIM and APN) for connecting to the 3G/4G/LTE network – in other case the router will be restarting in every 10 minutes!**
8. If you notice any failure or unusual LED flashing, then go to the **Troubleshooting** chapter.

In **case of restart** or manual restarting of the router, **all the three LEDs** will lighting for 1 second with **red** colour, then will be blank for a couple of seconds. Then the boot sequence repeats from the point nr. 3 as it is written here above.

### 1.3 Web user interface & Login

1. Then now you can connect to the **router's local web interface (LuCi) through the Ethernet** interface – on its default address.

***Attention!***

*For accessing the web user interface we offer the Mozilla Firefox web.*

Default web user interface (LuCi) address is: <https://192.168.127.1:8888>

The login data are the following:

- **Username: *root***
- **Password: *wmrpwd***
- then push to the **Login** button.

M2M-Router-PRO

### Authorization Required

Please enter your username and password.

Username

Password

Powered by LuCI Master (git-15.137.54403-f67d39e) / OpenWrt Designated Driver r49022

2. **Allow the accessing of the router default IP address in your browser** by pushing to the **Special** button, then **allow the safety exclusion** into the pop-up window.

***Attention!***

*When connecting to the public network, it is recommended to change the login password!  
The ethernet IP address can be modified after login from the OpenWrt.*





## 2. Router configuration on the OpenWrt user interface

### 2.1 Dashboard (Main page)

After the login to the web interface, the startup screen appears with the current status of the router.

M2M-Router-PRO Status System Router Services Network Logout AUTO REFRESH ON

#### Status


##### System

Hostname	M2M-Router-PRO
Model	Atmel AT91SAM9X25-EK
Firmware Version	OpenWrt Designated Driver r49022 / LuCI Master (git-15.137.54403-f67d39e)
Build Date	2017-04-20 09:39:16.372111327+02:00
Kernel Version	4.4.4
STM32 Firmware	201604191
Local Time	Thu Apr 27 14:00:16 2017
Uptime	0h 4m 23s
Load Average	1.74, 1.30, 0.57

##### Memory

Total Available	<div style="width: 70%;"><span>89020 kB / 125560 kB (70%)</span></div>
Free	<div style="width: 67%;"><span>84276 kB / 125560 kB (67%)</span></div>
Buffered	<div style="width: 3%;"><span>4744 kB / 125560 kB (3%)</span></div>

##### Network

Modem Model	EHS5-E
IMEI	358173053776707
SIM ID	8936200003250172672
Modem RSSI	11
Modem SQ	99
CREG	2,1,"1204","01CD8B54",6
COPS	0,0,"Telenor HU",2
IPv4 WAN Status	 Type: 3g Address: 91.104.81.71 Netmask: 255.255.255.255 Gateway: 91.104.81.71 DNS 1: 217.79.129.75 DNS 2: 217.79.128.45 Connected: 0h 0m 8s

Check the *Build Date* (OpenWrt) statuts that it is 2017-04-20 or newer and the *STM32 Firmware* version.

At the **Network** part you can check the **Modem model**, modem identifier (**IMEI**), the SIM identifier ICC (**SIM ID**), the **Modem RSSI** (mobile network signal strength), the **Modem SQ** (signal quality CSQ) values, and the **SIM-card logon data** (*AT+COPS?*), with the **IPv4 WAN status** of the network (as connection Type, IP address).

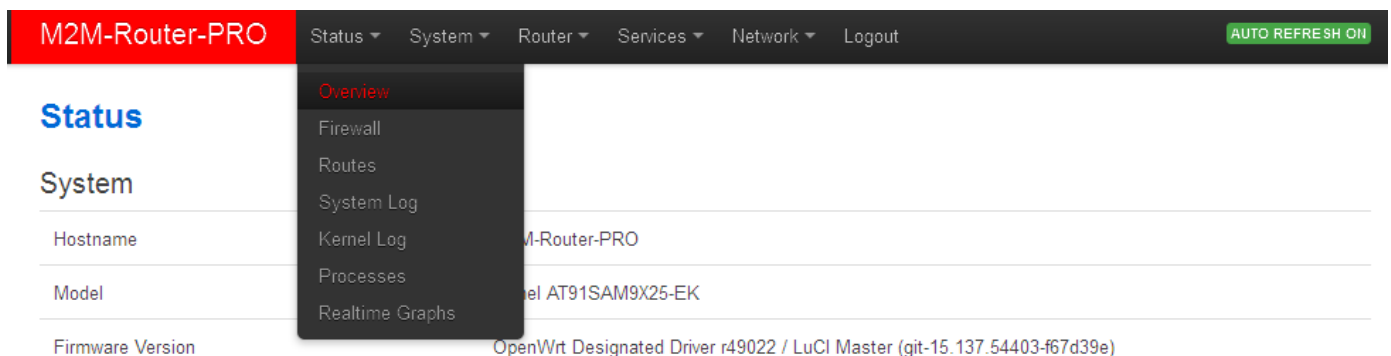
## 2.2 Menu

By the menu you can access the following features:

- **Status** – Status data, operation logs, operation monitoring
- **System** – System settings, administration, software and fw-refresh, backup/restrore of the configuration settings
- **Router** – Device Manager settings, Modem and Logging parameters, Ping an IP address, Daily restart, Factory settings
- **Services** – DynDNS (dinamic DNS) settings, Ser2net configuration (RS232/RS485)
- **Network** – network interface settings, WiFi settings, DHCP, DNS, Route rules, diagnostics, firewall

## 2.3 Status menu

- In the **Status** you can check the current status (**Overview**) ,
- activities of the router (**Processes**),
- monitoring the realtime operation at the **Realtime Graphs**,
- check the system messages and event log (**System Log** and **Kernel Log**),
- at the **Firewall** item, you can see the firewall events and information,
- at the **Routes** item the valid/active route settings.



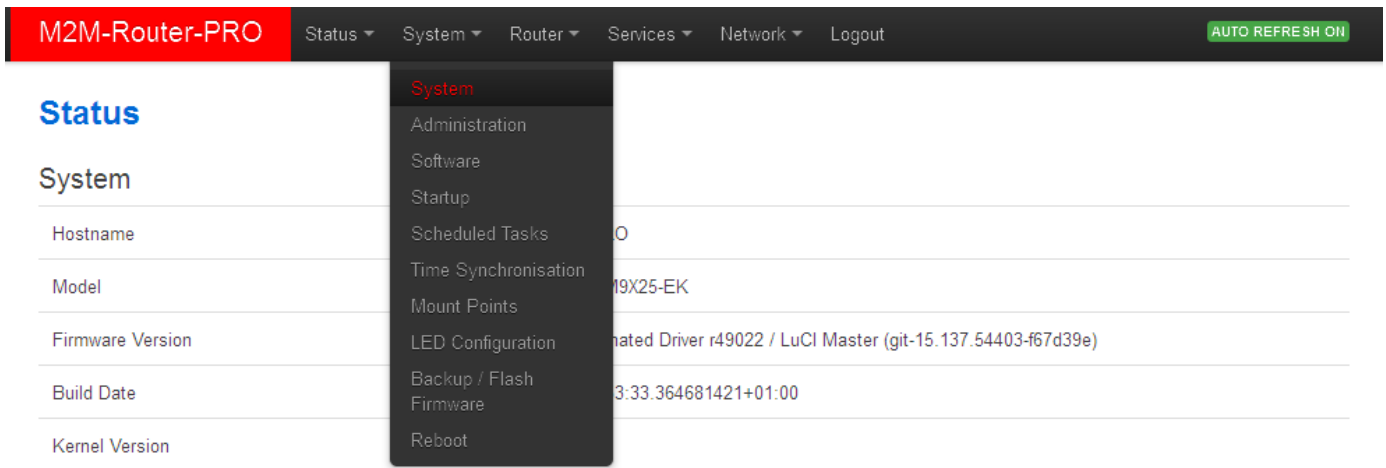
The screenshot shows the M2M-Router-PRO web interface. The top navigation bar includes 'Status', 'System', 'Router', 'Services', 'Network', and 'Logout'. A dropdown menu is open under 'Status', listing 'Overview', 'Firewall', 'Routes', 'System Log', 'Kernel Log', 'Processes', and 'Realtime Graphs'. The main content area displays system information: Hostname (M-Router-PRO), Model (el AT91SAM9X25-EK), and Firmware Version (OpenWrt Designated Driver r49022 / LuCI Master (git-15.137.54403-f67d39e)). An 'AUTO REFRESH ON' button is visible in the top right corner.

## 2.4 System menu

You can found several system settings in the **System** and **Administration** menu items.

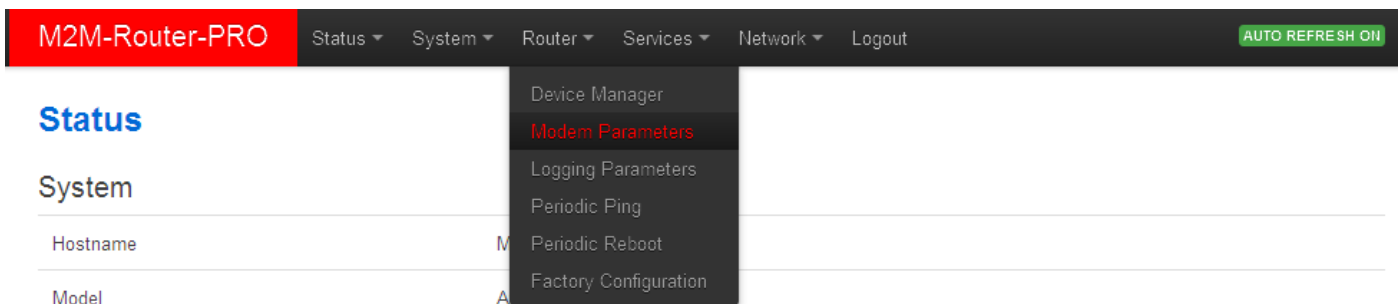
- Installation of further **Software** (3rd party tools, applications for the Linux distribution.
- You can define the **Startup** applicatons – resident programs during the operation and th **Scheduled Tasks**.
- Setup the NTP server for **Time Synchronisation**.

- The **Mount Points** are showing the available (mounted) shares and drives.
- The **LED Configuration** is also configurable.
- You also can **Backup / Flash firmware** updates even **Rebooting** the router device.



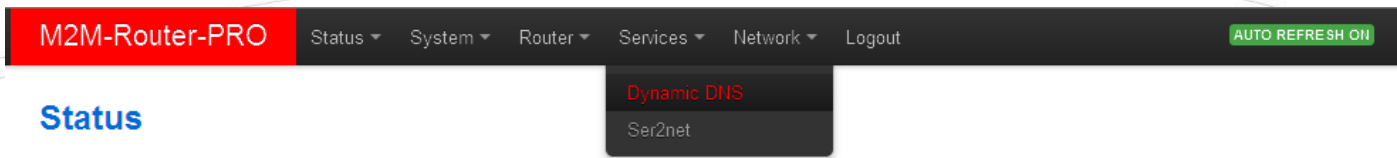
## 2.5 Router menu

- You can define the remote monitoring software connection settings of the az M2M **Device Manager**.
- Then at the **Modem parameters** (define special parameters for the connection).
- Define the **Logging parameters**.
- At the **Periodic Ping** you can configure the cyclic heartbeat ping interval settings – as a network checking method feature.
- The daily router reboot can be allowed at the **Periodic Reboot** menu item.
- The backup of the factory settings is possible at the **Factory Configuration** (saves to a file).



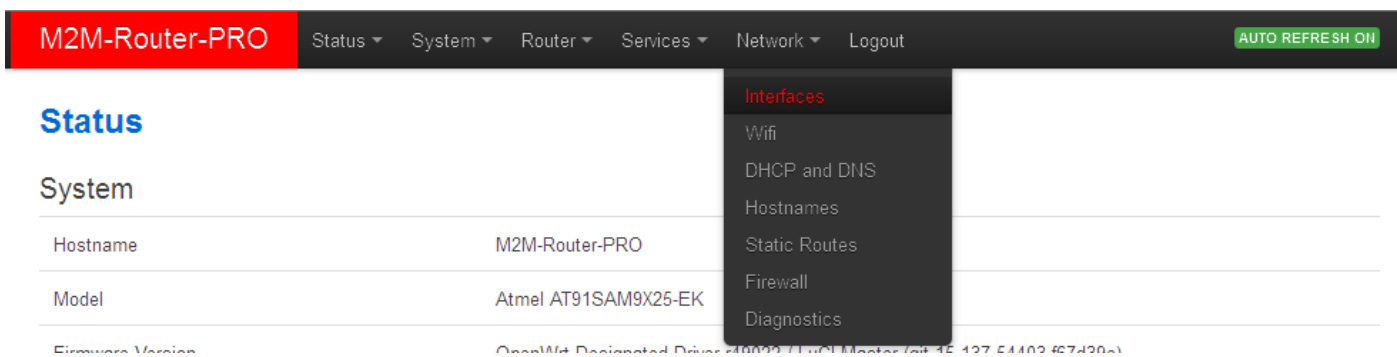
## 2.6 Services menu

- Here you can define the **DynDNS** (dynamic DNS) service settings
- Also the RS232/RS485 port communication settings (**Ser2net**).



## 2.7 Network menu

- Here you can configure the settings of each network **Interfaces**
- You can check the WiFi connected devices at the **WiFi** item.
- You can modify the **DHCP** and **DNS** settings.
- or define the router network device name at the **Hostname**.
- The **Static route** paths can be also defined.
- The **Firewall** rules can be declared here as the following submenu items: Port forward, IP router, NAT settings.
- At the **Diagnostics** item, you can test the network operation and connection health by the ping an IP address for the interfaces.



# 3. Network configuration of the router

## 3.1 Interface settings

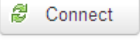
The list of the available network interfaces can be found at the **Interfaces / Interface Overview** menu item.

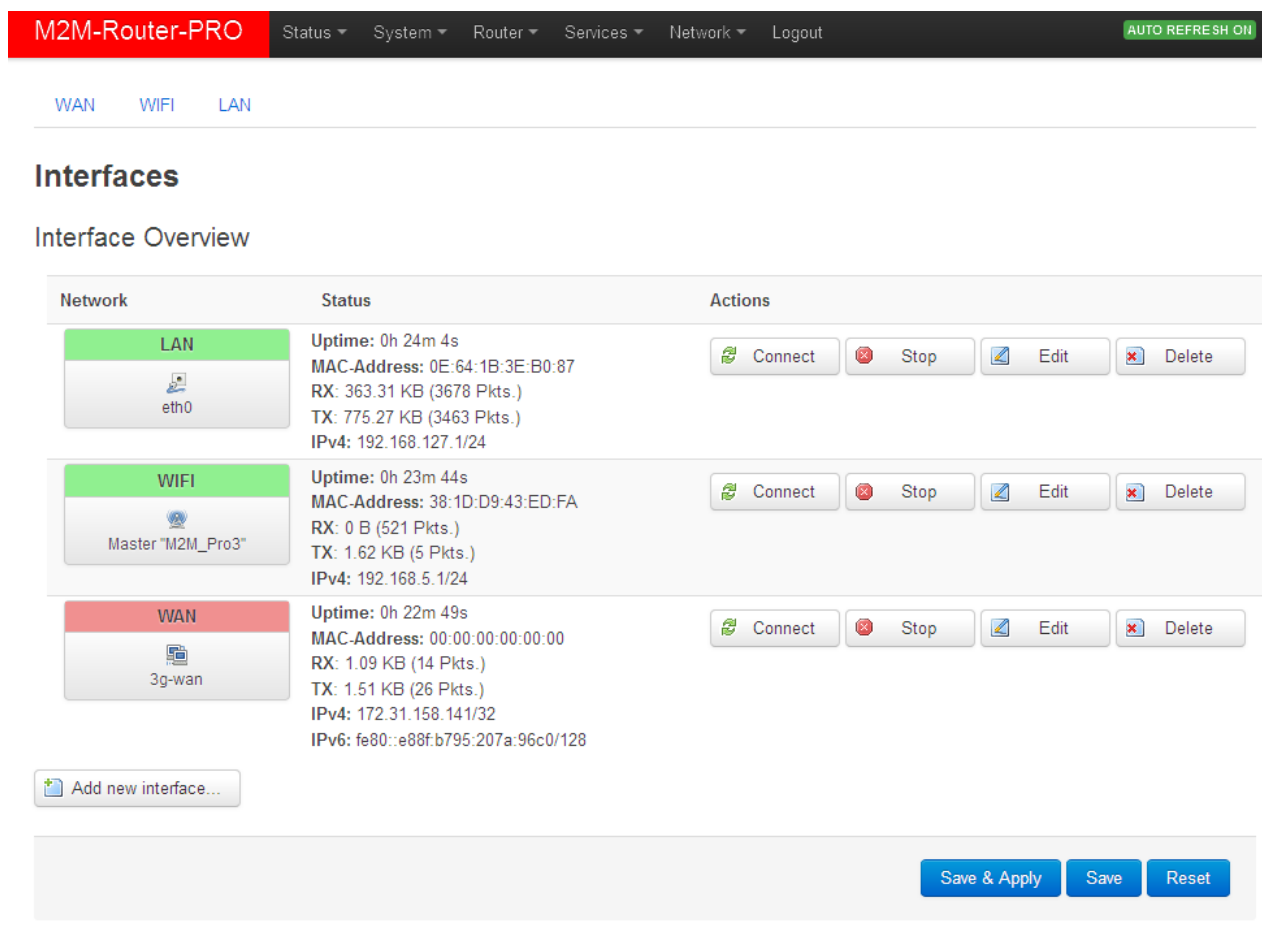
The **LAN** interface meaning the Ethernet port connection (*eth0*), the **WAN** interface is the public wireless Internet connection (as *3g-wan, in case of LTE: eth1*) – which means the 3G, 4G, LTE 450 module by physically.

In case of **WiFi** the proper related interface is also available.

### Modifying the interface settings

At the interfaces, at right you can modify the settings with the  button.

The **Stop** button stops the communication on the current interface, the  button reconnects the related interface connection.



The screenshot shows the M2M-Router-PRO interface configuration page. At the top, there is a navigation bar with 'M2M-Router-PRO' and a menu with 'Status', 'System', 'Router', 'Services', 'Network', and 'Logout'. An 'AUTO REFRESH ON' button is on the right. Below the navigation bar, there are tabs for 'WAN', 'WIFI', and 'LAN'. The main content area is titled 'Interfaces' and 'Interface Overview'. It displays a table with three rows, each representing a network interface: LAN, WIFI, and WAN. Each row includes the interface name, status, and a set of action buttons (Connect, Stop, Edit, Delete). The LAN interface (eth0) is highlighted in green, the WIFI interface (Master "M2M\_Pro3") is highlighted in green, and the WAN interface (3g-wan) is highlighted in red. Below the table, there is an 'Add new interface...' button. At the bottom right, there are 'Save & Apply', 'Save', and 'Reset' buttons.

Network	Status	Actions
<b>LAN</b> eth0	Uptime: 0h 24m 4s MAC-Address: 0E:64:1B:3E:B0:87 RX: 363.31 KB (3678 Pkts.) TX: 775.27 KB (3463 Pkts.) IPv4: 192.168.127.1/24	Connect  Stop  Edit  Delete
<b>WIFI</b> Master "M2M_Pro3"	Uptime: 0h 23m 44s MAC-Address: 38:1D:D9:43:ED:FA RX: 0 B (521 Pkts.) TX: 1.62 KB (5 Pkts.) IPv4: 192.168.5.1/24	Connect  Stop  Edit  Delete
<b>WAN</b> 3g-wan	Uptime: 0h 22m 49s MAC-Address: 00:00:00:00:00:00 RX: 1.09 KB (14 Pkts.) TX: 1.51 KB (26 Pkts.) IPv4: 172.31.158.141/32 IPv6: fe80::e88f:b795:207a:96c0/128	Connect  Stop  Edit  Delete

Add new interface...

Save & Apply Save Reset

At the upper **WAN, WIFI, LAN** titles you will find further settings related to the chosen interfaces.

## 3.2 Mobile internet settings (3G/4G/LTE450 modem)

Open the **WAN** item from the upper selection. Then at the **General Setup** tab you can see the current status of the interface and the transmitted data amount.

The screenshot shows the M2M-Router-PRO web interface. At the top, there is a navigation bar with 'M2M-Router-PRO' in a red box, followed by menu items: Status, System, Router, Services, Network, and Logout. A green 'AUTO REFRESH ON' button is on the right. Below the navigation bar, there are three tabs: WAN (selected), WIFI, and LAN. The main heading is 'Interfaces - WAN'. A descriptive paragraph explains that users can bridge interfaces and use VLAN notation. Below this is the 'Common Configuration' section with three sub-tabs: General Setup (selected), Advanced Settings, and Firewall Settings. The 'General Setup' tab displays the status of the '3g-wan' interface, including uptime (0h 28m 40s), MAC address (00:00:00:00:00:00), RX/TX data (1.09 KB / 1.51 KB), IPv4 (172.31.158.141/32), and IPv6 (fe80::e88f:b795:207a:96c0/128) addresses. Below the status, there are several configuration fields: Protocol (UMTS/GPRS/EV-DO), Modem device (/dev/ttyACM3), Service Type (UMTS/GPRS), Mobile country code, Mobile network code, Dual SIM (unchecked), SIM #1 APN (wm2m), SIM #1 PIN, SIM #1 PAP/CHAP username, SIM #1 PAP/CHAP password (with a green eye icon for visibility), and Dial number (\*99\*\*\*1#).

Configure the module to the wireless internet and for the 3G/4G/LTE network connection (by the modem type and network behaviour) here for the **WAN** interface.

For configuring end enabling the **roaming** settings – in **case of international or country border usage** – you may need to setup the **Mobile country code** and **Mobile network code** parameters – even if you are attempted to use only a preferred mobile network.

The international country codes can be found here: <http://mcc-mnc.com>

Ask your mobile operator about the available international settings.

You can define the **SIM #1 APN** account name, and the **SIM #1 PIN** code if it is necessary for the connection.

***Attention!***

*The available APN settings will be assured by the SIM card provider mobile operator or your mobile internet service provider.*

Here you will find some examples for the APN settings.

**M2M APN (enclosed)**

APN name: wm2m

SIM #1 APN

wm2m

**Public Internet APN (opened)**

APN name: net

SIM #1 APN

net

***The LTE 450 communication needs special network and an LTE capable SIM-card for the successful connection!***

**Automatic mode**

**When you not set any value** for the APN, the router will connect by the SIM-card automatically to the next available network's available APN.

**Authentication**

The **PAP/CHAP username** and **PAP/CHAP password** settings can be also configured here – if it is required for the connection.

**When you are attempted to use a DUAL-SIM version router**

This can be used well as an alternative – or spare - network path, when the operation can be granted with better change instead of the field coverage (adding further mobile operator service).

Check in the **Dual SIM** option and define the **SIM #2** APN and PIN code parameter over the **SIM #1**.

### Fom the Dual-SIM handling...

The nr. #1 SIM can be accessed by externally of the router, the SIM #2 is located inside the router.

The switching between the SIMs is automatic. It will switch to the next, when with the current SIM it cannot register to the network, or it is hanging or not operating.

The switching between the SIM cards is possible in turned of modem status. It takes about 1.5-2 minutes while the new SIM card will be registered to the mobile network.

Dual SIM	<input checked="" type="checkbox"/>
SIM #1 APN	<input type="text" value="net"/>
SIM #1 PIN	<input type="text"/>
SIM #1 PAP/CHAP username	<input type="text"/>
SIM #1 PAP/CHAP password	<input type="password"/>
SIM #2 APN	<input type="text" value="wm2m"/>
SIM #2 PIN	<input type="text"/>
SIM #2 PAP/CHAP username	<input type="text"/>
SIM #2 PAP/CHAP password	<input type="password"/>

The SIM switching can be occured by the following possible events **in case of every modem types**:

- Optional ping does not work (Periodic ping)
- Wrong SIM PIN code
- RSSI low value (99 or 0)
- No available PPP connection (timeout)

There is no SIM switch recovery, the switching is continuous. When none of the SIM cards were registered to the network, then it will continuously switching the SIM cards.

Click to the **Save & Apply** button for saving the settings, while the devices attempts then connecting to the mobile network.

#### ***Attention!***

*After doing the SIM, APN settings, and saving the settings, the router and the modem will not be automatically restarted futhermore!*

#### **Only in case of using the LTE450 modem:**

- After the SIM switching, the modem cannot registered for more than 2 minutes
- After 1 minute of the registration it still does not get WAN IP address to the **eth1** interface (still will be 10.0.0.10)



### 3.3 WiFi settings (in case of WiFi presence)

Choose the **WiFi** option from the menu, then at the **General Setup** tab you can define a different IP address range for the **IPv4 address**.

The WiFi feature is optional for the router. In case of presence of the module, the default **WiFi** mode is the *Access Point*, which means that the connecting clients on the WiFi can be using the wireless internet connection of the router. The WiFi module interface is bridged to the ethernet by default.

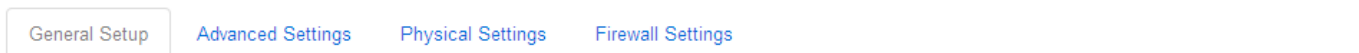
The **default WiFi password** for the *M2M\_Pro3* SSID is: **M2MPro\_123**









#### Interfaces - WIFI

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



Status	 Master "M2M_Pro3"	<b>Uptime:</b> 0h 35m 58s <b>MAC-Address:</b> 38:1D:D9:43:ED:FA <b>RX:</b> 0 B (782 Pkts.) <b>TX:</b> 1.62 KB (5 Pkts.) <b>IPv4:</b> 192.168.5.1/24
Protocol	Static address 	
IPv4 address	<input type="text" value="192.168.5.1"/>	
IPv4 netmask	255.255.255.0 	
IPv4 gateway	<input type="text"/>	
IPv4 broadcast	<input type="text" value="192.168.5.255"/>	
Use custom DNS servers	<input type="text"/> 	
IPv6 assignment length	disabled 	
	 Assign a part of given length of every public IPv6-prefix to this interface	

At the **Advanced Settings** tab, in the **DHCP Server** part, check the **Start** IP address and the number of the max. connectable WiFi clients (**Limit**). The router will assure IP addresses from **Start** IP address up to the **Limit** for the connecting clients. The IP address will be automatically provided for clients on the WiFi network.

## Interfaces - WIFI

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field 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 builtin IPv6-management

Override MAC address

Override MTU

Use gateway metric

### DHCP Server

General Setup

Advanced Settings

IPv6 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).

On the top of the screen, the **Bring up on boot** feature must be active (which initializes the 3G module when the router is booting), and the **Use default gateway** also must be active.

When you modified the settings, save them by the **Save & Apply** button.

M2M-Router-PRO Status ▾ System ▾ Router ▾ Services ▾ Network ▾ Logout AUTO REFRESH ON

---

radio0: Master "M2M\_Pro3"

### Wireless Overview

Generic MAC80211 802.11abgn (radio0) Scan Add

0% SSID: M2M\_Pro3 | Mode: Master Disable Edit Remove

*Wireless is disabled or not associated*

### Associated Stations

SSID	MAC-Address	Host	Signal / Noise	RX Rate / TX Rate
No information available				

The connecting WiFi clients can be listed at the **Network** menu / **WiFi** menu item - at the **Associated Clients** part.

You can define or modify further the current **WiFi settings** by the  button.

M2M-Router-PRO Status System Router Services Network Logout AUTO REFRESH ON


radio0: Master "M2M\_Pro3"

### Wireless Network: Master "M2M\_Pro3" (wlan0)

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


#### Device Configuration

General Setup **Advanced Settings**

Status  **SSID: M2M\_Pro3 | Mode: Master**  
0% *Wireless is disabled or not associated*

Wireless network is enabled  **Disable**

Operating frequency Mode Channel  
Legacy 6 (2437 MHz)



Transmit Power 20 dBm (100 mW)  
 dBm


#### Interface Configuration

General Setup **Wireless Security** MAC-Filter

ESSID M2M\_Pro3

Mode Access Point

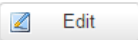
Network  lan:   
 wifi:   
 create:

 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 **Wireless Network** (WiFi interface) settings can be seen at the **Interface** part. The **ESSID** is the name of the SSID point (will be listed for the clients under this name). Therefore the wireless devices can easily discover and find it, and connect to the router by using the WiFi password.

#### **Attention!**

*The reconfiguration of the **SSID** is highly recommended, which can be initiated by the  button.*

At the **Mode** defines the WiFi operation mode as it can be *Access Point* or *Client*. In Client mode, the router can connect to other router.

If it is necessary to change the encryption method/level or WiFi password, you can make it at the **Wireless Security** tab, at **Encryption** field – where you can change to an another. By default the encryption os WPA2-PSK.


At the **Key** field you can change the WiFi connection password.

#### Interface Configuration

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

Encryption: WPA2-PSK

Cipher: auto

Key: ●●●●●●●● 

[Back to Overview](#) [Save & Apply](#) [Save](#) [Reset](#)

### 3.4 Ethernet (LAN) settings

For the LAN interface, at the **LAN** menu item at the **General Setup** tab you can define an own IP range (**IPv4 address**), with the related **IPv4 netmask** (subnet mask).

The detailed **LAN** interface settings can be performed by the **Network Interfaces** menu item at

the **LAN** interface  button.

**Change the default** 192.168.127.1 router **IPv4 address** to a different (own) IP address, regarding the current subnet.

Check the **IPv4 netmask** to be proper for the selected and required network class which you are attempted to use.

When you modified the settings, save them by the **Save & Apply** button.

WAN WIFI LAN

## Interfaces - LAN

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



eth0

**Uptime:** 2h 42m 18s  
**MAC-Address:** 0E:64:1B:3E:B0:87  
**RX:** 2.09 MB (19249 Pkts.)  
**TX:** 5.55 MB (17305 Pkts.)  
**IPv4:** 192.168.127.1/24

Protocol Static address ▾

IPv4 address 192.168.127.1

IPv4 netmask 255.255.255.0 ▾

IPv4 gateway

IPv4 broadcast

Use custom DNS servers

IPv6 assignment length disabled ▾

 Assign a part of given length of every public IPv6-prefix to this interface

IPv6 address

IPv6 gateway

IPv6 routed prefix

 Public prefix routed to this device for distribution to clients.

### **Important!**

*The DHCP service is turned off for the router Ethernet interface, by default. Therefore, you have to configure an IP address for you PC, manually.*

If you are not attempted to use a fixed IP address for the router, and if you want to use DHCP given IP by a different network device, then modify the **IPv4 address** to the connecting gateway – or other network device - IP address, and choose the *Static address* at the **Protocol**, the *DHCP client*

setting, and push the **Switch protocol** button. **Then the DHCP client will be activated for ethernet interface.**

Push the **Save & Apply** button for performing the changes.

### 3.5 DHCP, DNS settings

The DHCP service allows the automatic IP address providing for the connecting devices in the current IP segment by the router.

The DHCP settings can be found at the **Network** menu, **DHCP and DNS** item.

#### DHCP Server

General Setup IPv6 Settings

Ignore interface  [Disable DHCP for this interface.](#)

[Back to Overview](#)

Save & Apply

Save

Reset

#### ***Important!***

*The DHCP service is disabled by the factory default configuration. First, you have to enable the DHCP service for the usage and performing the further DHCP settings!*

If you attempted to enable the DHCP service, uncheck the *Disable DHCP for this interface* option. Then the related parameter settings will be visible with their default settings.

#### DHCP Server

General Setup **Advanced Settings** IPv6 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 \(2m\).](#)

[Back to Overview](#)

Save & Apply

Save

Reset

The **Start** field means the starting IP address in the subnet for the connecting devices (by default 192.168.x...). You can **Limit** how many IP addresses will be provided. The router will be providing addresses for the connecting devices in the 192.168.x subnet within the *Start* and between the *Start+Limit* address range (especially important for WiFi).

Save the settings with the **Save & Apply** button.

The further DHCP settings can be achieved at the **Network** menu, at the **DHCP and DNS** item, **General Settings** tab.

M2M-Router-PRO Status System Router Services Network Logout AUTO REFRESH ON

## DHCP and DNS

Dnsmasq is a combined [DHCP-Server](#) and [DNS-Forwarder](#) for [NAT](#) firewalls

### Server Settings

General Settings **Resolv 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 are 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](#)

### Active DHCP Leases

Hostname	IPv4-Address	MAC-Address	Leasetime remaining
----------	--------------	-------------	---------------------

There are no active leases.

At the **Active DHCP Leases** part you can see the list of the devices, which given their IP addresses from the router's DHCP service (with the renewal *lease time*).

In the **Static Leases** part you can  devices to always provide the same dedicated IP address by the router. This can be required by adding values to the **Hostname**, the **MAC-Address** and the **IPv4-Address**.

When you have modified the settings, save them by the **Save & Apply** button.

### 3.6 DNS settings

You can configure the DNS service from the **Network / DHCP and DNS** menu, with choosing the **Advanced Settings** tab.

At the **DNS server port** field you can define the port for the DNS service (by default its port number is 53).

M2M-Router-PRO Status ▾ System ▾ Router ▾ Services ▾ Network ▾ Logout AUTO REFRESH ON

### DHCP and DNS

Dnsmasq is a combined [DHCP](#)-Server and [DNS](#)-Forwarder for [NAT](#) firewalls

#### Server Settings

[General Settings](#) [Resolv and Hosts Files](#) [TFTP Settings](#) **Advanced Settings**

- Filter private [?](#) Do not forward reverse lookups for local networks
- Filter useless [?](#) Do not forward requests that cannot be answered by public name servers
- Localise queries [?](#) Localise hostname depending on the requesting subnet if multiple IPs are available
- Expand hosts [?](#) Add local domain suffix to names served from hosts files
- No negative cache [?](#) Do not cache negative replies, e.g. for not existing domains
- Additional servers file   
[?](#) This file may contain lines like 'server=/domain/1.2.3.4' or 'server=1.2.3.4' for domain-specific or full upstream [DNS](#) servers.
- Strict order [?](#) [DNS](#) servers will be queried in the order of the resolvfile
- Bogus NX Domain Override  [?](#) List of hosts that supply bogus NX domain results
- [DNS](#) server port   
[?](#) Listening port for inbound [DNS](#) queries
- [DNS](#) query port   
[?](#) Fixed source port for outbound [DNS](#) queries
- [Max.](#) [DHCP](#) leases   
[?](#) Maximum allowed number of active [DHCP](#) leases
- [Max.](#) [EDNS0](#) packet size   
[?](#) Maximum allowed size of [EDNS.0](#) UDP packets
- [Max.](#) concurrent queries   
[?](#) Maximum allowed number of concurrent [DNS](#) queries

#### Active DHCP Leases


Hostname	IPv4-Address	MAC-Address	Leasetime remaining
----------	--------------	-------------	---------------------

When you have modified the settings, save them by the **Save & Apply** button.



### 3.7 Defining the route rules

In the **Network** menu, **Static routes** item you can define the rules for the current routing.

You can define a new one by the  button.

These can be performed by choosing the related interface and adding the **Host-IP or Network** name, the **IPv4-Netmask**, and **IPv4-Gateway**.

M2M-Router-PRO Status ▾ System ▾ Router ▾ Services ▾ Network ▾ Logout


### 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			


*This section contains no values yet*



#### Static IPv6 Routes

Interface	Target	IPv6-Gateway	Metric	MTU	
	IPv6-Address or Network (CIDR)				

*This section contains no values yet*



Save & Apply Save Reset

**Save & Apply** your settings here.

### 3.8 Firewall settings

By default, the firewall is active, but it allows all communication. It can be necessary to limit the traffic.

On the public internet the you can have several network attack and getting unwanted communication, internet data collection by applications. These all over the unwanted network activity causes the growing the mobile network traffic and increasing the transmitted amount of

data (which is unnecessarily decrease the available data package amount of the SIM card in the router).

**Important!**

*It is offered to check the network traffic on the router. Check the connections, the active communication channels (port number, incoming IP) and listen the incoming activities and for sure the output traffic! These all you can check in the **Status** menu, **Realtime Graphs** item at the **Connections** tab – where these can be listed.*

If will you identify communication from an unwanted IP/port, then you have to disable or limit the occurred port or IP-segment at the firewall setting rules to deny this traffic.

M2M-Router-PRO

[Status](#) - [System](#) - [Router](#) - [Services](#) - [Network](#) - [Logout](#)
AUTO REFRESH ON

[Load](#)
[Traffic](#)
[Wireless](#)
Connections

### Realtime Connections

This page gives an overview over currently active network connections.

Active Connections

(3 minute window, 3 second interval)

<u>UDP:</u>	160	Average:	163	Peak:	490
<u>TCP:</u>	7	Average:	7	Peak:	21
<u>Other:</u>	4	Average:	4	Peak:	5

Network	Protocol	Source	Destination	Transfer
IPV4	TCP	192.168.127.2:51404	M2M-Router-PRO.lan:8888	1.69 MB (2322 Pkts.)
IPV4	TCP	192.168.127.2:51406	M2M-Router-PRO.lan:8888	590.10 KB (862 Pkts.)
IPV4	TCP	192.168.127.2:51367	157.55.56.172:40028	51.33 KB (184 Pkts.)
IPV4	TCP	192.168.127.2:51369	65.55.223.25:40013	28.06 KB (102 Pkts.)
IPV4	UDP	192.168.6.103:17500	255.255.255.255:17500	5.00 KB (28 Pkts.)
IPV4	ICMP	192.168.127.2:0	192.168.251.0:0	3.34 KB (57 Pkts.)
IPV4	ICMP	192.168.127.2:0	192.168.6.109:0	3.22 KB (55 Pkts.)
IPV4	UDP	192.168.127.2:64558	192.168.6.205:161	2.69 KB (26 Pkts.)
IPV4	UDP	192.168.127.2:59509	rccs-24-43-69-30.west.biz.rr.com:49001	1.92 KB (10 Pkts.)
IPV4	TCP	192.168.127.2:51389	91.190.218.54:12350	1.82 KB (17 Pkts.)
IPV4	UDP	192.168.127.2:33290	157.55.235.170:40008	1.40 KB (8 Pkts.)

In the **Status** menu, **Firewall** item you can check the firewall statistic. The **INPUT** means the incoming, the **OUTPUT** the outgoing/transmitted and the **FORWARD** means the forwarded communication/traffic hereby.

As it can be seen, there are several communicating IP addresses on several ports to the router and subnet.

**M2M-Router-PRO** Status ▾ System ▾ Router ▾ Services ▾ Network ▾ Logout

### Firewall Status

IPv4 Firewall IPv6 Firewall

Reset Counters Restart Firewall

**Table: Filter**

Chain *INPUT* (Policy: *ACCEPT*, Packets: 0, Traffic: 0.00 B)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
1862	172.54 KB	ACCEPT	all	lo	*	0.0.0.0/0	0.0.0.0/0	ID:66773300
3638	287.34 KB	input_rule	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 /* user chain for input */
3481	271.86 KB	ACCEPT	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 ctstate RELATED,ESTABLISHED
1	44.00 B	DROP	all	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 ctstate INVALID
31	1.54 KB	syn_flood	tcp	*	*	0.0.0.0/0	0.0.0.0/0	ID:66773300 tcp flags:0x17/0x02
55	5.76 KB	zone_wan_input	all	3g-wan	*	0.0.0.0/0	0.0.0.0/0	ID:66773300
101	9.69 KB	zone_lan_input	all	eth0	*	0.0.0.0/0	0.0.0.0/0	ID:66773300
0	0.00 B	zone_lan_input	all	wlan0	*	0.0.0.0/0	0.0.0.0/0	ID:66773300

Chain *FORWARD* (Policy: *ACCEPT*, Packets: 0, Traffic: 0.00 B)

Pkts.	Traffic	Target	Prot.	In	Out	Source	Destination	Options
-------	---------	--------	-------	----	-----	--------	-------------	---------

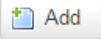
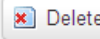

Another method for limitation is disabling all ports, to open / then enable only the necessary communication ports, IP-segments or allowing exact IPs.

You can modify the firewall settings at the **Network** menu, at the **Firewall** item, **General Settings** tab.

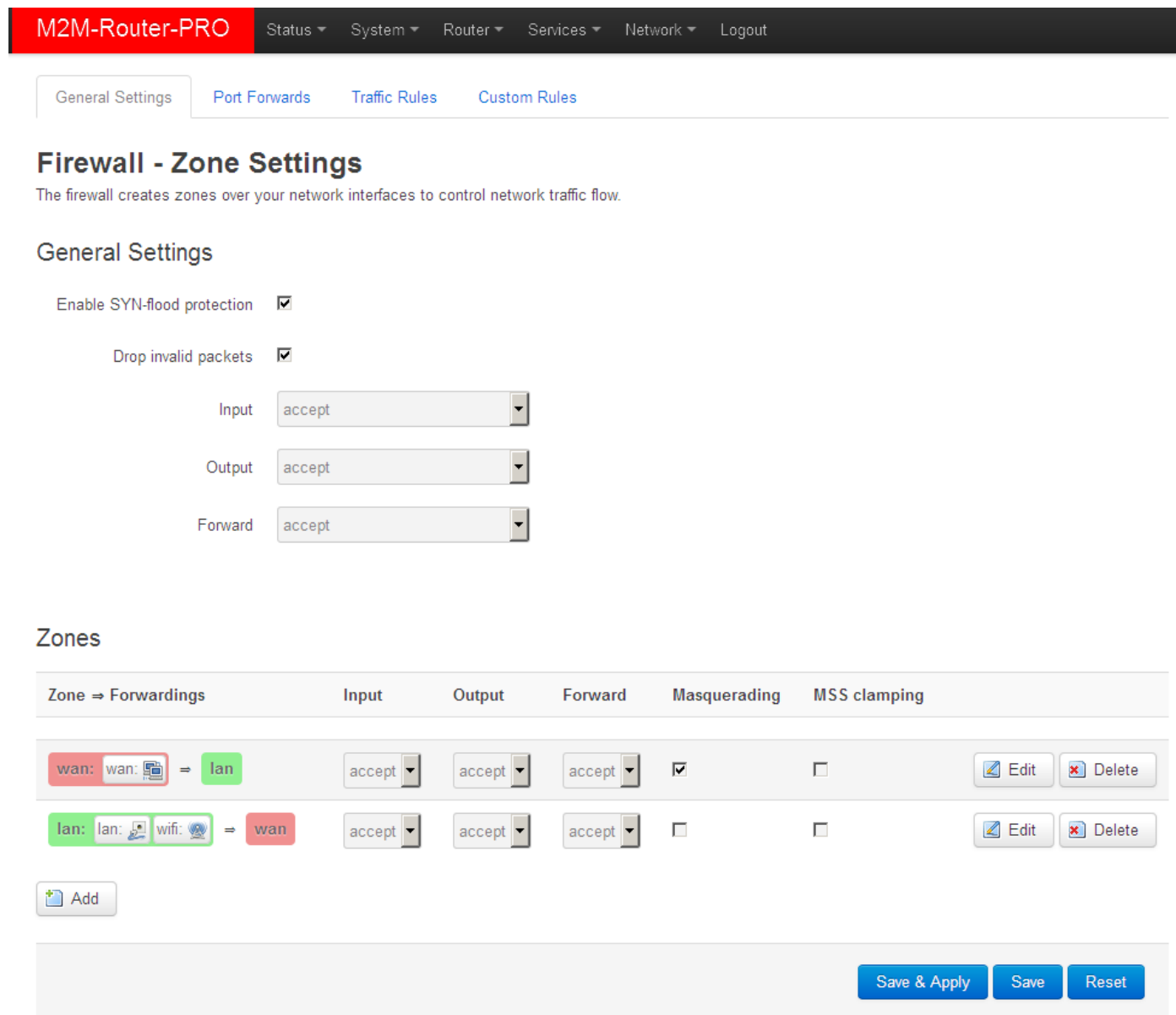
For first, the communication rules are listed here with the directions and operation of the communication rules.

Here, you can see and modify the general rules of the communication, at the **Input** (incoming), **Output** (outgoing) and **Forward** operations one by one by **accept** it, or **reject**, **drop**.

You can **Delete** the settings or  **Edit** modify.

At the **Zones** part you can  a new rule to the current ones. You also can  or  an existed rule.

When you are attempted to add a new firewall rule, it must be performed very carefully, because you can disable or tilt ports communication which are used by the router or some network services by general (e.g. Port nr. 67 is necessary for the DHCP service and 80 port for the, etc).








The screenshot shows the M2M-Router-PRO interface. The top navigation bar includes 'M2M-Router-PRO' and menu items: Status, System, Router, Services, Network, Logout. Below this is a breadcrumb trail: General Settings > Port Forwards > Traffic Rules > Custom Rules. The main heading is 'Firewall - Zone Settings' with a subtext: 'The firewall creates zones over your network interfaces to control network traffic flow.'

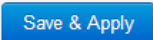


**General Settings**

- Enable SYN-flood protection
- Drop invalid packets
- Input: accept
- Output: accept
- Forward: accept

**Zones**

Zone ⇒ Forwardings	Input	Output	Forward	Masquerading	MSS clamping	
wan: wan: = lan	accept	accept	accept	<input checked="" type="checkbox"/>	<input type="checkbox"/>	 
lan: lan: wif: = wan	accept	accept	accept	<input type="checkbox"/>	<input type="checkbox"/>	 



When you have modified the settings, save them by the **Save & Apply** button.

At the **Advanced Settings** tab you can limit the incoming, outgoing, and forwarded traffic for each subnets. When you have modified the settings, save them by the **Save & Apply** button.

The firewall can be configured by default to allow or tilt the communication – according to the chosen settings.

The firewall is not protecting the router against external network attacks or intrusions if you will just enable the firewall feature.

For a massive safety, further port-level filtering or interface traffic limits or **Traffic Rules** settings are necessary to define!

M2M-Router-PRO Status System Router Services Network Logout

General Settings Port Forwards Traffic Rules Custom Rules

## Firewall - Zone Settings - Zone "wan"

### Zone "wan"

This section defines common properties of "wan". 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 members of this zone.

General Settings Advanced Settings

Restrict to address family IPv4 only

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

### Inter-Zone Forwarding

The options below control the forwarding policies between this zone (wan) and other zones. *Destination zones* cover forwarded traffic **originating from "wan"**. *Source zones* match forwarded traffic from other zones **targeted at "wan"**. 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: wifi:

Allow forward from *source* zones:  lan: lan: wifi:

Back to Overview Save & Apply Save Reset

When you have modified the settings, save them by the **Save & Apply** button.

[General Settings](#)[Port Forwards](#)[Traffic Rules](#)[Custom Rules](#)

## Firewall - Traffic Rules

Traffic rules define policies for packets traveling between different zones, for example to reject traffic between certain hosts or to open WAN ports on the router.

### Traffic Rules

Name	Match	Action	Enable	Sort
------	-------	--------	--------	------

*This section contains no values yet*

#### Open ports on router:

Name	Protocol	External port
------	----------	---------------

TCP+UDP ▾

#### New forward rule:

Name	Source zone	Destination zone
------	-------------	------------------

lan ▾

wan ▾

### Source NAT

Source NAT is a specific form of masquerading which allows fine grained control over the source IP used for outgoing traffic, for example to map multiple WAN addresses to internal subnets.

Name	Match	Action	Enable	Sort
------	-------	--------	--------	------

*This section contains no values yet*

#### New source NAT:

When you have modified the settings, save them by the **Save & Apply** button.

## 3.9 Port Forward settings

Here in the **Network** menu, at the **Firewall** item, **Port Forwards** tab you can setup, that which port forwarding rules should be valid. Here you can add the necessary ports and IP addresses.

You can add a new rule by the  button.

When you modified the settings, save them by the **Save & Apply** button.

[General Settings](#)[Port Forwards](#)[Traffic Rules](#)[Custom Rules](#)

## Firewall - Port Forwards

Port forwarding allows remote computers on the Internet to connect to a specific computer or service within the private LAN.

### Port Forwards

Name	Match	Forward to	Enable
------	-------	------------	--------

This section contains no values yet

#### New port forward:

Name	Protocol	External zone	External port	Internal zone	Internal IP address	Internal port
------	----------	---------------	---------------	---------------	---------------------	---------------

<input type="text" value="New port forward"/>	TCP+UDP ▾	wan ▾	<input type="text"/>	lan ▾	<input type="text"/>	<input type="text"/>
---	-----------	-------	----------------------	-------	----------------------	----------------------

[Save & Apply](#)[Save](#)[Reset](#)

## 3.10 IP routing, NAT settings

In the **Network** menu, **Firewall** item, **Traffic Rules** tab you can setup the **Traffic Rules**, and the **Source NAT** settings.

[General Settings](#)[Port Forwards](#)[Traffic Rules](#)[Custom Rules](#)

## Firewall - Traffic Rules

Traffic rules define policies for packets traveling between different zones, for example to reject traffic between certain hosts or to open WAN ports on the router.

### Traffic Rules

Name	Match	Action	Enable	Sort
------	-------	--------	--------	------

This section contains no values yet

#### Open ports on router:


Name	Protocol	External port
------	----------	---------------

<input type="text" value="New input rule"/>	TCP+UDP ▾	<input type="text"/>	<a href="#">Add</a>
---	-----------	----------------------	---------------------

#### New forward rule:

Name	Source zone	Destination zone
------	-------------	------------------

<input type="text" value="New forward rule"/>	lan ▾	wan ▾	<a href="#">Add and edit...</a>
---	-------	-------	---------------------------------

You can add a new rule by the  button. Here you can open ports (e.g. for TCP) for the packages, or define new forwarding rule for interfaces (**New forward rule**).

When you modified the settings, save them by the **Save & Apply** button.

The **Source NAT** settings can be performed for each protocol (tcp, udp), that the router allows the redirection of data –which incoming IP address and port must be redirected to which outgoing IP address and port and must be forwarded the data traffic. You also can define a port range, hereby.

## Source NAT

Source NAT is a specific form of masquerading which allows fine grained control over the source IP used for outgoing traffic, for example to map multiple WAN addresses to internal subnets.

Name	Match	Action	Enable	Sort
This section contains no values yet				
New source NAT:				
Name	Source zone	Destination zone	To source IP	To source port
<input type="text" value="New SNAT rule"/>	<input type="text" value="lan"/>	<input type="text" value="wan"/>	<input type="text" value="Do not rewrite"/>	<input type="text" value="Do not rewrite"/>
<input type="button" value="Add and edit..."/>				

These rules must always be defined, not disallowing the general communication and must consider that the router must be further available on the network. It is easy to enclose the router from the network or disabling the remote access. Please, be careful when configure these settings.

### **Important!**

*Always check the used standard ports by the network services and allow these (e.g. FTP: port 21, SSH/Telnet: port 22, web: port 80, general network traffic on windows: 443, etc.).*

The proper port filtering, routes are minimizing the communication, what could be important by safety reasons, and could decrease the open threads and risks of safety leaks. Always limit the access of services, and decrease the amount of the througput communication on the network by rules to provide the operation of the necessary services, ports.

When you modified the settings, save them by the **Save & Apply** button.



### 3.10 Dynamic DNS settings

In the **Services / Dynamic DNS** menu you can allow the DDNS service providing and the IP address of the DDNS.

New settings can be  by the button or the current can be -ed.





M2M-Router-PRO Status ▾ System ▾ Router ▾ Services ▾ Network ▾ Logout AUTO REFRESH ON


### Dynamic DNS

Dynamic DNS allows that your router can be reached with a fixed hostname while having a dynamically changing IP address.  
[OpenWrt Wiki: DDNS Client Documentation](#) --- [DDNS Client Configuration](#)

#### Overview

Below is a list of configured DDNS configurations and their current state.  
If you want to send updates for IPv4 and IPv6 you need to define two separate Configurations i.e. 'myddns\_ipv4' and 'myddns\_ipv6'  
[To change global settings click here](#)

Configuration	Lookup Hostname Registered IP	Enabled	Last Update Next Update	Process ID Start / Stop	
myddns_ipv4	yourhost.example.com <i>No data</i>	<input type="checkbox"/>	<i>Never Disabled</i>	-----	 
myddns_ipv6	yourhost.example.com <i>No data</i>	<input type="checkbox"/>	<i>Never Disabled</i>	-----	 



Save & Apply Save Reset

When you modified the settings, save them by the **Save & Apply** button.

## 4. Special settings

### 4.1 M2M Device Manager settings

The further router parameters can be easily and remotely configured by the az *M2M Device Manager*<sup>®</sup> server application. It is also capable of performing remote monitoring and firmware updates.

The necessary Device Manager settings can be defined in the **Router / Device Manager** menu.

The main important ones are the **DM IP Address**, the **DM Port Number** and **DM User Name**.

The **DM port number** is **443** by default.

These must be also configured in the Device Manager and the router must access the IP address of the M2M Device Manager. You can check it by performing a ping.

M2M-Router-PRO Status ▾ System ▾ Router ▾ Services ▾ Network ▾ Logout

### Device Manager Parameters

Carefully change the parameters.

DM Name	<input type="text" value="something"/>
DM User Name	<input type="text" value="root"/>
DM IP Address	<input type="text"/>
DM Port Number	<input type="text"/>
Static WAN IP Address	<input checked="" type="checkbox"/> <a href="#">?</a> Disable WAN up CALL.
CALL Timeout	<input type="text" value="30"/> <a href="#">?</a> Next CALL when sending fails.

When you modified the settings, save them by the **Save & Apply** button.

### 4.2 Monitoring the modem

At the **Router / Modem Parameters** menu you can define some special operation monitoring and listener parameters for the modem. The **Watchdog timeout** can be declared as a modem restarting time interval trigger in case of mobile network unaccessibility.

The **Max. RSSI error count** means the possible max. error in case of continuous signal strength troubles. If it is permanently low or not available, the modem will be restarted as it is defined according to the **Watchdog timeout** parameter.

The screenshot shows the 'M2M-Router-PRO' web interface. At the top, there is a navigation bar with 'M2M-Router-PRO' in a red box and menu items: Status, System, Router, Services, Network, and Logout. Below this is the 'Modem Parameters' section. It contains three input fields: 'Watchdog timeout (>300) [s]' with the value '600', 'Maximum RSSI error count in 10s increments' with the value '60', and 'Debug level' with the value '0'. At the bottom right of the settings area, there are three buttons: 'Save & Apply', 'Save', and 'Reset'.

When you modified the settings, save them by the **Save & Apply** button.

### 4.3 Ping an IP address

Open the **Network** menu, **Diagnostics** item. Here you can check the availability of an IP address, that is it accessible or can be pinged (**Ping**), is there a naming service provided, is there a response between two points (**Nslookup**), furthermore the path of the communication (**Traceroute**).

The screenshot shows the 'M2M-Pro3' web interface. The navigation bar includes 'M2M-Pro3' in a red box and menu items: Status, System, WMR, Services, Network, and Logout. On the right side of the navigation bar, there is a blue notification box that says 'UNSAVED CHANGES: 4'. Below the navigation bar is the 'Diagnostics' section, which is titled 'Network Utilities'. It features three columns of controls. Each column has a text input field containing 'dev.openwrt.org'. The first column has a dropdown menu set to 'IPv4' and a 'Ping' button. The second column has a 'Traceroute' button. The third column has an 'Nslookup' button. Below these controls, there is a note: 'Install iputils-traceroute6 for IPv6 traceroute'.

#### **Important!**

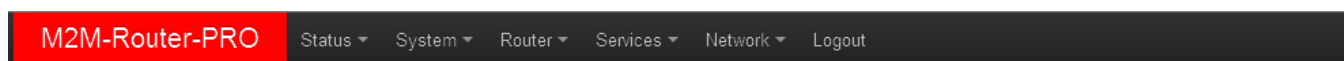
*Check only IP addresses, which are available to access from the current IP segment and APN zone for sure (e.g. from an enclosed APN zone the router will not access the public internet, and from the public internet it will not access the enclosed M2M APN zone).*

### **Important!**

*In case of M2M APN the 192.168.1.250 address can be accessed, it is possible to ping the address for checking the 3G network connection.*

## 4.4 RS485/RS232 parameters

In case of present of the serial port and RS485 port expansion, at the **Services / Ser2net** menu you can define the elements of the protocol conversion, such as receiving the incoming communication in the proper format and the transparent forwarding.




### Proxies


The program comes up normally as a service, opens the TCP ports specified in the configuration file, and waits for connections. Once a connection occurs, the program attempts to set up the connection and open the serial port. If another user is already using the connection or serial port, the connection is refused with an error message.

Delete


TCP Port

 Name or number of the TCP/IP port to accept connections from for this device. A port number may be of the form [host.]port, such as 127.0.0.1,2000 or localhost,2000. If this is specified, it will only bind to the IP address specified for the port. Otherwise, it will bind to all the ports on the machine.


State

 Either raw or rawlp or telnet or off. off disables the port from accepting connections. It can be turned on later from the control port. raw enables the port and transfers all data as-is between the port and the long. rawlp enables the port and transfers all input data to device, device is open without any termios setting. It allow to use /dev/lpX devices and printers connected to them. telnet enables the port and runs the telnet protocol on the port to set up telnet parameters. This is most useful for using telnet.


Timeout

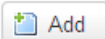

 The time (in seconds) before the port will be disconnected if there is no activity on it. A zero value disables this function.

Device

 The name of the device to connect to. This must be in the form of /dev/.

Options

 Sets operational parameters for the serial port. Values may be separated by spaces or commas. Options 300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 set the various baud rates. EVEN, ODD, NONE set the parity.

At the bottom, you can  or  a new setting.

When you modified the settings, save them by the **Save & Apply** button.

## 4.5 Network Time Service (NTP)

Open the **System** menu, **Time Synchronisation** item.

You can add hereby the refresh interval at the **Update interval (in seconds)**.

You can define the time synch at the **Clock Adjustment**.

M2M-Router-PRO Status System Router Services Network Logout

### Time Synchronisation

Synchronizes the system time

#### General

Current system time Wed Mar 1 14:11:45 2017

Update interval (in seconds)

Count of time measurements   
empty = infinite

#### Clock Adjustment

Offset frequency

#### Time Servers

Hostname	Port	
<input type="text" value="0.openwrt.pool.ntp.org"/>	<input type="text" value="123"/>	<input type="button" value="Delete"/>
<input type="text" value="1.openwrt.pool.ntp.org"/>	<input type="text" value="123"/>	<input type="button" value="Delete"/>
<input type="text" value="2.openwrt.pool.ntp.org"/>	<input type="text" value="123"/>	<input type="button" value="Delete"/>
<input type="text" value="3.openwrt.pool.ntp.org"/>	<input type="text" value="123"/>	<input type="button" value="Delete"/>

At the **Time Servers** part you can  NTP time servers by its **Hostname**, IP-address or server name, and **Port**.

When you modified the settings, save them by the **Save & Apply** button.

## 4.6 Identifying names connecting machines

Open the **Services** menu, **Hostnames** item.

Here you can register those machines, network devices which are using the router connection - for an easier identification. You can add logical names to the IP addresses which you can see as listed at the status overview. When you modified the settings, save them by the **Save & Apply** button.

## 4.7 TFTP service settings

Open the **Network** menu, **DHCP and DNS** item, **TFTP settings** tab to allow the TFTP service (**Enable TFTP server**), and the related further parameters.

M2M-Router-PRO Status ▾ System ▾ Router ▾ Services ▾ Network ▾ Logout AUTO REFRESH ON

### DHCP and DNS

Dnsmasq is a combined [DHCP-Server](#) and [DNS-Forwarder](#) for [NAT](#) firewalls

#### Server Settings

[General Settings](#) [Resolv and Hosts Files](#) [TFTP Settings](#) [Advanced Settings](#)

Enable TFTP server

#### Active DHCP Leases

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

#### Active DHCPv6 Leases

Host	IPv6-Address	DUID	Leasetime remaining
There are no active leases.			

#### 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. The optional *Lease time* can be used to set non-standard host-specific lease time, e.g. 12h, 3d or infinite.

Hostname	MAC-Address	IPv4-Address	Lease time	IPv6-Suffix (hex)
This section contains no values yet				

[Add](#)

[Save & Apply](#) [Save](#) [Reset](#)

## 4.8 LED configuration

Open the **System** menu, **LED Configuration** item. Here you can define the LED operation rules for the main important events.

By the **Name** field you can identify a rule, at the **LED Name** field, where you can choose the LED light according to the following:

- *led2g* – LED2 green light
- *led1r* – LED1 red light
- *led3g* – LED3 green light
- *led2r* – LED2 red light
- *led3r* – LED3 red light

Only the free – not used - LED statuses will be visible and listed here.

M2M-Router-PRO Status System Router Services Network Logout

### LED Configuration

Customizes the behaviour of the device LEDs if possible.

Name

LED Name

Default state

Trigger

Device

Trigger Mode  Link On  Transmit  Receive

Name

LED Name

Default state

Trigger

Device

Trigger Mode  Link On  Transmit  Receive

The **Trigger** allows to choose an event type of operation. E.g. *netdev* means the network interface connection type, and **Device** identifies the related network interface.

You can  or  a LED setting.

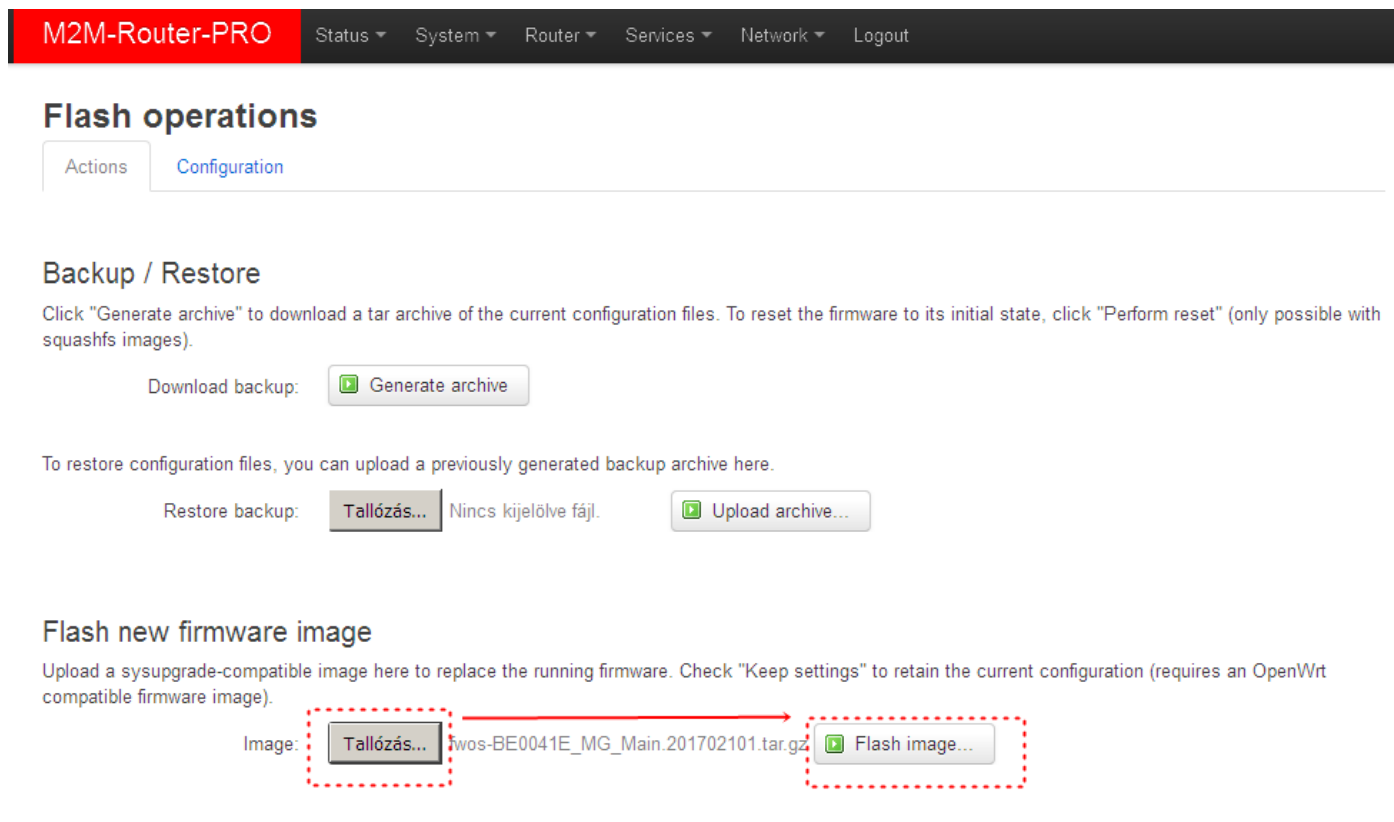
When you have modified the settings, save them by the **Save & Apply** button.



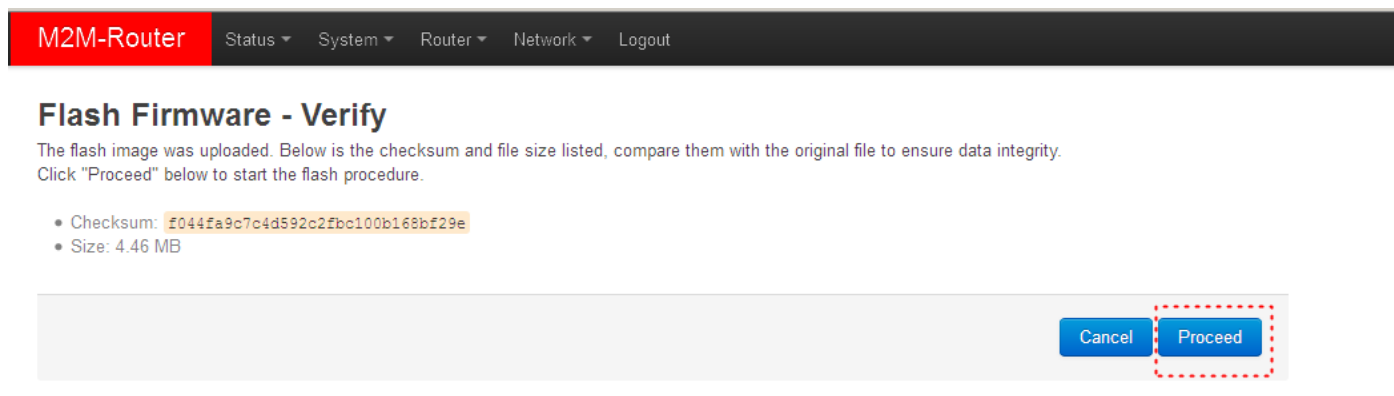
# 5. Software refresh and router maintenance

## 5.1 Firmware refresh

1. Open the **System** menu, **Backup / Flash firmware** item.
2. Browse the *fwos-....* compressed file then push to the **Flash image** button.



3. A new window will appear where the file will be checked. When it is okay, the system refreshment is possible by the **Proceed** button.



4. Then the next message appears on the screen in the browser. Then the refresh method has started, while the **LED2** and **LED3** is continuously lighting by **red**.

#### System - Flashing...

The system is flashing now.  
DO NOT POWER OFF THE DEVICE!  
Wait a few minutes before you try to reconnect. It might be necessary to renew the address of your computer to reach the device again, depending on your settings.  
Loading Waiting for changes to be applied...

5. Later the **LED2** will blank and only the **LED3** lighting with **red**.
6. At the end of the installation – the LEDs are not lighting further – the system restarting twice while **all the three LEDs** are continuously **lighting** with **green**, then the OpenWrt system will be loaded as it was described before.

#### ***Important!***

*This flashing... window will not closed automatically, and the browser cannot sense the availability of the OpenWrt site. Then, close the windows after the refresh and open a new with the default URL in your browser.*

7. When the middle **Cell LED** is lighting continuously in **green**. Login to main page again, and check the updated software version!

## 5.2 Installing applications

Open the **System / Software** menu.

#### ***Important!***

*This feature is available when the public internet can be accessed by the SIM card, APN zone.*

You can refresh the catalog of the available applications by the **Update lists** button.

**When it was successful**, fill the name of the application you are attempted to install at the **Download and install package** field (e.g. MC – Midnight Commander esetében), and push to the **OK** button for the installation – regarding the upcoming hints on the screen.

The installed packages of the router are listed lower at the **Status** part.

The screenshot shows the M2M-Router-PRO web interface. At the top, there is a navigation bar with the title 'M2M-Router-PRO' and several menu items: Status, System, Router, Services, Network, and Logout. Below the navigation bar, the 'Software' section is active, with tabs for 'Actions' and 'Configuration'. The 'Software' section displays 'No package lists available' and a green 'Update lists' button. Below this, it shows 'Free space: 100% (44.52 MB)' with a green progress bar. There are two input fields for package management: one for 'Download and install package:' with an 'OK' button, and another for 'Filter:' with a 'Find package' button. The 'Status' section is also visible, with tabs for 'Installed packages' and 'Available packages'. Below the tabs is a table listing installed packages.

	Package name	Version
<a href="#">Remove</a>	base-files	168-r49022
<a href="#">Remove</a>	bind-client	9.9.8-P4-2

### 5.3 Restarting the router

Choose the **System / Reboot** item and push upon the **Perform reboot** button. Then the router will be restarted as it was described before (**the 3 LEDs lighting shortly** by **red** colour for a second, and the **St. LED** flashing assigns the booting process, then the router will be operating as normal, and will be connected to the internet according the configuration settings.

The screenshot shows the 'Reboot' section of the M2M-Router-PRO web interface. The navigation bar at the top is the same as in the previous screenshot. Below the navigation bar, the 'Reboot' section is active, with the title 'Reboot' and a description: 'Reboots the operating system of your device'. There is a green 'Perform reboot' button. At the bottom of the page, there is a footer: 'Powered by LuCI Master (git-15.137.54403-f67d39e) / OpenWrt Designated Driver r49022'.

## 5.4 Reset

When the router is not reacting or it was not possible to configure properly, push int he **Reset** titled low-case button for 10 seconds – by a sharp and thin object. Then the router will be restarted by the factory configuration, whereas the LED lights will assign it. After a few minutes, the router will be available and accessible on its default address.

### ***Important!***

*Configure the router on its web user interface!*

## 5.5 Password change

Open the **System / Administration** menu.

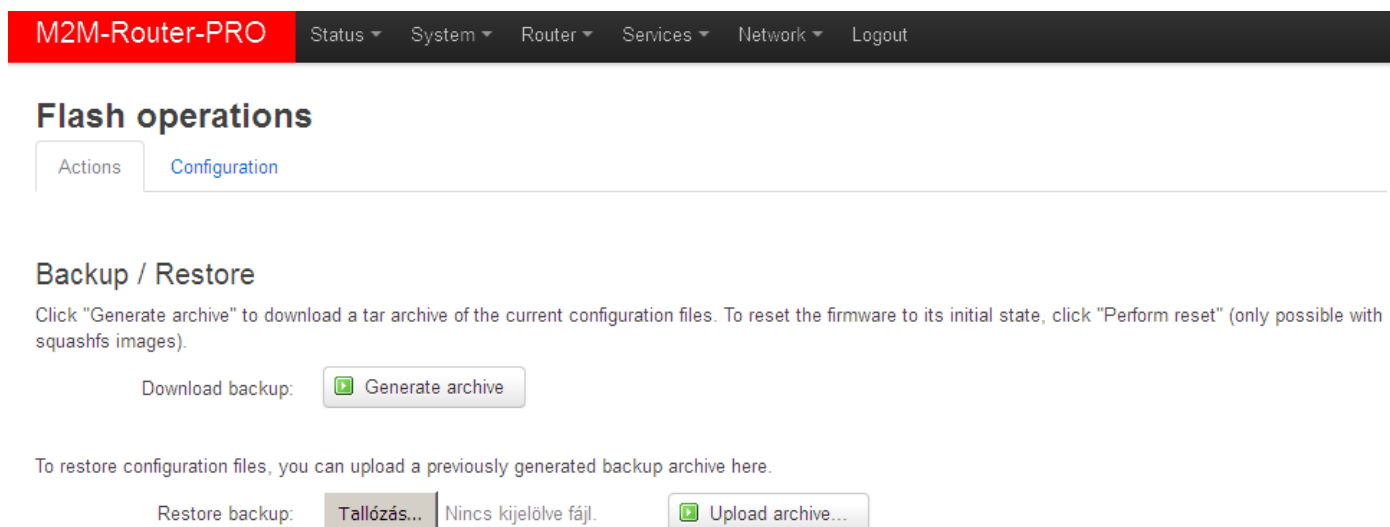
At the **Router password** you can fill the new **Password** and again to the **Confirm password** fields. Now, you will be able to login with this new password.

(Remember: the default account name is *root*, the default password is *wmrpwd*).

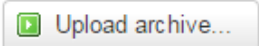
## 5.6 Backup and restore of settings

Open the **System** menu, **Backup / Flash Firmware** item.

At the **Backup / Restore** part and **Download backup** feature push the  button for saving the settings into a file.



The screenshot shows the web interface of the M2M-Router-PRO. At the top, there is a navigation bar with the title "M2M-Router-PRO" and several menu items: "Status", "System", "Router", "Services", "Network", and "Logout". Below the navigation bar, the "Flash operations" section is active, with "Configuration" selected. Underneath, the "Backup / Restore" section is visible. It contains a paragraph of text: "Click 'Generate archive' to download a tar archive of the current configuration files. To reset the firmware to its initial state, click 'Perform reset' (only possible with squashfs images)." Below this text, there are two buttons: "Download backup:" followed by a "Generate archive" button. Further down, there is another paragraph: "To restore configuration files, you can upload a previously generated backup archive here." Below this, there are two buttons: "Restore backup:" followed by a "Tallózás..." button and the text "Nincs kijelölve fájl.", and then an "Upload archive..." button.

The **Restore backup** is possible to reload – a previously saved configuration – when you will be able to browse and load from your computer to the router memory by pushing the  button.

## 5.7 Handling the memory cards

The router is able to handle the connected and mounted uSD cards, USB memory sticks. But these are only possible to access from the Linux command line (ssh connection).

The partitions and memory areas are listed when you will attempted to choose the **System / Mount Points** menu. At the **Mount Points** part will be listed the automatically connected and mounted devices. These will be attached under the /mnt.

## 6. Troubleshooting

### LED activities

Can you see a LED signal activity?

It is not sure that after 2 minutes of LED inactivity it must mean a failure. It is possible that the router is currently under restart progress or it has just booting. Wait 2-3 minutes, then check the LEDs. If the **LED1..LED2..LED3** are not blinking or light then the device hasn't got its power supply or the device has damaged, or it has a malfunction.

### In case of LED blinking after restart

After cca. 2 minutes of the the router starting, the **LED1** start to blinking by **green** (once in every second). Then after cca. 2 minutes the **LED1** will flashing further once in every 10 seconds.

Then the **LED3** starts to blinking in **green**. The router tries to connect to the mobile network (autenticates and logging to the APN zone and will be initiating the network connection).

(In case of 4G version, the after connecting the **LED3** will not lighting – the LED is inactive).

The device is communicating on the network and will send a couple of minutes later proper *RSSI* values and life signals. During the operation, the **LED1** will blinks once in every 10 seconds. This means the normal operation of the router.

### Power supply

Check that the router that it has its power source through its microfit connector (**POWER**). If it does not, then reconnect the power cable. When it has its power source the LED signals will sign it. In this case please wait for 2-3 minutes, while the router will register to the network then check the life signals. When the power source will be added, all then the **LED1** (**green**) will lighting for 2 minutes, then after that only blinks once in every 10 seconds. The router is booting and just started. When it is ready to operate, login and check the life signals.

### Cable connection

Check or connect the RJ45 UTP cable to the **ETHERNET** port. When the router is operating, the **Ethernet** port LEDs must sign the network activities.

## **Continuous restarting...**

When the modem is not available or cannot be connected to the network, then the router will be restarted in every 2 minutes!

When the ppp/wan connection is not configured properly or the modem was not properly configured, the router will be restarted in every 10 minutes.

## **Antenna**

Check or connect proper SMA fit antenna to the **Antenna** connector and mount it to the interface. The router must send and assure proper RSSI signal value and life signals after 2-3 minutes of the starting.

In case of using WiFi, use WiFi antenna!

## **SIM-card is not detected**

Turn off the router – **POWER** plug disconnection. Check that a SIM card was inserted to the **SIM** holder in the proper position and orientation. Push the SIM card back and ask your Mobile Operator that the SIM card is active or not. Let's start the router again and check it, please.

## **SIM/APN failure**

It means a SIM or APN failure, if the **Cell. LED** will not light for minutes. If the device is not registering to the network, then the modem was not initiated properly, and the router will restart itself after 10 minutes.

This could be caused by a not proper APN setting (you can configure it on the local web user interface).

## **Connection to the router, checking the connection**

Configure the **Ethernet interface** IP address on your PC where you can access it (**Control panel / Network / Network Adapter / Adapter settings**). Ping the router IP address.

## **When the router will not start...**

Follow the hints of the Installation manual.

## Cannot access the router on ssh or on the LuCi web interface

The DHCP service is turned off for the router Ethernet interface, by default. Therefore, you have to configure an IP address for you PC, manually. Add fog e.g. 192.168.127.10 IP address to your computer's Ethernet interface for connecting to the router.

(If you have the WiFi onboard version of the router, then you can configure your router on WiFi (DHCP activated).

For accessing the web user interface we offer the Mozilla Firefox web.

Default web user interface (LuCi) address is: <https://192.168.127.1:8888>

- **Username:** *root*
- **Password:** *wmrpwd*
- then push to the **Login** button.

Allow the accessing of the router default IP address in your browser by pushing to the Special button, then allow the safety exclusion into the pop-up window.



## 7. Support availability

If you have any questions concerning the use of the device, contact us at the following address:

E-mail: [support@m2mserver.com](mailto:support@m2mserver.com)

Telephone: +36203331111

### 7.1 Contact the support line

For the proper identification of the router you should use the sticker on the device, which contains important information for the call center.

Attach the OpenWrt related important information – marked - of modem identifiers to the problem ticket, which will help resolving the problem! Thank you!

**M2M-Router** Status ▾ System ▾ Router ▾ Network ▾ Logout AUTO REFRESH ON

### Status

#### System

Hostname	M2M-Router
Model	Atmel AT91SAM9X25-EK
Firmware Version	OpenWrt Designated Driver r49022 / LuCI Master (git-15.137.54403-f67d39e)
Build Date	2017-02-10 18:30:10.090307131+01:00
Kernel Version	4.4.4
STM32 Firmware	201604191
Local Time	Fri Feb 10 18:10:24 2017
Uptime	0h 38m 7s
Load Average	0.27, 0.23, 0.27

#### Memory

Total Available	101404 kB / 125560 kB (80%)
Free	98936 kB / 125560 kB (78%)
Buffered	2468 kB / 125560 kB (1%)

#### Network

Modem Model	HE910-GL
Modem RSSI	8

## **7.2 Product support**

The documentation and software released for this product can be accessed via the following link:

<http://www.m2mserver.com/en/products/m2m-router>

The documentation and software released for this product can be accessed via the following link:

<http://www.m2mserver.com/en/support/>

Online product support can be required here:

<http://www.m2mserver.com/en/support/>

## 8. Legal notice

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### **Warning**

Any errors occurring during the program update process may result in failure of the device.