

User Manual



MC-LTE-Gateway

This documentation applies to MC-LTE-GATEWAY SW version 1.1.1 and later.

1 GENERAL	4
1.1 WARRANTY PROVISIONS	4
2 SAFETY	4
2.1 TECHNICAL LIMITING VALUES.....	4
2.2 OBLIGATIONS OF THE OPERATOR.....	4
2.3 QUALIFICATION OF PERSONNEL	4
2.4 GUIDELINES FOR TRANSPORT AND STORAGE	5
2.5 LABELS ON THE PRODUCT	5
2.6 ENVIRONMENTAL PROTECTION	5
2.7 BASIC SAFETY REQUIREMENT	6
3 USE OF OPEN-SOURCE SOFTWARE	6
3.1 GENERAL	6
3.2 LIABILITY REGULATIONS.....	7
3.3 USED OPEN-SOURCE SOFTWARE	7
4 CONTENTS	7
5 TECHNICAL SPECIFICATIONS	8
5.1 TECHNICAL DATA.....	8
5.1.1 Physical properties	8
5.1.2 Technological mobile network features	8
6 CHECK MODEM VERSION	9
7 PORTS AND DISPLAY	10
7.1 POWER SUPPLY AND SERIAL INTERFACE	10
7.2 LAN AND WAN.....	10
8 INSTALLATION	11
8.1 INSERTING THE SIM CARD	11
8.2 POWER SUPPLY	11
8.3 CONFIGURATION VIA WEB INTERFACE	11
8.4 SETTING UP THE SIM AND ESTABLISHING A CONNECTION	12
8.5 ONLINE-TEST.....	13
8.6 INTERNET ACCESS	14
8.7 ACCESS VIA SSH.....	14
8.8 ACCESS VIA SERIAL PORT RS232 (PUTTY)	14
8.9 COMMAND LINE INTERFACE.....	15
8.10 CHANGE IP-ADDRESS	15
8.10.1 Using Command line	15
8.10.2 Using Luci Web interface.....	17
8.11 NODE-RED WEB INTERFACE	18
8.11.1 Enable the Node-Red installed in MC-LTE-GATEWAY:.....	18
8.11.2 Install extra modules:.....	18
8.11.3 Add a node	18
8.11.4 Add a debug node	19
8.11.5 Wire the nodes	19
8.11.6 Deploy	19
8.12 SETTING UP WIFI	20
8.12.1 MC-LTE-GATEWAY in Access Point mode	20
8.12.2 MC-LTE-GATEWAY as Wifi Client.....	21
9 LED	22
9.1 LED POWER.....	22

9.2	LED GSM	22
9.3	LED WARN (RED)	22
9.4	STATUS LED 1 AND LED 2	23
10	OPENVPN	24
10.1	CLIENT CONFIGURATION	24
10.2	SERVER CONFIGURATION	26
11	SER2NET	28
12	MAINTENANCE, REPAIR AND TROUBLESHOOTING	29
12.1	MAINTENANCE.....	29
12.2	TROUBLESHOOTING	29
12.3	REPAIR	29
13	DISPOSAL.....	29
13.1	RETURN OF THE OLD EQUIPMENT	29

1 General

These instructions enable the safe and efficient handling of the product. The instructions are an integral part of the product and must be kept accessible at all times to installation, commissioning and operating personnel.

1.1 Warranty provisions

Unauthorized use, non-observance of this documentation, the use of insufficiently qualified personnel and unauthorized modifications exclude the manufacturer's liability for resulting damages. The manufacturer's warranty is void. The provisions of our terms and conditions of delivery and purchase (AGB) apply. These can be found on our website (<https://www.mc-technologies.net/en/terms-and-conditions.php>)

2 Safety

The Safety section provides an overview of the safety instructions to be observed when operating the product.

The product has been constructed in compliance with the currently valid rules of technology and is safe to operate. It has been tested and has left the factory in perfect condition in terms of safety. In order to maintain this condition over the operating time, the information in the applicable publications and certificates must be observed and followed.

The basic safety instructions must be strictly maintained when operating the product. In addition to the basic safety instructions, the individual sections of the documentation contain descriptions of procedures and operating instructions with specific safety information.

Furthermore, the local guidelines for the prevention of accidents and general safety regulations for the area of application of the device should be applied.

Only the consideration of all safety instructions enables the optimum protection of personnel and the environment against hazards as well as the safe and trouble-free operation of the product.

2.1 Technical limiting values

The product is exclusively intended for use within the technical limits specified in the data sheets. The following limit values must be observed:

- The surrounding temperature limits must not be exceeded or dropped below.
- The supply voltage range must not be violated under or above.
- The maximum air humidity must not be exceeded and condensation must be avoided.
- The maximum switching voltage and the maximum switching current load must not be exceeded.
- The maximum input voltage and the maximum input current must not be exceeded.

2.2 Obligations of the operator

The operator must always observe the national regulations applicable in his country regarding the operation, functional testing, repair and maintenance of electronic devices.

2.3 Qualification of personnel

Installation, commissioning and maintenance of the product may only be carried out by trained specialist personnel authorised by the system operator. The qualified personnel must have read and understood this documentation and follow the instructions.

The electrical installation and commissioning of the product may only be carried out by a person who, due to his or her specialist training, knowledge and experience as well as knowledge of the

relevant standards and regulations, is able to carry out work on electrical systems and independently detect and avoid possible hazards.



2.4 Guidelines for transport and storage

The following instructions must be observed:

- Do not expose the product to moisture or other potentially harmful environmental conditions (radiation, gases, etc.) during transport and storage. Pack the product properly.
- Pack the product so that it is protected from shocks during transport and storage, e.g. by using air-cushioned packaging.
- Before installing the product, check it for possible damage that may have been caused by improper transport or storage. Damage in transit must be noted on the shipping documents. All claims for damages must be made immediately and before installation to the carrier / company responsible for storage.

2.5 Labels on the product






The type plate of the product is located as a sticker on one surface of the product. It may contain the following markings, among others, which are explained in more detail here.

	<p>Dispose of old equipment in an environmentally responsible manner This symbol indicates that old devices must be disposed of separately from residual waste at suitable collection points. See also the disposal section in this manual.</p>
	<p>CE-label By affixing the CE marking, the manufacturer confirms that the product complies with the product-specific applicable European regulations.</p>

2.6 Environmental protection

Dispose the product and its packaging in accordance with the relevant environmental protection regulations. Refer to the disposal section of this manual for instructions on how to dispose of the product. Separate the packaging components made of cardboard and paper as well as plastic and recycle them using the appropriate collection systems.

2.7 Basic safety requirement

	<p>Electrostatic discharges can damage the product! Damage the product. Observe the general precautions for handling electrostatically sensitive components.</p>
	<p>Moisture and liquids from the surrounding area can get inside the product! Risk of fire and damage to the product. The product must not be used in wet or humid environments or in the immediate vicinity of water. Install the product in a dry place protected from splashing water. Turn off the power before performing any work on a device that has been exposed to moisture.</p>
	<p>Short circuits and damage due to improper repairs and modifications and opening of maintenance areas! Risk of fire and damage to the product. It is not permitted to open the product for repair work or modifications beyond the removal and insertion of the plug-in cards provided for this purpose.</p>
	<p>Overvoltage and voltage peaks from the power supply system! Fire hazard and damage to the device due to overvoltage. Install a suitable surge protection.</p>
	<p>Distance between antennas and persons! Too small distance between mobile phone antennas and people can affect their health. Please note that the mobile phone antenna must be at least 20 cm away from persons during operation.</p>

3 Use of open-source software

3.1 General

This product includes, among other things, so-called open-source software, which was produced by third parties and published for free use by everyone. The open-source software is subject to special open-source software licenses and the copyright of third parties. Every customer can use the open-source software according to the license terms of the respective manufacturer. The rights of the customer to use the open-source software beyond the purpose of our product are regulated in detail by the respective open source software license. The customer may freely use the open-source software, as provided for in the respective valid license, beyond the purpose of the open-source software in our product. In the case that there is a contradiction between our license terms for our product and the respective open-source software license, the respective open-source software license takes priority over our license terms as far as the respective open-source software is affected.

The use of the open-source software used is free of charge. We do not charge any user fees or comparable fees for the use of the open-source software contained in our product. The use of the open-source software by the customer in our product is not part of the profit we make with the contractual remuneration.

The provided list shows all open source software programs that are included in our product. The most important open-source software licenses are listed in the licenses section at the end of this publication.

As far as programs contained in our product are under the GNU General Public License (GPL), GNU Lesser General Public License (LGPL), the Clarified Artistic License or any other open-source software license, which stipulates that the source code must be made available, we will send the source code at any time on request. Our offer to send the source code on demand automatically ends 3 years after delivery of our product to the customer. Requests should be sent to the following address, if possible stating the serial number of our product:

MC Technologies GmbH
Kabelkamp 2
30179 Hannover

3.2 Liability regulations

We do not assume any warranty or liability if the open-source software programs contained in our product are used by the customer in a way that no longer corresponds to the purpose of the contract on which the purchase of our product is based. This applies in particular to any use of the open source software programs outside of our product. For the use of the open source software beyond the purpose of the contract, the warranty and liability provisions provided for in the applicable open source software license for the corresponding open source software, as listed below, shall apply. In particular, we shall not be liable if the open source software in our product or the entire software configuration in our product is changed. The warranty given in the contract on which the purchase of our product is based shall only apply to the unchanged open source software and the unchanged software configuration in our product.

3.3 Used open-source software

Please contact our support department (support@mc-technologies.net) for a list of open source software used in this product. Alternatively, a list of the open source software used can be found in the MC-LTE-GATEWAY web interface under System -> Software -> Installed.

4 Contents

The package includes the accessories listed below. Please check that all accessories listed are included in your box. If a part is missing or damaged, please contact MC Technologies directly.

- MC LH Gateway
- Quick Installation Guide
- Safety Instructions
- Mobile phone antennas
- Wifi Antenna

Optional accessories are not included. Among others, the following parts are available at MC Technologies:

- Mobile phone antennas
- Antenna extensions and accessories
- DIN Rail
- Ethernet cable
- GSM (LTE)-Antenna

5 Technical specifications

The following specifications apply to all versions of the MC-LTE-GATEWAY. If these variants differ from one another, the different values are indicated separately.

5.1 Technical Data

5.1.1 Physical properties

Physical characteristics	Value
Supply Voltage	8 V ... 30 V DC
Dimensions (W x H x D)	100 x85 x 32mm
Operation temperature	-20°C to +70°C
Housing	Plastic

The extended temperature range allows temporary operation at increased temperatures. This may result in functional restrictions (especially during data transmission). This serves to protect the internal electronics.

5.1.2 Technological mobile network features

Technological feature	Description
Supporting networks	LTE Cat1 (4G): Band 1,3,5,7,8 and 20 HSDPA/HSUPA/HSPA+ (3G): Band 1,5,8, all bands with diversity GSM/GPRS/EDGE (2G): Band 3,8
Transmission rates LTE	Up to 50 Mbps uplink and 10 Mbps downlink
Transmission rates HSPA+	Up to 5.76 Mbps uplink and 21.6 Mbps downlink
Transmission rates EDGE	Up to 236.8 kbps uplink and 236.8 kbps downlink
Antenna connections	SMA (female)

LED 4 shows the statuses of the network connection:


Signal	Bedeutung
OFF	GSM OFF
Blinking (200ms ON, 1800ms OFF)	Search network
Blinking (1800ms aus, 200ms ON)	Stand-by state
Blinking (125ms ON, 125ms OFF)	Data transfer

6 Check Modem Version

To check the firmware version of your MC-LTE-GATEWAY:

1. Login to Luci web interface using your device IP address (default: 192.168.2.1)
2. On the main page, scroll down to MC info Tab

MC Info

Signal Strength	 -103 dBm (16%)
Product Name	MCLH
Hardware Revision	v1.4
Modem Revision	EC21EFAR02A08M4G
IMEI	867962040013883

3. Under Modem Revision, you can read the firmware version of your MC-LTE-GATEWAY Model Chip.

7 Ports and display

The following figures show a maximum equipped version of the MC-LTE-GATEWAY. Depending on the variant, your MC-LTE-GATEWAY may not have all connections, display or control elements.



7.1 Power supply and serial interface

The connection is made via a 6-pin connector socket "Molex 43045-0614". This connector contains the power supply and the serial interface for connection.



Funktion	Pin	Pin	Funktion
8-30V	4	1	n.c.
GND	5	2	GND
RxD	6	3	TxD

7.2 LAN and WAN



Port	Description
LAN	Ethernet-Port (RJ45, 10/100 BT)
WAN	Ethernet-Port (RJ45, 10/100 BT)

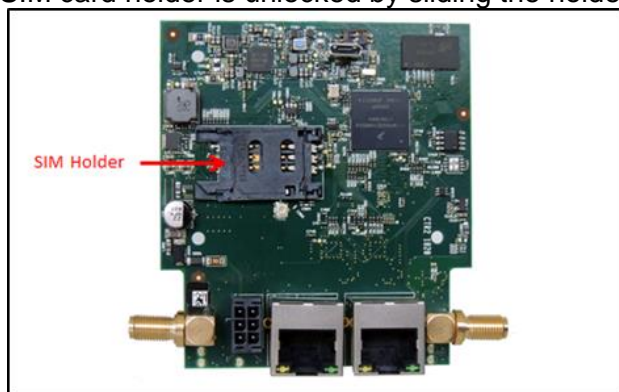
8 Installation

The MC-LTE-GATEWAY Gateway provides easy access to the Internet via the cellular network. For its installation, a SIM card from your mobile network operator that has been activated for parcel services (GPRS, UMTS, HSPA or LTE) is required.

Please follow the instructions step by step and configure the settings for the SIM card. An incorrect PIN can lead to the SIM card being blocked.

8.1 Inserting the SIM card

A SIM card holder for the MINI SIM card is located inside the casing. To insert a SIM card, the housing must be opened. To do this, switch off the power supply and remove all connection cables. Open the housing by removing the screw connections on the side. The SIM card holder is unlocked by sliding the holder to the left.



8.2 Power supply

The MC-LTE-GATEWAY is operated with a supply voltage of 10 - 30V DC. Please connect an external DC power supply with an output voltage of 10 - 30V (e.g. 12V > 1.2A or 24V > 600mA).

Please connect the power supply unit to the power supply or switch on the power supply. A green LED "Power" will light up. After a short initialization phase (approx. 40 seconds) the device is ready for operation.

8.3 Configuration via web interface

The MC-LTE-GATEWAY can be configured to set mobile phone parameters (SIM pin, APN, etc.) via an integrated web interface. To do this, connect the Ethernet interface of your PC and the Ethernet LAN interfaces of the MC-LTE-GATEWAY (LAN) with a network cable.

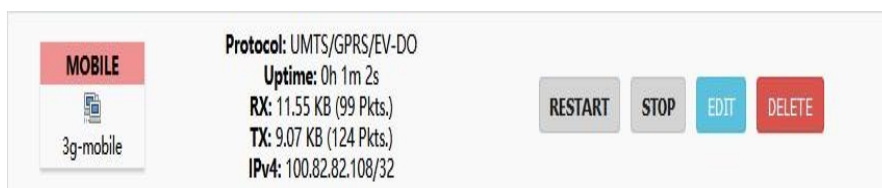
- The PC must obtain its IP address automatically.
- Open a browser on the PC. Firefox browser is preferred. Using Internet explorer browser Luci interface load slowly and often react only after repeated "refresh".
- **The MC-LTE-GATEWAY can be reached via web interface using the IP address 192.168.2.1.**
- For authentication, a user name and password must be entered. The default user name here is "root". During the first installation you can click directly on the login button without entering a password.

For security reasons, click on "Go to Password Configuration" in the yellow window and change/set the "Password" here.



8.4 Setting up the SIM and establishing a connection

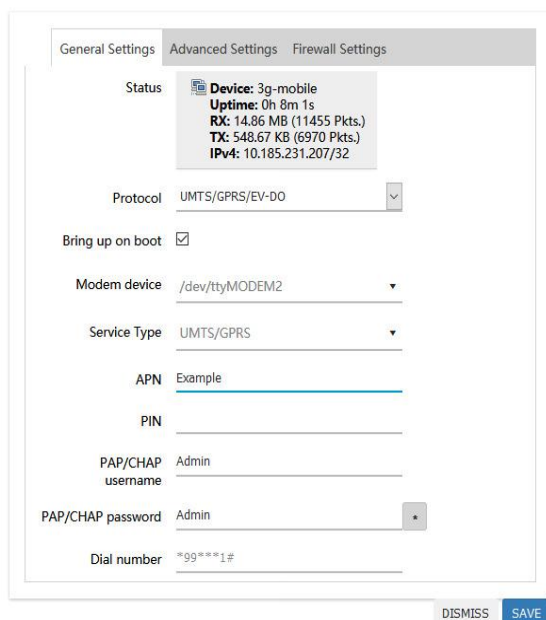
Click on "Network" in the left menu and then on "Interfaces".
Click on the "EDIT" button at the "MOBILE" interface.



Setting APN:

1. Change Protocol to: "UMTS/GPRS/EV-DO." (Supports LTE-connection)
2. Click on "SWITCH PROTOCOL."
3. Change Modem device to "/dev/ttyMODEM2"
4. Enter the access data, APN, user and password for data transmission in your mobile network.

Interfaces » MOBILE

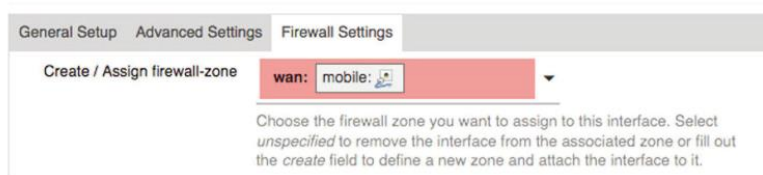


5. Enter the PIN number of your SIM card. Leave the entry field empty for a SIM card without PIN.

You can obtain the data from your mobile phone provider. Many providers do not require additional entries for user and password.

On the tab "Firewall Settings" select the setting "**wan: mobile**" under "Create / Assign firewall-zone".

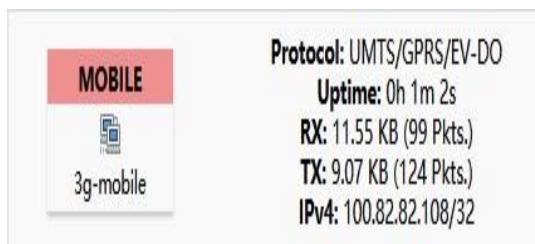
Common Configuration



Confirm your entries by clicking on the "SAVE & APPLY" button.

Please disconnect the MC-LTE-GATEWAY briefly from the power supply.

After a startup phase of several minutes, log in to the web interface again. Navigate to the menu item "Network" and "Interfaces". In the **MOBILE** area, the transmission values in MB for RX and TX should now appear.



The quality of the connection can be in Luci under Status -> Overview -> MCInfo

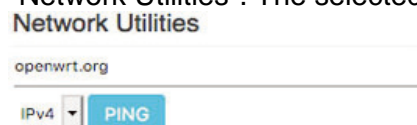
MC Info



RSRP		
> -70 dBm to -79 dBm	Very good signal	Telecommunication and Internet operate without any disturbance
-80 dBm to -89 dBm	Good, solid signal	Telecommunication and Internet operate with slight disturbance
-90 dBm to -100 dBm	Medium signal	Telecommunication and Internet operate with slight disturbance
-101 dBm to -110 dBm	Poor signal	Telecommunications and Internet operate with significant disruption
< -110 dBm	Slow or no signal	No connection or disconnected

8.5 Online-Test

Navigate to the menu item "Network" and "Diagnostics". Click on the "PING" button under "Network Utilities". The selected server on the Internet should answer with PING times.



8.6 Internet access

After successfully logging into the mobile network, you can now connect to the Internet using your browser. To do this, open the browser on your PC and enter a URL known to you in the address field (e.g. www.mc-technologies.net).

8.7 Access via SSH

To access the Linux system of the MC-LTE-GATEWAY, you must connect to the same IP address (default: 192.168.2.1) as the web interface.

The following access data are required:

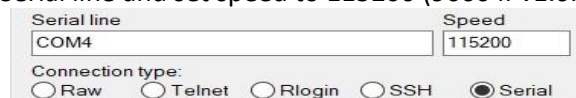
User: `root`

Password: In delivery state no password is necessary here

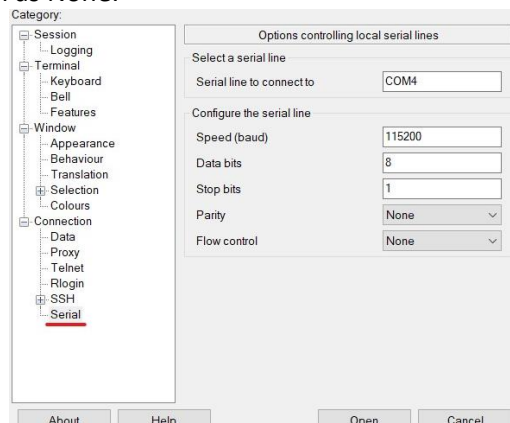
To secure your MC-LTE-GATEWAY change the password by entering "passwd" under SSH.

8.8 Access via Serial port RS232 (Putty)

1. Connect your MC-LTE-GATEWAY using Serial adapter to your PC.
2. On your PC, open the device manager to check the COM port of your MC-LTE-GATEWAY (If there are multiple COM ports, try disconnecting and reconnecting the Serial adapter to detect the right port).
3. Run Putty and choose Serial as connection type.
4. Type the COM port as Serial line and set speed to 115200 (9600 if v1.0.8).



5. Under Category -> Connection -> SSH click on Serial, and set Data bits to 8, Stop bits to 1, Parity as None, and Flow control as None.



6. Click on Open, a new window will be opened, click Enter button and you will be able to access the Linux system of the MC-LTE-GATEWAY.

```

Using username "root".
BusyBox v1.30.1 () built-in shell (ash)

MC TECHNOLOGIES

-----
OpenWrt 1.1.1-dirty, Flying Squirrel
-----
=== WARNING! =====
There is no root password defined on this device!
Use the "passwd" command to set up a new password
in order to prevent unauthorized SSH logins.
-----
root@MCLH:~# █
    
```

8.9 Command Line Interface

Open the Command Prompt to login your device:

1. Type: ssh root@192.168.2.1
2. Type the password.

Command	Use to
mcinfo info	Print general information about the modem.
mcinfo mobile	Print information about mobil communication status.

```

root@MCLH:~# mcinfo
Usage: mcinfo [options] [command[ command]]

Options:
  -h          Show this help message and exit.
  -v          Print verbose debug information to error
  -V          Show version information and exit.
  -d DEVICE   Set the tty device (default: /dev/ttyUSB3)
  -c COMMAND  Send COMMAND to modem.
  -t TIME     define the timeout in deciseconds
              default: 1

Command:
info  Print general information about the modem.
mobile Print information about mobil communication status
gpio  Print information about external GPIO module pins
root@MCLH:~# █
    
```

8.10 Change IP-address

8.10.1 Using Command line

Open the Command Prompt to login your device:

1. Type: ssh root@192.168.2.1
2. Type the password.
3. Open the configuration file using command: vi /etc/config/network

```
config interface 'lan'  
  option type 'bridge'  
  option ifname 'eth0'  
  option proto 'static'  
  option netmask '255.255.255.0'  
  option ip6assign '60'  
  option ipaddr '192.168.2.1'
```

4. Press "i" to enter the input mode, and change the line "option ipaddr" in the interface "lan" to the corresponding address.
5. If the MC-LTE-GATEWAY is to go online via a router, the line option gateway 'aaa.bbb.ccc.ddd' can be added (with the IP address of the gateway).
6. Then press Escape to save the file, and then type :wq and press Enter.
7. Finally, type service network reload and press Enter.

Restart the network services with the new settings. After a few seconds the MC-LTE-GATEWAY has the new IP address. If necessary, the network connection at the host PC must be briefly disconnected and reconnected so that the PC can obtain a new IP.

8.10.2 Using Luci Web interface

1. Click on "Network" in the left menu and then on "Interfaces".
2. Click on the "EDIT" button at the "LAN" interface.

Interfaces >> LAN

General Settings | Advanced Settings | Physical Settings
Firewall Settings | DHCP Server

Status

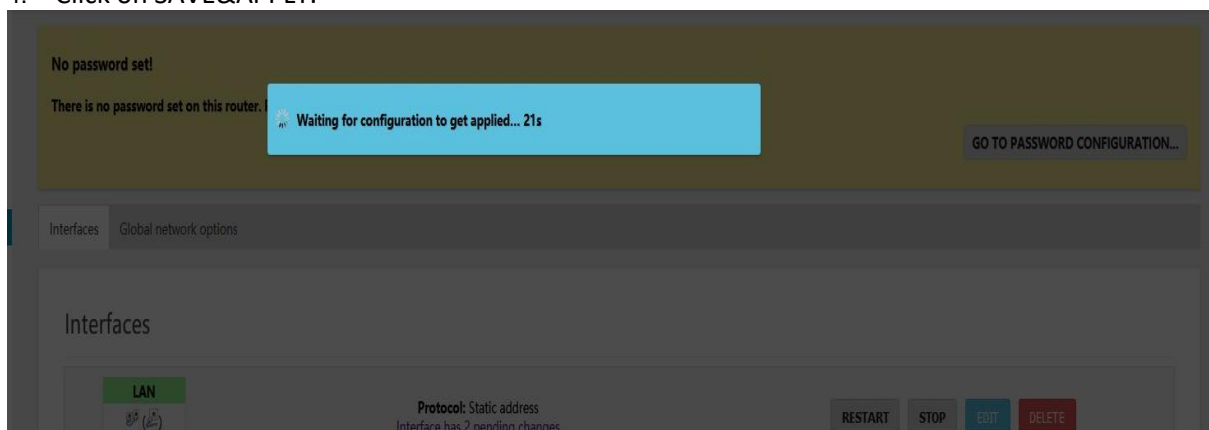
Device: br-lan
Uptime: 0h 2m 51s
MAC: 8E:E5:9E:FF:36:25
RX: 324.77 KB (2138 Pkts.)
TX: 358.30 KB (1102 Pkts.)
IPv4: 192.168.2.1/24
IPv6: fd33:a2e7:1dd1::1/60

Static address: 192.168.2.1
Protocol: Static address
Bring up on boot:
IPv4 address: 192.168.2.1
IPv4 netmask: 255.255.255.0
IPv4 gateway: 192.168.2.255
IPv4 broadcast: 192.168.2.255
Use custom DNS servers:
IPv6 assignment length: 60
IPv6 assignment hint: 0
IPv6 suffix: ::1

Optional: Allowed values: 'eui64', 'random', fixed value like ':1' or ':1:2'. When IPv6 prefix (like 'aib:cd::') is received from a delegating server, use the suffix (like ':1') to form the IPv6 address ('aib:cd::1') for the interface.

DISMISS | SAVE

3. Change IPv4 address to the wanted IP address and click on SAVE.
4. Click on SAVE&APPLY.



5. Login in to Luci using the new IP address within the given 30 seconds.

8.11 Node-RED Web Interface

Node-RED is a programming tool that allows hardware devices, APIs and online services to be wired together. It is built on Node.js, fully utilizing the advantages of its event-driven, non-blocking model.

It offers a browser-based editor that enables to easily wire flows by using the wide range of nodes in the palette.

If Node-RED is installed, you can reach the Node-RED web interface with the same IP address as the standard web interface and the specification of the port (e.g. 1880)

Example with default address: <http://192.168.2.1:1880>

(Note: Using https:// will not work.)

8.11.1 Enable the Node-Red installed in MC-LTE-GATEWAY:

Click on "System" in the left menu and then on "Startup".

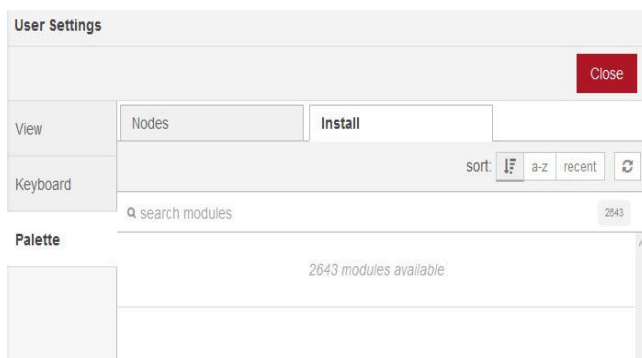
Search for Initscript: "node-red" and Click the "Enable/Disable" button.



8.11.2 Install extra modules:

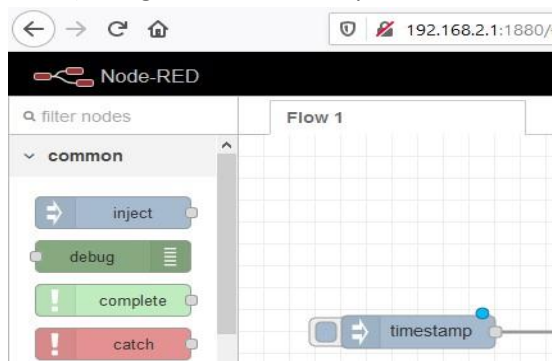
To install modules for Node-RED:

1. Open Node-RED web interface.
2. On the left upper corner, click on the 3-dash button.
3. Click on "Manage Palette".
4. In the "Manage Palette" interface, Click on install.
5. Type the modules name in "Search modules".



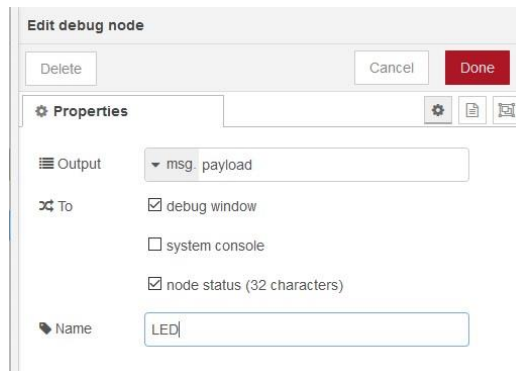
8.11.3 Add a node

Select the node you want to add from the nodes list (i.e. Inject node, allow injecting messages into a flow). Drag it into the workspace.



8.11.4 Add a debug node

The debug node displays the payload of the message or the entire message object. It can be



renamed from its setting by double clicking on it.

8.11.5 Wire the nodes

After adding all the wanted nodes, wire them together by dragging between the outputs of one to the input of the other.

8.11.6 Deploy

Now click on the Deploy button to deploy the flow to the server.

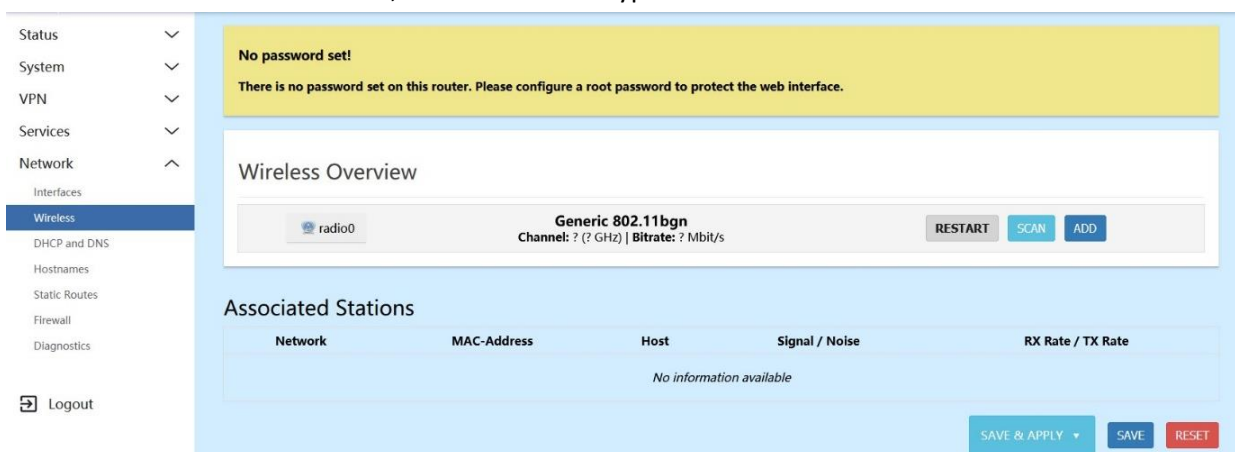
8.12 Setting Up Wifi

This section is only for MC-LTE-GATEWAY devices that support wireless connection (Wifi).

8.12.1 MC-LTE-GATEWAY in Access Point mode

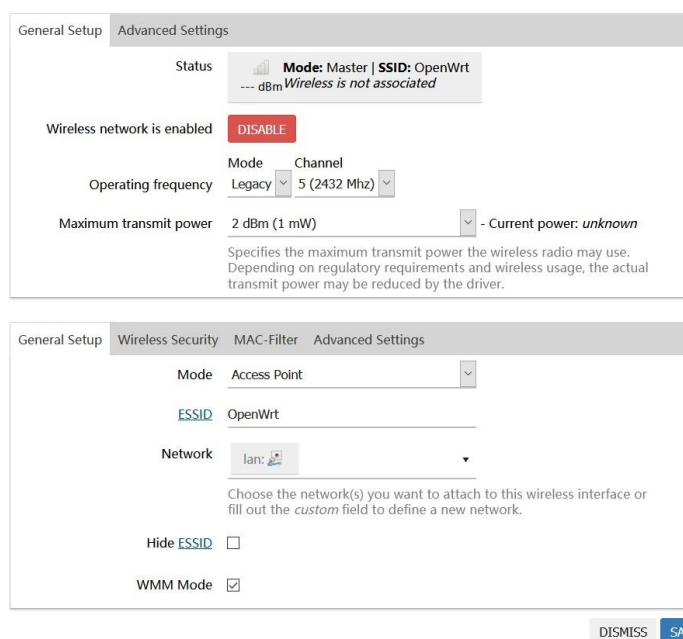
MC-LTE-GATEWAY can be used as an access point for other devices to wirelessly connect to it. To set MC-LTE-GATEWAY in Access point mode:

1. In LuCI, click on Network then on Wireless.
2. Under Wireless Overview, click on ADD.
3. Set Network to LAN, and under ESSID type wanted Wifi name.



4. Click on wireless security to set the type of wanted encryption.
5. Click on SAVE, then SAVE&APPLY

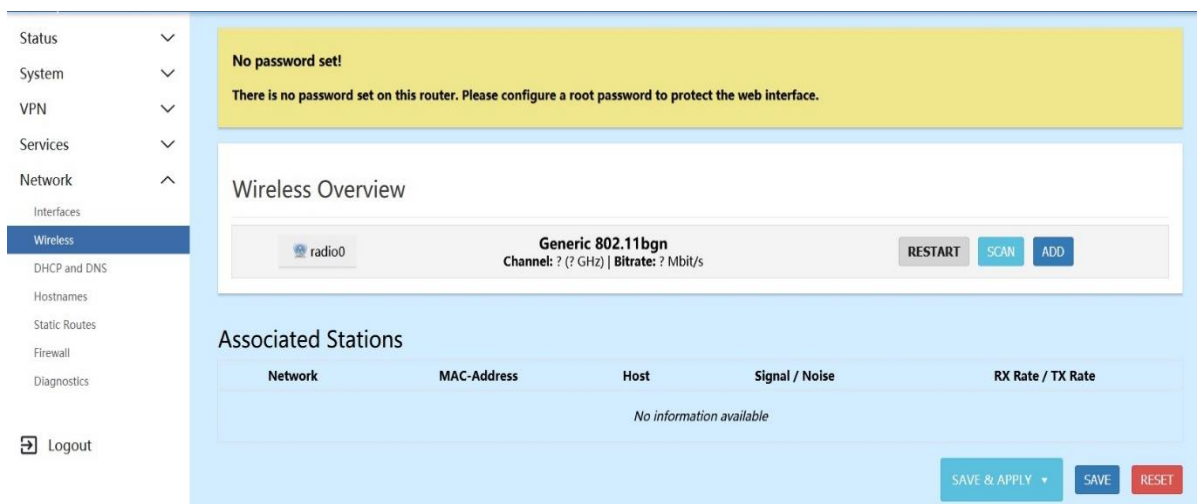
Edit wireless network



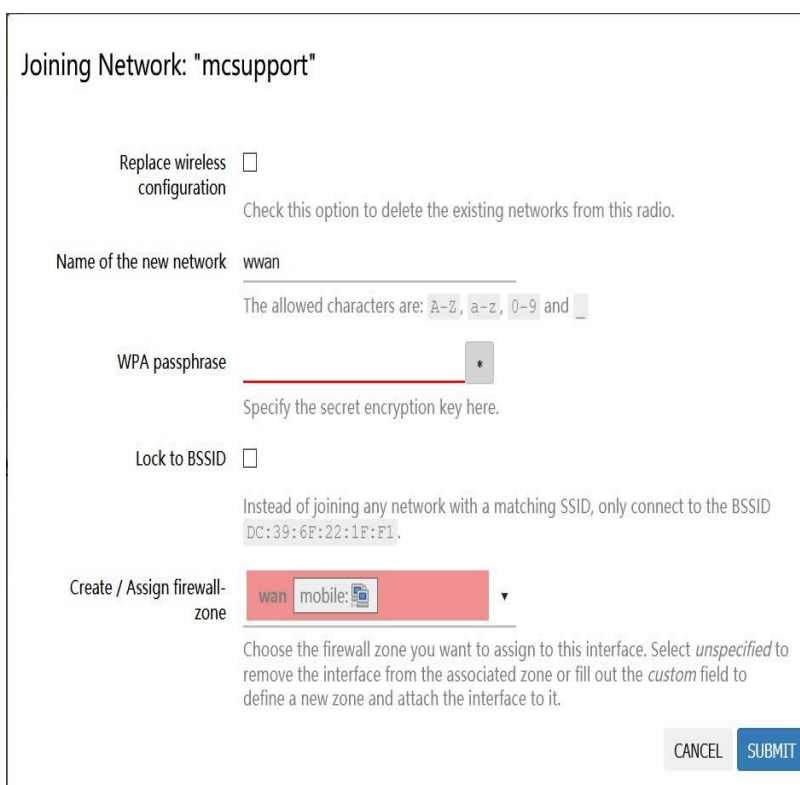
8.12.2 MC-LTE-GATEWAY as Wifi Client

MC-LTE-GATEWAY can be used as a Wifi client and connect to access point in its range.
To set MC-LTE-GATEWAY in Clinet mode:

1. In LuCI, click on Network then on Wireless.
2. Under Wireless Overview, click on SCAN.



3. Choose wanted network and click on JOIN.



4. Type wifi password under WPA passphrase.
5. Click on Submit, then SAVE.
6. SAVE&APPLY.

9 LED

9.1 LED Power

The Power LED indicates that the operating voltage is present.

9.2 LED GSM

This LED indicates the current state of the integrated GSM module.

Signal	Bedeutung
OFF	GSM OFF
Blinking (200ms ON, 1800ms OFF)	Search network
Blinking (1800ms aus, 200ms ON)	Stand-by state
Blinking (125ms ON, 125ms OFF)	Data transfer
ON	Telefonanruf aktiv (nicht verwendet)

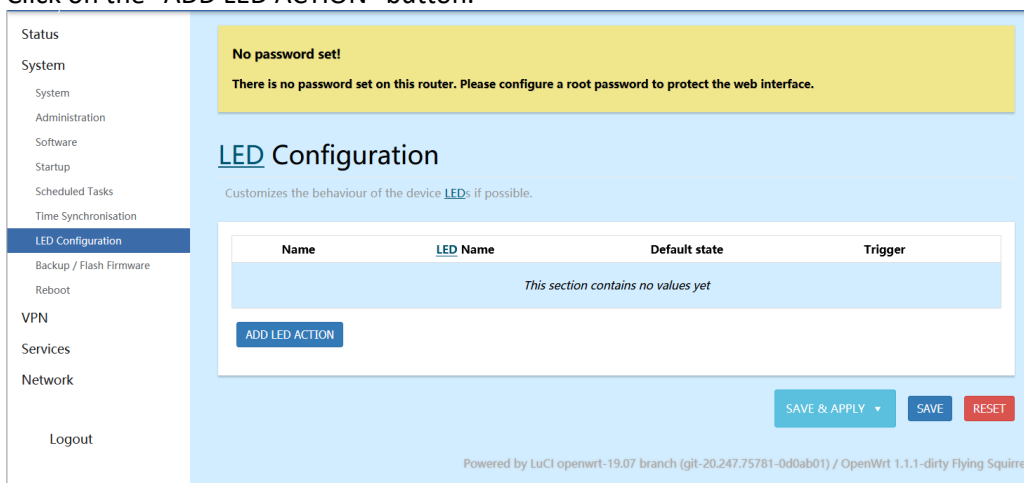
9.3 LED Warn (Red)

This LED is Programmable.

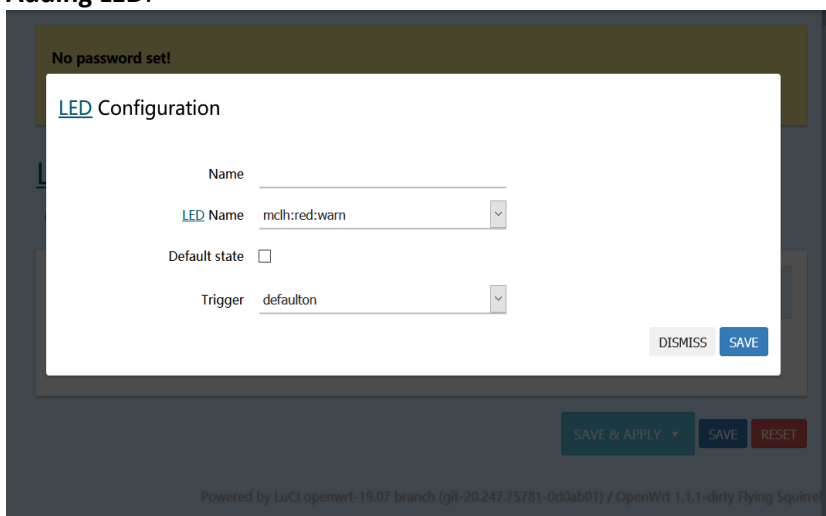
To configure the LEDs, you need to log in to the MC-LTE-GATEWAY using LuCI web interface.

Click on "System" in the left menu and then on "LED Configuration".

Click on the "ADD LED ACTION" button.



Adding LED:



6. In the "Name" field type, you can optionally give a name for the LED configuration.
7. Under "LED Name", choose wanted LED (MC-LTE-Gateway:red:warn for LED warn Red)

8. Check "Default state".
9. Under "Trigger", choose the wanted LED triggering setting.
10. Click on "SAVE", then "SAVE & APPLY".

9.4 Status LED 1 and LED 2

This LEDs are Programmable.

LED Configuration can be done same as for LED warn (Red).

LED	LED Name
LED 1	MC-LTE-Gateway:orange:info
LED 2	MC-LTE-Gateway:orange:status

10 OpenVPN

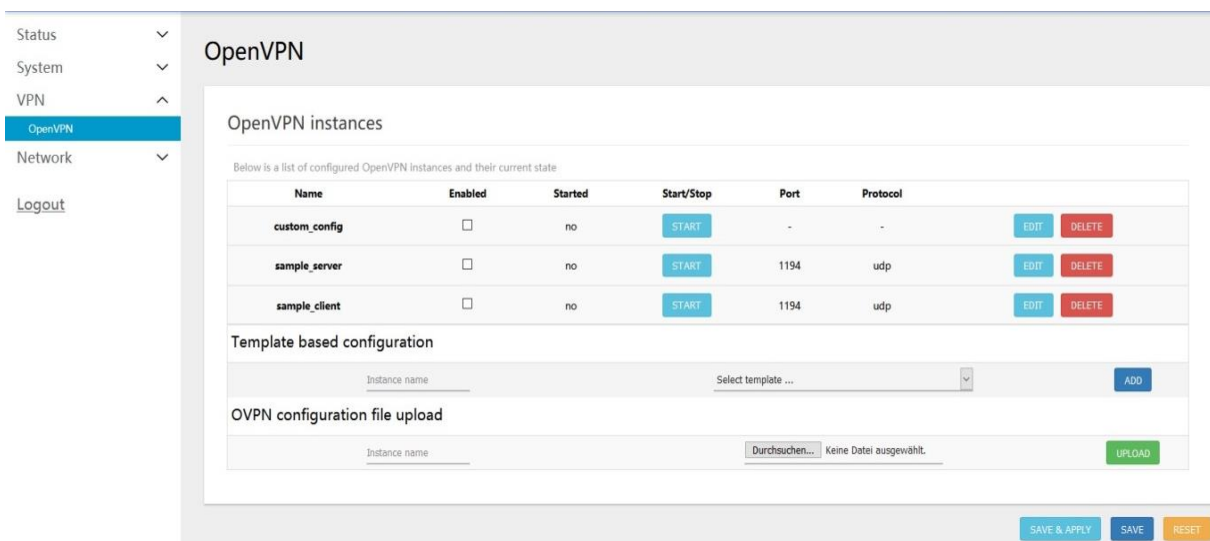
Before starting, create your own Certificate Authority (CA), certificates and keys for an OpenVPN server and clients.

You will need:

- Certificate Authority (ca.crt)
- Server certificate (server.crt) and server key (server.key)
- Client certificate (client.crt) and client key (client.key)

10.1 Client Configuration

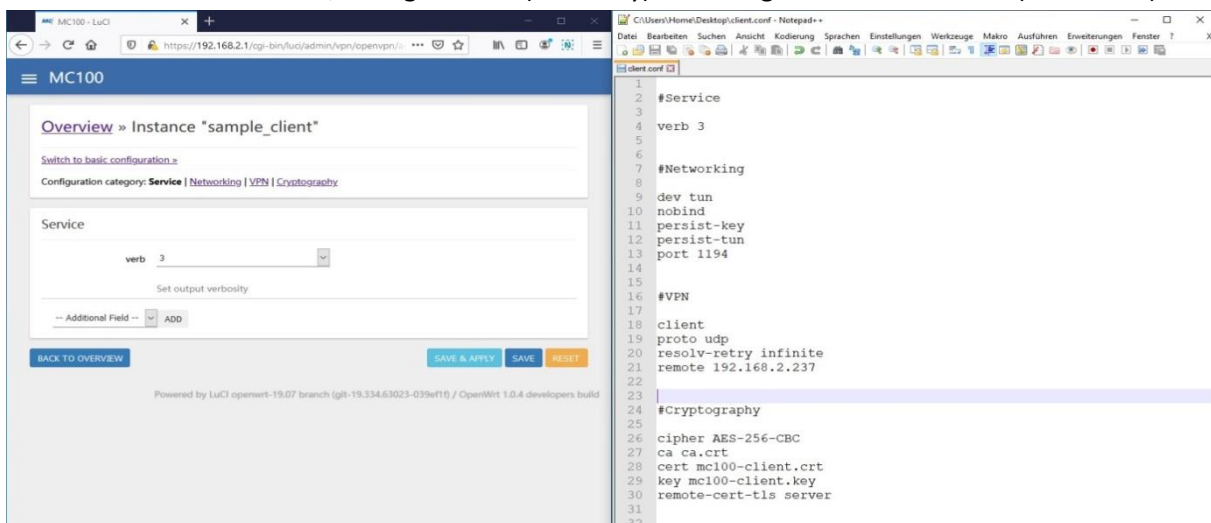
1. After logging to MC-LTE-GATEWAY Luci interface using the IP address (default 192.168.2.1), click on "OpenVPN" under "VPN" tab.



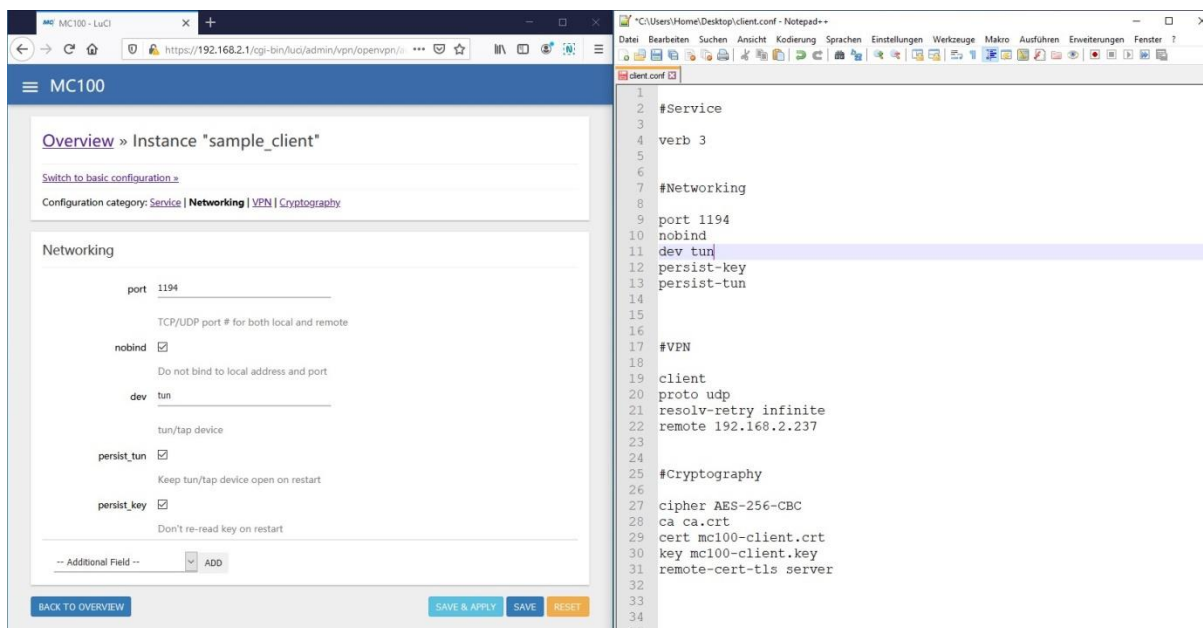
2. Click on "EDIT" at "sample_client" tab.
3. Click on "Switch to advanced configuration".
4. Edit the settings as the one in the client.conf file you have.

Example:

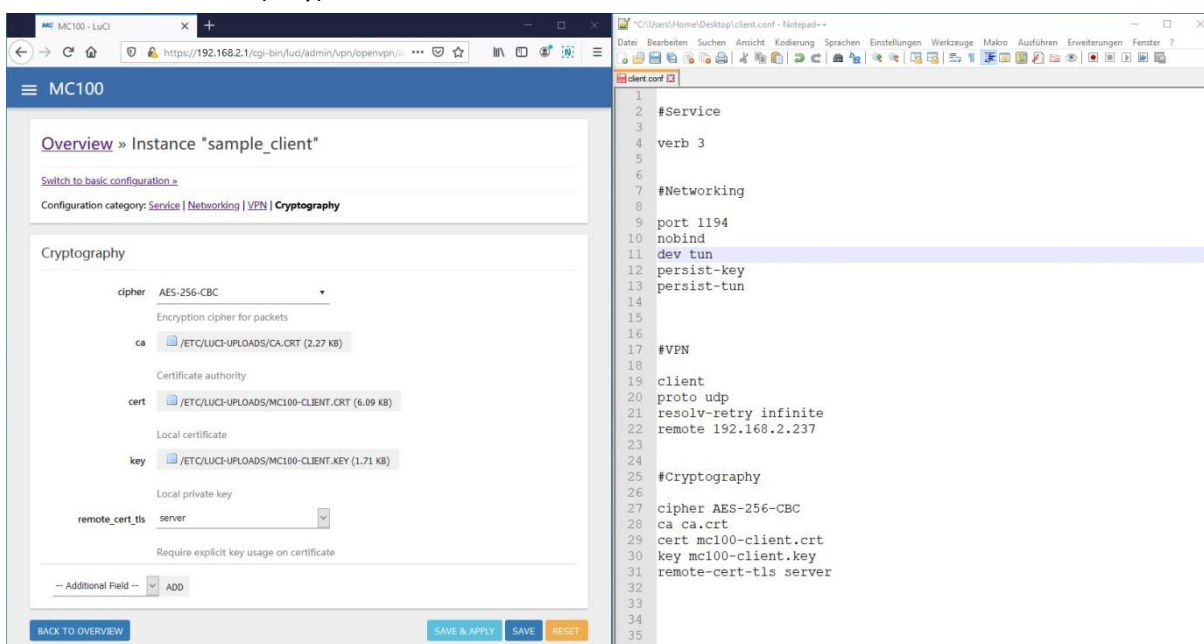
1. Under Service, Change "verb" (verbosity) same as given in the .conf file (here it is 3).



2. Under Networking, change every setting as same as given in the .conf file.



3. Same for VPN section.
4. Under Cryptography:
 - a. Change the cipher type to the one given in the .conf file.
 - b. In the path /ETC/LUCI-UPLOADS/ upload the Certificate authority “ca” file(.CRT), local certificate “cert” (.CRT), and the local private key “key” (.key).

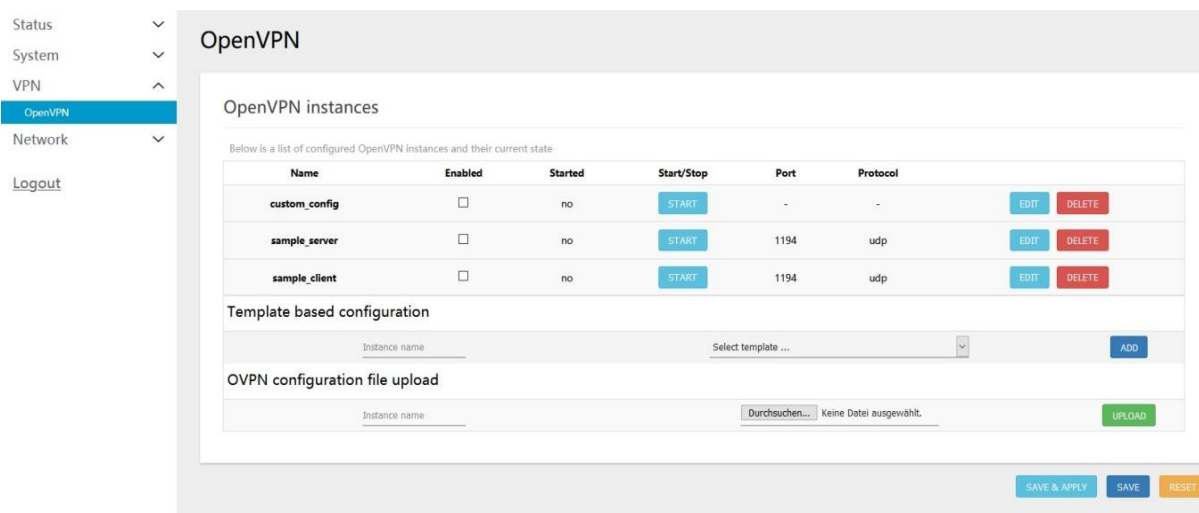


5. Click on “SAVE & APPLY” and then “BACK TO OVERVIEW”.
6. Enable the configured instance, then click on “SAVE AND APPLY”, then “START”.

sample_client	<input checked="" type="checkbox"/>	yes (7803)	STOP	1194	udp	EDIT	DELETE
---------------	-------------------------------------	------------	------	------	-----	------	--------

10.2 Server Configuration

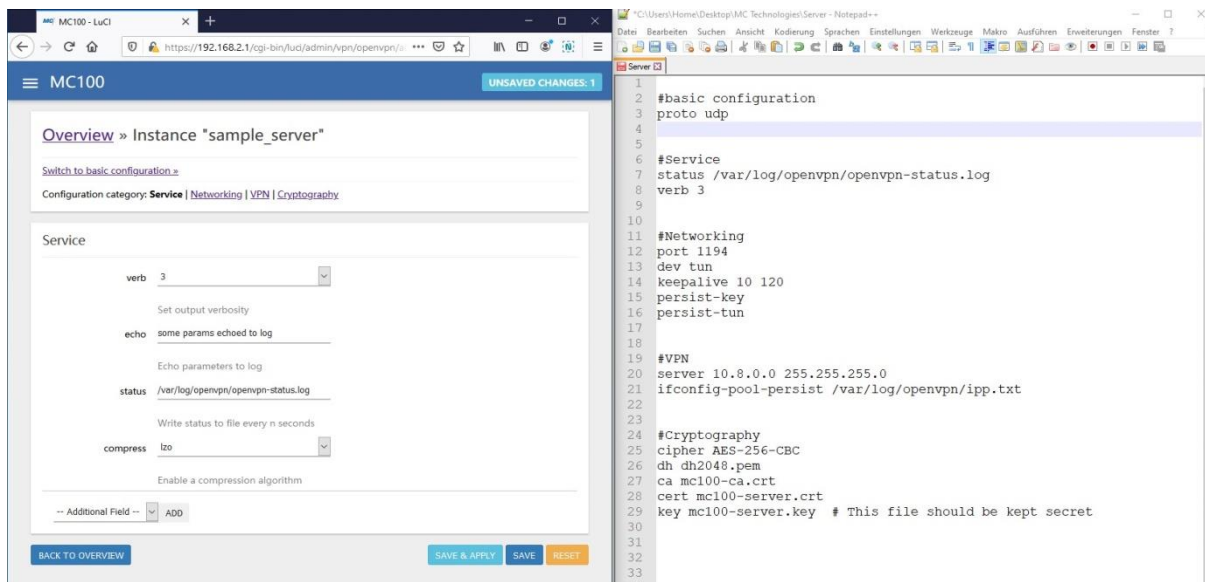
1. After logging to MC-LTE-GATEWAY Luci interface using the IP address (default 192.168.2.1), click on “OpenVPN” under “VPN” tab.
2. Click on “EDIT” at “sample_server” tab.



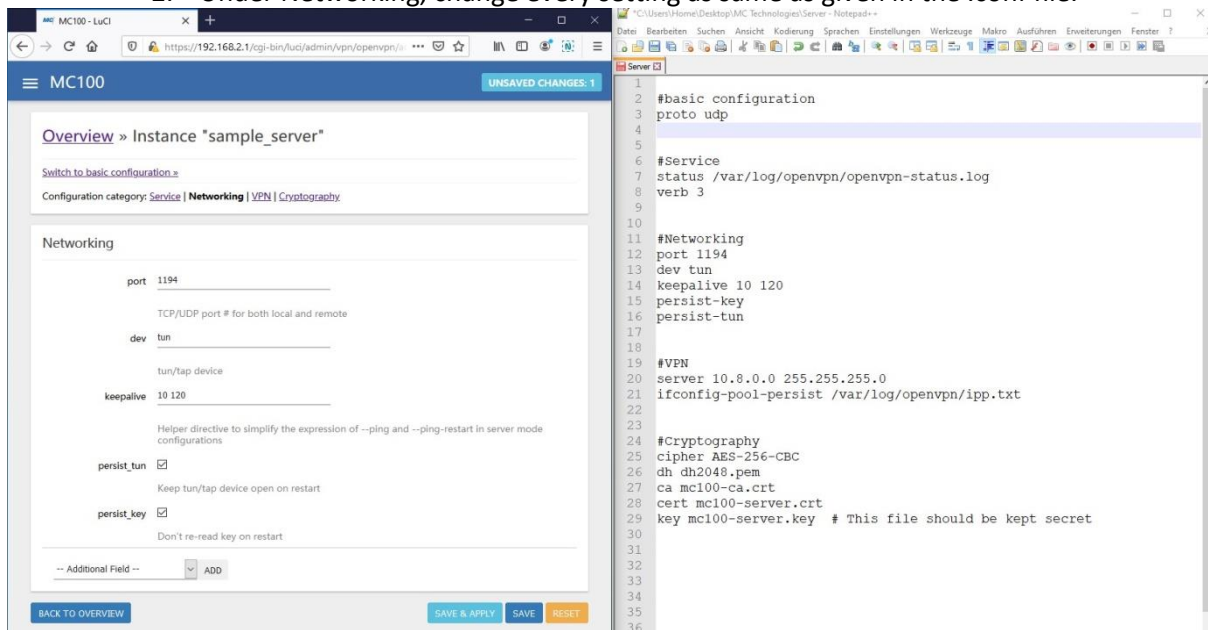
3. Click on “Switch to advanced configuration”.
4. Edit the settings as the one in the server.conf file you have.

Example:

1. Under Service, Change “verb” (verbosity) same as given in the .conf file (here it is 3).



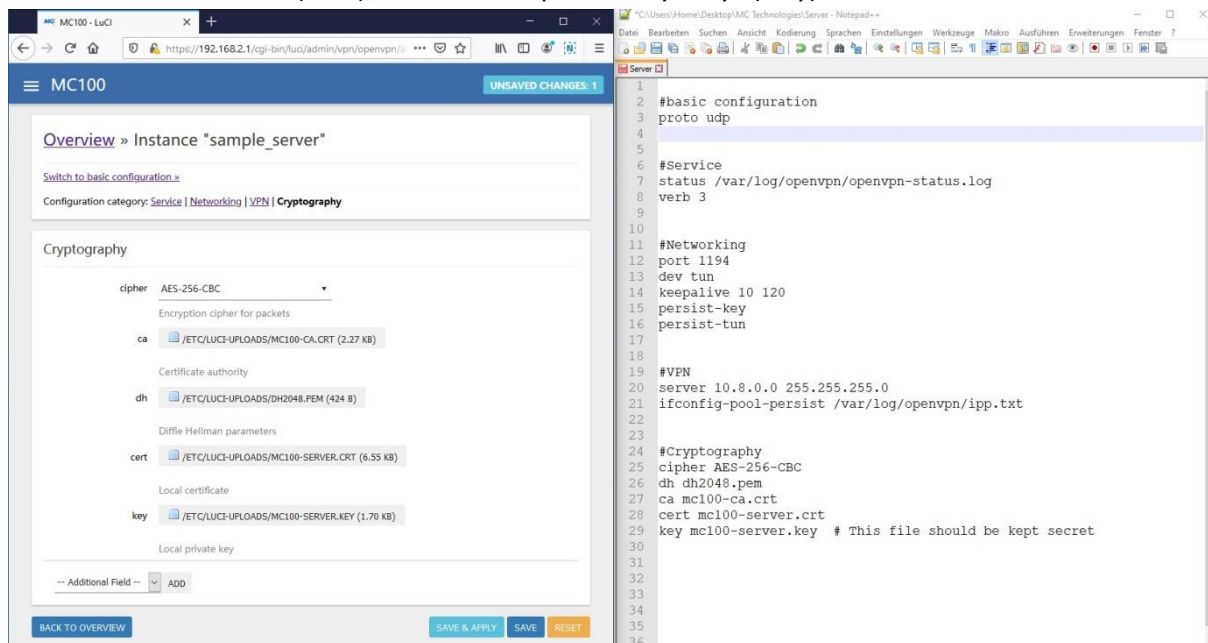
2. Under Networking, change every setting as same as given in the .conf file.



3. Same for VPN section.

4. Under Cryptography:

- a. Change the cipher type to the one given in the .conf file.
- b. In the path /ETC/LUCI-UPLOADS/ upload the Certificate authority "ca" file(.CRT), Diffie Hellman parameters "dh" (.PEM), local certificate "cert" (.CRT), and the local private key "key" (.key).



5. Click on "SAVE & APPLY" and then "BACK TO OVERVIEW".

6. Enable the configured instance, and then click on "SAVE AND APPLY", then "START".



11 Ser2net

Note: A hardware handshake is, using RS232 interface, not possible.

Ser2net can be enabled and configured using LuCI web Interface:

1. In LuCI web Interface, Click on "Services" in the left menu and then on "Ser2net".
2. Enable "GLOBAL".

Ser2Net Global

GLOBAL

Enabled

Enable the service. If disabled, all proxys below will not start.

3. Enable one of the "Proxys", ex. CFG0423E7.
4. Set wanted "Port" and type of "Protocol".
5. Type wanted device (/dev/ttymcx3 for Serial port RS232).

CFG0423E7

Enabled

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.

Protocol

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/.

Baudrate

DataBits

StopBits

Parity

Char Delay

Hangup when done

enabled = lowers the modem control lines (DCD, DTR, etc.) when the connection closes

Kick old user

Telnet BRK on sync

XON/XOFF support

Hardware flow control

Remctl

allows remote control of the serial port parameters via RFC 2217

No Break

Disables automatic clearing of the break setting of the port.

Local

enabled = ignores the modem control lines (DCD, DTR, etc.)

6. Click on "SAVE" then "SAVE&APPLY".

12 Maintenance, repair and troubleshooting

12.1 Maintenance

The product is maintenance-free and requires no special regular maintenance.

12.2 Troubleshooting

If a fault occurs during operation of the product and you need assistance, please contact MC Technologies support. You can reach our support department by e-mail at: support@mc-technologies.net.

12.3 Repair

Send defective products with a detailed error description to:

MC Technologies GmbH, Kabelkamp 2, 30179 Hannover

Before shipping the device:

- Call our support team and ask for an RMA (Return to Manufacturer Authorisation) number.
- Remove possibly inserted SIM cards.
- Back up the configurations on the device and any other data stored on it.
- Back up any applications running on the device.

It is not permitted to open the product for repair work or modifications.

13 Disposal

13.1 Return of the old equipment

In accordance with WEEE regulations, the return and recycling of old MC Technologies equipment for our customers is regulated as follows:

Please send your old devices carriage paid to the following address:

**MC Technologies GmbH
-Entsorgung-
Kabelkamp 2
30179 Hannover**