

LORIX *One*

Low cost LoRa IP43/IP65 gateway



Application note

4G LTE access with Mikrotik wAP



Revision	Note	Date
0.1	Initial creation	10/30/2017
0.2	Added screenshots	11/30/2017
0.3	Language Correction	12/05/2017

1 SUMMARY

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2 INTRODUCTION

This document shows what materials you need and how to connect all elements together to use Lora Gateway with LTE. How to configure the wAP LTE from a web interface with the SIM Card and other parameters. To configure your Lora Gateway, please refer to document sent with your kit LORIX One Lora Gateway.

3 MATERIAL

To complete this application note, you will need the following material:

1. A [LORIX One LoRa gateway kit](#)



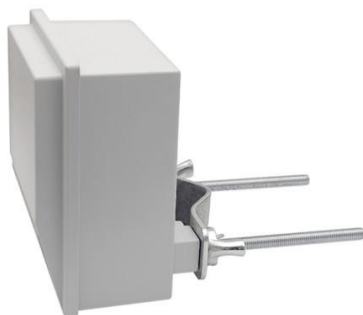
Wifx's online shop name: Lora Gateway LORIX One

2. A [wAP LTE kit \(RBwAPR-2nD&R11e-LTE\)](#)



Wifx's online shop reference: RBWAPR-2ND&R11E-LTE

3. An [Outdoor Poe Splitter \(POE-SPLITTER\)](#)



Wifx's online shop reference: DLB-POE-SPLITTER-03

4 SETUP

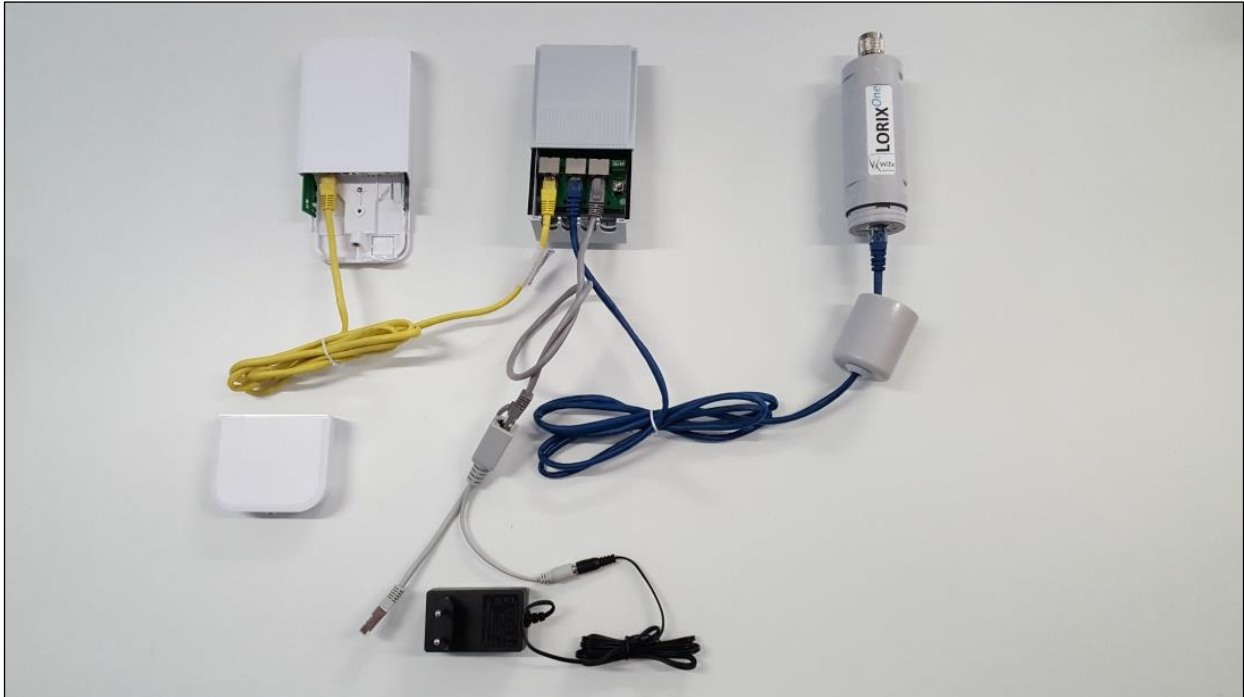
Please follow the next steps in order, it is very important for an optimal configuration

At this stage, **don't plug the SIM Card into the wAP**

4.1 HARDWARE

(The yellow, blue and grey patch cables in the following picture are not included)

Connect the wAP to the left port (Port 1) of the splitter and the LORIX One Lora Gateway to the middle port (Port 2) of the splitter then connect the injector PoE in the last port (Port 3) of the splitter. (See below picture)



4.2 SOFTWARE

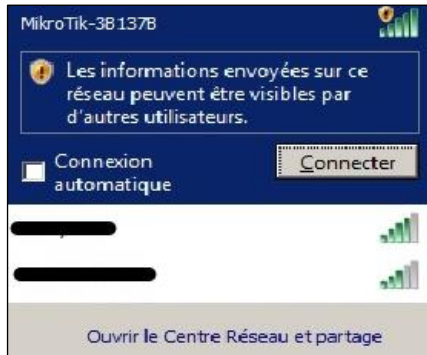
4.2.1 CONFIGURE YOUR WAP LTE

Warning, your network card must be configured in DHCP, not in static IP since the wAP embeds a DHCP server.

At this stage, **don't plug the SIM Card into the wAP**

1. Disconnect Ethernet cable from your computer if any or disable any already connected network interface to avoid any compatibility problem.

2. Connect your computer to the WiFi network; Mikrotik-XXXXX(example : Mikrotik-3B137B) :



For the following steps please check the screenshot on the next page.

3. Launch a web Browser and type in http://192.168.88.1. Log in User: admin Password: (no password) after login go to the Quick Set option in the right top corner see next picture and chose LTE AP.
4. Configure the following points as below for your wireless network
 - a. Change the Network Name
 - b. Change the Frequency and chose 2437
 - c. Do not change the Band (2GHz-B/G/N)
 - d. Change the country to the one which applies
 - e. Set a new WiFi Password to avoid any security issue
5. Configure settings for LTE
 - a. Enter PIN of your SIM CARD
 - b. Set the name of an operator (optional for some operators)
At this stage, **don't plug the SIM Card into the wAP**
6. Set the Local Network
 - a. Chose the IP address for your wAP (192.168.1.1)
 - b. Define the subnet mask (255.255.255.0/24)
 - c. DHCP range for your network (192.168.1.100-192.168.1.250)
 - d. Check NAT rule for your network
7. Configure the wAP System
 - a. Define the router Identity name
 - b. Define your personal password for admin router login (for security reasons try to not use the same password that you already defined for the WiFi)
8. Apply your new configuration

The screenshot shows the Mikrotik RouterOS WebFig interface for a wAP device. The browser address bar shows the URL `192.168.88.1/webfig/` with the title "Default wAP network address". The interface is in "Configuration mode of the wAP" and shows the following sections:

- Wireless:** Network Name: LORIXOne, Frequency: 2437 MHz, Band: 2GHz-B/G/N, Country: switzerland, MAC Address: E4:8D:8C:3B:13:7B, WiFi Password: LORIX_One (with a "WiFi network password" label below it).
- Guest Wireless Network:** Guest Network: (dropdown menu).
- Wireless Clients:** A table with columns: MAC Address, In ACL, Last IP, Uptime, max: (blank), Signal Strength. One client is listed with MAC 08:ED:B9:63:2D:F8, In ACL no, Last IP 192.168.88.254, Uptime 00:04:05, and Signal Strength -49.
- LTE:** PIN: (masked), APN: internet.
- Internet:** IP Address: 0.0.0.0, Firewall Router: checked.
- Local Network:** IP Address: 192.168.1.1, Netmask: 255.255.255.0 (/24), DHCP Server: checked, DHCP Server Range: 192.168.1.100-192.168.1.2, NAT: checked, UPnP: unchecked.
- System:** Router Identity: LORIXOne_Router_LTE, Password: (masked), Confirm Password: (masked) (with a "wAP interface password" label below it).

Buttons for "Check For Updates", "Reset Configuration", and "Apply Configuration" are visible at the bottom right.

4.2.2 CHECK THE CONFIGURATION

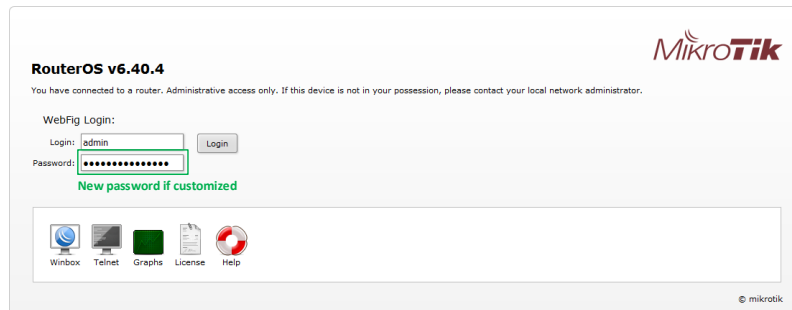
Once the configuration applied, the new parameters will be effective. If you choose to change the WiFi network name and/or password, you will be disconnected and will need to login again.

It's now time to insert the SIM card into the wAP device:

1. Unplug the cable from the wAP device
2. Insert the SIM card
3. Reconnect the patch cable in the wAP device

Once reconnected, the wAP will boot and start the WiFi network with parameters as previously defined:

1. Connect to the wAP Wi-Fi Network with the new SSID and password
2. Launch a web Browser and type in <http://192.168.1.1> or customized IP address
3. Login in wAP Router with **User: admin Password:** (customized password)



4. Check LTE signal of your wAP (LTE connexion can take until 15 minutes to connect)

Wireless

Network Name: LORIXOne
 Frequency: 2437 MHz
 Band: 20MHz-8/3N
 Country: Switzerland
 MAC Address: E4:8D:8C:3B:13:7B
 Use Access List (ACL):
 WiFi Password: LORIX_One Hide

Guest Network

Wireless Clients

MAC Address	In ACL	Last IP	Uptime	Signal Strength
08:ED:B9:63:2D:FB	no	192.168.1.200	00:02:23	-54

Signal Strength: cur: avg: max:

LTE

PIN:
 APN:

Status

Current Operator: 22803
 EARFCN: 1850 (band 3, bandwidth 20MHz, ccl 6)
 Signal quality graph showing RSRP values over time.

Internet

IP Address: 10.161.131.207
 Firewall Router:

Local Network

IP Address: 192.168.1.1
 Netmask: 255.255.255.0 (24)
 DHCP Server:
 DHCP Server Range: 192.168.1.100-192.168.1.1
 NAT:
 UPnP:

System

Router Identity: LORDOne_Router_LTE

4.3 TEST AND VALIDATION

To test the configuration you can try to contact a server through internet.

1. Ping¹ a site to verify that you are well connected to internet:

```

C:\Windows\system32\cmd.exe - ping 8.8.8.8 -t
Réponse de 8.8.8.8 : octets=32 temps=46 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=53 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=44 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=35 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=42 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=49 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=70 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=55 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=39 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=25 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=49 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=60 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=58 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=52 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=79 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=49 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=60 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=41 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=50 ms TTL=58
Réponse de 8.8.8.8 : octets=32 temps=39 ms TTL=58

C:\Windows\system32\cmd.exe - ping 192.168.1.50 -t
Réponse de 192.168.1.50 : octets=32 temps<ins> TTL=64
Réponse de 192.168.1.50 : octets=32 temps<ins> TTL=64
Réponse de 192.168.1.50 : octets=32 temps=2 ms TTL=64
Réponse de 192.168.1.50 : octets=32 temps<ins> TTL=64
Réponse de 192.168.1.50 : octets=32 temps<ins> TTL=64
Réponse de 192.168.1.50 : octets=32 temps<ins> TTL=64
Réponse de 192.168.1.50 : octets=32 temps=2 ms TTL=64
Réponse de 192.168.1.50 : octets=32 temps<ins> TTL=64
Réponse de 192.168.1.50 : octets=32 temps<ins> TTL=64
Réponse de 192.168.1.50 : octets=32 temps=1 ms TTL=64
Réponse de 192.168.1.50 : octets=32 temps=5 ms TTL=64
Réponse de 192.168.1.50 : octets=32 temps<ins> TTL=64
Réponse de 192.168.1.50 : octets=32 temps=7 ms TTL=64
Réponse de 192.168.1.50 : octets=32 temps=1 ms TTL=64
Réponse de 192.168.1.50 : octets=32 temps<ins> TTL=64
Réponse de 192.168.1.50 : octets=32 temps=1 ms TTL=64
Réponse de 192.168.1.50 : octets=32 temps<ins> TTL=64
Réponse de 192.168.1.50 : octets=32 temps<ins> TTL=64
Réponse de 192.168.1.50 : octets=32 temps<ins> TTL=64
Réponse de 192.168.1.50 : octets=32 temps<ins> TTL=64

```

If the message “Reply from ...” appears multiple times, your wAP 4G/LTE is connected to internet.

If the message “Request timed out” appears, your wAP 4G/LTE doesn’t have internet connection, go [4.2.1 step 4](#) and check the parameters again.

E-mail: info@lorixone.io

For any RMA questions, contact: rma@lorixone.io

For more information, visit our website: www.lorixone.io

¹ To launch the ping command, open a terminal by typing “Win+R” then write “cmd” and press enter. In the terminal (black window), type “ping <domain>”, e.g. ping lorixone.io