Traçabilité, surveillance et métrologie

USER GUIDE

JRI LORA GATEWAY

Products N°12706-12707-12708-12709-13191

PRSF017D_EN

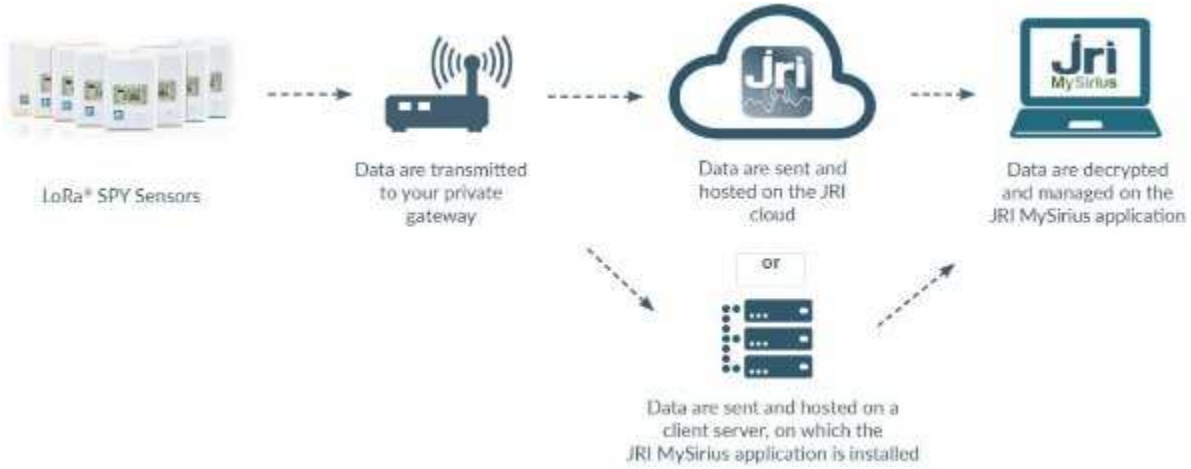
TABLE OF CONTENTS

1. DESCRIPTION

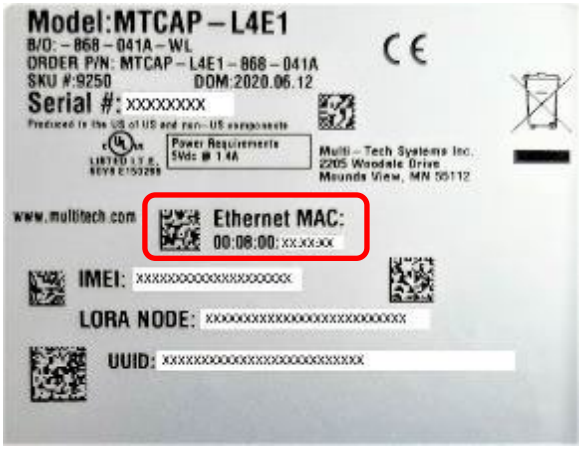
This document describes the installation procedure and utilization of the JRI LoRa Gateways.

1.1. Important information

The JRI LoRa gateways default configuration ensures communication between JRI LoRa devices (LoRa SPYs, LoRa Temp's) and JRI-MySirius Cloud. For a use with MySirius Server version, a modification is required in the built-in NodeRed server (see part 7).



- NEVER CONNECT A NEW GATEWAY ON A CUSTOMER'S ETHERNET NETWORK WITH A DHCP SERVER IF IT IS MEANT TO BE USED IN FIXED IP MODE.
- LORA GATEWAYS ARE CONFIGURED BY DEFAUT IN DHCP; A RESERVATION OF AN IP ADDRESS CAN BE MADE BY PROVIDING THE GATEWAY'S MAC ADDRESS. (SEE BACKSIDE STICKER)



- TO SWITCH TO FIXED IP MODE, DO A SHORT RESET OF 10 SECONDS (>5 SEC AND <30 SEC) AND SEE STEP 5.2 . NEVER DO A HARD RESET > 30 SEC (FACTORY RESET).
- CONNECTING A JRI LORA GATEWAY TO THE CUSTOMER'S NETWORK ALLOWS REMOTE MANAGEMENT OF THE GATEWAY THROUGH ITS CONFIGURATION PORTAL. FOR THE ETHERNET VERSION, IT IS THE MEDIUM OF DATA COMMUNICATION, WHEREAS THE 4G VERSION USES THE ETHERNET NETWORK FOR COMMUNICATION BUT CAN SWITCH TO THE CELLULAR NETWORK IN CASE OF ETHERNET NETWORK FAILURE.

1.2. Regulatory and Environmental information

	Do not dispose of with other waste. Instead, hand it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.
CE	Compliant with European Council Directives 2011/65/EU and 2014/53/EU for electrical safety, flammability, disruptive electromagnetic emissions, and immunity to environmental electrical disturbances.
RoHS	Embedded products comply with the chemical concentration limitations set forth in the directive 2015/863 of the European Parliament (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment - RoHS). This product does not contain the banned chemicals.
FC	This device complies with part 15 of the FCC rules. Operation is subject to conditions. Contact us for more details. The grantee is not responsible for any changes or modification not expressly approved by the party responsible for compliance. The antenna(s) used for this transmitter, must be installed to provide a separation distance of at least 20 cm from all persons. Installers and end-users must be provided with operating conditions for satisfying RF exposure compliance.

1.3. Product content

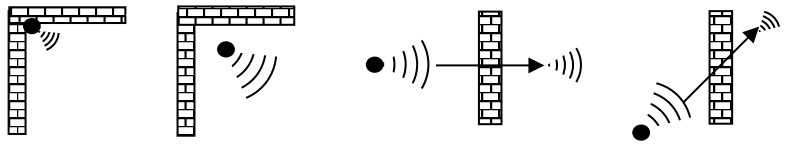
- JRI LoRa Gateway
- LoRa Antenna 20 cm 3db. Can be replaced by Outdoor antenna 8db 1m20 with 10 m extension cable (see product 12524)
- Power supply
- Ethernet cable
- Mounting bracket

2. INSTALLATION RECOMMENDATIONS

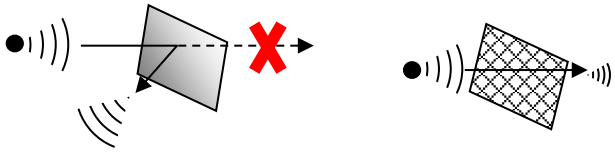
To ensure optimal radio transmission, a certain number of recommendations must be respected, as any wireless transmission is subject to disturbances.

2.1. Sources of attenuation and disturbances

- The presence of obstacles between the LoRa recorders and the LoRa Gateway (wall, furniture, vehicles…) or near the antenna.
- The thickness of an obstacle. The attenuation is greater diagonally than perpendicularly.



- A solid metal wall without any openings will not allow transmission by radio. Small openings in the wall will attenuate the signal. Recommended size of openings is 35cm minimum.



2.2. Positioning

- Position the Gateway's LoRa antenna at 45° degrees from the wall (avoid being in parallel). Place the Gateway in a high and central position according to the distribution of LoRa SPYs sensors. A LoRa SPY TEST (Ref: 12146/12308) can be used to determine the gateway's best location onsite.

- A large external antenna with 8dB gain (ref 12524) can be installed instead of the antenna provided by default. A cable of 10m long can be used for remote installation.

- Use the mounting bracket provided for an easier installation.

To ensure your safety during installation or an intervention on a device placed in a high position, use proper equipment which provides adequate stability, wear appropriate non-slip shoes and install warning signs around the work area if the intervention takes place in an area of foot traffic.

3. HARDWARE DESCRIPTION

The above image shows the model with all features (ETHERNET and Cellular). For models that don't have a cellular radio, the chassis will not have a SIM slot.

Item	Description
Connectors	
Power	5 Volt power jack.
Ethernet	RJ45 Ethernet jack.
Reset	Reset button. Reboots device or restores factory defaults. see Resetting the Device P.1
LoRa antenna	Connect external 3db LoRa antenna or extension cable for 8db LoRa antenna
SIM	*Cellular models only.* SIM slot. Refer to *Installing SIM Card* for details.
LEDs	
STATUS	Blinks when operating system is fully loaded.
LORA	Lights when LoRa software (node Red) is active.
CELL	*Cellular models only.* Lights when there is power to the radio. Blinks when the SIM is registered with the carrier.
Ethernet Link	Left LED on the Ethernet connector. Blinks when data is sent or received on the Ethernet link. Steady light when there is a valid Ethernet connection.
Ethernet Speed	Right LED on the Ethernet connector. Lit when the Ethernet is linked at 100 Mbps. If not lit, the Ethernet is linked at 10 Mbps.

4. TECHNICAL PREREQUISITES

4.1. General:

- A 220V electrical outlet is required within 1.5m from the Gateway location
- 4G cellular coverage or RJ45 network socket depending on the Gateway chosen.
- For MySirius CLOUD use: Open TCP port **8443** to *device.jri-mysirius.com* platform.
- For MySirius SERVUR use: Open TCP port **13252** to the IP address of the MySirius server.
- For remote management: Open TCP **5798** port to *ds.devicehq.com* platform.

CAUTION: Depending on the generation of the Gateway, some are still configured to work on port **13252** in classic **HTTP**, and not on port **8443** which is the **HTTPS** port. JRI strongly recommends to switch the configuration for MySirius CLOUD to **HTTPS** only (port 8443 - see chapter on NodeRED Configuration)

4.2. DHCP mode:

It is recommended to set Gateways in DHCP (default configuration). A DHCP server is required for an automated IP configuration but it is mandatory to know the IP address that will be allocated to the Gateway for future modification. Otherwise, the Gateway IP address is only recoverable from *www.devicehq.com*.

4.3. Fixed IP mode:

For a fixed IP usage, the user should provide the information bellow:

- IP address
- Subnetwork mask
- Gateway
- DNS

5. CONFIGURATION

5.1. Start and login on the configuration portal:

DHCP configuration:

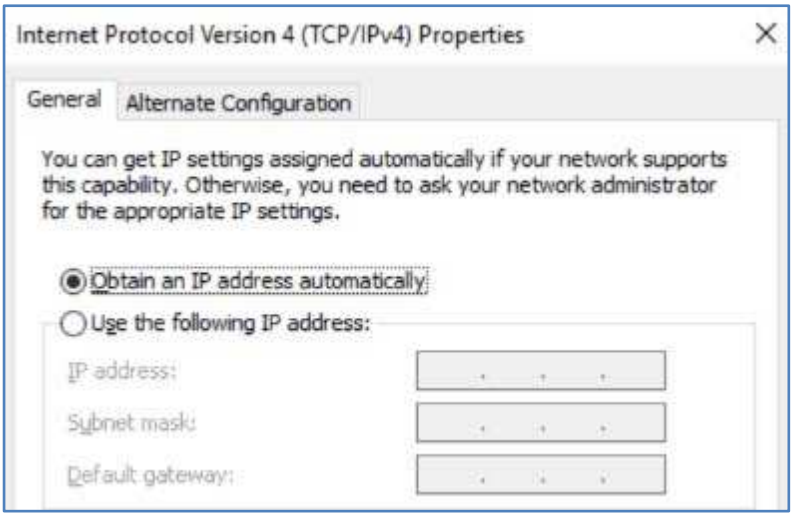
- Power the Gateway.
- Connect the Gateway on a customer network with a DHCP server (Request a reservation of an IP address by providing the Gateway MAC address - backside label).
- Open an internet browser at the GATEWAY IP address.
- In the login page that appears, provide the following default credentials:
  - **User name:** admin
  - **Password:** Admin1234. (Password is “admin” for former versions)

Depending on the Gateway version, access customization may be requested.

FIXED IP configuration (if the IP address has not been configured by JRI):

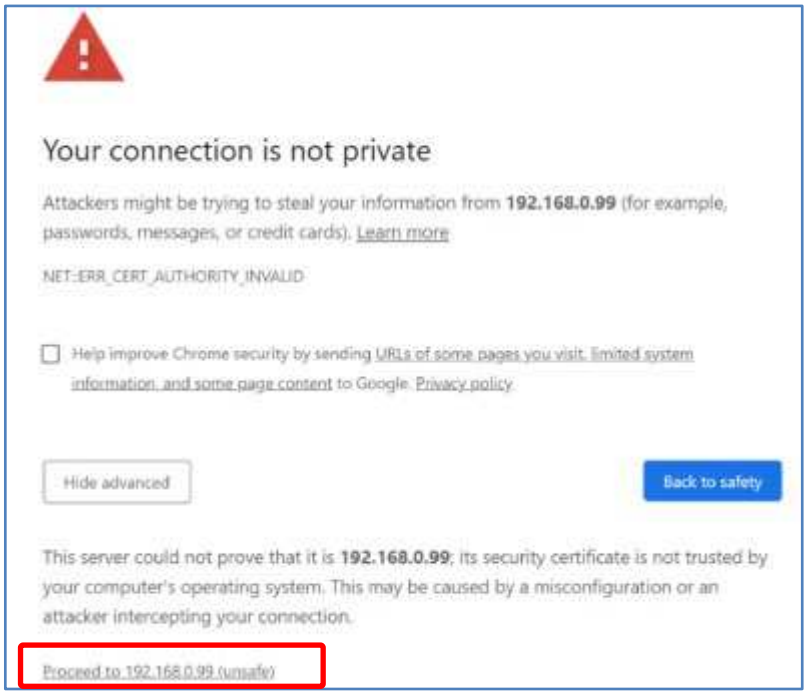
- Power the Gateway.
- Wait for the Gateway to completely start: LoRa LED is steady / STATUS LED is blinking.
- Remove the sticker on the RESET button and press for 10 seconds with a paperclip.
- Wait for the full reboot of the Gateway: LoRa LED is steady / STATUS LED is blinking.

- Set the PC network adapter to automatic mode (Disconnect the PC from Ethernet or Wifi network)



- Connect the Gateway to the PC using the Ethernet cable (disable the Firewall or antivirus if necessary).

- Open an internet browser and enter the address http://192.168.2.1



- If a security message appears (depending on the browser) Click on more details and continue to the site 192.168.2.1

- In the login page, enter the following default credentials:

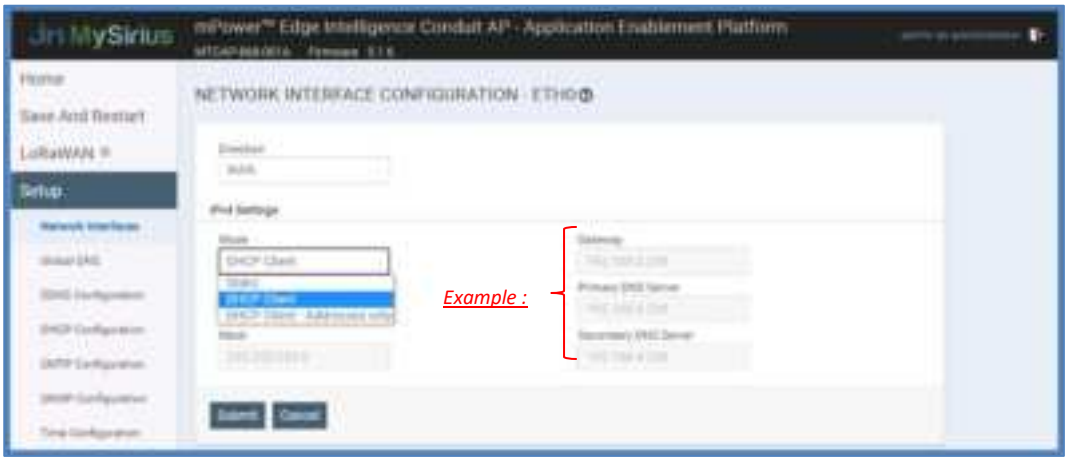
  - **User name** : admin
  - **Password** : Admin1234.
    Click on **Login**

- After connection, the configuration page below opens.
- The left menu gives access to the different configuration panels.

5.2. IP Configuration

- Setup Menu > Network Interfaces.
- Click on the pencil in the Options column to modify “eth0”.

- Fill in the fields according to the desired configuration:
  - Let direction on LAN for default Ethernet configuration and select WAN for Ethernet with cellular failover utilization
  - Select DHCP client (default) for dynamic IP configuration
  - Or select Static IP for fixed IP configuration and enter the IP/Mask/Gateway/DNS information.
- Click on "submit"



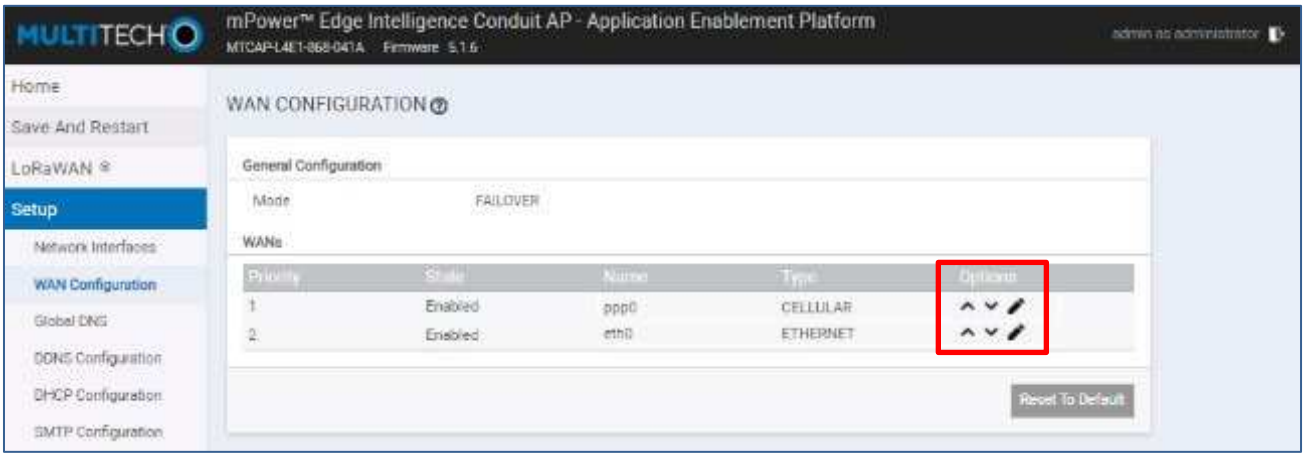
To connect to the Gateway configuration page again, enter its new IP address in the browser if it has been modified (fixed IP given by the client or IP allocated by the client's DHCP server).

5.3. WAN Failover Priority

Failover mode regulates which medium (Ethernet or Cellular) is used for the Internet connection and switches from one to another if a connectivity failure is detected. Priority can be set either on Ethernet or Cellular connection.

If Ethernet connection (eth0) is set as priority 1 by default, cellular connection can be set as a failover connection by setting its priority to 2. Both connections should be set as WAN.

- Click Setup > WAN Configuration.
- Under Options, click the up and down arrows to change the priority of the appropriate connection.
- Click Save and Apply to save the change.



To edit failover configuration:

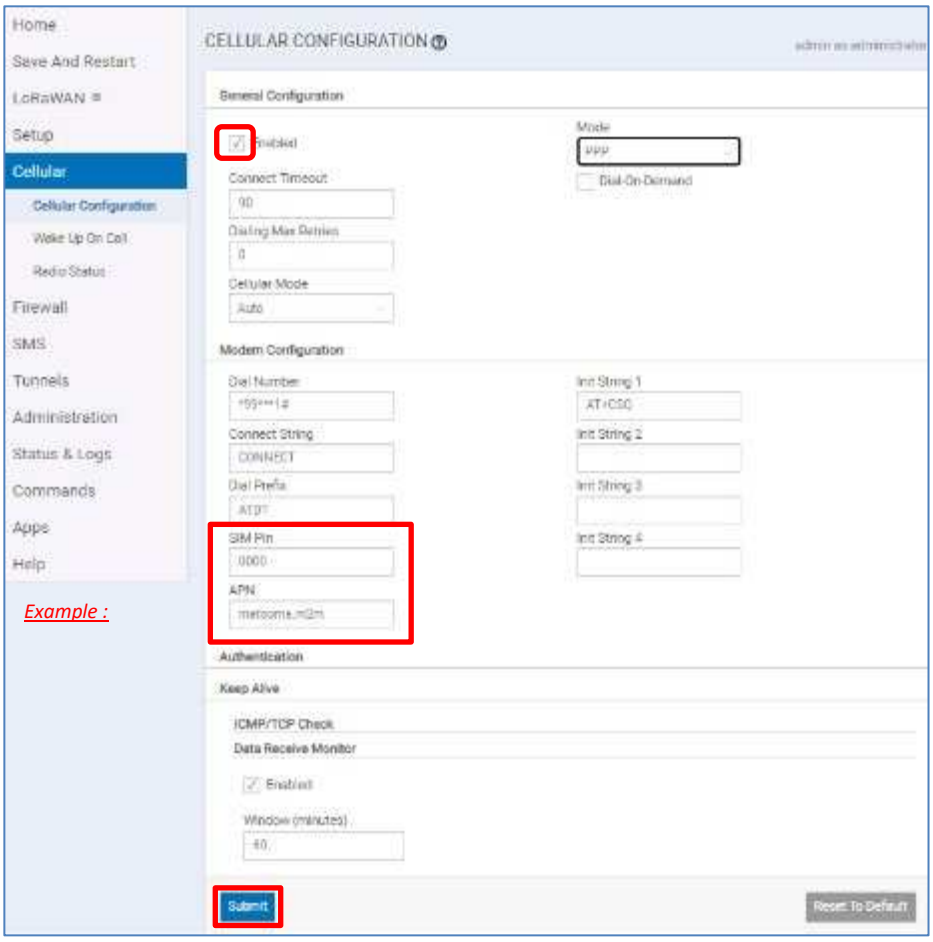
- Under the Options column at the right, click the pencil icon (edit) for the selected WAN. The Failover Configuration page is displayed.
- Make the desired changes. Refer to Failover Configuration Fields for details.
- Click Finish.

CAUTION: To detect network availability (Ethernet or 4G) and thus be able to switch from one connection mode to another, the Gateway needs to send a ping or an ICMP frame to an address (by default www.google.fr). You must ensure that this address is accessible to the Gateway.

5.4. Cellular configuration

- Insert a micro SIM card before starting the Gateway.
- Use Machine to Machine sim cards with data connection service of minimum 5Mb/month for small installations (ex: 10 monitored units with default JRI configuration)

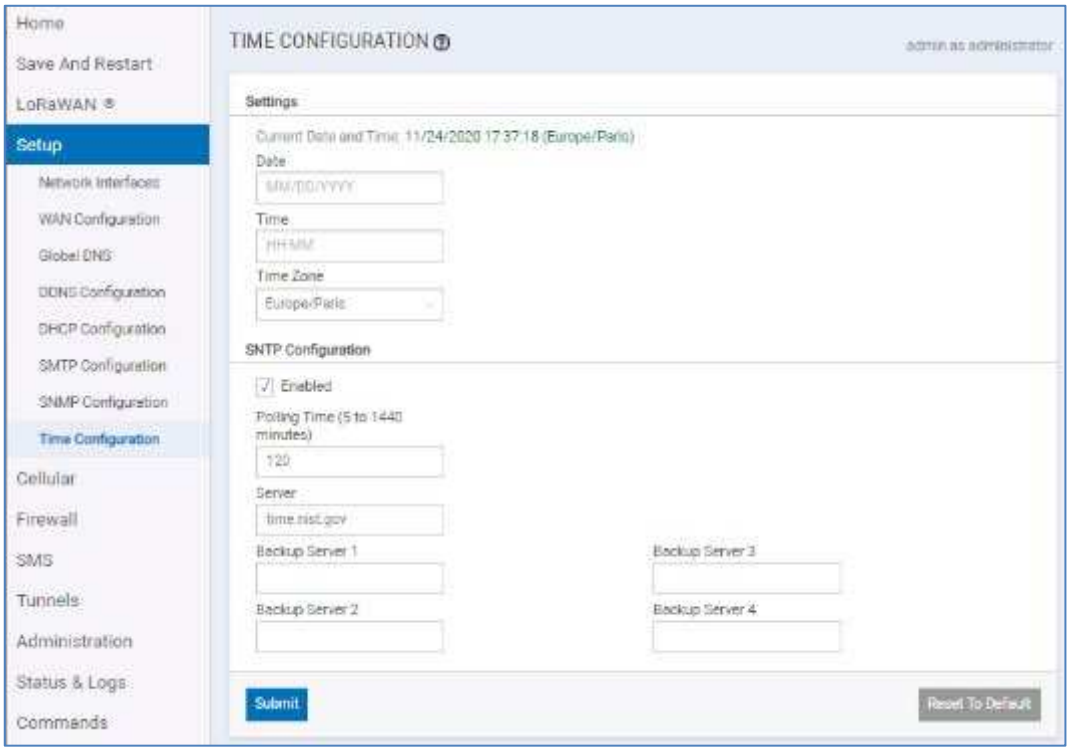
- Go to the Cellular > Cellular Configuration menu.
- In the General Configuration tab, check that the "Enabled" box is checked.
- In the Modem Configuration tab, complete the PIN and APN fields according to the SIM card used.
- Let all other settings with default values and click on «submit».



According to the SIM card provider chosen and the coverage level, the connection to the cellular network can take up to 1h30. In optimized conditions, this process is done within 15 minutes.

5.5. Date and time: (To be modified only if ≠ from the PC time):

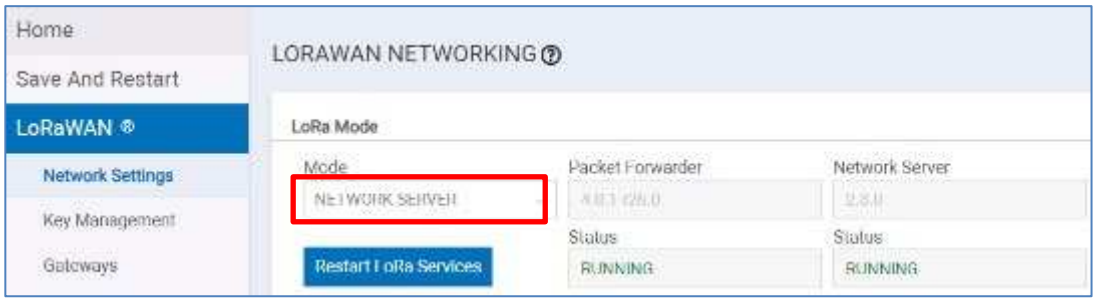
- Setup menu > Time: choose UTC > then submit.



5.6. LoRaWAN Parameters (SF and Packet Forwarder mode configuration)

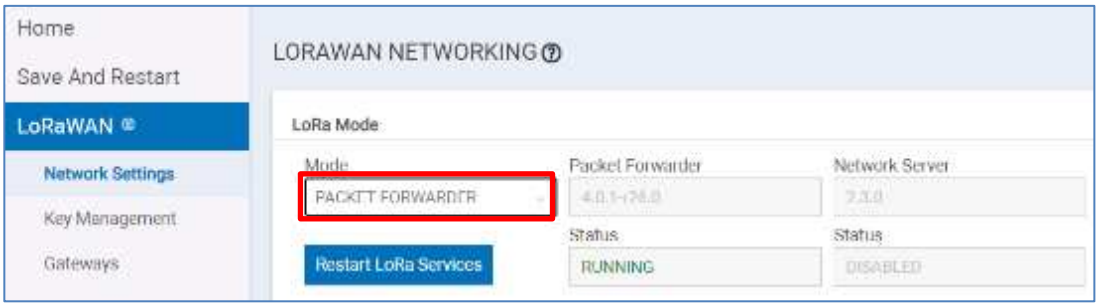
- JRI recommends to set the SF between 9 and 12 for the 868MHz version (12706/12707) to optimize radio communications: → Lora WAN Menu → Network Settings → Settings → change the value of the Max Data rate to 3 (SF9). Minimum Data rate is set by default to 0 (SF12). For the 915MHz version, the default values of SF are set from 7 to 10.

- By default, the JRI Gateways are configured as Network servers: Each Gateway uses the built-in Node Red server to communicate with MySirius (Cloud or Server) via TCP port 13252.



It is possible to set the Packet Forwarder mode to send the measurements of LoRa devices from a "slave" Gateway (Packet forwarder) to the "master" Gateway (Network Server) which must always be configured in fixed IP.

→ Administration Menu → LoRaWAN → LoRa mode → select PACKET FORWARDER mode → Restart LoRa services.

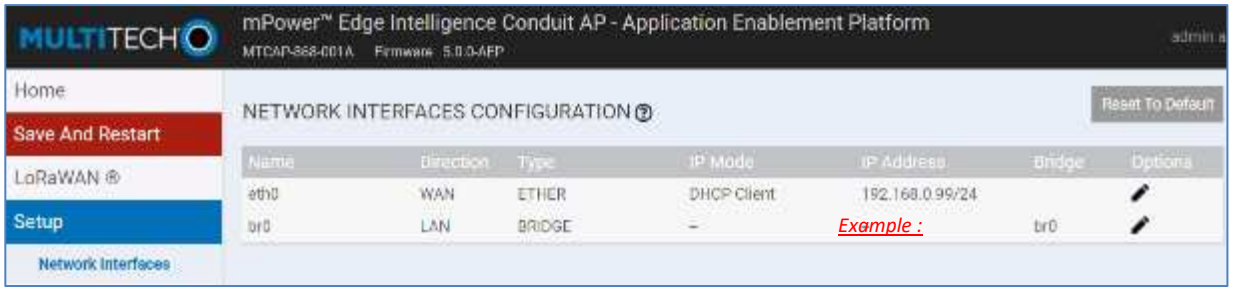


Go to the bottom of the page and configure the Gateway Network Server information:
→ Select Network Manual → Enter the IP address of the GateWay Network Server → Save & Restart.

Example :

5.7. Save changes and restart

- To save modifications, restart the Gateway by clicking on "Save and Restart" in the menu on the left.



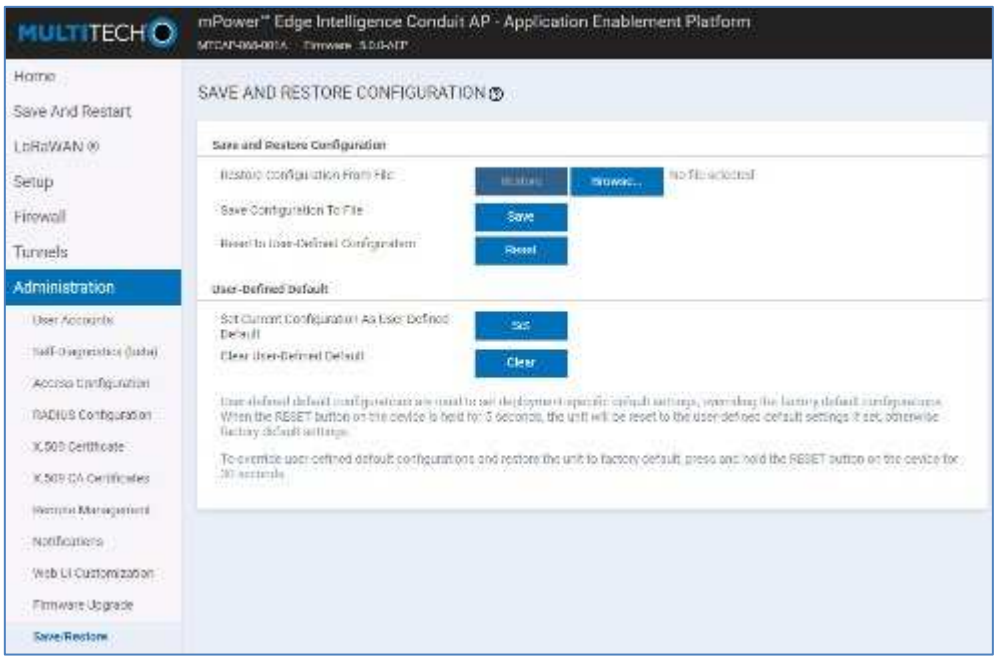
- After restarting, the Gateway can be disconnected from the PC and connected to the customer's network (optional for 4G versions).

To connect to the Gateway configuration page again, enter its new IP address in the browser if it has been modified (fixed IP given by the client or IP allocated by the client's DHCP server).

6. RESTART AND RESTORE CONFIGURATION

- To restart a Gateway: Disconnect then reconnect the power supply or click on Save / Restart
- When the RESET button is pressed for less than 5 seconds, the Gateway can be restarted without losing its entire configuration (Ex: Node Red Server).
- Pressing the RESET button for 10 seconds (>5 sec; < 30 sec) allows you to restore the JRI default configuration.
- It is possible to create your own backup point:

Go to Administration > Save / Restore > User Defined Default > click on Set in the User Defined Default.

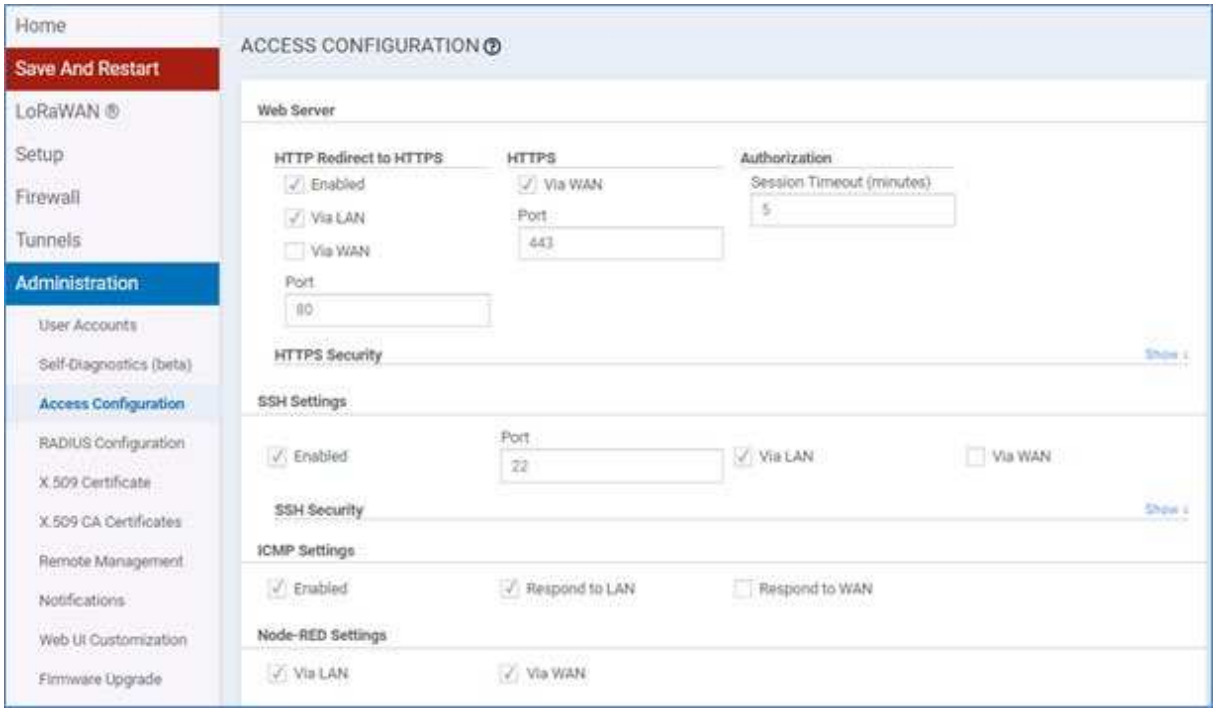


A 30 second reset completely removes the configuration of the Gateway and requires general reprogramming by JRI including the configuration of the Node Red server. It is not recommended to do this action.

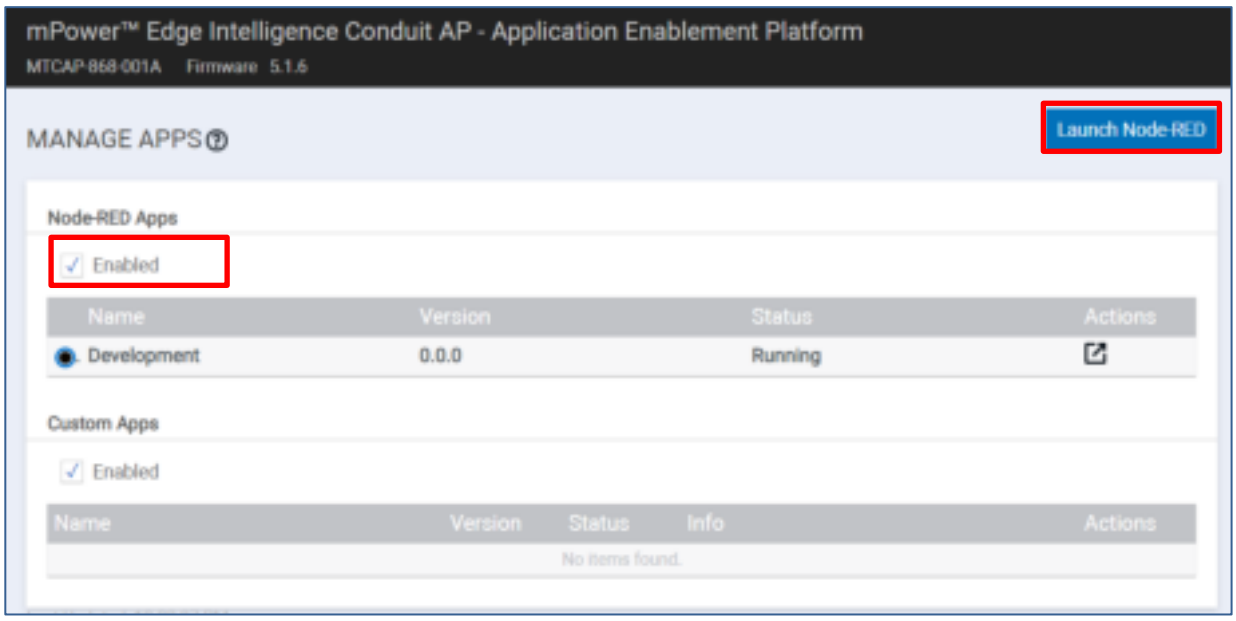
7. NODE RED CONFIGURATION FOR MYSIRIUS SERVER USE

To use a LoRa JRI Gateway with a private server, a modification of the NodeRed embedded software is required.

- When connecting to the GateWay for the first time, access to the NodeRed settings must be enabled via LAN and WAN. Administration Access configuration NodeRed settings



- Connect to the Gateway LoRa interface and go to the Apps section → Launch Node RED



- Connect to the Node-RED interface with the same identifiers used to connect to the configuration page of the Gateway:

- Select SET CONFIG tab → Double click on the “Change MySirius Server URL”.

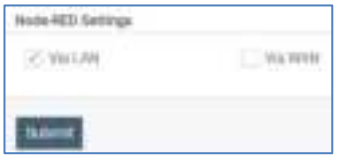
- Replace the name of the JRI cloud (https://device.jri-mysirius.com:8443) by the IP address of the local MySirius server (Example: http://**192.168.0.150**:13252).

- Click on « DONE » to validate the changes and close the window.

- Click on 

to apply the modified FLOW.

- When the green "Operation successful" message is displayed, use the button  to apply the changes.
- Disable access to the NodeRed settings for security reasons, apply the changes, then click "Save and Restart" and wait for the GateWay to restart.



- If it is necessary to change this configuration again, perform a 10-second reset on the GateWay, and repeat the whole process described in section 7.

Checking the connection with the MySirius server:

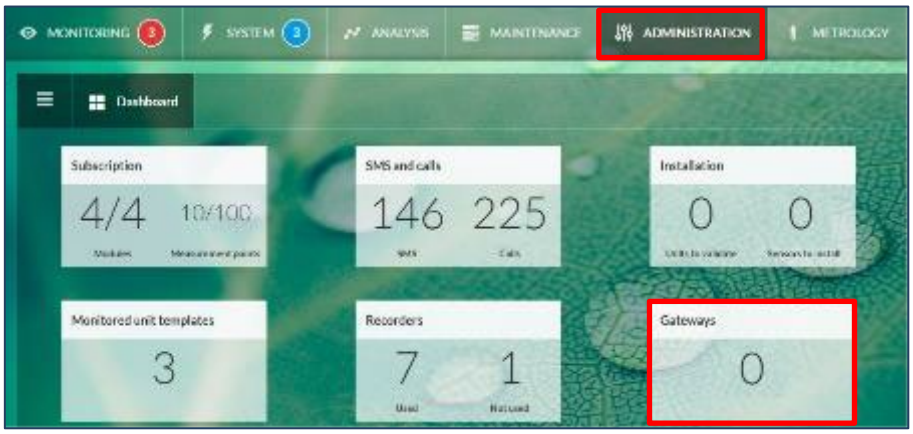
It is possible to check the connection of the gateway with the MySirius server directly in Node-RED, if the gateway is connected to the client network (not possible if connected directly to the PC).

- Go to the "MySirius" tab and click on the "GenerateNotifPresenceEachHour" block button

- If an error message appears in the "Debug" tab (on the right of the screen), it means that there is a problem either in the server URL or in the client network which has not correctly opened the port
- If no message in the "Debug" tab -> the gateway is working correctly

8. ADD THE GATEWAY IN MYSIRIUS

- Log in to MySirius with an ADMINISTRATOR account
- Open the configuration dashboard by clicking on the “Administration” tab



- Click on the « Gateways » tile.
- Click on +ADD and follow the wizard

- Select GateWay LoRa® SPY, enter the required information then click on SAVE.

Caution: It is important to enter the correct serial number. It will be used to link your gateway with your MySirius account.

- Once added on MySirius, the gateway will appear in the LoRa® Spy gateways list.

- You can now start your LoRa SPY / LoRa temp’ devices within the radio coverage area of the gateway. An automatic detection is done for an easy installation.
- The gateway installation is a success if the “Date of last message” of the gateway is filled with the current date. Note that it may take a few minutes to get a connection between the gateway and MySirius. You may refresh your web page until the date of last message shows up.

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