

# Gateway Configuration to Lorient network server

Check user manual for more details:

[Getting started with the P-NUCLEO-LRWAN2 and P-NUCLEO-LRWAN3 starter packs - User manual](#)

# Gateway setup

1. Connect the NUCLEO-F746ZG board to a network router with an Ethernet cable through Ethernet connector CN14. Make sure that the router has DHCP service and Internet access (no password).
2. Connect the antenna to the antenna connector (CN2) (for P-NUCLEO-LRWAN3).
3. On the LoRa® gateway expansion board, connect an external 5 V supply through its USB Micro-B connector (CN1) to power the whole board. Important: power supply must be connected to the gateway shield USB port and not with the Nucleo USB port. On the Nucleo board, green LED LD6 (PWR) and LD4 (COM) light up. On the gateway shield, the green LED lights up.

Note: a USB wall adapter/charger is required to power the gateway.

# Frequency band, LoRaWAN server, MAC address configuration

Using Tera Term emulation, it is possible to view the gateway parameters and perform LoRaWAN modification. Press the reset button B2 (black button) to view the gateway

- frequency band using (AT+CH) command
- LoRaWAN server using (AT+PKTFWD) for Europe

Frankfurt :

AT+PKTFWD=eu1.loriot.io,1780,1780

- Changes the MAC address if needed. Use (AT+MAC) command.

AT+MAC=001122334455

```
COM23 - Tera Term VT
File Edit Setup Control Window Help

Powered by RisingHF & STMicroelectronics

-----
VERSION: 2.1.7, Nov 6 2018
LOG: OFF
AT ECHO: ON
BAUDRATE: 115200bps
MACADDR: 00:00:00:00:00:00
ETHERNET: DHCP
DNS1: 114.114.114.114
DNS2: 8.8.8.8
NTP SERVER: 1.ubuntu.pool.ntp.org
EUI PADDING: <3, FF>, <4, FF>
GATEWAY ID: 080027FFFF052733
LoRaWAN: Public
LORAWAN SERVER: eu1.loriot.io
UPLINK UDP PORT: 1780
DOWNLINK UDP PORT: 1780
CHANNEL0: 867100000, A, SF7/SF12, BW125KHz <LORA_MULTI_SF>
CHANNEL1: 867300000, A, SF7/SF12, BW125KHz <LORA_MULTI_SF>
CHANNEL2: 867500000, A, SF7/SF12, BW125KHz <LORA_MULTI_SF>
CHANNEL3: 867700000, A, SF7/SF12, BW125KHz <LORA_MULTI_SF>
CHANNEL4: 867900000, A, SF7/SF12, BW125KHz <LORA_MULTI_SF>
CHANNEL5: 868100000, B, SF7/SF12, BW125KHz <LORA_MULTI_SF>
CHANNEL6: 868300000, B, SF7/SF12, BW125KHz <LORA_MULTI_SF>
CHANNEL7: 868500000, B, SF7/SF12, BW125KHz <LORA_MULTI_SF>
CHANNEL8: 868800000, B, SF7, BW250KHz <LORA_STANDARD>
CHANNEL9: 868800000, B, 50Kbps <FSK>
-----
Concentrator starting...
Concentrator Radio A type SX1257
Concentrator Radio B type SX1257
Concentrator started (2926ms)
ST LoRa GW V2
Ethernet starting...
Ethernet started
DHCP IP: 192.168.109.6
Downlink UDP Connected
Uplink UDP Connected
```

# Loriot Login

1. Through Loriot website: [LORIENT - Hybrid Network Management System for Massive IoT](#)
2. choose Frankfurt, Germany EU1 (server)

The screenshot shows the Loriot website's server selection interface. The header includes the Loriot logo and navigation links: About, Technology, Products, Know-how, Resources, Partners, Contact us, and login. The main content is divided into three regional sections: EMEA, ASIA / PACIFIC, and AMERICAS. Each section contains a table of servers and their locations. The Frankfurt, Germany EU1 server is highlighted with a red box.

EMEA		ASIA / PACIFIC		AMERICAS	
SERVER	LOCATION	SERVER	LOCATION	SERVER	LOCATION
EU4PR0	<a href="#">Amsterdam, Netherlands</a>	AP4PR0	<a href="#">Singapore</a>	US3PR0	<a href="#">Oregon City, USA</a>
EU5PR0	<a href="#">Frankfurt, Germany</a>	AU2PR0	<a href="#">Sydney, Australia</a>	US1	<a href="#">California, USA</a>
ME1PR0	<a href="#">United Arab Emirates</a>	IL1	<a href="#">Israel</a>	US2	<a href="#">New York, USA</a>
EU1	<a href="#">Frankfurt, Germany</a>	AP1	<a href="#">Singapore</a>	SA1	<a href="#">Sao Paulo, Brazil</a>
EU2	<a href="#">Amsterdam, Netherlands</a>	AU1	<a href="#">Sydney, Australia</a>		
EU3	<a href="#">Madrid, Spain</a>	AP2	<a href="#">Tokyo, Japan</a>		
UK1	<a href="#">London, United Kingdom</a>	AP3	<a href="#">Mumbai, India</a>		
AF1	<a href="#">Cape Town, South Africa</a>				

# Gateway registration

**LORIoT** Professional Account Singapore v.4.0.33

## Dashboard

Welcome to **LORIoT** Professional Account!

Your Virtual Private LoRaWAN is ready for use with your LoRa applications. Your account is now pre-configured with given number of gateways, applications, and per-application device capacity, based on your contract with LORIoT.

### PROFESSIONAL ACCOUNT features

- ✓ Custom number of gateways
- ✓ Custom number of devices
- ✓ Technical support per contract

### News

- Dec 5, 2018, 12:00:00 AM** **UPDATE** LORIoT Network Server 4.0 has been released! Check our [release note](#) for more details.
- Jun 15, 2018, 12:00:00 AM** **UPDATE** LORIoT Network Server 3.3 has been released! Check our [release note](#) for more details.
- Mar 17, 2018, 12:00:00 AM** **IMPORTANT** Planned maintenance on Monday 19/03/2018 from 18:00 to 19:00 UTC to mitigate Meltdown and Spectre vulnerabilities. A temporary service interruption of approx. 15 minutes is expected.
- Jul 10, 2017, 7:00:00 PM** **UPDATE** We have a fresh new user interface ready for you. You will need to login separately into this interface, but can use both the current and the new in parallel. The old user interface will be sunset by October 2017. The release notes for the last update are now also available.

**Network Gateways** **+ Register a new gateway** **Applications** only last 10 shown **+ Add a new application**

Location	Model	MAC	Version	Last Data	Name	AppID	Devices
No gateways registered. Start by registering your gateway.					ST_workshop		1



**Back to Networks**

**SAMPLE NETWORK** AI-00-34-45

**Map**

**MultiTech Conduit XEP**

**MultiTech Conduit AP**

**MultiTech Conduit IP67**

**MultiTech Conduit IP67 Geolocation**

**MultiTech Conduit IP67 R3**

**MultiTech Conduit mLinux (OS Version 5.3.3 and lower)**

**MultiTech Conduit mLinux (OS Version 6.0.0 and higher)**

**OpenWrt Atheros**

**Opton CloudGate**

**Packet Forwarder Microchip**

**Packet Forwarder STM**

**Packet Forwarder Semtech**

**Packet Forwarder Tektelic**

**RAK 7249**

**RAK 7258**

**RAK 7269**

**RF1 S**

**Raspberry Pi**

**RisingHF RHFS3008**

**RisingHF RHFS3024**

**Robustel R3000**

**ST N-NUCLEO-LRWAN 2 and 3**

**Tektelic Kona Enterprise**

**Tektelic Kona Macro**

**Tektelic Kona Mega**

**Tektelic Kona Micro**

**Uralink UGB7**

**WinkLL**

# Gateway registration

LORIO T

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SAMPLE NETWORK

A0-00-26-05

Map

MAC address of eth0 interface

The MAC Address of the Ethernet port can be queried by running

```
ifconfig eth0 | grep Hwaddr
```

command from your device's console. A sample output will be similar to

```
eth0 Link encap:Ethernet Hwaddr AB:CD:EF:12:34:56
```

Copy and paste the highlighted part (six octets separated by colons) from the output of your device console to the input field below.

\*eth0 MAC address

AB:CD:EF:12:34:56

Upon successful registration, we will provide you with a setup guide for your gateway and a gateway binary with cryptographic keys tied to this MAC address.

The keys are tied to the MAC address of the device, and cannot be moved to another device.

Gateway Location

To provide all users with a reasonable view of the coverage of the network, please provide the address at which the gateway will be placed.

When displayed to other users, the location will be offset by a random value to protect your privacy.

Choose between these 2 options for setting the position of the gateway.

Map

Manual Address

Country\*

City

City

Address

Street name (number optional)

ZIP Code

ZIP Code

Register Packet Forwarder STM gateway

The MAC address of a gateway can usually be found on a sticker on the back of the device

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# Device registration to Loriot network server

After completing the gateway registration process, a new application automatically created with a maximum limit of 10 devices that can be assigned to it you can find from Loriot dashboard.

The screenshot displays the Loriot dashboard interface. On the left is a dark sidebar with navigation links: Dashboard, Applications, Networks, Join Servers, Account, Upgrade, and Alerts. The main content area is divided into two primary sections: 'Gateways' and 'Applications'.

The 'Gateways' section at the top features a status bar with indicators for Online, Offline, Active, Inactive, Never seen, Uplinks, Downlinks, Join Accept, and Join Request. Below this, there's a map titled 'Gateways' showing a grid of locations. A legend indicates 'Show all gateways', 'Show online', and 'Show offline'. The map shows a single gateway location in Italy.

The 'Applications' section at the bottom contains a table with columns: Name, Country, Gateways, and Ownership. A red box highlights the 'Ownership' column for the 'Sample network' row, which shows 'Owned by you'.

Name	Country	Gateways	Ownership
Sample network	Italy	1	Owned by you

Below the 'Applications' section, there is another table with columns: Name, AppID, Devices, and Ownership. A red box highlights the 'Ownership' column for the 'SampleApp' row, which shows 'Owned by you'.

Name	AppID	Devices	Ownership
SampleApp	BE7A2B0A	1	Owned by you

# Device registration to Loriot network server

- In the Application you can enroll device by providing device name, specific address of 8-bytes, EUI (optional), FCnt Uplink, FCnt Downlink, Network Session Key, Application Session Key.

The screenshot shows the 'Enroll a new device' form in the Loriot network server interface. The form is divided into several sections, with some fields highlighted by red boxes. The 'Enrollment Process' dropdown is set to 'ABP'. The 'Location' section has 'DISABLED' and 'ENABLED' buttons. The 'Details' section includes fields for 'Title', 'End-device Address' (DevAddr), 'EUI (optional)' (DevEUI), 'FCnt Number Uplink' (FCntUp), 'FCnt Number Downlink' (FCntDn), 'Network Session Key' (NWKSEKEY), 'Application Session Key (optional)' (APPSKEY), and 'Device Template'. The 'Enroll' button is highlighted with a red box.

Back to Applications

SAMPLEAPP  
BE-7A-2B-0A

+ Enroll Device

Bulk Import

Devices

Devices Map

Output

API Data Format

Websocket Applications

Statistics

Join Server

Access Tokens

Log

Downloads

### Enroll a new device

LoRaWAN® Version  
LoRaWAN® 1.0.x

Enrollment Process  
ABP

Location  
DISABLED ENABLED

You can define coordinates for static devices enabling this option.

#### Details

Title  
End-device Address  
DevAddr (8 hex digits)

EUI (optional)  
DevEUI (16 hex digits, without dashes)

Description

FCnt Number Uplink  
FCntUp (Decimal)

FCnt Number Downlink  
FCntDn (Decimal)

Network Session Key  
NWKSEKEY (32 hex digits)

Application Session Key (optional)  
APPSKEY (32 hex digits)

Device Template

Create Another

Enroll

Reset



# Device details

