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Getting Started with Kerlink Gateways and AWS IoT Core for LoRaWAN

Getting Started Guide

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1.0	Initial version
1.1	Add AWS IoT Core for LoRaWAN missing screens and update credential section
1.2	Update after AWS review
1.3	Update based on AWS template
1.4	Typo corrections
1.5	Update AWS information from template
1.6	Document reworked after internal review
1.7	Document reworked after internal review

Reference	Description
[1]	https://wikikerlink.fr/wirnet-productline/doku.php?id=wiki:lora:aws

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This guide will walk you through the unboxing, connection, and installation of Kerlink Wirnet Gateway to be used with AWS IoT Core for LoRaWAN.

When you order a Kerlink Wirnet Gateway with AWS IoT Core for LoRaWAN support, it comes preconfigured.

1 Gateway Setup

Please refer to corresponding quick start guide (delivered in gateway box and available on the wiki):

- Wirnet iStation Setup => Quick start guide
- Wirnet iFemtoCell Setup => Installation manual
- Wirnet iFemtoCell-evolution Setup => Quick Start guide

2 Connect to Kerlink Wanesy Management Center (optional)

Note: The following sections (2.1, 2.2) are only applicable if you have a Wanesy Management Center access for your gateway. Please contact Kerlink for additional information.

If you only use AWS, without a Wanesy Management Center access, you can go directly to chapter 3 Setup your AWS account and permissions

Once the gateway online, you can connect to Kerlink Wanesy Management Center. This is the central place to monitor, configure and remotely access your gateway.

2.1 Log-in

Kerlink will send you the credentials and URL to connect to WMC. Connect to the WMC instance and enter the username and password.

Figure 1: Wanesy Management Center login page

2.2 Gateway overview

Once logged-in, go to "**Management** >> **Gateway**" menu. You will find your gateway on that page.
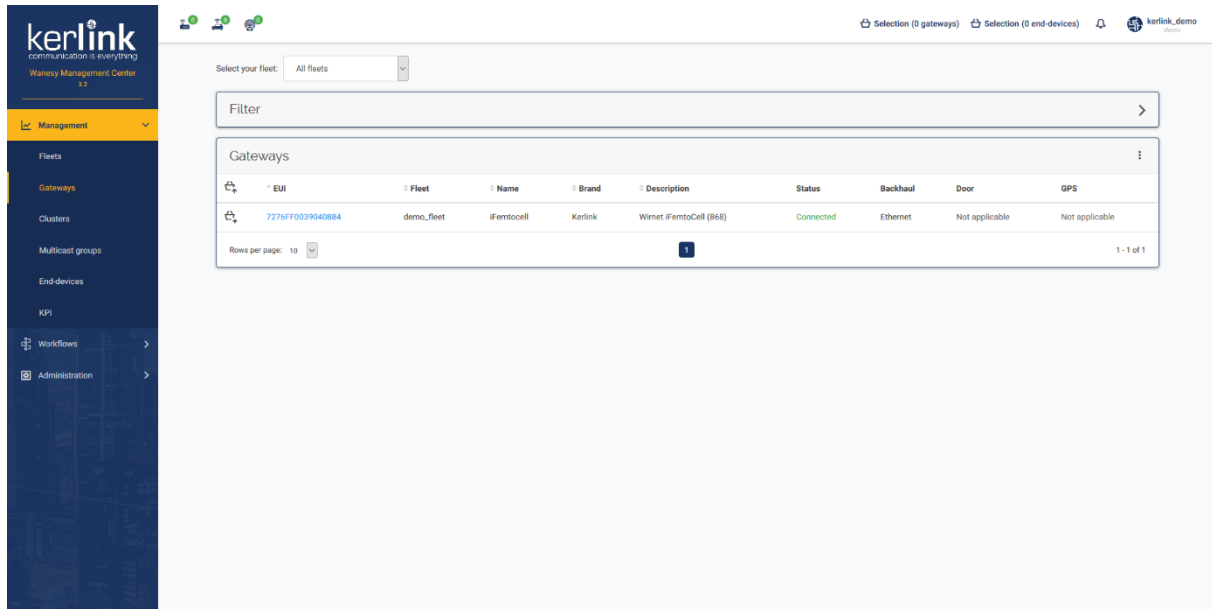

Figure 2: Wanesy Management Center - Gateway management page

Select your gateway by clicking on its EUI. You will get the gateway overview with all the details you need. In case of multiple gateways, look for your gateway EUI using the "Filter" window. Enter in the EUI search field the last 6 digits of your Gateway's Board ID located on the label at the back of the Wirnet iFemtocell.
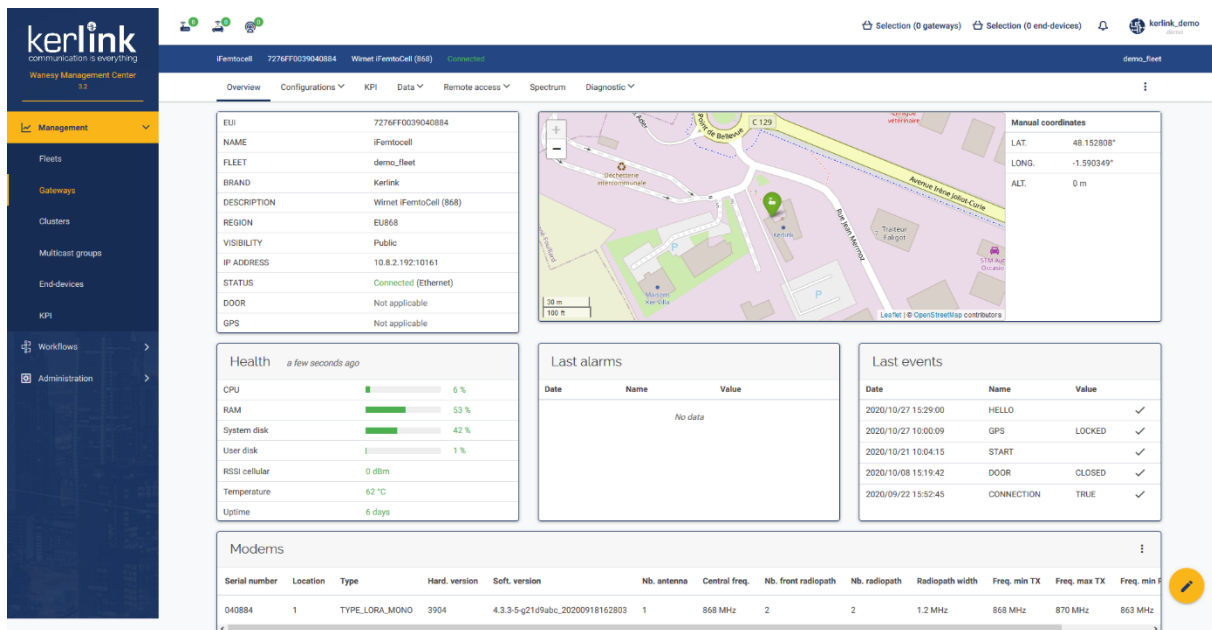

Figure 3: Wanesy Management Center - Gateway overview

Note or copy to your clipboard the **Gateway EUI** for the following registration on AWS.

You can use all the other menus to explore all the capabilities of your gateway and the associated service. This overview will be sufficient for the moment.

3 Setup your AWS account and Permissions

If you don't have an AWS account, refer to the instructions in the guide here. The relevant sections are **Sign up for an AWS account** and **Create a user and grant permissions**.

Follow the AWS documentation to setup your AWS account and permissions here:
https://docs.aws.amazon.com/iot/latest/developerguide/connect-iot-lorawan.html

The high-level steps to get started with AWS IoT Core for LoRaWAN are as follows:
1. Setup Roles and Policies in IAM
2. Add a Gateway (see section Add the Gateway to AWS IoT)
3. Add Device(s) (see "Getting Started with Kerlink WAL-e AWS IoT Core for LoRaWAN" in [1])

These steps are detailed below. For additional details, refer to the AWS LoRaWAN developer guide.

3.1 Setup Roles and Policies in IAM

3.1.1 Add an IAM Role for CUPS server

Follow the AWS documentation here:
https://docs.aws.amazon.com/iot/latest/developerguide/connect-iot-lorawan-onboard-devices.html#connect-iot-lorawan-onboard-permissions

3.1.2 Create IAM Role for Destination to AWS IoT Core for LoRaWAN

Follow the AWS documentation here:
https://docs.aws.amazon.com/iot/latest/developerguide/connect-iot-lorawan-create-destinations.html

3.2 Add the Gateway to AWS IoT

To connect to AWS IoT Core for LoRaWAN, Kerlink Wirnet Gateway comes with Basic Station pre-installed and enabled.

Basic Station is a LoRaWAN Packet Forwarder. It is a program that runs on Kerlink gateways which forward LoRaWAN RF packets to AWS IoT Core for LoRaWAN network server.

3.2.1 Preparation

To complete setting up your gateway, you need:

- LoRaWAN region. For example, if the gateway is deployed in a US region, the gateway must support LoRaWAN region US915.
- Gateway LNS-protocols. Currently, the LoRa Basics Station protocol is supported.
- Gateway ID: Getaway EUI
    - Gateway EUI you noted earlier if the gateway is on WMC.
    - Otherwise it can be found in "/tmp/board_info.json" file on the gateway directly as described in the wiki: Gateway EUI wiki page

```
cat /var/run/lora/gateway-id.toml
gateway.id = 0x7076FF0039050789
```

- If a new EUI has been defined under /etc/lorafwd.toml, then, this new EUI is used by lorafwd. Otherwise, the default EUI is used.

- Or, for iStation and iFemtoCell-evolution, Gateway EUI can be found back on the gateway sticker:

3.2.2 Add the LoRaWAN Gateway

To register the Gateway with AWS IoT Core for LoRaWAN, follow these steps:

- Go to the [AWS IoT Core console](#).
- Select **Wireless connectivity** in the navigation panel on the left.
  If you don't see this service in the left panel, do a search in the top bar with the name of the service "wireless connectivity" and choose "AWS IoT Core for LoRaWAN" service, you may change the region to get it enabled in the left panel
- Choose **Intro**, and then choose **Get started**. This step is needed to pre-populate the default profiles.
- Under **Add LoRaWAN gateways and wireless devices**, choose **Add gateway**.
- In the **Add gateway** section, fill in the **GatewayEUI** and **Frequency band (RF Region)** fields.
- Enter a descriptive name in the **Name – optional** field. We recommend that you use the GatewayEUI as the name.
- Choose **Add gateway**
- On the **Configure your Gateway** page, find the section titled **Gateway certificate**.
- Select **Create certificate**.
- Once the **Certificate created and associated with your gateway** message is shown, select **Download certificates** to download the certificate (`xxxxx.cert.pem`) and private key (`xxxxxx.private.key`).
- In the section **Provisioning credentials**, choose **Download server trust certificates** to download the CUPS (`cups.trust`) and LNS (`lns.trust`) server trust certificates.
- Copy the CUPS endpoint to your clipboard and paste it into a new text file named cups.uri.
- Copy the LNS endpoint to your clipboard and paste it into a new text file named tc.uri.
- Choose **Submit** to add the gateway.

3.3 Prepare credentials for Basic Station

Basic Station only recognize certificates and keys with specific names, so you need to rename the files as follow:

- Rename lns.trust to tc.trust
- Duplicate the *.cert.pem file
- Rename one as cups.crt, the second as tc.crt
- Duplicate the *.private.key file
- Rename one as cups.key, the second as tc.key

Before → 6 files	After → 8 files	
3a6517a4-1814-4fdb-ac60-954a9607ec30.cert.pem 3a6517a4-1814-4fdb-ac60-954a9607ec30.private.key cups.trust cups.uri lns.trust tc.uri	cups.crt cups.key cups.trust cups.uri	tc.crt tc.key tc.trust tc.uri

3.4 Upload credentials to Kerlink Wirnet Gateway

3.4.1 Gateway connected to WMC (optional)

This section is only applicable if you have a Wanesy Management Center access for your gateway.

3.4.1.1 Install certificates

To install those certificates on your gateway, login to Wanesy Management Center again. This time browse to your gateway and select **Remote access** >> **File Explorer**.
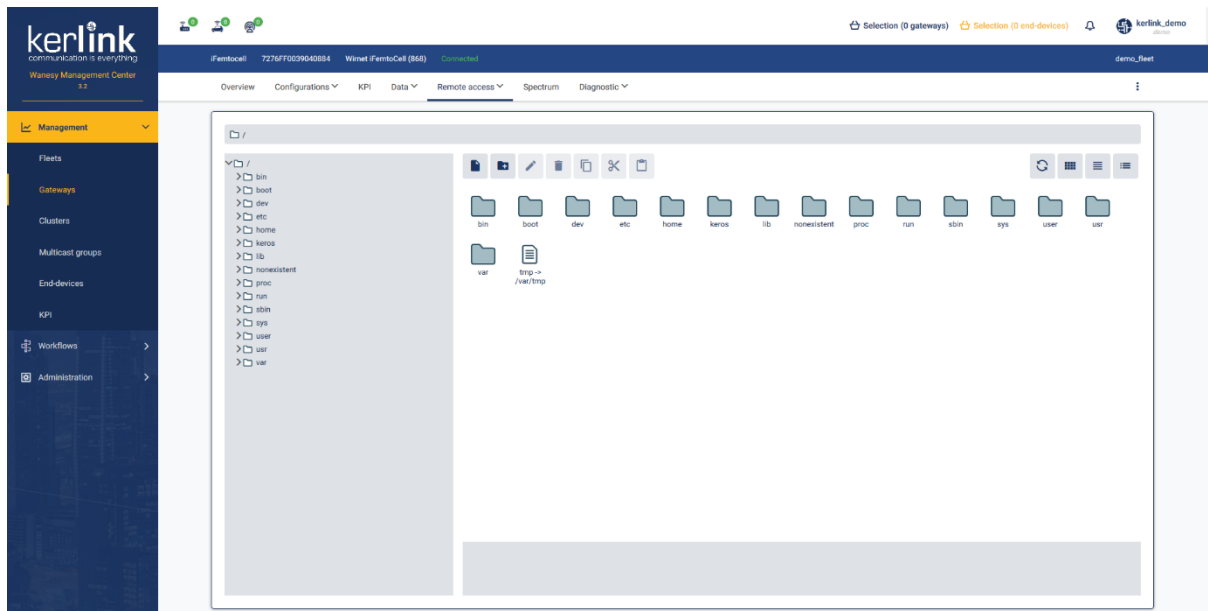

Figure 4: Wanesy Management Center - File Explorer

Navigate to `/etc/station/` folder and upload your credential files there using the "**Upload File**" menu for each.
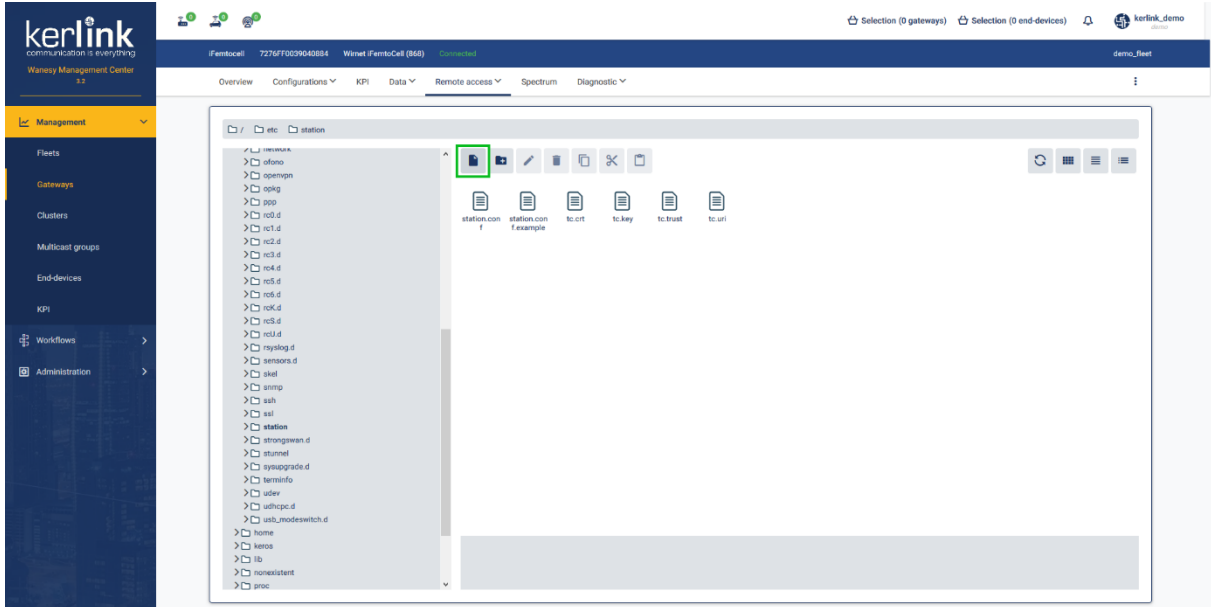

Figure 5: Wanesy Management Center: Upload file

3.4.1.2 Enable the credentials

To enable your credentials, go to **Remote access** >> **Command** or **Connect on the gateway by SSH** and type the following command.
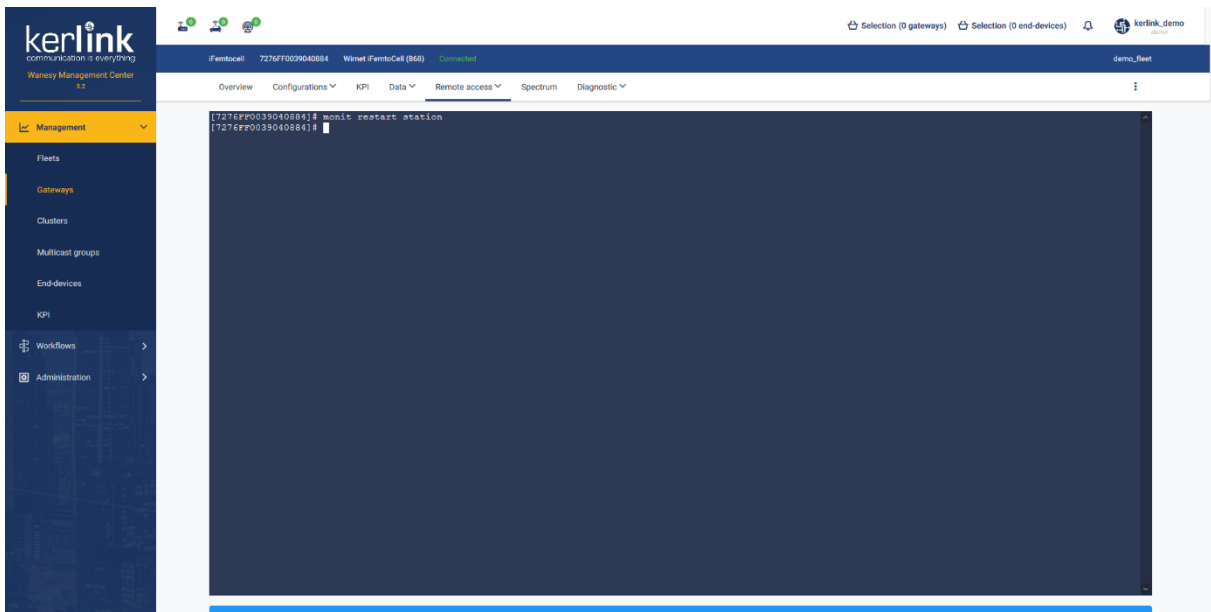
```
monit restart station
```


Figure 6: Wanesy Management Center - command

3.4.2 Gateway NOT connected to WMC

This section is only applicable if you <u>don't</u> have a Wanesy Management Center access.

3.4.2.1 Install certificates

Upload your credential files by scp in the "/etc/station/" folder of the gateway.

```
$ ls
cups.crt  cups.key  cups.trust  cups.uri  tc.crt  tc.key  tc.trust  tc.uri
$ scp * root@klk-wiis-xxxxxx:/etc/station/
```

3.4.2.2 Enable the credentials

To enable your credentials, go to **Remote access** >> **Command** or **Connect on the gateway by SSH** and type the following command.

```
$ monit restart station
```

Going back to AWS IoT Core for LoRaWAN interface, you should see your gateway connected.
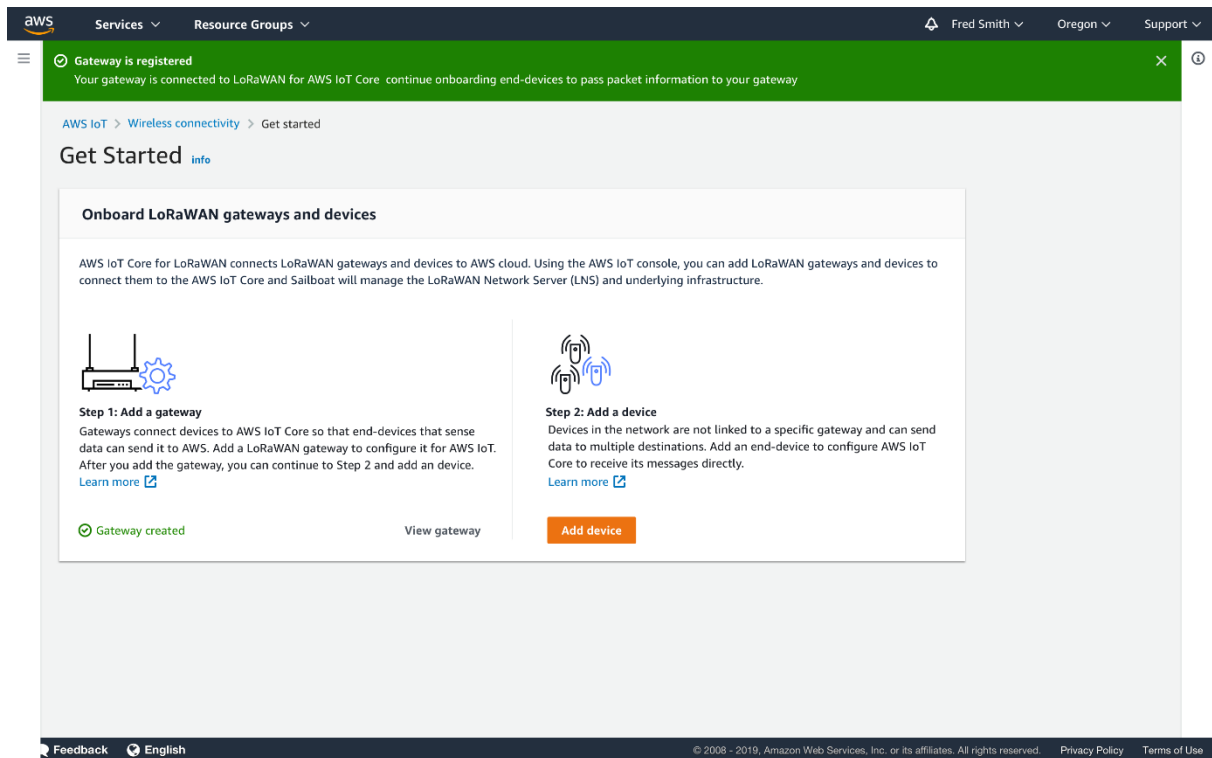

Figure 7: AWS IoT Core for LoRaWAN - Gateway created

Congratulations! You can now move to end-device on-boarding with AWS IoT Core for LoRaWAN. Refer to "Getting Started with Kerlink WAL-e AWS IoT Core for LoRaWAN" in [1].

End of Document