Node Location Solution Kit With TTN

Quick Start Guide V1.0

Content

1. Overview

This document describes how to connect to the LoRaWAN server TTN using RAK831+Pi3 gateways with RAK811 BreakBoard.

(The RAK811 TrackerBoard and RAK811 SensorNodeBoard are the same except GPS. Hereinafter referred to as BreakBoard)

Including the following：

How to register TTN account ?

How to register RAK831+Pi3 gateway in TTN ?

How to Add RAK811 BreakBoard Device to TTN Application Server ?

How to register myDevices account ?

How to import RAK811 BreakBoard data into Cayenne ?

How to view data on phone via Cayenne APP ?

So let's get started！

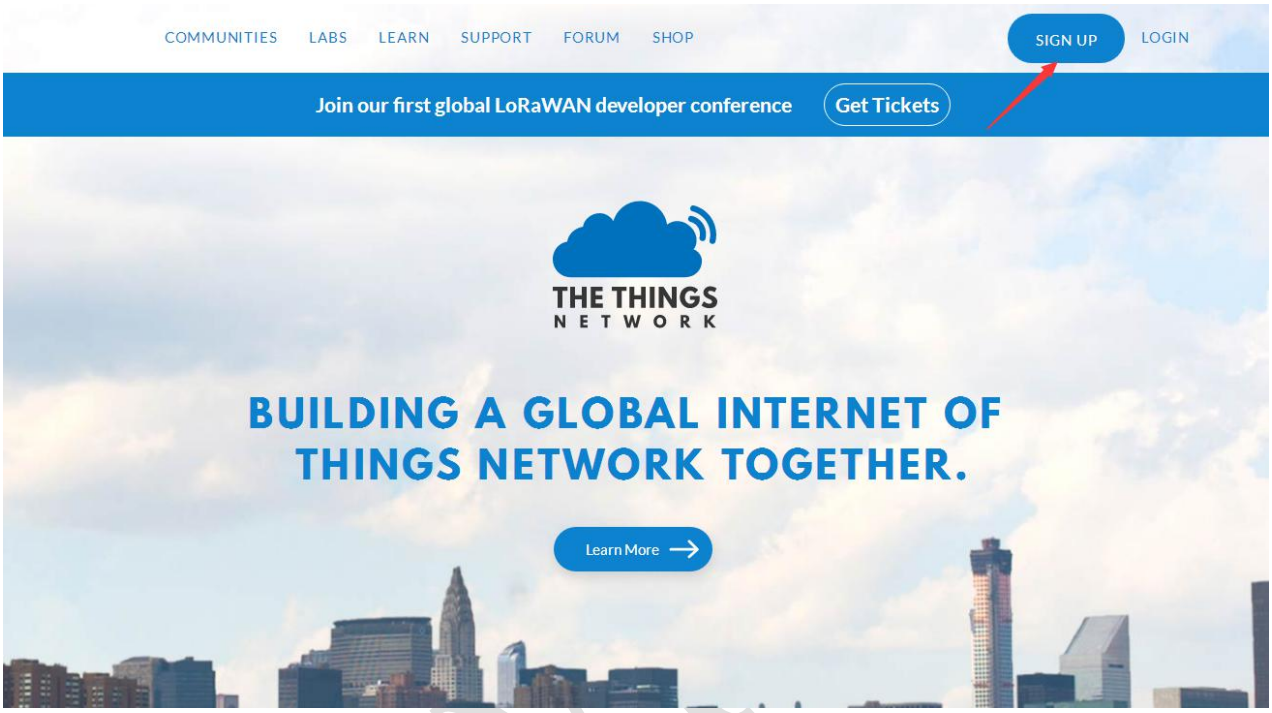
2. Start Using

2.1 Register TTN

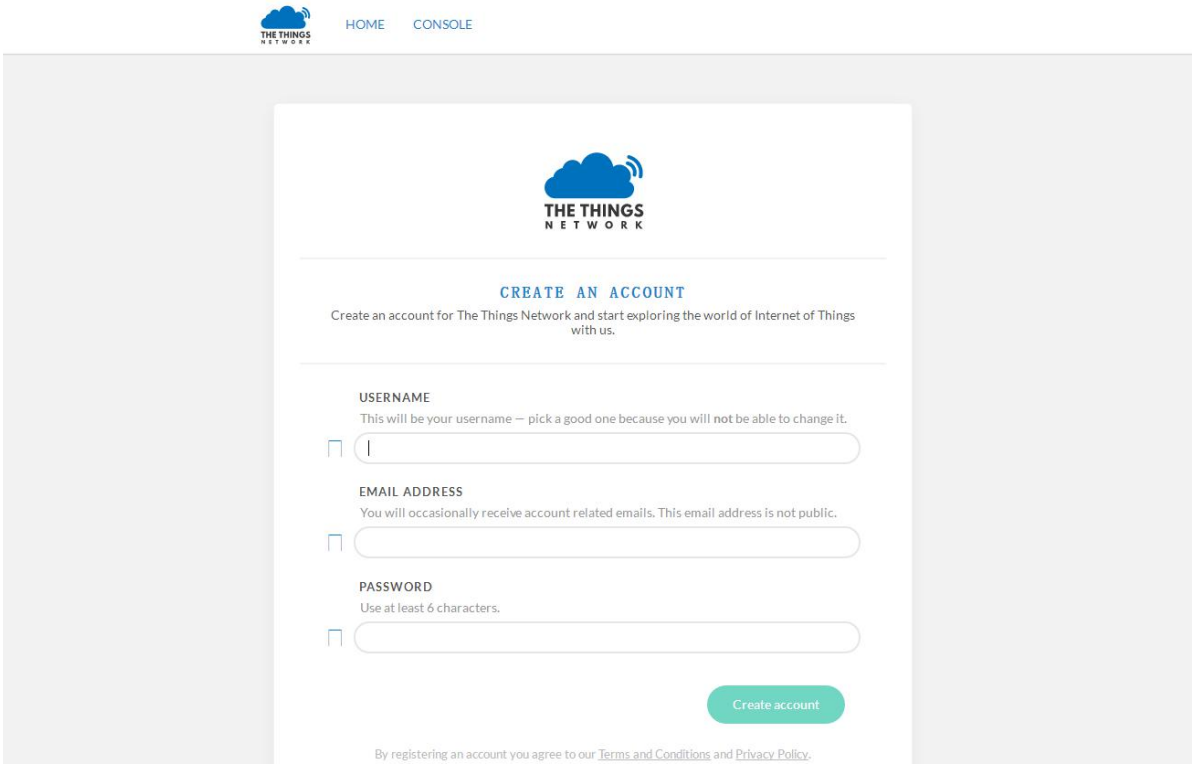
TTN is The Things Network, The Things Network is a proud contributor member of the LoRa Alliance, is the a LoRaWAN network solutions.

First let's open TTN home page: https://www.thethingsnetwork.org/

Then click the place pointed by the arrow. Enter register interface.



After entering the ThingParkPartner, click Try in the upper right to enter the registration interface. After filling out the information you can use Actility.



2.2 Register Gateway to TTN

In this case the LoRa gateway used is a LoRaWAN network server composed of RAK831 + Ri3 + TTN. If you want to buy RAK831 + Ri3 kit please click: https://www.aliexpress.com/store/2805180

If you already have the RAK831 + Ri3 kit then you can check out here to learn how to connect the RAK831 + Ri3 to the TTN.

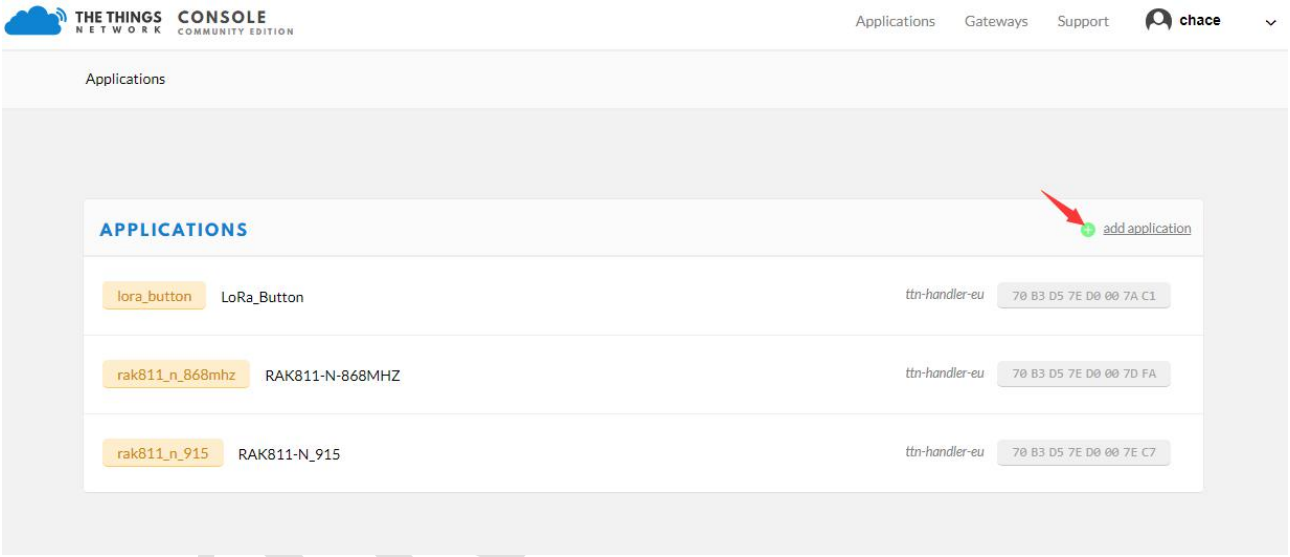
https://www.hackster.io/naresh-krish/getting-started-with-the-rak-831-lora-gateway-and-rpi3-e3351d

If you are a Chinese customer, then you can go to the official document download center to download the Chinese version of the tutorial.

http://www.rakwireless.com/cn/download/RAK831%20LoRa%20Gateway/%E8%BD%AF%E4%BB%B6%E5%BC%80%E5%8F%91

2.3 Register your device to TTN

After successfully connecting the RAK831 + Ri3 to the TTN, your TTN gateway interface now has its own gateway, but you still need to set up your own application. So, back to the TTN application interface, click Create a new application.



Enter the application settings interface, follow the prompts to fill in the information:

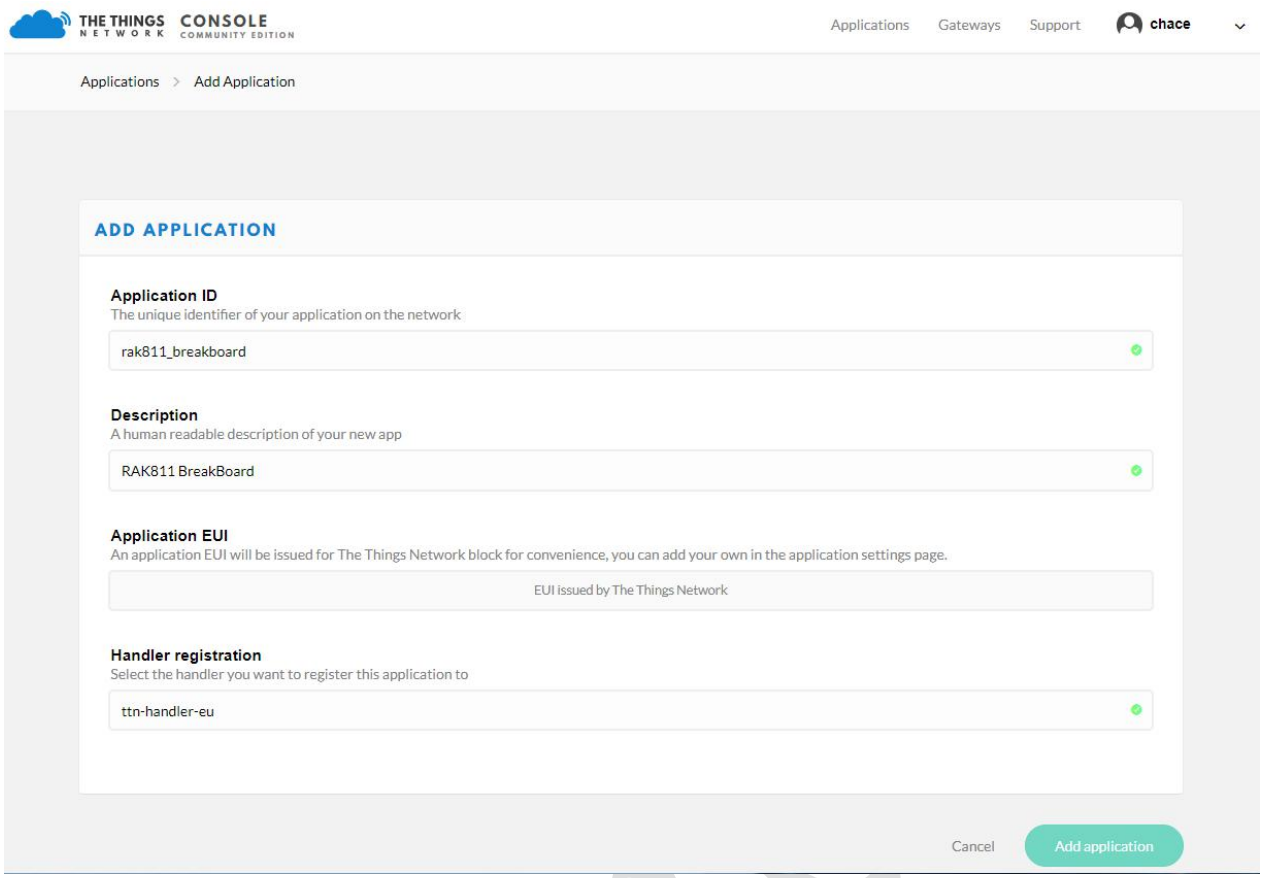
Application ID: The unique identifier of your application on the network,(When filling in this ID, capital letters and spaces can not be used)

Description: A human readable description of your new app,(Without limitation, you can fill in any description of your application)

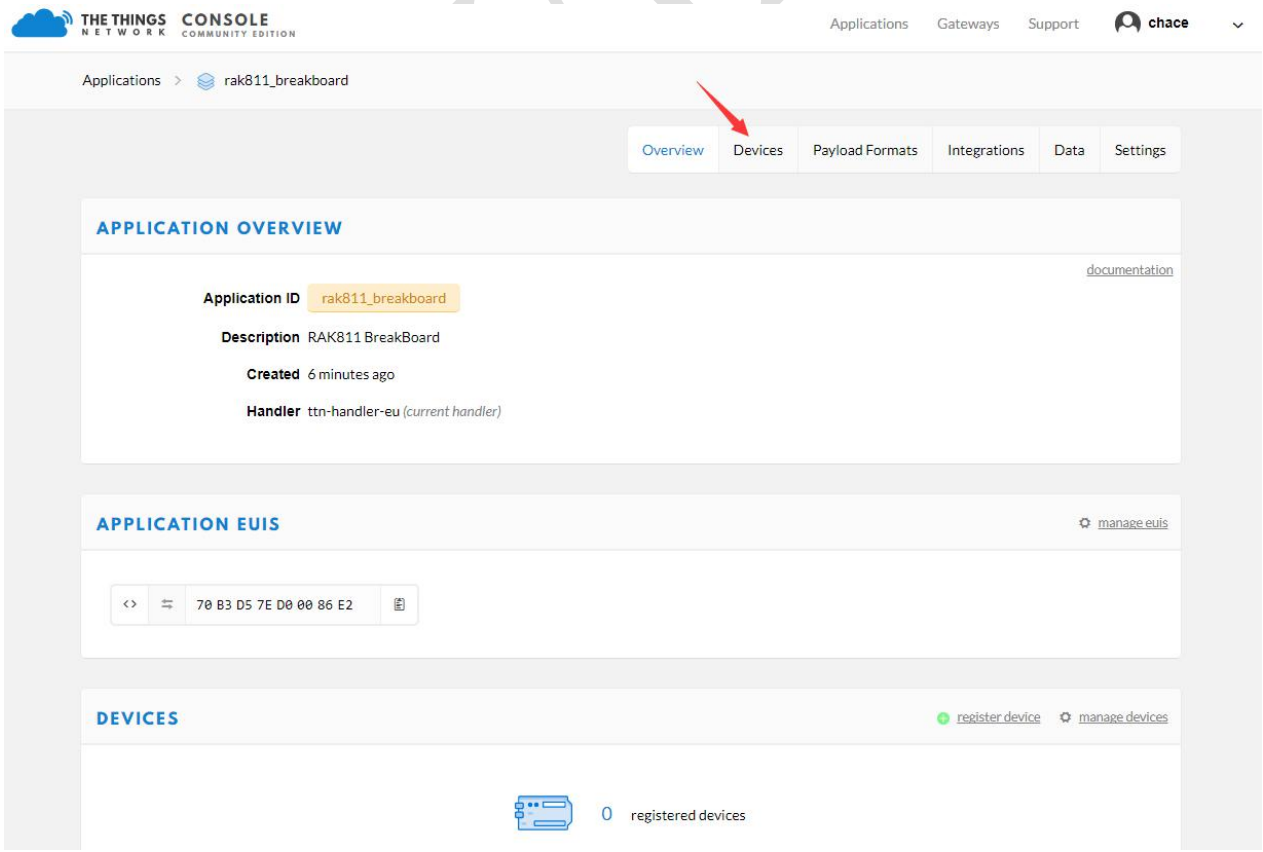
Application EUI: This application EUI is assigned by default for TTN. Can not be manually modified.

Handler registration: Here you can default, can also be set as your own area.

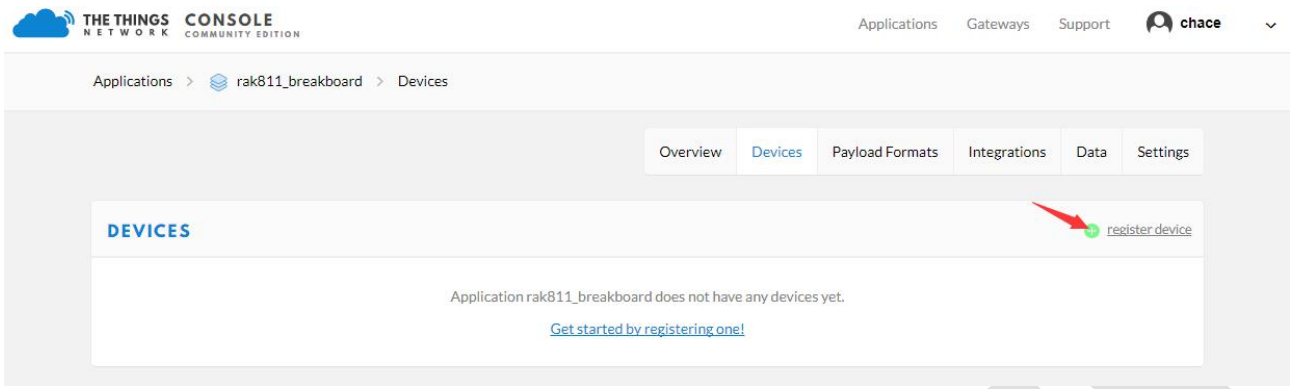
After the setup is complete, click the Add application button and an application is created.



After the app is added, you need to add the devices under the Applocation, so click the Devices button.



Then click Register Device.



In the device registration interface, follow the prompts to fill in the information:

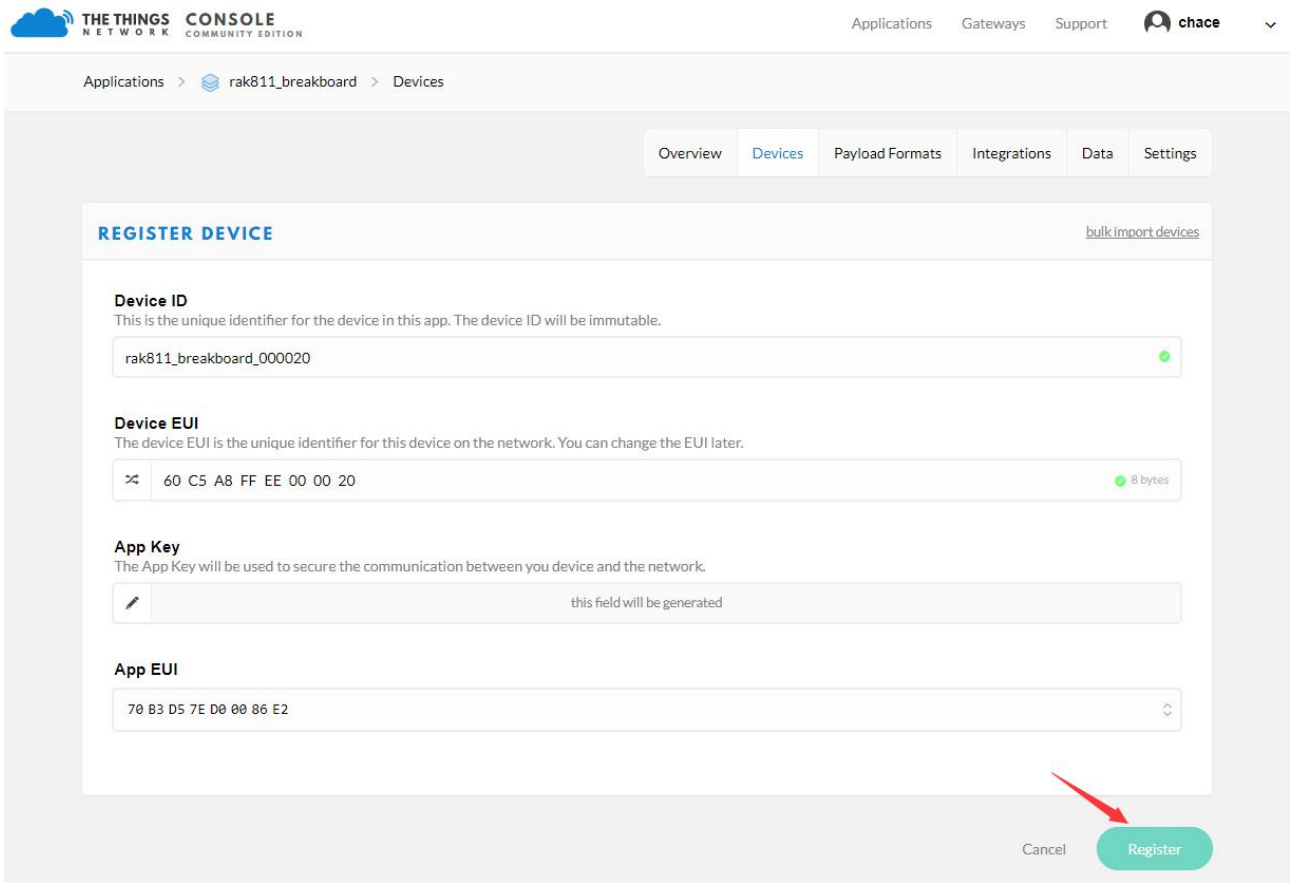
Device ID: This is the unique identifier for the device in this app. The device ID will be immutable.(The ID does not support capital letters and spaces).

Device EUI: The device EUI is the unique identifier for this device on the network. You can change the EUI later.(8-byte number)

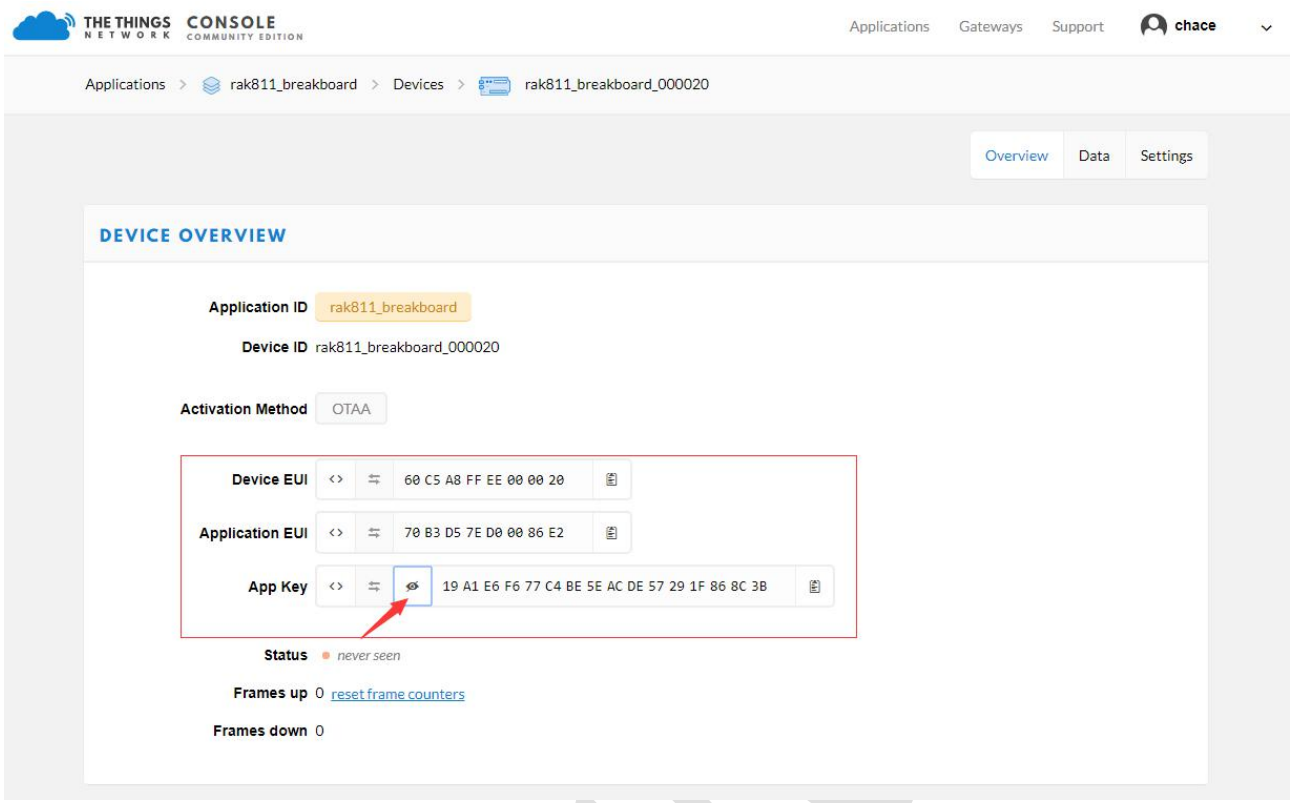
App Key: The App Key will be used to secure the communication between you device and the network.(By TTN default setting)

App EUI: Default setting.

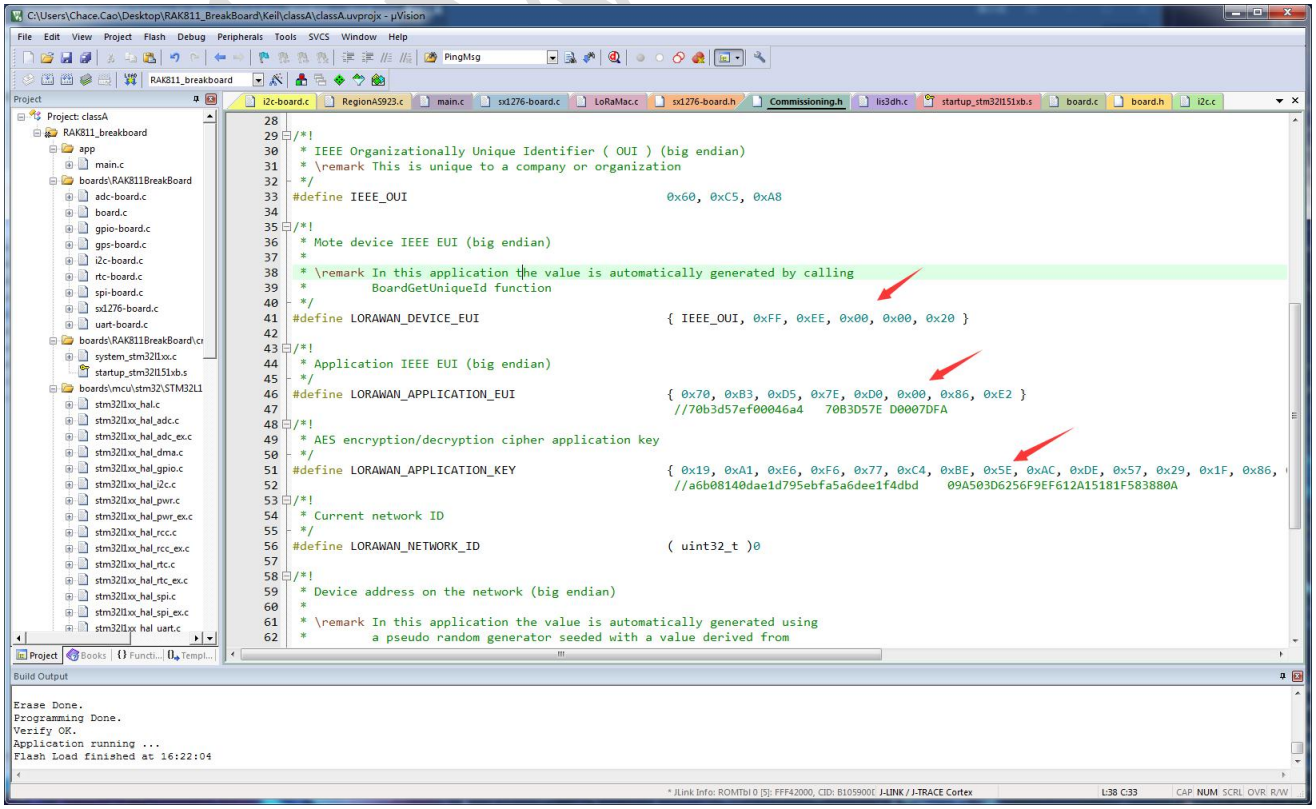
After setting, click the register button.



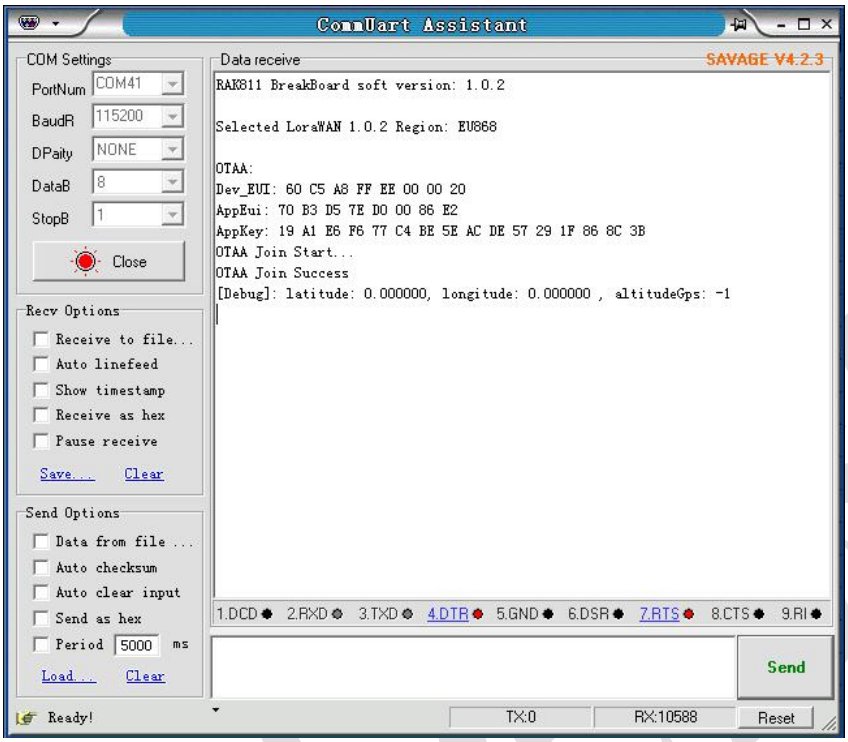
Device registration is successful, you can see the device is very important three parameters, Devices EUI, App EUI, App key,(If you do not see it, click on the arrow to show it).



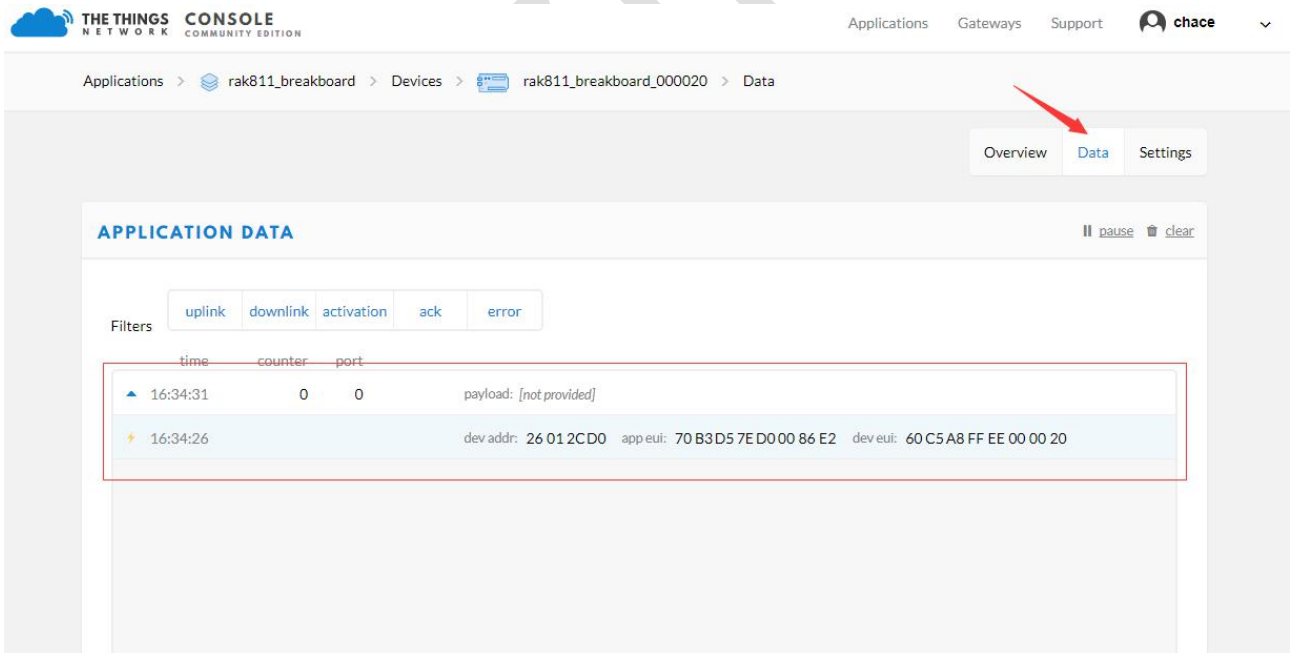
After obtaining three parameters of Devices EUI, App EUI and App key, open the ClassA project of RAK811 BreakBoard open source code and modify these three parameters. Then compile the download process.



After the program download is complete, reset the RAK811 BreakBoard device, you can see the following information in the serial port of the device's Micro USB interface.



In the TTN interface, you can also see the device to join the request and reply.

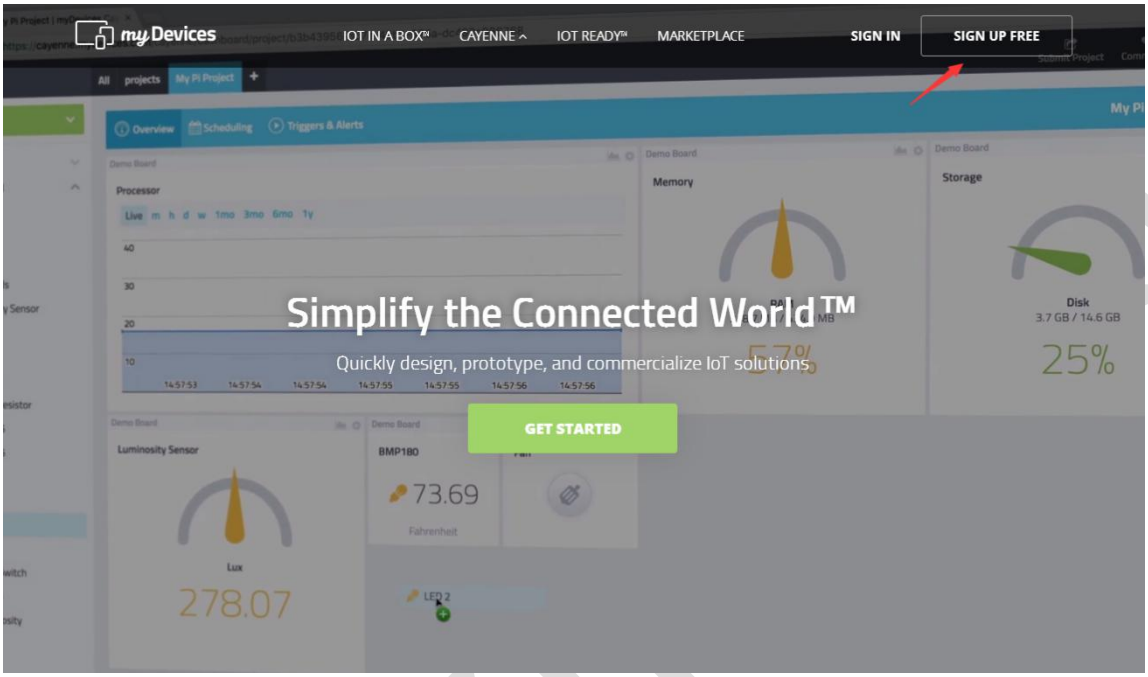


2.4 Register myDevices

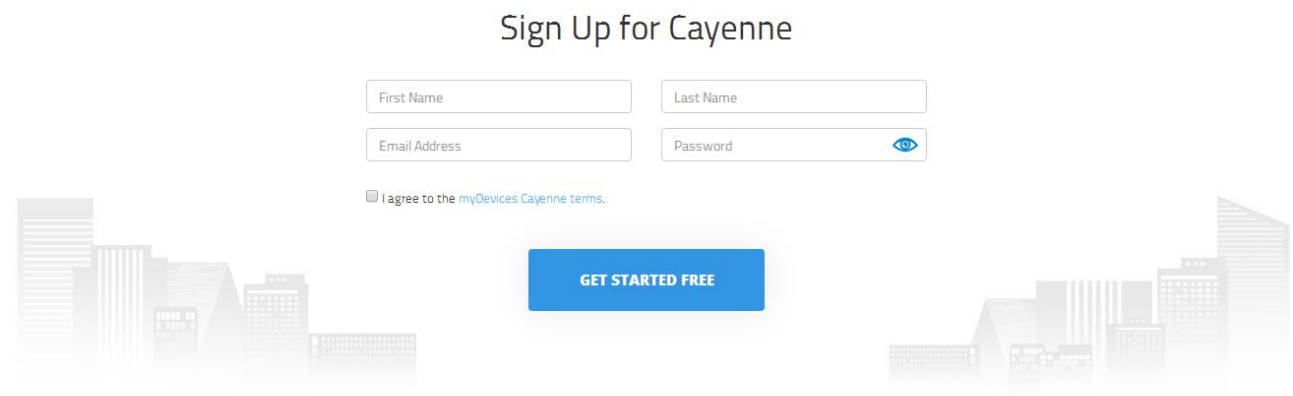
myDevices is an Internet of Things solutions company. They created Cayenne – the world's first drag-and drop IoT project builder. Cayenne enables engineers, makers, network operators and system integrators to quickly and easily develop and deploy IoT solutions across a wide variety of verticals.

First let's open myDevices home page: https://mydevices.com/

Then click the SIGN UP FREE button at the top right to start registering.

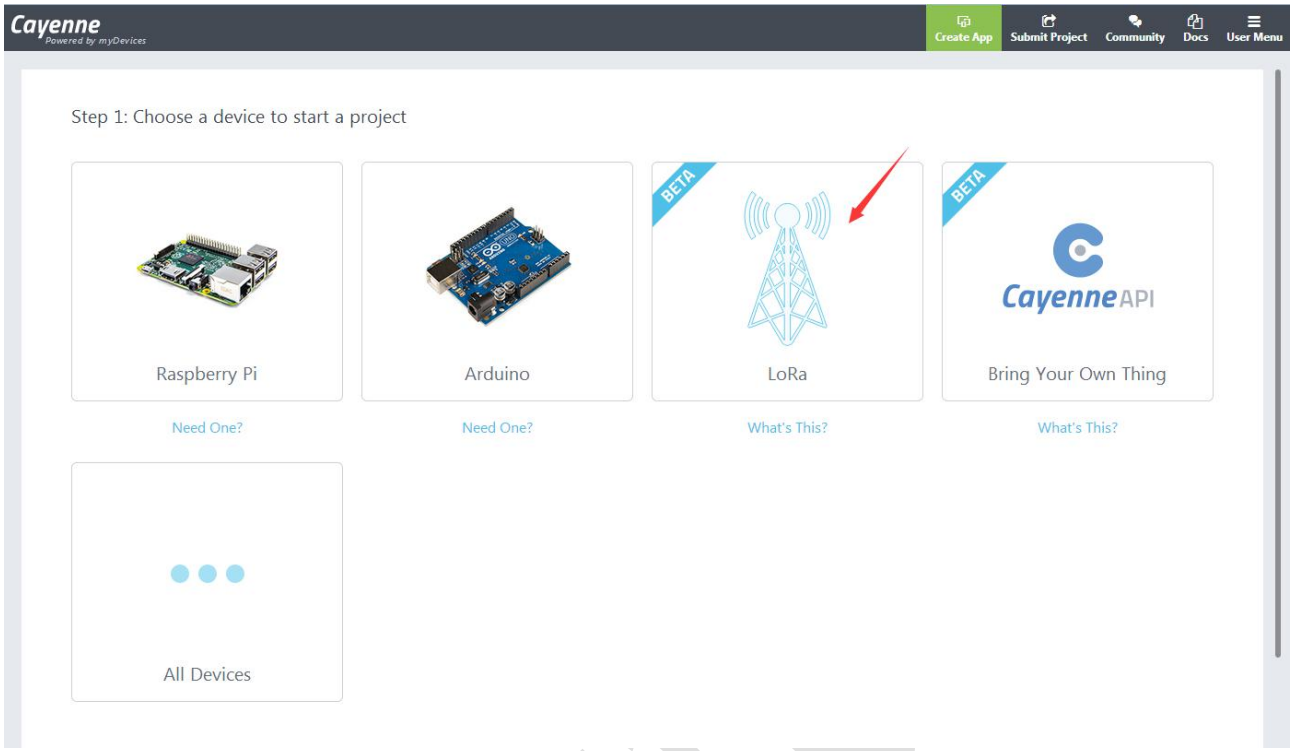


In accordance with the requirements, fill in the information, you can create a myDevices account.

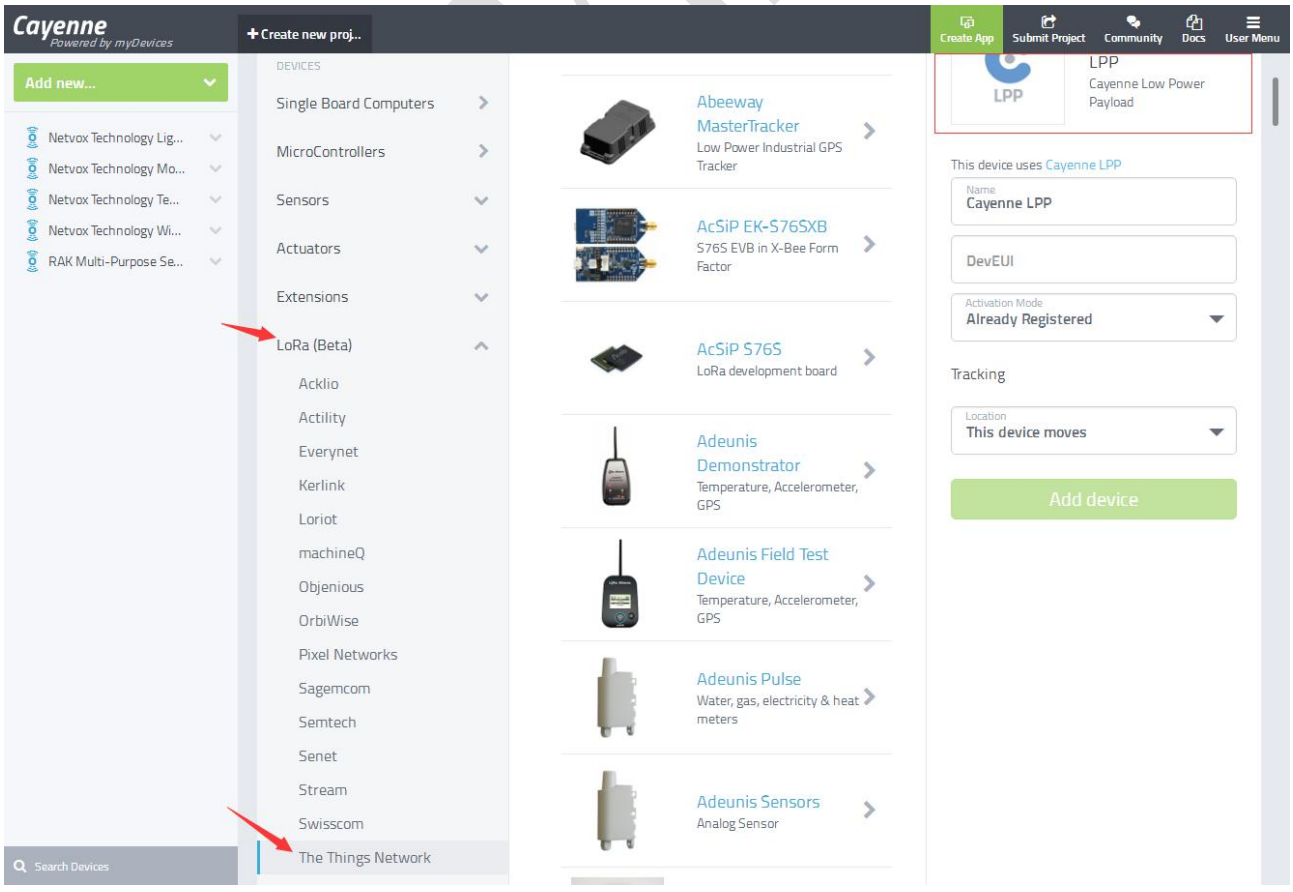


2.5 Export the data to Cayenne

After registering myDevices account, log in to your account and you will see your Cayenne Dashboard. Since the device we want to add is a LoRa device, select the LoRa icon Click.



After entering, first select the left LoRaWAN network provider, here select TheThingsNetwork. Next, select the sensor device, so choose the device: Cayenne LPP.

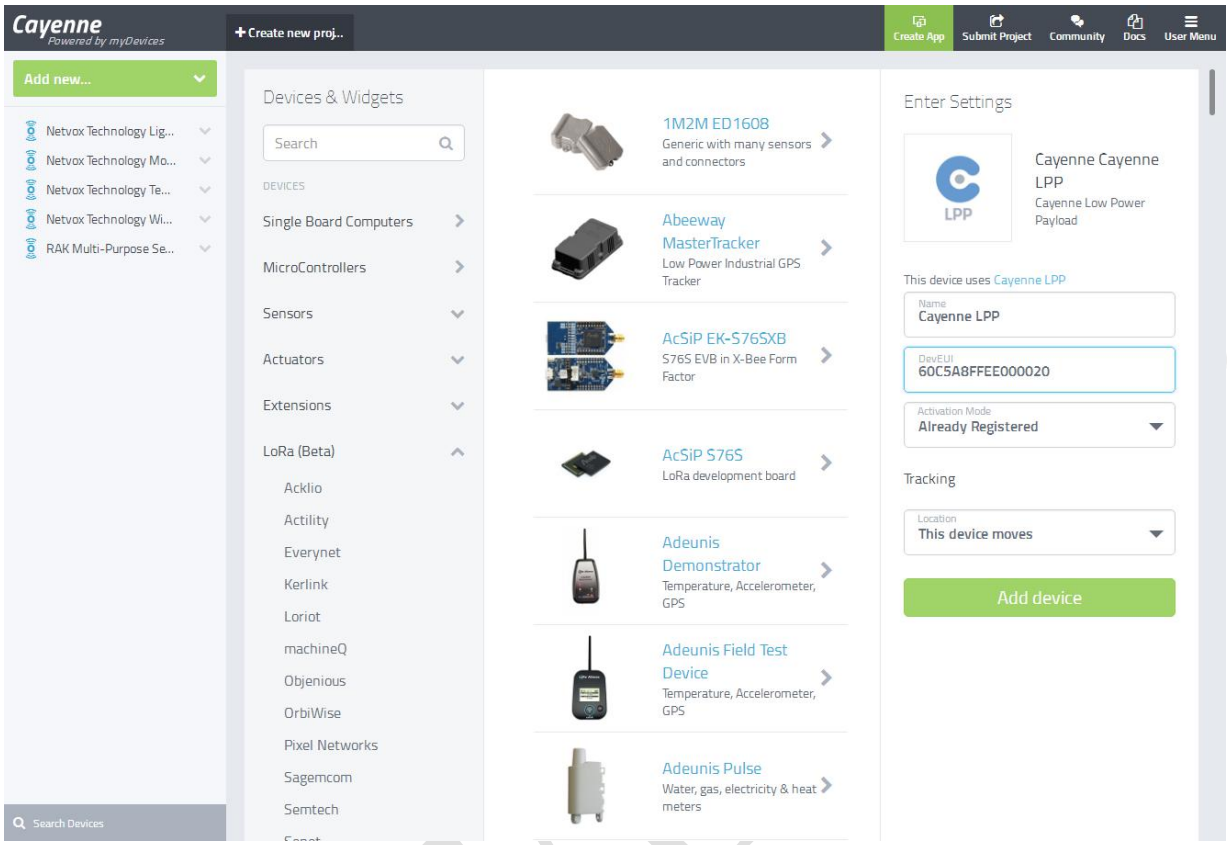


You can see the need to fill in some of the parameters of the device, described in detail below：

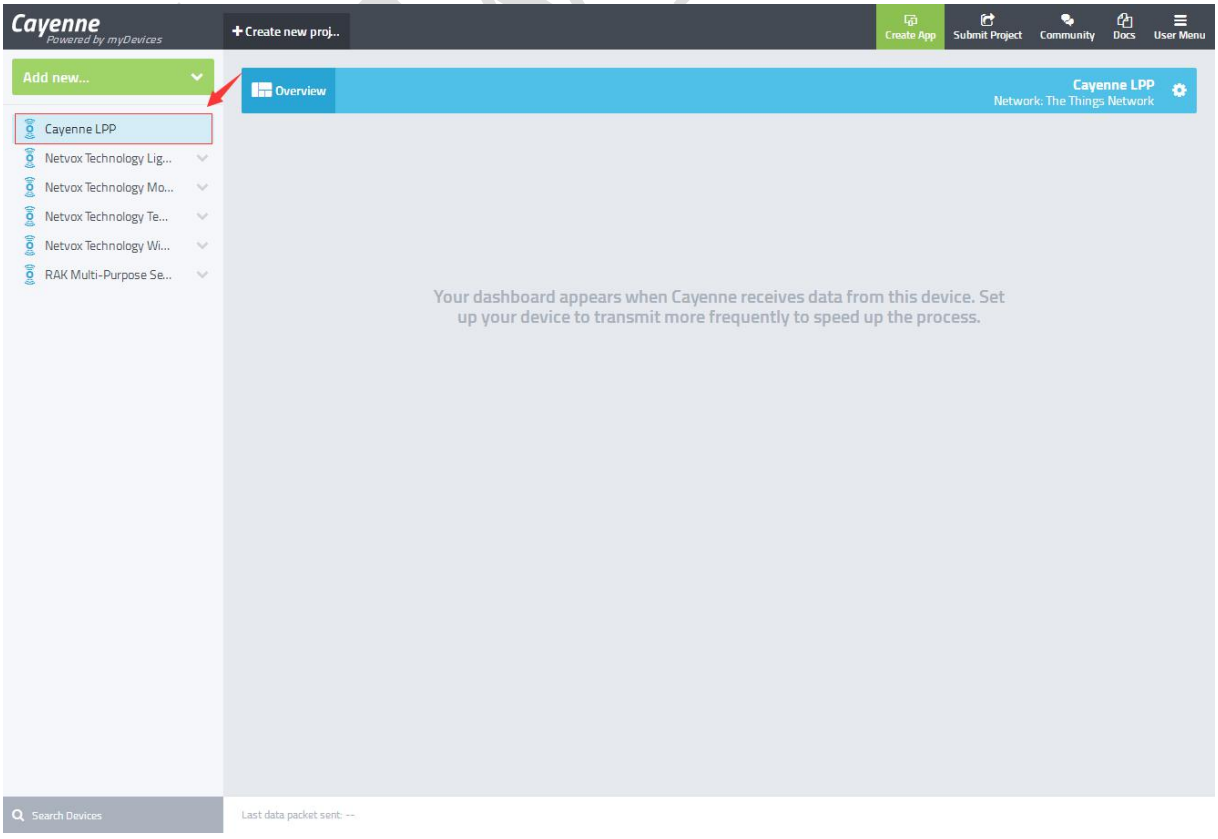
DevEUI: The DevEUI is a unique device 64-bits identifier. This parameter can be acquire in TTN.

Activation Mode: The Default setting Already Registered.

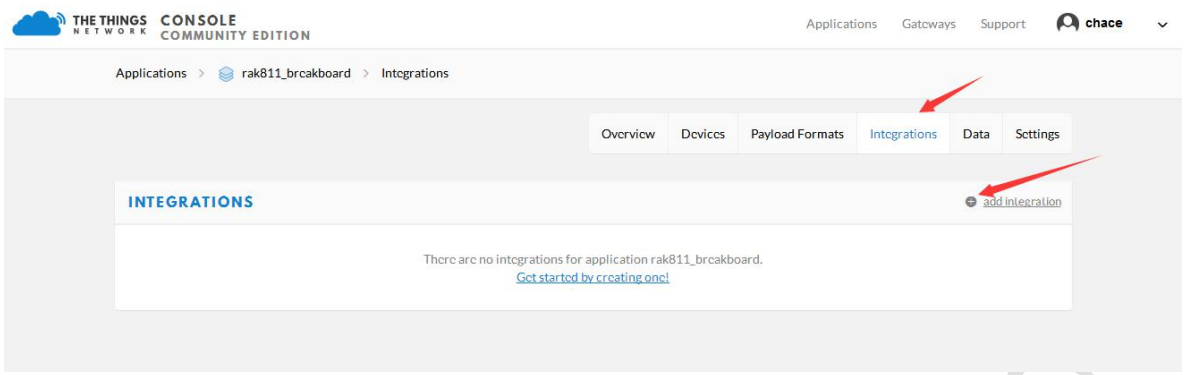
Location: Set according to your equipment.



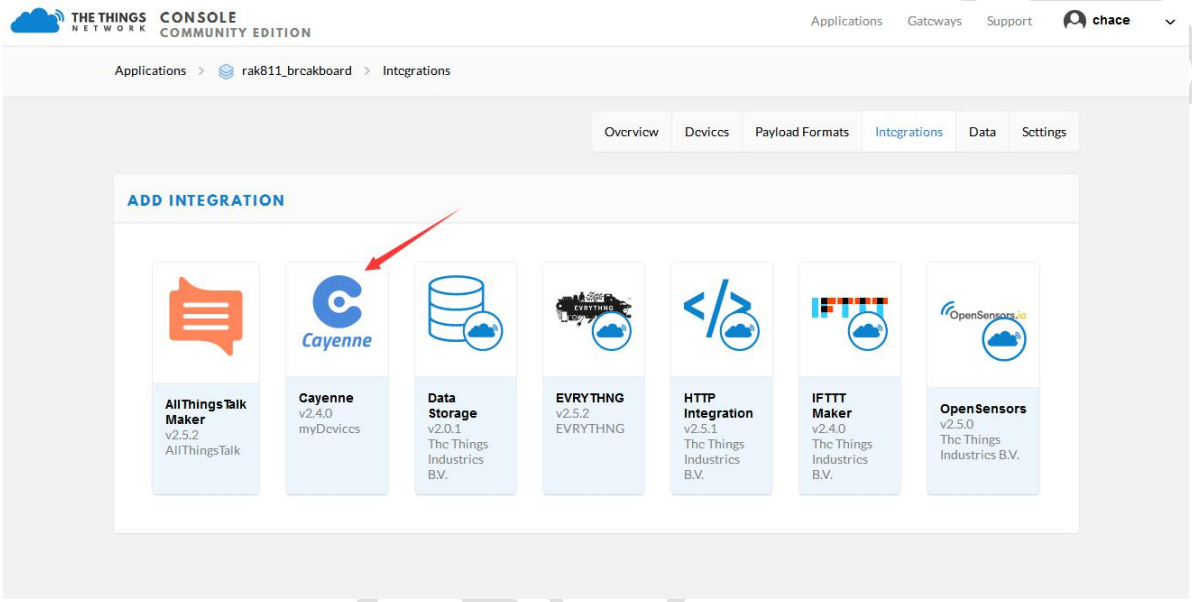
Finally click Add Device, the device is added successfully. Next you need to set the parameters of the TTN interface.



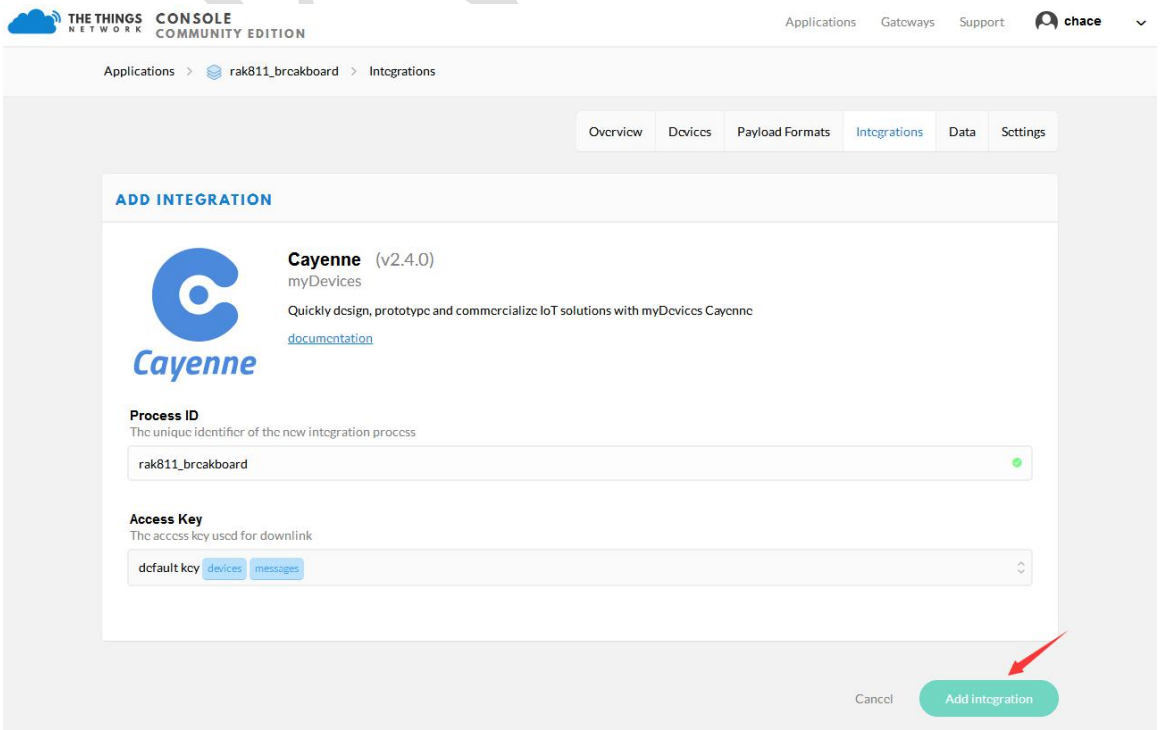
Return to the TTN application interface, Click Integrations and click Add.



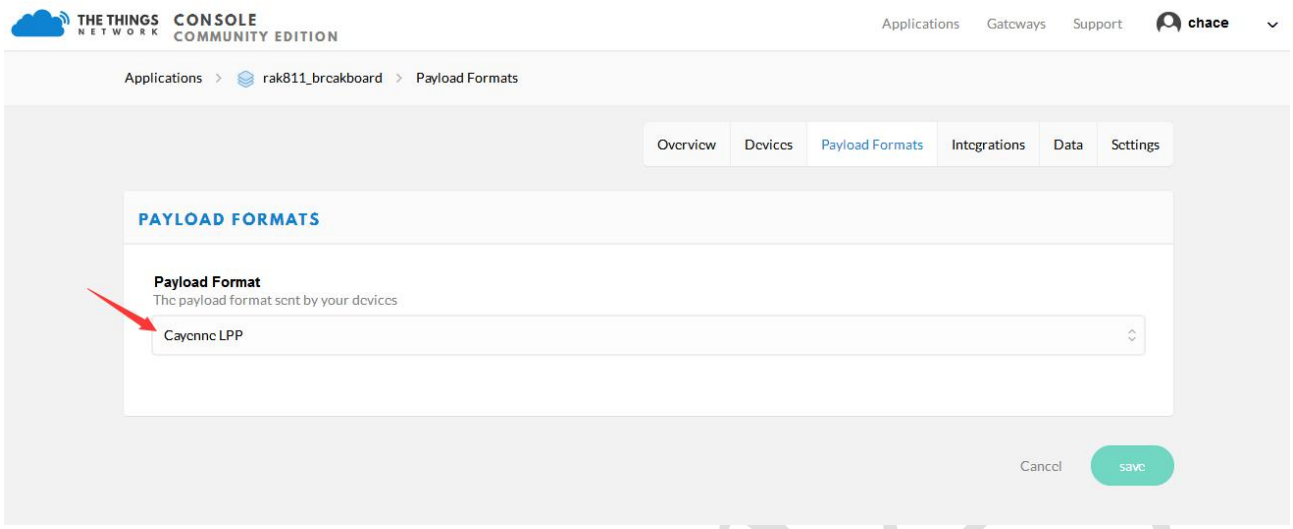
Then you can see the Cayenne interface.click it.



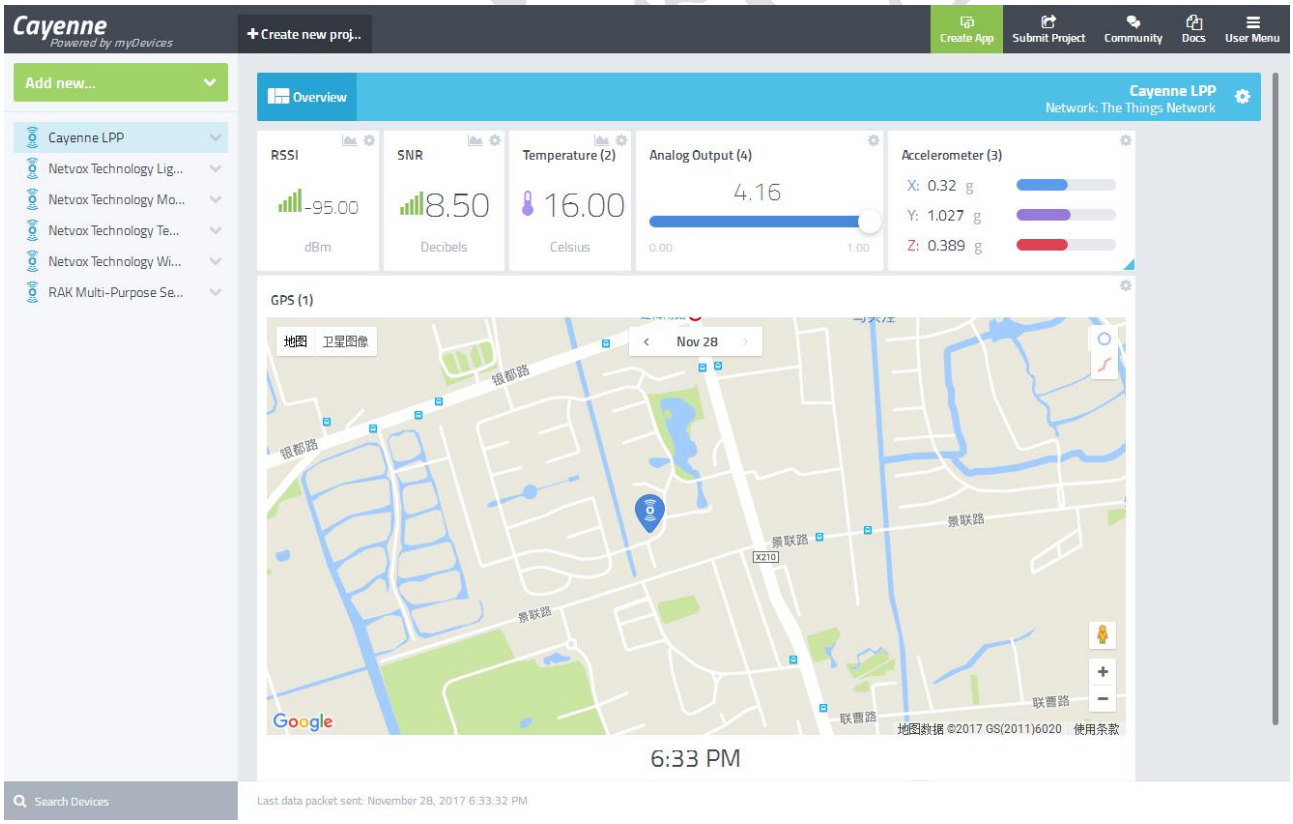
After entering the setting interface, the Process ID can fill in any name,eg: lora_button. The Access Key is set defaylt key..then click Add Integrations. So Cayenne is added.



However, at this time, Cayenne does not recognize the data format, so you also need to set the Payload Formats. Click to enter the Payload Formats interface and select Payload Format as the Cayenne LPP.



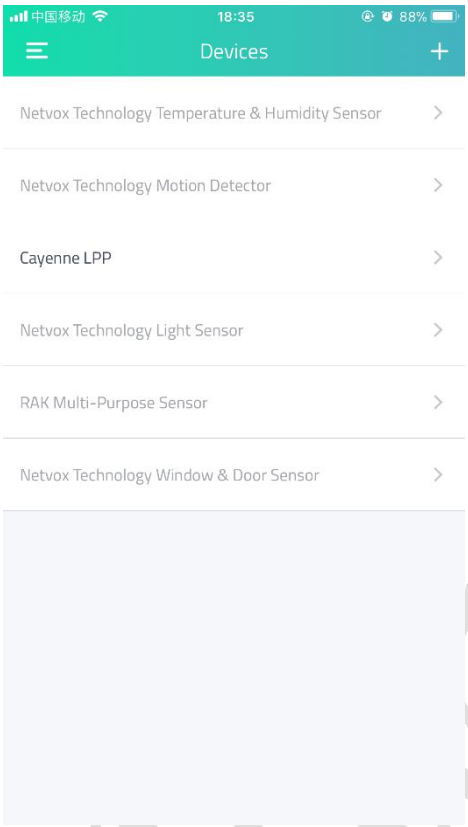
The TTN Cayenne is set up, After waiting for the device to be positioned, you will see in the Cayenne interface as shown below:

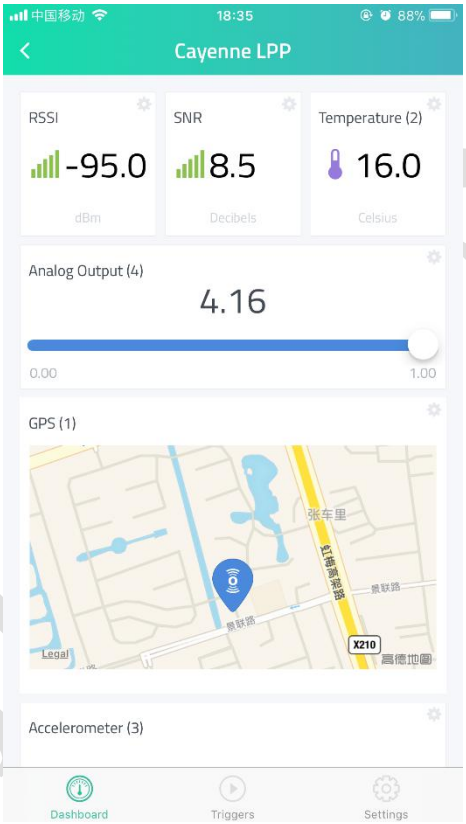


(This is the RAK811 TrackerBoard Data information,the RAK811 SensorNodeBoard will not have GPS data.)

2.6 Watch the data on the phone

After the data has been successfully imported into the Cayenne, you can view the sensor data on your phone just by downloading the Cayenne mobile app. Mobile APP supports IOS and Android platform. If you are an Apple phone, go to the Apple Store and search for Cayenne. If you are an Android phone, go to Google Store and search for Cayenne.(If you are a Chinese user, may not be able to access these, then you may need to VPN proxy). The usage method of mobile phone APP is similar to the webpage, and will not be described in detail.





3. Contact information

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4. Revision History

Version	Date	Change	Author
V1.0	2017-11-28	First release	Chace