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How To Connect LoRa RAK811 To Actility V1.0

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1. Introduction

This document mainly gives a detailed introduction about how to connect RAK811(Lora) to Actility.

RAK811 Low-Power Long Range LoRa Technology Transceiver module, provides an easy to use, small size, low-power solution for long range wireless data transmission.

First, The RAK811 module complies with the latest LoRaWAN Class A & C protocol specifications, it is simple to access LWPA IOT platforms, such Actility etc. Second, it also support Lora Point to Point communications, this function can help customers implement their own private long range Lora network fast.

Module integrates semtech SX1276 and stm32L, offer user an serials At commands with UART Interface .It is easy to accomplish their applications, such as simple long range sensor data applications with external host MCU, low-power feature is suitable for battery applications.

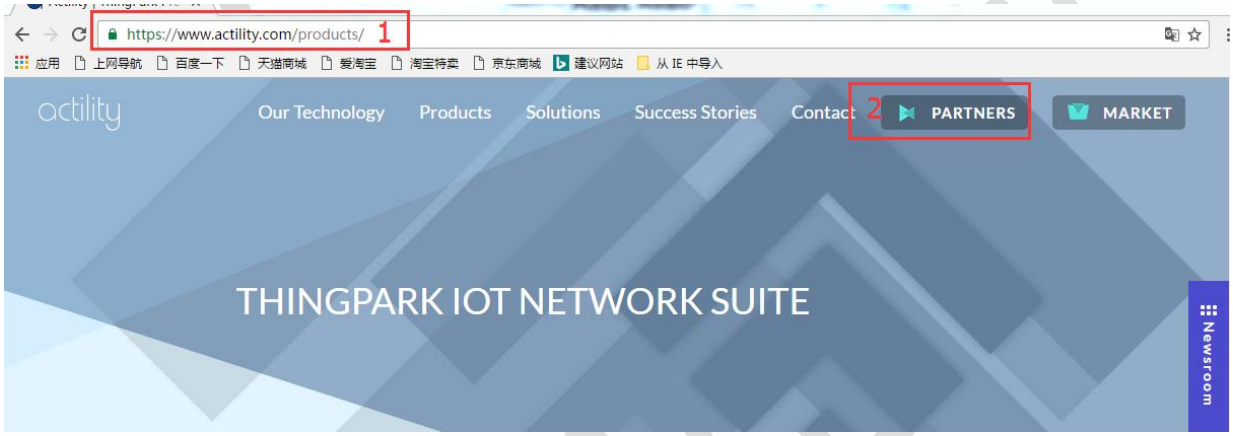
2. Registered Account

If you wanted connect the RAK811 to Actility,you need to register an account on ThingPark.Its website is https://www.actility.com. Now,please follow the step below to register.

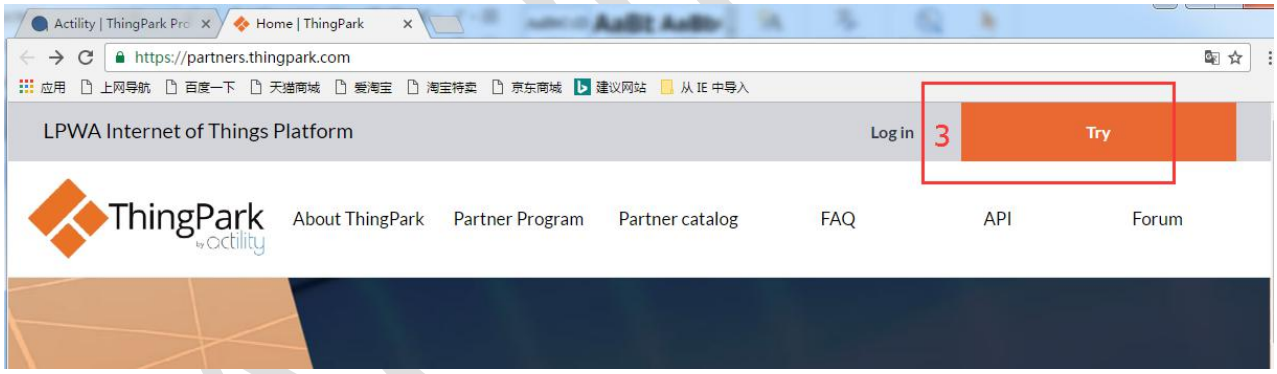
1.Please click the URL mentioned above,or copy and paste this URL and open with browser;

Step 1: Open this website;

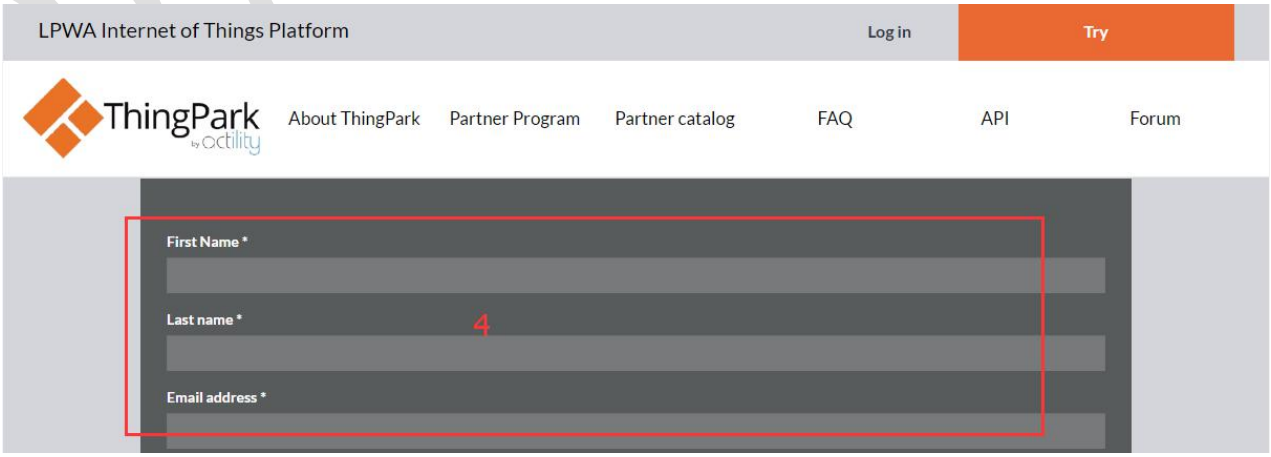
Step 2: Click " PARTNERS";



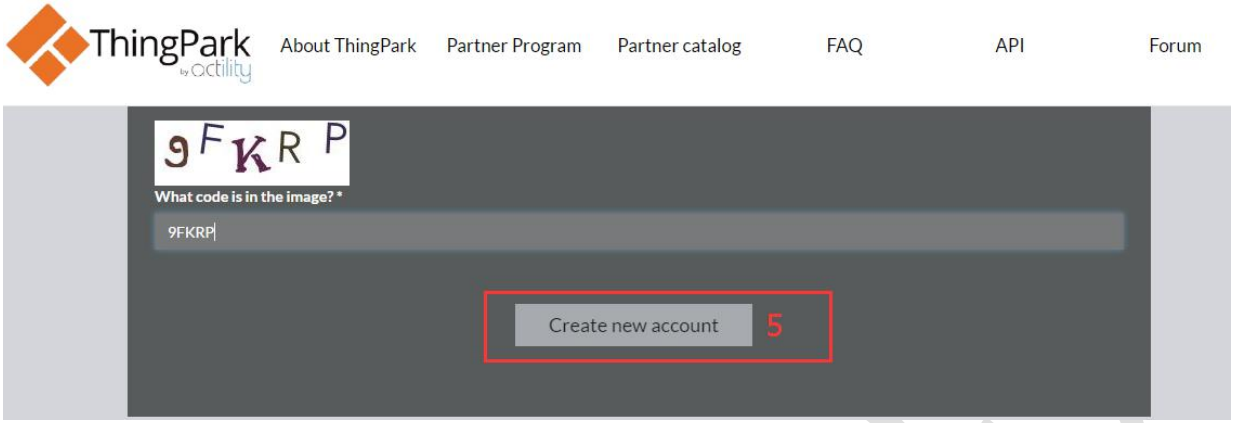
Step 3: Click "Try",you will see a registration form;



Step 4: Fill in the form as required;



Step 5: After filling,click “Create new account” and complete registration;



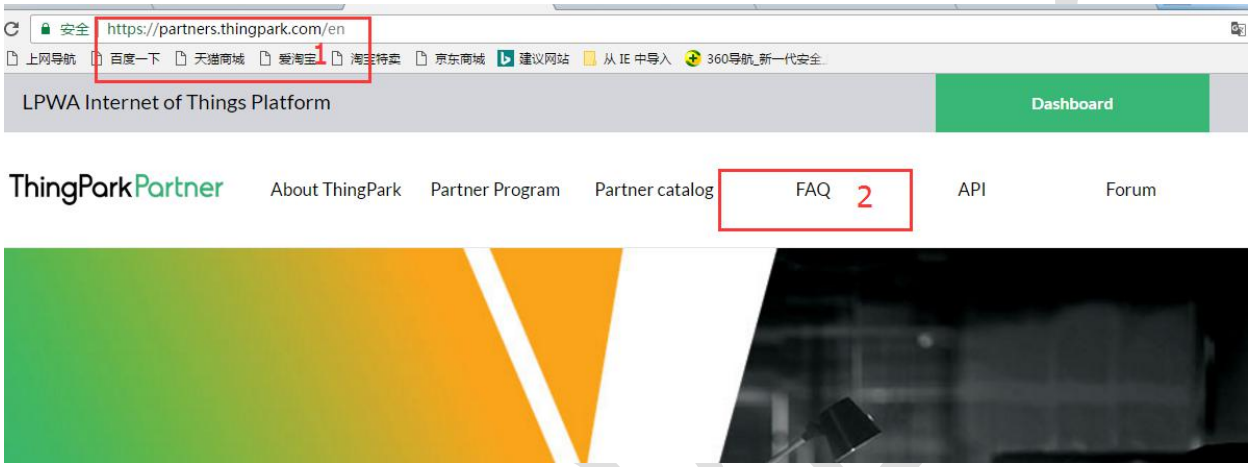
Step 6: Wating a moment you will received a email from ThingPark,it shown that you register account successfully.and now,you can use yourself account log in ThingPark.

3. Prepare Gateway

To connect our gateway to ThingPark, we need to download the Actility LRR (Long-Range Relay) firmware and flash the gateway. But how to set our gateway?

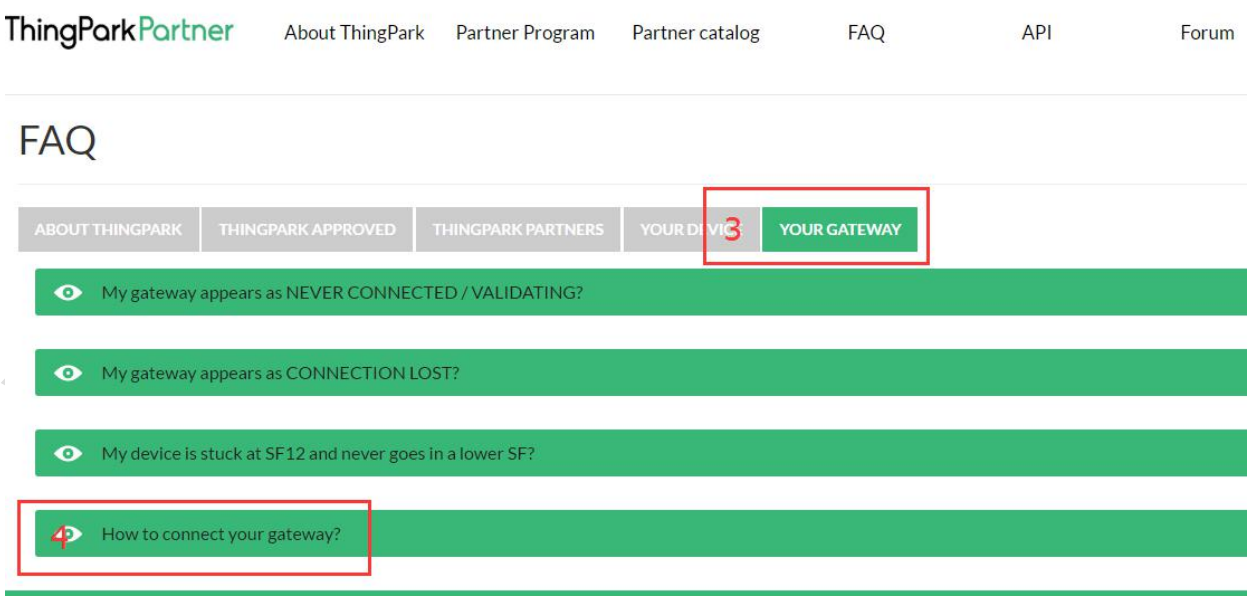
Step 1: Open this website https://partners.thingpark.com/en/ in the browser;

Step 2: Click on "FAQ";



Step 3: Click on "YOUR GATEWAY";

Step 4: Click on "how to connect your gateway?";

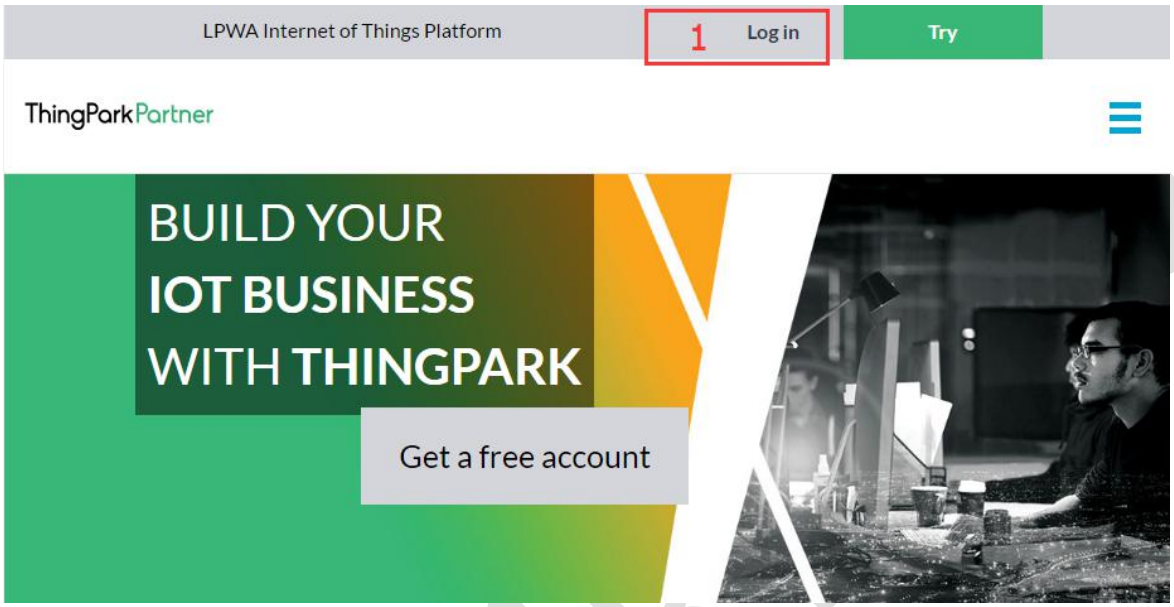


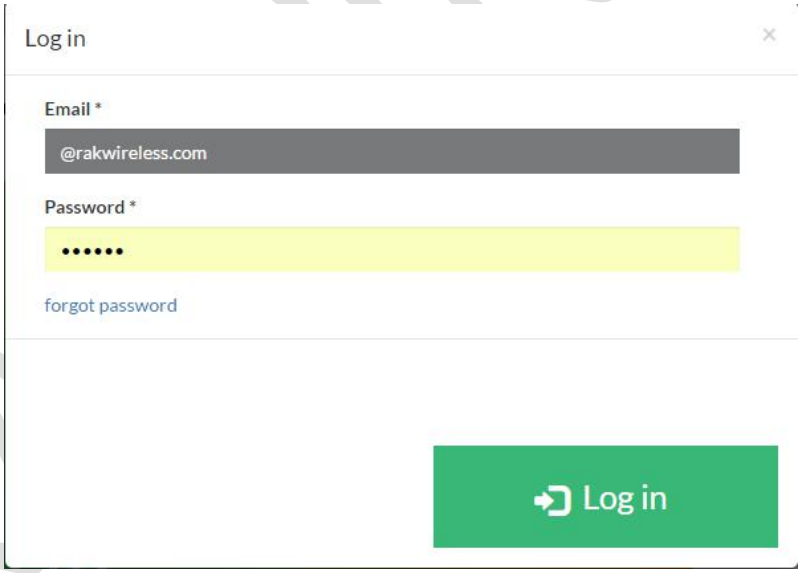
Step 5: We can see it introduce three gateway products to download the Actility LRR (Long-Range Relay) firmware and flash the gateway. Select the corresponding steps according to the product module, Operate according to steps;

4. Add Gateway to Actility

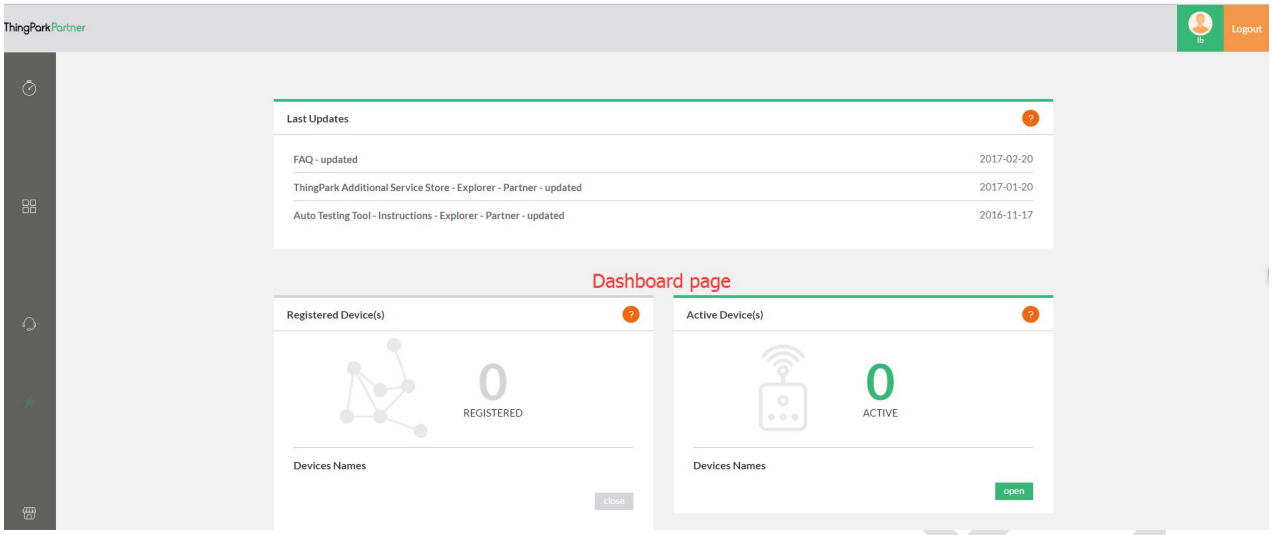
Please log in to your account and follow the steps below, Here I use MultiTECH gateway device to demonstrate:

Step 1: Log in your account;

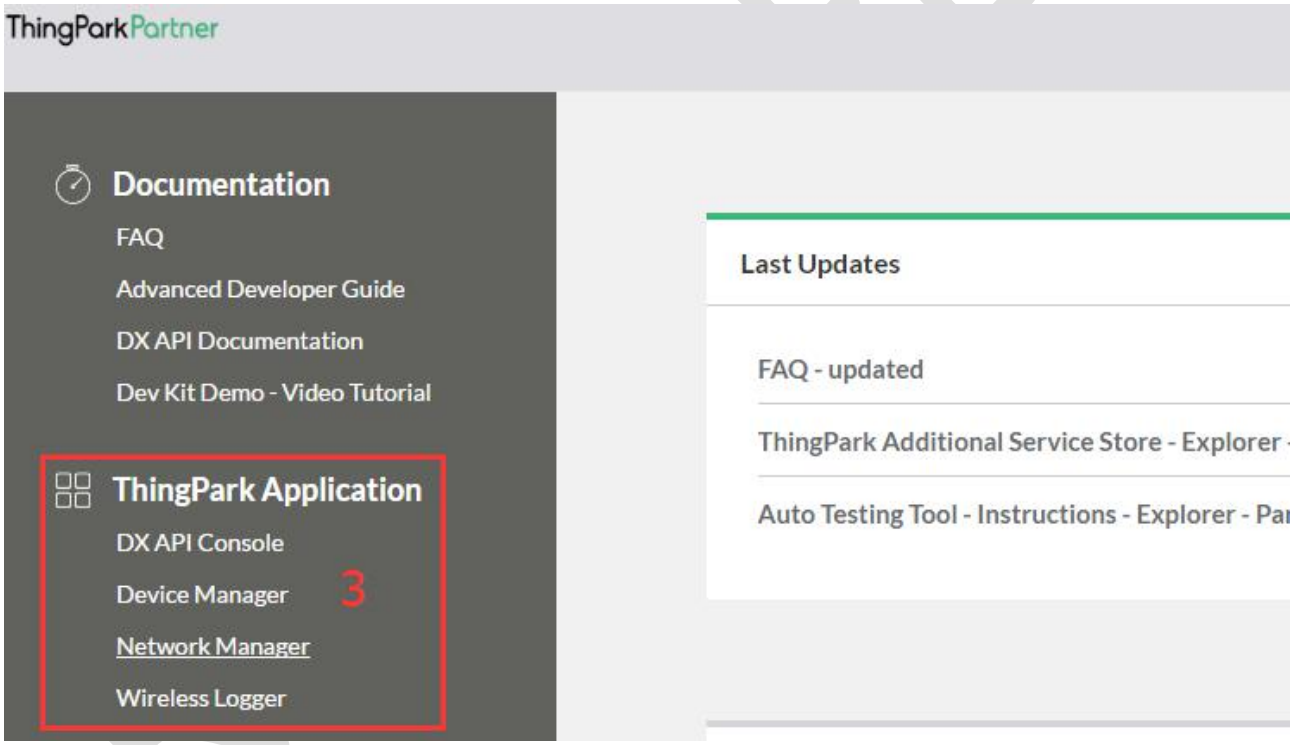




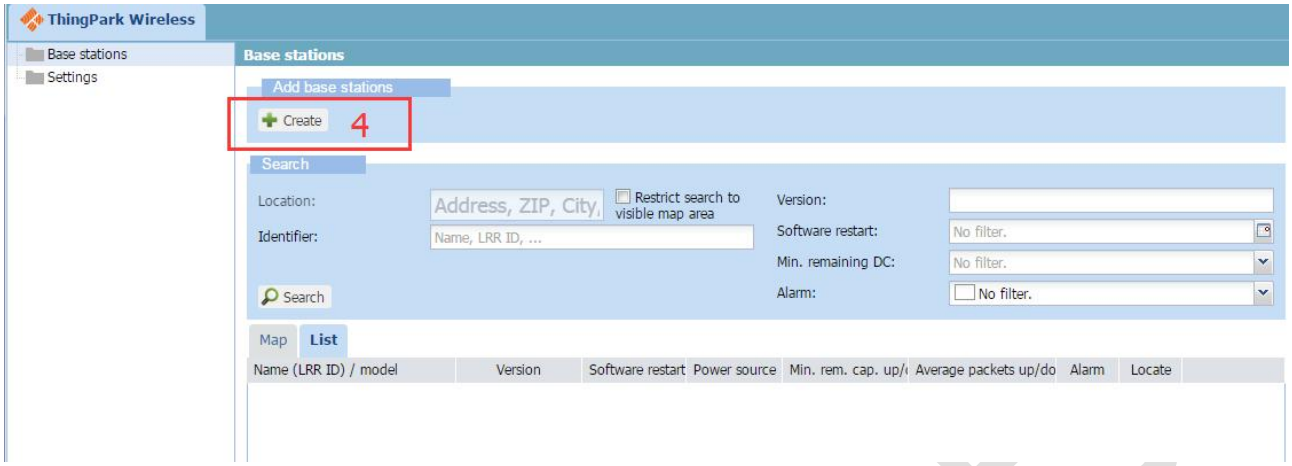
Step 2: You will enter a page called "Dashboard", it shown in following picture,from the picture we can see that: Registered Device(s) is 0,Active Device(s) is 0:



Step 3: Click on , then click the "Network Manager",start to add gateway device.

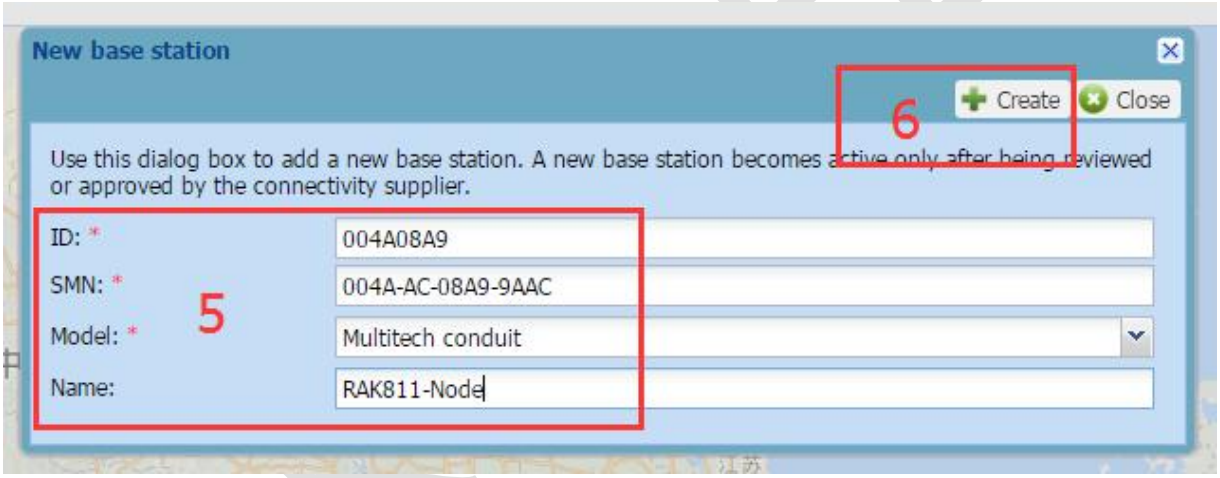


Step 4: Click "Create";



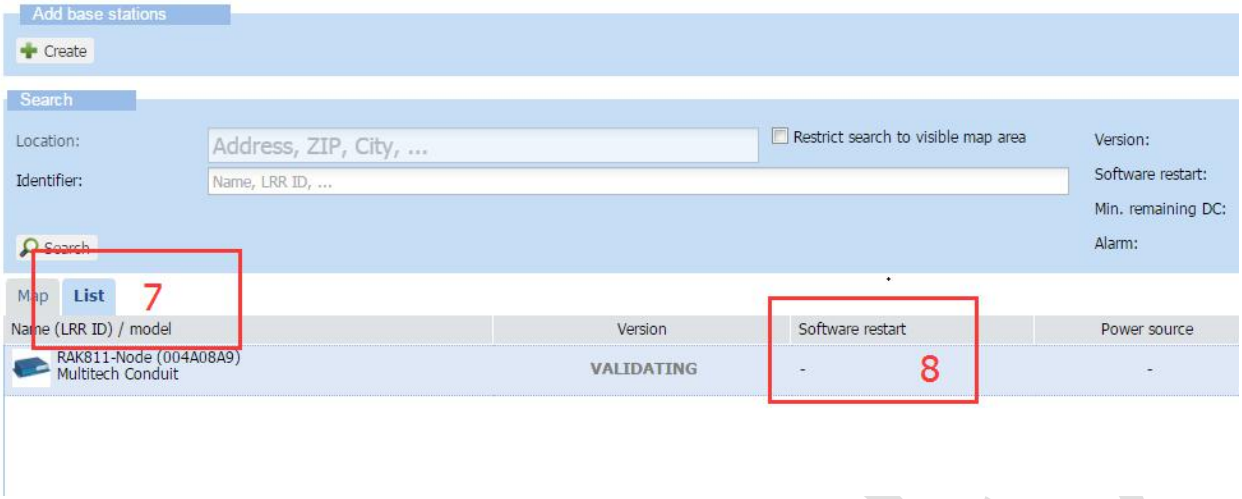
Step 5: According to requirements ,fill in your gateway device information;

Step 6: Click " Create";



Step 7: Click " List",we can see the RAK811-Node device that we created in the Step 6,it shown we add base device successfully;

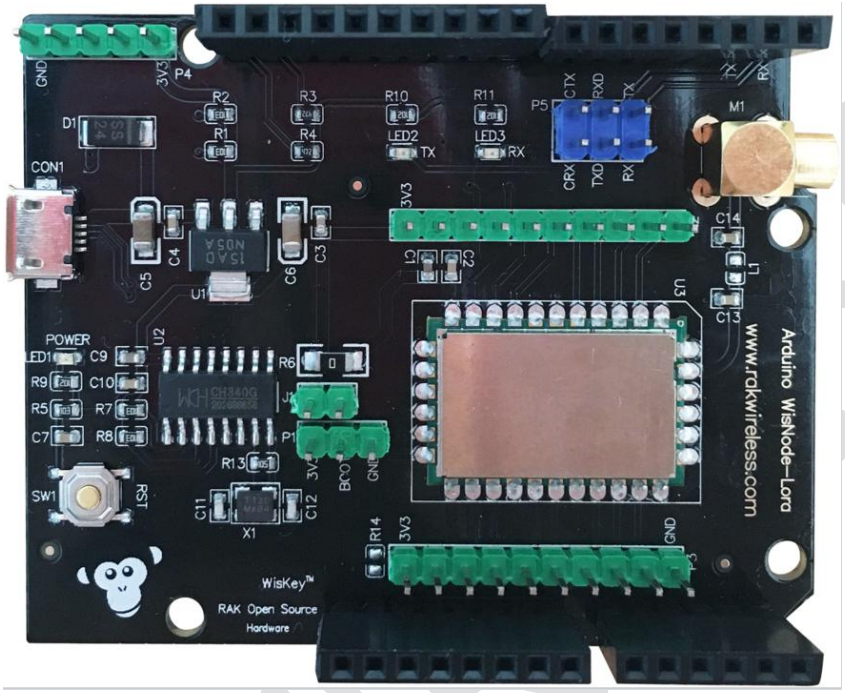
Step 8: The "Softerware restart" not displayed. Now we need send e-mail to the official of Ability,tell them our base device MAC address,and get our device "approved" by them;



Step 9: After send the e-mail, we will get back soon;Then refresh this web page,if the "Softerware restart" displayed like the picture as the following,This means that our gateway is activated by Actility. Now, we can add our RAK811 module on this gateway.

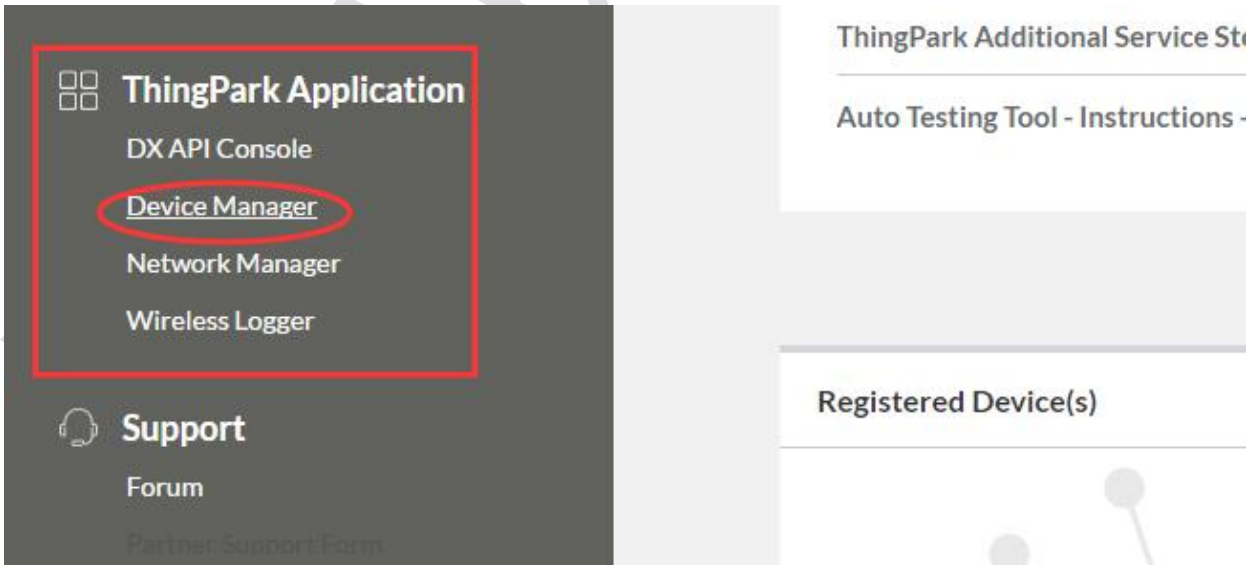
5. Add RAK811 to Our Gateway

In this part, I will use WisNode-Lora EVB to demonstrate how to add our LoRa RAK811 module to gateway;



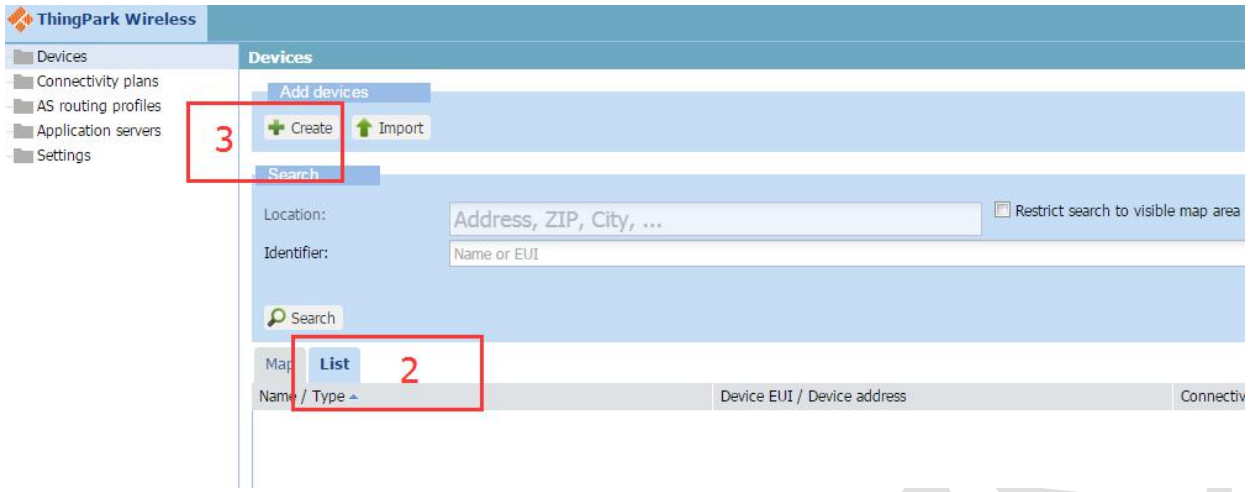
RAK WisNode-Lora EVB

Step 1: Click on ,then click the "Device Manager",start to add RAK811 module.

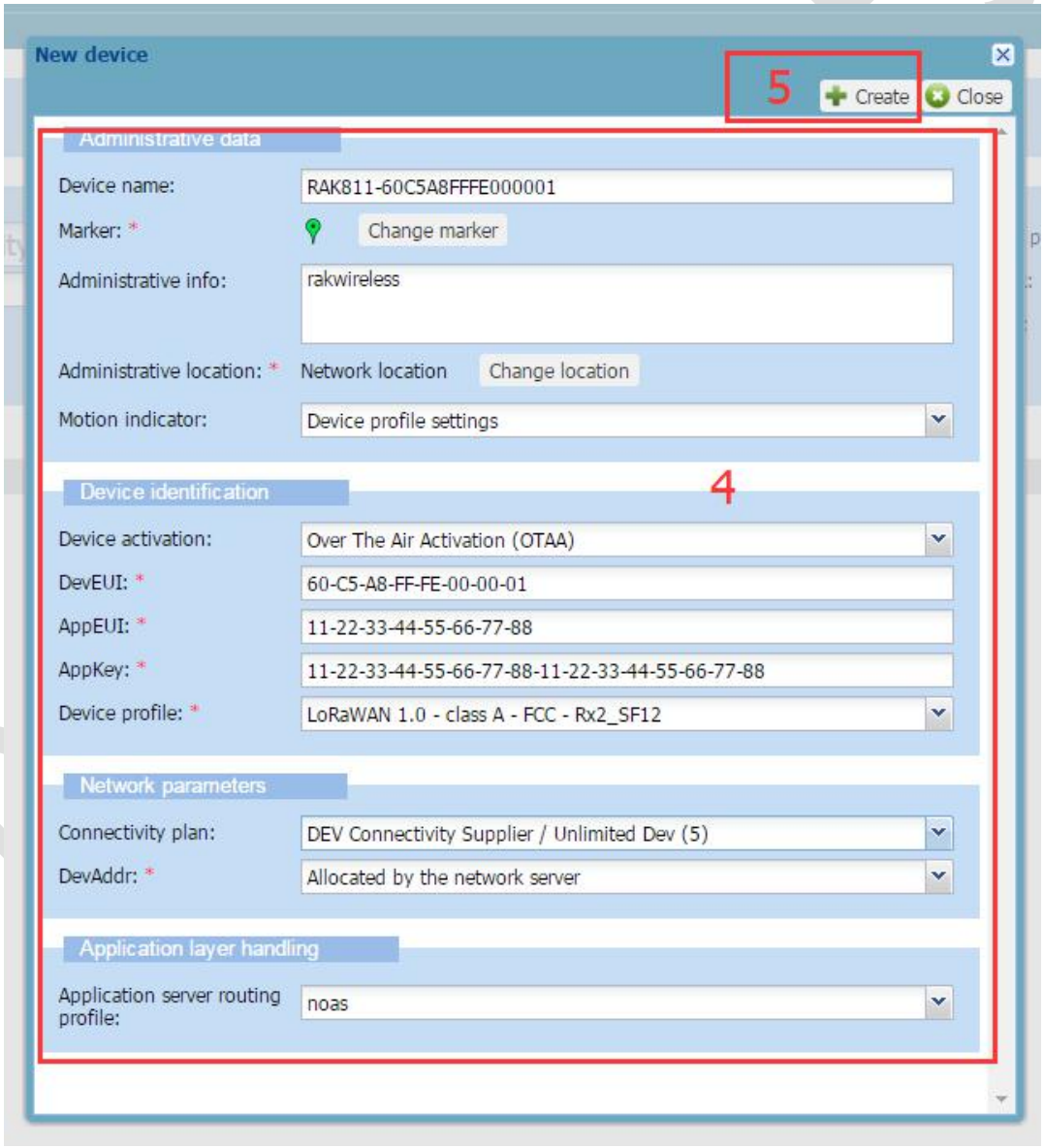


Step 2: Click on "List",we can see no module on our gateway;

Step 3: Click on "Create",start our steps;



Step 4: Fill in the following form as require;



Device activation: You can choose a way to activation the device ,here we choose OTAA as the example.

Device EUI: Enter the DevEUI for your device. This ID should come with the information included with your device, or can be found in the device use at+get_config=dev_eui.

Device Address: Skip – When selecting OTAA activation, the device address will automatically be generated based on the DevEUI.

Application EUI: Enter the AppEUI. The AppEUI is a global application ID that uniquely identifies the application provider (i.e., owner) of the device.

TIP: If you do not have an Applicate EUI, you can create one yourself. It must be a unique string composed of 16 alphanumeric characters.

Application key: Enter the Appkey. The AppKey is a key specific for the end-device that is assigned by the application owner to the end-device and most likely derived from an application-specific root key exclusively known to and under the control of the application provider.

TIP: If you do not have an Applicate key, you can create one yourself. It must be a unique string composed of 32 alphanumeric characters.

Device Profile: Actility uses this profile to correctly decode the payload, based on the device type, and display it on our dashboard. Be sure to select the correct profile for your device and which network it will be using.

Step 5: Click on "Create";

Step 6: Use Micro USB interface to supply the module power. One end of the serial line is connected to the module, and one end is connected to the computer. Then open the Uart AssistTool, send AT command to operate the module.

Step 7: Send the AT command to the module in the following order, make the RAK811 module join the Otaa;

Boot information : Welcome to RAK811

Send: at+mode=0 /* SET LoraWAN work mode */
Return: OK

Send:at+set_config=dev_eui:60C5A8FFFE000001 /* GET Dev_EUI check if NULL ,set the enter before information */
Return: OK

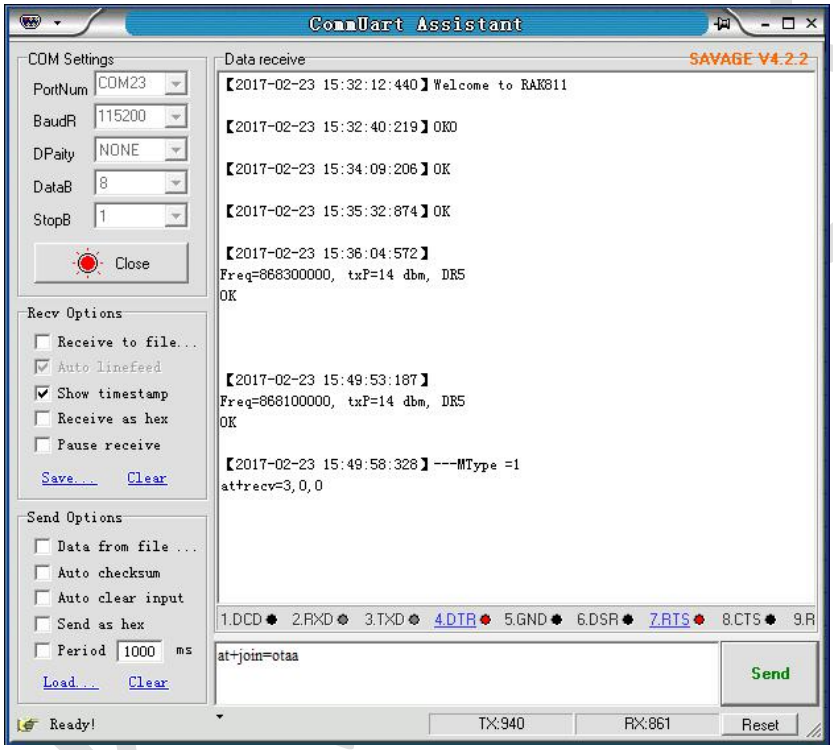
Send:
at+set_config=app_eui:1122334455667788&app_key:11223344556677881122334455667788

/* SET LoraGateway app_eui and app_key , big endian, you set at **Step 4***/

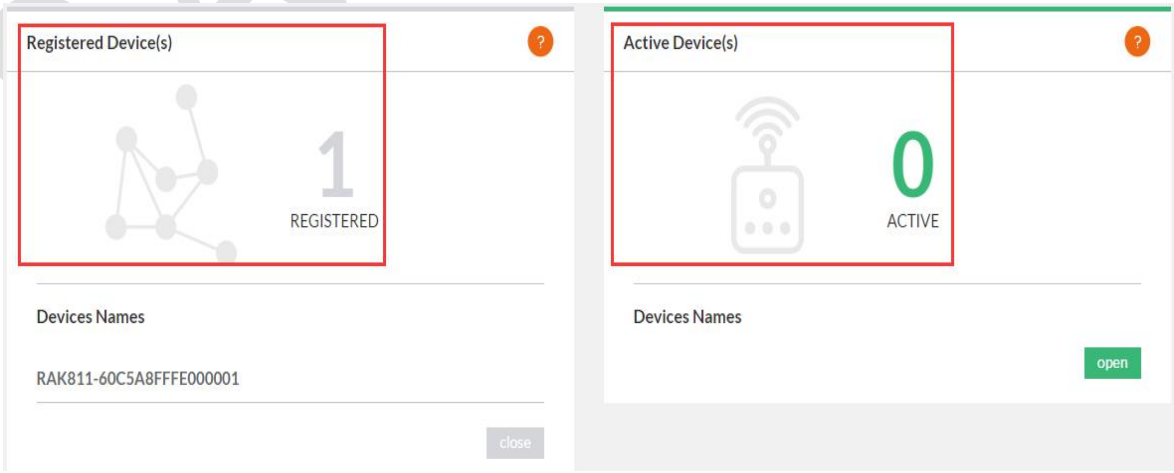
Return: OK

Send: at+join=otaa /* Join OTAA type*/
Return: OK

Return: at+recv=3,0,0 /* Join status success*/



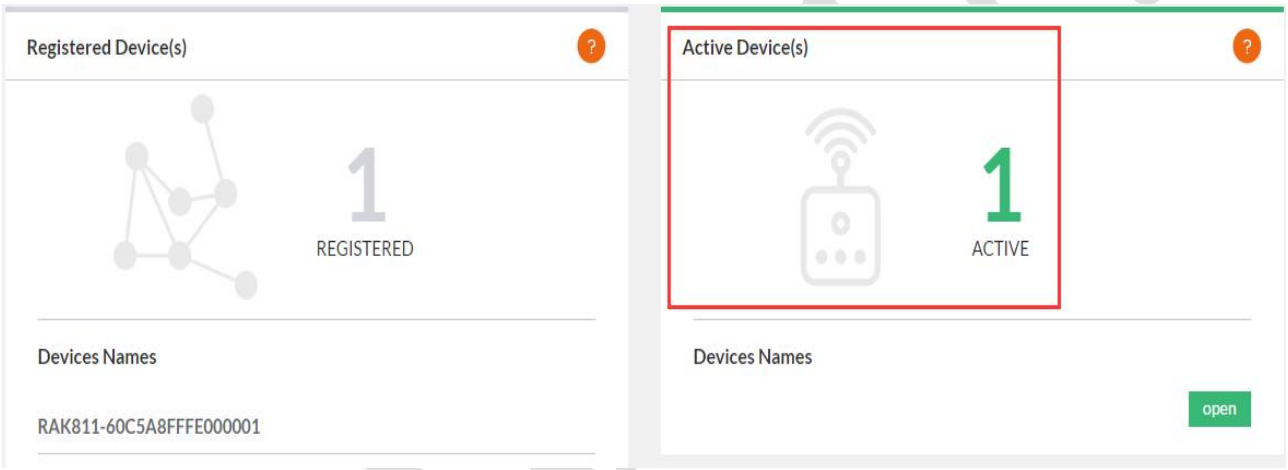
Step 8: After join gateway success, refresh dashboard page; We can see Registered Device(s) is 1;



Step 9: After join gateway success, then can send and receive data,refresh dashboard page,we can see Active Device(s) is 1 , it means our module connect with server;

Send: at+send=0,2,000000000000007F0000000000000000
/*APP port:2, battery level 50%, unconfirmed message*/
Return: at+recv=2,0,0 /*unconfirmed mean tx success*/

Send: at+send=1,2,000000000000007F0000000000000000
/*APP port :2, battery level 50%, confirmed message*/
Return: at+recv=1,0,0 /*confirmed mean receive ack from gateway*/



6. Modify Record

Version	Author	Data	Modify content
V1.0	Wenyong.tang	2017/02/24	Create Document