

Node Location Solution Kit With Actility V1.0

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After update the new version, this document without prior notice.

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1. Overview

This document describes how to connect to the LoRaWAN server Actility using Actility 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 Actility account ?

How to register Actility gateway in Actility ?

How to Add RAK811 BreakBoard Device to Actility 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 !

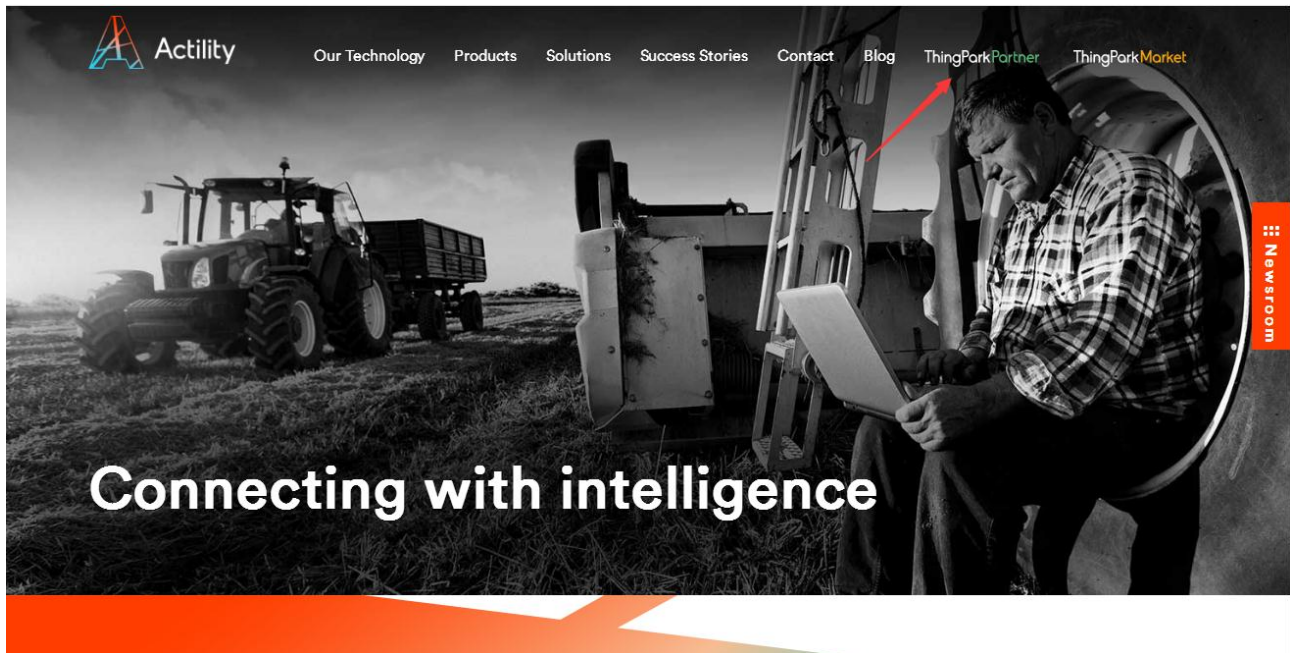
2. Start Using

2.1 Register Activity

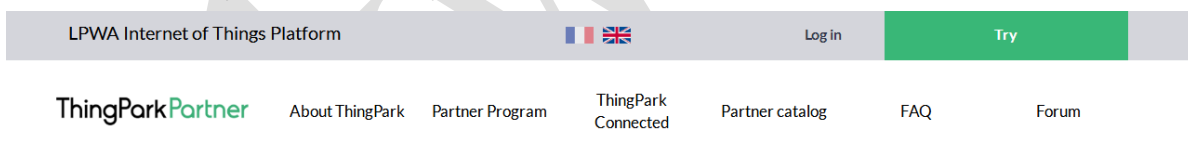
Activity is the leader in LoRaWAN network solutions. Activity's ThingPark is an advanced IoT enabler platform for the deployment, management and monetisation of LPWA networks.

First let's open Activity's home page: <https://www.activity.com/>

Then click the place pointed by the arrow. Enter ThingParkPartner.



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



Become an Explorer!

First Name *

Last name *

Email address *

Password *

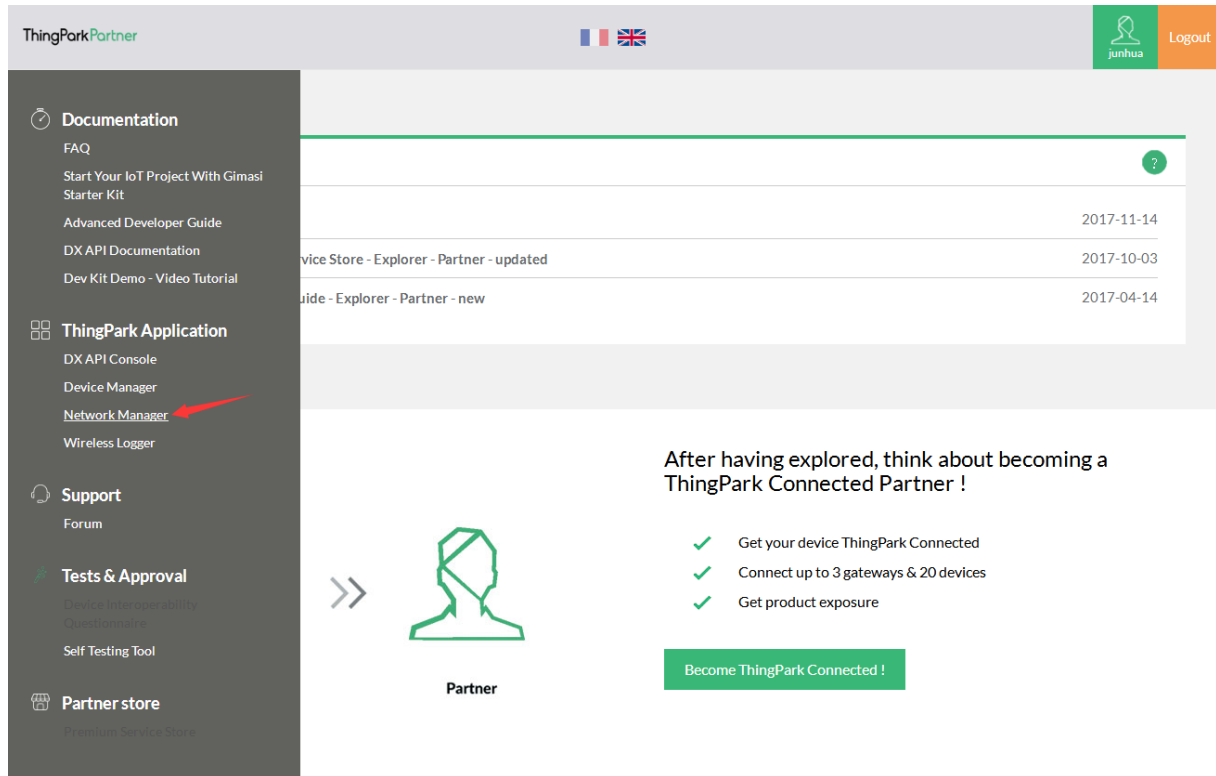
Confirm password *

Company name *

Status *

2.2 Register Gateway to Activity

After registering your Activity account, you will be logged in to your dashboard. Click the “Network Manager” button on the left to enter Activity's Management Gateway interface.



ThingPark Partner

Documentation

- FAQ
- Start Your IoT Project With Gimasi Starter Kit
- Advanced Developer Guide
- DX API Documentation
- Dev Kit Demo - Video Tutorial

ThingPark Application

- DX API Console
- Device Manager
- Network Manager**
- Wireless Logger

Support

- Forum

Tests & Approval

- Device Integrability Questionnaire
- Self Testing Tool

Partner store

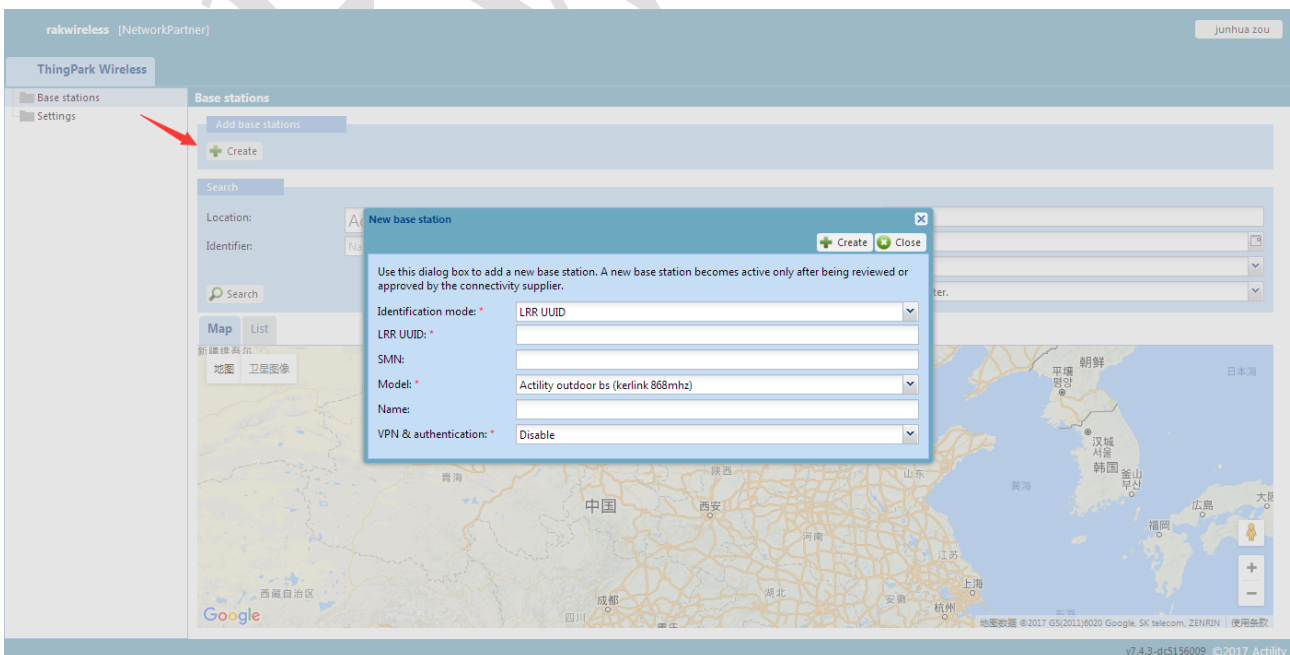
Premium Service Store

After having explored, think about becoming a ThingPark Connected Partner !

- ✓ Get your device ThingPark Connected
- ✓ Connect up to 3 gateways & 20 devices
- ✓ Get product exposure

Become ThingPark Connected !

In Activity's Management Gateway interface, you can see that there is a Create button, click to add a gateway device.



rakwireless [NetworkPartner]

junhua zou

ThingPark Wireless

- Base stations
- Settings

Base stations

Add base stations

Create

Search

Location:

Identifier:

Search

Map List

Google

New base station

Use this dialog box to add a new base station. A new base station becomes active only after being reviewed or approved by the connectivity supplier.

Identification mode: LRR UUID

LRR UUID:

SMN:

Model: Activity outdoor bs (kerlink 868mhz)

Name:

VPN & authentication: Disable

Create Close

Copyright © 2017 Activity

Select the LRR ID in the Identification mode field. You will see that you need to type in four messages: LRR ID, SMN, Model, Name. they mean is as follows:

LRR ID: Identification of the base station -> Enter the last BS ID 8 hexadecimal digits (**Must**)

Model : Gateway model -> Select the proper one (**Must**)

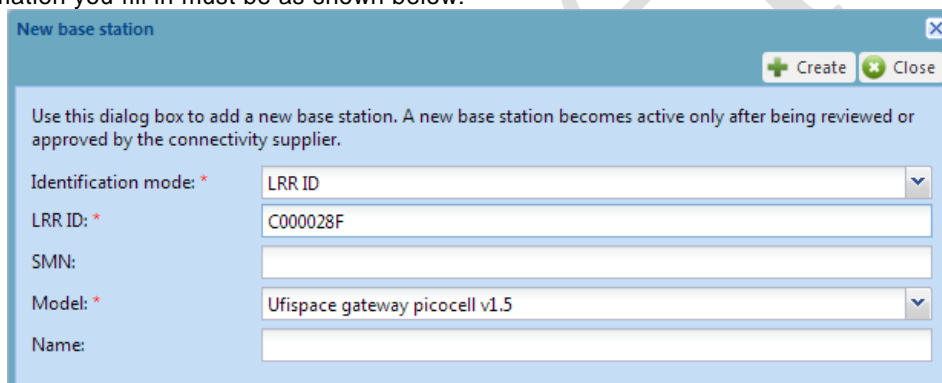
SMN: Serial Number -> Enter 0000-XX-0000-0000 as SMN (do not copy and paste from here, please enter it manually) (**Optional**)

Name : name of your Basestation -> Enter a name (**Optional**)

The information you need can be found at the bottom of your gateway device. The BS ID here stands for LRR ID. Model is the device type corresponding to the gateway. In this case, Ufispac gateway picocell v1.5



The information you fill in must be as shown below:



New base station

Use this dialog box to add a new base station. A new base station becomes active only after being reviewed or approved by the connectivity supplier.

Identification mode: * LRR ID

LRR ID: * C000028F

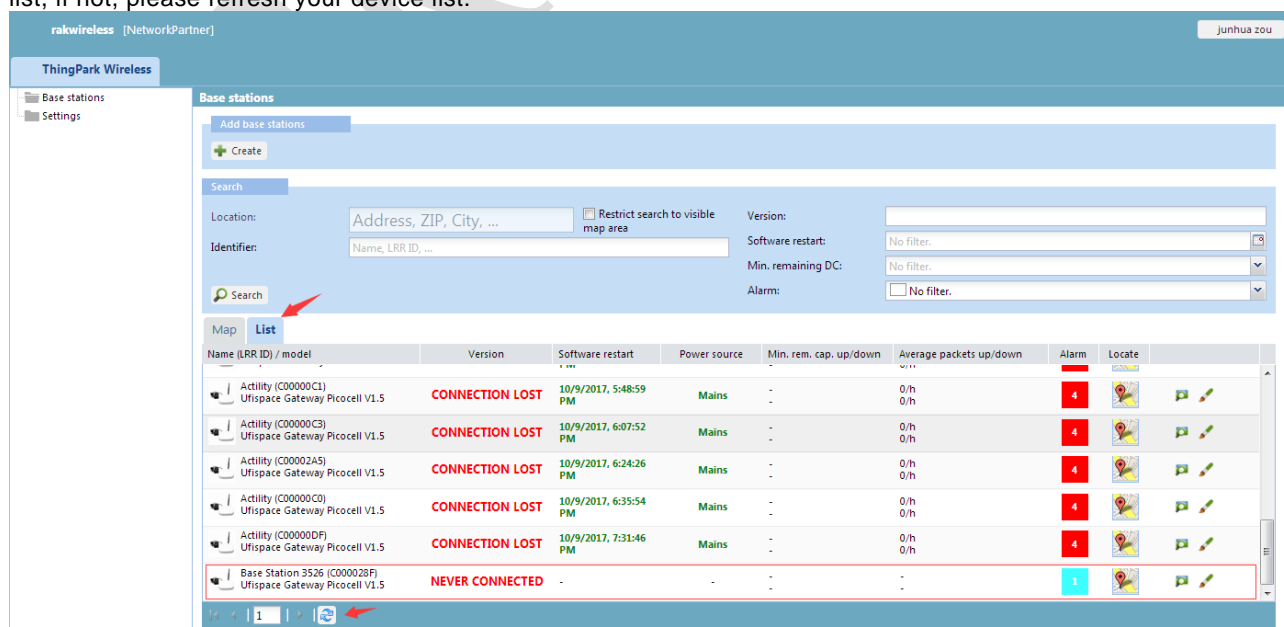
SMN:

Model: * Ufispac gateway picocell v1.5

Name:

Create **Close**

Finally, click the Create button to create the device, after the success you can see your device in your device list, if not, please refresh your device list.



Base stations

Search

Location: Address, ZIP, City, ... ☐ Restrict search to visible map area

Identifier: Name, LRR ID, ...

Version:

Software restart: No filter.

Min. remaining DC: No filter.

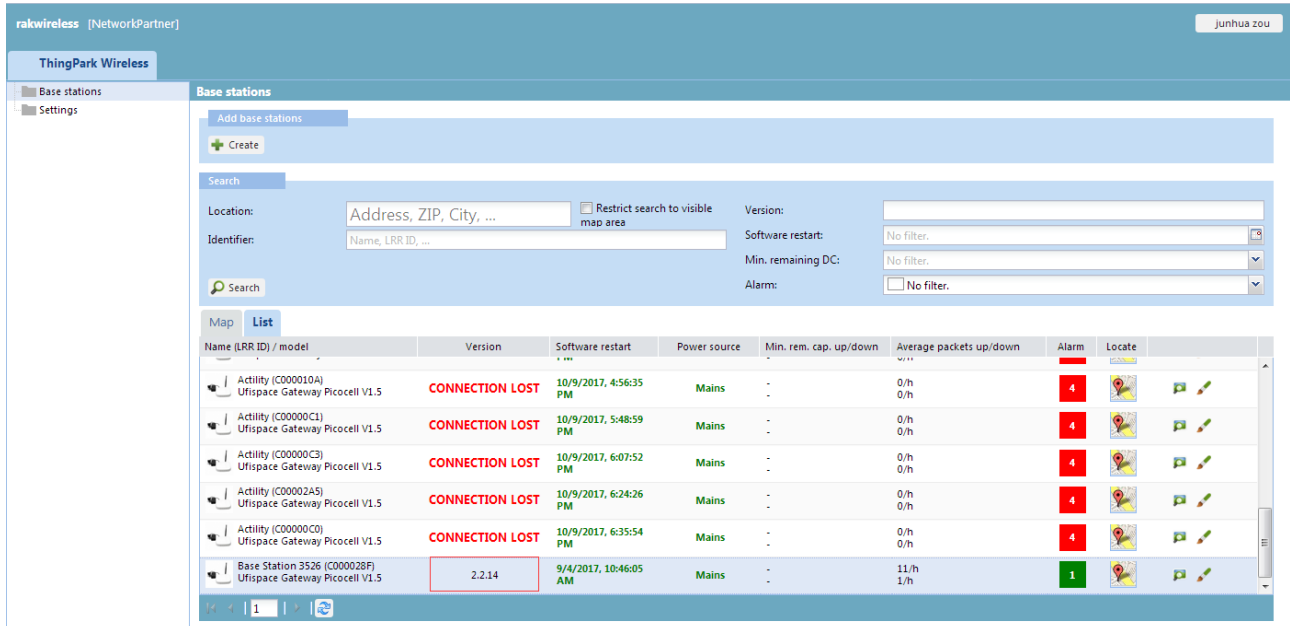
Alarm: No filter.

Map **List**

Name (LRR ID) / model	Version	Software restart	Power source	Min. rem. cap. up/down	Average packets up/down	Alarm	Locate
Activity (C00000C1) Ufispac Gateway Picocell V1.5	CONNECTION LOST	10/9/2017, 5:48:59 PM	Mains	-	0/h 0/h	4	
Activity (C00000C3) Ufispac Gateway Picocell V1.5	CONNECTION LOST	10/9/2017, 6:07:52 PM	Mains	-	0/h 0/h	4	
Activity (C00002A5) Ufispac Gateway Picocell V1.5	CONNECTION LOST	10/9/2017, 6:24:26 PM	Mains	-	0/h 0/h	4	
Activity (C00000C0) Ufispac Gateway Picocell V1.5	CONNECTION LOST	10/9/2017, 6:35:54 PM	Mains	-	0/h 0/h	4	
Activity (C00000DF) Ufispac Gateway Picocell V1.5	CONNECTION LOST	10/9/2017, 7:31:46 PM	Mains	-	0/h 0/h	4	
Base Station 3526 (C000028F) Ufispac Gateway Picocell V1.5	NEVER CONNECTED	-	-	-	-	1	

Power up your gateway device at this time. Be sure to connect your gateway device to a networked environment (connected to the WLAN port). For how to configure the gateway device, please refer to the gateway device manual: [Picocell_User Manual_GPE810-20170524_V0.1](#).

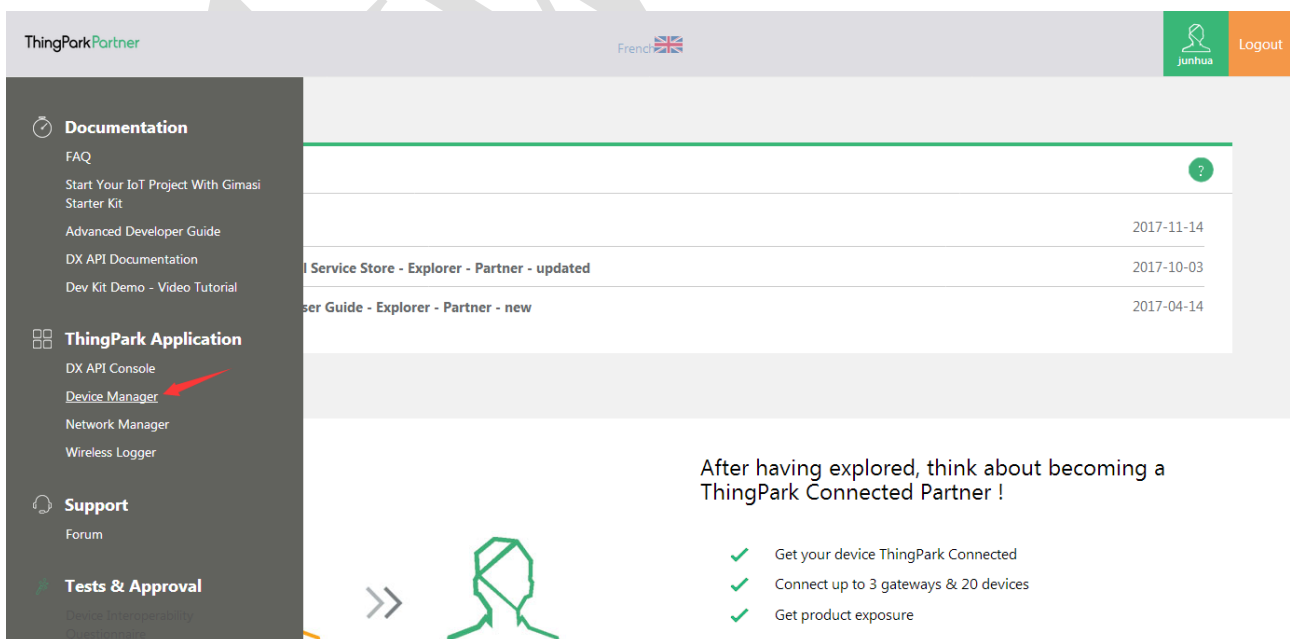
After power-up, your device automatically connects to the Activity network. You only need to refresh your list of devices to see the connection status of the device.



Name (LRR ID) / model	Version	Software restart	Power source	Min. rem. cap. up/down	Average packets up/down	Alarm	Locate
Activity (C000010A) Ufispac Gateway Picocell V1.5	CONNECTION LOST	10/9/2017, 4:56:35 PM	Mains	-	0/h 0/h	4	
Activity (C00000C1) Ufispac Gateway Picocell V1.5	CONNECTION LOST	10/9/2017, 5:48:59 PM	Mains	-	0/h 0/h	4	
Activity (C00000C3) Ufispac Gateway Picocell V1.5	CONNECTION LOST	10/9/2017, 6:07:52 PM	Mains	-	0/h 0/h	4	
Activity (C00002A5) Ufispac Gateway Picocell V1.5	CONNECTION LOST	10/9/2017, 6:24:26 PM	Mains	-	0/h 0/h	4	
Activity (C00000C0) Ufispac Gateway Picocell V1.5	CONNECTION LOST	10/9/2017, 6:35:54 PM	Mains	-	0/h 0/h	4	
Base Station 3526 (C000028F) Ufispac Gateway Picocell V1.5	2.2.14	9/4/2017, 10:46:05 AM	Mains	-	11/h 1/h	1	

2.3 Register your device to Activity

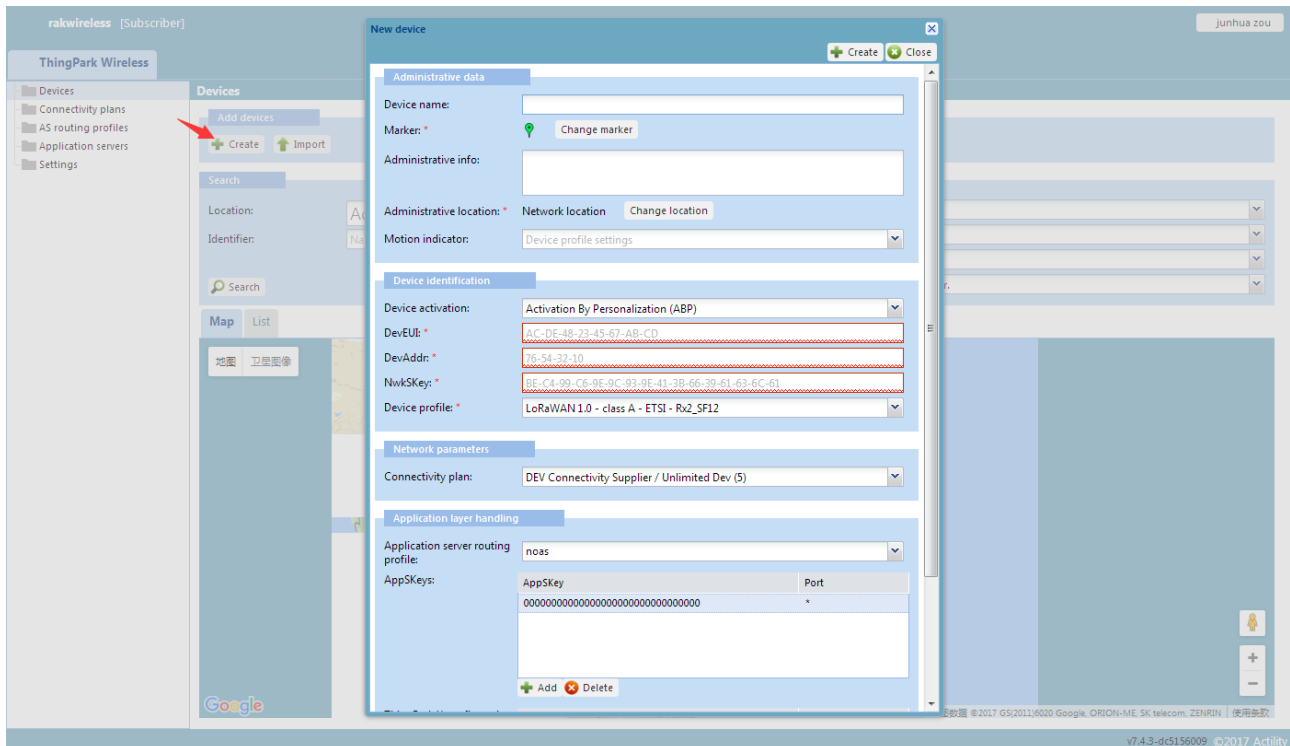
Return to the dashboard interface of your Acceleration account, Click the Device Manager button to enter the device management interface.



After having explored, think about becoming a ThingPark Connected Partner !

- ✓ Get your device ThingPark Connected
- ✓ Connect up to 3 gateways & 20 devices
- ✓ Get product exposure

After entering the device management interface, click the Create button to create the device.



The screenshot shows the 'New device' form in the ThingPark Wireless interface. The form is divided into several sections: Administrative data, Device identification, Network parameters, and Application layer handling. A red arrow points to the 'Create' button in the 'Devices' sidebar.

Administrative data

- Device name: [Text input field]
- Marker: [Dropdown menu with 'Change marker' button]
- Administrative info: [Text input field]
- Administrative location: [Dropdown menu with 'Network location' and 'Change location' button]
- Motion indicator: [Dropdown menu with 'Device profile settings' option]

Device identification

- Device activation: [Dropdown menu with 'Activation By Personalization (ABP)' option]
- DevEUI: [Text input field with value 'AC-DE-48-23-45-67-AB-CD']
- DevAddr: [Text input field with value '76-54-32-10']
- NwkSKKey: [Text input field with value 'BE-C4-99-C6-9E-9C-93-9E-41-3B-66-39-61-63-6C-61']
- Device profile: [Dropdown menu with 'LoRaWAN 1.0 - class A - ETSI - Rx2_SF12' option]

Network parameters

- Connectivity plan: [Dropdown menu with 'DEV Connectivity Supplier / Unlimited Dev (5)' option]

Application layer handling

- Application server routing profile: [Dropdown menu with 'noas' option]
- AppSKKey: [Text input field with value '00000000000000000000000000000000']

The parameters of these devices, you can see the following introduction:

Device name: This is the device name ,you can set any name. Recommended setting: Device model_The last three EUIs. Eg: [RAK811_BreakBoard_0000AA](#).

Marker: Default setting.

Administrative info: Do not set.

Administrative location: Default setting.

Motion indicator: Do not set.

Device activation: Set to OTAA or ABP mode. Take OTAA for example.

DecEUI: The DevEUI is a unique device 64-bits identifier. This parameter can be set arbitrarily.(Please remember these parameters, the back of the device will be used)

AppEUI: The AppEUI/joinEUI is the identifier of the joinServer, it is provided by the operator. This parameter can be set arbitrarily.(Please remember these parameters, the back of the device will be used)

AppKey: The AppKey authenticates the joinRequest, it is generated randomly by the device manufacturer. This parameter can be set arbitrarily.(Please remember these parameters, the back of the device will be used)

Device profile: Select [LoRaWAN 1.0.2 revA - class A - ETSI - Rx2_SF12](#) Settings.

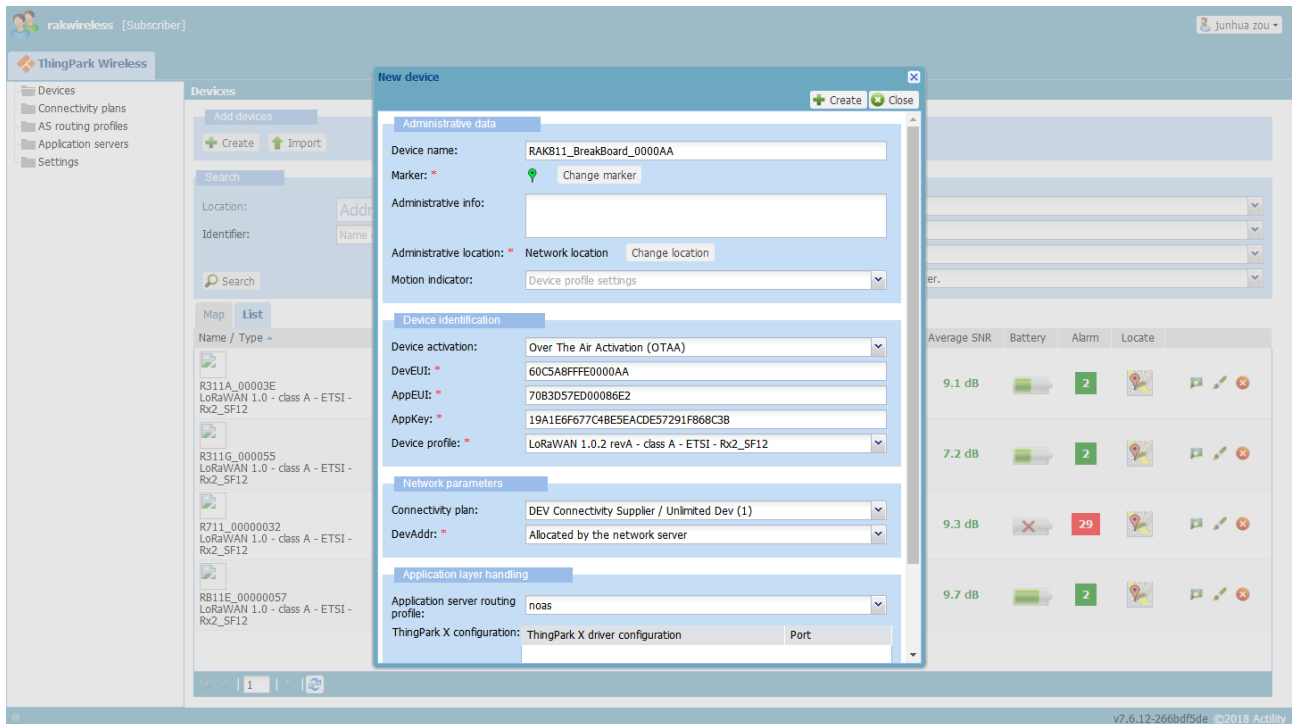
Connectivity plan: Select [DEV Connectivity Supplier / Unlimited Dev \(?\)](#) Settings.

DevAddr:Select [Allocated by the network server](#) Settings.

Application server routing profile: Select [noas](#) Setting, there will be settings later.

ThingPark X configuration: Do not set.

Finally, the information you set must be as shown below:



New device

Administrative data

Device name: RAK811_BreakBoard_0000AA
 Marker: Change marker
 Administrative info:
 Administrative location: Network location Change location
 Motion indicator: Device profile settings

Device identification

Device activation: Over The Air Activation (OTAA)
 DevEUI: 60CSA8FFFE0000AA
 AppEUI: 7083D57ED00086E2
 AppKey: 19A1E6F677C4BE5EACDE57291F868C38
 Device profile: LoRaWAN 1.0.2 revA - class A - ETSI - Rx2_SF12

Network parameters

Connectivity plan: DEV Connectivity Supplier / Unlimited Dev (1)
 DevAddr: Allocated by the network server

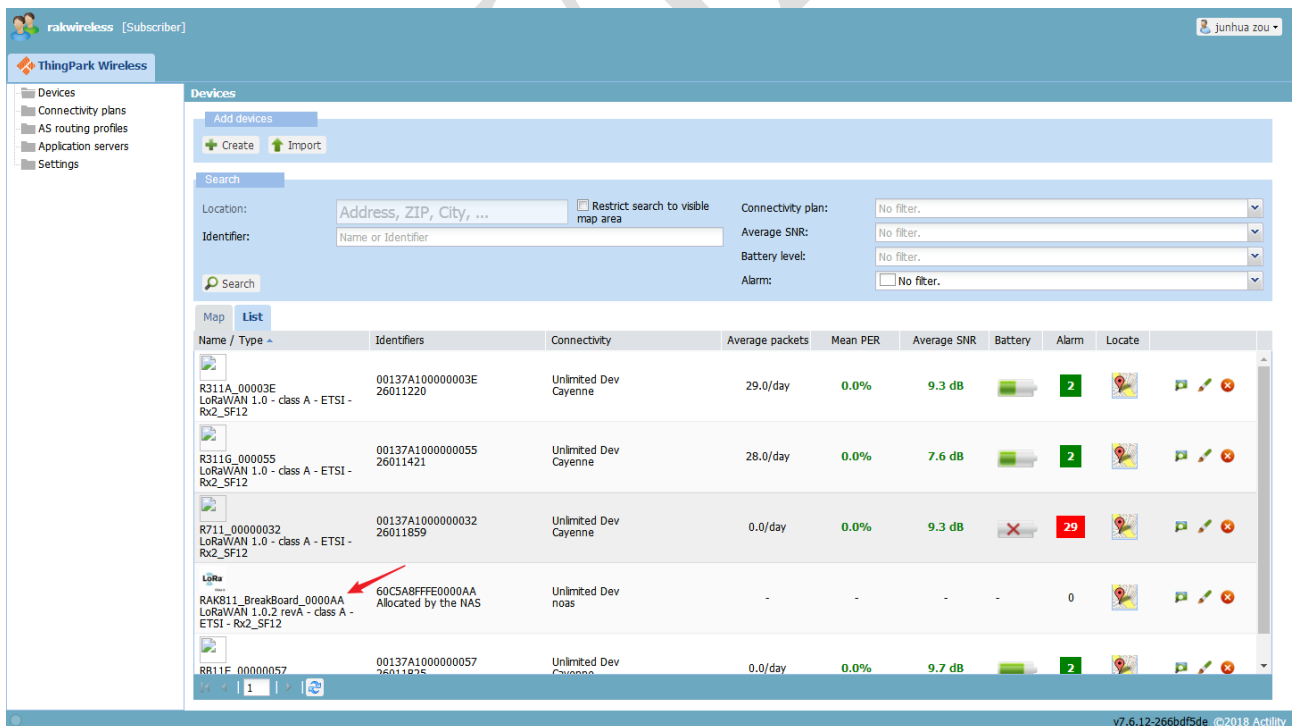
Application layer handling

Application server routing profile: noas
 ThingPark X configuration: ThingPark X driver configuration Port

Devices List

Name / Type	Identifiers	Connectivity	Average packets	Mean PER	Average SNR	Battery	Alarm	Locate
R311A_00003E LoRaWAN 1.0 - class A - ETSI - Rx2_SF12	00137A100000003E 26011220	Unlimited Dev Cayenne	29.0/day	0.0%	9.3 dB		2	
R311G_000055 LoRaWAN 1.0 - class A - ETSI - Rx2_SF12	00137A1000000055 26011421	Unlimited Dev Cayenne	28.0/day	0.0%	7.6 dB		2	
R711_00000032 LoRaWAN 1.0 - class A - ETSI - Rx2_SF12	00137A1000000032 26011859	Unlimited Dev Cayenne	0.0/day	0.0%	9.3 dB		29	
RAK811_BreakBoard_0000AA LoRaWAN 1.0.2 revA - class A - ETSI - Rx2_SF12	60CSA8FFFE0000AA Allocated by the NAS	Unlimited Dev noas	-	-	-	-	0	
RB11E_00000057 LoRaWAN 1.0 - class A - ETSI - Rx2_SF12	00137A1000000057 26011875	Unlimited Dev Cayenne	0.0/day	0.0%	9.7 dB		2	

After setting the parameters, click the “Create” button on the top right to create the device, After the creation is successful, you will see the device you created in your device list, if not, please refresh your list.



Devices

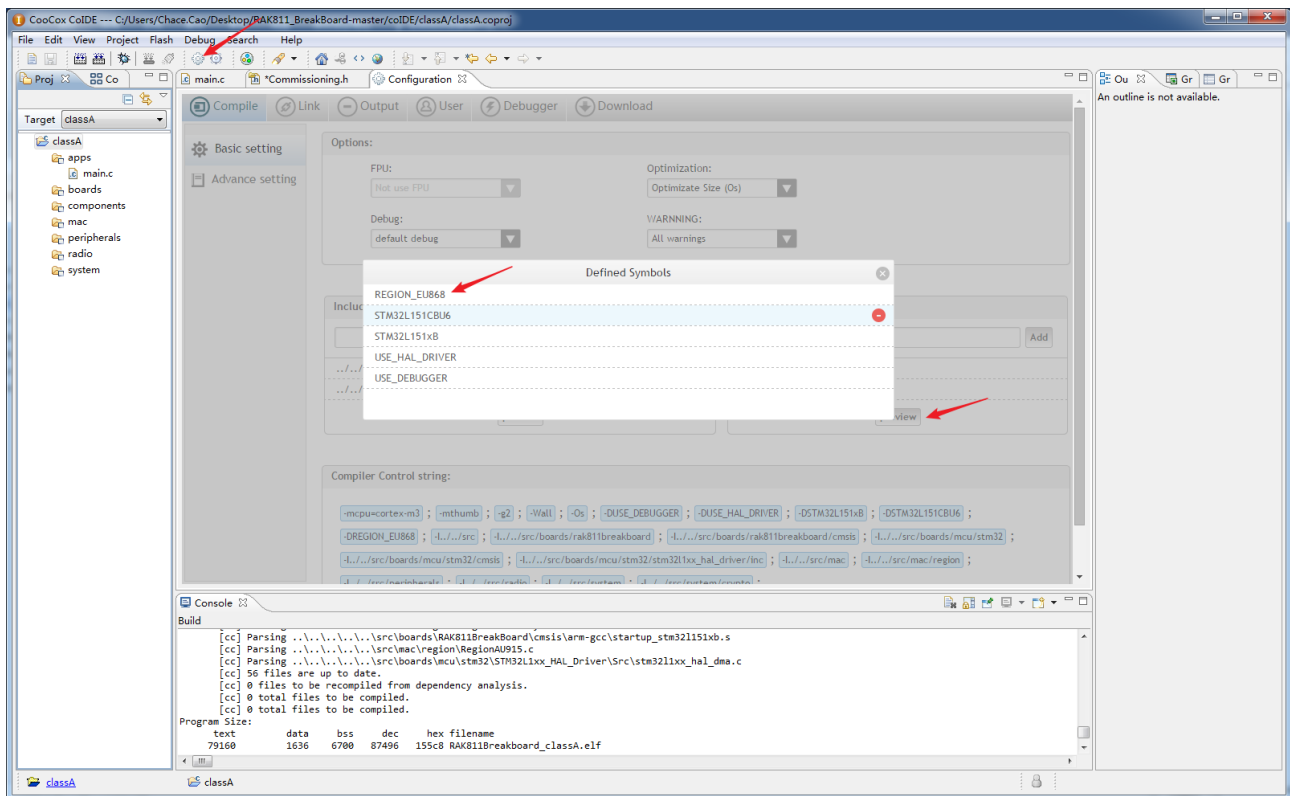
Search

Location: Address, ZIP, City, ... ☐ Restrict search to visible map area
 Identifier: Name or Identifier
 Connectivity plan: No filter.
 Average SNR: No filter.
 Battery level: No filter.
 Alarm: ☐ No filter.

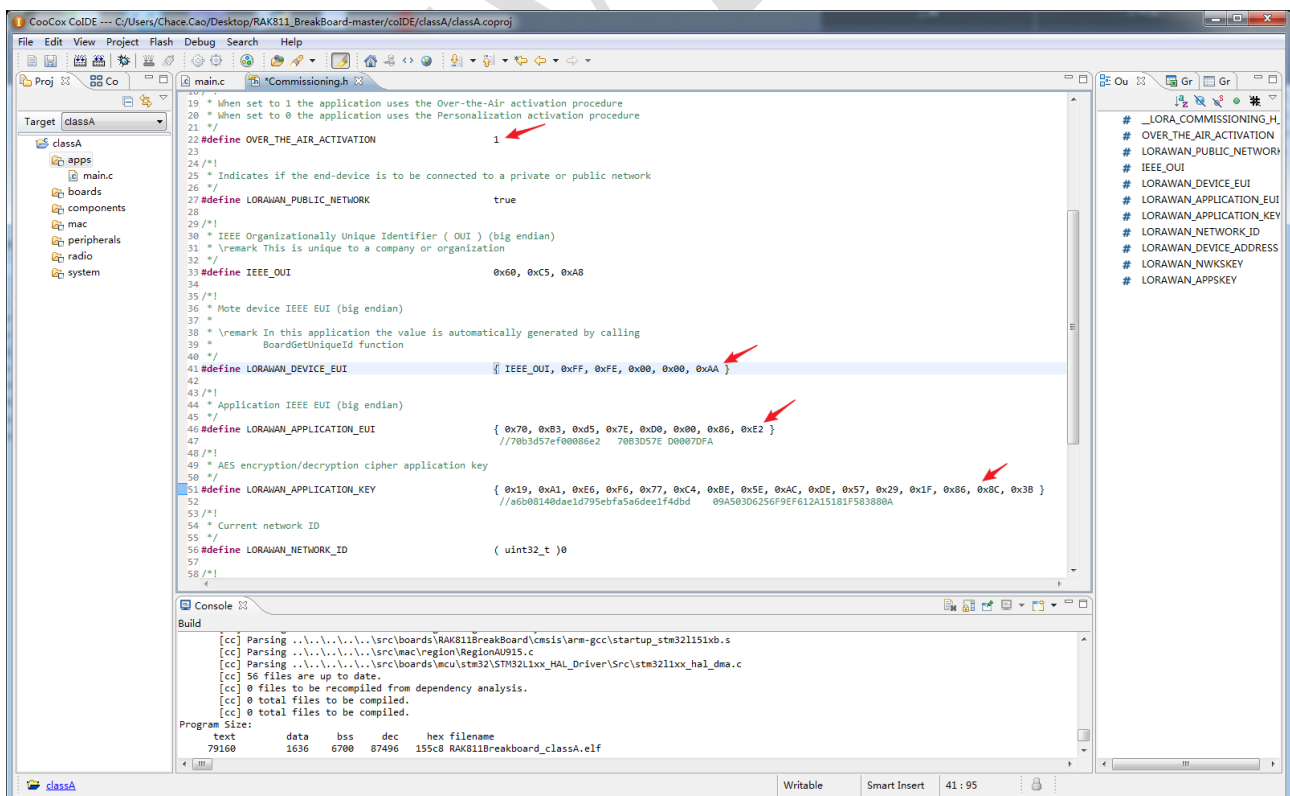
Map List

Name / Type	Identifiers	Connectivity	Average packets	Mean PER	Average SNR	Battery	Alarm	Locate
R311A_00003E LoRaWAN 1.0 - class A - ETSI - Rx2_SF12	00137A100000003E 26011220	Unlimited Dev Cayenne	29.0/day	0.0%	9.3 dB		2	
R311G_000055 LoRaWAN 1.0 - class A - ETSI - Rx2_SF12	00137A1000000055 26011421	Unlimited Dev Cayenne	28.0/day	0.0%	7.6 dB		2	
R711_00000032 LoRaWAN 1.0 - class A - ETSI - Rx2_SF12	00137A1000000032 26011859	Unlimited Dev Cayenne	0.0/day	0.0%	9.3 dB		29	
RAK811_BreakBoard_0000AA LoRaWAN 1.0.2 revA - class A - ETSI - Rx2_SF12	60CSA8FFFE0000AA Allocated by the NAS	Unlimited Dev noas	-	-	-	-	0	
RB11E_00000057 LoRaWAN 1.0 - class A - ETSI - Rx2_SF12	00137A1000000057 26011875	Unlimited Dev Cayenne	0.0/day	0.0%	9.7 dB		2	

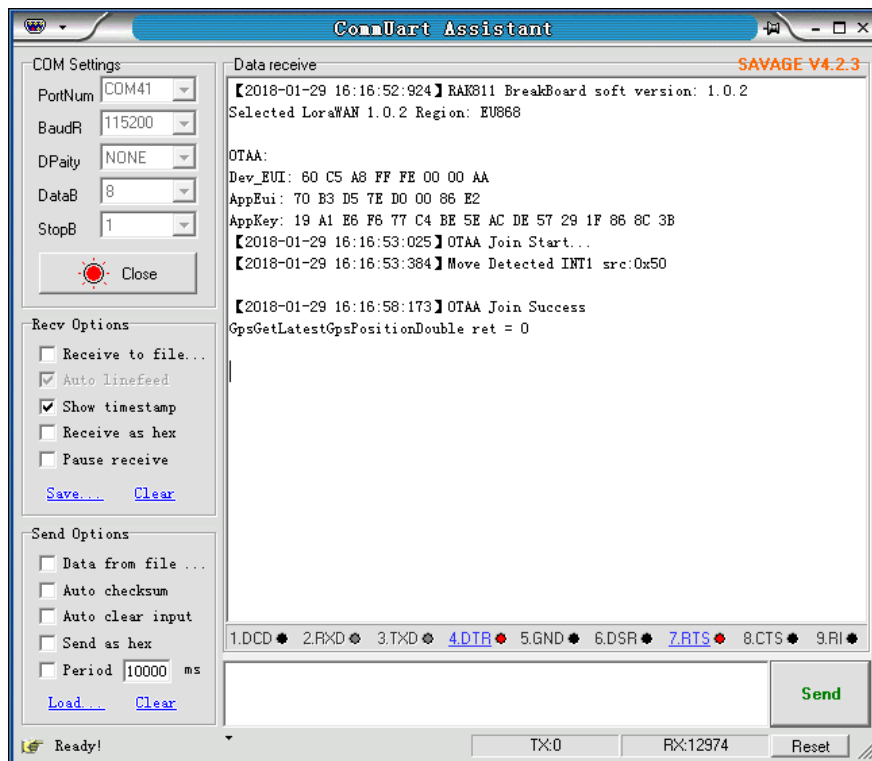
After registering the device in the Activity interface, then you need to modify the parameters of the device. Open the RAK811_BreakBoard open source project. Modify the region.



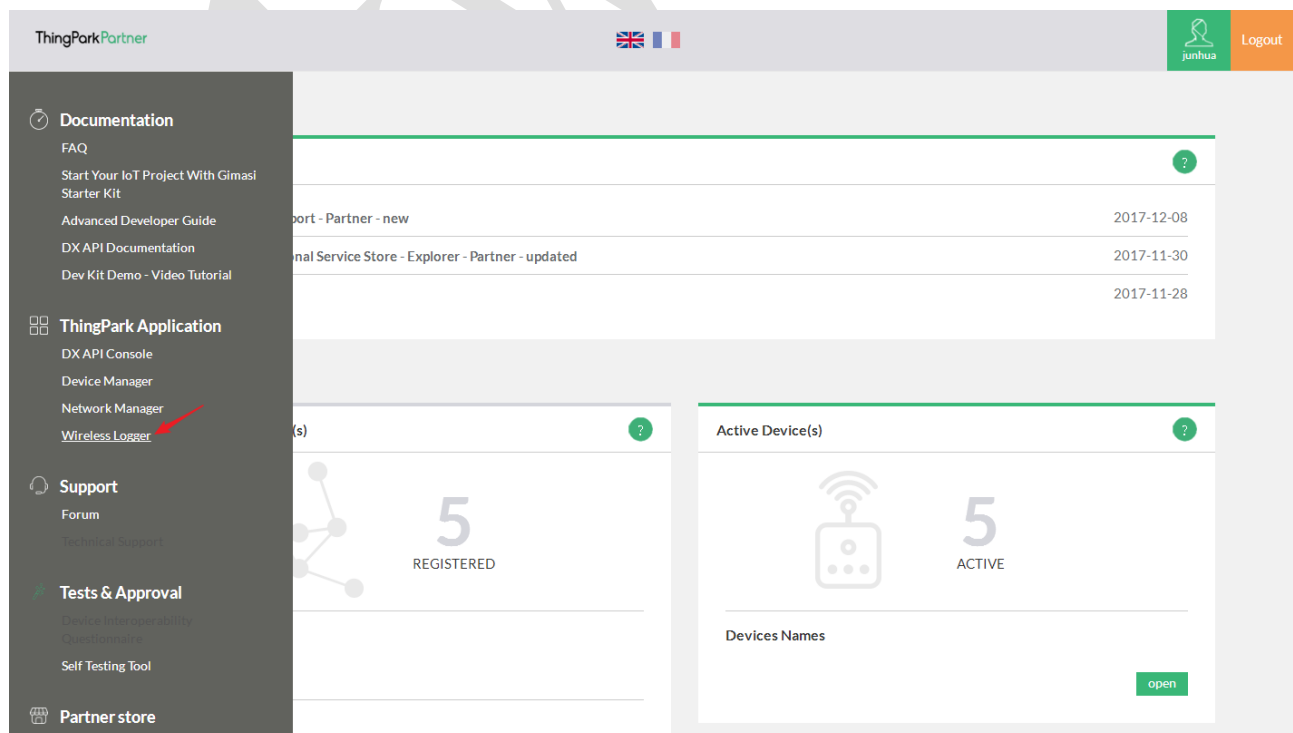
Then modify the parameters, modify the join method for OTAA, and modify the OTAA method is required for three parameters Device EUI, App EUI and App key(The three parameters are the three parameters set before). At last compile the download process.



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 your Activity dashboard, click "Wireless Logger" and you will see the data sent to the gateway by the device.(If you do not see, please refresh the list)



WIRELESS-LOGGER Last Update: 2018-01-29 16:25:54

Dashboard [100001062]

DevAddr Filtering: Clear DevEUI Filtering: Clear LRR Id Filtering: Clear LRC Id Filtering: Clear AS ID Filtering: Clear Logout

From: To:

Decoder:

Auto Reload: Expand All: ☐ Refresh Export size: 100 Export Map

Last packets

		UTC Timestamp	Local Timestamp	DevAddr	DevEUI	FPort	FCnt	FCnt	RSI	SNR	ESP	SF/DR	SubBand	Channel	LRC Id	LRR Id
data	2018-01-29 08:25:33...	2018-01-29 16:25:33...	04DAEBF7	60CSA8FFFE0000AA	4	11		-59.0	9.25	-59.48	SF7	G0	LC8	00000127	C000028F	
mac	2018-01-29 08:25:14...	2018-01-29 16:25:14...	04DAEBF7	60CSA8FFFE0000AA	3	10		-57.0	10.75	-57.35	SF7	G0	LC3	00000127	C000028F	
mac	2018-01-29 08:24:35...	2018-01-29 16:24:35...	04DAEBF7	60CSA8FFFE0000AA	0		4				SF7	G0	LC3	00000127	C000028F	
data	2018-01-29 08:24:34...	2018-01-29 16:24:34...	04DAEBF7	60CSA8FFFE0000AA	4	9		-49.0	9.25	-49.48	SF7	G0	LC1	00000127	C000028F	
data	2018-01-29 08:24:14...	2018-01-29 16:24:14...	04DAEBF7	60CSA8FFFE0000AA	3	8		-51.0	9.75	-51.43	SF7	G0	LC1	00000127	C000028F	
data	2018-01-29 08:23:34...	2018-01-29 16:23:34...	04DAEBF7	60CSA8FFFE0000AA	4	7		-49.0	9.5	-49.46	SF7	G0	LC1	00000127	C000028F	
data	2018-01-29 08:23:14...	2018-01-29 16:23:14...	04DAEBF7	60CSA8FFFE0000AA	3	6		-54.0	9.0	-54.51	SF7	G0	LC3	00000127	C000028F	
mac	2018-01-29 08:22:51...	2018-01-29 16:22:51...	04DAEBF7	60CSA8FFFE0000AA	4	5		-59.0	9.0	-59.51	SF7	G0	LC3	00000127	C000028F	
mac	2018-01-29 08:22:33...	2018-01-29 16:22:33...	04DAEBF7	60CSA8FFFE0000AA	0		3				SF9	G0	RX2	00000127	C000028F	
data	2018-01-29 08:22:31...	2018-01-29 16:22:31...	04DAEBF7	60CSA8FFFE0000AA	4	4		-45.0	9.25	-45.48	SF12	G0	LC4	00000127	C000028F	
mac	2018-01-29 08:20:24...	2018-01-29 16:20:24...	04DAEBF7	60CSA8FFFE0000AA	3	3		-55.0	6.25	-55.92	SF12	G0	LC3	00000127	C000028F	
mac	2018-01-29 08:19:49...	2018-01-29 16:19:49...	04DAEBF7	60CSA8FFFE0000AA	0		2				SF9	G0	RX2	00000127	C000028F	
mac	2018-01-29 08:19:47...	2018-01-29 16:19:47...	04DAEBF7	60CSA8FFFE0000AA	3	2		-40.0	9.25	-40.48	SF12	G0	LC5	00000127	C000028F	
mac	2018-01-29 08:17:41...	2018-01-29 16:17:41...	04DAEBF7	60CSA8FFFE0000AA	0		1				SF9	G0	RX2	00000127	C000028F	
mac	2018-01-29 08:17:39...	2018-01-29 16:17:39...	04DAEBF7	60CSA8FFFE0000AA	4	1		-47.0	9.25	-47.48	SF12	G0	LC1	00000127	C000028F	
mac	2018-01-29 08:17:20...	2018-01-29 16:17:20...	04DAEBF7	60CSA8FFFE0000AA	0		0				SF9	G0	RX2	00000127	C000028F	

Page 1

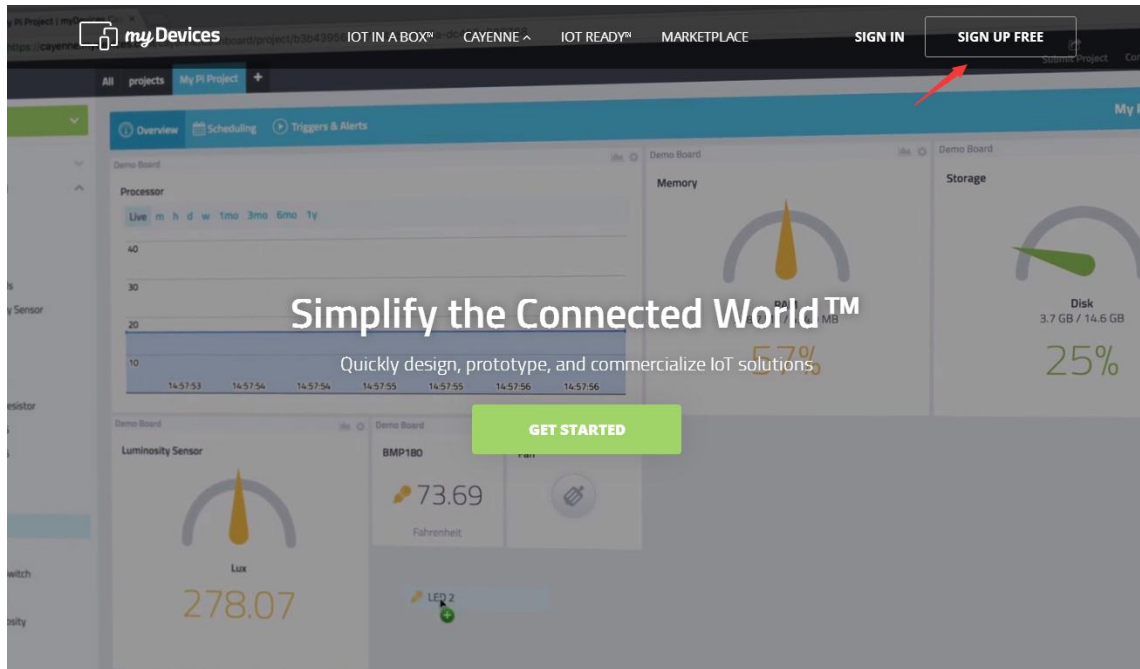
V5.2.3 Copyright Actility 2017

2.4 Register myDevices

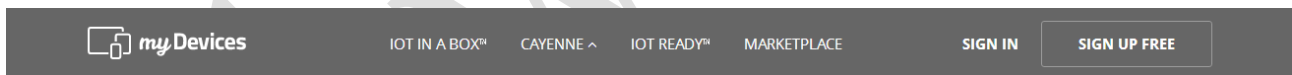
myDevices is an Internet of Things solutions company. They created Cayenne – the world's first drag-and drop IoT project builder. Cayenne enables engineers, makers, network operators and system integrators to quickly and easily develop and deploy IoT solutions across a wide variety of verticals.

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.



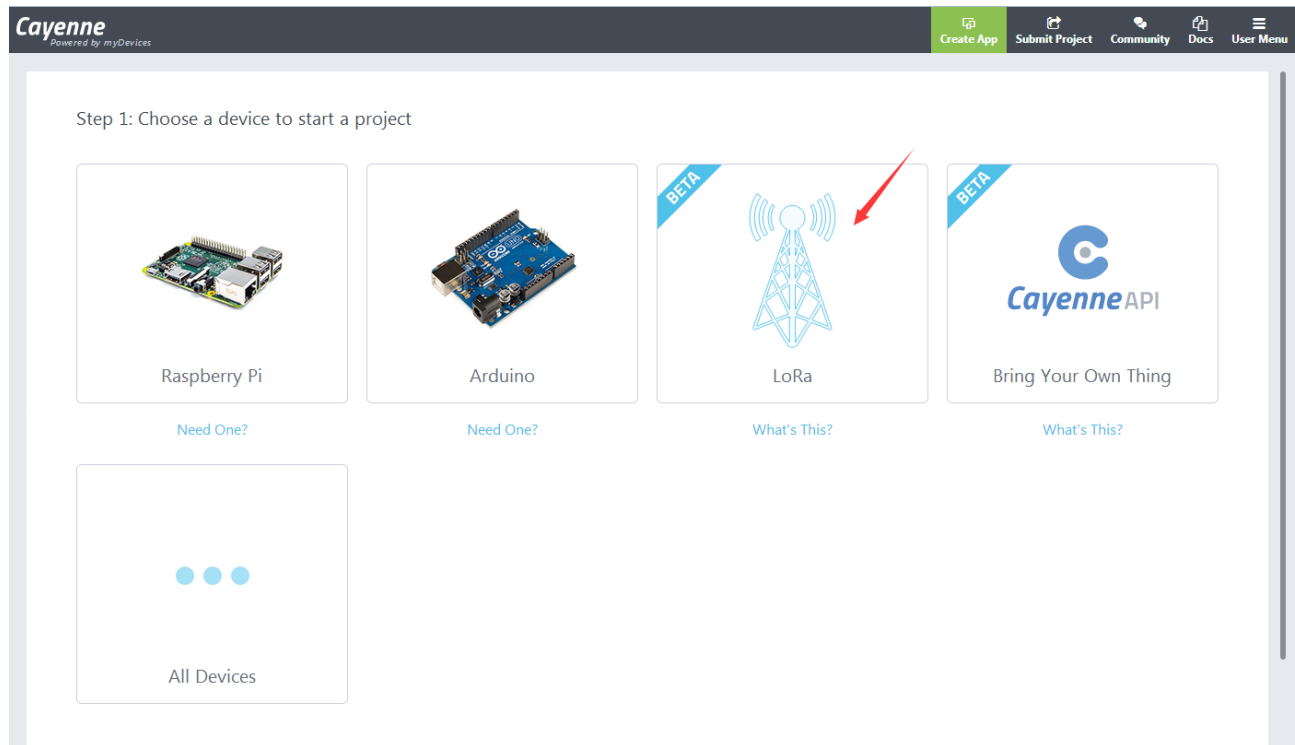
Sign Up for Cayenne

☐ I agree to the [myDevices Cayenne terms](#).

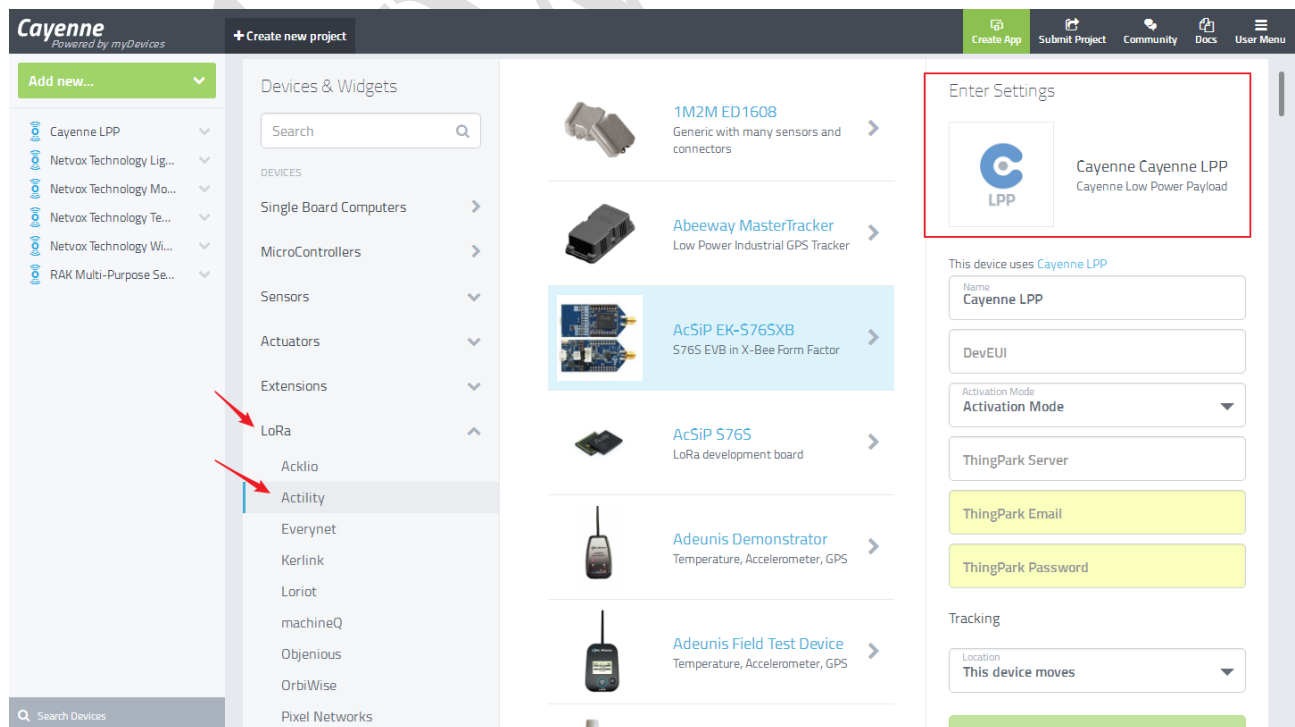
GET STARTED FREE

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 Actility. 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:

Name: You can set the name as you like.

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

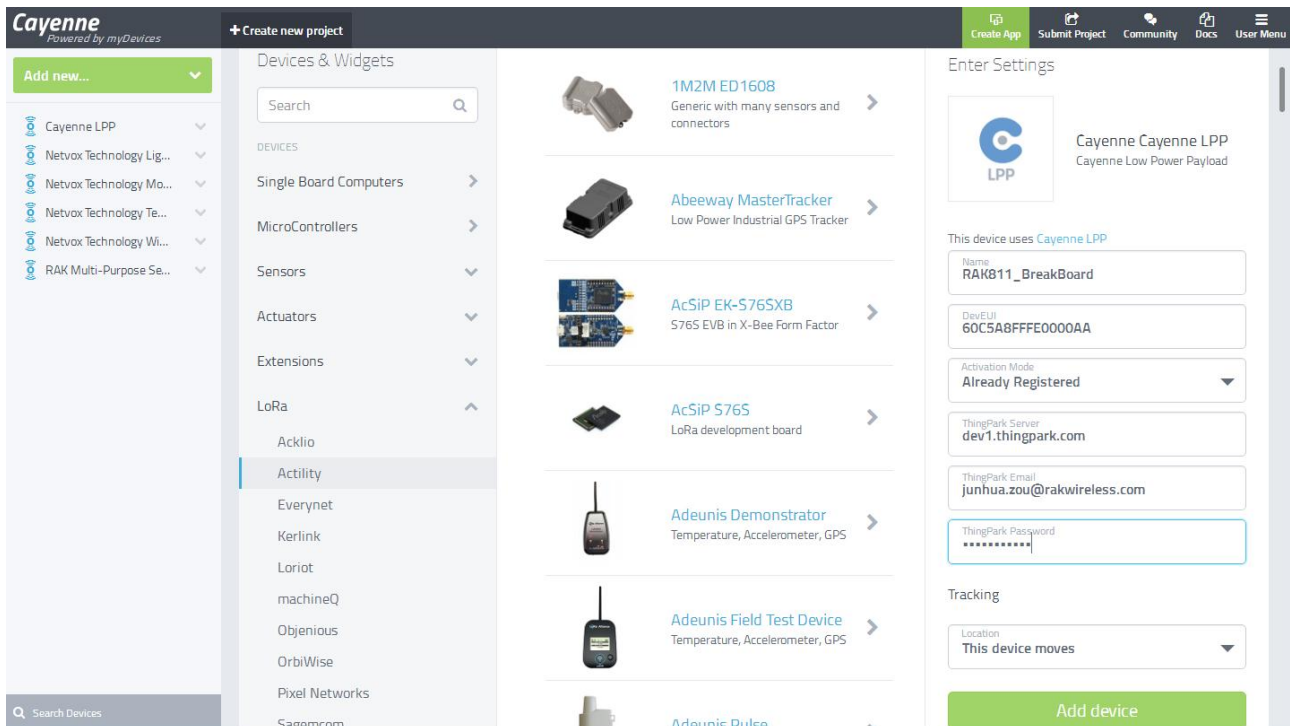
Activation Mode: The Default setting Already Registered.

ThingPark Sever: Set to dev1.thingpark.com.

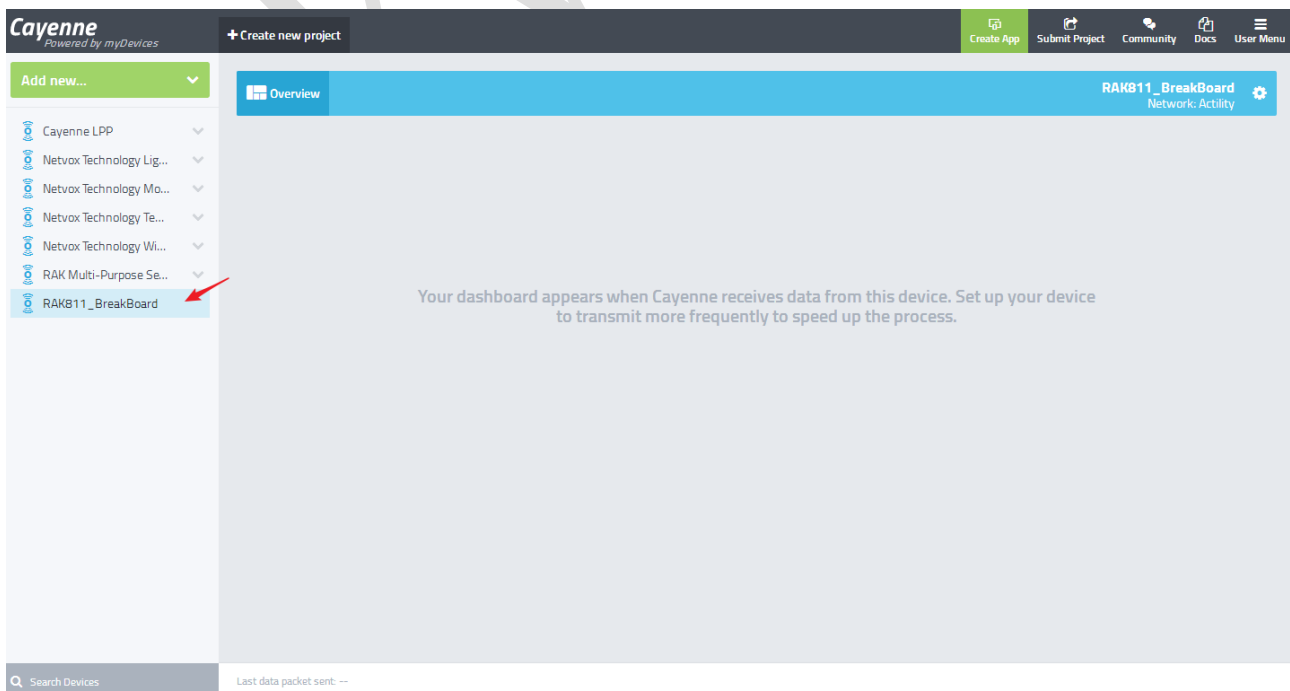
ThingPark Email: Your Activity account.

ThingPark Password: Your Activity Password.

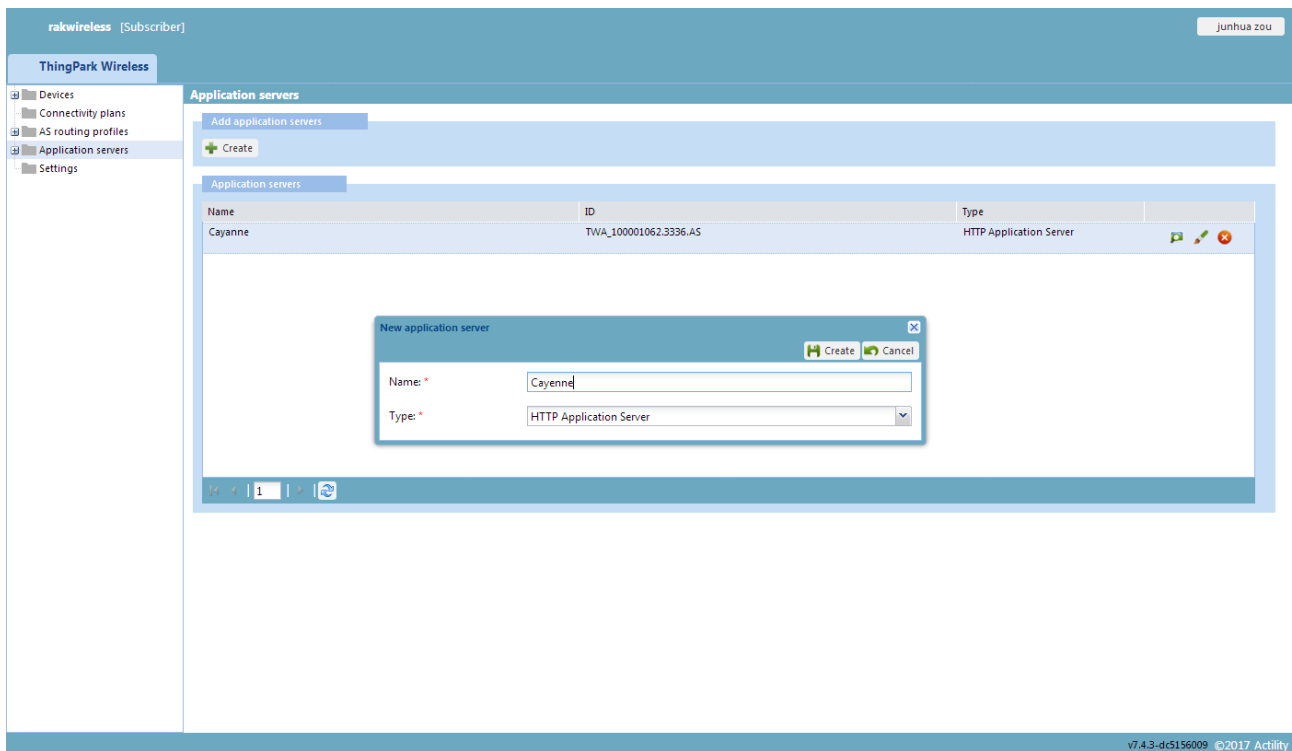
Location: Set according to your equipment.



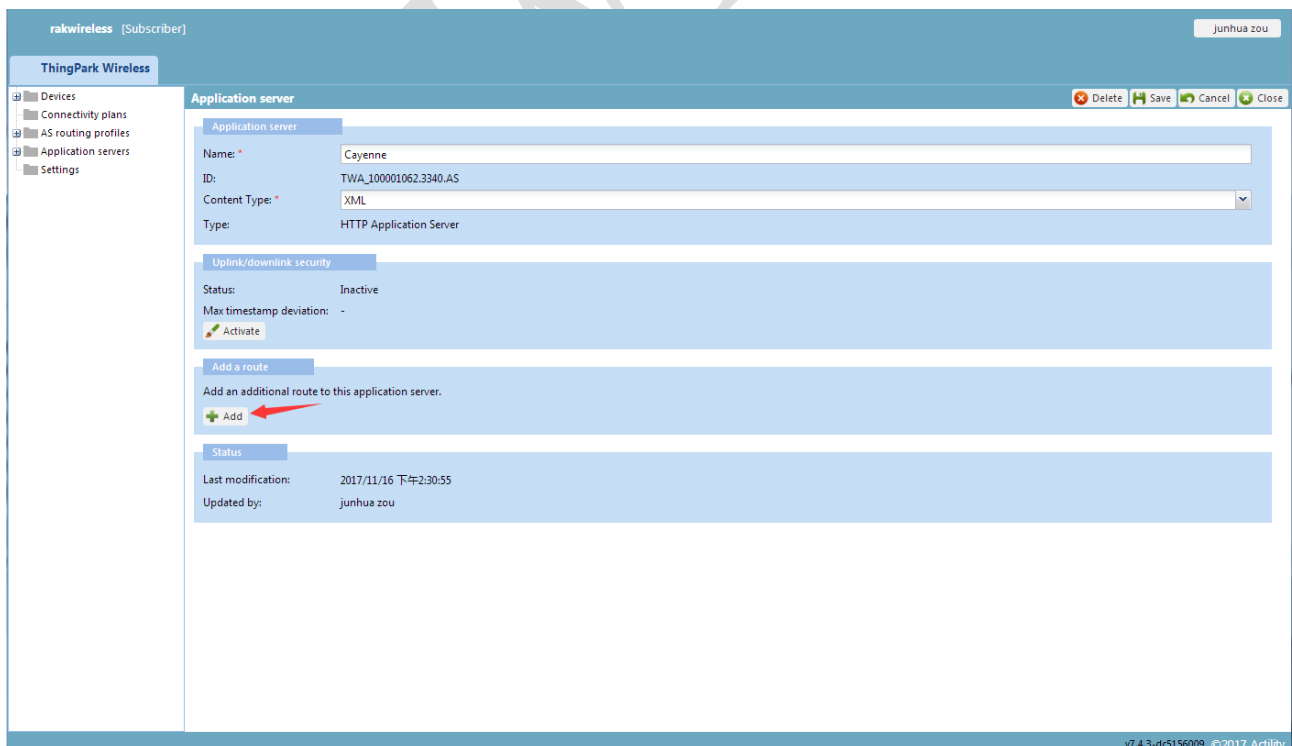
Finally click "Add Device", the device is added successfully. Next you need to set the parameters of the TTN interface.



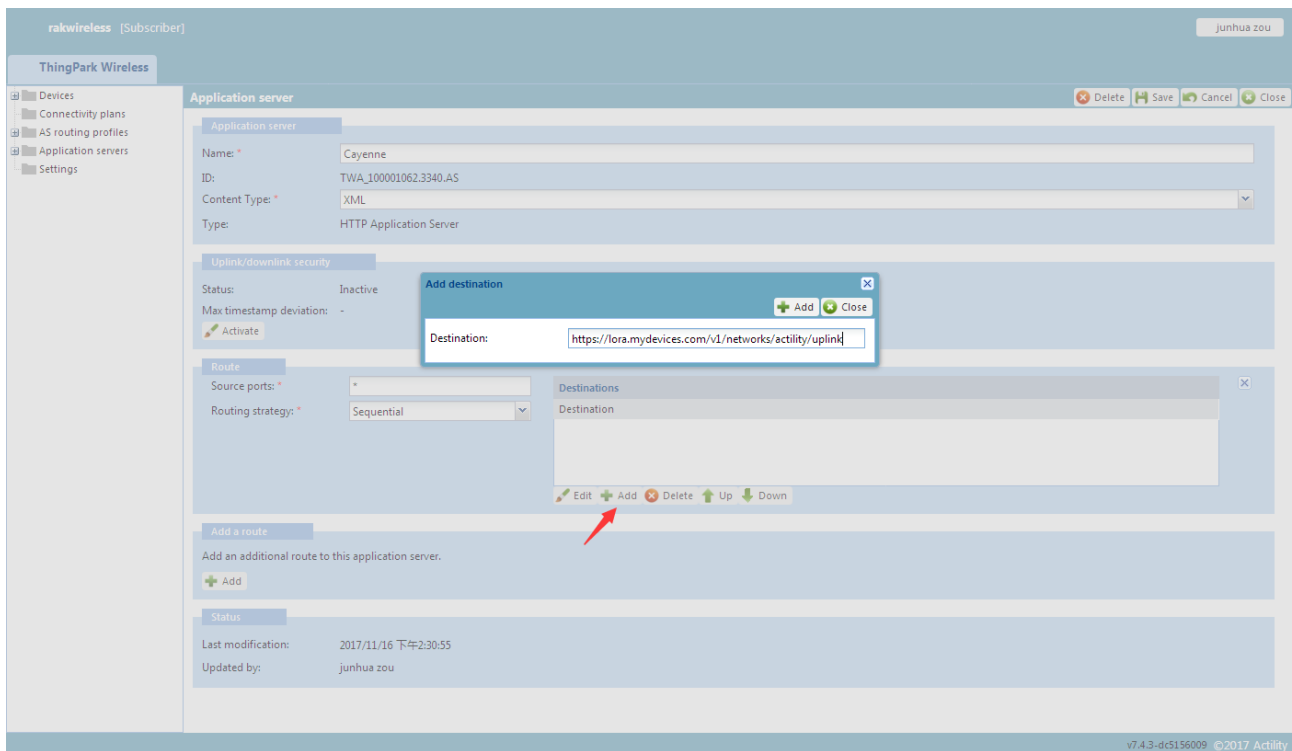
Open your Activity device management interface, Click the “Application servers” button ,then “Create”. In the settings interface, The Name can be filled Cayenne, Type select set to HTTP Application Server. Finally click Create.



Click to create, the interface will jump link settings interface, click “Add a route”-> “Add” button. add the Cayenne server link address

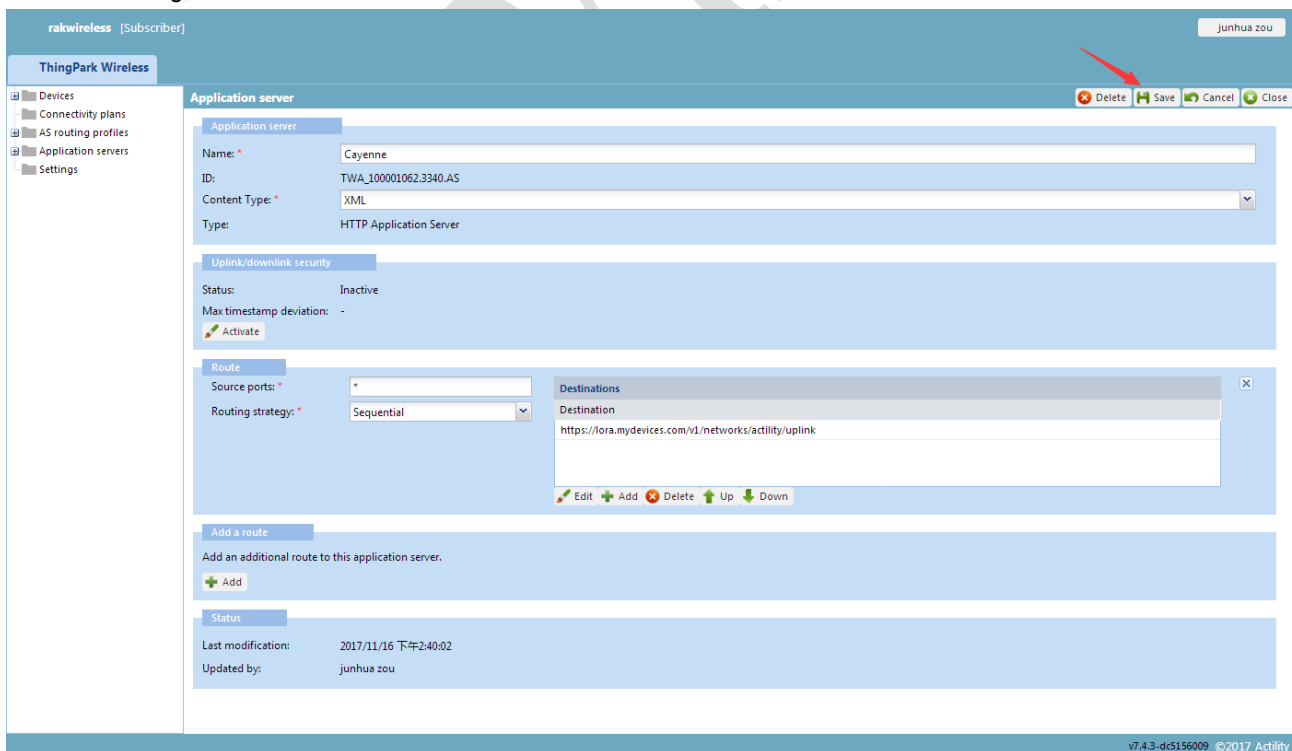


Add Cayenne server address: <https://loramyldevices.com/v1/networks/activity/uplink>. For details, see the Cayenne documentation: <https://mydevices.com/cayenne/docs/loramyl>



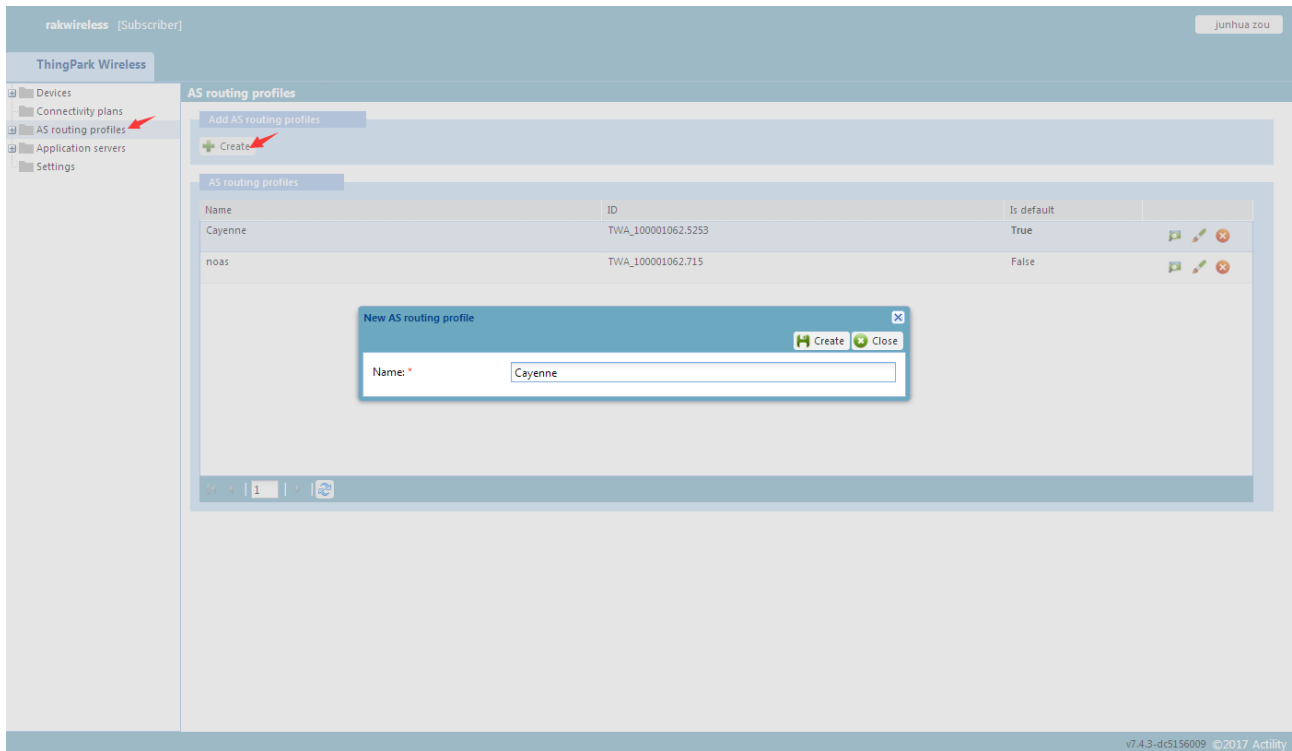
Application server configuration page. The 'Destinations' table is empty, and the 'Add destination' button is highlighted with a red arrow.

After adding, click "Save".

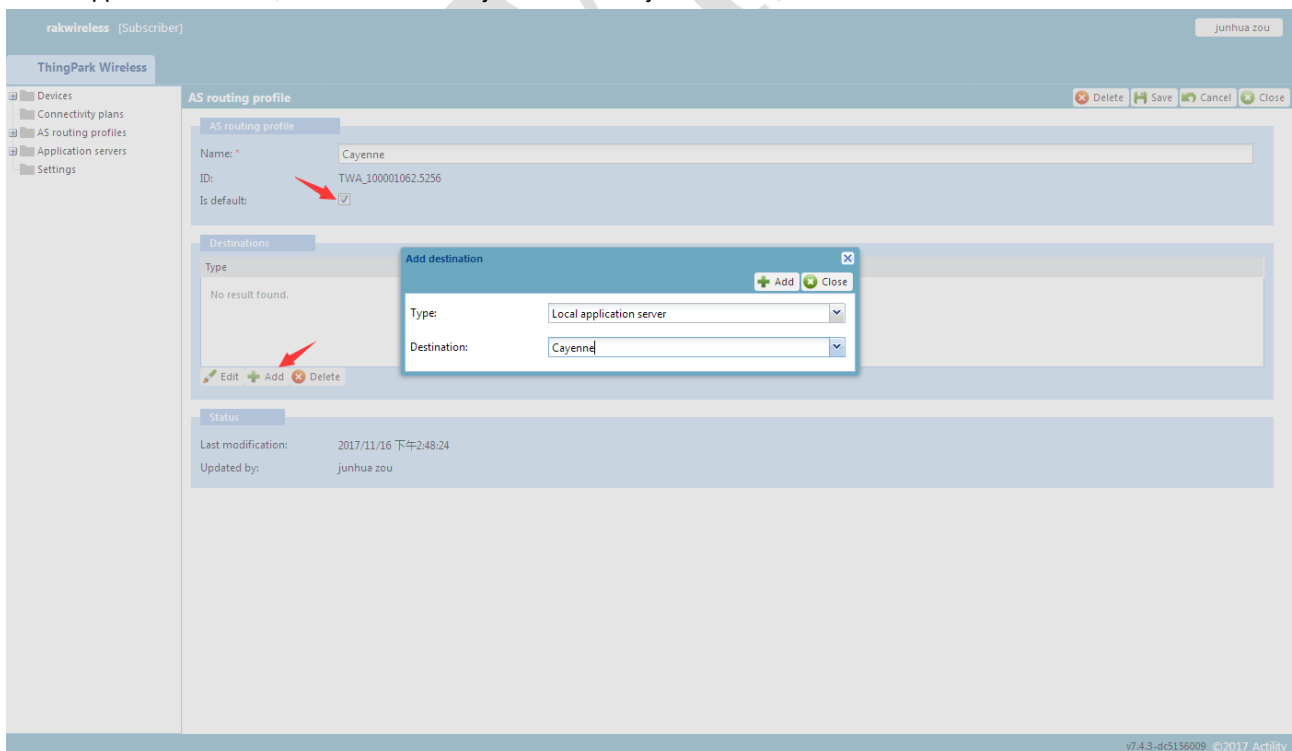


Application server configuration page after saving. The 'Destinations' table now contains one entry with the destination URL 'https://loramyldevices.com/v1/networks/activity/uplink'. The 'Save' button is highlighted with a red arrow.

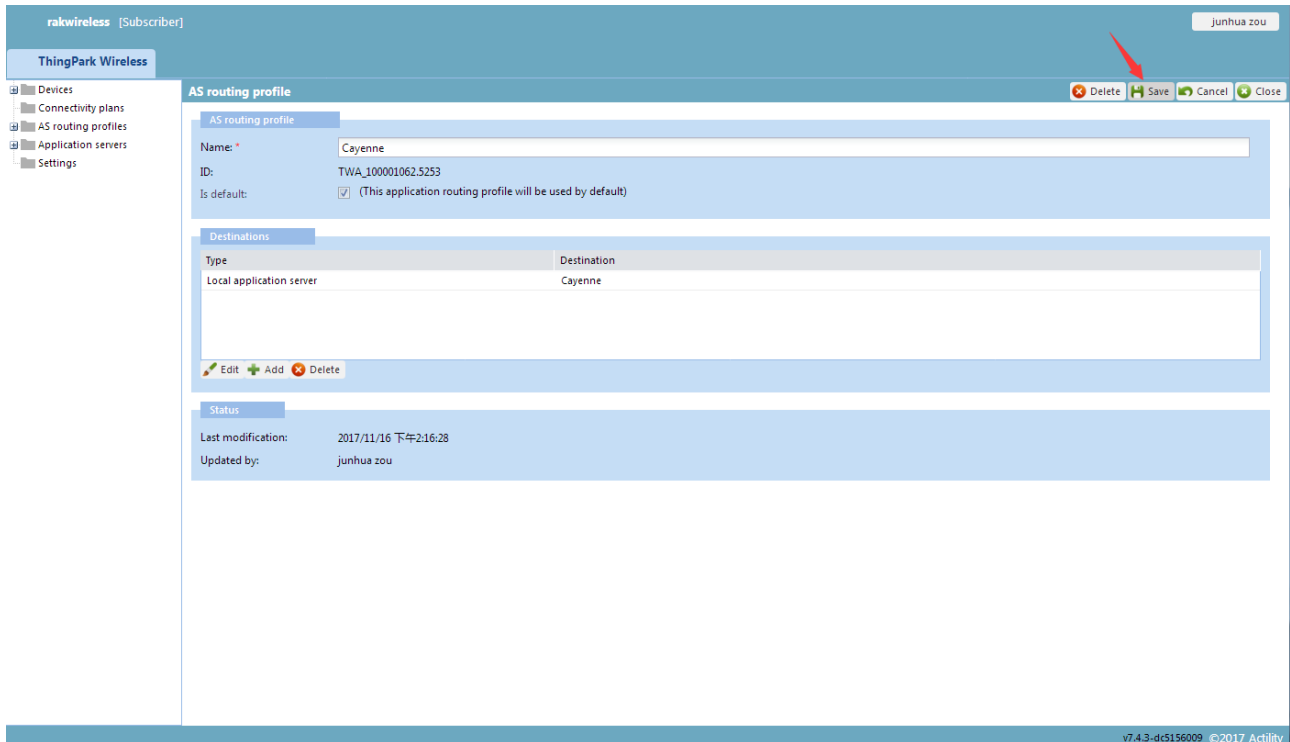
After setting the application server address, also need to set the AS routing profiles. Click “AS routing profiles” button, click “Create” to add. The name can also be set to Cayenne.



In the click to create, the next interface need to check “Is default” option, and then click the “Add” button, Type select “Local application server”, Destination select just created Cayenne.



After adding, click "Save".



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AS routing profile

AS routing profile

Name: * Cayenne

ID: TWA_100001062.5253

Is default: ☒ (This application routing profile will be used by default)

Destinations

Type	Destination
Local application server	Cayenne

Edit Add Delete

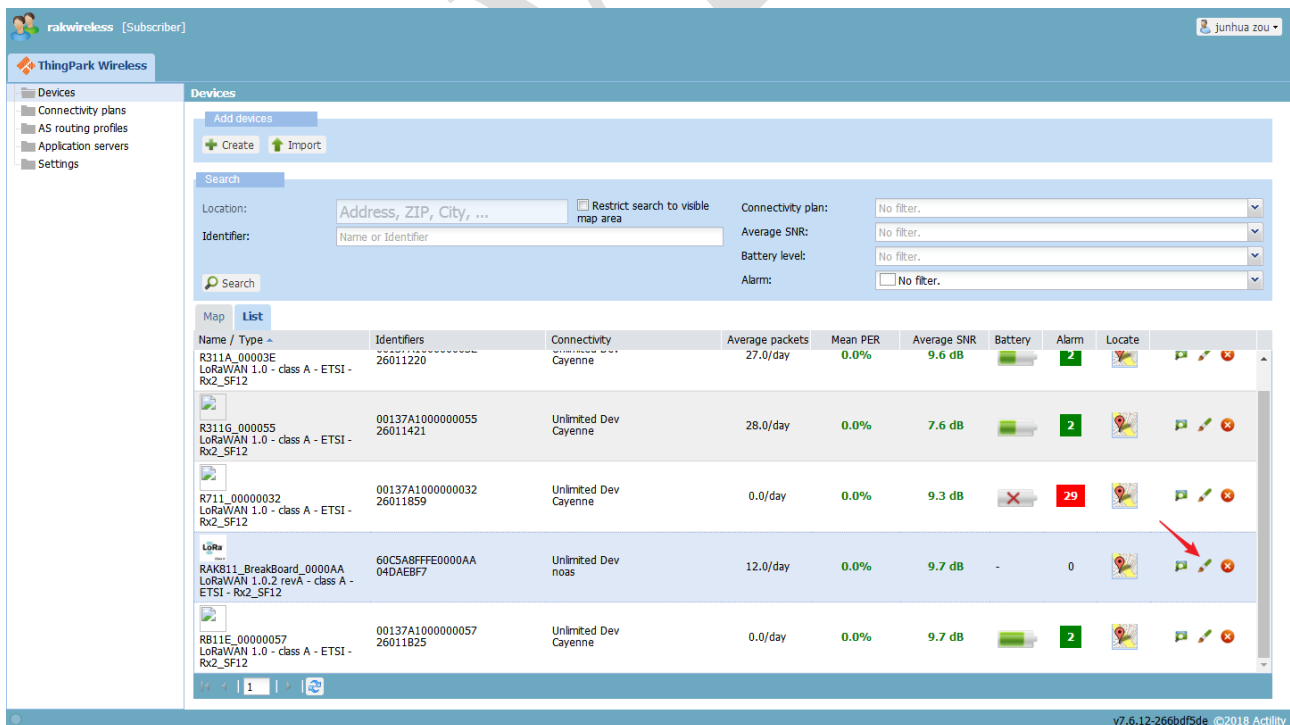
Status

Last modification: 2017/11/16 下午2:16:28

Updated by: junhua zou

v7.4.3-4c5156009 ©2017 Activity

Finally, modify the device Application server routing profile parameters, this parameter is set to default when creating the device, here you need to modify the Cayenne just created. So click the device button and click the "Edit" button.



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Devices

Add devices

Create Import

Search

Location: Address, ZIP, City, ... Restrict search to visible map area

Identifier: Name or Identifier

Search

Connectivity plan: No filter.

Average SNR: No filter.

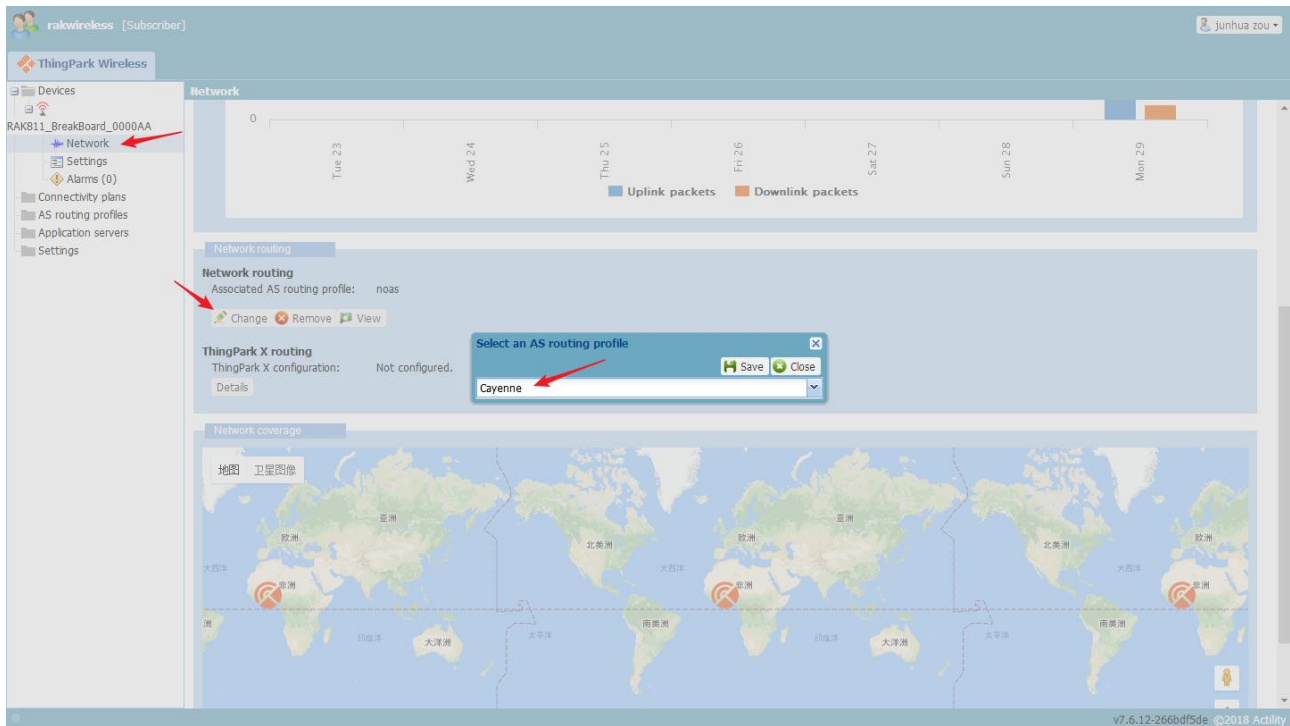
Battery level: No filter.

Alarm: No filter.

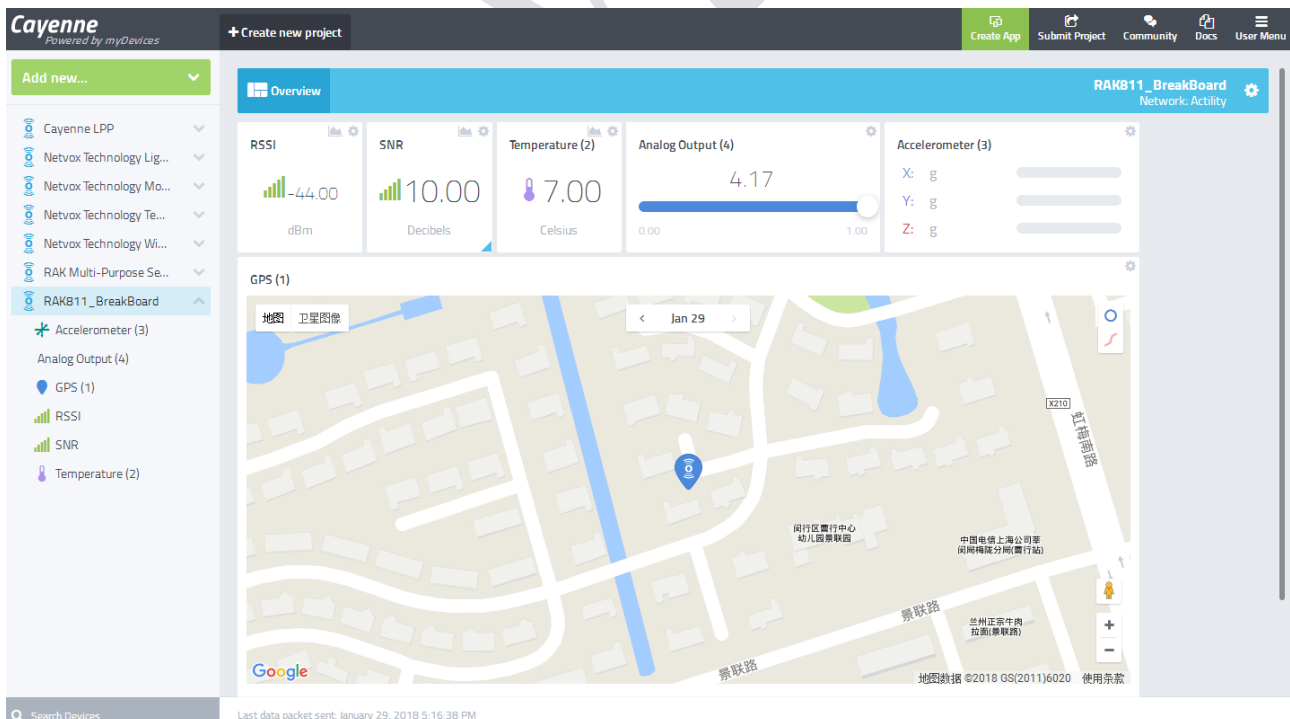
Name / Type	Identifiers	Connectivity	Average packets	Mean PER	Average SNR	Battery	Alarm	Locate
R311A_00003E LoRaWAN 1.0 - class A - ETSI - Rx2_SF12	26011220	Cayenne	27.0/day	0.0%	9.6 dB		2	
R311G_000055 LoRaWAN 1.0 - class A - ETSI - Rx2_SF12	00137A1000000055 26011421	Unlimited Dev Cayenne	28.0/day	0.0%	7.6 dB		2	
R711_00000032 LoRaWAN 1.0 - class A - ETSI - Rx2_SF12	00137A1000000032 26011859	Unlimited Dev Cayenne	0.0/day	0.0%	9.3 dB		29	
RAK811_BreakBoard_0000AA LoRaWAN 1.0.2 revA - class A - ETSI - Rx2_SF12	60C5A8FFFE0000AA 04DAEBF7	Unlimited Dev noas	12.0/day	0.0%	9.7 dB		0	
RB11E_00000057 LoRaWAN 1.0 - class A - ETSI - Rx2_SF12	00137A1000000057 26011825	Unlimited Dev Cayenne	0.0/day	0.0%	9.7 dB		2	

v7.6.12-266bdf5de ©2018 Activity

To the device settings interface, click on the left open the device settings card. select the “Network” button to click. select the Network routing click, and then click the Change button, select Cayenne, save. This completes all settings of Activity.



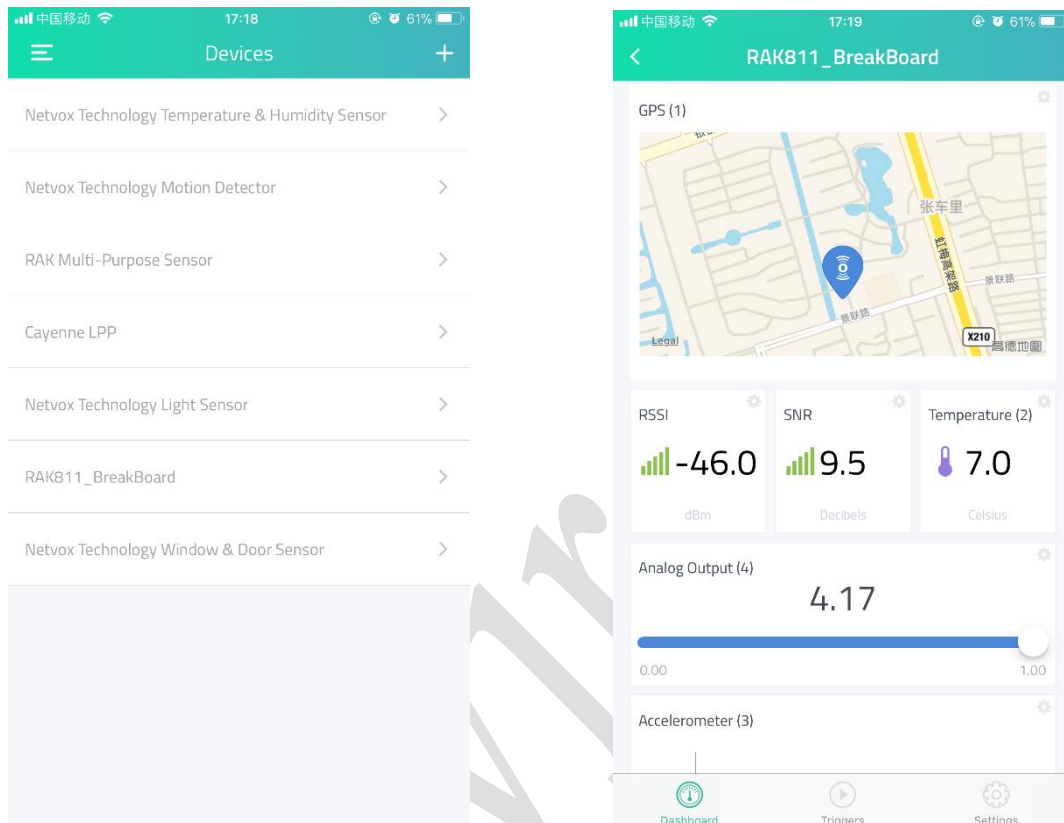
The Activity Cayenne is set up, After waiting for the device to be positioned, you will see in the Cayenne interface as shown below:



(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	2018-01-29	First release	Chace

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