

## **How to setup location system with TTN**

V1.2

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## Introduction

This document introduces how to setup a location system with RUICTEC platform and TTN network server. You can select the nearest TTN server to reduce the delay.

### 1. Login as administrator

Firstly, need to login RUICTEC platform as administrator.

The access address is: <https://location.rctiot.com>

Before login, you need to register with a register code which will be sent by us after you purchase the devices. Under this administrator account, you can create project for your company, or resell the devices to other companies and create projects for them.

If you have an account already, login directly.

### 2. Create customer

The customer is a company or organization which will use the location system.

Operation path: User Management -> Customers -> Add

Add Information ×

* Name:	<input type="text" value="Please enter clientname"/>
Tel:	<input type="text" value="Please enter telephone"/>
* Email:	<input type="text" value="Please enter email"/> ?
ID:	<input type="text" value="kmm7jwy3"/> ?
Address:	<input type="text" value="Please enter address"/>
Logo setting:	<input type="text" value="Please select and set logo  "/> ?
Project maintain:	<input type="text" value="Please select permission"/> ?
Purchase history:	<input type="text" value="0/1024"/>
Remark:	<input type="text" value="0/64"/>

Name: Company name.

ID: It's a register code which can be used by the company user to register.

Device: Device scheme, such as US915, AS923. Multi types can be selected.

Logo setting: Whether the customer can change the logo.

Access rights: Whether the customer can access the platform. The user can be blocked by setting this parameter as No.

Project maintain: Whether the user can manage the project, such as create building, floor, map. If set as No, the company user will not see the interfaces, the project can only be managed by administrator.

Here we create AB company for demo, and after finished the register code will be sent to the mailbox, anybody from the company can use the code to register.

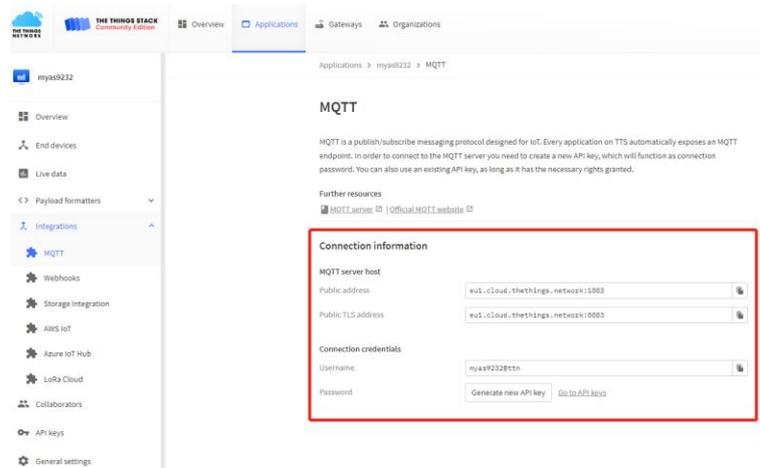
Here we suppose a user from AB company has registered an account named *userdemo*. It will be used later.

### 3. Create application in TTN

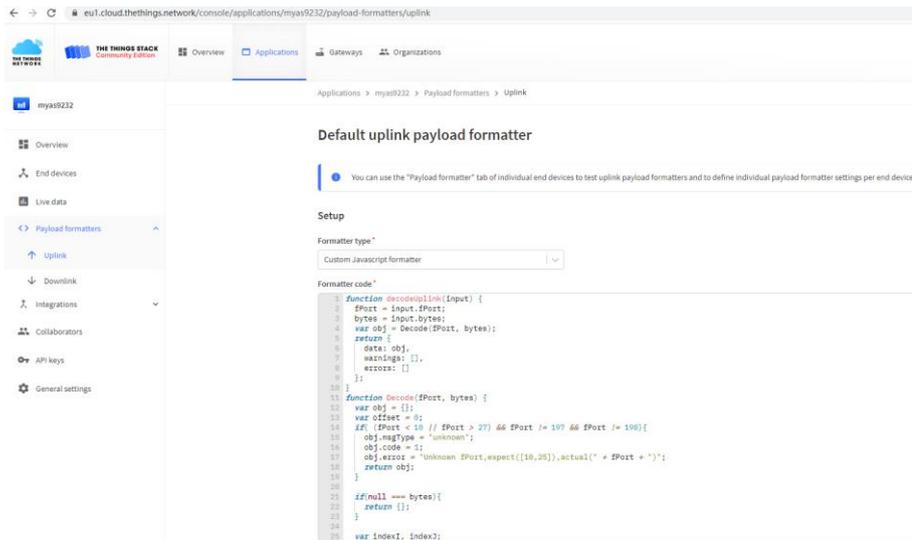
Please follow TTN operation guide to create an application for the project.

<https://www.thethingsindustries.com/docs/integrations/adding-applications/>

The data between TTN and RUICTEC platform is exchanged over MQTT.



Then set payload formatters.



For the detailed scripts, please refer to another document “RCT\_Tracker\_Data\_Parse”.

## 4. Create Project

Come back to RUICTEC platform, create a project for AB company. Project type only determine the building icon. For the MQTT broker info, please refer to [step 3](#). Please select correct time zone, then in any other time related item, you can select your local time directly rather than UTC time.

Operation path: Project Management -> Add.

Add Project Information ×

\* Project:

\* Company:

\* Scheme:

\* Location type:

\* Project type:

\* Time zone:

Forward:

\* Network server:

\* MQTT Broker:

\* User:

\* Password:

Remark:

0/64

## 5. Assign devices

Assign the trackers and beacons to the project.

Operation path: Device Management -> Tracker -> Batch operate -> Assign.

Before the operation, need to select the devices. In this project, we assign three trackers and six beacons to the project.

DevEUI	Alias	Mode	Scheme	Type	System	Assign	Used	State	Project	Ver	Connected	SDC	FCrit	Freq	Sta	Operate
8c1f543e8a300001	8c1f5...	OTAA	US91...	badge	Yes	Yes	No	Nor...	Metrop...	1.5	online	98	10810	904.5	202	Operate
8c1f543e8a300002	8c1f5...	OTAA	US91...	badge	Yes	Yes	No	Nor...	Metrop...	1.5	online	20	28382	905.1	202	Operate
8c1f543e8a300003	8c1f5...	OTAA	US91...	badge	Yes	Yes	No	Nor...	Metrop...		unknown					Operate

Major	Minor	Beacon ID	Alias	System	Allocated	Used	State	Type	Region	Checkin	RSSI@1m	RSSI@2m	Project	Floor ID	Operate
1101	1128	b59299f	11011...	Yes	Yes	No	Normal	position		No	-59	-69	Metro...		Operate
1101	1129	77cb898r	11011...	Yes	Yes	No	Normal	position		No	-59	-69	Metro...		Operate
1101	112A	J79a8B4	11011...	Yes	Yes	No	Normal	position		No	-59	-69	Metro...		Operate
1101	112B	98k291x	11011...	Yes	Yes	No	Normal	position		No	-59	-69	Metro...		Operate
1101	112C	l78633c	11011...	Yes	Yes	No	Normal	position		No	-59	-69	Metro...		Operate
1101	112D	m82trv4r	11011...	Yes	Yes	No	Normal	position		No	-59	-69	Metro...		Operate

## 6. Enter project

In project management, select the project then click “Enter project”.

If only GPS needed, skip this step.

### 6.1 Add map

Create a 2D map, if don't know the actual width and length of the map, you can click “Map out” to select two points which you know the distance, after you mark the distance, the system will calculate the size of the map automatically.

After complete, click “OK” to save the map as draft, click “Submit” to send for review.

Before approved the status is “audit”, after approved the status is “pass”.

In this project, we create two maps.

Add Map Information ×



+

Upload .jpg/.png/.jpeg/.svg files, no more than 2MB

Map name:

Actual width:  Map out ?

Actual length:  ?

Sensitivity:  ?

Activity:  ?

Project: Metropolitan Museum of Art ▾

Remark:  0/64

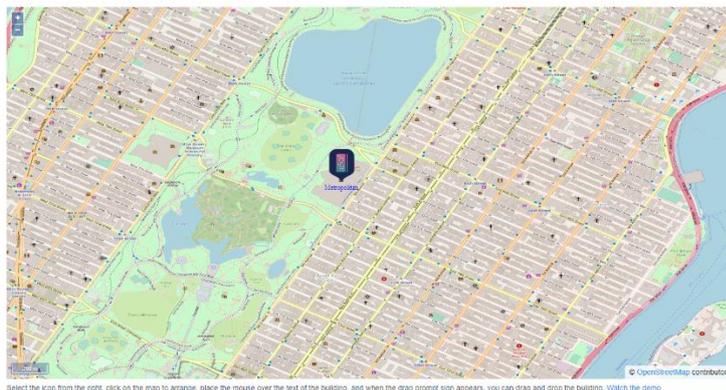
Cancel
OK
Submit

## 6.2 Create building

We create one building in this project.

Drag the map to the position where the project located, and zoom the map to a proper size, then select the icon from the right panel and click on the map to deploy. It will be saved automatically.

Project Management / Metropolitan Museum of Art / Building



## 6.3 Create floor

After creating the building, you need to create floors for the building.

Multiple floors can be mapped to the same map. You can only select the maps that have

been reviewed and approved.

Building Information ×

\* Building:

Floor:

Map name:

Remark:  32/64

## 6.4 Deploy beacons

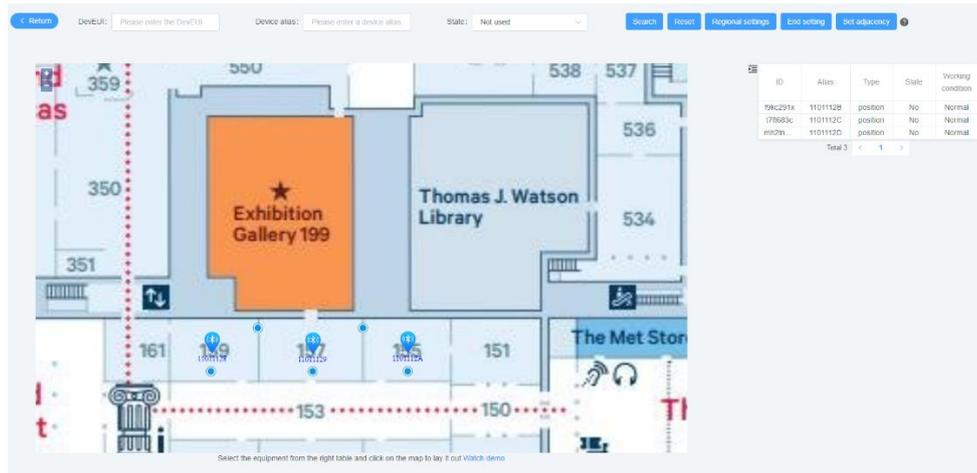
After creating floor, you can deploy beacons on the map by clicking “Deploy”.

ID	Alias	Type	State	Working condition
19ac291x	1101112B	position	No	Normal
17863c	1101112C	position	No	Normal
me29v4	1101112D	position	No	Normal

Total: 3 < 1 >

The available beacons are listed in the right panel, select the beacon and click on the map to deploy. We deploy three beacons on this map.

If you want to see the trajectory of the device, need to set the beacon adjacency. Click “Add Connection Point” button to add five connection points, then click “End setting” to finish. Three points are located in the rooms and two points are located on the doors.



Now, begin to set adjacency relationship :

1. Select the beacon or connection point with the left mouse button.
2. Press and hold the shift key, and left click to select the beacon or connection point connected to it.
3. Click "Set adjacency" button to set the adjacency relationship.

The connection should be like the following picture:



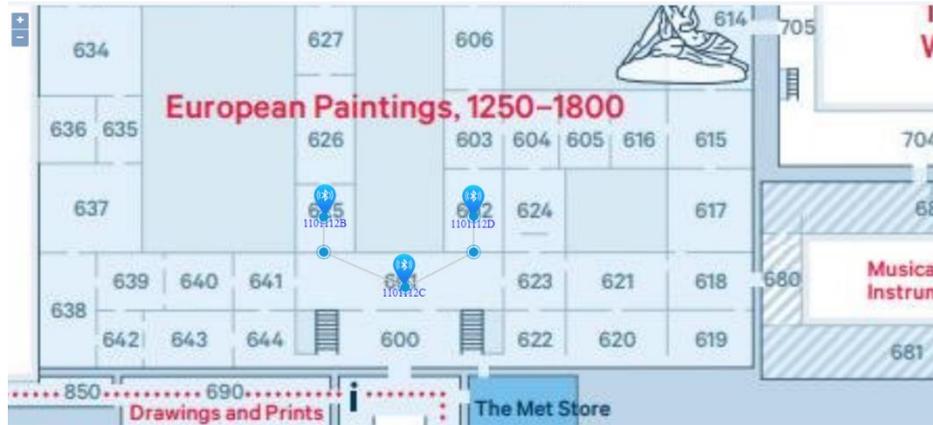
Finally, you need to drag the connection point to the beacon.



All the operation mentioned above will be save automatically.

Right click the beacon or connection point can dissolve the adjacency relationship.

We also deploy three beacons on the second floor.



## 7. Add devices in TTN

<https://www.thethingsindustries.com/docs/devices/adding-devices/>

eu1.cloud.thethings.network/console/applications/myas9232/devices/add/manual

myas9232

Overview

End devices

Live data

Payload formatters

Integrations

Collaborators

API keys

General settings

### Register end device

From The LoRaWAN Device Repository **Manually**

Frequency plan <sup>Ⓞ</sup> \*  
United States 902-928 MHz, FSB 2 (used by TTN)

LoRaWAN version <sup>Ⓞ</sup> \*  
LoRaWAN Specification 1.0.3

Regional Parameters version <sup>Ⓞ</sup> \*  
RP001 Regional Parameters 1.0.3 revision A

Show advanced activation, LoRaWAN class and cluster settings ▾

DevEUI <sup>Ⓞ</sup> \*  
..... Generate 0/50 used

AppEUI <sup>Ⓞ</sup> \*  
..... Fill with zeros

AppKey <sup>Ⓞ</sup> \*  
..... Generate

End device ID <sup>Ⓞ</sup> \*  
my-new-device  
This value is automatically prefilled using the DevEUI

Get these information from Device Management of Ruitec platform.

Register another end device of this type

Register end device

EDWEI

Home Page Device Management User Management Project Management Data Management System Management

DevEUI: Search Reset Import Export Add device Batch operate Batch command

Unencrypted appkey, should be configured in the Network Server.

	DevEUI	Warning	Location type	Encryption	AppEui	Nwkskey	Appkey	Orignwkskey	Origappkey	Debugging status	Configuration
<input type="checkbox"/>	8c1f643e8a0001c7...	disabled	Three-point	Yes	8c1f643e8a0001c7...	7c597bd0636b2...	a399183a429d6...	35b0892368e99...	7aefc92040ab6...	Info	Yes
<input type="checkbox"/>	8c1f643e8a010001	disabled	Three-point	Yes	8c1f643e8a010001	f92456d3e029f1...	b48f24c4ad727...	510d7dea11f2b...	799f80c0bddd3...	Info	Yes
<input type="checkbox"/>	8c1f643e8a010002	disabled	Three-point	Yes	8c1f643e8a010002	5fe531e2c518a...	5fad409ce8ec91...	1196559113e9d...	02a085d7b917...	Info	Yes
<input type="checkbox"/>	8c1f643e8a0f0001	disabled	Three-point	Yes	8c1f643e8a0f0001	351f739b40a6a...	8300871d59366...	a3395dce1cf06f...	29295e1862c7b...	Info	Yes

## 8. Add gateway in TTN

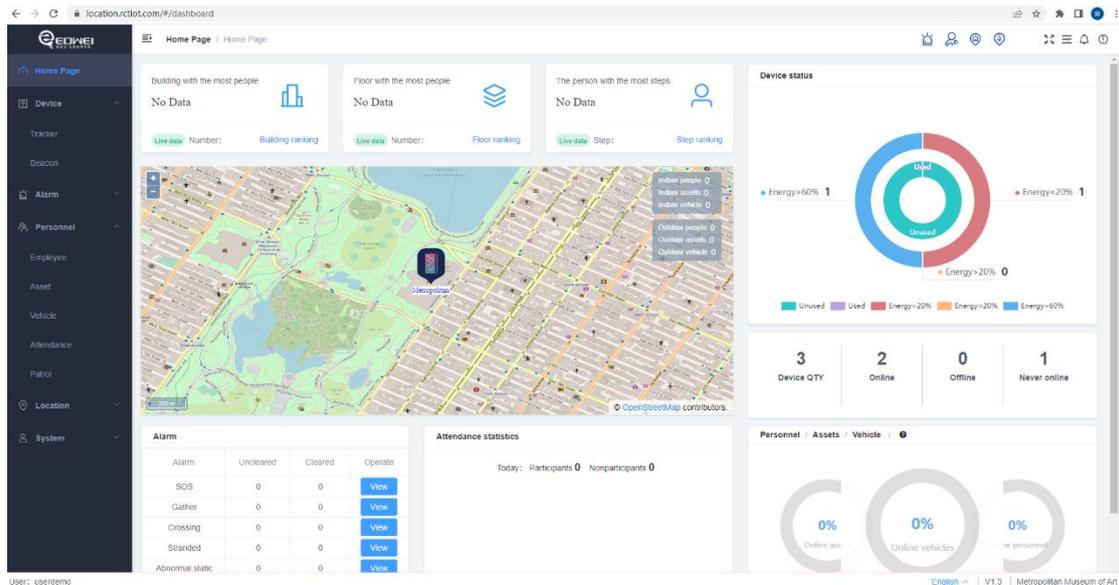
Finally you need to set your Lora Gateway as packet forward mode, and add the gateway

to TTN: <https://www.thethingsindustries.com/docs/gateways/adding-gateways/>

If you have any other questions, please contact us.

## 9. Login as company user

At this point, all the work about the administrator is done, now enter the platform as an enterprise user “userdemo”.



## 10. Add employee

In this step, we'll create some employees and bind the devices to them.

Path: Personnel -> Employee -> Add



Upload jpg/png/jpeg files, no more than 2MB

\* Name:

Employee no.:

Age:

Sex:

Tel.:

Department:

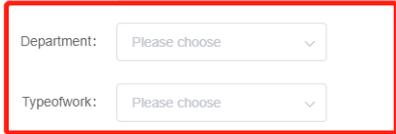
Typeofwork:

Card no.:

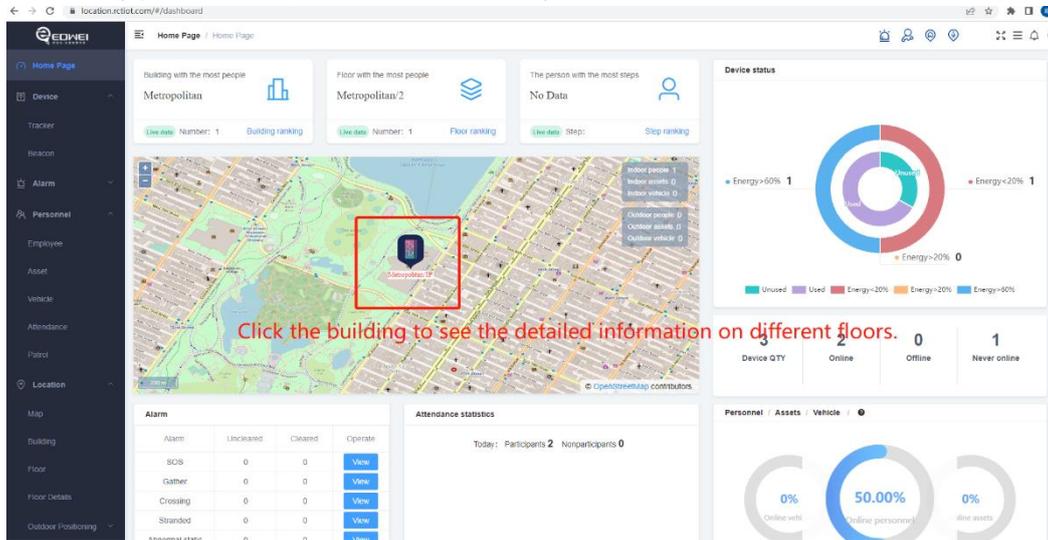
Remark:

34/64

You can create department and work type in advance.



After binding you'll see a people in the building or outside.



The dashboard displays the following information:

- Building with the most people:** Metropolitan (Live data: Number: 1, Building ranking)
- Floor with the most people:** Metropolitan/2 (Live data: Number: 1, Floor ranking)
- The person with the most steps:** No Data (Live data: Step: 0, Step ranking)
- Device status:** A donut chart showing energy levels: Energy > 60% (1), Energy < 20% (1), Energy > 20% (0), and Energy < 20% (0). Below the chart, Device QTY is shown as 3 Online, 2 Offline, 0 Never online.
- Alarm:** A table with columns: Alarm, Uncleared, Cleared, Operate. Rows include SCIS, Gather, Crossing, Stranded, and Abnormal state.
- Attendance statistics:** Today: Participants 2, Nonparticipants 0.
- Personnel / Assets / Vehicle:** Three donut charts showing 0% Online web, 50.00% In-line personnel, and 0% In-line assets.

Click the building to see the detailed information on different floors.



If you have any other questions, please contact us or visit our online help system:

<https://location.rctiot.com:8078>

# The End