WoMaster

COVER

User Manual

# ThingsMaster OTA

**Over-The-Air Device Management System**

Dec.11.2018 V.1.0

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# WoMaster

## **ThingsMaster OTA** Over-The-Air Device Management System

# User Manual



## About This Manual

This user manual is intended to guide a professional installer to install and to configure the ThingsMaster OTA dashboard. It includes procedures to assist you in avoiding unforeseen problems.

**NOTE:**

Only qualified and trained personnel should be involved with installation, inspection, and repairs of this switch.

### Disclaimer

WoMaster reserves the right to make changes to this Manual or to the product hardware at any time without notice. Information provided here is intended to be accurate and reliable. However, it might not cover all details and variations in the equipment and does not claim to provide for every possible contingency met in the process of installation, operation, or maintenance. Should further information be required or should particular problem arise which are not covered sufficiently for the user's purposes, the matter should be referred to WoMaster. Users must be aware that updates and amendments will be made from time to time to add new information and/or correct possible unintentional technical or typographical mistakes. It is the user's responsibility to determine whether there have been any such updates or amendments of the Manual. WoMaster assumes no responsibility for its use by the third parties.

### WoMaster Online Technical Services

At WoMaster, you can use the online service forms to request the support. The submitted forms are stored in server for WoMaster team member to assign tasks and monitor the status of your service. Please feel free to write to help@womaster.eu if you encounter any problems.

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# 1. INTRODUCTION

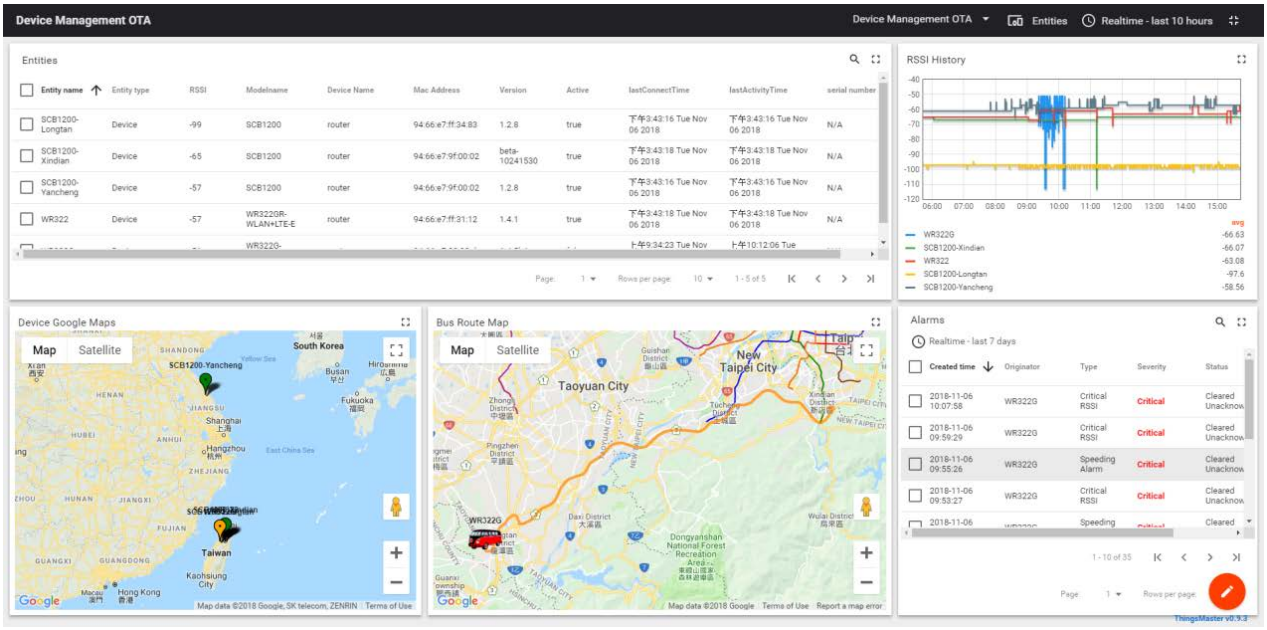
## 1.1 OVERVIEW

ThingsMaster OTA is designed to conveniently monitor and manage all of WoMaster router devices including SCB Series and WR Series devices. The system allows to securely gather status information of all devices and to change their configuration even if the devices do not have public IP addresses. **Try ThingsMaster OTA for free and experience it!**

**Website**: https://ota-thingsmaster.womaster.eu/

**Username**: womaster@womaster.eu

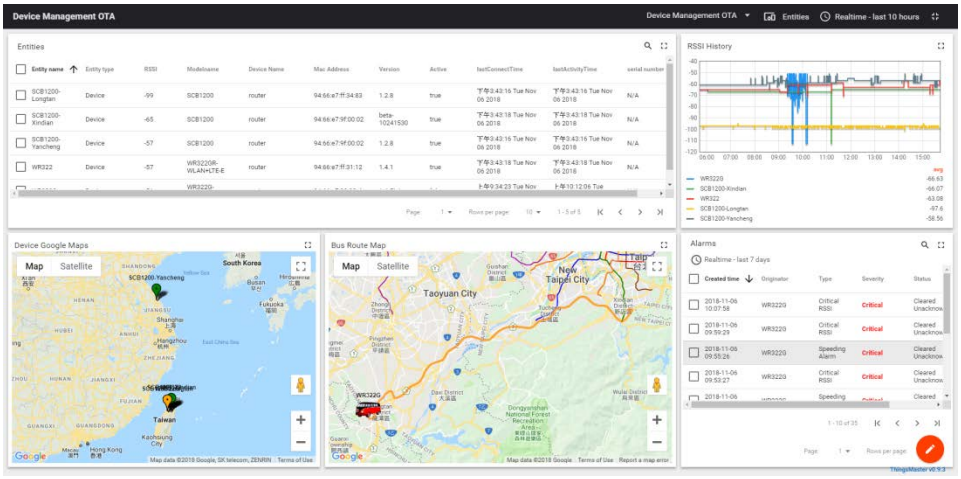
**Password**: womaster101



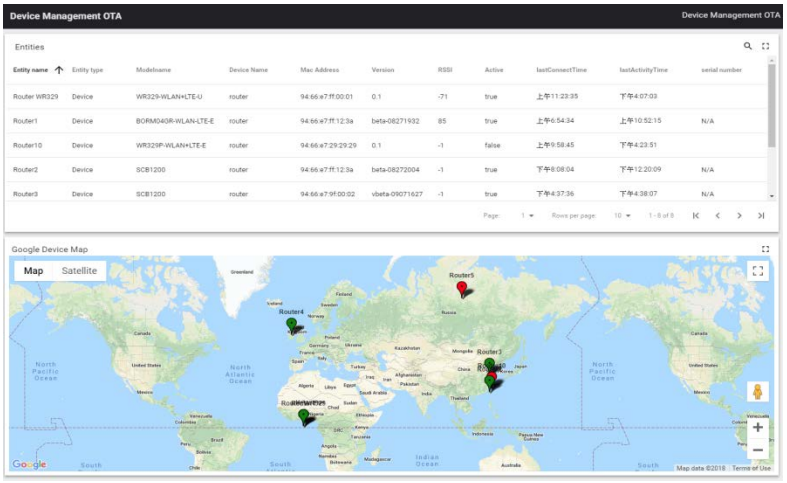
## 1.2 MAJOR FEATURES

**Below are the major features of ThingsMaster OTA:**

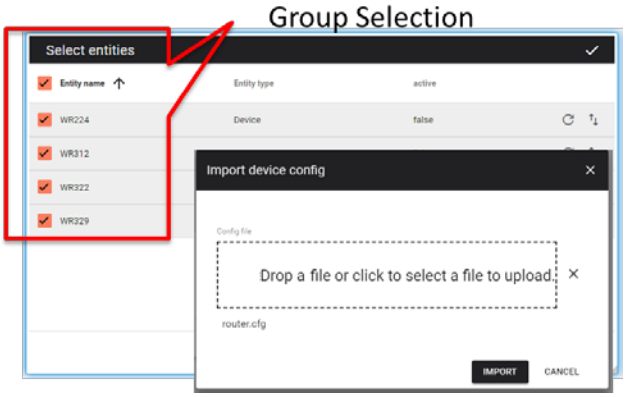
- Interactive monitoring dashboard and map shows the status, signal strength, and location of all WR series deployed




- Map shows devices online/offline/warning status in green/red/orange color, respectively

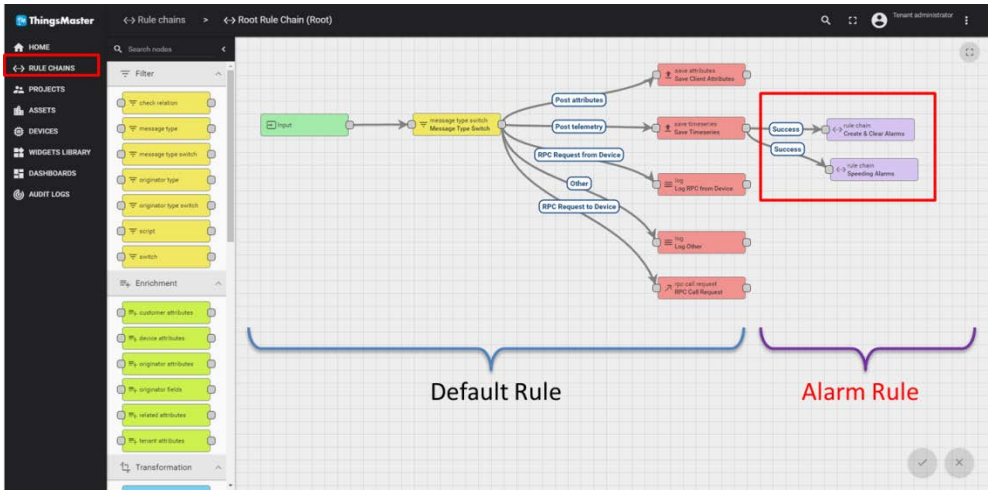



- Supports over-the-air batch device configuration and firmware* update




- Set alerts on critical events to prevent downtime (i.e. Signal strength is too low or temperature is too high)

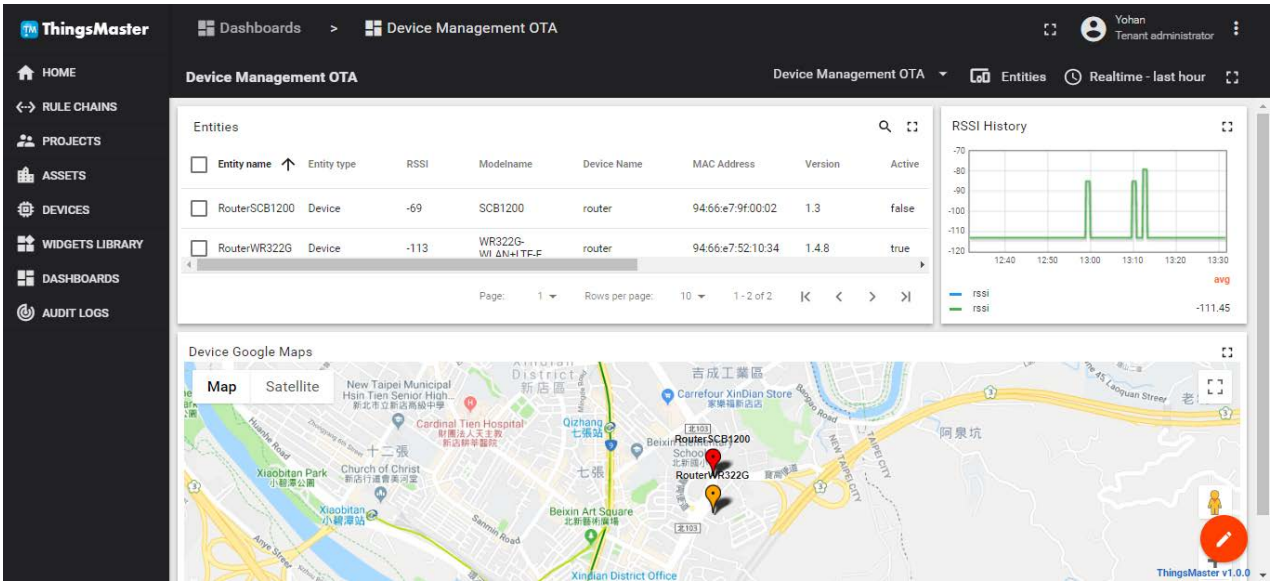
- Node-red like flow-based programming




- Support the latest TLS encryption and x.509 authentication

# 2. THINGSMASTER OTA DASHBOARD

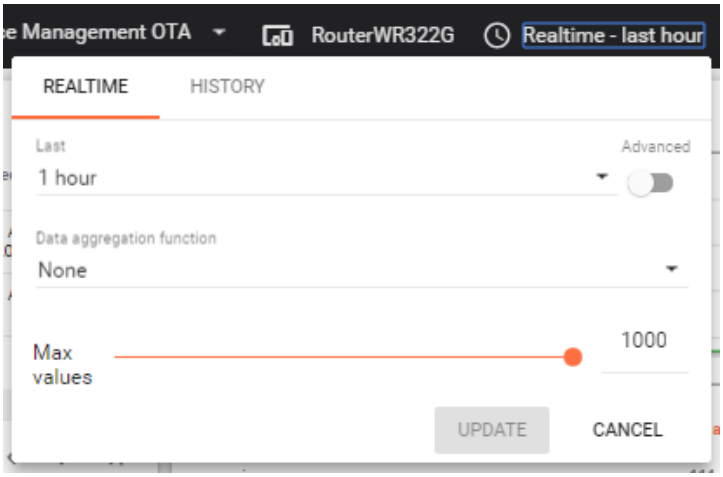
ThingsMaster OTA is also designed for central network management such as device configuration; receive the fault alert, and event records. It has interactive monitoring dashboard and map shows the status, signal strength, and location. User can set alerts on critical events to prevent downtime. ThingsMaster OTA is equipped with a feature that similar with Node-RED in order to create a flow-based programming for the rule chain. This WoMaster OTA supports the latest TLS encryption and X.509 authentication. For the dashboard, user can arrange the dashboard.



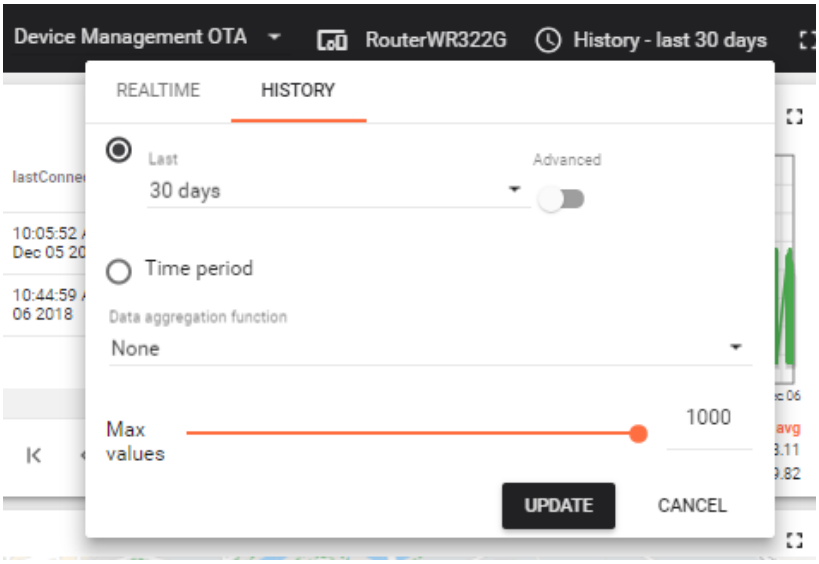

There are several panels to operate the dashboard.

**1. Dashboard History and Real Time data**

If user wants to check the specific data from the dashboard based on the time, user can click the Real time panel on the top right side of the dashboard. A page will appear then user can select the time to show the specific data at the specific time. Click Update to apply the setting.

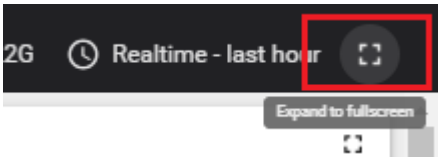



User also can choose the history to show the data according to the time range in the last few minutes, hours or days. And also in the specific time range by clicking the Time Period then enter the specific time. Click update to show the data.




**2. Set to Full screen interface**

User can have a better interface from the dashboard by clicking the Expand to full screen to have the full interface.



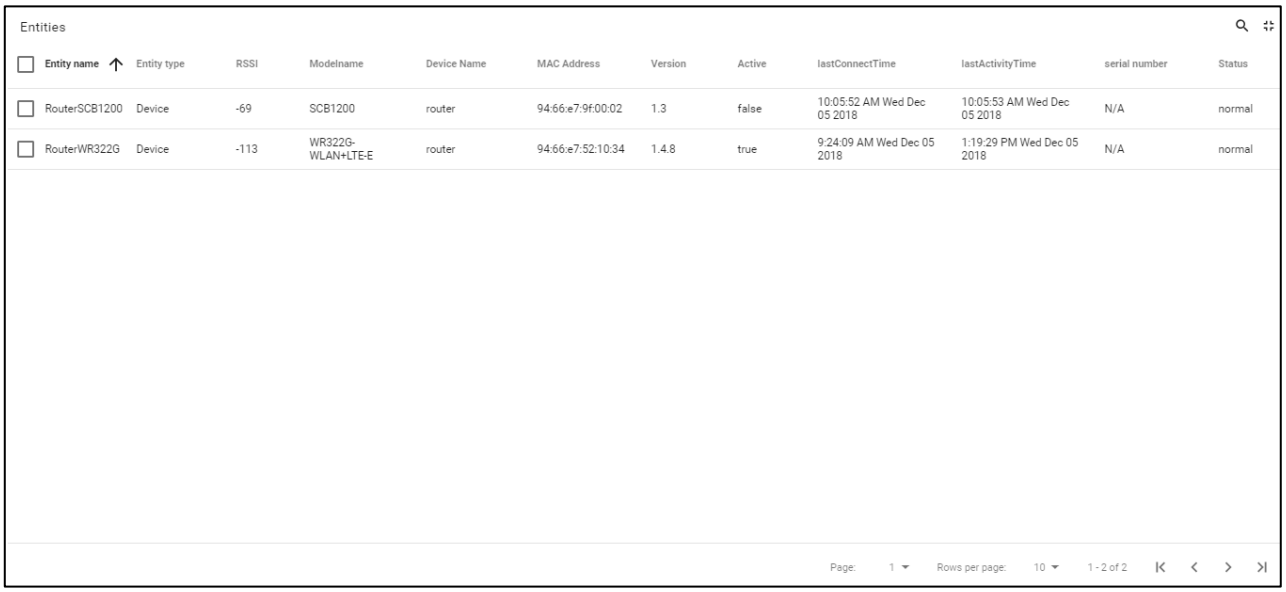

**3. Enter the Edit mode.**

The ThingsMaster OTA dashboard is editable, so it is easy for user if they want to create their dashboard. To edit the dashboard click the Edit button on the right bottom side of the dashboard then it will enable the edit mode.

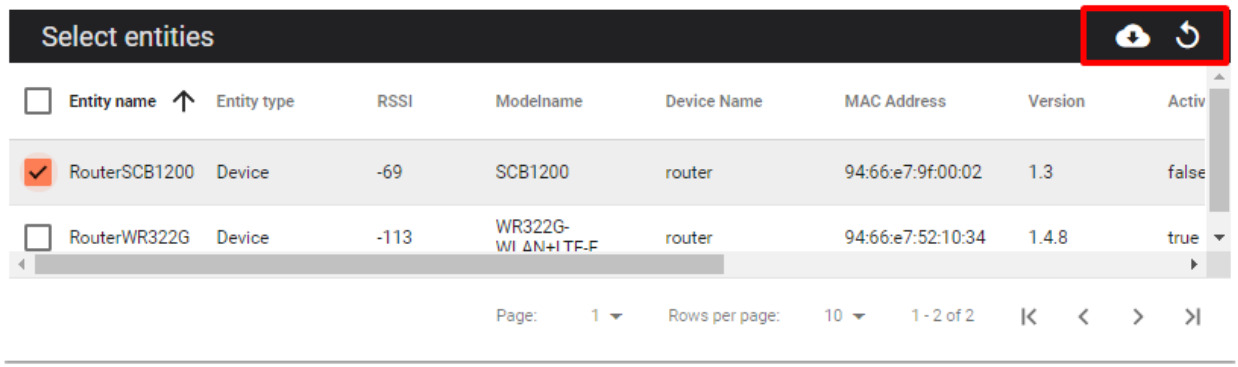

In this Edit mode user can add more widget to the dashboard, export the dashboard interface (the file will be saved in .json), and add Entity Alias for the dashboard.

## 2.1 DEVICE LIST

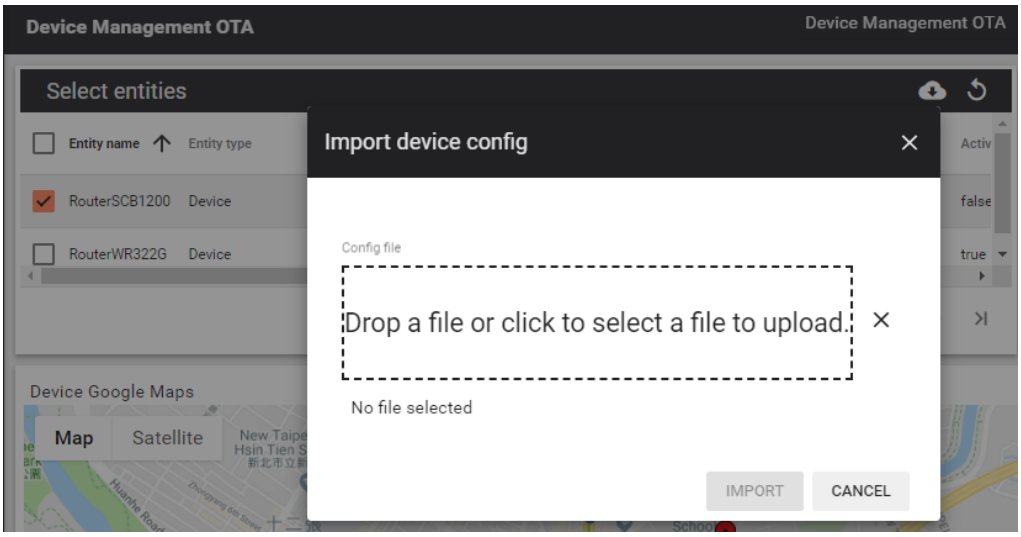
This device list dashboard is included all of the information of the registered devices. The information consists of the entity name, device name, device type, RSSI, model name, MAC address, firmware version, device active status (true – active, false – inactive), last connect time, last activity time, serial number, and device status. The interface is as below:



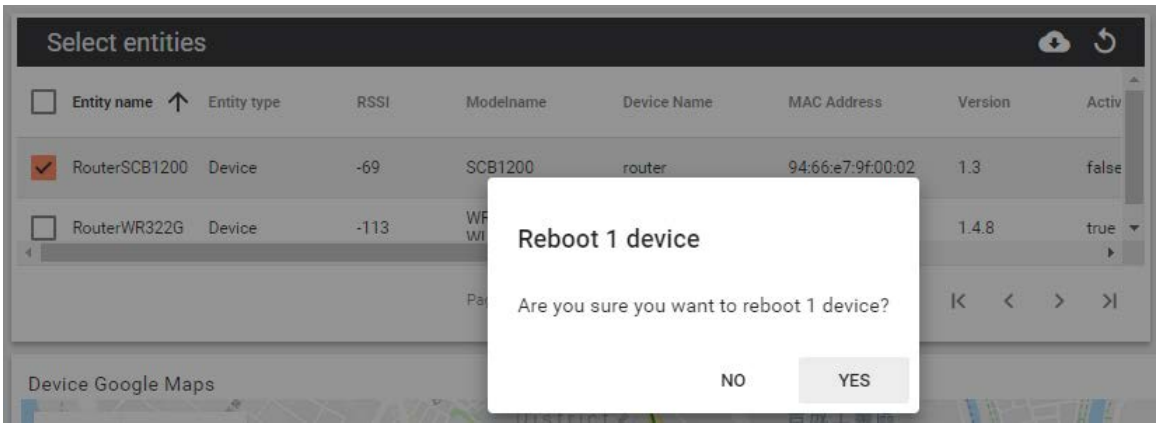

In this dashboard, user can do the device configuration and reboot the device directly. When user select a device from the list two configuration options will appear



**Import device configuration** – by clicking this button user can upload the configuration file in order to restore the configuration. It can be done for a multiple group of devices.

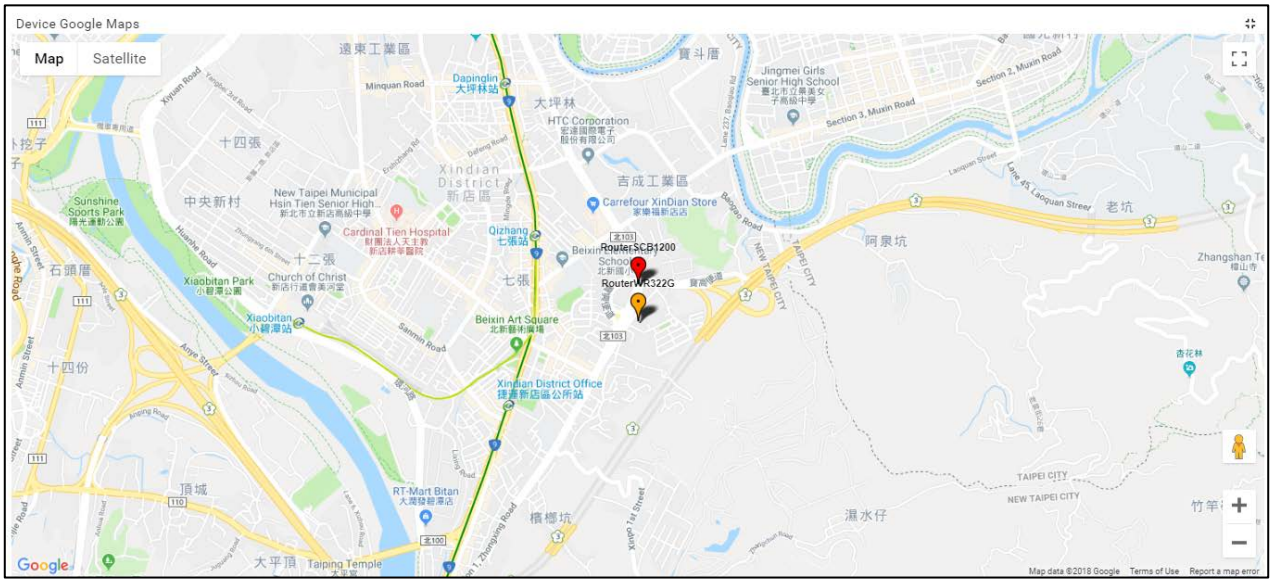



**Reboot** – by clicking this button user can reboot the device directly. It can be done for a group of devices. Click Yes to execute.



## 2.2 DEVICE MAPS LOCATION

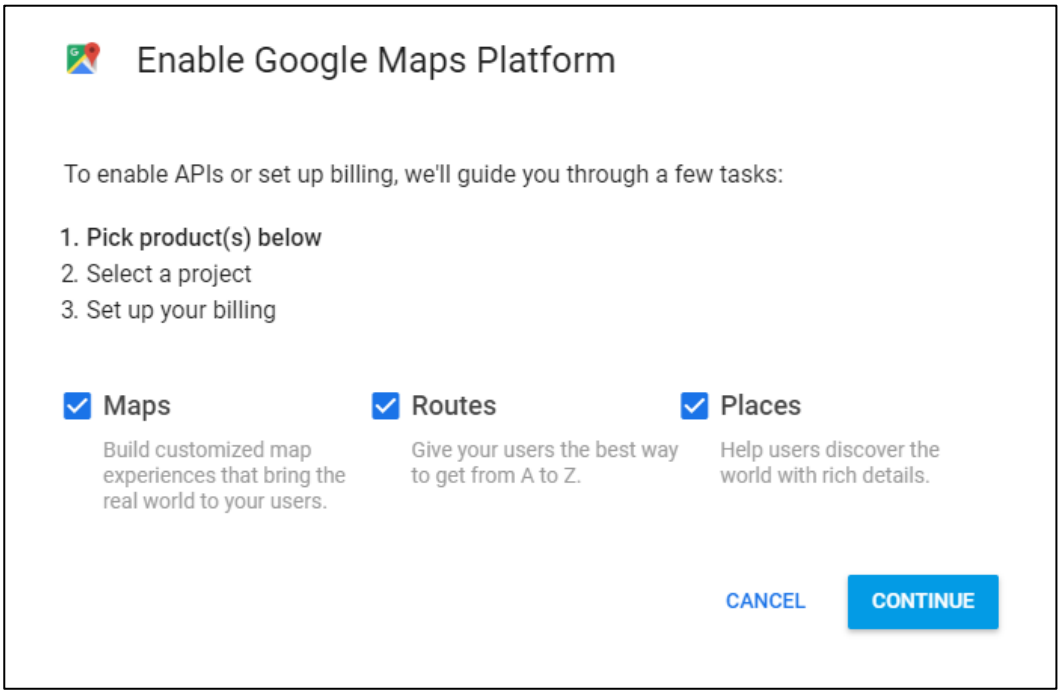
This device maps location dashboard is pointed the device real time location. The device location can be configured in the device web GUI management (IoT -> RMS). MAP shows devices online/offline/Warning status in **Green**/**Red**/**Orange** color, respectively. This OTA dashboard is supported with the google maps features.



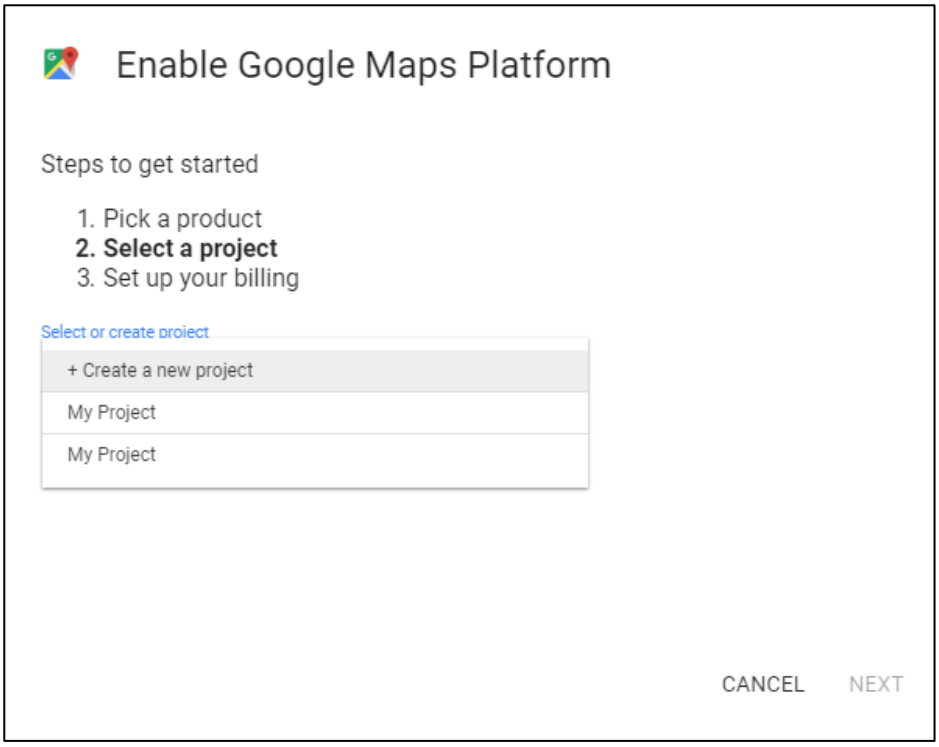

For the google maps, user needs to have the Google Maps API Key. Google Maps API key is used to access Google Maps API. **Some applications or plugins using the capabilities of Google Maps require getting and adding an individual token.** Below is the procedure how to get and add the Google Maps API key.

1. Go to Google Maps Platform (https://cloud.google.com/maps-platform/?apis=maps,routes), to get Google Maps API Key

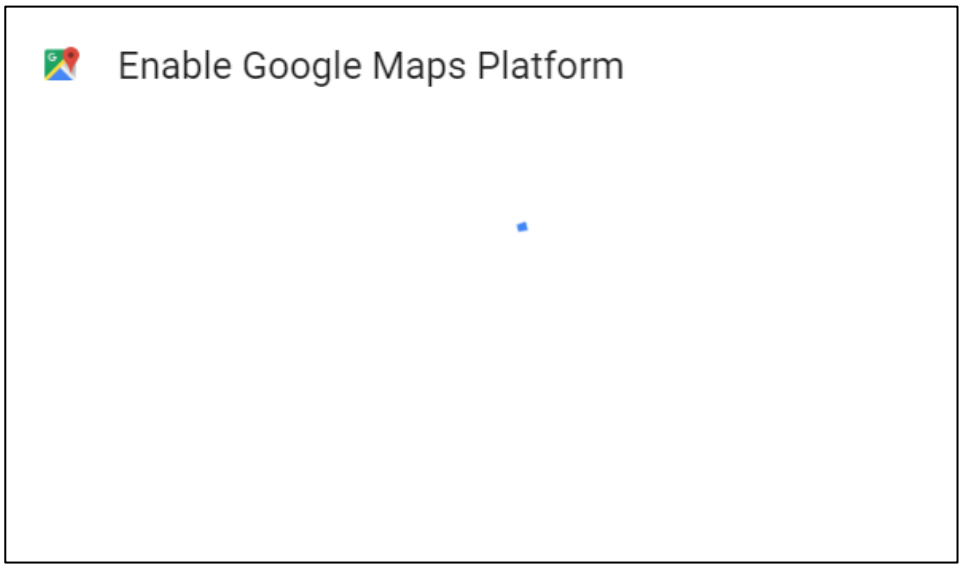
2. Click Get Started and check all of the check box for maps, routes, and places. Then click continue.



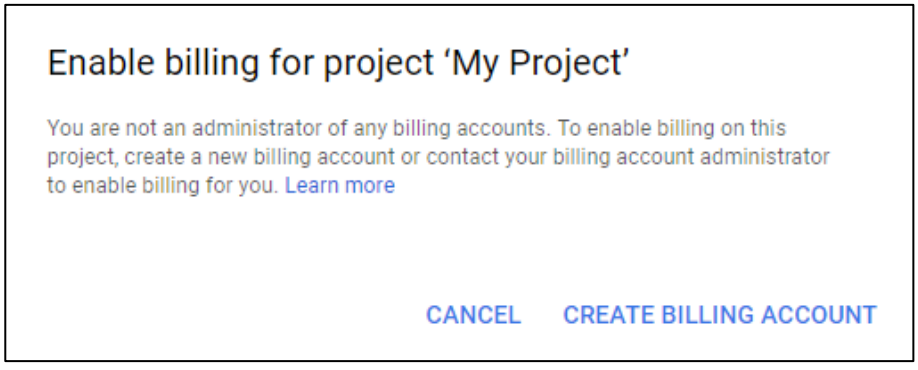
3. Choose My project from the dropdown list. Then click Next.



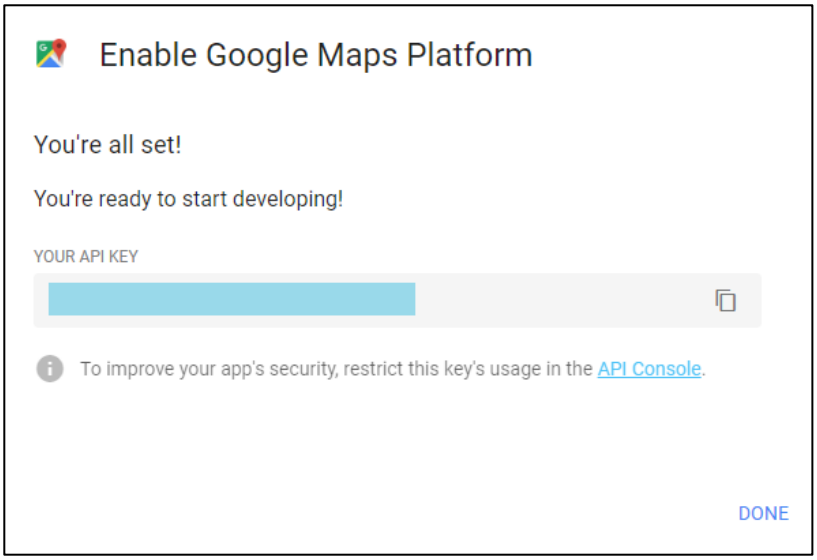

4. It will start enable the Google Maps Platform



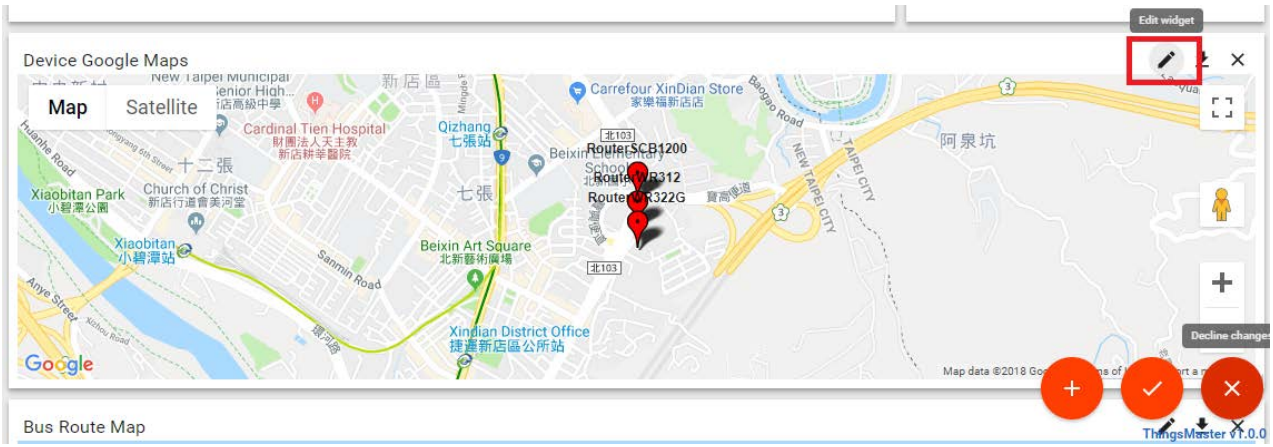

5. Click Create Billing Account and create the Payment methods.



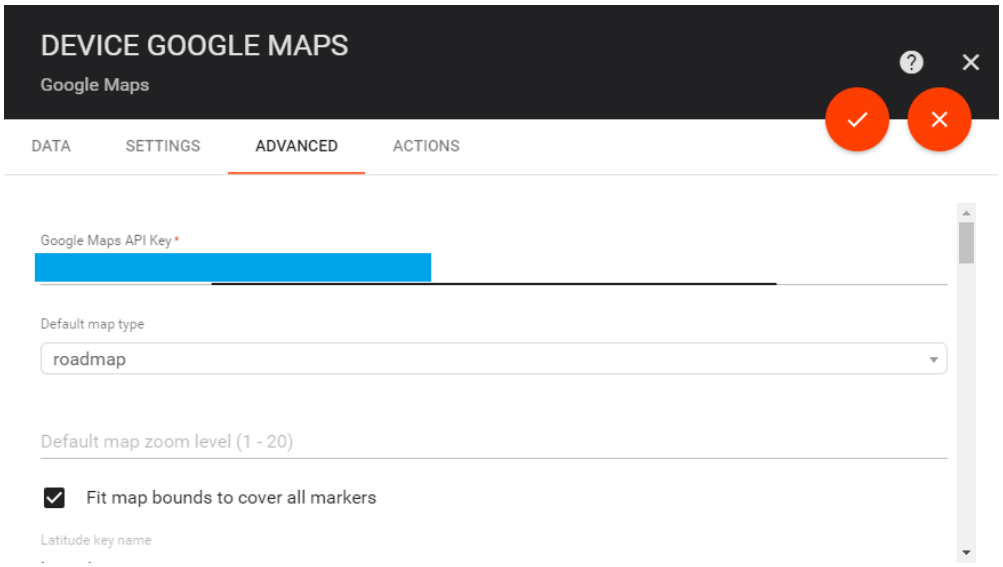
6. After user get the API key, then copy paste the key to the dashboard.




7. Enter the edit mode, then Click Edit on Maps Widget.

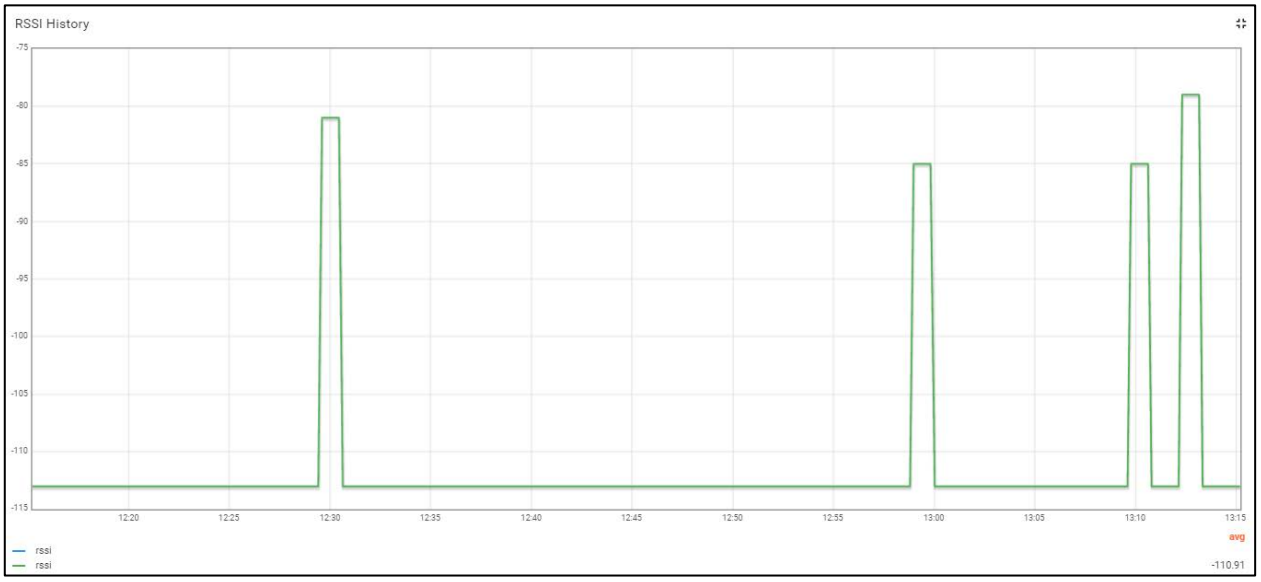



8. Go to Advanced and paste the API key. Click Apply Changes.



## 2.3 RSSI HISTORY

This is the device RSSI history dashboard that shows the graph or chart status of the rssi signal from the registered device, each device has its own line graph. This information is useful for the user to have the real time condition from the device.



# 3. THINGSMASTER OTA DASHBOARD CONFIGURATION

## 3.1 ESTABLISH OTA CONNECTION & REGISTER A DEVICE

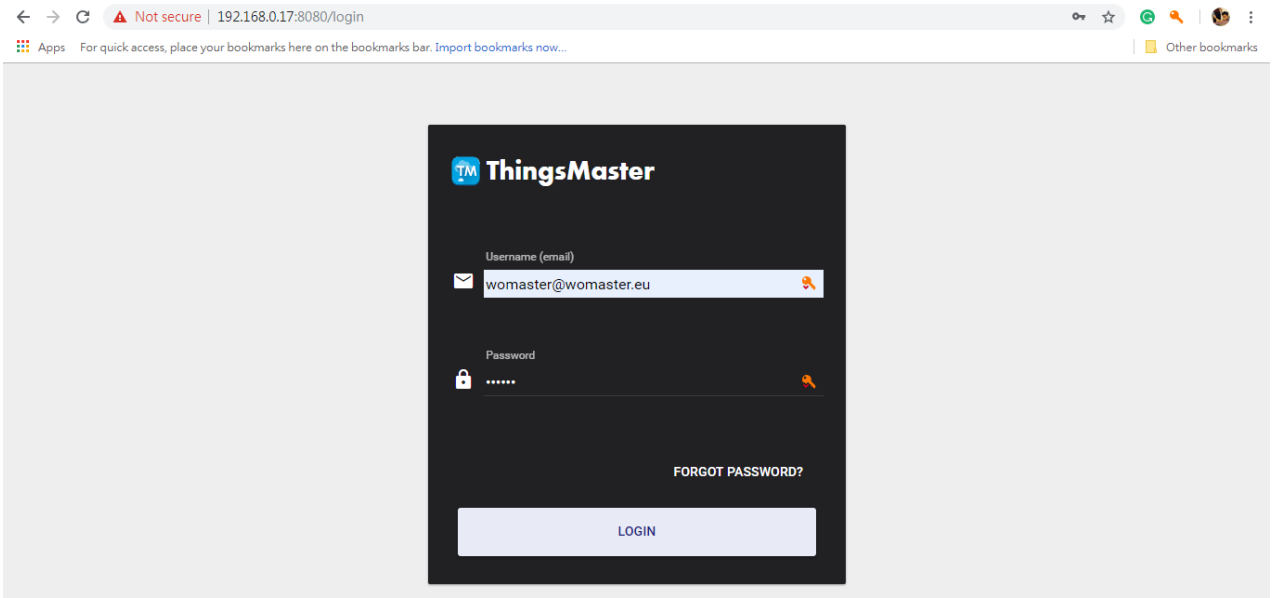
### HOW TO ESTABLISH AND CONNECT TO THE THINGSMASTER OTA SERVER

1. Contact our Sales to get the access to the ThingsMaster OTA Account.

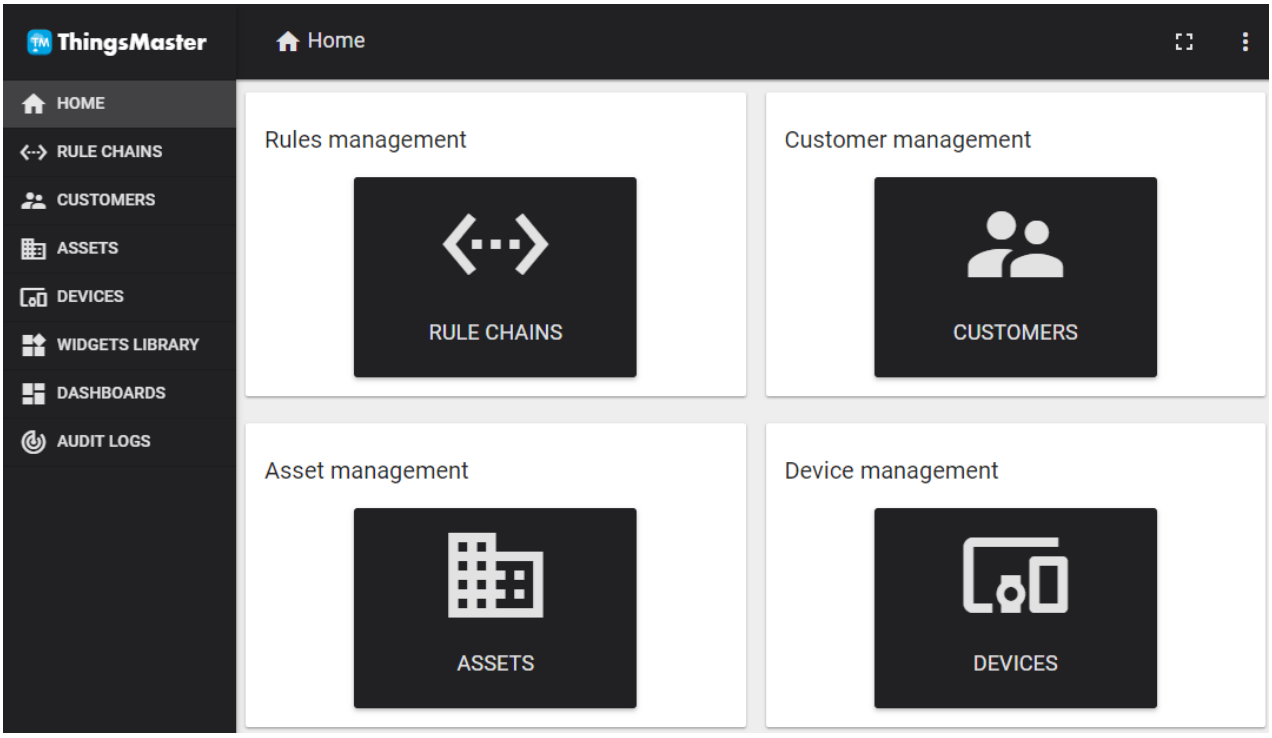
2. Login to ThingsMaster OTA, using OTA Account. (https://ota-thingsmaster.womaster.eu)

**Login: <User OTA Account>**

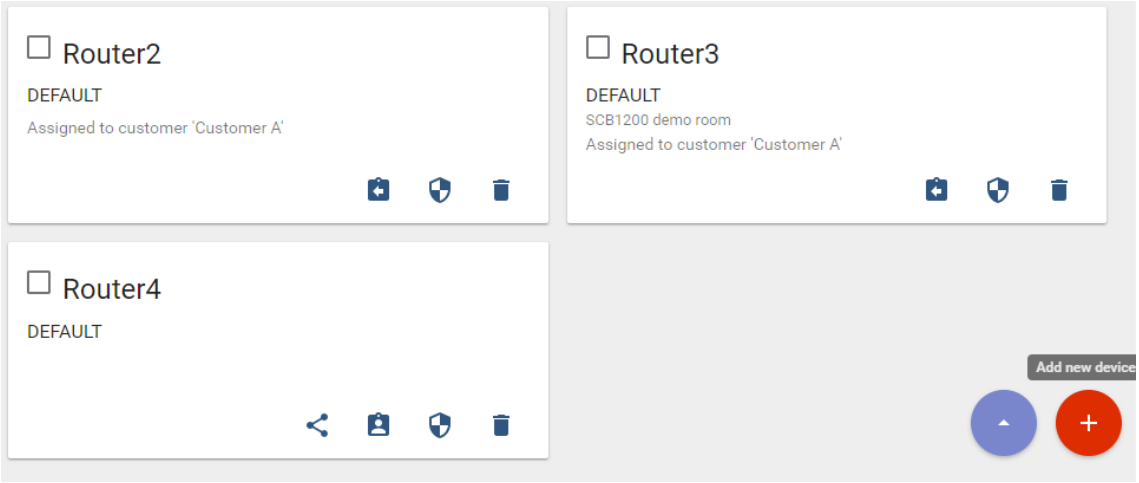
**Password: <User OTA Password>**




3. Go to Home -> Device Management to register the device.

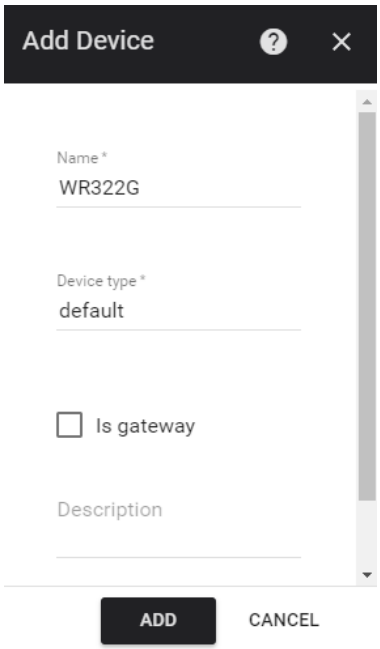


4. Add new device information, by clicking the “+” at the corner of the page.

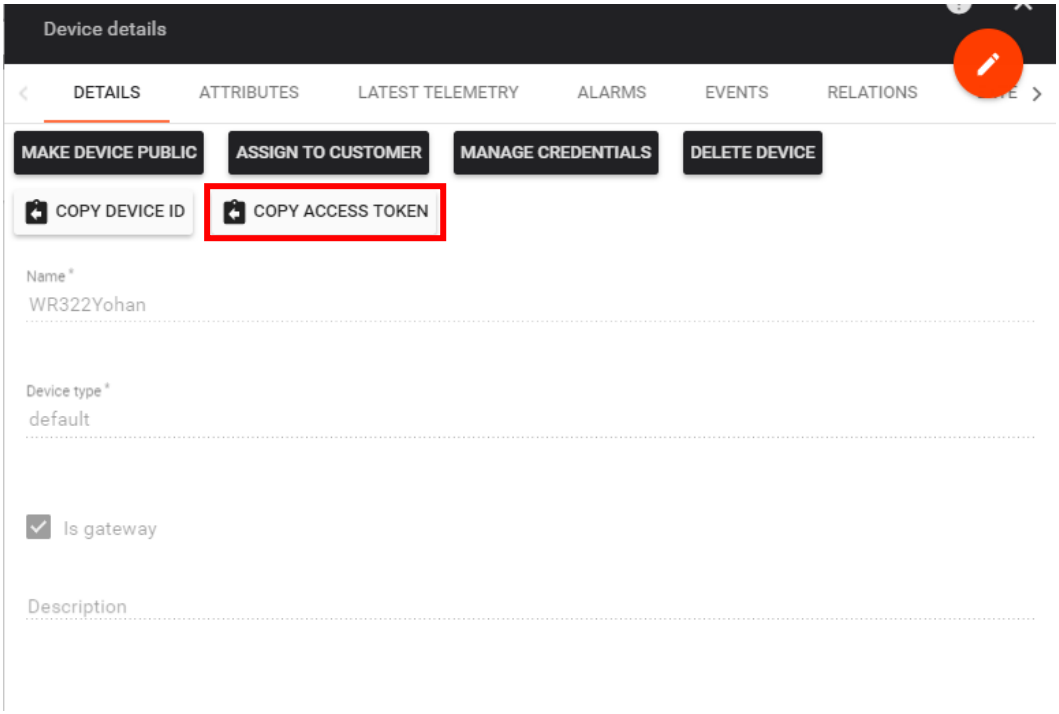



After click “+” menu then a page will pop up. Enter the device information.

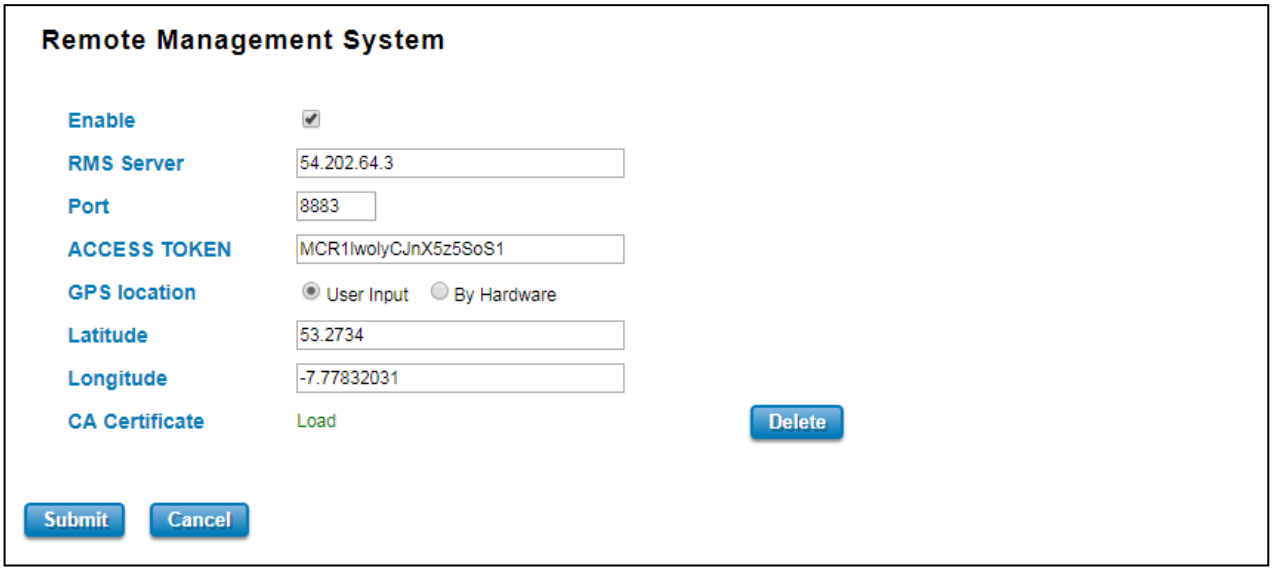
- Name: Please start the name with Router + Number.
- Device type: default
- Is gateway: uncheck the box
- Click **Add**



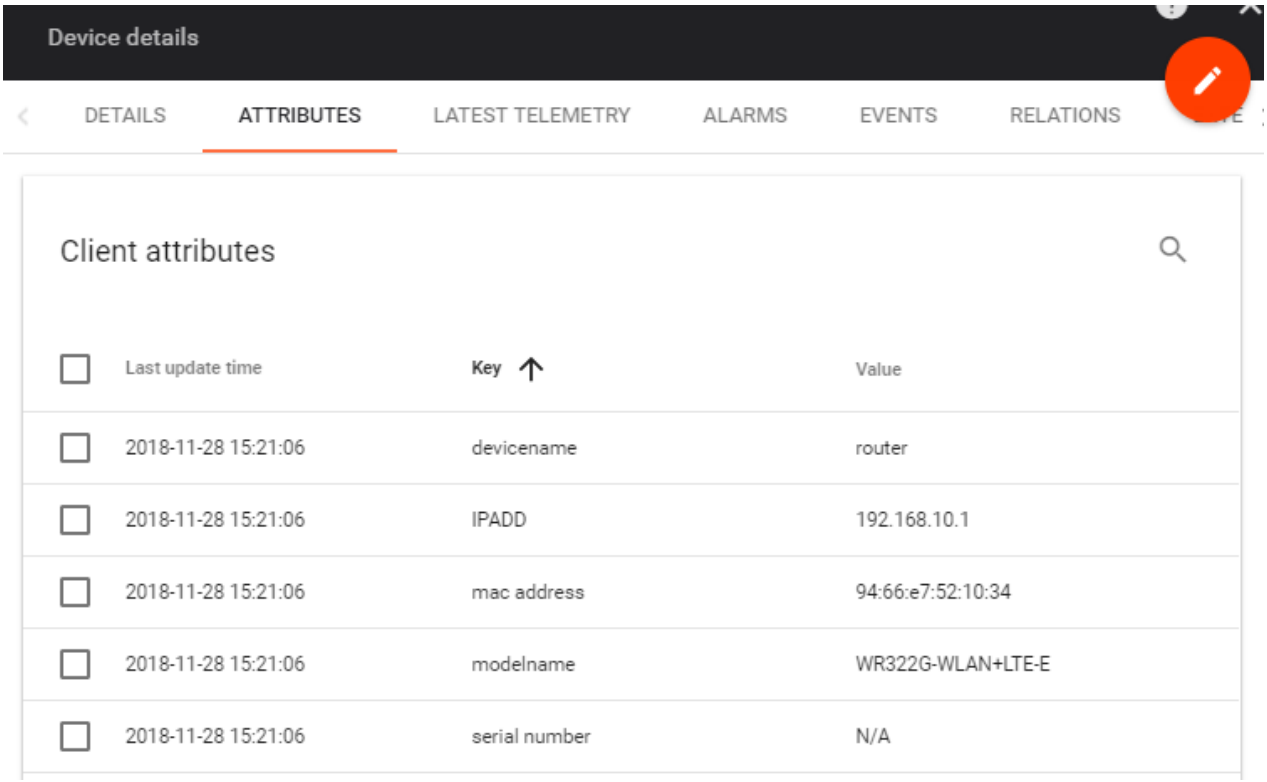
5. After the device is registered, then click on the device folder go to Details -> Click on Copy Access Token. This access token is code to link the device with the ThingsMaster OTA Server.



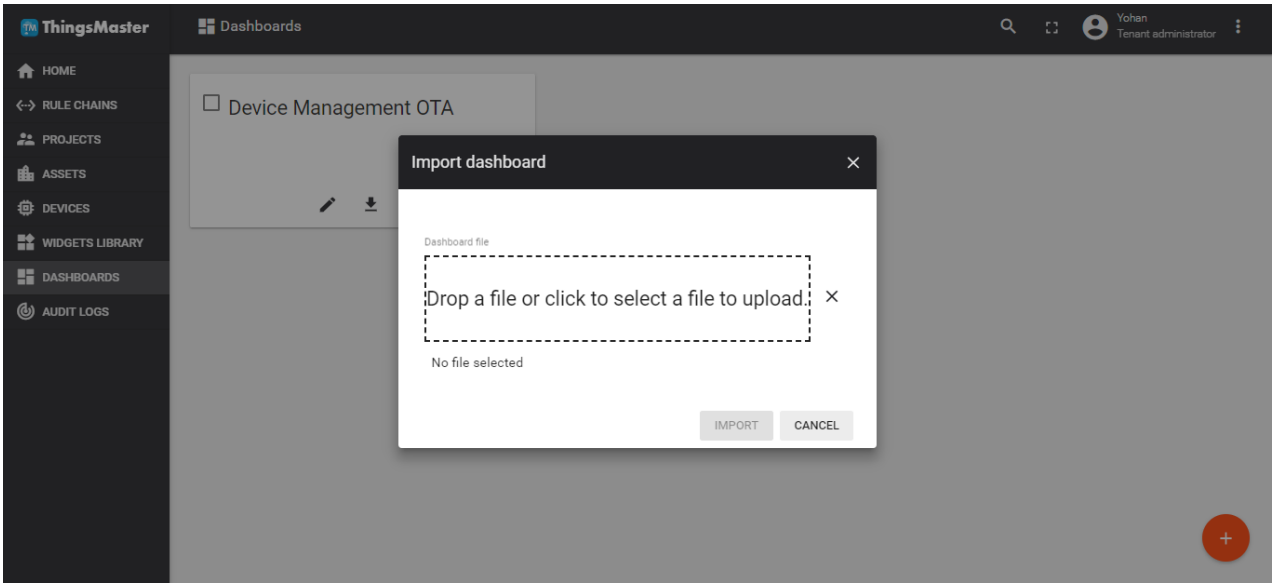

6. Go to the Web GUI -> IoT -> RMS. Paste the **Access Token** code to the Web GUI. And complete the configuration.



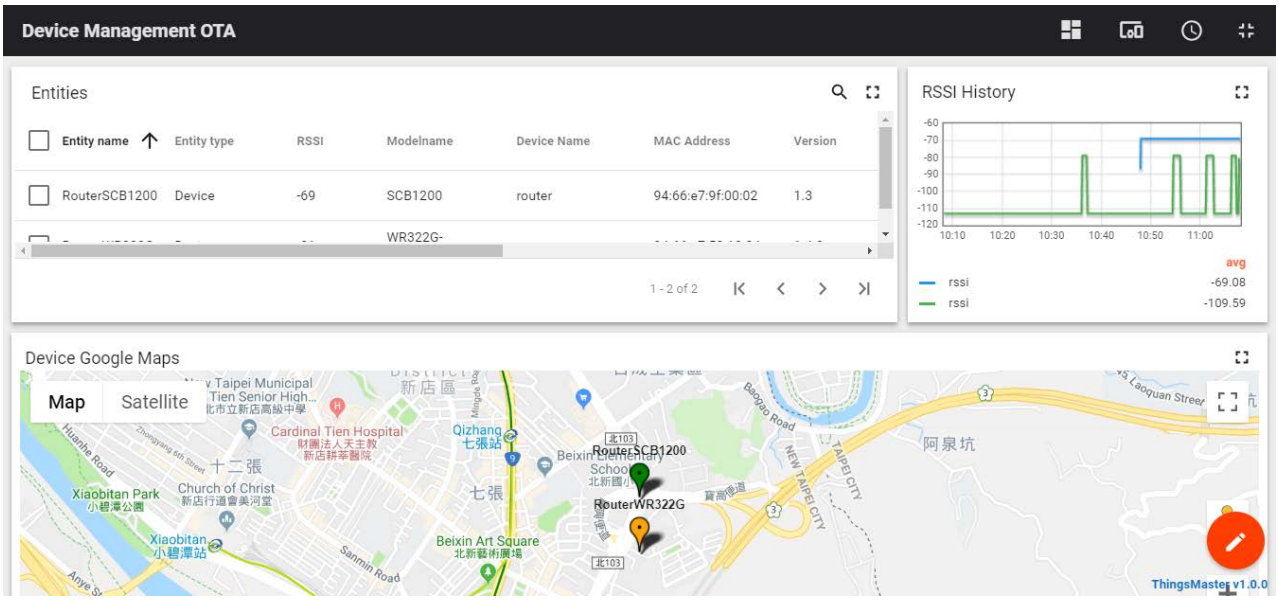
7. After the configuration is done then go back to ThingsMaster OTA Server. And then click on the newly added Router -> Attributes-> Client Attributes to see if the data has been uploaded.




8. If all of the data has been uploaded, user can create a dashboard to visualize the data. Go to Dashboards menu. In this page, user can upload the main dashboard JSON (**device_management_ota.json**) file that sent by the WoMaster Sales in the email. Click the "+" to import JSON File or create a new Dashboard.

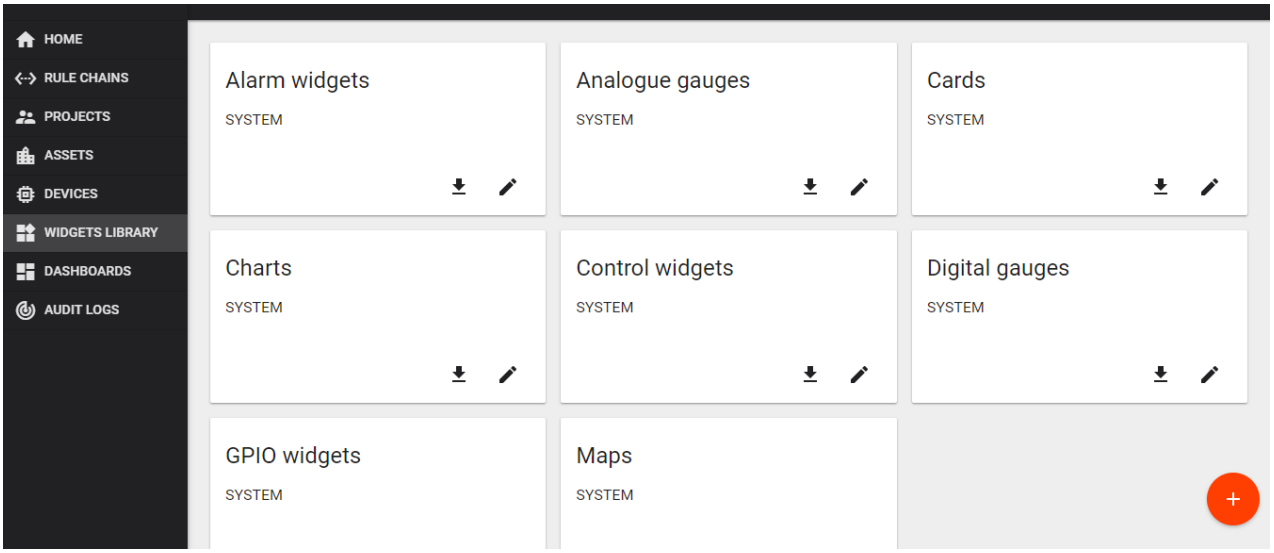


9. After the JSON file is uploaded, the dashboard will show as below:



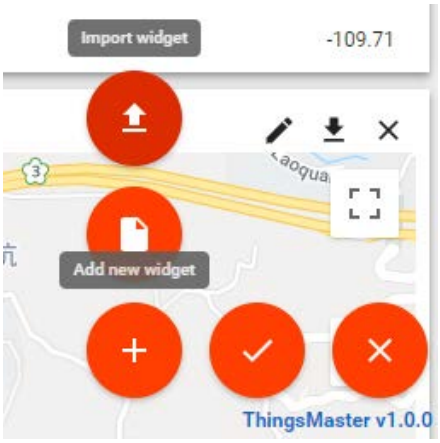

## 3.2 ADD WIDGET TO THE DASHBOARD

This ThingsMaster OTA dashboard is easy to use and flexible for user to arrange their dashboard. The important thing about arrange the dashboard is how to add the widget to the dashboard. There are some widgets that user can use. User can go to the side panel and click Widgets Library to check the widget that ThingsMaster OTA has.



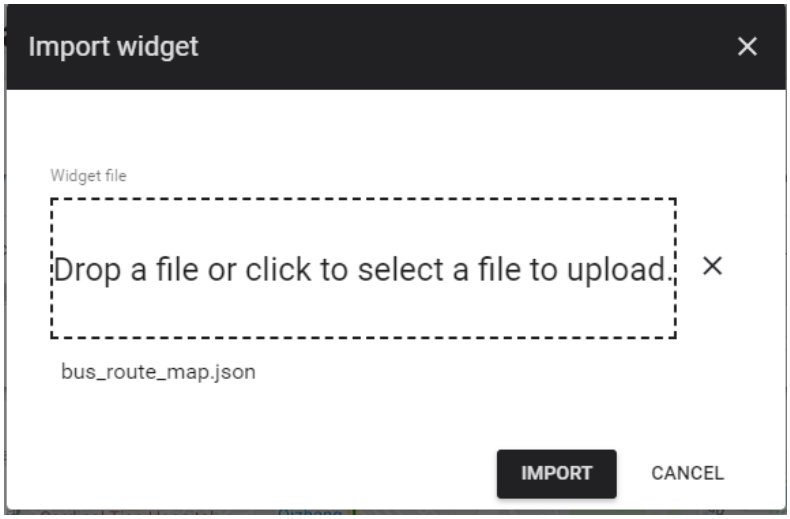

The ThingsMaster OTA dashboard is editable, so it is easy for user if they want to create their dashboard. To edit the dashboard click the Edit button on the right bottom side of the dashboard then it will enable the edit mode.

After enter the Edit mode, 3 sub menus will appear, Add New Widget, Apply Changes, and Decline change.

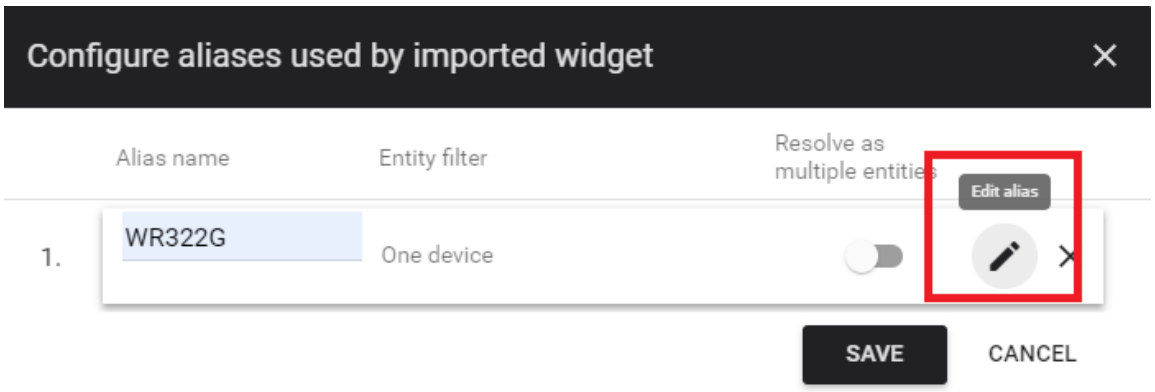



To add the widget user will have two options Add new widget or Import widget.

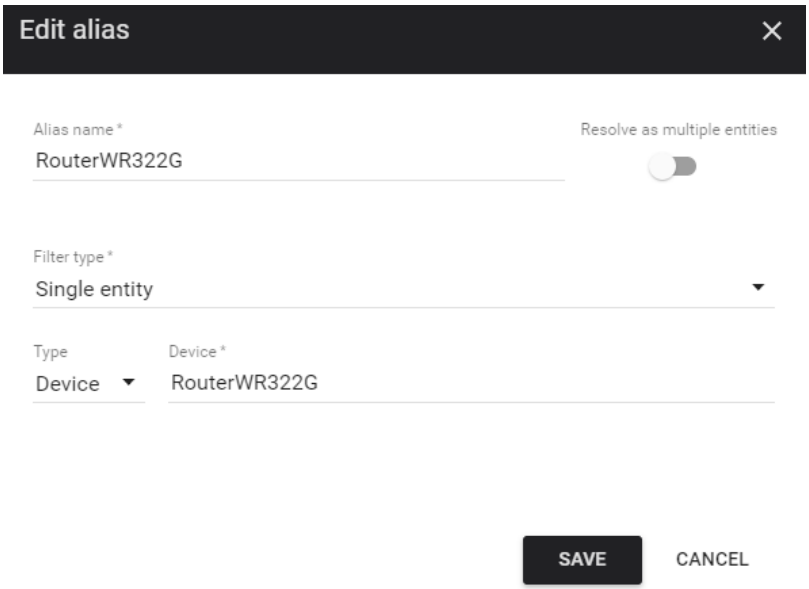
**Import widget** – User can import the JSON file from a widget; just drag the file to the import page.



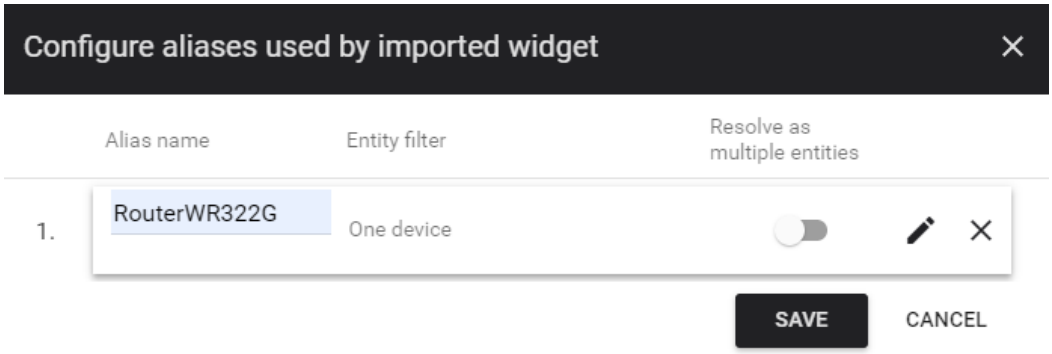

When user imports a widget from other OTA dashboard, there is a case that it doesn't have any entity alias. Then user needs to edit the Alias or Add new Alias according to the device that user used.



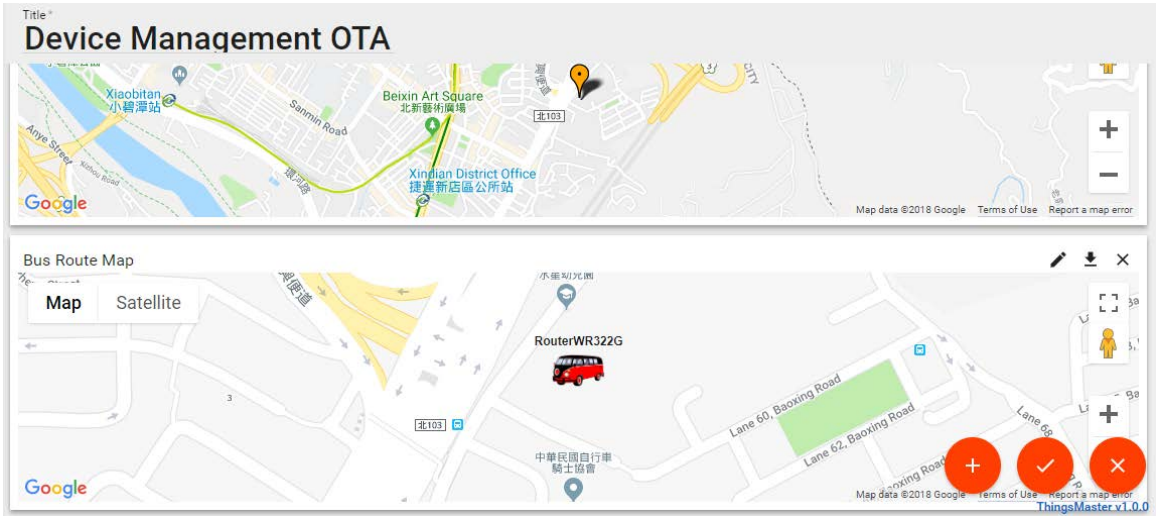
Input the Alias name based on the device that registered on the OTA dashboard or use the familiar name according to the user environment. For the Filter type chooses the Single entity to set the entity to a specific single device and widget. Choose the device from device list. Then click save to add the alias.




Click Save to apply the alias configuration.

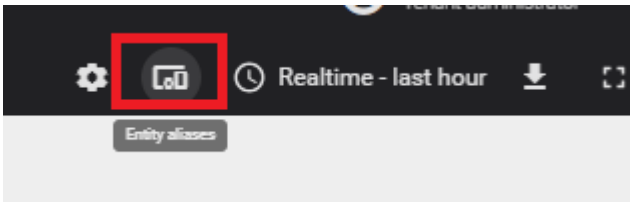



Then a new imported widget will appear at the bottom of the dashboard.

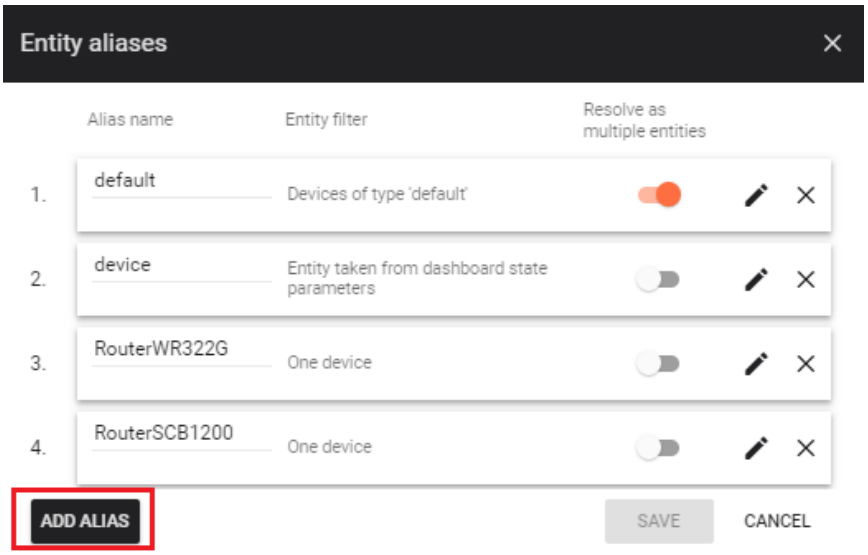


## Add new Entity Alias

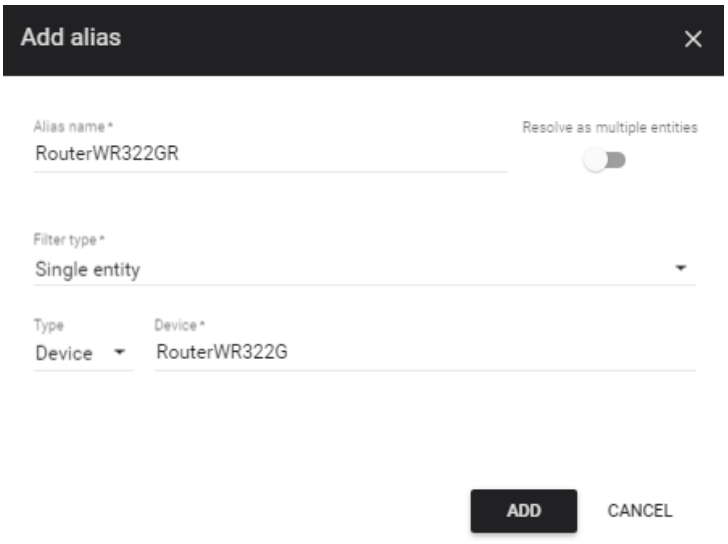
In case, user needs to add new alias. Enter the edit mode and then click the Entity Alias menu at the top panel of the dashboard. By creating this entity alias, it can help to specify the data belongs to which device.




The alias panel will appear, click Add Alias

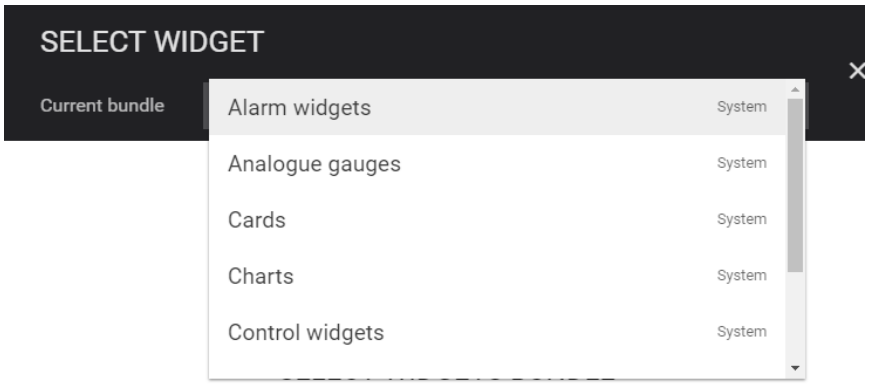



Add new information for the Entity Alias.

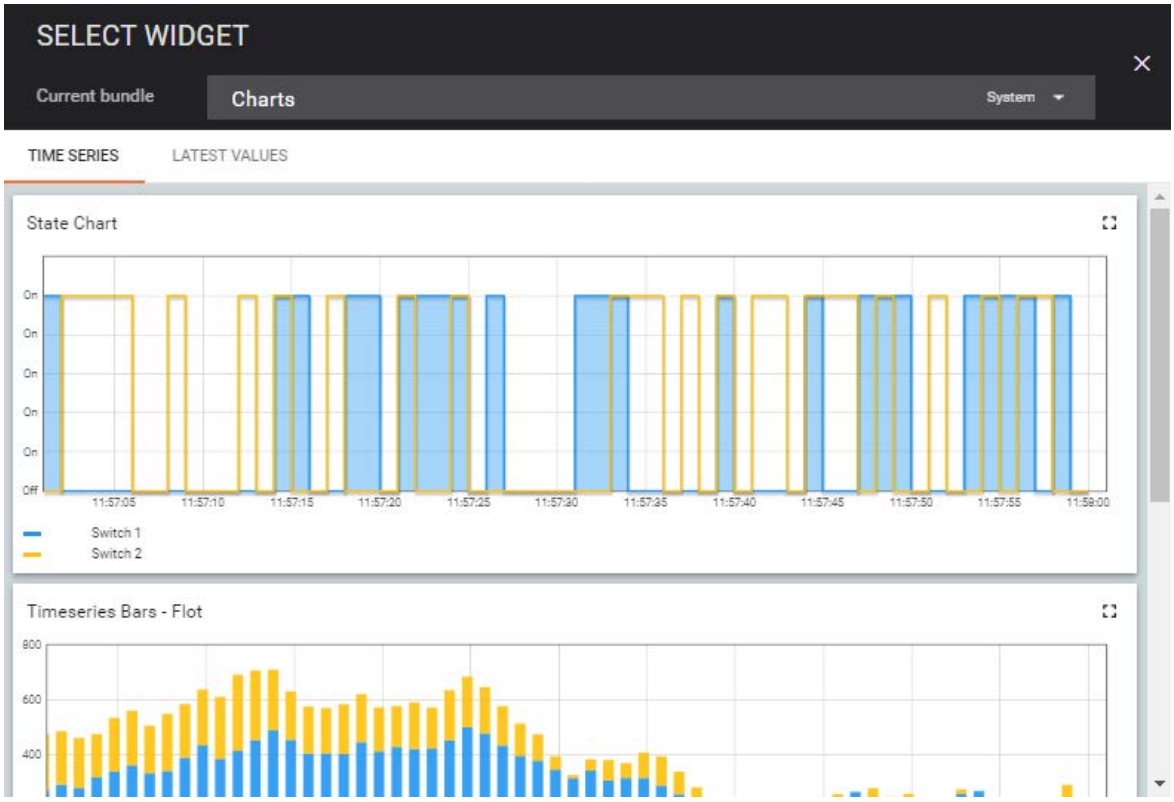


**Create New Widget –** in this section User can choose the widget that want to be added to the dashboard.

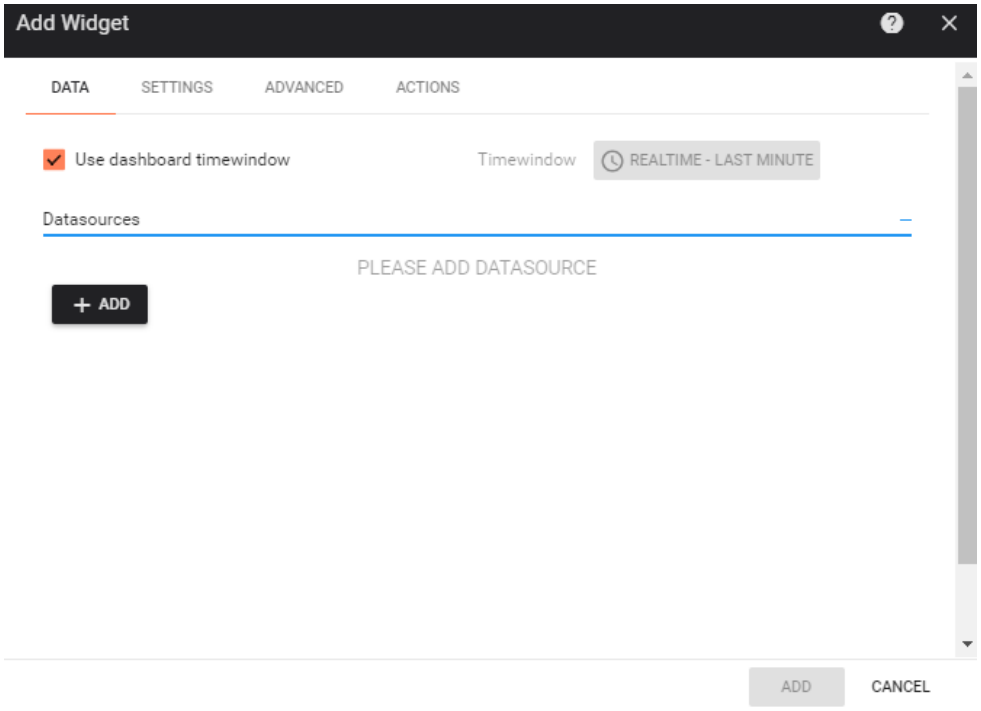
User can choose from the list, in every list it will show several option for the widget type.



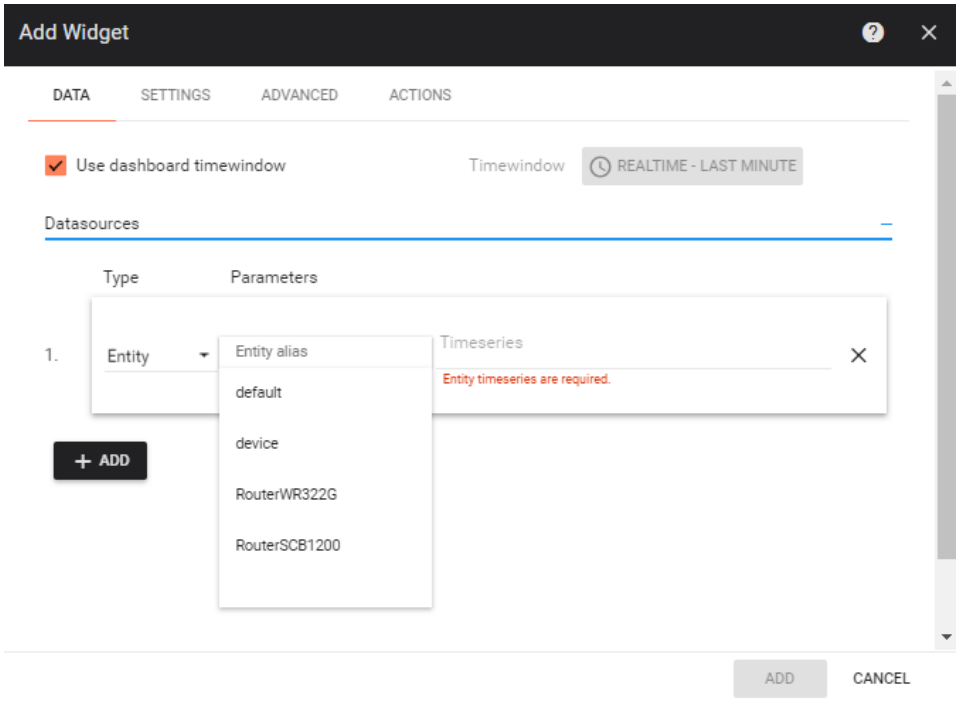

For example choose the Charts widget. It will show several charts as option.



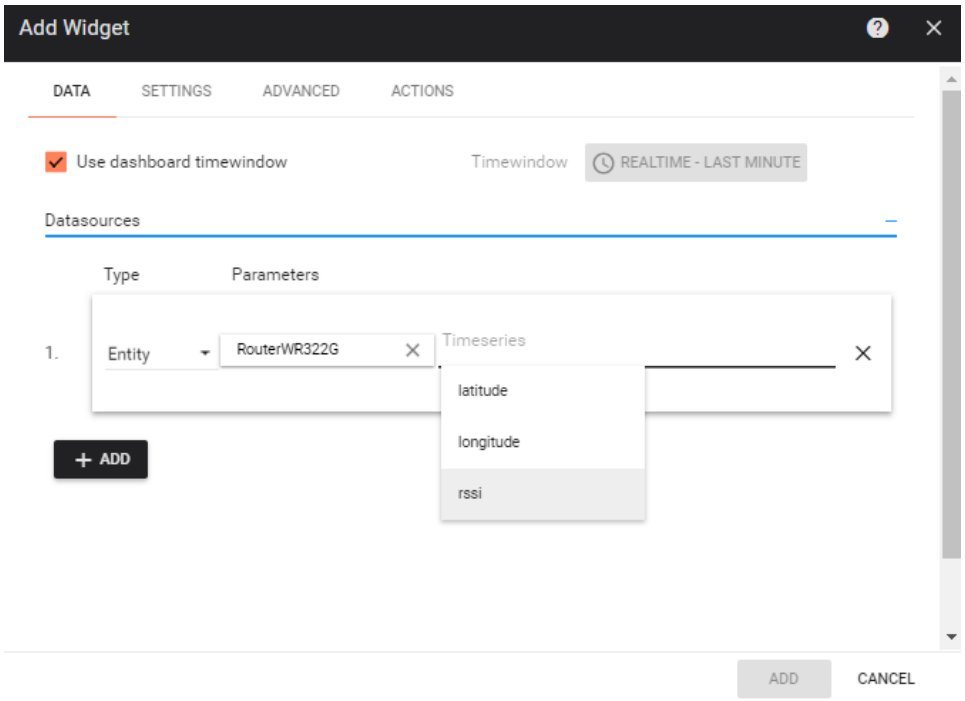
Click the Charts to configure the data source. Click Add to add the data source.



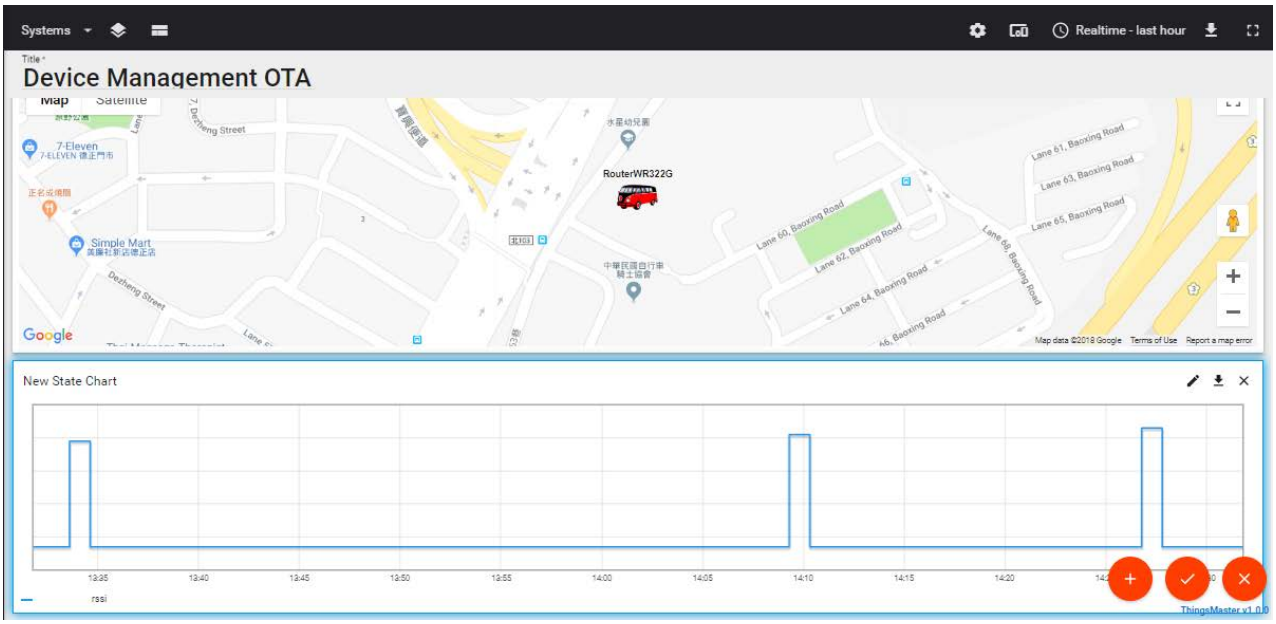

Choose the Entity Alias; by setting this entity it means the widget just belong to the specific device.



Choose what data that wants to be shown on the chart, in this case choose the rssi from the device. And the chart will show the rssi chart information. The Timeseries data is provided by the Client Device, for the standard it will provide latitude, longitude, and the rssi data.

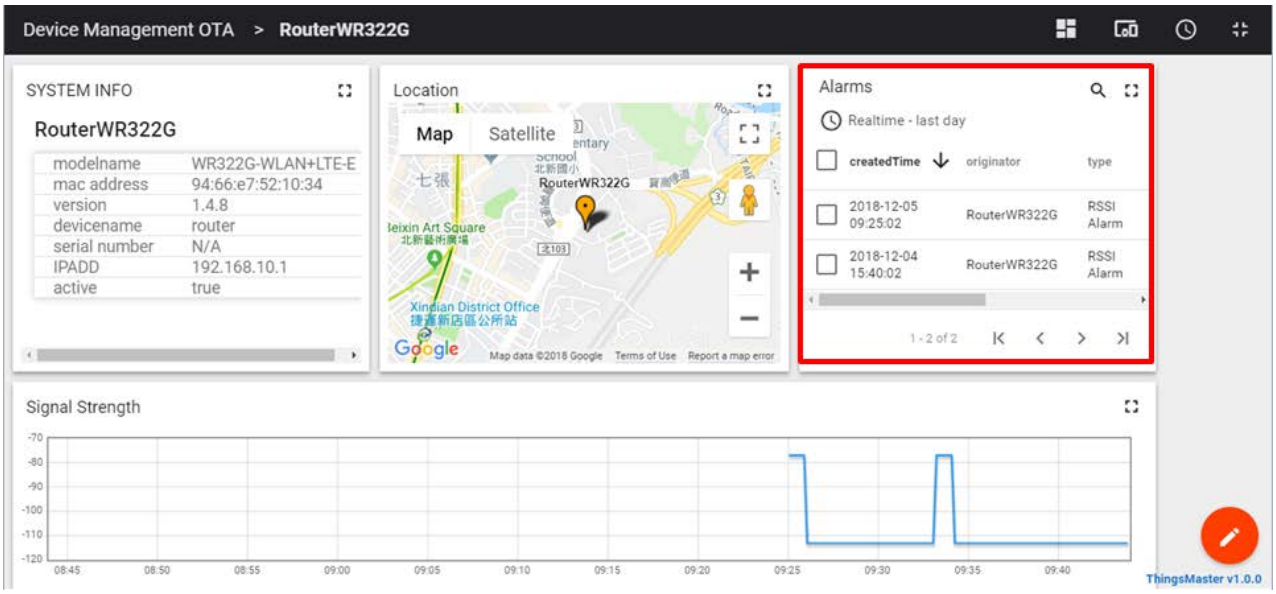



Then click Add and the newly added widget will appear.

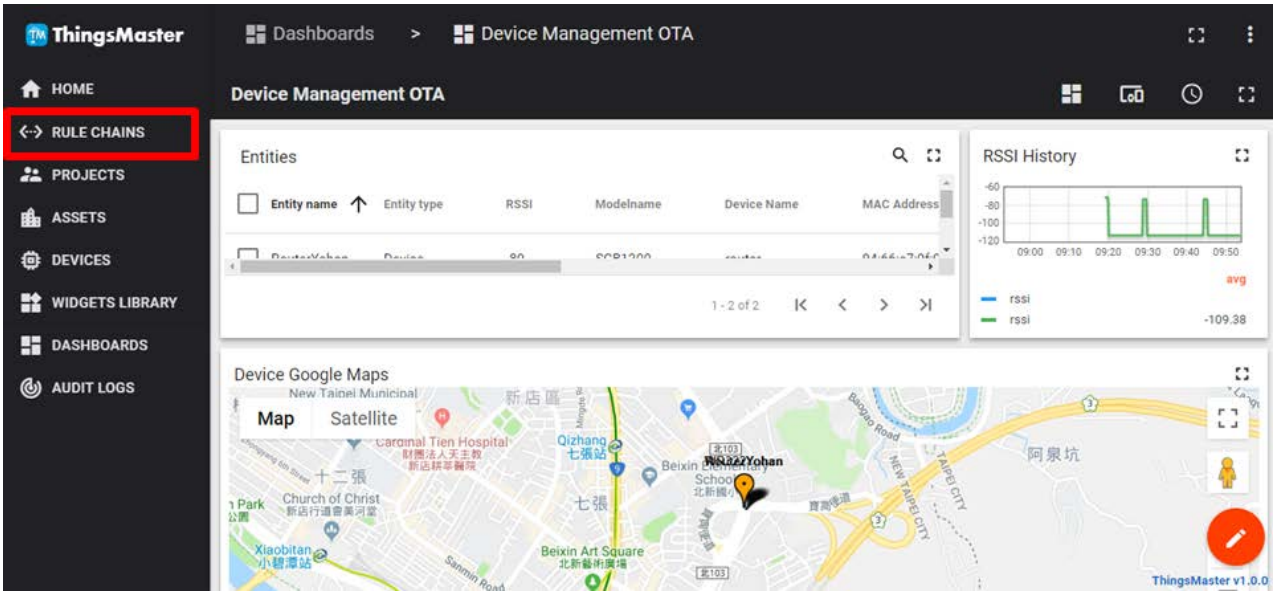


# 4. THINGSMASTER OTA ALARM RULE CHAIN

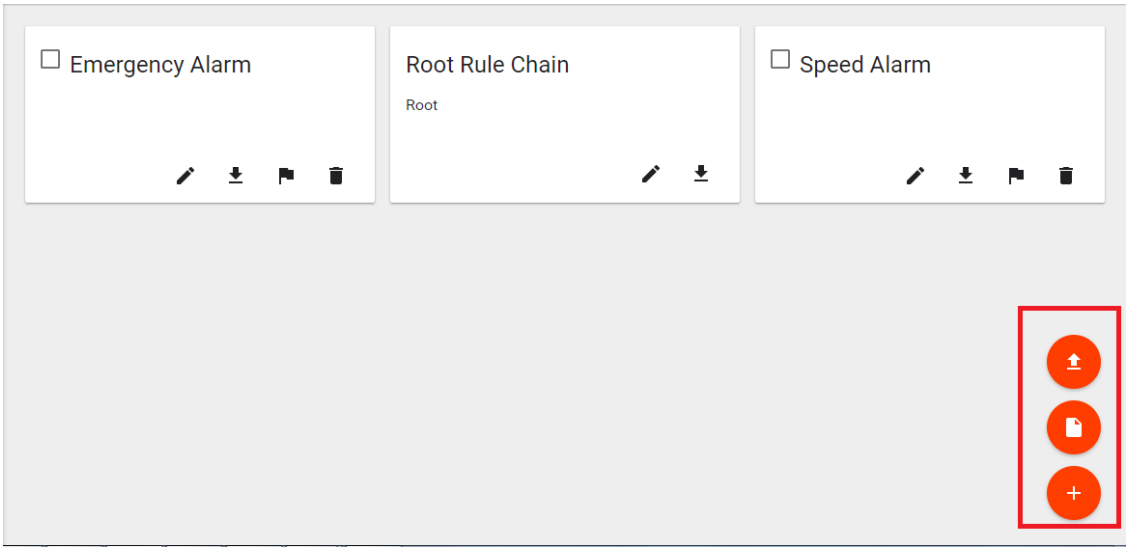
WoMaster ThingsMaster OTA is equipped with the rule chain feature where user may add more rule to trigger or send alarm information to the dashboard. Every time the device icon change into orange color or red color, it means the device has an error alert. User can check the alarm information from the dashboard by click the device icon and the information page will appear.




To add these alarm information, a rule chain needs to be added to the ThingsMaster OTA. To add the rule chain, go to the side panel and click Rule Chain.



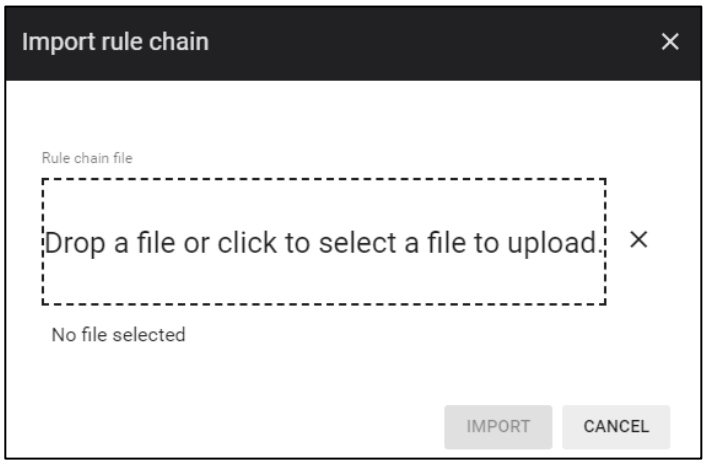
For adding the rule chain user can choose Import a JSON file for a rule chain or create a new rule chain.



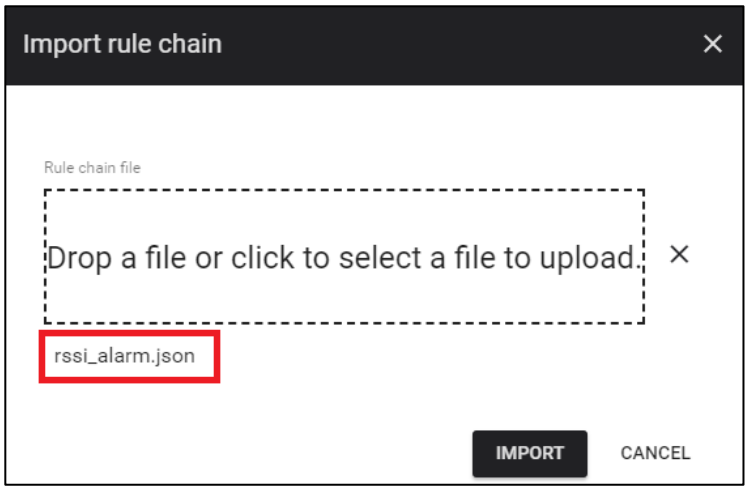

To import a rule chain, user can just directly upload a JSON file that provided by WoMaster **(rssi_alarm.json)**.

Follow the instruction below for importing Rule Chain JSON file.

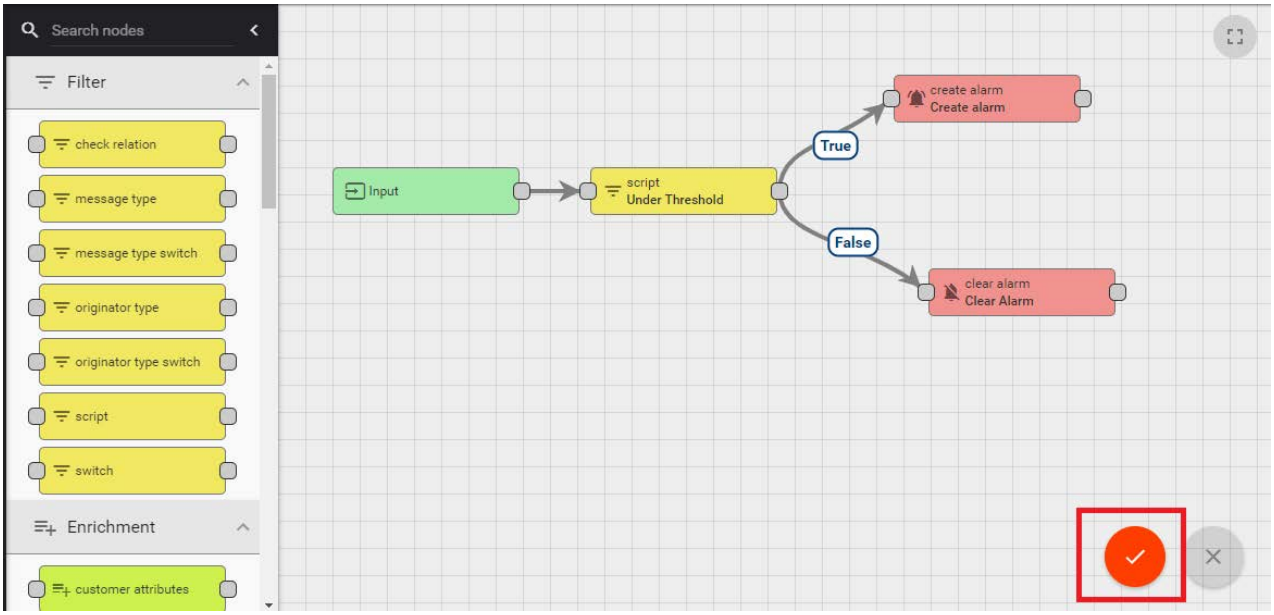
1. Click Import Rule Chain and a pop up box will appear.



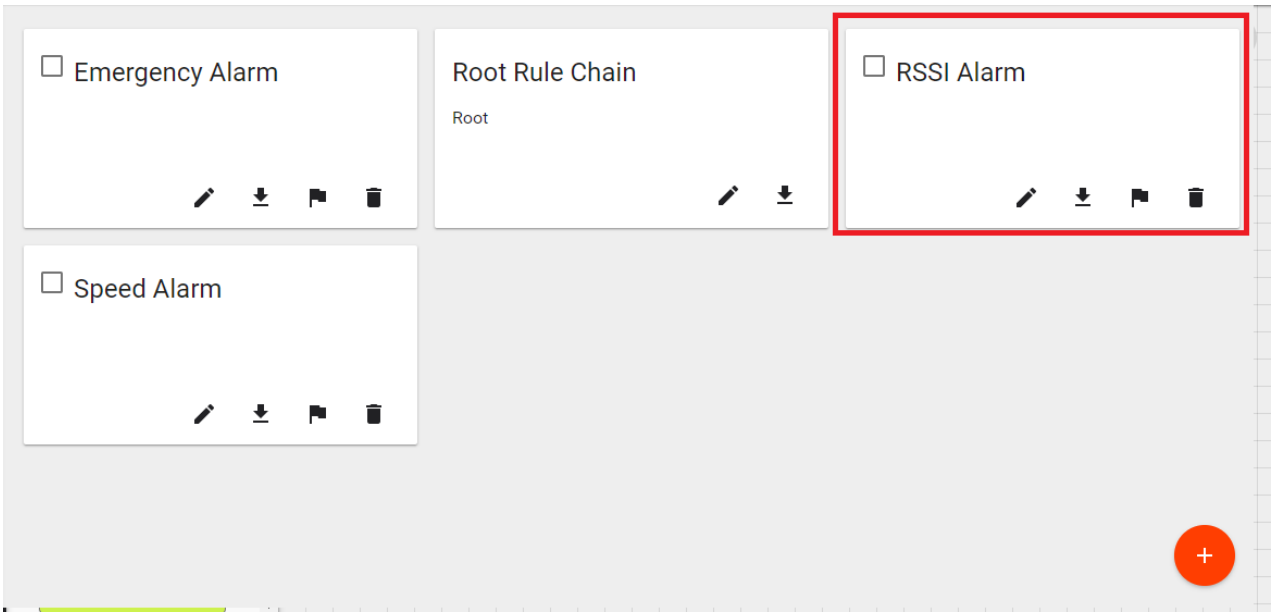
2. User can drag the JSON file or select the JSON file by clicking the box in the middle.



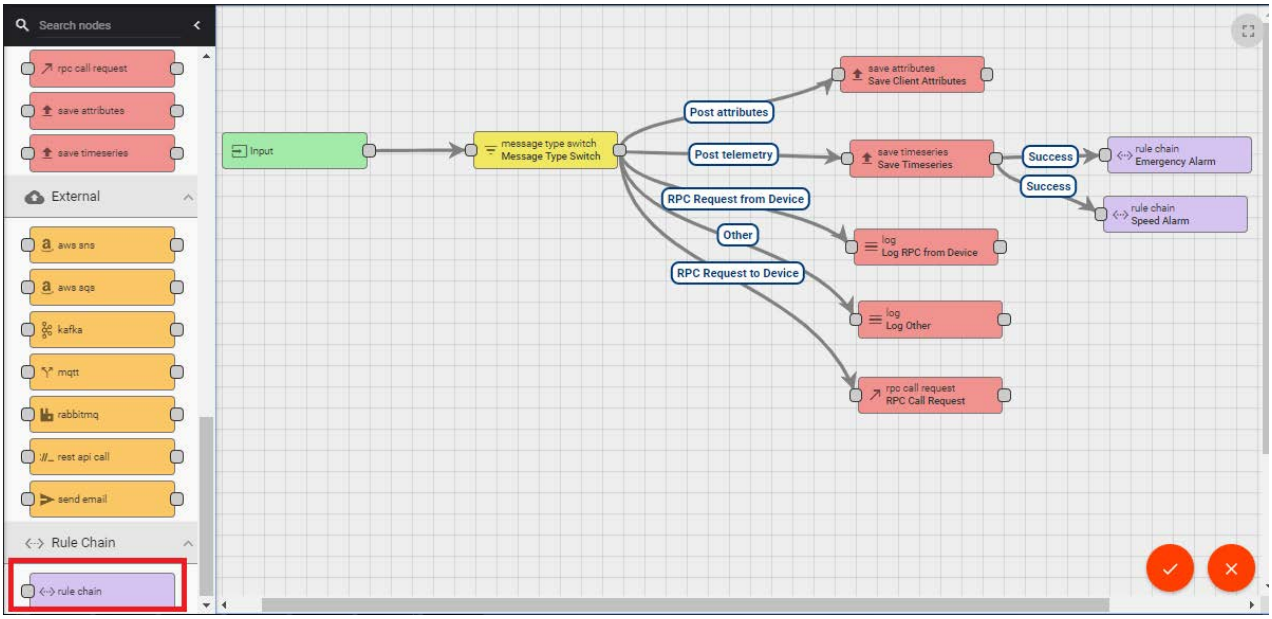

3. Click Import and a newly added Rule Chain will appear. Click Apply changes to apply the rule chain.



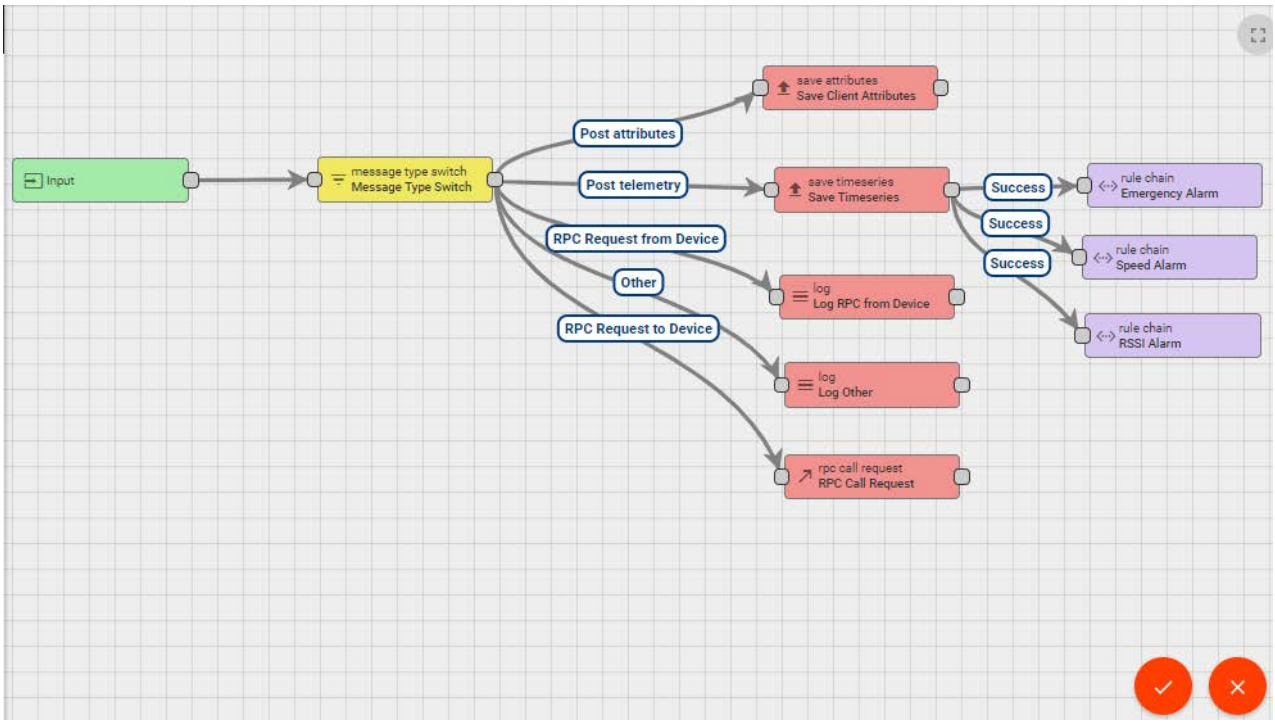
4. User can check the Rule Chain dashboard; a newly imported rule chain file is added.




5. Add the new Rule Chain to the **Root Rule Chain** to activate the new rule. Drag and drop the Rule Chain block to the dashboard.



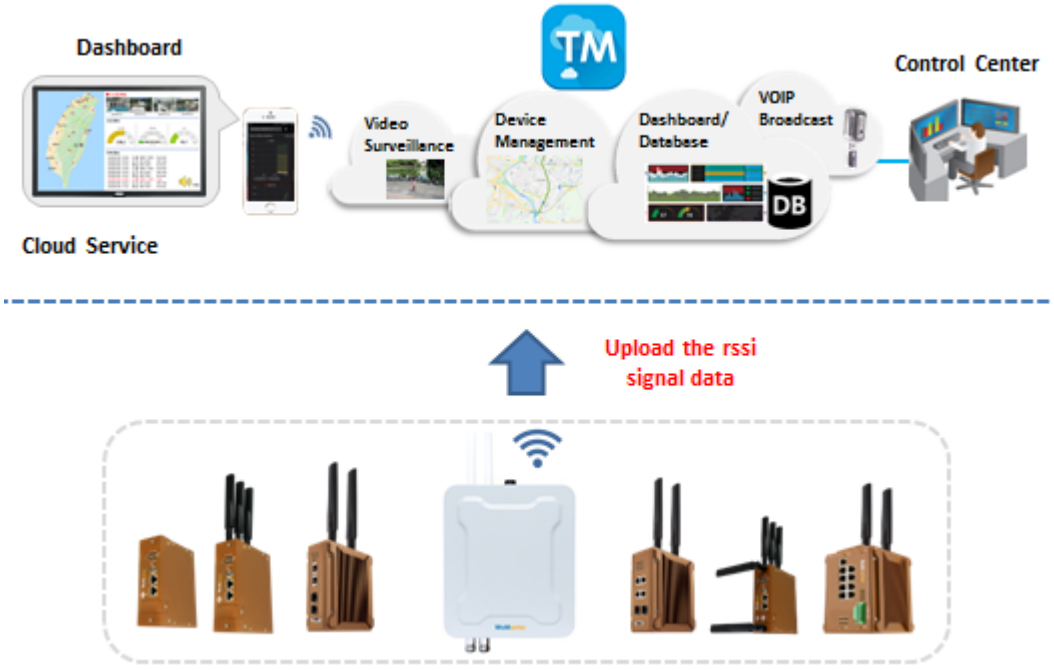
6. Then create a link by pulling a line from the Save Timeseries block to the Emergency Alarm Rule Chain. Put the Success label to the line. Then click Apply Changes.



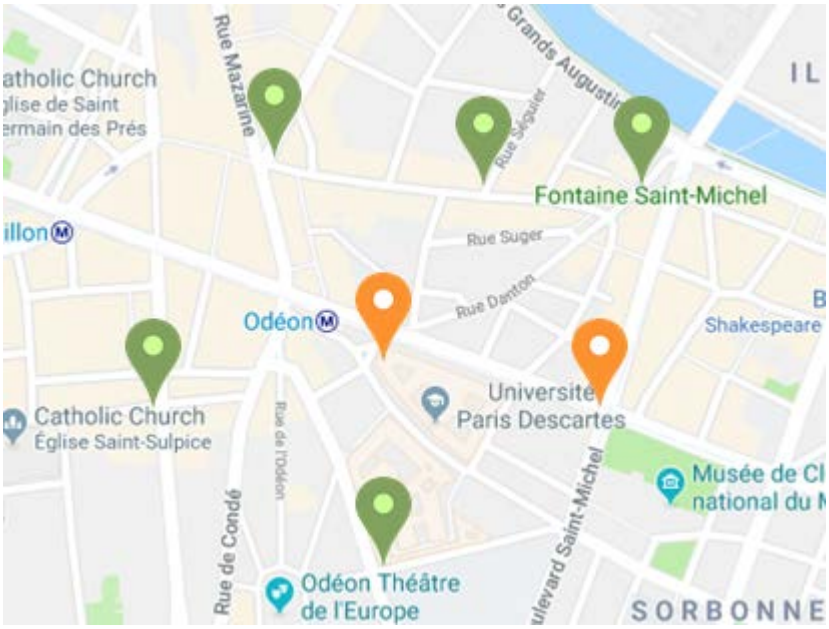

For creating a new alarm rule, below are two examples about the Alarm Rule Chain, the rssi signal strength rule chain, and the emergency push button alarm rule chain.

## 4.1 RSSI SIGNAL ALARM

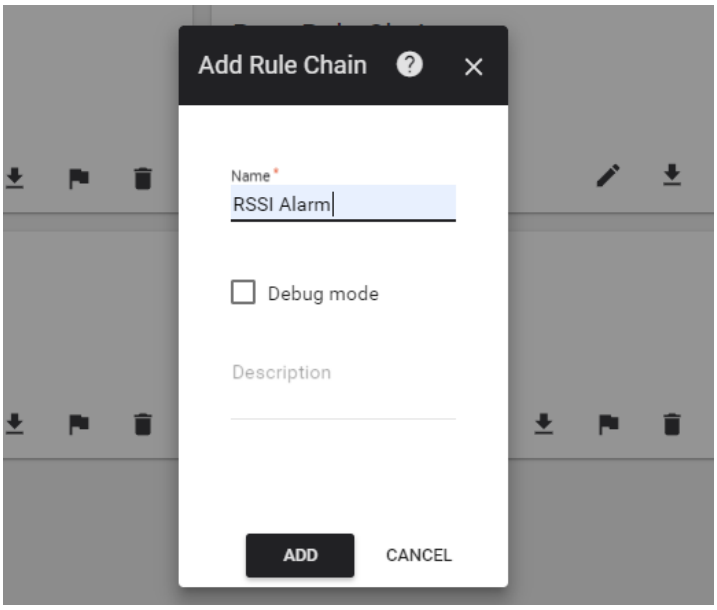
The first case is about receiving rssi signal alarm when the rssi is below the normal rssi value or low signal. In this case the threshold for the rssi value is < -70 dbm. This rule chain can be applied in a simple topology as below:



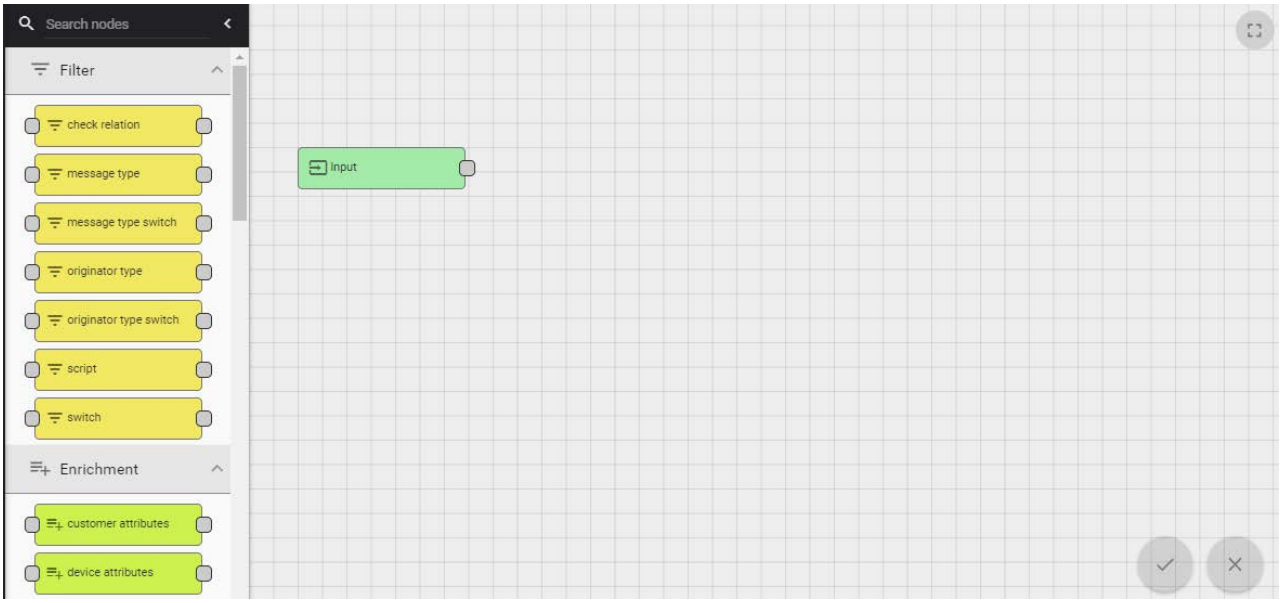
In order to prevent the down time issue, a system administrator needs to get a real time data about the rssi signal from several devices (WR Series or SCB Series) that they have installed. The cellular information is important for every cellular device. By adding the rssi alarm rule chain, it can help the administrator easily to monitor and do the maintenance directly when the device status show low signal. It can reduce the maintenance cost and prevent periodically maintenance as well because through the cloud administrator can arrange the time when they need to go onsite to maintenance the device. The orange color means that the signal is low or below the threshold and the green color icon means the signal is normal or stable.




Click Create New Rule Chain or Import Rule Chain to Add a Rule Chain. Click Add and a new rule chain folder will appear.



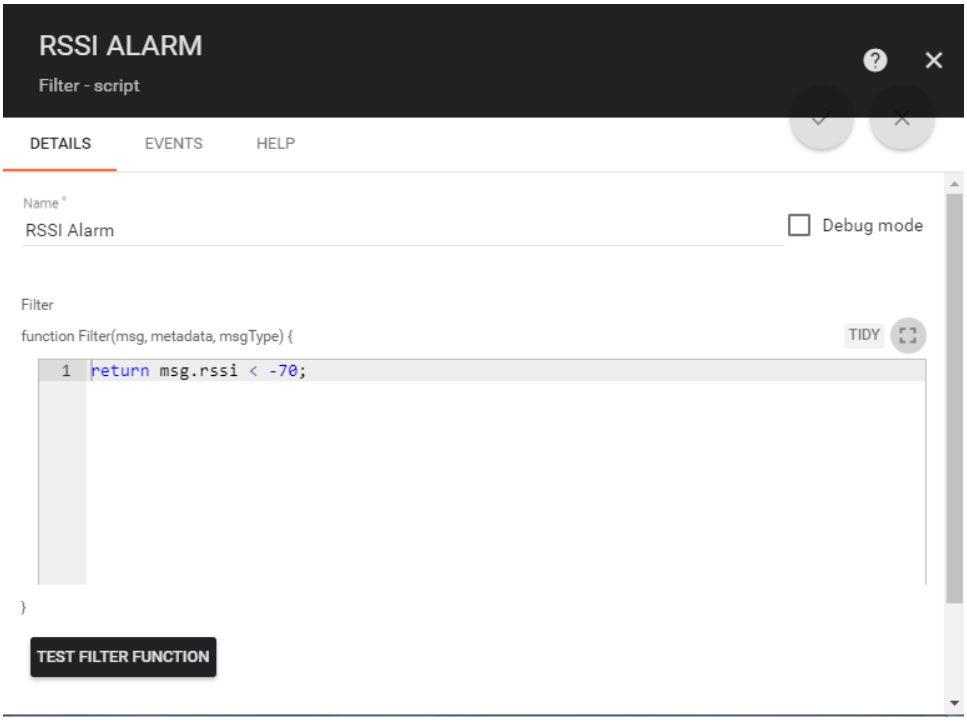
Click the RSSI alarm folder to enter the rule chain dashboard. It consists of a lot of function that user can use according to the needs. Drag and drop the block from the side panel then do some modification for the command.



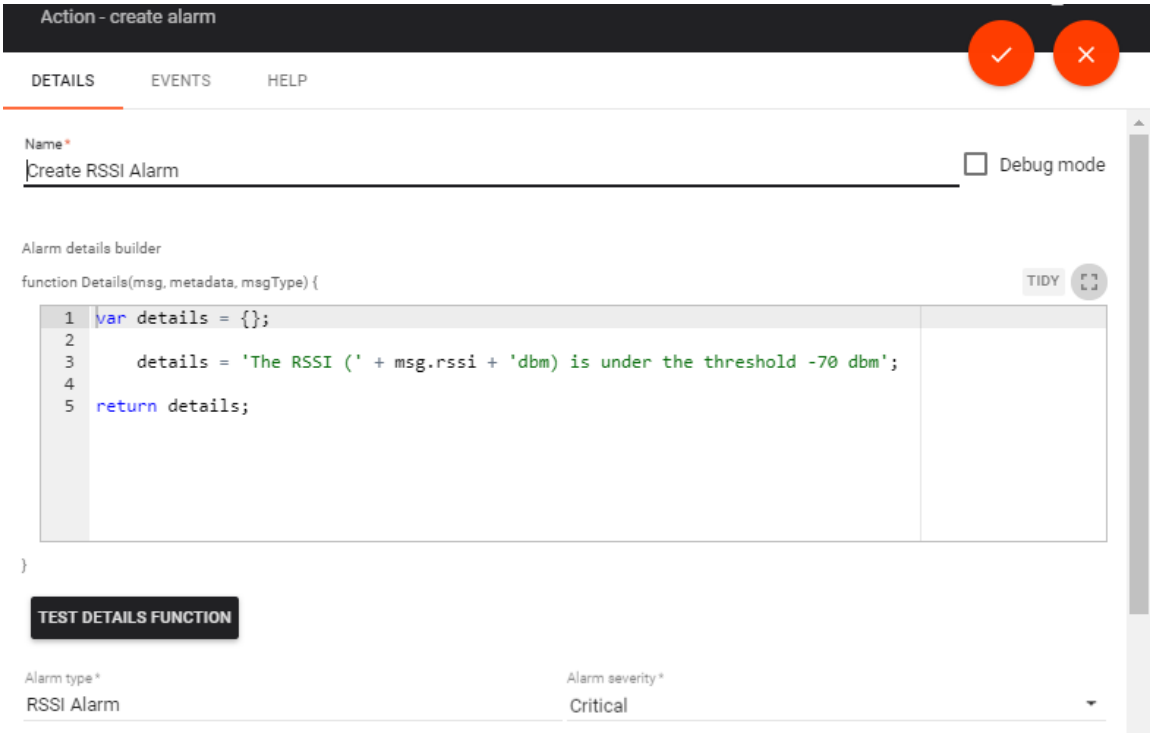

Drag the block from the Filter section -> select the Switch block. After user drag the block, a pop up page will appear and in this page user may needs to add the filter name and modify the command. User needs to set up the command and put the threshold and a condition when it will trigger the alarm and send alarm information to the OTA dashboard. The switch filter will read the rssi variable to add the condition.

Command:

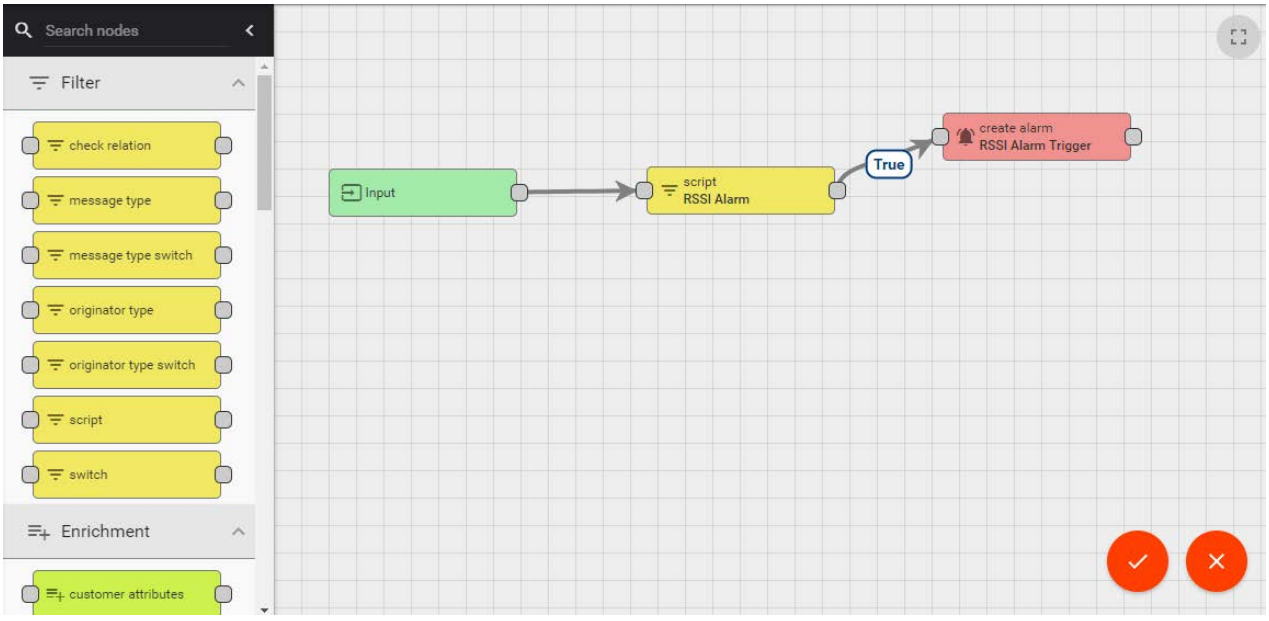
return msg.rssi < -70;



To create the alarm rule chain, drag and drop the Create Alarm block to the dashboard. Then the Action detail page will appear. Input the Alarm name, modify the command as below, and input the Alarm Type as well.

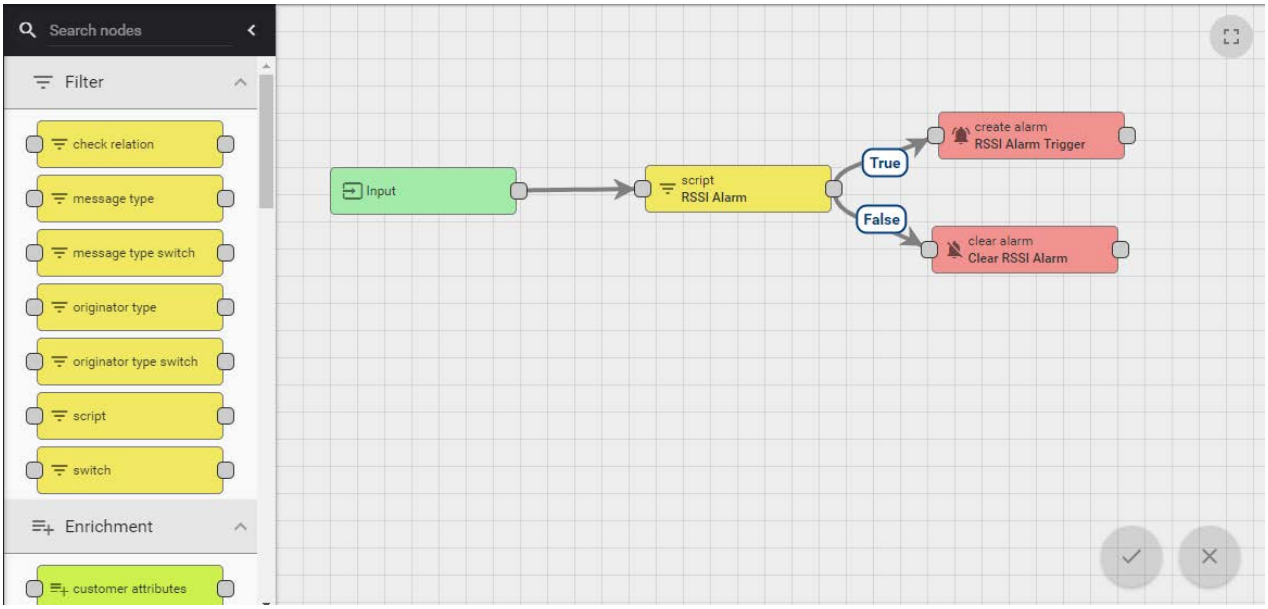



After Add the Action block to Create Alarm, drag a line from the Filter block to the Create alarm block set it as True value. The Alarm will be triggered when the value is True.

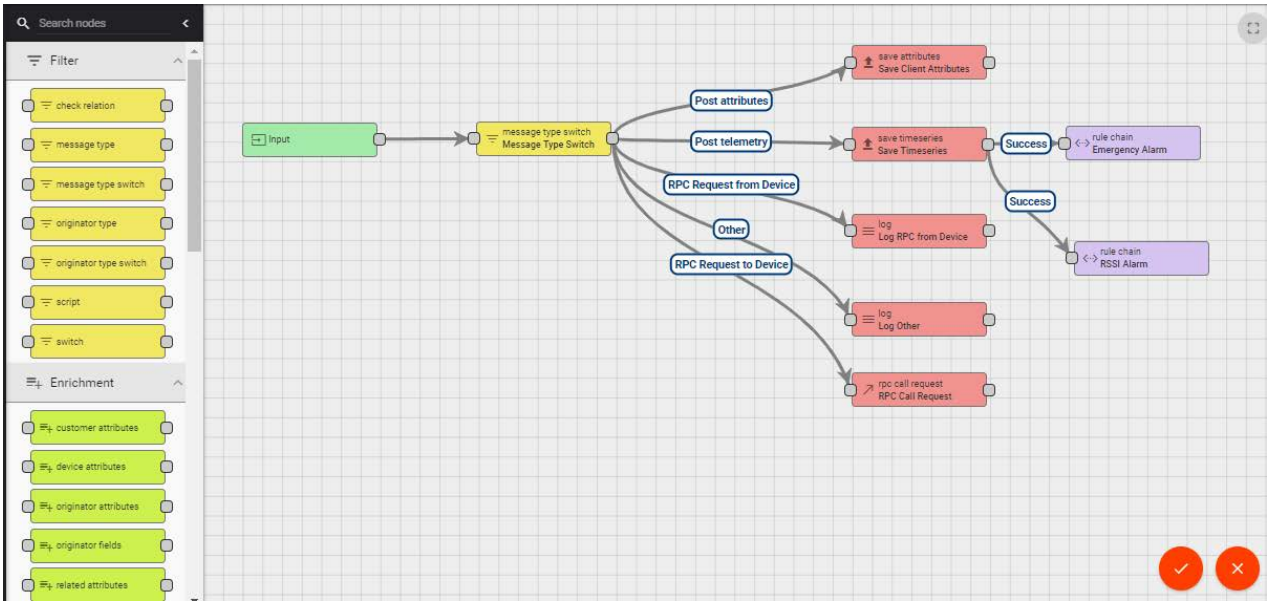


Set the Rule Name as Clear RSSI Alarm and set the Alarm Type to RSSI Alarm. Click Add to add the Clear Alarm block.

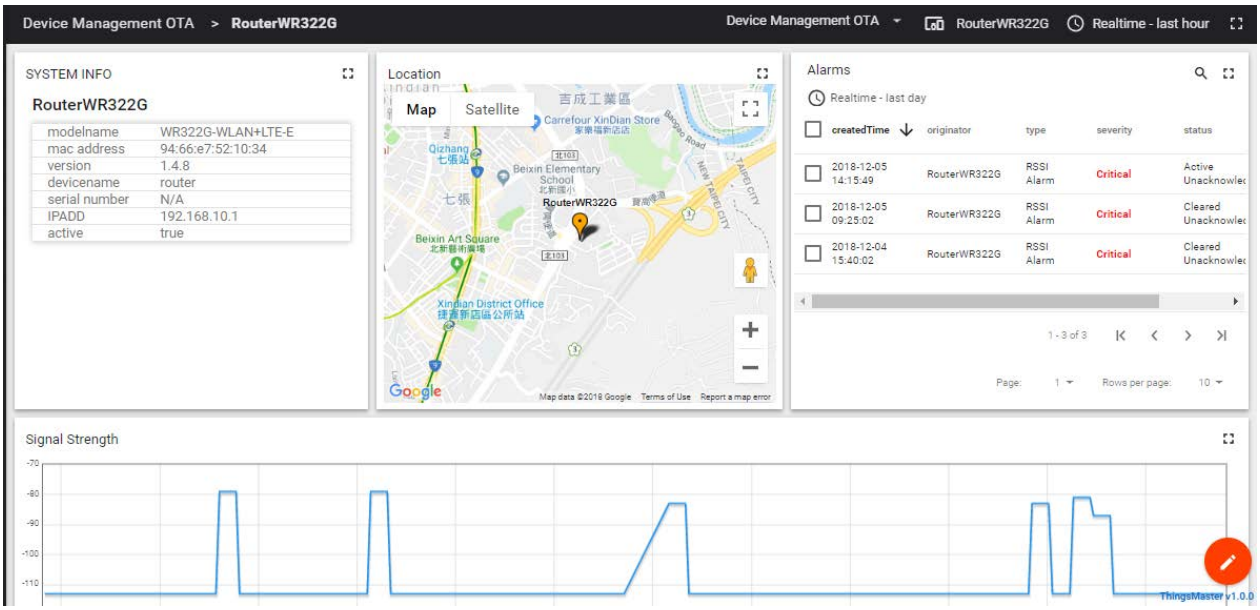

After Add the Action block to Clear Alarm, drag a line from the Filter block to the Clear alarm block set it as False value. The Alarm will not be triggered when the value is False.



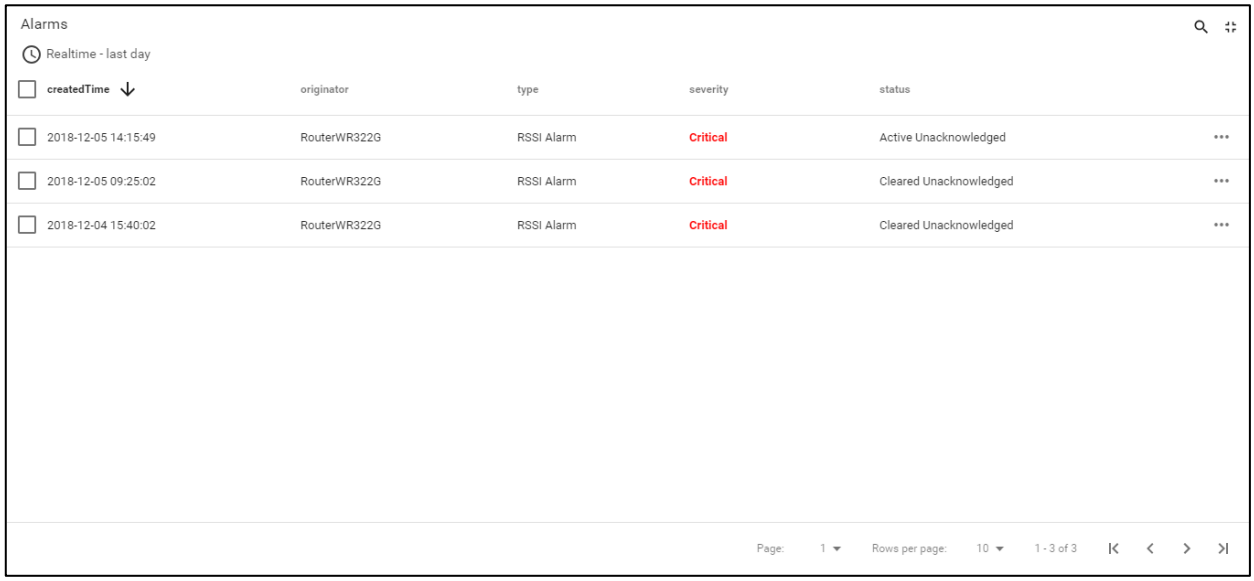
Add the new Rule Chain to the **Root Rule Chain** to activate the new rule. Drag and drop the Rule Chain block to the dashboard then create a link by pulling a line from the Save Timeseries block to the Emergency Alarm Rule Chain. Put the Success label to the line.



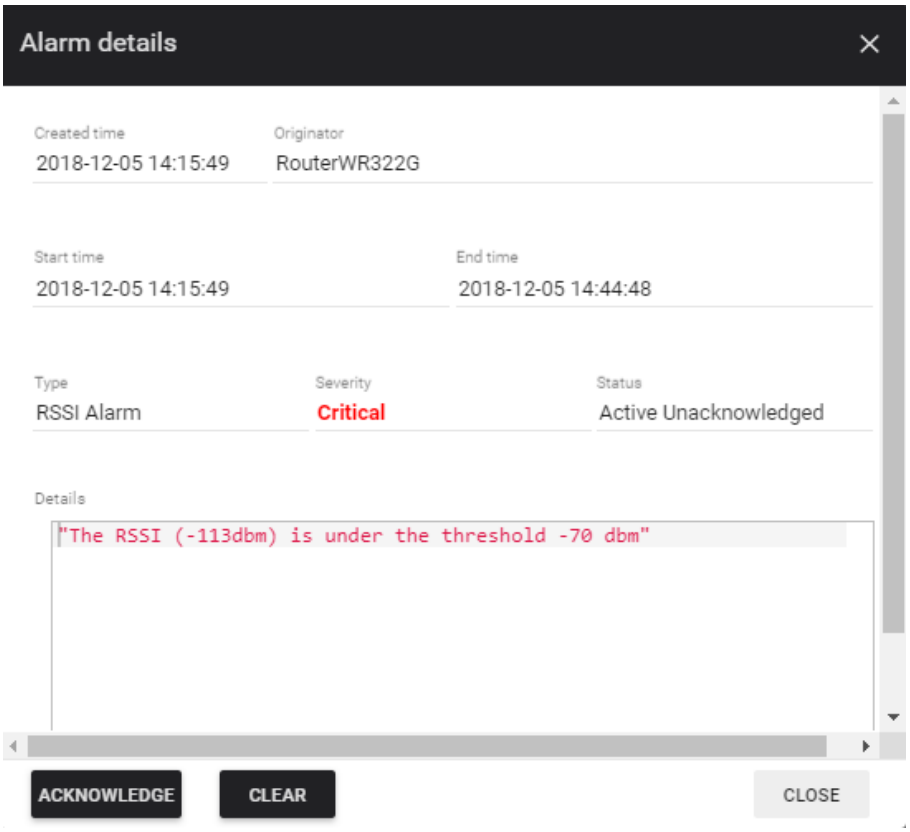

Go to the dashboard and click the related device and the device information will appear. Go to the Alarm Section and user will see the RSSI Alarm that has been triggered when the RSSI signal is below -70dbm.



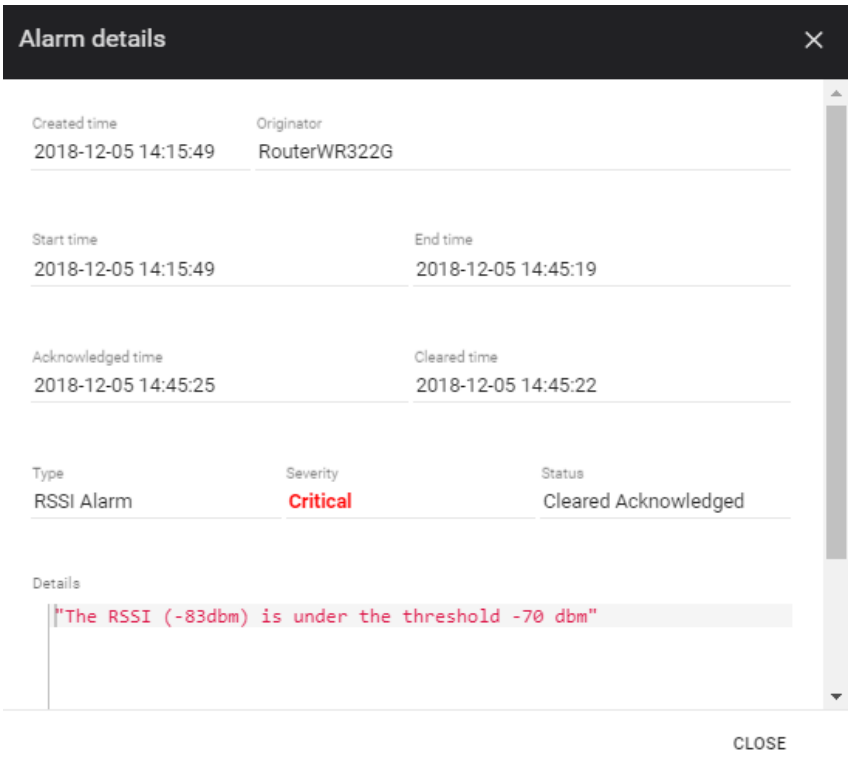
Every time the RSSI signal is below the threshold (<-70dbm) then it will trigger the alarm and send alarm information the OTA dashboard.




To check the Alarm detail, click the **"…"** to open the Alarm detail page.

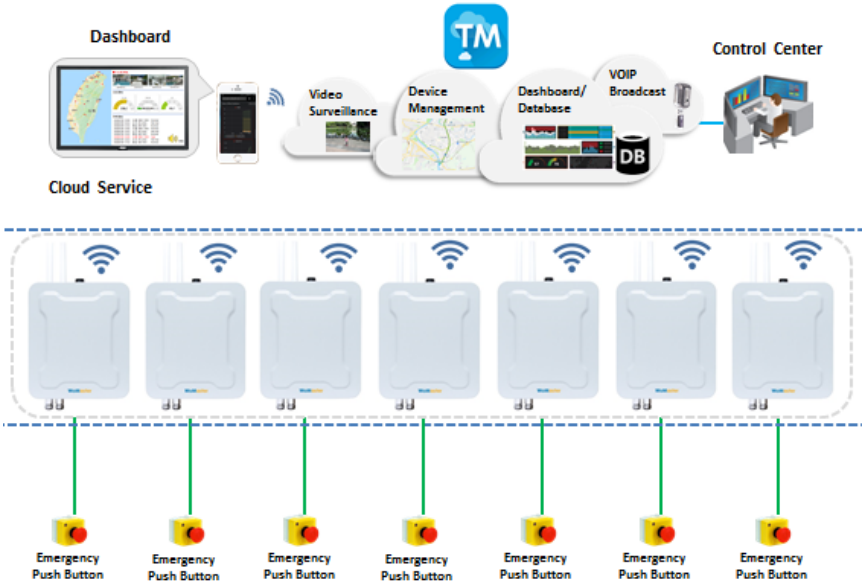


Click **Acknowledge** button, if the alarm has been confirmed. Click **Clear** to clear the alarm. The status will change as below.

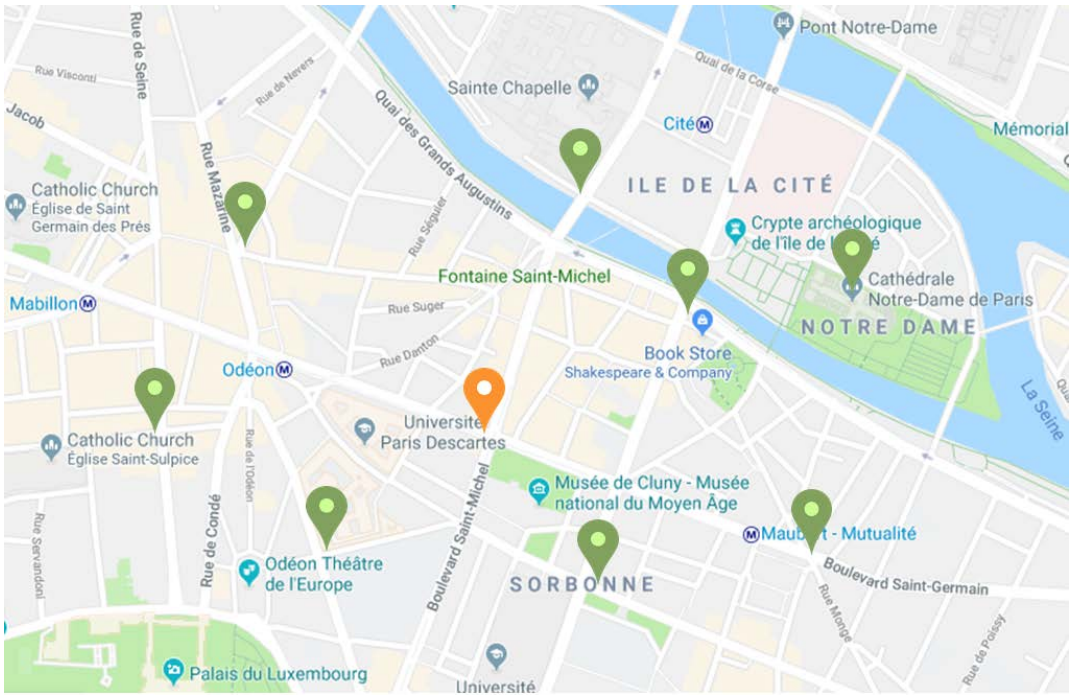


## 4.2 EMERGENCY ALARM

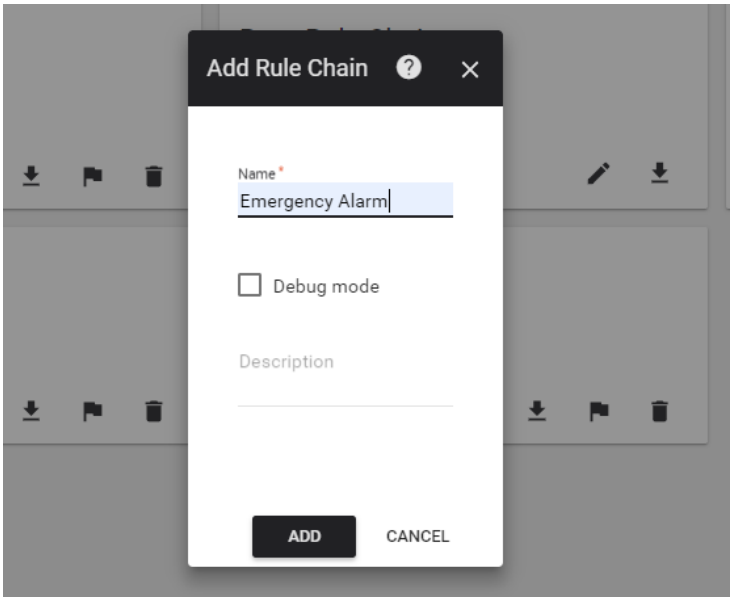
This alarm will appear when user pushes the Emergency push button alarm and it will send alarm information to the OTA dashboard. This rule chain can be applied in WoMaster SCB Demo Kit. (Contact our sales for more information). Below is a simple topology about the Emergency push button.



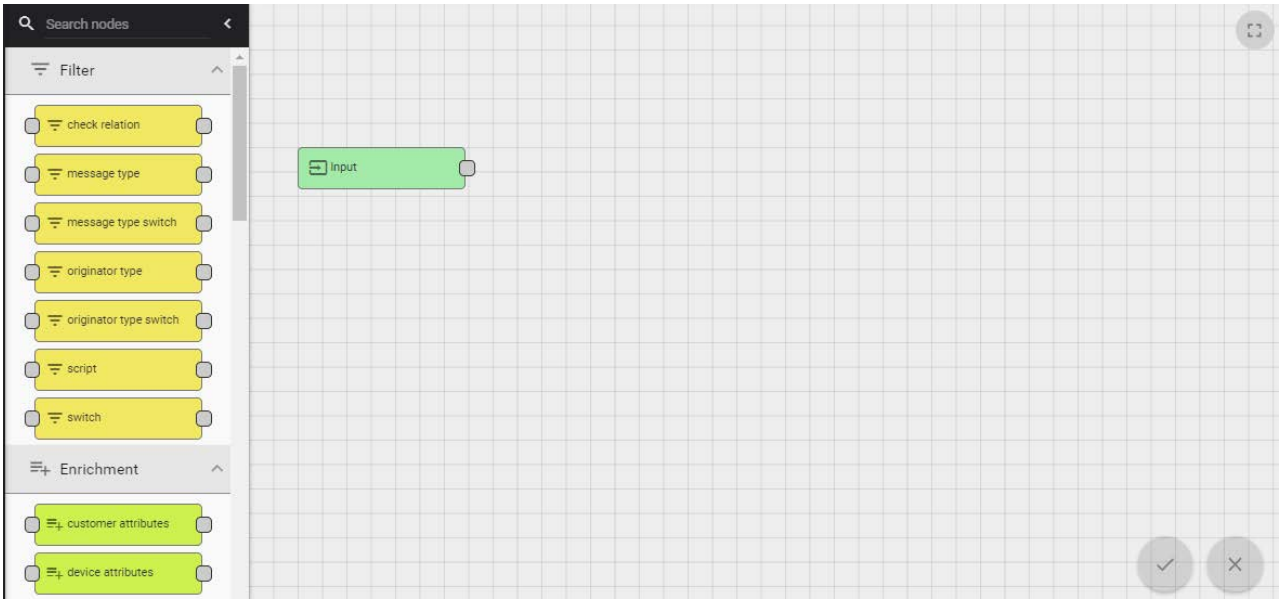

For example in a Smart City Application, the government wants enhance the city security system and reduce the crime. They use a lot of SCB devices with emergency push button to help the police get any emergency alarm and handle the issue faster. The SCB is installed near a public area, so the pedestrian can easily give an emergency alarm in case there is security issue. Every time the pedestrian push the emergency button then it will send the emergency alarm to the cloud. Then the police easily identify which device or area that sent the emergency signal. The police can check directly from the cloud by checking the device icon that has orange color.



Click Create New Rule Chain or Import Rule Chain to Add a Rule Chain. Click Add and a new rule chain folder will appear.




Click the Emergency alarm folder to enter the rule chain dashboard. It consists of a lot of function that user can use according to the needs. This Rule Chain page is easy to use, user just need to drag and drop the block from the side panel then do some modification for the command. The input block will appear every time user creates a new rule.

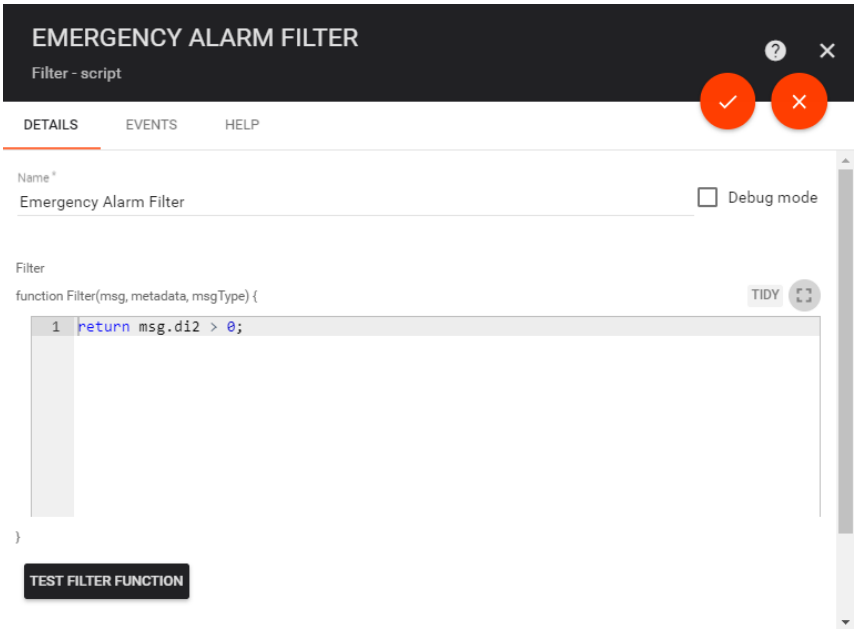



Drag the block from the Filter section -> select the Switch block. After user drag the block, a pop up page will appear and in this page user may needs to add the filter name and modify the command.

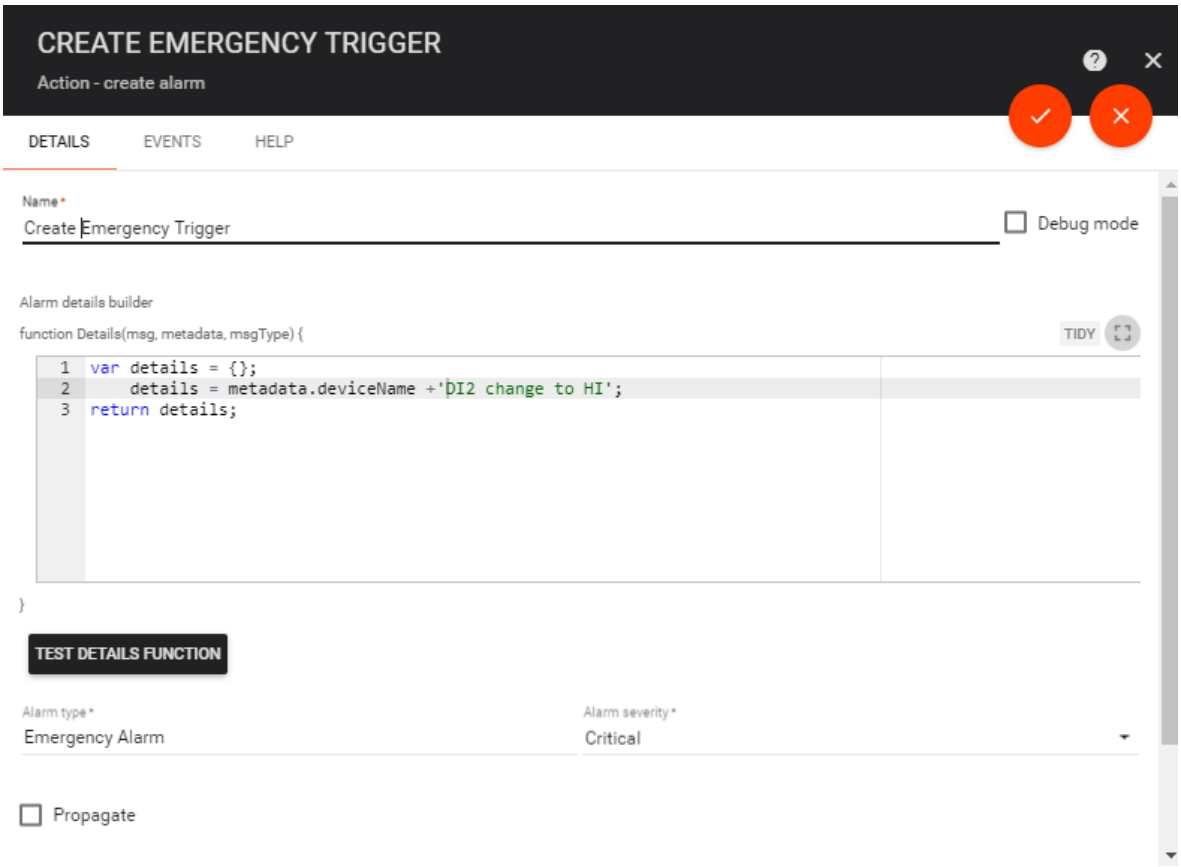
Because the Emergency alarm used the push button method, that means it receives the command from the digital input, the digital input variable in this case is represented by DI2 since it is connected to the DI2 (Refers to the SCB interface).

**Command:**

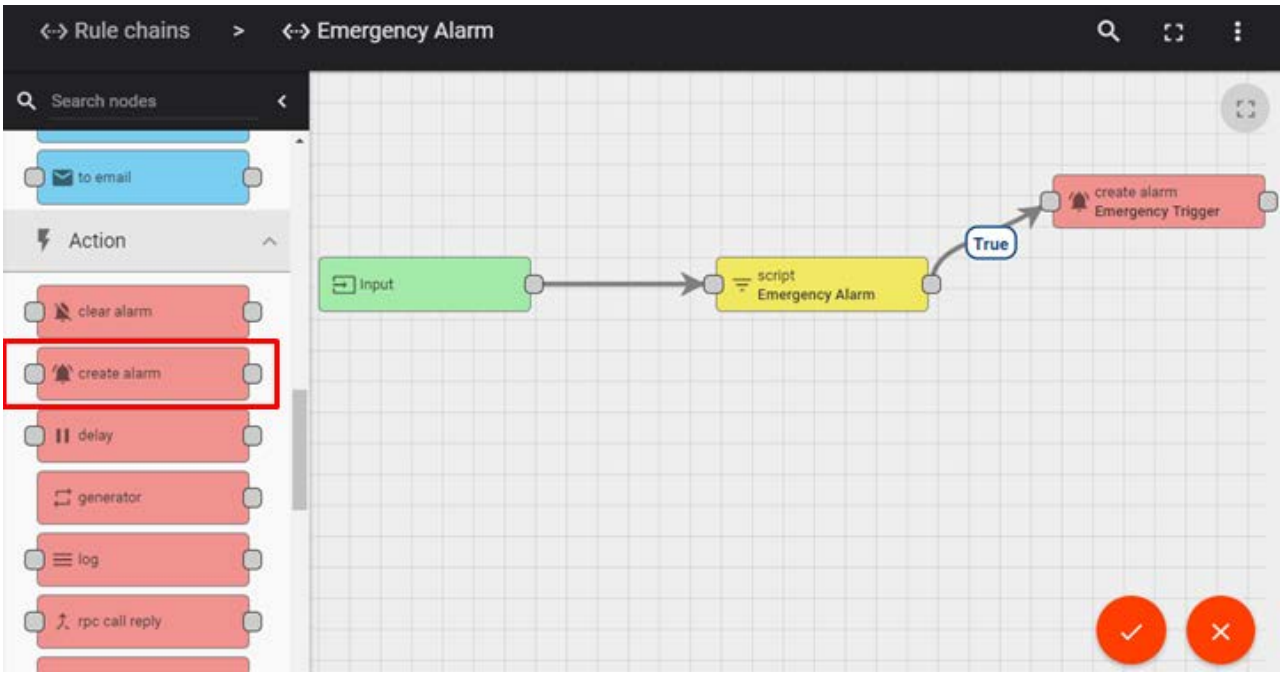
```
return msg.di2 > 0;
```



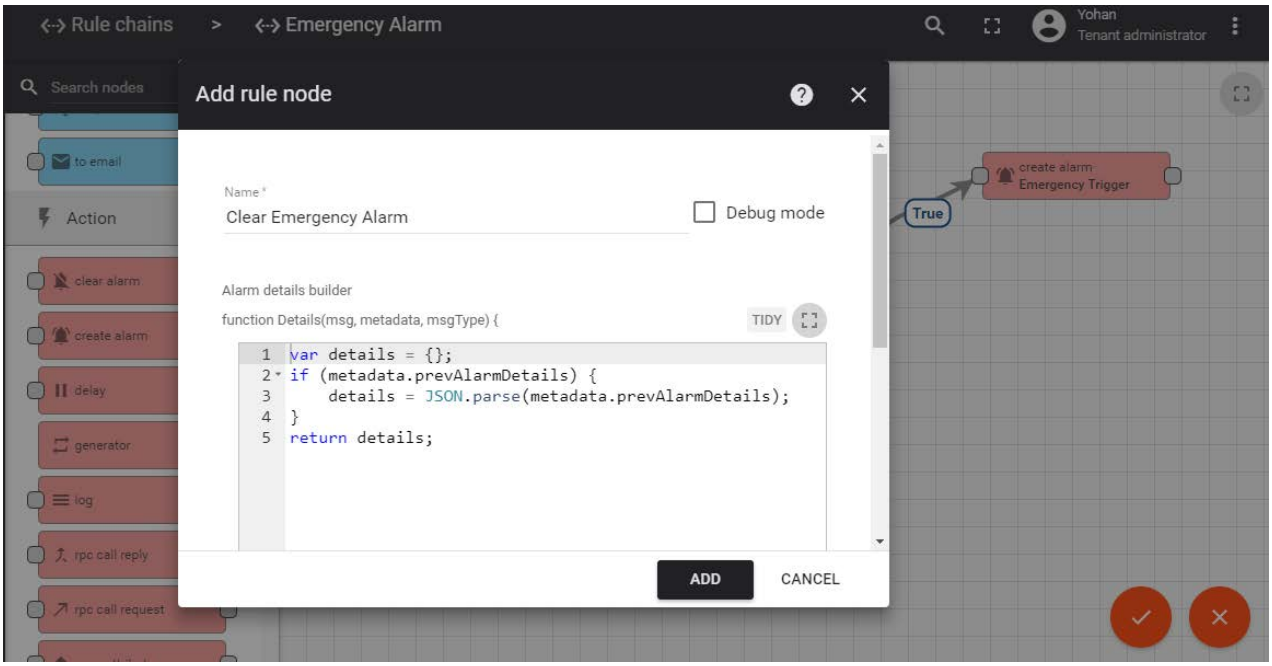

To create the alarm rule chain, user can drag and drop the Create Alarm block to the dashboard. Then the Action page will appear. Click the check button after finish with the setting.



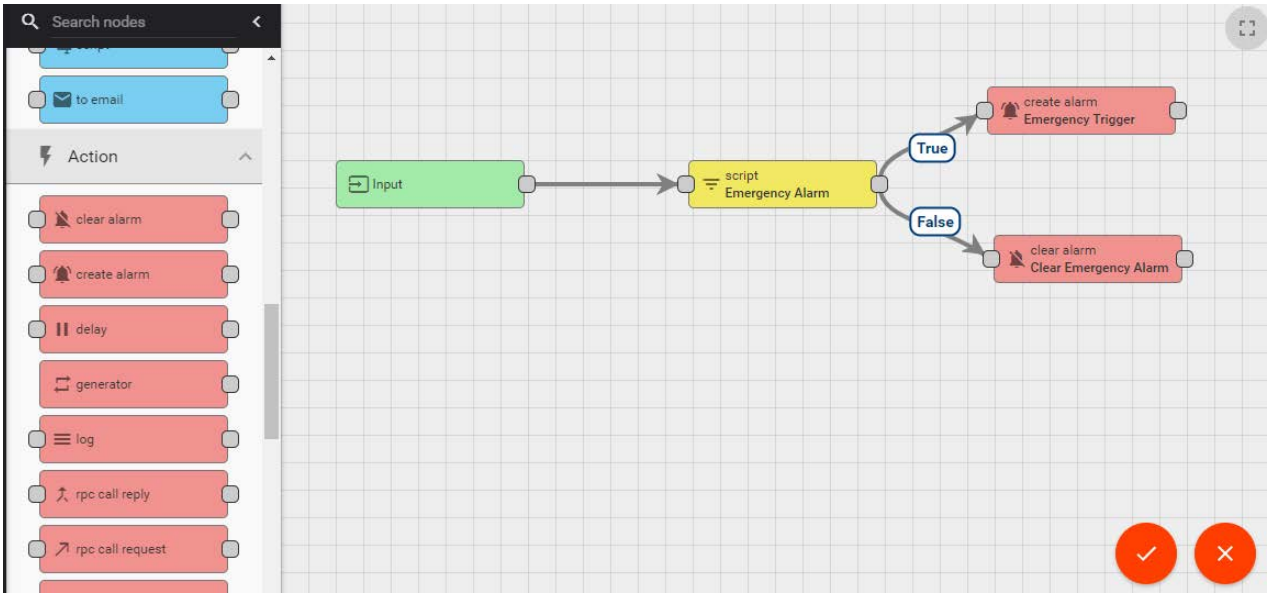
After Add the Action block to Create Alarm, drag a line from the Filter block to the Create alarm block set it as True value. The Alarm will be triggered when the value is True.



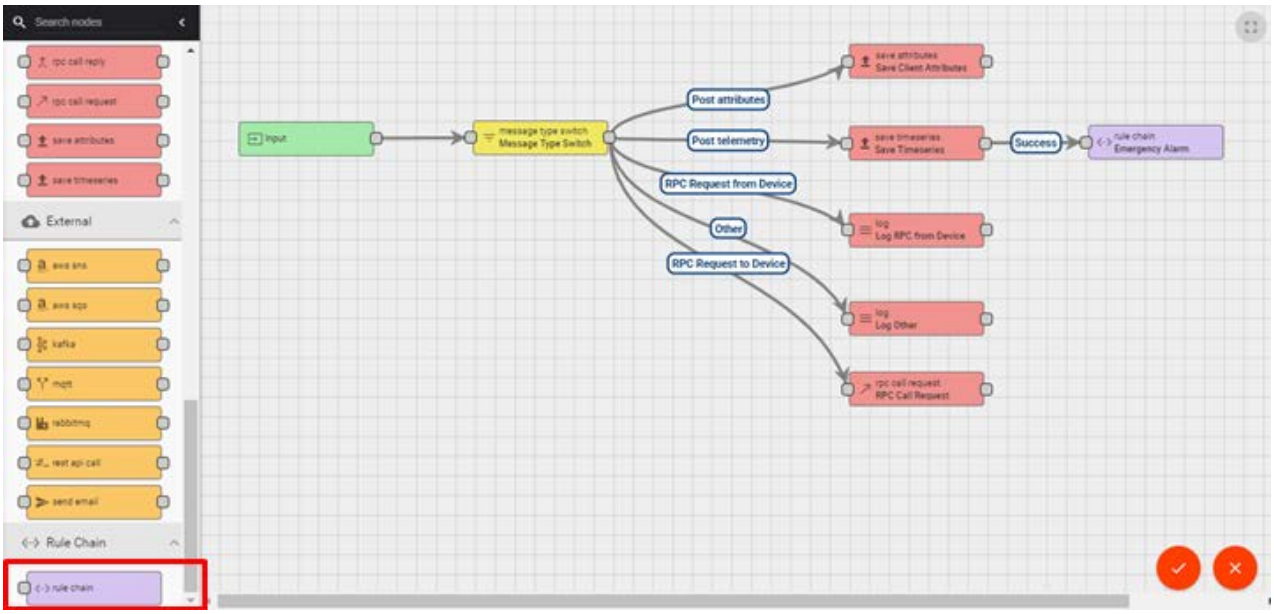

Set the Rule Name as Clear Emergency Alarm and set the Alarm Type to Emergency Alarm. Click Add to add the Clear Alarm block.



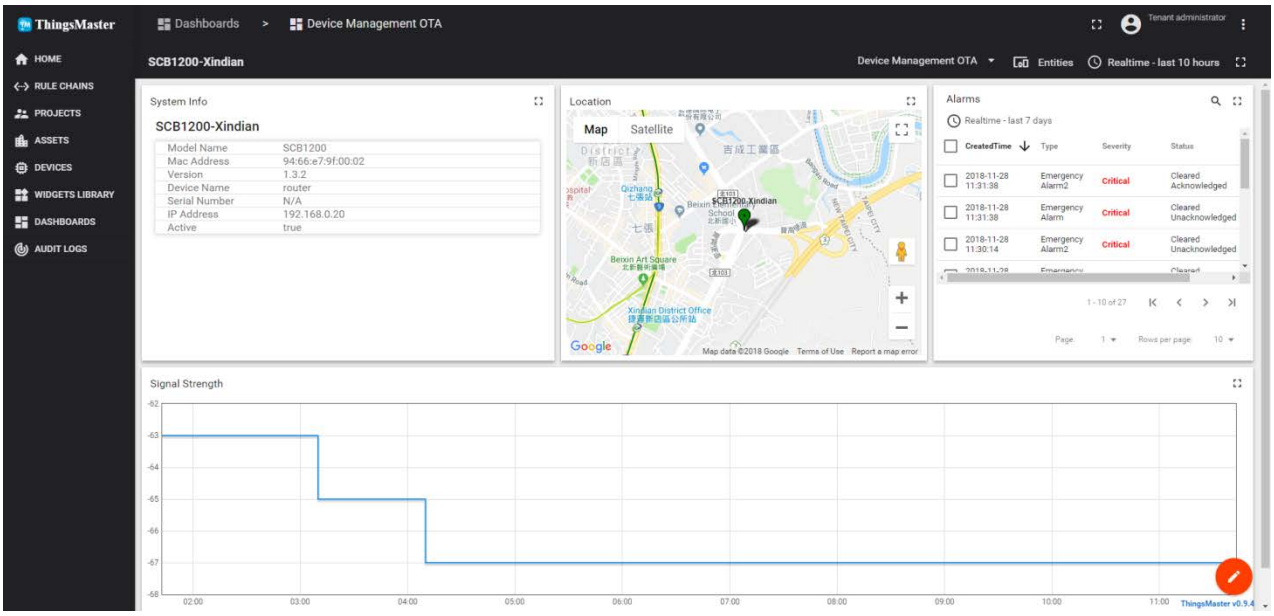
After Add the Action block to Clear Alarm, drag a line from the Filter block to the Clear alarm block set it as False value. The Alarm will not be triggered when the value is False. Click the check button after finish with the setting.




Add the new Rule Chain to the **Root Rule Chain** to activate the new rule. Drag and drop the Rule Chain block to the dashboard then create a link by pulling a line from the Save Timeseries block to the Emergency Alarm Rule Chain. Put the Success label to the line. Don't forget to click the check button after finish with the setting.

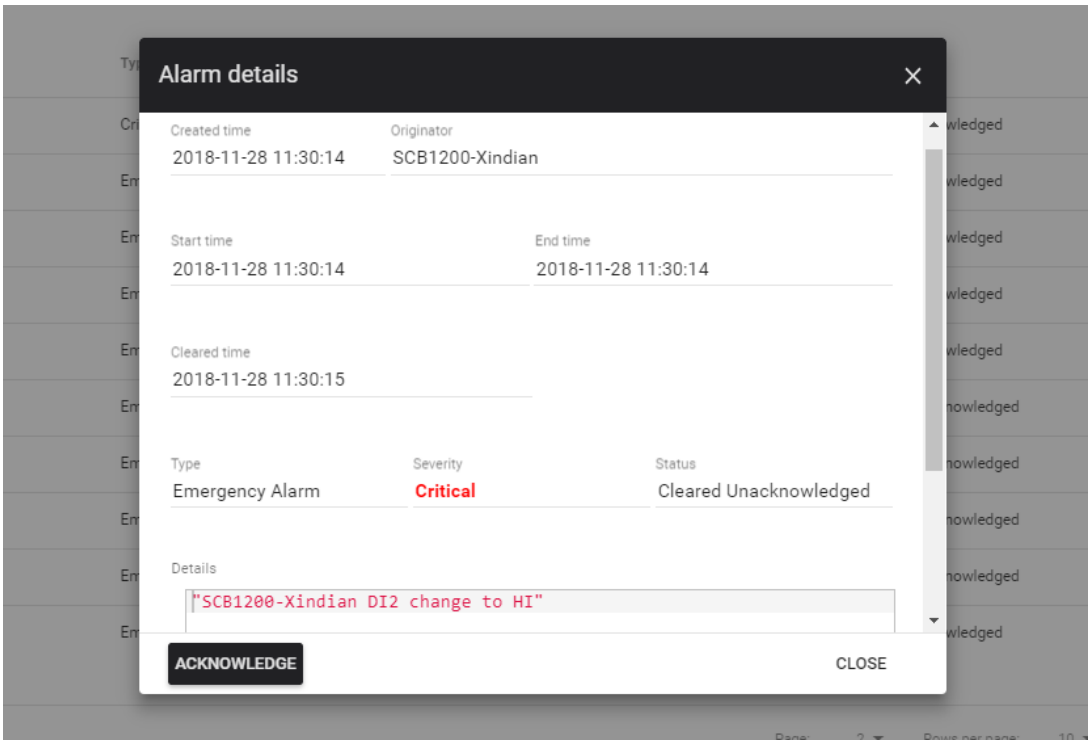


Go to the dashboard and click the related device and the device information will appear. Go to the Alarm Section and user will see the Emergency Alarm that has been triggered by the Emergency push button.




Every time user pushes the Emergency button then it will trigger the alarm and send alarm information the OTA dashboard. User can notice the alarm from the dashboard, by checking the device icon. When the Emergency button is pushed, it will upload some information about the alarm.

To check the Alarm detail, click the **"…"** to open the Alarm detail page. The detail is included the alarm time, alarm type, severity, Alarm status, and the Alarm detail information.




Click **Acknowledge** button, if the alarm has been confirmed. The status will change as below.