

Receiving QVR Pro External URL Notification using QIoT

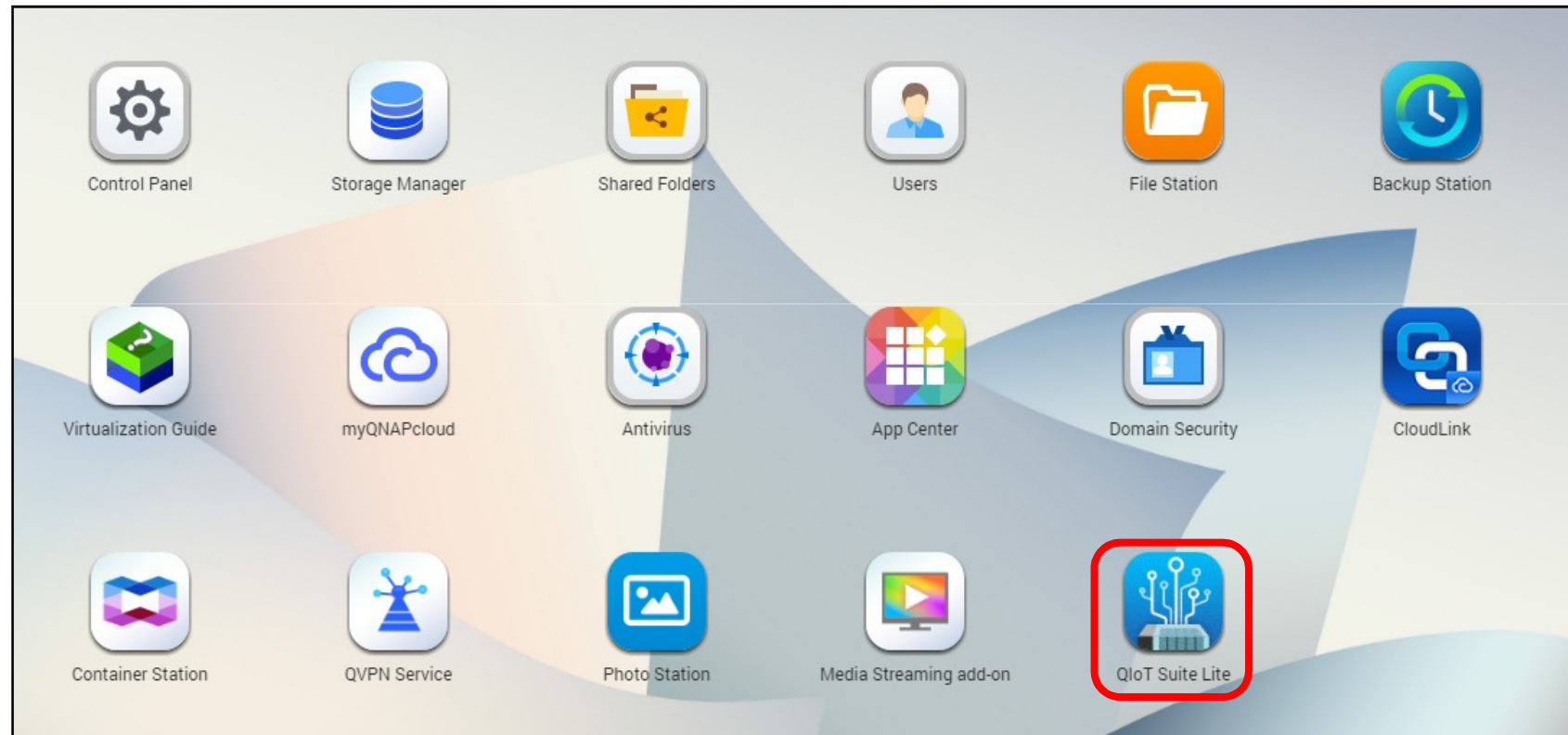
QNAP Systems, Inc.

QVR RD

2017-04-06

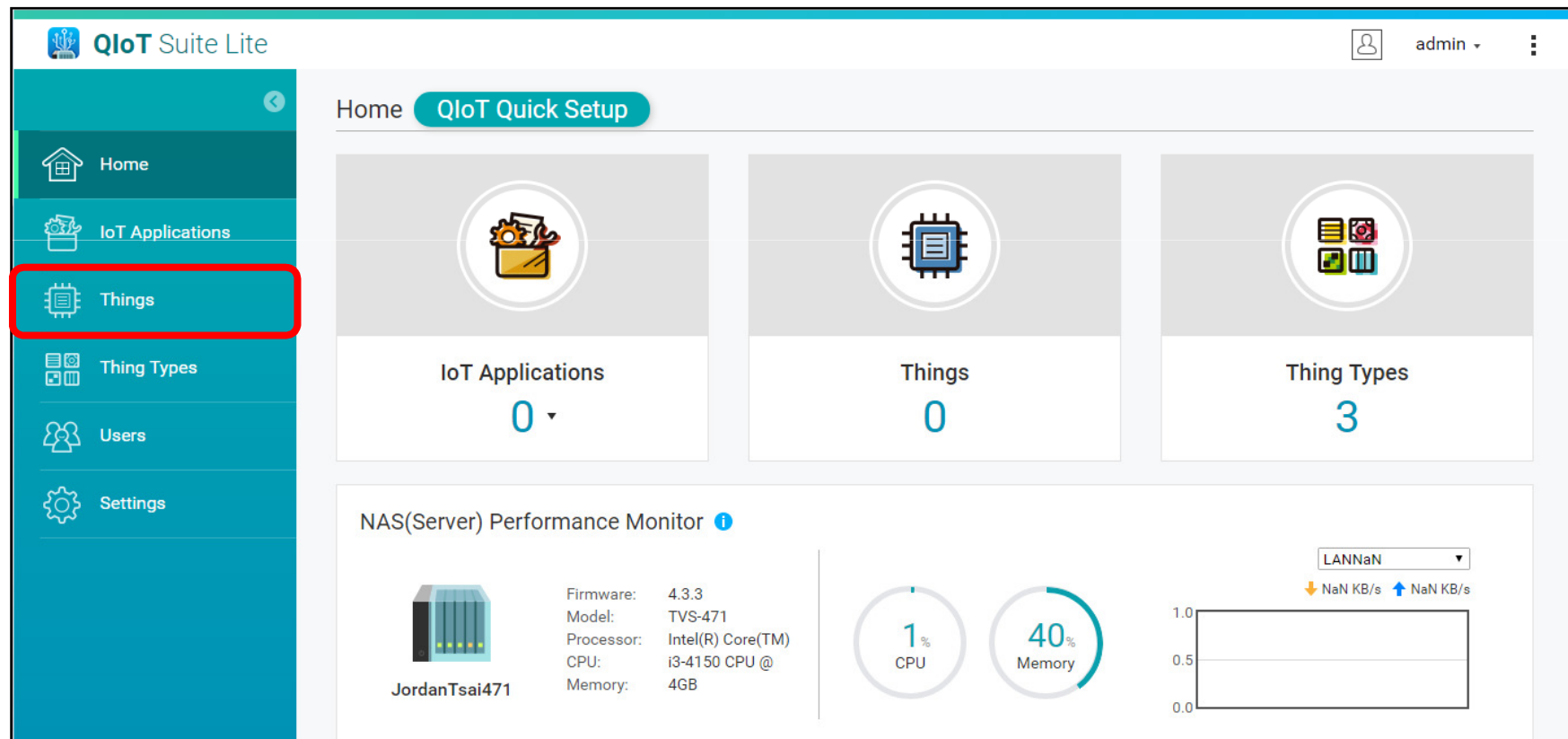
Receiving QVR Pro External URL Notification

- Click icon to open "Qiot Suite Lite"



Receiving QVR Pro External URL Notification

- Click "Things" to configure Thing



Receiving QVR Pro External URL Notification

- Add new Thing

QIoT Suite Lite

admin

Things

Things are virtual representation of your real devices in QIoT Suite Lite.

+ Add Thing Delete

Search Name or Description

Thing Name	Category	Type	Description	Resource Count	Created On	Last Connection	Actions
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You do not have any Thing.
Please click on 'Add Thing' button to add new Thing.

Page 1 / NaN

Display item: 1 - 0, Total: 0

Receiving QVR Pro External URL Notification

- Add new Thing (cont.)
 - Enter Thing name
 - Click Add to finish

The screenshot shows the 'Add Thing' dialog box with the following fields and options:

- Thing Information**
 - Thing Name***: things01 (highlighted with a red box and a green checkmark icon)
 - Description**: Please enter the Description
 - Thing Category**:
 - ☒ QIoT Supported
 - ☐ Custom
- Thing Type**
 - Thing Type**: Arduino Yun
- Attributes for things01 (Optional)**:
 -
 -

Note: Inputs with * are required field

Add (highlighted with a red box) **Cancel**

Receiving QVR Pro External URL Notification

- Add new resource
 - Click flask icon

QIoT Suite Lite





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Things

Things are virtual representation of your real devices in QIoT Suite Lite.

+ Add Thing Delete

Search Name or Description

	Thing Name	Category	Type	Description	Resource Count	Created On	Last Connection	Actions
<input type="checkbox"/>	things01	QIoTSupported	Arduino Yun		0	2017/4/5 11:55:16	None	   

Page 1 /Infinity Display item: 1 - 0, Total: 1 show Items

Receiving QVR Pro External URL Notification

- Add new resource (cont.)
 - Click " Add Resource "


Thing Resources

Thing Resources represent Sensors, Thing Peripherals, Switches or any dynamic properties of the Thing like CPU usage etc. Please add these resources to the device with desired configurations.

Thing Name: things01

+ Add Resource

Delete

<input type="checkbox"/>	Resource Name	Resource ID	Resource Type	Data Type	Unit	Description	Actions
<div><p>You do not have any Thing Resource. Please click on "Add Resource" button to add new resource.</p></div>							

Page 1 / 0

1 - 0 of 0

Close

Receiving QVR Pro External URL Notification

- Add new resource (cont.)
 - Enter resource name
 - Enter resource ID
 - Chose boolean data type
 - Click " Add "

Add Thing Resource

Resource Name*: resource01 ✓

Resource Description: Please enter the description

Resource ID*: lightstatus01 ✓

Resource Type: Custom Sensor(Boolean) ▼

Data Type: Boolean ▼

Unit:

☐ Set Range

Minimum Value: Please enter minimum value

Maximum Value: Please enter maximum value

☐ Set Default Value

Default Value: Please enter default value

Note: Inputs with * are required field

Add Cancel

Receiving QVR Pro External URL Notification

- Generate certificate
 - Click "i" icon

Things

Things are virtual representation of your real devices in QIoT Suite Lite.

+ Add Thing | Delete

Search Name or Description

	Thing Name	Category	Type	Description	Resource Count	Created On	Last Connection	Actions
<input type="checkbox"/>	things01	QIoTSupported	Arduino Yun		1	2017/4/5 11:55:16	None	

Page 1 / Infinity

Display item: 1 - 0, Total: 1 | show | Items

Receiving QVR Pro External URL Notification

- Generate certificate (cont.)

- Go to " Connect a Device " tab
- Click " Generate a Device Certificate "

Thing Information

[Details](#) **[Connect a Device](#)** [Policy](#)

Following Process will guide you to make your device start communicating to QIoT Suite.
Choose the protocol you would like to use:

☐ MQTT ☒ MQTTS

Generate Device Certificate:

First, you will need to create and download security credentials for your device. The following steps will help you to create and download security credentials (A device Certificate, CA Certificate and a Private key).

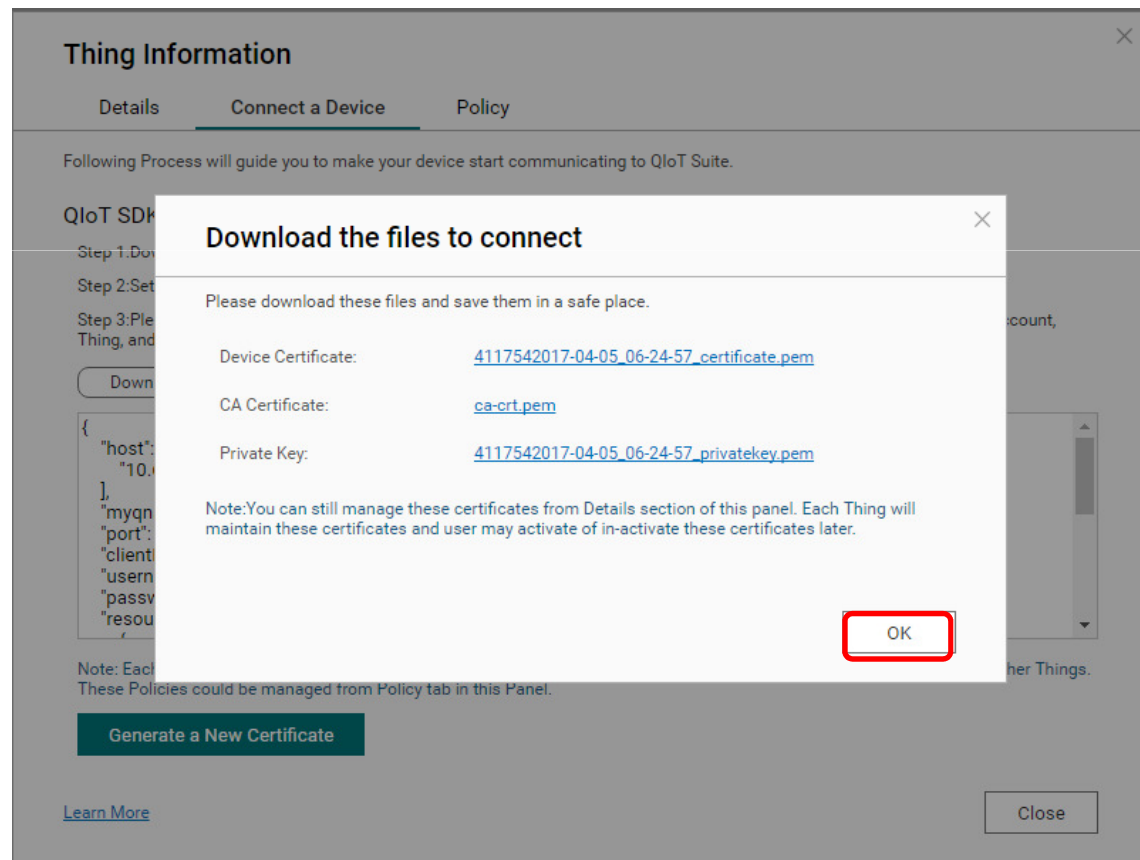
You can generate these by clicking following button. When you generate these certificates, you may download these and link them with your device SDK to onboard the device to QIoT Suite.

[Generate a Device Certificate](#)

[Learn More](#) [Close](#)

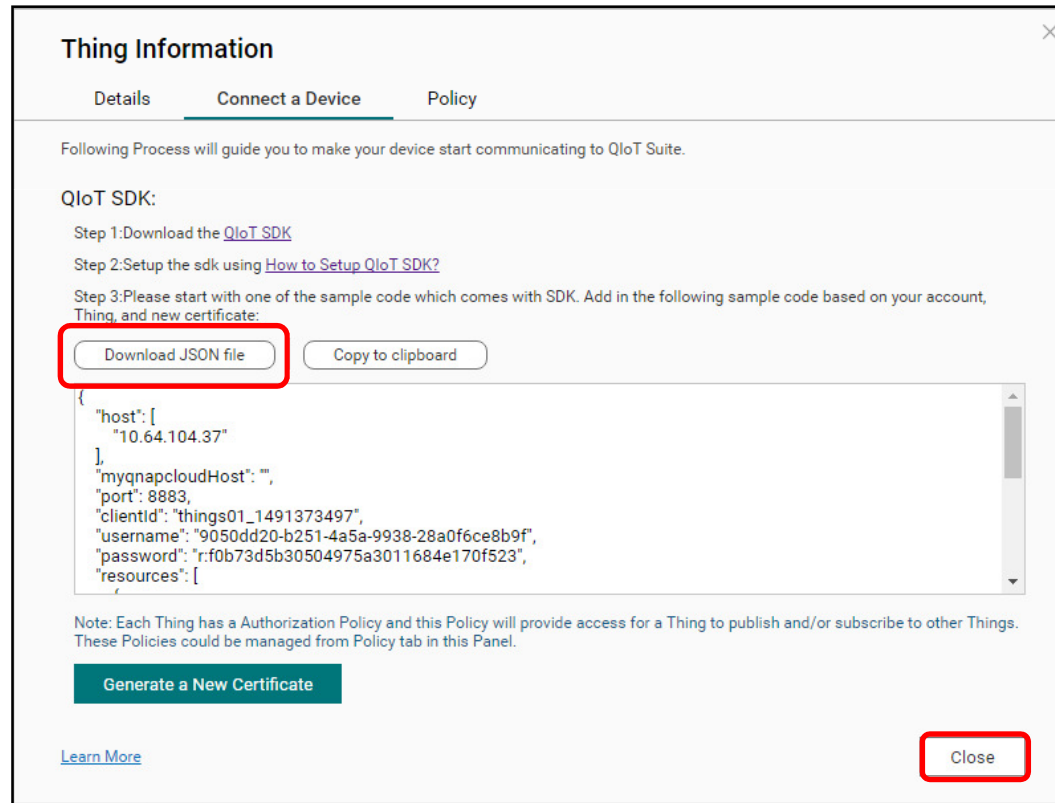
Receiving QVR Pro External URL Notification

- Generate certificate (cont.)
 - Click " OK "



Receiving QVR Pro External URL Notification

- Generate certificate (cont.)
 - Download certificate content
 - Click " close "



Receiving QVR Pro External URL Notification

- Generate certificate (cont.)
 - Now a certificate is active
 - You can show Thing configuration by click " i "

Thing Information

Details | Connect a Device | Policy

REST API End Point(Local): http://10.64.104.37:21500/resources/qiqot/things/admin/things01/{ResourceID}

REST API End Point(myqnapcloud): NoT Available

MQTT Topic: qiot/things/admin/things01

Thing Type ⓘ

Thing type: Arduino Yun

Thing Type Attributes:

Thing Attributes (Optional) ⓘ

+ Add Attribute | Delete

Device Certification

Action ▾

<input type="checkbox"/>	Certificate ID	Status	Created On	Revoked On	Action
<input type="checkbox"/>	58e48db99c31dc001feb51...	Active	2017/4/5 14:24:57	N/A	ⓧ ⬇ ⓘ

[Learn More](#) | OK | Cancel

Thing Configuration

```
{
  "result": {
    "username": "9050dd20-b251-4a5a-9938-28a0f6ce8b9f",
    "privateCert": "4117542017-04-05_06-24-57/4117542017-04-05_06-24-57_privatekey.pem",
    "myqnapcloudHost": "",
    "clientId": "things01_1491373622",
    "clientCert": "4117542017-04-05_06-24-57/4117542017-04-05_06-24-57_certificate.pem",
    "host": [
      "10.64.104.37"
    ],
    "caCert": "/v1/media/ca-crt.pem",
    "password": "rf0b73d5b30504975a3011684e170f523",
    "port": 8883,
    "resources": [
      {
        "description": "",
        "datatype": "Boolean",
        "resourceid": "lightstatus01",

```

Close

Receiving QVR Pro External URL Notification

- Add new Application





The screenshot displays the QIoT Suite Lite web interface. On the left is a teal sidebar with navigation icons and labels: Home, IoT Applications (selected), Things, Thing Types, Users, and Settings. The main content area is titled 'IoT Applications' and includes a subtitle: 'An IoT Application is a combination of multiple Things, single Rule and single Dashboard.' Below this, there is a '+ Add IoT Application' button highlighted with a red rectangle, followed by an 'Action' dropdown menu. A search bar with the placeholder 'Search Name or Description' is located to the right. Below these elements is a table with columns: Application Name, Description, Status, Created On, and Actions. The table is currently empty. In the center of the table area, there is a large dashed circle containing an icon of a folder with a gear and a document. Below the circle, the text reads: 'You do not have any IoT Application. Please click on "Add IoT Application" button to create new IoT application.' At the bottom of the interface, there is a pagination bar showing 'Page 1 / 0' and a status bar indicating 'Display item: 1 - 0, Total: 0' and 'show 25 Items'.

Receiving QVR Pro External URL Notification

- Add new Application
 - Enter application name
 - Click " Create " to create new application

Create a New IoT Application

IoT Application is a combination of multiple Things, Rule and Dashboard. All these elements as an IoT Application provides user complete IoT Application environment. Please use enter following information to create an IoT Application.


 =  +  + 

IoT Application

Things

Rule


Dashboard



IoT Application Name *: QVRProApp

Description:


Please enter the Description



Rule Name: Rule_QVRProApp

Description:

Please enter the Description



Dashboard Name: Dashboard_QVRProApp

Description:

Please enter the Description

Note: Inputs with * are required field

Create

Cancel





QNAP®

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- Edit application
 - Click application name to start editing

IoT Applications
An IoT Application is a combination of multiple Things, single Rule and single Dashboard.

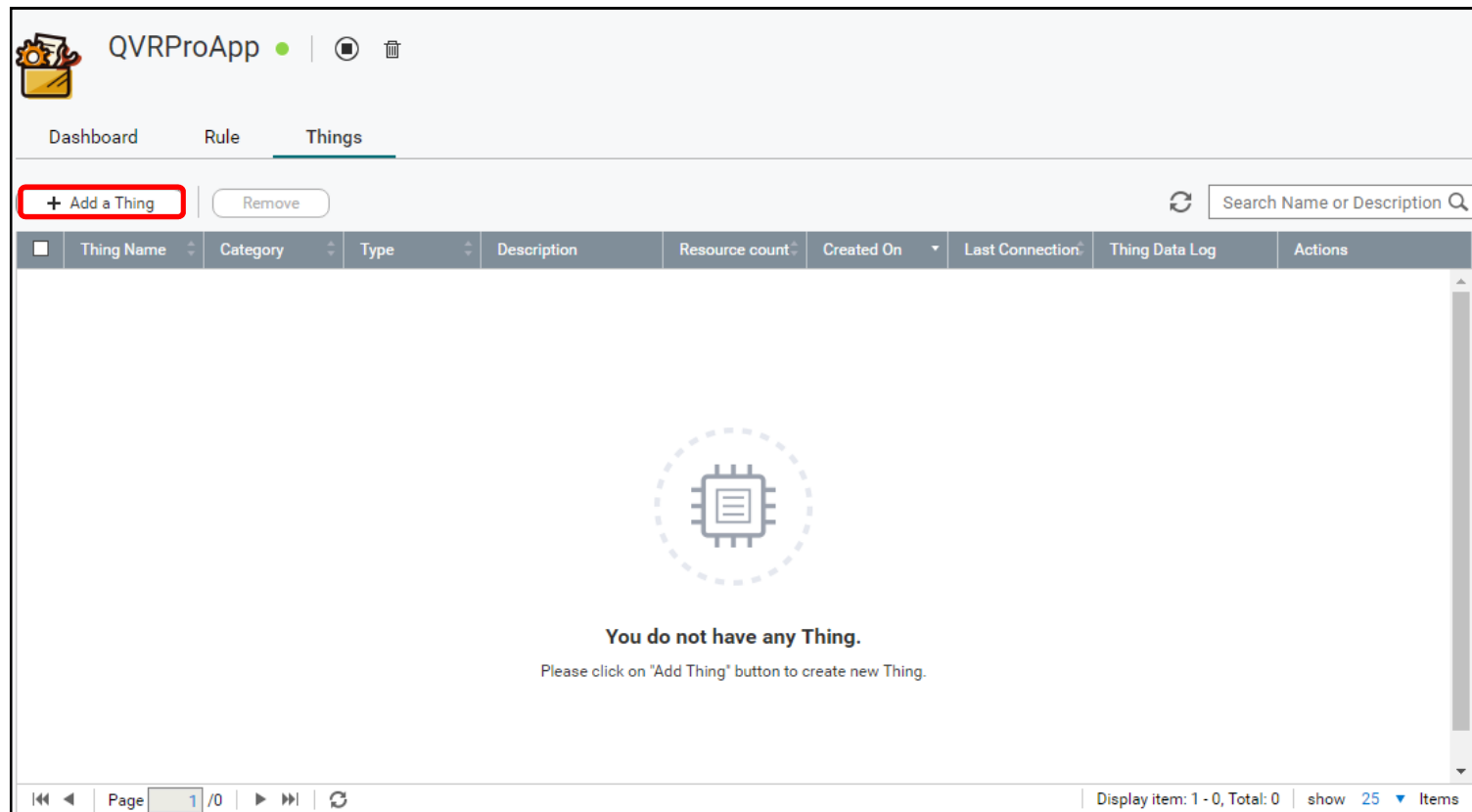
+ Add IoT Application | Action ▼ | Search Name or Description 🔍

<input type="checkbox"/>	Application Name	Description	Status	Created On	Actions
<input type="checkbox"/>	 QVRProApp		● Running	2017/4/5 14:29:41	  

Page 1 / 1 | Display item: 1 - 1, Total: 1 | show 25 Items

Receiving QVR Pro External URL Notification

- Add a Thing to application
 - Click " Add a Thing "



Receiving QVR Pro External URL Notification

- Add a Thing to application (cont.)
 - Select Thing from existing Things
 - Check the Thing you have created
 - Click " Add " to add Thing

Add Thing ⓘ

☐ Create a New Thing
Create a thing to represent your device in the QIoT Suite. This step creates an entry in the thing registry or device registry.

☒ **Select from existing Things**
Select a thing from existing things and associate it with this IoT Application.

Search Name or Description 🔍

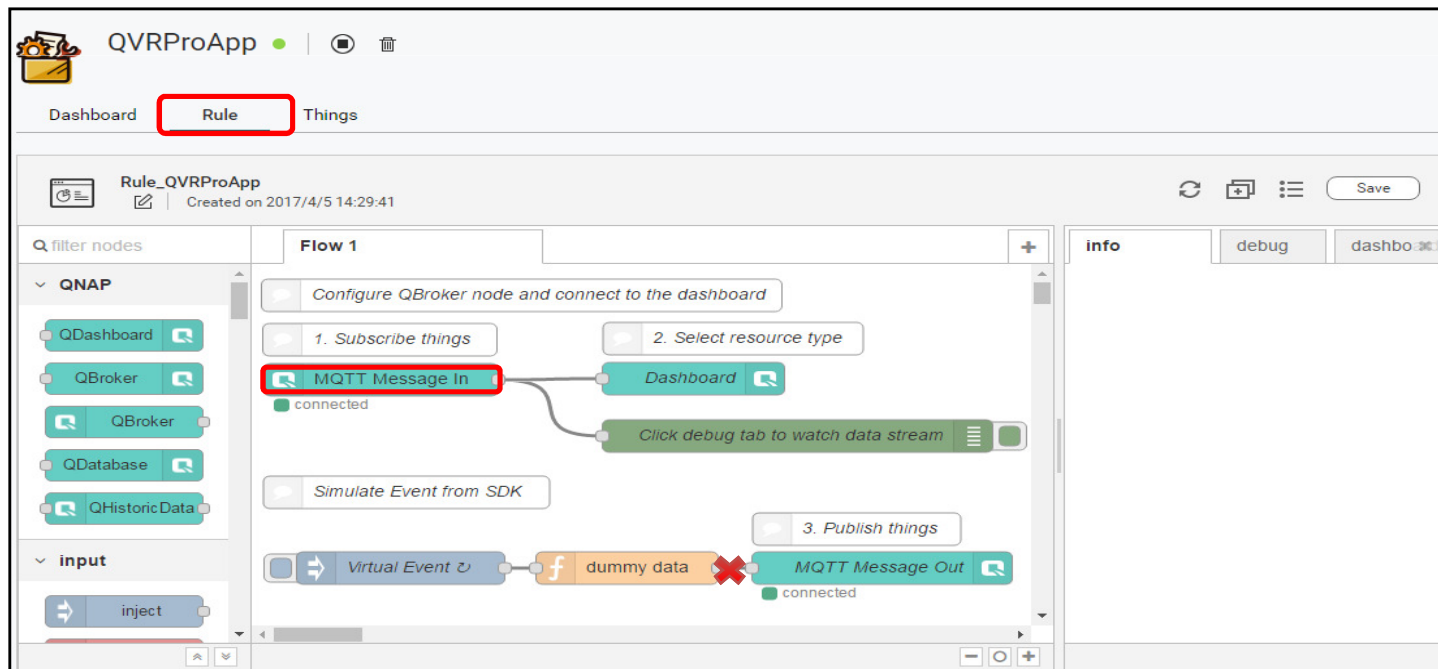
<input checked="" type="checkbox"/>	Thing Name	Category	Type	Description	Resource	Created On	Last Connected
<input checked="" type="checkbox"/>	things01	QIoTSupported	Arduino Yun		1	2017/4/5 11:55...	

Page 1 / 1 | Display item: 1 - 1, Total: 1 | show 5 Items

Add Cancel

Receiving QVR Pro External URL Notification

- Edit Rule
 - Go to " Rule " tab
 - Delete connection between " dummy data " and " MQTT Message Out " (to stop dummy data)
 - Double click " MQTT Message in " to edit node



Receiving QVR Pro External URL Notification

- Edit Rule (cont.)
 - Un-check " Use custom topic "
 - Select Thing
 - Click " add " to add resource
 - Select resource
 - Check " auto save "
 - Click " Done "

Edit QBroker node

Cancel Done

Name: MQTT Message In

→ Use custom topic ☐

Thing: things01

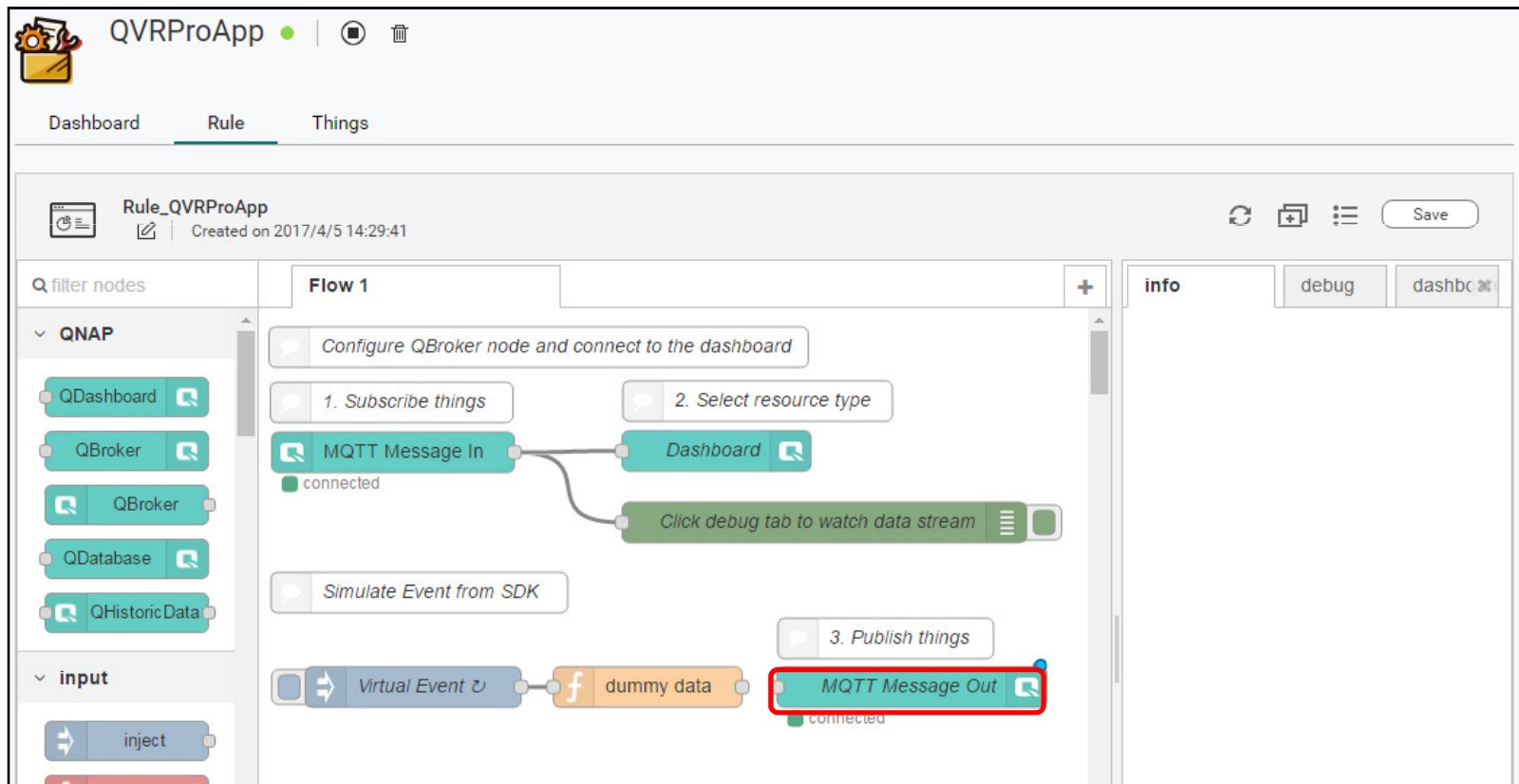
Resources:

resource01 → 1 ☒ auto save

+ add

Receiving QVR Pro External URL Notification

- Edit Rule (cont.)
 - Double click " MQTT Message out " to edit node



Receiving QVR Pro External URL Notification

- Edit Rule (cont.)
 - Un-check " Use custom topic "
 - Select Thing and Resource
 - Set Qos to 1, Retain to true
 - Click " Done "

Edit QBroker node

Cancel Done

Name: MQTT Message Out

→ Use custom topic: ☐

Thing: things01

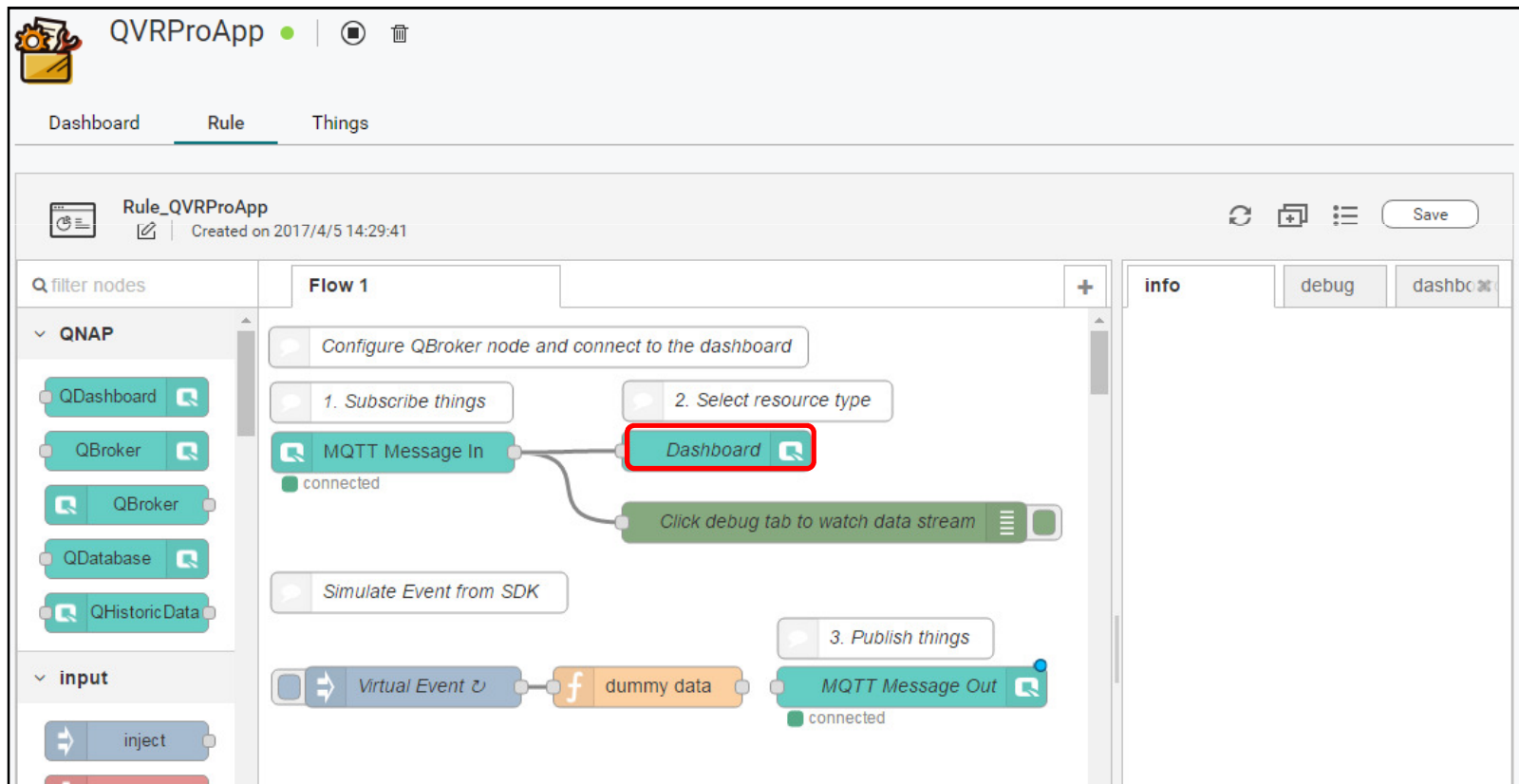
Resource: resource01

QoS: 1 Retain: true

Define `msg.payload` to publish message to QIoT broker.

Receiving QVR Pro External URL Notification

- Edit Rule (cont.)
 - Double click " Dashboard " to edit node



Receiving QVR Pro External URL Notification

- Edit Rule (cont.)
 - Rename node name (recorder in example)
 - Click " Done "

Edit QDashboard node

Cancel Done

Name: recorder

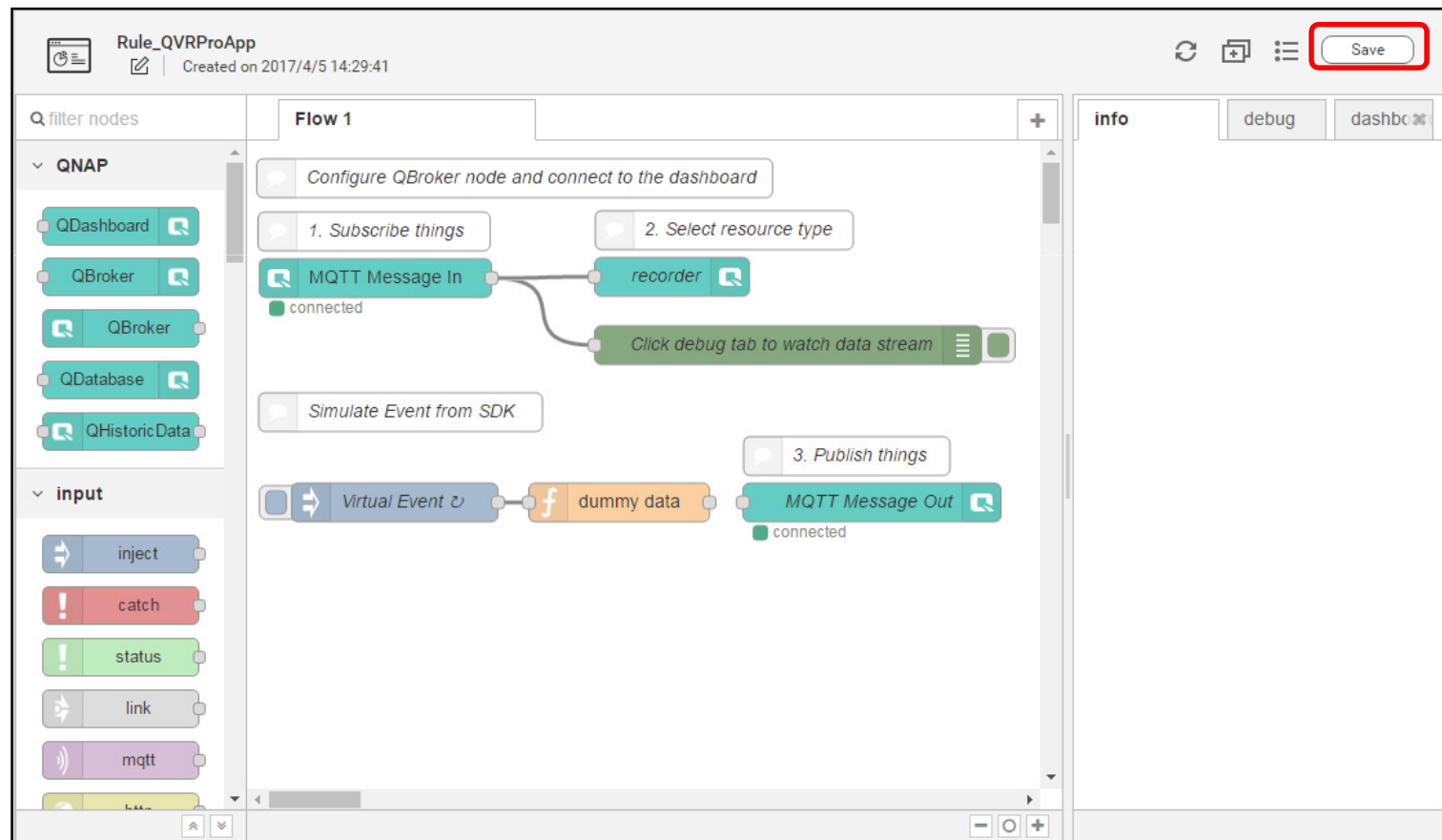
ResourceType: Temperature ▼

Formatting Response ☒ Include Resource Type metadata

```
1 msg.payload = msg.payload.value;  
2 return msg;
```

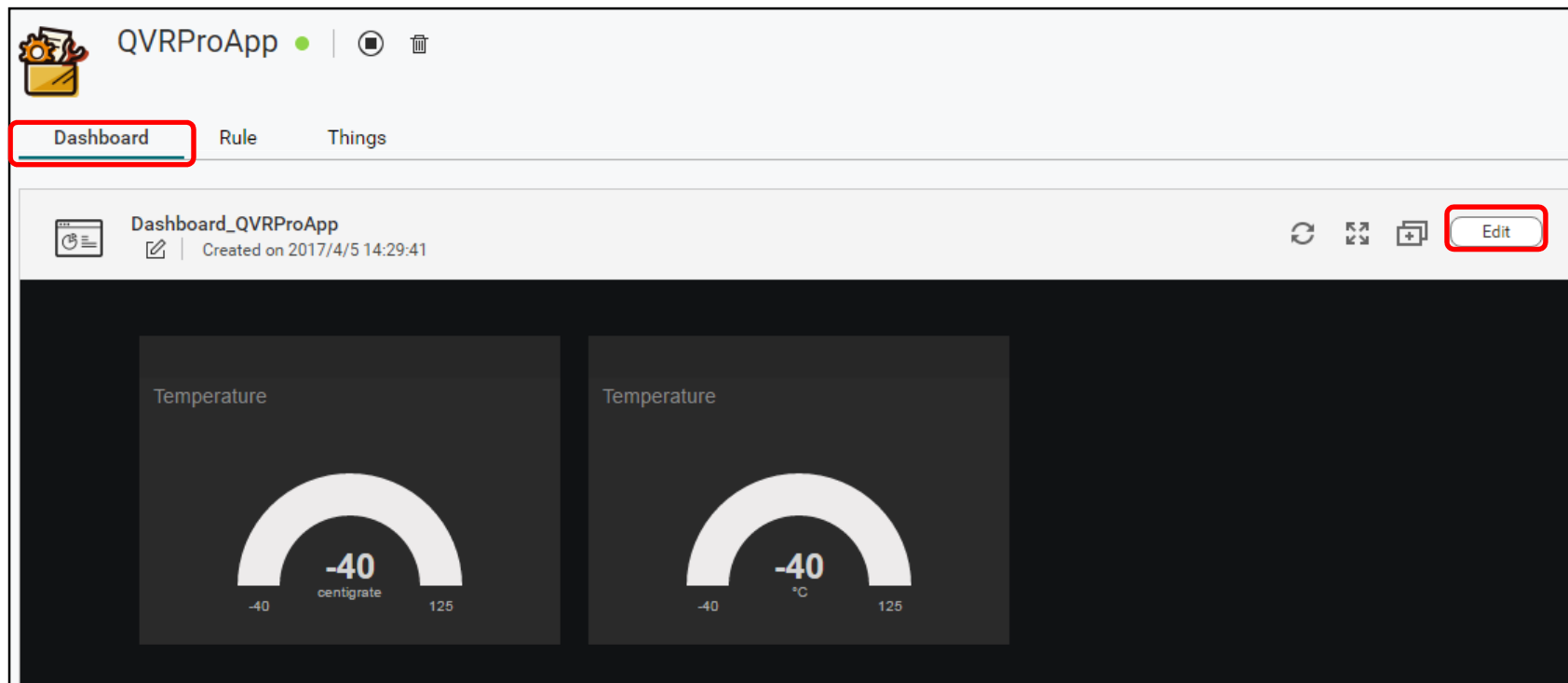

Receiving QVR Pro External URL Notification

- Edit Rule (cont.)
 - Click " Save " to save changes



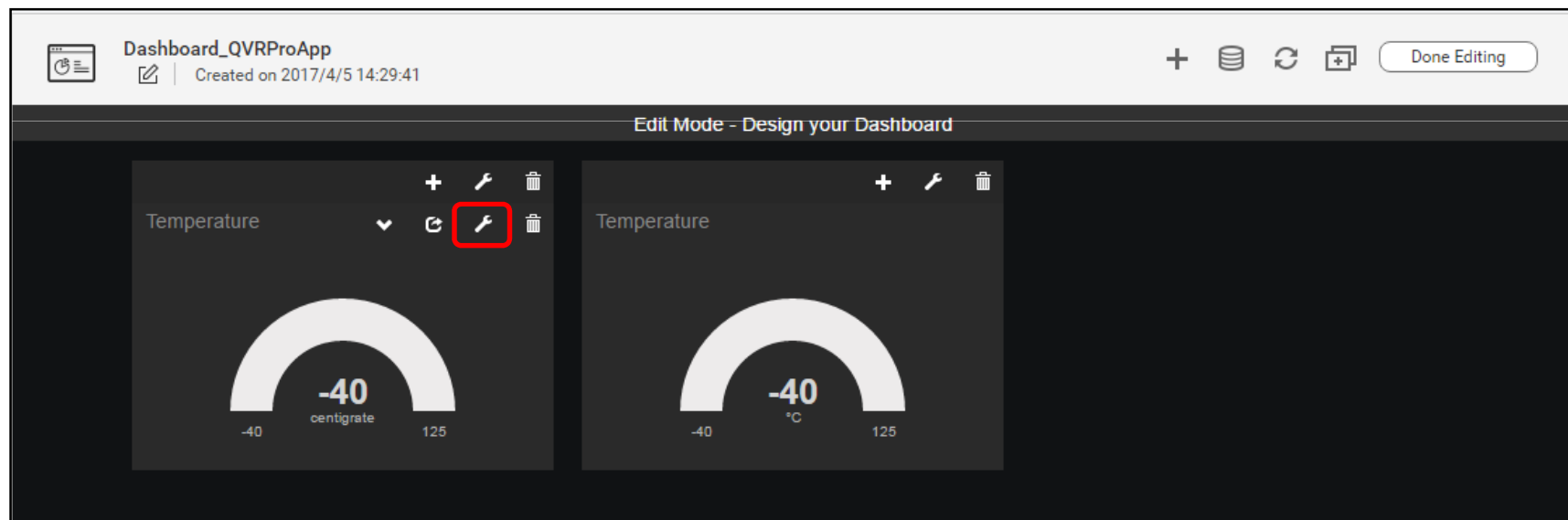
Receiving QVR Pro External URL Notification

- Edit Dashboard
 - Click " Dashboard " tab
 - Click " Edit "



Receiving QVR Pro External URL Notification

- Edit Dashboard (cont.)
 - Click wrench icon (appeared when mouse hover)



Receiving QVR Pro External URL Notification

- Edit Dashboard (cont.)
 - Enter widget title
 - Set value, minimum and maximum
 - Click " SAVE "

WIDGET

TYPE Gauge ▼

TITLE Boolean sensor

VALUE datasources['recorder']['value'] + DATASOURCE JS EDITOR

UNITS

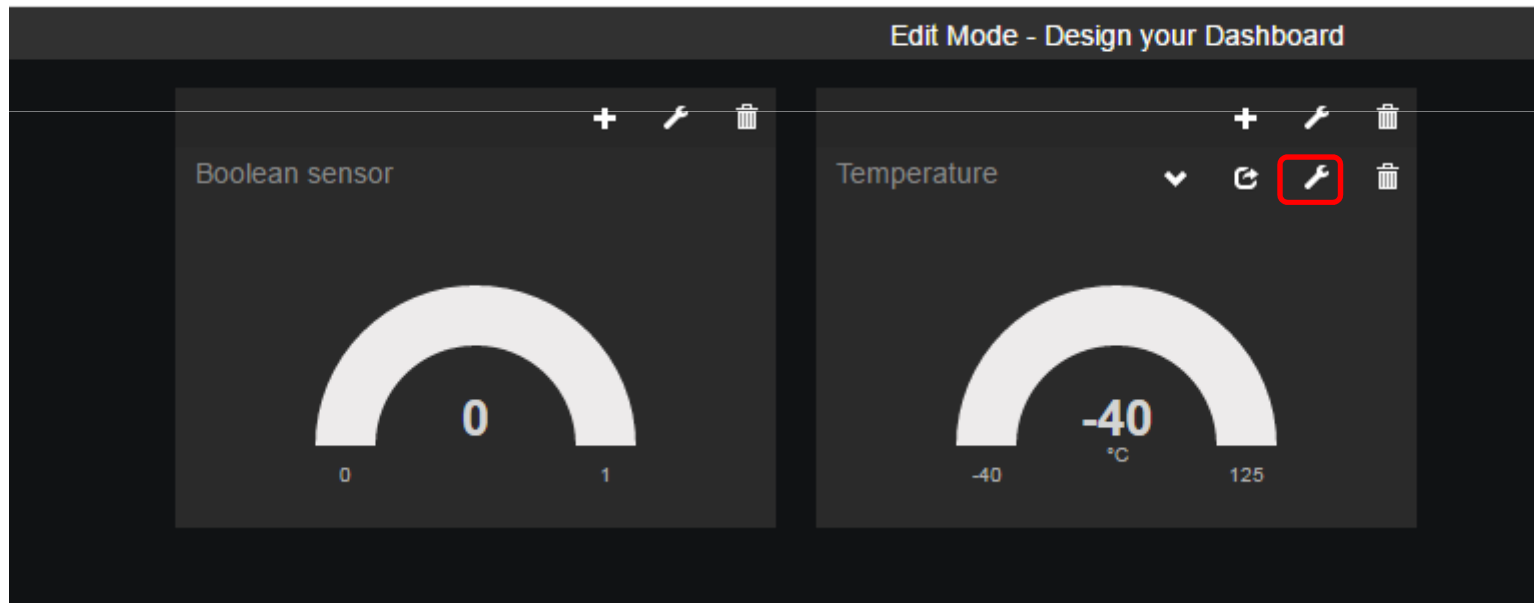
MINIMUM 0

MAXIMUM 1

SAVE CANCEL

Receiving QVR Pro External URL Notification

- Edit Dashboard (cont.)
 - Click wrench icon (appeared when mouse hover)



Receiving QVR Pro External URL Notification

- Edit Dashboard (cont.)
 - Select type "Indicator Light"
 - Enter widget name
 - Set value
 - Click "SAVE"

WIDGET

TYPE Indicator Light

TITLE light

VALUE `datasources['recorder']['value']` + DATASOURCE .JS EDITOR

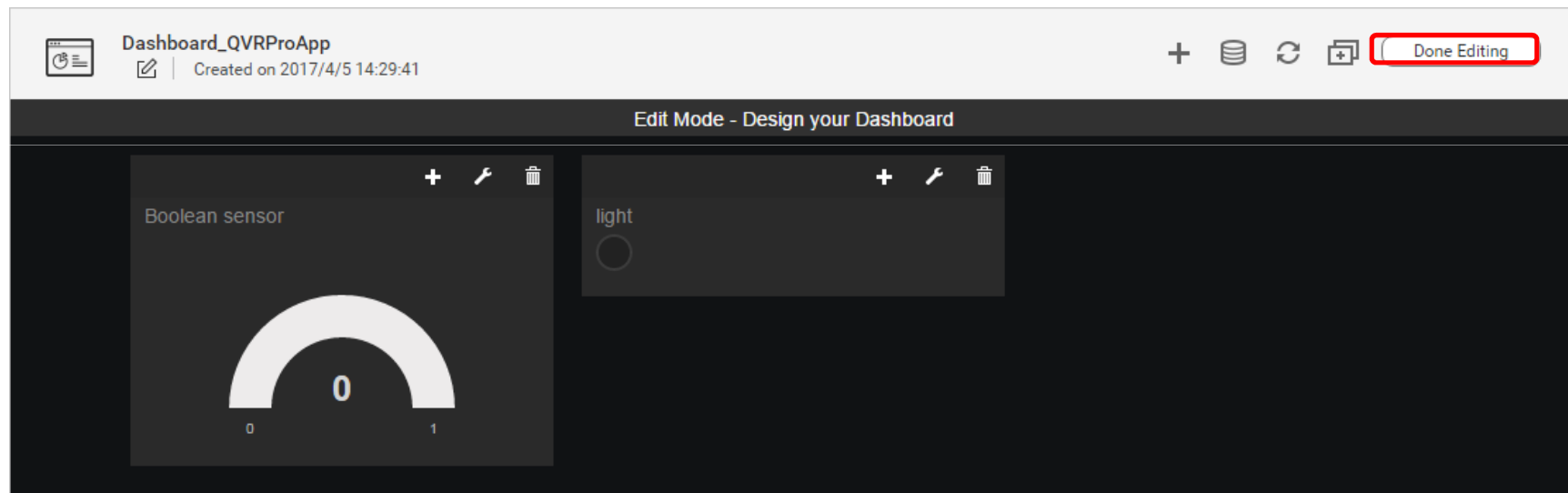
ON TEXT + DATASOURCE .JS EDITOR

OFF TEXT + DATASOURCE .JS EDITOR

SAVE CANCEL

Receiving QVR Pro External URL Notification

- Edit Dashboard (cont.)
 - Click " Done Editing " to save changes



Receiving QVR Pro External URL Notification

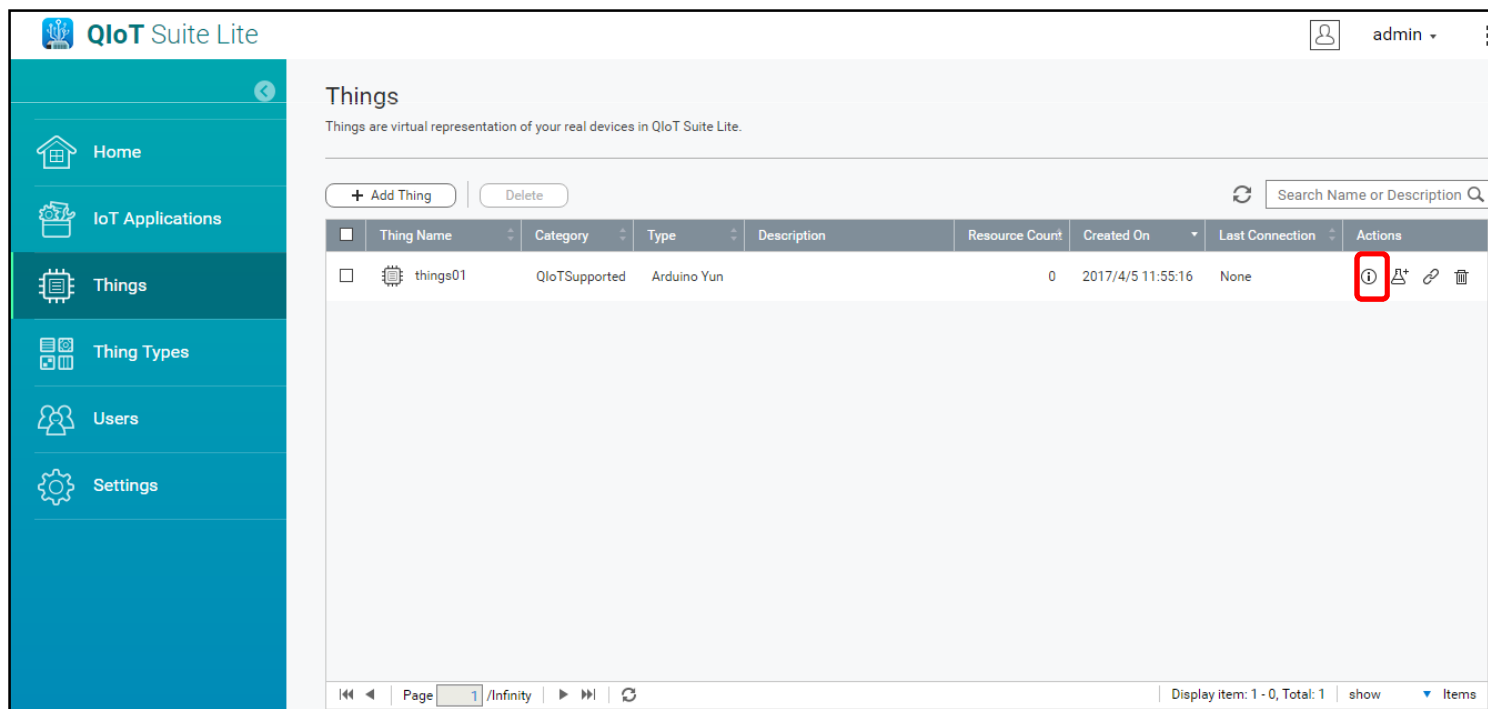
- Example curl command
 - Curl command format

```
curl -X PUT -H "requesterid: {REQUESTER_ID}" -H "Access-Token: {ACCESS_TOKEN}" -  
H "Content-Type: application/json" -d '{DATA}' "{REST_API_END_POINT}" -i
```

- {REQUESTER_ID} is username in certificate content
- {ACCESS_TOKEN} is password in certificate content
- {DATA} is JSON type data ready to send to application
- {REST_API_END_POINT} is REST API End Point in Thing info

Receiving QVR Pro External URL Notification

- Example curl command (cont.)
 - Get REST API End Point
 - Go to Things page
 - Click " i " to see Thing information



Receiving QVR Pro External URL Notification

- Example curl command (cont.)
 - Get REST API End Point
 - The ResourceID (lightstatus01 in example) can got in resource setting page

The screenshot shows a 'Thing Information' dialog box with three tabs: 'Details', 'Connect a Device', and 'Policy'. The 'Details' tab is active. The 'Thing Information' section contains the following fields:

- Thing Name: things01
- Description: Description
- Created On: 2017/4/5 11:55:16
- REST API End Point(Local): **http://10.64.104.37:21500/resources/qiot/things/admin/things01/{ResourceID}** (highlighted with a red box)
- REST API End Point(myqnapcloud): NoT Available
- MQTT Topic: qiot/things/admin/things01

The 'Thing Type' section shows 'Thing type' as 'Arduino Yun'.

The 'Thing Attributes (Optional)' section has a '+ Add Attribute' button and a 'Delete' button.

The 'Device Certification' section has a 'Learn More' link.

At the bottom right, there are 'OK' and 'Cancel' buttons.

Receiving QVR Pro External URL Notification

- Example curl command (cont.)
 - Get username, password from certificate content (refer to p.12)

```
{
  "host": [
    "10.64.104.37"
  ],
  "myqnapcloudHost": "",
  "port": 8883,
  "clientId": "things01_1491373497",
  "username": "9050dd20-b251-4a5a-9938-28a0f6ce8b9f",
  "password": "r:f0b73d5b30504975a3011684e170f523",
  "resources": [
    {
      "resourcename": "resource01",
      "resourceid": "lightstatus01",
      "resourcetypename": "Custom Sensor(Boolean)",
      "datatype": "Boolean",
      "unit": null,
      "description": "",
      "topic": "qiot/things/admin/things01/lightstatus01"
    }
  ],
  "caCert": "/v1/media/ca-crt.pem",
  "clientCert": "/v1/media/4117542017-04-05_06-24-57/4117542017-04-05_06-24-57_certificate.pem",
  "privateCert": "/v1/media/4117542017-04-05_06-24-57/4117542017-04-05_06-24-57_privatekey.pem"
}
```

Receiving QVR Pro External URL Notification

- Example curl command (cont.)
 - Create curl command

```
curl -X PUT -H "requesterid: 9050dd20-b251-4a5a-9938-28a0f6ce8b9f" -H "Access-Token: r:f0b73d5b30504975a3011684e170f523" -H "Content-Type: application/json" -d '{"value":1}' "http://10.64.104.37:21500/resources/qiot/things/admin/things01/lightstatus01" -i
```

Receiving QVR Pro External URL Notification

- Example curl command (cont.)
 - Result

