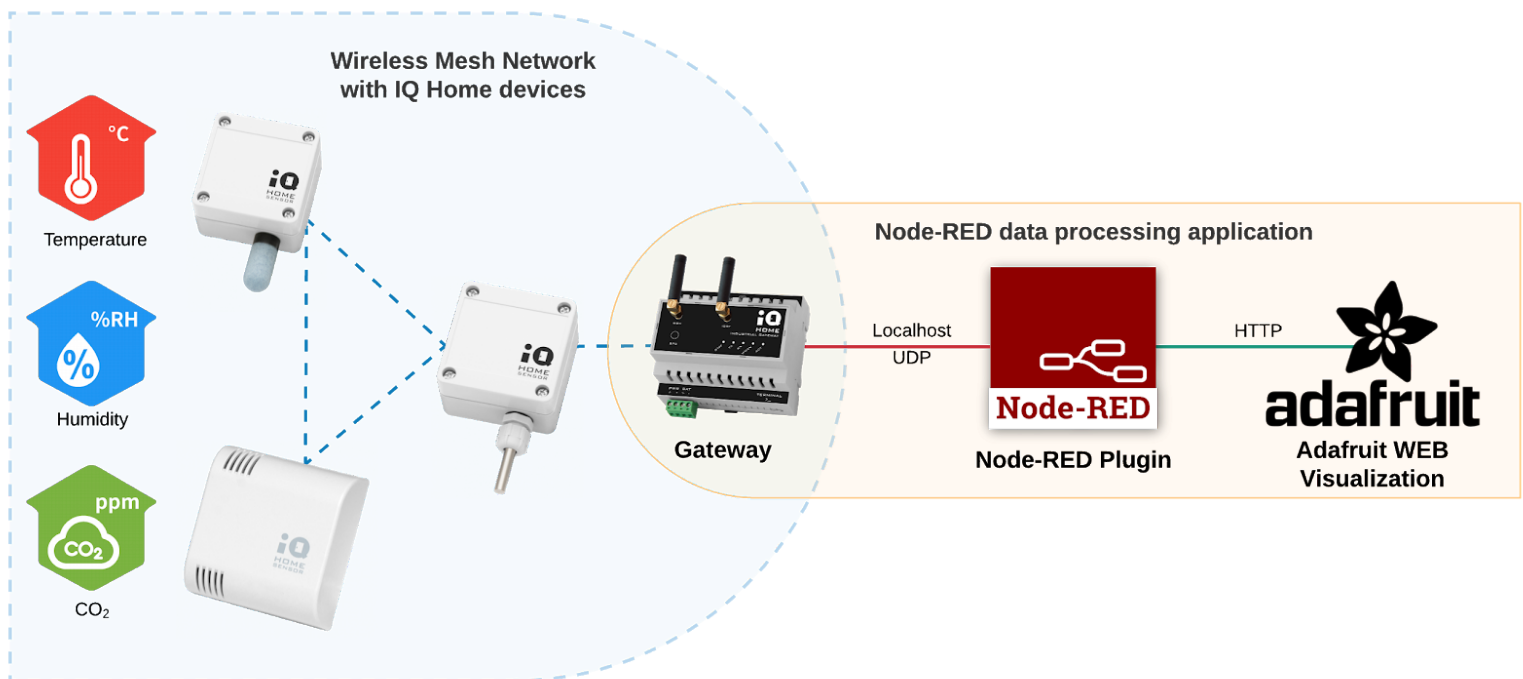


Uploading sensor data to Adafruit IO with Node-RED



Revision: 20.09
Date: 2020-09-29



Contents

Contents	2
1 Overview	3
2 Enable the Application Interface	4
3 Configure your Adafruit IO account	6
4 Set up a Node-RED network to forward the sensor data	11

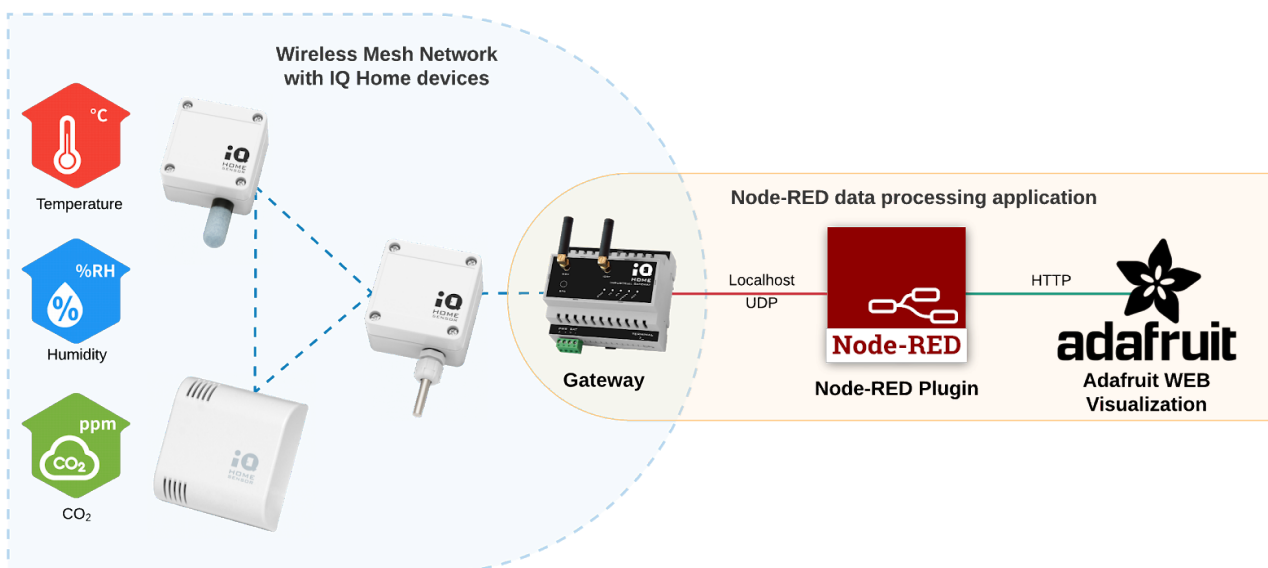
1 Overview

In this guide, you will learn how to use the **Adafruit IO** free data visualization platform with your IQHome Gateway and Sensors.

The pre-installed Node-RED service and IQHome package on your Gateway will be used to periodically collect and upload your sensor data to Adafruit IO.

What you will need:

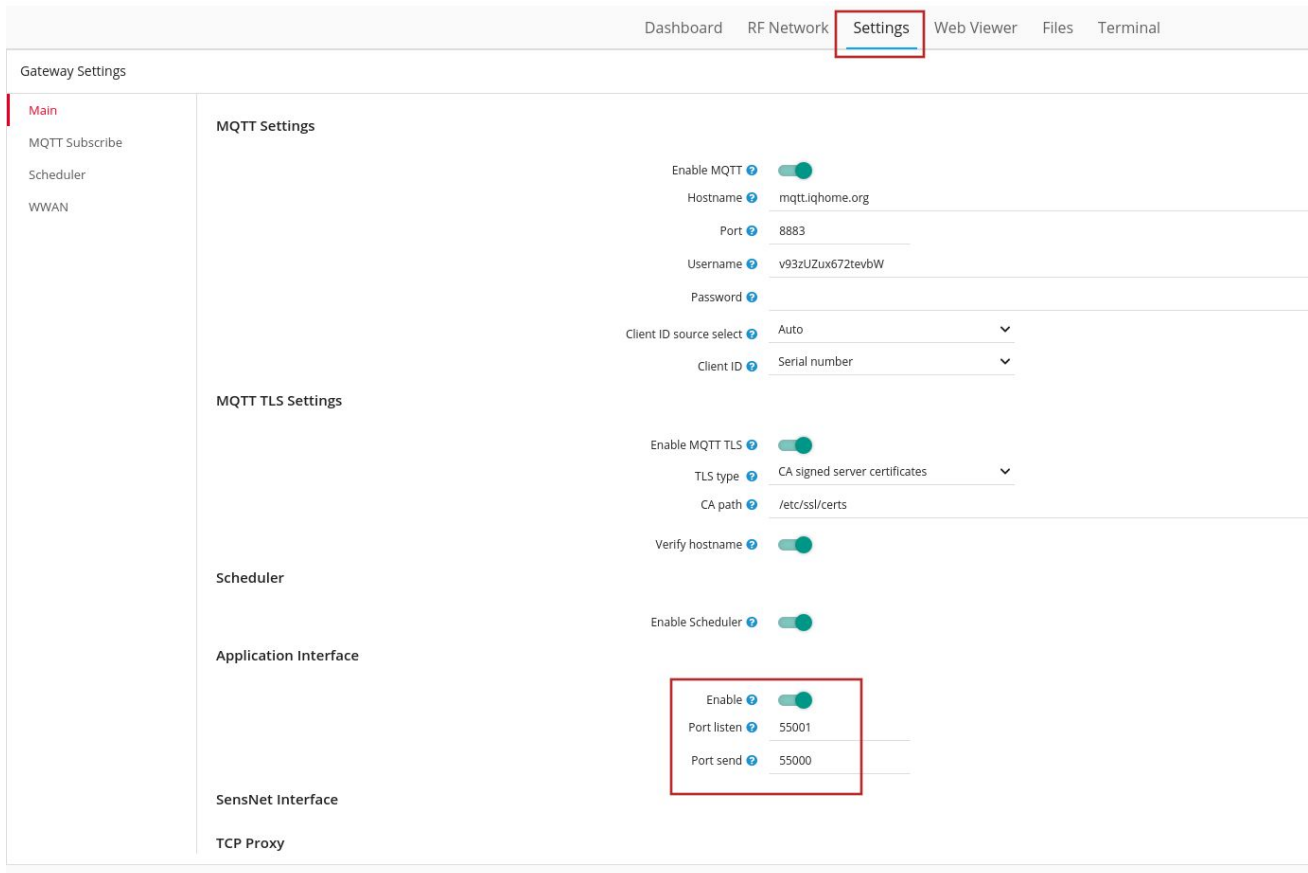
- [IQ Home Gateway](#)
- [IQ Home Sensor](#)
- [Adafruit IO Account](#)



2 Enable the Application Interface

To connect to the Adafruit IO service, first, we need to enable the Application Interface feature on your gateway.

1. Connect to the Gateway using the “**Link It!**” Software
2. Go to the “**Settings**” tab
3. Enable “**Application Interface**” and set a “**Port Send**” value (e.g. 55000)



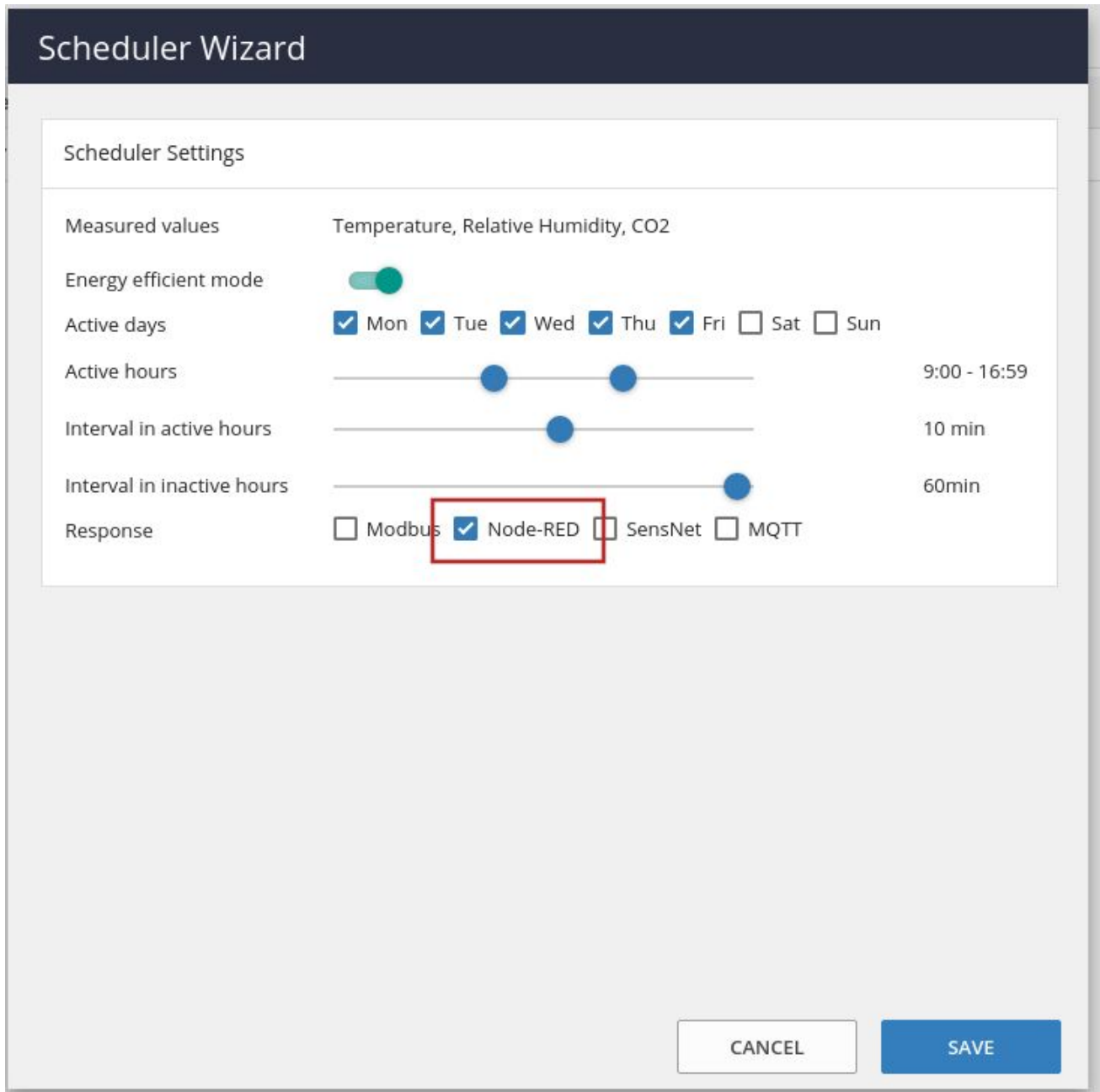
The screenshot shows the 'Gateway Settings' page with the 'Settings' tab selected. The 'Application Interface' section is highlighted with a red box, showing the 'Enable' toggle checked, 'Port listen' set to 55001, and 'Port send' set to 55000. Other settings include MQTT, MQTT TLS, Scheduler, and SensNet Interface.

Section	Setting	Value
MQTT Settings	Enable MQTT	<input checked="" type="checkbox"/>
	Hostname	mqtt.iqhome.org
	Port	8883
	Username	v93zUZux672tevbW
	Password	
	Client ID source select	Auto
MQTT TLS Settings	Client ID	Serial number
	Enable MQTT TLS	<input checked="" type="checkbox"/>
	TLS type	CA signed server certificates
	CA path	/etc/ssl/certs
Scheduler	Verify hostname	<input checked="" type="checkbox"/>
	Enable Scheduler	<input checked="" type="checkbox"/>
Application Interface	Enable	<input checked="" type="checkbox"/>
	Port listen	55001
	Port send	55000
SensNet Interface		
TCP Proxy		

The **Port Send** value selected here will be used in Node-RED.

Then enable the Node-RED scheduler for the sensors.

1. Open the “**RF Network**” tab
2. Switch to “**Sensor Data**”
3. Click on the clock icon in the top right corner labeled “**Create Scheduler**”
4. Enable the “**Node-RED**” Response option



The screenshot shows the "Scheduler Wizard" interface. The "Scheduler Settings" section is visible, with the following configurations:

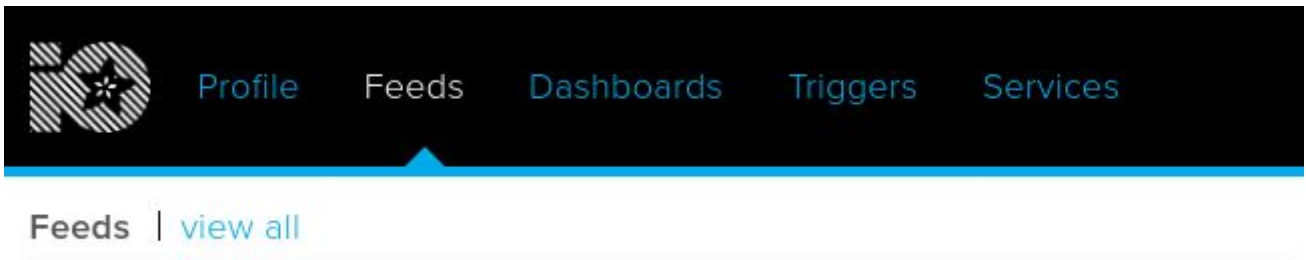
- Measured values: Temperature, Relative Humidity, CO2
- Energy efficient mode:
- Active days: Mon Tue Wed Thu Fri Sat Sun
- Active hours: 9:00 - 16:59
- Interval in active hours: 10 min
- Interval in inactive hours: 60min
- Response: Modbus Node-RED SensNet MQTT

The "Node-RED" option is highlighted with a red box. At the bottom right, there are "CANCEL" and "SAVE" buttons.

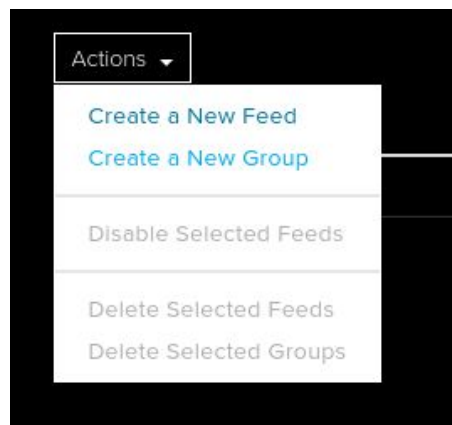
You can also set the time intervals between the sensor measurements.

3 Configure your Adafruit IO account

1. Open [Adafruit IO](#) and log in or create a free account if you don't already have one
2. Open **Feeds > View all**



3. Click on **Actions > Create a New Feed** and name your new feed. By default, our Node-RED package uses {sensor type}-{device address} as topic names (e.g. temperature-1), but you can use any other name



Create a new Feed ✕

Name

Maximum length: 128 characters. Used: 13

Description

Note

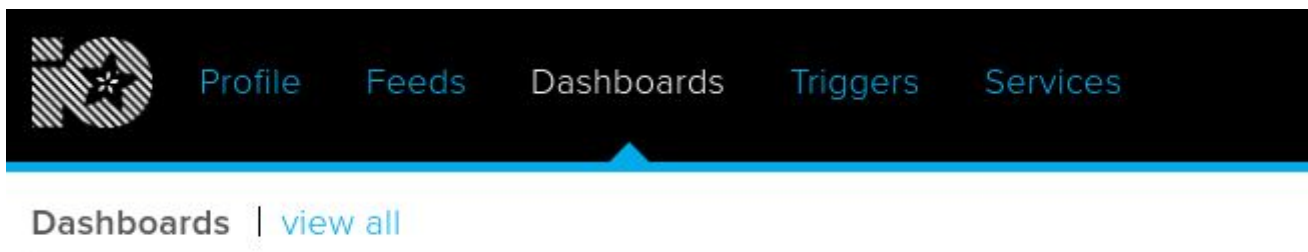
You can easily identify your sensors and their device addresses by using the “**indicate**” button in the right-click menu of the sensors under the **RF Network** tab in **LinkIt!** and finding the blinking LED on the sensor.

4. Create the feeds for all other sensors. In this example, we are using a temperature (device address: 1) and a temperature+humidity sensor (device address: 2), so we create a new feed (topic) for each of them

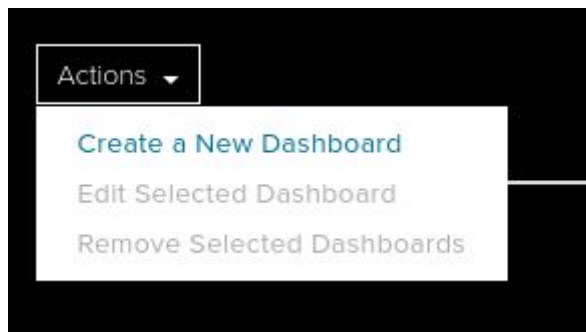
Group / Feed	Key
<input type="checkbox"/> Default	default
<input type="checkbox"/> humidity-2	humidity-2
<input type="checkbox"/> temperature-1	temperature-1
<input type="checkbox"/> temperature-2	temperature-2

Note the values in the **Key** column, these are going to be used in Node-RED

5. Open **Dashboards > View all**



6. Create a new dashboard



Create a new Dashboard ✕

Name

Description

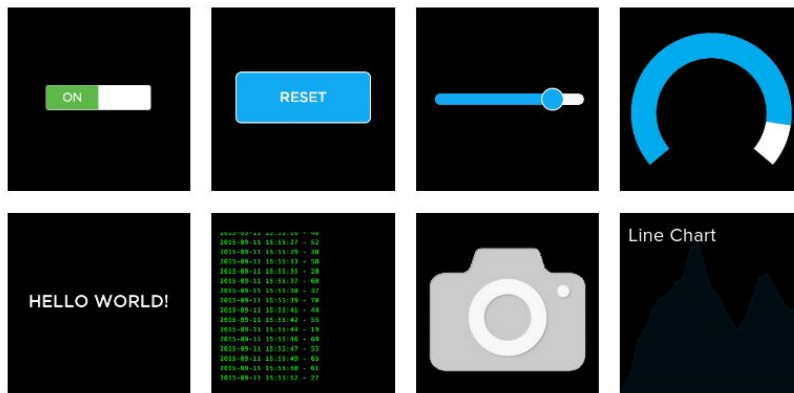
Cancel

Create

7. Open your new dashboard and click on the blue plus button in the top right corner to create a new block



8. Select **Line Chart**



9. Select both temperature feeds and click **Next step**

Choose up to 5 feeds



Line Chart: The line chart is used to graph one or more feeds.

If you have lot of feeds, you may want to use the search field. You can also create a feed quickly below.

Enter new feed name

Create

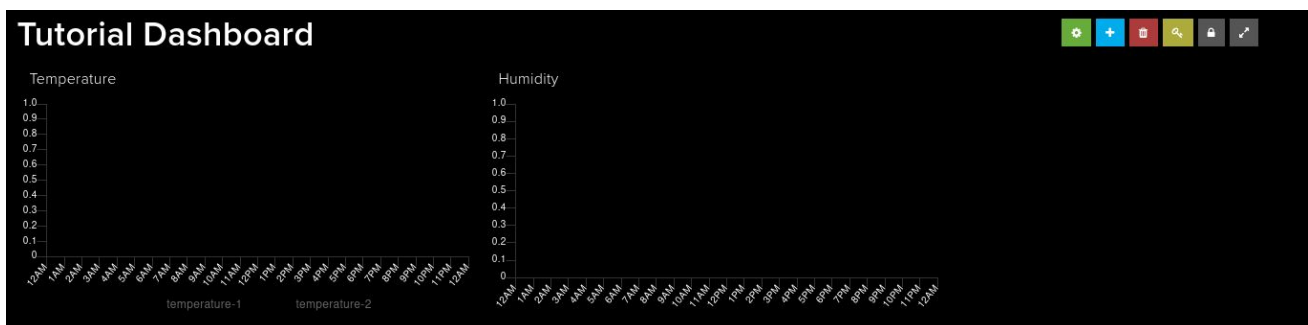
Group / Feed	Last value	Recorded	
<input type="checkbox"/> humidity-2	🔒	1 minute	
<input checked="" type="checkbox"/> temperature-1	🔒	1 day	1 of 5
<input checked="" type="checkbox"/> temperature-2	🔒	1 day	2 of 5

← Previous step

Next step →

10. On the next page, you can customize the settings for your line chart, but for now, the defaults are fine. Give a name to the new chart and click **Create block**

11. Repeat the same steps for other kinds of sensor values you would like to visualize



12. Click on the **Adfruit IO Key** button in the top right corner, and note down your **Username** and **Active Key**. They will be used in Node-RED in the next step

YOUR ADAFRUIT IO KEY



Your Adafruit IO Key should be kept in a safe place and treated with the same care as your Adafruit username and password. People who have access to your Adafruit IO Key can view all of your data, create new feeds for your account, and manipulate your active feeds.



If you need to regenerate a new Adafruit IO Key, all of your existing programs and scripts will need to be manually changed to the new key.

Username

Active Key

REGENERATE KEY

WARNING!

If you decide to regenerate your Adafruit IO key, you will have to update your Node-RED configuration with your new IO key!

4 Set up a Node-RED network to forward the sensor data

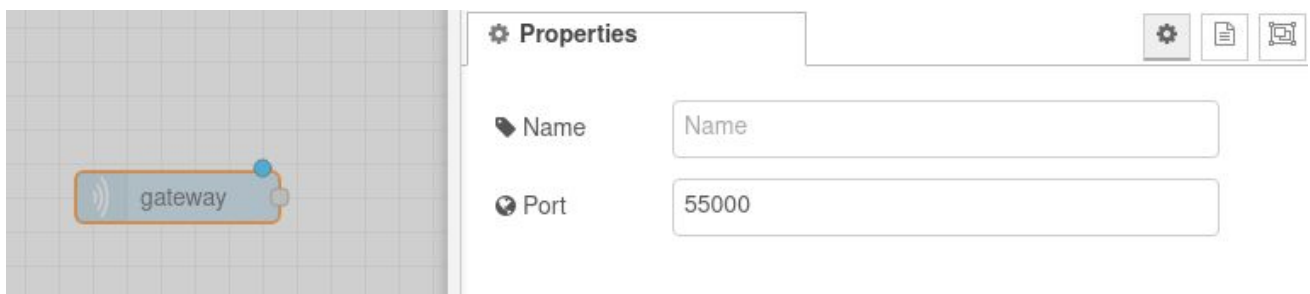
For this demo, we will be using a **Temperature Sensor** [SI-T-02/SC] and a **Temperature and Relative Humidity Sensor** [SN-TH-02].

1. Switch to the **Node-RED** tab in **LinkIt!**

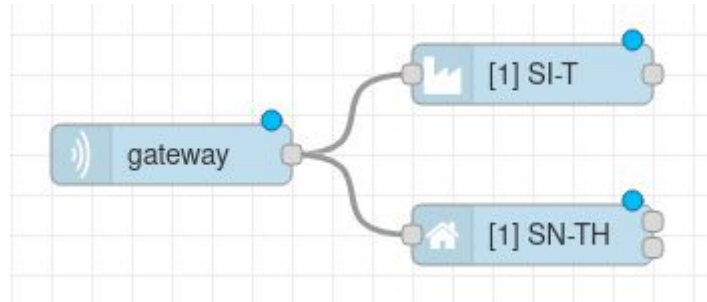
The **IQHome** nodes can be found in the bottom of the panel on the left side of your screen.



2. Add an iqhome **gateway** node. If you changed the used port in the first step, you can set it here by double-clicking on the node



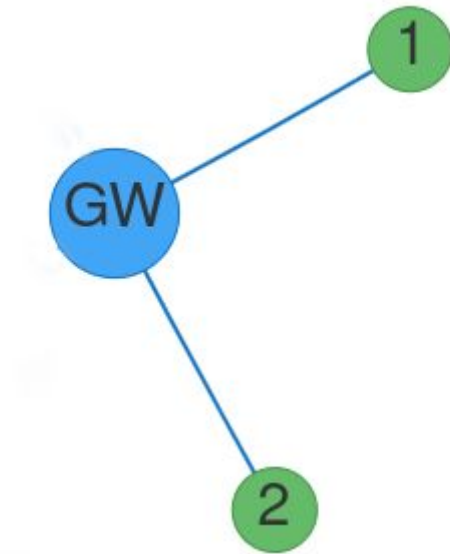
3. Add the sensor nodes corresponding to the sensors you are using in your IQHome network. In this example, we are using the **SI-T-02/SC** and **SN-TH-02** sensors, so we will add the **SI-T** and **SN-TH** nodes



4. Set the **device addresses** corresponding to your sensor's addresses as seen in the **LinkIt! RF Network** tab by double-clicking the sensor nodes. We are using the default topic (feed) names generated by the sensor nodes, so you can leave the boxes under "Topics" empty. If you used a different topic (feed) name on the Adafruit website, you have to write the same topic names here.

Note

You can easily identify your sensors and their device addresses by using the "indicate" button in the right-click menu of the sensors under the **RF Network** tab in **LinkIt!** and finding the blinking LED on the sensor.



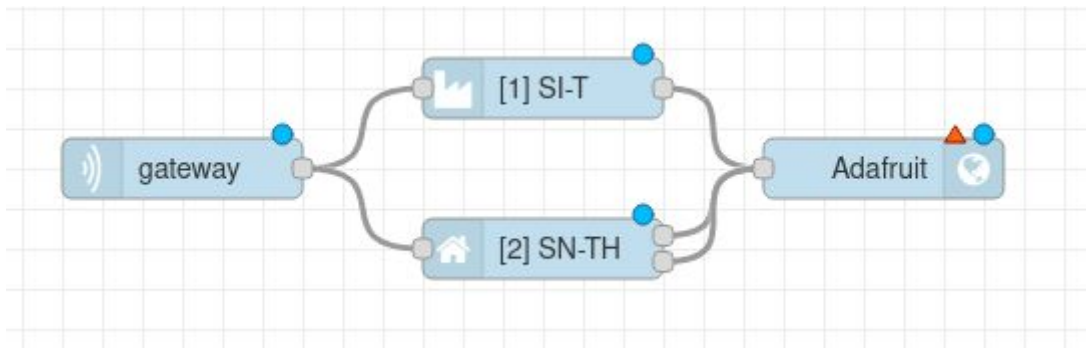
The screenshot shows a Node-RED workspace with a 'gateway' node connected to two sensor nodes: '[1] SI-T' and '[2] SN-TH'. The right-hand panel displays the configuration for the selected '[2] SN-TH' node.

Properties	
Name	<input type="text" value="Name"/>
Address	<input type="text" value="2"/>
Topics	
Temperature	<input type="text" value="temperature-2"/>
Humidity	<input type="text" value="humidity-2"/>

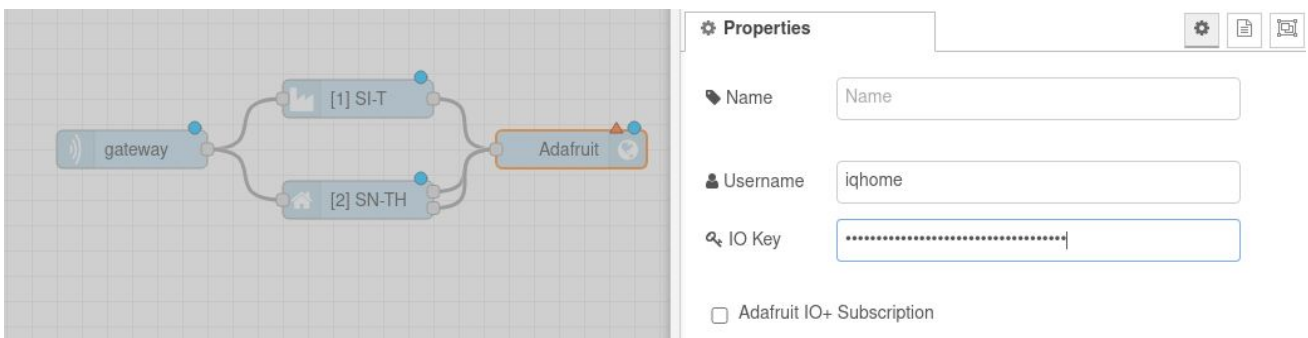
Each sensor node has outputs depending on what types of measurements can that sensor make.



5. Add an **Adafruit** node and connect it to the outputs of the sensor nodes.



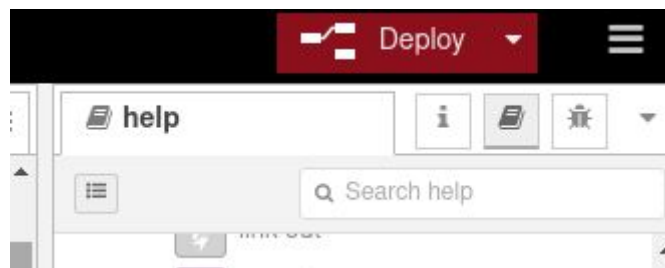
6. Double click the **Adafruit** node and enter your Adafruit **Username** and **IO Key**



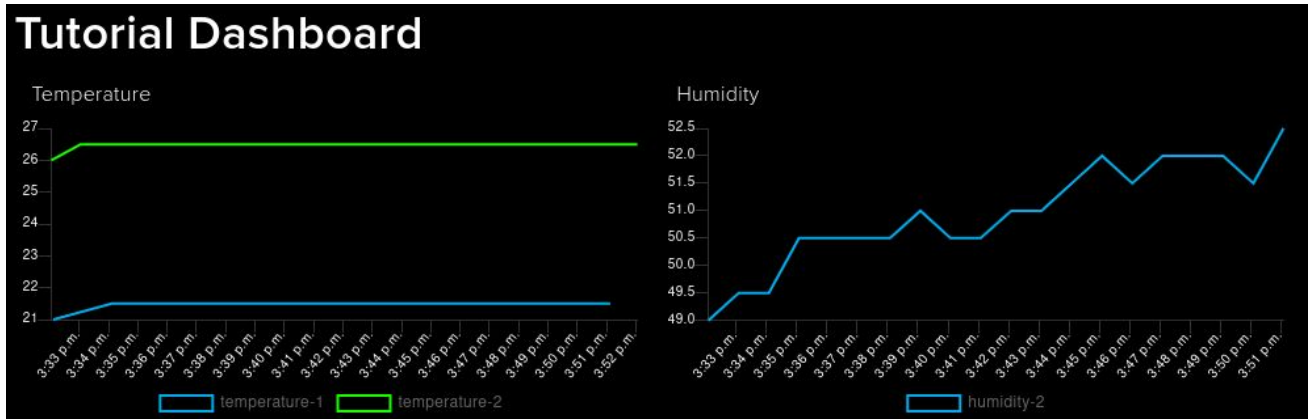
Note

The Adafruit node enforces the data limits set by Adafruit IO (max. 30 requests per minute). If you have an active Adafruit IO+ (paid) subscription, you can check the Adafruit IO+ Subscription checkbox in the Adafruit node to enable the higher (max. 60 requests per minute) data rate of the paid account.

7. **Deploy** your Node-RED network by clicking the **Deploy** button in the top right corner of your window



If you turn on your IQHome gateway and sensors, you will see the incoming data in your Adafruit IO Dashboard:



Note

You can change the horizontal scaling of your line graphs by clicking on the green cog icon in the top right corner.

5 Demo

You can find our **Adafruit** demo here:

<https://io.adafruit.com/iqhome/dashboards/iqhome-demo?kiosk=true>