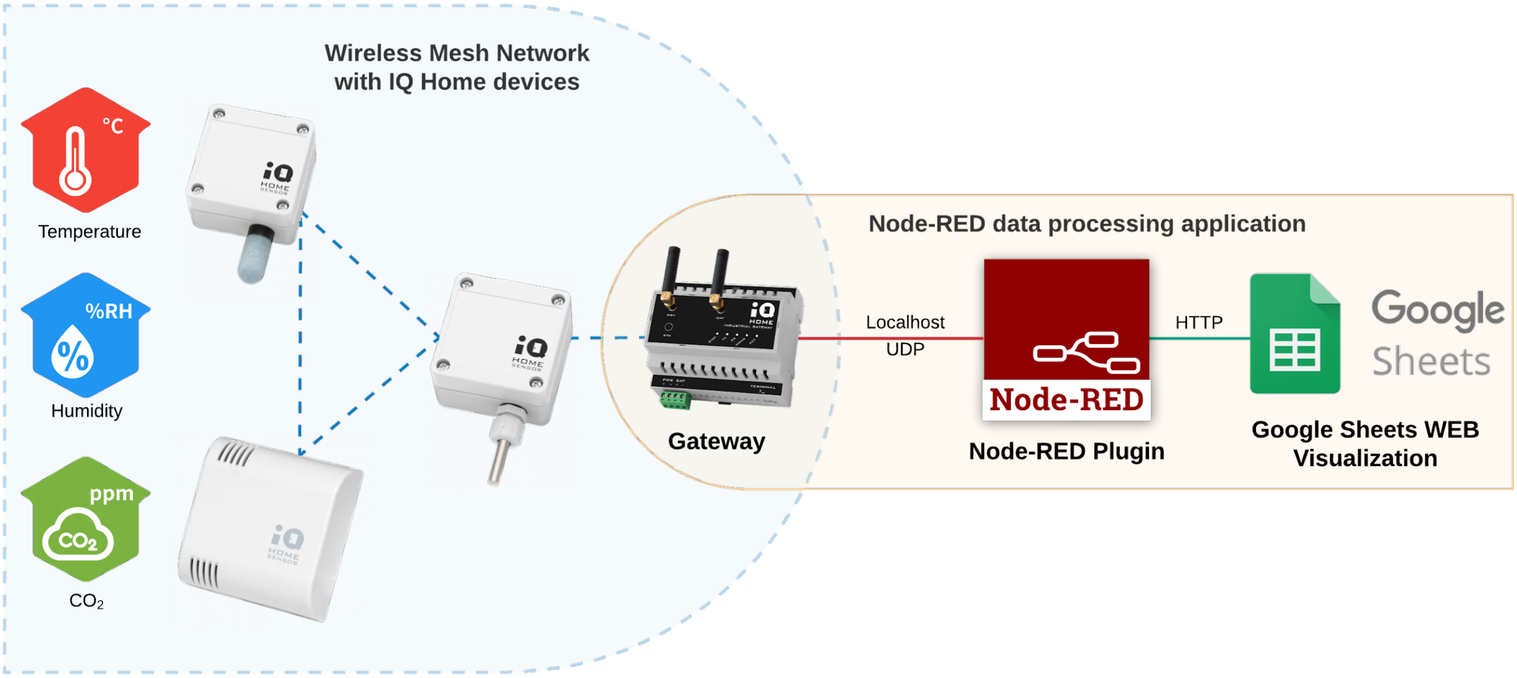
Uploading sensor data to Google Spreadsheet with Node-RED



www.iqhome.org

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Contents

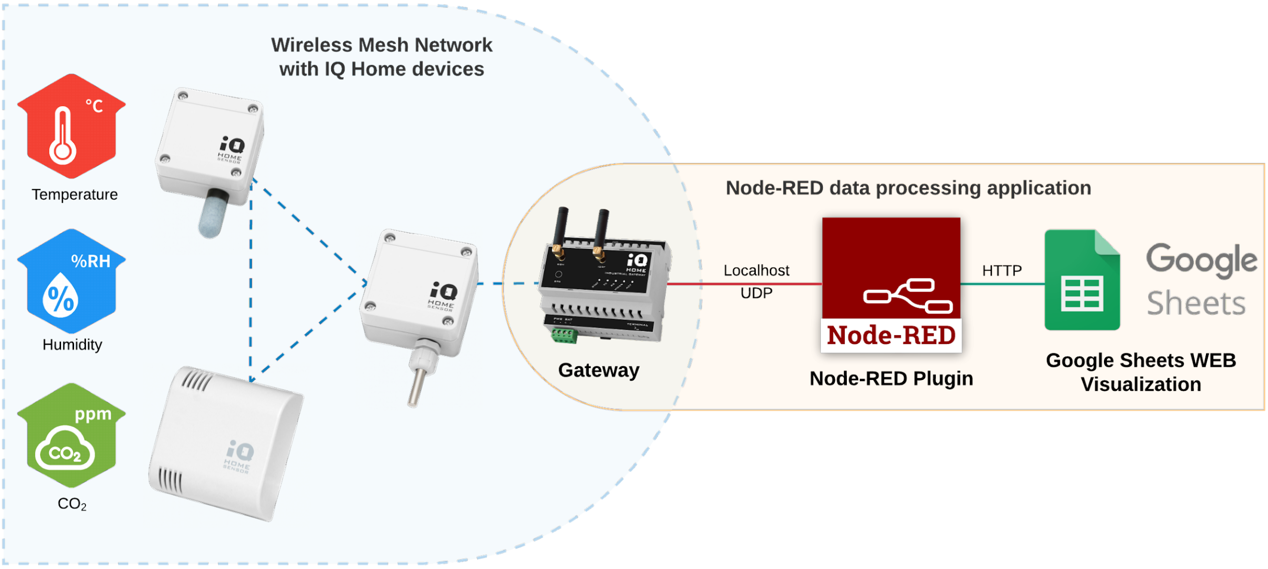
1 Overview

In this guide you will learn about how to upload periodically collected sensor data from your IQ Home sensor network to **Google Spreadsheets**.

The pre-installed Node-RED service on the gateway will be used to upload data to your Google Spreadsheet.

What you need:

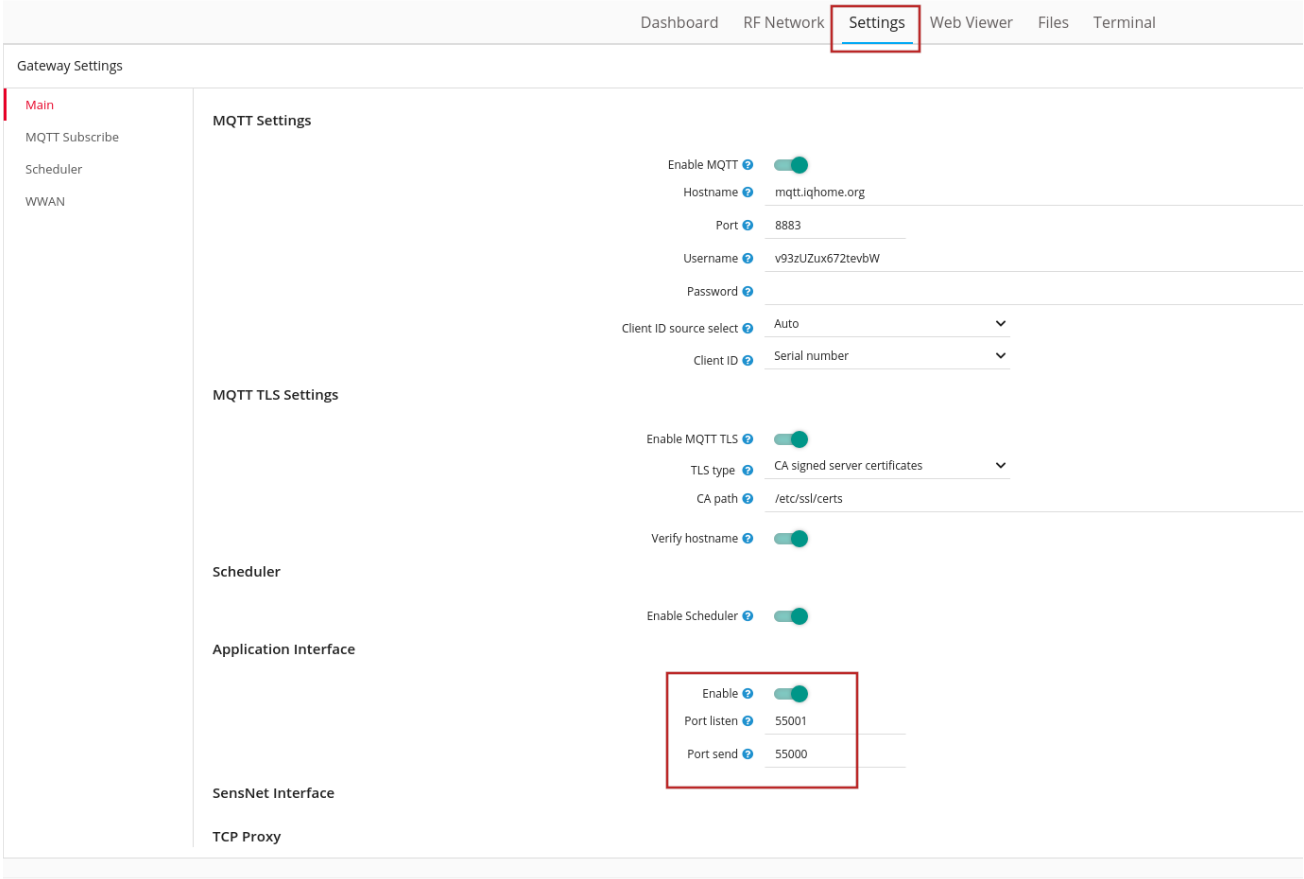
- IQ Home Gateway
- IQ Home Sensor
- Google Account to Google Drive



2 Enable the Application Interface

To collect sensor data with Node-RED, first, we need to enable the Application Interface feature on the 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)



MQTT Settings

Enable MQTT	●
Hostname	mqtt.iqhome.org
Port	8883
Username	v93zUZux672tevbW
Password	
Client ID source select	Auto
Client ID	Serial number

MQTT TLS Settings

Enable MQTT TLS	●
TLS type	CA signed server certificates
CA path	/etc/ssl/certs
Verify hostname	●

Scheduler

Enable Scheduler	●

Application Interface

Enable	●
Port listen	55001
Port send	55000

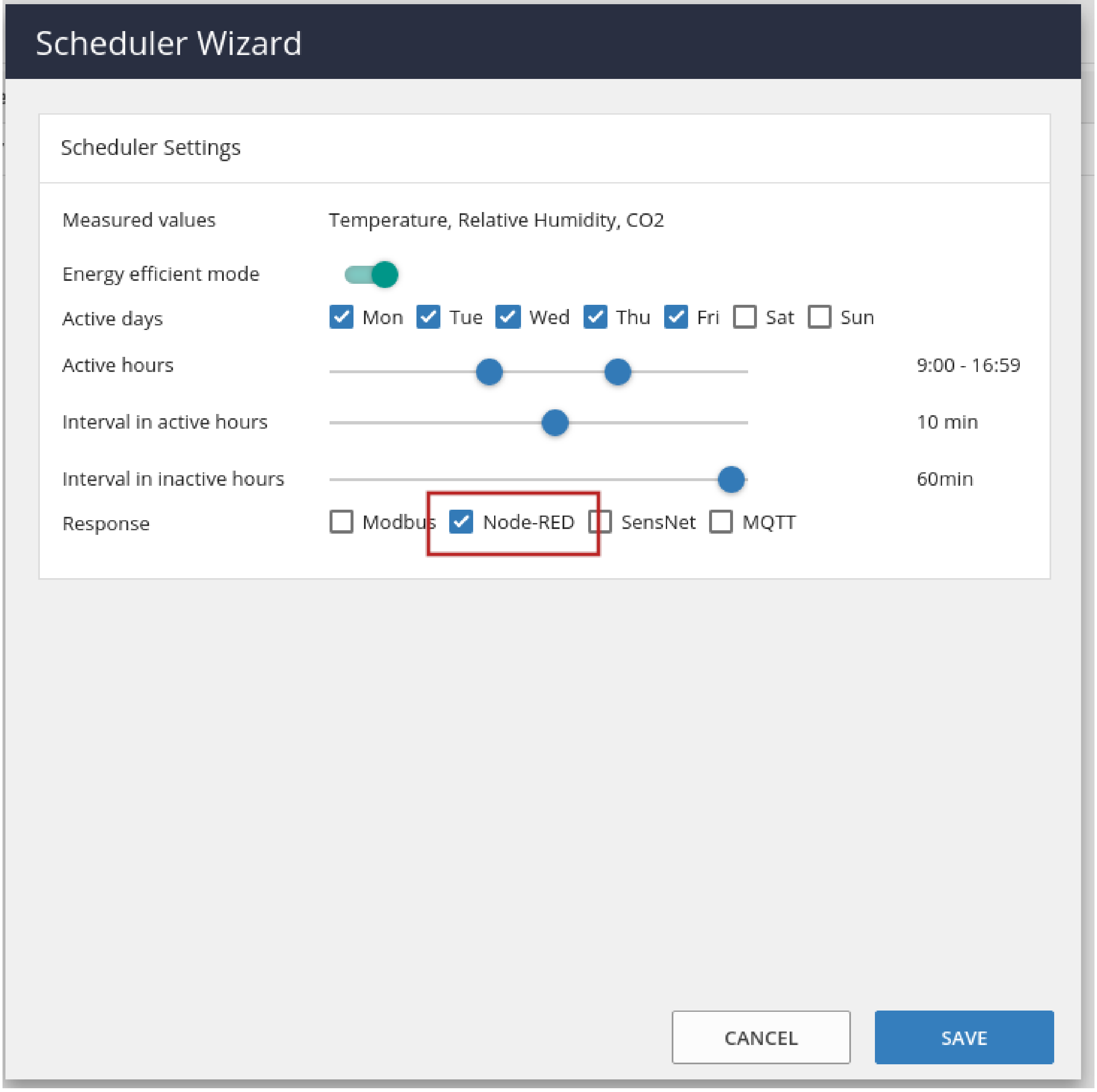
SensNet Interface

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



Scheduler Wizard

Scheduler Settings

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

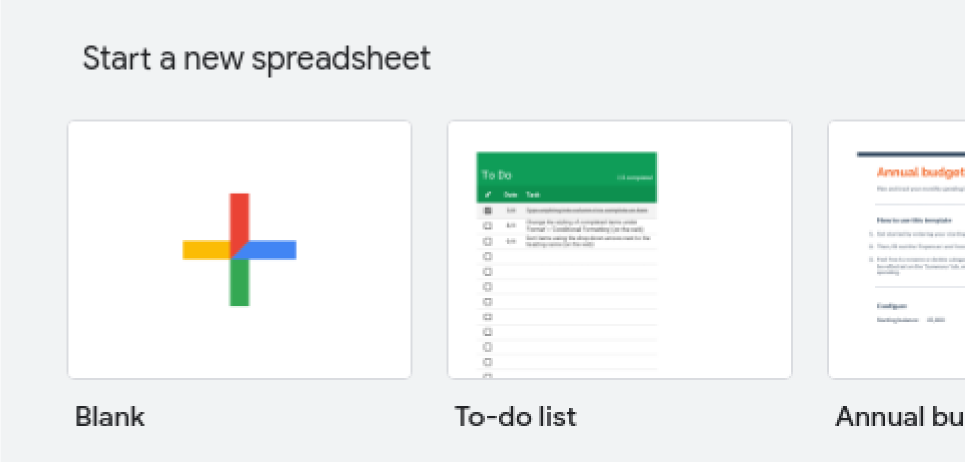
Interval in inactive hours: 60min

Response: □ Modbus ☑ Node-RED □ SensNet □ MQTT

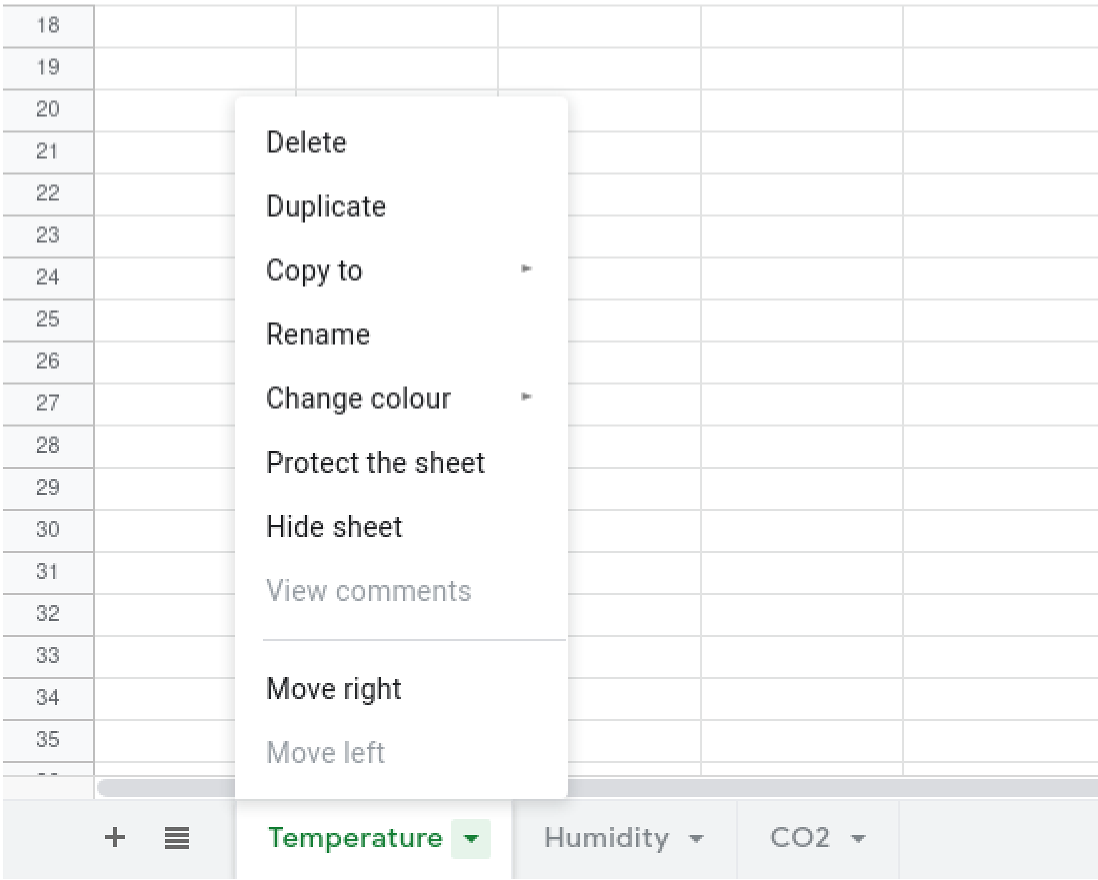
You can also set the time intervals between the sensor measurements.

3 Configure Google Sheets

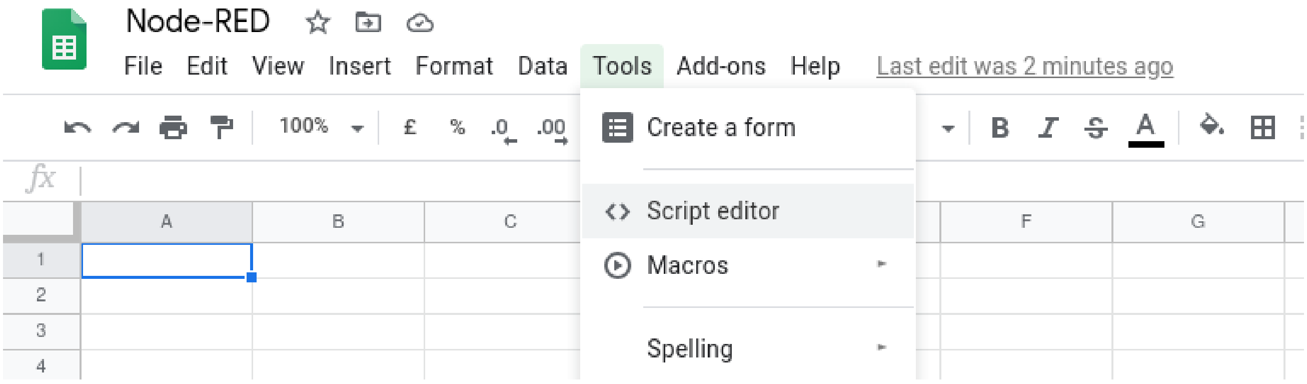
1. Open Google Sheets and create a blank spreadsheet



2. Create two new sheets and name them **“Temperature”, “Humidity”** and **“CO2”** by clicking on the down arrow next to the sheet name and the plus button in the bottom left corner.



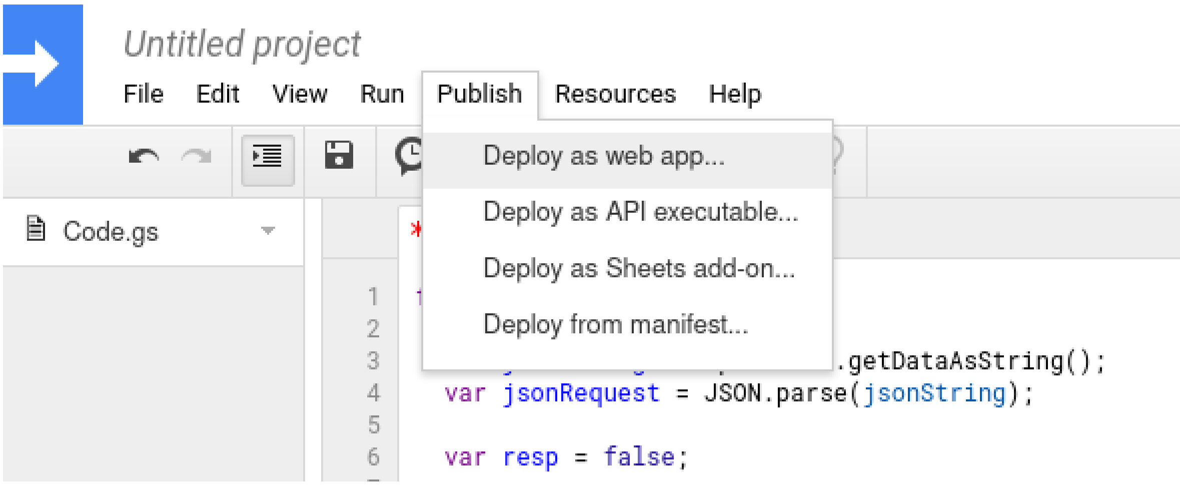
3. Copy and note down the **URL** of the sheet. It will be needed in Node-RED in a later step
4. Open **Tools > Script Editor**


Node-RED
File Edit View Insert Format Data Tools Add-ons Help
Last edit was 2 minutes ago
100%
Create a form
Script editor
Macros
Spelling

5. Copy the following script into the **Script Editor** overwriting the default code

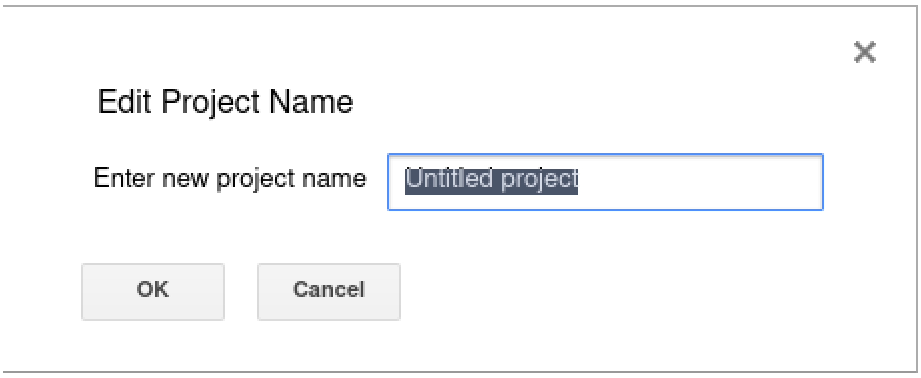
```
function doPost(e) {

  const jsonString = e.postData.getDataAsString();
  const jsonRequest = JSON.parse(jsonString);

  let resp = false;

  if(appendData(jsonRequest)){
    resp = true;
  }

  let response = {
    response: resp
  };

  SpreadsheetApp.flush();

  return ContentService.createTextOutput(JSON.stringify(response))
  .setMimeType(ContentService.MimeType.JSON);
}

function setHeaders(ws, n) {
  ws.forEach(item=>{
     let r = item.getRange(1,1,1,n+1);
     let h = ['Time'];
     for(let i=1;i<=n;i++) {
        h.push('Sensor '+i);
     }
     r.setValues([h]);
  });
}

function appendData(request){

  const ss = SpreadsheetApp.openById(request.spreadsheet);
  if(!ss) return false;
  const temp = ss.getSheetByName('Temperature');
  const hum = ss.getSheetByName('Humidity');
  const co = ss.getSheetByName('CO2');
  if(!(temp && hum && co)) return false;

  setHeaders([temp,hum,co], request.devices);

  temp.appendRow(request.temp);
  hum.appendRow(request.hum);
  co.appendRow(request.co);

  return true;
}
```

6. Click **Publish > Deploy as web app...**



```
                                    .getDataAsString();
  var jsonRequest = JSON.parse(jsonString);

  var resp = false;
```

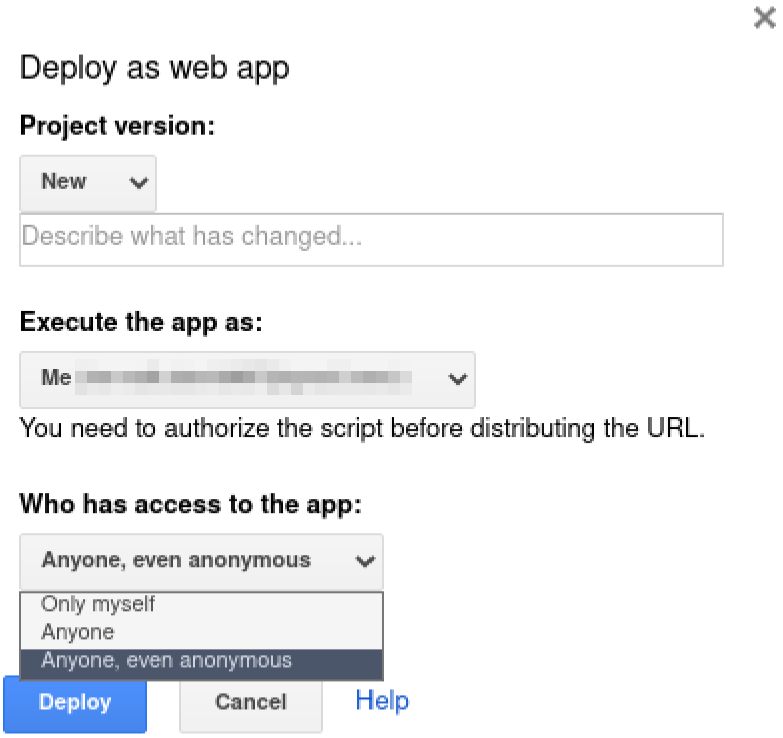
7. Click **OK**



Edit Project Name

Enter new project name: Untitled project

8. Select **Anyone, even anonymous** under “Who has access to the app” then click **Deploy**



Deploy as web app

Project version: New

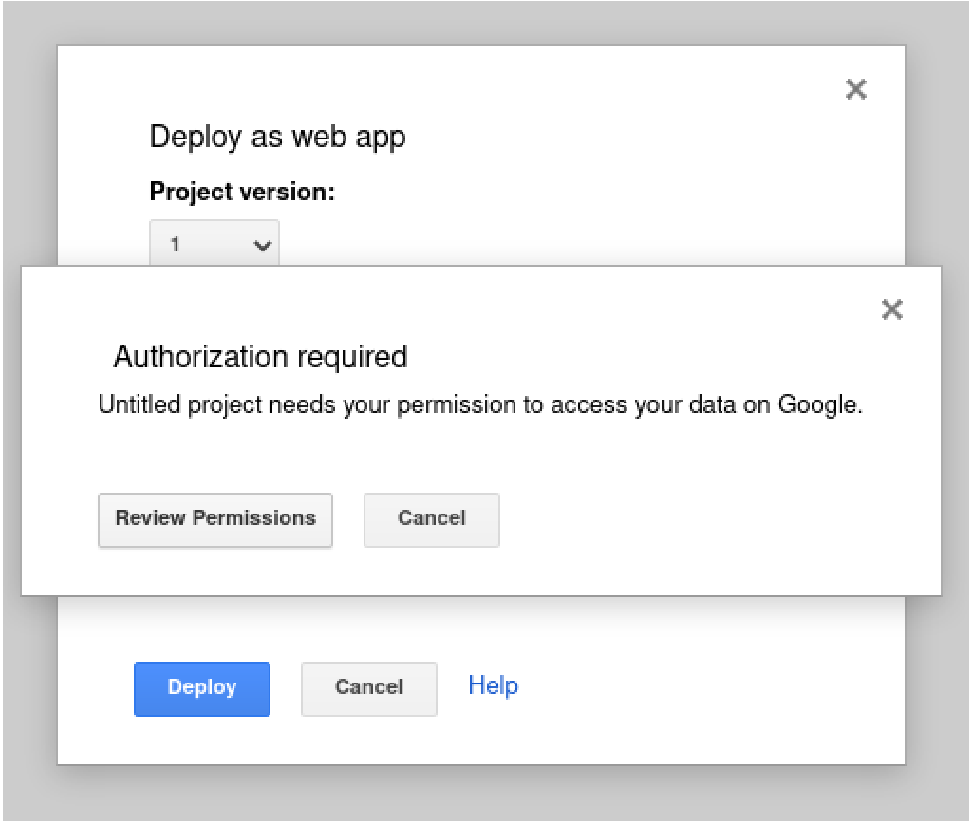
Describe what has changed...

Execute the app as: Me [redacted]

You need to authorize the script before distributing the URL.

Who has access to the app: Anyone, even anonymous

9. Click **Review Permissions** and sign in to your Google account



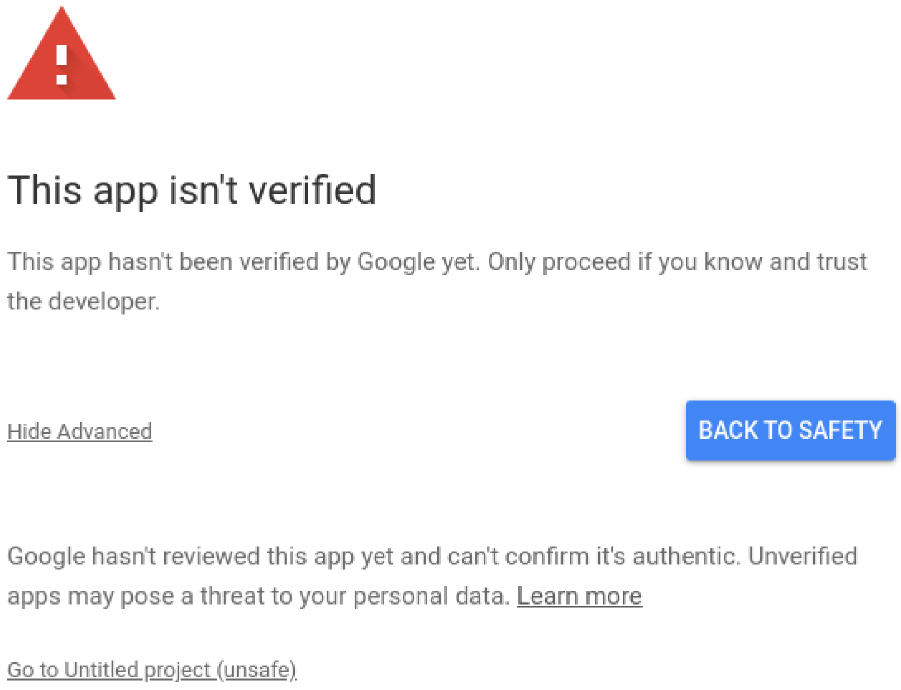
Deploy as web app

Project version: 1

Authorization required

Untitled project needs your permission to access your data on Google.

10. Click on **Advanced** and **Go to Untitled project**

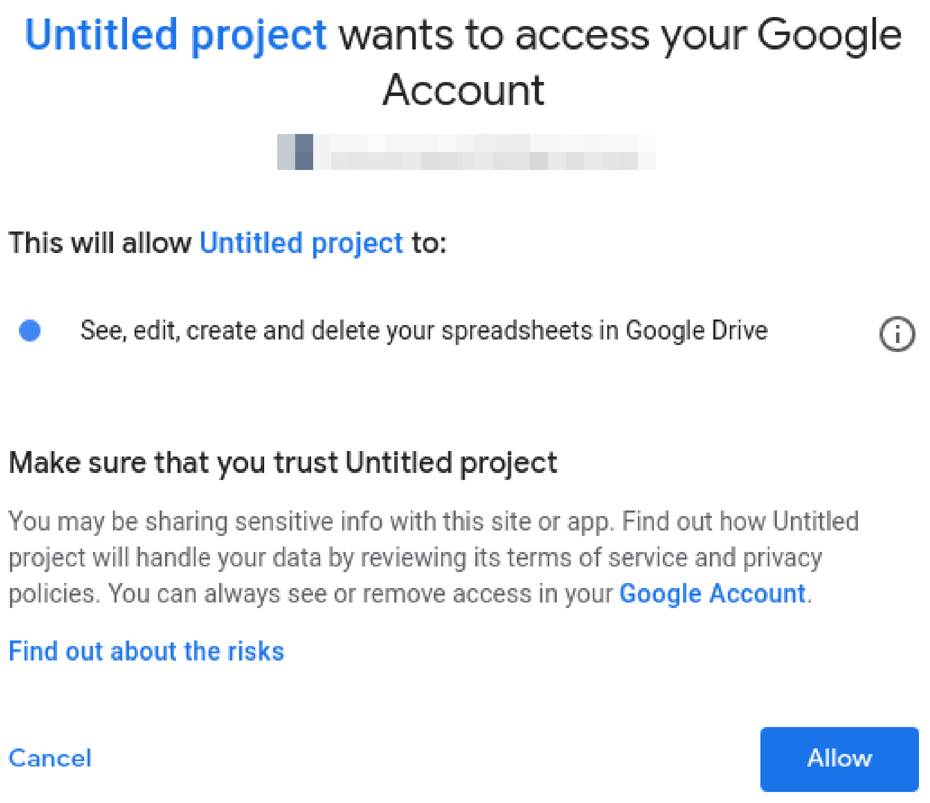


This app isn't verified

This app hasn't been verified by Google yet. Only proceed if you know and trust the developer.

Google hasn't reviewed this app yet and can't confirm it's authentic. Unverified apps may pose a threat to your personal data. Learn more

11. Click **Allow**



Untitled project wants to access your Google Account

[redacted]

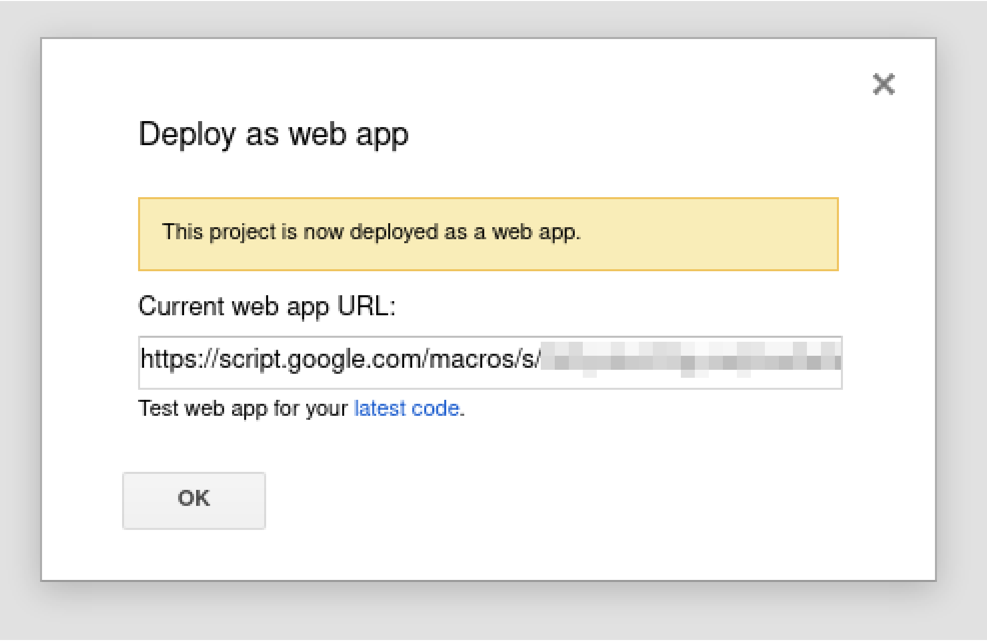
This will allow Untitled project to:

- See, edit, create and delete your spreadsheets in Google Drive

Make sure that you trust Untitled project

You may be sharing sensitive info with this site or app. Find out how Untitled project will handle your data by reviewing its terms of service and privacy policies. You can always see or remove access in your Google Account.

12. Go back to the **Script Editor** window and copy and note down your **Current web app URL**. This URL will be needed in Node-RED in a later step.



Deploy as web app

This project is now deployed as a web app.

Current web app URL:

https://script.google.com/macros/s/[redacted]

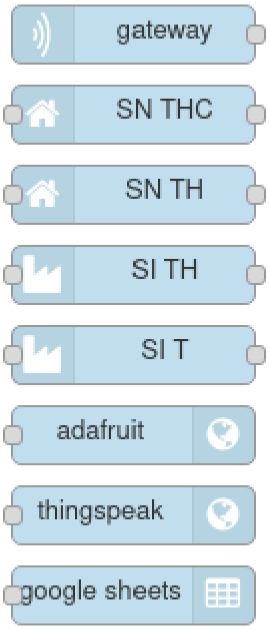
Test web app for your latest code.

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

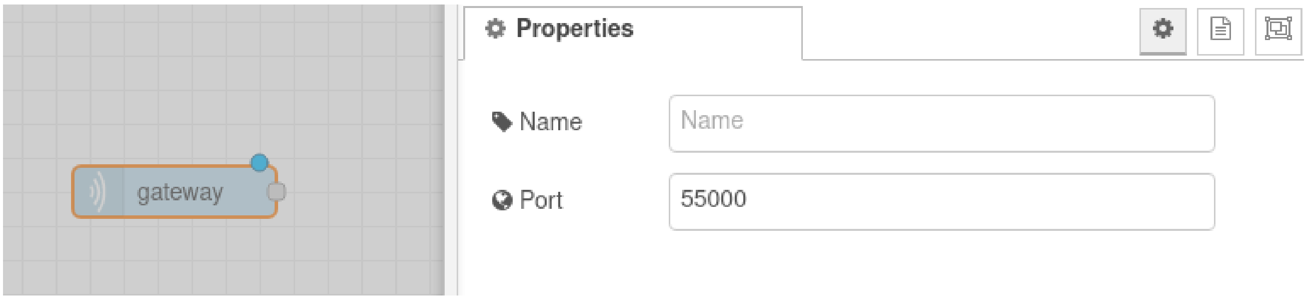
For this demo, we will be using a **Temperature Sensor** [SI-T-02/SC] and a **Temperature and Relative Humidity Sensor** [SN-TH-02].

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.



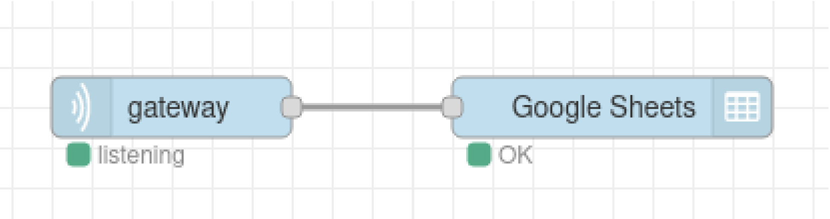
2. Add an iqhome **gateway** node. If you changed the used port in the first step, you can set it here by double-clicking on the node



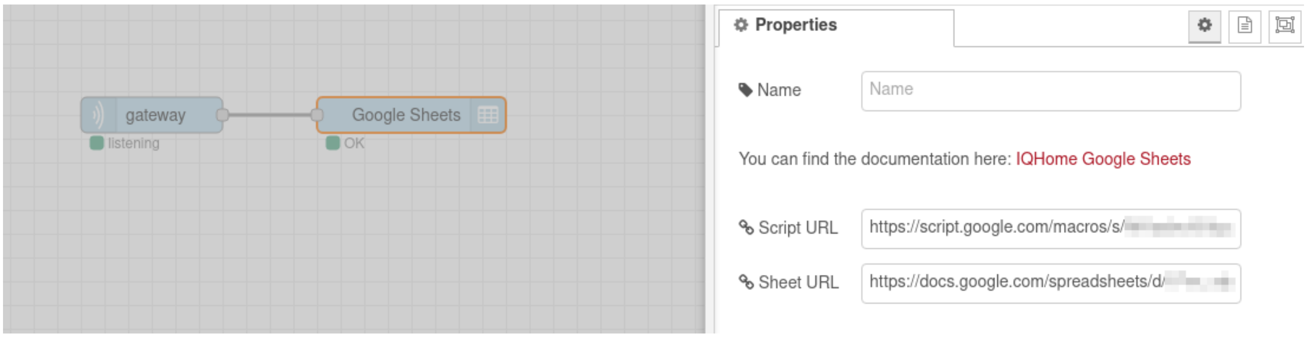
Name: Name

Port: 55000

3. Add a **Google Sheets** node and connect it to the **Gateway** node



4. Double click on the **Google Sheets** node and enter your **Script URL** and **Sheet URL** from the previous steps



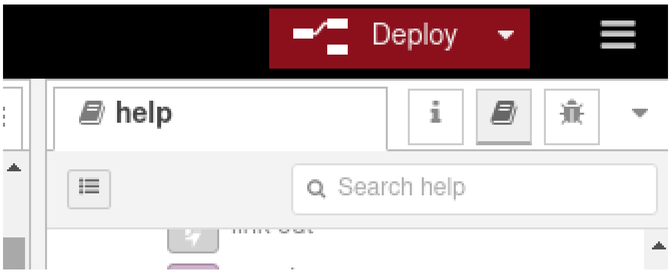
Name: Name

You can find the documentation here: IQHome Google Sheets

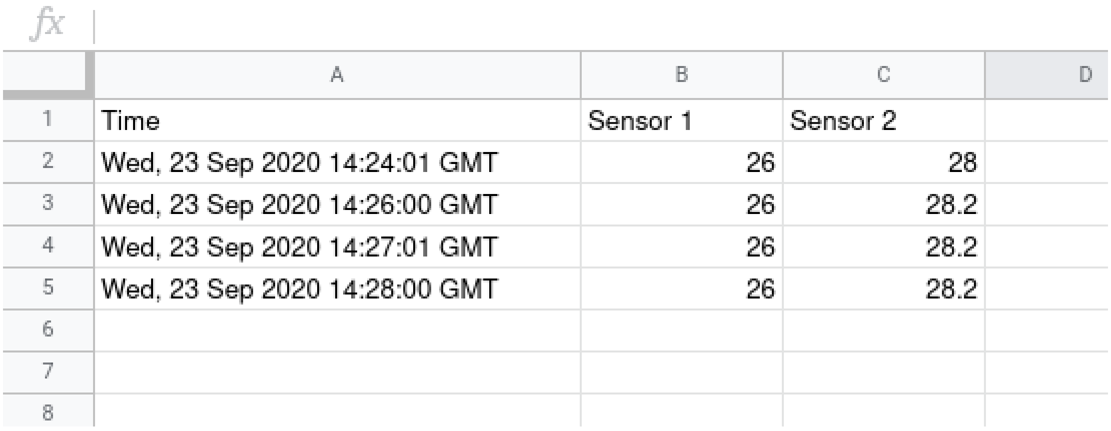
Script URL: https://script.google.com/macros/s/

Sheet URL: https://docs.google.com/spreadsheets/d/

5. **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 Google Sheet:



	A	B	C	D
1	Time	Sensor 1	Sensor 2	
2	Wed, 23 Sep 2020 14:24:01 GMT	26	28	
3	Wed, 23 Sep 2020 14:26:00 GMT	26	28.2	
4	Wed, 23 Sep 2020 14:27:01 GMT	26	28.2	
5	Wed, 23 Sep 2020 14:28:00 GMT	26	28.2	
6				
7				
8				

Acknowledgement

This content was created with the support of the Ministry of Foreign Affairs and Trade of Hungary.