Interface Node-RED with Microsoft Azure

In this article, we will see how to interface Node-RED with Microsoft Azure IoT hub

Setup Microsoft Azure IoT Hub
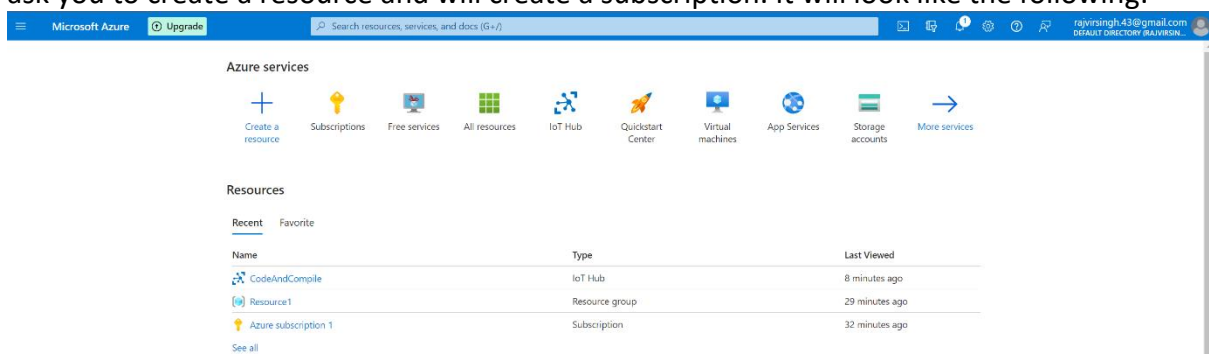

Step 1: Create an account

Make a free account on Microsoft Azure IoT: Use this link to sign up: https://portal.azure.com/

Step 2: Create resource

Once you are signed in. Create a resource named 'IoT Hub'. During the setup process, it will ask you to create a resource and will create a subscription. It will look like the following:

Step 3: Create IoT device

Navigate to to your IoT Hub 'CodeAndCompile' and click on 'Devices' on the left tree and add a new device.

Give a device name and make sure you check 'Connect this deice to an IoT hub' as shown below:

Create a device ⋯

> ℹ Find Certified for Azure IoT devices in the Device Catalog

Device ID * ⓘ

IoTDevice2

☑ IoT Edge Device

Authentication type ⓘ

(**Symmetric key** X.509 Self-Signed)

Auto-generate keys ⓘ

☑

Connect this device to an IoT hub ⓘ

(**Enable** Disable)

Parent device ⓘ

No parent device
Set a parent device

Child devices ⓘ

0

Choose child devices

Once, the device is created, click on your device name and you will see your device credentials as shown below:
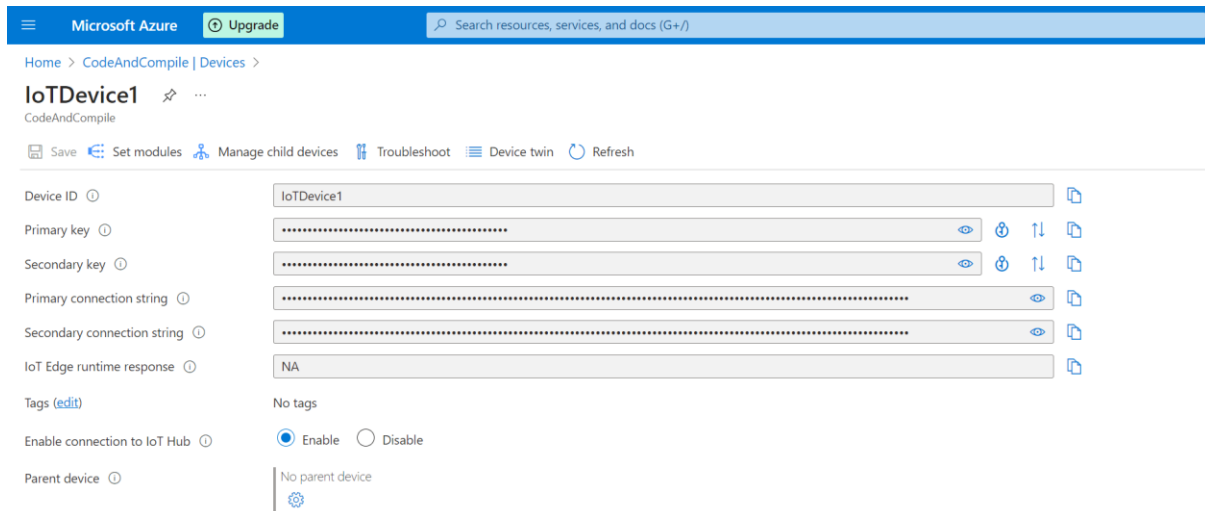
We have created two IoT devices for this example as shown below. You can create any number of IoT device you like.
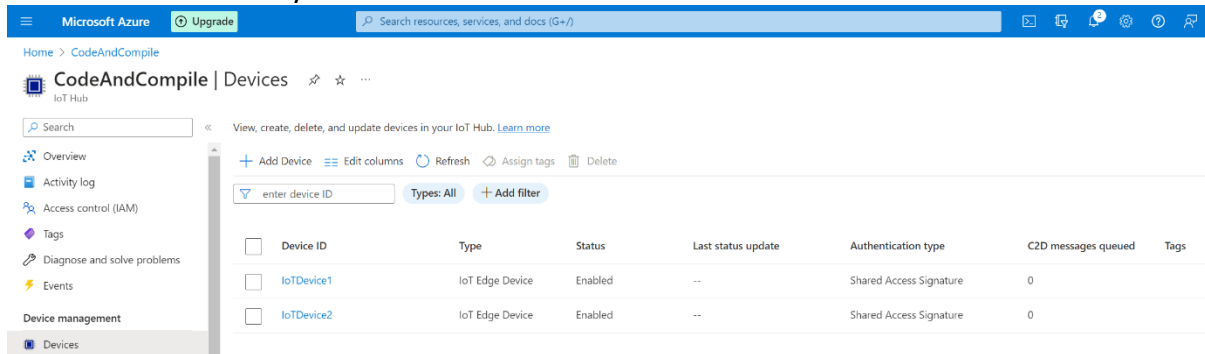
Setup Node-RED on your Computer

Step 1: Install IoT hub flow

Go to pallete and install this flow: node-red-contrib-azure-iot-hub
Reference link: https://flows.nodered.org/node/node-red-contrib-azure-iot-hub

Step 2: Use and configure Azure IoT hub node on your editor

Drag and drop Azure IoT hub node on your editor and configure with the following parameters:

- **Name**: Any name of your choice

- **Protocol**: mqtt
- **Hostname**: Hostname of your IoT Hub
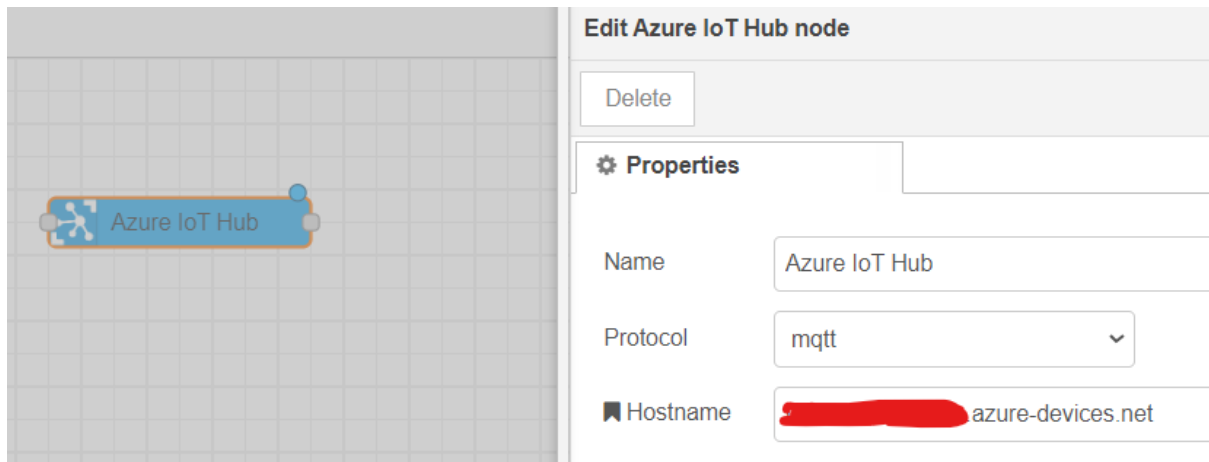
The hostname of your IoT hub can be located at Home > Your_IoT_HuB
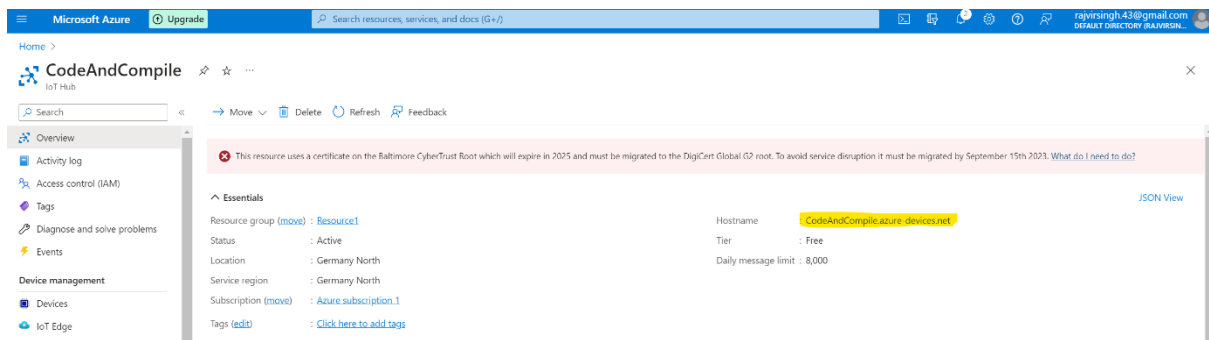
Step 3: Create flows

Take two inject nodes and connect those to the Azure IoT hub node as shown below:

In these inject node, send a JSON message as shown below:

Send to Device1
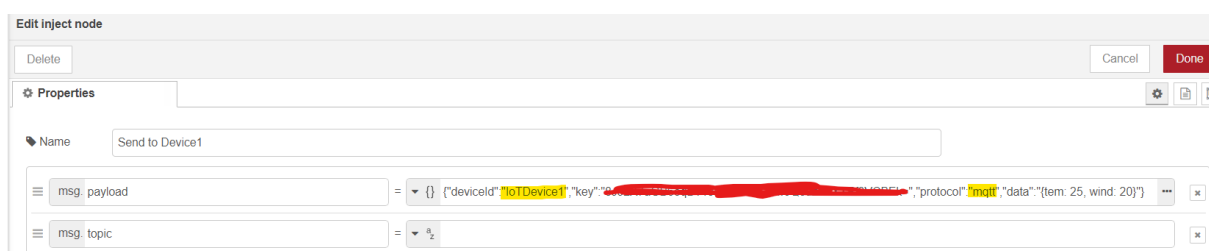
msg.payload

```
{"deviceId":"IoTDevice1","key":"your_IoT_device_primary_key","protocol":"mqtt","data":"{
tem: 25, wind: 20}"}
```

Send to Device2

msg.payload

```
{"deviceId":"IoTDevice2","key":"your_IoT_device_primary_key","protocol":"mqtt","data":"{tem: 45, wind: 40}"}
```
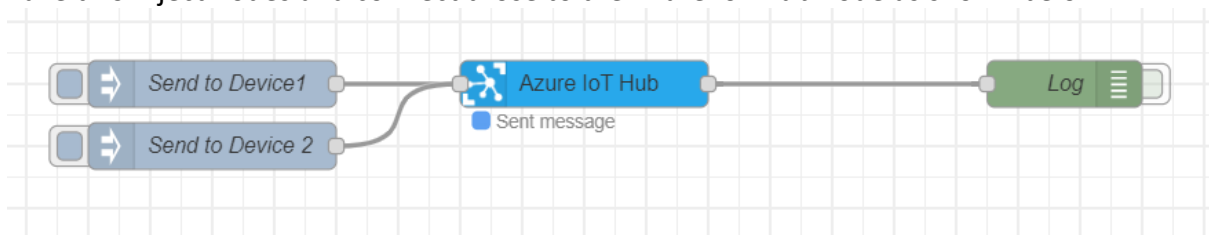
Make sure you enter the correct parameters in the JSON message:

- **deviceid**: Its the name of the IoT device ID that you created in your IoT hub
- **key**: This is the primary key you can get from your device ID
- **protocol**: mqtt
- **data**: The data that you want to send to the IoT hub in JSON format. In this example: we are sending two values temp and wind.

Step 4: Send data to IoT Hub

Test your flows by injecting the data to the Azure IoT hub. If your parameters are correctly entered then you will the data in your debug window
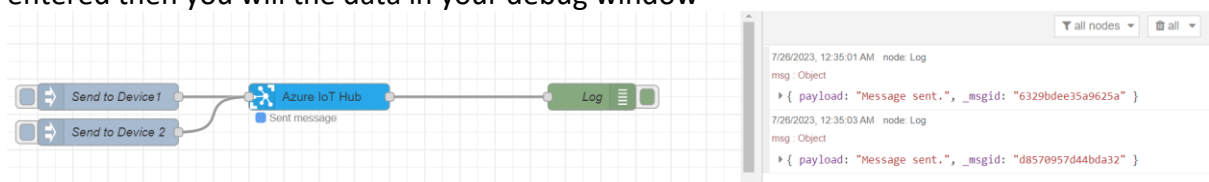
Step 5: Receive data from IoT Hub

To receive the data from the IoT hub you need to use **Azure IoT hub receiver** node on the editor. Drag the node on the editor and enter the parameter **conneciton string of the IoT hub**
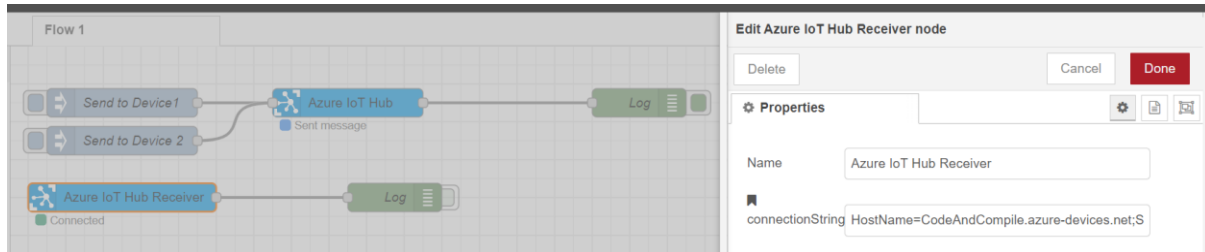
To get the connection string navigate to **Home>Your_IoT_Hub(CodeAndCompile)>Shared access policies>iothubowner>Primary connection string**
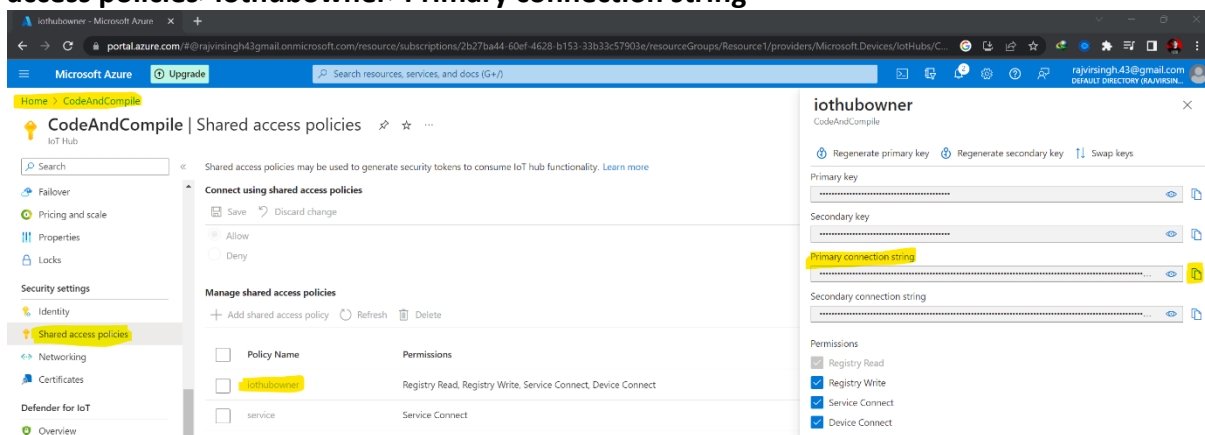
Step 6: Deploy and test

Now you should be able to see the data received back from Azure IoT hub to your Node-RED
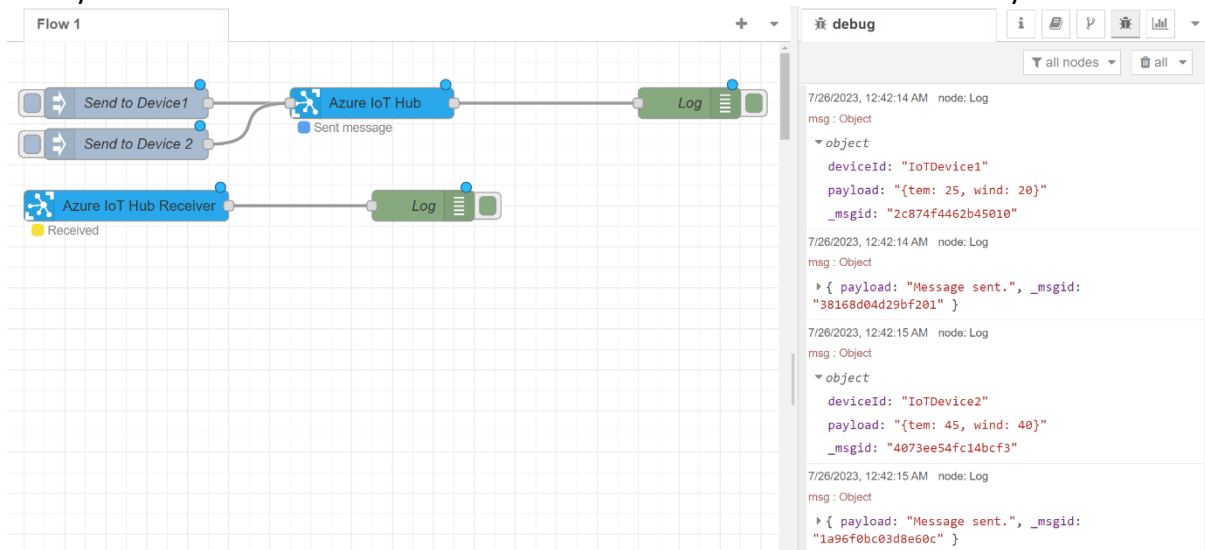
Hope you enjoyed this tutorial.

Source code

You can use the following source code in your project. **Make sure to enter your own IoT device primary key in the inject nodes.**

```
[
    {
        "id": "102479925e0d1c08",
        "type": "tab",
        "label": "Flow 1",
        "disabled": false,
        "info": "",
        "env": []
    },
    {
        "id": "f775e252.a49f2",
        "type": "debug",
        "z": "102479925e0d1c08",
        "name": "Log",
        "active": true,
        "tosidebar": true,
        "console": false,
        "complete": "true",
        "statusVal": "",
        "statusType": "auto",
        "x": 1450,
        "y": 60,
        "wires": []
    },
    {
        "id": "95789379.e44d2",
        "type": "azureiothub",
        "z": "102479925e0d1c08",
        "name": "Azure IoT Hub",
        "protocol": "mqtt",
        "x": 1140,
        "y": 60,
        "wires": [
            [
                "f775e252.a49f2"
            ]
        ]
    },
    {
        "id": "228b0f18.7799c",
        "type": "inject",
        "z": "102479925e0d1c08",
        "name": "Send to Device1",
```

```json
      "props": [
        {
          "p": "payload"
        },
        {
          "p": "topic",
          "vt": "str"
        }
      ],
      "repeat": "",
      "crontab": "",
      "once": false,
      "onceDelay": "",
      "topic": "",
      "payload":
"{\"deviceId\":\"IoTDevice1\",\"key\":\"Your_IoT_device_Key\",\"protocol\":\"mqtt\",\
"data\":\"{tem: 25, wind: 20}\"}",
      "payloadType": "json",
      "x": 900,
      "y": 60,
      "wires": [
        [
          "95789379.e44d2"
        ]
      ]
    },
    {
      "id": "817f33a3.ddf5f",
      "type": "azureiothubreceiver",
      "z": "102479925e0d1c08",
      "name": "Azure IoT Hub Receiver",
      "x": 900,
      "y": 160,
      "wires": [
        [
          "c2825fc8.d6323"
        ]
      ]
    },
    {
      "id": "c2825fc8.d6323",
      "type": "debug",
      "z": "102479925e0d1c08",
      "name": "Log",
      "active": true,
      "tosidebar": true,
      "console": false,
```

```json
        "tostatus": false,
        "complete": "true",
        "targetType": "full",
        "statusVal": "",
        "statusType": "auto",
        "x": 1190,
        "y": 160,
        "wires": []
    },
    {
        "id": "560eac6a68556dec",
        "type": "inject",
        "z": "102479925e0d1c08",
        "name": "Send to Device 2",
        "props": [
            {
                "p": "payload"
            },
            {
                "p": "topic",
                "vt": "str"
            }
        ],
        "repeat": "",
        "crontab": "",
        "once": false,
        "onceDelay": "",
        "topic": "",
        "payload":
"{\"deviceId\":\"IoTDevice2\",\"key\":\"Your_IoT_device_Key\",\"protocol\":\"mqtt\",\
"data\":\"{tem: 45, wind: 40}\"}",
        "payloadType": "json",
        "x": 900,
        "y": 100,
        "wires": [
            [
                "95789379.e44d2"
            ]
        ]
    }
]
```