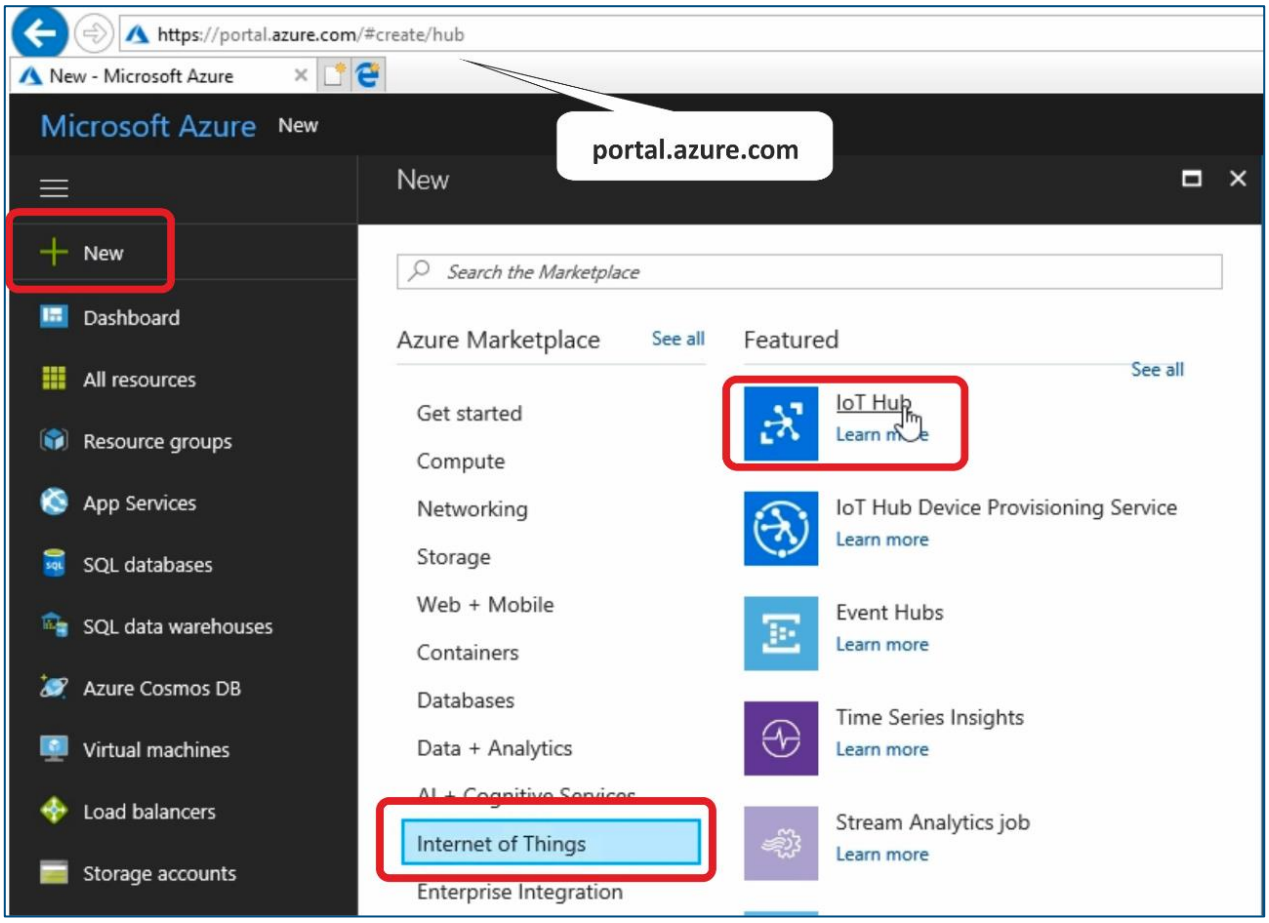
IoT Starter Kit – Part 3: Connect to the cloud – Microsoft Azure

In this part, we will connect an IQRF gateway to Microsoft Azure. Microsoft Azure offers free services for developers for a limited time and in a limited amount. You will be asked to enter your credit card details. Your credit card will be used only if you exceed the services provided free of charge. It is one of the possible clouds that you can get connected to from your IQRF Gateway Daemon using the MQTT channel.

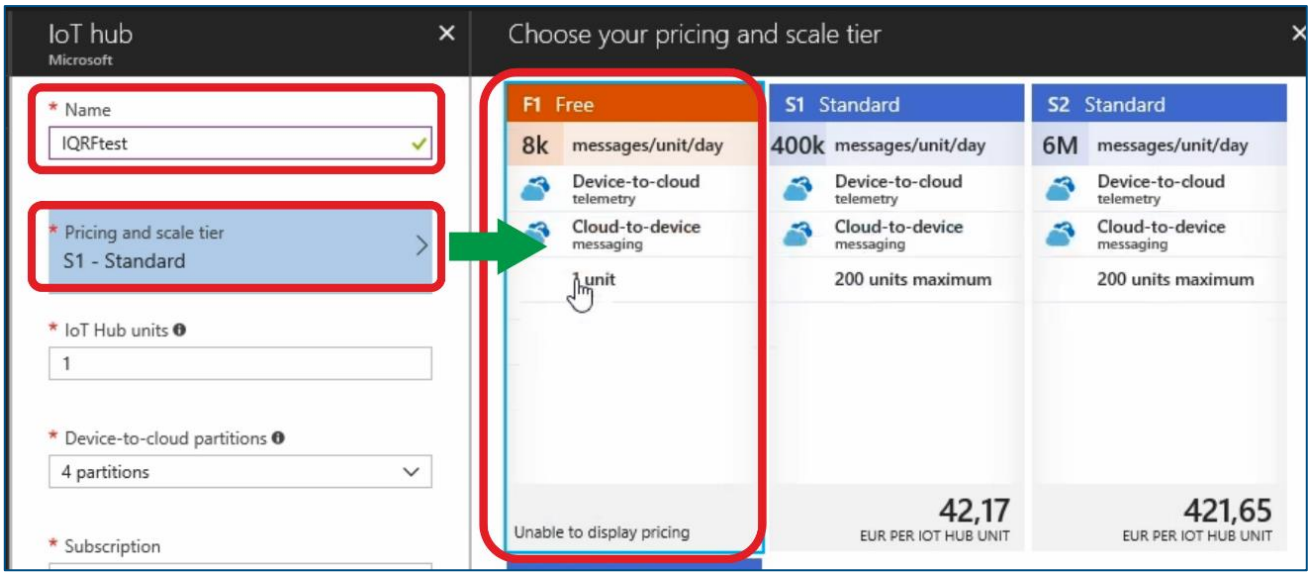
1 Virtual device in Microsoft Azure

1.1 Set up the IoT Hub

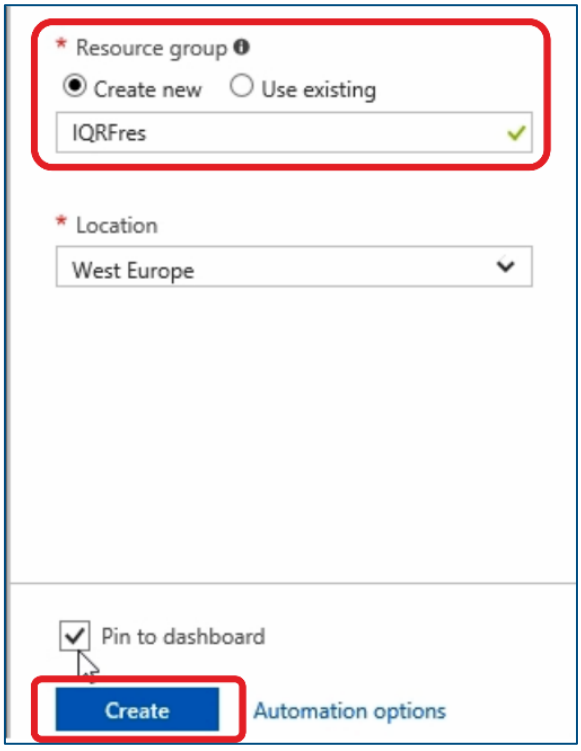
First, log in to your Microsoft Azure account on portal.azure.com. Click on the **New item** in the left menu, go to the **Internet of Things** and select **IoT Hub**.



Setup the **IoT Hub name** and your **pricing model**. As a developer you can create one IoT Hub for free.

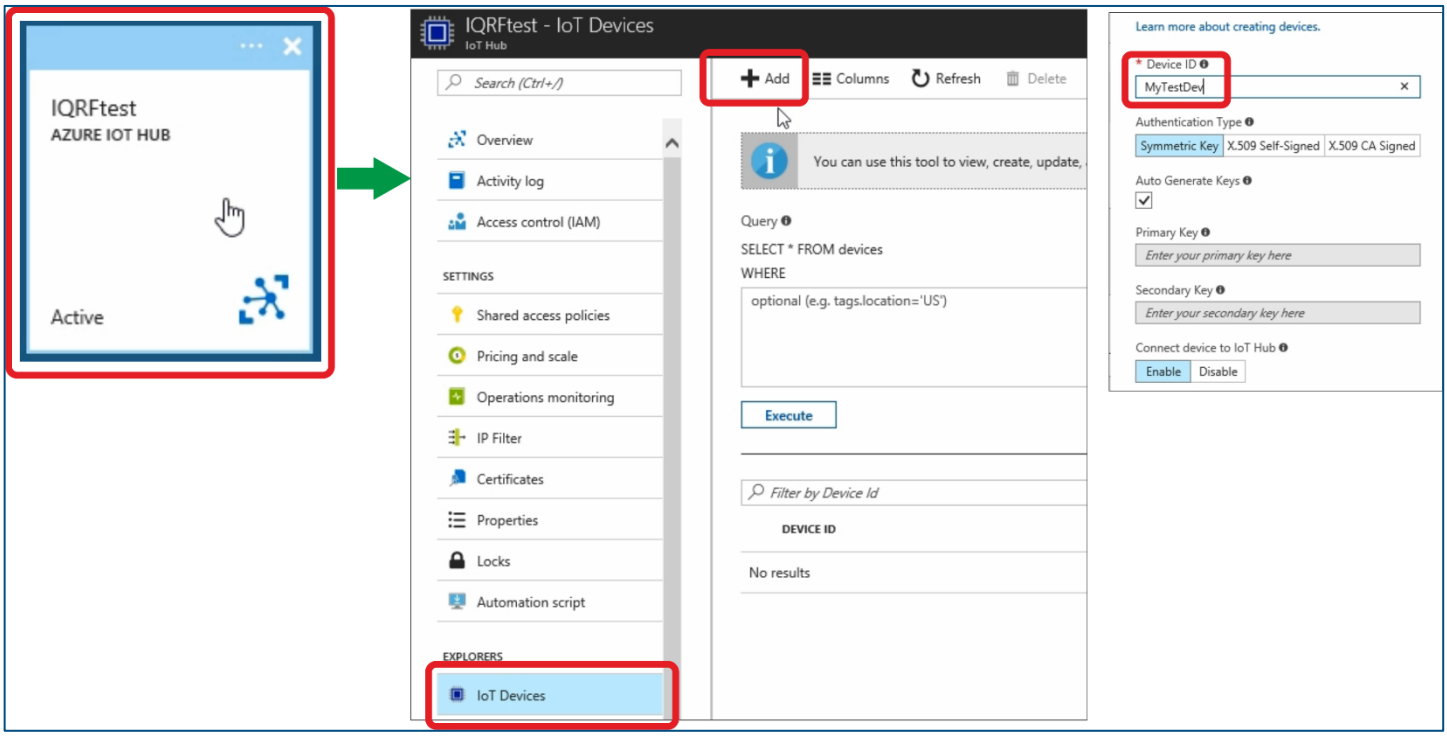


Set up a name of your **Resource group**. Click on the **Create** button.

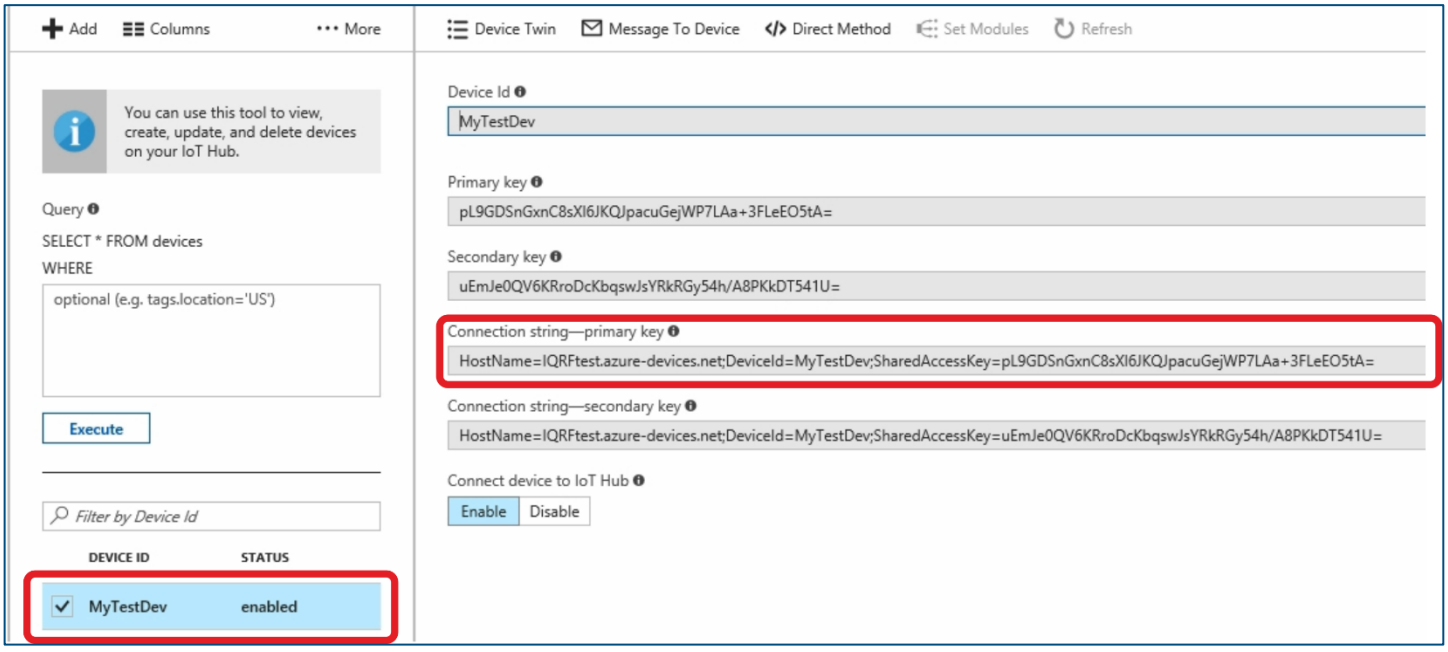


1.2 Create a virtual device

In the **IoT Hub** find the **IoT Devices** item. Click on the **Add** button and create your new IoT device. This virtual device represents your UP board.



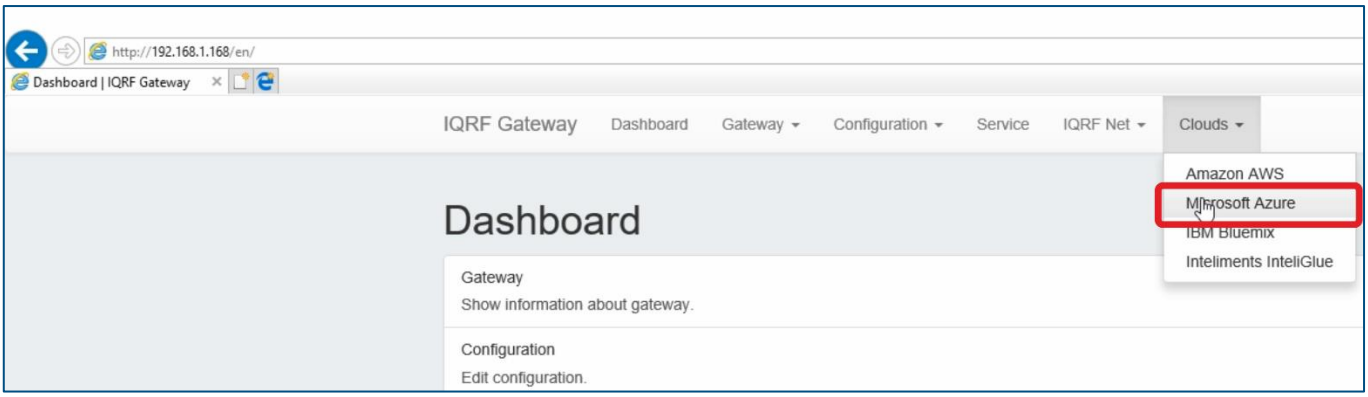
Copy the **Connection string primary key**. It will be used in the MQTT interface configuration.



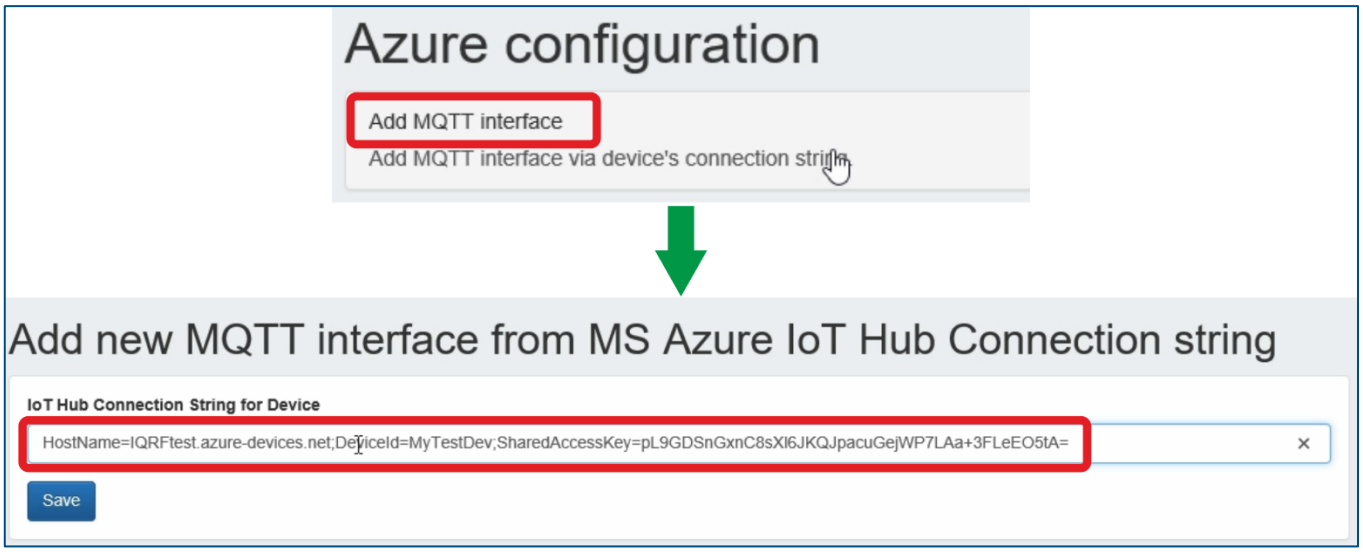
2 Set up the MQTT interface in the IQRF Gateway

2.1 Create a new MQTT interface

In the web browser on your computer, insert the IP address of your UP board, and login to it as *admin* with password *iqrf*. In the IQRF Gateway Daemon web application, click on the **Microsoft Azure** item in the **Clouds** menu.

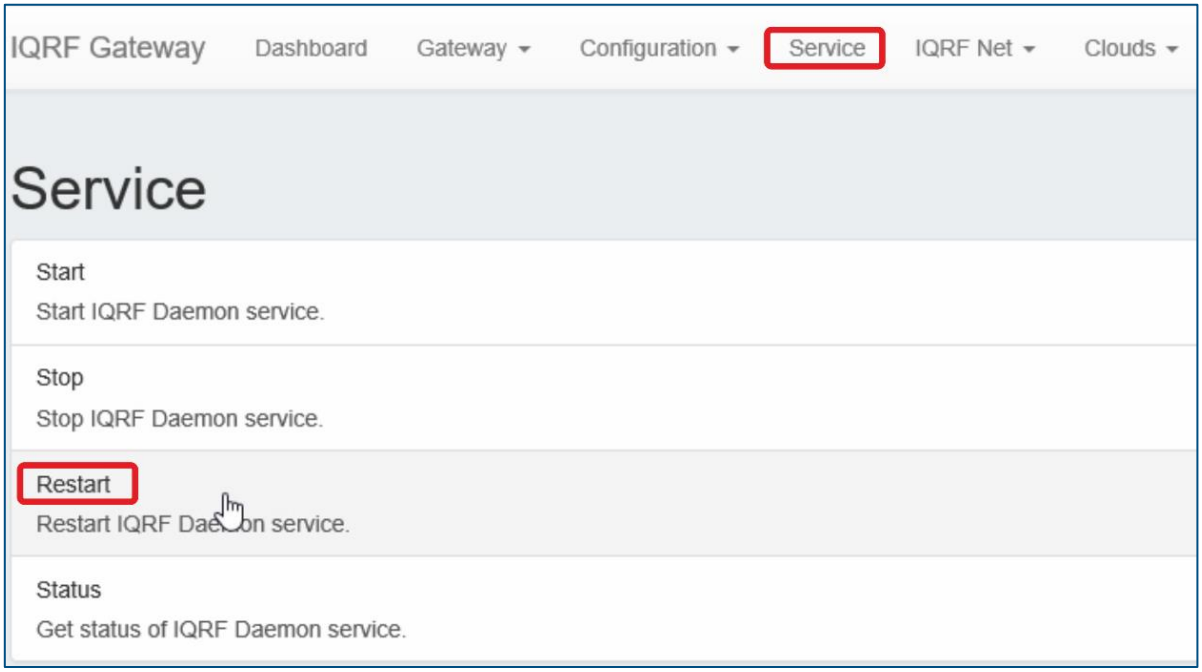


Add a new **MQTT interface**. Paste here the **connection string** which you copied before and save the configuration.



2.2 Restart the service

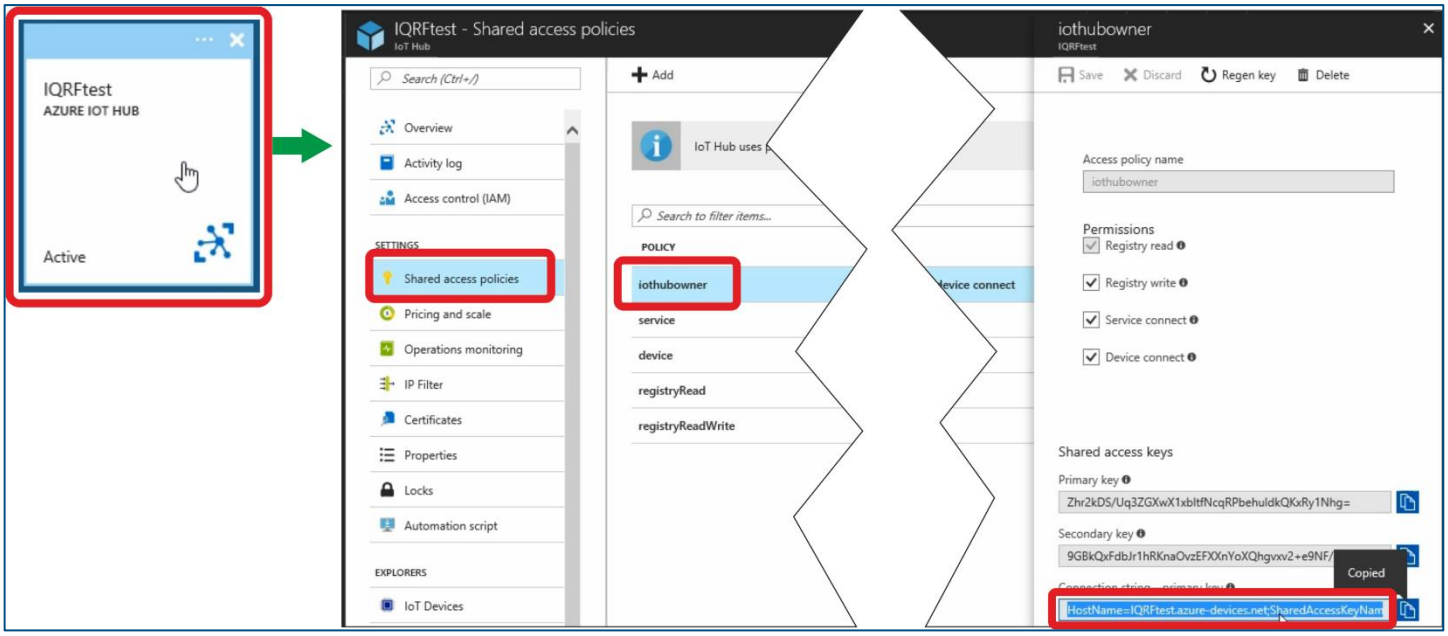
Restart the IQRF Gateway Daemon service.



3 Test the connection using Device Explorer

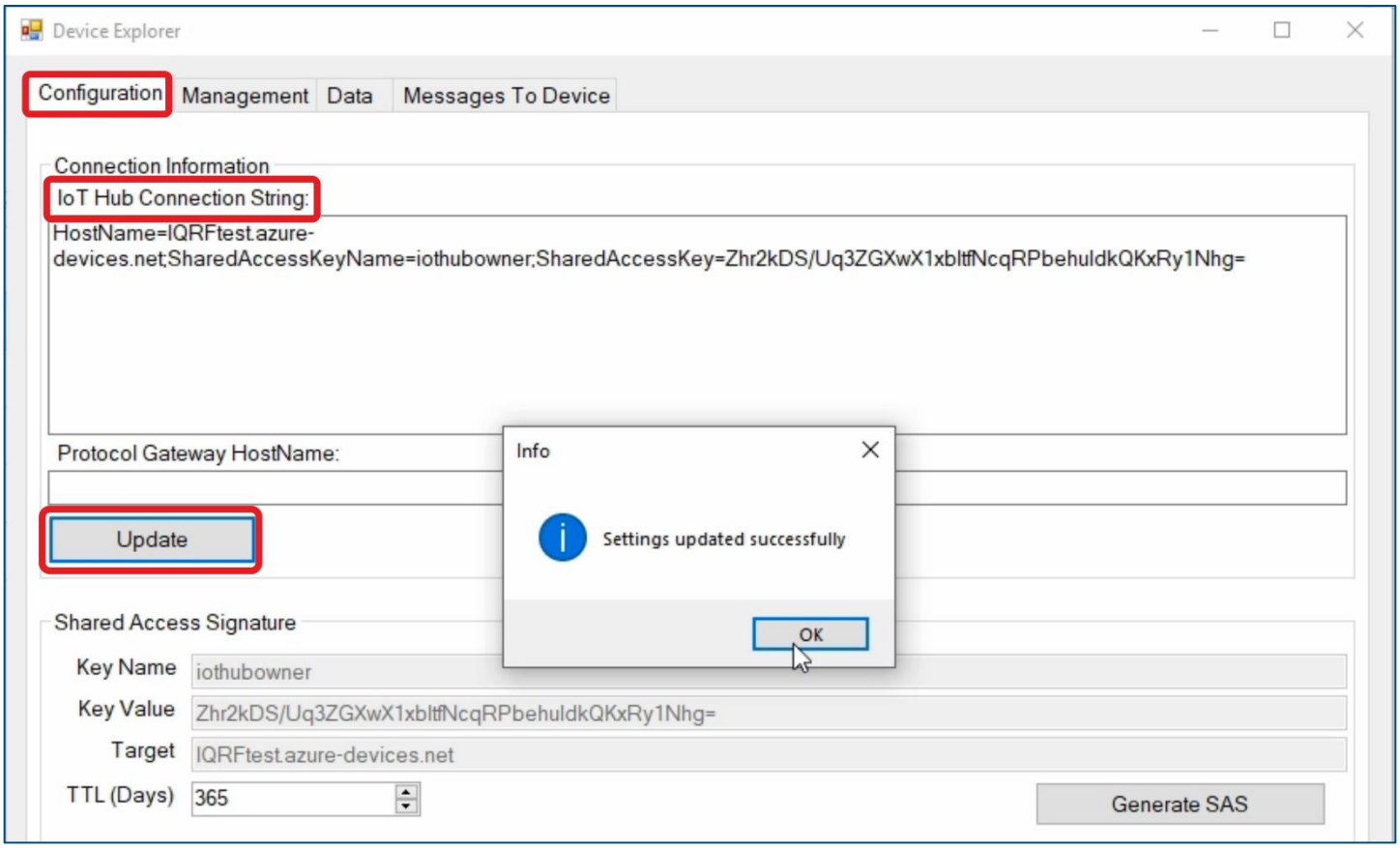
3.1 Copy credentials from IoT Hub

In the **IoT Hub** find the **Shared access policies** menu. Copy the **Connection string primary key** for the **iothubowner**.

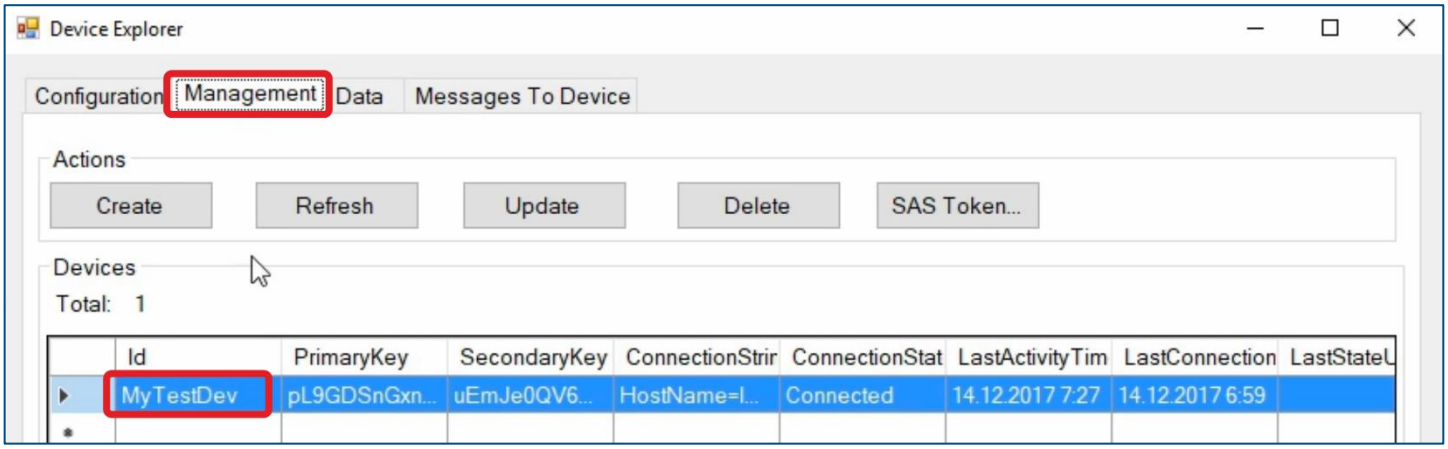


3.2 Set up the Device Explorer

Insert this string into the connection information in the **Device Explorer** application. We will use this application for sending DPA packets to our IQRF network. Click on the **Update** button.

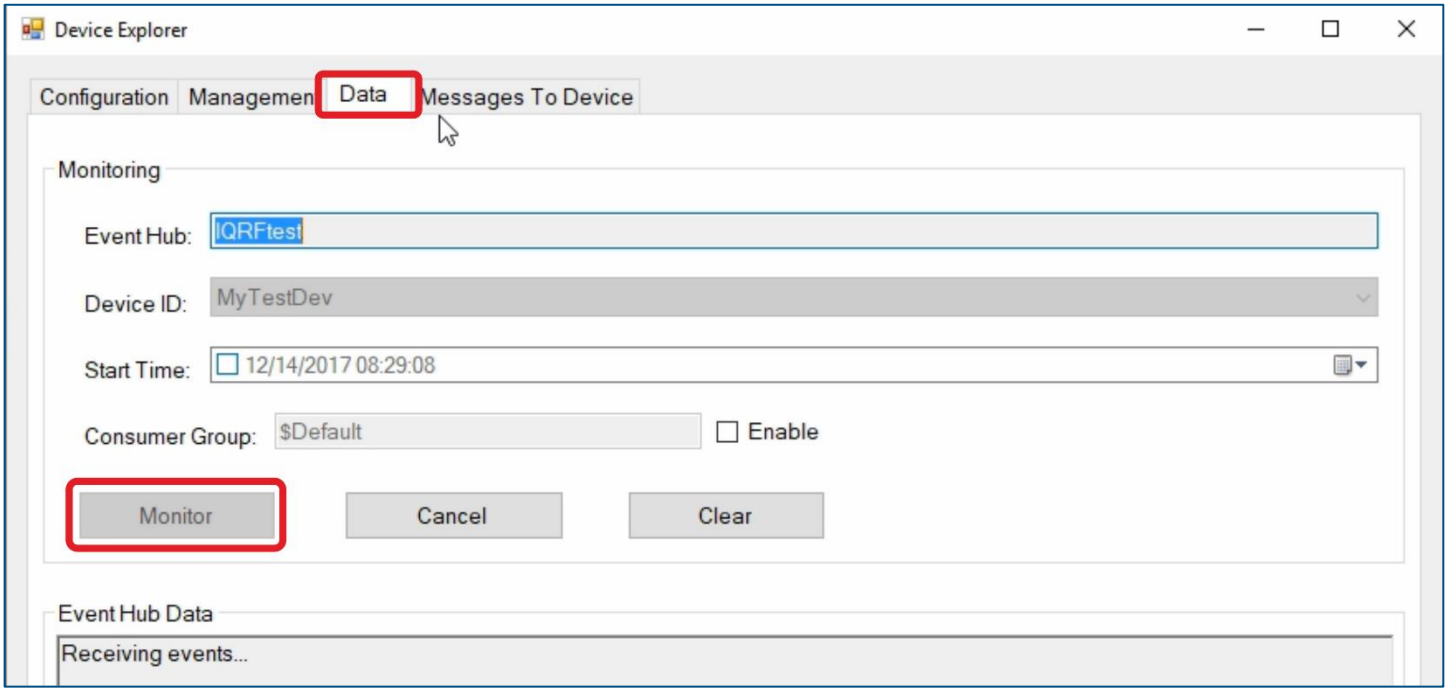


In the **Management** tab we can see our virtual device that we've just set up.



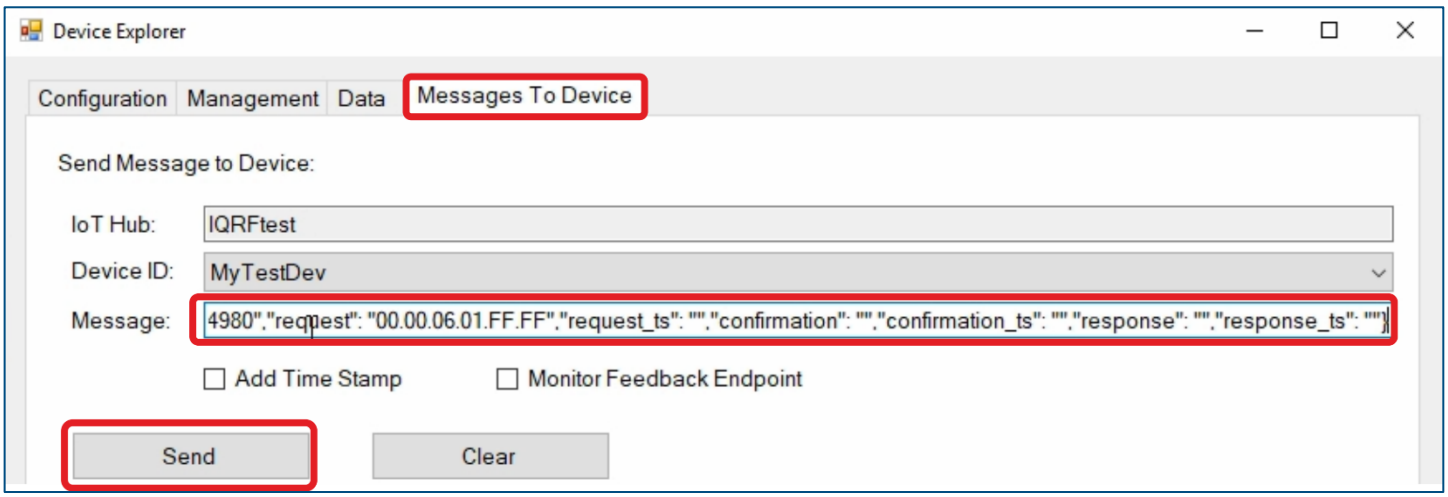
3.3 Inspect the communication

In the **Data** tab, click on **Monitor**. This will enable you to read received events.

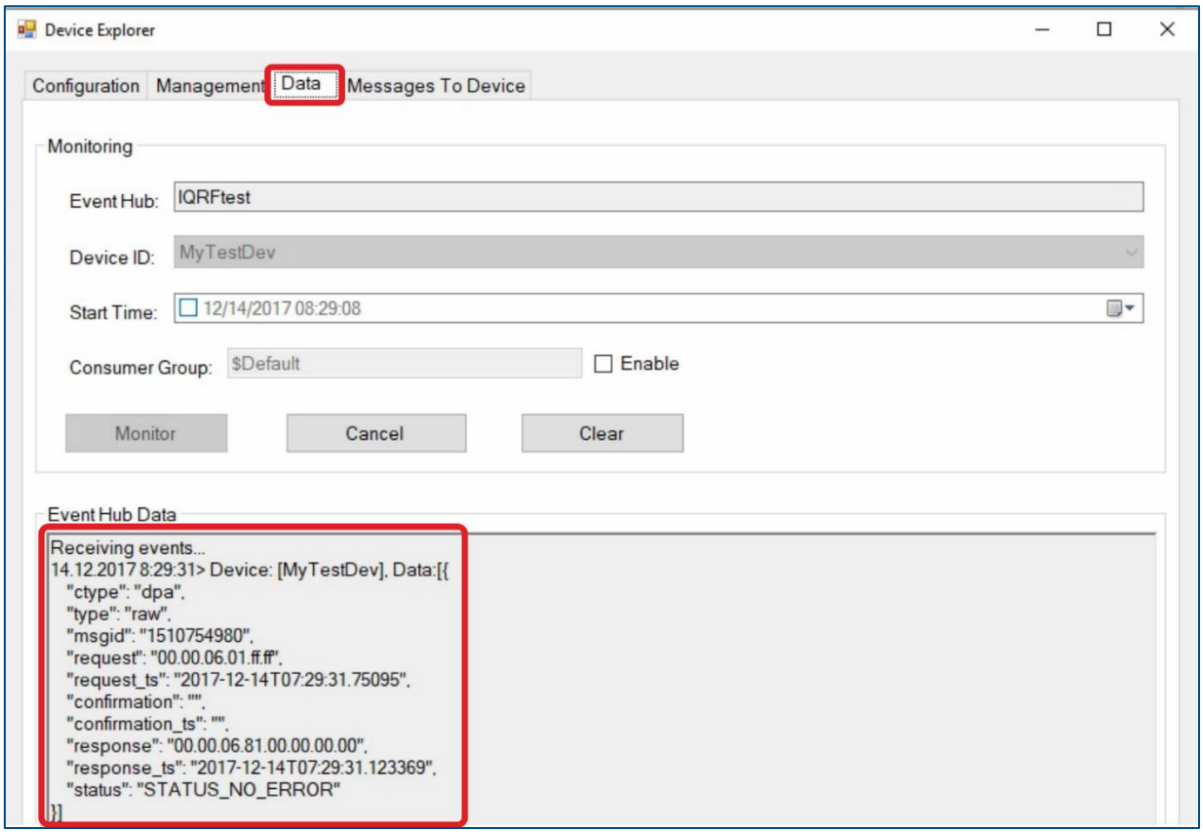


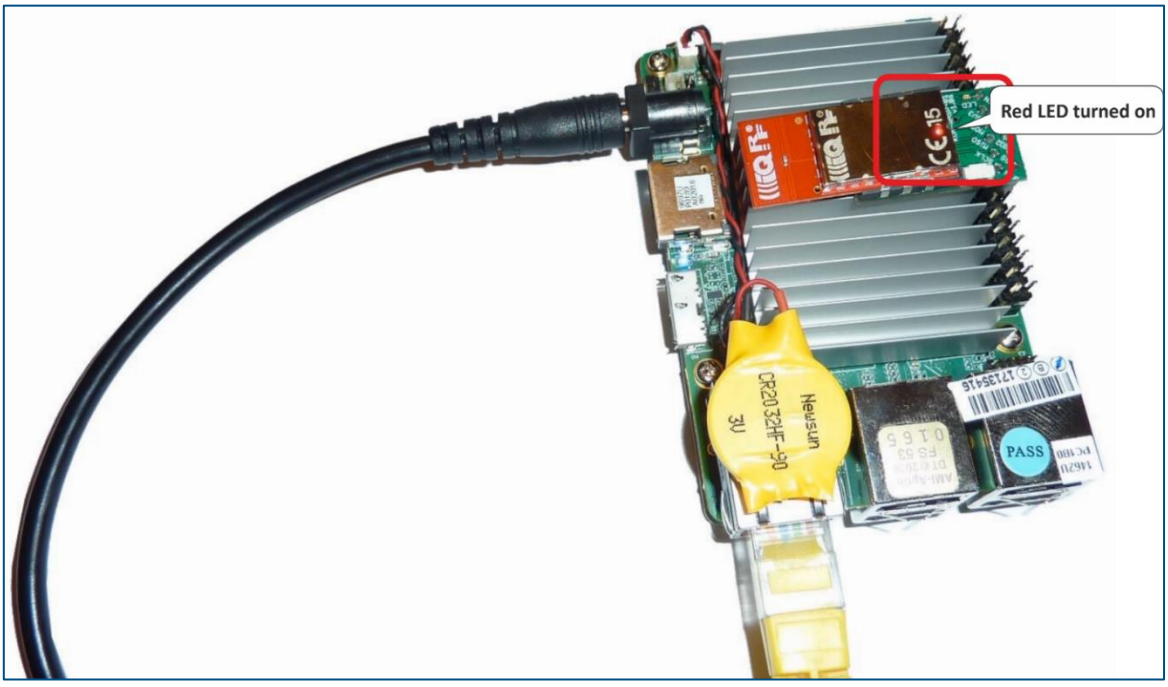
Go to the **Messages To Device** tab, insert a DPA packet in JSON format into the **Message** textbox and click on **Send**. We've just sent a command for turning on the red LED on the IQRF coordinator.

```
{
"ctype": "dpa",
"type": "raw",
"msgid": "1510754980",
"request": "00.00.06.01.FF.FF",
"request_ts": "",
"confirmation": "",
"confirmation_ts": "",
"response": "",
"response_ts": ""
}
```



In the **Data** tab, you can see the incoming communication from the UP board. You can easily double check that the command has been executed.





In the same way, you can turn the red LED off as well as send any other DPA command to your network.

4 Summary

The bidirectional communication between IQRF network and the Microsoft Azure is up and running. Now it's just up to you to use it for your own IoT solution.