AND9839/D

Connecting to the IBM Cloud Using the RSL10 Sense and Control Mobile Application

ON Semiconductor®

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APPLICATION NOTE

Introduction

RSL10 Sense and Control, the Bluetooth Low Energy (BLE) based mobile application from ON Semiconductor, enables users to publish and subscribe data from sensors and actuators connected to platforms that feature RSL10, industry's lowest power Bluetooth 5 certified SoC. These platforms include the IDK (IoT Development Kit) and the B−IDK (Bluetooth Low Energy IoT Development Kit).

This document provides step−by−step instructions on setting up the MQTT broker on the IBM Watson cloud and configuring the mobile app to connect to the IBM cloud.

Prerequisities

Users need to download the appropriate platform−specific firmware to enable communication with the mobile app.

IoT Development Kit (IDK)

- Ensure that the BLE−IOT−GEVB board is connected to the IDK baseboard, BB−GEVK
- Download firmware found on BLE−IOT−GEVB web page to the BLE−IOT−GEVB board
- Download the "BLE Custom Service Firmware" example to the IDK baseboard, BB−GEVK
  - Detailed instructions on compiling example code and downloading to the IDK baseboard, BB−GEVK, can be found here

Bluetooth Low Energy IoT Development Kit (B−IDK)

- Download the custom service firmware to the B−IDK baseboard, BDK−GEVK
  - Detailed instructions on compiling and downloading the custom service firmware to the B−IDK baseboard, BDK−GEVK, can be found here

Once the firmware is loaded, the mobile application can be used to read sensor values and set actuator values, publish sensor values to an MQTT broker and subscribe actuator settings from the MQTT broker.

Configuring IBM Watson Cloud

1. Create a free IBM Cloud account https://console.bluemix.net/docs/services/watson/index.html#free−account
2. Go to https://console.bluemix.net/dashboard/apps (login using credentials from step 1)
3. Click *Create Resource*

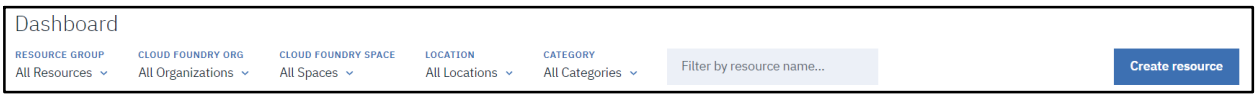

Figure 1.

3. a. Select *Internet of Things* from the left pane

Figure 2.

3. b. Once the resource is created, click Launch

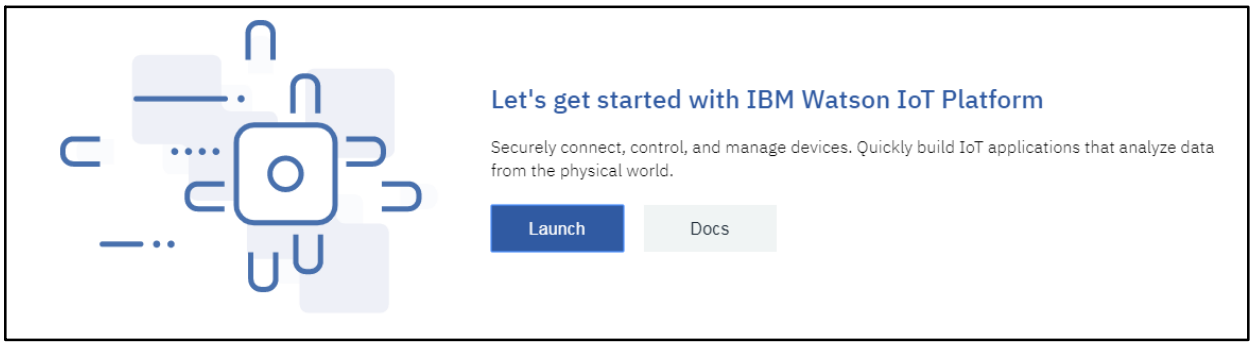

Figure 3.

This will launch the Service and take you to the IBM Watson IoT Platform page

4. Click on *Add Device*

Figure 4.

4. a. Enter **MobileApp** as Device Type as shown below

4. b. Enter any string (Ex: **MyONDevice**) as Device ID as shown below

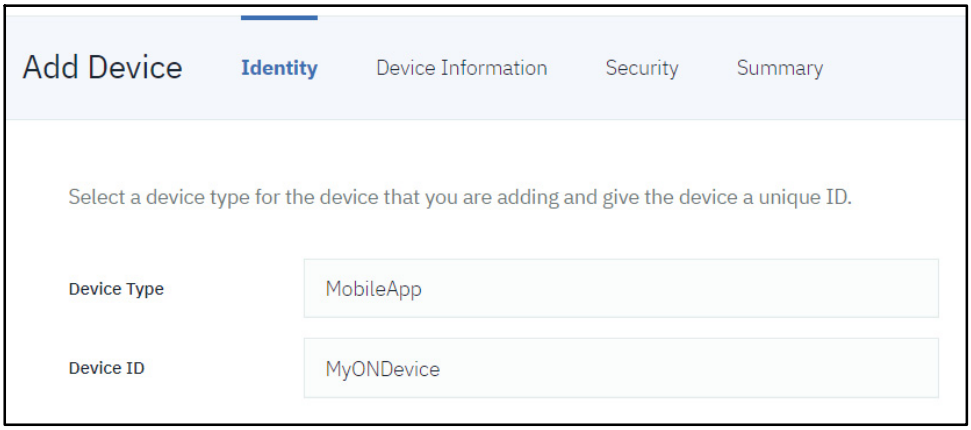

Figure 5.

4. c. Click *Next* till you get to the Summary screen

4. d. Click *Done*

5. Click *Apps* to launch the API key generation screen

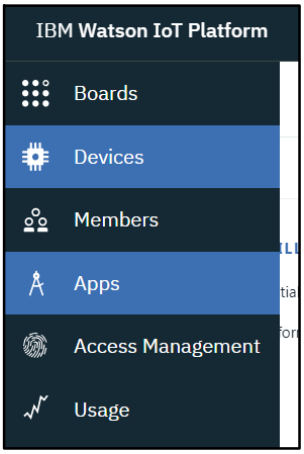

Figure 6.

5. a. Click *Generate API Key*

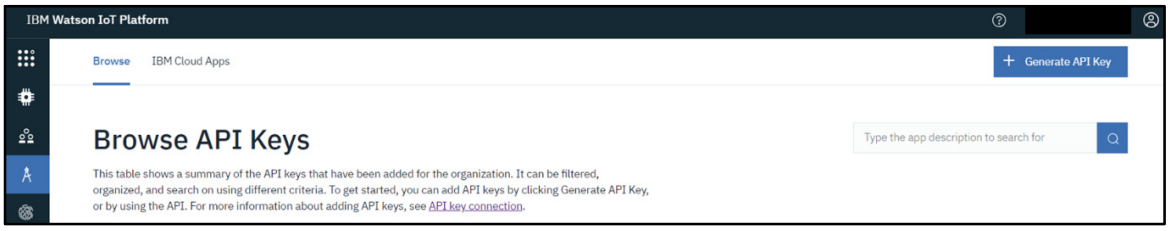

Figure 7.

5. b. On the next screen, enter Description (Optional) and click *Next*

Figure 8.

5. c. Select “Standard Application” for Role and click *Generate Key*

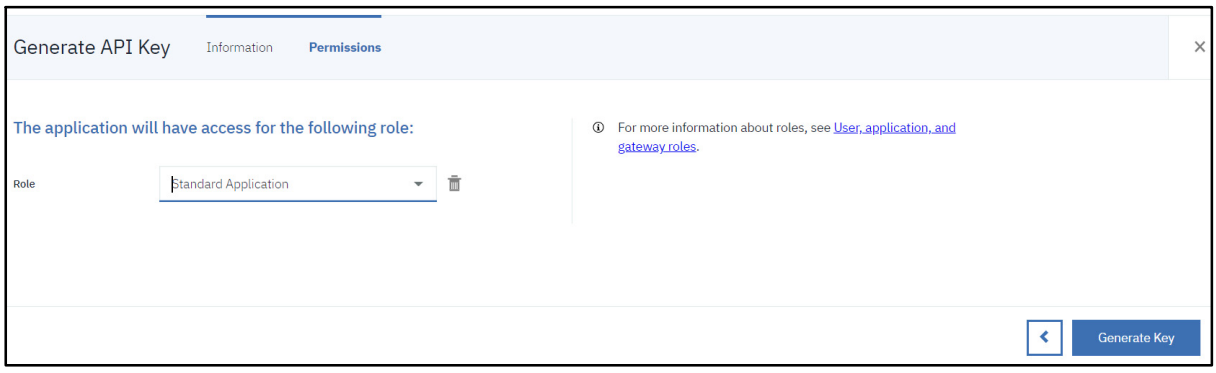

Figure 9.

6. Save the API Key and the Authentication token displayed on the screen after API key generation

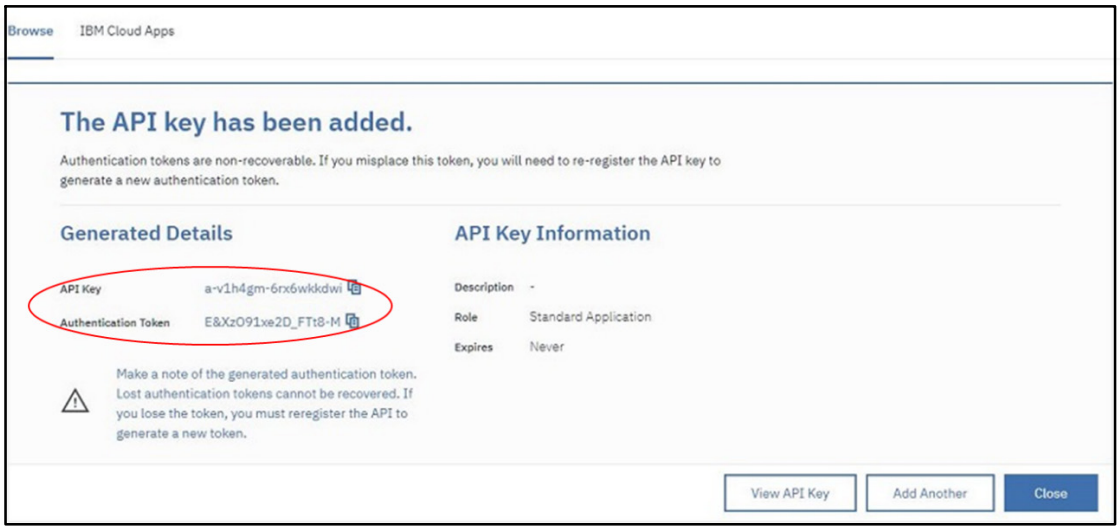

Figure 10.

Please Note that this step is crucial since the token cannot be recovered at a later stage. So, it’s important to note down the two values before navigating away from this page.

7. After copying and saving the API Key and the Authentication Token, clicking the *Devices* from the dashboard page should display the newly created device as shown below

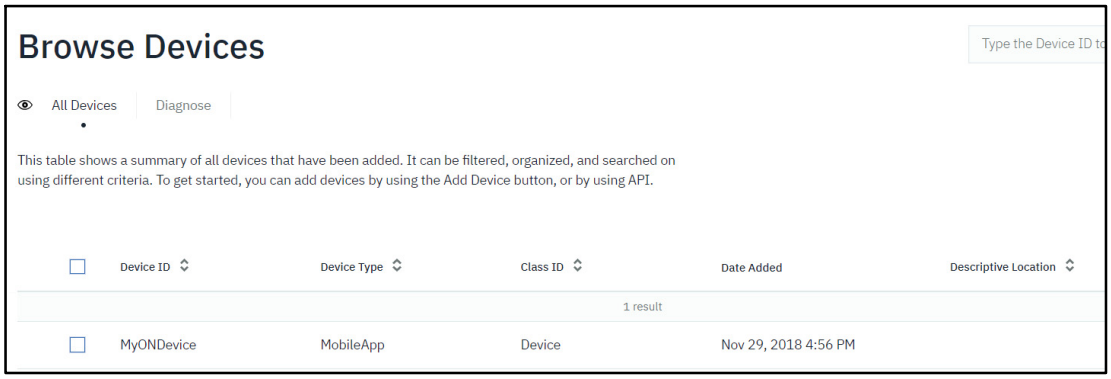

Figure 11.

The device is now setup. Clicking on the device will display device details. Once the mobile app is configured, the published data can be seen on the “State” tab.

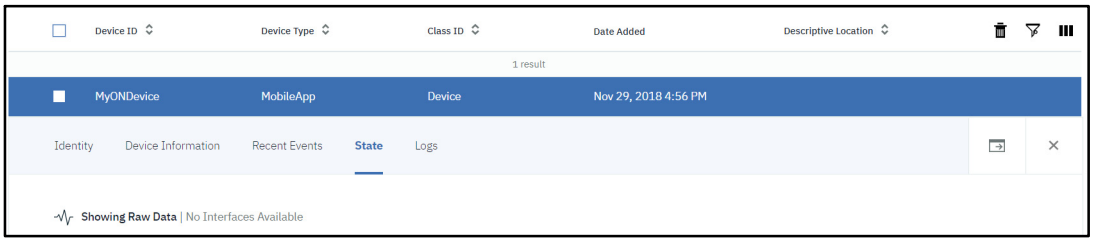

Figure 12.

8. Org Id: Make a note of the Organization ID which can be found under Settings as shown below. You’ll need the Org Id when configuring the mobile app

Figure 13.

Android Application Configuration

9. Start the Android App

9. a. On the main page of the App, tap on the Settings icon as shown below

9. b. On the settings page tap on the Manage Brokers settings

9. c. Tap on the '+' symbol on the bottom of the screen

9. d. Tap on the add broker setting denoted by '+'

9. e. Select IBM Watson and tap Next

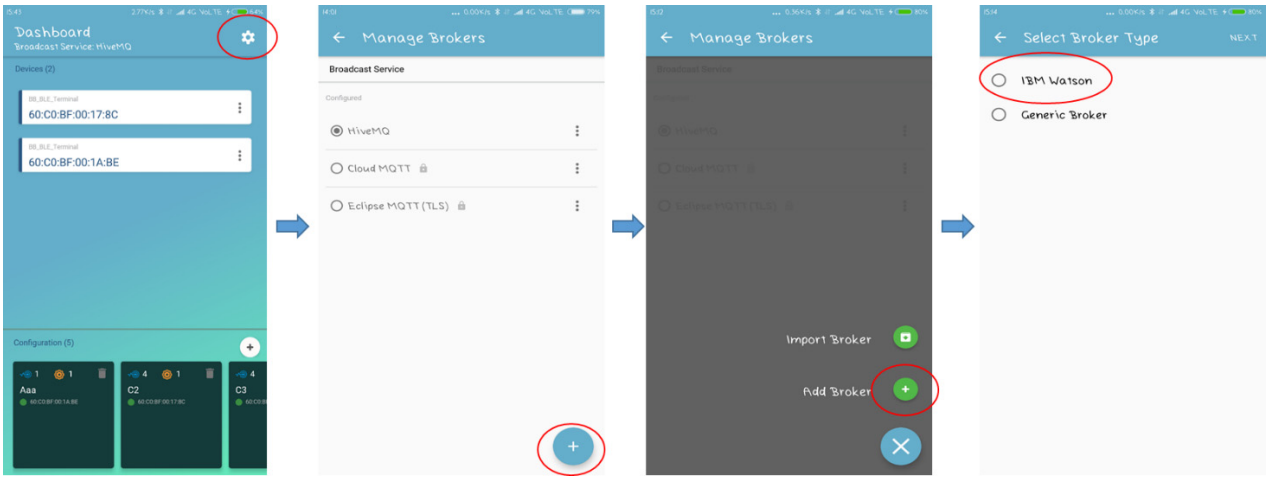

Figure 14.

10. Populate the Fields with the values shown below

- IBM client name: *Any text string*
- App ID: *Enter the API Key* (generated in step 6)
- IBM Client ID: Skip this field. (Auto populated as per the entry in App ID field)
- Device Type: *MobileApp* (as per step 4 a)
- Device ID: *The Device ID created on the IBM cloud* (as per step 4 b)
- Protocol : *Choose TCP or SSL*
- URL: *<orgid>.messaging.internetofthings.ibmcloud.com* (replace <orgid> with your organization ID as per step 8)
- Port No: *1883*
- Username : *Enter the API Key* (generated in step 4)
- Password : Enter the Authentication Token (generated in step 4)
- Leave "Supports MQTT v3.1.1" & "SSL Certificate" boxes unchecked

Click Save to save settings and to validate the connection.

Once the broker is successfully verified, the app is ready to communicate with the IBM Watson cloud.

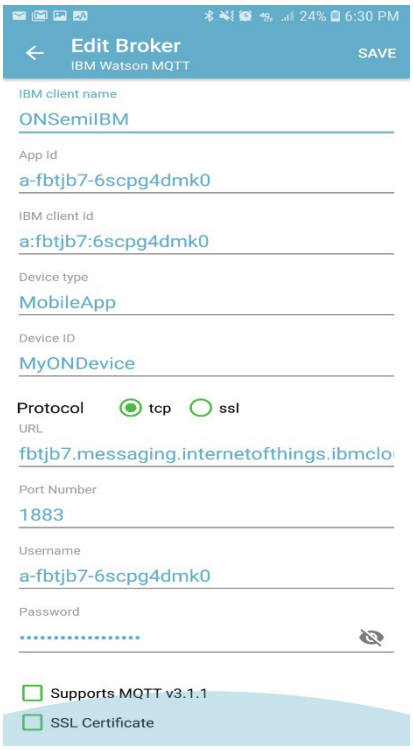

Figure 15.

Editing an Existing Broker

In order to edit a previously saved broker, click edit on the broker entry as shown below.

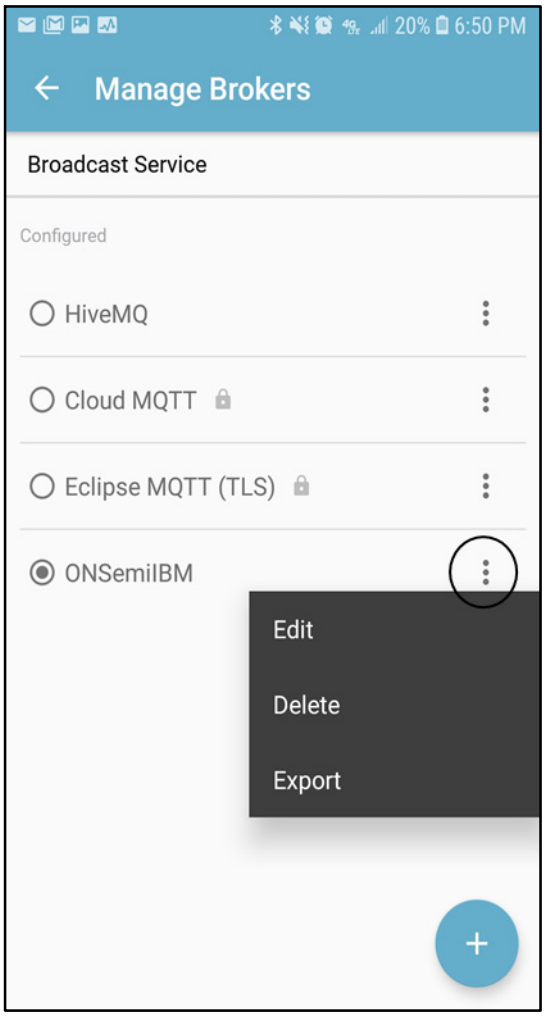

Figure 16.

iOS Application Configuration

11. Start the iOS App

11. a. On the main page of the App, tap on the Settings icon as shown below

11. b. On the settings page tap on the Manage Brokers settings

11. c. Tap on the '+' symbol on the bottom of the screen

11. d. Tap on the add broker setting denoted by '+'

11. e. Select IBM and tap Next

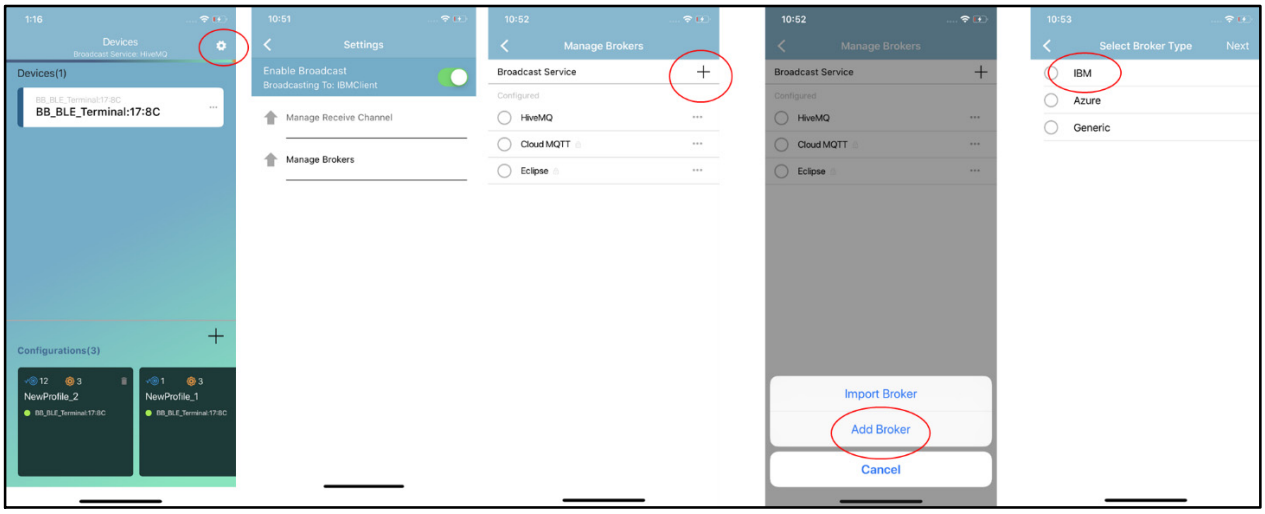

Figure 17.

12. Populate the Fields with the values shown below

- IBM client name: *Any text string*
- App ID: *Enter the API Key* (generated in step 6)
- IBM Client ID: Skip this field. (Auto populated as per the entry in App ID field)
- Device Type: *MobileApp* (as per step 4 a)
- Device ID: *The Device ID created on the IBM cloud* (as per step 4 b)
- Protocol : *Choose TCP or SSL*
- URL: *<orgid>.messaging.internetofthings.ibmcloud.com* (replace <orgid> with your organization ID as per step 8)
- Port No: *1883*
- Username : *Enter the API Key* (generated in step 4)
- Password : Enter the Authentication Token (generated in step 4)
- Leave "Supports MQTT v3.1.1" & "SSL Certificate" boxes unchecked

Click Save to save settings and to validate the connection.

Once the broker is successfully verified, the app is ready to communicate with the IBM Watson cloud.

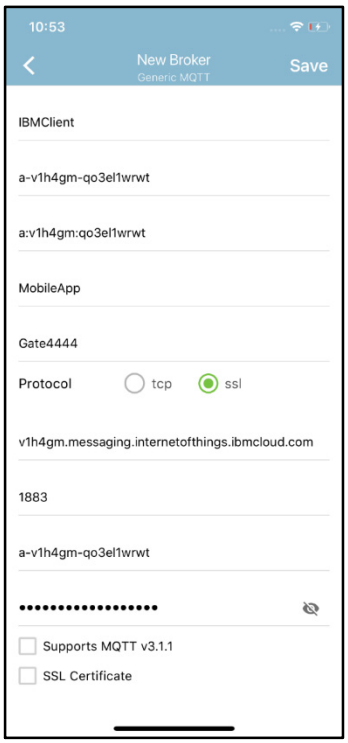

Figure 18.

Editing an Existing Broker

In order to edit a previously saved broker, click edit on the broker entry as shown below.

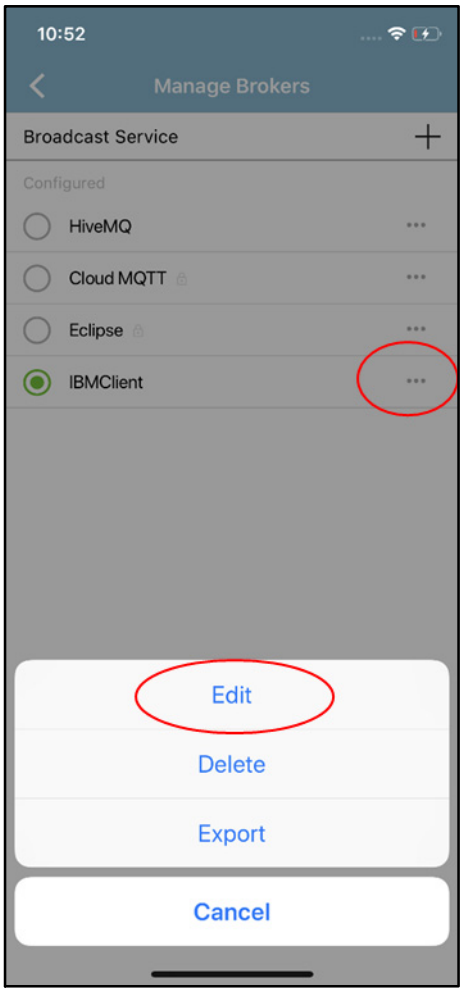

Figure 19.

Once the Device is Setup and the Mobile App is Configured,
View the Published Data

13. Go to *Resource List* from the left pane

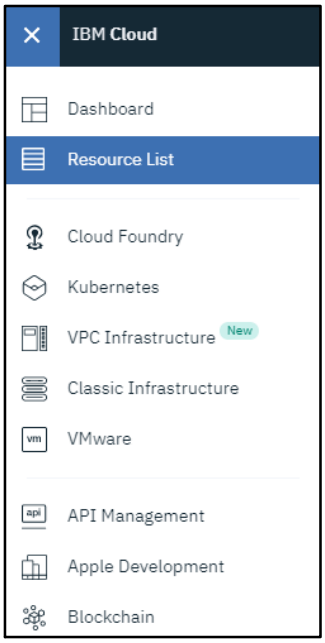

Figure 20.

14. Go to *Cloud Foundry Services* and select the resource created *(IoT Platform)*

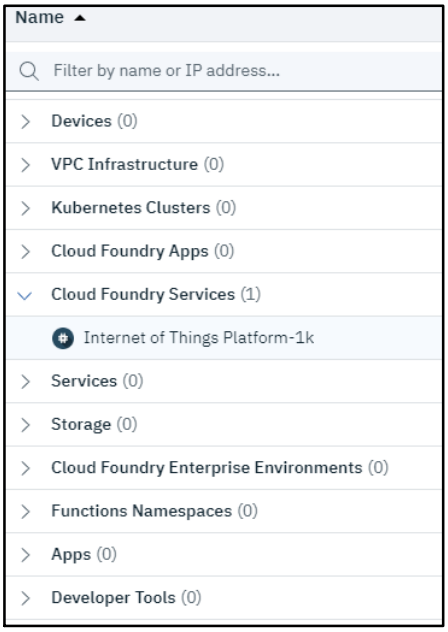

Figure 21.

15. Click Launch

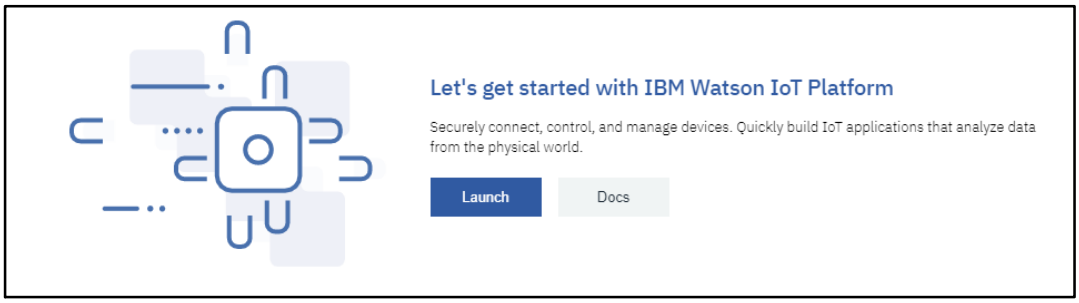

Figure 22.

This will launch the Service and take you to the IBM Watson IoT Platform page

16. Select the *Device* created and view the description by clicking the right arrow

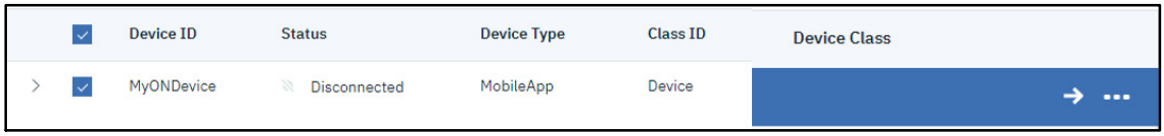

Figure 23.

17. View the *Recent Events* and select the latest live stream of data that is coming from the device.
    a. For example to view the temperature data of the HB_BLE_ Device

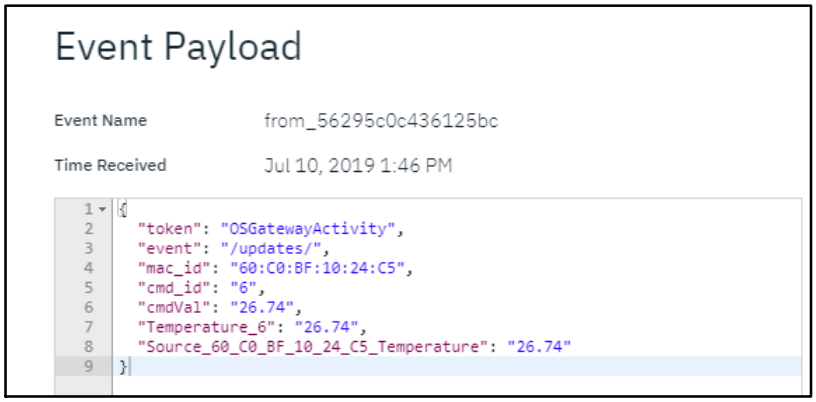

Figure 24.

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