

# **SENDING DATA FROM RASPBERRY-PI TO IBM WATSON**

Date: **15-11-2022**

Team ID: **PNT2022TMID51764**

Project Title: **Gas Leakage Monitoring and Alerting System**

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## **AIM:**

To send sensor data (or any dummy data) from Raspberry –Pi to IBM Watson .In our case it is DHT sensors Data.

## **REQUIREMENTS:**

### **HARDWARE:**

- RASPBERRY-PI (3B)(WITH ETHERNET CABLE OR WIFI CONNECTED)
- USB MOUSE
- USB KEYBOARD
- VGA TO HDMI CABLE
- A MONITOR
- RASPBERRY’S POWER SUPPLY
- DHT-11 Sensor ○ Connecting Wires

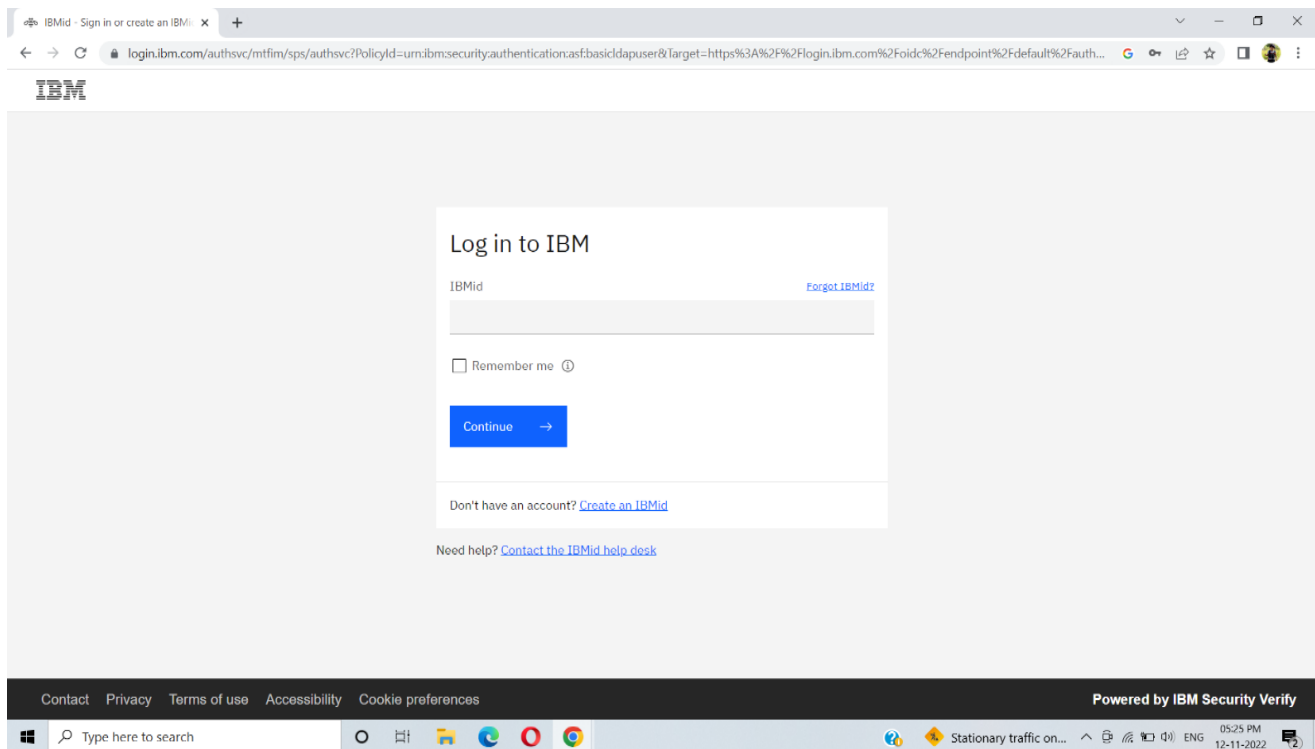
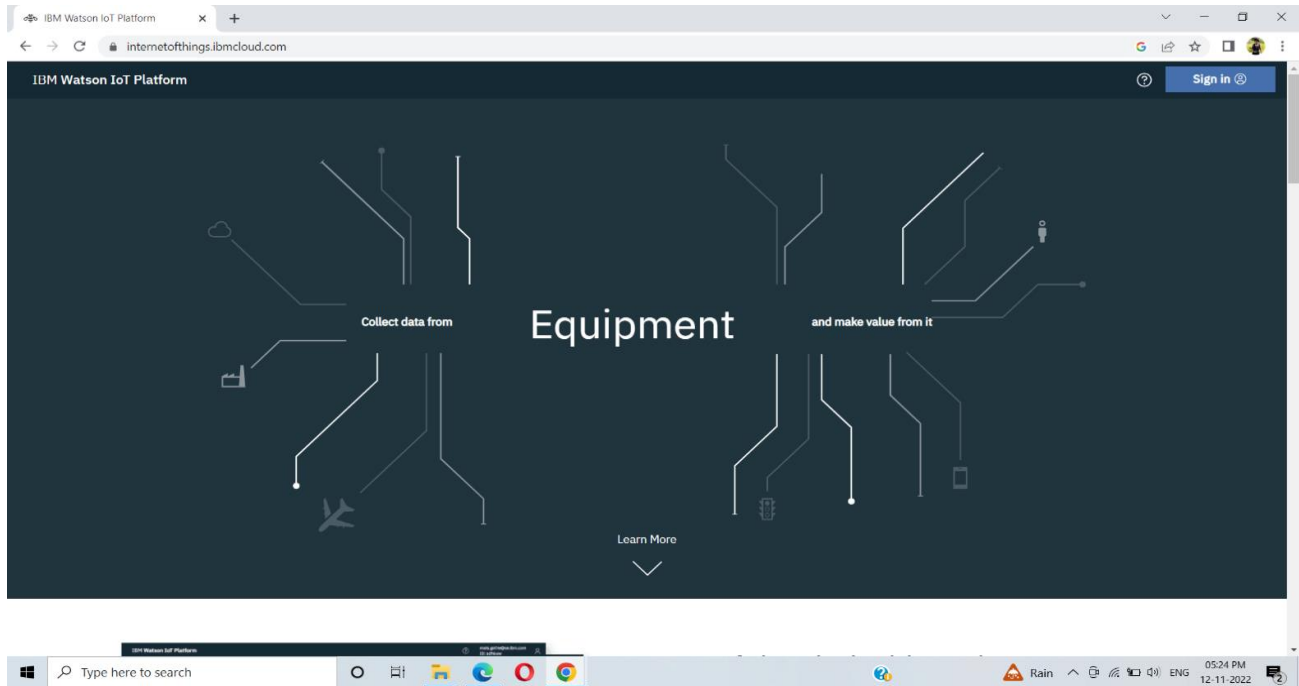
### **SOFTWARE:**

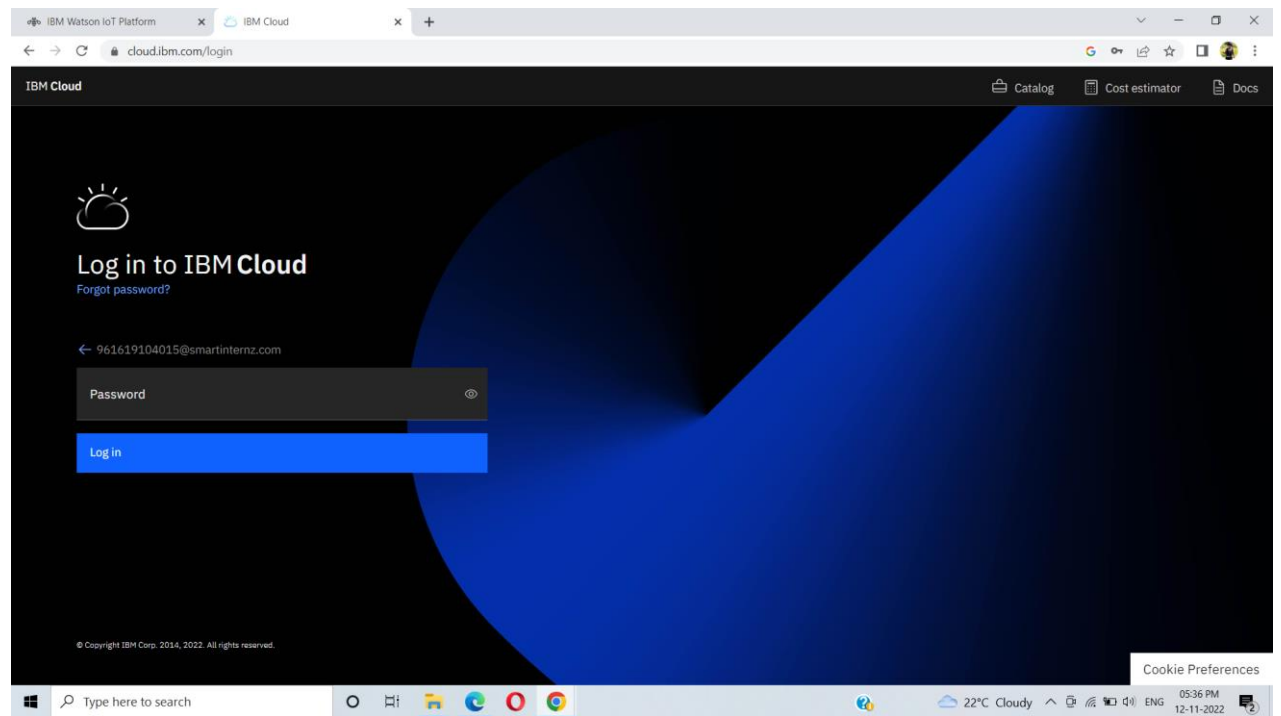
- IBM BLUEMIX ACCOUNT

## **STEPS TO BE FOLLOWED**

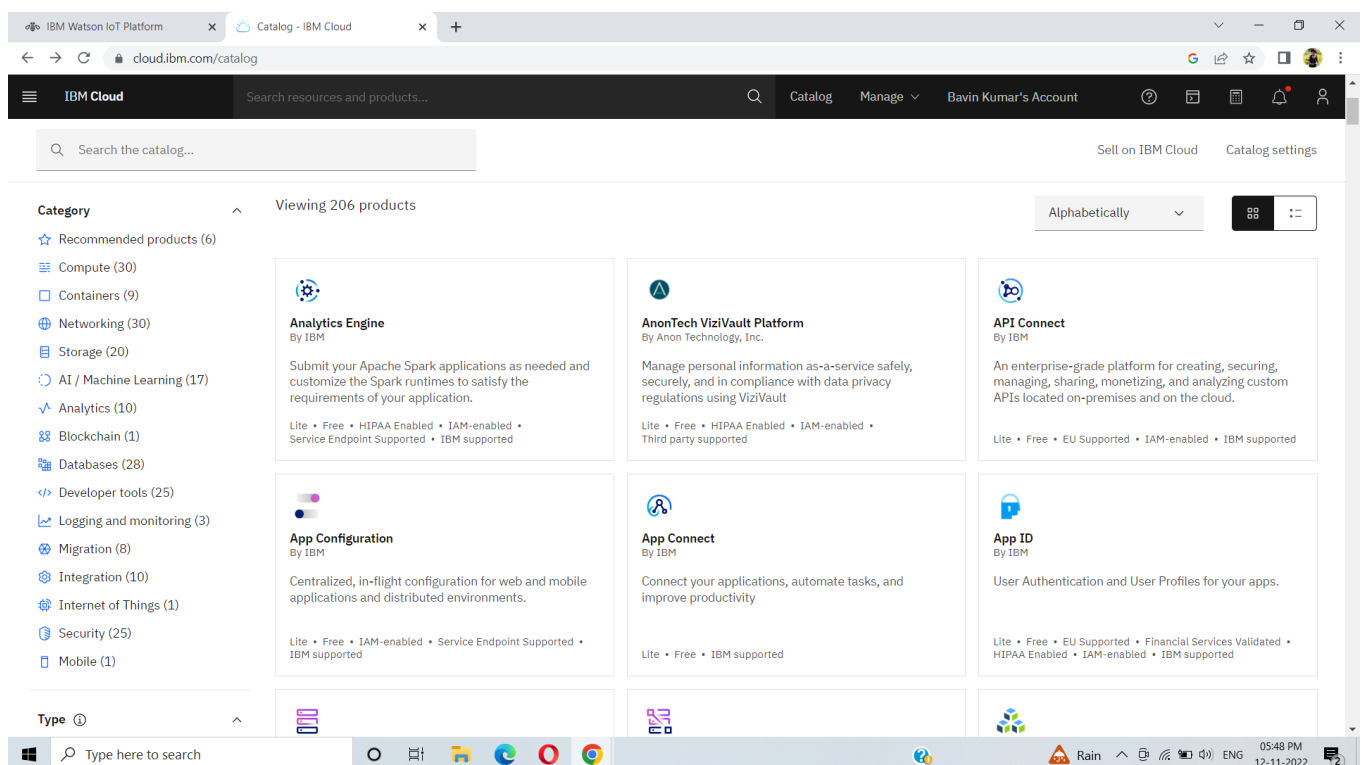
### **Step-1: Create a device in IBM Watson:**

- Firstly, login into your IBM-Bluemix account with your e-mail ID and Password.





- Click on catalog on your dashboard screen, then under platform go IoT.



Check all details and click on create.

The screenshot shows the IBM Cloud catalog page for the Internet of Things Platform. The page is titled "Internet of Things Platform" and includes a description: "This service is the hub of all things IBM IoT, it is where you can set up and manage your connected devices so that your apps can access their live and historical data." The page has two tabs: "Create" and "About". The "Create" tab is active, showing a "Select a location" dropdown menu with "Frankfurt (eu-de)" selected. Below this is a "Select a pricing plan" section with a table of plans. The table has three columns: "Plan", "Features", and "Pricing". The "Lite" plan is selected, showing features like "Includes up to 500 registered devices, and a maximum of 200 MB of each data metric" and a pricing of "Free". On the right side of the page, there is a "Summary" panel with details like "Location: Frankfurt", "Plan: Lite", "Service name: Internet of Things Platform-9h", and "Resource group: Default". At the bottom of the summary panel, there is a checkbox for "I have read and agree to the following license agreements:" and a "Create" button.

Plan	Features	Pricing
Lite	Includes up to 500 registered devices, and a maximum of 200 MB of each data metric Maximum of 500 registered devices Maximum of 500 application bindings Maximum of 200 MB of each of data exchanged, data analyzed and edge data analyzed	Free

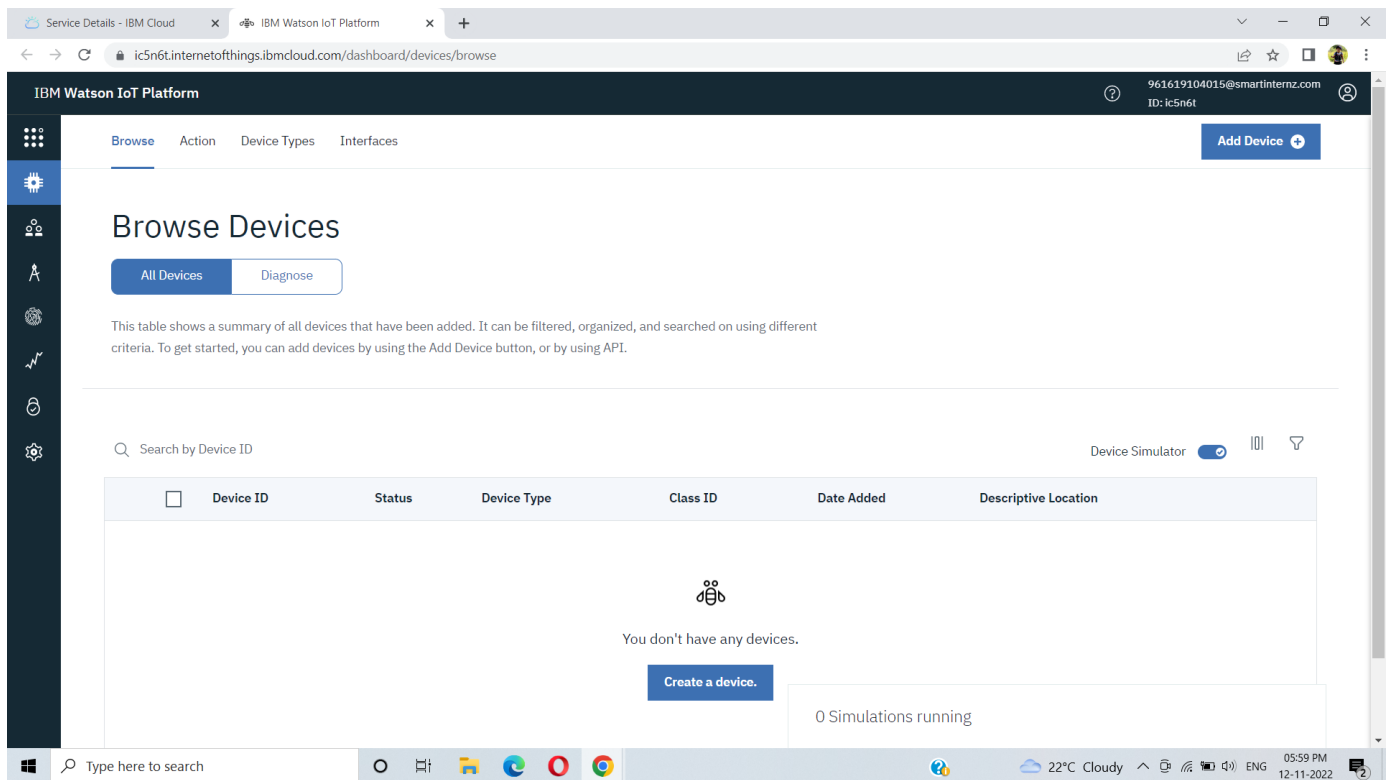
click on Launch

The screenshot shows the IBM Watson IoT Platform dashboard. The page is titled "Internet of Things Platform-kw" and includes a status indicator "Active" and a link to "Add tags". The dashboard has a left sidebar with "Manage" and "Plan" tabs. The main content area features a large graphic of a device with a central circle and several lines radiating outwards. Below this graphic is a "Let's get started with IBM Watson IoT Platform" section with a "Launch" button and a "Docs" link. Further down, there is a "Ready for the next level?" section titled "IBM Watson IoT Platform Journey" with three progress indicators: "Lite", "Non-Production", and "Production". Each indicator has a description of the service plan and a list of features. The "Lite" plan is currently selected, showing features like "Free" and "200 MB data-transfer limit".

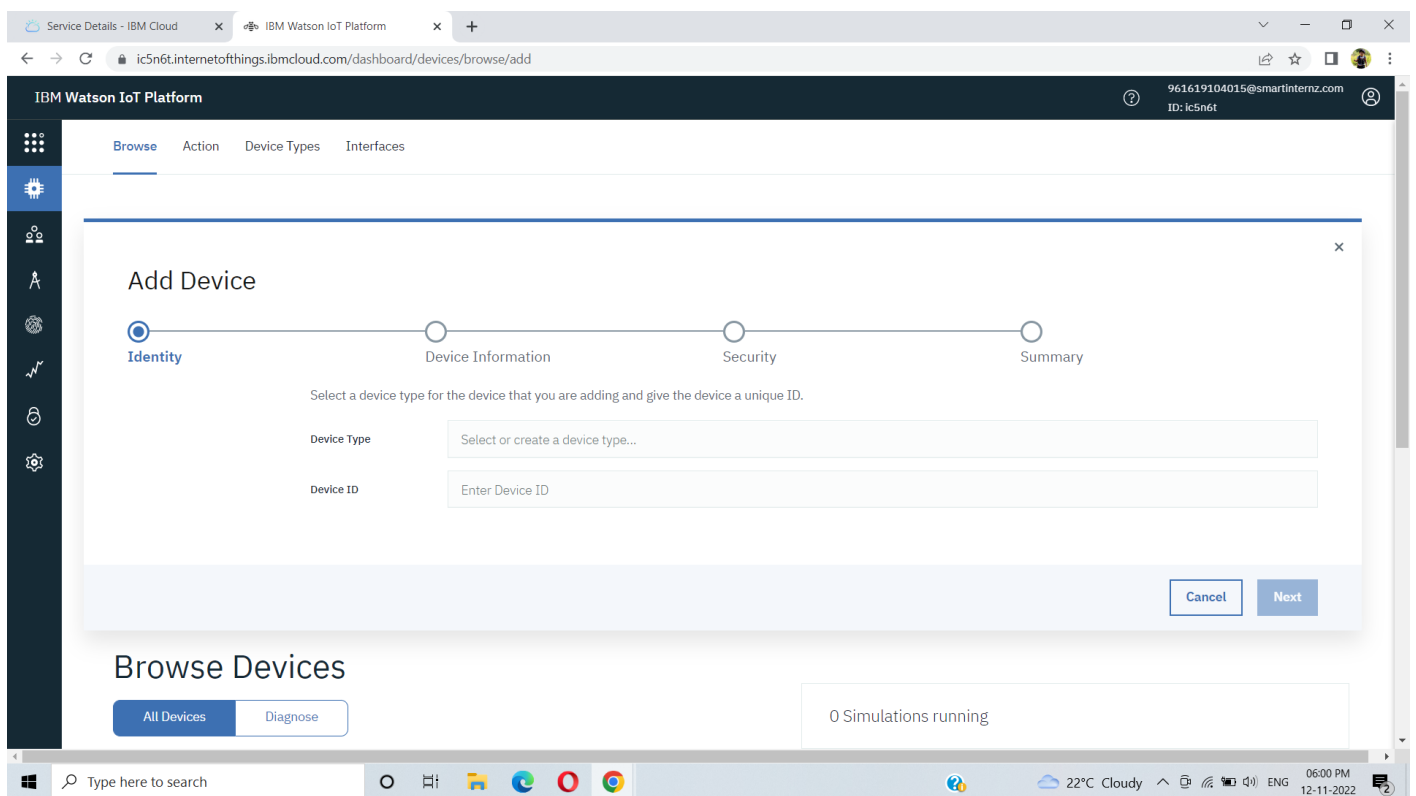
Plan	Features
Lite	Free 200 MB data-transfer limit
Non-Production	Starts at \$500 per month Capacity limit based on device type
Production	Includes IBM Service & Support Pricing based on number of devices per

Dashboard of IBM Watson IoT platform,

Click on Add device



○ After click on Add device this page will open



Go to device type and fill the details.

Service Details - IBM Cloud

IBM Watson IoT Platform

+

ic5n6t.internetofthings.ibmcloud.com/dashboard/devices/types/add

961619104015@smartinternz.com  
ID: ic5n6t

Browse

Action

Device Types

Interfaces

Add Type

Identity

Device Information

Device types group devices that have similar characteristics, such as model number, firmware version, or location. Give the device type a unique name and a description that identifies characteristics that are shared by devices of this type.

Type

Device

Or

Gateway

Name

Bavin

The device type name is used to identify the device type uniquely and uses a restricted set of characters to make it suitable for API use.

Description

Cancel

Next

0 Simulations running

Type here to search

22°C Cloudy

06:00 PM  
12-11-2022

Click on Finish

Service Details - IBM Cloud

IBM Watson IoT Platform

+

ic5n6t.internetofthings.ibmcloud.com/dashboard/devices/types/add

961619104015@smartinternz.com  
ID: ic5n6t

Browse

Action

Device Types

Interfaces

Add Type

Identity

Device Information

These attributes will be used as a template for new devices that are assigned this device type

Serial Number

Enter Serial Number

Model

Enter Model

Description

Enter Description

Hardware Version

Enter Hardware Version

Manufacturer

Enter Manufacturer

Device Class

Enter Device Class

Firmware Version

Enter Firmware Version

Descriptive Location

Enter Descriptive Location

Edit Metadata

Back

Finish

0 Simulations running

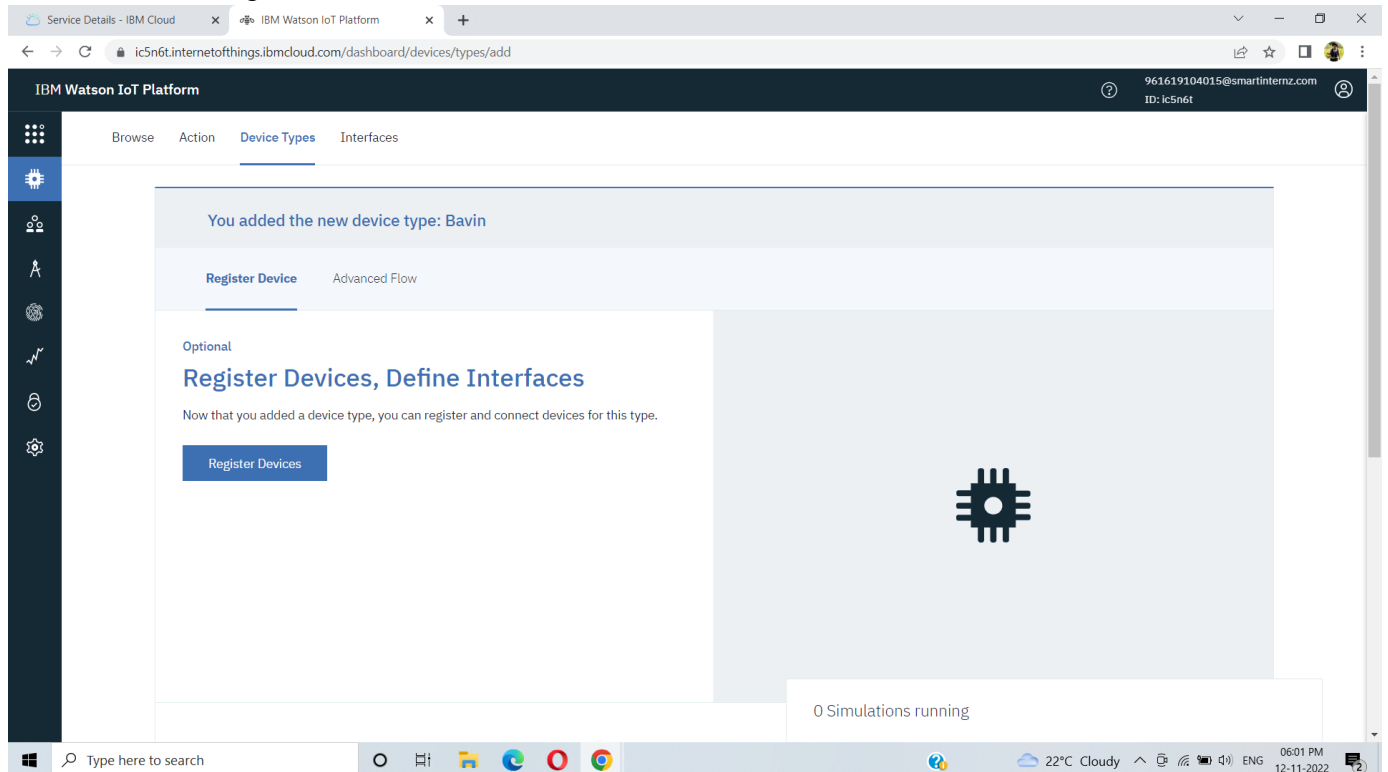
Type here to search

22°C Cloudy

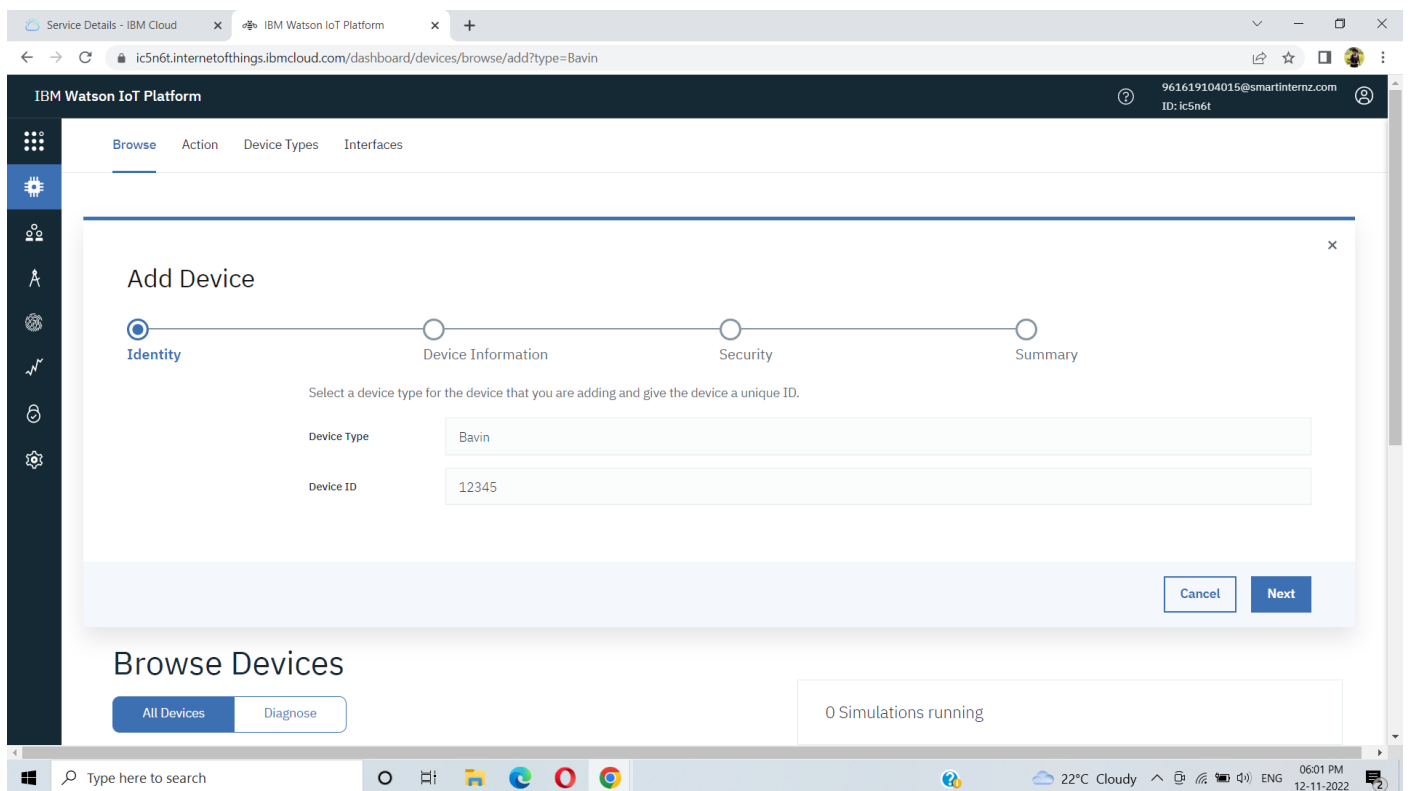
06:00 PM  
12-11-2022

○ Click on

## Register Device.



○ Choose the device and give device ID and then click on next.



Next

## Click on

The screenshot shows the 'Add Device' form in the IBM Watson IoT Platform. The form is titled 'Add Device' and has a progress bar with four steps: Identity (selected), Device Information, Security, and Summary. Below the progress bar, there is a text box for 'Serial Number' with the placeholder 'Enter Serial Number'. To the right of the 'Serial Number' field is a 'Manufacturer' field with the placeholder 'Enter Manufacturer'. Below the 'Serial Number' field is a 'Model' field with the placeholder 'Enter Model'. To the right of the 'Model' field is a 'Device Class' field with the placeholder 'Enter Device Class'. Below the 'Model' field is a 'Description' field with the placeholder 'Enter Description'. To the right of the 'Description' field is a 'Firmware Version' field with the placeholder 'Enter Firmware Version'. Below the 'Description' field is a 'Hardware Version' field with the placeholder 'Enter Hardware Version'. To the right of the 'Hardware Version' field is a 'Descriptive Location' field with the placeholder 'Enter Descriptive Location'. At the bottom left of the form is a button labeled 'Add Metadata +'. At the bottom right of the form is a status bar that says '0 Simulations running'.

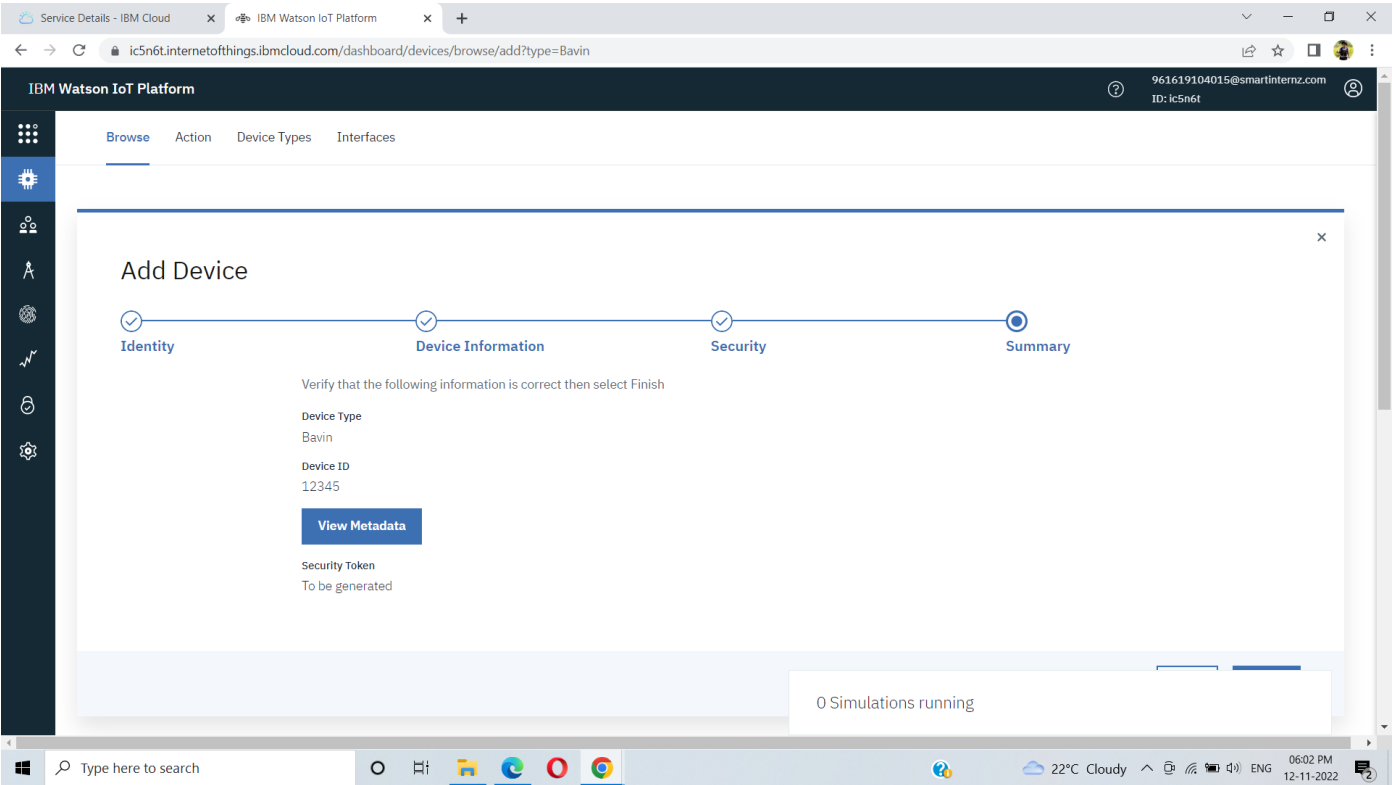
## Click on Next

The screenshot shows the 'Add Device' form in the IBM Watson IoT Platform, Step 2: Security. The form is titled 'Add Device' and has a progress bar with four steps: Identity, Device Information (selected), Security, and Summary. Below the progress bar, there is a text box for 'Authentication Token' with the placeholder 'Enter an optional token'. To the right of the 'Authentication Token' field is a button labeled 'Next'. Below the 'Authentication Token' field is a status bar that says '0 Simulations running'.

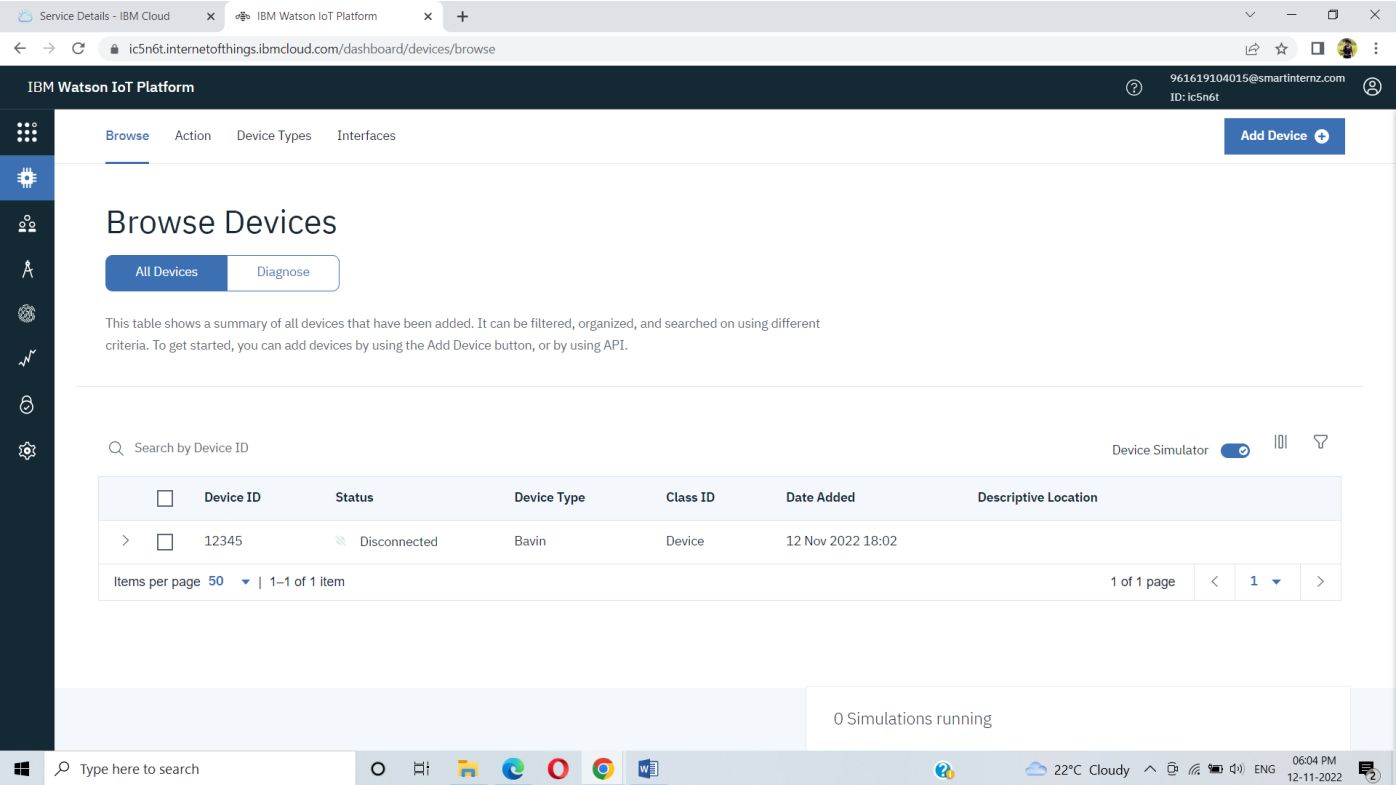


Click on

Finish



Device is created



## **STEP-2: INSTALLING NECESSARY PACKAGES ON YOUR PI:**

- Now we are going to install necessary packages on your pi.
- Open your terminal in your pi and type the following commands
- `curl -LO https://github.com/ibm-messaging/iot-raspberrypi/releases/download/1.0.2.1/iot_1.0-2_armhf.deb`
- `sudo dpkg -i iot_1.0-2_armhf.deb`
- `service iot status`

Following are the images as to what appears on your pi's terminal when u type these commands

- Then open your terminal and type `pip install ibmiotf`
- I have sent DHT-11 Sensors data to ibm bluemix. To get the code u need to login into IOT GYAN.
- Then I get the image as follows in my pi's shell:

## **Step-3: checking your data sent on IBM Bluemix:**

- After you have sent your sensors data you can check whether it is received at your iot platform Just look at the image below and if u see the same wifi kind of symbol on your created device then your data is being received.
- After double clicking on your created device you can see the received data as shown in image

## **Step-4: Creating boards and cards for visualization of data:**

- In your Watson platform you have an option called board. Click on it and you get the following window on your screen
- Click on Create a new board to create a board.

The given below window appears give a name and description to your board as shown in the window below.

- Then click on Next you get the below window then again click on Submit
- Then double click on your boards name which you have created.
- Click on Add New Card
- Select the type of Graph u want accordingly and click next

- You get the below window, choose the Device and click on Next.
- Select the event, properly to be visualized on your graph and click next. In my case it is humidity
- Then select the size of the graph and colour of the graph board you want and click next
- Here is the graph
- Repeat the process to get different graphs.

## **RESULT:**

Hence, we were able to send data from our pi to IBM Watson and visualize it on a graph.