Sreenidhi Hub <sreenidhihub@sreenidhi.edu.in>

Fwd: IOT Project Nucleonix - Documentation

1 message

Dr. Ameet Chavan <ameetchavan@sreenidhi.edu.in> Thu, Mar 5, 2020 at 4:14 PM
To: Sreenidhi Hub <sreenidhihub@sreenidhi.edu.in>

---------- Forwarded message ---------
From: **Varun Rastogi** <varunrastogi2007@gmail.com>
Date: Sat, Dec 9, 2017 at 12:28 PM
Subject: IOT Project Nucleonix - Documentation
To: Dr. Ameet Chavan <ameetchavan@sreenidhi.edu.in>

Hello Sir,

Please find attached.

Warm Regards,
Varun Rastogi

--
Thanks,

Dr. Ameet Chavan | अमित चव्हाण | అమిత్ చవాన్
(B.E. (Pune Univ.), M.S., Ph.D. (Univ. of Texas ELP))
IEEE Senior Member
Professor & Dean (Innovation and Research)
School of Electronics (ECE)
Sreenidhi Institute of Science and Technology (SNIST)
https://www.researchgate.net/profile/Ameet_Chavan2

IOT PROJECT DOCUMENTATION.pdf
3450K

RADIATION DETECTOR
INSTRUMENT AUGMENTATION AS AN
IOT ENABLED DEVICE

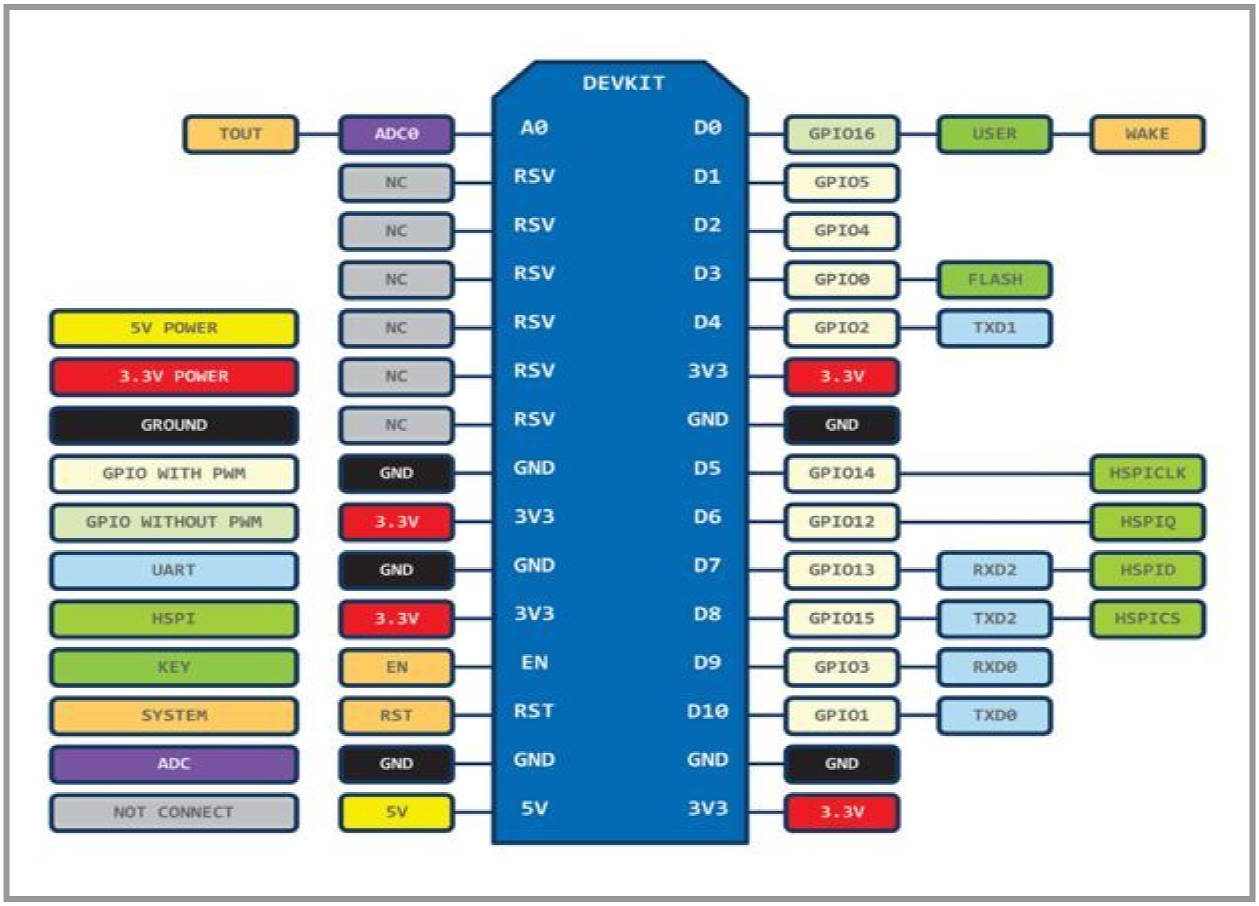
Chapter 1: Prerequisites

NodeMCU

Introduction

In this Project NODE MCU is the device which is going to read the data from the Detector's Processor/Controller Chip and Send it to the cloud via the Wifi that it is configured to access.

ESP-12E Pin Mapping



The Pins we will be primarily concerned with , will be that of power and communication (RX and TX)

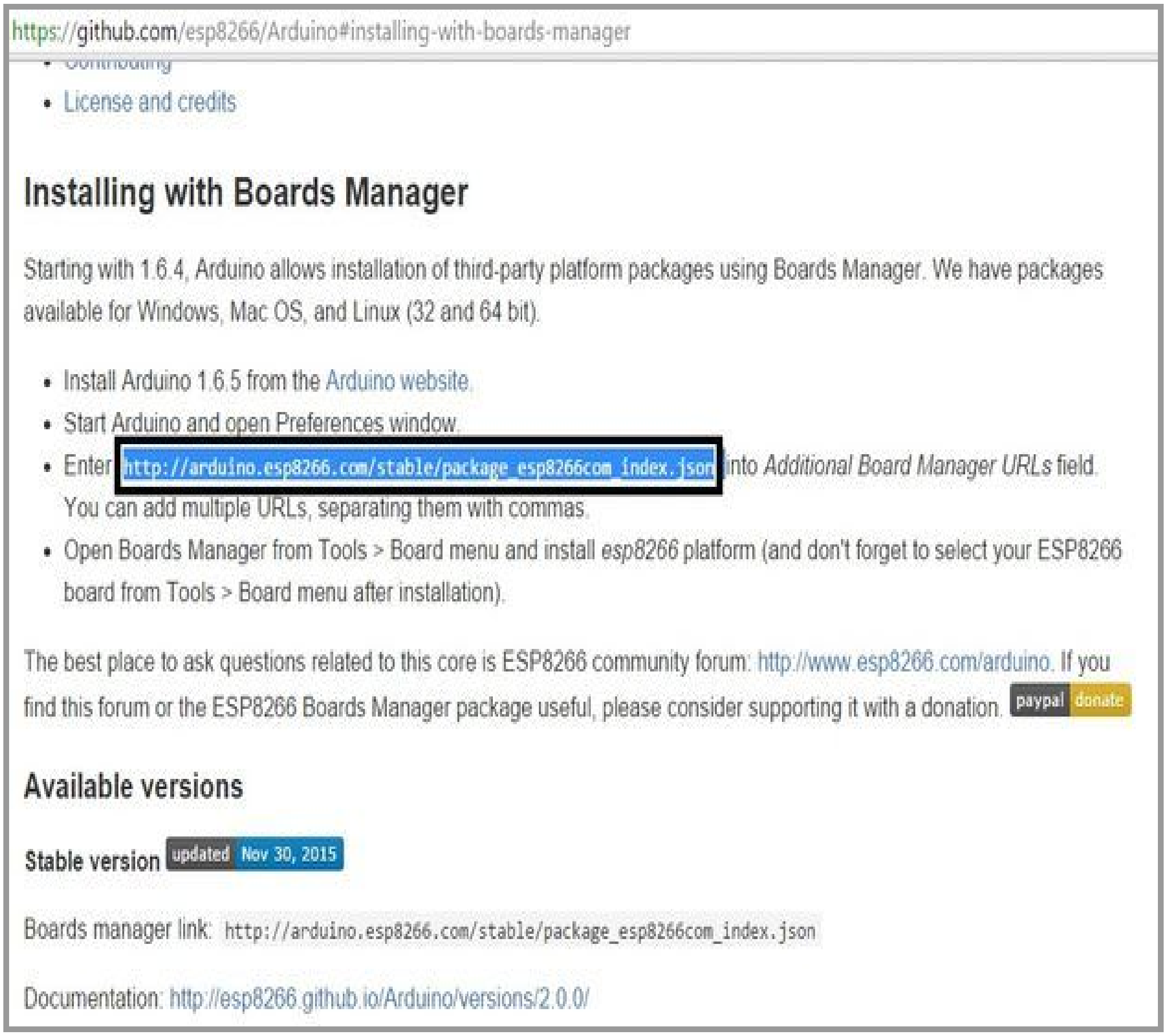
Setting up Arduino for Programming NODE MCU

Step 1: Install Arduino

Latest version of arduino software will be available in the software section of arduino.cc website.Below is the link to download the latest software.
https://www.arduino.cc/en/Main/Software

Step 2: Installing Arduino Core for NodeMCU ESP-12E Using Arduino Boards Manager.

NodeMCU packages for arduino can be installed from the below link.
https://github.com/esp8266/Arduino



https://github.com/esp8266/Arduino#installing-with-boards-manager

- Contributing
- License and credits

Installing with Boards Manager

Starting with 1.6.4, Arduino allows installation of third-party platform packages using Boards Manager. We have packages available for Windows, Mac OS, and Linux (32 and 64 bit).

- Install Arduino 1.6.5 from the Arduino website.
- Start Arduino and open Preferences window.
- Enter `http://arduino.esp8266.com/stable/package_esp8266com_index.json` into *Additional Board Manager URLs* field. You can add multiple URLs, separating them with commas.
- Open Boards Manager from Tools > Board menu and install *esp8266* platform (and don't forget to select your ESP8266 board from Tools > Board menu after installation).

The best place to ask questions related to this core is ESP8266 community forum: http://www.esp8266.com/arduino. If you find this forum or the ESP8266 Boards Manager package useful, please consider supporting it with a donation. paypal donate

Available versions

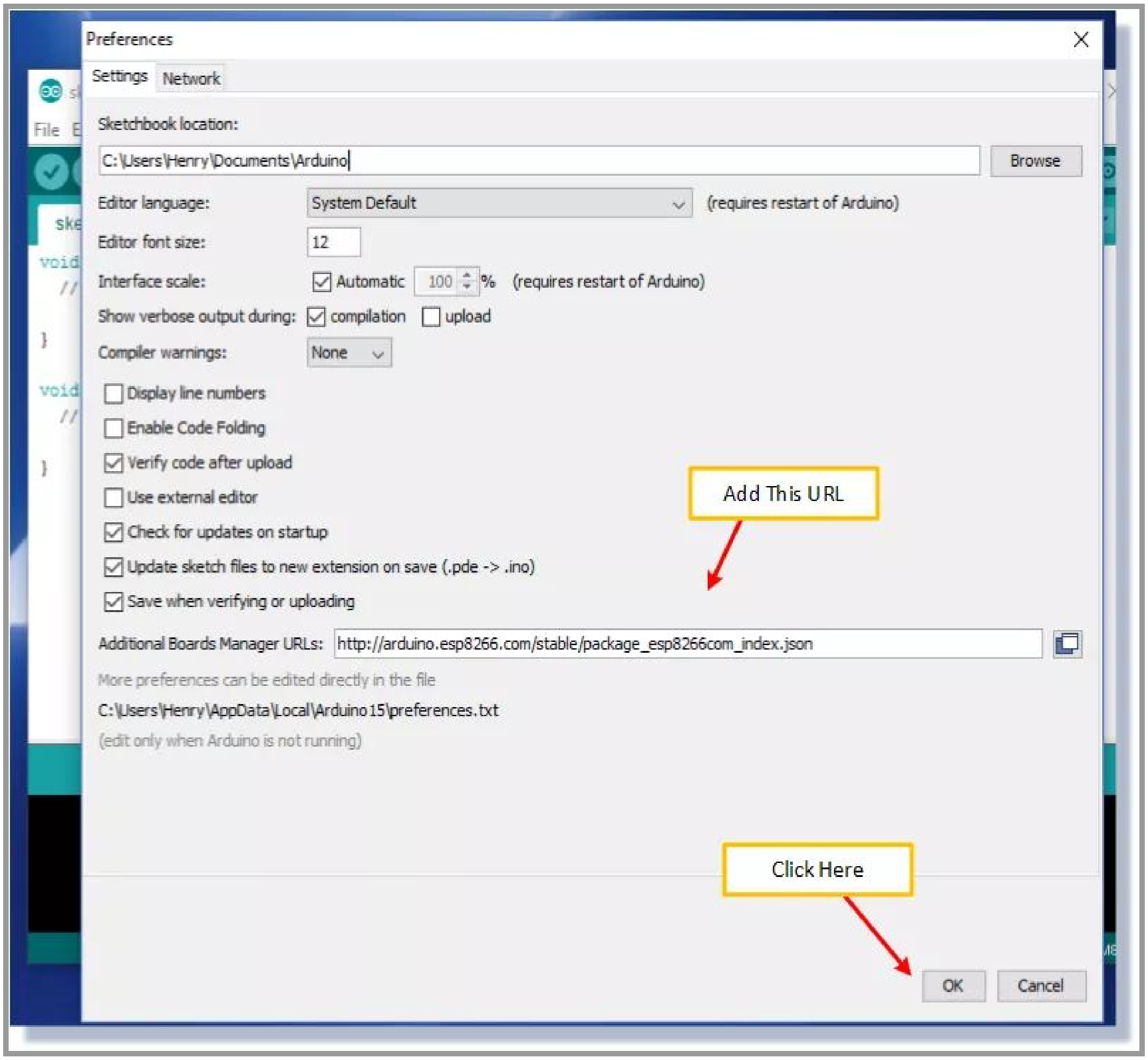
Stable version updated Nov 30, 2015

Boards manager link: `http://arduino.esp8266.com/stable/package_esp8266com_index.json`

Documentation: http://esp8266.github.io/Arduino/versions/2.0.0/

Copy the link highlighted in the above figure.

Step 3: Insert Link for .json NodeMCU Package Files Into Arduino IDE



Sketchbook location:
C:\Users\Henry\Documents\Arduino

Editor language: System Default (requires restart of Arduino)

Editor font size: 12

Interface scale: ☑ Automatic 100 % (requires restart of Arduino)

Show verbose output during: ☑ compilation □ upload

Compiler warnings: None

□ Display line numbers
□ Enable Code Folding
☑ Verify code after upload
□ Use external editor
☑ Check for updates on startup
☑ Update sketch files to new extension on save (.pde -> .ino)
☑ Save when verifying or uploading

Additional Boards Manager URLs: http://arduino.esp8266.com/stable/package_esp8266com_index.json

More preferences can be edited directly in the file
C:\Users\Henry\AppData\Local\Arduino15\preferences.txt
(edit only when Arduino is not running)

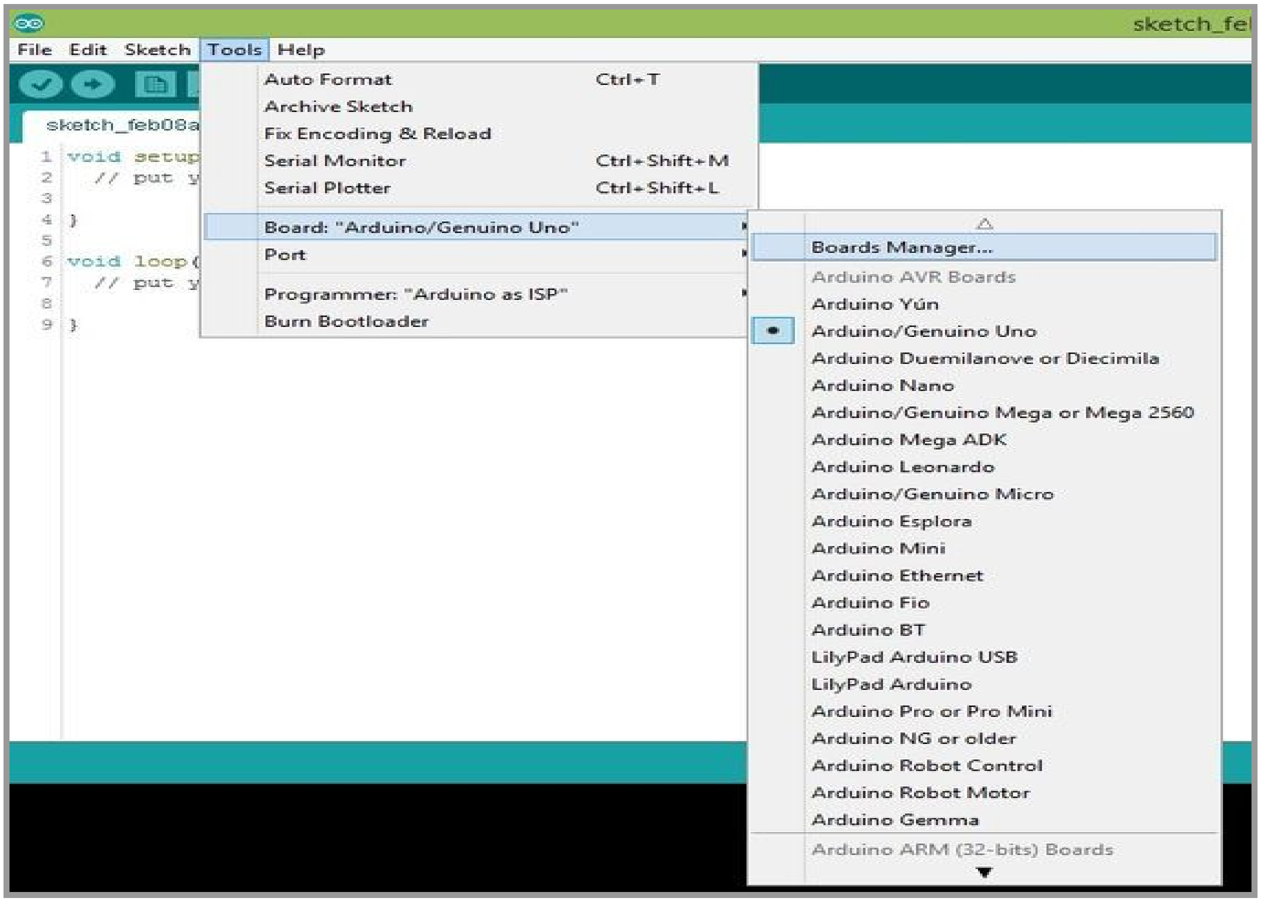
Add This URL

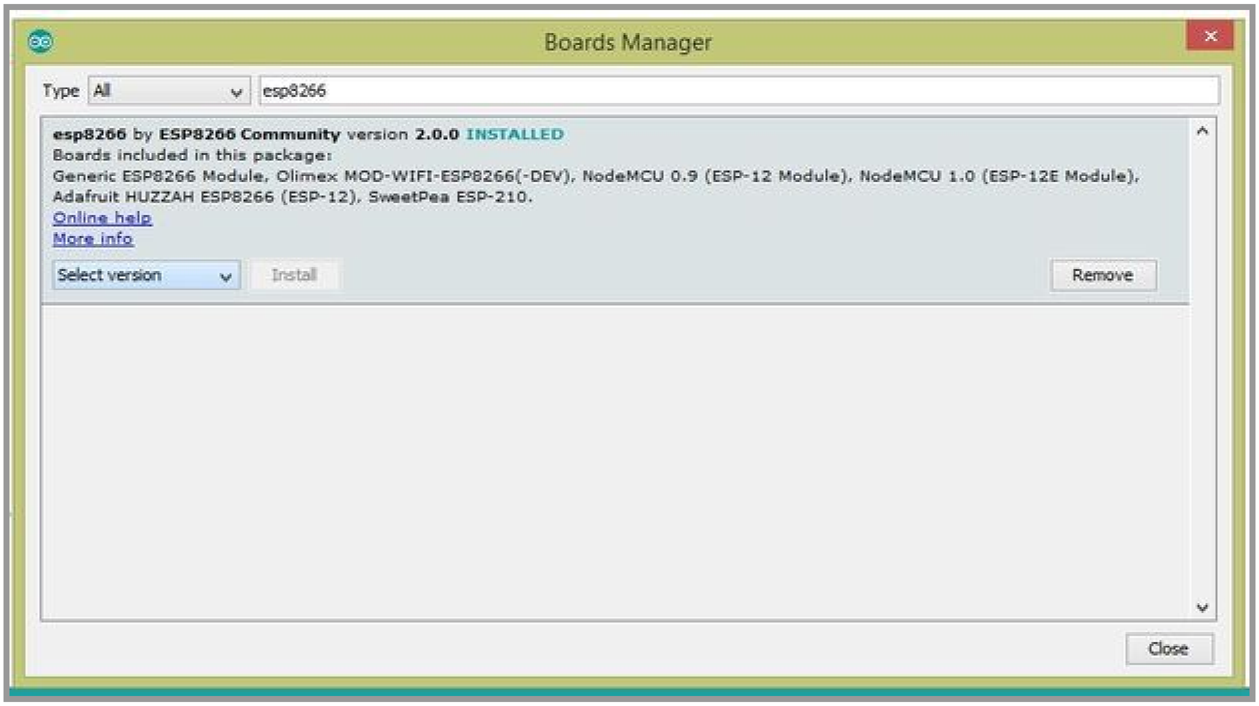
Click Here

*Paste the copied link into Arduino IDE using following sequence *File menu -> Preferences-*

*Paste copied link into the URL area shown in above image. Close and restart the Arduino IDE.

Step 4: Tools - Boards Manager





Type: All

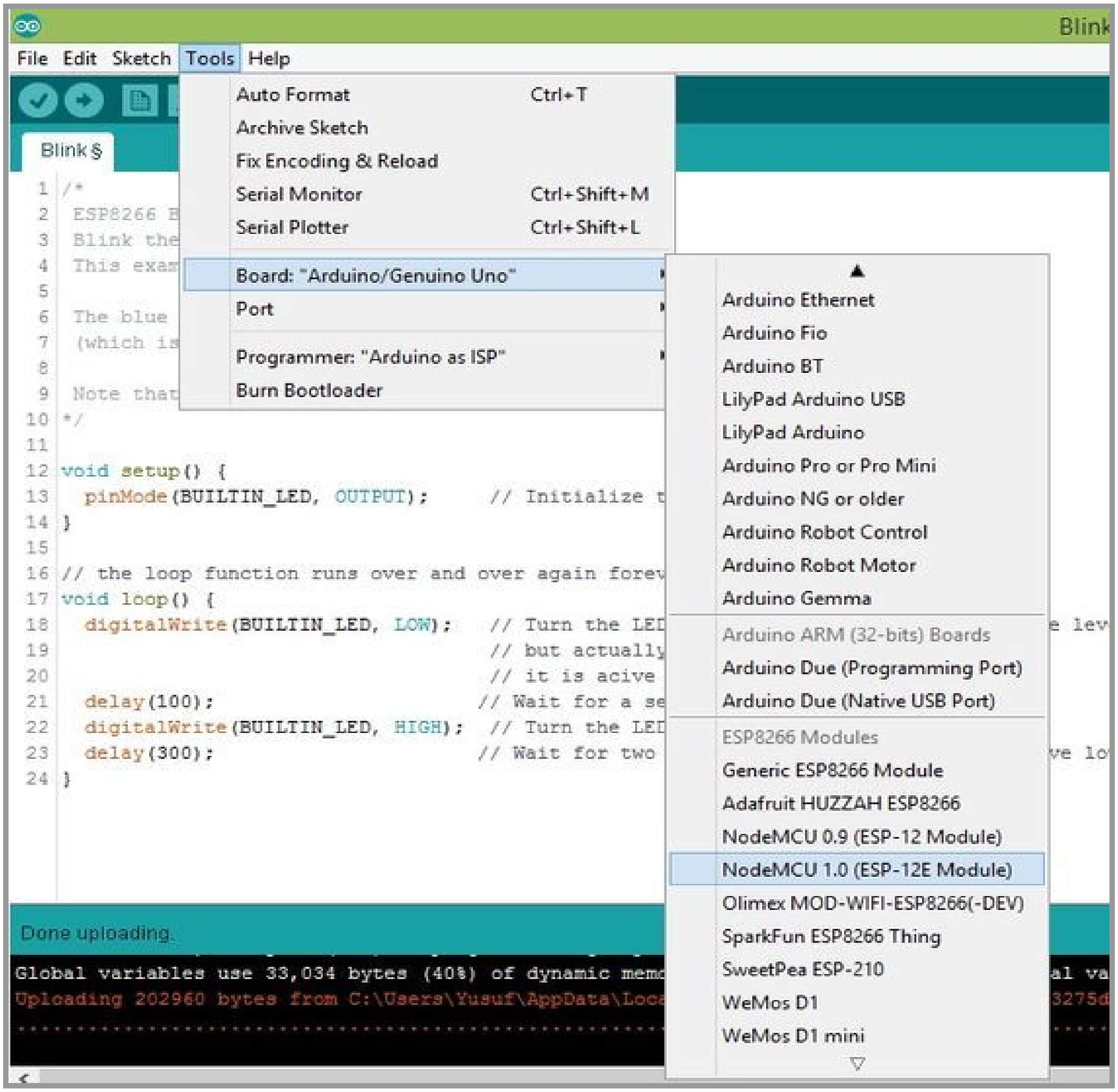
esp8266

esp8266 by **ESP8266 Community** version **2.0.0** INSTALLED
Boards included in this package:
Generic ESP8266 Module, Olimex MOD-WIFI-ESP8266(-DEV), NodeMCU 0.9 (ESP-12 Module), NodeMCU 1.0 (ESP-12E Module), Adafruit HUZZAH ESP8266 (ESP-12), SweetPea ESP-210.
Online help
More info

Tools ->Boards manager and search for ESP8266 and install the libraries/files given under heading *ESP8266 by ESP community*.

Restart the Arduino IDE once again.

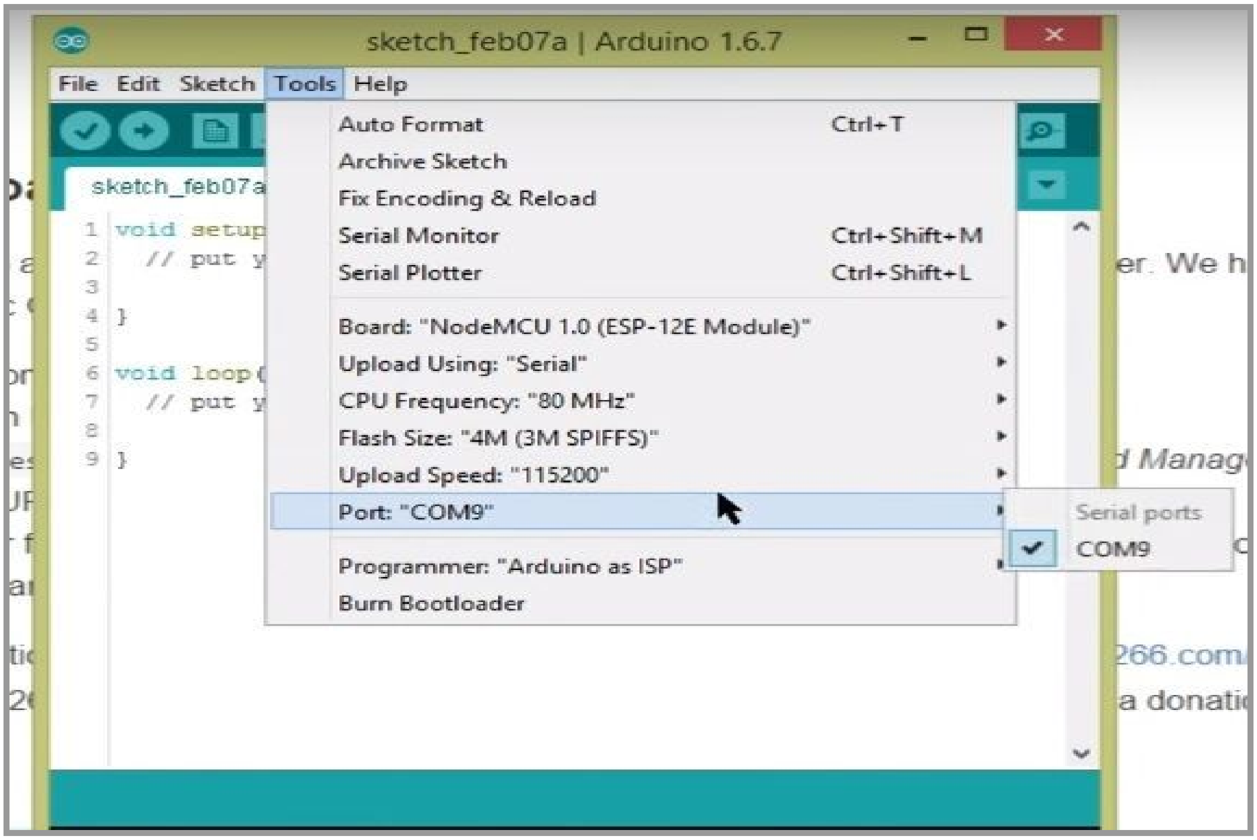
Step 5: Selecting NodeMCU Board in Arduino IDE



```
/*
 ESP8266 B
 Blink the
 This exam

 The blue
 (which is

 Note that
*/

void setup() {
  pinMode(BUILTIN_LED, OUTPUT);     // Initialize t
}

// the loop function runs over and over again forev
void loop() {
  digitalWrite(BUILTIN_LED, LOW);   // Turn the LED
                                    // but actually
                                    // it is acive
  delay(100);                      // Wait for a se
  digitalWrite(BUILTIN_LED, HIGH);  // Turn the LED
  delay(300);                      // Wait for two
}
```

Done uploading.

```
Global variables use 33,034 bytes (40%) of dynamic memo
Uploading 202960 bytes from C:\Users\Yusuf\AppData\Loc
..................................................
```


sketch_feb07a | Arduino 1.6.7
File Edit Sketch Tools Help
sketch_feb07a
Auto Format Ctrl+T
Archive Sketch
Fix Encoding & Reload
Serial Monitor Ctrl+Shift+M
Serial Plotter Ctrl+Shift+L
Programmer: "Arduino as ISP"
Burn Bootloader
Serial ports
COM9

```
void setup
  // put y

}

void loop(
  // put y

}
```

Board: "NodeMCU 1.0 (ESP-12E Module)"
Upload Using: "Serial"
CPU Frequency: "80 MHz"
Flash Size: "4M (3M SPIFFS)"
Upload Speed: "115200"
Port: "COM9"

Go to *Tools* - *Boards* (scroll down the list of boards) - Select *NodeMCU 1.0 (ESP-12E Module).*

Select the *Port* number at which you have connected nodeMCU.Remove and plug the usb cable attached to NODE MCU again if it shows error in opening COM PORT. Rest of the settings can be left to default values.To know the COM port go to Device manager in your computer and your device appears under COM port section.

Setting up the Azure Cloud System

Introduction

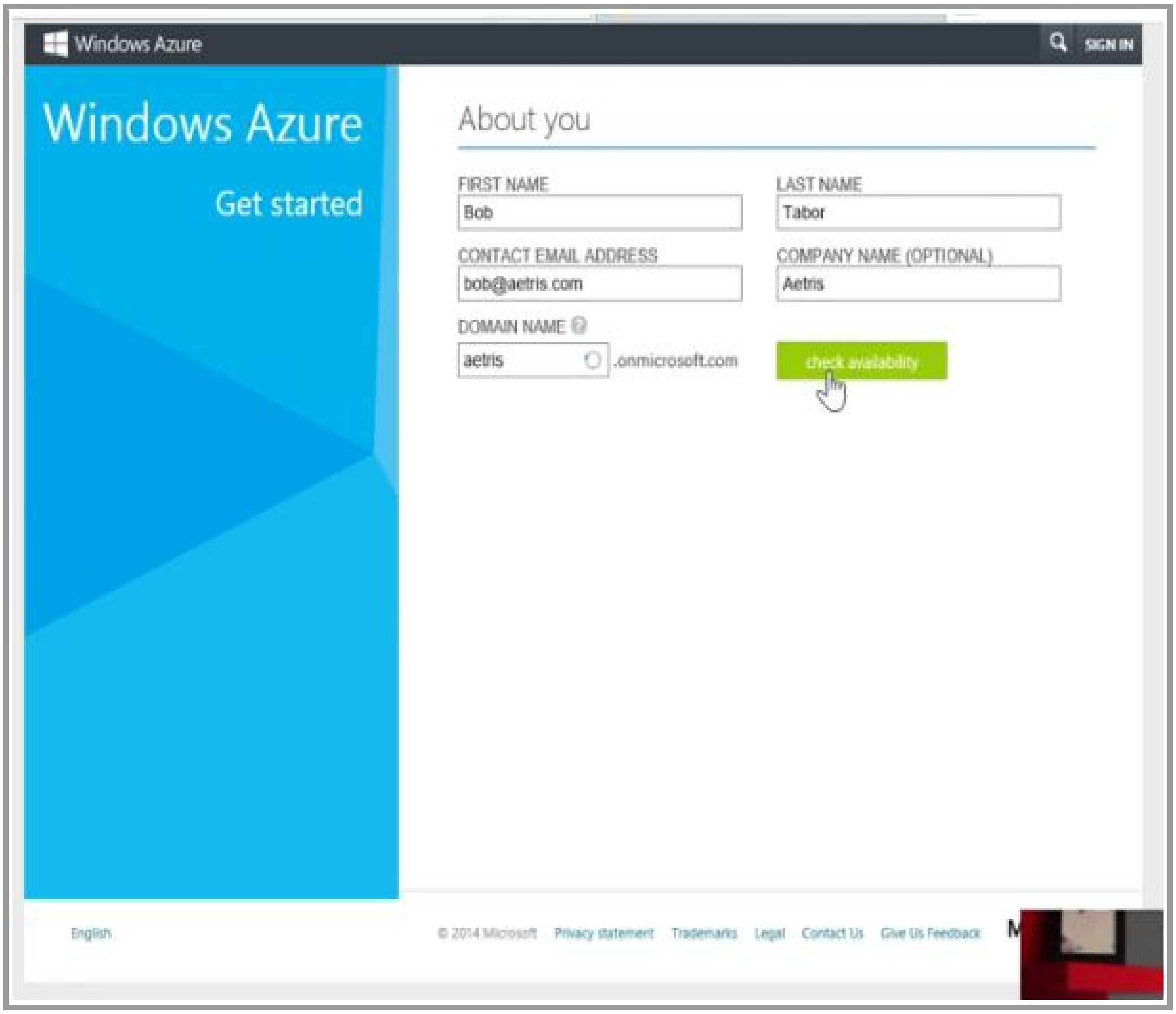
The Cloud that we are using is the Microsoft Azure Cloud and in that we are using three components

- Azure IoTHub
- Stream Analytics
- Azure Table Storage.

Azure IoTHub accepts data from various physical devices and stream analytics is process that sends the data to Power Bi (*Refer Next Section which talks about setting up a power bi account*) where it is visualized . We are further using Azure table Storage to enable configuring of devices based on user input.To use all these components we have to sign up for an azure organizational account and further create personalized instances of these components in our account which is shown in the following steps.

Step1:Create Microsoft Azure Organizational Account

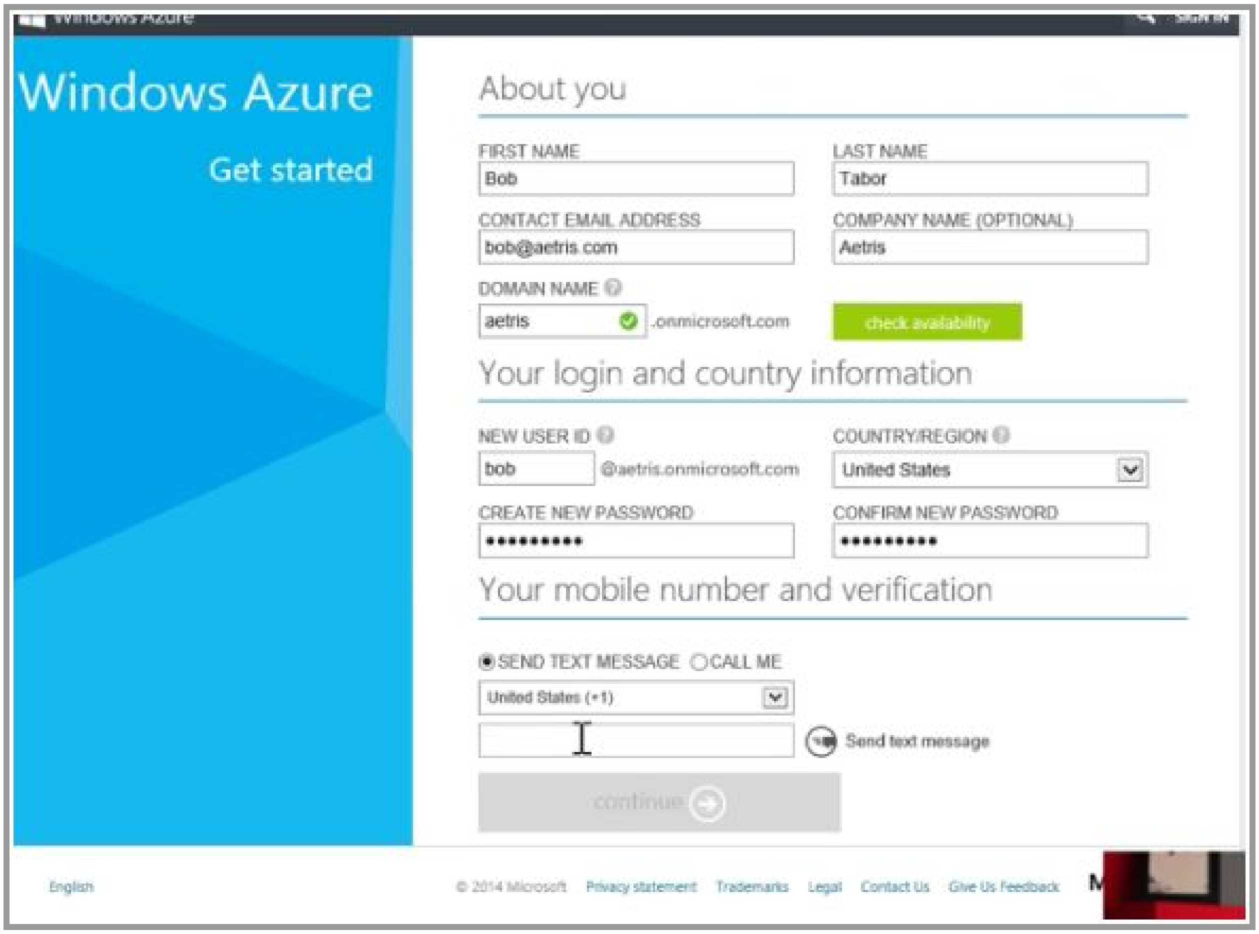
Go to https://account.windowsazure.com/organization.
Further steps are as follows
We fill in details like name , email , company name and a domain name of our choice (based on availability all email ids of the company can be linked to this domain)



About you

FIRST NAME: Bob
LAST NAME: Tabor
CONTACT EMAIL ADDRESS: bob@aetris.com
COMPANY NAME (OPTIONAL): Aetris
DOMAIN NAME: aetris .onmicrosoft.com

Soon after availability check
We create a user id and password and get verified by phone number.



About you

FIRST NAME: Bob
LAST NAME: Tabor
CONTACT EMAIL ADDRESS: bob@aetris.com
COMPANY NAME (OPTIONAL): Aetris
DOMAIN NAME: aetris .onmicrosoft.com

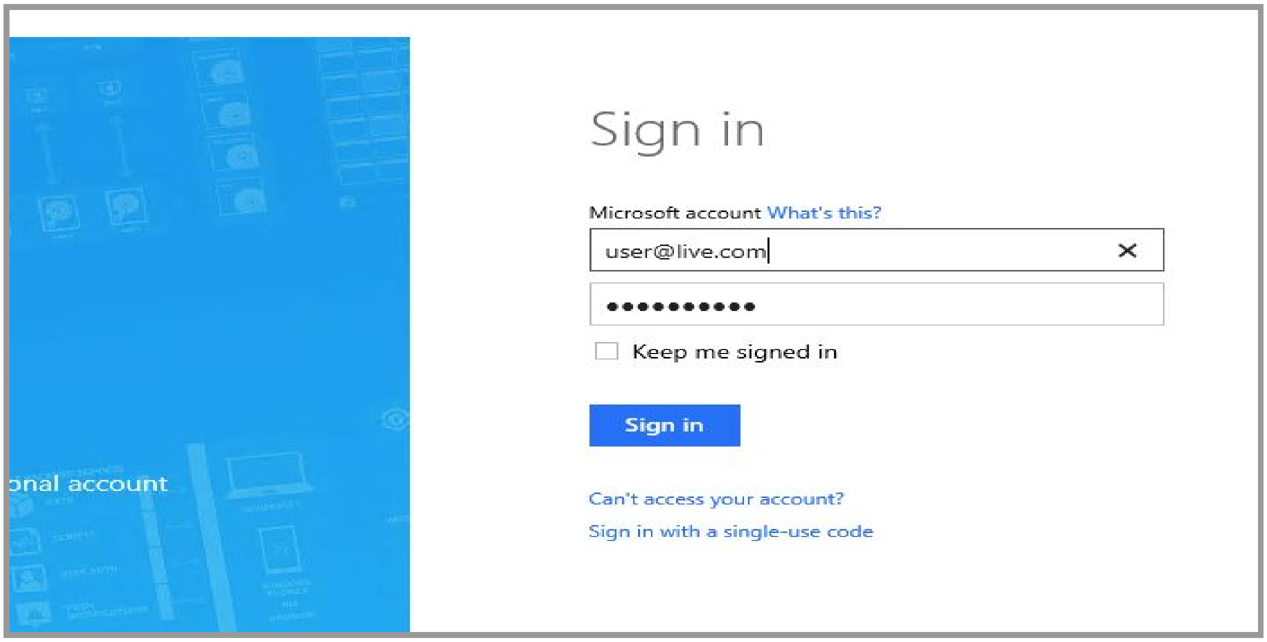
Your login and country information

NEW USER ID: bob @aetris.onmicrosoft.com
COUNTRY/REGION: United States
CREATE NEW PASSWORD: ••••••••••
CONFIRM NEW PASSWORD: ••••••••••

Your mobile number and verification

● SEND TEXT MESSAGE ○ CALL ME
United States (+1)

After that we login with the account and password that we have created in the previous step.



Sign in

Microsoft account What's this?

user@live.com ✕

●●●●●●●●●●

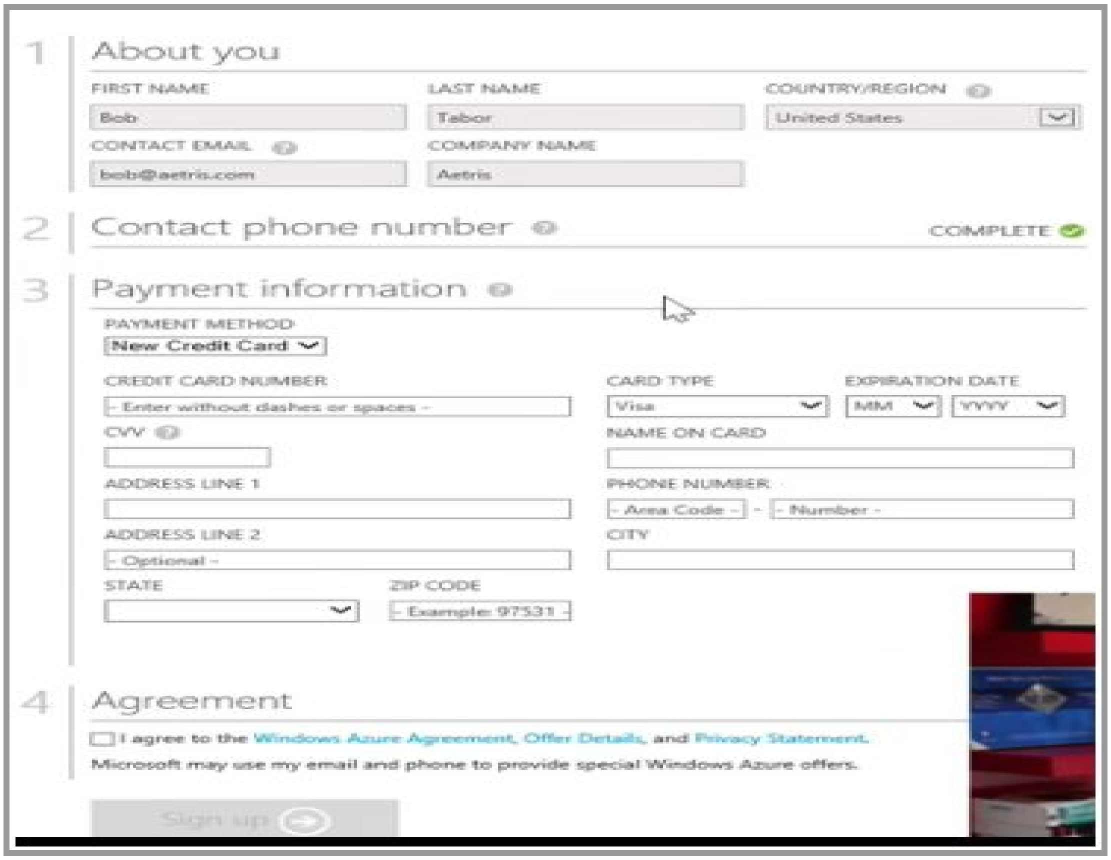
□ Keep me signed in

Sign in

Can't access your account?

Sign in with a single-use code

After that we provide some financial details.



1 About you

FIRST NAME	LAST NAME	COUNTRY/REGION
Bob	Tabor	United States
CONTACT EMAIL	COMPANY NAME	
bob@aetris.com	Aetris	

2 Contact phone number COMPLETE ✓

3 Payment information

PAYMENT METHOD

New Credit Card

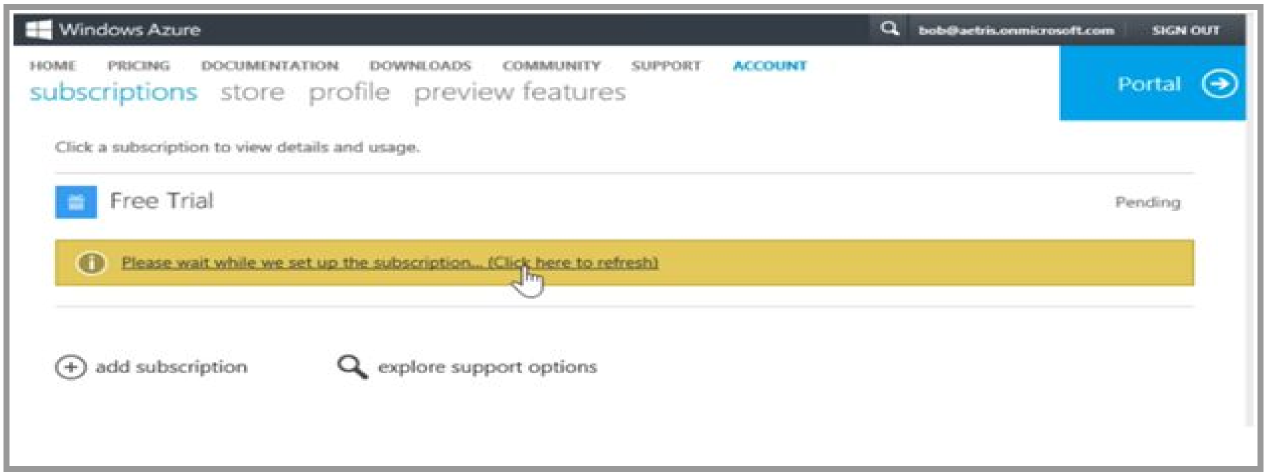
CREDIT CARD NUMBER	CARD TYPE	EXPIRATION DATE
- Enter without dashes or spaces -	Visa	MM YYYY
CVV	NAME ON CARD	
ADDRESS LINE 1	PHONE NUMBER	
	- Area Code - - - Number -	
ADDRESS LINE 2	CITY	
- Optional -		
STATE	ZIP CODE	
	- Example: 97531 -	

4 Agreement

□ I agree to the Windows Azure Agreement, Offer Details, and Privacy Statement.

Microsoft may use my email and phone to provide special Windows Azure offers.

It takes some time to initialize our free subscription

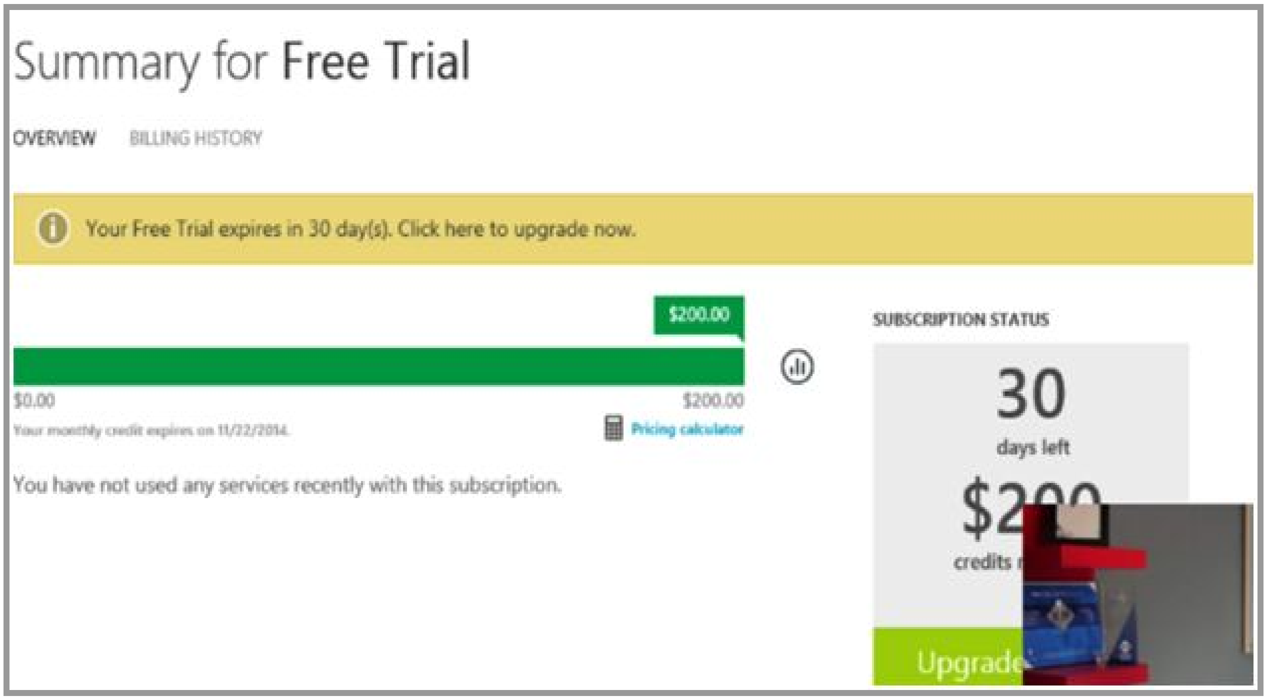


Click a subscription to view details and usage.

Free Trial Pending

Please wait while we set up the subscription... (Click here to refresh)

Once done the following screen shows up.



Your Free Trial expires in 30 day(s). Click here to upgrade now.

Your monthly credit expires on 11/22/2014.

You have not used any services recently with this subscription.

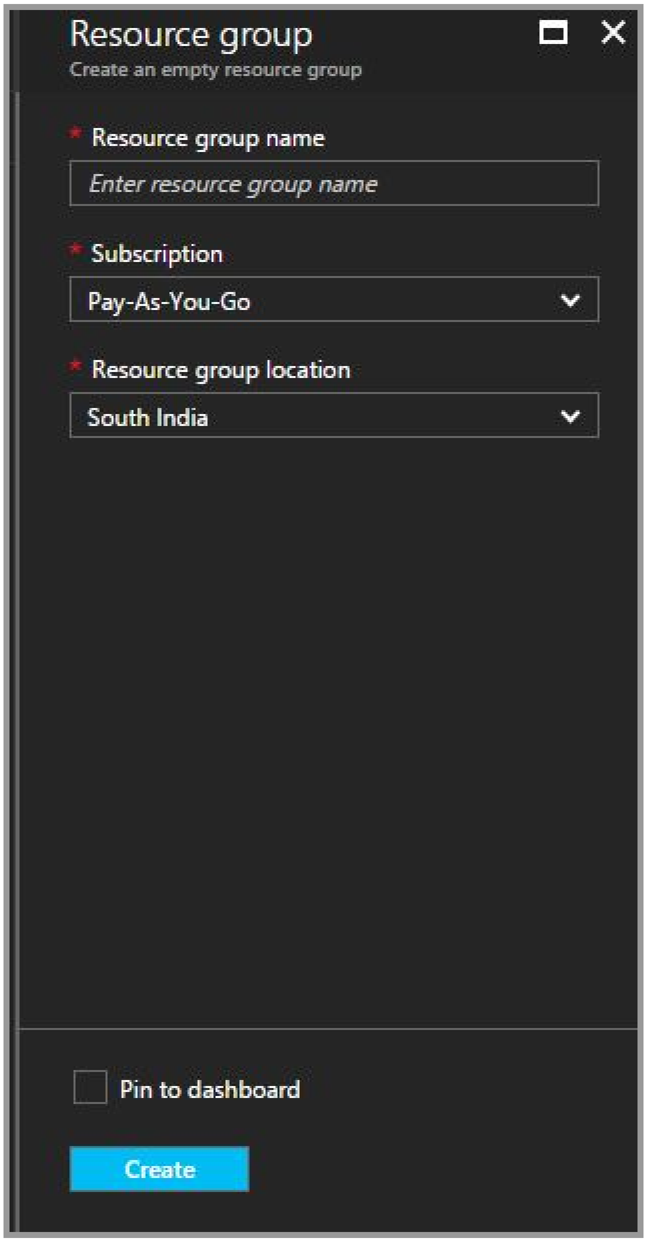
This shows our thirty day free trial subscription and credits.

References for step 1:
---------In the last part of this blog (In the heading **Create Organization Account from Scratch**)
https://blog.codingoutloud.com/2014/01/24/stupid-azure-trick-2-how-do-i-create-a-new-organizational-account-on-windows-azure-active-directory-without-any-existing-accounts-or-ea/
---------In this video
https://channel9.msdn.com/Series/Microsoft-Azure-Fundamentals/06

Step 2 : Setting up a Resource Group

A resource group is a Azure entity which is used to group all the other entities related to a project together. Resource groups decrease confusion when there are multiple projects using multiple entities deployed over the same Azure account .

To create a resource group we go to Azure Dashboard, New -> Resource Group and fill in details as shown in the screenshot below.



Resource group

Create an empty resource group

* Resource group name

Enter resource group name

* Subscription

Pay-As-You-Go

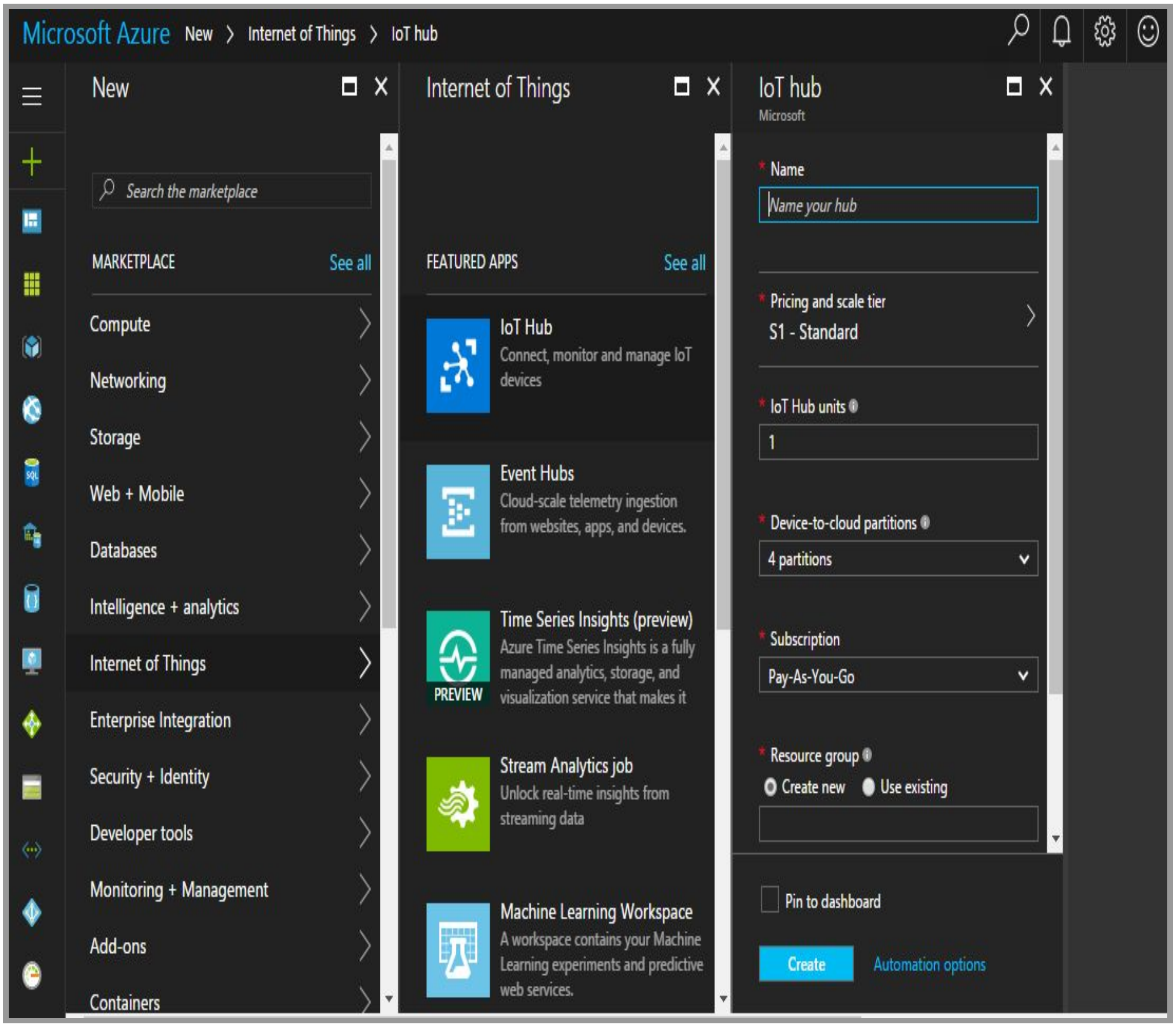
* Resource group location

South India

□ Pin to dashboard

Step 3 :Create IoT Hub

Login to your Azure Account
Click on New->Internet of Things->IoT Hub . Give a unique name to the iot-hub and then click ok.
While creating choose the location closest to you i.e, in our case SouthEast Asia.


Microsoft Azure
New > Internet of Things > IoT hub
New
Search the marketplace
MARKETPLACE
See all
Compute
Networking
Storage
Web + Mobile
Databases
Intelligence + analytics
Internet of Things
Enterprise Integration
Security + Identity
Developer tools
Monitoring + Management
Add-ons
Containers
Internet of Things
FEATURED APPS
See all
IoT Hub
Connect, monitor and manage IoT devices
Event Hubs
Cloud-scale telemetry ingestion from websites, apps, and devices.
Time Series Insights (preview)
Azure Time Series Insights is a fully managed analytics, storage, and visualization service that makes it
PREVIEW
Stream Analytics job
Unlock real-time insights from streaming data
Machine Learning Workspace
A workspace contains your Machine Learning experiments and predictive web services.
IoT hub
Microsoft
Pin to dashboard
Create
Automation options

* Name
Name your hub

* Pricing and scale tier
S1 - Standard

* IoT Hub units
1

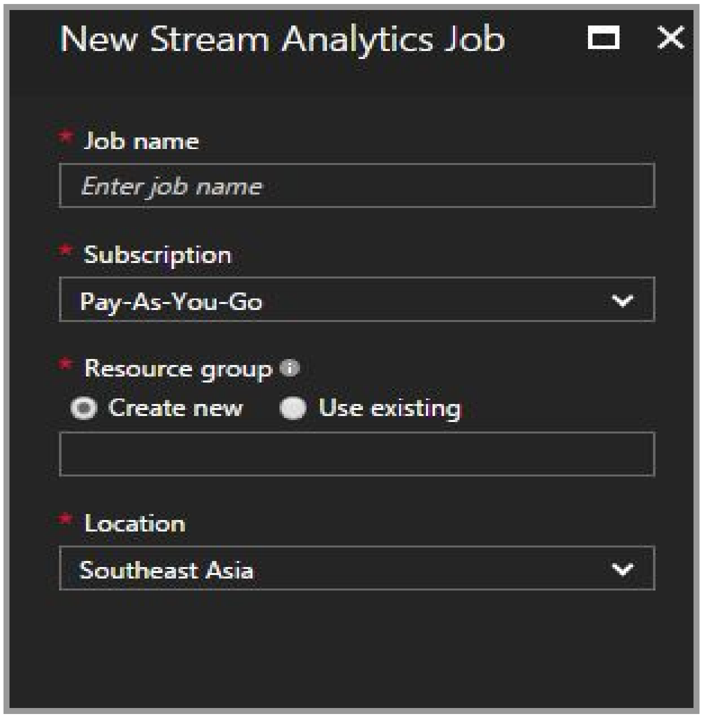
* Device-to-cloud partitions
4 partitions

* Subscription
Pay-As-You-Go

* Resource group
● Create new ○ Use existing

Step 4 :Creating Stream Analytics And Configuring Its Inputs and Outputs

Click on new---> Select Stream Analytics ----> Give the Stream Analytics a Unique Name and choose the location which is closest to our geographical location.



New Stream Analytics Job

* Job name

Enter job name

* Subscription

Pay-As-You-Go

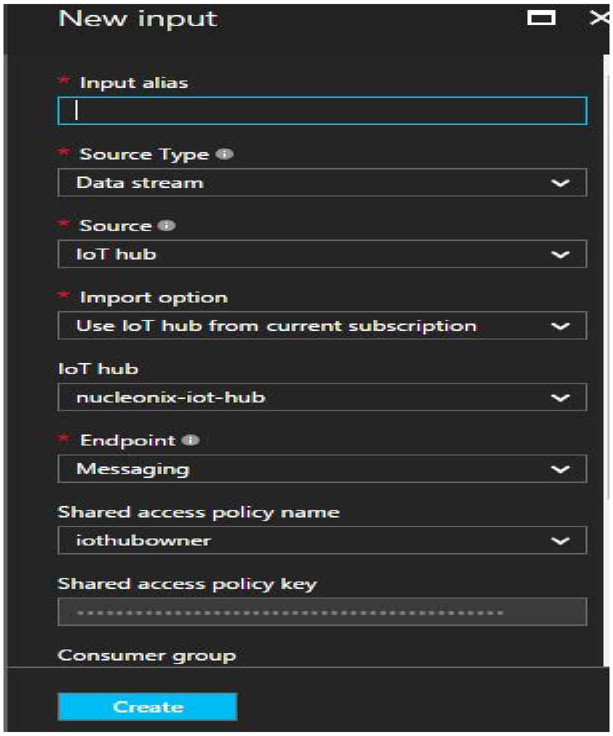
* Resource group

● Create new ○ Use existing

* Location

Southeast Asia

Then Choose Input as the Iot Hub that we created and Output as Power bi account that we are using to see visualization of data.



New input

* Input alias

* Source Type

Data stream

* Source

IoT hub

* Import option

Use IoT hub from current subscription

IoT hub

nucleonix-iot-hub

* Endpoint

Messaging

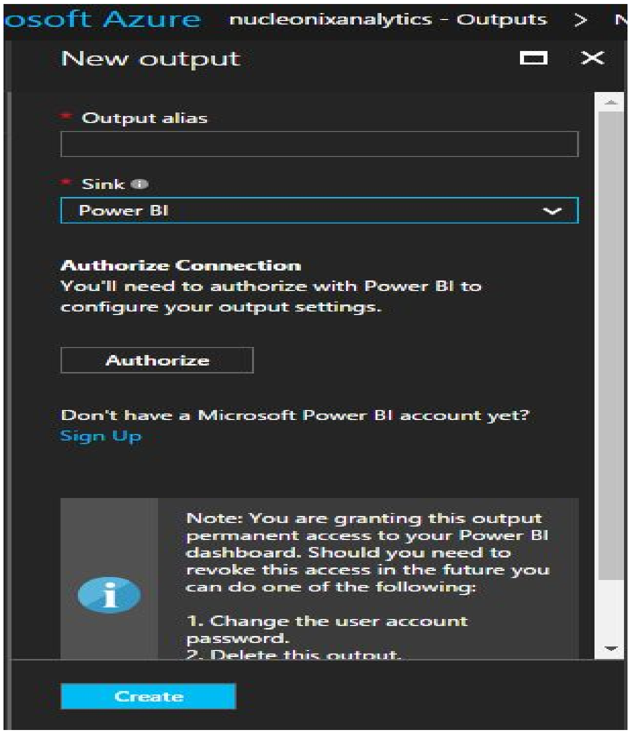
Shared access policy name

iothubowner

Shared access policy key

••

Consumer group



New output

* Output alias

* Sink

Power BI

Authorize Connection

You'll need to authorize with Power BI to configure your output settings.

Don't have a Microsoft Power BI account yet?

Sign Up

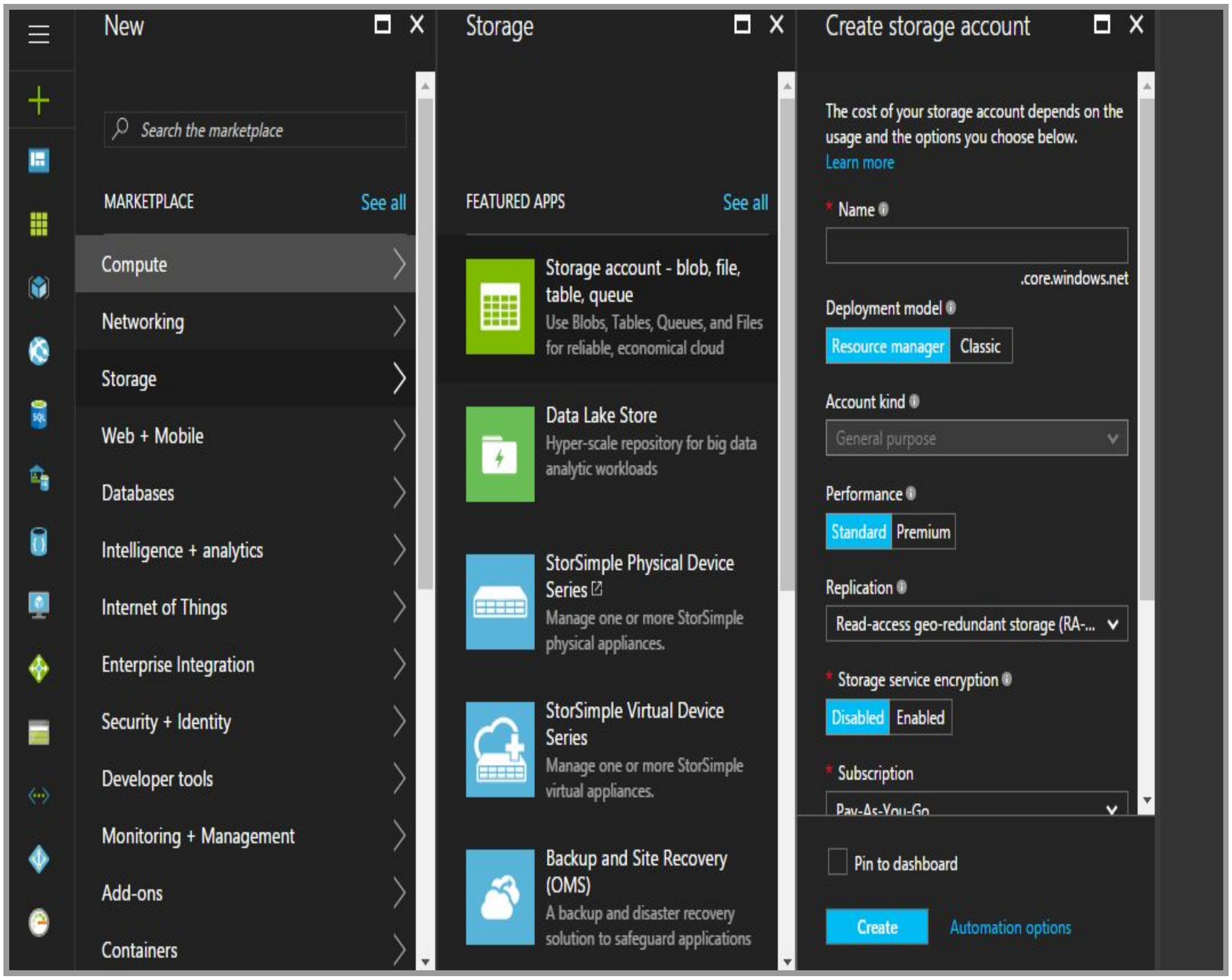
Note: You are granting this output permanent access to your Power BI dashboard. Should you need to revoke this access in the future you can do one of the following:

1. Change the user account password.
2. Delete this output.

Here input indicates the Input to the stream analytics that is coming from iot-hub.Give it a unique name (This is the name we should be using in our stream analytics query)and choose Source as IoT Hub.Then click Create.

Here output indicates the output from Stream analytics to Power BI visualization tool((*Refer Next Section which talks about setting up a power bi account*).Outputs can be multiple for multiple devices.Select Sink as POWER BI.Sink indicates the destination.Then click Authorize and sign in using power bi account.

Step 5 :Creating Azure Storage table instance


New
Search the marketplace
MARKETPLACE
See all
Compute
Networking
Storage
Web + Mobile
Databases
Intelligence + analytics
Internet of Things
Enterprise Integration
Security + Identity
Developer tools
Monitoring + Management
Add-ons
Containers
Storage
FEATURED APPS
See all
Storage account - blob, file, table, queue
Use Blobs, Tables, Queues, and Files for reliable, economical cloud
Data Lake Store
Hyper-scale repository for big data analytic workloads
StorSimple Physical Device Series
Manage one or more StorSimple physical appliances.
StorSimple Virtual Device Series
Manage one or more StorSimple virtual appliances.
Backup and Site Recovery (OMS)
A backup and disaster recovery solution to safeguard applications
Create storage account
Learn more
Pin to dashboard
Create
Automation options

The cost of your storage account depends on the usage and the options you choose below.

* Name
.core.windows.net

Deployment model: [✓ Resource manager] Classic

Account kind: General purpose

Performance: [✓ Standard] Premium

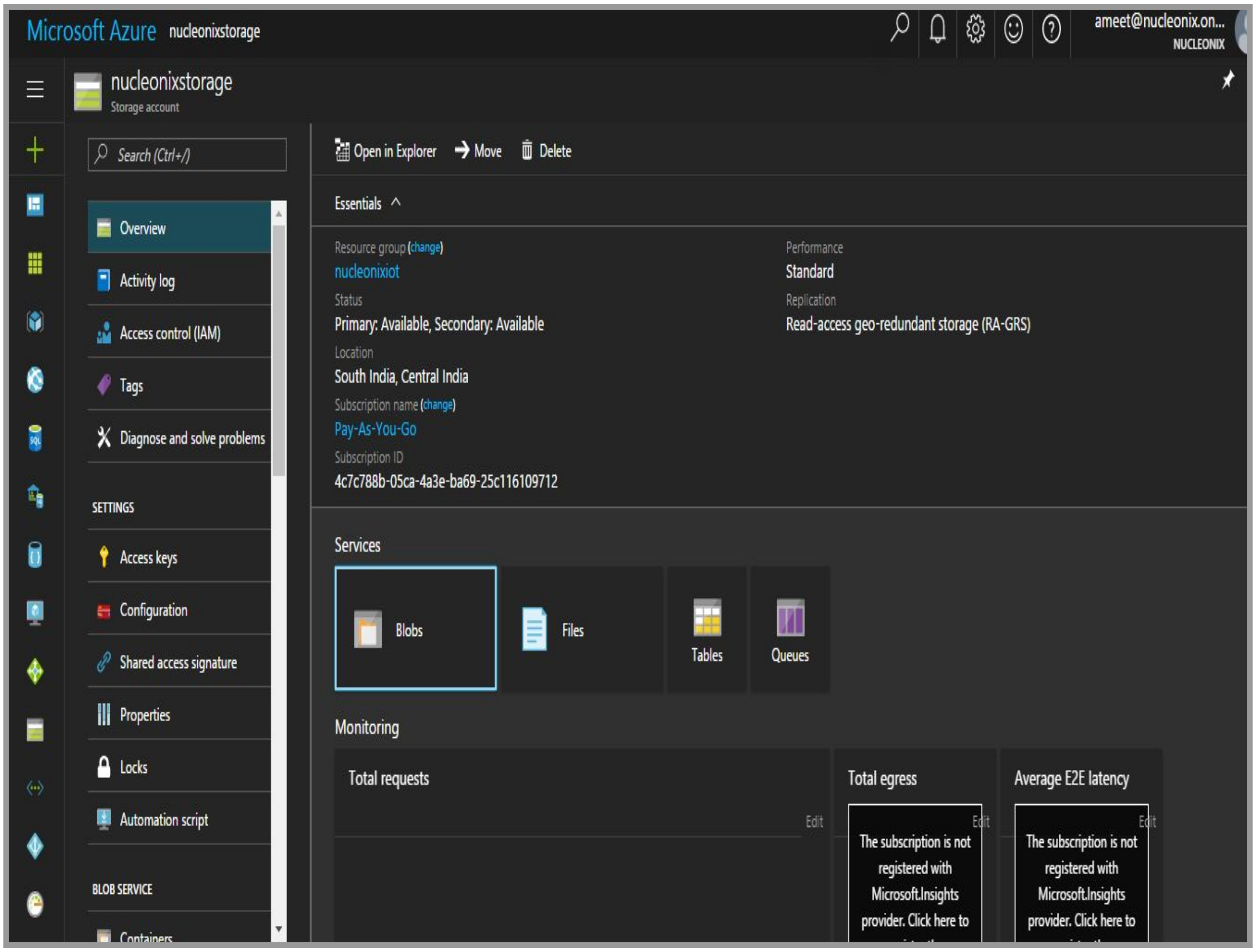
Replication: Read-access geo-redundant storage (RA-...

* Storage service encryption: [✓ Disabled] Enabled

* Subscription: Pay-As-You-Go

□ Pin to dashboard

Go to new instance and select storage then choose storage account-blob.table,queue.Later choose a unique name for your storage account and before proceeding ensure that you have chosen nearest place under location column.Then press create.



Resource group (change)
nucleonixiot

Status
Primary: Available, Secondary: Available

Location
South India, Central India

Subscription name (change)
Pay-As-You-Go

Subscription ID
4c7c788b-05ca-4a3e-ba69-25c116109712

Performance
Standard

Replication
Read-access geo-redundant storage (RA-GRS)

The subscription is not registered with Microsoft.Insights provider. Click here to

The subscription is not registered with Microsoft.Insights provider. Click here to

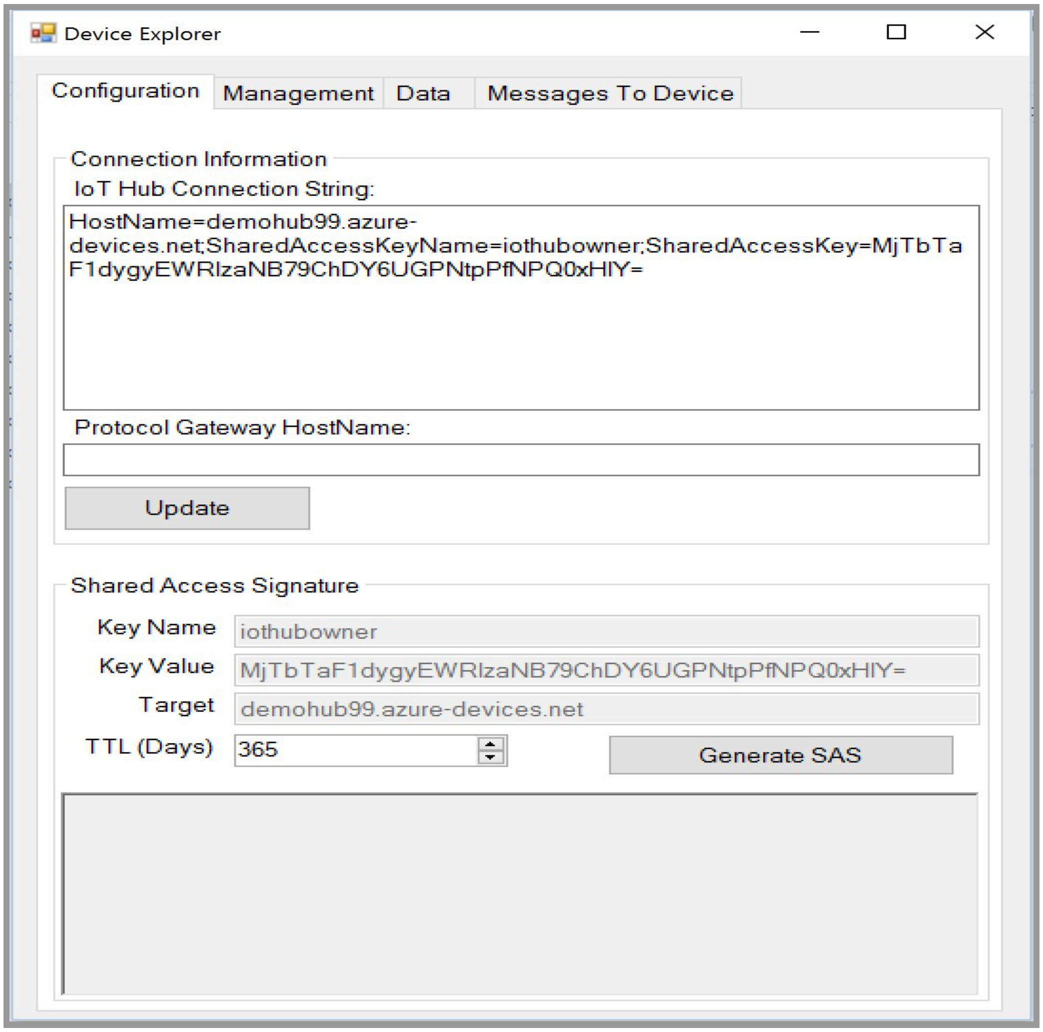
Once you have created storage account instance for azure table ,go to dashboard and you will find storage account there.Click on the storage account to create and view the tables.

Step 6 :Downloading Device Explorer and Storage Explorer

Device Explorer is an open source tool used to add and authenticate devices which can connect to your Iot Hub. Further in the document we show how it is used to setup and monitor devices.
Download the latest SetupDeviceExplorer.msi file from the below link and install it.

https://github.com/Azure/azure-iot-sdk-csharp/releases

When you open Device Explorer it should look like the figure below.



Connection Information

IoT Hub Connection String:

HostName=demohub99.azure-devices.net;SharedAccessKeyName=iothubowner;SharedAccessKey=MjTbTaF1dygyEWRlzaNB79ChDY6UGPNtpPfNPQ0xHIY=

Protocol Gateway HostName:

Update

Shared Access Signature

Key Name: iothubowner

Key Value: MjTbTaF1dygyEWRlzaNB79ChDY6UGPNtpPfNPQ0xHIY=

Target: demohub99.azure-devices.net

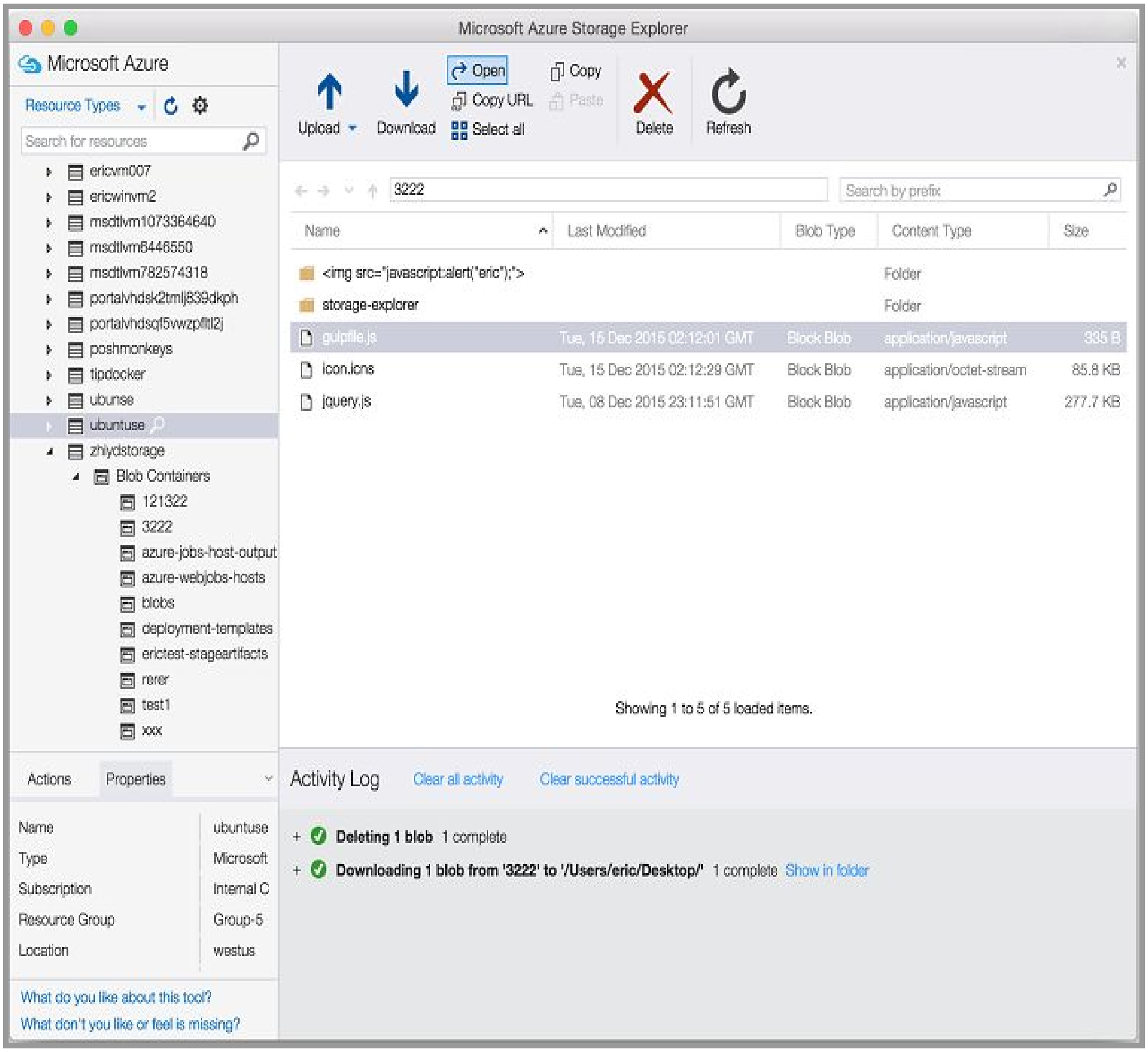
TTL (Days): 365

Generate SAS

Azure Storage Explorer is a Microsoft software that can be used to modify data in the Azure Table Storage.In this project it acts a configuration control which is being used to change parameters on the Device remotely by changing the input table as well as get updates as new rows come in the Upgradation and Calibration table whenever the device needs upgradation or calibration.

Download Azure Storage Explorer from the link below
http://storageexplorer.com/

Once installed the Software should look like this



Name	Last Modified	Blob Type	Content Type	Size
<img src="javascript:alert('eric');">			Folder	
storage-explorer			Folder	
gulpfile.js	Tue, 15 Dec 2015 02:12:01 GMT	Block Blob	application/javascript	335 B
icon.icns	Tue, 15 Dec 2015 02:12:29 GMT	Block Blob	application/octet-stream	85.8 KB
jquery.js	Tue, 08 Dec 2015 23:11:51 GMT	Block Blob	application/javascript	277.7 KB

Showing 1 to 5 of 5 loaded items.

Name	ubuntuse
Type	Microsoft
Subscription	Internal C
Resource Group	Group-5
Location	westus

+ **Deleting 1 blob** 1 complete

+ **Downloading 1 blob from '3222' to '/Users/eric/Desktop/'** 1 complete Show in folder

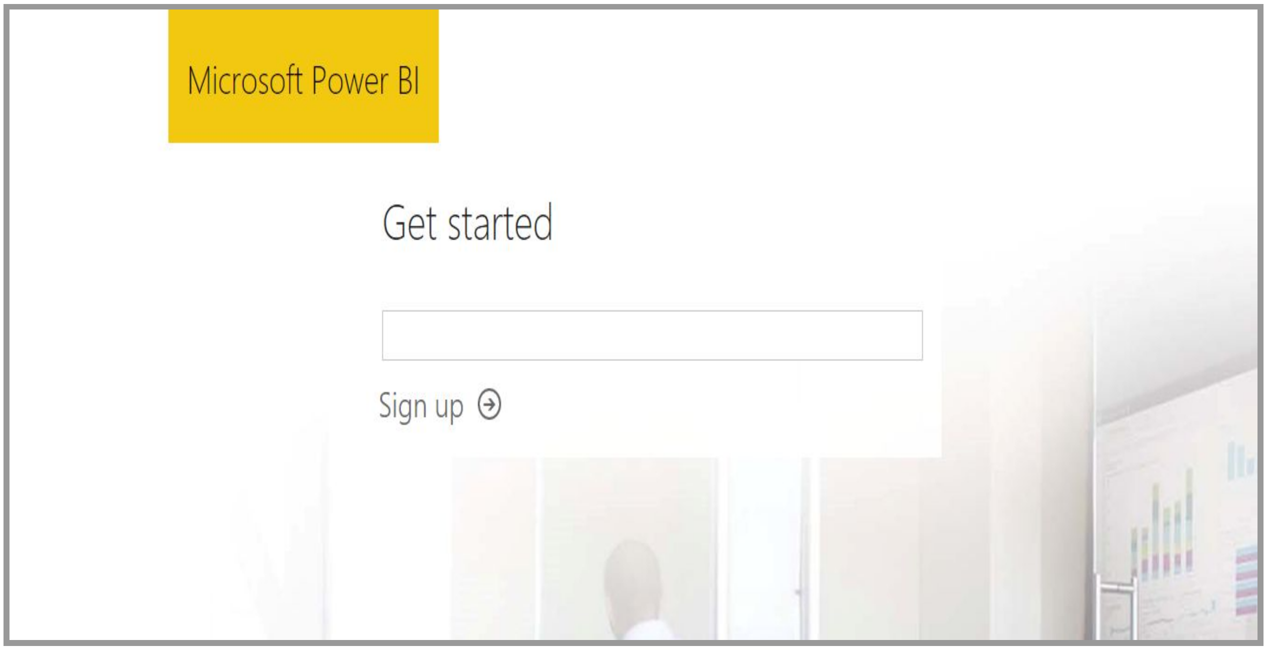
Step 7 :Setting up Power BI

Introduction

Power bi takes data from stream analytics and helps us in visualizing data and configuring alerts for that data as required.

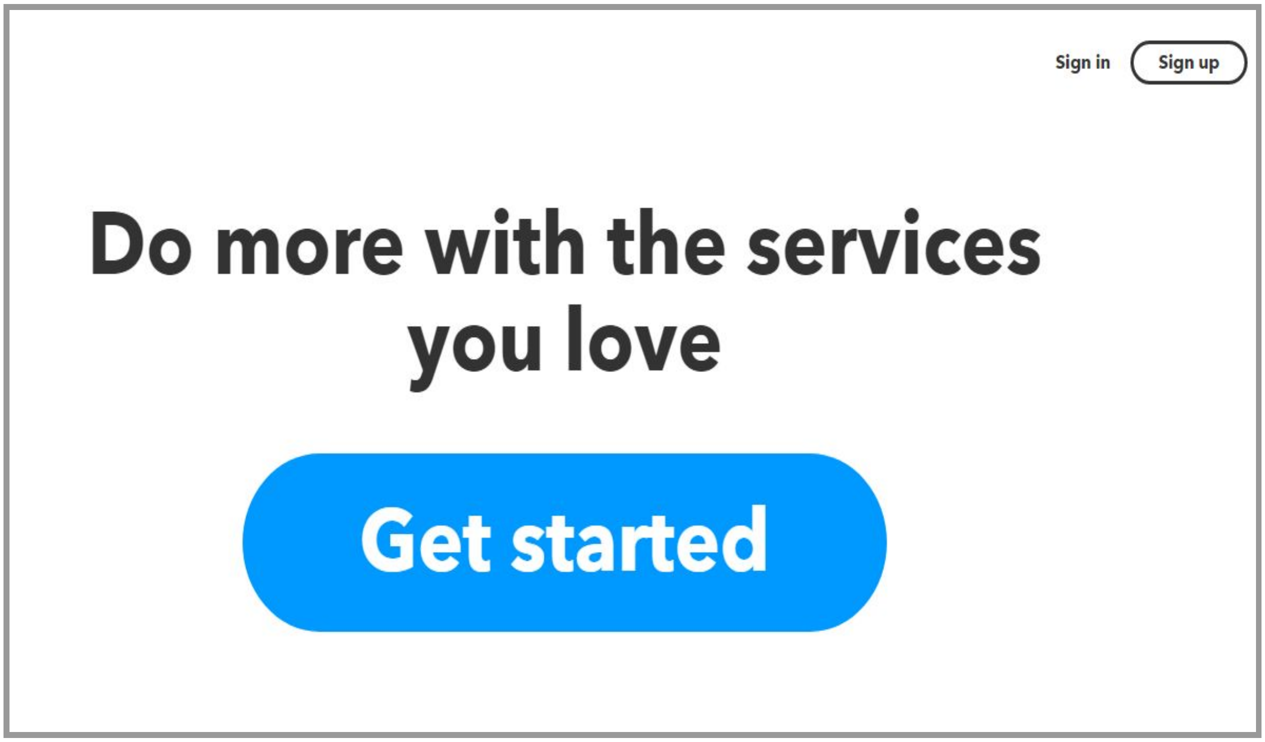
Registering

It Requires a organization based email address(For Eg :- abc@nucleonix.com)

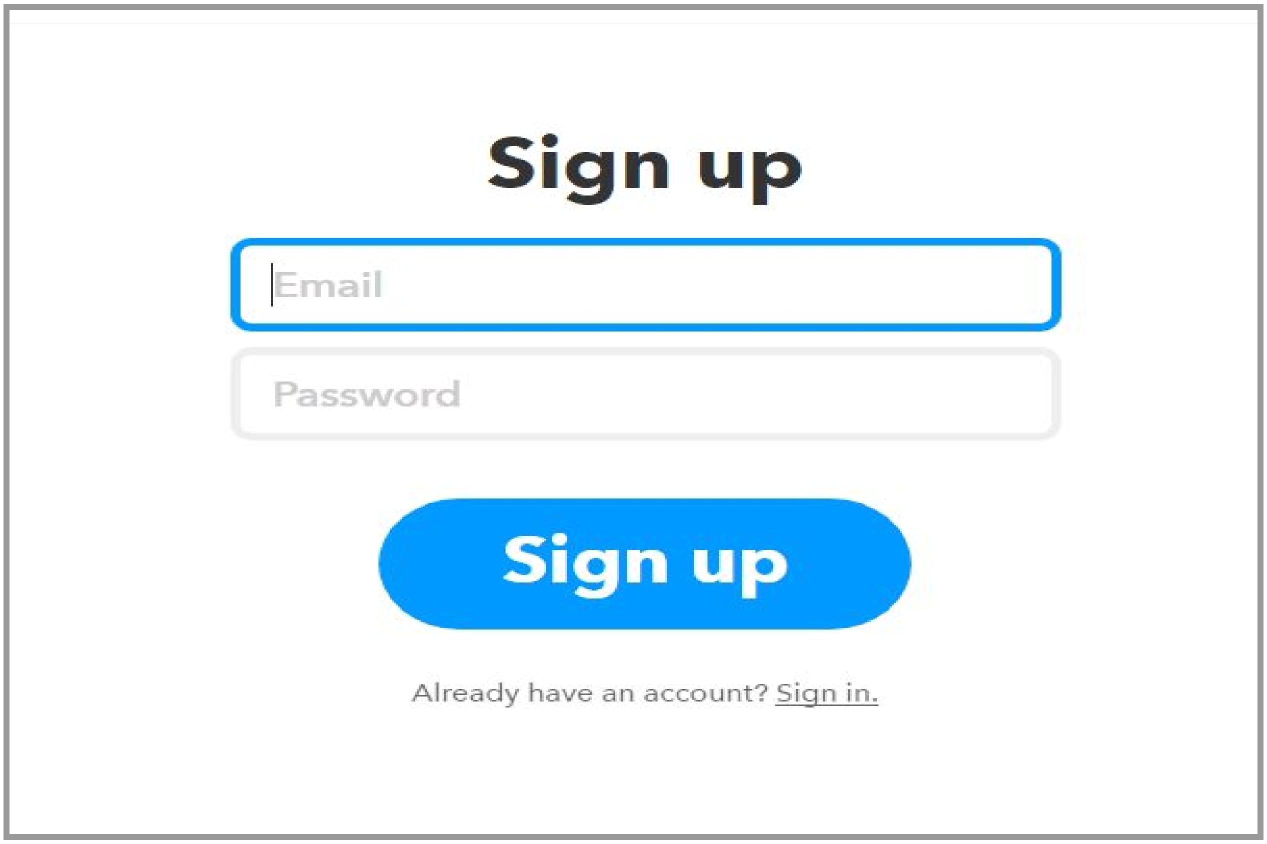


Step 8 :Registering on IFTTT Notification Server

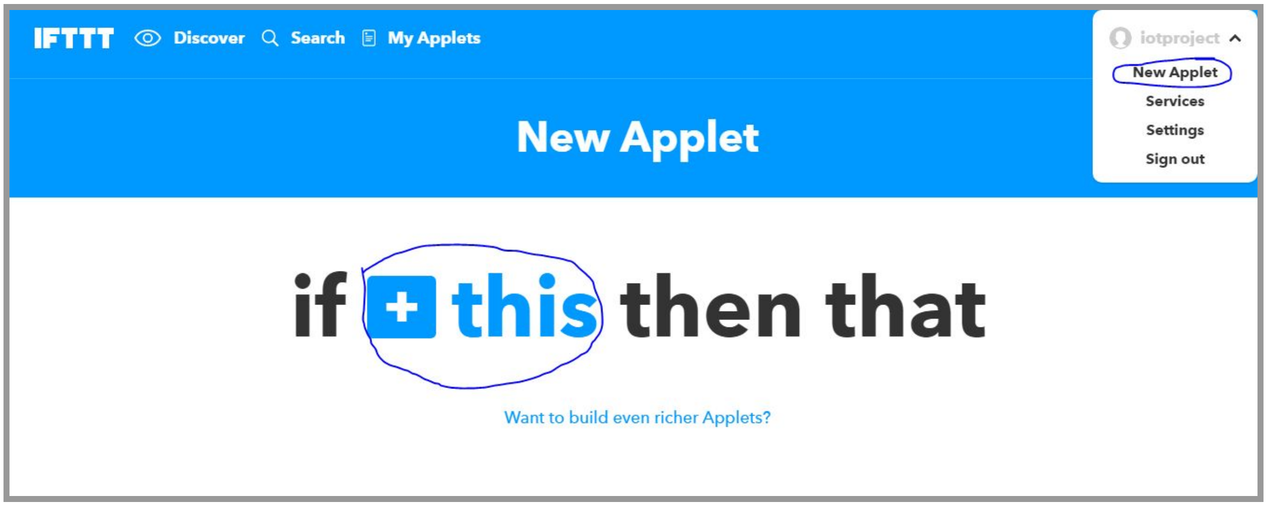
Go to the below link and click on signup button.
https://ifttt.com/



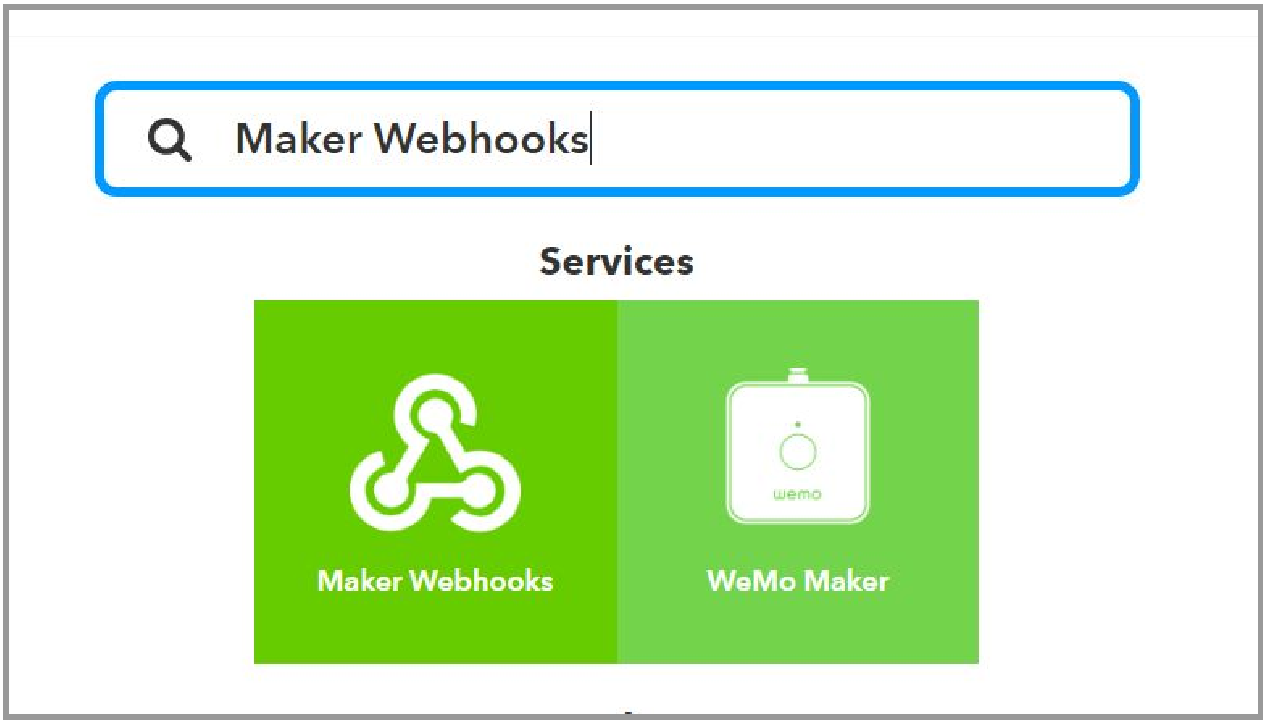
Do more with the services you love



Enter Email id and password then click on sign up button.Later go to user account icon and click on New Applet as shown in figure below.

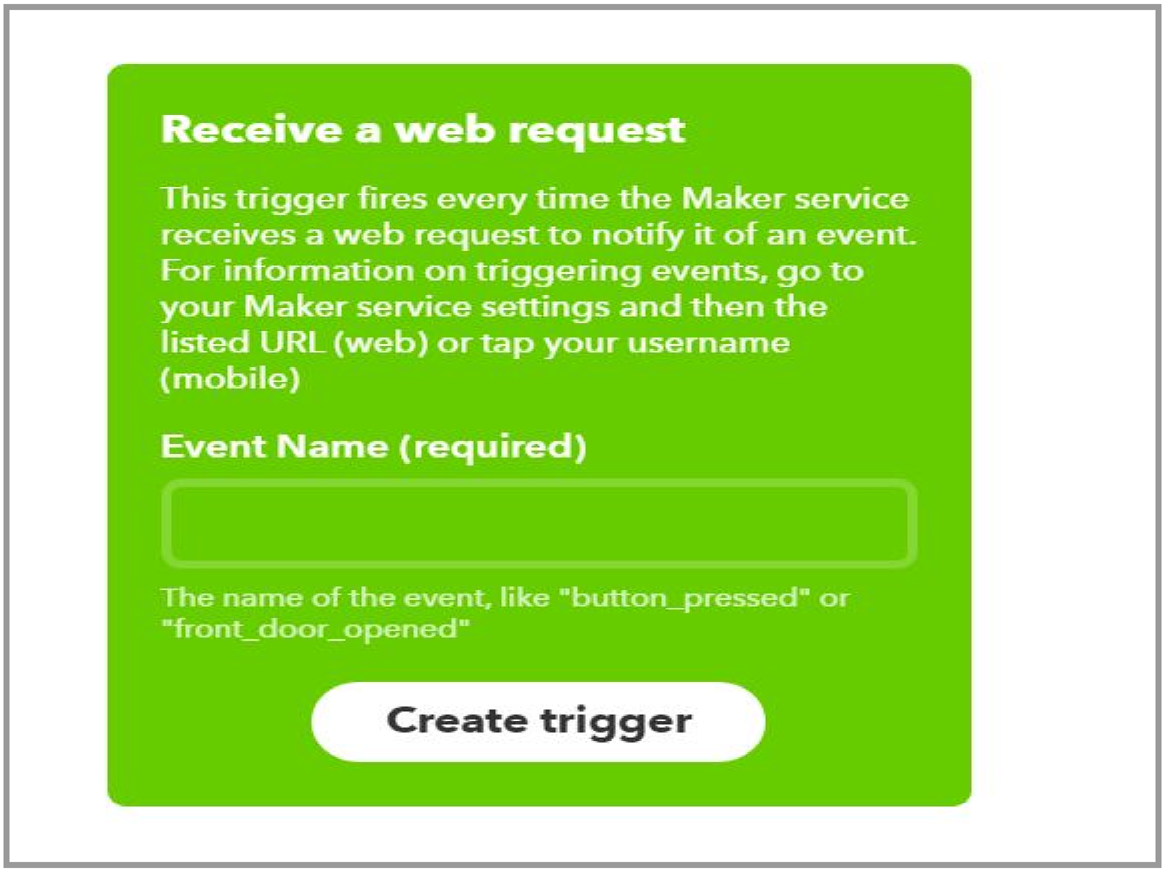


Next click on *+this* as shown in above figure.Later in search window type Maker Webhooks as shown below.



Maker Webhooks

Click on webhooks and enter Unique Event name and click on Create Trigger.



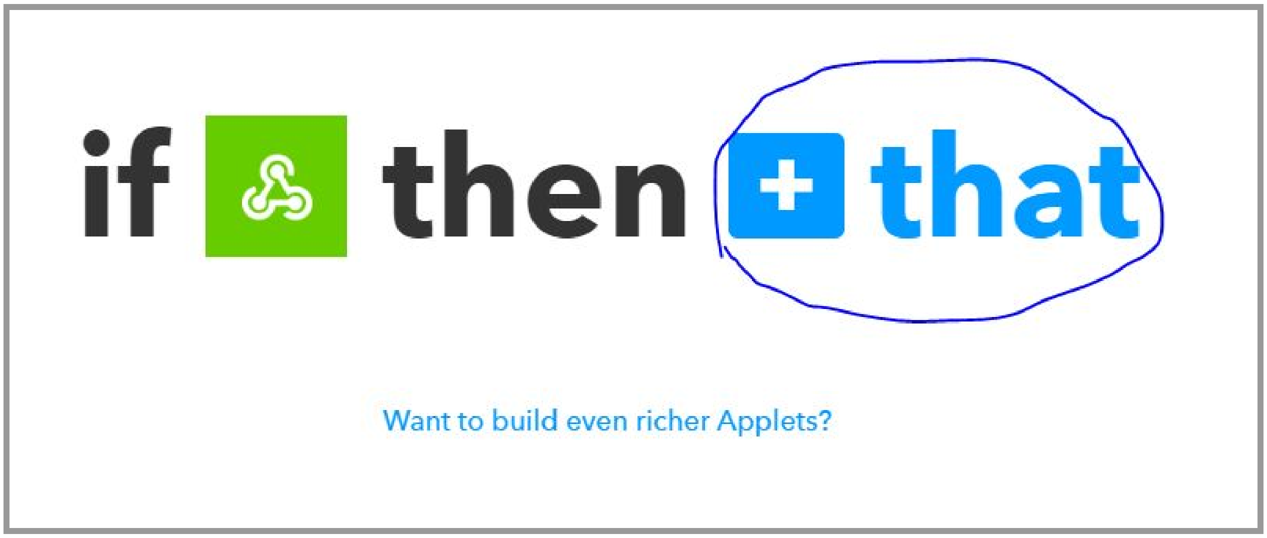
Receive a web request

This trigger fires every time the Maker service receives a web request to notify it of an event. For information on triggering events, go to your Maker service settings and then the listed URL (web) or tap your username (mobile)

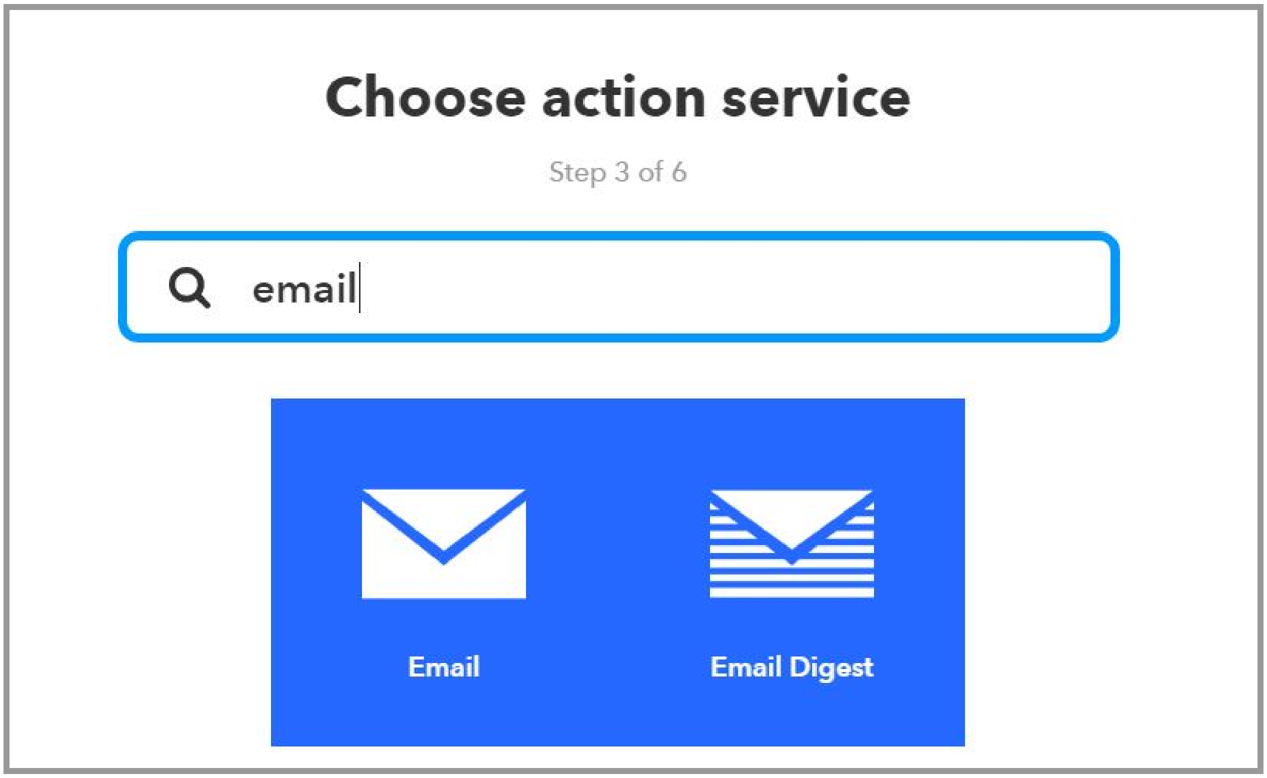
Event Name (required)

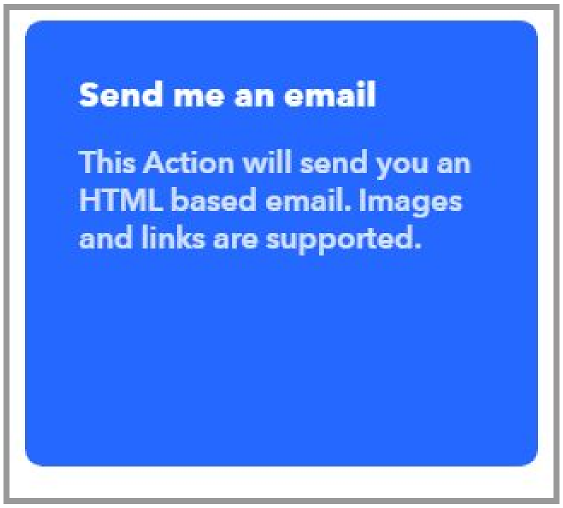
The name of the event, like "button_pressed" or "front_door_opened"

Now click on *+that as shown below.*



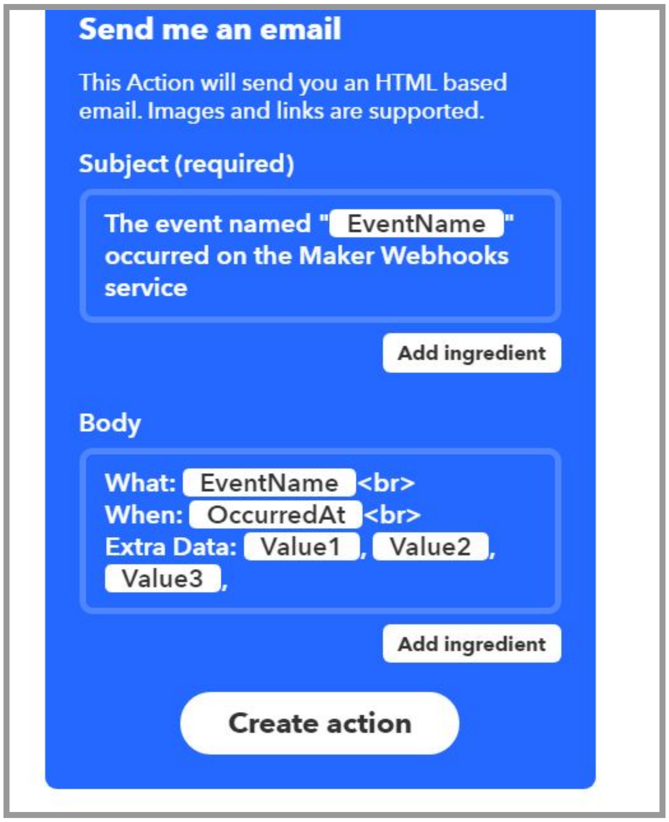
Type Email in search window and select it.Later click on it and enter suitable subject and body.





Send me an email

This Action will send you an HTML based email. Images and links are supported.



Send me an email

This Action will send you an HTML based email. Images and links are supported.

Subject (required)

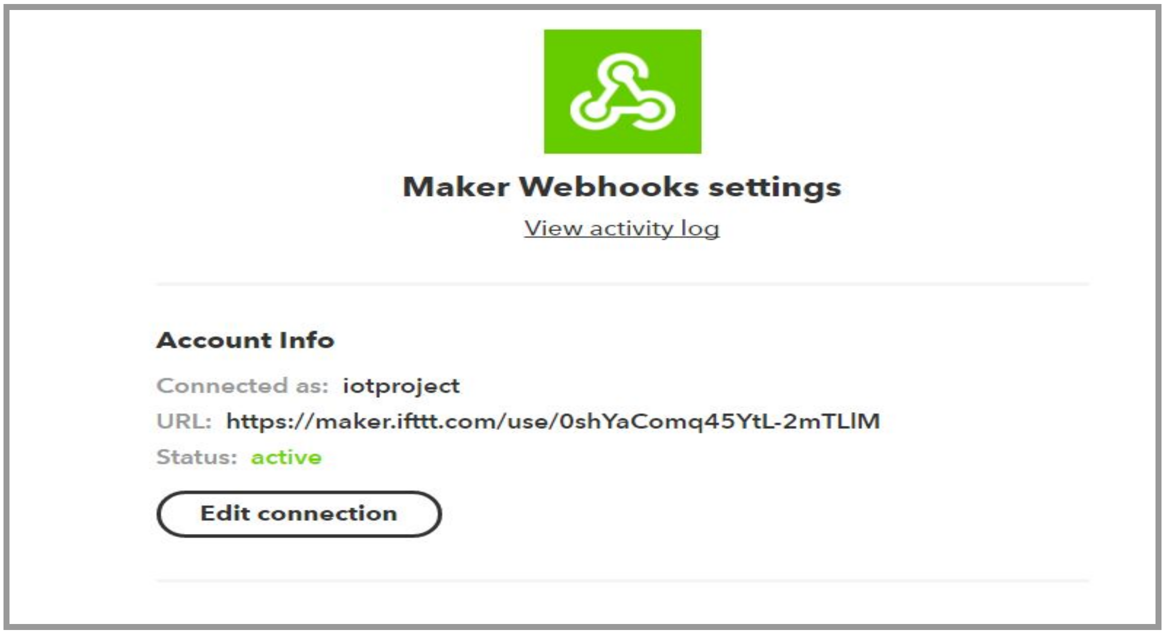
The event named " EventName " occurred on the Maker Webhooks service

Body

What: EventName
When: OccurredAt
Extra Data: Value1 , Value2 , Value3 ,

*Mention the Device Serial number and Device ID as parameter in the body.Click on Create Action--->Finish.

Next Click on *settings* and following window appears.



Maker Webhooks settings

View activity log

Account Info

Connected as: iotproject
URL: https://maker.ifttt.com/use/0shYaComq45YtL-2mTLlM
Status: active

Copy the URL and paste it in Arduino Code.

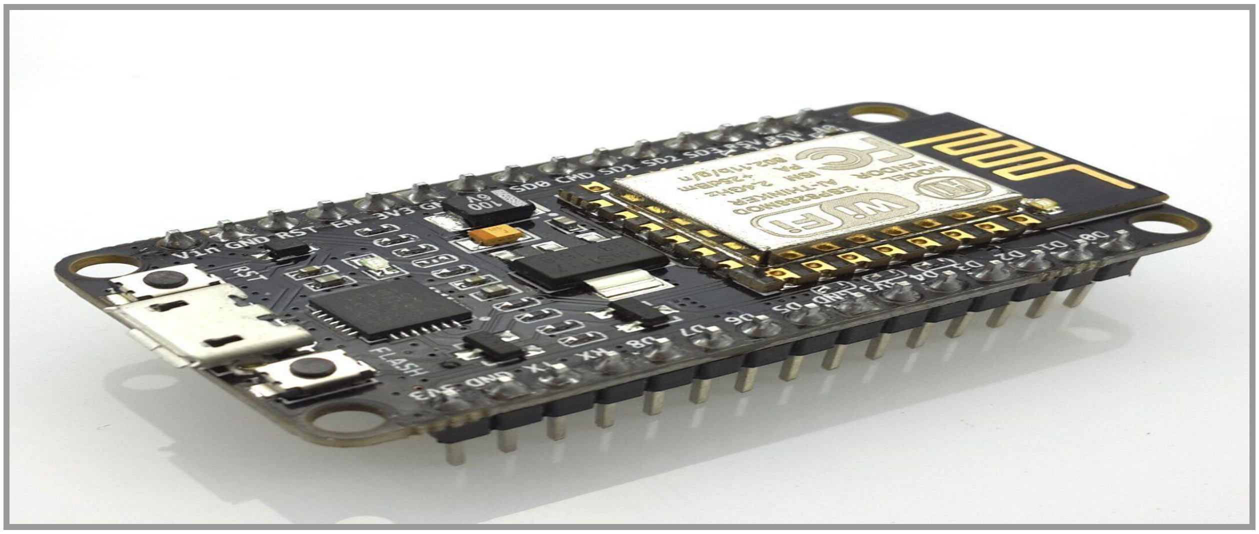
Chapter 2: Setting up the device as IoT Augmented

Step1:Configuring Colibri T20 to send Radiation data to Node MCU

The Colibri T20 is a SODIMM sized computer module based on the NVIDIA© Tegra 2 embedded system-on-a-chip. The Cortex A9 dual core CPU peaks at 1 GHz. The module delivers high CPU and graphic performance with minimum power consumption. The module also meets stringent industrial temperature range.The integrated NVIDIA Graphics enables visually rich, smooth and fast user interfaces.

.

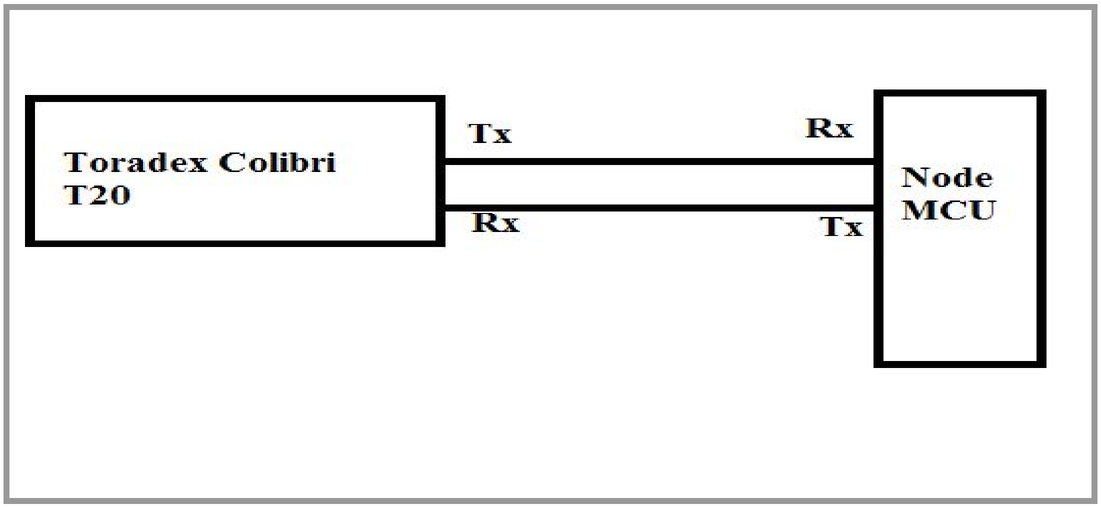
NodeMCU is an open source IoT platform. It includes firmware which runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which is based on the ESP-12 module.



Colibri reads the data from radiation detectors and that data is sent to NodeMCU via UART.The baud rate used is 9600.Serial data format has to be in JSON (JavaScript Object Notation) format as is shown below. The default values must be changed with actual variables which hold the data.

```
{
"strModel" :"RM701" ,
"strSerialNum" : "20120202010301" ,
 "strMfgDt":"01-01-2015" ,
"strCps": "5" ,
"strExposureRate" : "1" ,
 "strUnit" : "mR/h" ,
 "strHV": "500" ,
"strLV" : "120" ,
 "strDetStatus" : "OK" ,
"strLastCalibDate" : "01-09-2016",
"alarmStatus" : "true"
}
```

Colibri T20 should be configured in such a way such that it sends this json structured format to NodeMCU at 9600 baud rate whenever it receives a ”D!” character from the Node MCU.

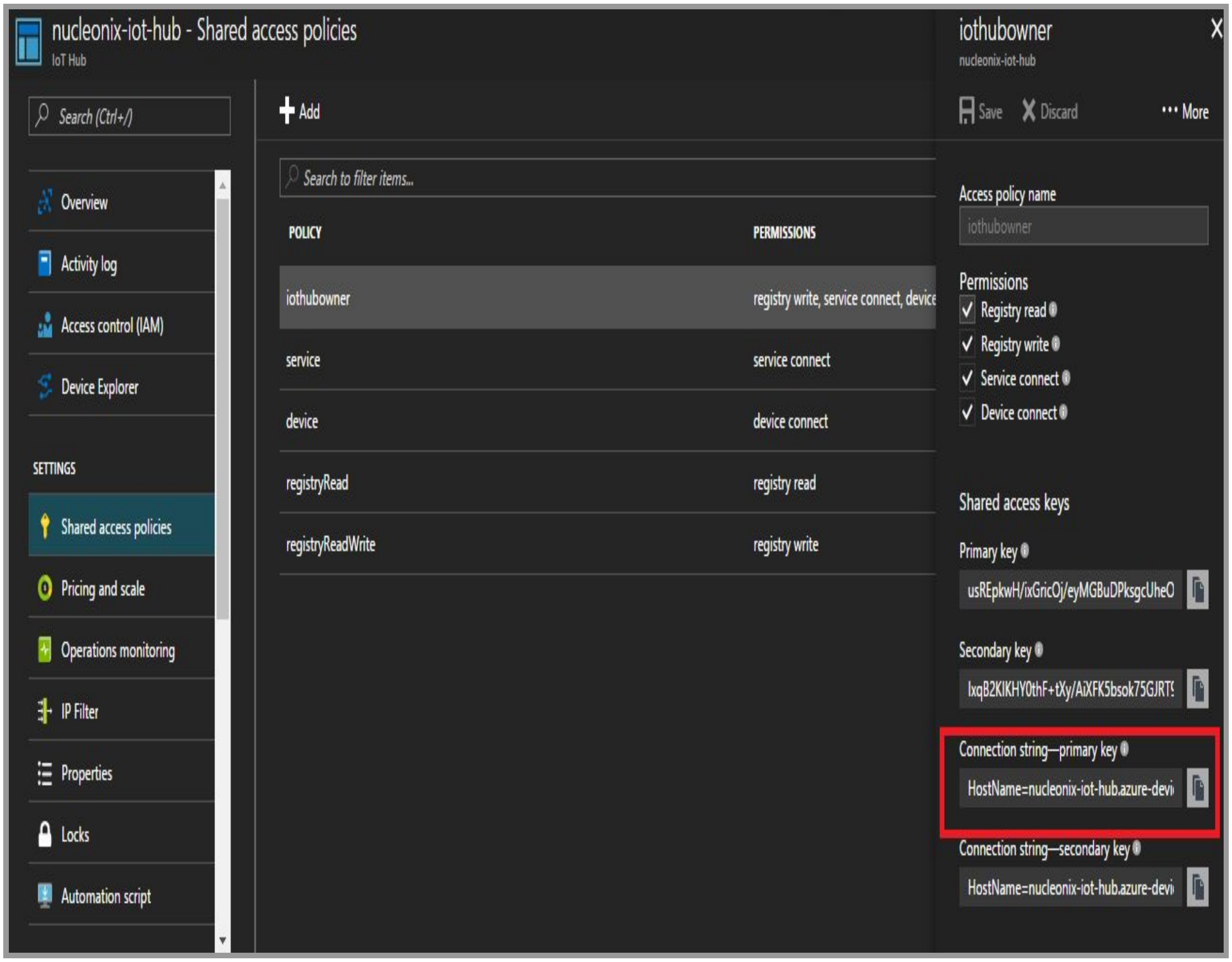


Our next step is to connect to the cloud and upload this data.It requires registering of the device ,creating a storage table and then uploading the data.

Step2:Register/Authenticate a new device using the Device Explorer software that sends data to Azure IoT Hub

(a)Using the IoT Hub Connection String in Device Explorer

We open the Azure Portal after signing in with our Azure id. From the dashboard we select our Iothub and then head to shared access policies where we select iothubowner policy which gives us a set of keys out of which we copy the primary key connection string.



POLICY	PERMISSIONS
iothubowner	registry write, service connect, device
service	service connect
device	device connect
registryRead	registry read
registryReadWrite	registry write

Access policy name: iothubowner

Permissions
- ☑ Registry read
- ☑ Registry write
- ☑ Service connect
- ☑ Device connect

Shared access keys

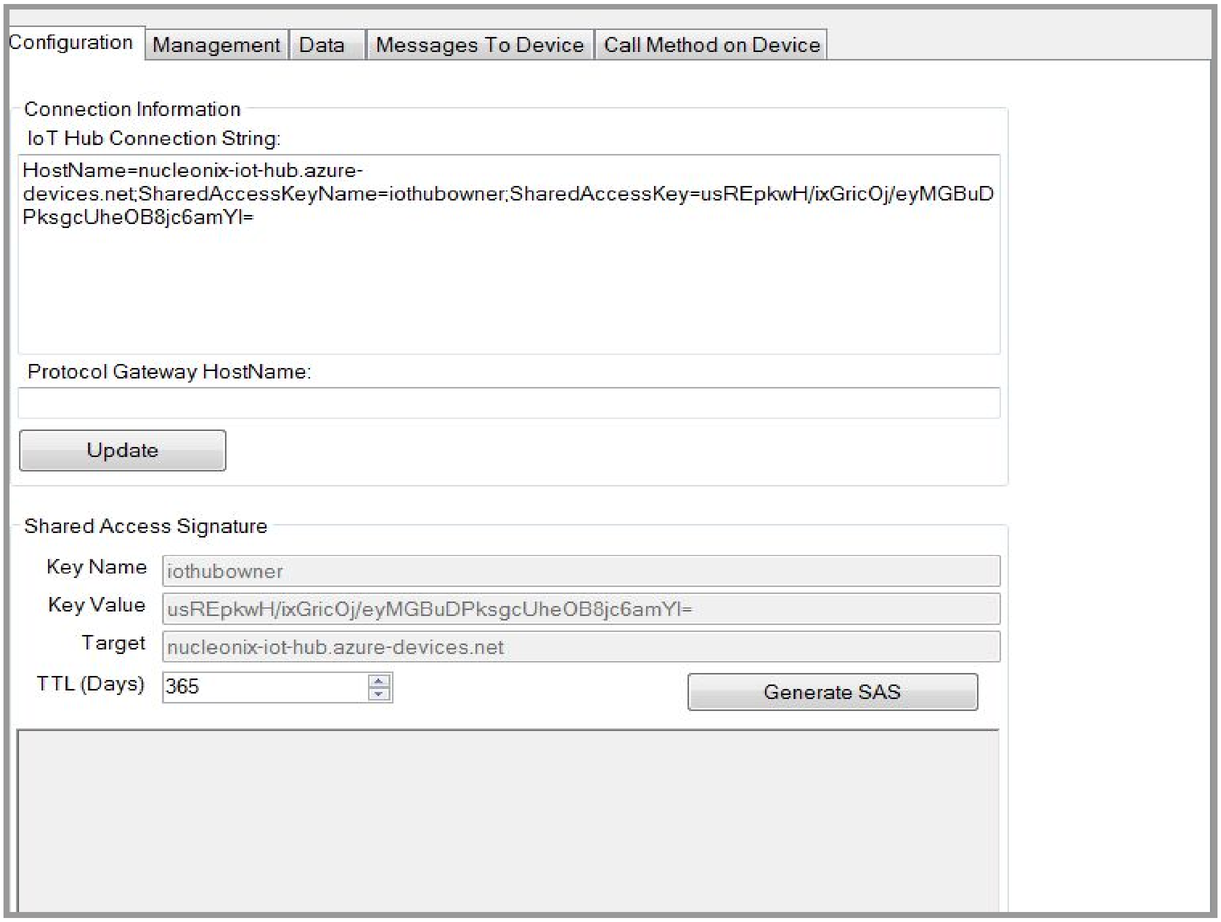
Primary key: usREpkwH/ixGricOj/eyMGBuDPksgcUheO

Secondary key: lxqB2KIKHY0thF+tXy/AiXFK5bsok75GJRT

Connection string—primary key: HostName=nucleonix-iot-hub.azure-devi

Connection string—secondary key: HostName=nucleonix-iot-hub.azure-devi

We open the device explorer software that we have downloaded (refer Chapter 1: Setting Up Azure Cloud System- Chapter 6). Once it opens we need to paste the Connection String of our azure IoT Hub and press the update button. Key Name,Key Value and Target loads automatically once connection is established.



IoT Hub Connection String:

```
HostName=nucleonix-iot-hub.azure-devices.net;SharedAccessKeyName=iothubowner;SharedAccessKey=usREpkwH/ixGricOj/eyMGBuDPksgcUheOB8jc6amYI=
```

Protocol Gateway HostName:

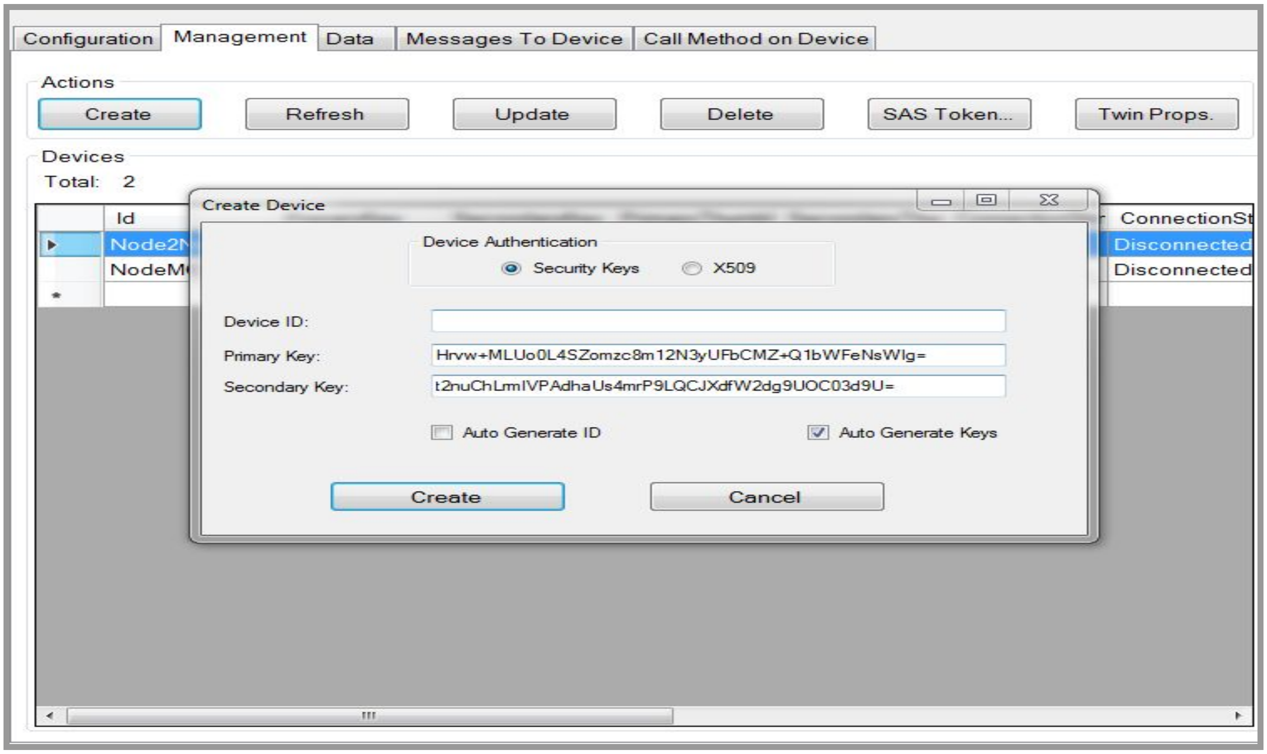
Key Name: iothubowner

Key Value: usREpkwH/ixGricOj/eyMGBuDPksgcUheOB8jc6amYI=

Target: nucleonix-iot-hub.azure-devices.net

TTL (Days): 365

(b)Click on Management tab and then click on create and give your device a unique ID(name) .Select auto generate keys.(See figure on next page)



Device Authentication

● Security Keys ○ X509

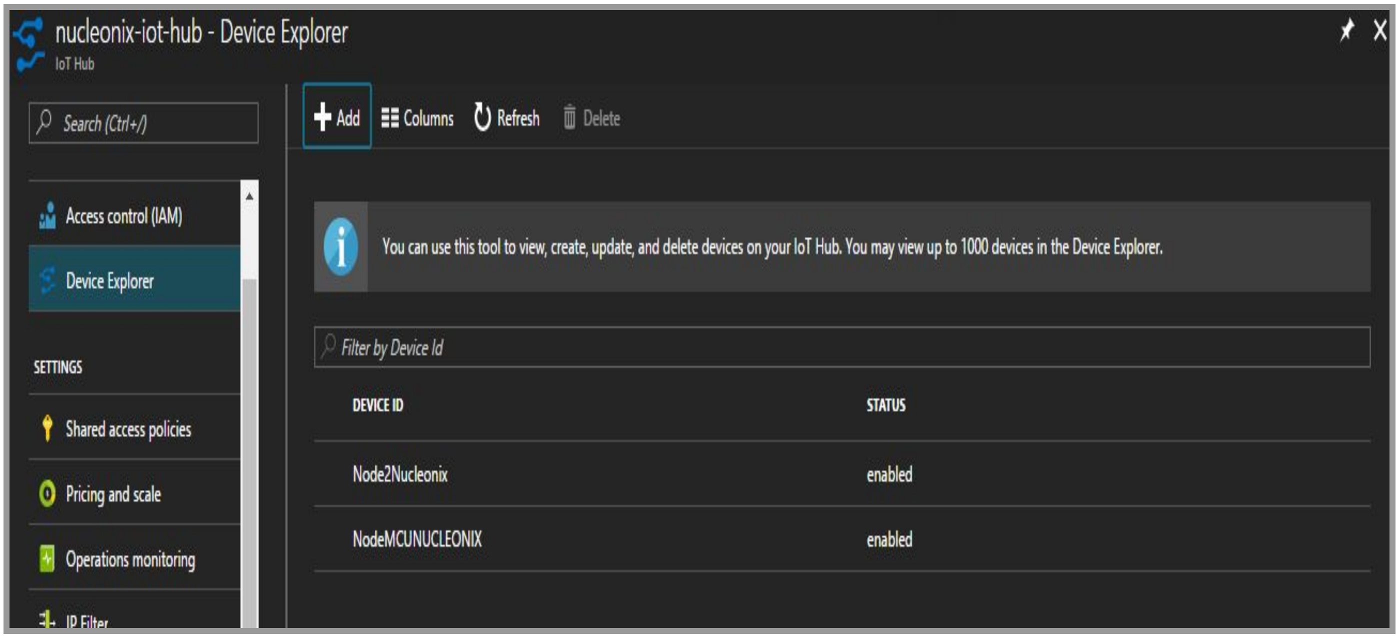
Device ID:

Primary Key: Hrvw+MLUo0L4SZomzc8m12N3yUFbCMZ+Q1bWFeNsWIg=

Secondary Key: t2nuChLmIVPAdhaUs4mrP9LQCJXdfW2dg9UOC03d9U=

□ Auto Generate ID ☑ Auto Generate Keys

Once this is done , go to Azure portal and select IOT hub→ Device Manager Tab it shows
A new device is registered.



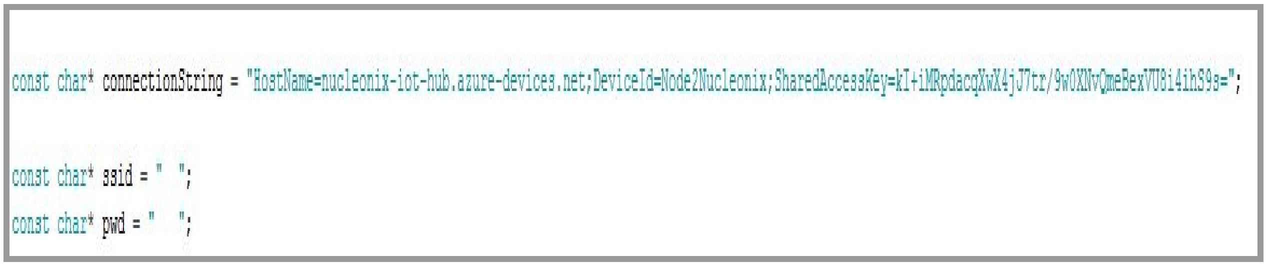
You can use this tool to view, create, update, and delete devices on your IoT Hub. You may view up to 1000 devices in the Device Explorer.

DEVICE ID	STATUS
Node2Nucleonix	enabled
NodeMCUNUCLEONIX	enabled

Once we click on the new device we have registered we have Connection string—primary key displayed which is to be copied(we use it in next step).

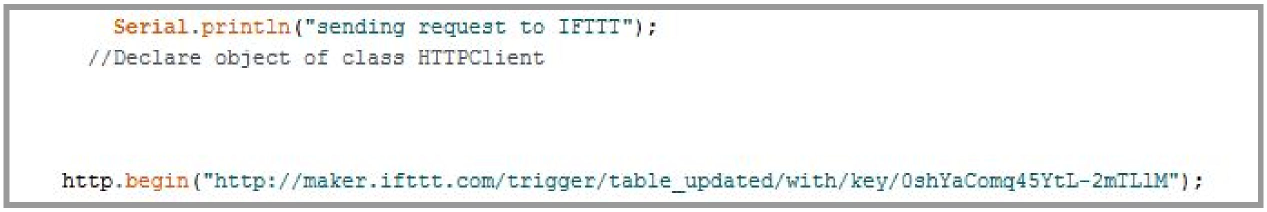
(c)Modify Parameters in the Code

In Azure Client file of the node mcu code we paste the Connection string—primary key
we had copied in the previous step. As well as fill in the Wifi ssid and password of the WIFI network the device is going to be tested/deployed in.



```
const char* connectionString = "HostName=nucleonix-iot-hub.azure-devices.net;DeviceId=Node2Nucleonix;SharedAccessKey=kI+iMRpdacqXwX4jJ7tr/9w0XNvQmeBexVU8i4ihS9s=";


const char* ssid = "  ";

const char* pwd = "   ";
```

*ssid indicates the WiFi id available in the range.Replace it with the name of the WiFi available.
*pwd indicates the WiFi password.Replace it with the corresponding WiFi password.
*Paste the URL from IFTTT that was copied earlier in the arduino code at the location specified in following window.

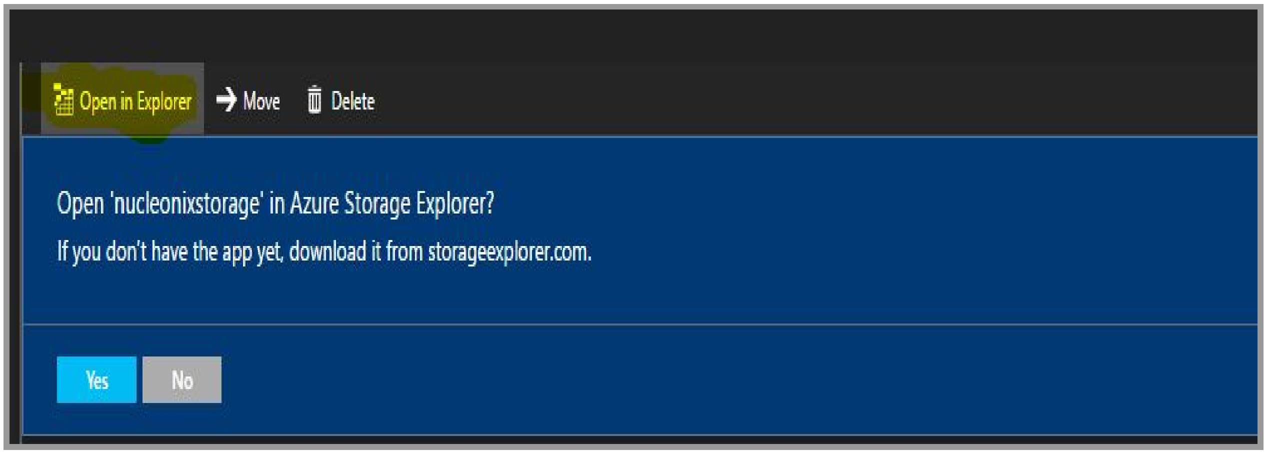


```
      Serial.println("sending request to IFTTT");
    //Declare object of class HTTPClient



  http.begin("http://maker.ifttt.com/trigger/table_updated/with/key/0shYaComq45YtL-2mTL1M");
```

Once this is done we can burn this modified code onto Node MCU.

(d)Setting up Azure Table Storage- Azure Storage Explorer to Set up the configuration table from where we can configure our new device

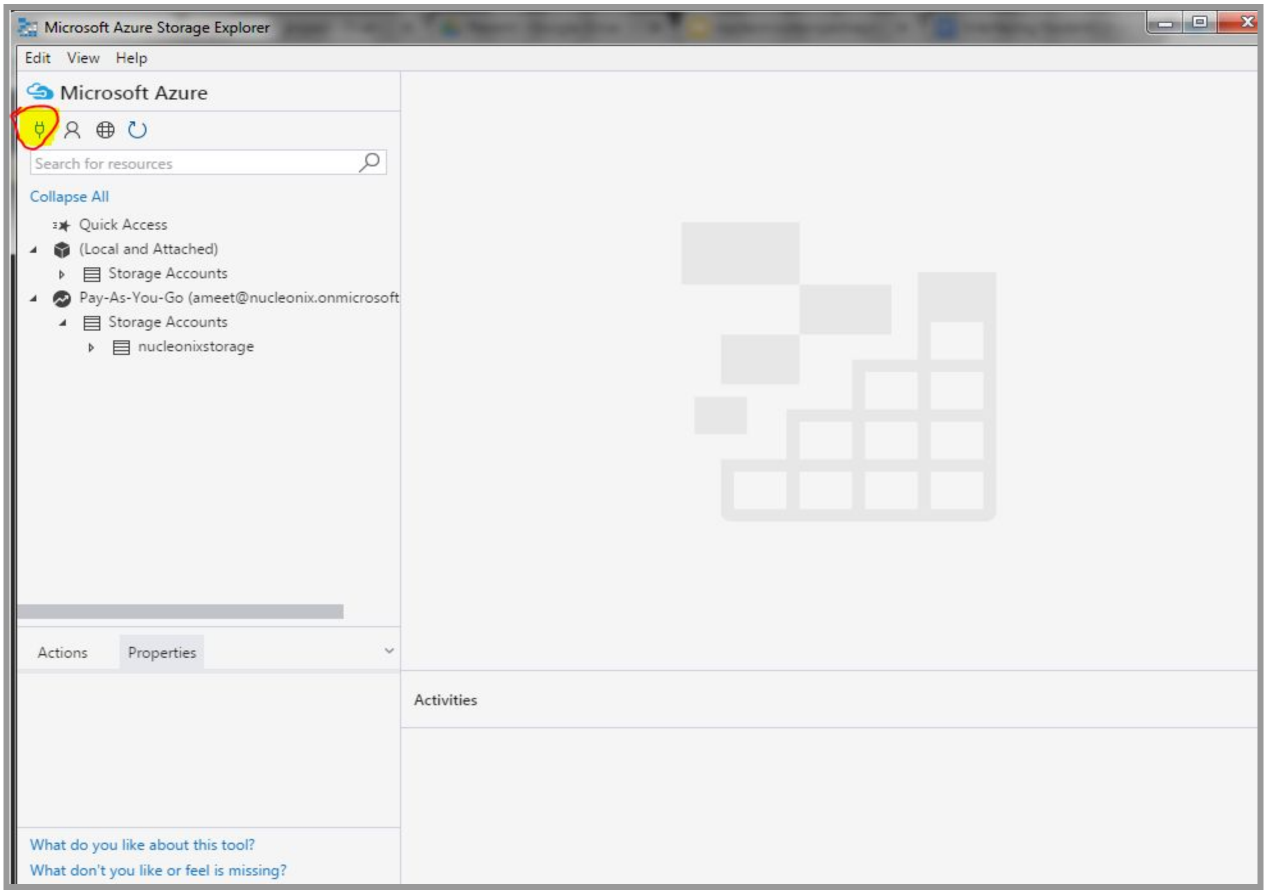
We have downloaded and installed Azure Storage Explorer (refer Chapter 1: Setting Up Azure Cloud System- Chapter 6).We open the Azure Portal click on our storage account and then Click on “Open in explorer” then download the Azure table storage explorer if not previously downloaded otherwise just click ok on the open url pop-up which shows up. This opens up the Microsoft Azure Storage explorer.



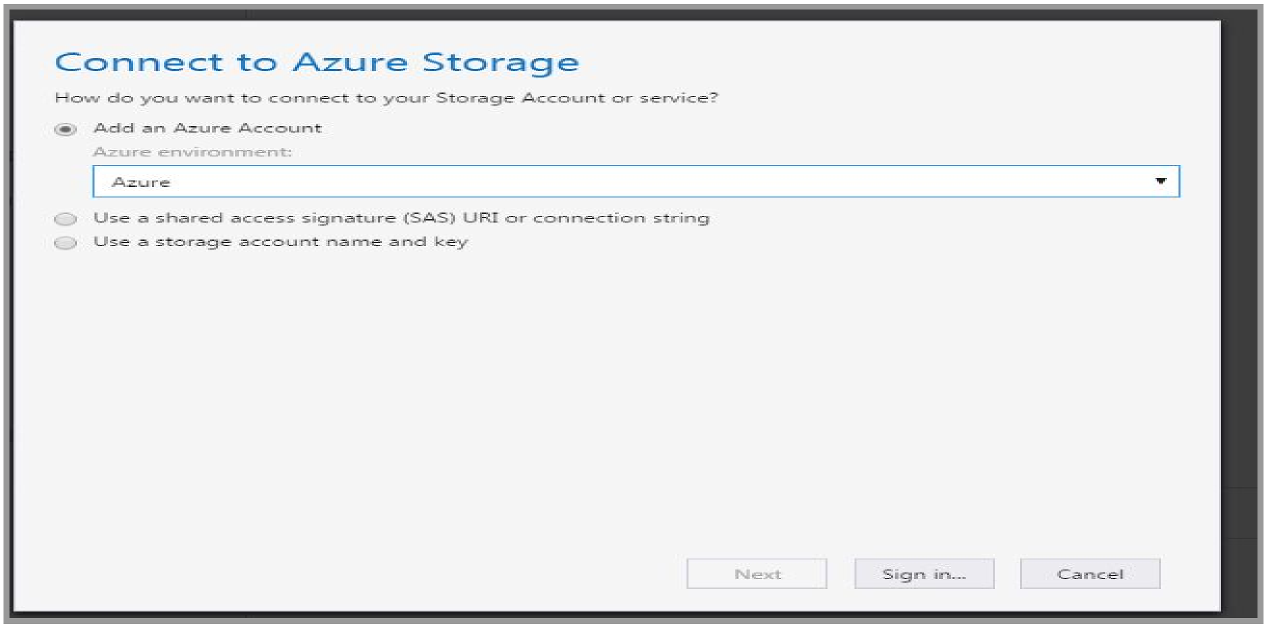
Open 'nucleonixstorage' in Azure Storage Explorer?

If you don't have the app yet, download it from storageexplorer.com.

If not already connected then we must sign in using azure account Credentials by clicking on the “Connect to Azure storage “ icon as shown in figure below.



Now following window will appear, select azure environment as Azure and click Sign In.



Connect to Azure Storage

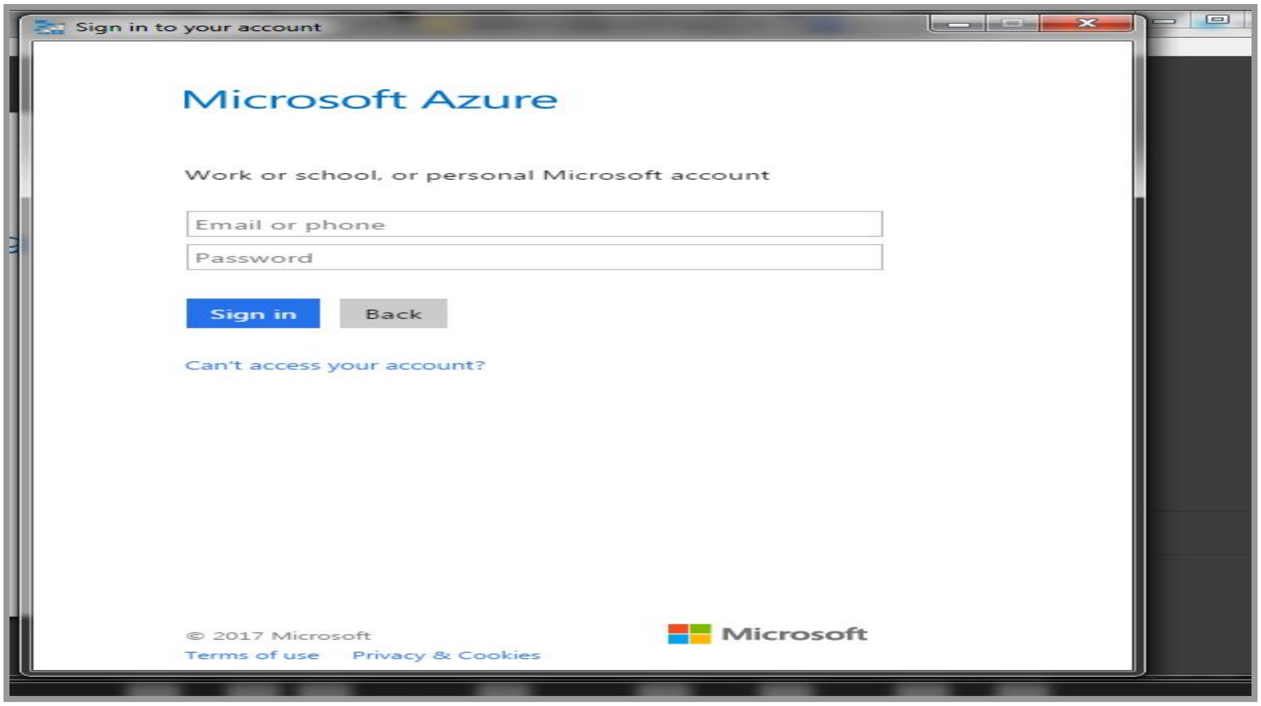
How do you want to connect to your Storage Account or service?

● Add an Azure Account

Azure environment: Azure

○ Use a shared access signature (SAS) URI or connection string

○ Use a storage account name and key



Sign in to your account

Microsoft Azure

Work or school, or personal Microsoft account

Email or phone

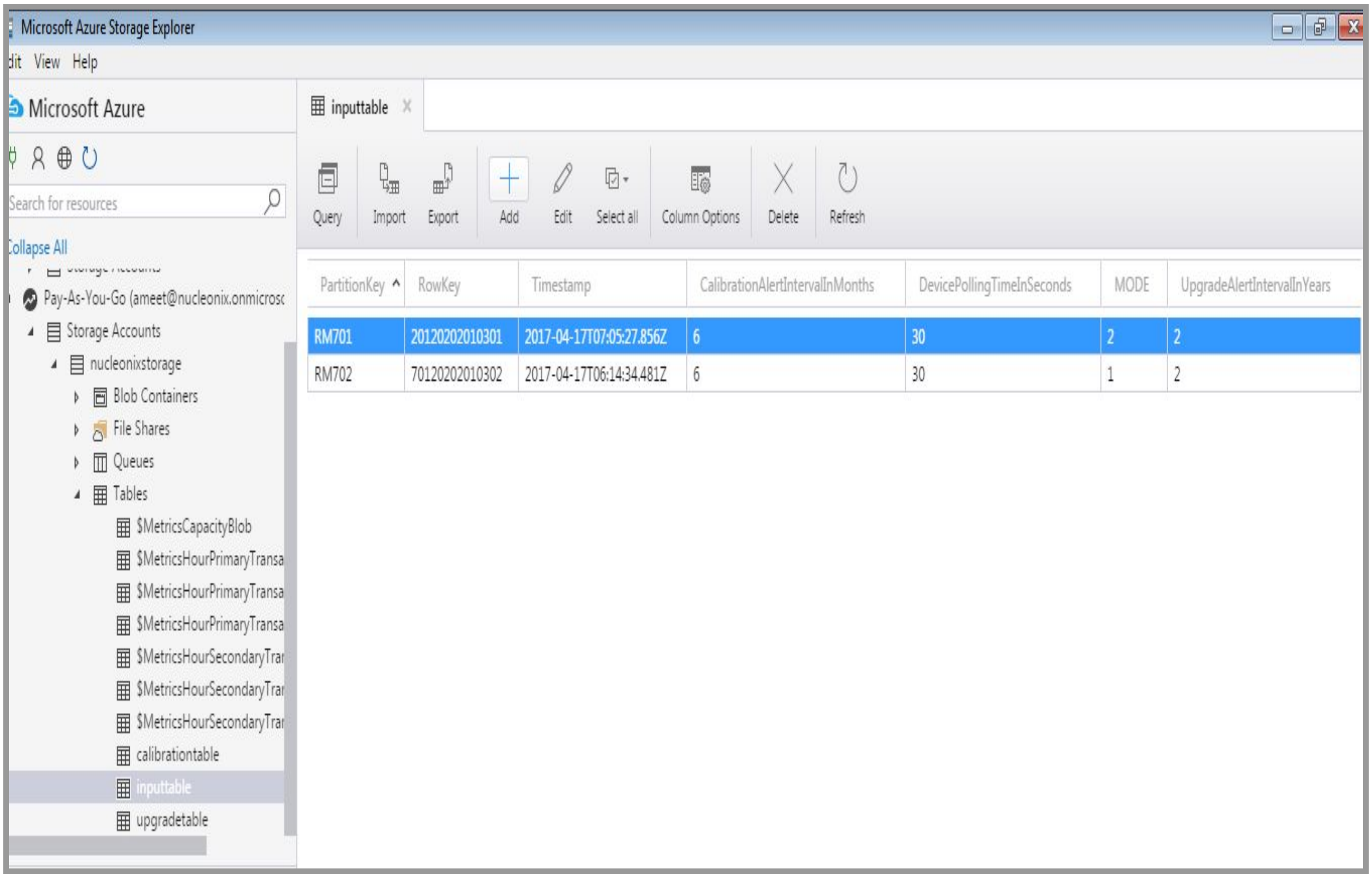
Password

© 2017 Microsoft

Enter the details and click on sign in button.

(d)Adding entities

Once the connection is established between Storage Explorer and Azure Storage,it shows various storage services like Files,Blobs,Queues,Tables. Navigate inside the left side menu to the Table named inputtable.

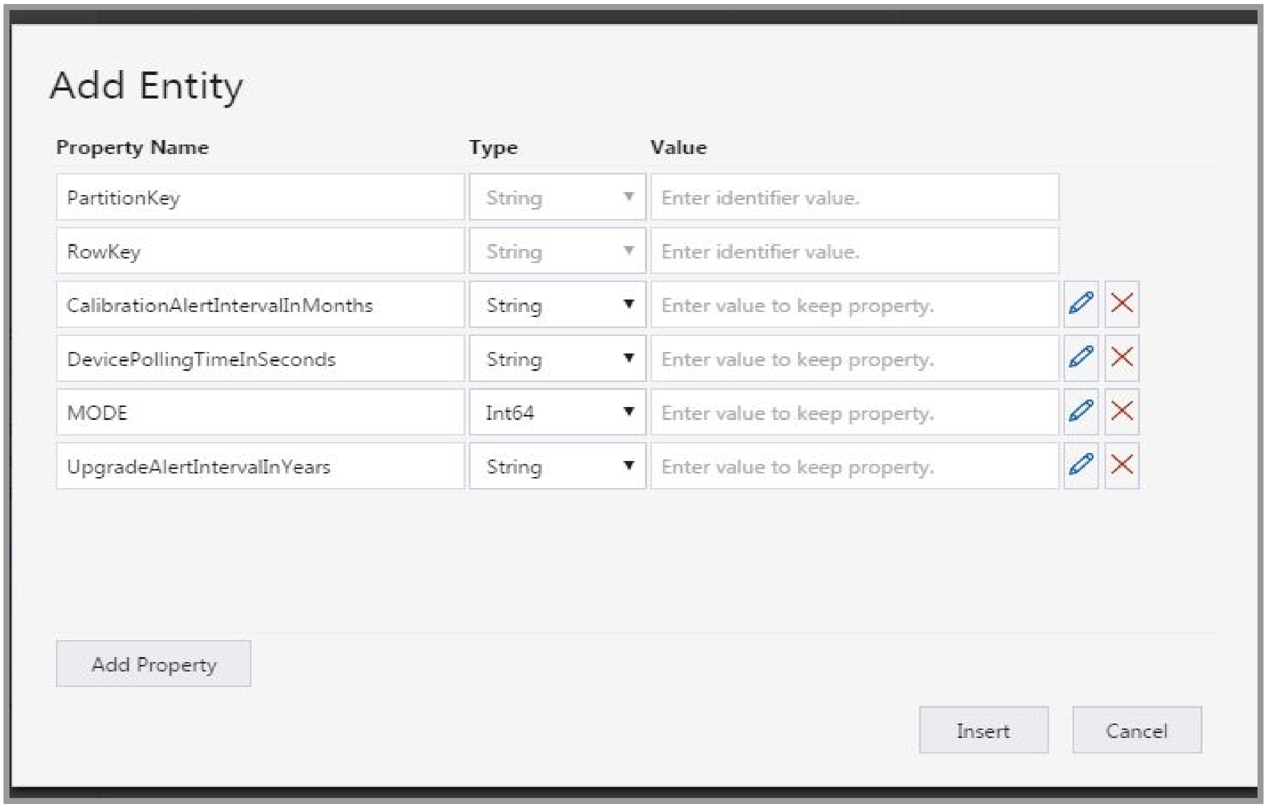


PartitionKey	RowKey	Timestamp	CalibrationAlertIntervalInMonths	DevicePollingTimeInSeconds	MODE	UpgradeAlertIntervalInYears
RM701	20120202010301	2017-04-17T07:05:27.856Z	6	30	2	2
RM702	70120202010302	2017-04-17T06:14:34.481Z	6	30	1	2

Now add an entity by clicking the Add+ mark shown in the below figure.

Partition Key and Row Key allows us to fetch data from particular row and column.We can add our own Properties (ex:temperature,voltage...).Here TYPE indicates the datatype of the property and the PROPERTY VALUE indicates the input value that you want to give for that particular property.

In Our case “Input table” that accepts the inputs from administrator has the following structure.



Add Entity

Property Name	Type	Value
PartitionKey	String	Enter identifier value.
RowKey	String	Enter identifier value.
CalibrationAlertIntervalInMonths	String	Enter value to keep property.
DevicePollingTimeInSeconds	String	Enter value to keep property.
MODE	Int64	Enter value to keep property.
UpgradeAlertIntervalInYears	String	Enter value to keep property.

IMPORTANT : In Partition Key field correctly enter the model no. such as “RM107” and in row Key correctly enter the Serial no. such as “201648383” which we are getting via Serial Communication. So that each node mcu fetches it’s respective row’s data from the table while configuring itself.

Other fields can be filled as follows :

“ **CalibrationAlertIntervalInMonths** “ indicates the time period for a device beyond which a calibration alert has to be generated.This is specified in months(Integer).

“ **DevicePollingTimeInSeconds** ” indicates the time interval at which the device has to upload data to the iot-hub.

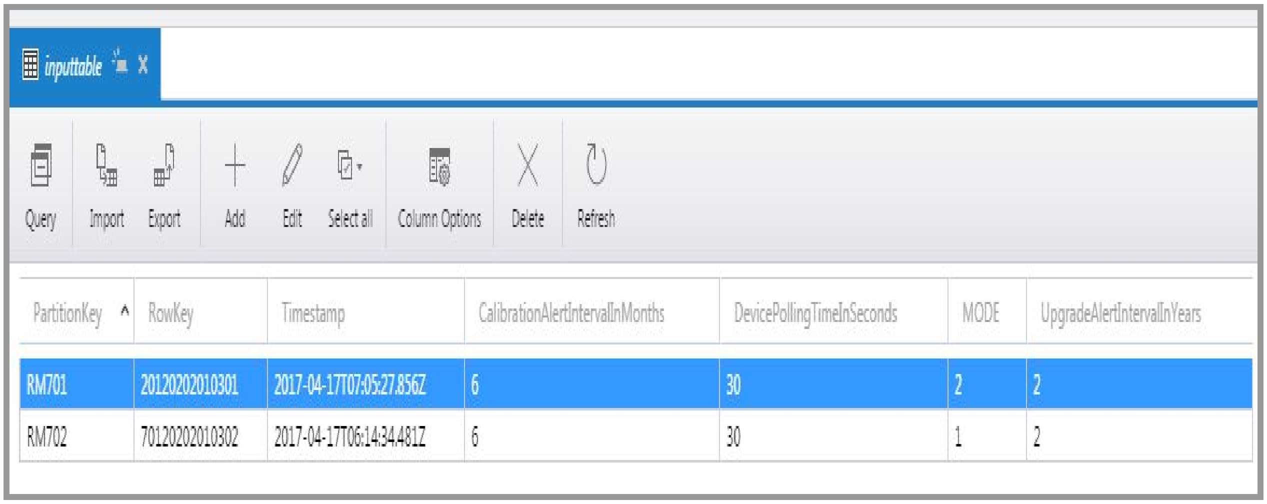
“ **MODE** ” indicates the operating mode of the device.It is usually 1or 2 or 3.

1 – Send every time data is read – cps, Exposure rate, Unit, AlarmStatus

2 – Send data only when Alarm is generated, i.e., AlarmStatus=True

3 – Do not send data

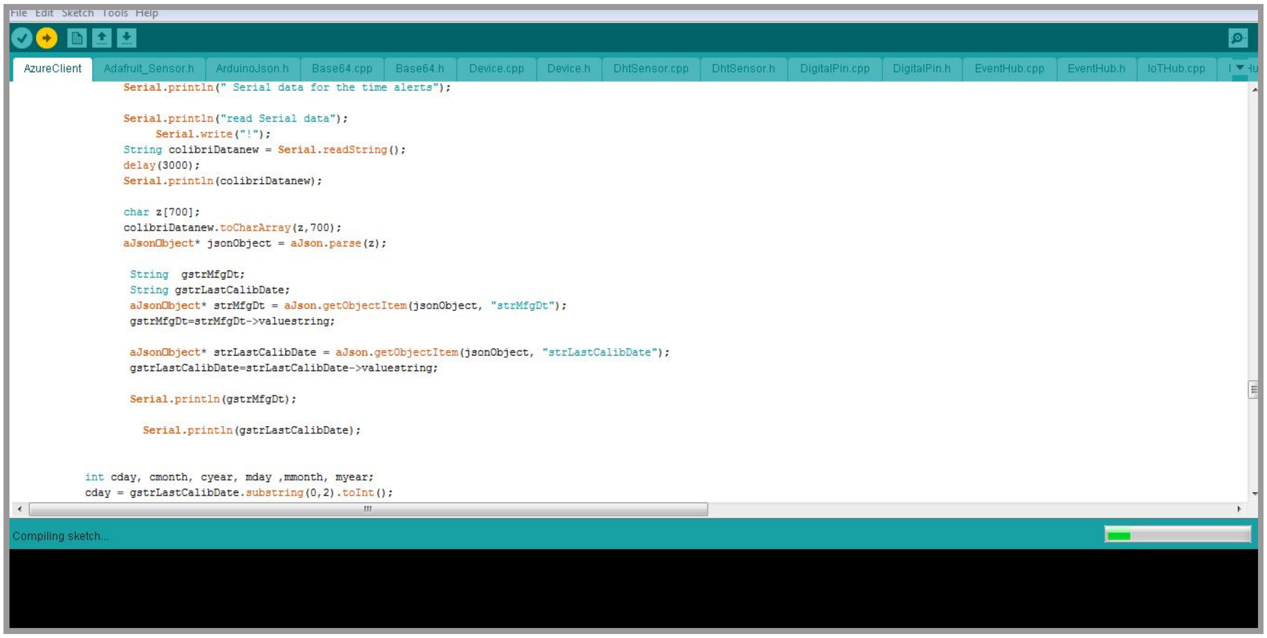
“ **UpgradeAlertIntervalInYears** ” indicates the time period for a device beyond which a upgrade alert has to be generated.This is specified in years(Integer).



PartitionKey	RowKey	Timestamp	CalibrationAlertIntervalInMonths	DevicePollingTimeInSeconds	MODE	UpgradeAlertIntervalInYears
RM701	20120202010301	2017-04-17T07:05:27.856Z	6	30	2	2
RM702	70120202010302	2017-04-17T06:14:34.481Z	6	30	1	2

Step3: Burn the code and Test whether the NODE MCU is working properly

1.Compile and Upload the Code to NodeMCU

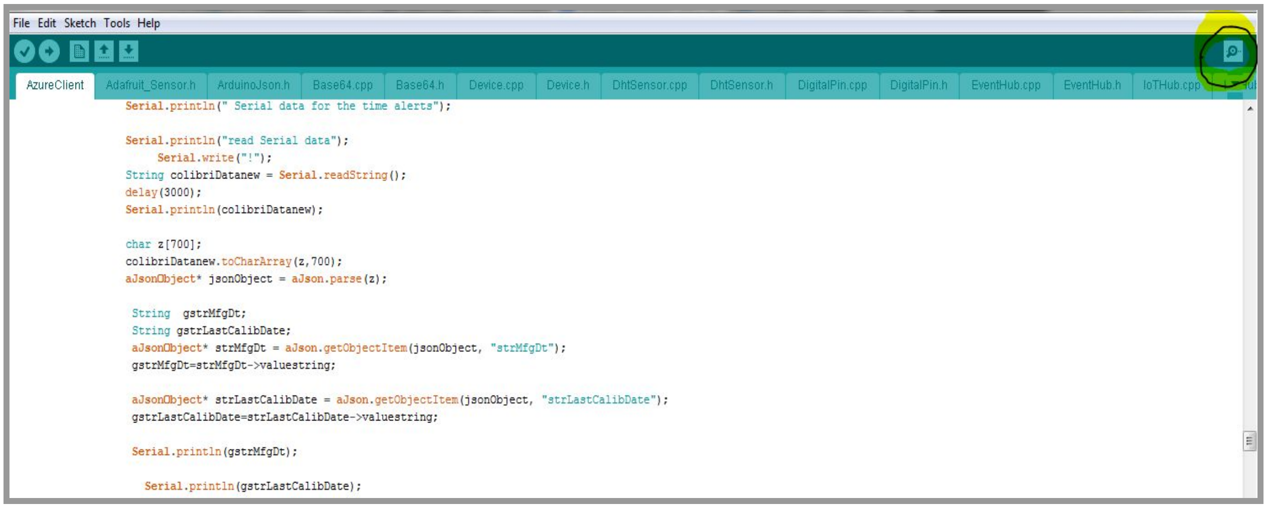


```
      Serial.println(" Serial data for the time alerts");

      Serial.println("read Serial data");
           Serial.write("!");
      String colibriDatanew = Serial.readString();
      delay(3000);
      Serial.println(colibriDatanew);

      char z[700];
      colibriDatanew.toCharArray(z,700);
      aJsonObject* jsonObject = aJson.parse(z);

       String  gstrMfgDt;
       String gstrLastCalibDate;
       aJsonObject* strMfgDt = aJson.getObjectItem(jsonObject, "strMfgDt");
       gstrMfgDt=strMfgDt->valuestring;

       aJsonObject* strLastCalibDate = aJson.getObjectItem(jsonObject, "strLastCalibDate");
       gstrLastCalibDate=strLastCalibDate->valuestring;

       Serial.println(gstrMfgDt);

         Serial.println(gstrLastCalibDate);


int cday, cmonth, cyear, mday ,mmonth, myear;
cday = gstrLastCalibDate.substring(0,2).toInt();
```

Compiling sketch...

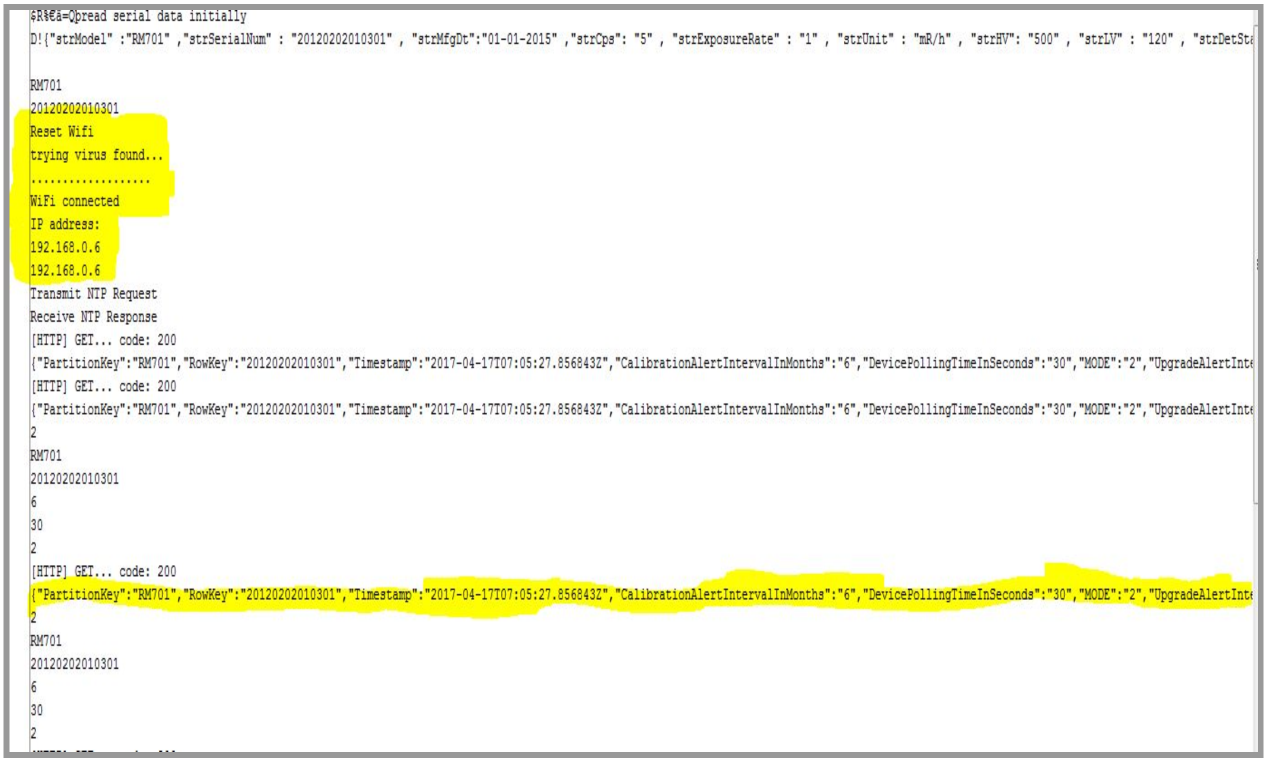
*Click on the Arrow present at top-left of arduino IDE,this button auto compiles the code and on successful completion uploads the code to NodeMCU.
*All the errors related to the code will be displayed in the black window available at the bottom of the IDE.

2.Checking Serial Monitor Data



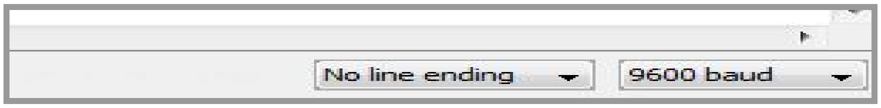
```
Serial.println(" Serial data for the time alerts");

Serial.println("read Serial data");
     Serial.write("!");
String colibriDatanew = Serial.readString();
delay(3000);
Serial.println(colibriDatanew);

char z[700];
colibriDatanew.toCharArray(z,700);
aJsonObject* jsonObject = aJson.parse(z);

 String  gstrMfgDt;
 String gstrLastCalibDate;
 aJsonObject* strMfgDt = aJson.getObjectItem(jsonObject, "strMfgDt");
 gstrMfgDt=strMfgDt->valuestring;

 aJsonObject* strLastCalibDate = aJson.getObjectItem(jsonObject, "strLastCalibDate");
 gstrLastCalibDate=strLastCalibDate->valuestring;

 Serial.println(gstrMfgDt);

   Serial.println(gstrLastCalibDate);
```

On clicking the icon specified in top right of the above picture,serial monitor will appear.



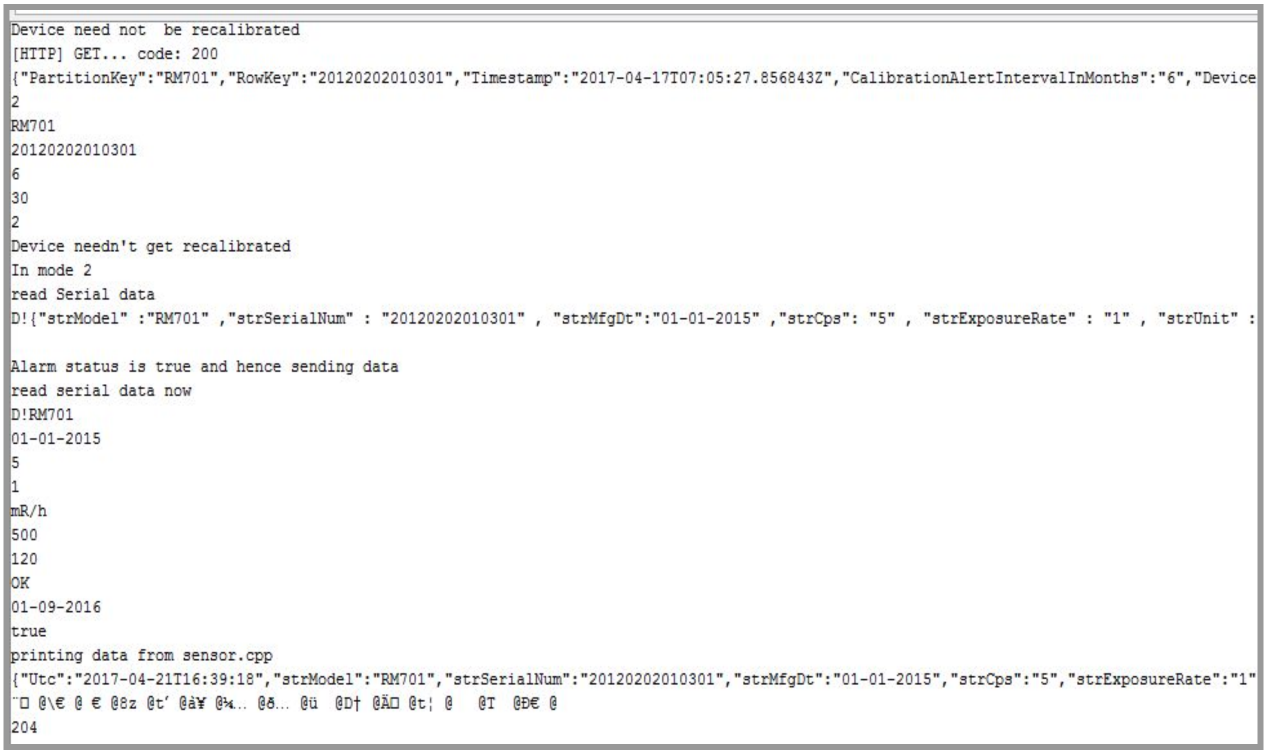
```
$R$€ã=Qpread serial data initially
D!{"strModel" :"RM701" ,"strSerialNum" : "20120202010301" , "strMfgDt":"01-01-2015" ,"strCps": "5" , "strExposureRate" : "1" , "strUnit" : "mR/h" , "strHV": "500" , "strLV" : "120" , "strDetSt

RM701
20120202010301
Reset Wifi
trying virus found...
...................
WiFi connected
IP address:
192.168.0.6
192.168.0.6
Transmit NTP Request
Receive NTP Response
[HTTP] GET... code: 200
{"PartitionKey":"RM701","RowKey":"20120202010301","Timestamp":"2017-04-17T07:05:27.856843Z","CalibrationAlertIntervalInMonths":"6","DevicePollingTimeInSeconds":"30","MODE":"2","UpgradeAlertInte
[HTTP] GET... code: 200
{"PartitionKey":"RM701","RowKey":"20120202010301","Timestamp":"2017-04-17T07:05:27.856843Z","CalibrationAlertIntervalInMonths":"6","DevicePollingTimeInSeconds":"30","MODE":"2","UpgradeAlertInte
2
RM701
20120202010301
6
30
2
[HTTP] GET... code: 200
{"PartitionKey":"RM701","RowKey":"20120202010301","Timestamp":"2017-04-17T07:05:27.856843Z","CalibrationAlertIntervalInMonths":"6","DevicePollingTimeInSeconds":"30","MODE":"2","UpgradeAlertInte
2
RM701
20120202010301
6
30
2
```

Select the suitable baudrate -same as the baudrate mentioned in the setup() function.In our case it is 9600



No line ending

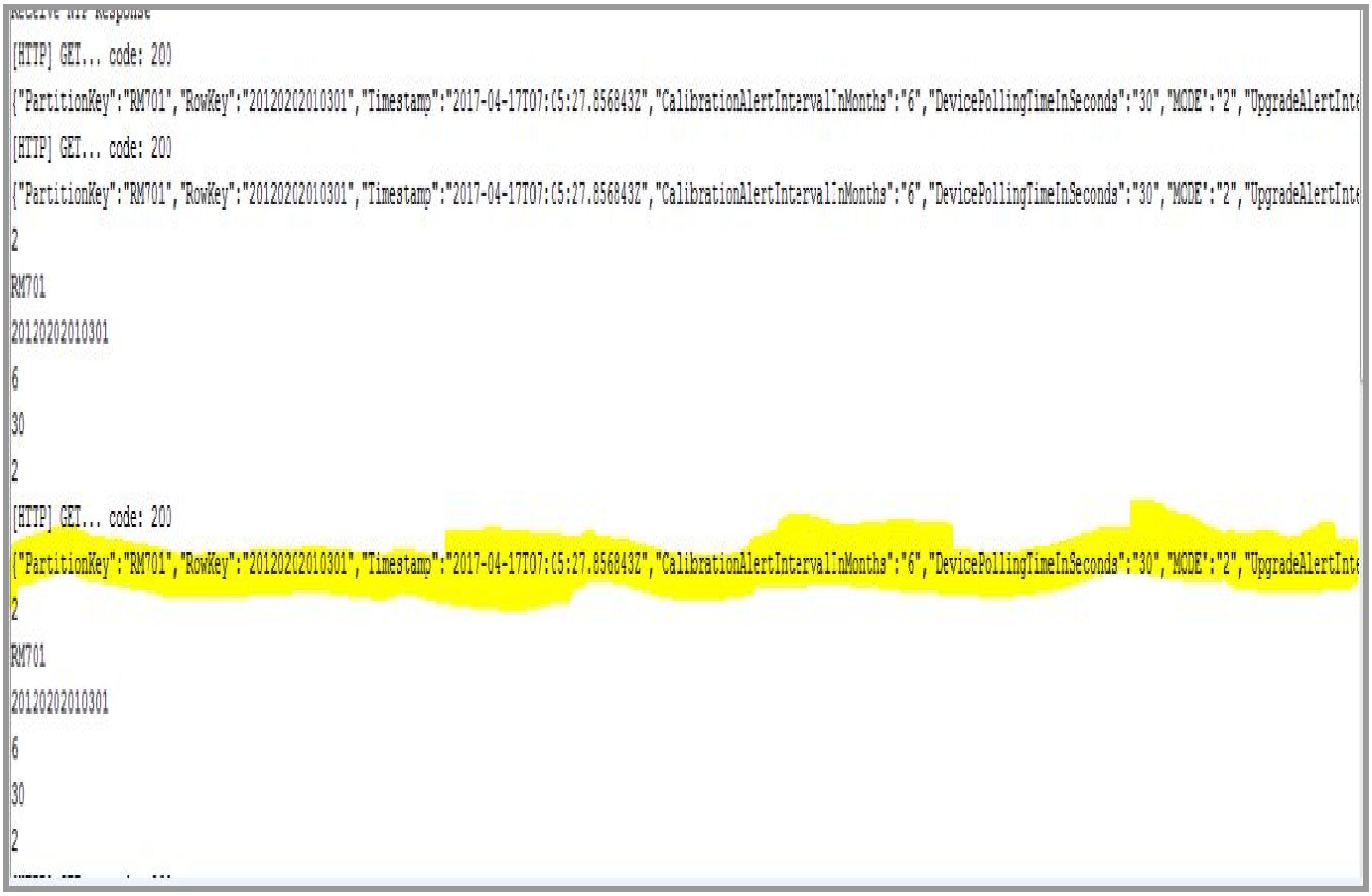
9600 baud



```
Device need not  be recalibrated
[HTTP] GET... code: 200
{"PartitionKey":"RM701","RowKey":"20120202010301","Timestamp":"2017-04-17T07:05:27.856843Z","CalibrationAlertIntervalInMonths":"6","Device
2
RM701
20120202010301
6
30
2
Device needn't get recalibrated
In mode 2
read Serial data
D!{"strModel" :"RM701" ,"strSerialNum" : "20120202010301" , "strMfgDt":"01-01-2015" ,"strCps": "5" , "strExposureRate" : "1" , "strUnit" :

Alarm status is true and hence sending data
read serial data now
D!RM701
01-01-2015
5
1
mR/h
500
120
OK
01-09-2016
true
printing data from sensor.cpp
{"Utc":"2017-04-21T16:39:18","strModel":"RM701","strSerialNum":"20120202010301","strMfgDt":"01-01-2015","strCps":"5","strExposureRate":"1"
¨□ @\€ @ € @8z @t´ @à¥ @¼… @ð… @ü  @D† @Ä□ @t¦ @   @T  @Ð€ @
204
```

3.Checking whether our node is successfully fetching the row associated with it from Azure Table Storage

Once you have followed the previous steps we can open the COM port in the Arduino with the Node MCU plugged in using a USB connector as well as Serial communication taking place between the Colibiri T20 and the Node.

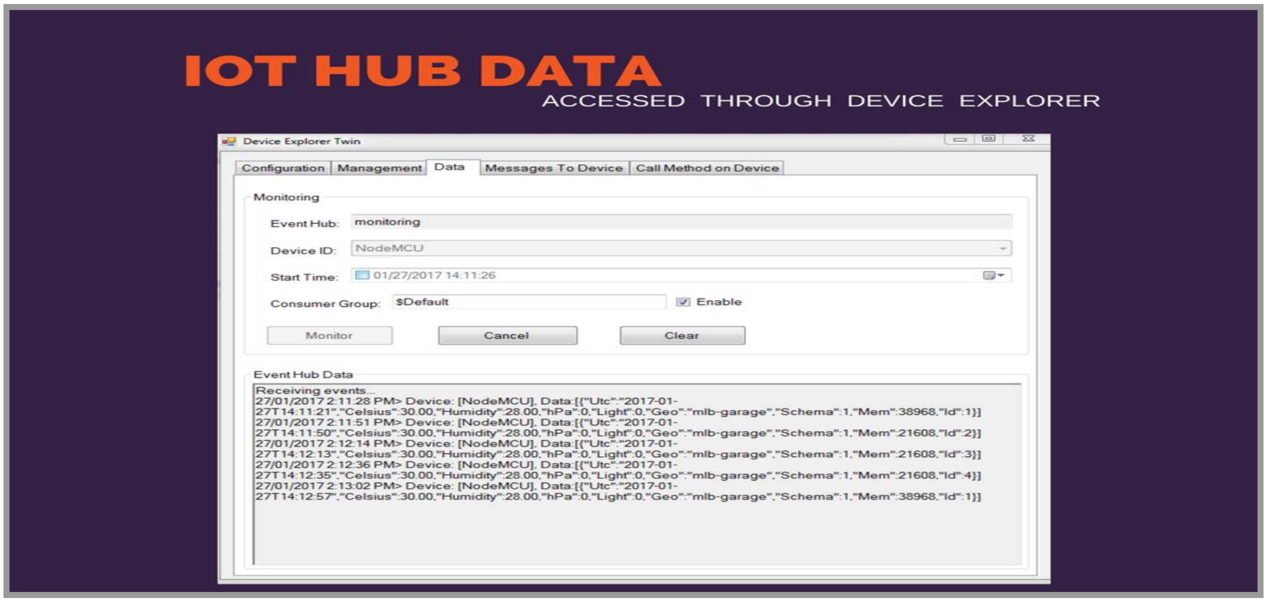


```
Receive HTTP Response
[HTTP] GET... code: 200
{"PartitionKey":"RM701","RowKey":"2012020201030l","Timestamp":"2017-04-17T07:05:27.856843Z","CalibrationAlertIntervalInMonths":"6","DevicePollingTimeInSeconds":"30","MODE":"2","UpgradeAlertInte
[HTTP] GET... code: 200
{"PartitionKey":"RM701","RowKey":"2012020201030l","Timestamp":"2017-04-17T07:05:27.856843Z","CalibrationAlertIntervalInMonths":"6","DevicePollingTimeInSeconds":"30","MODE":"2","UpgradeAlertInte
2
RM701
20120202010301
6
30
2
[HTTP] GET... code: 200
{"PartitionKey":"RM701","RowKey":"2012020201030l","Timestamp":"2017-04-17T07:05:27.856843Z","CalibrationAlertIntervalInMonths":"6","DevicePollingTimeInSeconds":"30","MODE":"2","UpgradeAlertInte
2
RM701
20120202010301
6
30
2
```

The above figure shows that NodeMCU has a successful GET request i.e., it has fetched the parameters from the input table successfully.Hence it shows **successful request code "200**".The variables:MODE,CalibrationAlertIntervalInMonths,UpgradationAlertIntervalInYears,DevicePollingTimeInSeconds are declared globally in the arduino program so that every time when values are fetched from table these values of global variables change and hence device configures itself.We can change values in input table and see how the device reconfigures itself..

4. Checking whether our node mcu is able to send the serial data to IoT Hub

To check whether data has successfully uploaded to the IoT Hub, we check for successful request code **204 in the serial monitor .**We can also open Device Explorer and go to Data tab ,Select your eventhub ,device ID,enable it with a default consumer group and then click on Monitor to see real time data coming into the Iot Hub.



IOT HUB DATA

ACCESSED THROUGH DEVICE EXPLORER

Event Hub: monitoring

Device ID: NodeMCU

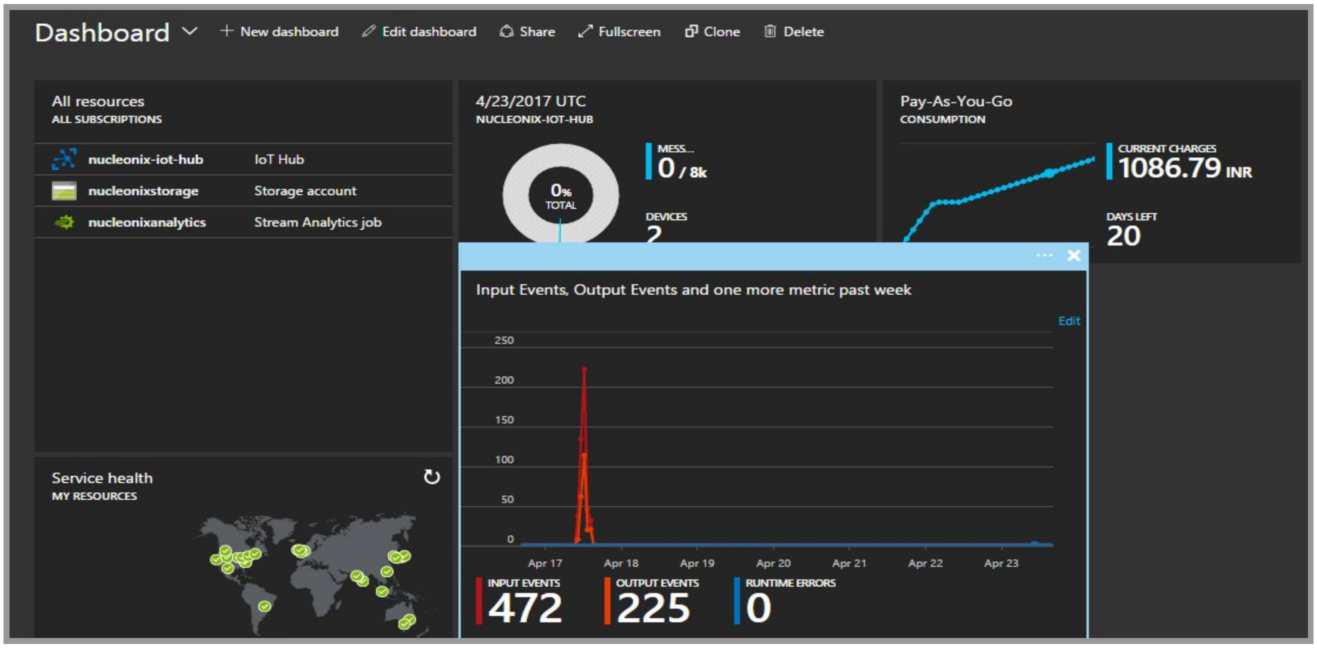
Start Time: 01/27/2017 14:11:26

Consumer Group: $Default ☑ Enable

```
Receiving events...
27/01/2017 2:11:28 PM> Device: [NodeMCU], Data:[{"Utc":"2017-01-
27T14:11:21","Celsius":30.00,"Humidity":28.00,"hPa":0,"Light":0,"Geo":"mlb-garage","Schema":1,"Mem":38968,"Id":1}]
27/01/2017 2:11:51 PM> Device: [NodeMCU], Data:[{"Utc":"2017-01-
27T14:11:50","Celsius":30.00,"Humidity":28.00,"hPa":0,"Light":0,"Geo":"mlb-garage","Schema":1,"Mem":21608,"Id":2}]
27/01/2017 2:12:14 PM> Device: [NodeMCU], Data:[{"Utc":"2017-01-
27T14:12:13","Celsius":30.00,"Humidity":28.00,"hPa":0,"Light":0,"Geo":"mlb-garage","Schema":1,"Mem":21608,"Id":3}]
27/01/2017 2:12:36 PM> Device: [NodeMCU], Data:[{"Utc":"2017-01-
27T14:12:35","Celsius":30.00,"Humidity":28.00,"hPa":0,"Light":0,"Geo":"mlb-garage","Schema":1,"Mem":21608,"Id":4}]
27/01/2017 2:13:02 PM> Device: [NodeMCU], Data:[{"Utc":"2017-01-
27T14:12:57","Celsius":30.00,"Humidity":28.00,"hPa":0,"Light":0,"Geo":"mlb-garage","Schema":1,"Mem":38968,"Id":1}]
```

We can also see on the Azure portal how many requests the IoT Hub has received in a day by logging into the portal.

Step 4 :Monitoring Input/Output requests in IoT/Hub and Stream Analytics



nucleonix-iot-hub	IoT Hub
nucleonixstorage	Storage account
nucleonixanalytics	Stream Analytics job

MESS... 0 / 8k

0% TOTAL

DEVICES 2

CURRENT CHARGES 1086.79 INR

DAYS LEFT 20

INPUT EVENTS 472

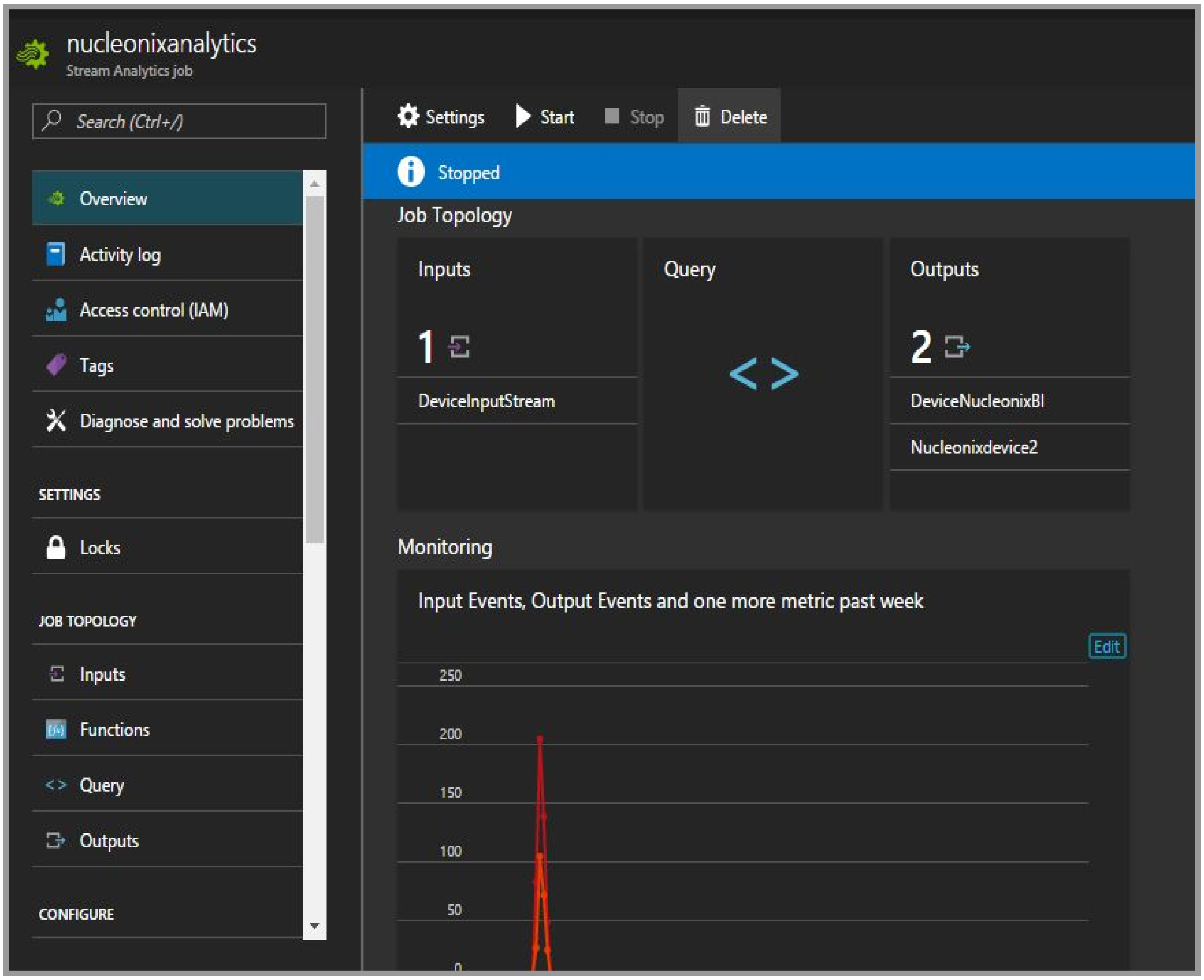
OUTPUT EVENTS 225

RUNTIME ERRORS 0

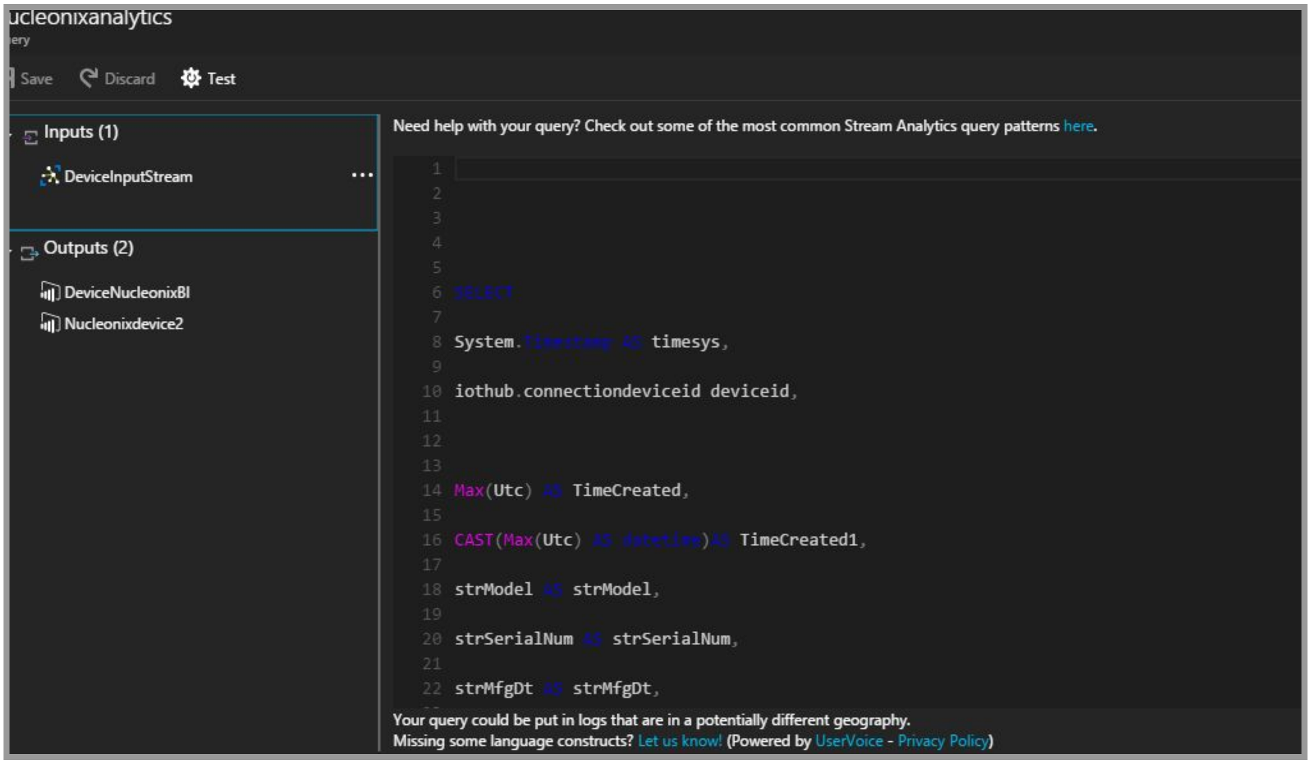
Clicking on the metrics gives the above graphical data..

8K under Messages field indicates the maximum number of requests that can be sent to iot-hub per day.INPUT EVENTS indicates the number of POST requests to iot hub i.e.,polling the device data to iot-hub.OUTPUT EVENTS indicates the number of packets that iot-hub has sent to stream analytics.

Step 5:Performing Analytics using Stream Analytics



- Click on the stream analytics job that has be created earlier and above window appears.Here START /STOP indicates whether data is to retrieved from iot-hub and visualized or not.Stream analytics is based on NOSQL queries.Amount will be charged only when status is RUNNING.
- INPUT indicates the input data source to the stream analytics i.e., iot-hub and OUTPUT represents the target GUI where the data is to be visualized i.e.,POWER BI.
- One can easily edit the query by clicking on QUERY window available between INPUT and OUTPUT events.

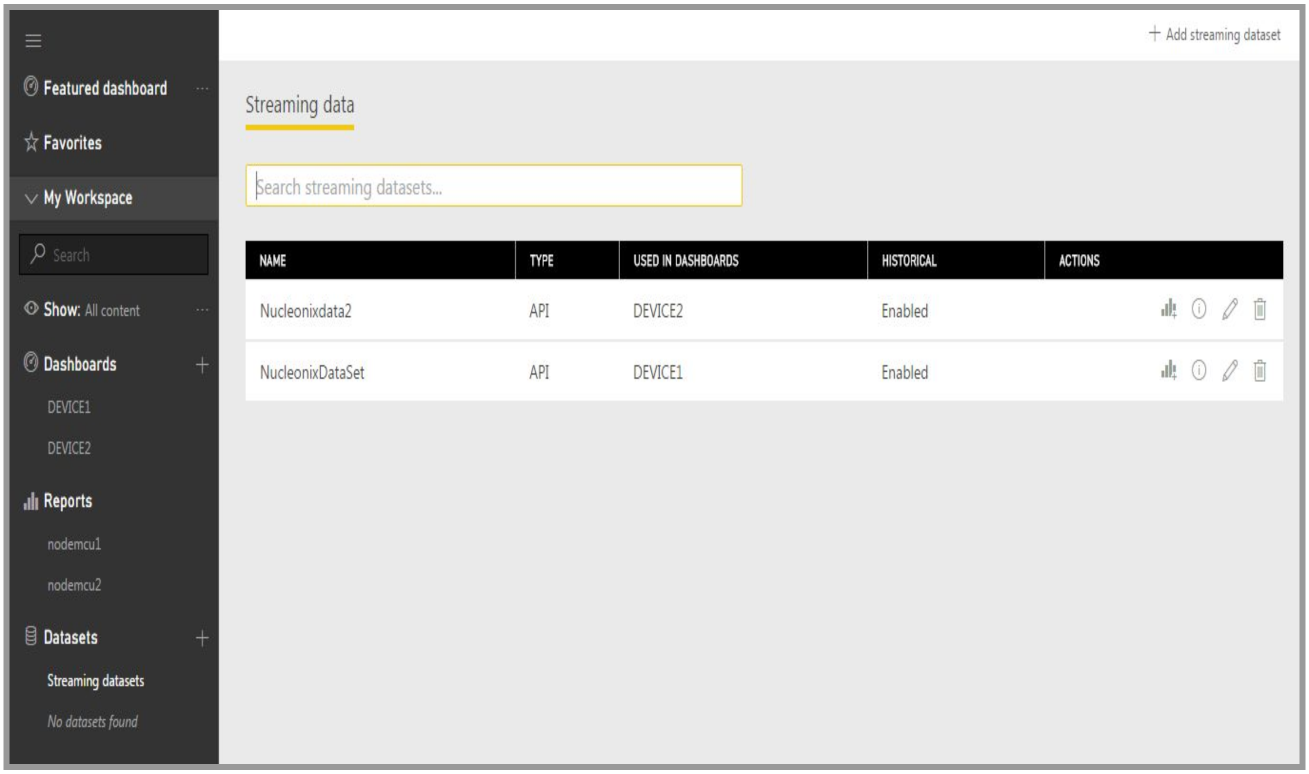


Need help with your query? Check out some of the most common Stream Analytics query patterns here.

```
SELECT

System.Timestamp AS timesys,

iothub.connectiondeviceid deviceid,



Max(Utc) AS TimeCreated,

CAST(Max(Utc) AS datetime)AS TimeCreated1,

strModel AS strModel,

strSerialNum AS strSerialNum,

strMfgDt AS strMfgDt,
```

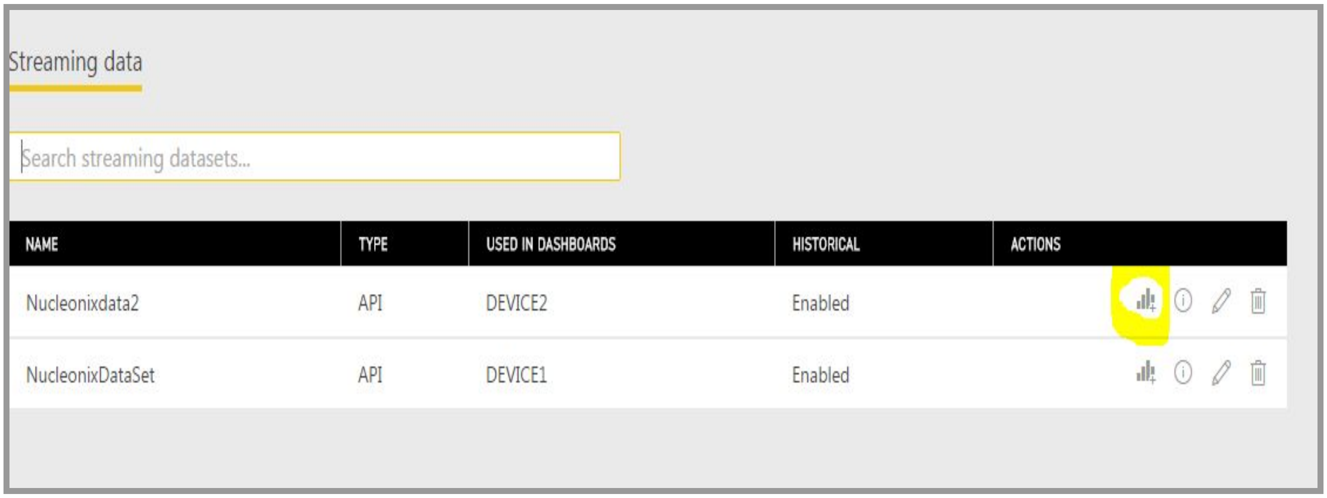
Your query could be put in logs that are in a potentially different geography.
Missing some language constructs? Let us know! (Powered by UserVoice - Privacy Policy)

Step 6:Visualizing the Stream Analytics data using POWER BI



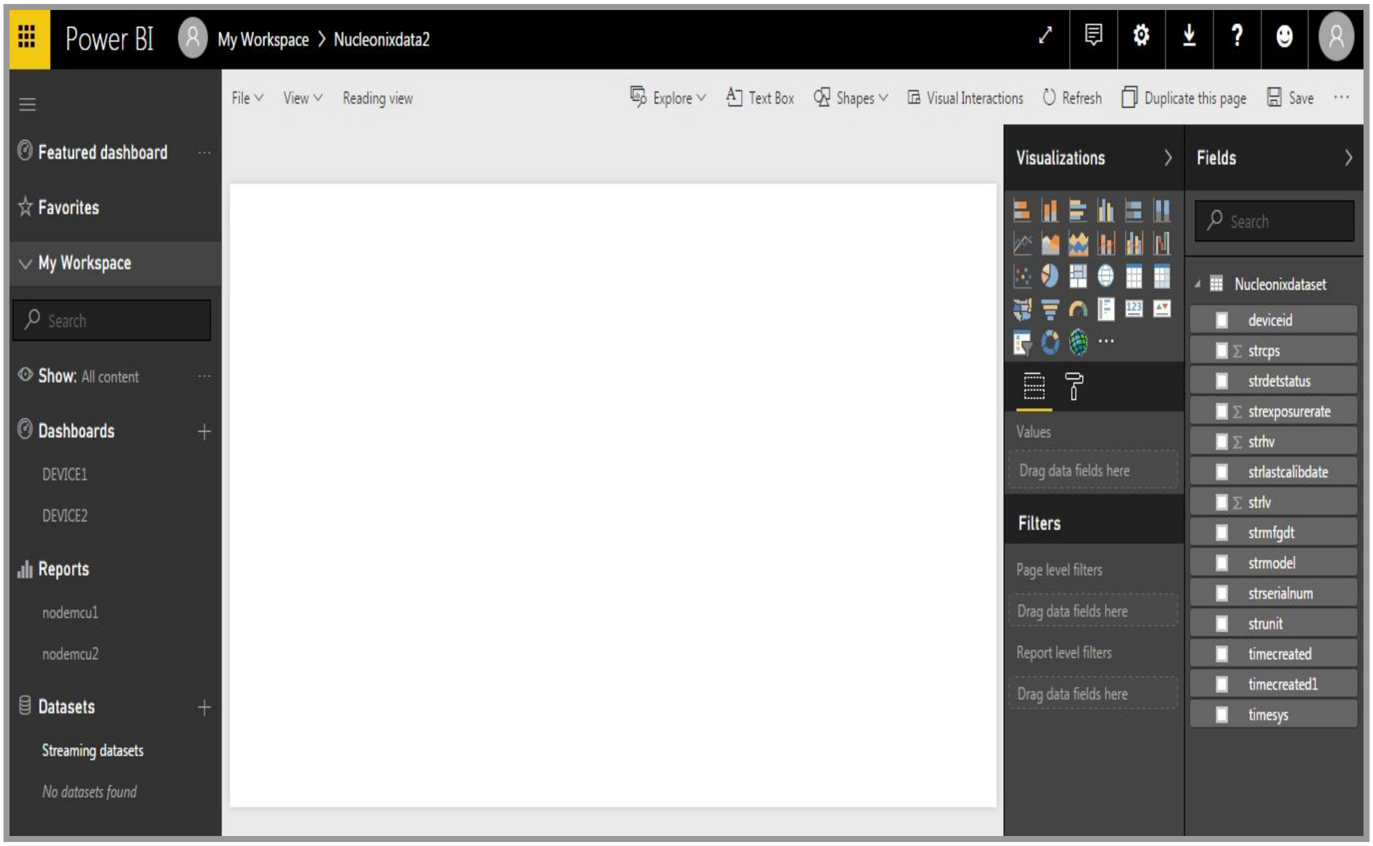
NAME	TYPE	USED IN DASHBOARDS	HISTORICAL	ACTIONS
Nucleonixdata2	API	DEVICE2	Enabled	
NucleonixDataSet	API	DEVICE1	Enabled	

Log In to POWER BI and then go to the datasets and click on Streaming datasets.The datasets that were created initially while creating output events in stream analytics will appear here automatically.Now,click on one of the datasets and select CREATE REPORT(highlighted in the below picture).



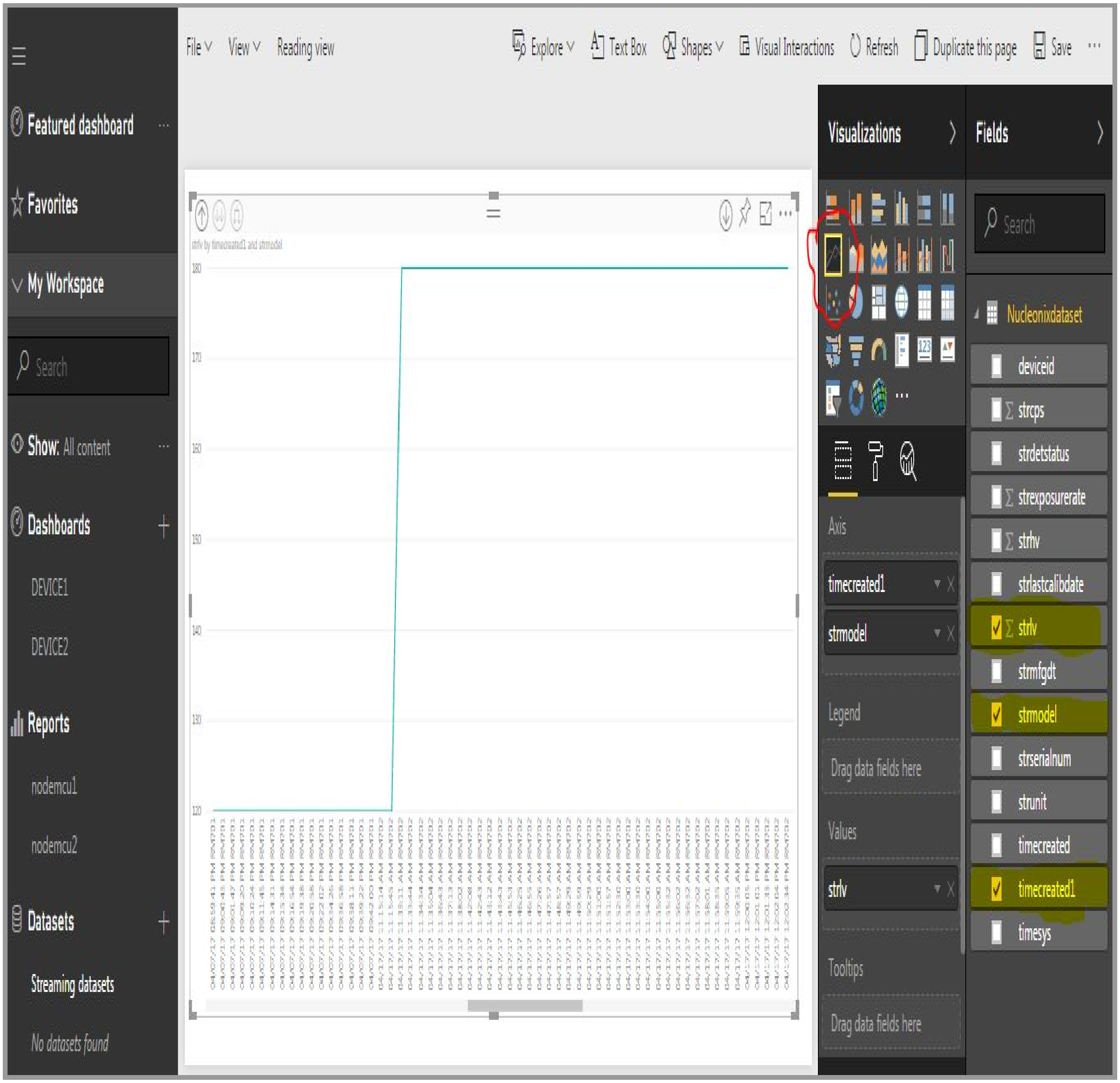
NAME	TYPE	USED IN DASHBOARDS	HISTORICAL	ACTIONS
Nucleonixdata2	API	DEVICE2	Enabled	
NucleonixDataSet	API	DEVICE1	Enabled	

The following screen appears when you click on create report.



Next select the type of chart required to display the input data coming from the stream analytics.

Consider a LINE CHART(highlighted in the below picture with red circle).Then select the parameters that are to be displayed.Here we are selecting strlv on Y axis and timecreated1 on X-axis.strModel indicates the Model number of the device.This is unique for every device.



Axis

timecreated1

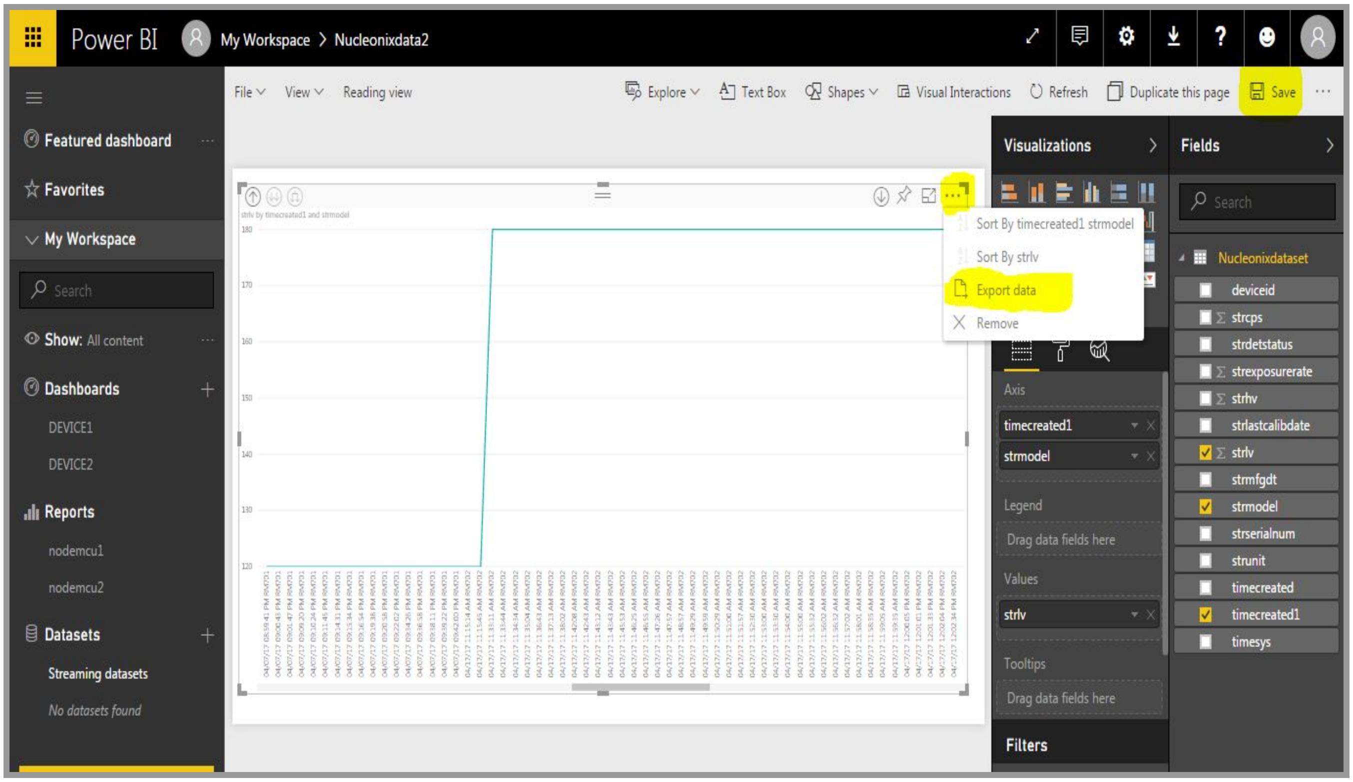
strmodel

Values

strlv

- ☐ deviceid
- ☐ ∑ strcps
- ☐ strdetstatus
- ☐ ∑ strexposurerate
- ☐ ∑ strhv
- ☐ strlastcalibdate
- ☑ ∑ strlv
- ☐ strmfgdt
- ☑ strmodel
- ☐ strserialnum
- ☐ strunit
- ☐ timecreated
- ☑ timecreated1
- ☐ timesys

Next step is to save the report and download it in the form of excel sheet using the feature of EXPORT DATA as shown in the figure below.

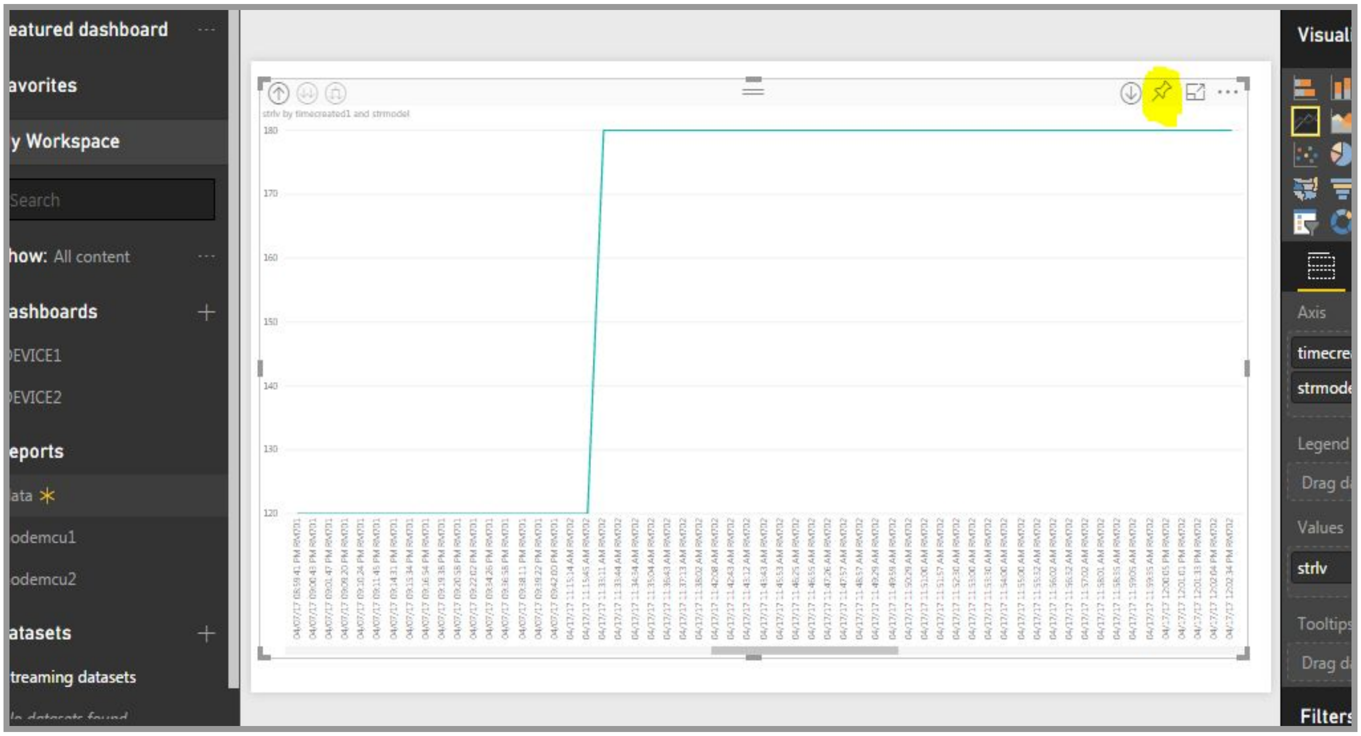


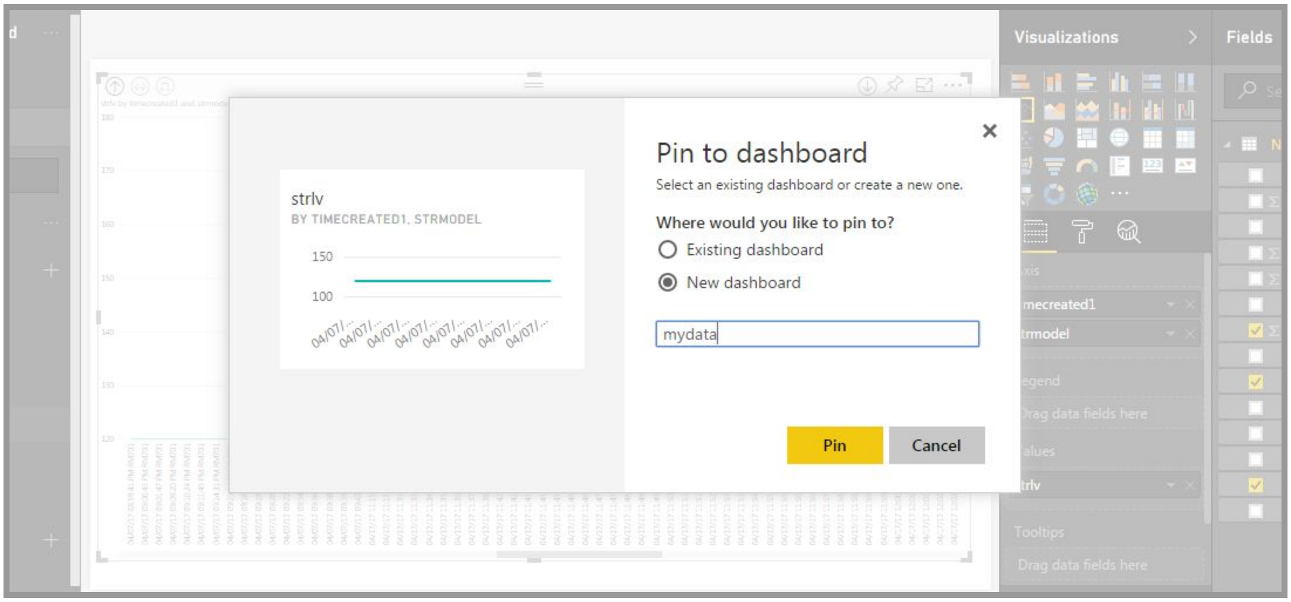
Axis: timecreated1, strmodel

Values: strlv

☐ deviceid
☐ strcps
☐ strdetstatus
☐ strexposurerate
☐ strhv
☐ strlastcalibdate
☑ strlv
☐ strmfgdt
☑ strmodel
☐ strserialnum
☐ strunit
☐ timecreated
☑ timecreated1
☐ timesys

Pin your report to dashboard where various reports can be viewed at single place.creation of dashboard is shown below.Click on the icon highlighted in yellow color.





Pin to dashboard

Select an existing dashboard or create a new one.

Where would you like to pin to?

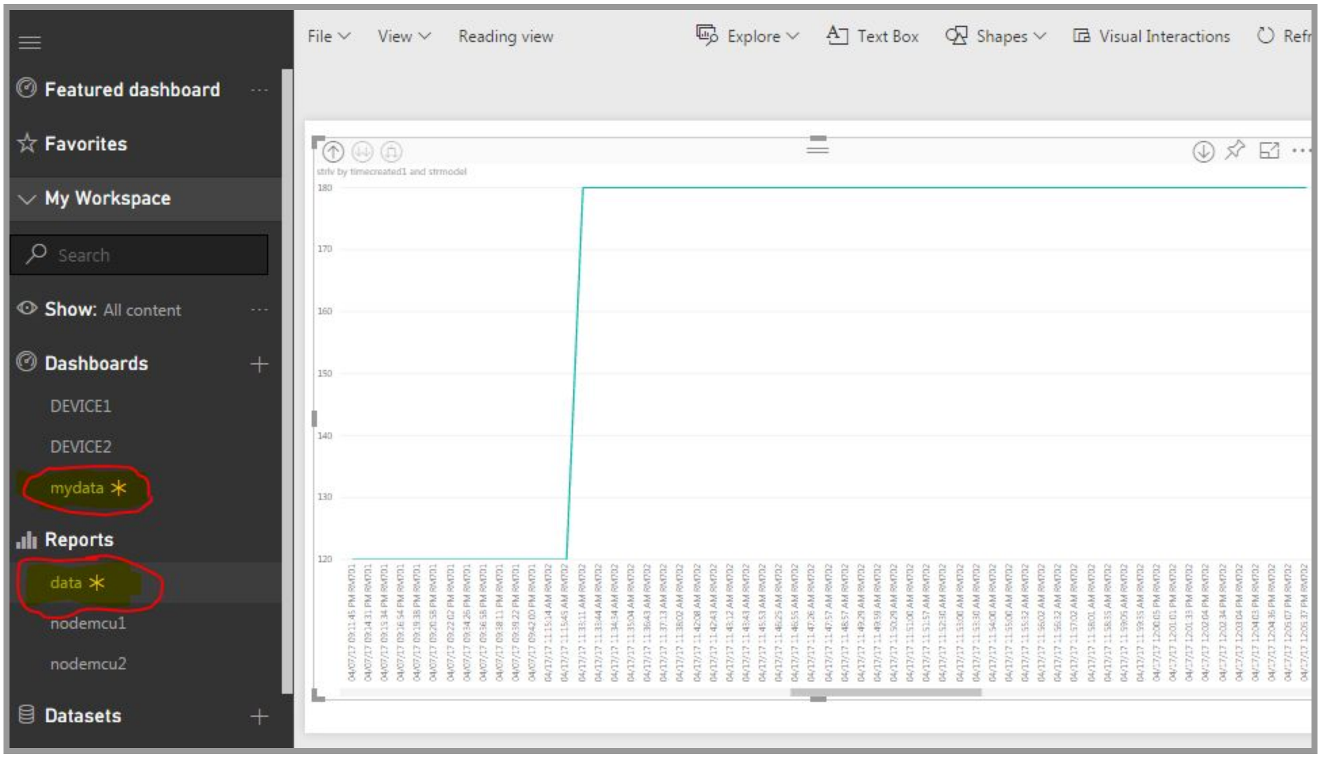
○ Existing dashboard

● New dashboard

mydata

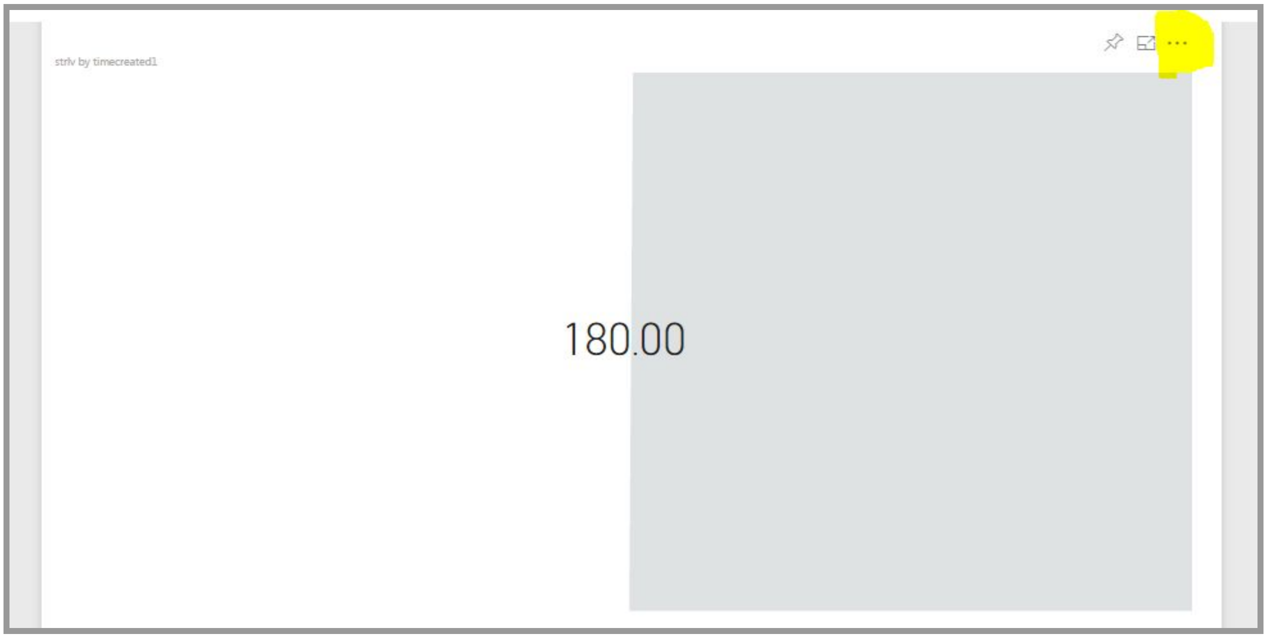
Pin Cancel

Select a new dashboard and give a unique name or choose an existing one and click Pin.The below figure shows the Dashboard and the Reports that are being saved.Here *data* is name of the report and mydata is the name of the *dashboard.*

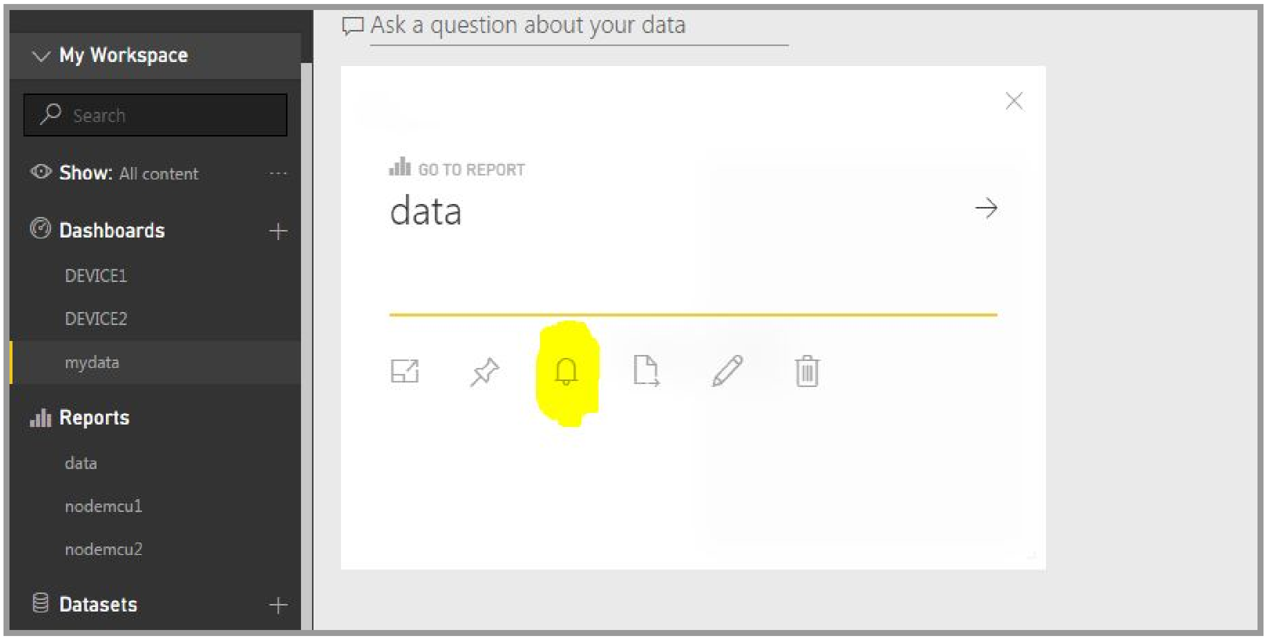


Step 7:Setting up ALERT EMAILS

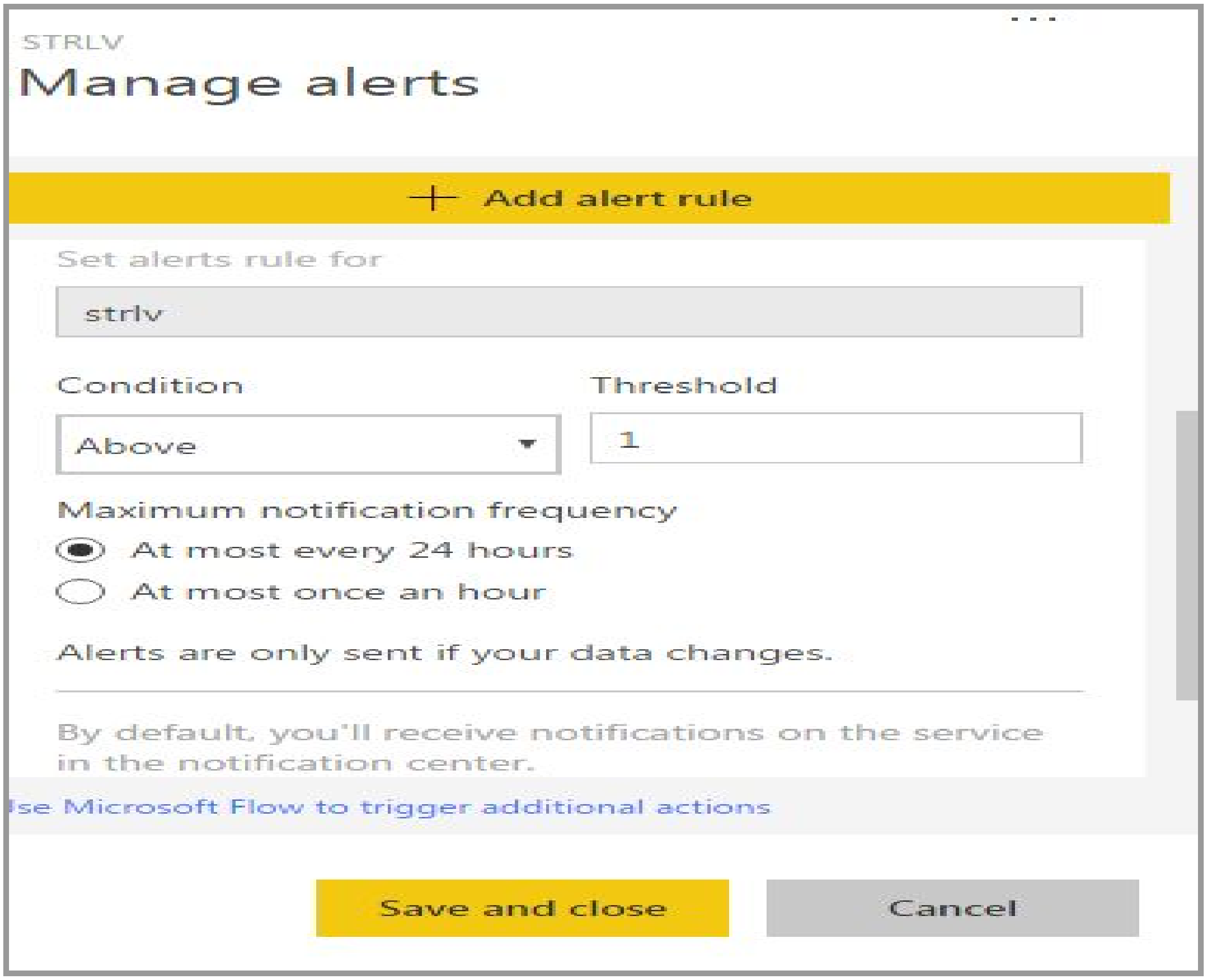
Power bi offers alert mail feature wherein user gets an email whenever the input value in the report crosses a particular threshold value.
For this purpose here we take KPI type chart from the chart menu(because alert feature is applicable only for the charts that display integer values) and it is as shown below.



Select the OPEN MENU option (highlighted in the above picture).Following window appears ,then click on the BELL icon as shown below.



Click on Add Alert Rule and specify the title for the alert,parameter for which alert rule has to be applied(in this case for strlv value) and specify the condition ,threshold value.Select the notification frequency then save and close.


STRLV

Manage alerts

Set alerts rule for

strlv

Condition: Above

Threshold: 1

Maximum notification frequency

● At most every 24 hours

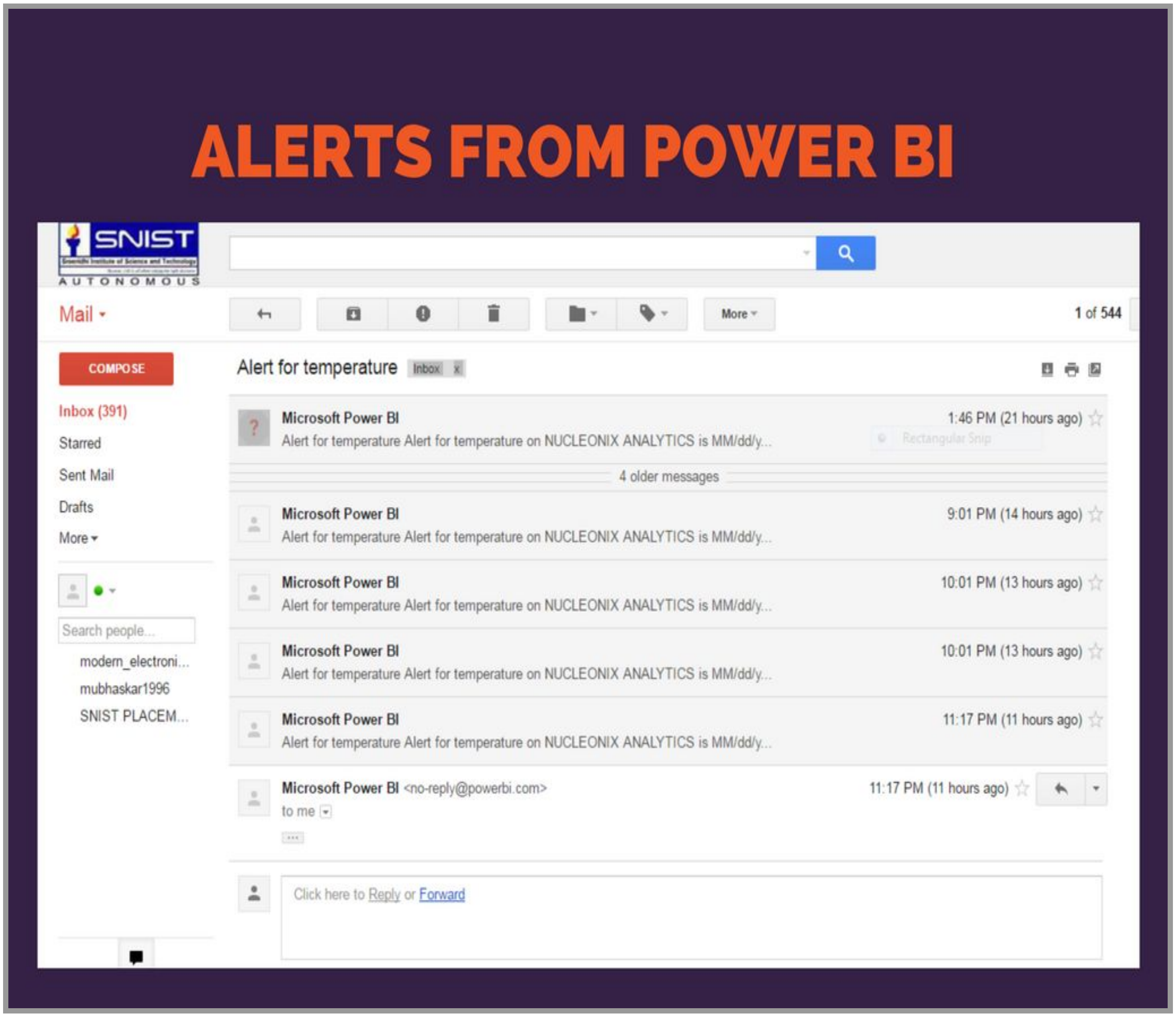
○ At most once an hour

Alerts are only sent if your data changes.

By default, you'll receive notifications on the service in the notification center.

Jse Microsoft Flow to trigger additional actions

The below picture shows the alert email that has been received as the input value is greater than the threshold value.



ALERTS FROM POWER BI

Alert for temperature

Microsoft Power BI 1:46 PM (21 hours ago)
Alert for temperature Alert for temperature on NUCLEONIX ANALYTICS is MM/dd/y...

4 older messages

Microsoft Power BI 9:01 PM (14 hours ago)
Alert for temperature Alert for temperature on NUCLEONIX ANALYTICS is MM/dd/y...

Microsoft Power BI 10:01 PM (13 hours ago)
Alert for temperature Alert for temperature on NUCLEONIX ANALYTICS is MM/dd/y...

Microsoft Power BI 10:01 PM (13 hours ago)
Alert for temperature Alert for temperature on NUCLEONIX ANALYTICS is MM/dd/y...

Microsoft Power BI 11:17 PM (11 hours ago)
Alert for temperature Alert for temperature on NUCLEONIX ANALYTICS is MM/dd/y...

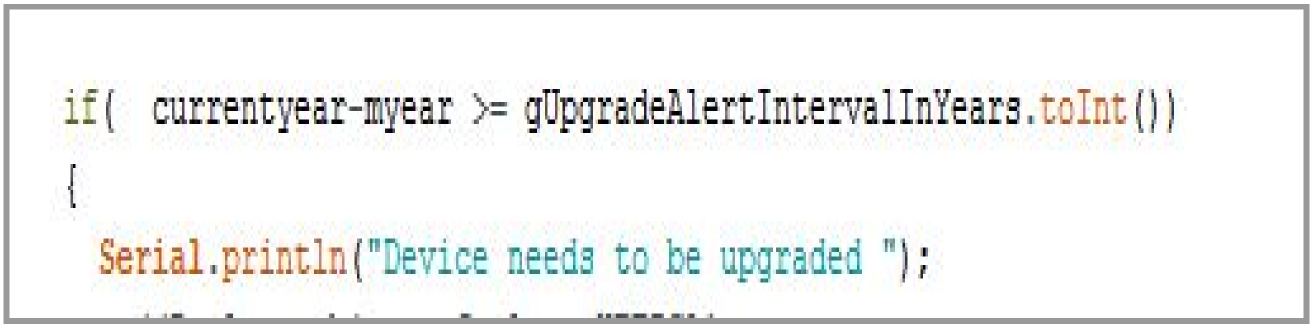
Microsoft Power BI <no-reply@powerbi.com> 11:17 PM (11 hours ago)
to me

Click here to Reply or Forward

Step 8:Modifying the Device Parameters

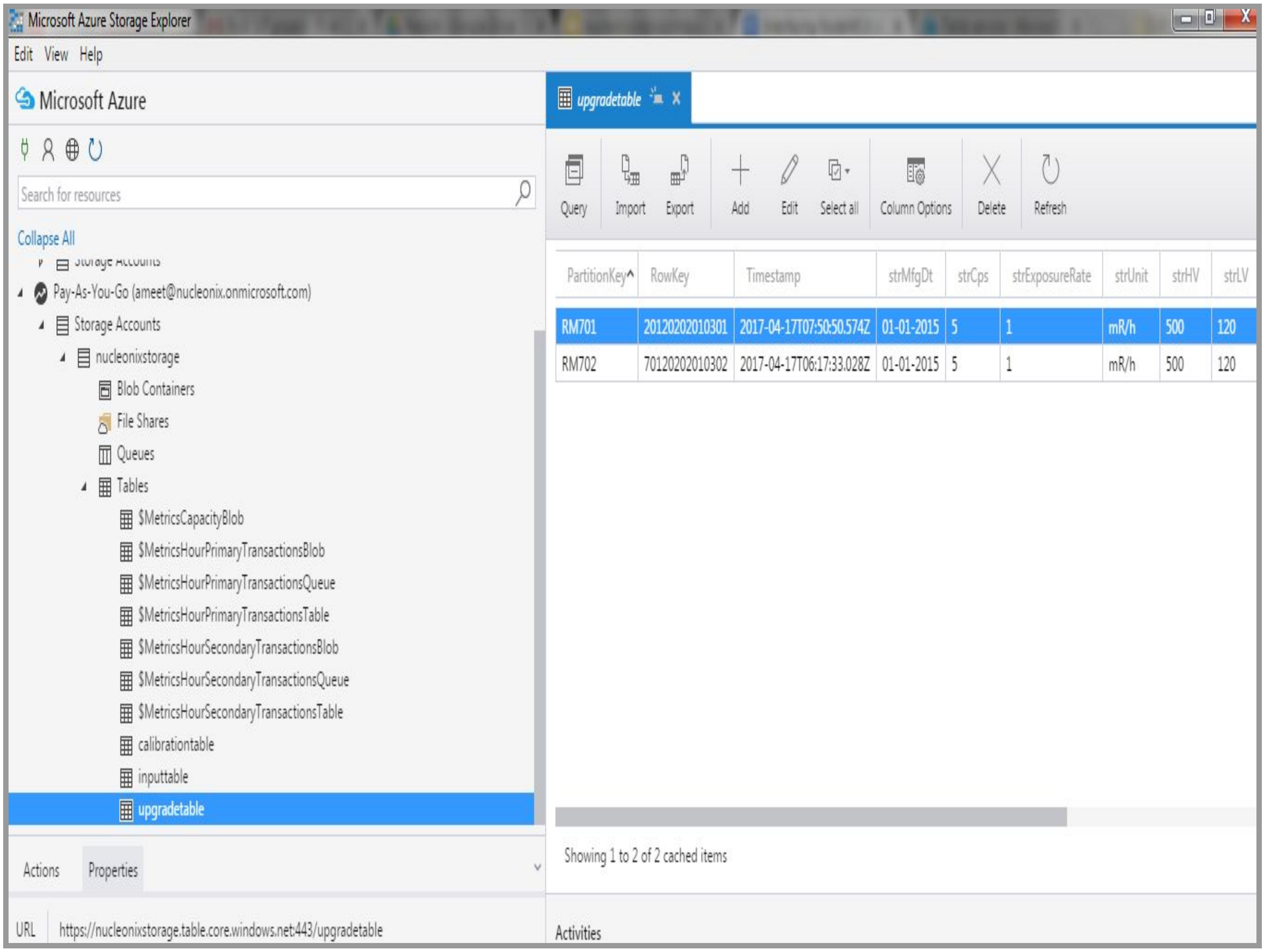
Generating Calibration and Upgradation Alerts

Two new tables are created to store the details of devices which have crossed the calibration months and upgradation years limit. now() function in arduino gives us the current date - time information and the device date of manufacture is specified in the serial data.Hence a difference between these two things gives us the information of when to upgrade the device based on the UpgradationAlertIntervalInYears value specified in input table.It is done as follows



```
if(  currentyear-myear >= gUpgradeAlertIntervalInYears.toInt())
{
  Serial.println("Device needs to be upgraded ");
```

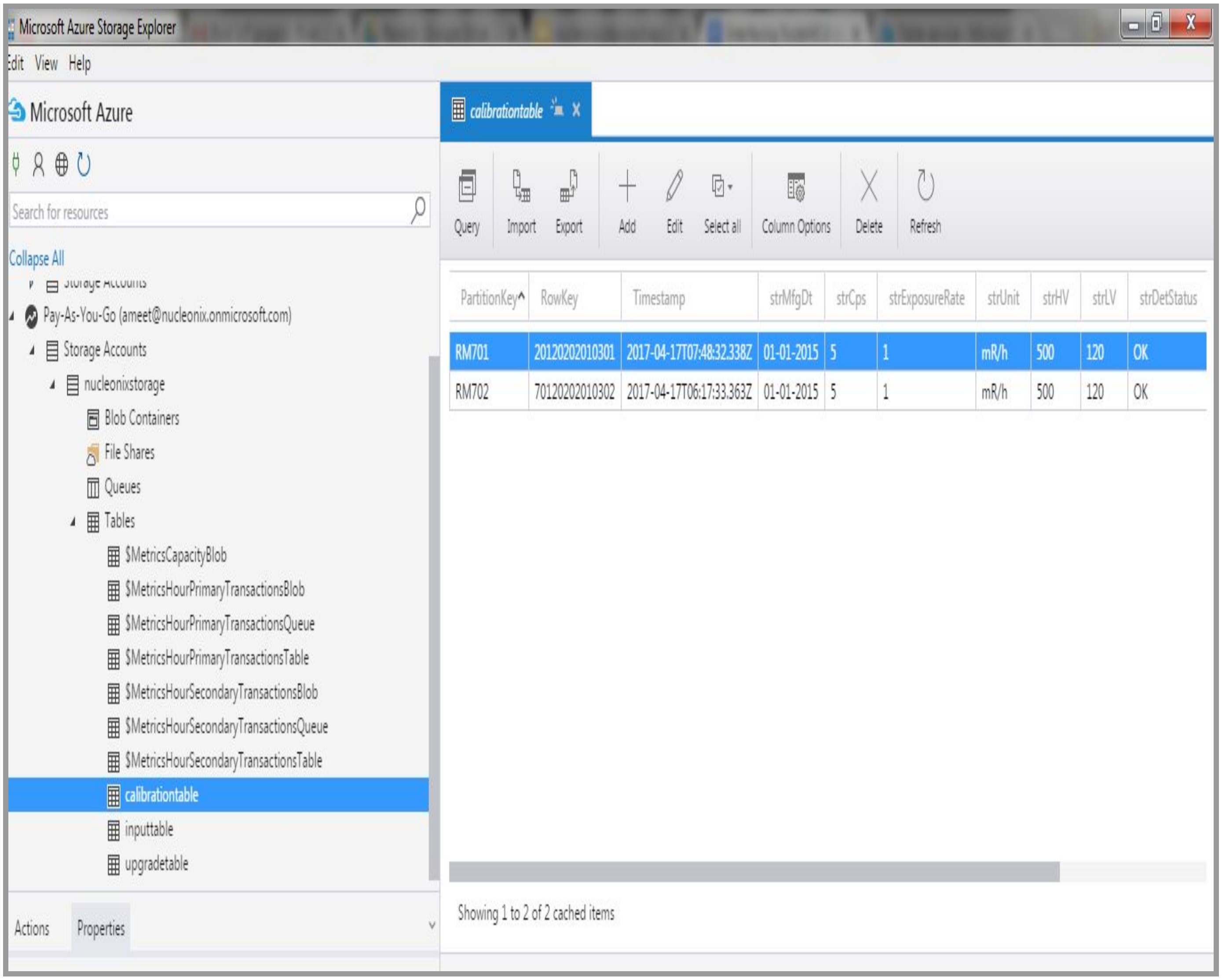
When the above condition is satisfied , POST request is sent to Azure table storage and device details(that are read from serial communication) are updated in the Upgradation table.Similarly for Calibration table.



PartitionKey^	RowKey	Timestamp	strMfgDt	strCps	strExposureRate	strUnit	strHV	strLV
RM701	20120202010301	2017-04-17T07:50:50.574Z	01-01-2015	5	1	mR/h	500	120
RM702	70120202010302	2017-04-17T06:17:33.028Z	01-01-2015	5	1	mR/h	500	120

Showing 1 to 2 of 2 cached items

URL https://nucleonixstorage.table.core.windows.net:443/upgradetable

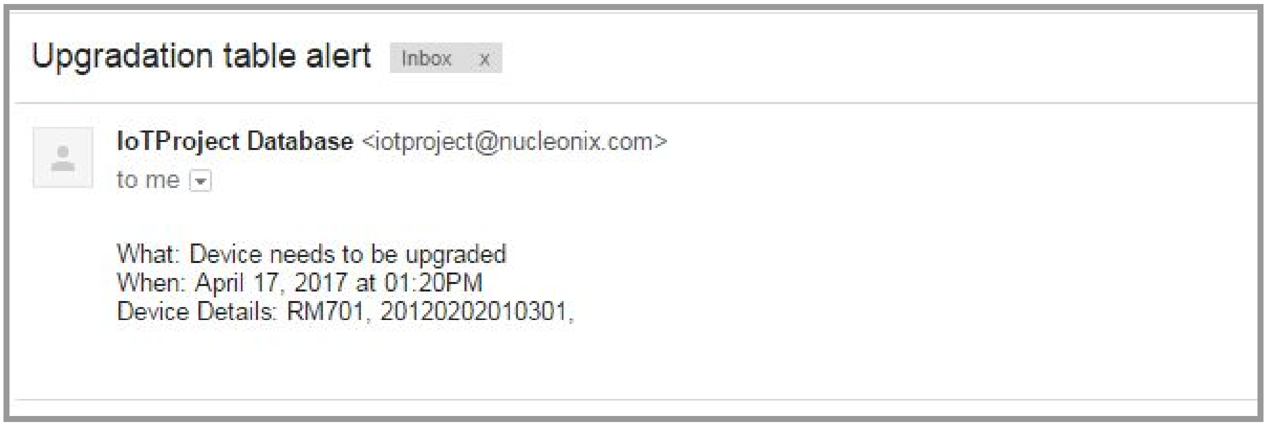


Microsoft Azure Storage Explorer
Edit View Help
Microsoft Azure
Search for resources
Collapse All
Storage Accounts
Pay-As-You-Go (ameet@nucleonix.onmicrosoft.com)
Storage Accounts
nucleonixstorage
Blob Containers
File Shares
Queues
Tables
$MetricsCapacityBlob
$MetricsHourPrimaryTransactionsBlob
$MetricsHourPrimaryTransactionsQueue
$MetricsHourPrimaryTransactionsTable
$MetricsHourSecondaryTransactionsBlob
$MetricsHourSecondaryTransactionsQueue
$MetricsHourSecondaryTransactionsTable
calibrationtable
inputtable
upgradetable
Actions
Properties
calibrationtable
Query
Import
Export
Add
Edit
Select all
Column Options
Delete
Refresh

PartitionKey	RowKey	Timestamp	strMfgDt	strCps	strExposureRate	strUnit	strHV	strLV	strDetStatus
RM701	20120202010301	2017-04-17T07:48:32.338Z	01-01-2015	5	1	mR/h	500	120	OK
RM702	70120202010302	2017-04-17T06:17:33.363Z	01-01-2015	5	1	mR/h	500	120	OK

Showing 1 to 2 of 2 cached items

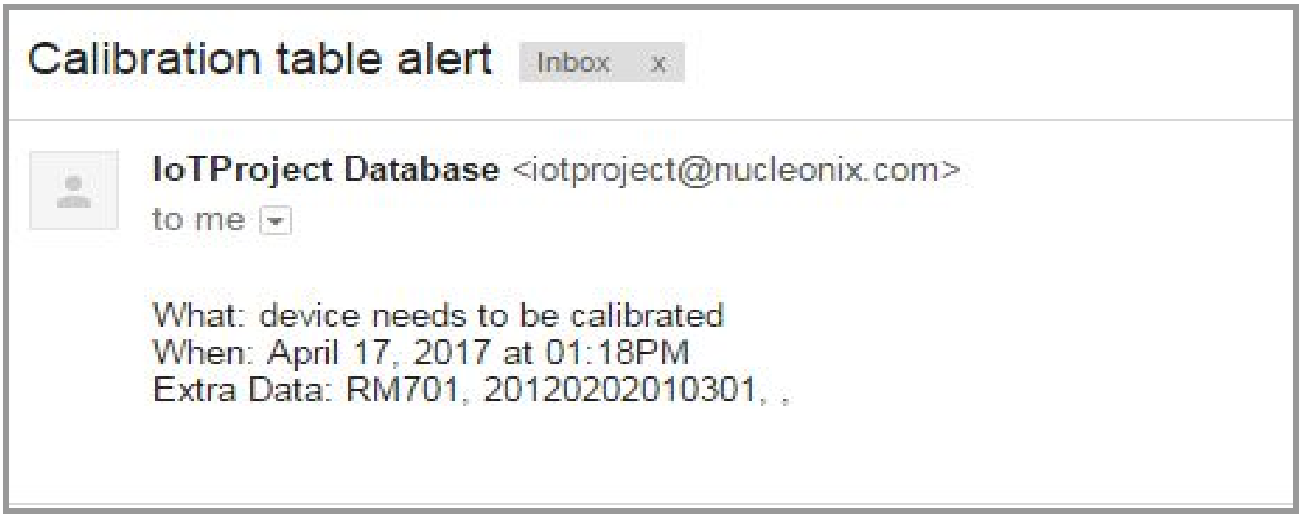
Once the data is successfully inserted into the table an alert email is sent to the Admin using IFTTT notification service.



Upgradation table alert

IoTProject Database <iotproject@nucleonix.com>

What: Device needs to be upgraded
When: April 17, 2017 at 01:20PM
Device Details: RM701, 20120202010301,



Calibration table alert

IoTProject Database <iotproject@nucleonix.com>

to me

What: device needs to be calibrated
When: April 17, 2017 at 01:18PM
Extra Data: RM701, 20120202010301, ,

Sreenidhi Institute of Science and Technology

Department of Computer Science and Engineering

Industrial Project Report on

Biometric Based Attendance

Submitted to

NUCLEONIX SYSTEMS PVT. LTD. INDIA

One of the most significant thing which is absent in this advanced world for each individual is time, with many atomization's coming into the picture. In this existing system, the data from Biometric machines are collected and manual calculations are done to get payable days. These is always possibility of tampering on unauthorized updations of data is manual system.

In our proposed system we are collecting data from Biometric machine and our system is automatically calculating the payable days. This project aims for the atomization of attendance and salary calculation in major organizations but is mainly focused on the principles of Nucleonix system pvt ltd based on the biometric data taken from machines.

INPUTS:

Biometric Based Data
External Inputs – On duty and Overtime Approvals
Initial Carry Forward Leaves
Time period for calculation

OUTPUTS:

Total number of Payable Days

Atomization of Carry forward leaves

Overtime Information (>7 Hrs 45 Min and < 9 Hrs 45 Min with Approval)

Work Less Calculations (<7 Hrs 45 Min)

Filtering of records with 2 in's and 2 outs'

SOFTWARES USED:

SQL Server 2014

Windows 7

VALLAKATLA CHARITH	14311A0565
ITIKALA SHIVA KUMAR REDDY	14311A0527
G. AKSHAY KUMAR	14311A05B6

Under the Guidance of

Dr. ARUNA VARANASI, HOD, CSE

Mrs. K. KRISHNA JYOTHI, Assistant Professor, CSE Dept

Mr. D RAM BABU, Assistant Professor, CSE Dept

Head of the Department

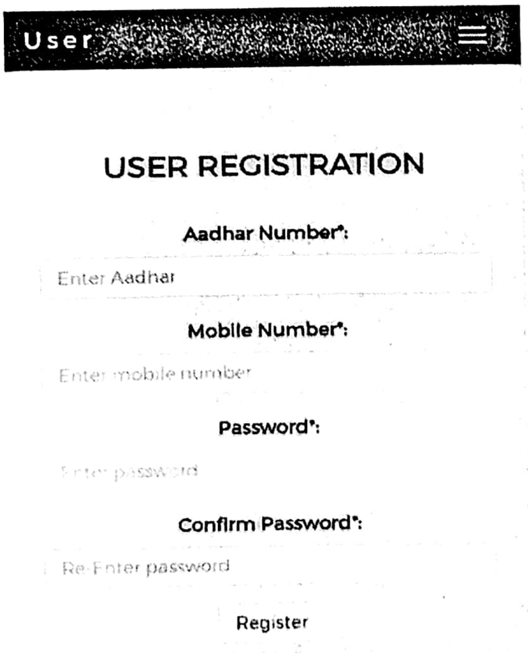
CSE, SNIST

USERS

Users are expected to download app from play store. To use this app, the users must first register by providing their personal details like Aadhaar number, mobile number etc.

After registration, they can login using their Aadhaar number and password. The following snapshot explains the registration and login.

User Registration:



User

USER REGISTRATION

Aadhar Number*:

Enter Aadhar

Mobile Number*:

Enter mobile number

Password*:

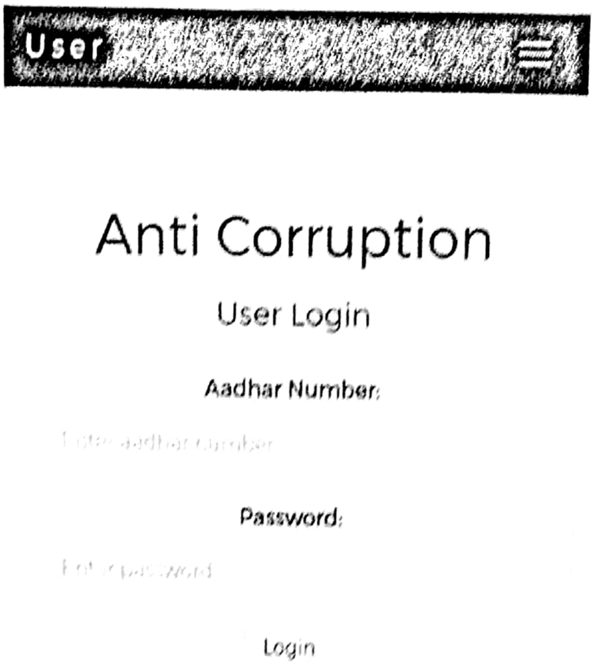
Enter password

Confirm Password*:

Re-Enter password

Register

User Login:



Anti Corruption

User Login

Aadhar Number:

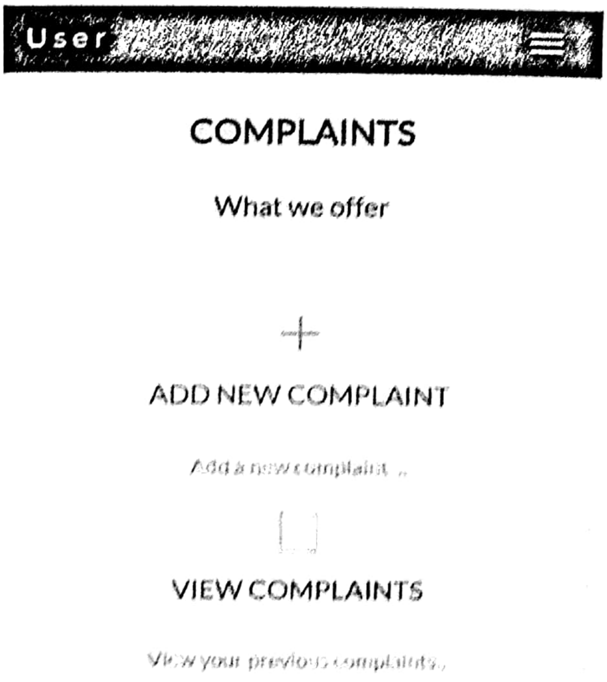
Enter aadhar number

Password:

Enter password

After the user logs in, two tabs are visible, they are "**ADD COMPLAINT**" and "**VIEW COMPLAINT**". If the user wants to add a complaint, he/she must click the add complaint button. The following snapshot shows this process.

After Login:



COMPLAINTS

What we offer

Add a new complaint ..

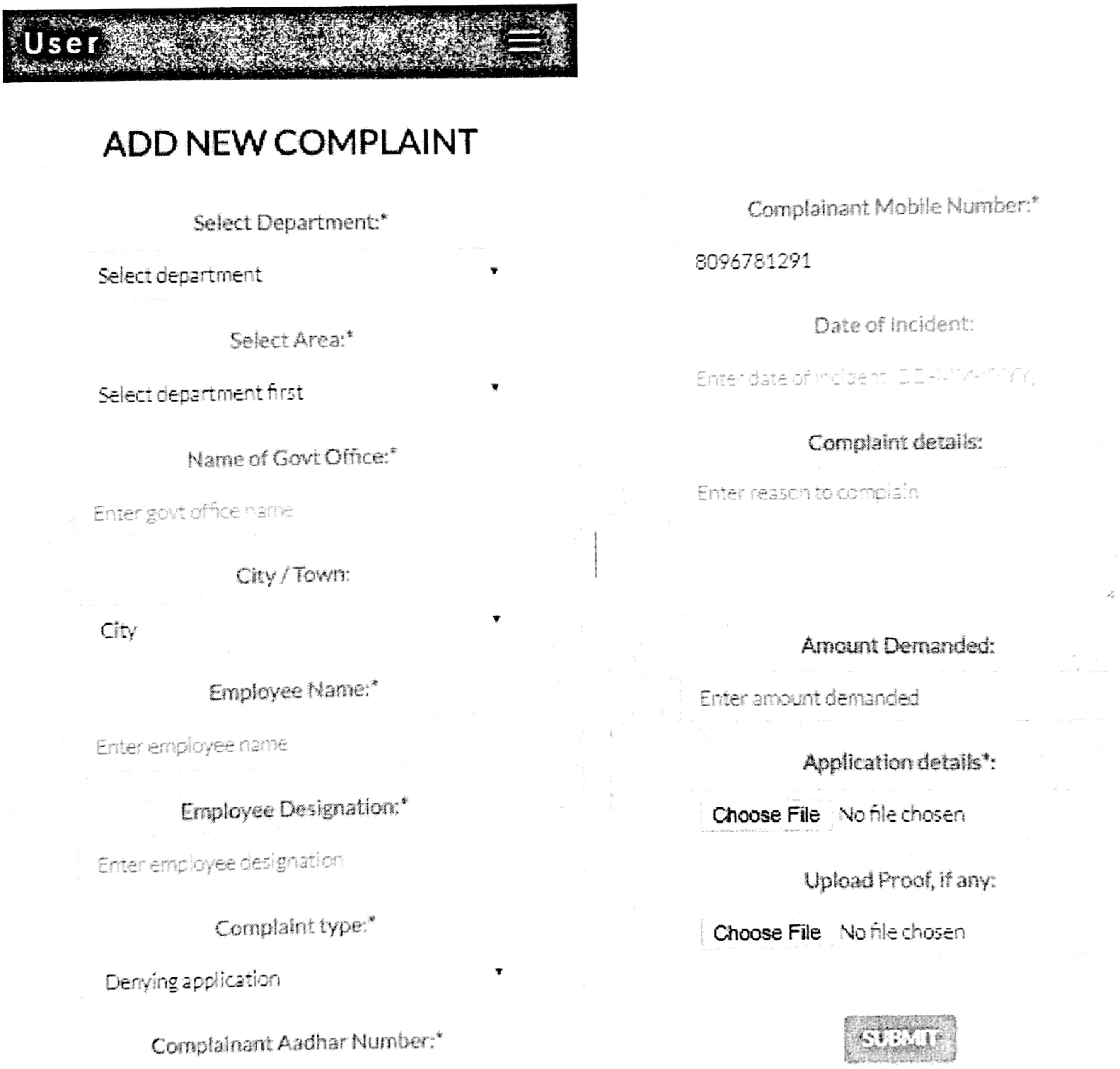
View your previous complaints..

By clicking add new complaint button it will enable the user to add complaint. This process is as explained below:

Add Complaint

The user shall fill the below form containing details like department, location, name of officer designation, nature of complaint, date of incident, amount demanded etc. Proofs like Audio/Video/Documents can also be uploaded. After the complaint is posted, an email & SMS is sent to the concerning officials of the department.

The following snapshots demonstrate this process.



User

ADD NEW COMPLAINT

Select Department:*

Select department ▾

Select Area:*

Select department first ▾

Name of Govt Office:*

Enter govt office name

City / Town:

City ▾

Employee Name:*

Enter employee name

Employee Designation:*

Enter employee designation

Complaint type:*

Denying application ▾

Complainant Aadhar Number:*

Complainant Mobile Number:*

8096781291

Date of Incident:

Enter date of incident: DD-MM-YYYY

Complaint details:

Enter reason to complain

Amount Demanded:

Enter amount demanded

Application details*:

Choose File No file chosen

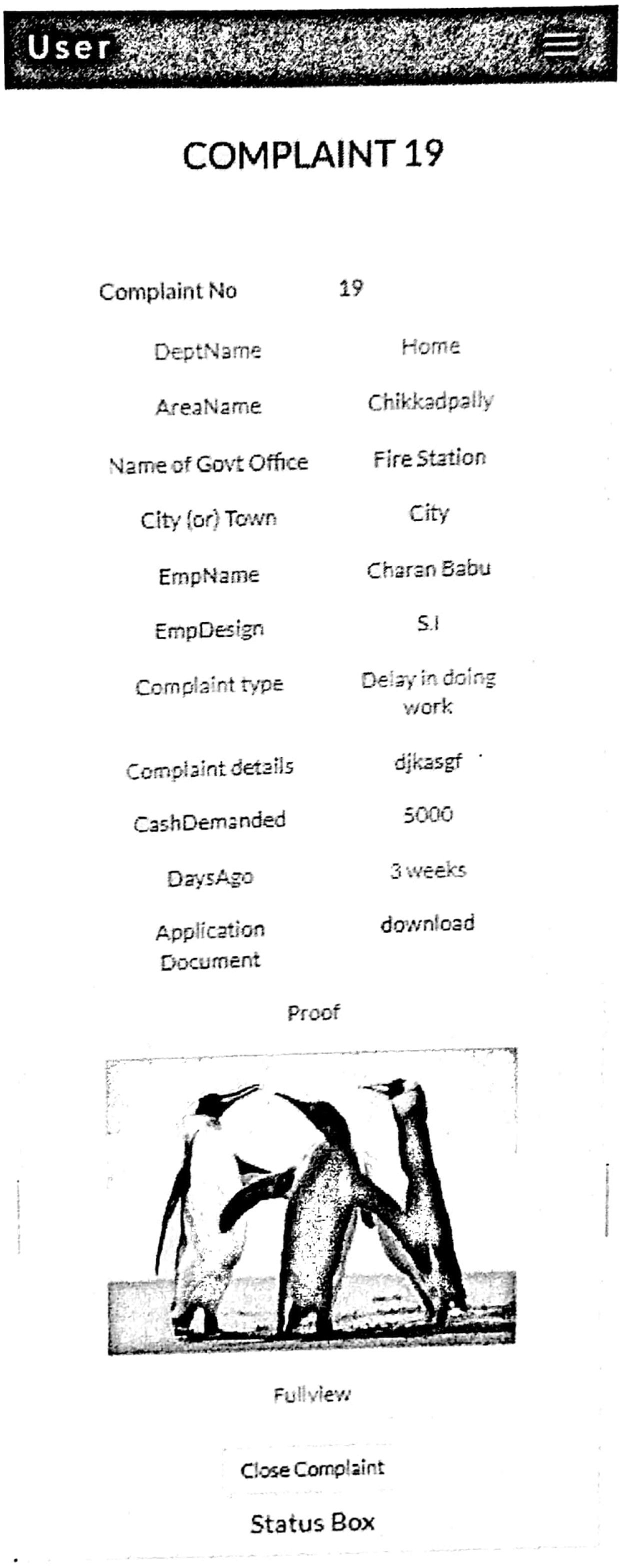
Upload Proof, if any:

Choose File No file chosen

SUBMIT

Complaint View

On clicking the view complaint tab, The users can see their previous complaints and view status of them. User can close the complaint by clicking the "**CLOSE COMPLAINT**" button. They can also provide comments to it.



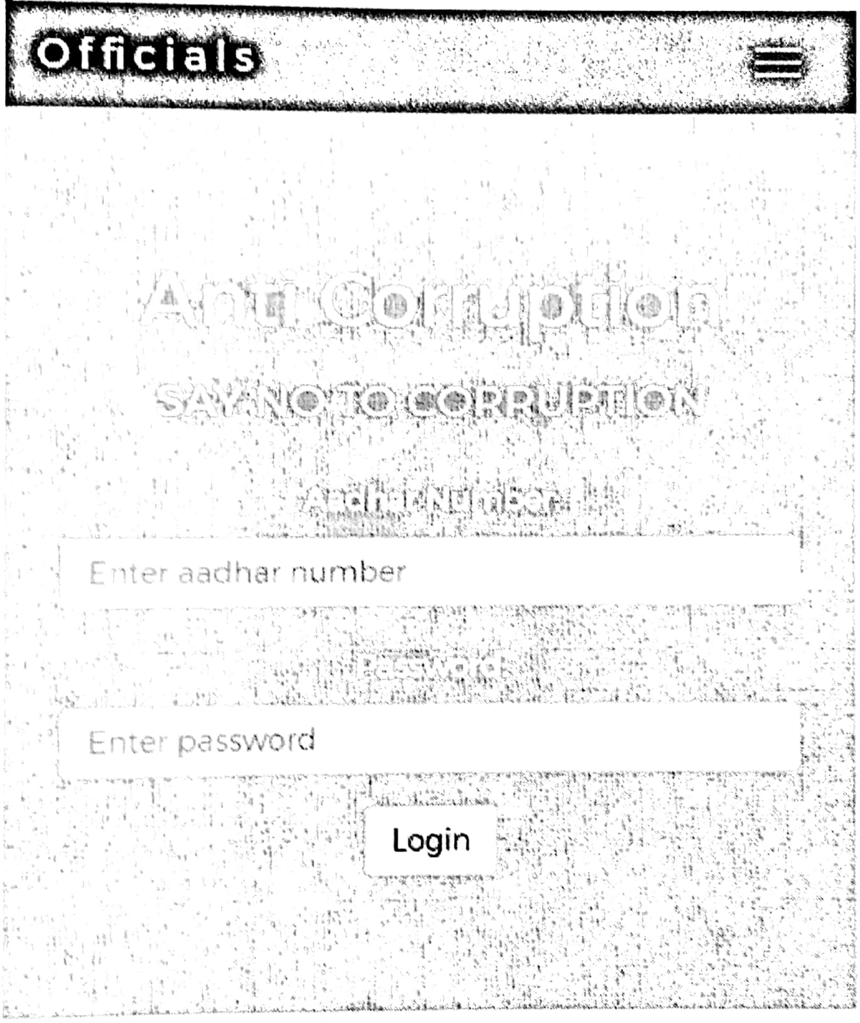
COMPLAINT 19

Complaint No	19
DeptName	Home
AreaName	Chikkadpally
Name of Govt Office	Fire Station
City (or) Town	City
EmpName	Charan Babu
EmpDesign	S.I
Complaint type	Delay in doing work
Complaint details	djkasgf
CashDemanded	5000
DaysAgo	3 weeks
Application Document	download

OFFICIALS

The password will be provided by admin. The username is their Aadhar number. They must login using their Aadhar number and password. After successfully logging in, the complaints concerned to them based on their area and department, are visible. The officials can provide the status updates to the complaint in the form of comment. The following snapshot shows officials login

Officials Login:



Officials

Anti Corruption

SAY NO TO CORRUPTION

Aadhar Number

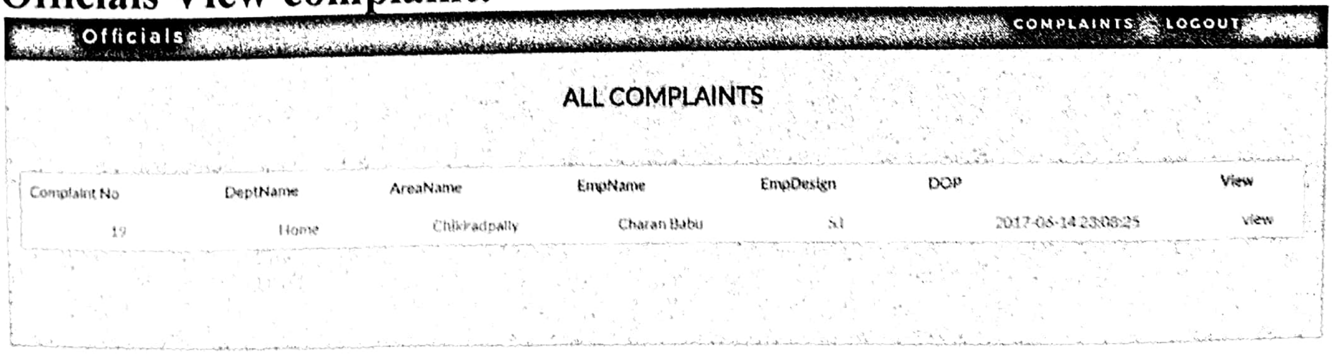
Enter aadhar number

Password

Enter password

Login

Officials View complaint:



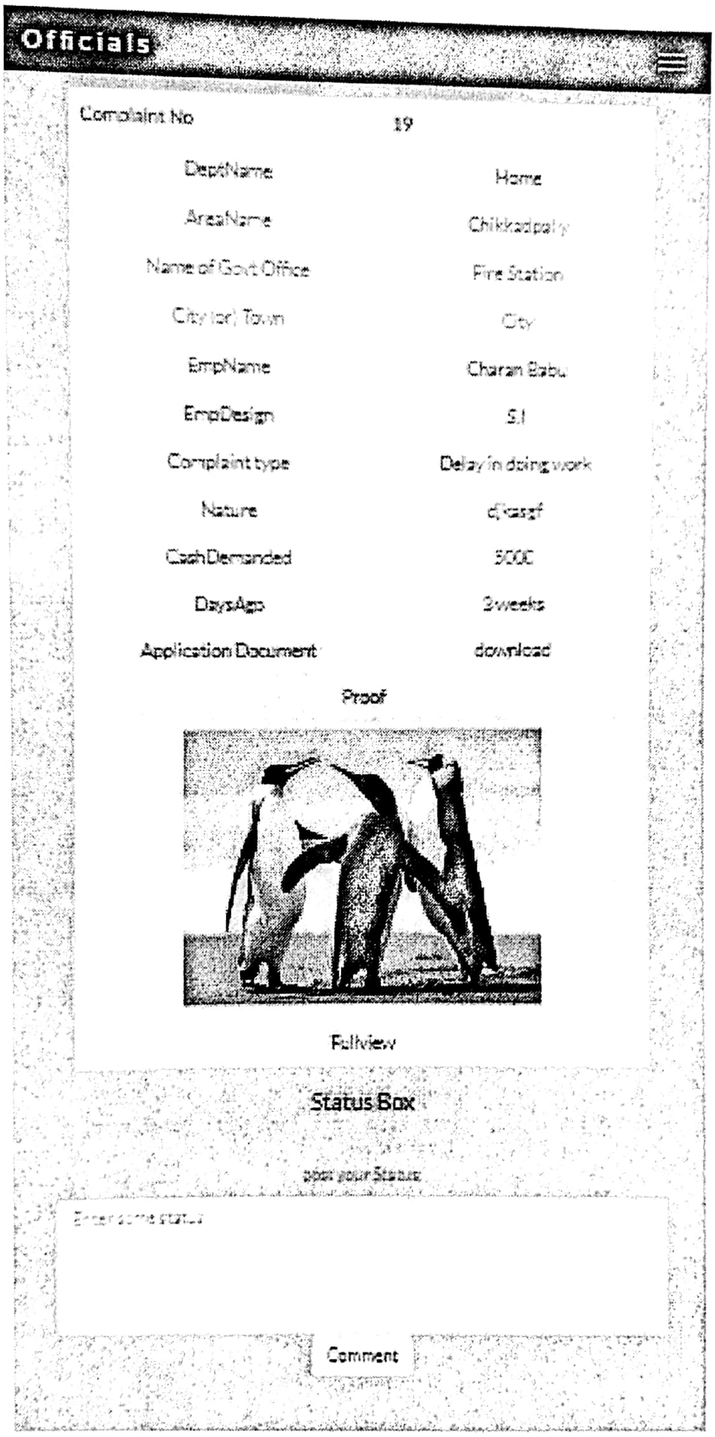
Officials

COMPLAINTS LOGOUT

ALL COMPLAINTS

Complaint No	DeptName	AreaName	EmpName	EmpDesign	DOP	View
19	Home	Chikkadpally	Charan Babu	S.I	2017-06-14 23:08:25	view

Officials View Complaint:



Complaint No	19
DeptName	Home
AreaName	Chikkadpally
Name of Govt Office	Fire Station
City (or) Town	City
EmpName	Charan Babu
EmpDesign	S.I
Complaint type	Delay in doing work
Nature	djkasgf
CashDemanded	5000
DaysAgo	2weeks
Application Document	download

Proof

Fullview

Status Box

post your Status

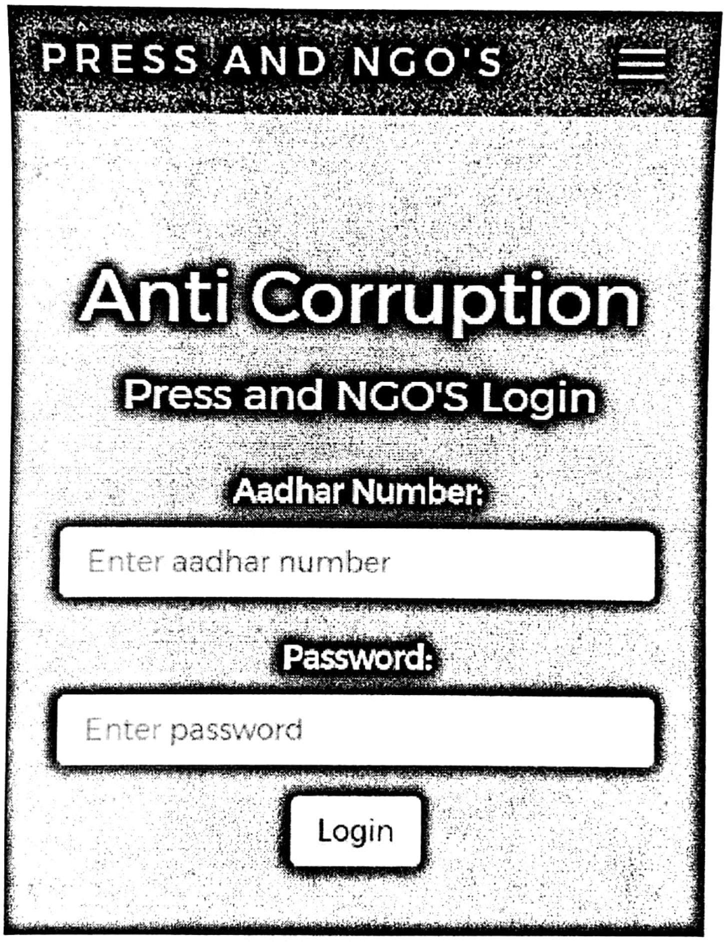
Enter some status

STAKEHOLDERS (PRESS & NGO's)

To register, they must first obtain the registration key from the admin. Using this key they can register. While registering they need to provide their concerned area and departments, they want to observe. They must login using their Aadhar number and password.

After successfully log in, the complaints concerned to them are visible. They can view and add comments.

Stakeholders Login:



PRESS AND NGO'S

Anti Corruption

Press and NGO'S Login

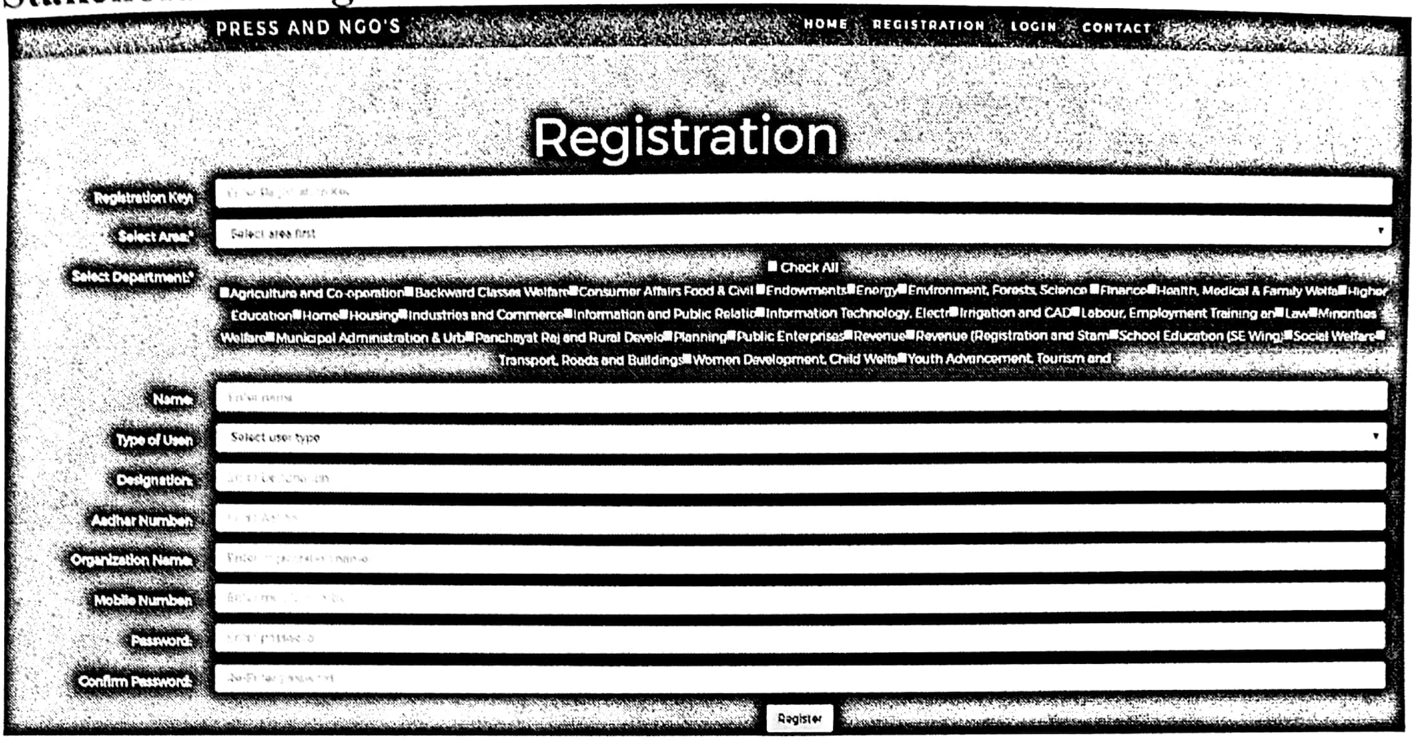
Aadhar Number:

Enter aadhar number

Password:

Enter password

Stakeholders Registration:



Registration

Registration Key:

Select Area:* Select area first ▾

Select Department:* ■ Check All

■Agriculture and Co-operation■Backward Classes Welfare■Consumer Affairs Food & Civil ■Endowments■Energy■Environment, Forests, Science ■Finance■Health, Medical & Family Welfa■Higher Education■Home■Housing■Industries and Commerce■Information and Public Relatio■Information Technology, Electr■Irrigation and CAD■Labour, Employment Training an■Law■Minorities Welfare■Municipal Administration & Urb■Panchayat Raj and Rural Develo■Planning■Public Enterprises■Revenue■Revenue (Registration and Stam■School Education (SE Wing)■Social Welfare■Transport, Roads and Buildings■Women Development, Child Welfa■Youth Advancement, Tourism and

Name:

Type of User: Select user type ▾

Designation:

Aadhar Number:

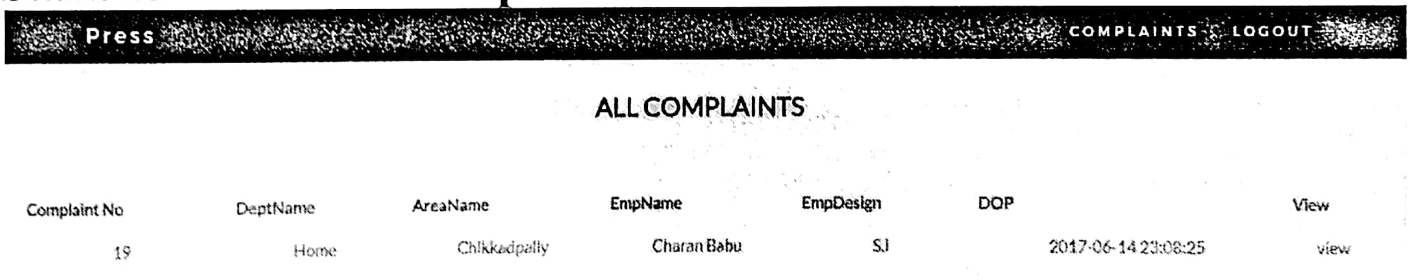
Organization Name:

Mobile Number:

Password:

Confirm Password:

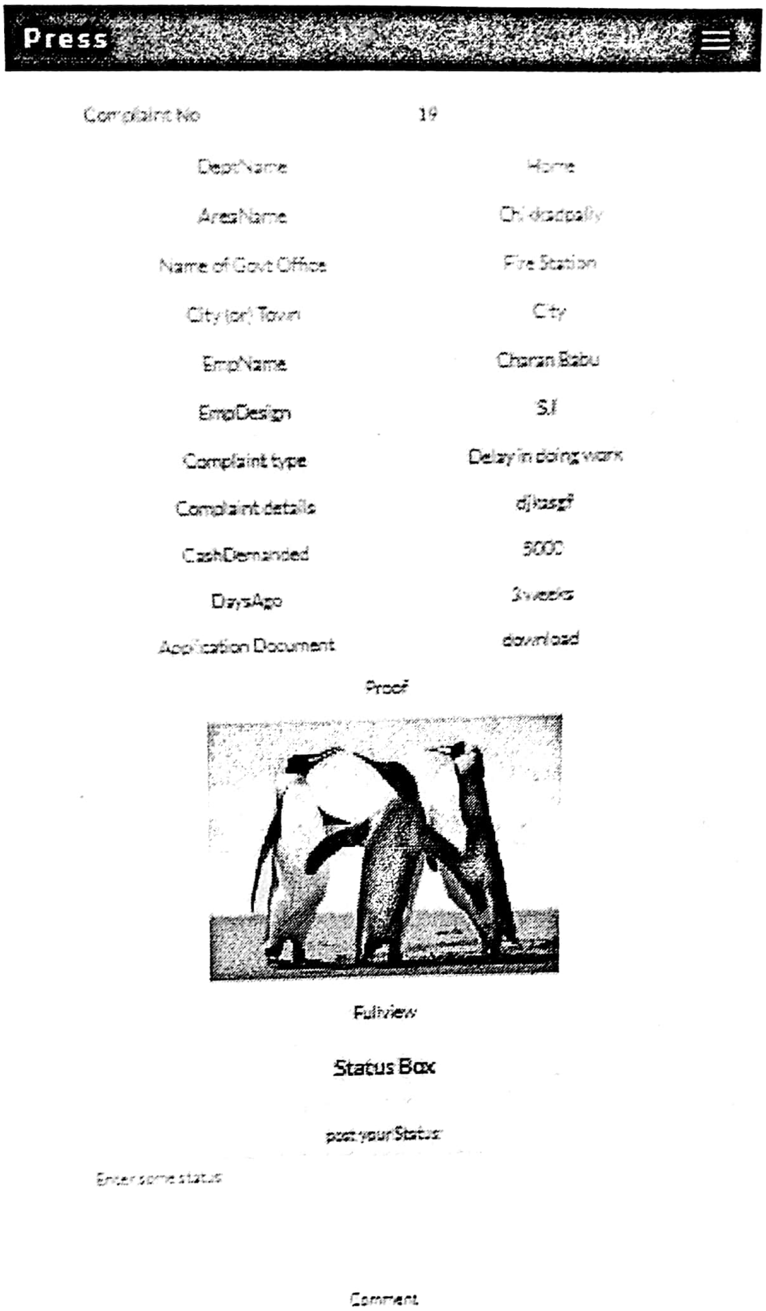
Stakeholders View Complaint:



ALL COMPLAINTS

Complaint No	DeptName	AreaName	EmpName	EmpDesign	DOP	View
19	Home	Chikkadpally	Charan Babu	S.I	2017-06-14 23:08:25	view

Stakeholders Comment view:



Complaint No	19
DeptName	Home
AreaName	Chikkadpally
Name of Govt Office	Fire Station
City (or) Town	City
EmpName	Charan Babu
EmpDesign	S.I
Complaint type	Delay in doing work
Complaint details	djkasgf
CashDemanded	5000
DaysAgo	3weeks
Application Document	download

Proof

Fullview

Status Box

post your Status:

Enter some status

Comment

Mr. M. Charan Babu
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CSE Dept, SNIST