Azure FarmBeats IoT Data Simulator

Azure FarmBeats IoT Data Simulator is a console application to help you create devices and sensors in Azure FarmBeats and send simulated telemetry. You can also use it to ingest existing or historical sensor readings.

Introduction

The app requires two configuration files:

1. EndPointConfig.txt: Contains information related to Azure FarmBeats endpoint and authentication
2. DataConfig.txt: Contains metadata information about Farms, Devices, Sensors, Sensor Models, Device Models

The app will first create resources based on information in DataConfig.txt. For this, it will use the Datahub endpoint and API credentials specified in EndPointConfig.txt. After creating the resources, it will start sending telemetry based on the details in DataConfig.txt. The app can be used to run on your computer or as a web job.

Prerequisites

1. Install Azure FarmBeats.
2. Download .NET Core Runtime 2.2.8. For Windows x64, the link is here.
3. Download the app. Unzip it into a folder, say `c:\iotsimulator`, on your local computer.

Steps

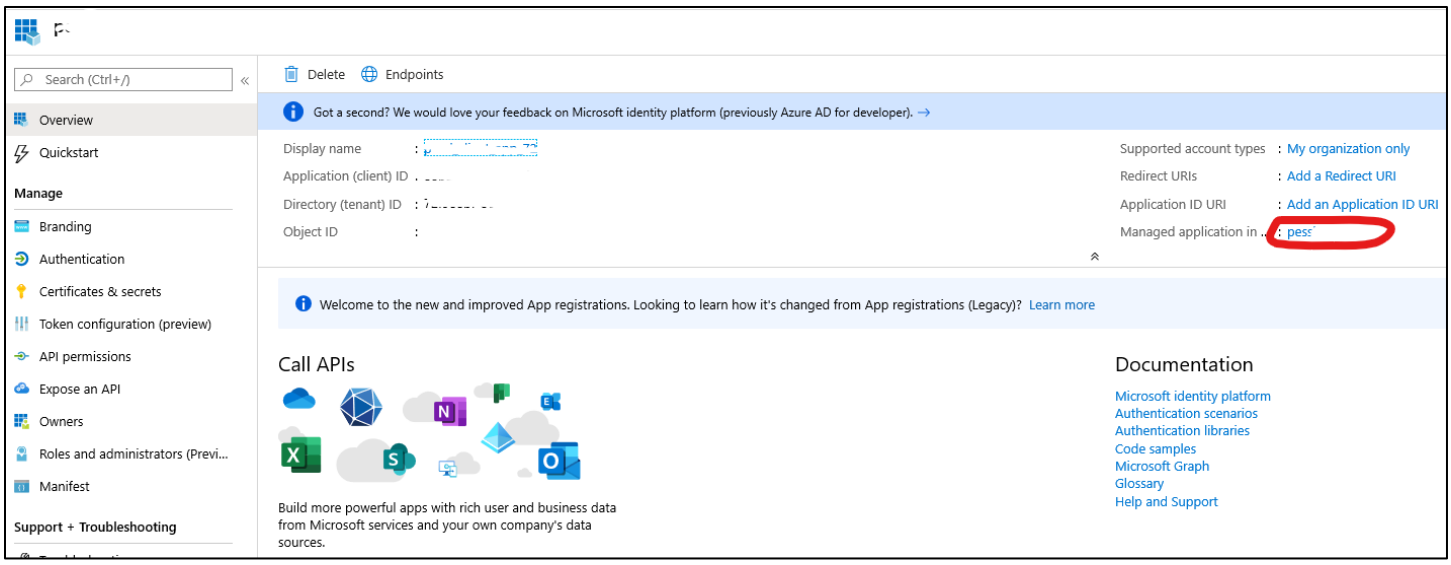
In `c:\iotsimulator`, you will find two configuration files: EndPointConfig.txt and DataConfig.txt

Update EndPointConfig.txt

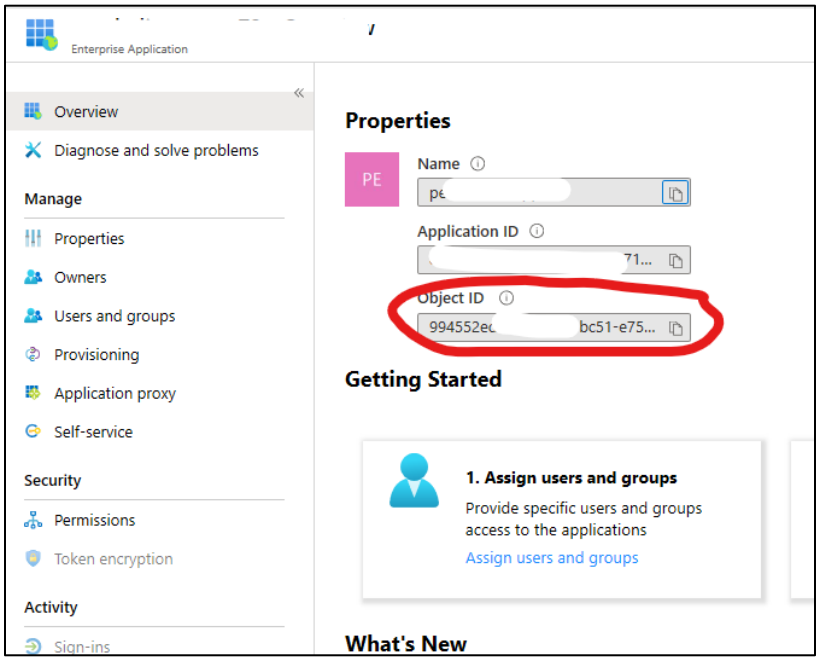
You will need two set of credentials – one for admin and one for partner.

Follow the below steps to generate the required credentials. The admin credentials are marked in red and the partner credentials are marked in green.

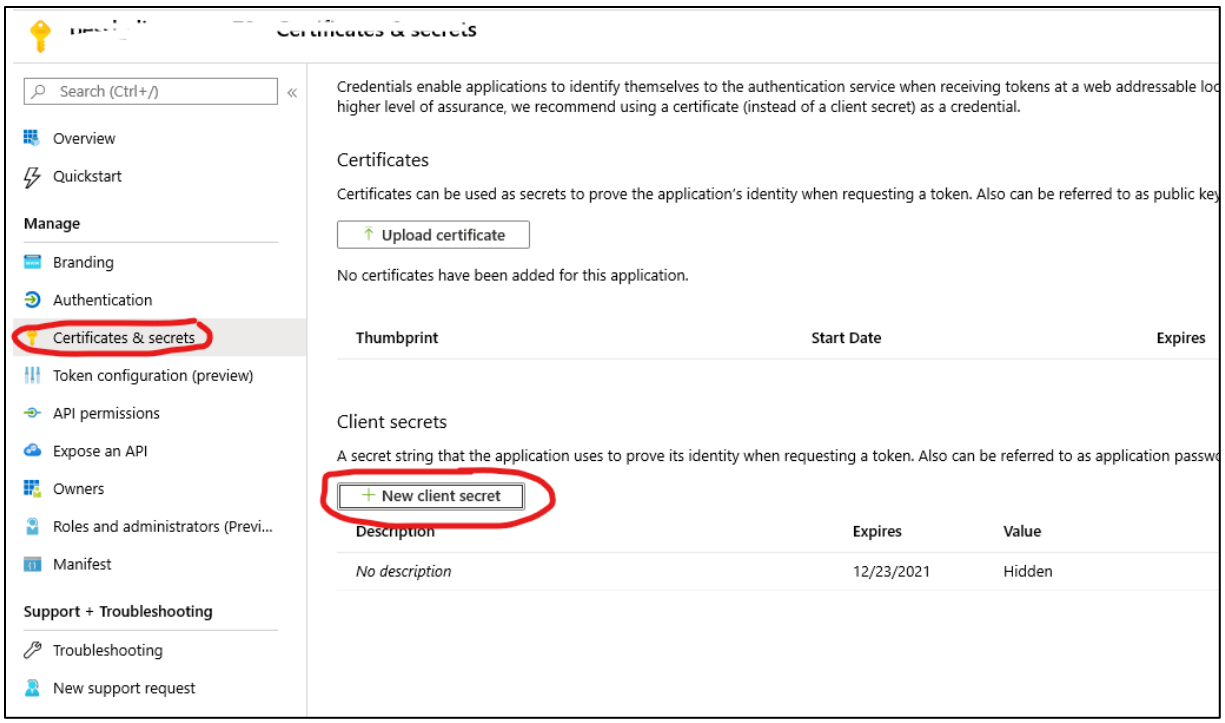
1. Admin Credentials
    a. Go to Azure Active Directory -> App Registrations and select the app registration that was created during FarmBeats deployment. It will have the same name as your Datahub.
    b. Capture the Client ID and Tenant ID
    c. Click on the app registration link beside “Managed application in local directory”



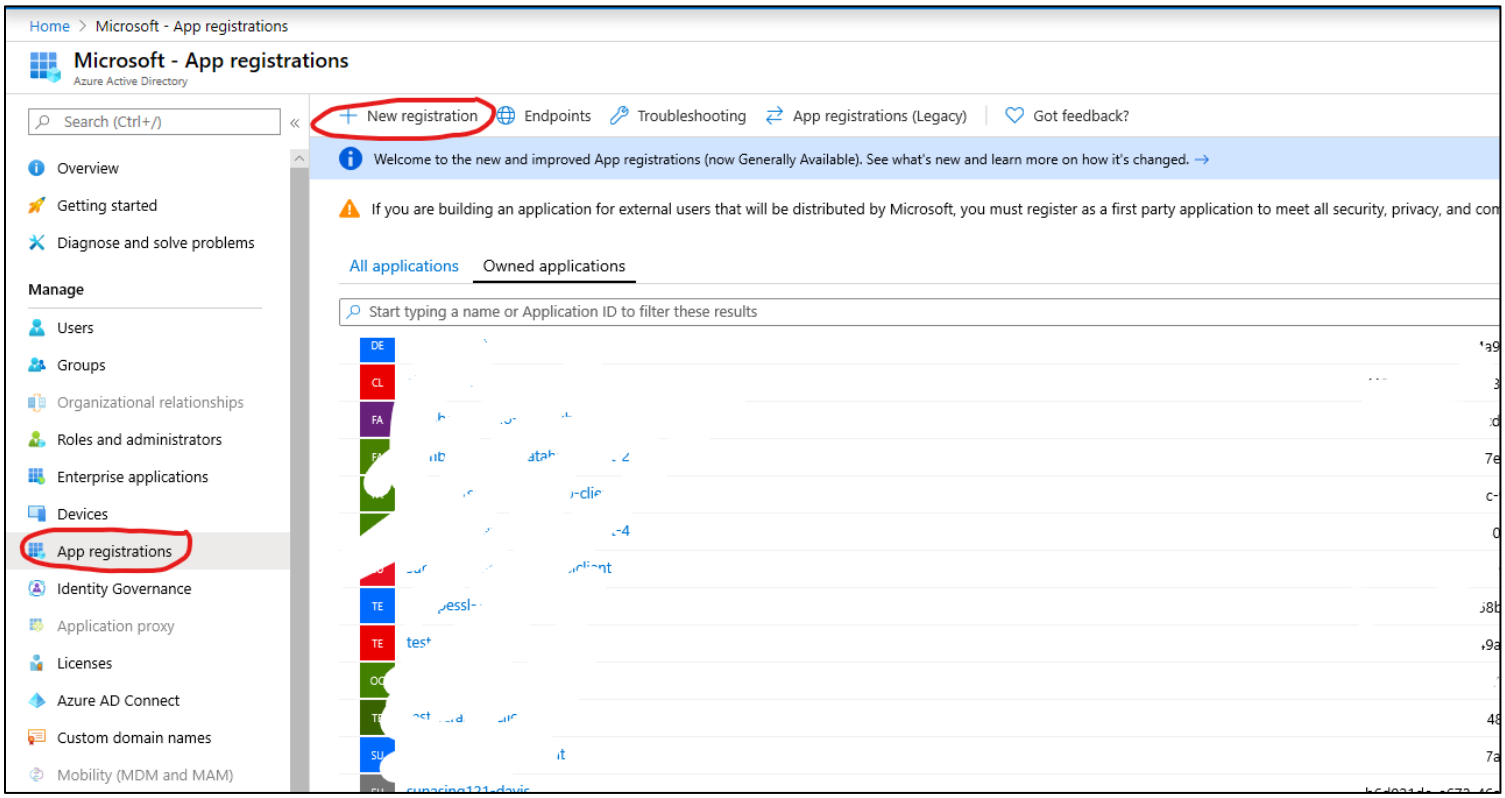
d. Make a note of the "Object ID"



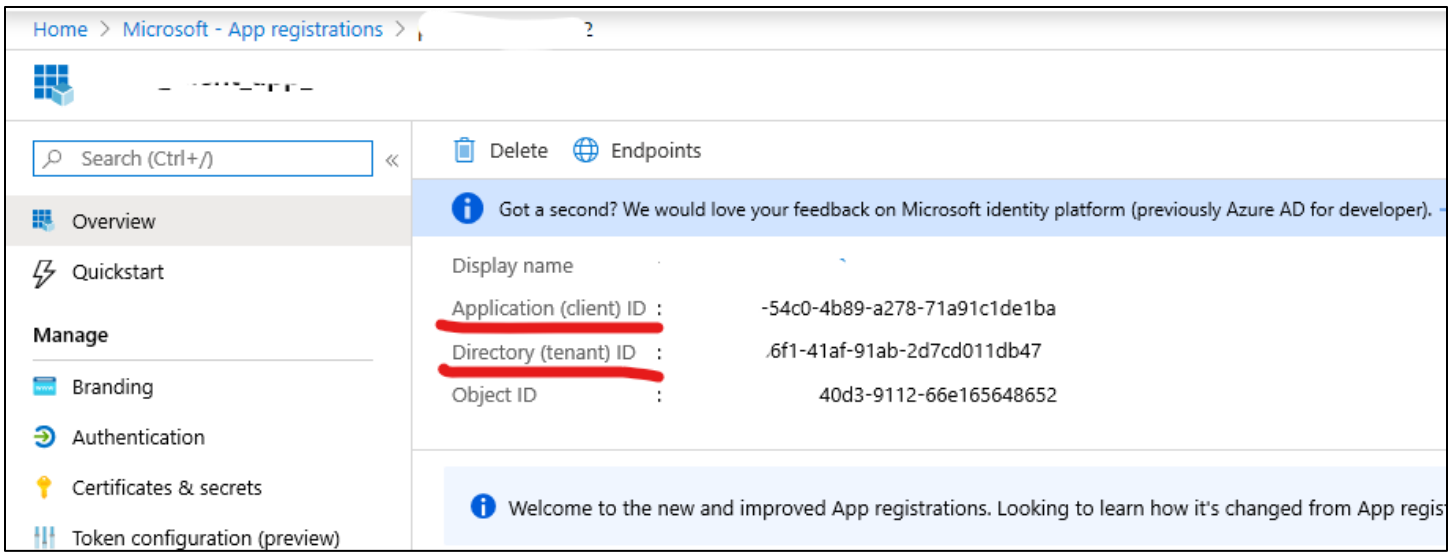
e. Go to Certificates and Secrets -> New Client Secret. Generate a new secret and make a note of the Client Secret.



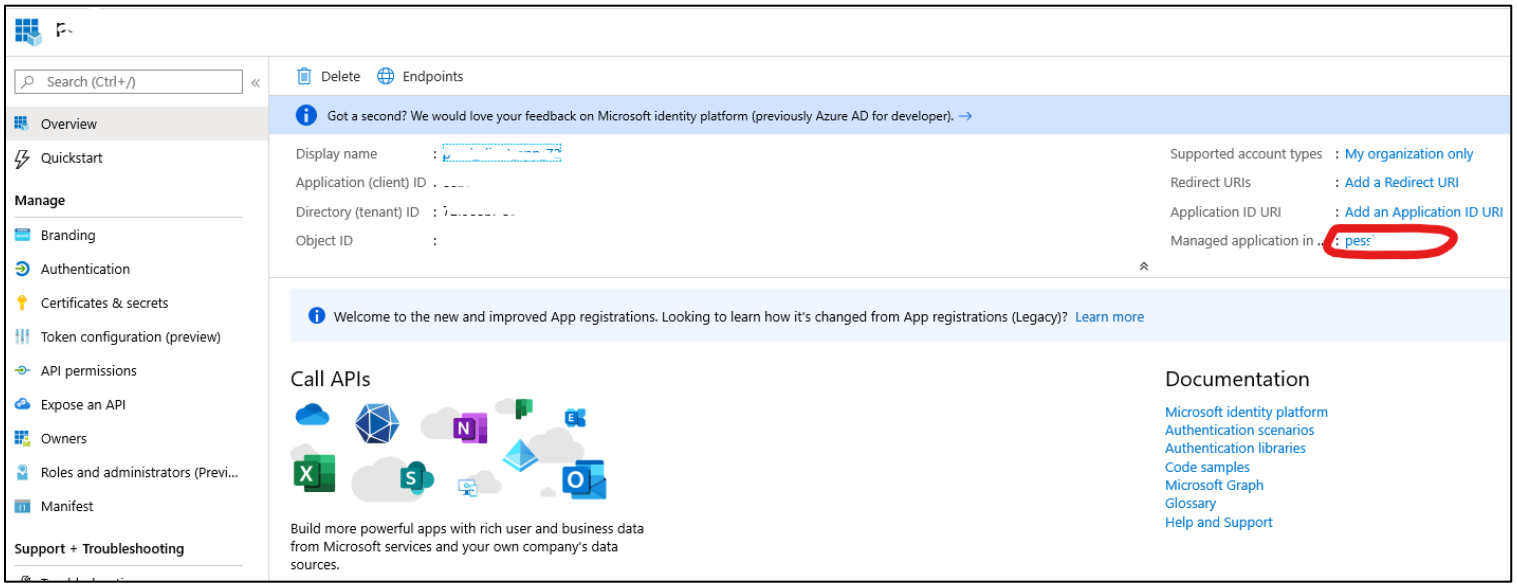
2. Partner Credentials:
    a. Create an AAD app by navigating to Azure portal, Azure Active Directory -> App Registrations -> New App Registration. Select default settings.



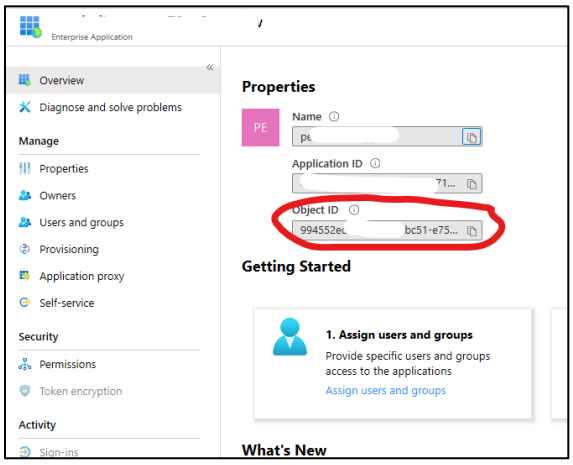
    b. Capture the Client ID and Tenant ID of the newly created app registration



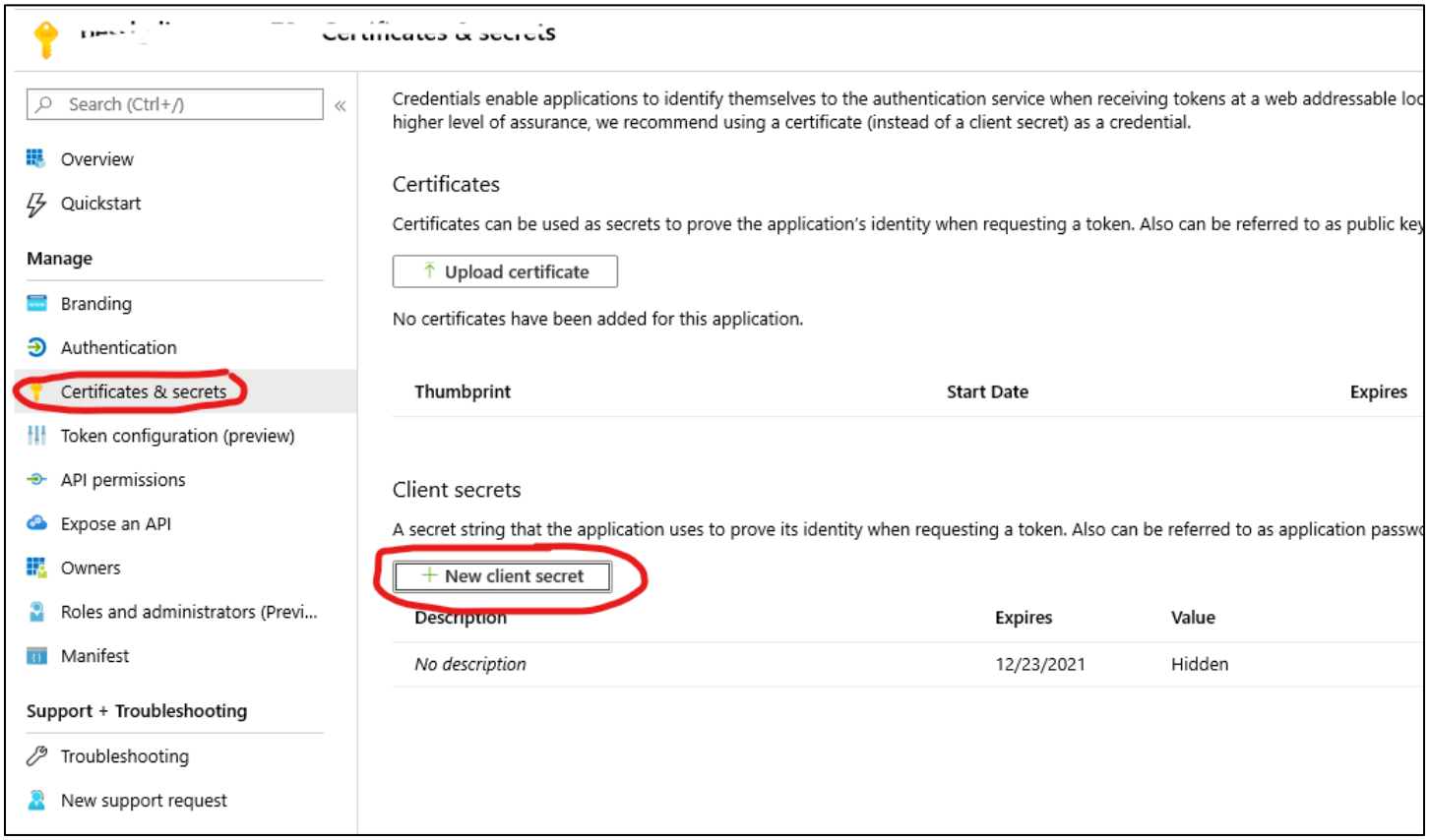
c. Click on the app registration link beside "Managed application in local directory"



d. Make a note of the "Object ID"



e. Go to "Certificates and Secrets" -> New Client Secret. Generate a new secret and make a note of the Client Secret.



Now you have the values to update the EndPointConfig.txt as below:

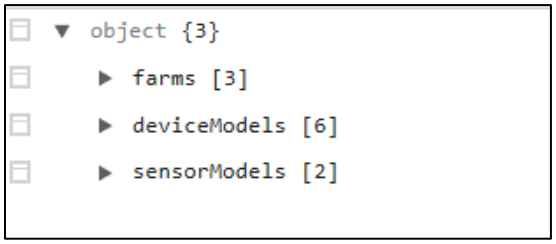
```
{
    "dataHubAppServiceEndPoint": "Your FarmBeats Datahub endpoint e.g. https://datahub.azurewebsites.net",
    "adminAADDetails": {
      "clientID": "<the aad app id that was created during FarmBeats deployment. Step 1b>",
      "clientSecret": "<generate a client secret for the app id. Step 1e>",
      "tenantID": "<tenant id. Step 1b>",
      "objectID": "<object id of the service principal associated with the app. Step 1d>",
      "aadAppHomePageUrl": "Your FarmBeats Datahub endpoint e.g. https://datahub.azurewebsites.net"
    },
    "partnerAADDetails": {
      "clientID": "<The aad app id that was created in the steps above. Step 2b>",
      "clientSecret": "<Generate a client secret for this app. Step 2e>",
      "tenantID": "<tenant id. Step 2b>",
      "objectID": "<object id of the service principal associated with the app. Step 2d>",
      "aadAppHomePageUrl": "Your FarmBeats Datahub endpoint e.g. https://datahub.azurewebsites.net"
    }
  }
```

Here is a sample EndPointConfig.txt:

```
[
  {
    "dataHubAppServiceEndPoint": "https://farmbeatsxxxxxxx.azurewebsites.net",
    "adminAADDetails": {
      "clientID": "4f7a729e-f91d-495b-bb33- xxxxxxx",
      "clientSecret": "MRcgfemfYQwvk2gV2-oz64jym=.Klqb?",
      "tenantID": "9467df75-672a-xxxx-b121-f7d61050d976",
      "objectID": "54b99753-d6c4-xxxx-8bb7-fecf1a89806f",
      "aadAppHomePageUrl": "https:// farmbeatsxxxxxxx.azurewebsites.net"
    },
    "partnerAADDetails": {
      "clientID": "777346d6-f422-4c9f-aac2- xxxxxxx",
      "clientSecret": "ZWI1OWVjNTUtYjIwZC00NDBkLThiZDYtODgxNzBmNmZiNDFl=",
      "tenantID": "9467df75-672a-xxxx-b121-f7d61050d976",
      "objectID": "2288de44-09ca-xxxx-ab46-48a932e8fa96",
      "aadAppHomePageUrl": "https:// farmbeatsxxxxxxx.azurewebsites.net"
    }
  }
]
```

Update DataConfig.txt

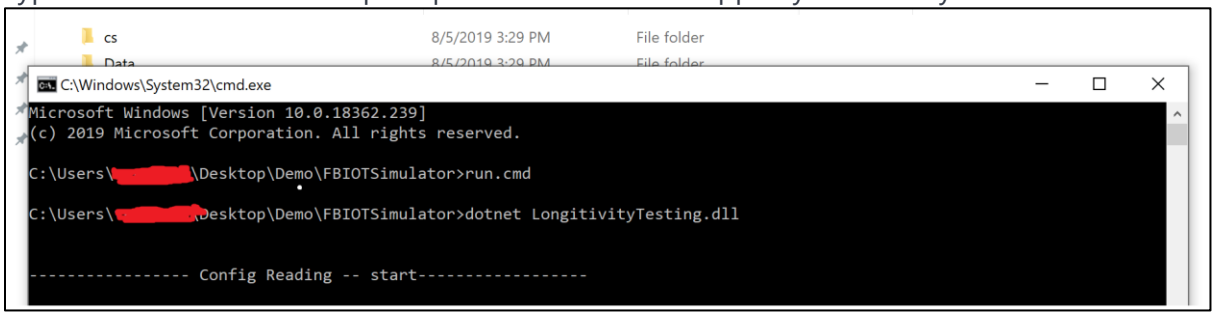
You will find a file called DataConfig.txt in the `c:\iotsimulator` folder. It is a text file in json format and has three farms along with few devices and sensors pre-configured as shown below:



Update it as per your requirements. You can use a json editor to edit the same. For details on the device/sensor specifications, please see this link.

Run the app

- Now you have the EndPointConfig and DataConfig as per your specifications.
- Open Command Prompt and go to the `c:\otsimulator`.
- Type `run.cmd` in command prompt which will run the app in your local system.



- Alternatively, you can also create a web job to run this app in cloud.
  - Create a new zip file after editing the necessary config files.
  - Open Azure App service. For creating a new Azure App service, please refer the documentation.
- Open WebJobs > New > create new continuous web job by uploading the zip file.