Connecting Virtual Sensor to Azure IoT Hub

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Contents

Objectives

This lab will help you to explore IoT Hub, by connecting a virtual sensor to it. You can find the sample code for this Lab at:

https://github.com/acsug/GIB2018/tree/master/samples/Simulated%20IoT%20Devices%20and%20Azure

Prerequisites

- Microsoft Azure account and subscription
- Visual Studio 2017

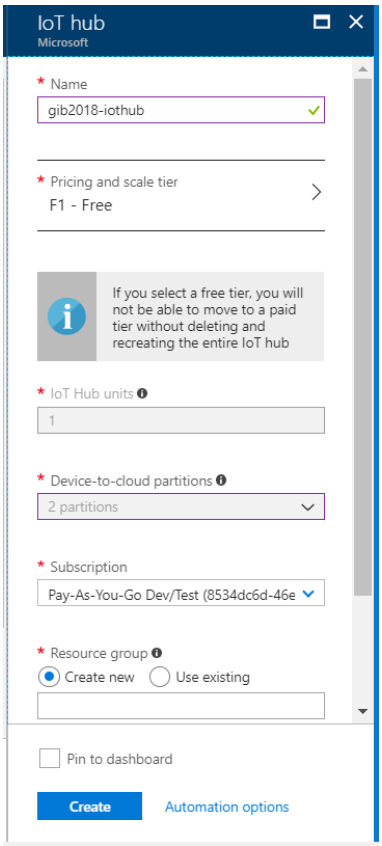
Step by step guide

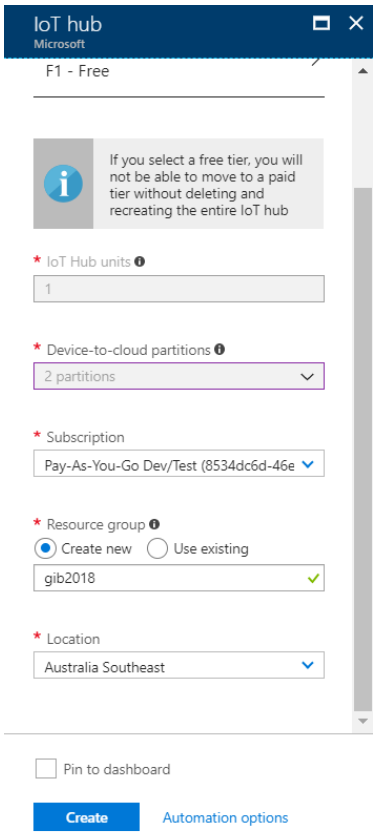
Create an IoT Hub resource

1. Go to **Azure Portal** (portal.azure.com).
2. Click **+ Create a resource** -> Search for **IoT Hub** -> Select the first **IoT Hub** option -> Click **Create**.
3. Enter the following information:
   - **Name**: The name of your IoT Hub must be globally unique
   - **Pricing and scale tier**: F1 – Free
   - **Subscription**: Choose your subscription
   - **Resource group**: Create a new resource group. Give it a name.
   - **Location**: Australia Southeast

   A Resource group is similar to a folder that contains files. In this case, your 'files' are your resources – one of them is your IoT Hub.

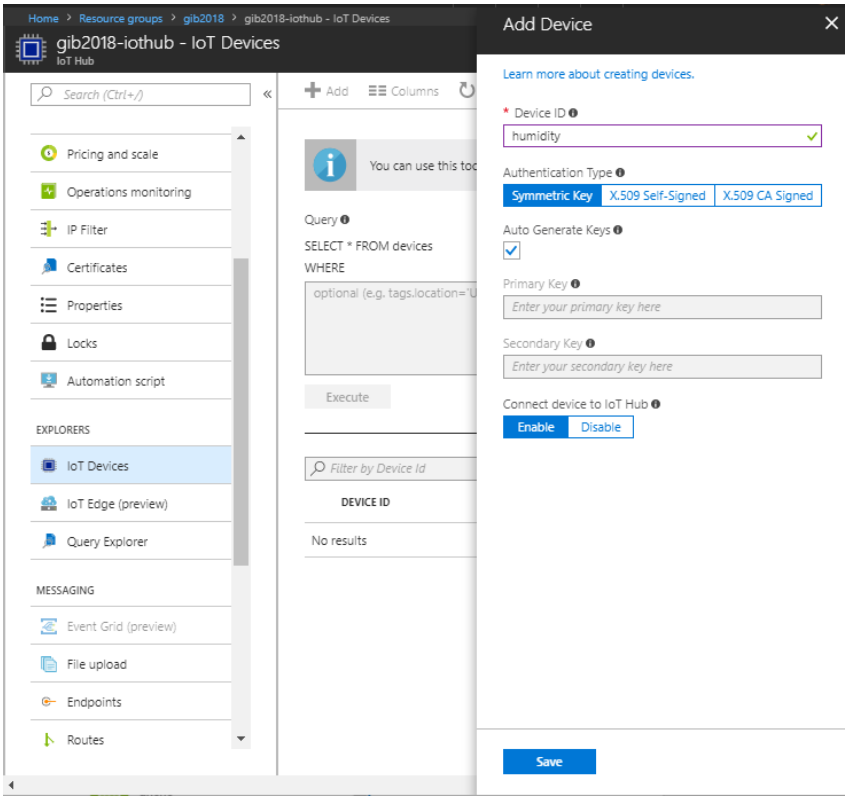
   Click **Create**.





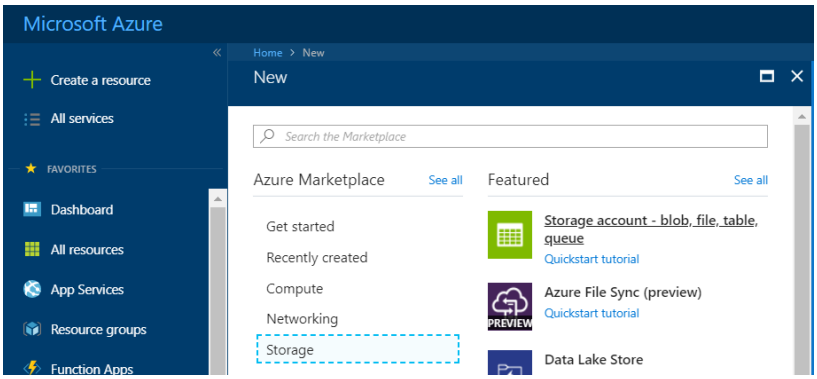
4. Once deployment is finished, go to your IoT Hub. **Resources groups** -> your Resource group -> your **IoT Hub**.

5. Add 2 devices – humidity and temperature. From your **IoT Hub** screen -> Go to **IoT Devices** -> **+ Add**.
    - For the Device ID, enter **humidity**. Click **Save**.
    - Again, click **+ Add**. Do the same as above for **temperature**.



Create a Blob Storage

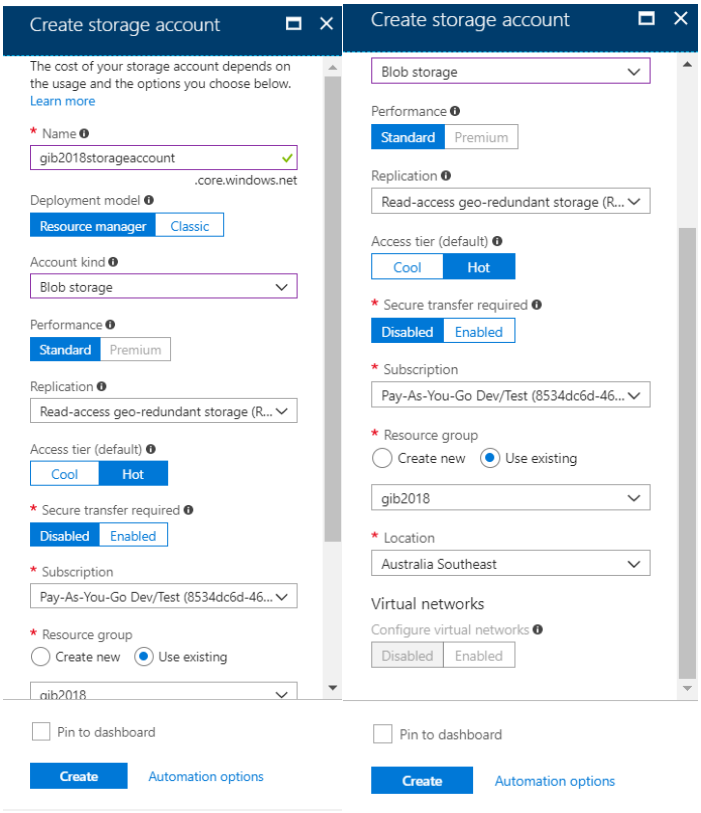
1. Click **+ Create a resource** -> **Storage** -> **Storage account – blob, file, table, queue**.



2. Give your new storage account the following information:
    - **Name**: The name of the storage account must be globally unique.
    - **Account kind**: Blob storage

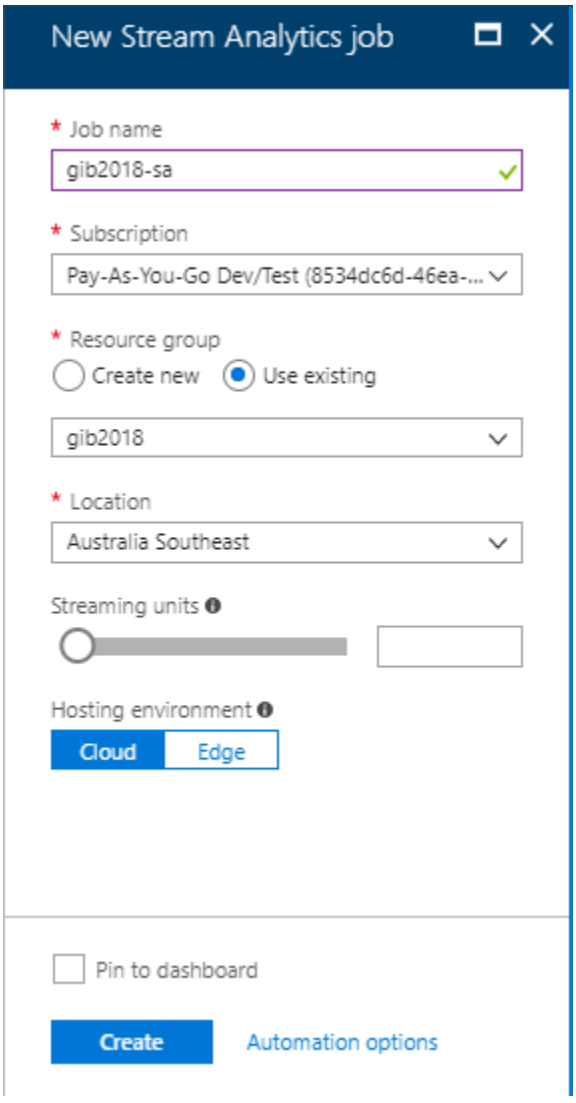
- **Subscription**: Choose the same subscription that your IoT Hub uses.
- **Resource group**: Must be the same resource group that your IoT Hub uses.
- **Location**: Australia Southeast

3. Click **Create**.



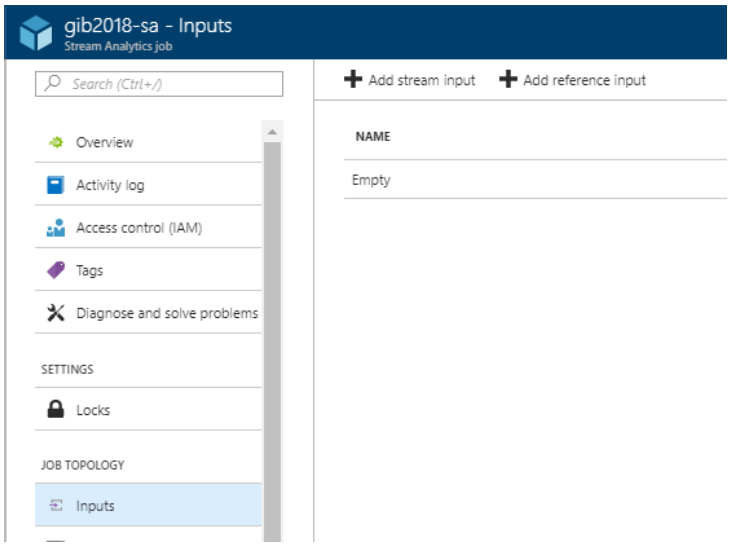
Create a Stream Analytics Job

1. Click **+ Create a resource** -> Search for **Stream Analytics** -> Select the first **Stream Analytics** option -> Click **Create**.
2. Enter the following information:
    - **Name**: Name your Stream Analytics job
    - **Subscription**: Same as IoT Hub's
    - **Resource group**: Same as IoT Hub's
    - **Location**: Australia Southeast
3. Click **Create**.



Set-up Stream Analytics

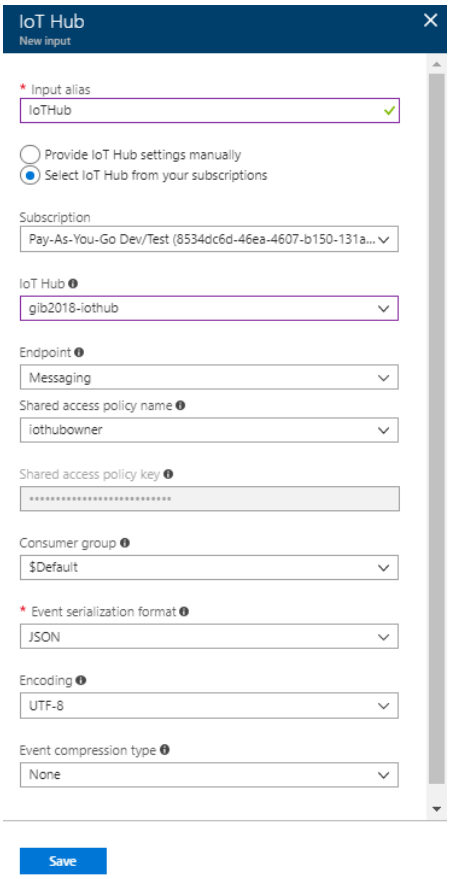
1. Go to **Stream Analytics**. (**Resource groups** -> your Resource group -> **Stream Analytics** job created in Part 3).
2. Click **Inputs** -> **+ Add stream input** -> **IoT Hub**.



3. Enter the following details:

   Use your own subscription and select the IoT Hub you created in Part 1.

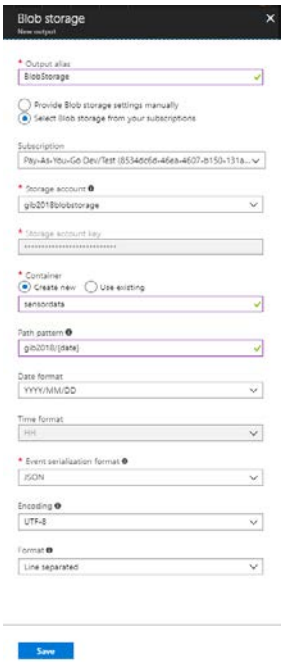
   Click **Save**.



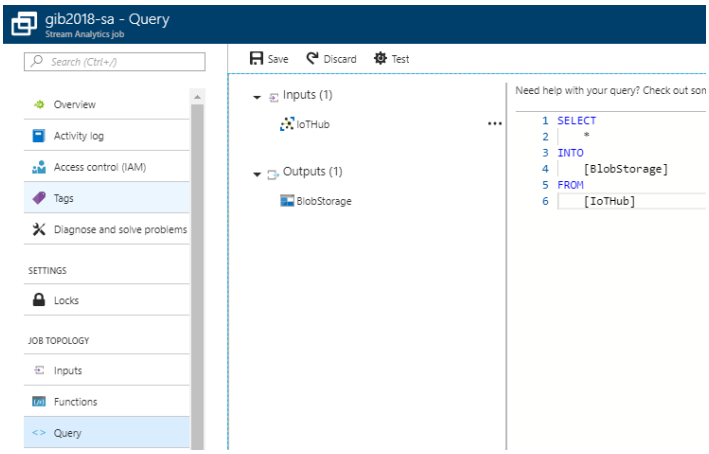
4. Click **Outputs** -> **+ Add** -> **Blob storage**.
5. Enter the following details:

   Use your own subscription and select the Blob Storage you created in Part 2.

   Click **Save**.



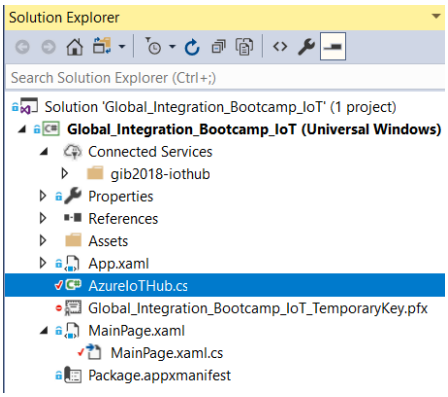
6. Go to **Query**. Replace **[YourOutputAlias]** with **[BlobStorage]** and **[YourInputAlias]** with **[IoTHub]**. Click **Save**.



7. Go to **Overview** -> click **Start**.

Connecting Simulated Devices to IoT Hub using UWP (Universal Windows Platform).

1. Open the **Global_Integration_Bootcamp_IoT.sln** file.
2. Open **AzureIoTHub.cs**.

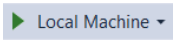


3. Go to **Azure Portal** (portal.azure.com) -> your **IoT Hub** -> **IoT Devices** -> **humidity** -> Copy the **primary key connection string**.

   Go back to **AzureIoTHub.cs** -> replace **{Humidity Connection String}** with the connection string you just copied.

```
30
31      const string deviceConnectionString = "{Humidity Connection String}";
32      const string deviceConnectionString2 = "{Temperature Connection String}";
33
```

   Repeat for temperature. Replace **{Temperature Connection String}**.

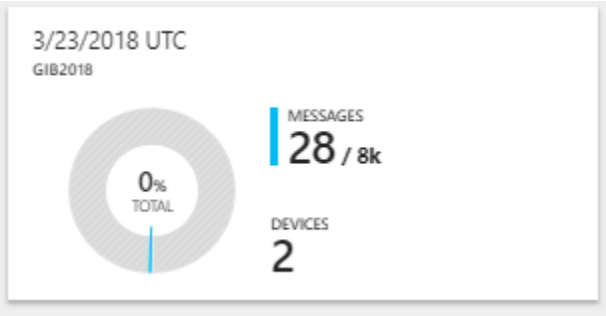
4. Click  to run the application.

5. Press either one of  the buttons to send the current value of a specific sensor device to IoT Hub.

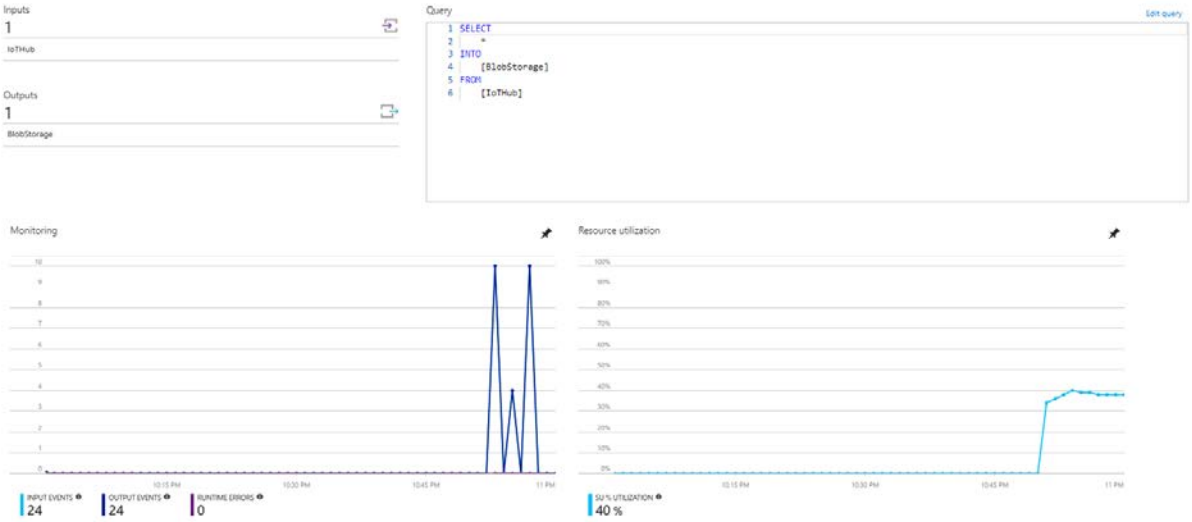
Checking IoT Hub and Blob Storage.

Go to **Azure Portal** (portal.azure.com) and open your **IoT Hub**.

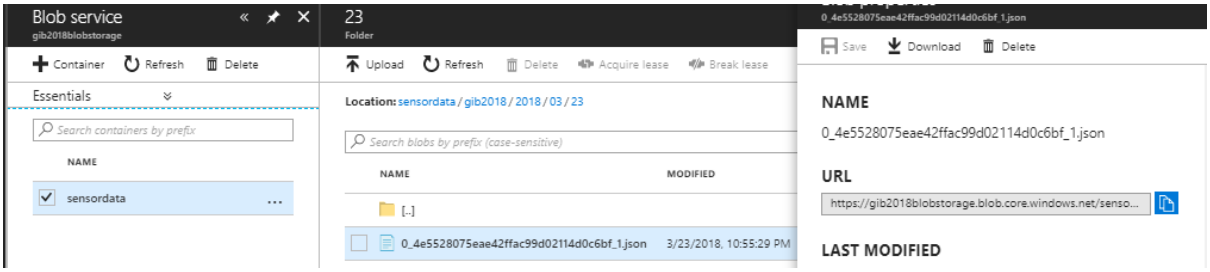
If you clicked **send** in Part 5, you should be able to see how many messages you have sent so far. (You might need to wait a bit just in case there's any delay.)

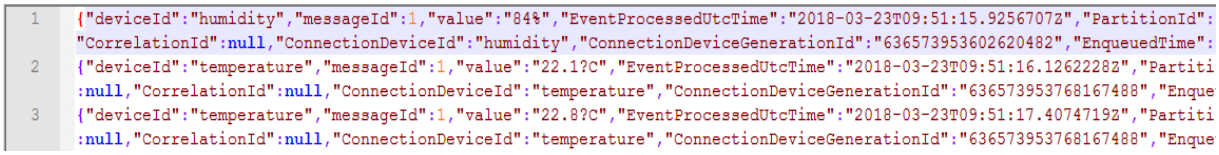


Now, go to **Stream Analytics** and see the Input and Output spikes in the **Monitoring** section/graph. (Again, the messages from IoT Hub might take a few minutes to arrive just like below). Once you see that there is at least one output event, go to your **Blob storage**.



From your **Blob storage** page -> Click **Blobs** -> **sensordata** -> **gib2018** -> **2018** -> **03** -> **23** (or **24**) -> click on the **.json** file -> **Download**.





Finally, don't forget to stop your Stream Analytics when not in use to prevent charges.