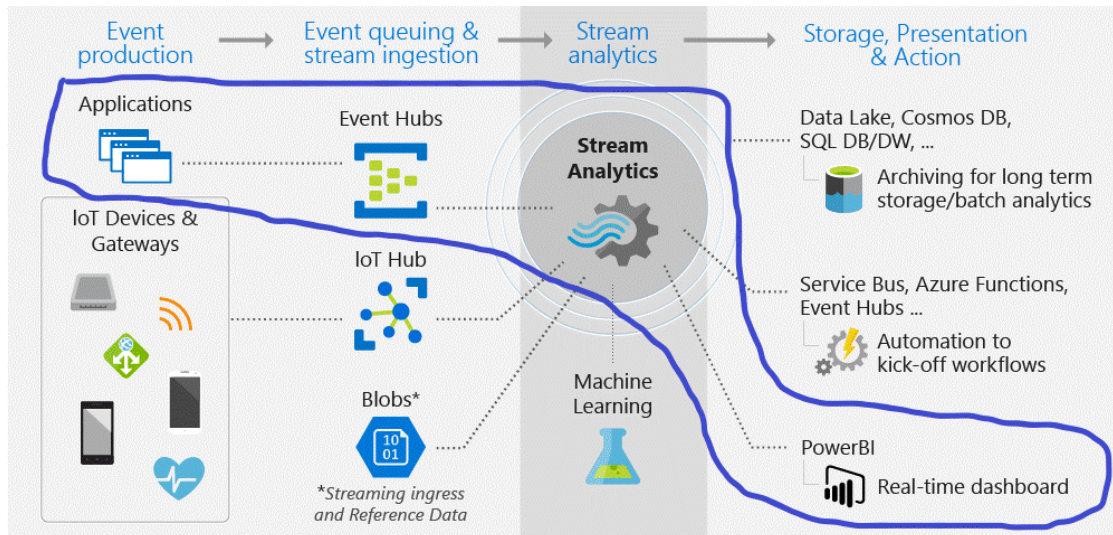


Demo Introduction

This setup guide will step you through creating an end-to-end demo of Python writing to an Azure Event Hub, Azure Stream Analytics mulling from Azure Event Hub and finally creating a real time line chart in Power BI.

The section of this architecture diagram outlined in blue represent the architecture of this demo.



Prerequisites

A computer with python installed.

The first thing you will need is somewhere to run the sample Python code that will simulate a sine wave.

Go to <https://www.python.org/downloads/> download and install the latest version of Python.

If the machine you have does not have the module to include service bus calls you can install it using the following command.

```
pip install azure-eventhub==1.3.*
```

You will need to make minor changes to the python code to include the name of your event hub and your event hub credentials. This can be done in notepad or you could install Visual Studio or Visual Studio Code.

An Azure Account

If you have an Azure account, you can skip this step. If you do not have an Azure account you can sign up for a free trial here: https://azure.microsoft.com/en-us/free/search/?&OCID=AID2000128_SEM_XuZaUwAAAGT3OwZj:20200614171147:s&msclkid=024061b7e2a71698aefd3f51b8e83491&ef_id=XuZaUwAAAGT3OwZj:20200614171147:s&dclid=CJnflr7mgeoCFYGHaQod36cHcw

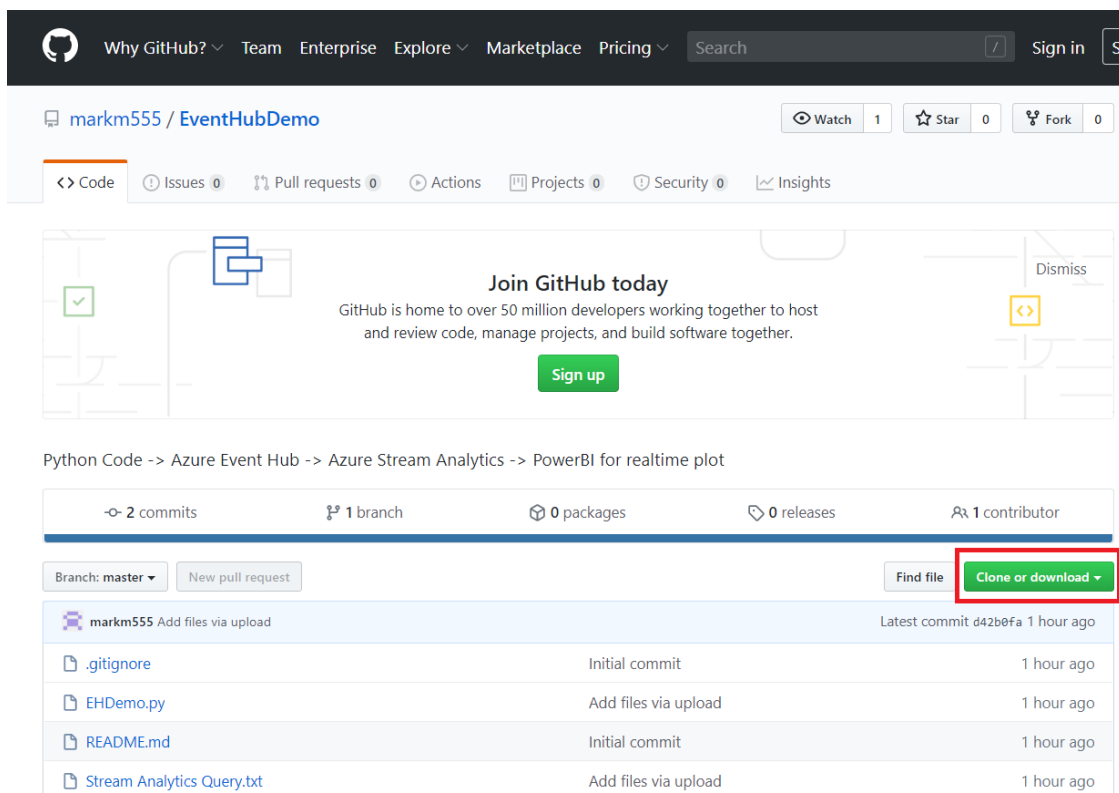
A PowerBI account

If you have a Power BI account you can skip this step. If you do not have a Power BI account you and sign up for a free trial here: <https://powerbi.microsoft.com/en-us/>

Clone the Git Hub repository

From the machine with python installed go to <https://www.github.com/markm55/EventHubDemo> and clone the repository to your machine.

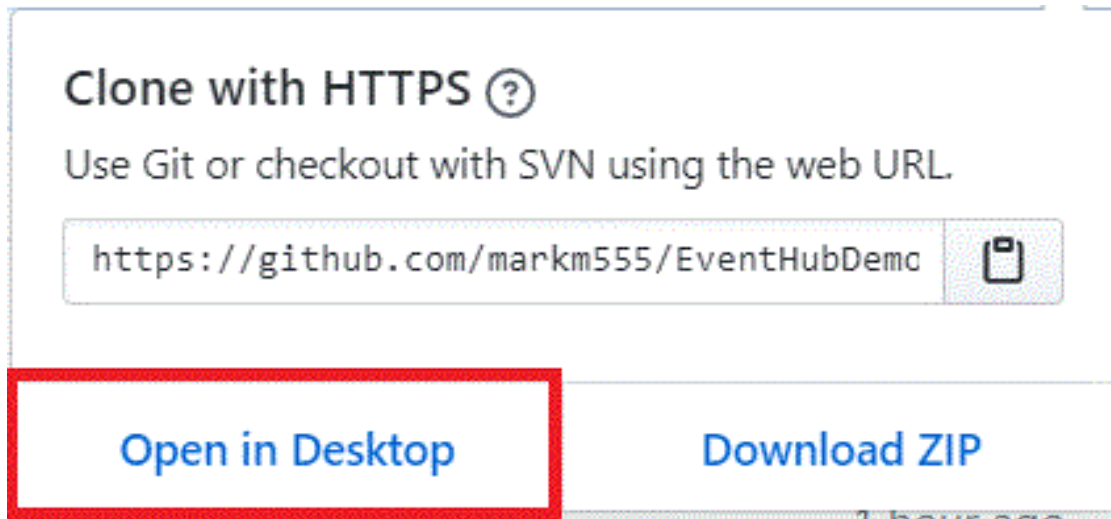
Click on Clone or download and the following dialog box will display:



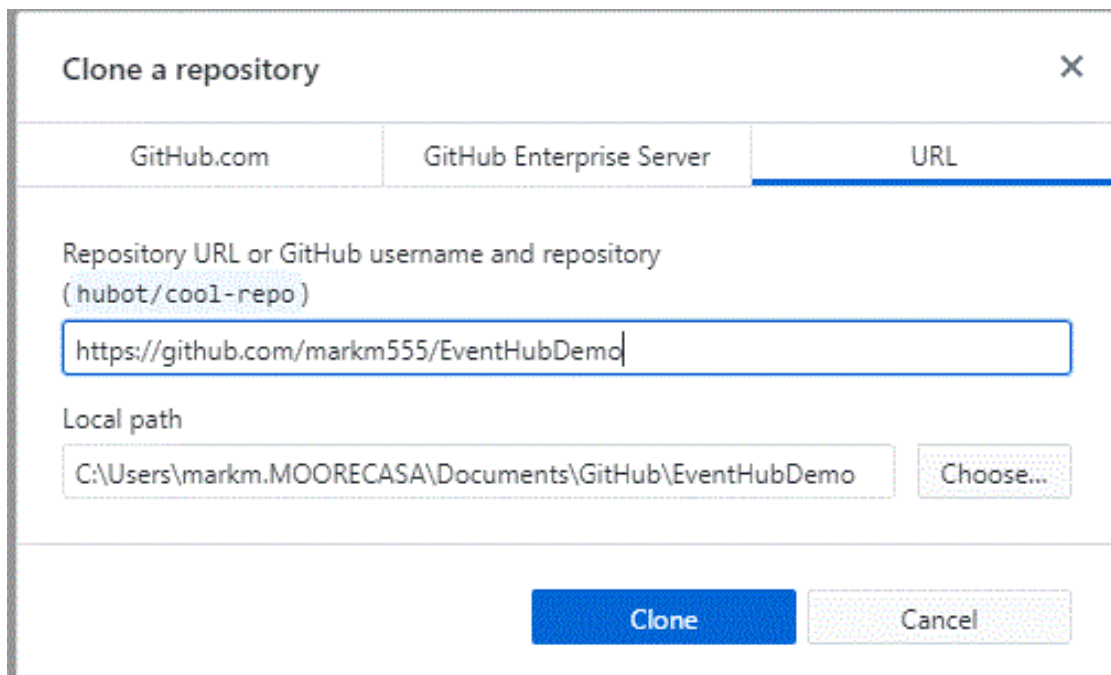
Python Code -> Azure Event Hub -> Azure Stream Analytics -> PowerBI for realtime plot

2 commits	1 branch	0 packages	0 releases	1 contributor
Branch: master New pull request Find file Clone or download				
markm55 Add files via upload Latest commit d42b0fa 1 hour ago				
.gitignore	Initial commit	1 hour ago		
EHDemo.py	Add files via upload	1 hour ago		
README.md	Initial commit	1 hour ago		
Stream Analytics Query.txt	Add files via upload	1 hour ago		

Click on Open in Desktop



You may be prompted to install Github desktop. If you are click okay and the following dialog box will appear:



You can accept the default local path or change it to something different. The path you choose is where we will do the remainder of the work for this demo.

Setting up the Demo

Log into Azure and begin setting up the resources we will need for this demo: In this section you will:

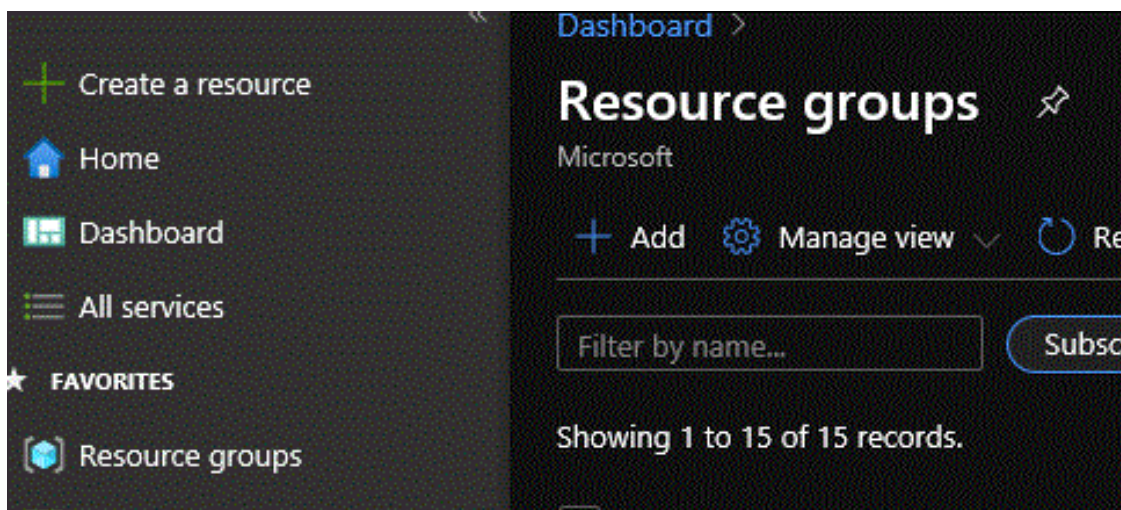
1. Create a Resource Group

2. Create an Event Hub
3. Create a Stream Analytics Job with the Event Hub as your input and Power BI as your output.
4. Create a Stream Analytics Query
5. Run the Stream Analytics Query

Go to <https://portal.azure.com> and let's get started.

Create a Resource Group

Once you have logged into Azure click on Resource Groups and Click on + Add

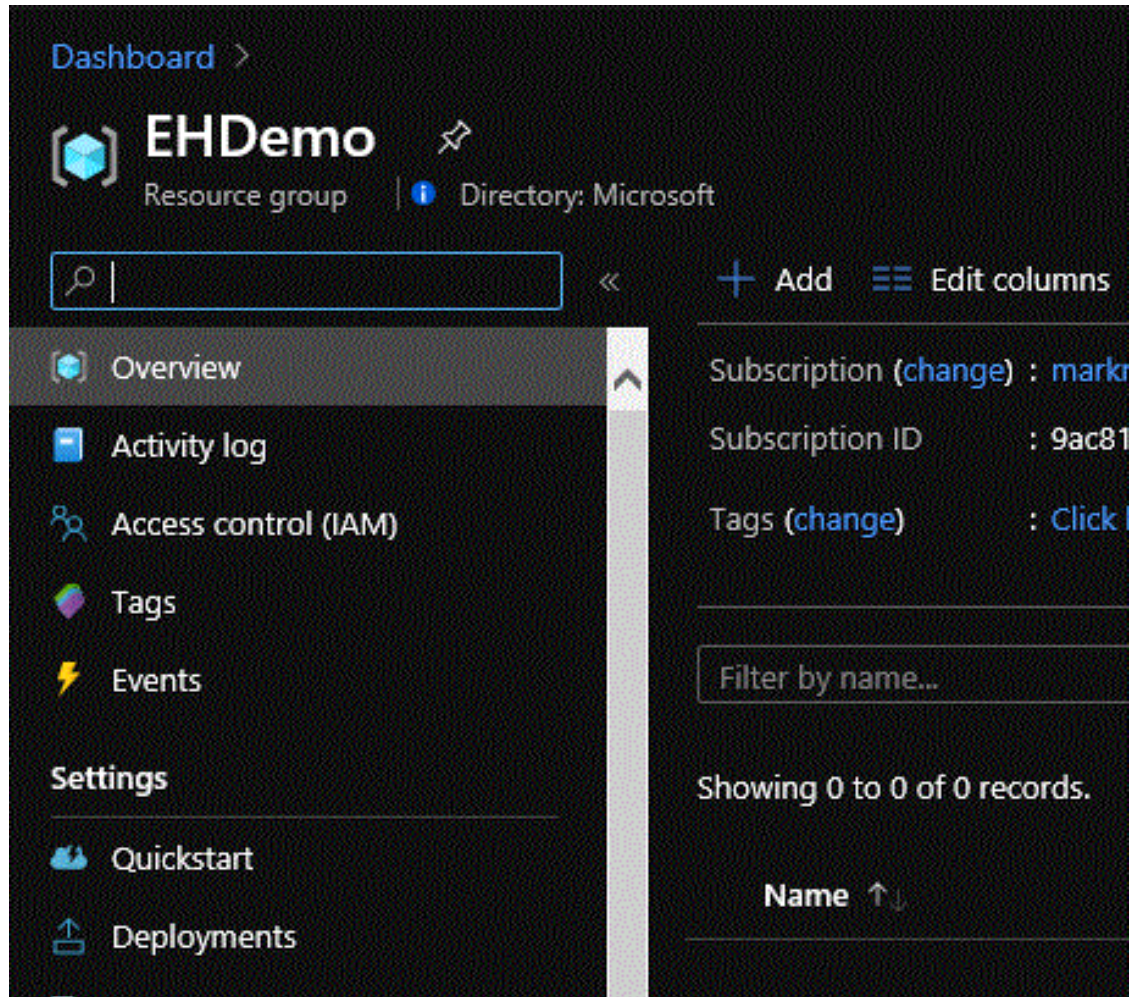


Chose a name for your resource group and choose a region for the resource group

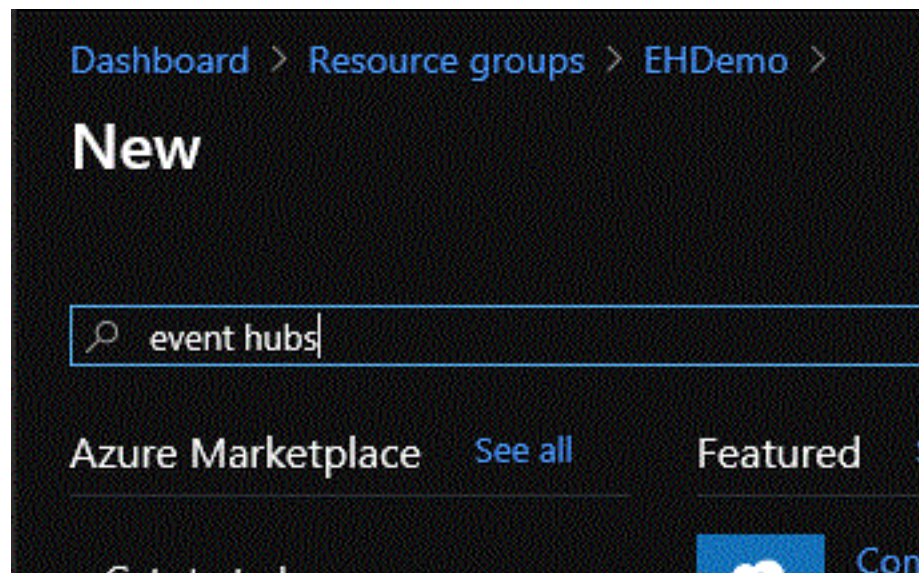
A screenshot of the 'Basics' tab in the Azure portal's 'Create resource group' form. The page has three tabs: 'Basics', 'Tags', and 'Review + create'. A descriptive paragraph explains that a resource group is a container for related resources. Below this, the 'Project details' section contains two dropdown menus: 'Subscription' (selected: 'markm - Internal Consumption') and 'Resource group' (selected: 'EHDemo', marked with a green checkmark). The 'Resource details' section contains a 'Region' dropdown menu (selected: '(US) South Central US').

Creating an Event Hub

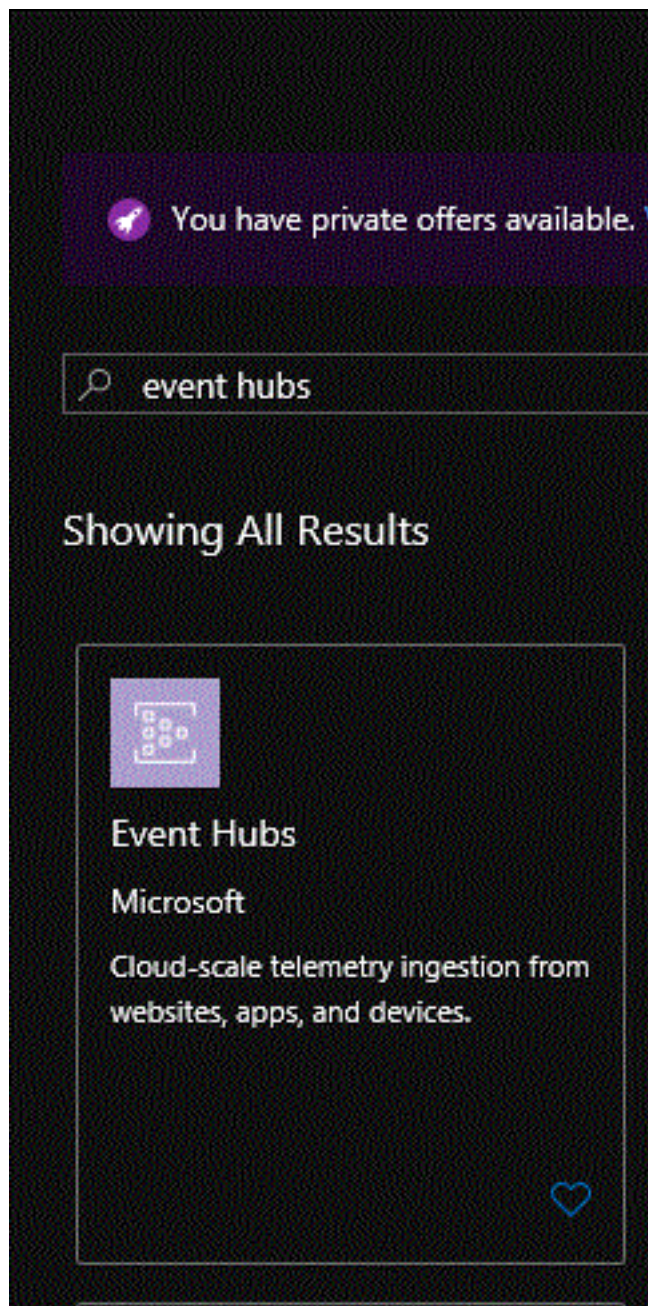
Click on your newly created resource group and click on + Add.



In the search box type “event hubs”



Select event hubs



In this screen you will need to provide the resource group where you want the event hub, a namespace for the event hub, a region for the event hub, a pricing tier (basic works fine and is the least expensive).

Create Namespace

Event Hubs

Basics Features Tags Review + create

PROJECT DETAILS

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * markm - Internal Consumption

Resource group * EHDemo

[Create new](#)

INSTANCE DETAILS

Enter required settings for this namespace, including a price tier and configuring the number of throughput units.

Namespace name * EHDemo-EH ✓
.servicebus.windows.net

Location * South Central US

Pricing tier ([View full pricing details](#)) * Basic (1 Consumer group, 100 Brokered connections)

Throughput Units * 1

Click Create and once the event hub is created click on it in your resource group.

Click on + Event Hub to create an Event Hub.

Dashboard > Namespace Overview

EHDemo-EH

Event Hubs Namespace | Directory: Microsoft

Search

+ Event Hub Delete Refresh

Resource group (change) : EHDemo

Status : Active

Location : South Central US

Subscription (change) : markm - Internal Consumption

Subscription ID : 9ac817f3-c68f-4899-89cb-f64c8cde9fd3

Host name : EHDemo-EH.servicebus.windows.net

Tags (change) : [Click here to add tags](#)

NAMESPACE CONTENTS
0 EVENT HUBS

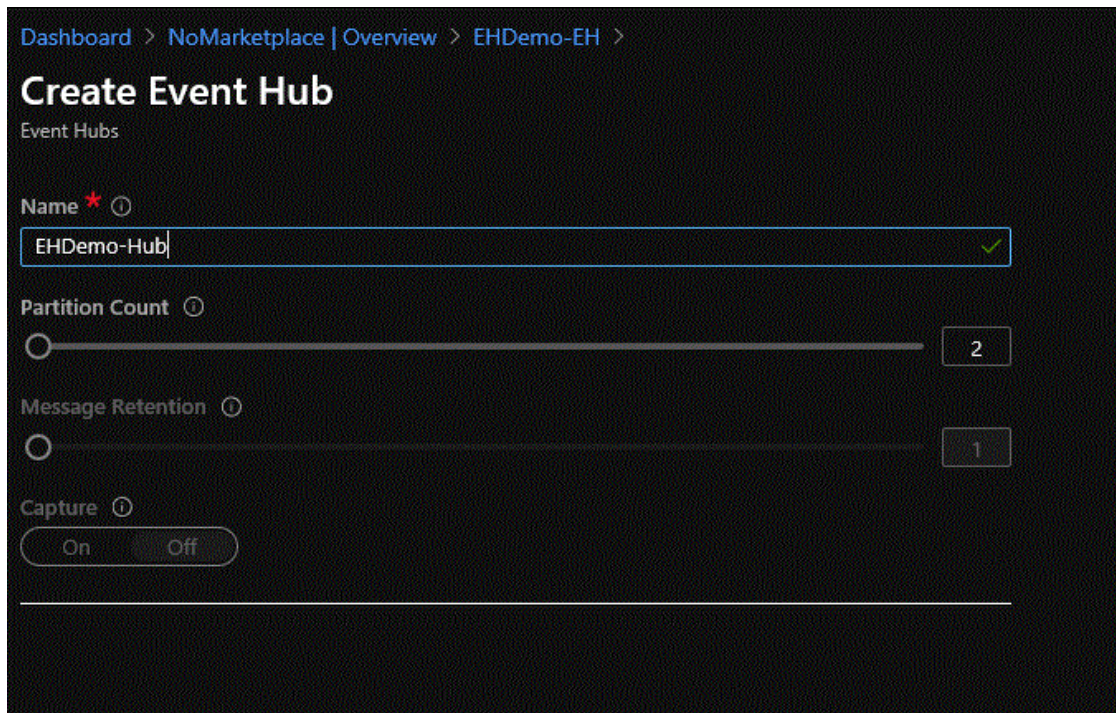
KAFKA SURFACE
NOT SUPPORTED

Show metrics:
[Requests](#) [Messages](#) [Throughput](#)

100

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Events
- Settings
 - Shared access policies
 - Scale
 - Geo-Recovery
 - Encryption
 - Properties

Make a note of your Host name displayed above, you will need that for the python portion of this Demo.



Dashboard > NoMarketplace | Overview > EHDemo-EH >

Create Event Hub

Event Hubs

Name ★ ⓘ

EHDemo-Hub ✓

Partition Count ⓘ

2

Message Retention ⓘ

1

Capture ⓘ

☒ On ☐ Off

Choose a name for the Event Hub and make a note of this name as well, you will need that for the python portion.

Click Create.

Once the Event Hub has been created you will need to create a policy and get a key.

Under Entities click on Event Hubs and Click on the Event Hub you just created.



EHDemo-EH | Event Hubs

Event Hubs Namespace

Directory: Microsoft



Event Hub



Overview



Activity log



Access control (IAM)



Tags



Diagnose and solve problems



Events

Settings



Shared access policies



Scale



Geo-Recovery



Encryption



Properties



Locks



Export template

Entities



Event Hubs

Monitoring



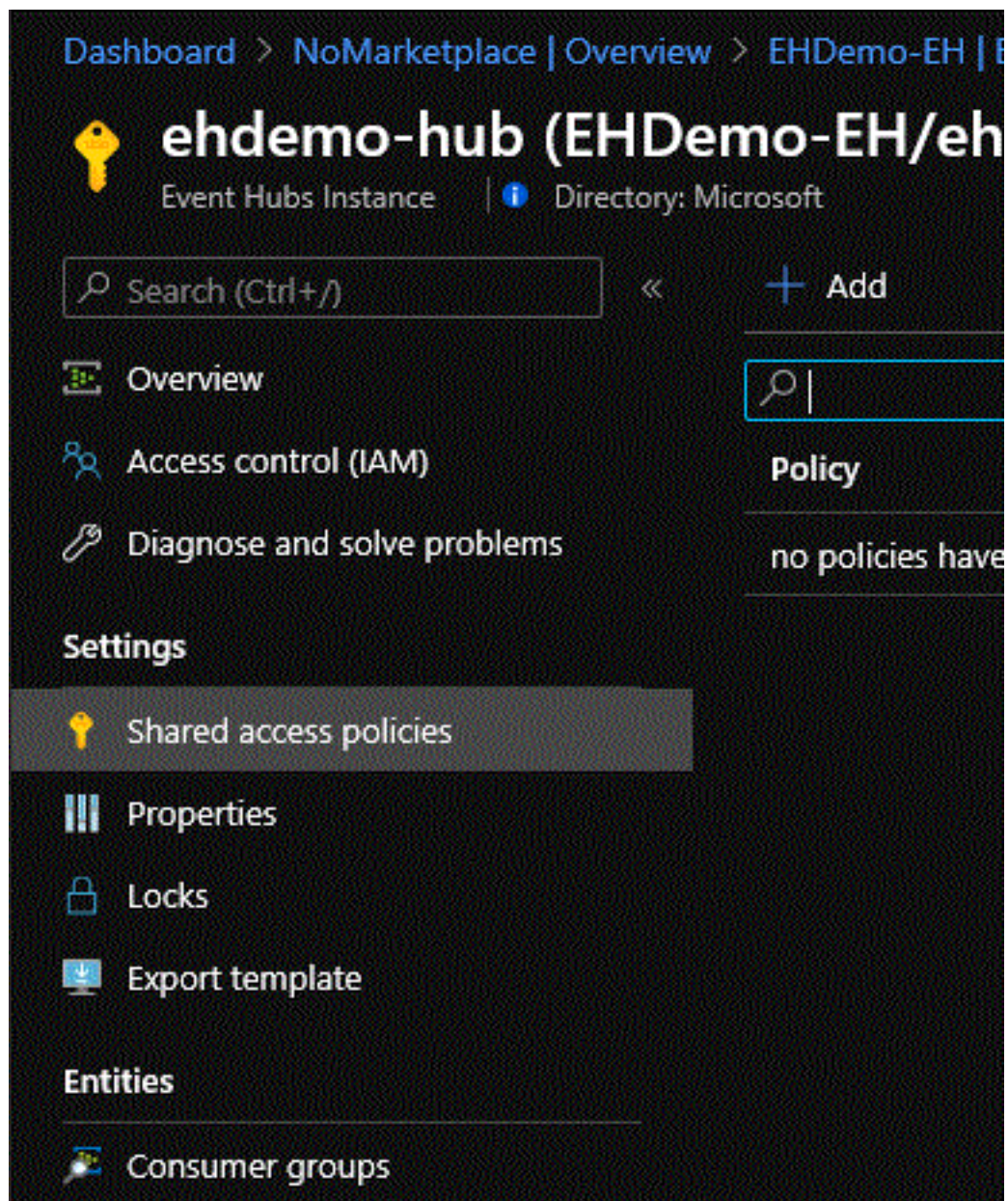
Alerts



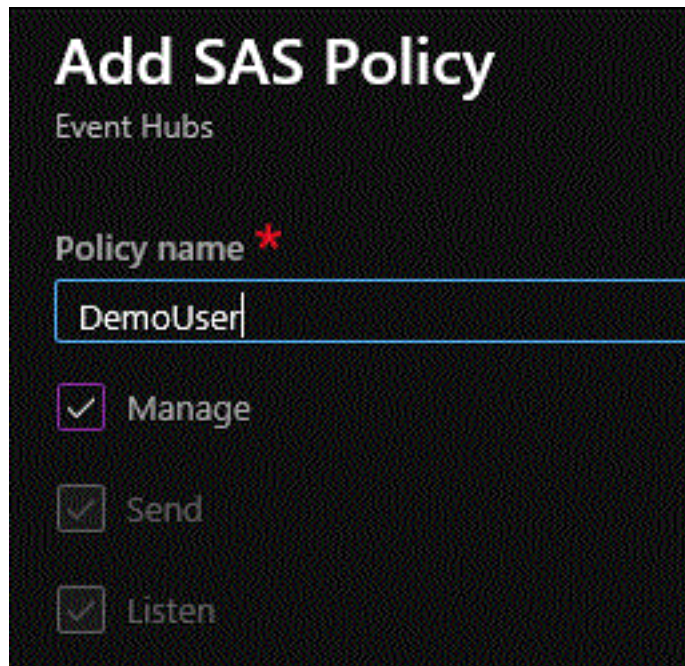
Name

ehdemo-hub

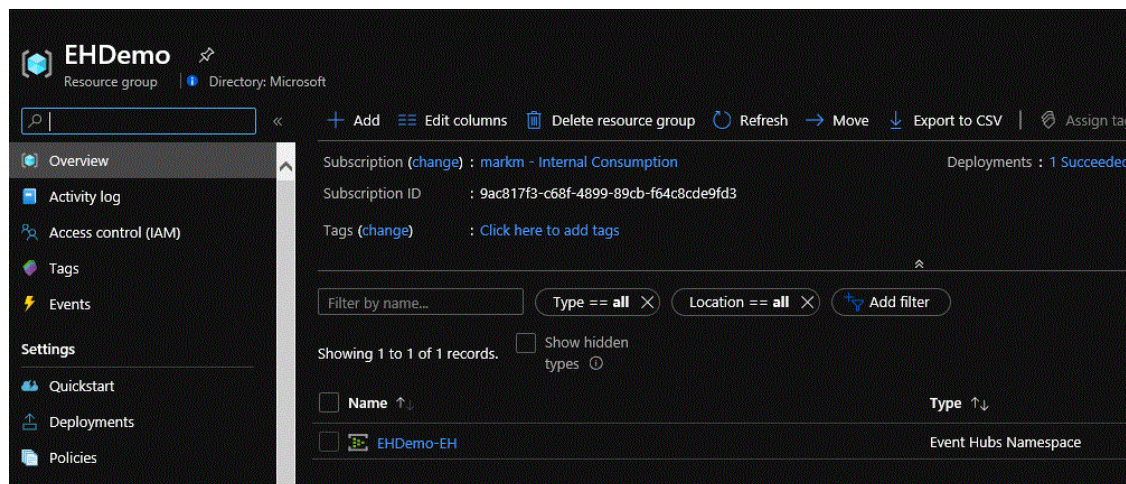
Click on Shared access policies and click + Add



Create a Policy name and select Manage. Send and Listen will fill in automatically.



Make a note of the Policy name you will need this for the Python portion of the Demo setup.



Click on the newly created Share Access Policy and you will see you keys.

Copy your Primary Key and paste it where you have been keeping the other notes you have made for the Python portion of the demo. This is all the information you will need for the Python section.

SAS Policy: DemoUser

Save

Discard

Delete

☒ Manage

☐ Send

☐ Listen

Primary key

7M6twRvlnkyOVU0pmJOOZtdKv7dHn2GT...

Secondary key

3u+GrcGiDsbmHtjp/Yx4e1wQPA1r4k6boF...

Connection string–primary key

Endpoint=sb://ehdemo-eh.servicebus.win...

Connection string–secondary key

Endpoint=sb://ehdemo-eh.servicebus.win...

Create a Stream Analytics Job.

Go back to your resource group and click on + Add like you did in the previous step.

Search for “stream analytics job”

Dashboard > Resource groups > EHDemo >

New

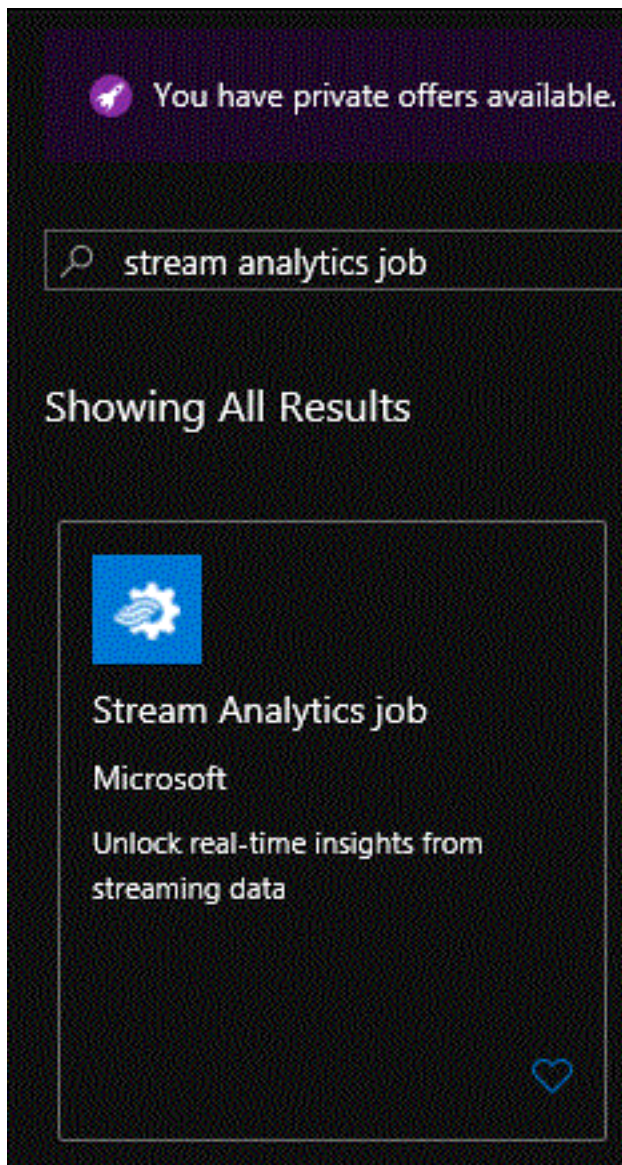
stream analytics job

Azure Marketplace

See all

Popular

Click on Stream Analytics Job




You will need to provide a Job name, a resource group and region.


New Stream Analytics job

 This will create a new Stream Analytics job. You will be charged according to the usage of the job.


Job name *

Stream2PowerBI 

Subscription *


markm - Internal Consumption 

Resource group *

EHDemo 

[Create new](#)

Location *

South Central US 

Hosting environment ⓘ

☒ Cloud

☐ Edge

Streaming units (1 to 192) ⓘ



3



Secure all private data assets needed by this job in my Storage account. ⓘ

Click Create and go to the resource once it is created.



Stream2PowerBI

Stream Analytics job

Directory



Overview



Activity log



Access control (IAM)



Tags



Diagnose and solve problems

Settings



Properties



Locks

Job topology



Inputs



Functions



Query



Outputs

Configure



Storage account settings



Scale

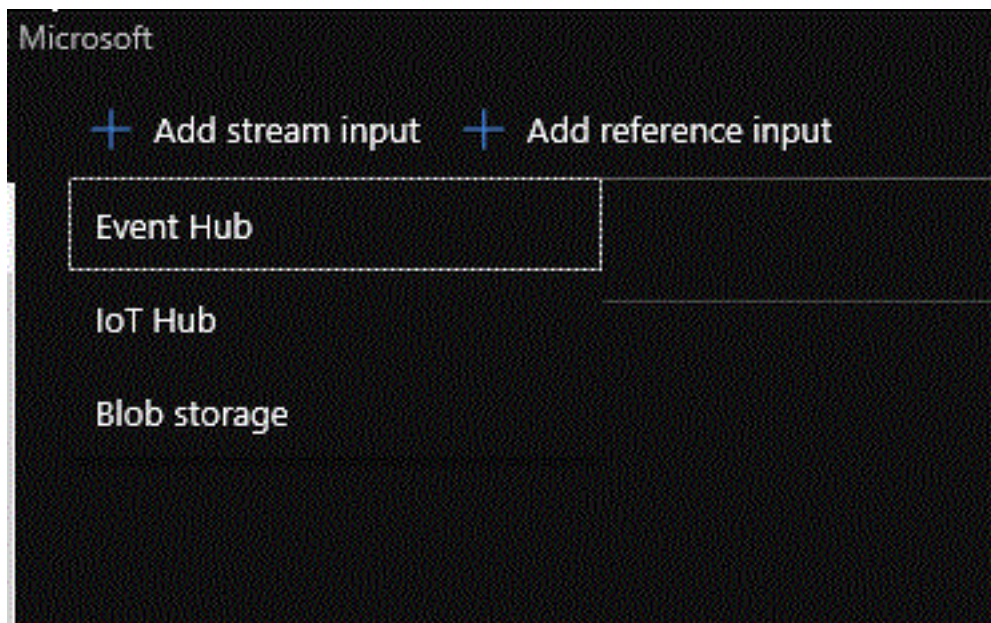


Locale



Event ordering

Under Job Topology click on input and then click + Add stream input
Select Event Hub as your stream input.



You will be asked to provide an input alias, namespace, event hub name and policy name.
Select the ones you created while setting up your event hub.

Event Hub

New input

Input alias *

- ☐ Provide Event Hub settings manually
- ☒ Select Event Hub from your subscriptions

Subscription

markm - Internal Consumption

Event Hub namespace * ⓘ

EHDemo-EH

Event Hub name * ⓘ

- ☐ Create new ☒ Use existing

ehdemo-hub

Event Hub policy name * ⓘ

- ☐ Create new ☒ Use existing

DemoUser

Event Hub policy key

.....

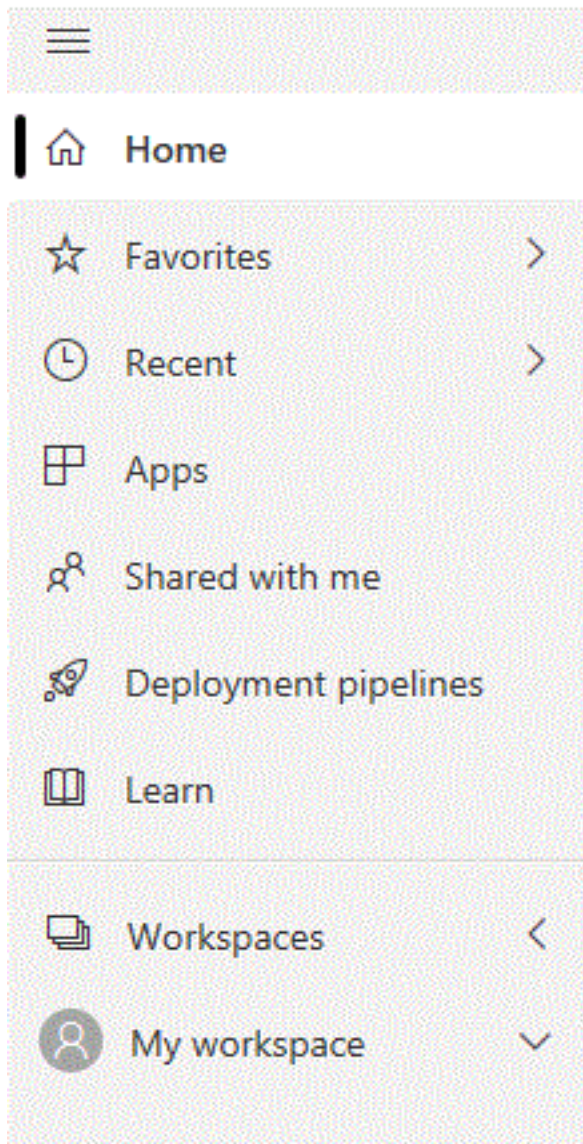
Event Hub consumer group * ⓘ

- ☐ Create new ☒ Use existing

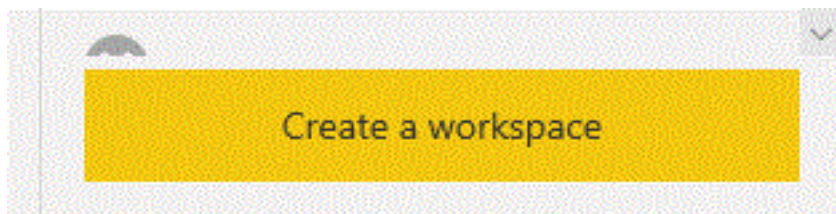
\$Default

Partition Key ⓘ

We will need to create a new workspace in Power BI for our Demo. Log in to Power BI and on the left hand side of the screen select Workspaces.



Now select Create a workspace.



Provide the workspace with a name and click save.

Create a workspace

YOU'RE CREATING AN UPGRADED WORKSPACE

Enjoy new features, better sharing options, and improved security controls.

[Revert to classic](#) | [Learn more](#)

Workspace image



↑ Upload

🗑 Delete

Workspace name

Available

Description

Describe this workspace

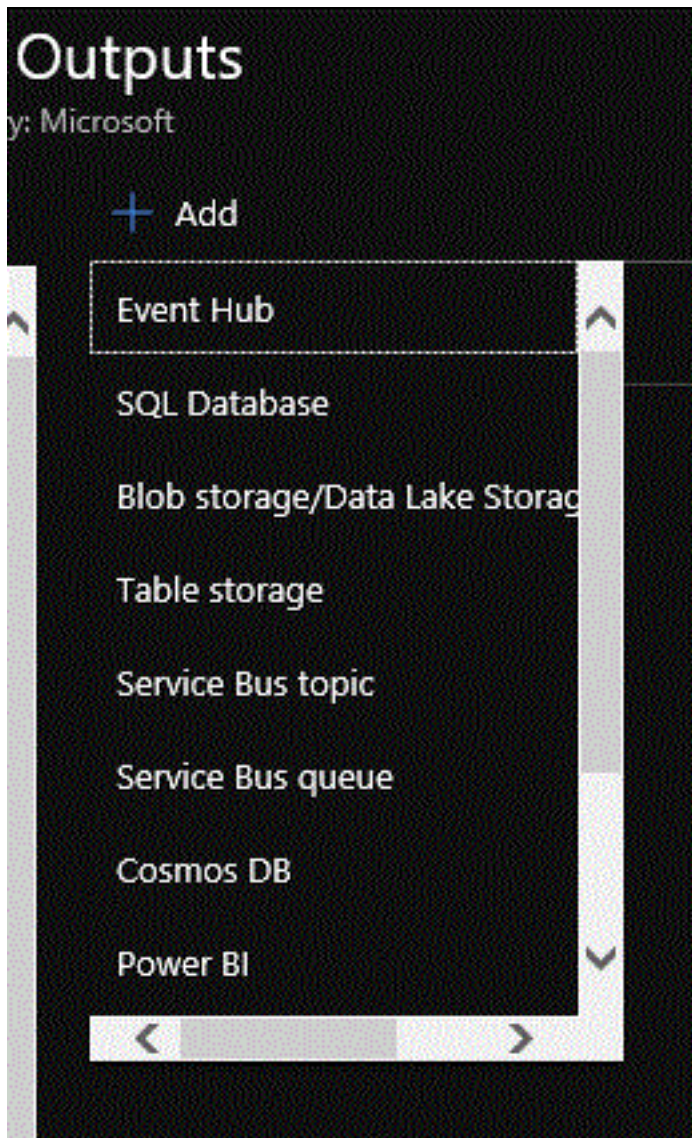
[Learn more about workspace settings](#)

Advanced ▾

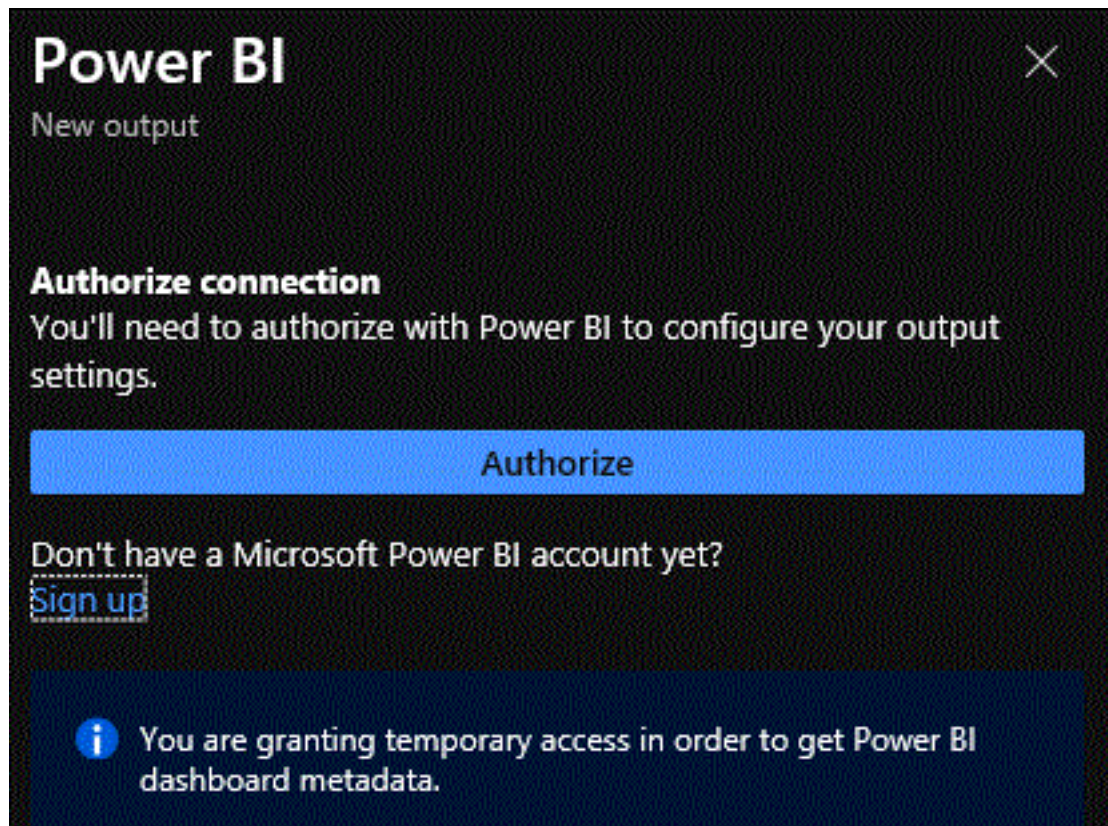
Save

Cancel

Now that we have a workspace to use as an output to Power BI, back in the Azure portal in your stream analytics job under Job Topology select Outputs. Click on + Add and select Power BI at the bottom of the list.



You will be prompted to Authorize, use the same credential to Authorize that you used to log into Power BI.



You will now be asked to provide an Output Alias. Make a note of the name you use you will need it for the Query.

Select the newly created Workspace you just Created in Power BI.

Provide a dataset name and table name and click save.

Power BI



New output

Currently authorized as [Mark Moore \(markm@microsoft.com\)](#)

Output alias *

PowerBI



Group workspace

EHDemo



Dataset name * ⓘ

sinewave



Table name *

table1



Authentication mode

User token



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.

Save

In the Overview section of your stream analytics Job you will see a blank query. Click Edit Query.

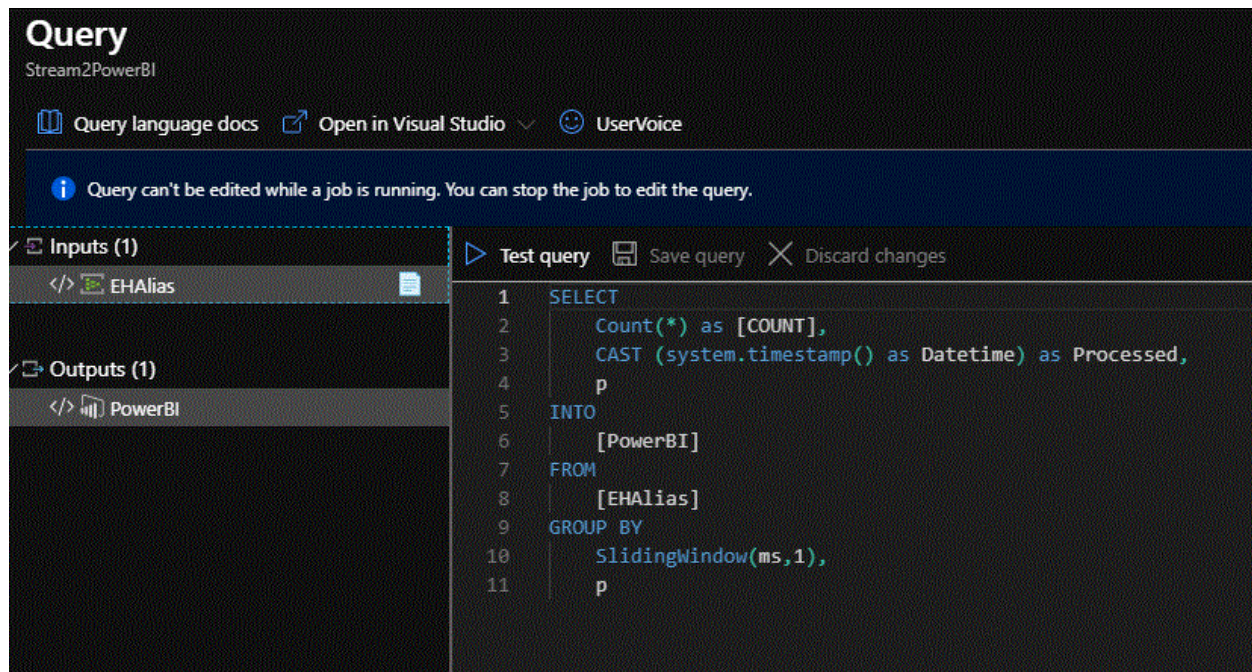
Select the sample query and paste over it with the contents of the sample query provided on git hub. If you chose different names for your Input and Output alias, insert them into the Stream Analytics Query replacing the ones provided in the sample query.

The screenshot shows the 'Stream2PowerBI' Stream Analytics Job Overview page. The left sidebar contains navigation links: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings (Properties, Locks), Job topology (Inputs, Functions, Query, Outputs), Configure (Storage account settings, Scale, Locale, Event ordering, Error policy, Compatibility level, Managed Identity), and General. The main content area displays job details: Resource group (EHDemo), Status (Created), Location (South Central US), Subscription (markm - Internal Consumption), Subscription ID (9ac817f3-c68f-4899-89cb-f64c8cde9fd3), Send feedback (UserVoice), Created (Saturday, June 13, 2020 1:20:42 PM), Started (-), Output watermark (-), and Hosting environment (Cloud). Below this is the 'Overview' section showing 1 input (EHAlias) connected to Event Hub and 1 output (PowerBI) connected to Power BI. At the bottom is the 'Query' section with a sample query:

```
1 SELECT
2 *
3 INTO
4 [YourOutputAlias]
5 FROM
6 [YourInputAlias]
```

An 'Edit query' link is visible in the top right corner of the query editor.

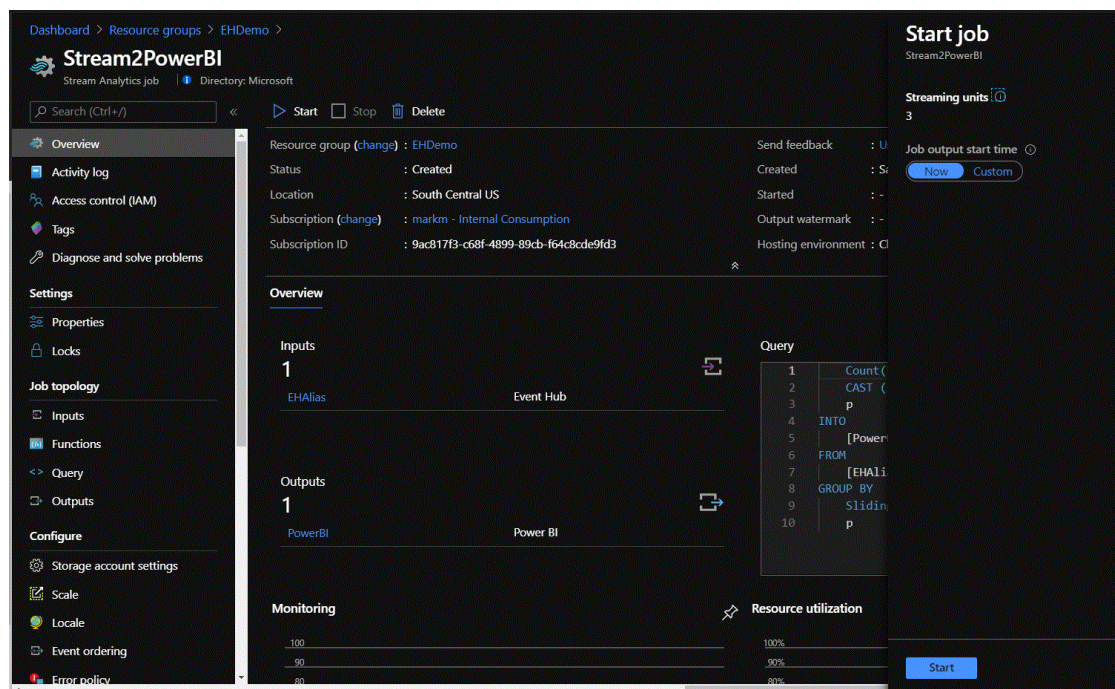
Your query should look like this:



Test the Query using the Test Query button. If the Test Query button is greyed out the syntax of your query is incorrect.


Once you have successfully tested your query save the query by clicking the Save query button and you will return to the overview page.


Click on the Start button to start your Stream Analytics Job. It may take a minute or two for the job to start.





Once the stream analytics job has successfully started you are streaming data to your Power BI workspace. Now let's put together a simple Dashboard to view the output in real time.


Go back to Power BI and click on Workspace on the left-hand side of the screen. Select the workspace you previously created for this demo.





 Home


 Favorites >


 Recent >


 Apps

 Shared with me

 Deployment pipelines

 Learn

 Workspaces <

 My workspace ▾

 My workspace 

 Search

Workspaces

 CFDD

 CFDD-Test

 Cloud Platform Immersion Pr...

 CloudOTools

 Commerce Data and Insights...

 CSA Champs FY18-FY19

 CSS Ambassador Program Po...

 Data-CSA-StudyGroup

 DTA 2018 - Hack - Proctor Te...

 DTA 2018 - What The Hack -...

 DTA 2018 - What The Hack! -...

 EDS Way of Life

 EHDemo

 Employee Learning Insights

 Enablement Insights Cube ba...

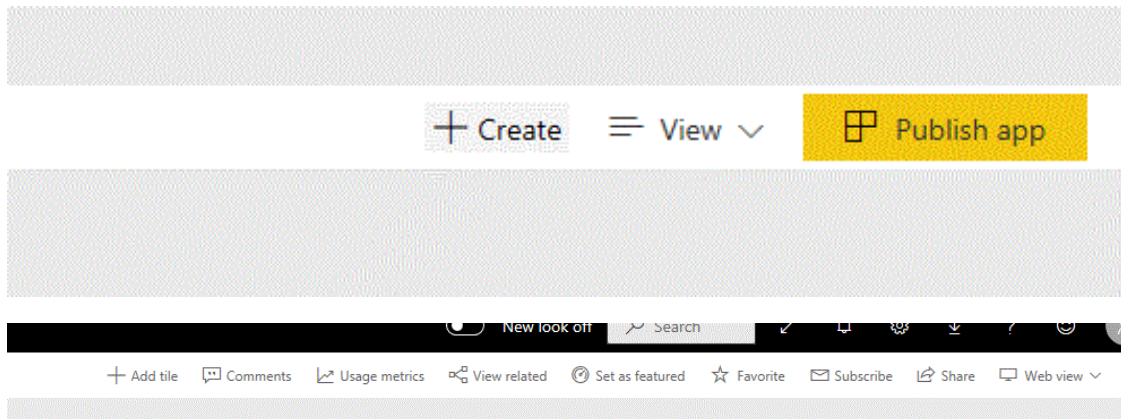
 Events

 Field Demo RDL 

 Financial Services Industry -...

 FS US CSU

Once you have selected your workspace click on Create.



In the next screen under Real-Time Data select Custom Streaming Data.

Add tile

Select source

MEDIA



Web content



Image

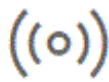


Text box



Video

REAL-TIME DATA



Custom Streaming
Data

Next

Cancel

Click Next.

Choose the dataset you created while setting up the Output in the stream analytics job.

Add a custom streaming data tile

Choose a streaming dataset

+ Add streaming dataset

YOUR DATASETS

sinewave

[Manage datasets](#)

Back

Next

Cancel

Select Line Chart and for the Axis select processed. This is the time axis and we are pulling system time from stream analytics in real-time as the query process each point. Under values select P.

Add a custom streaming data tile

Choose a streaming dataset > Visualization design

Visualization Type

Line chart

Axis

Processed

+ Add value

Legend

+ Add value

Values

p

+ Add value

Time window to display

Last

1

Minutes

[Manage datasets](#)

Back

Next

Cancel

You should see a preview of your sine wave being updated in real time. Click next and your demo is complete.

