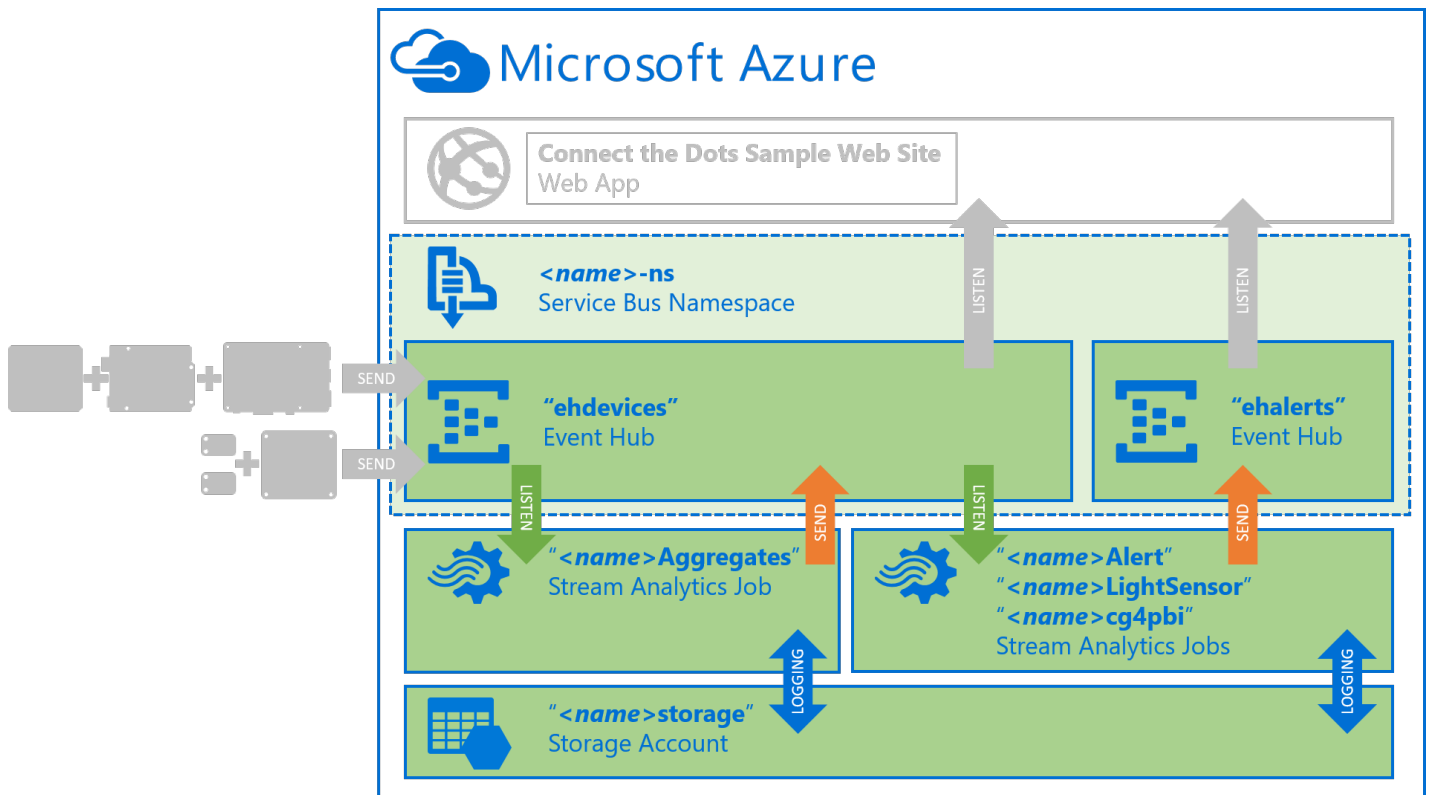


"Azure Prep" Hands-On Lab

Overview

In this lab you will prepare your Azure subscription with the Service Bus namespace, Event Hubs, Storage Account and Stream Analytics jobs as required by the [ConnectTheDots.io](#) architecture:



In this "Azure Prep" HOL, we'll focus on the Azure Service Bus, Event Hubs, and Stream Analytics components. The sample web site and device specific implementations are covered in other labs. The components we create here are:

Name	Type	Use
"<name>-ns"	Service Bus Namespace	Contains the Event Hubs
"ehdevices"	Event Hub	Receives messages from devices as well as the "<name>Aggregates" Stream Analytics Job. Messages sent to this event hub are later received by the sample website and displayed graphically in charts
"ehalerts"	Event Hub	Receives alert messages generated by the alert Stream Analytics jobs. Those messages are then read by the sample website and used to display alerts about various sensor values
"<name>Aggregates"	Stream Analytics Job	Reads temperature messages from "ehdevices", averages them over 10 second windows, and outputs the resulting averages back into "ehdevices". Those messages are later displayed in the sample website along with the detail temperature data.
"<name> * "	Stream Analytics Jobs	Various jobs to read messages from "ehdevices" then generate alerts or other data to be output into the "ehalerts" event hub. Those messages will then be used later by the sample website (or other downstream clients like Power BI) to display alerts data.
"<name>storage"	Storage	Used by the Stream Analytics jobs for monitoring and logging purposes. This is known as the

name-storage	Account	"Regional Monitoring" storage account
--------------	---------	---------------------------------------

Prerequisites

To successfully complete this lab, you will need:

- An active Azure Subscription. If needed you can create a [free trial here](#).
- A computer with access to the Internet and a web browser
- A copy of the ConnectTheDots.io repository. You can get the latest version [here](#).

Tasks

1. Choose your "**<name>**" and "**<region>**"
2. Create the "**<name>-ns**" Azure Service Bus Namespace
3. Create the "**ehdevices**" Event Hub
4. Create the "**ehalerts**" Event Hub
5. Create the "**<name>storage**" Azure Storage Account
6. Create the "**<name>Aggregates**" Stream Analytics Job
7. Create the "**<name> ***" Stream Analytics Jobs

Task 1 - Choose your "**<name>**" and "**<region>**"

Throughout this lab, you will be creating a number of resources in Azure. Many of those resources require unique names. In addition, when you are done with the lab you will likely want to delete the resources you provisioned during it. To aid in both the uniqueness and later location of the azure resources you create we will use a standard "**<name>__**" naming convention for many of the items you create.

For example, when creating our Service Bus Namespace in Task 2, we will use a name in the format of "**<name>-ns**". You need to pick an appropriate, short prefix for the "**<name>**" component.

The name you choose needs to be:

- Less than 17 characters long (but shorter is better)
- Likely to be unique

A convenient solution may be to use a prefix of "**ctd**" (short for "**C**onnect the **D**ots") followed by your first middle and last initial (or others as the case may be). For example, if your name were "**J**ames **T**iberius **K**irk" you may choose a name prefix of "**ctdjtk**". Make sense?

For the rest of the lab, we will assume a name prefix of "**ctdhol**", short for "**C**onnect the **D**ots **H**ands-On **L**ab". You will need to pick something unique for yourself, and replace all subsequent occurrences of "**<name>**" with it.

1. Pick your name prefix, and make a note of it.
2. Help yourself out, and be consistent in its use.

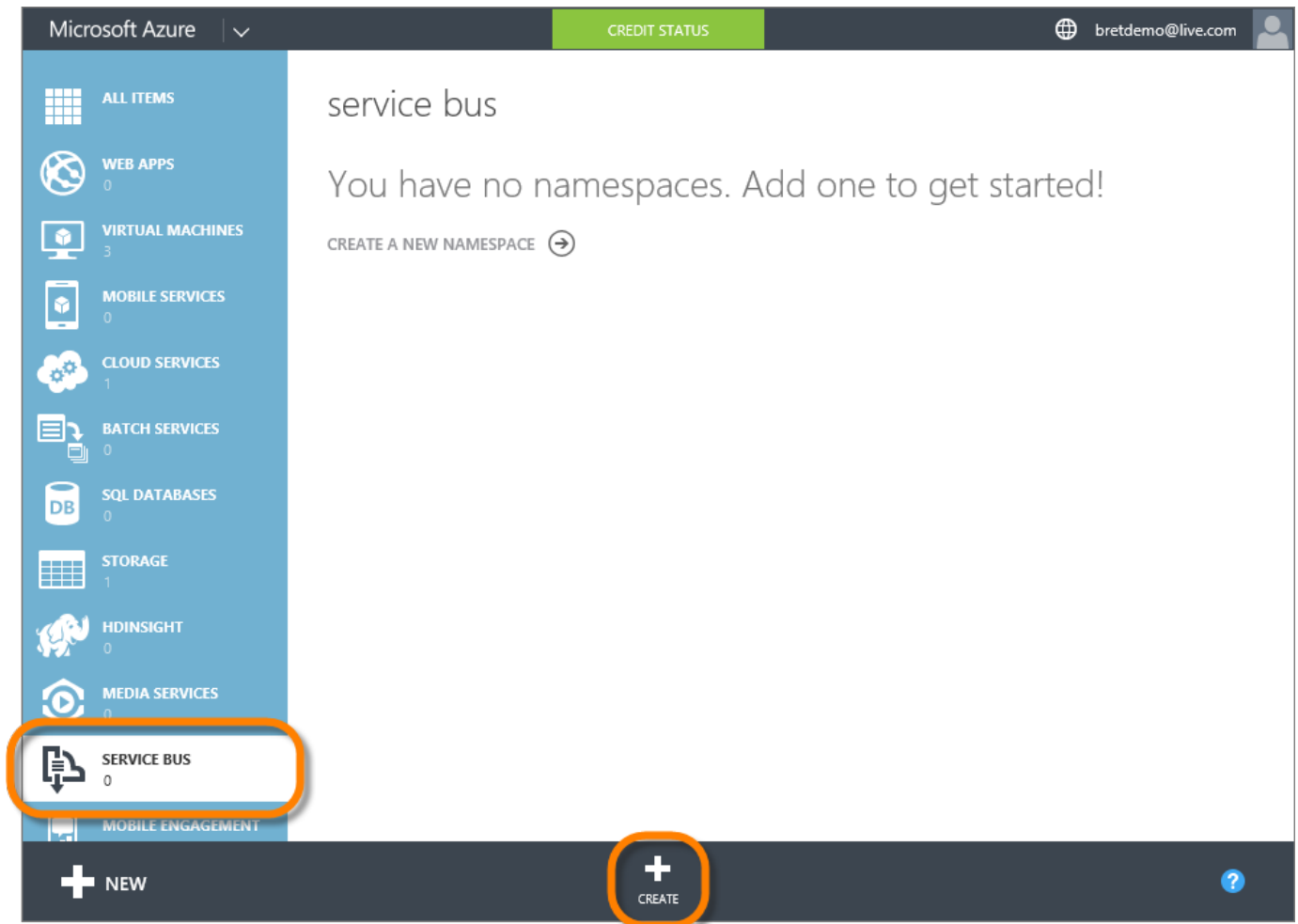
In addition to a unique name, you need to make sure to provision all of the resources you create in these labs in the same region.

1. Review the list of **Azure Regions** (<http://azure.microsoft.com/en-us/regions> , scroll down to the "**Locations**" heading) and choose a specific Azure Region to use consistently when ever you are presented with a choice in the labs.
2. Note that at certain times, certain services [may not be available in all regions](#). For this lab, we are using "**South Central US**" as the region as we have verified that it currently supports all required services.

Task 2 - Create the "**<name>-ns**" Azure Service Bus Namespace

In this task we'll create the "**<name>-ns**" Azure Service Bus Namespace. This Namespace will contain the "**ehdevices**" and "**ehalerts**" event hubs.

1. In your web browser, open the "**Azure Management Portal**" (<https://manage.windowsazure.com>) and login to your subscription.
2. Click on the "**Service Bus**" icon along the left, then click the "**+CREATE**" button along the bottom to create a new Service Bus Namespace



3. In the "**CREATE A NAMESPACE**" window, complete the fields as described, then click the "✓" button

Field	Value
Namespace Name	"<name>-ns"
Region	"<region>"
Type	"MESSAGING"
Messaging Tier	"STANDARD"

CREATE A NAMESPACE

×

Add a new namespace

NAMESPACE NAME

ctdhol-ns ✓

.servicebus.windows.net

REGION

South Central US ▾

TYPE ?

MESSAGING

NOTIFICATION HUB

MESSAGING TIER ?

BASIC

STANDARD

✓

4. Wait until the new namespace's status shows as **"Active"**, then click on the name of the new namespace to open it.

Microsoft Azure ▾

CREDIT STATUS

bretdemo@live.com

ALL ITEMS

WEB APPS 0

VIRTUAL MACHINES 3

MOBILE SERVICES 0

CLOUD SERVICES 1

BATCH SERVICES 0

SQL DATABASES 0

STORAGE 1

HDINSIGHT 0

MEDIA SERVICES 0

SERVICE BUS

service bus

NAMESPACE NAME	STATUS	TYPE	LOCATION	SUBSCRIPTION	CREATED DATE
ctdhol-ns →	✓ Active	Messaging	South Central US	Demo Azure Subscri...	5/25/2015 8:54:18 A...

Wait until the **STATUS** shows as **"Active"**

✓ Successfully created namespace 'ctdhol-ns'.

DETAILS ⓘ OK ✓

+ NEW

+ CREATE

🔑 CONNECTION INFORMATION

🗑 DELETE

1 ⓘ

Task 3 - Create the "ehdevices" Event Hub

In this task, we'll create the "**ehdevices**" event hub. You really should make sure to use the name "**ehdevices**" rather than choosing your own. The name itself doesn't matter, except that it has been assumed and hard coded into a number of the other projects throughout the ConnectTheDots.io repository. Do yourself a favor and use the name as given, otherwise, you'll have to find all the references to it and fix them.

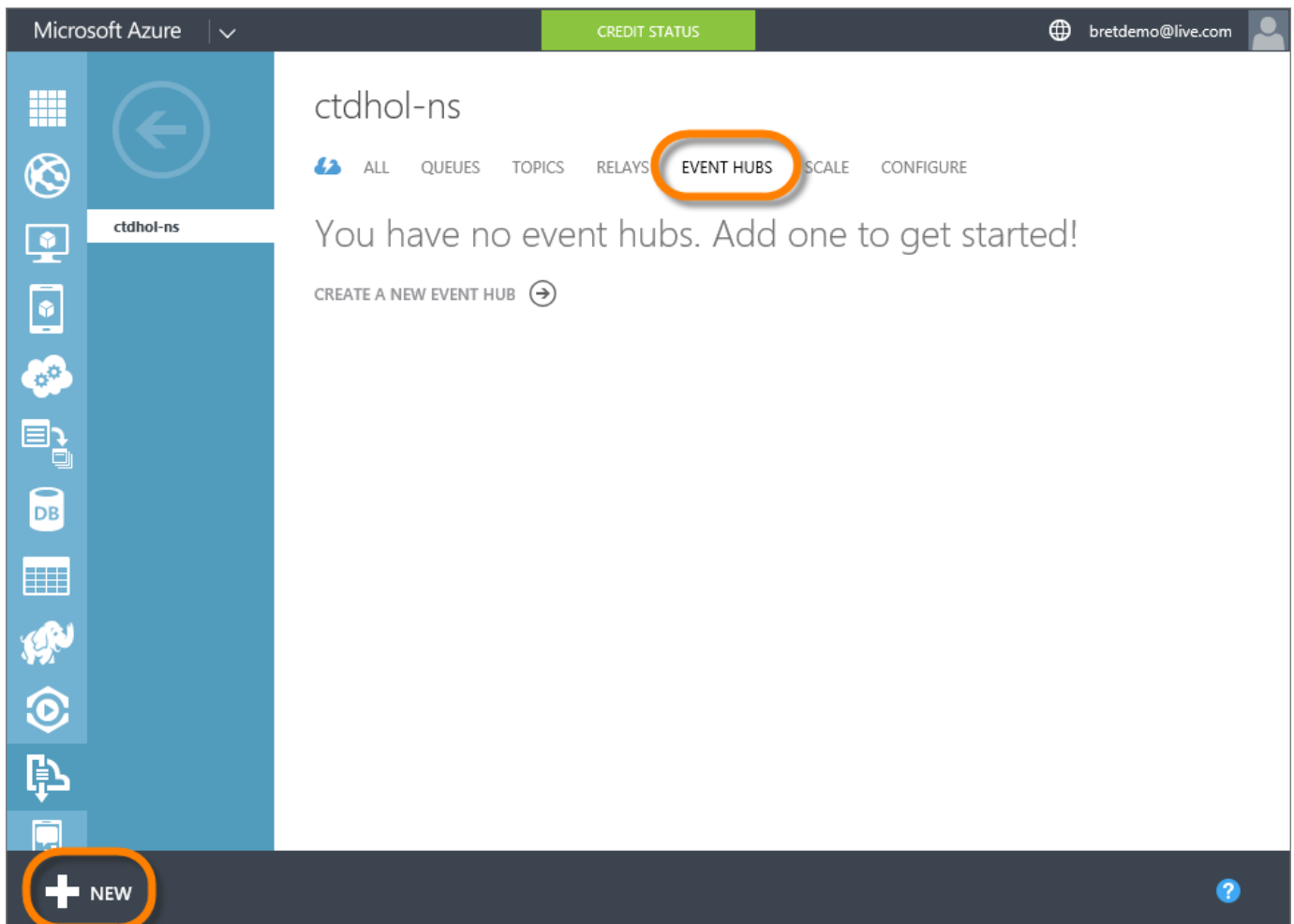
The "**ehdevices**" event hub is the primary data ingestion point in the architecture. It is where all the devices (Arduinos, Raspberry Pis, FEZ Spiders, etc) will be sending their sensor readings to.

These devices will be sending JSON formatted messages similar to the following:

```
{
  "organization": "Microsoft",
  "location": "Redmond, WA",
  "guid": "61b3eb31-4166-487a-8181-69918092cedf",
  "displayname": "Conference Room SparkFun Temp Sensor",
  "unitofmeasure": "F",
  "measurename": "temperature",
  "value": "78",
  "timecreated": "01/01/2015 12:00:00 PM"
}
```

The above message is a sample temperature reading. There will also be messages for humidity, and light (as identified by the "measurename" property). If you have other sensors to connect, you can send your own messages using the above format, but providing appropriate meta-data for them (measurename, unitofmeasure, value, etc.). These messages will be read by the sample website, and the values displayed in graphical charts. In addition, the Stream Analytics jobs will read these message and provide various aggregations and alerts based on their values.

1. In the portal page for your newly created Service Bus Namespace, switch to the "**EVENT HUBS**" page, then click the "**+NEW**" button in the bottom left hand corner.



2. In the "NEW" panel, select "APP SERVICES" | "SERVICE BUS" | "EVENT HUB" | "QUICK CREATE". Complete the fields as described below, then click the "CREATE A NEW EVENT HUB ✓" button.

Field	Value
Event Hub Name	"ehdevices" - It is strongly recommended that use this name (without the quotes). It is hard coded into multiple projects and would require significant effort to change
Region	"<region>"
Namespace Name	"<name>-ns" - The name you used when creating the namespace previously

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ctdhol-ns

ALL QUEUES TOPICS RELAYS EVENT HUBS SCALE CONFIGURE

NEW

QUEUE
TOPIC
RELAY
NOTIFICATION HUB
EVENT HUB

QUICK CREATE
CUSTOM CREATE

EVENT HUB NAME
ehdevices ✓

REGION
South Central US

NAMESPACE
ctdhol-ns
.servicebus.windows.net

CREATE A NEW EVENT HUB ✓

3. Wait until the status of the "ehdevices" event hub shows as "Active" then click on the name of the event hub to open it.

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ctdhol-ns

ALL QUEUES TOPICS RELAYS EVENT HUBS SCALE CONFIGURE

NAME	STATUS	PARTITION COUNT
ehdevices →	✓ Active	16

4. Click on the **"CONFIGURE"** page along the top, then, under the **"Shared Access Policies"** header, add a new **Shared Access Policy** named **"D1"** with **"Send"** permissions, then click **"SAVE"** to save it:

The screenshot shows the Microsoft Azure portal interface. At the top, the 'Microsoft Azure' logo and a 'CREDIT STATUS' button are visible. The user's email 'bretdemo@live.com' is shown in the top right. The left sidebar contains various service icons, with 'ehdevices' highlighted. The main content area shows the 'ehdevices' configuration page. The 'CONFIGURE' tab is selected. Under the 'general' section, 'MESSAGE RETENTION' is set to 1 day, 'EVENT HUB STATE' is Enabled, and 'PARTITION COUNT' is 16. Under the 'shared access policies' section, a table shows a new policy named 'D1' with 'Send' permissions. The 'SAVE' button at the bottom is highlighted.

5. Repeat the previous steps to create the following Shared Access Policies. Make sure to click the **"SAVE"** button when you are done!

Name	Permissions	Purpose
D1	Send	Used by the first devices to send messages into the event hub
D2	Send	Used by a second optional device to send messages into the event hub
D3	Send	Used by a third optional device to send messages into the event hub
D4	Send	Used by a fourth optional device to send messages into the event hub
WebSite	Manage,Send,Listen	Used by the sample web site to read messages from devices chart them
StreamingAnalytics	Manage,Send,Listen	Used by multiple Stream Analytics jobs to read devices messages for further processing

6. Again, make sure to click the **"SAVE"** button. When you are done, your list of **"Shared Access Policies"** for the **"ehdevices"** event hub should match the following:

Microsoft Azure

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ehalerts

ehdevices

general

MESSAGE RETENTION

1

days

EVENT HUB STATE

Enabled

PARTITION COUNT

16

Partitions

shared access policies

NAME	PERMISSIONS
D1	Send
D2	Send
D3	Send
D4	Send
WebSite	Manage, Send, Listen
StreamingAnalytics	Manage, Send, Listen
NEW POLICY NAME	

+ NEW

Task 4 - Create the "ehalerts" Event Hub

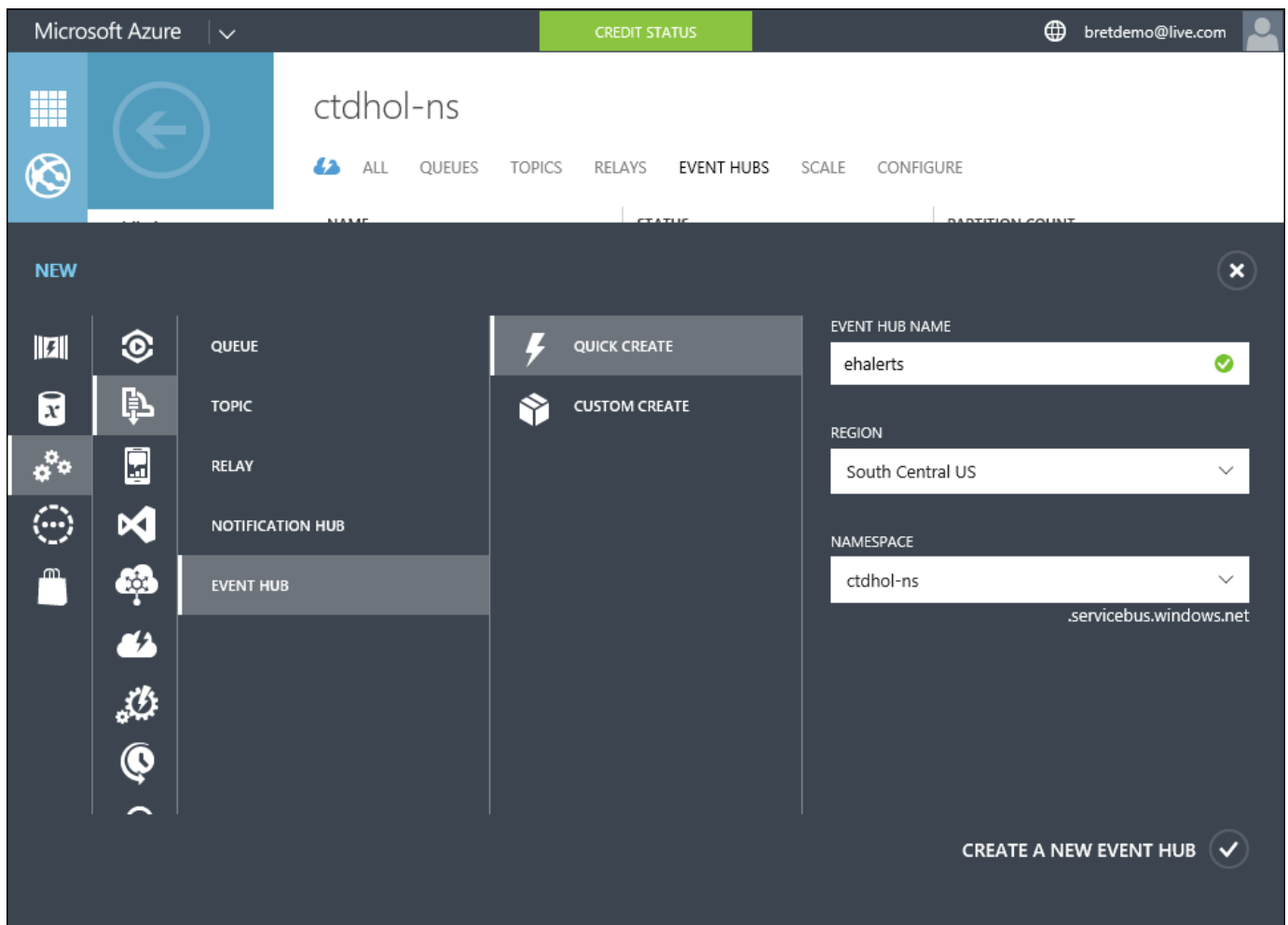
In this task, we'll use a similar process to the previous task, but this time we'll create the "ehalerts" event hub.

This event hub is less critical, and is in fact optional if you prefer to not include the alerting features (including the "<name>*" Stream Analytics jobs in Task 7). The devices in the field (at least as designed) do not write to this event hub.

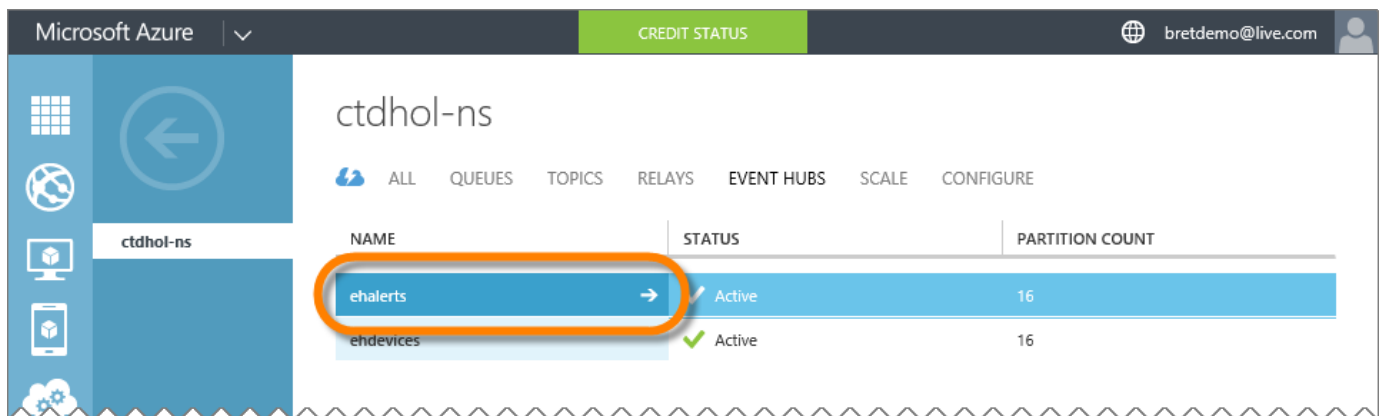
The event hub is used as the output for the Stream Analytics jobs that generate alerts on the light and temperature readings. The sample website then reads those messages and uses them to display alert information on the web page.

1. In the Azure Management Portal (<https://manage.windowsazure.com>) return to the "<name>-ns" Service Bus Namespace, switch to the "Event Hubs" page, and click the "+NEW" button in the lower left corner.
2. In the "NEW" Panel, select "APP SERVICES" | "SERVICE BUS" | "EVENT HUB" | "QUICK CREATE". Complete the fields as described below, then click the "CREATE A NEW EVENT HUB ✓" button.

Field	Value
Event Hub Name	"ehalerts" - You must use this name, without the quotes. It is hard coded into multiple projects and would require significant effort to change
Region	"<region>"
Namespace Name	"<name>-ns" - The name you used when creating the namespace previously



3. Again, wait until the new Event Hub's status is "Active", then click on the "ehalerts" name to open it.



4. Switch to the "CONFIGURE" Page, and under the "Shared Access Policies" heading, create the following policies. Make sure to click the "SAVE" button when you are done.

Name	Permissions	Purpose
WebSite	Manage,Send,Listen	Used by the sample web site to read alert mssages and display them
StreamingAnalytics	Manage,Send,Listen	Used by multiple Stream Analytics jobs to output alerts

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ehalerts

DASHBOARD **CONFIGURE** CONSUMER GROUPS

general

MESSAGE RETENTION days

EVENT HUB STATE

PARTITION COUNT Partitions

shared access policies

NAME	PERMISSIONS
WebSite	Manage, Send, Listen
StreamingAnalytics	Manage, Send, Listen
<input type="text" value="NEW POLICY NAME"/>	<input type="text"/>

+ NEW

Task 5 - Create the "<name>storage" Azure Storage Account

The Stream Analytics jobs in a region all share a single Azure Storage account for monitoring and logging purposes. This storage account is referred to as the "**Regional Monitoring Storage Account**". If you already have Stream Analytics jobs running in your target "<region>", you must continue to use that same storage account. If you don't have stream analytics jobs in the target region though you either need to select an existing storage account in that region, or create one for Stream Analytics use.

Here, we'll assume that you need to create a storage account to use at the "**Regional Monitoring Storage Account**".

1. In the Azure Management Portal (<https://manage.windowsazure.com>), click the on the "**STORAGE**" icon along the left to view your existing storage accounts (if any), then click the "**+NEW**" button in the lower left corner.

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BATCH SERVICES

0

SQL DATABASES

0

STORAGE

1

HDINSIGHT

0

MEDIA SERVICES

0

SERVICE BUS

1

MOBILE ENGAGEMENT

0

VISUAL STUDIO ONLINE

1

CACHE

0

BIZTALK SERVICES

0

RECOVERY SERVICES

0

CDN

1

storage

NAME	STATUS	LOCATION	SUBSCRIPTION
portalvhds6qmtwzdlgpbwj →	✓ Online	West US	Demo Azure Subscription

+

NEW

MANAGE ACCESS KEYS

MANAGE DOMAIN

DELETE

?

2. In the "NEW" panel, select "DATA SERVICES" | "STORAGE" | "QUICK CREATE". Complete the fields as described below, then click the "CREATE STORAGE ACCOUNT ✓" button.

Field	Value
URL	"<name>storage" (all lower case)
Location/Affinity Group	"<region>"
Replication	Leave it at the default "Geo-Redundant"

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BATCH SERVICES 0
SQL DATABASES 0

storage

NAME	STATUS	LOCATION	SUBSCRIPTION
ctdholstorage			

NEW

SQL DATABASE QUICK CREATE

STORAGE

HDINSIGHT

RECOVERY SERVICES

MACHINE LEARNING

STREAM ANALYTICS

STORSIMPLE MANAGER NOT AVAILABLE

URL
ctdholstorage
*.core.windows.net

LOCATION/AFFINITY GROUP
South Central US

REPLICATION
Geo-Redundant

CREATE STORAGE ACCOUNT

3. Wait for the new storage account's status to show as "Online"

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BATCH SERVICES 0
SQL DATABASES 0

storage

NAME	STATUS	LOCATION	SUBSCRIPTION
portalvhds6qmtwzdlgpbwj	Online	West US	Demo Azure Subscription
ctdholstorage	Online	South Central US	Demo Azure Subscription

STORAGE 2

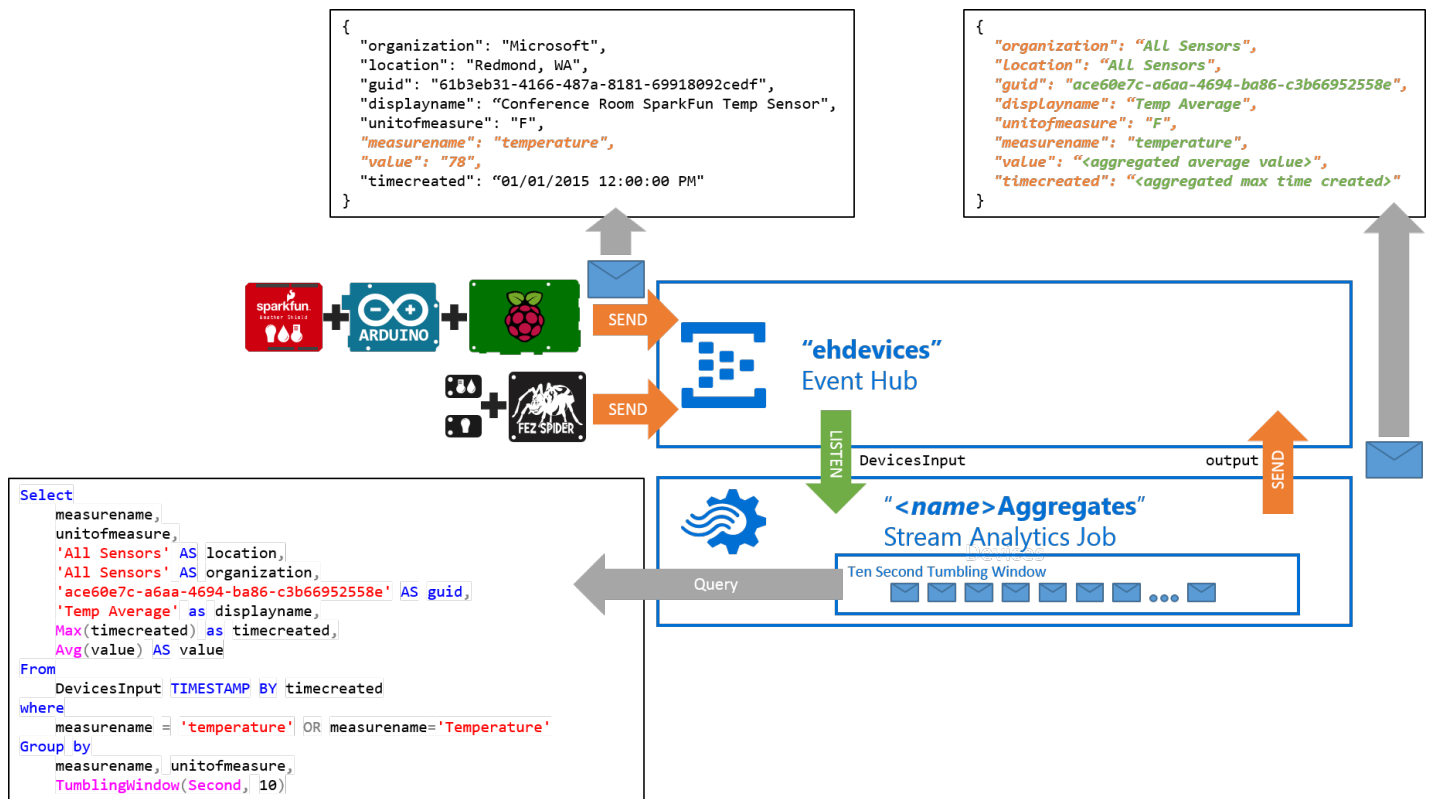
HDINSIGHT 0

MEDIA SERVICES

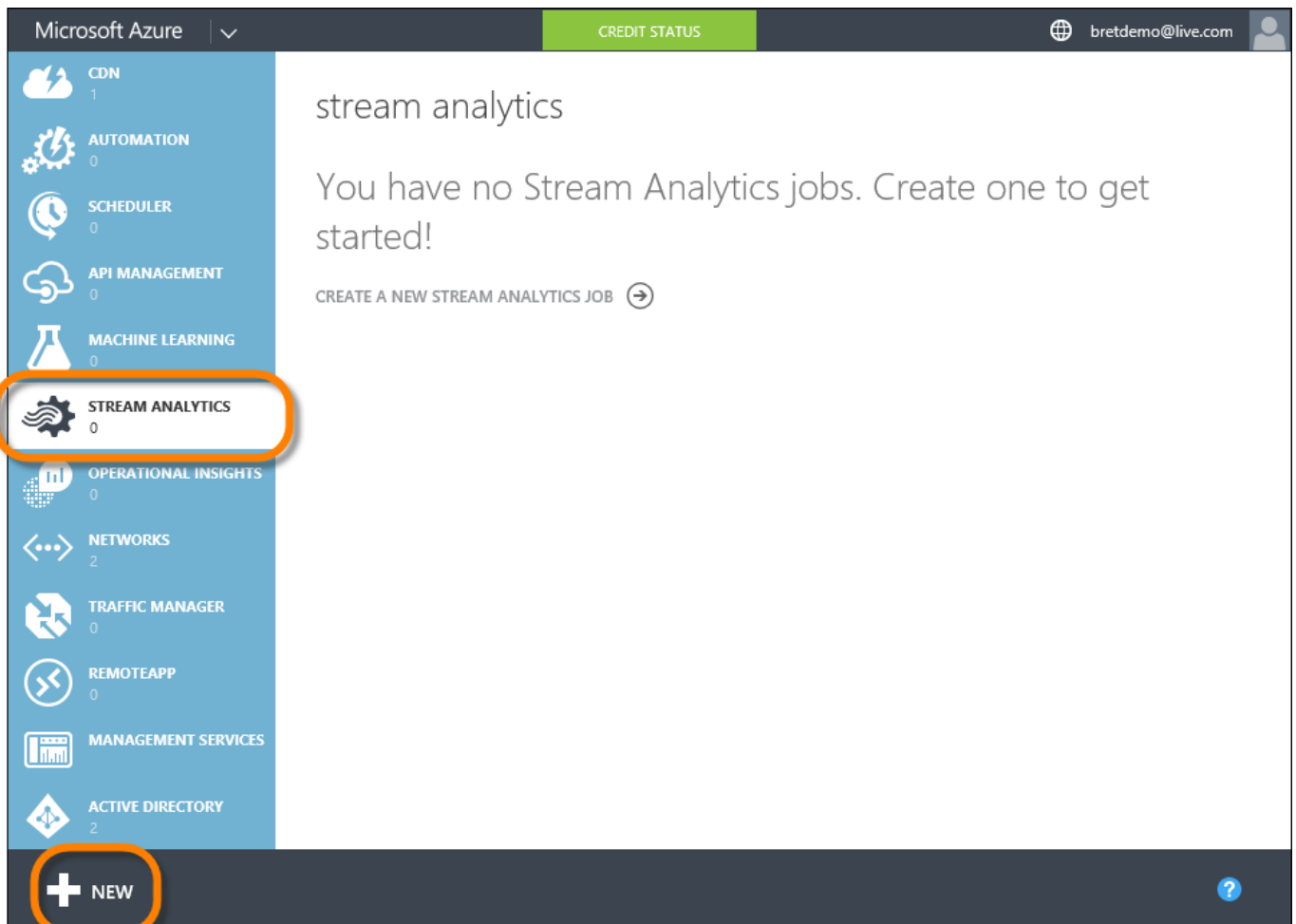
Task 6 - Create the "<name>Aggregates" Stream Analytics Job

In this task, we'll create the "<name>Aggregates" Stream Analytics Job. This job reads messages sent by devices to the "ehdevices" Event Hub, and then generates a new message with the average temperature value calculation for all messages received within a 10 second window. It then "tumbles" that window to the next 10 seconds and repeats the process. It emits it's output every ten seconds as a new message to the same "ehdevices" event hub.

You will receive a warning in the portal about the Stream Analytics job using the same event hub for both it's source and destination. Normally, that would be an odd case. Here though it works nicely. By emitting the temperature average aggregates into the same event hub, the downstream website can read a single event hub for both detail and aggregate data.



1. In the Azure Management Portal (<https://manage.windowsazure.com>) click the "STREAM ANALYTICS" icon along the left, then click the "+NEW" button in the bottom left corner.



- In the "NEW" panel, select "DATA SERVICES" | "STREAM ANALYTICS" | "QUICK CREATE". Complete the fields as described below, then click the "CREATE STREAM ANALYTICS JOB ✓"

Field	Value
Job Name	"<name>Aggregates"
Region	"<region>"
Regional Monitoring Storage Account	Select the "<name>storage" account you created previously. Or if you can't change the selection that means that other stream analytics jobs in the region have already targeted an account. That's ok.

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stream analytics

You have no Stream Analytics jobs. Create one to get

NEW

- SQL DATABASE
- STORAGE
- HDINSIGHT
- RECOVERY SERVICES
- MACHINE LEARNING
- STREAM ANALYTICS**
- STORSIMPLE MANAGER NOT AVAILABLE

QUICK CREATE

JOB NAME: ctdholAggregates ✓

REGION: South Central US

REGIONAL MONITORING STORAGE ACCOUNT: ctdholstorage

CREATE STREAM ANALYTICS JOB ✓

- Wait for the new job's status to show "Created" then click on the "<name>Aggregates" job name to open it.

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stream analytics

NAME	STATUS	CREATED	SUBSCRIPTION	REGION
ctdholAggregates →	✓ Created	5/25/2015 2:31:57 PM	Demo Azure Subscription	South Central US

- Switch to the "INPUTS" page, and click the "+ADD INPUT" button along the bottom:

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ctdholaggregates

DASHBOARD MONITOR **INPUTS** QUERY OUTPUTS SCALE CONFIGURE

You have no inputs. Add one to get started!

ADD AN INPUT →

+ NEW START + ADD INPUT ?

5. On the "Add an input to your job" Page, select "Data Stream", then click the "→" button

ADD AN INPUT

×

Add an input to your job

Each job requires at least one data stream input. Adding reference data input is optional.

☒ **Data stream**

A continuous sequence of data or events to be consumed and transformed by a Stream Analytics job.

☐ **Reference data**

Auxiliary data used for correlation and lookups. Reference data is static or slow-changing.

→

23

6. On the "Add a data stream to your job" Page, select "EVENT HUB", then click the "→" button

ADD A DATA STREAM

×

Add a data stream to your job

☒ **Event Hub ?**

☐ **Blob storage ?**

Missing an input source? [Let us know!](#) (Powered by [UserVoice](#) - [Privacy Policy](#))

1

←

→

3

7. On the "Event Hub settings" Page, complete the fields as described below, then click the "➔" button

Field	Value
Input Alias	"DevicesInput" - It's recommended you use this name
Subscription	Select "Use Event Hub from Current Subscription"
Choose a Namespace	Select the "<name>-ns" namespace you created previously.
Choose an Event Hub	Select the "ehdevices" event hub you created previously.
Event Hub Policy Name	Select the "StreamingAnalytics" policy you created previously.
Choose a Consumer Group	"\$Default"

ADD A SERVICE BUS EVENT HUB

Event Hub settings

INPUT ALIAS

DevicesInput

SUBSCRIPTION

Use Event Hub from Current Subscription

CHOOSE A NAMESPACE ?

ctdhol-ns (South Central US)

CHOOSE AN EVENTHUB ?

ehdevices

EVENT HUB POLICY NAME ?

StreamingAnalytics

CHOOSE A CONSUMER GROUP ?

\$Default

12

←→4

8. On the "Serialization settings" Page, complete the fields as described below then click the "✓" button.

Field	Value
Event Serialization Format	Select "JSON"
Encoding	Select "UTF8"

1
2
3

ADD A SERVICE BUS EVENT HUB

Serialization settings

EVENT SERIALIZATION FORMAT ?

JSON

ENCODING ?

UTF8

←

✓

9. Wait for the new "DevicesInput" input's "DIAGNOSIS" to show "OK".

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ctdholAggregates

DASHBOARD MONITOR INPUTS QUERY OUTPUTS SCALE CONFIGURE

NAME	SOURCE TYPE	TYPE	DIAGNOSIS
DevicesInput	→ Data stream	Event Hub	✓ OK

10. Switch to the "QUERY" page, and replace the default query syntax with that from the [Aggregates.sql](#) query file, then click "SAVE"

Note: The query source is being shown here as a reference. You may want to get the latest version from the [Aggregates.sql](#) file.

```

/* -----
// Copyright (c) Microsoft Open Technologies, Inc. All rights reserved.
//
// The MIT License (MIT)
//
// Permission is hereby granted, free of charge, to any person obtaining a copy
// of this software and associated documentation files (the "Software"), to deal
// in the Software without restriction, including without limitation the rights
// to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
// copies of the Software, and to permit persons to whom the Software is
// furnished to do so, subject to the following conditions:
//
// The above copyright notice and this permission notice shall be included in
// all copies or substantial portions of the Software.

```

```
//
// THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
// IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
// FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
// AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
// LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
// OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
// THE SOFTWARE.
// -----*/
```

```
Select
    measurename,
    unitofmeasure,
    'All Sensors' AS location,
    'All Sensors' AS organization,
    'ace60e7c-a6aa-4694-ba86-c3b66952558e' AS guid,
    'Temp Average' as displayname,
    Max(timecreated) as timecreated,
    Avg(value) AS value
From
    DevicesInput TIMESTAMP BY timecreated
where
    measurename = 'temperature' OR measurename='Temperature'
Group by
    measurename, unitofmeasure,
    TumblingWindow(Second, 10)
```

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ctdholaggregates

DASHBOARD MONITOR INPUTS **QUERY** OUTPUTS SCALE CONFIGURE

query

```

32     Max(timecreated) as timecreated,
33     Avg(value) AS value
34 From
35     DevicesInput TIMESTAMP BY timecreated
36 where
37     measurename = 'temperature' OR measurename='Temperature'
38 Group by
39     measurename, unitofmeasure,
40     TumblingWindow(Second, 10)

```

Missing some language constructs? [Let us know!](#) (Powered by UserVoice - [Privacy Policy](#))

Test Rerun

NEW START **SAVE** DISCARD ?

11. When prompted, click "YES" to confirm the changes to the query.

Are you sure you want to save all changes to the query?

YES



NO



12. Next, switch to the "OUTPUTS" page, and click the "+ADD OUTPUT" button along the bottom:

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ctdholaggregates

DASHBOARD MONITOR INPUTS QUERY **OUTPUTS** SCALE CONFIGURE

You have no output. Add one to get started!

ADD AN OUTPUT →

+ NEW | START | **+ ADD OUTPUT** | ?

13. On the "Add an output to your job" page, select "Event Hub" and click "→"

ADD AN OUTPUT

×

Add an output to your job

☐ SQL Database ?

☐ Blob storage ?

☒ Event Hub ?

☐ Power BI **PREVIEW** ?

☐ Table storage ?

Power BI is only available for organizational accounts. [Learn more about organizational accounts.](#)

Missing an output sink? [Let us know!](#) (Powered by [UserVoice](#) - [Privacy Policy](#))

→

2

14. On the "Event Hub settings" page, complete the fields as described below, then click "→"

Field	Value
Output Alias	"output"
Subscription	Select "Use Event Hub from Current Subscription"
Choose a Namespace	Select the "<name>-ns" namespace you created previously.
Choose an Event Hub	Select the "ehdevices" event hub you created previously.
Event Hub Policy Name	Select the "StreamingAnalytics" policy you created previously.

ADD A SERVICE BUS EVENT HUB

Event Hub settings

OUTPUT ALIAS

output

SUBSCRIPTION

Use Event Hub from Current Subscription

CHOOSE A NAMESPACE ?

ctdhol-ns (South Central US)

CHOOSE AN EVENTHUB ?

ehdevices

EVENT HUB POLICY NAME ?

StreamingAnalytics

☐ CONFIGURE ADVANCED SETTINGS

1

←

→

3

15. On the "**Serialization settings**" page, complete the fields as described below, then click "✓"

Field	Value
Event Serialization Format	Select " JSON "
Encoding	Select " UTF8 "
Format	Select " Array "

ADD A SERVICE BUS EVENT HUB

Serialization settings

EVENT SERIALIZATION FORMAT ?

JSON

ENCODING ?

UTF8

FORMAT ?

Array

1

2

←

✓

16. You should see a warning about the same container being used for both input and output. As was mentioned earlier, this is on purpose, by design, and expected. The "**<name>Aggregates**" job reads messages from and writes its output to the same "**ehdevices**" event hub. You can click "**OK**" to ignore the warning.

1 OPERATION IS CURRENTLY RUNNING, 1 HAS A WARNING

DISMISS COMPLETED ✕

Testing connection 'output'.

! The same container is used both as an input and output

OK ✓

NEW

START

ADD OUTPUT

TEST CONNECTION

DELETE

2

?

17. Wait for the "**output**" "**DIAGNOSIS**" to show "**OK**", then click the left arrow "←" button on the top left of the page to return to the list of Stream Analytics jobs:

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ctdholaggregates

DASHBOARD MONITOR INPUTS QUERY OUTPUTS SCALE CONFIGURE

NAME	TYPE	DIAGNOSIS
output	→ Event Hub	✓ OK

+ NEW | START | + ADD OUTPUT | <> TEST CONNECTION | DELETE | 2 ?

18. Back on the Stream Analytics page, click the row to the **right** of the new "<name>*Aggregates" job to select it. Then click the "▶ **START**" button along the bottom:

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stream analytics

NAME	STATUS	CREATED	SUBSCRIPTION	REGION
ctdholAggregates	✓ Created	5/25/2015 2:31:57 PM	Demo Azure Subscription	South Central US

NEW START DELETE ?

19. On the "START OUTPUT" Page, select "JOB START TIME" and click "✓"

ctdholAggregates

START OUTPUT ?

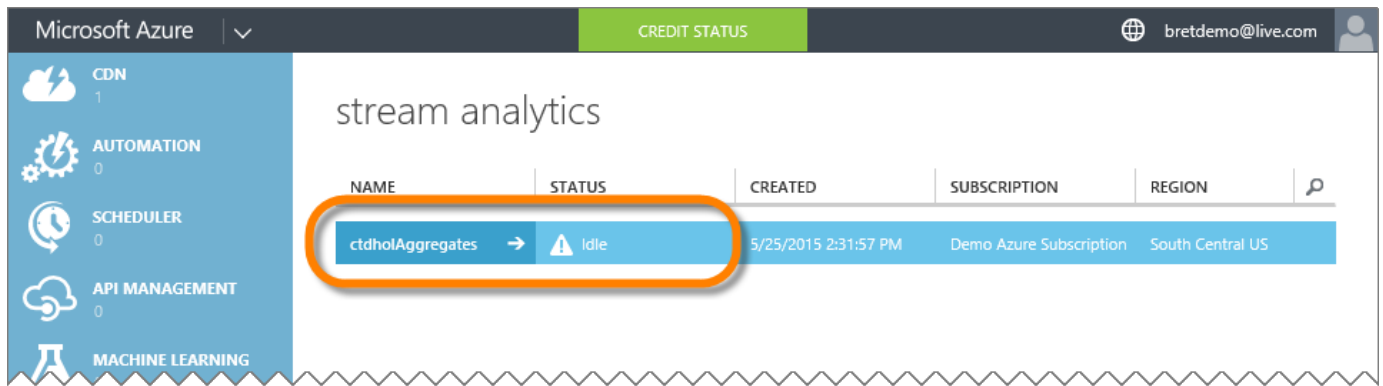
JOB START TIME

CUSTOM TIME

Specify when the job will start generating output. Note that the job may read the input data before this time if necessary to generate correct results for the specified query. To resume a stopped job without data loss, select Last Stopped Time (not available when running the job for the first time).

✓

20. It may take a few minutes for the job to start, watch it until it's status is "Idle"



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stream analytics

NAME	STATUS	CREATED	SUBSCRIPTION	REGION
ctdholAggregates	Idle	5/25/2015 2:31:57 PM	Demo Azure Subscription	South Central US

Task 7 - Create the "<name> * " Stream Analytics Jobs

In this last task of the "Azure Prep" lab, you will create the remaining Stream Analytics jobs. The steps here mimic those taken in Task 6, so the instructions won't be as detailed. Use what you learned from the previous task to complete these.

1. Repeat the steps from Task 6 to create and start the following Stream Analytics Jobs:
 - Create the following jobs in the target "<region>", using the "<name>storage" storage account

Job Name	Query Source	Purpose
ctdholAlert	Alert.sql	Creates a "Temperature over 80F" alert if the temp spikes over 80°F in during a five second tumbling window
ctdholcg4pbi	cg4pbi.sql	Creates a simplified data set for use by the PowerBI Walkthrough
ctdholLightSensor	LightSensor.sql	Creates a "The Light is turned off" alert if the average "light" sensor readings for three or more readings within a five second tumbling window is less that 0.02

- The jobs all have the same input configuration

Field	Value
Source	"Data Stream"
Source Type	"Event Hub"
Input Alias	"DevicesInput" - It's recommended you use this name
Subscription	Select "Use Event Hub from Current Subscription"
Choose a Namespace	Select the "<name>-ns" namespace you created previously.
Choose an Event Hub	Select the "ehdevices" event hub you created previously.
Event Hub Policy Name	Select the "StreamingAnalytics" policy you created previously.
Choose a Consumer Group	"\$Default"
Event Serialization Format	Select "JSON"
Encoding	Select "UTF8"

- The jobs all have the same output configuration (Note, that these jobs output to "ehalerts" NOT "ehdevices")

Field	Value
Destination	"Event Hub"
Output Alias	"output"
Subscription	Select "Use Event Hub from Current Subscription"
Choose a Namespace	Select the "<name>-ns" namespace you created previously.
Choose an Event Hub	Select the "ehalerts" event hub you created previously.
Event Hub Policy Name	Select the "StreamingAnalytics" policy you created previously.
Event Serialization Format	Select "JSON"
Encoding	Select "UTF8"
Format	Select "Array"

2. Once you have successfully created and started all the jobs, your list of Stream Analytics should resemble the following:

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a dropdown arrow, a green 'CREDIT STATUS' button, a globe icon, the email 'bretdemo@live.com', and a user profile icon. The left sidebar contains a list of services: ALL ITEMS, WEB APPS (0), VIRTUAL MACHINES (3), MOBILE SERVICES (0), CLOUD SERVICES (1), BATCH SERVICES (0), SQL DATABASES (0), STORAGE (2), HDINSIGHT (0), MEDIA SERVICES (0), SERVICE BUS (1), and MOBILE ENGAGEMENT. The main content area is titled 'stream analytics' and displays a table with the following data:

NAME	STATUS	CREATED	SUBSCRIPTION	REGION
ctdholAggregates →	Idle	5/25/2015 2:31:57 PM	Demo Azure Subscription	South Central US
ctdholAlert	Idle	5/25/2015 7:40:29 PM	Demo Azure Subscription	South Central US
ctdholcg4pbi	Idle	5/25/2015 7:44:19 PM	Demo Azure Subscription	South Central US
ctdholLightSensor	Idle	5/25/2015 7:47:35 PM	Demo Azure Subscription	South Central US

At the bottom of the portal, there is a dark blue bar with a '+ NEW' button, and three icons labeled 'START', 'STOP', and 'DELETE'. A help icon (?) is also present on the right side of this bar.