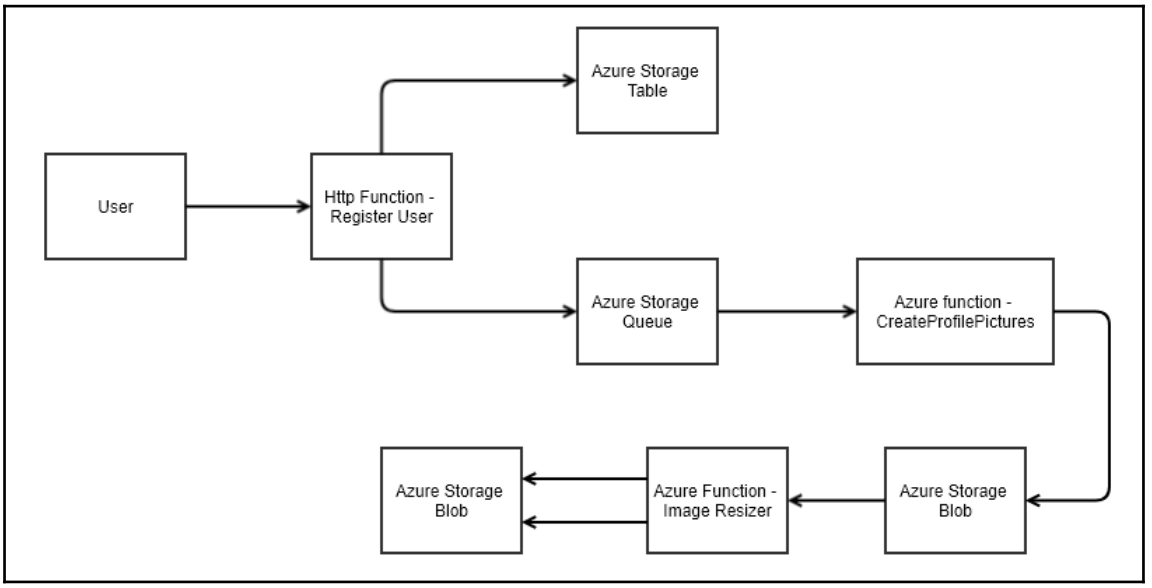
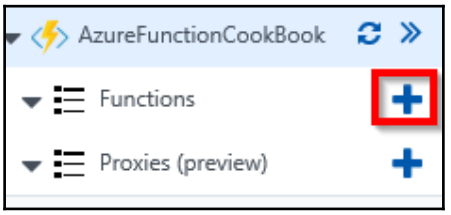
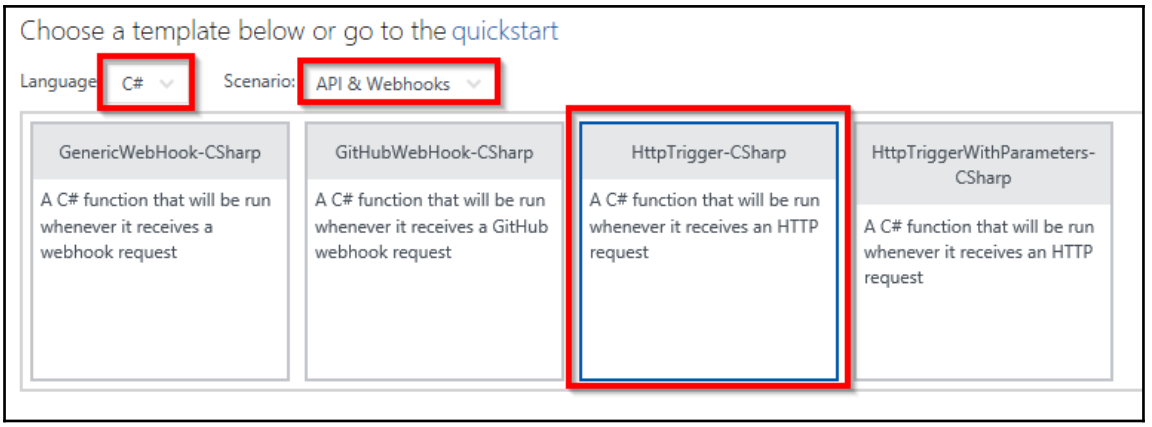
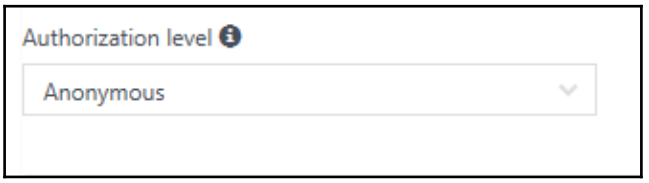
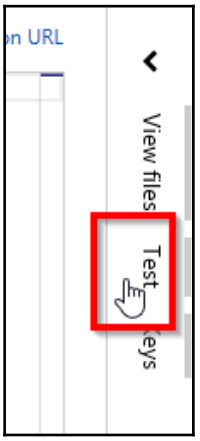
Chapter 01: Accelerate Your Cloud Application Development Using Azure Function Triggers and Bindings

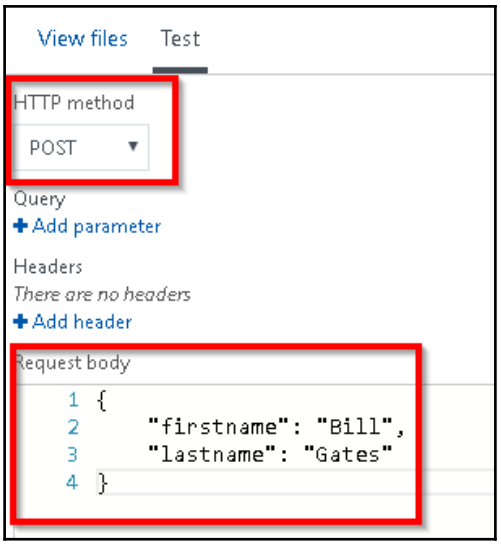


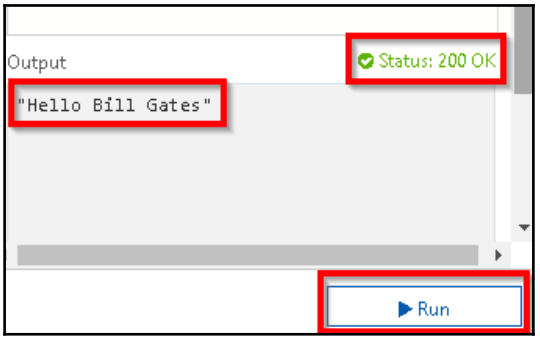


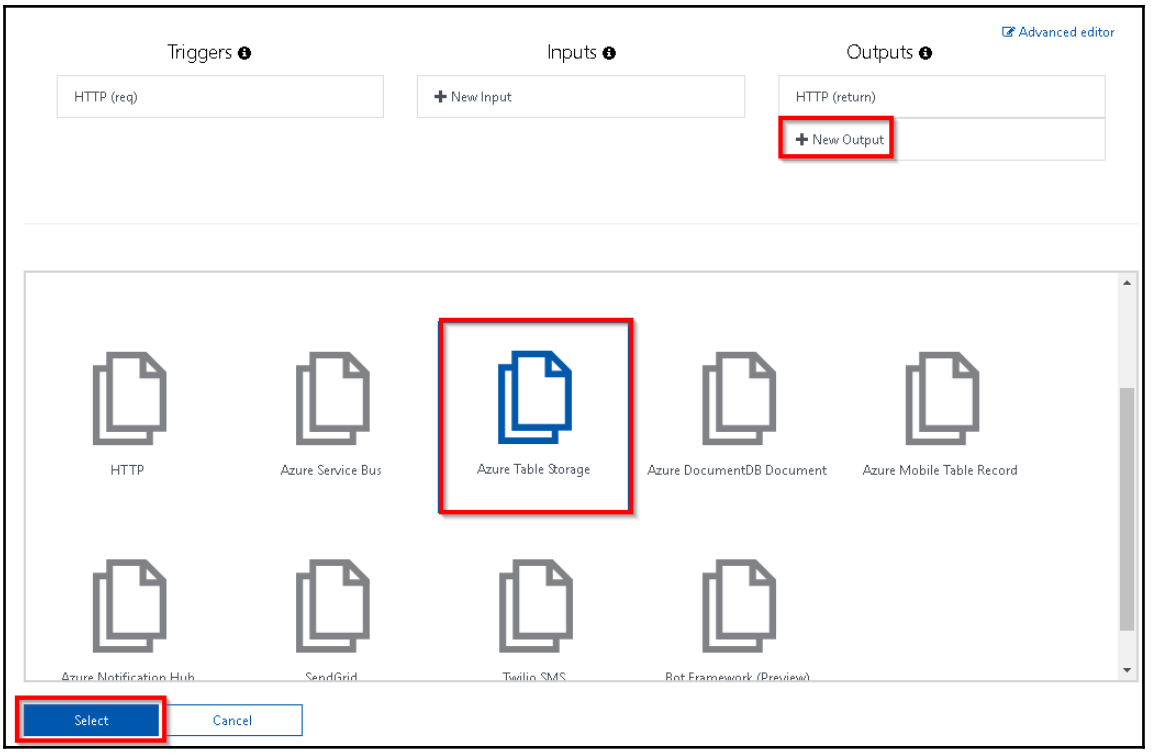

Choose a template below or go to the quickstart
Language: C#
Scenario: API & Webhooks
GenericWebHook-CSharp
A C# function that will be run whenever it receives a webhook request
GitHubWebHook-CSharp
A C# function that will be run whenever it receives a GitHub webhook request
HttpTrigger-CSharp
A C# function that will be run whenever it receives an HTTP request
HttpTriggerWithParameters-CSharp
A C# function that will be run whenever it receives an HTTP request


Authorization level
Anonymous

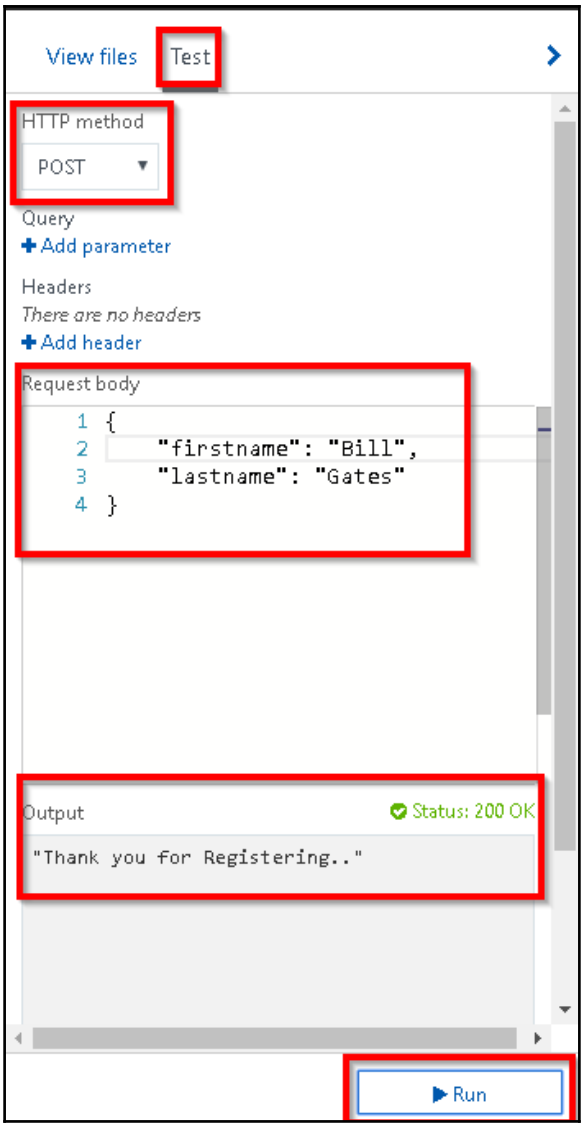

View files
Test

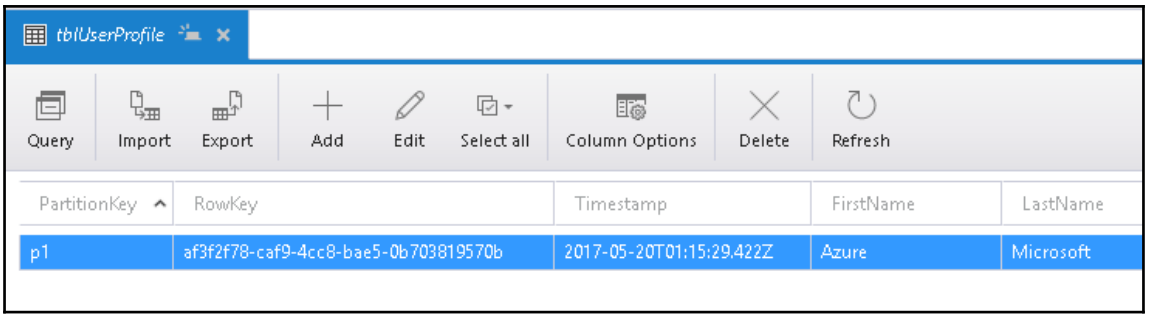

View files
Test
HTTP method
POST
Query
Add parameter
Headers
There are no headers
Add header
Request body
1 {
2 "firstname": "Bill",
3 "lastname": "Gates"
4 }

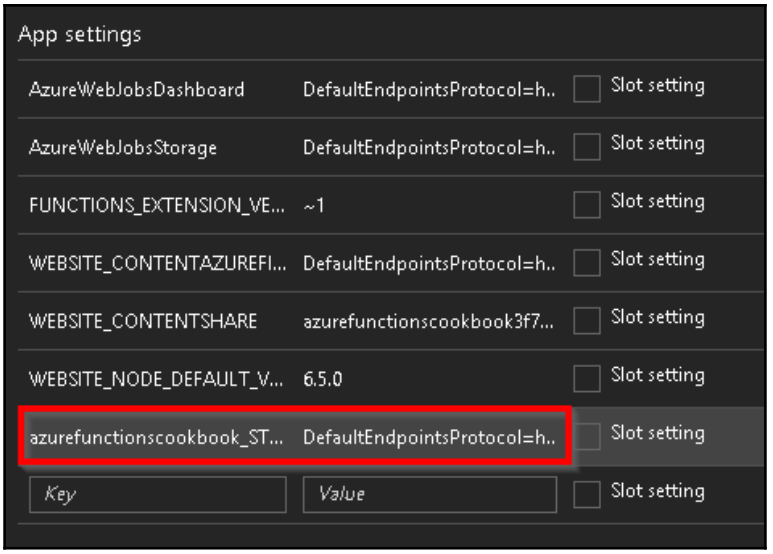

Output
Status: 200 OK
"Hello Bill Gates"
Run

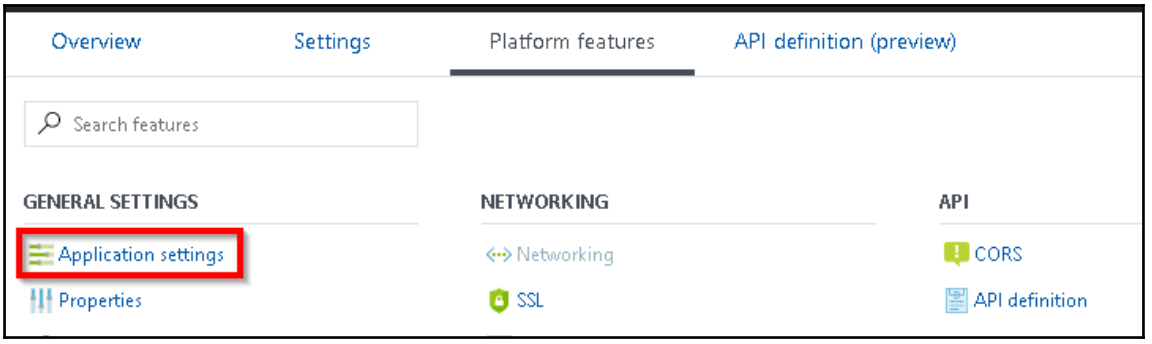

Advanced editor
Triggers
Inputs
Outputs
HTTP (req)
New Input
HTTP (return)
New Output
HTTP
Azure Service Bus
Azure Table Storage
Azure DocumentDB Document
Azure Mobile Table Record
Azure Notification Hub
SendGrid
Twilio SMS
Bot Framework (Preview)
Select
Cancel

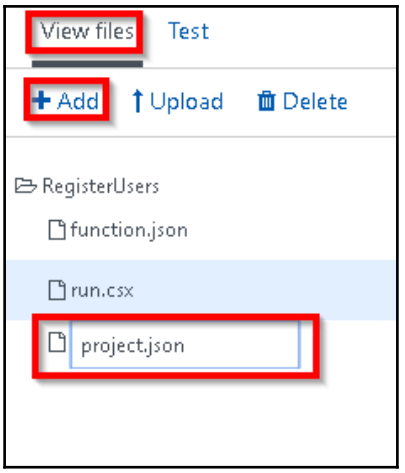
Azure Table Storage output (objUserProfileTable)
delete
Table parameter name
objUserProfileTable
Table name
tblUserProfile
Use function return value
Storage account connection
azurefunctionscookbook_STORAGE
new

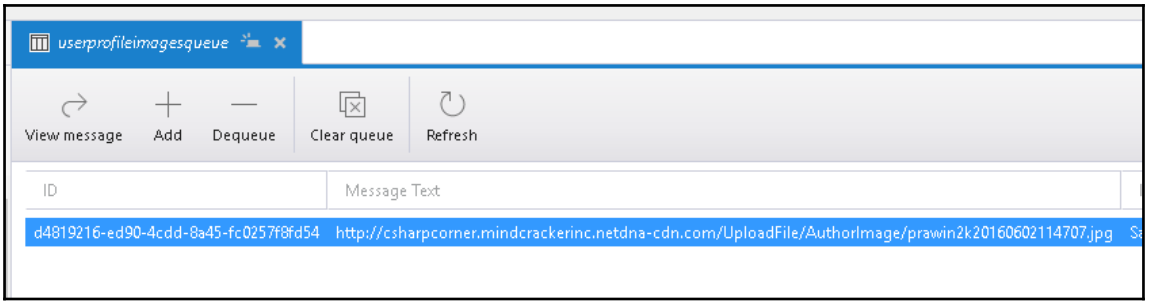

View files
Test
HTTP method
POST
Query
Add parameter
Headers
There are no headers
Add header
Request body
1 {
2 "firstname": "Bill",
3 "lastname": "Gates"
4 }
Output
Status: 200 OK
"Thank you for Registering.."
Run


tblUserProfile
Query
Import
Export
Add
Edit
Select all
Column Options
Delete
Refresh
PartitionKey
RowKey
Timestamp
FirstName
LastName
p1
af3f2f78-caf9-4cc8-bae5-0b703819570b
2017-05-20T01:15:29.422Z
Azure
Microsoft

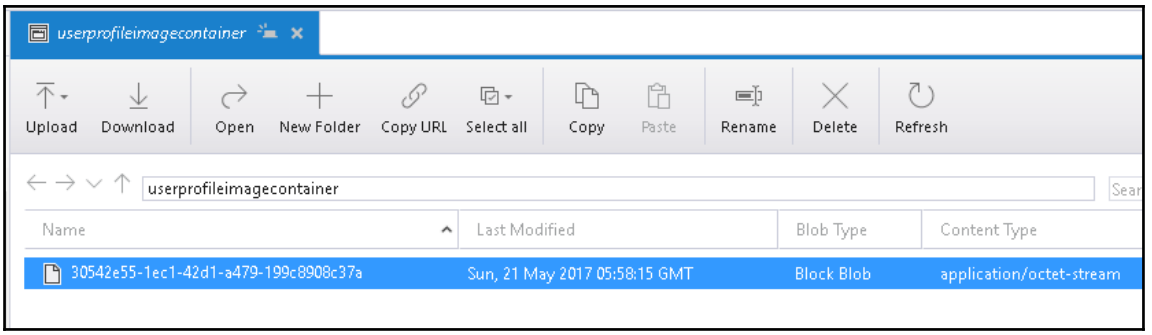

App settings
AzureWebJobsDashboard
DefaultEndpointsProtocol=h..
Slot setting
AzureWebJobsStorage
DefaultEndpointsProtocol=h..
Slot setting
FUNCTIONS_EXTENSION_VE...
~1
Slot setting
WEBSITE_CONTENTAZUREFI...
DefaultEndpointsProtocol=h..
Slot setting
WEBSITE_CONTENTSHARE
azurefunctionscookbook3f7...
Slot setting
WEBSITE_NODE_DEFAULT_V...
6.5.0
Slot setting
azurefunctionscookbook_ST...
DefaultEndpointsProtocol=h..
Slot setting
Key
Value
Slot setting

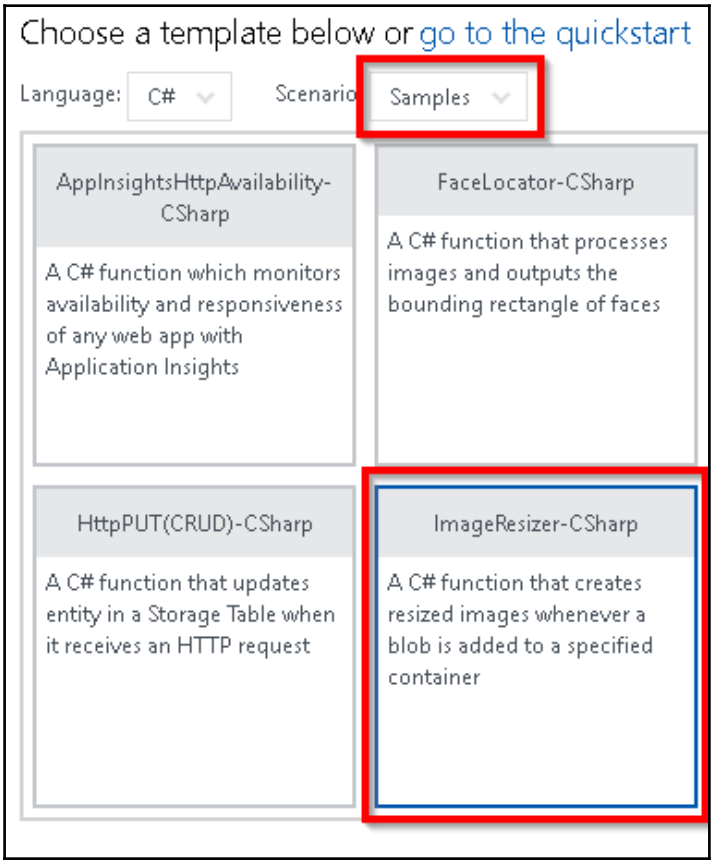

Overview
Settings
Platform features
API definition (preview)
Search features
GENERAL SETTINGS
Application settings
Properties
NETWORKING
Networking
SSL
API
CORS
API definition

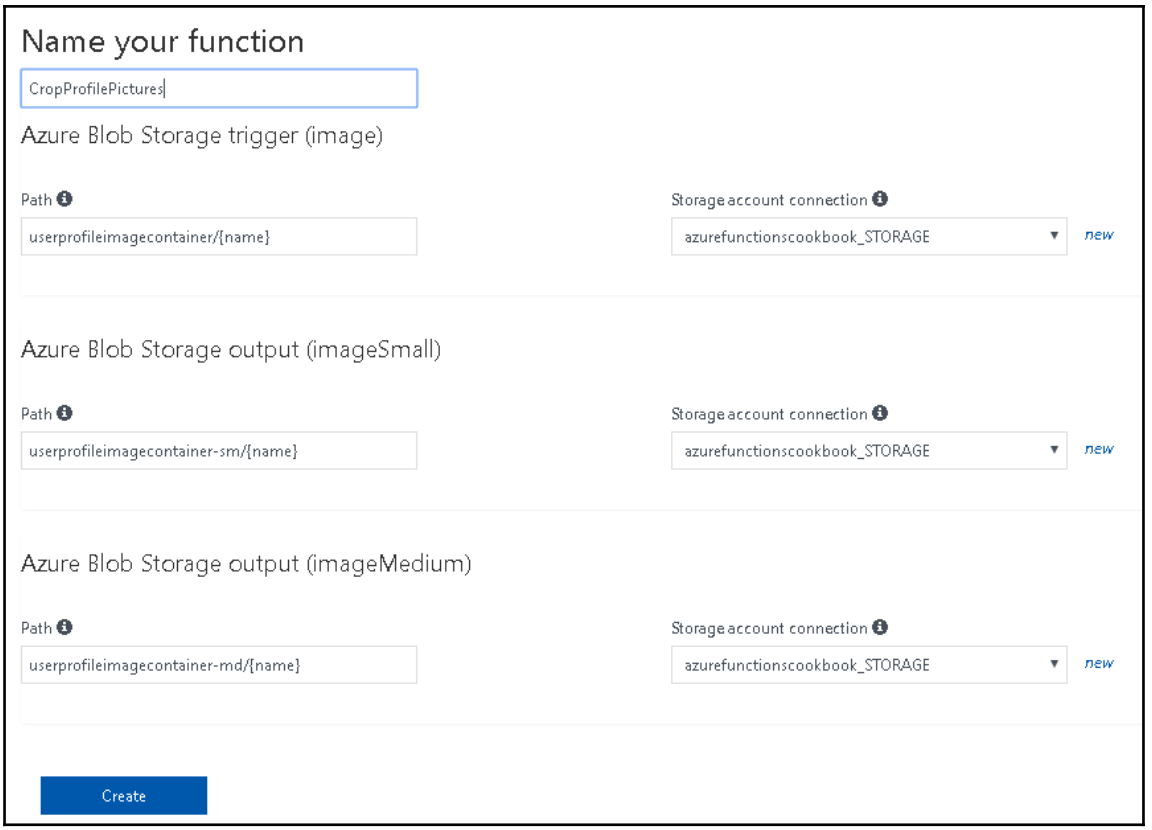

View files
Test
Add
Upload
Delete
RegisterUsers
function.json
run.csx
project.json

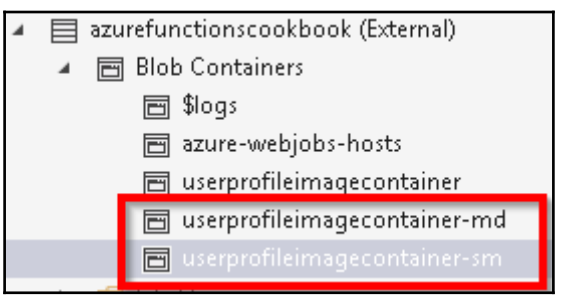

userprofileimagesqueue
View message
Add
Dequeue
Clear queue
Refresh
ID
Message Text
d4819216-ed90-4cdd-8a45-fc0257f8fd54
http://csharpcorner.mindcrackerinc.netdna-cdn.com/UploadFile/AuthorImage/prawin2k20160602114707.jpg

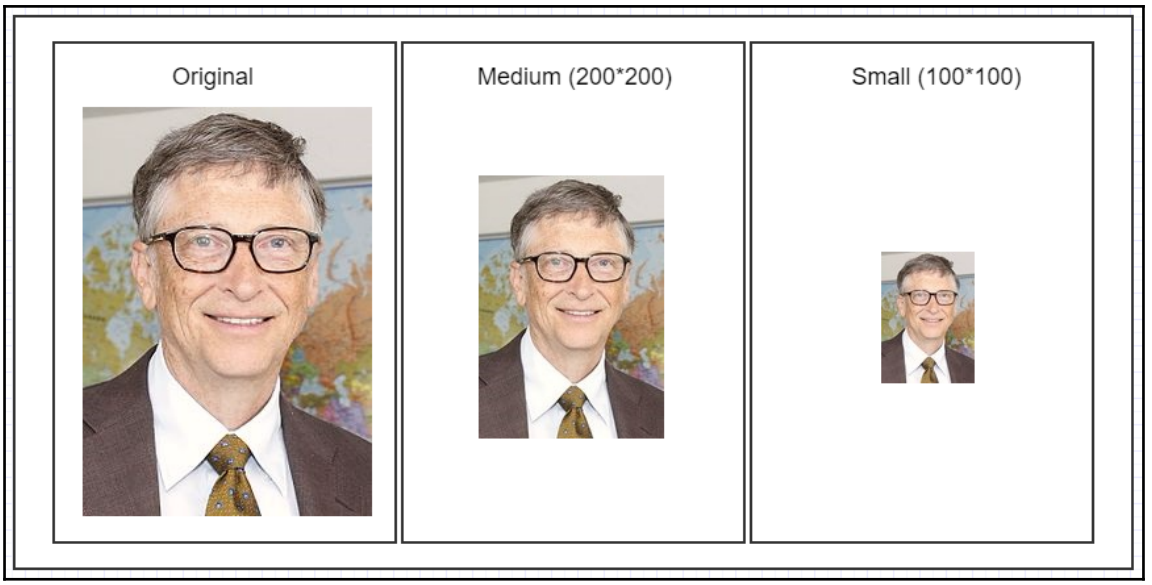
Azure Blob Storage output (outputBlob)
delete
Blob parameter name
outputBlob
Use function return value
Path
userprofileimagecontainer/{rand-guid}
Storage account connection
azurefunctionscookbook_STORAGE
new

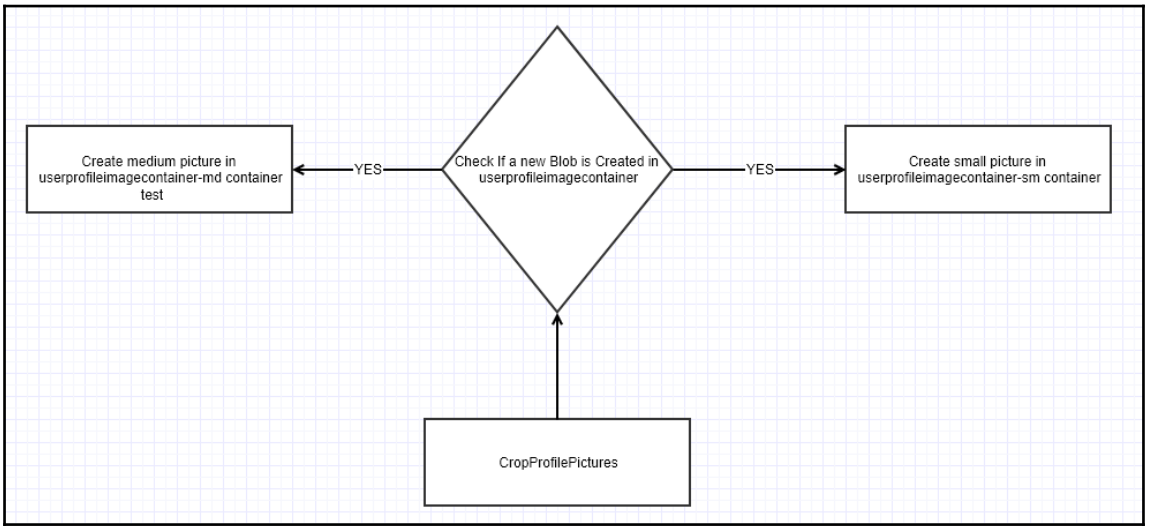

userprofileimagecontainer
Upload
Download
Open
New Folder
Copy URL
Select all
Copy
Paste
Rename
Delete
Refresh
userprofileimagecontainer
Name
Last Modified
Blob Type
Content Type
30542e55-1ec1-42d1-a479-199c8908c37a
Sun, 21 May 2017 05:58:15 GMT
Block Blob
application/octet-stream


Choose a template below or go to the quickstart
Language:
C#
Scenario:
Samples
AppInsightsHttpAvailability-CSharp
A C# function which monitors availability and responsiveness of any web app with Application Insights
FaceLocator-CSharp
A C# function that processes images and outputs the bounding rectangle of faces
HttpPUT(CRUD)-CSharp
A C# function that updates entity in a Storage Table when it receives an HTTP request
ImageResizer-CSharp
A C# function that creates resized images whenever a blob is added to a specified container

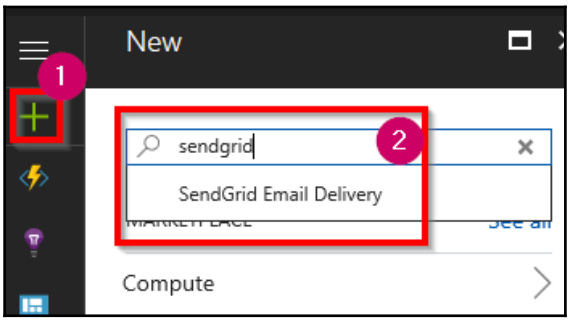

Name your function
CropProfilePictures
Azure Blob Storage trigger (image)
Path
userprofileimagecontainer/{name}
Storage account connection
azurefunctionscookbook_STORAGE
new
Azure Blob Storage output (imageSmall)
Path
userprofileimagecontainer-sm/{name}
Storage account connection
azurefunctionscookbook_STORAGE
new
Azure Blob Storage output (imageMedium)
Path
userprofileimagecontainer-md/{name}
Storage account connection
azurefunctionscookbook_STORAGE
new
Create

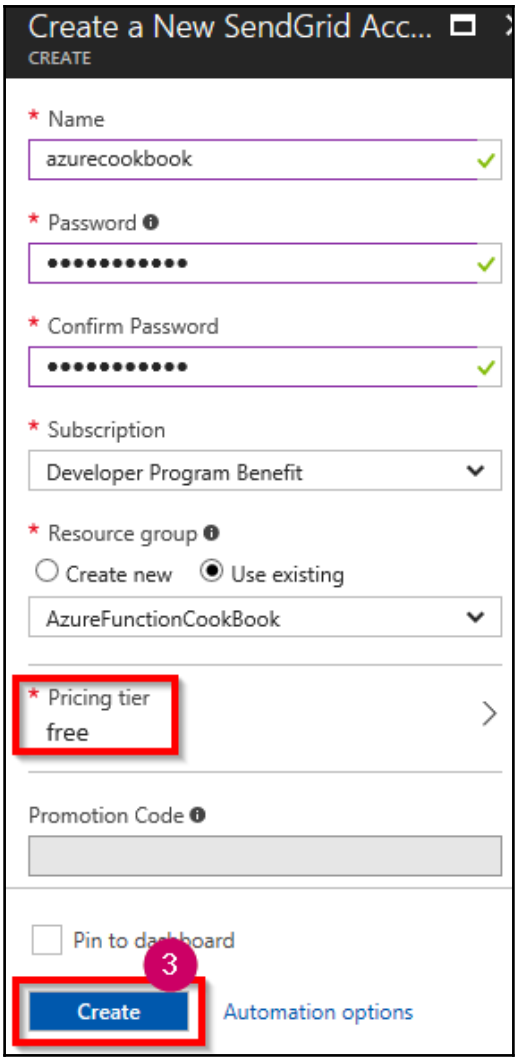

azurefunctionscookbook (External)
Blob Containers
$logs
azure-webjobs-hosts
userprofileimagecontainer
userprofileimagecontainer-md
userprofileimagecontainer-sm

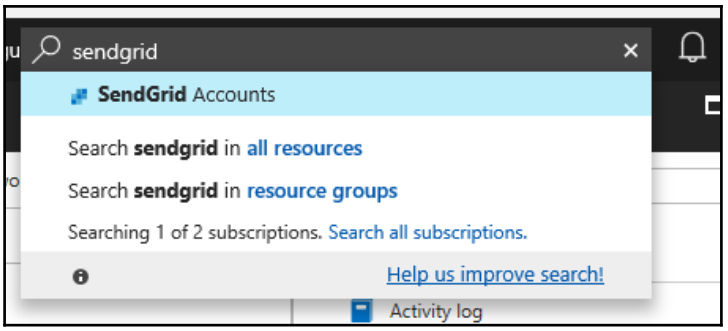

Original
Medium (200*200)
Small (100*100)

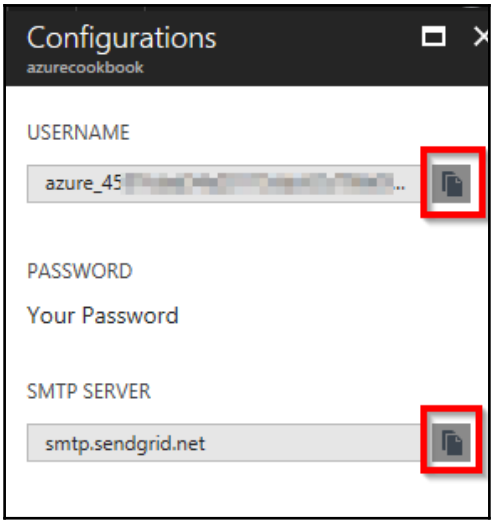

Create medium picture in userprofileimagecontainer-md container test
YES
Check If a new Blob is Created in userprofileimagecontainer
YES
Create small picture in userprofileimagecontainer-sm container
CropProfilePictures

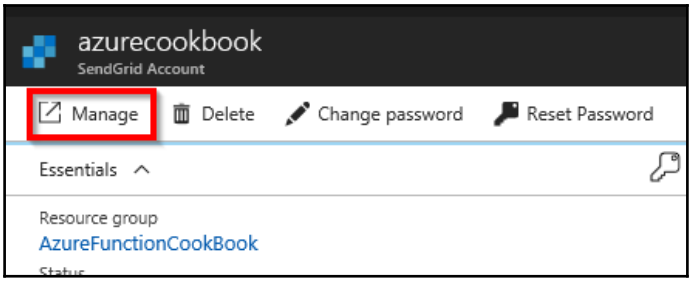
Chapter 02: Working with Notifications Using SendGrid and Twilio Services

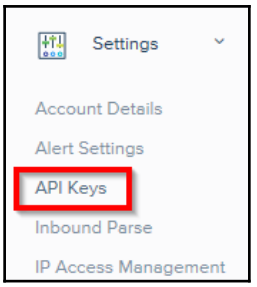


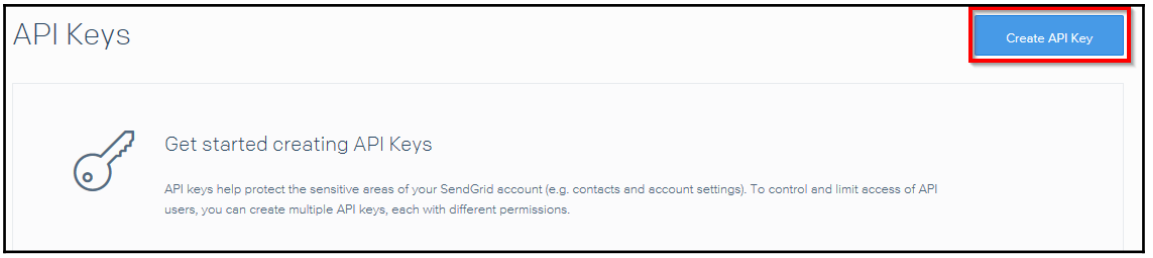

Create a New SendGrid Acc...
CREATE
* Name
azurecookbook
* Password
* Confirm Password
* Subscription
Developer Program Benefit
* Resource group
Create new
Use existing
AzureFunctionCookBook
* Pricing tier
free
Promotion Code
Pin to dashboard
3
Create
Automation options

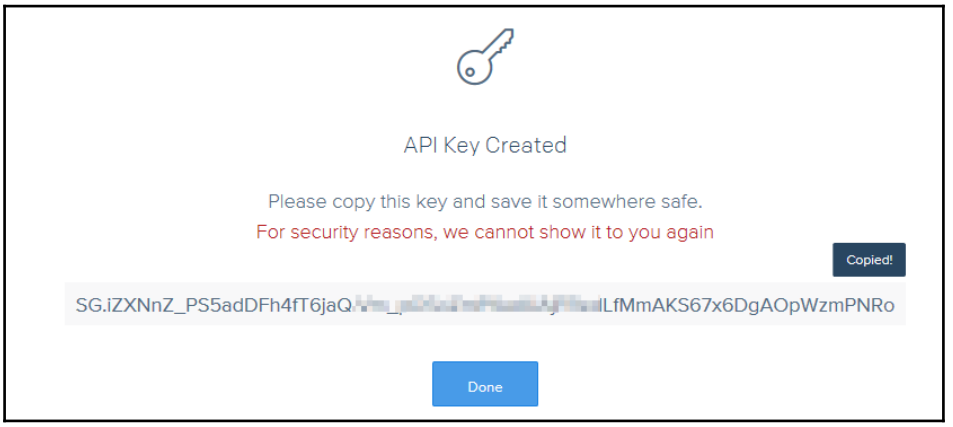

sendgrid
SendGrid Accounts
Search sendgrid in all resources
Search sendgrid in resource groups
Searching 1 of 2 subscriptions. Search all subscriptions.
Help us improve search!
Activity log

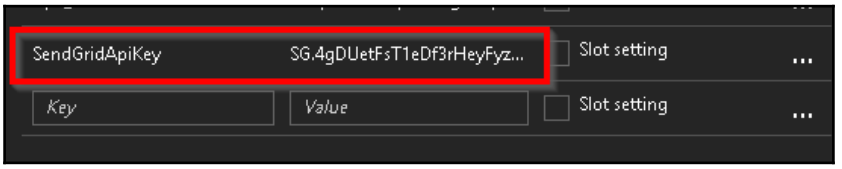

Configurations
azurecookbook
USERNAME
azure_45
PASSWORD
Your Password
SMTP SERVER
smtp.sendgrid.net

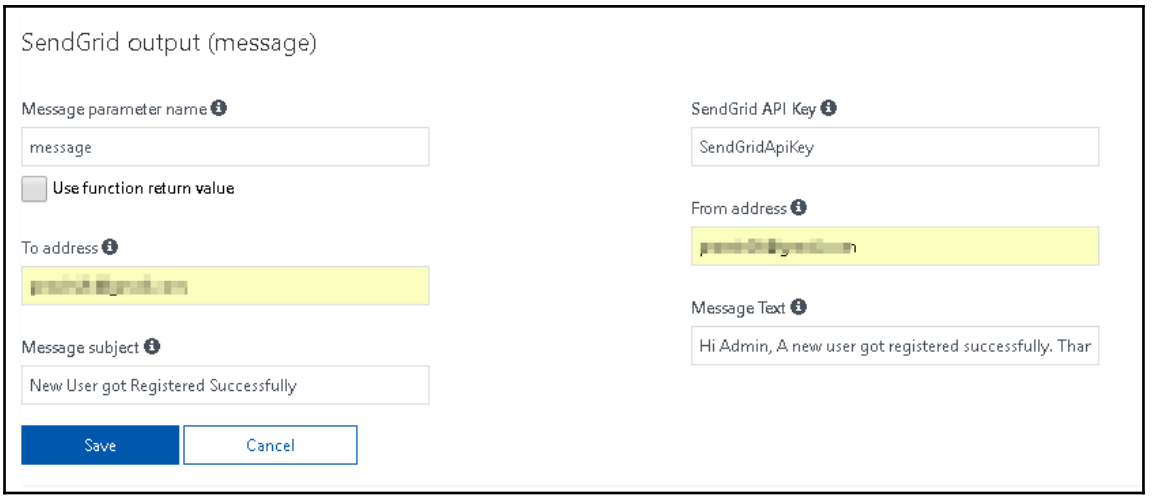

azurecookbook
SendGrid Account
Manage
Delete
Change password
Reset Password
Essentials
Resource group
AzureFunctionCookBook

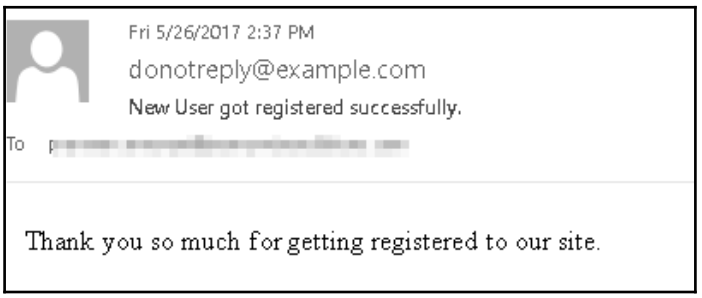

Settings
Account Details
Alert Settings
API Keys
Inbound Parse
IP Access Management

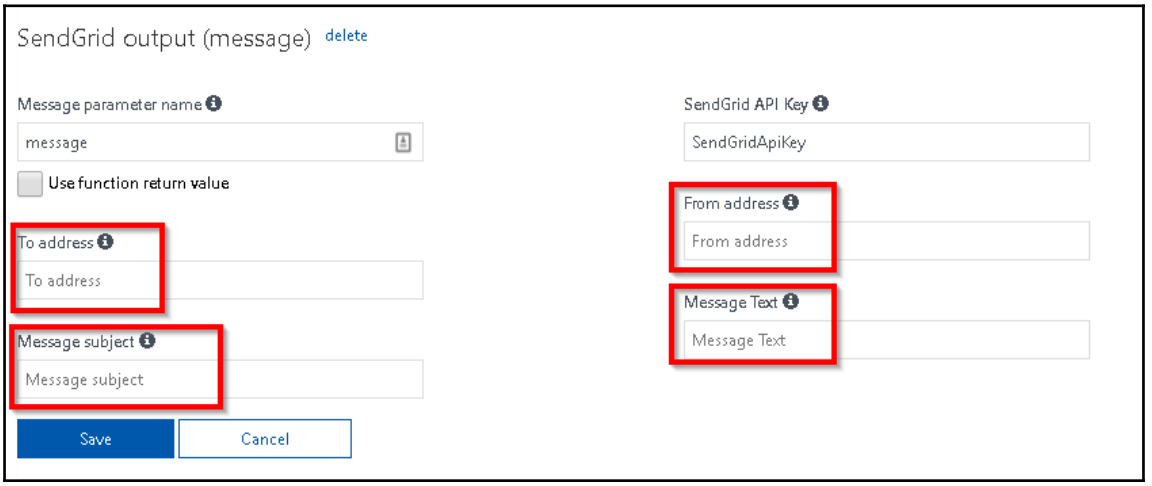

API Keys
Create API Key
Get started creating API Keys
API keys help protect the sensitive areas of your SendGrid account (e.g. contacts and account settings). To control and limit access of API users, you can create multiple API keys, each with different permissions.

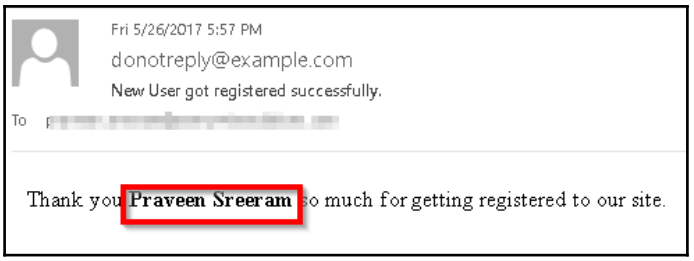

API Key Created
Please copy this key and save it somewhere safe.
For security reasons, we cannot show it to you again
Copied!
SG.iZXNnZ_PS5adDFh4fT6jaQ
lLfMmAKS67x6DgAOpWzmPNRo
Done


SendGridApiKey
SG.4gDUetFsT1eDf3rHeyFyz...
Slot setting
Key
Value
Slot setting

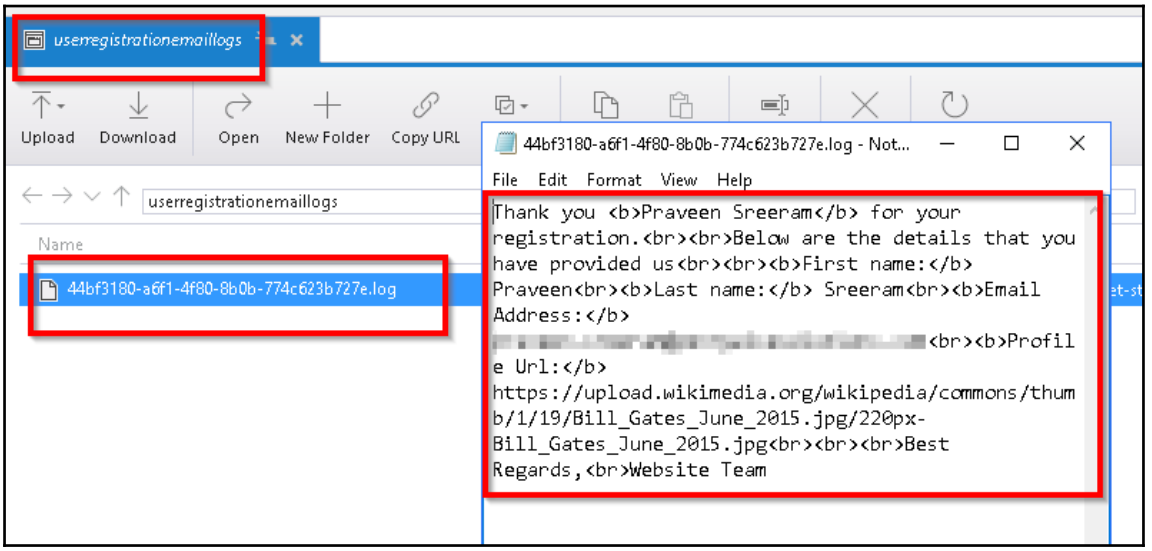

SendGrid output (message)
Message parameter name
message
Use function return value
To address
Message subject
New User got Registered Successfully
Save
Cancel
SendGrid API Key
SendGridApiKey
From address
Message Text
Hi Admin, A new user got registered successfully. Thar


Fri 5/26/2017 2:37 PM
donotreply@example.com
New User got registered successfully.
To
Thank you so much for getting registered to our site.


SendGrid output (message)
delete
Message parameter name
message
Use function return value
To address
To address
Message subject
Message subject
Save
Cancel
SendGrid API Key
SendGridApiKey
From address
From address
Message Text
Message Text


Fri 5/26/2017 5:57 PM
donotreply@example.com
New User got registered successfully.
To
Thank you Praveen Sreeram so much for getting registered to our site.

Azure Blob Storage output (outputBlob)
delete
Blob parameter name
outputBlob
Use function return value
Storage account connection
azurefunctionscookbook_STORAGE
new
Path
userregistrationemaillogs/{rand-guid}.log

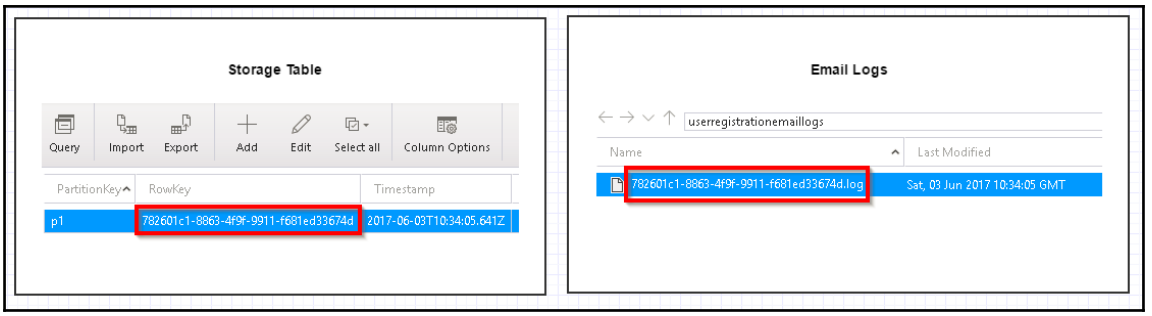

userregistrationemaillogs
Upload
Download
Open
New Folder
Copy URL
userregistrationemaillogs
Name
44bf3180-a6f1-4f80-8b0b-774c623b727e.log
44bf3180-a6f1-4f80-8b0b-774c623b727e.log - Not...
File Edit Format View Help
Thank you Praveen Sreeram for your registration.

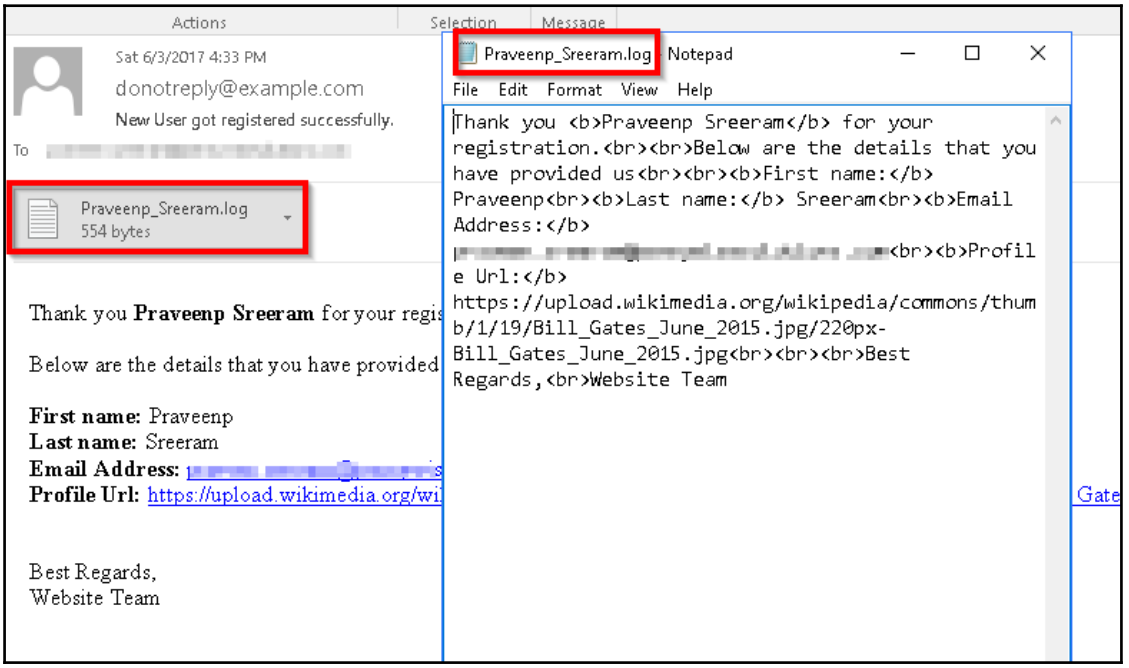
Below are the details that you have provided us

First name: Praveen
Last name: Sreeram
Email Address:

Profile Url:
https://upload.wikimedia.org/wikipedia/commons/thumb/1/19/Bill_Gates_June_2015.jpg/220px-Bill_Gates_June_2015.jpg

Best Regards,
Website Team


Storage Table
Query
Import
Export
Add
Edit
Select all
Column Options
PartitionKey
RowKey
Timestamp
p1
782601c1-8863-4f9f-9911-f681ed33674d
2017-06-03T10:34:05.641Z
Email Logs
userregistrationemaillogs
Name
Last Modified
782601c1-8863-4f9f-9911-f681ed33674d.log
Sat, 03 Jun 2017 10:34:05 GMT

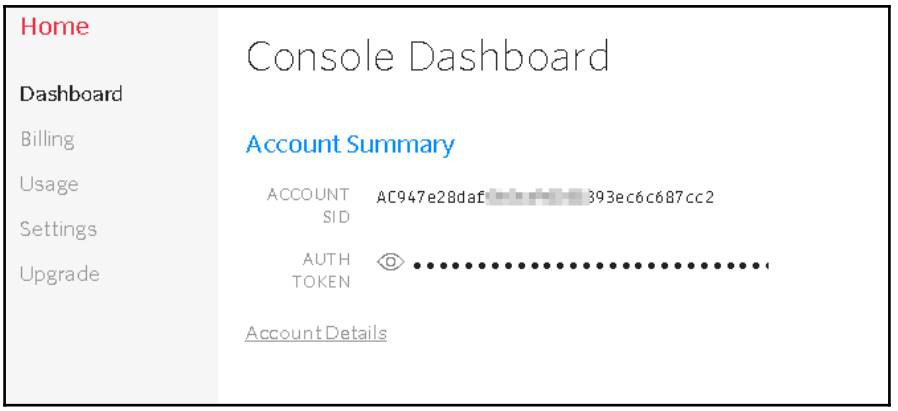

Actions
Selection
Message
Sat 6/3/2017 4:33 PM
donotreply@example.com
New User got registered successfully.
To
Praveenp_Sreeram.log
554 bytes
Thank you Praveenp Sreeram for your regis
Below are the details that you have provided
First name: Praveenp
Last name: Sreeram
Email Address:
Profile Url: https://upload.wikimedia.org/wi
Gate
Best Regards,
Website Team
Praveenp_Sreeram.log - Notepad
File Edit Format View Help
Thank you Praveenp Sreeram for your registration.

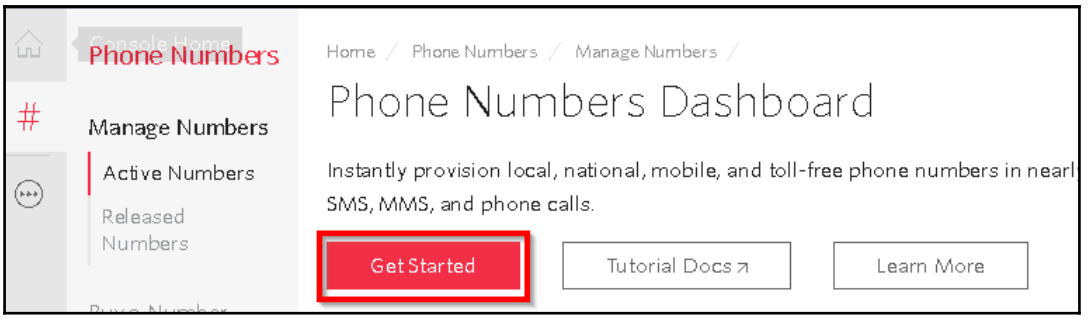
Below are the details that you have provided us

First name: Praveenp
Last name: Sreeram
Email Address:

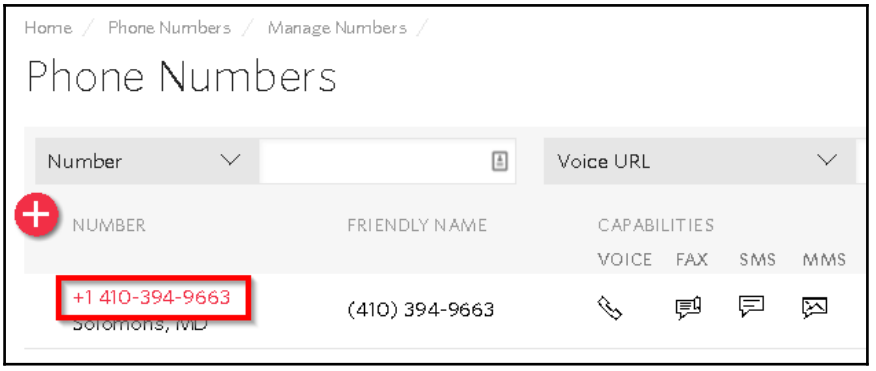
Profile Url:
https://upload.wikimedia.org/wikipedia/commons/thumb/1/19/Bill_Gates_June_2015.jpg/220px-Bill_Gates_June_2015.jpg

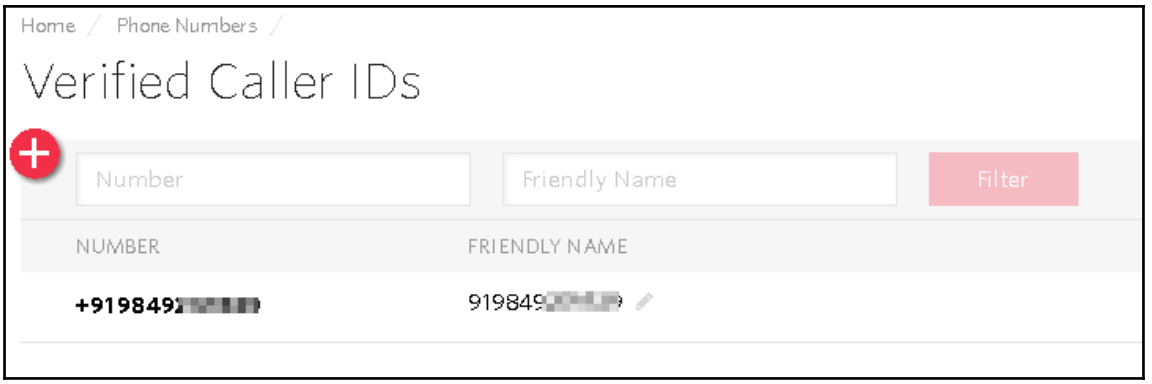
Best Regards,
Website Team


Home
Dashboard
Billing
Usage
Settings
Upgrade
Console Dashboard
Account Summary
ACCOUNT SID
AC947e28daf
393ec6c687cc2
AUTH TOKEN
Account Details

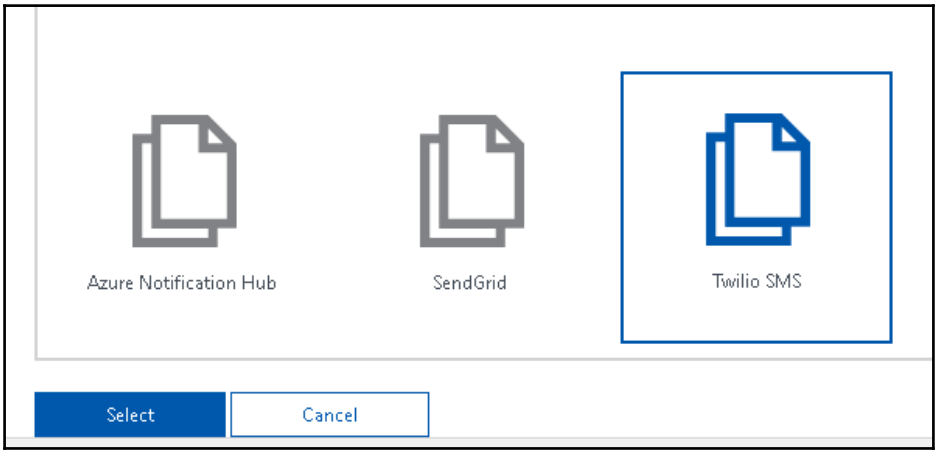

Phone Numbers
Manage Numbers
Active Numbers
Released Numbers
Home / Phone Numbers / Manage Numbers /
Phone Numbers Dashboard
Instantly provision local, national, mobile, and toll-free phone numbers in nearl
SMS, MMS, and phone calls.
Get Started
Tutorial Docs
Learn More

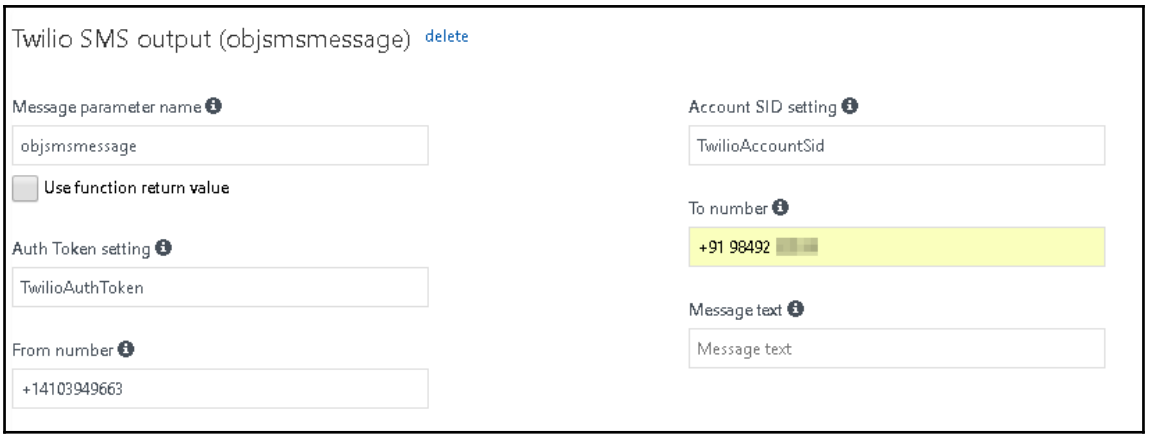
Get Started with Phone Numbers
Getting started with Twilio's phone numbers is easy! Search for local, toll-free, or mobile
Get your first Twilio phone number


Home / Phone Numbers / Manage Numbers /
Phone Numbers
Number
Voice URL
NUMBER
FRIENDLY NAME
CAPABILITIES
VOICE
FAX
SMS
MMS
+1 410-394-9663
Solomons, MD
(410) 394-9663


Home / Phone Numbers /
Verified Caller IDs
Number
Friendly Name
Filter
NUMBER
FRIENDLY NAME

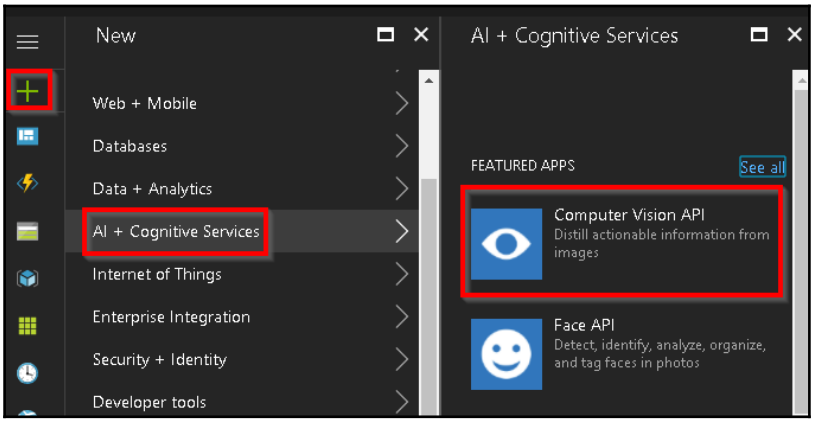
TwilioAccountSID
TwilioAuthToken

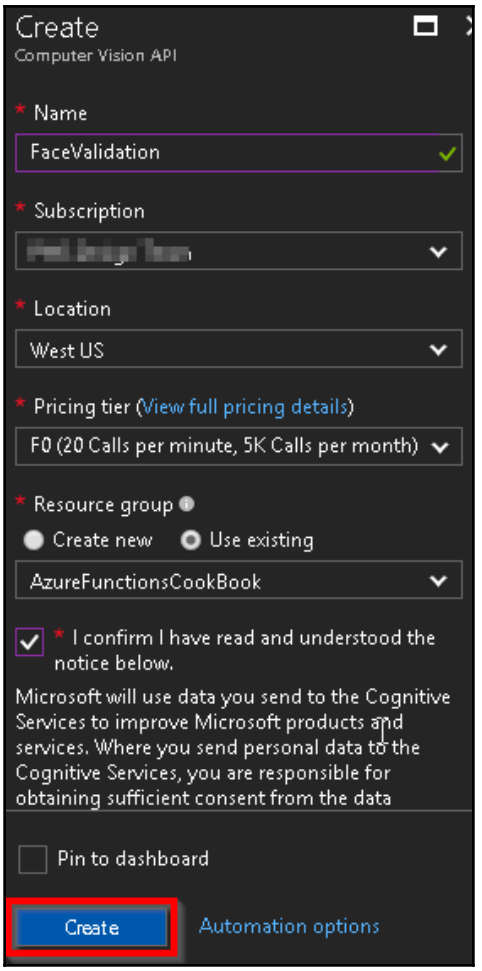

Azure Notification Hub
SendGrid
Twilio SMS
Select
Cancel


Twilio SMS output (objsmsmessage)
delete
Message parameter name
objsmsmessage
Use function return value
Auth Token setting
TwilioAuthToken
From number
+14103949663
Account SID setting
TwilioAccountSid
To number
+91 98492
Message text
Message text

Messaging – AirTel
51465
Sent from your Twilio trial account - Hello..
Thank you for getting registered.
AirTel
15:03
Type a message

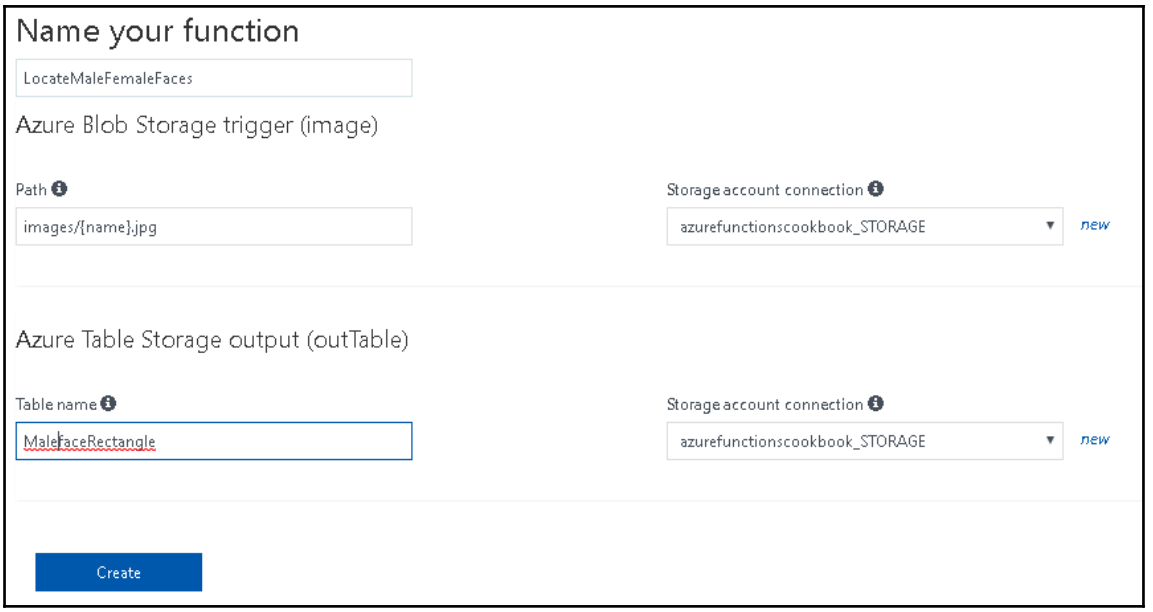
Chapter03: Seamless Integration of Azure Functions with Other Azure Services



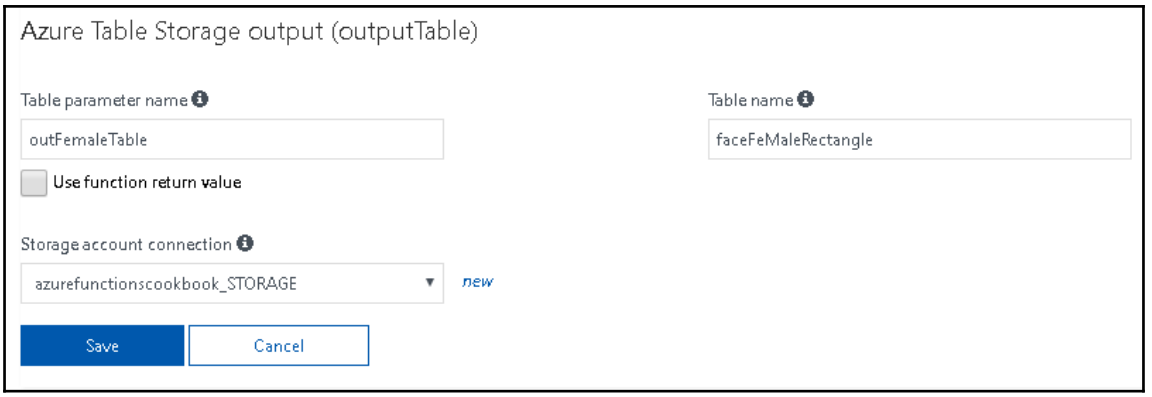

Create
Computer Vision API
* Name
FaceValidation
* Subscription
* Location
West US
* Pricing tier (View full pricing details)
F0 (20 Calls per minute, 5K Calls per month)
* Resource group
Create new
Use existing
AzureFunctionsCookBook
* I confirm I have read and understood the notice below.
Microsoft will use data you send to the Cognitive Services to improve Microsoft products and services. Where you send personal data to the Cognitive Services, you are responsible for obtaining sufficient consent from the data
Pin to dashboard
Create
Automation options

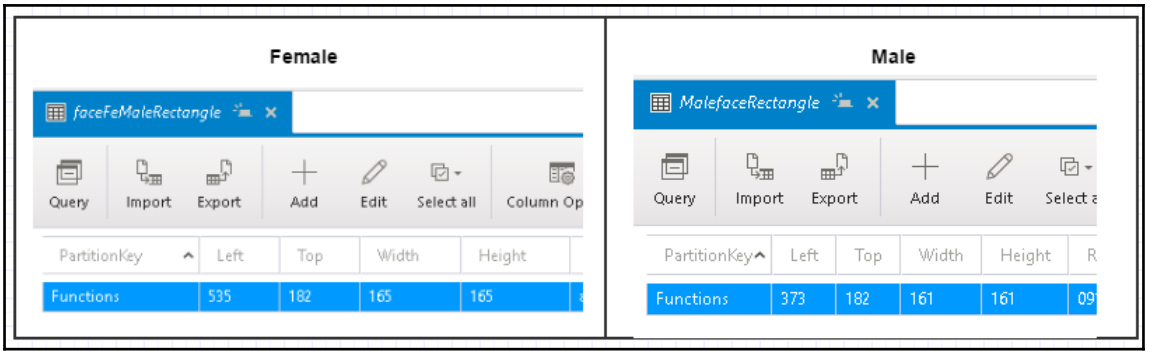
KEY 1
KEY 2

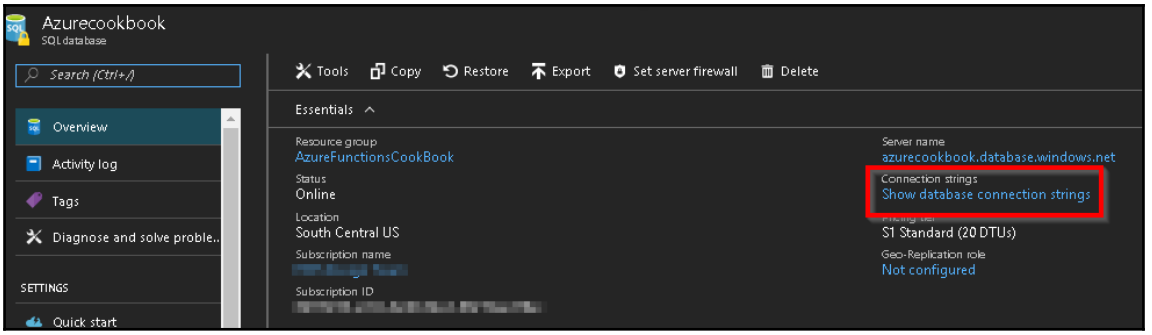
FaceLocator-CSharp
A C# function that processes images and outputs the bounding rectangle of faces


Name your function
LocateMaleFemaleFaces
Azure Blob Storage trigger (image)
Path
images/{name}.jpg
Storage account connection
azurefunctionscookbook_STORAGE
new
Azure Table Storage output (outTable)
Table name
MaleFaceRectangle
Storage account connection
azurefunctionscookbook_STORAGE
new
Create

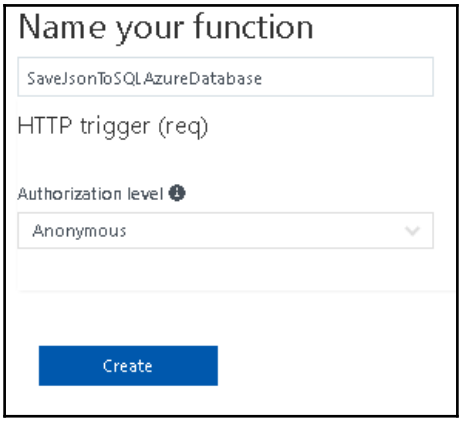
Azure Table Storage output (outMaleTable)
delete
Table parameter name
outMaleTable
Use function return value
Table name
MalefaceRectangle
Storage account connection
azurefunctionscookbook_STORAGE
new

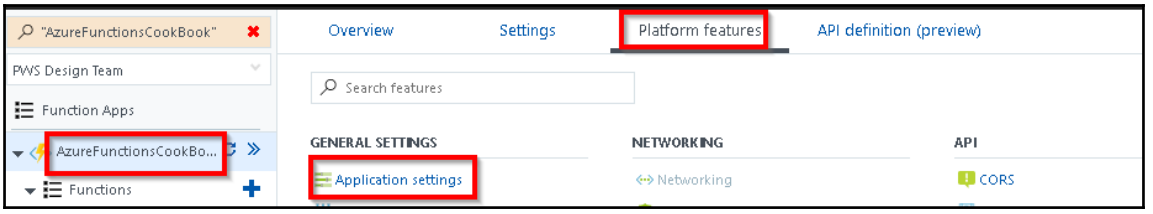

Azure Table Storage output (outputTable)
Table parameter name
outFemaleTable
Table name
faceFeMaleRectangle
Use function return value
Storage account connection
azurefunctionscookbook_STORAGE
new
Save
Cancel

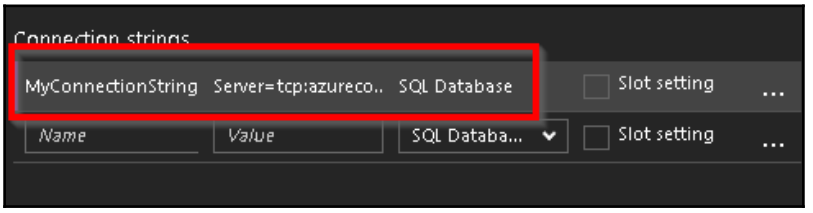

Female
faceFeMaleRectangle
Query
Import
Export
Add
Edit
Select all
Column Op
PartitionKey
Left
Top
Width
Height
Functions
535
182
165
165
Male
MalefaceRectangle
Query
Import
Export
Add
Edit
PartitionKey
Left
Top
Width
Height
Functions
373
182
161
161

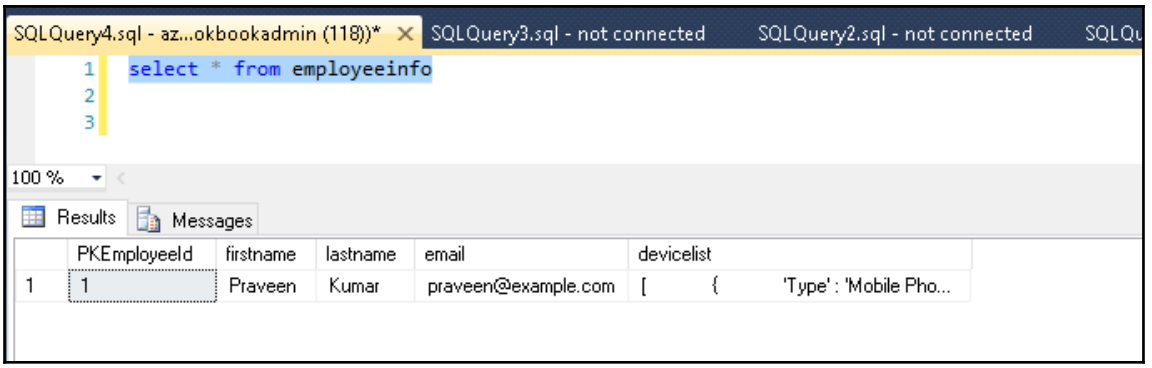

Azurecookbook
SQL database
Search (Ctrl+/)
Overview
Activity log
Tags
Diagnose and solve proble...
SETTINGS
Quick start
Tools
Copy
Restore
Export
Set server firewall
Delete
Essentials
Resource group
AzureFunctionsCookBook
Status
Online
Location
South Central US
Subscription name
Subscription ID
Server name
azurecookbook.database.windows.net
Connection strings
Show database connection strings
S1 Standard (20 DTUs)
Geo-Replication role
Not configured

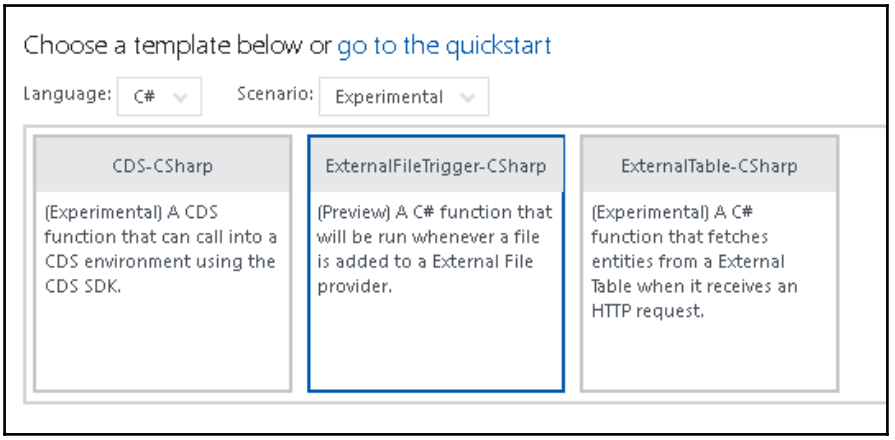
Database connection strings
Azurecookbook
ADO.NET
JDBC
ODBC
PHP
ADO.NET (SQL authentication)
Server=tcp:[redacted]433;Initial Catalog=Azurecookbook;Persist Security Info=False;User ID={your_username};Password={your_password};MultipleActiveResultSets=False;Encrypt=True;TrustServerCertificate=False;Connection Timeout=30;
Download ADO.NET driver for SQL server


Name your function
SaveJsonToSQLAzureDatabase
HTTP trigger (req)
Authorization level
Anonymous
Create

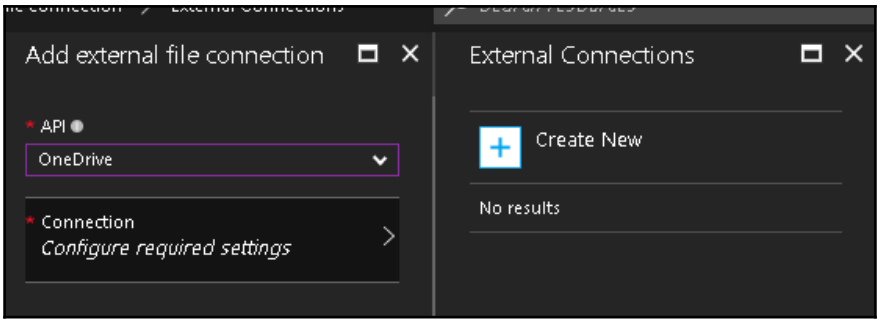

"AzureFunctionsCookBook"
PWS Design Team
Function Apps
AzureFunctionsCookBo...
Functions
Overview
Settings
Platform features
API definition (preview)
Search features
GENERAL SETTINGS
Application settings
NETWORKING
Networking
API
CORS

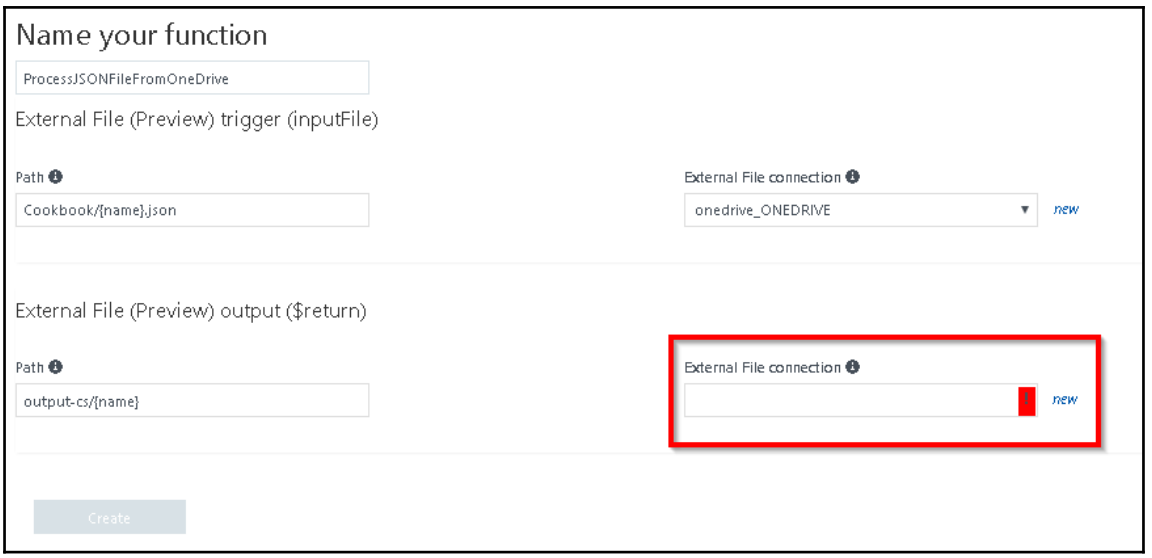

Connection strings
MyConnectionString
Server=tcp:azureco..
SQL Database
Slot setting
Name
Value
SQL Databa...
Slot setting

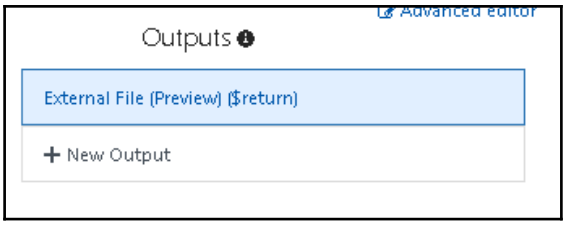

SQLQuery4.sql - az...okbookadmin (118))*
SQLQuery3.sql - not connected
SQLQuery2.sql - not connected
select * from employeeinfo
100 %
Results
Messages
PKEmployeeId
firstname
lastname
email
devicelist
1
1
Praveen
Kumar
praveen@example.com
[{ 'Type' : 'Mobile Pho...

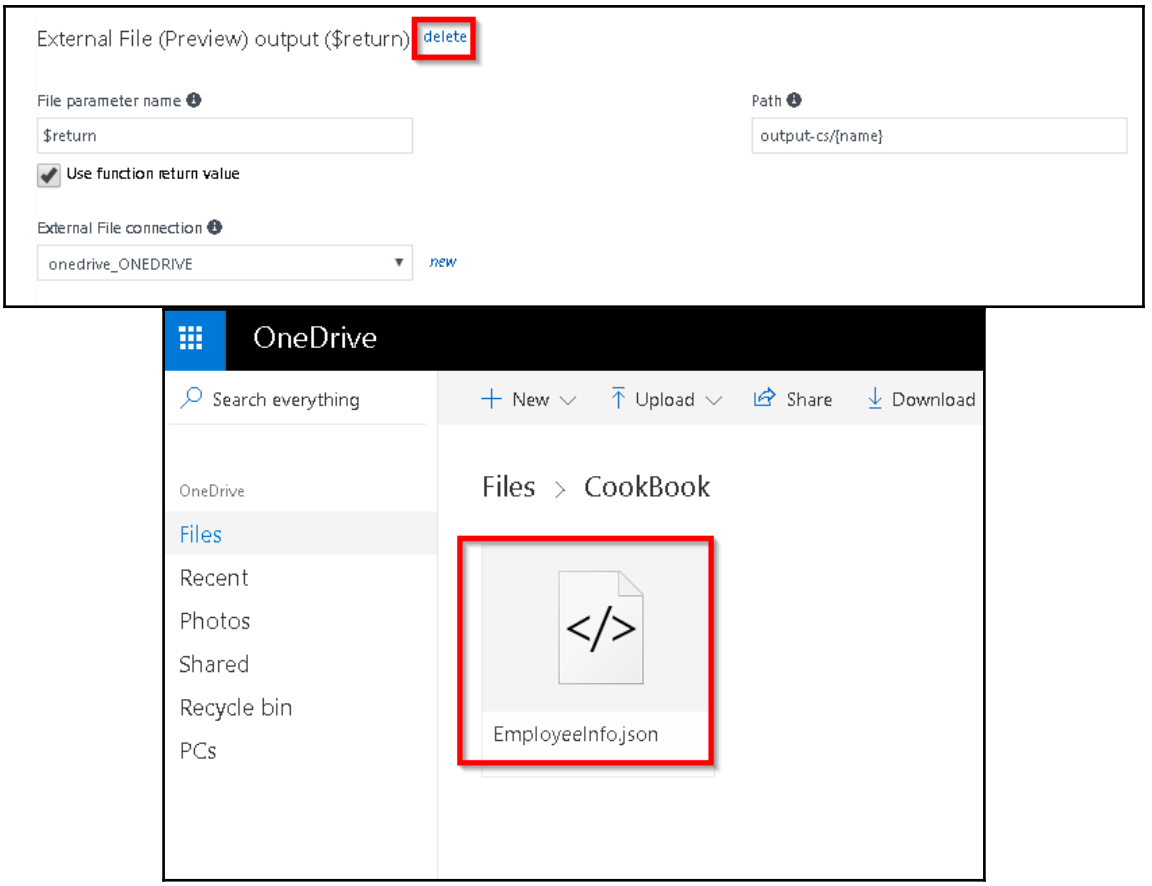

Choose a template below or go to the quickstart
Language: C#
Scenario: Experimental
CDS-CSharp
(Experimental) A CDS function that can call into a CDS environment using the CDS SDK.
ExternalFileTrigger-CSharp
(Preview) A C# function that will be run whenever a file is added to a External File provider.
ExternalTable-CSharp
(Experimental) A C# function that fetches entities from a External Table when it receives an HTTP request.

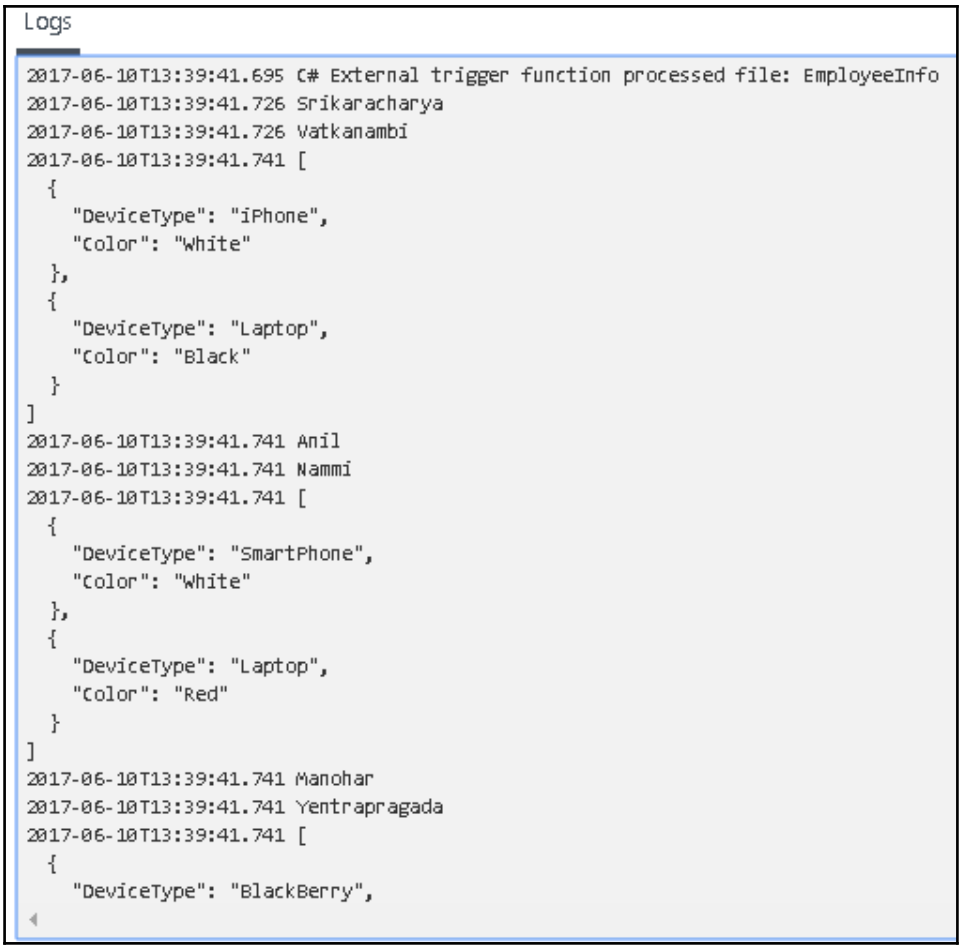
Name your function
ProcessJSONFileFromOneDrive
External File (Preview) trigger (inputFile)
Path
Cookbook/{name}.json
External File connection
new
External File (Preview) output ($return)
Path
output-cs/{name}
External File connection
new

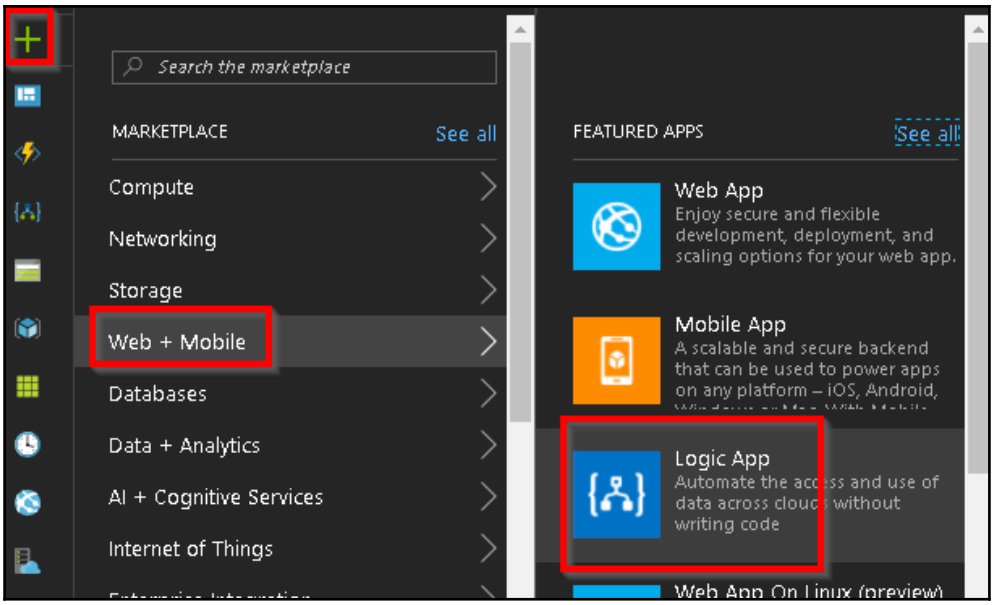

Add external file connection
API
OneDrive
Connection
Configure required settings
External Connections
Create New
No results

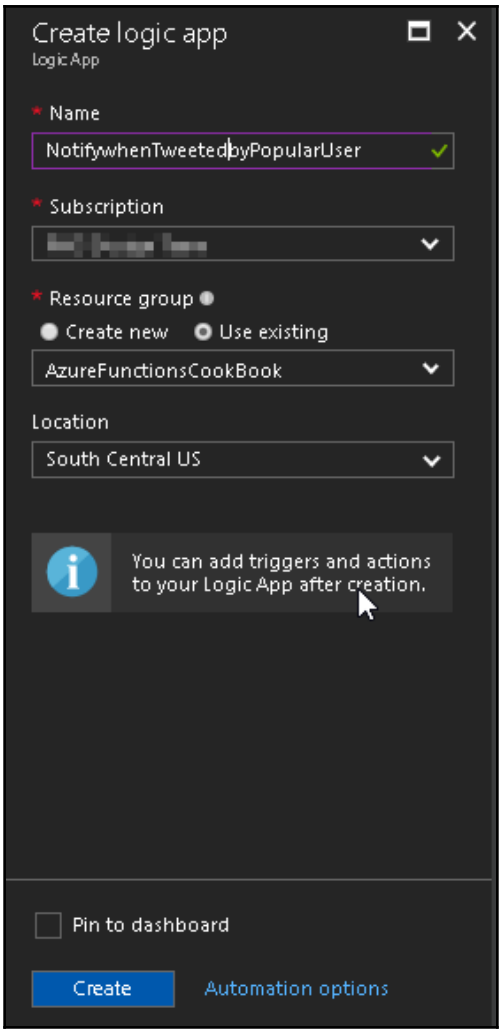

Name your function
ProcessJSONFileFromOneDrive
External File (Preview) trigger (inputFile)
Path
Cookbook/{name}.json
External File connection
onedrive_ONEDRIVE
new
External File (Preview) output ($return)
Path
output-cs/{name}
External File connection
new
Create

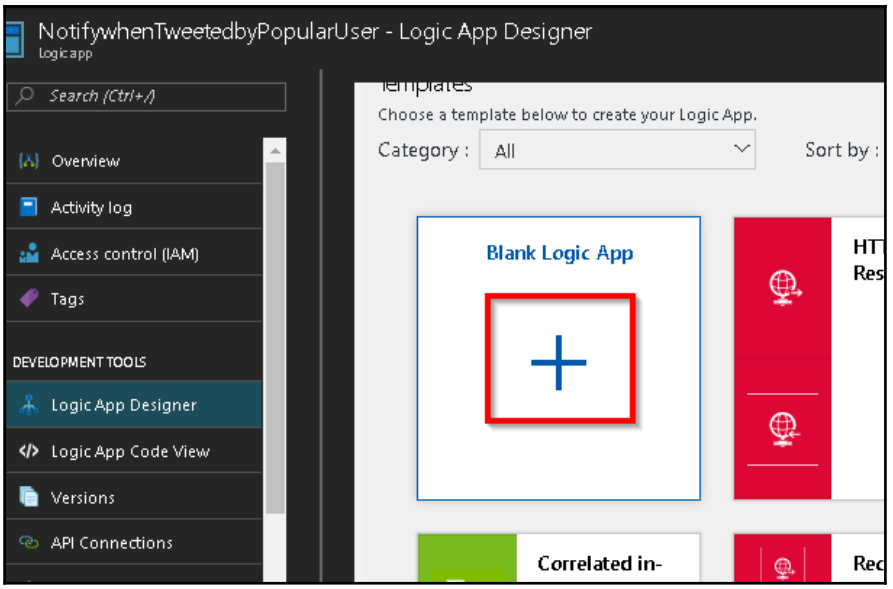

Advanced editor
Outputs
External File (Preview) ($return)
New Output

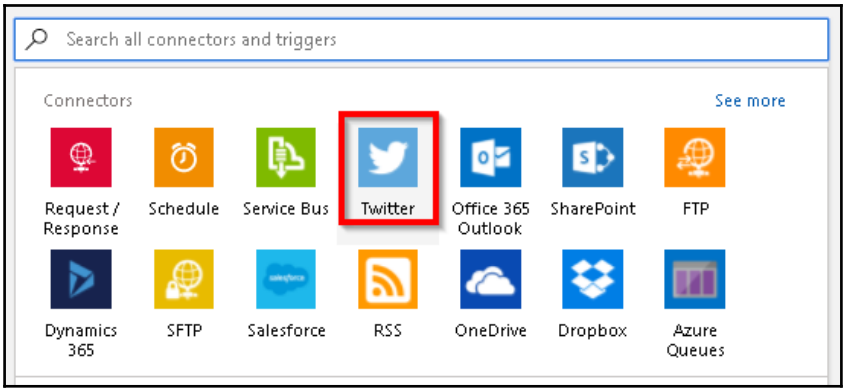

External File (Preview) output ($return)
delete
File parameter name
$return
Use function return value
Path
output-cs/{name}
External File connection
onedrive_ONEDRIVE
new
OneDrive
Search everything
New
Upload
Share
Download
OneDrive
Files
Recent
Photos
Shared
Recycle bin
PCs
Files > CookBook
EmployeeInfo.json

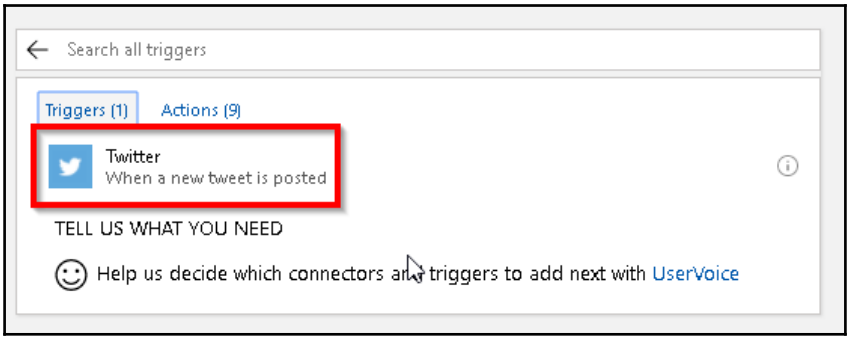

Logs
2017-06-10T13:39:41.695 C# External trigger function processed file: EmployeeInfo
2017-06-10T13:39:41.726 Srikaracharya
2017-06-10T13:39:41.726 Vatkanambi
2017-06-10T13:39:41.741 [
{
"DeviceType": "iPhone",
"Color": "White"
},
{
"DeviceType": "Laptop",
"Color": "Black"
}
]
2017-06-10T13:39:41.741 Anil
2017-06-10T13:39:41.741 Nammi
2017-06-10T13:39:41.741 [
{
"DeviceType": "SmartPhone",
"Color": "White"
},
{
"DeviceType": "Laptop",
"Color": "Red"
}
]
2017-06-10T13:39:41.741 Manohar
2017-06-10T13:39:41.741 Yentrapragada
2017-06-10T13:39:41.741 [
{
"DeviceType": "BlackBerry",

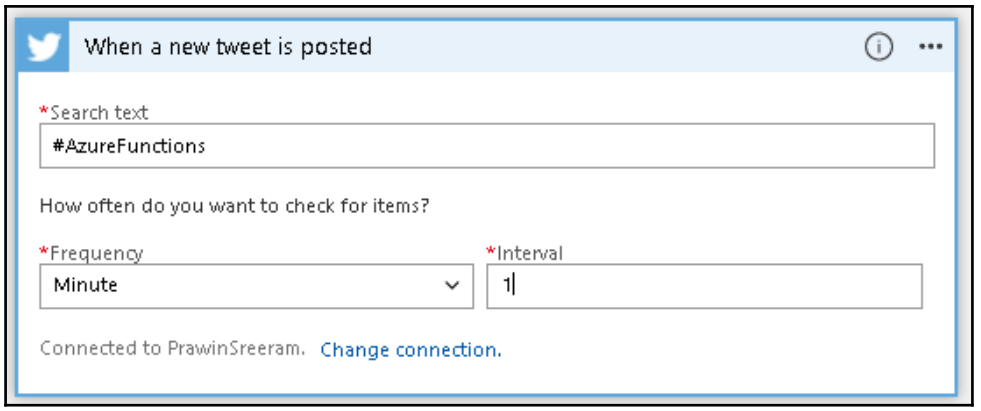

Search the marketplace
MARKETPLACE
See all
Compute
Networking
Storage
Web + Mobile
Databases
Data + Analytics
AI + Cognitive Services
Internet of Things
FEATURED APPS
See all
Web App
Enjoy secure and flexible development, deployment, and scaling options for your web app.
Mobile App
A scalable and secure backend that can be used to power apps on any platform – iOS, Android,
Logic App
Automate the access and use of data across clouds without writing code

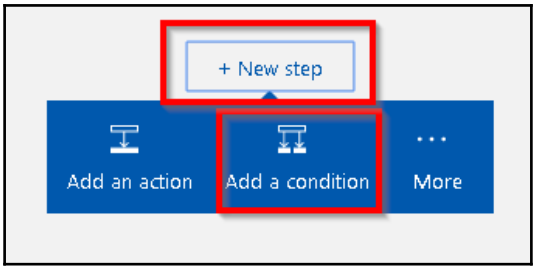

Create logic app
Logic App
* Name
NotifywhenTweetedbyPopularUser
* Subscription
* Resource group
Create new
Use existing
AzureFunctionsCookBook
Location
South Central US
You can add triggers and actions to your Logic App after creation.
Pin to dashboard
Create
Automation options

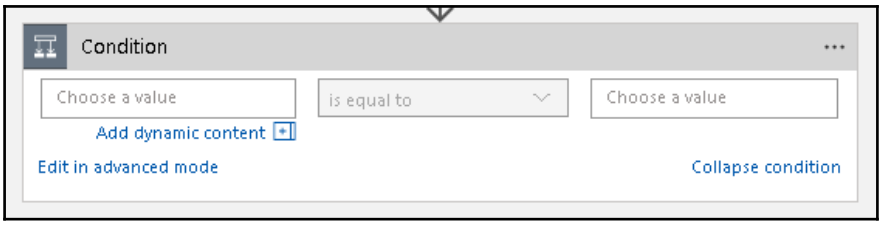

NotifywhenTweetedbyPopularUser - Logic App Designer
Logic app
Search (Ctrl+/)
Overview
Activity log
Access control (IAM)
Tags
DEVELOPMENT TOOLS
Logic App Designer
Logic App Code View
Versions
API Connections
Choose a template below to create your Logic App.
Category :
All
Sort by :
Blank Logic App
Correlated in-

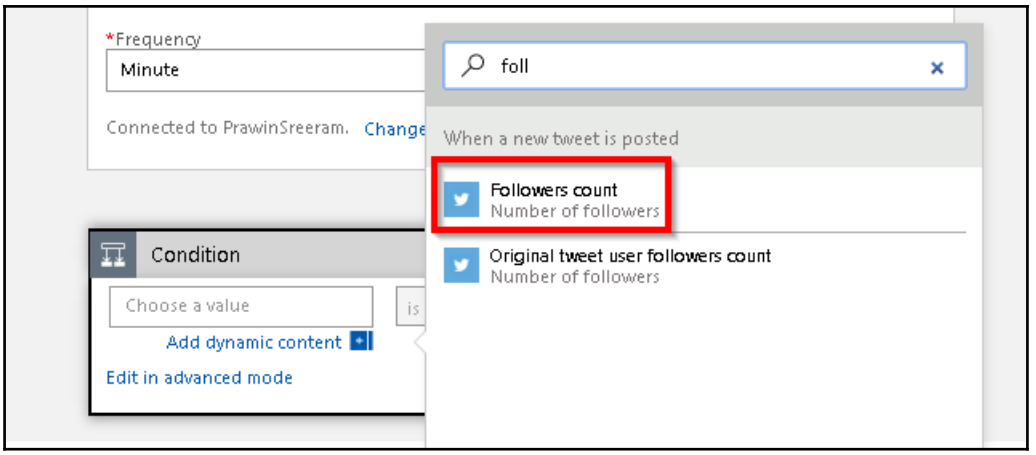

Search all connectors and triggers
Connectors
See more
Request / Response
Schedule
Service Bus
Twitter
Office 365 Outlook
SharePoint
FTP
Dynamics 365
SFTP
Salesforce
RSS
OneDrive
Dropbox
Azure Queues

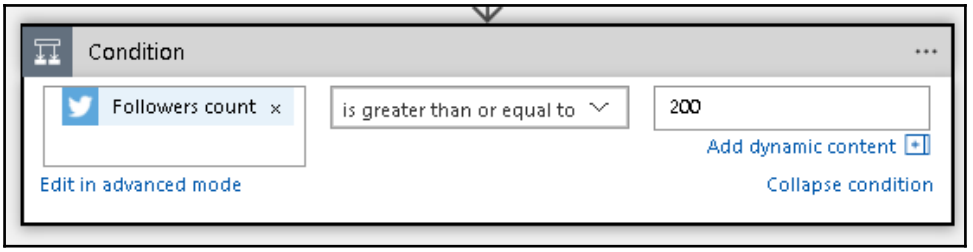

Search all triggers
Triggers (1)
Actions (9)
Twitter
When a new tweet is posted
TELL US WHAT YOU NEED
Help us decide which connectors and triggers to add next with UserVoice

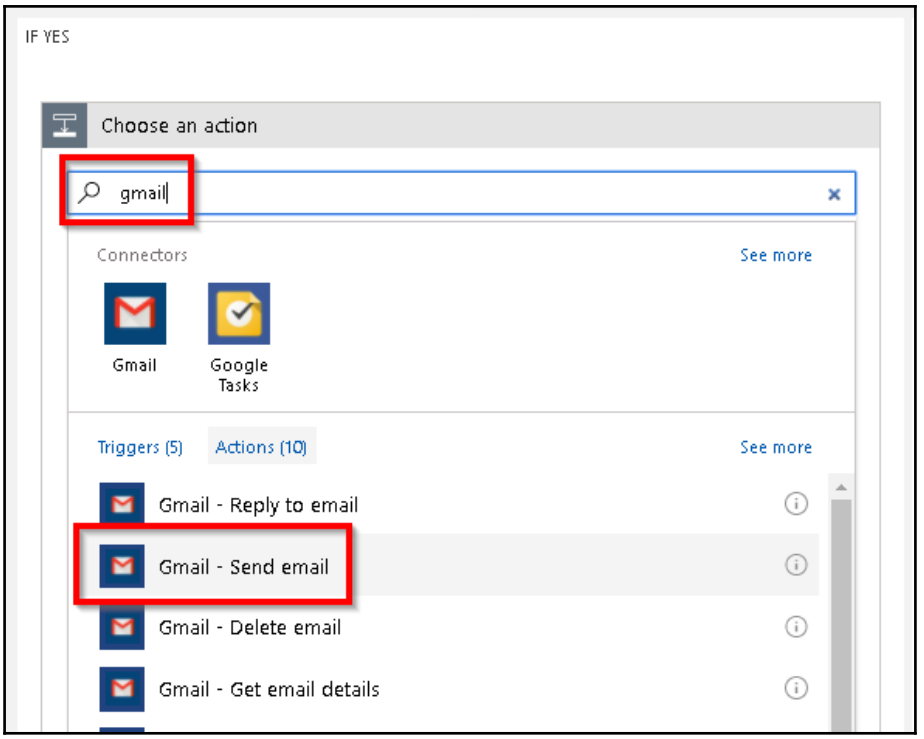

When a new tweet is posted
*Search text
#AzureFunctions
How often do you want to check for items?
*Frequency
Minute
*Interval
1
Connected to PrawinSreeram.
Change connection.

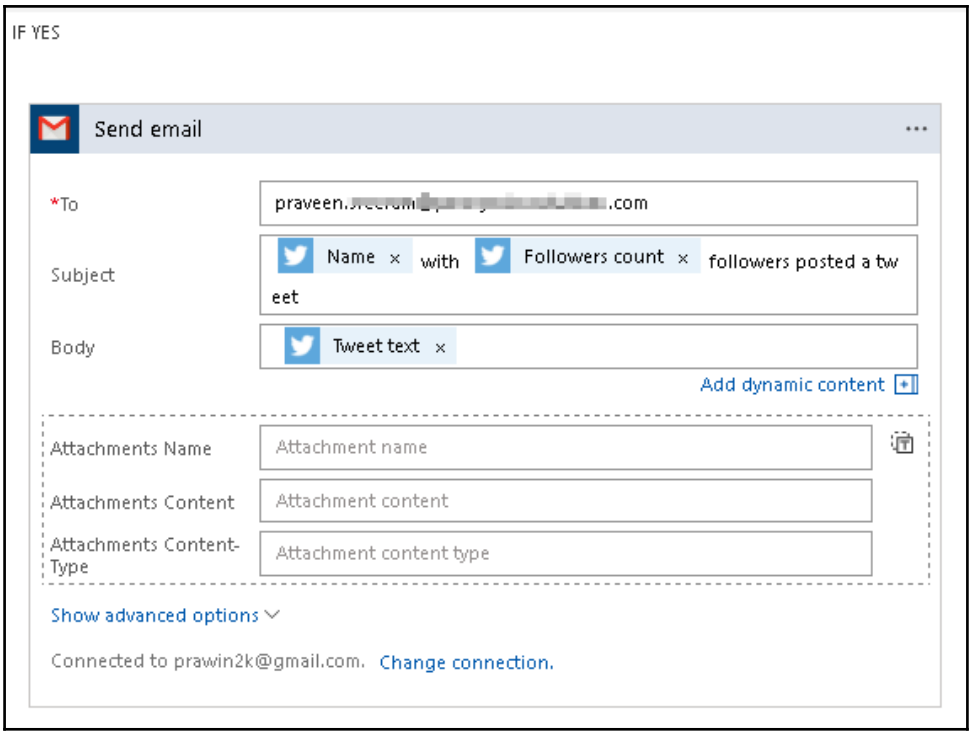

+ New step
Add an action
Add a condition
More


Condition
Choose a value
is equal to
Choose a value
Add dynamic content
Edit in advanced mode
Collapse condition

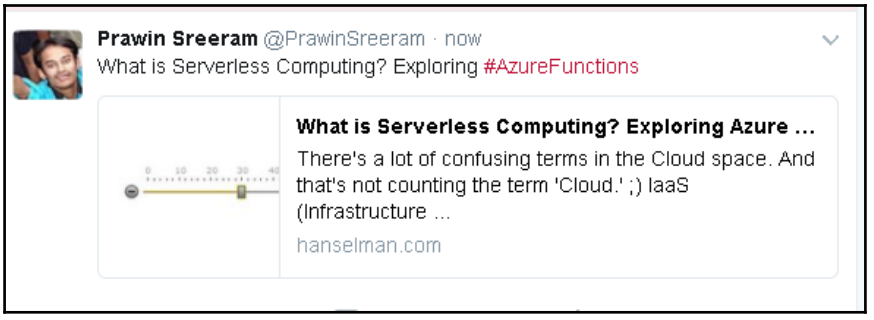

*Frequency
Minute
Connected to PrawinSreeram. Change
foll
When a new tweet is posted
Followers count
Number of followers
Original tweet user followers count
Number of followers
Condition
Choose a value
Add dynamic content
Edit in advanced mode

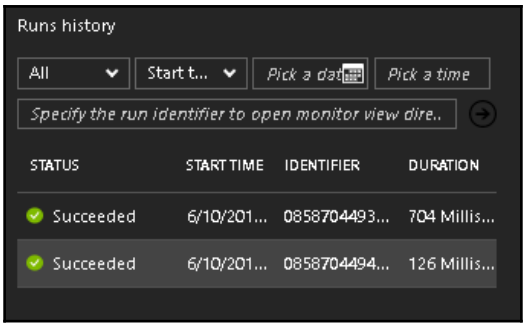

Condition
Followers count
is greater than or equal to
200
Add dynamic content
Edit in advanced mode
Collapse condition


IF YES
Choose an action
gmail
Connectors
See more
Gmail
Google Tasks
Triggers (5)
Actions (10)
See more
Gmail - Reply to email
Gmail - Send email
Gmail - Delete email
Gmail - Get email details

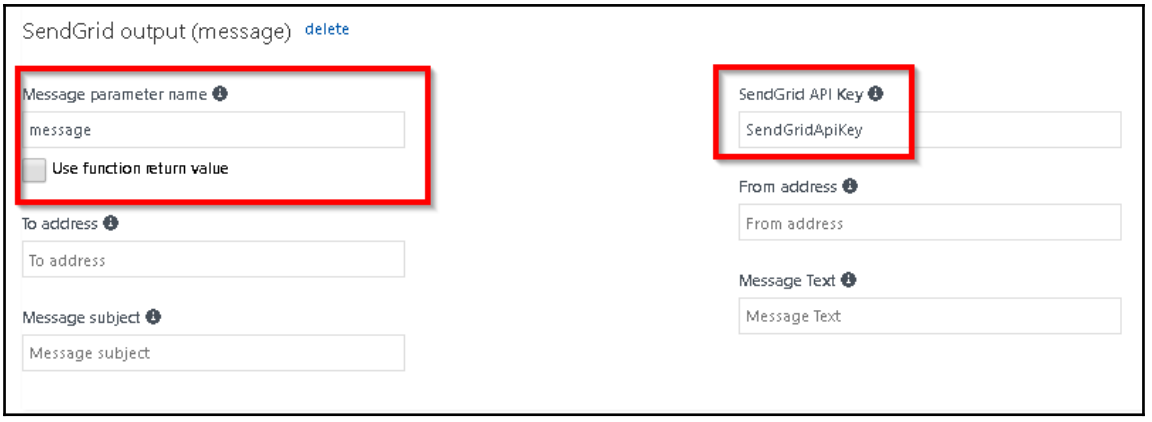

IF YES
Send email
*To
praveen.
.com
Subject
Name
with
Followers count
followers posted a tweet
Body
Tweet text
Add dynamic content
Attachments Name
Attachment name
Attachments Content
Attachment content
Attachments Content-Type
Attachment content type
Show advanced options
Connected to prawin2k@gmail.com.
Change connection.

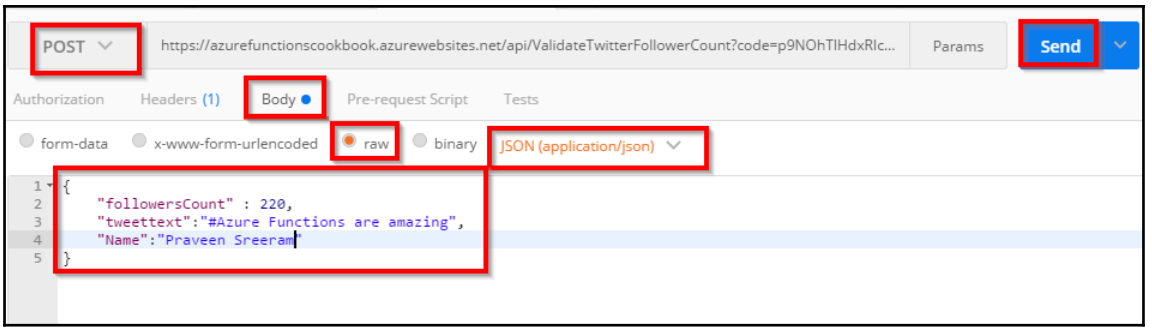
Logic Apps Designer
Save
Discard
Run
Designer

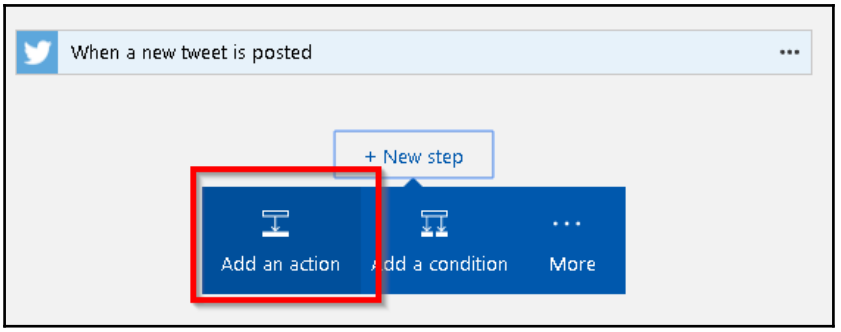

Prawin Sreeram @PrawinSreeram · now
What is Serverless Computing? Exploring #AzureFunctions
What is Serverless Computing? Exploring Azure ...
There's a lot of confusing terms in the Cloud space. And that's not counting the term 'Cloud.' ;) IaaS (Infrastructure ...
hanselman.com

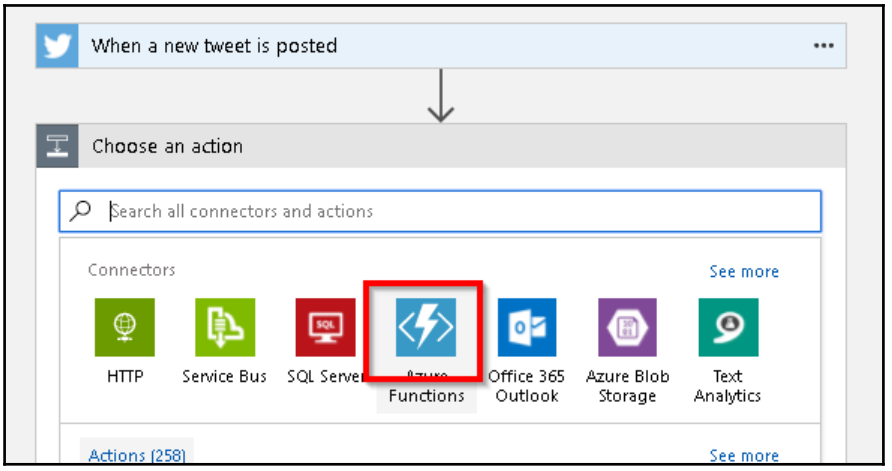

Runs history
All
Start t...
Pick a dat
Pick a time
Specify the run identifier to open monitor view dire..
STATUS
START TIME
IDENTIFIER
DURATION
Succeeded
6/10/201...
0858704493...
704 Millis...
Succeeded
6/10/201...
0858704494...
126 Millis...

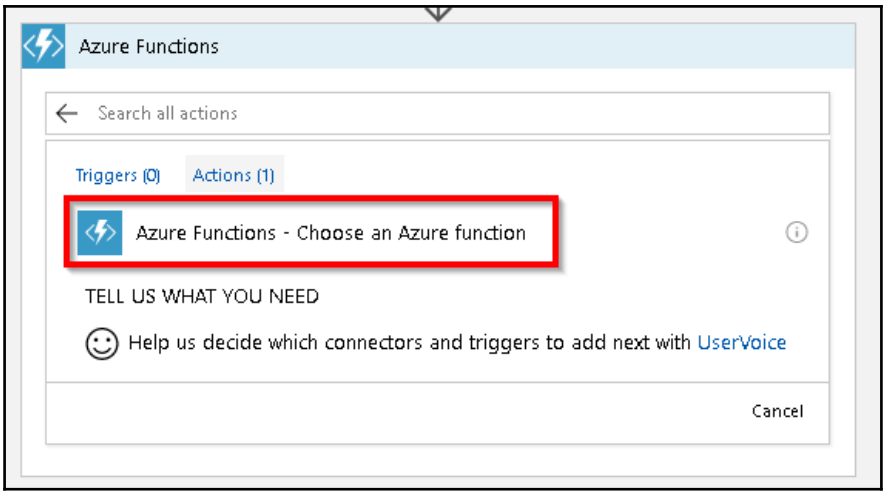
Sat 6/10/2017 10:13 PM
Prawin Sreeram with 238 followers posted a tweet
To praveen
What is Serverless Computing? Exploring #AzureFunctions https://t.co/0wgNBPvBjL

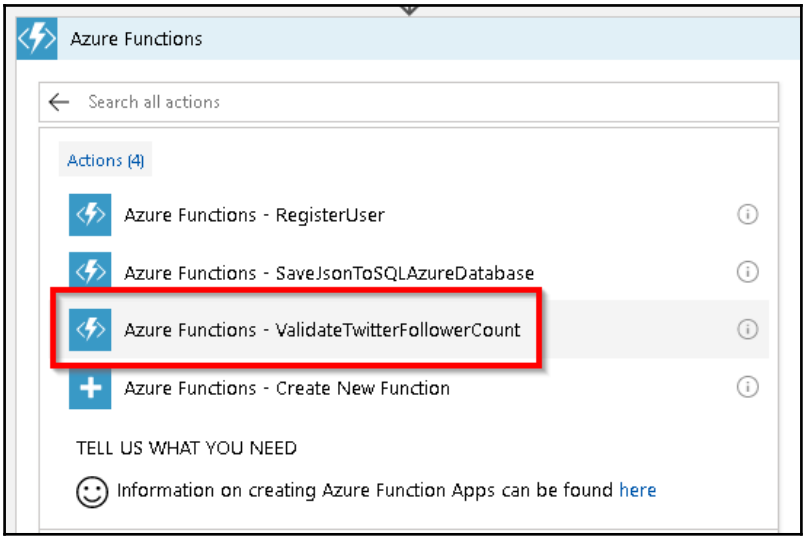

SendGrid output (message)
delete
Message parameter name
message
Use function return value
To address
To address
Message subject
Message subject
SendGrid API Key
SendGridApiKey
From address
From address
Message Text
Message Text

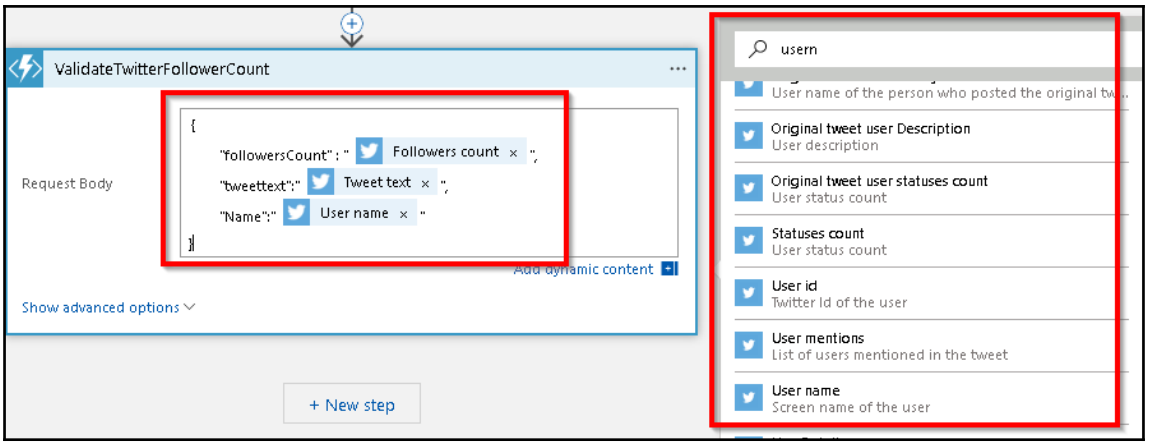

POST
https://azurefunctionscookbook.azurewebsites.net/api/ValidateTwitterFollowerCount?code=p9NOhTlHdxRlc...
Params
Send
Authorization
Headers (1)
Body
Pre-request Script
Tests
form-data
x-www-form-urlencoded
raw
binary
JSON (application/json)
{
"followersCount" : 220,
"tweettext":"#Azure Functions are amazing",
"Name":"Praveen Sreeram"
}

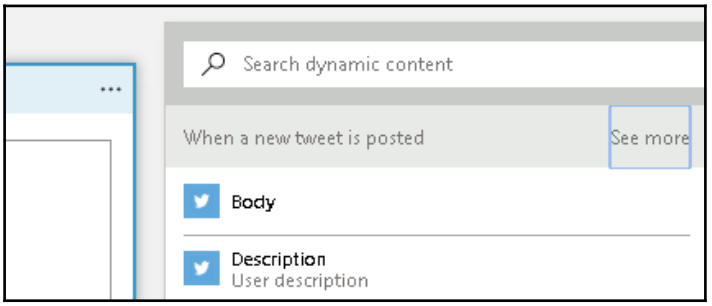

When a new tweet is posted
+ New step
Add an action
Add a condition
More


When a new tweet is posted
Choose an action
Search all connectors and actions
Connectors
See more
HTTP
Service Bus
SQL Server
Azure Functions
Office 365 Outlook
Azure Blob Storage
Text Analytics
Actions (258)
See more

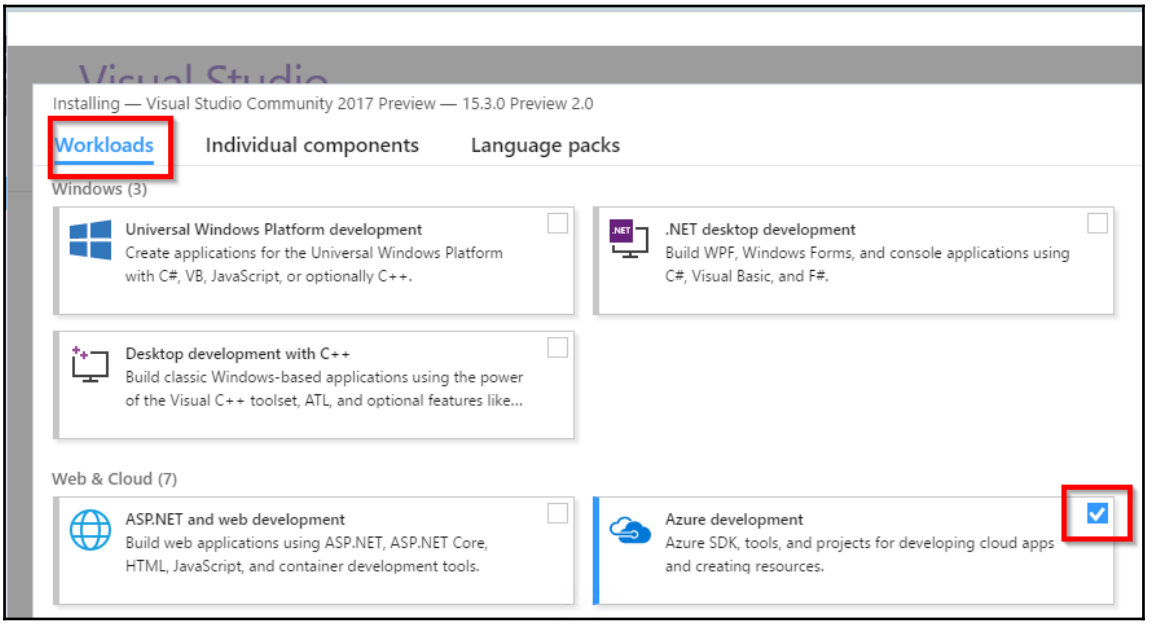

Azure Functions
Search all actions
Triggers (0)
Actions (1)
Azure Functions - Choose an Azure function
TELL US WHAT YOU NEED
Help us decide which connectors and triggers to add next with UserVoice
Cancel

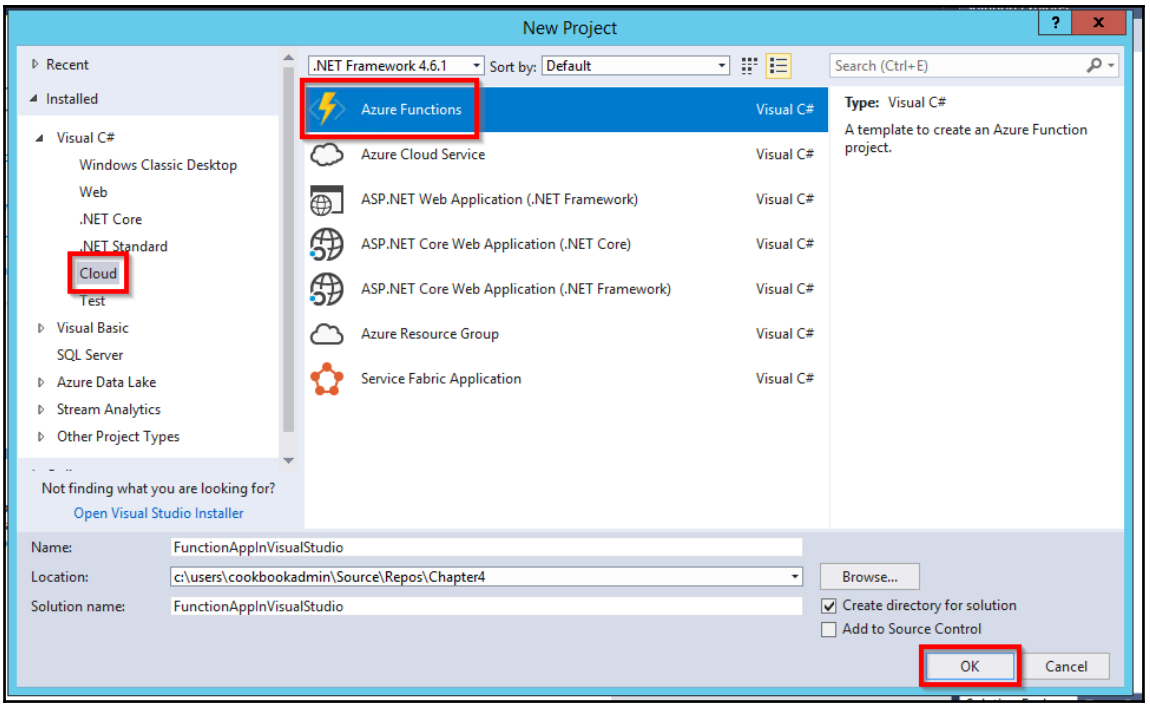

Azure Functions
Search all actions
Actions (4)
Azure Functions - RegisterUser
Azure Functions - SaveJsonToSQLAzureDatabase
Azure Functions - ValidateTwitterFollowerCount
Azure Functions - Create New Function
TELL US WHAT YOU NEED
Information on creating Azure Function Apps can be found here

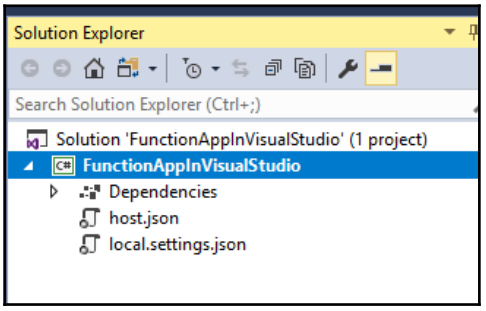

ValidateTwitterFollowerCount
Request Body
{
"followersCount" : "
Followers count
",
"tweettext":"
Tweet text
",
"Name":"
User name
"
}
Add dynamic content
Show advanced options
+ New step
usern
User name of the person who posted the original tw...
Original tweet user Description
User description
Original tweet user statuses count
User status count
Statuses count
User status count
User id
Twitter Id of the user
User mentions
List of users mentioned in the tweet
User name
Screen name of the user

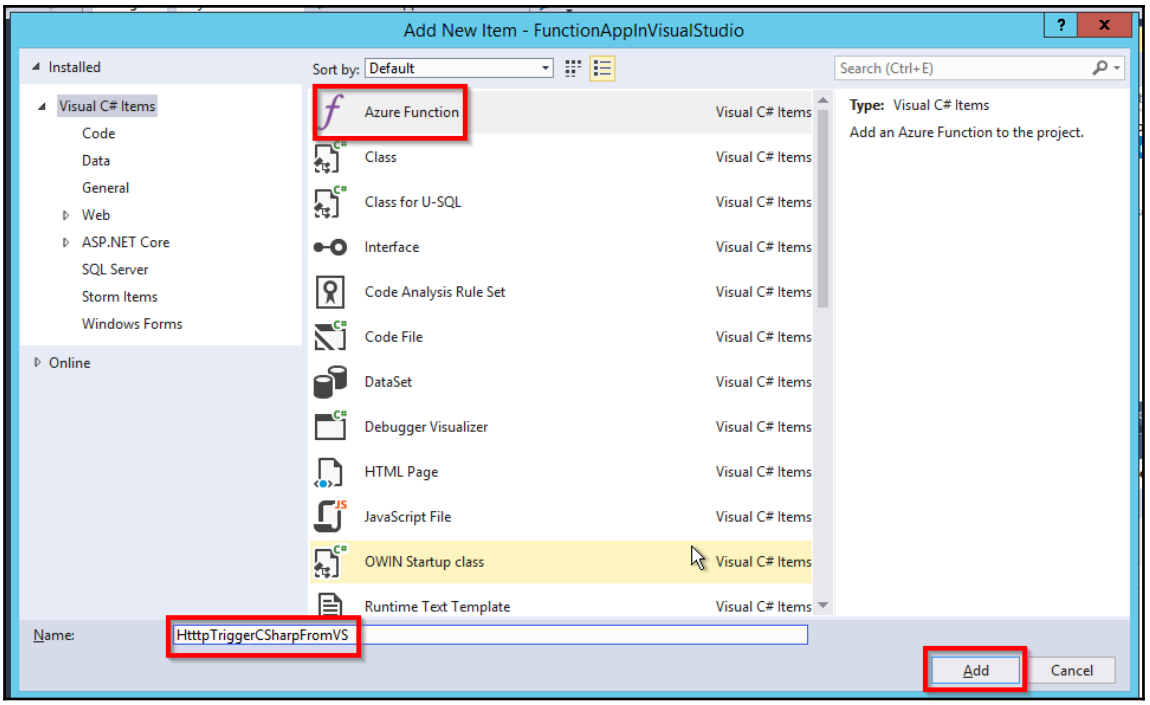

Search dynamic content
When a new tweet is posted
See more
Body
Description
User description

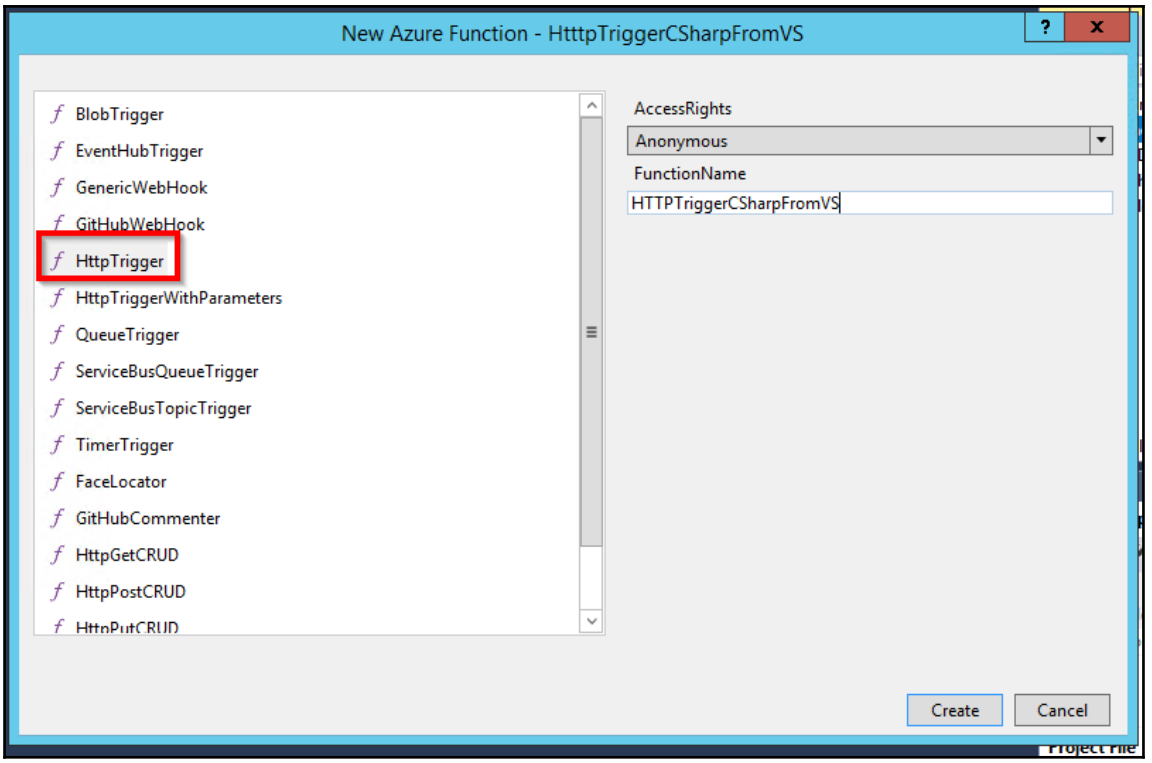
Chapter 04: Understanding the Integrated Developer Experience of Visual Studio Tools for Azure Functions

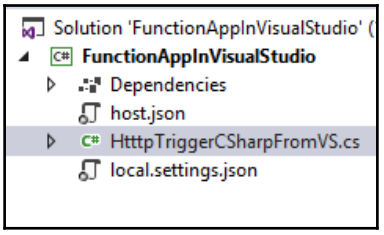



New Project
Recent
Installed
Visual C#
Windows Classic Desktop
Web
.NET Core
.NET Standard
Cloud
Test
Visual Basic
SQL Server
Azure Data Lake
Stream Analytics
Other Project Types
Not finding what you are looking for?
Open Visual Studio Installer
.NET Framework 4.6.1
Sort by: Default
Search (Ctrl+E)
Azure Functions
Visual C#
Azure Cloud Service
Visual C#
ASP.NET Web Application (.NET Framework)
Visual C#
ASP.NET Core Web Application (.NET Core)
Visual C#
ASP.NET Core Web Application (.NET Framework)
Visual C#
Azure Resource Group
Visual C#
Service Fabric Application
Visual C#
Type: Visual C#
A template to create an Azure Function project.
Name: FunctionAppInVisualStudio
Location: c:\users\cookbookadmin\Source\Repos\Chapter4
Solution name: FunctionAppInVisualStudio
Browse...
Create directory for solution
Add to Source Control
OK
Cancel


Solution Explorer
Search Solution Explorer (Ctrl+;)
Solution 'FunctionAppInVisualStudio' (1 project)
FunctionAppInVisualStudio
Dependencies
host.json
local.settings.json


Add New Item - FunctionAppInVisualStudio
Installed
Visual C# Items
Code
Data
General
Web
ASP.NET Core
SQL Server
Storm Items
Windows Forms
Online
Sort by: Default
Search (Ctrl+E)
Azure Function
Class
Class for U-SQL
Interface
Code Analysis Rule Set
Code File
DataSet
Debugger Visualizer
HTML Page
JavaScript File
OWIN Startup class
Runtime Text Template
Visual C# Items
Type: Visual C# Items
Add an Azure Function to the project.
Name:
HtttpTriggerCSharpFromVS
Add
Cancel

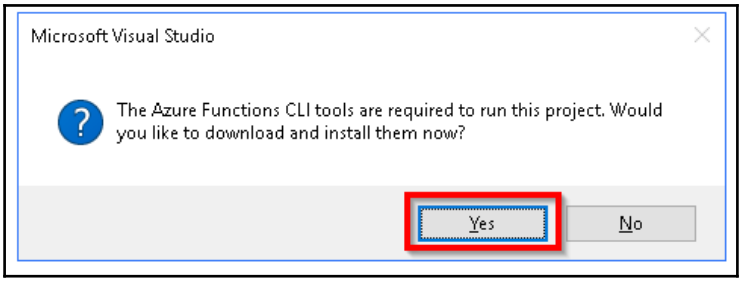

New Azure Function - HtttpTriggerCSharpFromVS
BlobTrigger
EventHubTrigger
GenericWebHook
GitHubWebHook
HttpTrigger
HttpTriggerWithParameters
QueueTrigger
ServiceBusQueueTrigger
ServiceBusTopicTrigger
TimerTrigger
FaceLocator
GitHubCommenter
HttpGetCRUD
HttpPostCRUD
HttpPutCRUD
AccessRights
Anonymous
FunctionName
HTTPTriggerCSharpFromVS
Create
Cancel

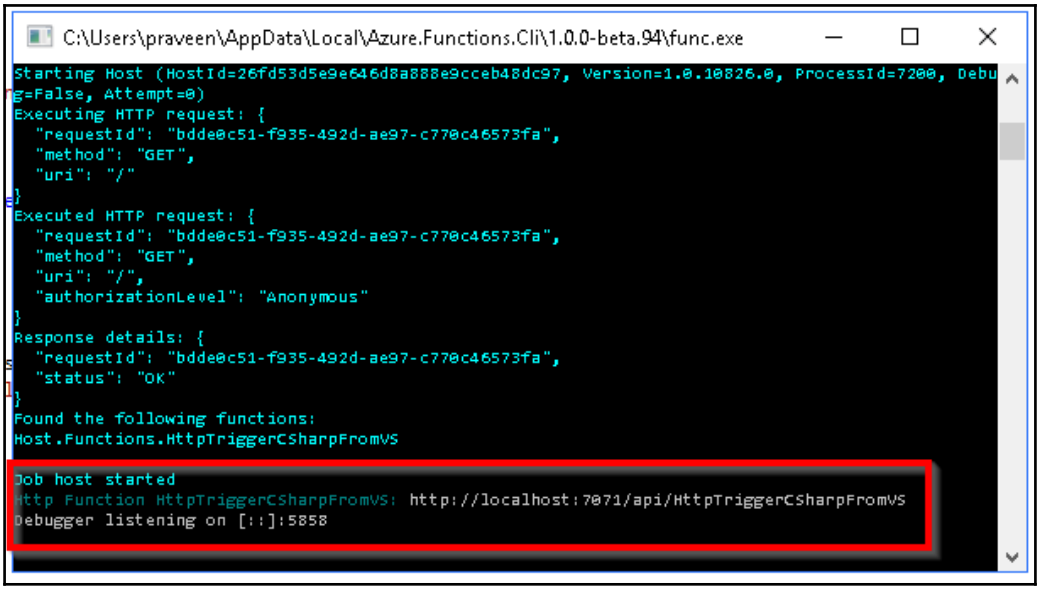

Solution 'FunctionAppInVisualStudio' (
FunctionAppInVisualStudio
Dependencies
host.json
HtttpTriggerCSharpFromVS.cs
local.settings.json

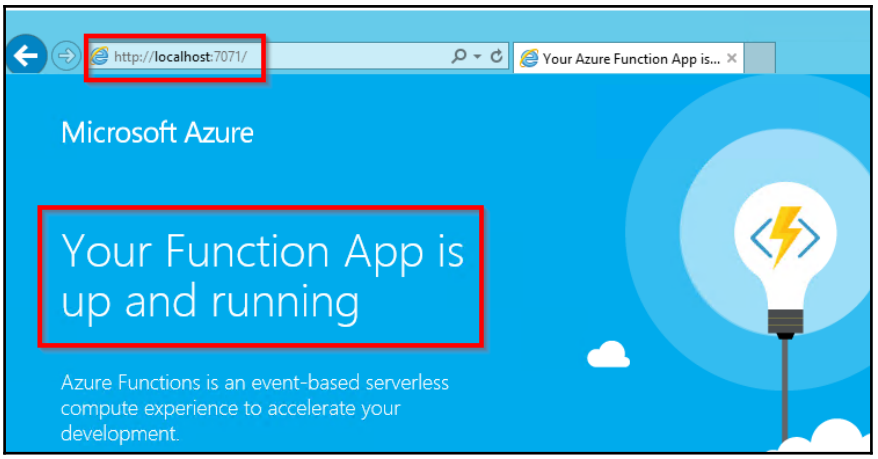
local.settings.json | HtttpTriggerCSharpFromVS.cs

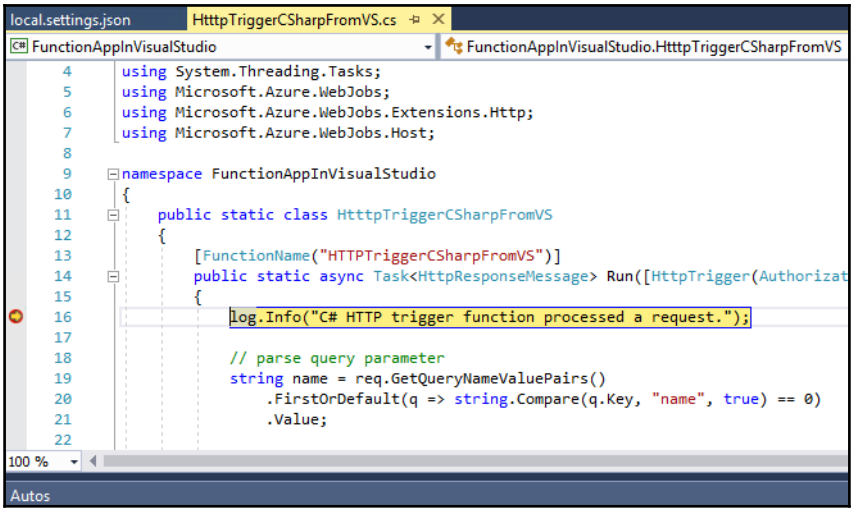
FunctionAppInVisualStudio | FunctionAppInVisualStudio.HtttpTrigg

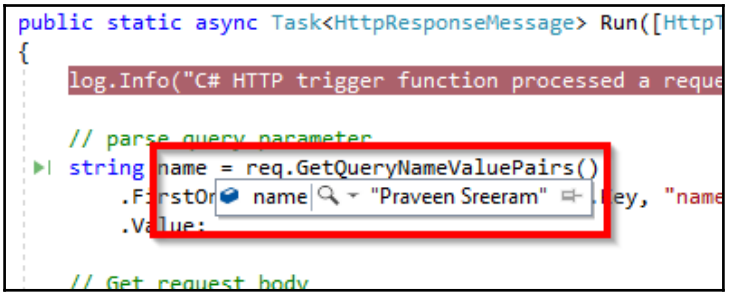
```
4   using System.Threading.Tasks;
5   using Microsoft.Azure.WebJobs;
6   using Microsoft.Azure.WebJobs.Extensions.Http;
7   using Microsoft.Azure.WebJobs.Host;
8
9   namespace FunctionAppInVisualStudio
10  {
11      public static class HtttpTriggerCSharpFromVS
12      {
13          [FunctionName("HTTPTriggerCSharpFromVS")]
14          public static async Task<HttpResponseMessage> Run([HttpTrigger(Authorizat
15          {
16              log.Info("C# HTTP trigger function processed a request.");
17
18              // parse query parameter
19              string name = req.GetQueryNameValuePairs()
20                  .FirstOrDefault(q => string.Compare(q.Key, "name", true) == 0)
21                  .Value;
```

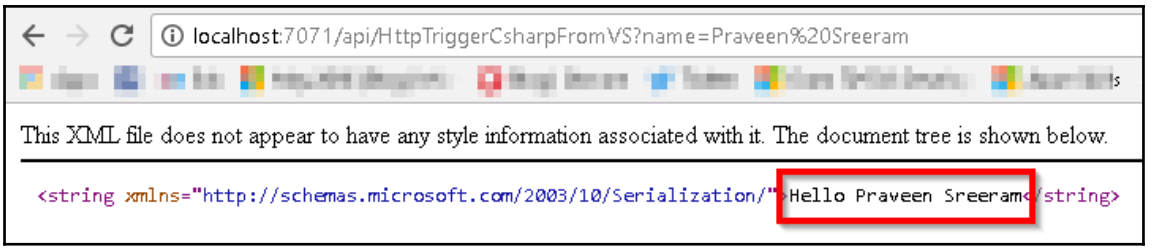


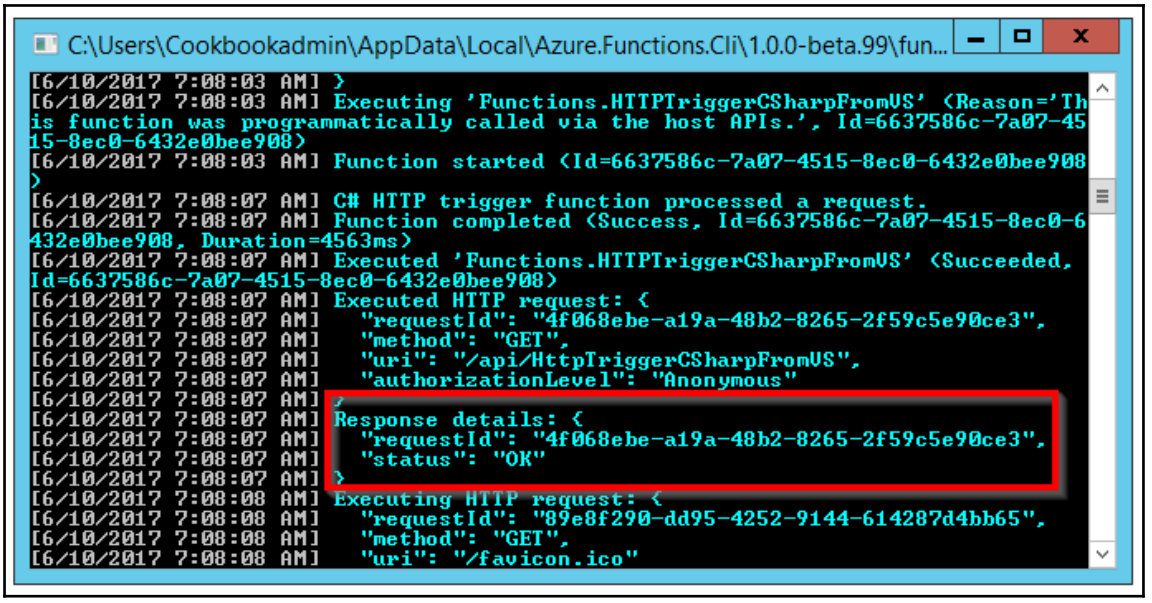


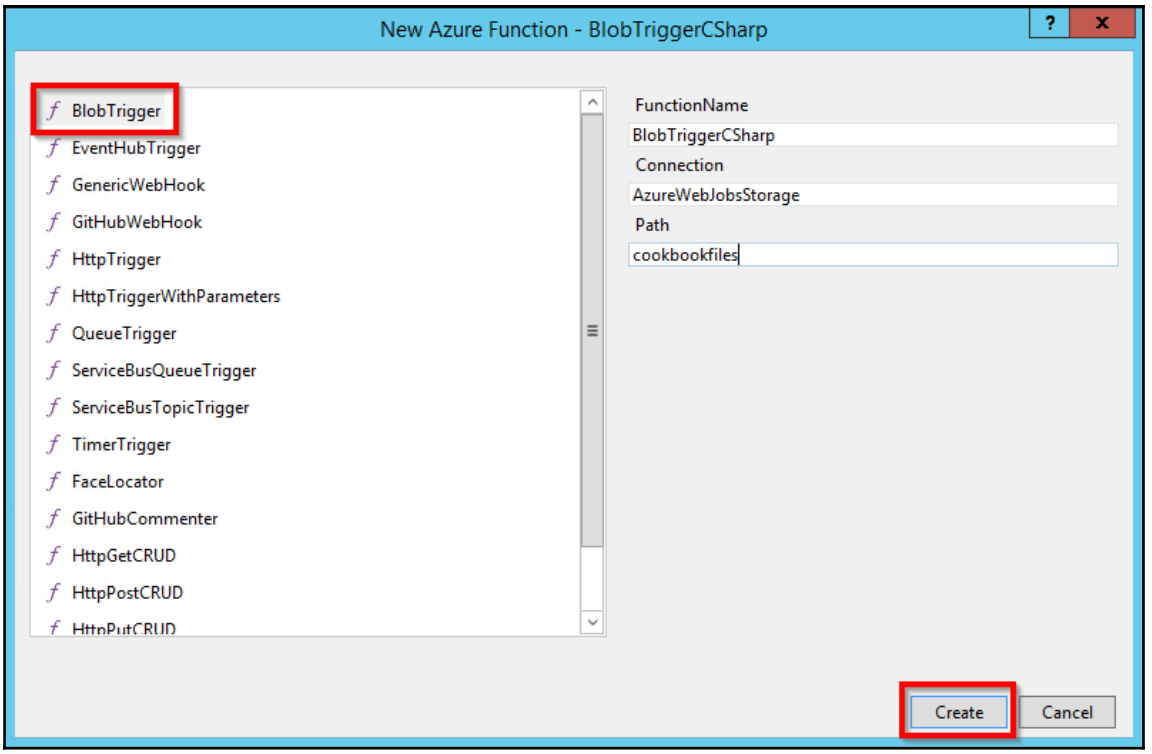

http://localhost:7071/
Your Azure Function App is...
Microsoft Azure
Your Function App is up and running
Azure Functions is an event-based serverless compute experience to accelerate your development.

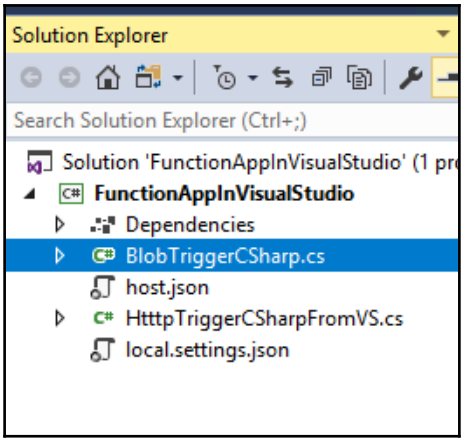

local.settings.json
HtttpTriggerCSharpFromVS.cs
FunctionAppInVisualStudio
FunctionAppInVisualStudio.HtttpTriggerCSharpFromVS
using System.Threading.Tasks;
using Microsoft.Azure.WebJobs;
using Microsoft.Azure.WebJobs.Extensions.Http;
using Microsoft.Azure.WebJobs.Host;
namespace FunctionAppInVisualStudio
{
public static class HtttpTriggerCSharpFromVS
{
[FunctionName("HTTPTriggerCSharpFromVS")]
public static async Task<HttpResponseMessage> Run([HttpTrigger(Authorizat
{
log.Info("C# HTTP trigger function processed a request.");
// parse query parameter
string name = req.GetQueryNameValuePairs()
.FirstOrDefault(q => string.Compare(q.Key, "name", true) == 0)
.Value;
100 %
Autos

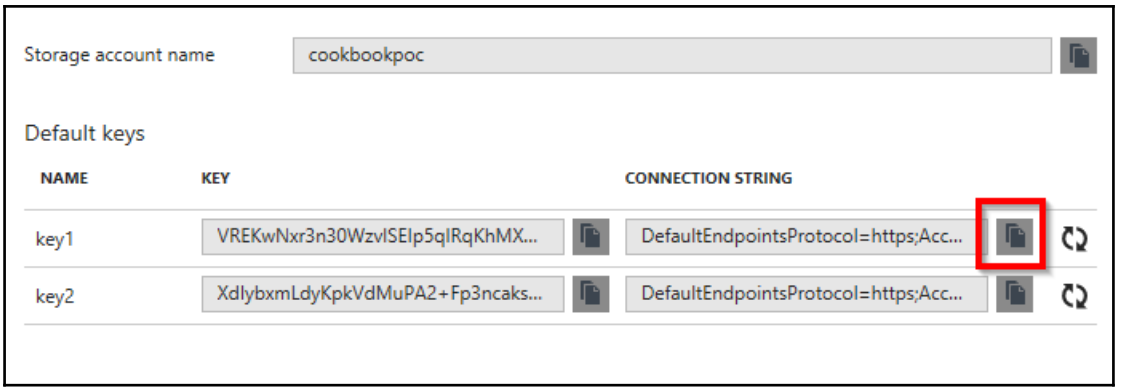

public static async Task<HttpResponseMessage> Run([HttpT
{
log.Info("C# HTTP trigger function processed a reque
// parse query parameter
string name = req.GetQueryNameValuePairs()
.FirstOr
name
"Praveen Sreeram"
ey, "name
.Value;
// Get request body

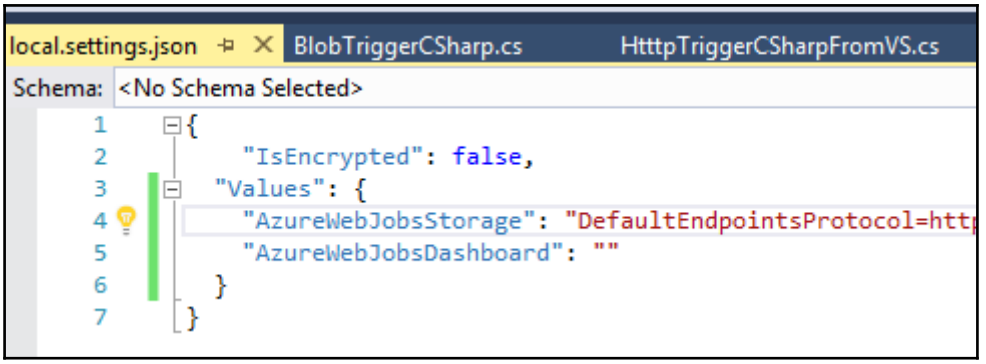

localhost:7071/api/HttpTriggerCsharpFromVS?name=Praveen%20Sreeram
This XML file does not appear to have any style information associated with it. The document tree is shown below.
<string xmlns="http://schemas.microsoft.com/2003/10/Serialization/">Hello Praveen Sreeram</string>

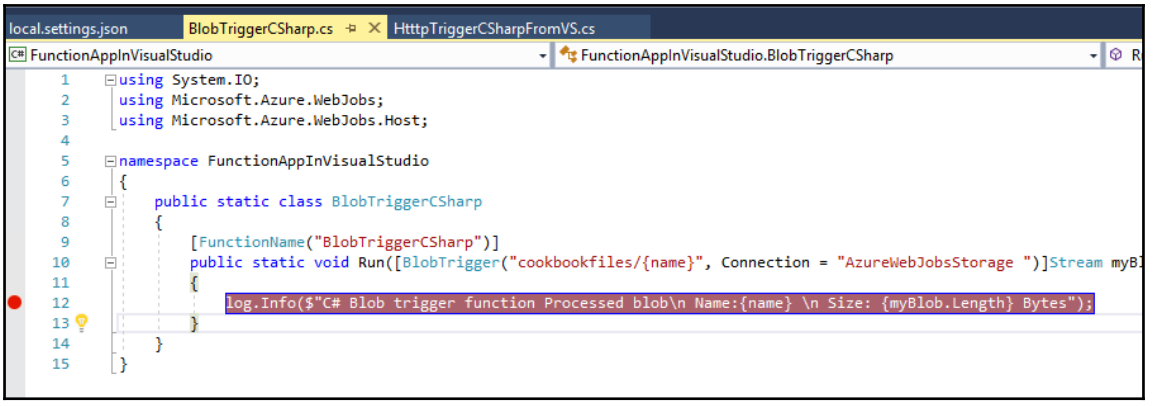

C:\Users\Cookbookadmin\AppData\Local\Azure.Functions.Cli\1.0.0-beta.99\fun...
[6/10/2017 7:08:03 AM] }
[6/10/2017 7:08:03 AM] Executing 'Functions.HTTPTriggerCSharpFromVS' (Reason='This function was programmatically called via the host APIs.', Id=6637586c-7a07-4515-8ec0-6432e0bee908)
[6/10/2017 7:08:03 AM] Function started (Id=6637586c-7a07-4515-8ec0-6432e0bee908)
[6/10/2017 7:08:07 AM] C# HTTP trigger function processed a request.
[6/10/2017 7:08:07 AM] Function completed (Success, Id=6637586c-7a07-4515-8ec0-6432e0bee908, Duration=4563ms)
[6/10/2017 7:08:07 AM] Executed 'Functions.HTTPTriggerCSharpFromVS' (Succeeded, Id=6637586c-7a07-4515-8ec0-6432e0bee908)
[6/10/2017 7:08:07 AM] Executed HTTP request: {
[6/10/2017 7:08:07 AM] "requestId": "4f068ebe-a19a-48b2-8265-2f59c5e90ce3",
[6/10/2017 7:08:07 AM] "method": "GET",
[6/10/2017 7:08:07 AM] "uri": "/api/HttpTriggerCSharpFromVS",
[6/10/2017 7:08:07 AM] "authorizationLevel": "Anonymous"
[6/10/2017 7:08:07 AM] }
[6/10/2017 7:08:07 AM] Response details: {
[6/10/2017 7:08:07 AM] "requestId": "4f068ebe-a19a-48b2-8265-2f59c5e90ce3",
[6/10/2017 7:08:07 AM] "status": "OK"
[6/10/2017 7:08:07 AM] }
[6/10/2017 7:08:08 AM] Executing HTTP request: {
[6/10/2017 7:08:08 AM] "requestId": "89e8f290-dd95-4252-9144-614287d4bb65",
[6/10/2017 7:08:08 AM] "method": "GET",
[6/10/2017 7:08:08 AM] "uri": "/favicon.ico"

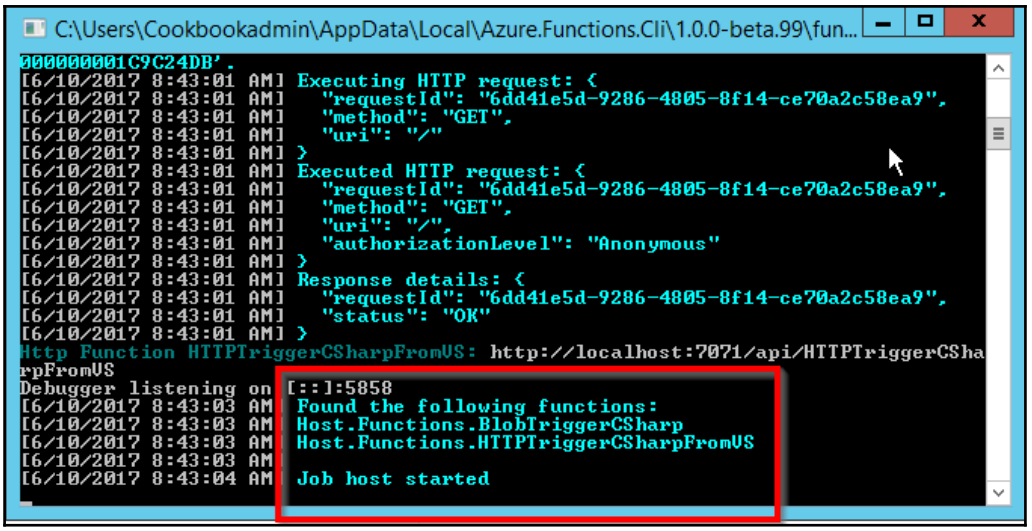

New Azure Function - BlobTriggerCSharp
BlobTrigger
EventHubTrigger
GenericWebHook
GitHubWebHook
HttpTrigger
HttpTriggerWithParameters
QueueTrigger
ServiceBusQueueTrigger
ServiceBusTopicTrigger
TimerTrigger
FaceLocator
GitHubCommenter
HttpGetCRUD
HttpPostCRUD
HttpPutCRUD
FunctionName
BlobTriggerCSharp
Connection
AzureWebJobsStorage
Path
cookbookfiles
Create
Cancel

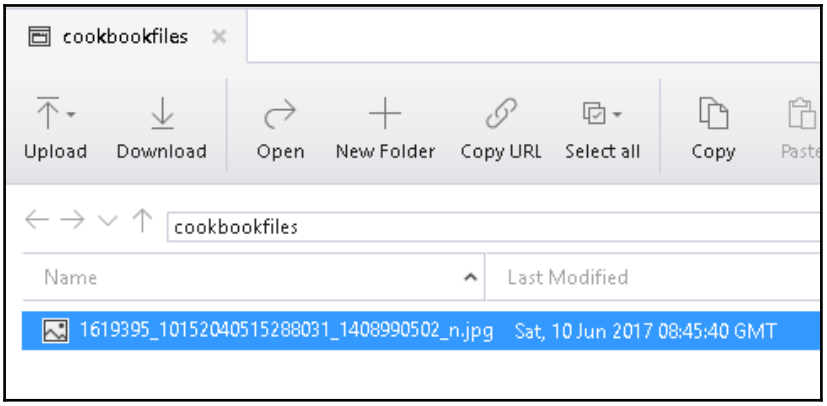

Solution Explorer
Search Solution Explorer (Ctrl+;)
Solution 'FunctionAppInVisualStudio' (1 pr
FunctionAppInVisualStudio
Dependencies
BlobTriggerCSharp.cs
host.json
HtttpTriggerCSharpFromVS.cs
local.settings.json

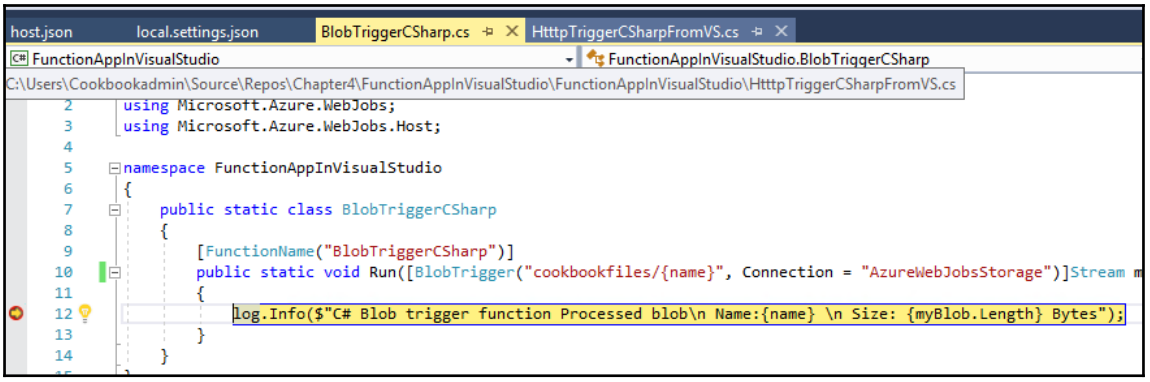

Storage account name
cookbookpoc
Default keys
NAME
KEY
CONNECTION STRING
key1
VREKwNxr3n30WzvlSEIp5qlRqKhMX...
DefaultEndpointsProtocol=https;Acc...
key2
XdlybxmLdyKpkVdMuPA2+Fp3ncaks...
DefaultEndpointsProtocol=https;Acc...

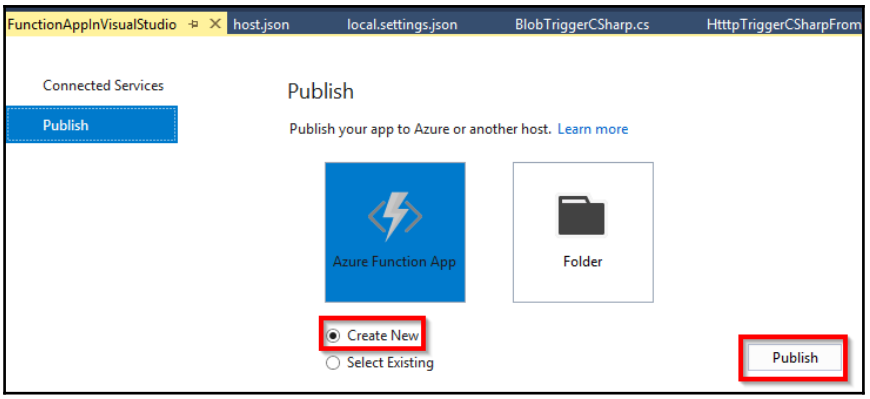

local.settings.json
BlobTriggerCSharp.cs
HtttpTriggerCSharpFromVS.cs
Schema: <No Schema Selected>
{
"IsEncrypted": false,
"Values": {
"AzureWebJobsStorage": "DefaultEndpointsProtocol=htt
"AzureWebJobsDashboard": ""
}
}

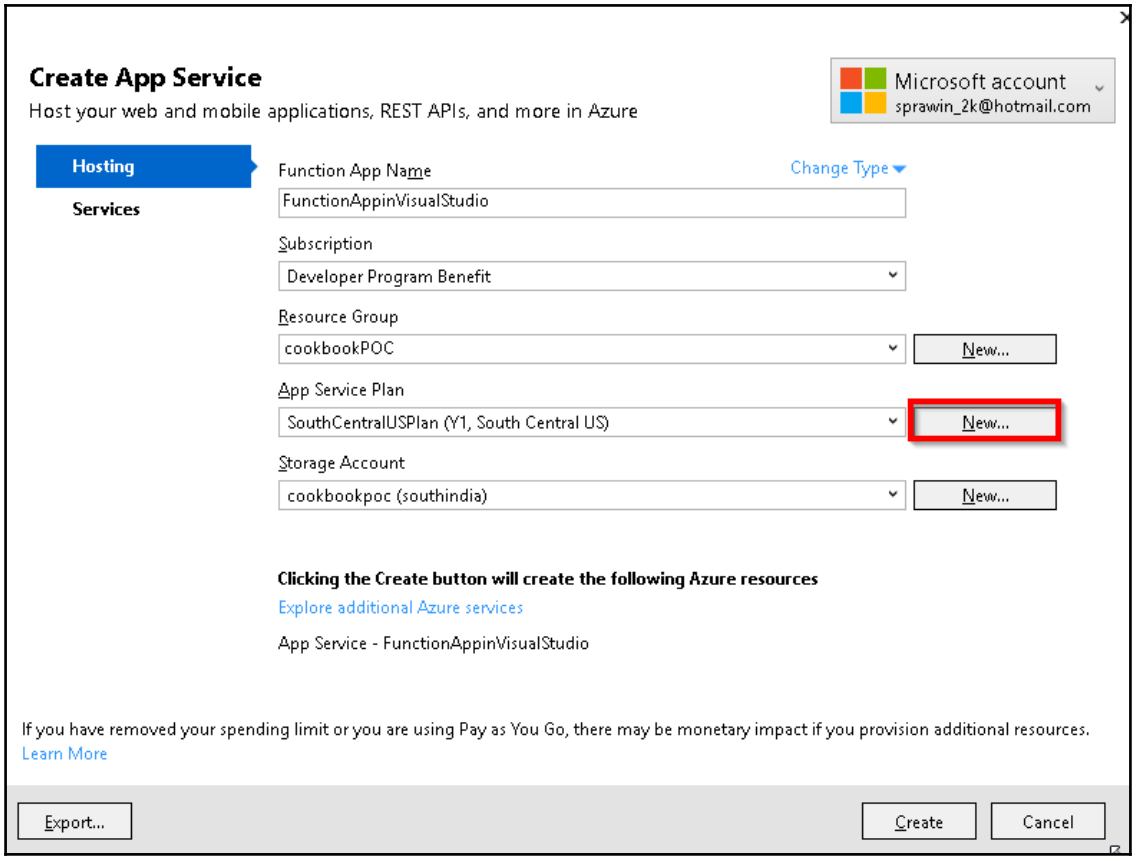

local.settings.json
BlobTriggerCSharp.cs
HtttpTriggerCSharpFromVS.cs
FunctionAppInVisualStudio
FunctionAppInVisualStudio.BlobTriggerCSharp
using System.IO;
using Microsoft.Azure.WebJobs;
using Microsoft.Azure.WebJobs.Host;
namespace FunctionAppInVisualStudio
{
public static class BlobTriggerCSharp
{
[FunctionName("BlobTriggerCSharp")]
public static void Run([BlobTrigger("cookbookfiles/{name}", Connection = "AzureWebJobsStorage ")]Stream myB
{
log.Info($"C# Blob trigger function Processed blob\n Name:{name} \n Size: {myBlob.Length} Bytes");
}
}
}

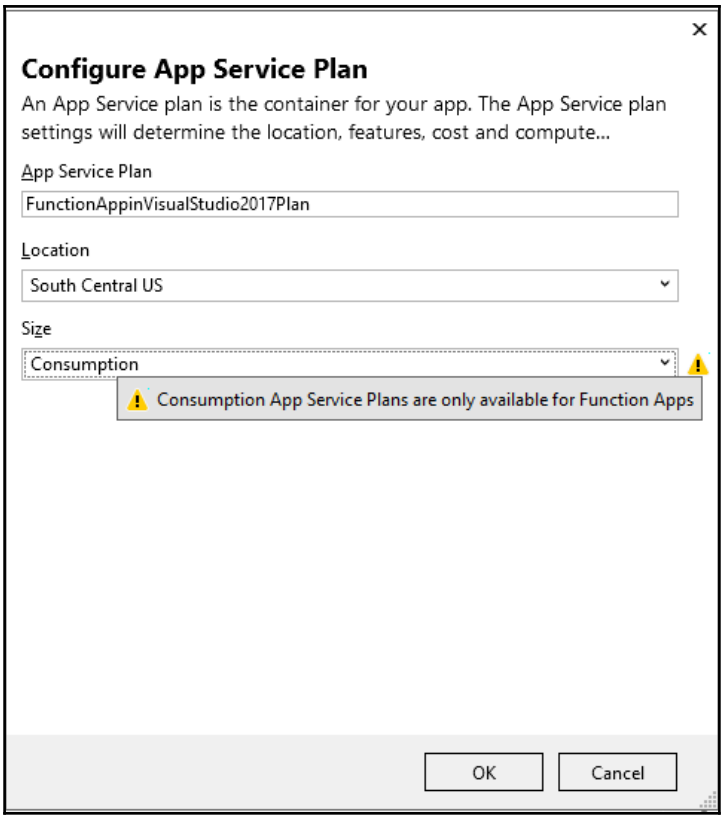

C:\Users\Cookbookadmin\AppData\Local\Azure.Functions.Cli\1.0.0-beta.99\fun...
000000001C9C24DB'.
[6/10/2017 8:43:01 AM] Executing HTTP request: {
[6/10/2017 8:43:01 AM] "requestId": "6dd41e5d-9286-4805-8f14-ce70a2c58ea9",
[6/10/2017 8:43:01 AM] "method": "GET",
[6/10/2017 8:43:01 AM] "uri": "/"
[6/10/2017 8:43:01 AM] }
[6/10/2017 8:43:01 AM] Executed HTTP request: {
[6/10/2017 8:43:01 AM] "requestId": "6dd41e5d-9286-4805-8f14-ce70a2c58ea9",
[6/10/2017 8:43:01 AM] "method": "GET",
[6/10/2017 8:43:01 AM] "uri": "/",
[6/10/2017 8:43:01 AM] "authorizationLevel": "Anonymous"
[6/10/2017 8:43:01 AM] }
[6/10/2017 8:43:01 AM] Response details: {
[6/10/2017 8:43:01 AM] "requestId": "6dd41e5d-9286-4805-8f14-ce70a2c58ea9",
[6/10/2017 8:43:01 AM] "status": "OK"
[6/10/2017 8:43:01 AM] }
Http Function HTTPTriggerCSharpFromVS: http://localhost:7071/api/HTTPTriggerCSharpFromVS
Debugger listening on [::]:5858
[6/10/2017 8:43:03 AM] Found the following functions:
[6/10/2017 8:43:03 AM] Host.Functions.BlobTriggerCSharp
[6/10/2017 8:43:03 AM] Host.Functions.HTTPTriggerCSharpFromVS
[6/10/2017 8:43:03 AM]
[6/10/2017 8:43:04 AM] Job host started

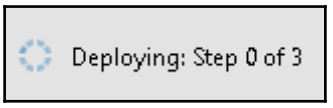

cookbookfiles
Upload
Download
Open
New Folder
Copy URL
Select all
Copy
cookbookfiles
Name
Last Modified
1619395_10152040515288031_1408990502_n.jpg Sat, 10 Jun 2017 08:45:40 GMT

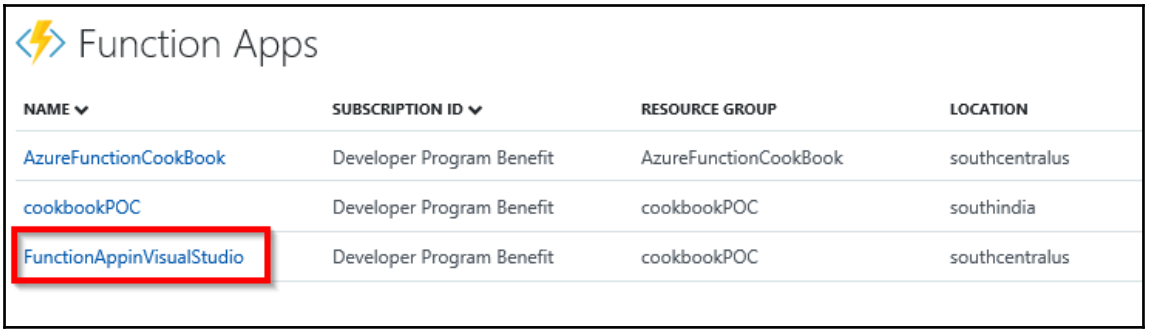

host.json
local.settings.json
BlobTriggerCSharp.cs
HtttpTriggerCSharpFromVS.cs
FunctionAppInVisualStudio
FunctionAppInVisualStudio.BlobTriggerCSharp
C:\Users\Cookbookadmin\Source\Repos\Chapter4\FunctionAppInVisualStudio\FunctionAppInVisualStudio\HtttpTriggerCSharpFromVS.cs
using Microsoft.Azure.WebJobs;
using Microsoft.Azure.WebJobs.Host;
namespace FunctionAppInVisualStudio
{
public static class BlobTriggerCSharp
{
[FunctionName("BlobTriggerCSharp")]
public static void Run([BlobTrigger("cookbookfiles/{name}", Connection = "AzureWebJobsStorage")]Stream m
{
log.Info($"C# Blob trigger function Processed blob\n Name:{name} \n Size: {myBlob.Length} Bytes");
}
}

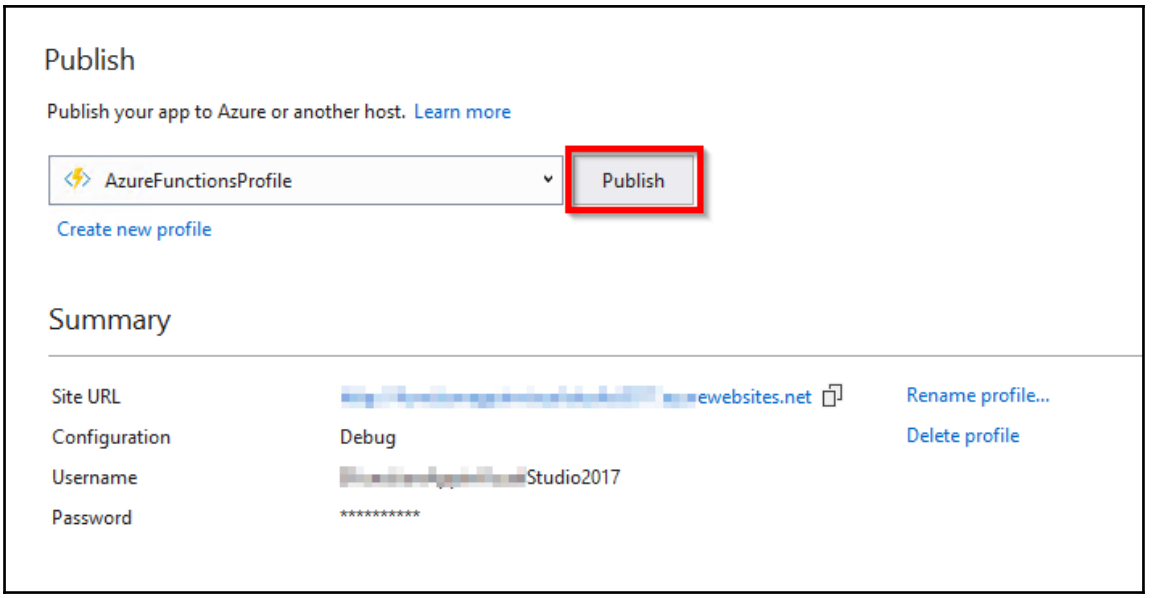

FunctionAppInVisualStudio
host.json
local.settings.json
BlobTriggerCSharp.cs
HtttpTriggerCSharpFrom
Connected Services
Publish
Publish
Publish your app to Azure or another host. Learn more
Azure Function App
Folder
Create New
Select Existing
Publish

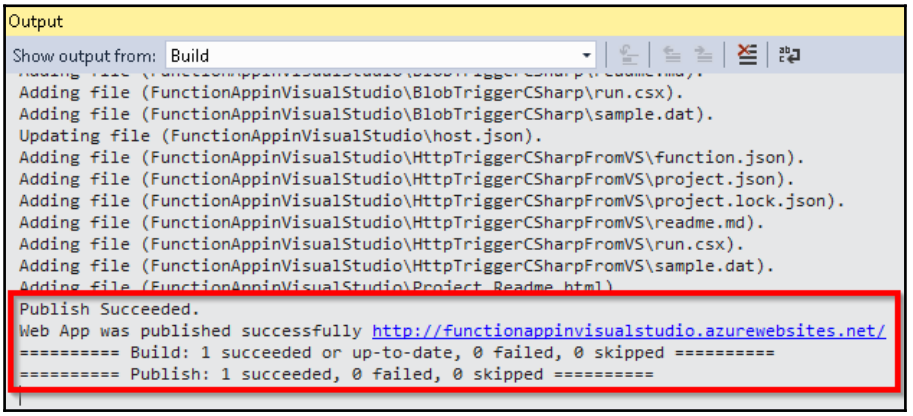

Create App Service
Host your web and mobile applications, REST APIs, and more in Azure
Microsoft account
sprawin_2k@hotmail.com
Hosting
Services
Function App Name
Change Type
FunctionAppinVisualStudio
Subscription
Developer Program Benefit
Resource Group
cookbookPOC
New...
App Service Plan
SouthCentralUSPlan (Y1, South Central US)
New...
Storage Account
cookbookpoc (southindia)
New...
Clicking the Create button will create the following Azure resources
Explore additional Azure services
App Service - FunctionAppinVisualStudio
If you have removed your spending limit or you are using Pay as You Go, there may be monetary impact if you provision additional resources.
Learn More
Export...
Create
Cancel

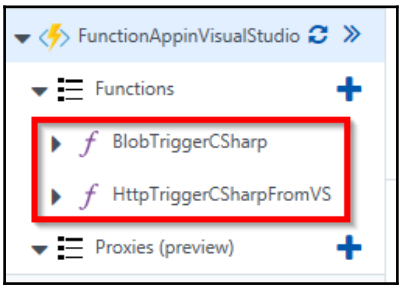

Configure App Service Plan
An App Service plan is the container for your app. The App Service plan settings will determine the location, features, cost and compute...
App Service Plan
FunctionAppinVisualStudio2017Plan
Location
South Central US
Size
Consumption
Consumption App Service Plans are only available for Function Apps
OK
Cancel

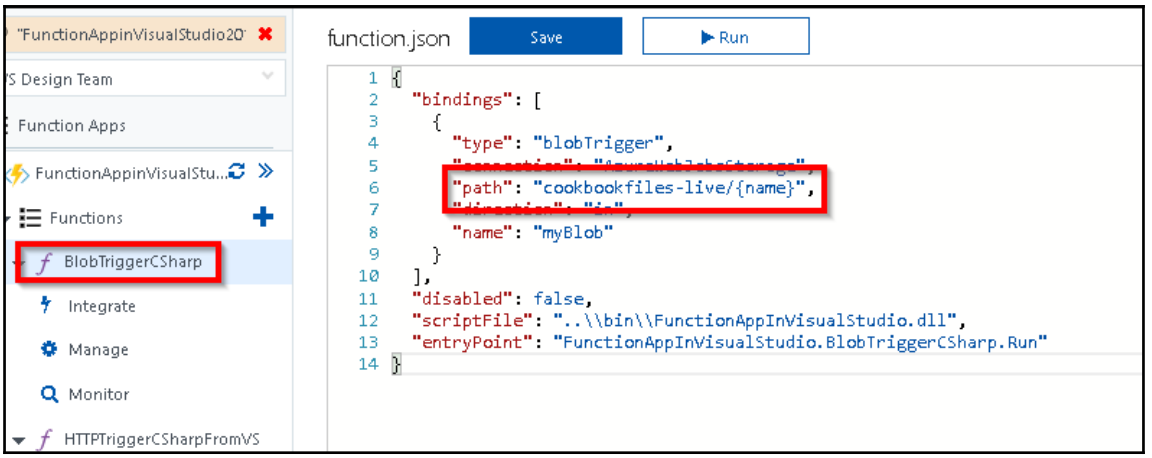

Deploying: Step 0 of 3

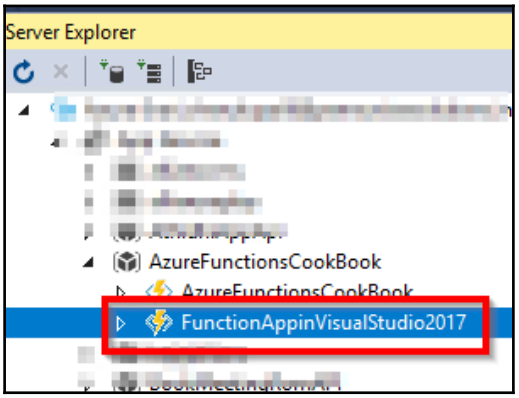

Function Apps
NAME
SUBSCRIPTION ID
RESOURCE GROUP
LOCATION
AzureFunctionCookBook
Developer Program Benefit
AzureFunctionCookBook
southcentralus
cookbookPOC
Developer Program Benefit
cookbookPOC
southindia
FunctionAppinVisualStudio
Developer Program Benefit
cookbookPOC
southcentralus

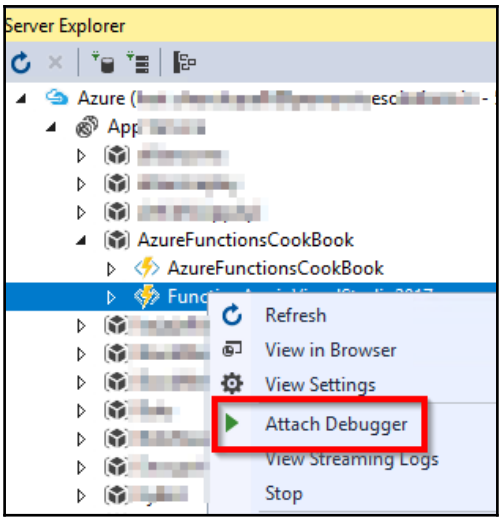

Publish
Publish your app to Azure or another host. Learn more
AzureFunctionsProfile
Publish
Create new profile
Summary
Site URL
ewebsites.net
Rename profile...
Configuration
Debug
Delete profile
Username
Studio2017
Password
****

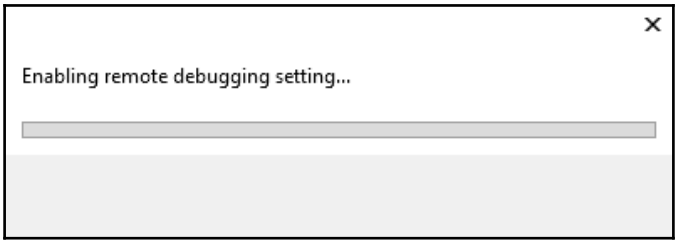

Output
Show output from: Build
Adding file (FunctionAppinVisualStudio\BlobTriggerCSharp\run.csx).
Adding file (FunctionAppinVisualStudio\BlobTriggerCSharp\sample.dat).
Updating file (FunctionAppinVisualStudio\host.json).
Adding file (FunctionAppinVisualStudio\HttpTriggerCSharpFromVS\function.json).
Adding file (FunctionAppinVisualStudio\HttpTriggerCSharpFromVS\project.json).
Adding file (FunctionAppinVisualStudio\HttpTriggerCSharpFromVS\project.lock.json).
Adding file (FunctionAppinVisualStudio\HttpTriggerCSharpFromVS\readme.md).
Adding file (FunctionAppinVisualStudio\HttpTriggerCSharpFromVS\run.csx).
Adding file (FunctionAppinVisualStudio\HttpTriggerCSharpFromVS\sample.dat).
Publish Succeeded.
Web App was published successfully http://functionappinvisualstudio.azurewebsites.net/
========== Build: 1 succeeded or up-to-date, 0 failed, 0 skipped ==========
========== Publish: 1 succeeded, 0 failed, 0 skipped ==========

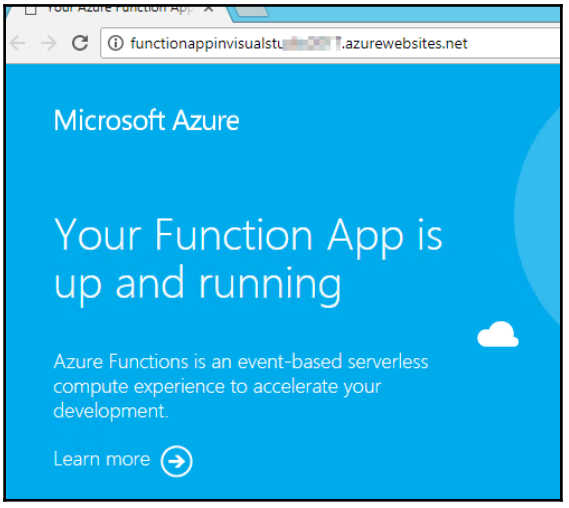

FunctionAppinVisualStudio
Functions
BlobTriggerCSharp
HttpTriggerCSharpFromVS
Proxies (preview)

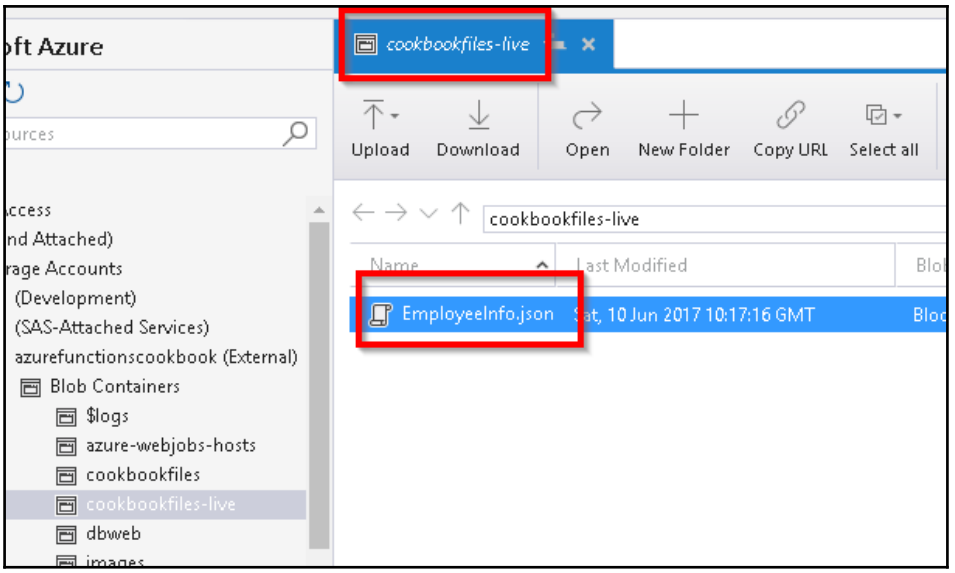

"FunctionAppinVisualStudio20
'S Design Team
Function Apps
FunctionAppinVisualStu...
Functions
BlobTriggerCSharp
Integrate
Manage
Monitor
HTTPTriggerCSharpFromVS
function.json
Save
Run
{
"bindings": [
{
"type": "blobTrigger",
"path": "cookbookfiles-live/{name}",
"name": "myBlob"
}
],
"disabled": false,
"scriptFile": "..\\bin\\FunctionAppInVisualStudio.dll",
"entryPoint": "FunctionAppInVisualStudio.BlobTriggerCSharp.Run"
}

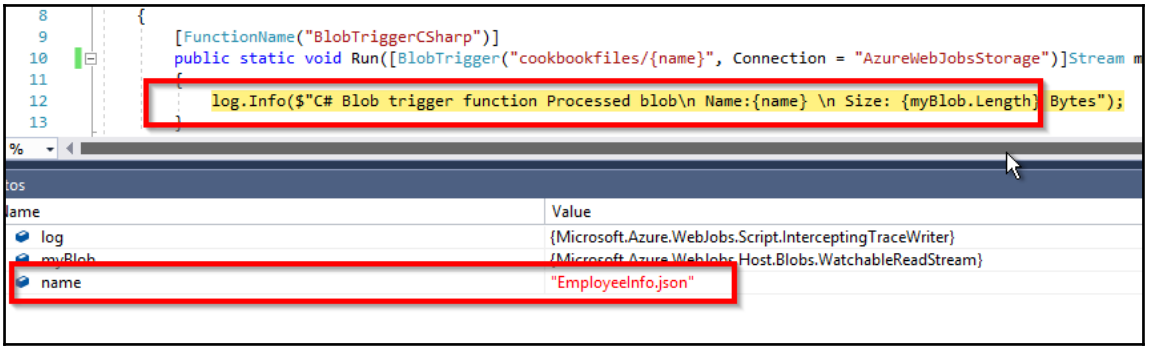

Server Explorer
AzureFunctionsCookBook
FunctionAppinVisualStudio2017


Server Explorer
AzureFunctionsCookBook
AzureFunctionsCookBook
Refresh
View in Browser
View Settings
Attach Debugger
View Streaming Logs
Stop

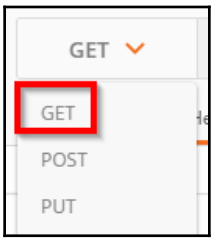

Enabling remote debugging setting...

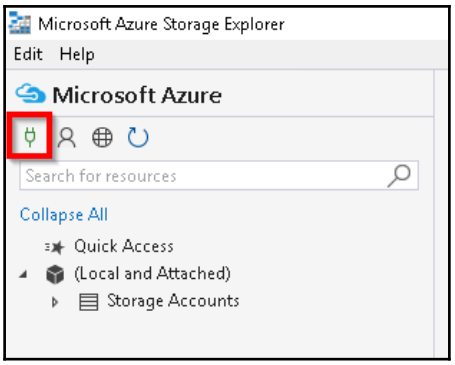

.azurewebsites.net
Microsoft Azure
Your Function App is up and running
Azure Functions is an event-based serverless compute experience to accelerate your development.
Learn more

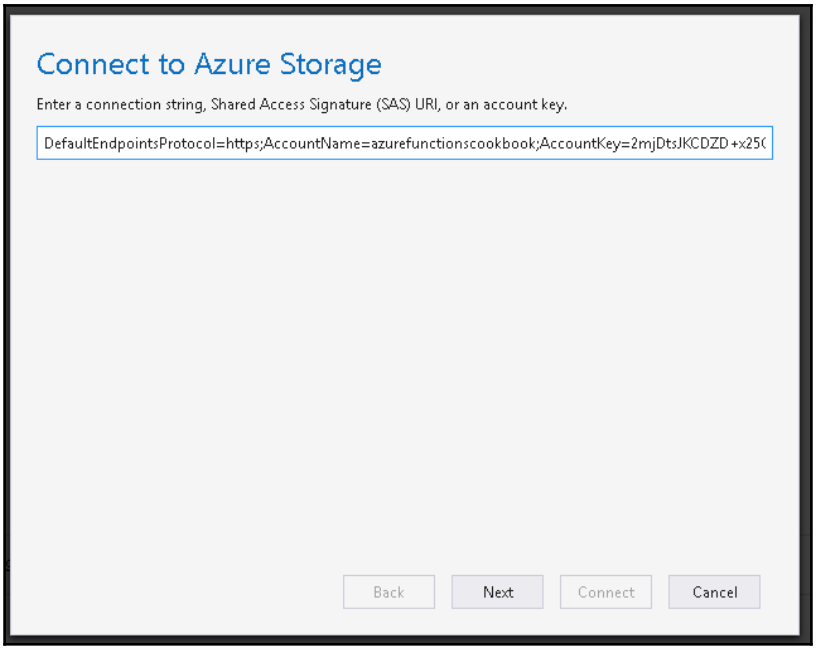

cookbookfiles-live
Upload
Download
Open
New Folder
Copy URL
Select all
cookbookfiles-live
Name
Last Modified
EmployeeInfo.json
Blob Containers
$logs
azure-webjobs-hosts
cookbookfiles
cookbookfiles-live
dbweb

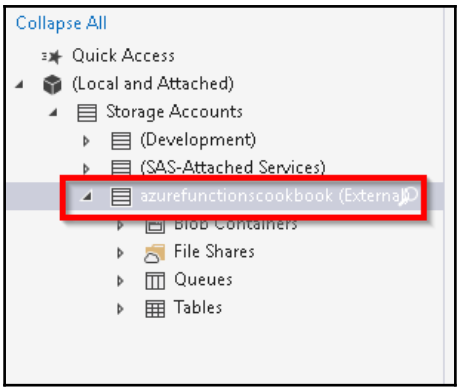

[FunctionName("BlobTriggerCSharp")]
public static void Run([BlobTrigger("cookbookfiles/{name}", Connection = "AzureWebJobsStorage")]Stream m
log.Info($"C# Blob trigger function Processed blob\n Name:{name} \n Size: {myBlob.Length} Bytes");
Value
log
{Microsoft.Azure.WebJobs.Script.InterceptingTraceWriter}
name
"EmployeeInfo.json"

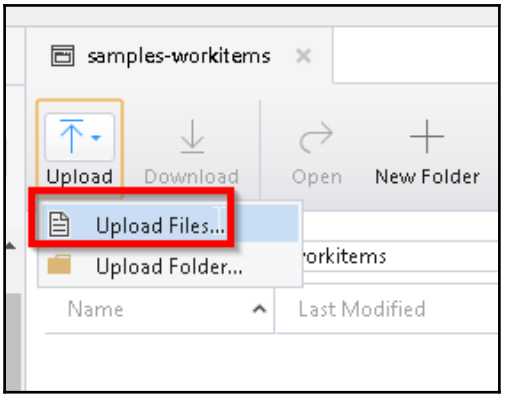
Chapter 05: Exploring Testing Tools for the Validation of Azure Functions

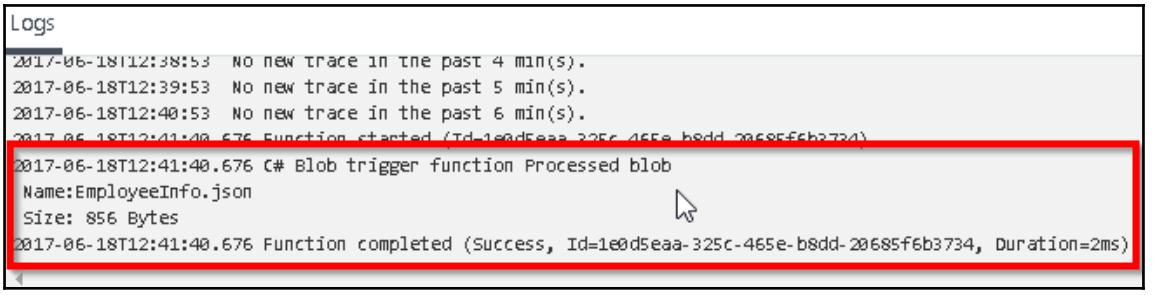


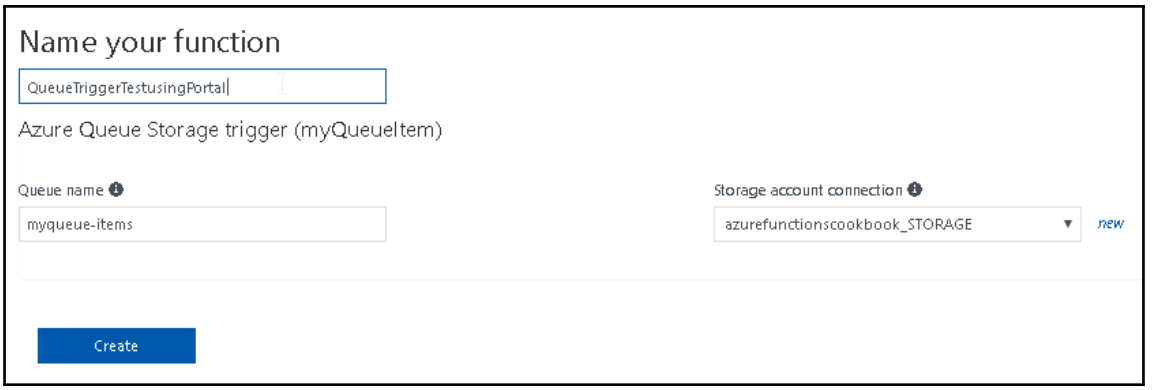

Microsoft Azure Storage Explorer
Edit Help
Microsoft Azure
Search for resources
Collapse All
Quick Access
(Local and Attached)
Storage Accounts

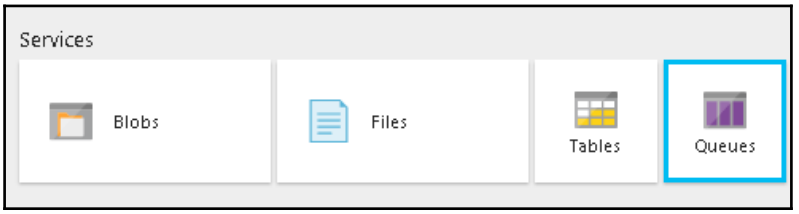

Connect to Azure Storage
Enter a connection string, Shared Access Signature (SAS) URI, or an account key.
DefaultEndpointsProtocol=https;AccountName=azurefunctionscookbook;AccountKey=2mjDtsJKCDZD+x25(
Back
Next
Connect
Cancel

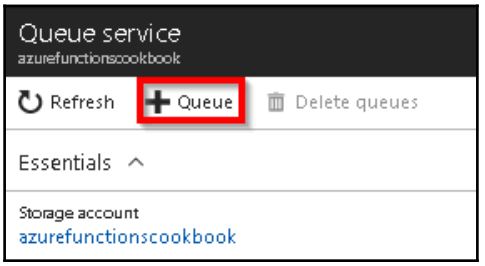

Collapse All
Quick Access
(Local and Attached)
Storage Accounts
(Development)
(SAS-Attached Services)
azurefunctionscookbook (External)
Blob Containers
File Shares
Queues
Tables

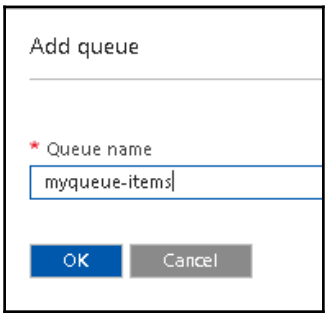

samples-workitems
Upload
Download
Open
New Folder
Upload Files...
Upload Folder...
Name
Last Modified

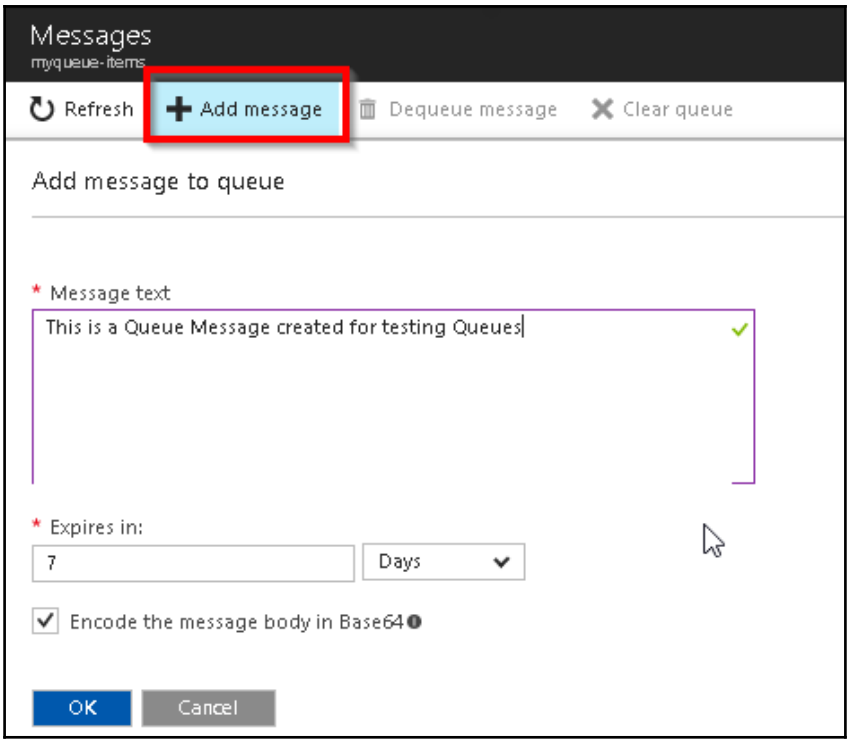

Logs
2017-06-18T12:38:53 No new trace in the past 4 min(s).
2017-06-18T12:39:53 No new trace in the past 5 min(s).
2017-06-18T12:40:53 No new trace in the past 6 min(s).
2017-06-18T12:41:40.676 C# Blob trigger function Processed blob
Name:EmployeeInfo.json
Size: 856 Bytes
2017-06-18T12:41:40.676 Function completed (Success, Id=1e0d5eaa-325c-465e-b8dd-20685f6b3734, Duration=2ms)

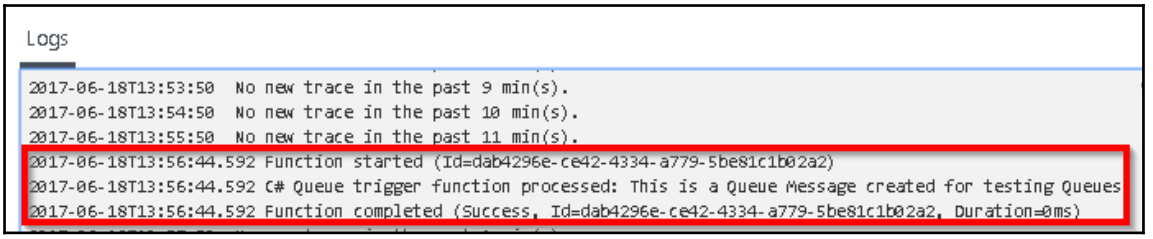

Name your function
QueueTriggerTestusingPortal
Azure Queue Storage trigger (myQueueItem)
Queue name
myqueue-items
Storage account connection
azurefunctionscookbook_STORAGE
new
Create


Services
Blobs
Files
Tables
Queues

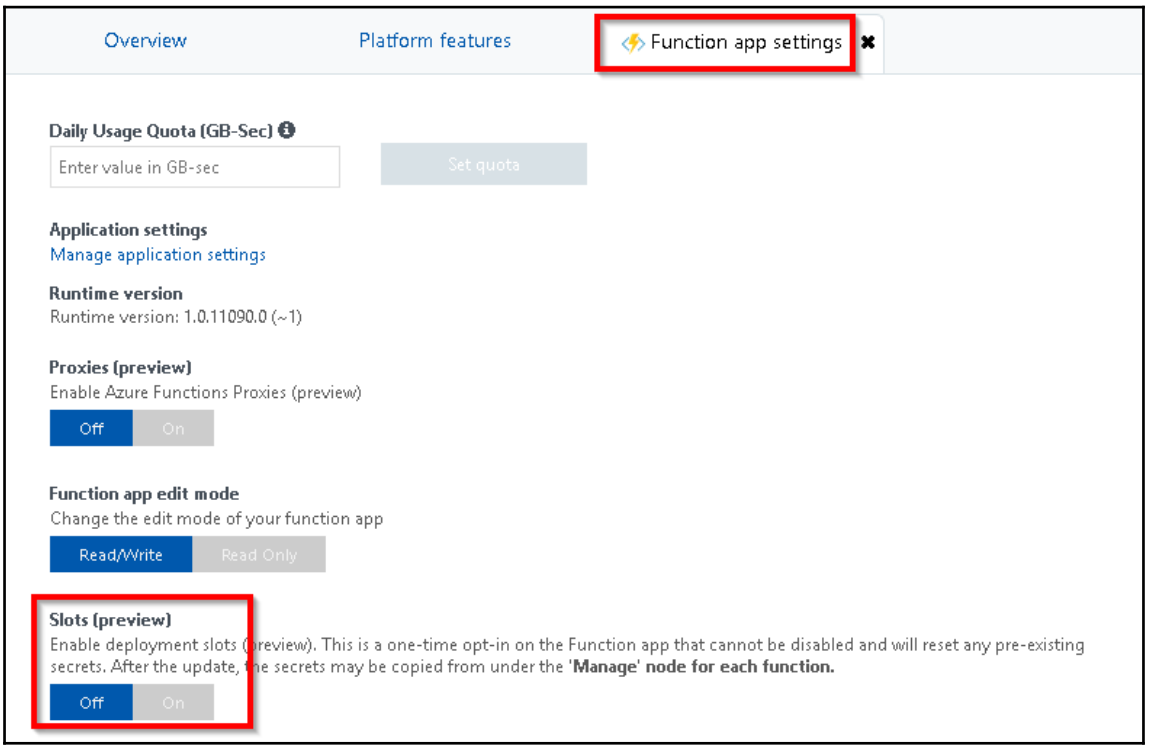

Queue service
azurefunctionscookbook
Refresh
Queue
Delete queues
Essentials
Storage account
azurefunctionscookbook

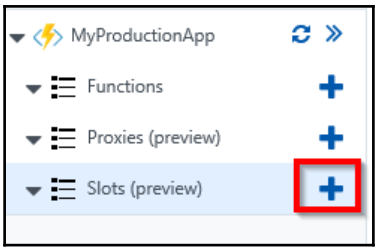

Add queue
* Queue name
myqueue-items
OK
Cancel

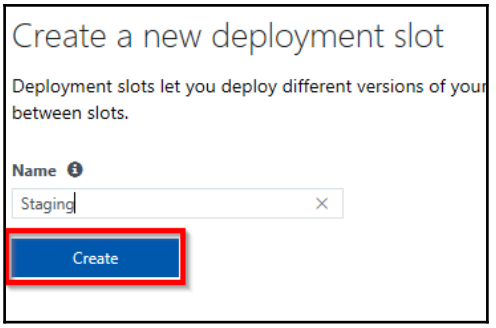

Messages
myqueue-items
Refresh
Add message
Dequeue message
Clear queue
Add message to queue
* Message text
This is a Queue Message created for testing Queues
* Expires in:
7
Days
Encode the message body in Base64
OK
Cancel

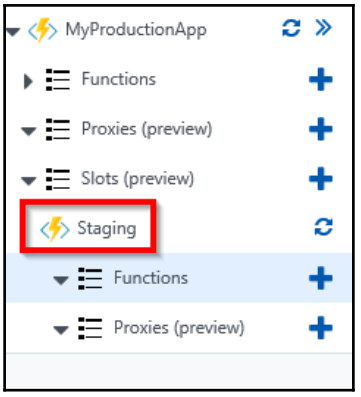

Logs
2017-06-18T13:53:50 No new trace in the past 9 min(s).
2017-06-18T13:54:50 No new trace in the past 10 min(s).
2017-06-18T13:55:50 No new trace in the past 11 min(s).
2017-06-18T13:56:44.592 Function started (Id=dab4296e-ce42-4334-a779-5be81c1b02a2)
2017-06-18T13:56:44.592 C# Queue trigger function processed: This is a Queue Message created for testing Queues
2017-06-18T13:56:44.592 Function completed (Success, Id=dab4296e-ce42-4334-a779-5be81c1b02a2, Duration=0ms)

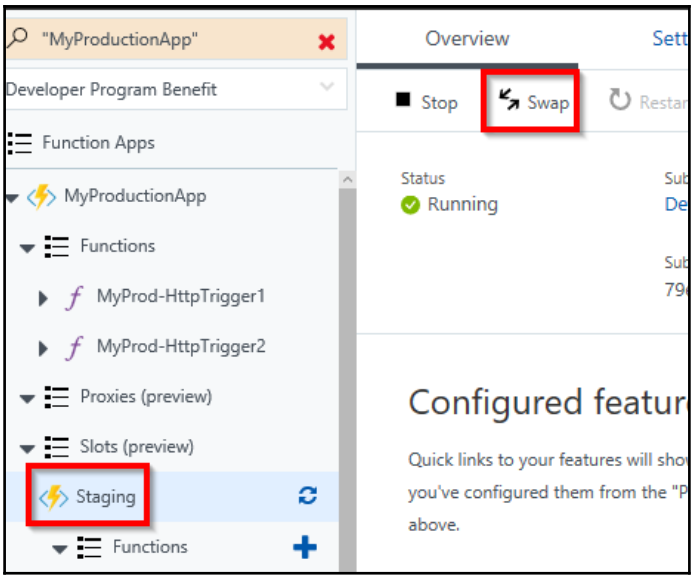
HTTP trigger (req)
delete
Allowed HTTP methods
Selected methods
Mode
Standard
Request parameter name
req
Route template
Route template
Authorization level
Anonymous
Selected HTTP methods
GET
POST
DELETE
HEAD
PATCH
PUT
OPTIONS
TRACE
Save
Cancel

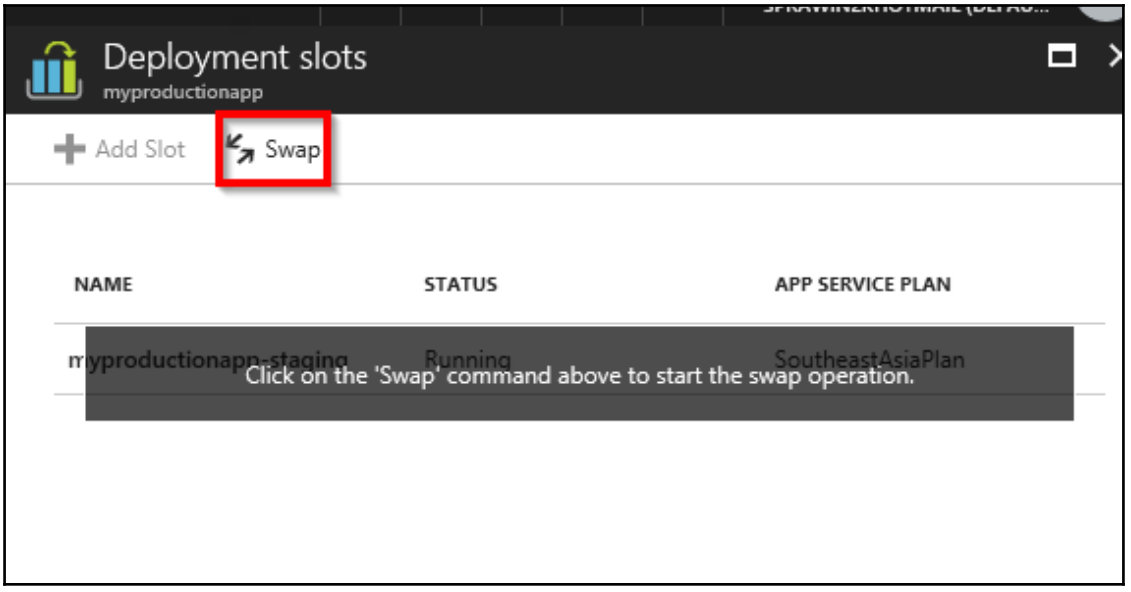

Overview
Platform features
Function app settings
Daily Usage Quota (GB-Sec)
Enter value in GB-sec
Set quota
Application settings
Manage application settings
Runtime version
Runtime version: 1.0.11090.0 (~1)
Proxies (preview)
Enable Azure Functions Proxies (preview)
Off
On
Function app edit mode
Change the edit mode of your function app
Read/Write
Read Only
Slots (preview)
Enable deployment slots (preview). This is a one-time opt-in on the Function app that cannot be disabled and will reset any pre-existing secrets. After the update, the secrets may be copied from under the 'Manage' node for each function.
Off
On

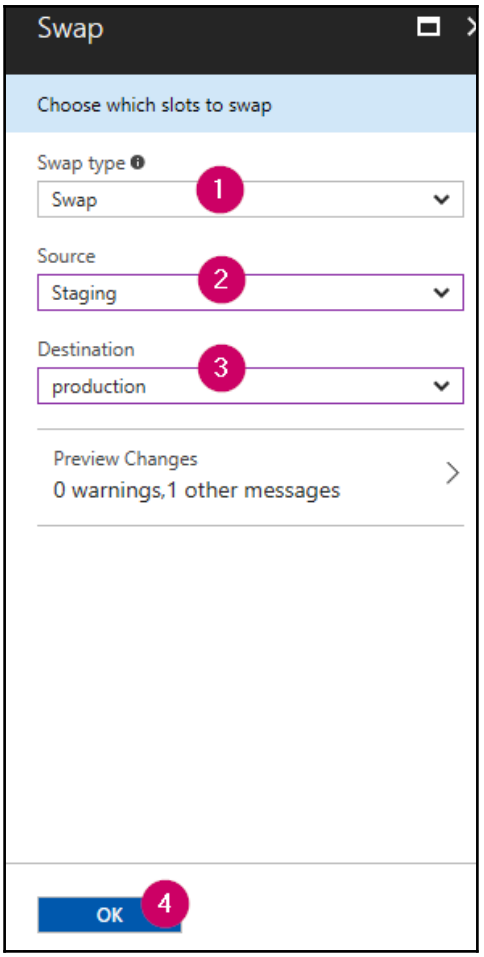

MyProductionApp
Functions
Proxies (preview)
Slots (preview)

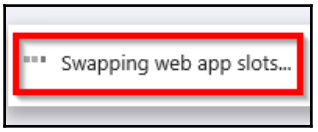

Create a new deployment slot
Deployment slots let you deploy different versions of your
between slots.
Name
Staging
Create

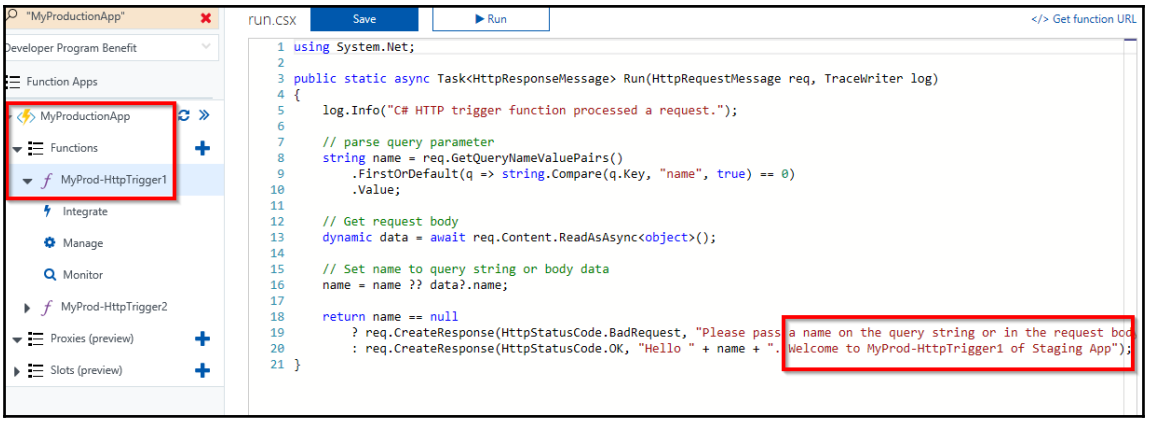

MyProductionApp
Functions
Proxies (preview)
Slots (preview)
Staging
Functions
Proxies (preview)

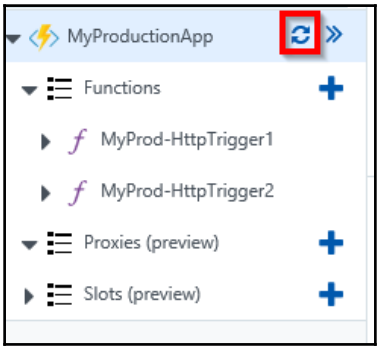

"MyProductionApp"
Developer Program Benefit
Function Apps
MyProductionApp
Functions
MyProd-HttpTrigger1
MyProd-HttpTrigger2
Proxies (preview)
Slots (preview)
Staging
Functions
Overview
Stop
Swap
Status
Running
Configured featur
Quick links to your features will sho
you've configured them from the "P
above.

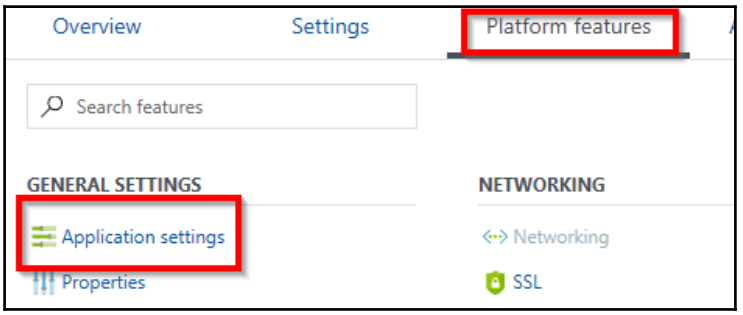

Deployment slots
myproductionapp
Add Slot
Swap
NAME
STATUS
APP SERVICE PLAN
myproductionapp-staging
Running
SoutheastAsiaPlan
Click on the 'Swap' command above to start the swap operation.

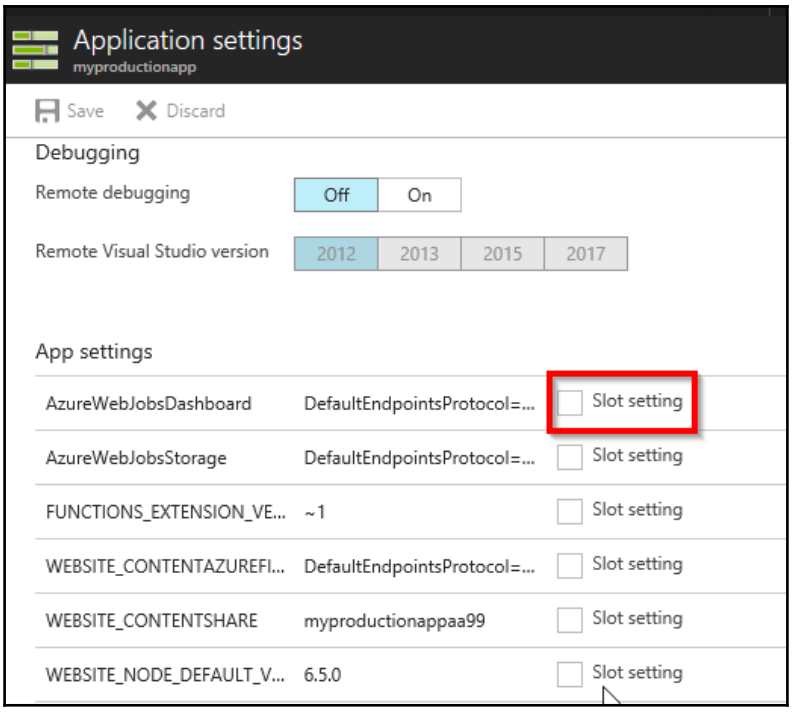

Swap
Choose which slots to swap
Swap type
Swap
1
Source
Staging
2
Destination
production
3
Preview Changes
0 warnings,1 other messages
OK
4

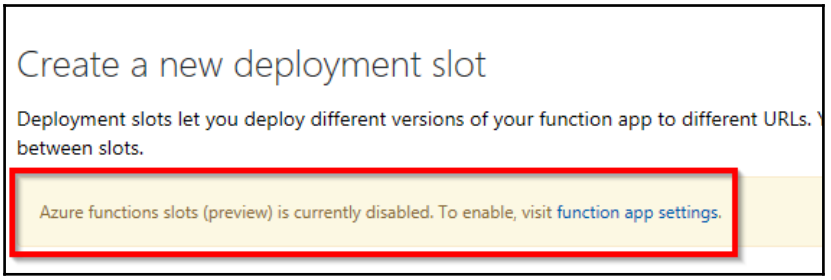

Swapping web app slots...

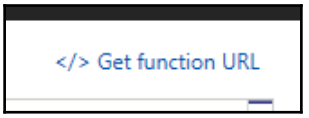

"MyProductionApp"
Developer Program Benefit
Function Apps
MyProductionApp
Functions
MyProd-HttpTrigger1
Integrate
Manage
Monitor
MyProd-HttpTrigger2
Proxies (preview)
Slots (preview)
run.csx
Save
Run
</> Get function URL
using System.Net;
public static async Task<HttpResponseMessage> Run(HttpRequestMessage req, TraceWriter log)
{
log.Info("C# HTTP trigger function processed a request.");
// parse query parameter
string name = req.GetQueryNameValuePairs()
.FirstOrDefault(q => string.Compare(q.Key, "name", true) == 0)
.Value;
// Get request body
dynamic data = await req.Content.ReadAsAsync<object>();
// Set name to query string or body data
name = name ?? data?.name;
return name == null
? req.CreateResponse(HttpStatusCode.BadRequest, "Please pass a name on the query string or in the request bod
: req.CreateResponse(HttpStatusCode.OK, "Hello " + name + ". Welcome to MyProd-HttpTrigger1 of Staging App");
}

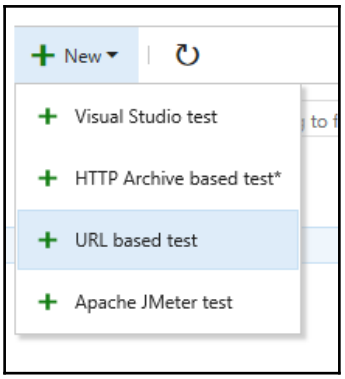

MyProductionApp
Functions
MyProd-HttpTrigger1
MyProd-HttpTrigger2
Proxies (preview)
Slots (preview)


Overview
Settings
Platform features
Search features
GENERAL SETTINGS
Application settings
Properties
NETWORKING
Networking
SSL


Application settings
myproductionapp
Save
Discard
Debugging
Remote debugging
Off
On
Remote Visual Studio version
2012
2013
2015
2017
App settings
AzureWebJobsDashboard
DefaultEndpointsProtocol=...
Slot setting
AzureWebJobsStorage
DefaultEndpointsProtocol=...
Slot setting
FUNCTIONS_EXTENSION_VE...
~1
Slot setting
WEBSITE_CONTENTAZUREFI...
DefaultEndpointsProtocol=...
Slot setting
WEBSITE_CONTENTSHARE
myproductionappaa99
Slot setting
WEBSITE_NODE_DEFAULT_V...
6.5.0
Slot setting

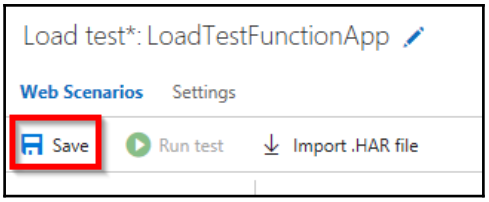

Create a new deployment slot
Deployment slots let you deploy different versions of your function app to different URLs.
between slots.
Azure functions slots (preview) is currently disabled. To enable, visit function app settings.

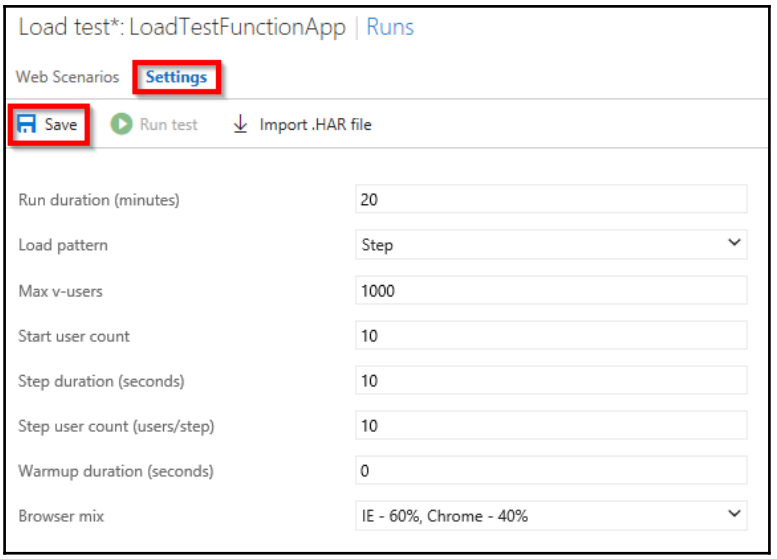

</> Get function URL

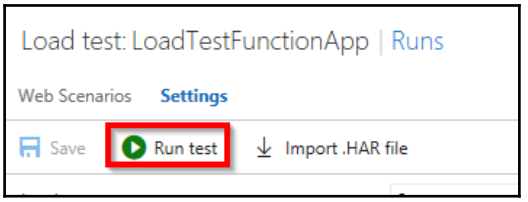

New
Visual Studio test
HTTP Archive based test*
URL based test
Apache JMeter test

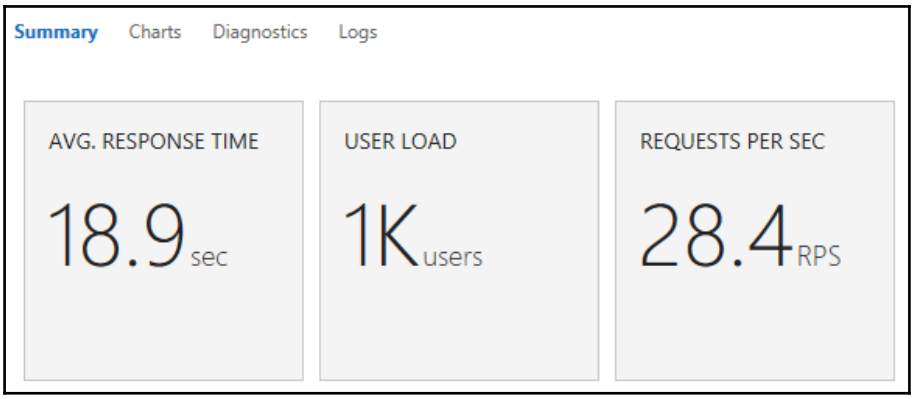
Load test*: LoadTestFunctionApp

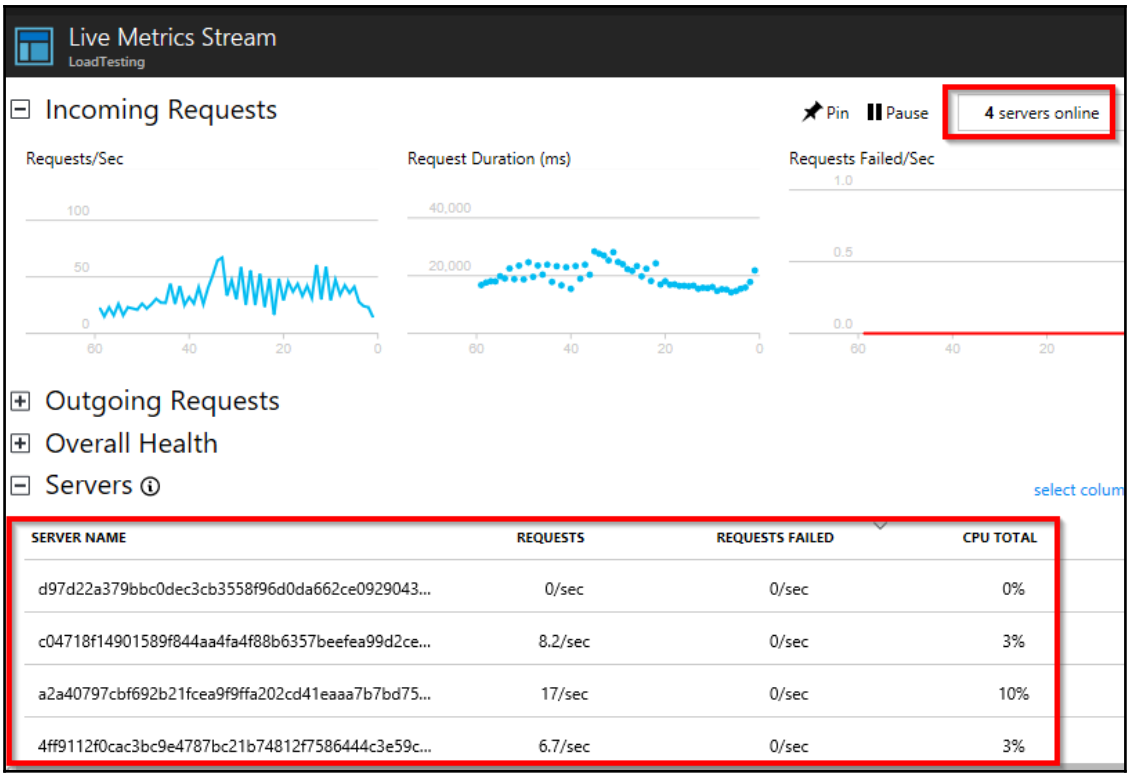
HTTP method
URL
GET
https://myproductionapp.azurewebsites.net/api/LoadTestHttpTrigger
Headers
Add header
QueryString Parameters

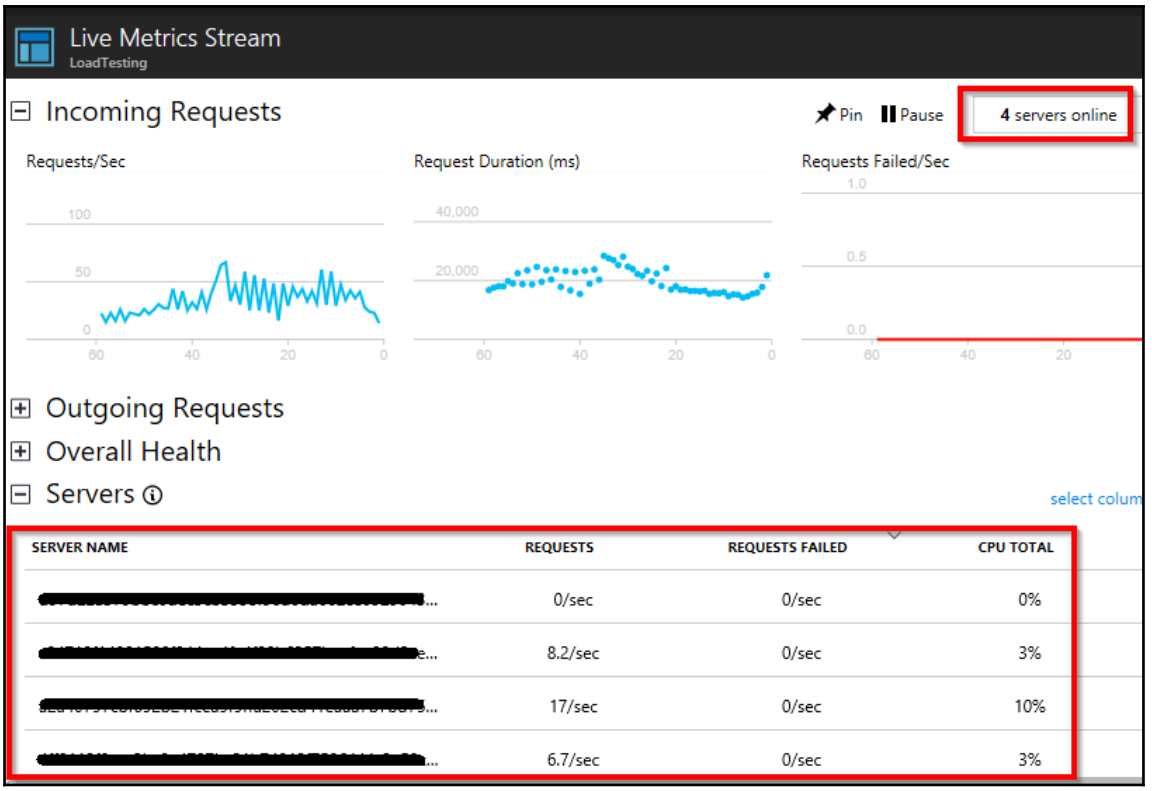

Load test*: LoadTestFunctionApp
Web Scenarios
Settings
Save
Run test
Import .HAR file

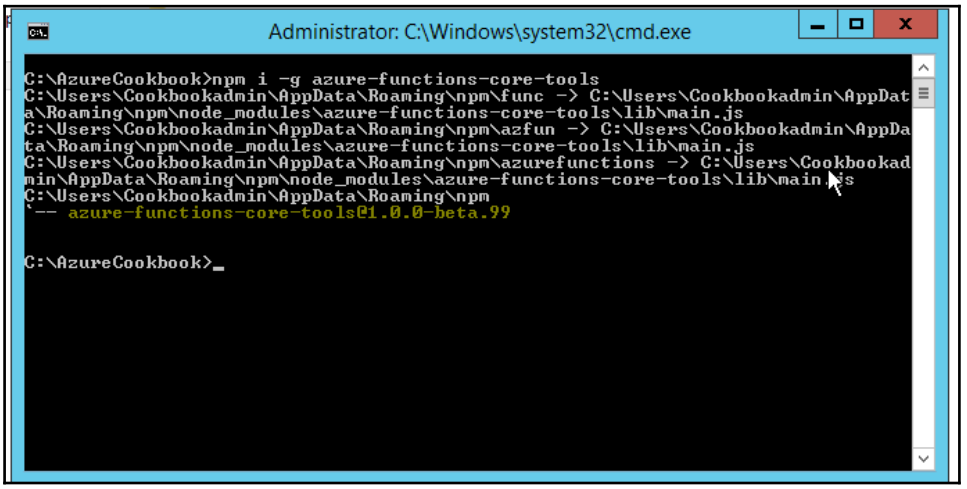

Load test*: LoadTestFunctionApp | Runs
Web Scenarios
Settings
Save
Run test
Import .HAR file
Run duration (minutes)
20
Load pattern
Step
Max v-users
1000
Start user count
10
Step duration (seconds)
10
Step user count (users/step)
10
Warmup duration (seconds)
0
Browser mix
IE - 60%, Chrome - 40%

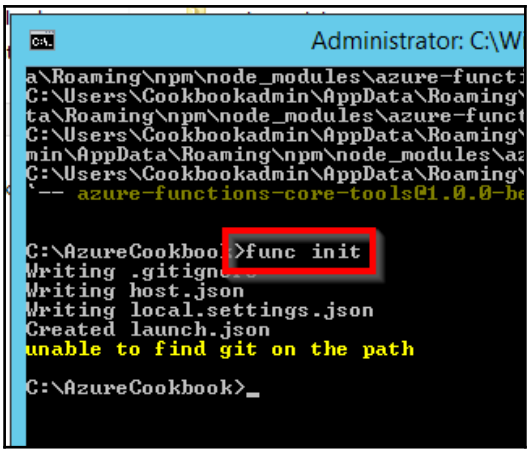

Load test: LoadTestFunctionApp | Runs
Web Scenarios
Settings
Save
Run test
Import .HAR file

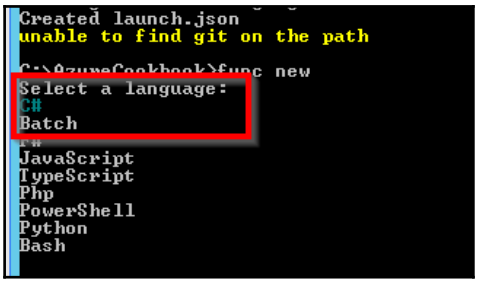

Summary
Charts
Diagnostics
Logs
AVG. RESPONSE TIME
18.9 sec
USER LOAD
1K users
REQUESTS PER SEC
28.4 RPS

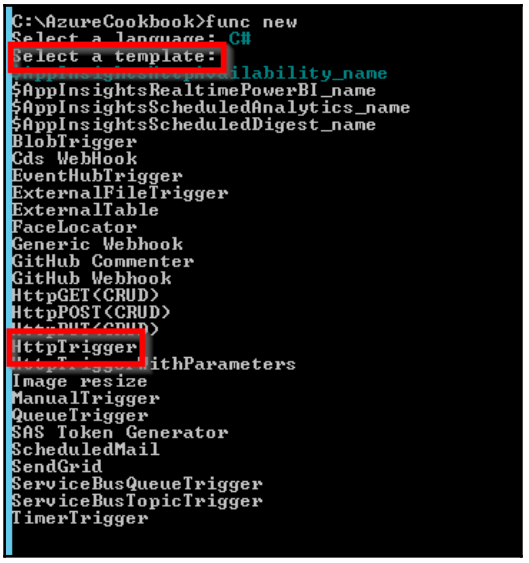

Live Metrics Stream
LoadTesting
Incoming Requests
Pin
Pause
4 servers online
Requests/Sec
Request Duration (ms)
Requests Failed/Sec
100
50
0
40,000
20,000
1.0
0.5
0.0
60
40
20
0
Outgoing Requests
Overall Health
Servers
select colum
SERVER NAME
REQUESTS
REQUESTS FAILED
CPU TOTAL
d97d22a379bbc0dec3cb3558f96d0da662ce0929043...
0/sec
0/sec
0%
c04718f14901589f844aa4fa4f88b6357beefea99d2ce...
8.2/sec
0/sec
3%
a2a40797cbf692b21fcea9f9ffa202cd41eaaa7b7bd75...
17/sec
0/sec
10%
4ff9112f0cac3bc9e4787bc21b74812f7586444c3e59c...
6.7/sec
0/sec
3%


Live Metrics Stream
LoadTesting
Incoming Requests
Pin
Pause
4 servers online
Requests/Sec
Request Duration (ms)
Requests Failed/Sec
Outgoing Requests
Overall Health
Servers
select colum
SERVER NAME
REQUESTS
REQUESTS FAILED
CPU TOTAL
0/sec
0/sec
0%
8.2/sec
0/sec
3%
17/sec
0/sec
10%
6.7/sec
0/sec
3%

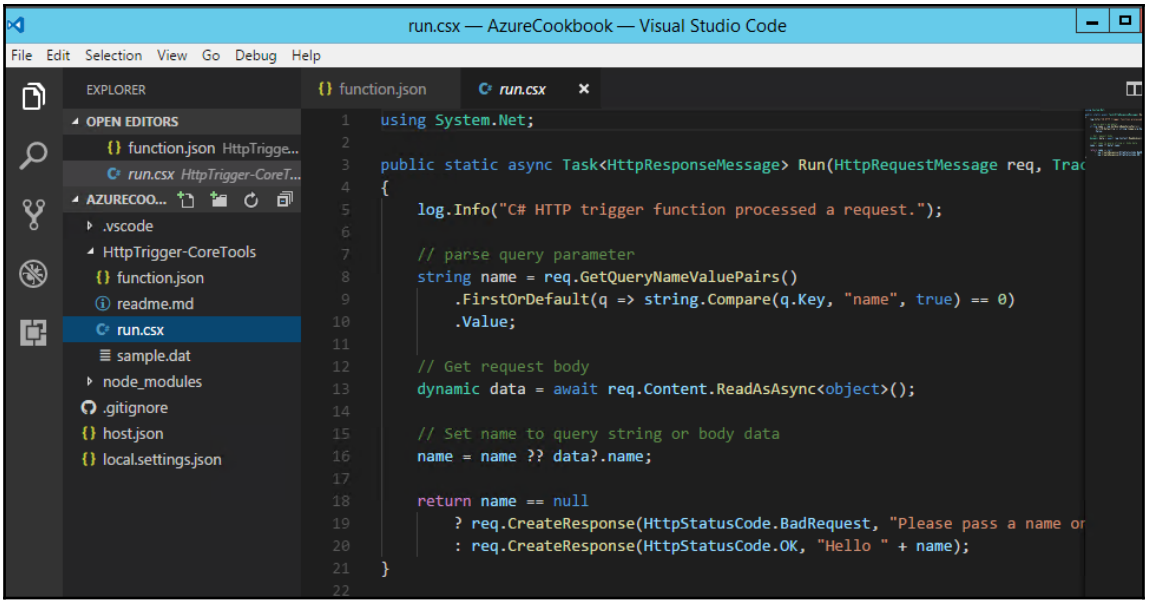

Administrator: C:\Windows\system32\cmd.exe
C:\AzureCookbook>npm i -g azure-functions-core-tools
C:\Users\Cookbookadmin\AppData\Roaming\npm\func -> C:\Users\Cookbookadmin\AppData\Roaming\npm\node_modules\azure-functions-core-tools\lib\main.js
C:\Users\Cookbookadmin\AppData\Roaming\npm\azfun -> C:\Users\Cookbookadmin\AppData\Roaming\npm\node_modules\azure-functions-core-tools\lib\main.js
C:\Users\Cookbookadmin\AppData\Roaming\npm\azurefunctions -> C:\Users\Cookbookadmin\AppData\Roaming\npm\node_modules\azure-functions-core-tools\lib\main.js
C:\Users\Cookbookadmin\AppData\Roaming\npm
`-- azure-functions-core-tools@1.0.0-beta.99
C:\AzureCookbook>


Administrator: C:\W
a\Roaming\npm\node_modules\azure-functi
C:\Users\Cookbookadmin\AppData\Roaming\
ta\Roaming\npm\node_modules\azure-funct
C:\Users\Cookbookadmin\AppData\Roaming\
min\AppData\Roaming\npm\node_modules\az
C:\Users\Cookbookadmin\AppData\Roaming\
`-- azure-functions-core-tools@1.0.0-be
C:\AzureCookboo >func init
Writing .gitign
Writing host.json
Writing local.settings.json
Created launch.json
unable to find git on the path
C:\AzureCookbook>

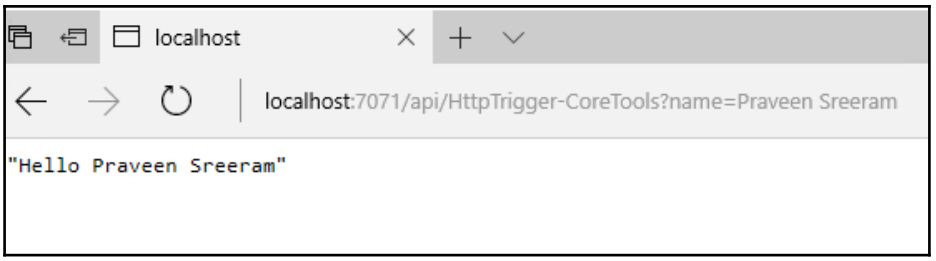

Created launch.json
unable to find git on the path
C:\AzureCookbook>func new
Select a language:
C#
Batch
F#
JavaScript
TypeScript
Php
PowerShell
Python
Bash

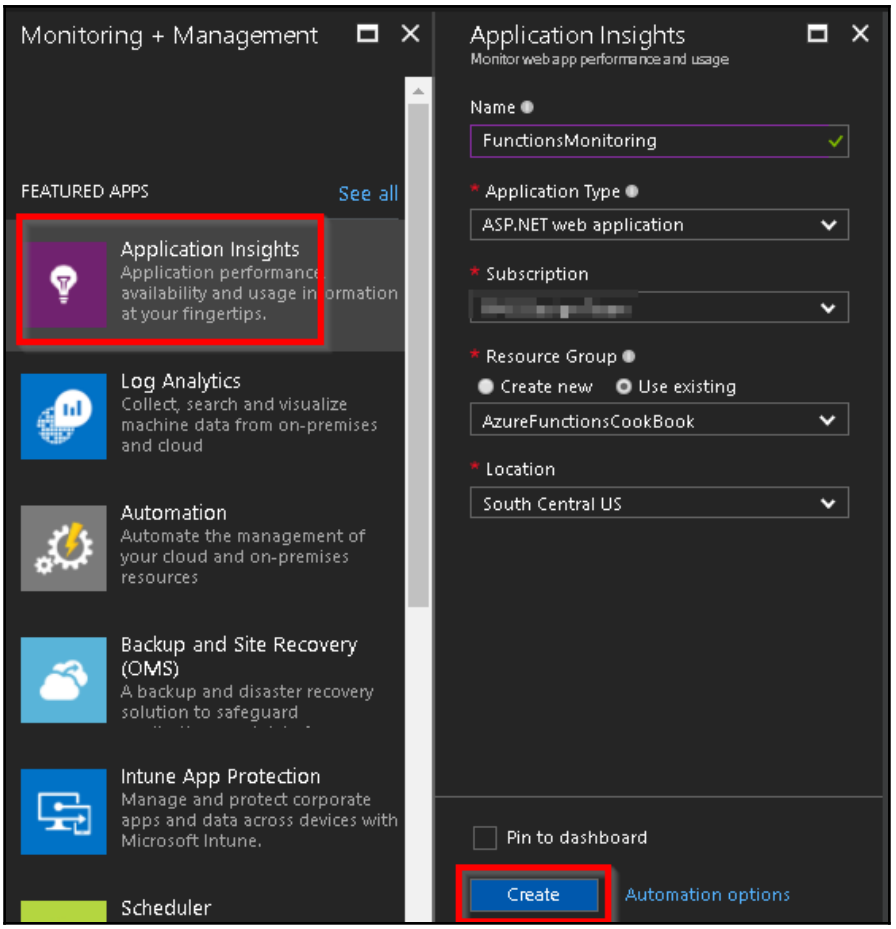

C:\AzureCookbook>func new
Select a language: C#
Select a template:
$AppInsightsRealtimePowerBI_name
$AppInsightsScheduledAnalytics_name
$AppInsightsScheduledDigest_name
BlobTrigger
Cds WebHook
EventHubTrigger
ExternalFileTrigger
ExternalTable
FaceLocator
Generic Webhook
GitHub Commenter
GitHub Webhook
HttpGET(CRUD)
HttpPOST(CRUD)
HttpTrigger
Image resize
ManualTrigger
QueueTrigger
SAS Token Generator
ScheduledMail
SendGrid
ServiceBusQueueTrigger
ServiceBusTopicTrigger
TimerTrigger

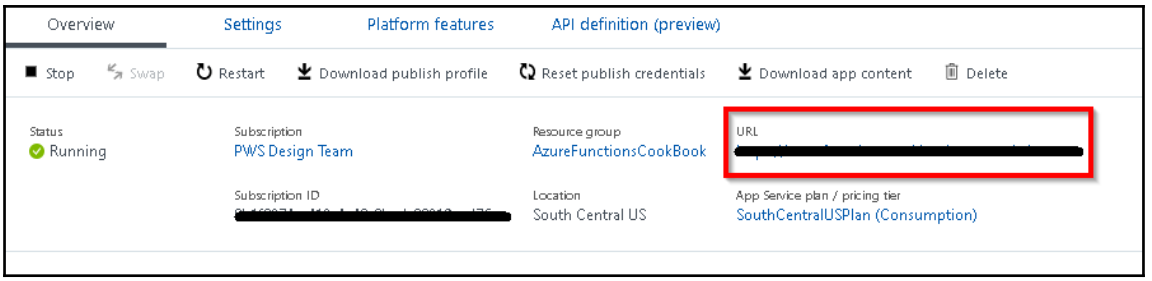
```
C:\AzureCookbook>func new
Select a language: C#
Function name: [HttpTriggerCSharp] HttpTrigger-CoreTools
Writing C:\AzureCookbook\HttpTrigger-CoreTools\run.csx
Writing C:\AzureCookbook\HttpTrigger-CoreTools\sample.dat
Writing C:\AzureCookbook\HttpTrigger-CoreTools\function.json

C:\AzureCookbook>_
```

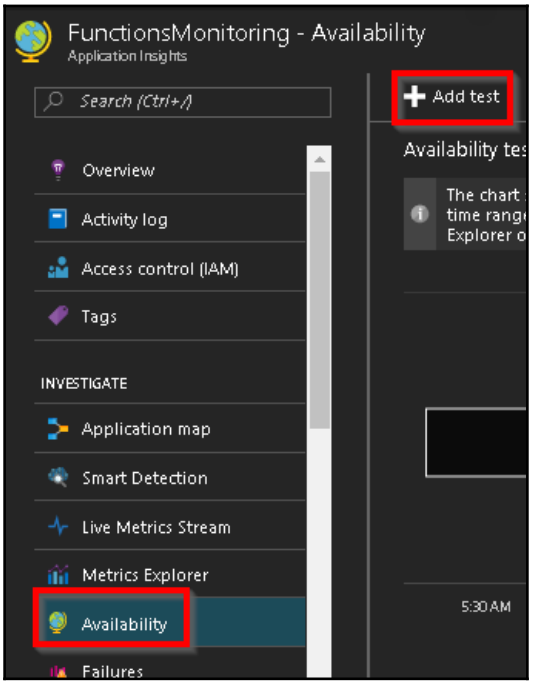


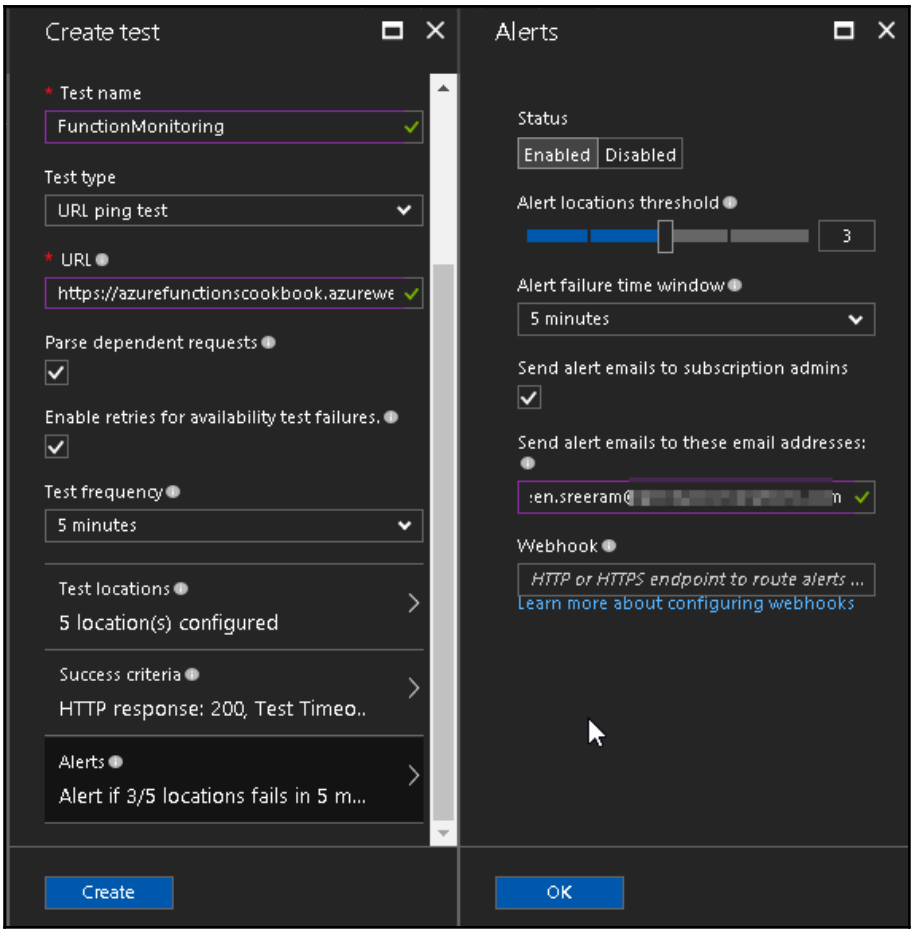

```
[6/17/2017 4:02:28 PM]   "method": "GET",
[6/17/2017 4:02:28 PM]   "uri": "/"
[6/17/2017 4:02:28 PM] }
[6/17/2017 4:02:28 PM] Job host started
[6/17/2017 4:02:28 PM] Executed HTTP request: {
[6/17/2017 4:02:28 PM]   "requestId": "c4fa5f31-3d20-4f4a-890d-d483ecab40bb",
[6/17/2017 4:02:28 PM]   "method": "GET",
[6/17/2017 4:02:28 PM]   "uri": "/",
[6/17/2017 4:02:28 PM]   "authorizationLevel": "Anonymous"
[6/17/2017 4:02:28 PM] }
[6/17/2017 4:02:28 PM] Response details: {
[6/17/2017 4:02:28 PM]   "requestId": "c4fa5f31-3d20-4f4a-890d-d483ecab40bb",
[6/17/2017 4:02:28 PM]   "status": "OK"
[6/17/2017 4:02:28 PM] }
Http Function HttpTrigger-CoreTools: http://localhost:7071/api/HttpTrigger-CoreTools
Debugger listening on [::]:5858
```

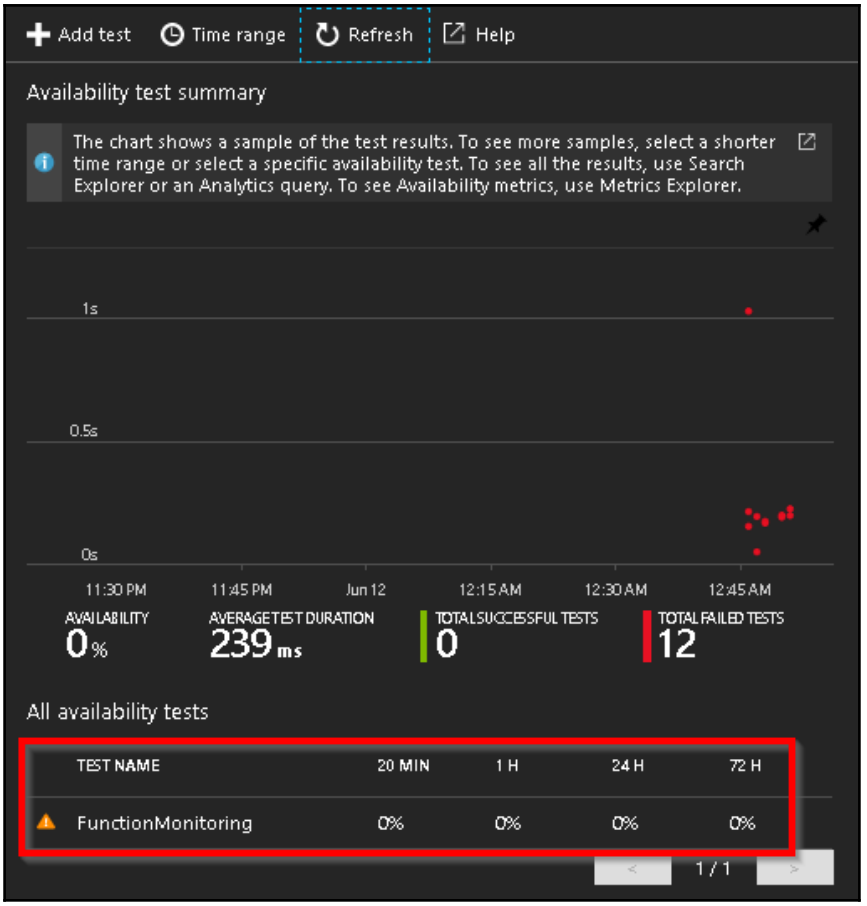

localhost
localhost:7071/api/HttpTrigger-CoreTools?name=Praveen Sreeram
"Hello Praveen Sreeram"

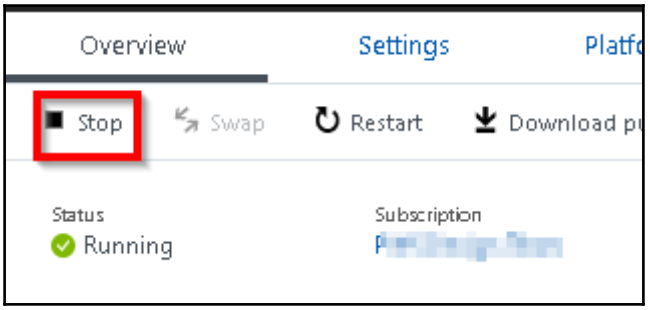

Monitoring + Management
FEATURED APPS
See all
Application Insights
Application performance availability and usage information at your fingertips.
Log Analytics
Collect, search and visualize machine data from on-premises and cloud
Automation
Automate the management of your cloud and on-premises resources
Backup and Site Recovery (OMS)
A backup and disaster recovery solution to safeguard
Intune App Protection
Manage and protect corporate apps and data across devices with Microsoft Intune.
Scheduler
Application Insights
Monitor web app performance and usage
Name
FunctionsMonitoring
* Application Type
ASP.NET web application
* Subscription
* Resource Group
Create new
Use existing
AzureFunctionsCookBook
* Location
South Central US
Pin to dashboard
Create
Automation options

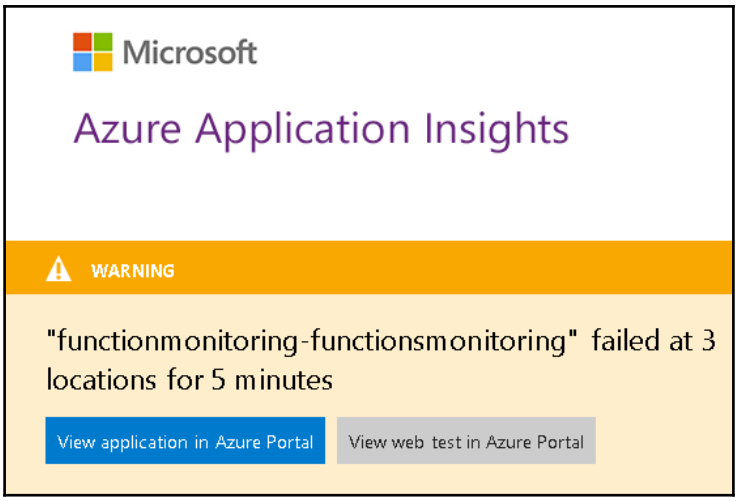

Overview
Settings
Platform features
API definition (preview)
Stop
Swap
Restart
Download publish profile
Reset publish credentials
Download app content
Delete
Status
Running
Subscription
PWS Design Team
Resource group
AzureFunctionsCookBook
URL
Subscription ID
Location
South Central US
App Service plan / pricing tier
SouthCentralUSPlan (Consumption)


FunctionsMonitoring - Availability
Application Insights
Search (Ctrl+/)
Add test
Overview
Activity log
Access control (IAM)
Tags
INVESTIGATE
Application map
Smart Detection
Live Metrics Stream
Metrics Explorer
Availability
Failures
5:30 AM

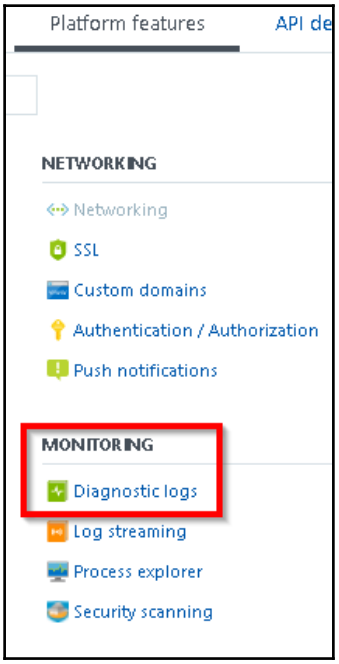

Create test
* Test name
FunctionMonitoring
Test type
URL ping test
* URL
https://azurefunctionscookbook.azurewe
Parse dependent requests
Enable retries for availability test failures.
Test frequency
5 minutes
Test locations
5 location(s) configured
Success criteria
HTTP response: 200, Test Timeo..
Alerts
Alert if 3/5 locations fails in 5 m...
Create
Alerts
Status
Enabled
Disabled
Alert locations threshold
3
Alert failure time window
5 minutes
Send alert emails to subscription admins
Send alert emails to these email addresses:
:en.sreeram
Webhook
HTTP or HTTPS endpoint to route alerts ...
Learn more about configuring webhooks
OK

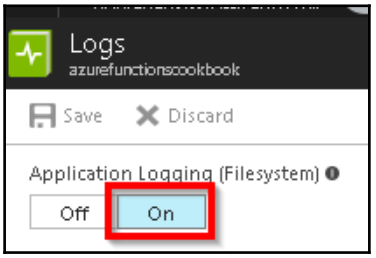

Add test
Time range
Refresh
Help
Availability test summary
The chart shows a sample of the test results. To see more samples, select a shorter time range or select a specific availability test. To see all the results, use Search Explorer or an Analytics query. To see Availability metrics, use Metrics Explorer.
1s
0.5s
0s
11:30 PM
11:45 PM
Jun 12
12:15 AM
12:30 AM
12:45 AM
AVAILABILITY
0%
AVERAGE TEST DURATION
239 ms
TOTAL SUCCESSFUL TESTS
0
TOTAL FAILED TESTS
12
All availability tests
TEST NAME
20 MIN
1 H
24 H
72 H
FunctionMonitoring
0%
0%
0%
0%
1 / 1

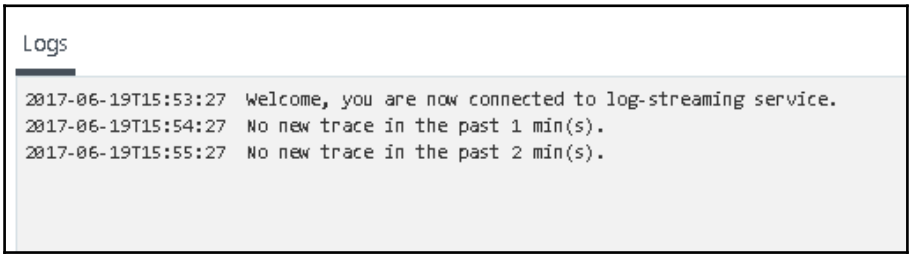

Overview
Settings
Stop
Swap
Restart
Status
Running
Subscription

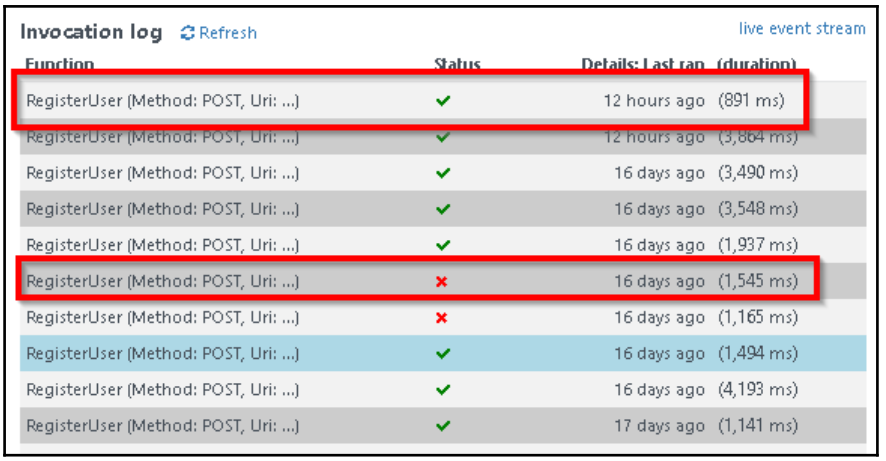

Microsoft
Azure Application Insights
WARNING
"functionmonitoring-functionsmonitoring" failed at 3 locations for 5 minutes
View application in Azure Portal
View web test in Azure Portal

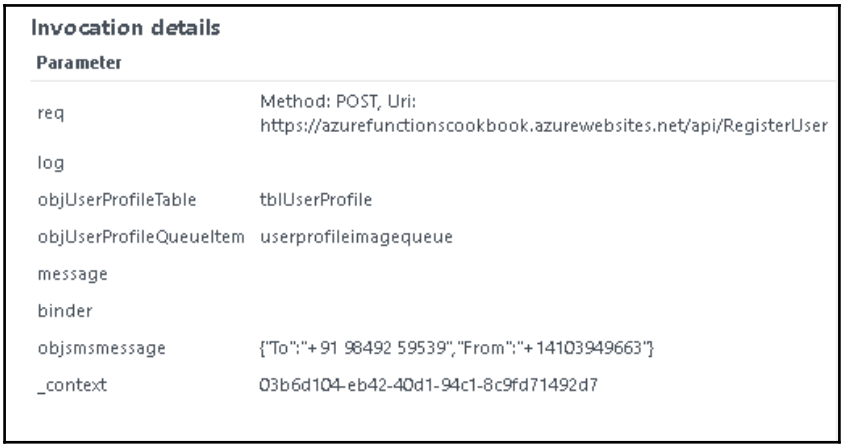
Chapter 06: Monitoring and Troubleshooting Azure Serverless Services

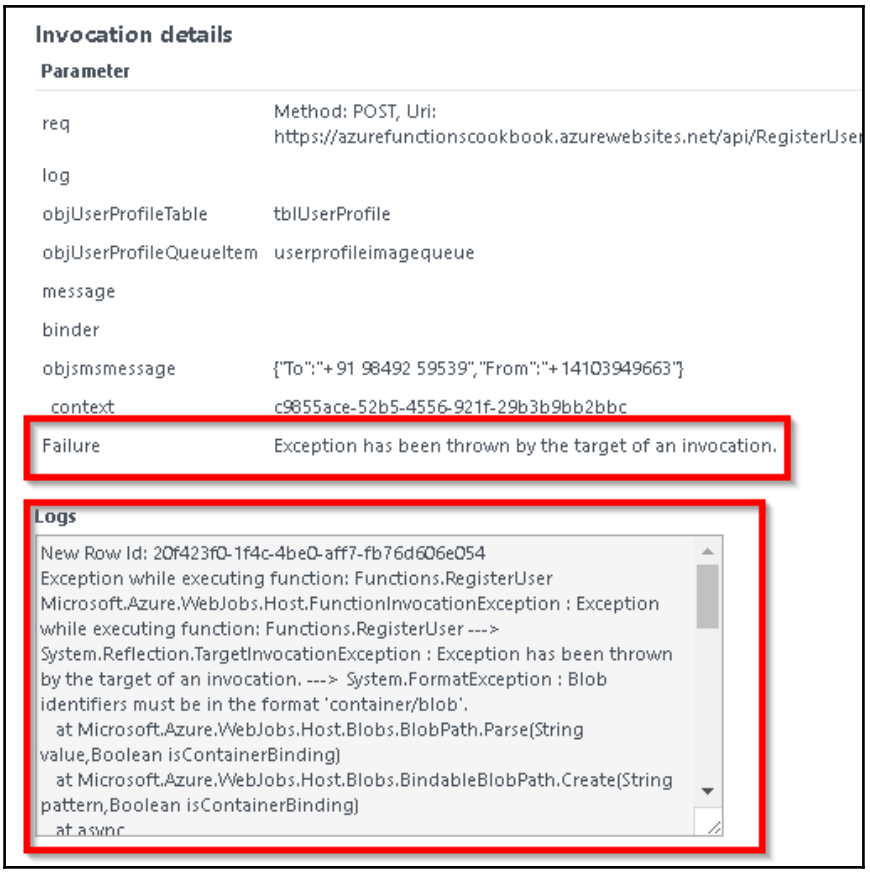


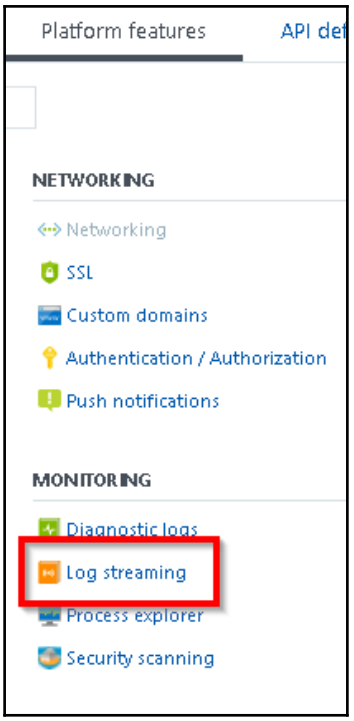




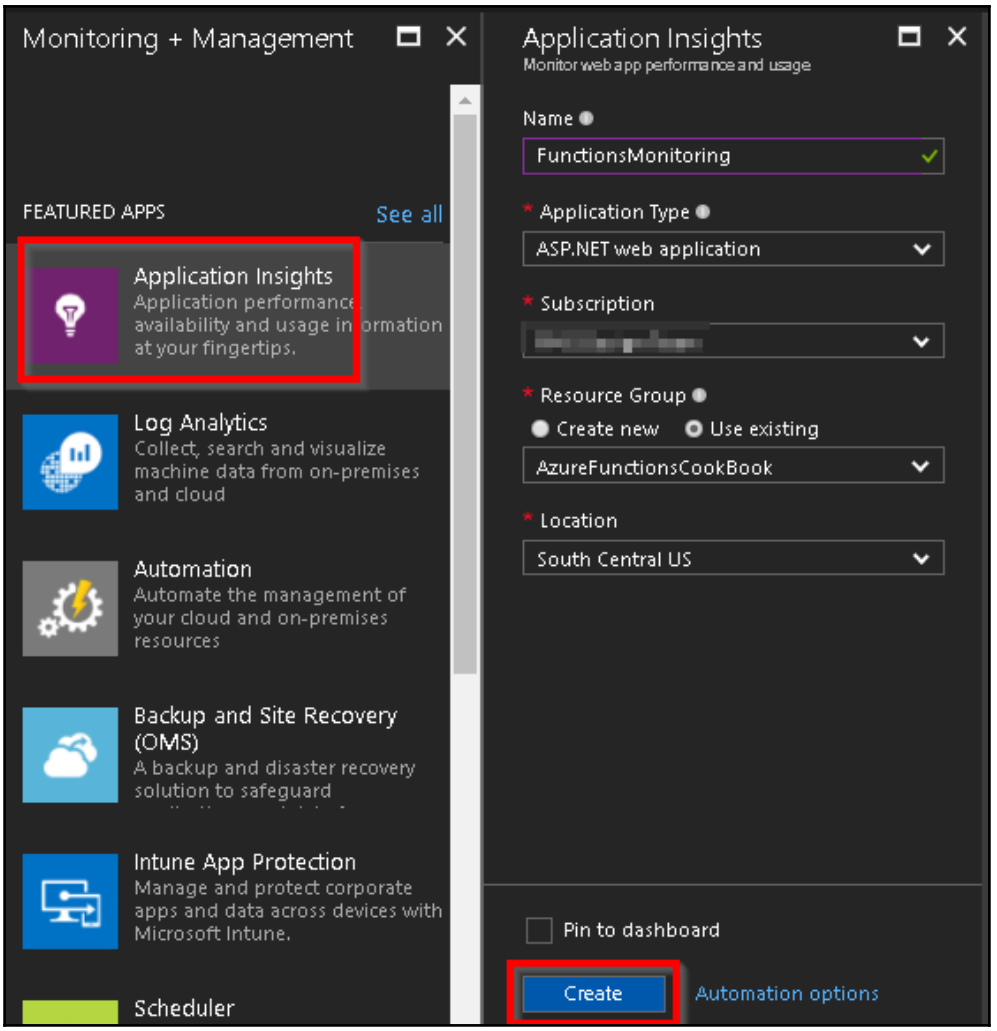

Invocation log
Refresh
live event stream
Function
Status
Details: Last ran
(duration)
RegisterUser (Method: POST, Uri: ...) 12 hours ago (891 ms)
RegisterUser (Method: POST, Uri: ...) 12 hours ago (3,864 ms)
RegisterUser (Method: POST, Uri: ...) 16 days ago (3,490 ms)
RegisterUser (Method: POST, Uri: ...) 16 days ago (3,548 ms)
RegisterUser (Method: POST, Uri: ...) 16 days ago (1,937 ms)
RegisterUser (Method: POST, Uri: ...) 16 days ago (1,545 ms)
RegisterUser (Method: POST, Uri: ...) 16 days ago (1,165 ms)
RegisterUser (Method: POST, Uri: ...) 16 days ago (1,494 ms)
RegisterUser (Method: POST, Uri: ...) 16 days ago (4,193 ms)
RegisterUser (Method: POST, Uri: ...) 17 days ago (1,141 ms)

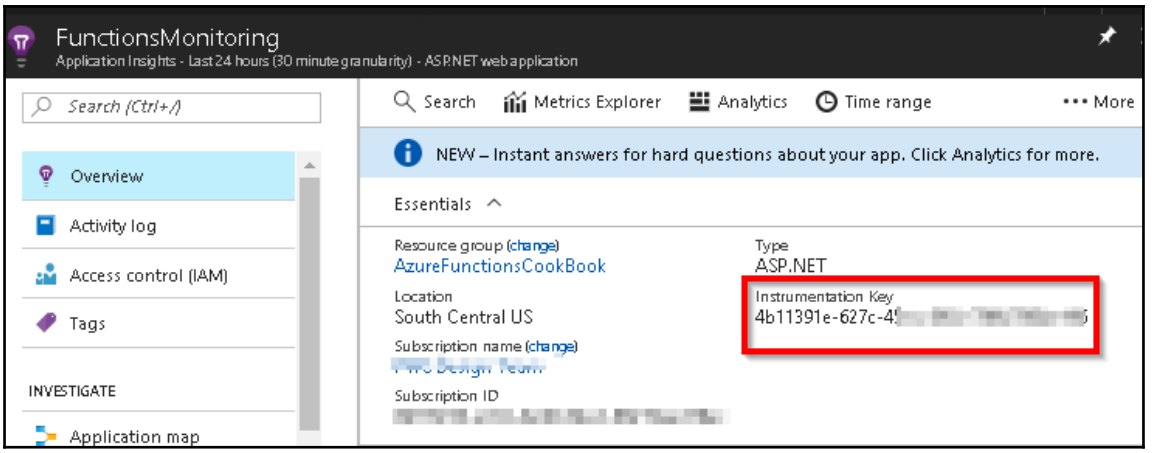

Invocation details
Parameter
req
Method: POST, Uri: https://azurefunctionscookbook.azurewebsites.net/api/RegisterUser
log
objUserProfileTable
tblUserProfile
objUserProfileQueueItem
userprofileimagequeue
message
binder
objsmsmessage
{"To":"+91 98492 59539","From":"+14103949663"}
_context
03b6d104-eb42-40d1-94c1-8c9fd71492d7

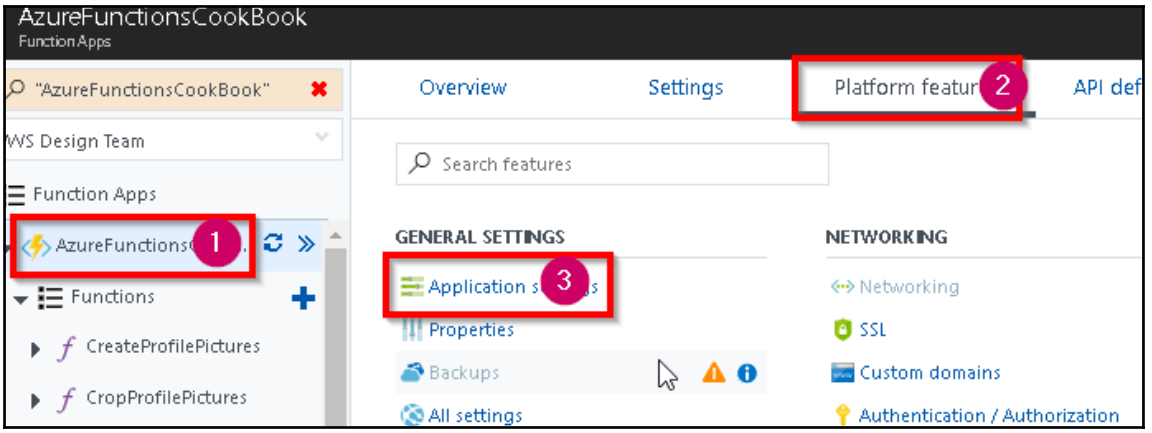

Invocation details
Parameter
req
Method: POST, Uri:
https://azurefunctionscookbook.azurewebsites.net/api/RegisterUser
log
objUserProfileTable
tblUserProfile
objUserProfileQueueItem
userprofileimagequeue
message
binder
objsmsmessage
{"To":"+91 98492 59539","From":"+14103949663"}
context
c9855ace-52b5-4556-921f-29b3b9bb2bbc
Failure
Exception has been thrown by the target of an invocation.
Logs
New Row Id: 20f423f0-1f4c-4be0-aff7-fb76d606e054
Exception while executing function: Functions.RegisterUser
Microsoft.Azure.WebJobs.Host.FunctionInvocationException : Exception
while executing function: Functions.RegisterUser --->
System.Reflection.TargetInvocationException : Exception has been thrown
by the target of an invocation. ---> System.FormatException : Blob
identifiers must be in the format 'container/blob'.
at Microsoft.Azure.WebJobs.Host.Blobs.BlobPath.Parse(String
value,Boolean isContainerBinding)
at Microsoft.Azure.WebJobs.Host.Blobs.BindableBlobPath.Create(String
pattern,Boolean isContainerBinding)
at asyno

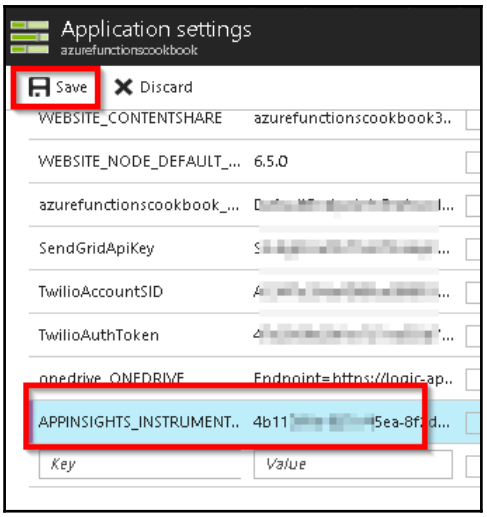

Platform features
API def
NETWORKING
Networking
SSL
Custom domains
Authentication / Authorization
Push notifications
MONITORING
Diagnostic logs
Log streaming
Process explorer
Security scanning

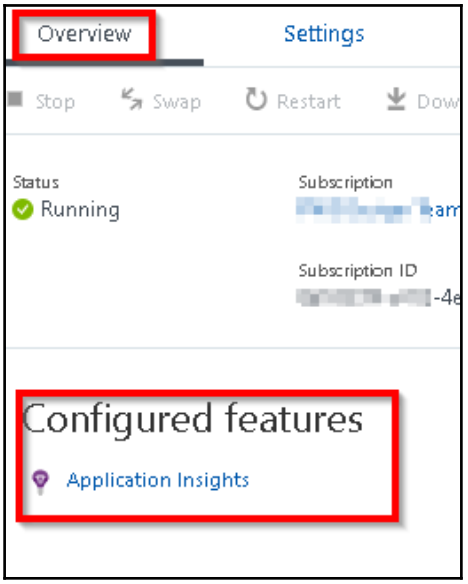
Streaming logs
Application logs
Web server logs
Pause
Start
Clear
Application logs
"state": "Running",
"version": "1.0.11002.0"
}
2017-06-19T15:24:32.691 Executed HTTP request: {
"requestId": "a4a0cd10-809e-4486-8e1d-a59c95693ae7",
"method": "GET",
"uri": "/admin/host/status",
"authorizationLevel": "Admin"
}
2017-06-19T15:24:32.691 Response details: {
"requestId": "a4a0cd10-809e-4486-8e1d-a59c95693ae7",
"status": "OK"
}
2017-06-19T15:24:58.402 Executing HTTP request: {
"requestId": "04d906b2-f495-46df-bc50-3d0bcbbd6b6e",
"method": "GET",
"uri": "/"
}
2017-06-19T15:24:58.402 Executed HTTP request: {
"requestId": "04d906b2-f495-46df-bc50-3d0bcbbd6b6e",
"method": "GET",
"uri": "/",
"authorizationLevel": "Anonymous"
}
2017-06-19T15:24:58.402 Response details: {
"requestId": "04d906b2-f495-46df-bc50-3d0bcbbd6b6e",
"status": "OK"
}

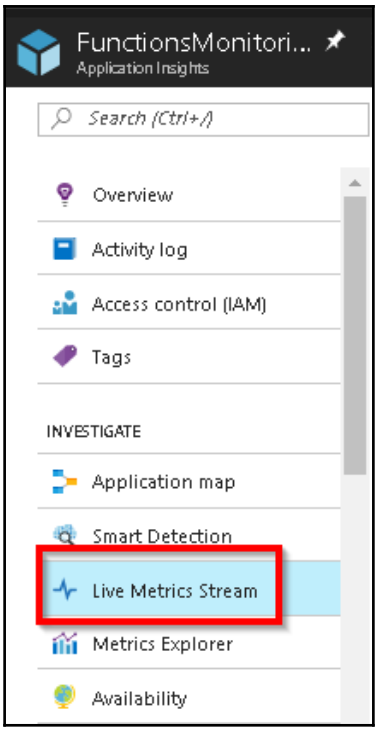

Monitoring + Management
FEATURED APPS
See all
Application Insights
Application performance availability and usage information at your fingertips.
Log Analytics
Collect, search and visualize machine data from on-premises and cloud
Automation
Automate the management of your cloud and on-premises resources
Backup and Site Recovery (OMS)
A backup and disaster recovery solution to safeguard
Intune App Protection
Manage and protect corporate apps and data across devices with Microsoft Intune.
Scheduler
Application Insights
Monitor web app performance and usage
Name
FunctionsMonitoring
* Application Type
ASP.NET web application
* Subscription
* Resource Group
Create new
Use existing
AzureFunctionsCookBook
* Location
South Central US
Pin to dashboard
Create
Automation options

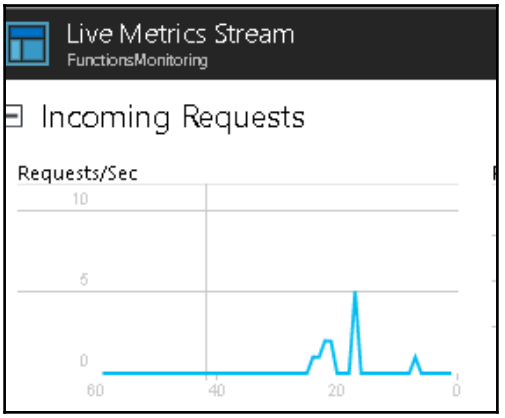

FunctionsMonitoring
Application Insights - Last 24 hours (30 minute granularity) - ASP.NET web application
Search (Ctrl+/)
Overview
Activity log
Access control (IAM)
Tags
INVESTIGATE
Application map
Search
Metrics Explorer
Analytics
Time range
More
NEW – Instant answers for hard questions about your app. Click Analytics for more.
Essentials
Resource group (change)
AzureFunctionsCookBook
Location
South Central US
Subscription name (change)
Subscription ID
Type
ASP.NET
Instrumentation Key
4b11391e-627c-4

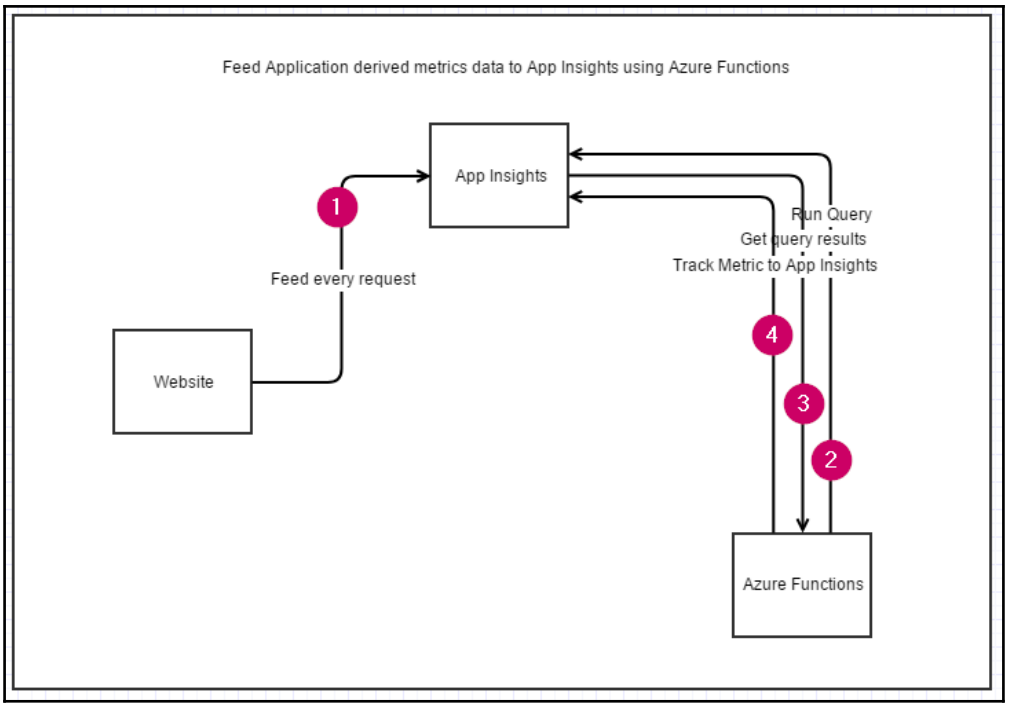

AzureFunctionsCookBook
Function Apps
"AzureFunctionsCookBook"
WS Design Team
Function Apps
AzureFunctions
Functions
CreateProfilePictures
CropProfilePictures
1
Overview
Settings
Platform featur
2
API def
Search features
GENERAL SETTINGS
Application s
3
Properties
Backups
All settings
NETWORKING
Networking
SSL
Custom domains
Authentication / Authorization

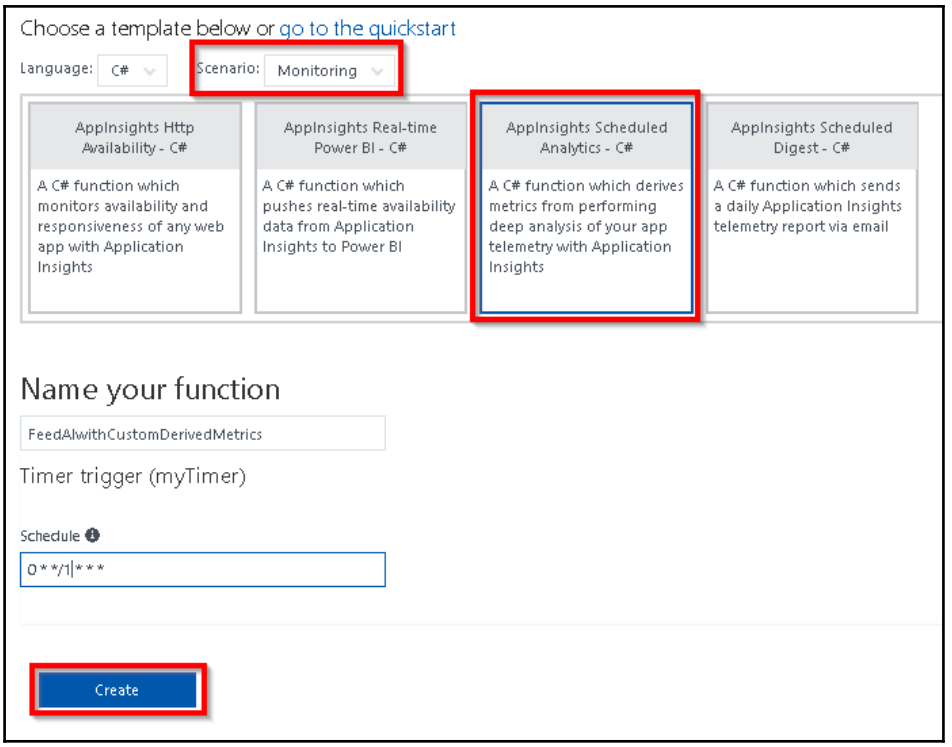

Application settings
azurefunctionscookbook
Save
Discard
WEBSITE_CONTENTSHARE
azurefunctionscookbook3..
WEBSITE_NODE_DEFAULT_...
6.5.0
azurefunctionscookbook_...
SendGridApiKey
TwilioAccountSID
TwilioAuthToken
onedrive_ONEDRIVE
Endpoint=https://logic-ap..
APPINSIGHTS_INSTRUMENT..
Key
Value

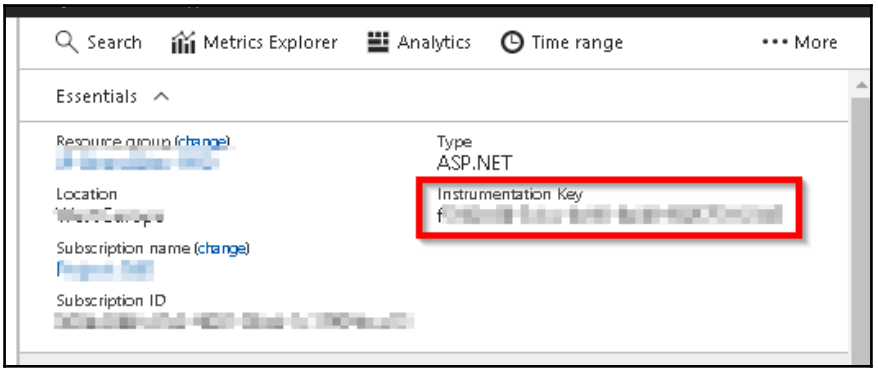

Overview
Settings
Stop
Swap
Restart
Status
Running
Subscription
Subscription ID
Configured features
Application Insights

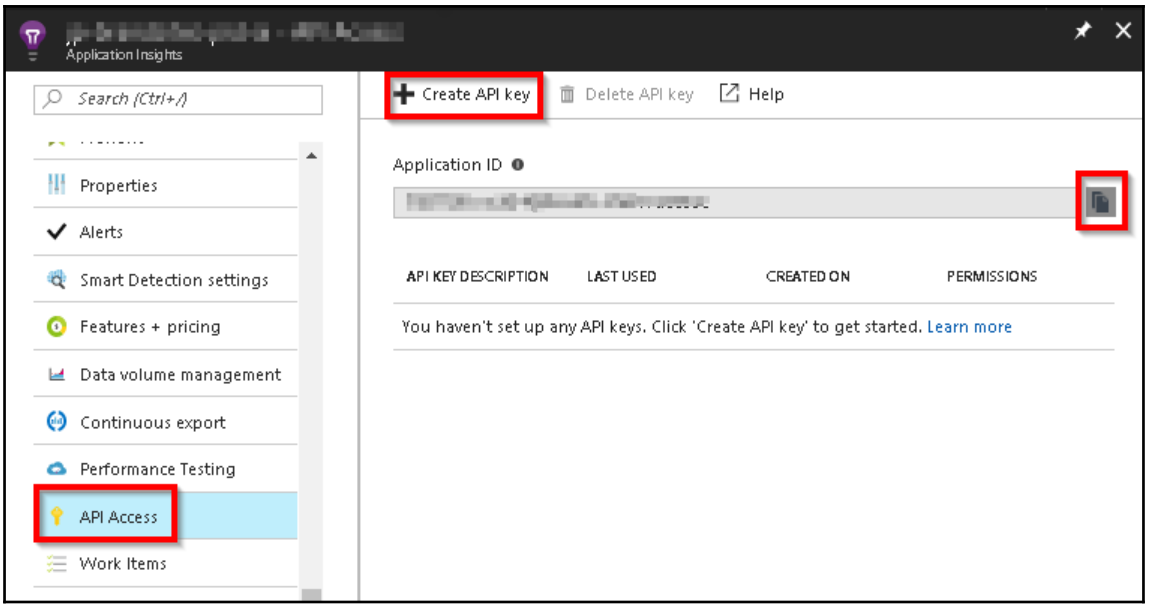

FunctionsMonitori...
Application Insights
Search (Ctrl+/)
Overview
Activity log
Access control (IAM)
Tags
INVESTIGATE
Application map
Smart Detection
Live Metrics Stream
Metrics Explorer
Availability

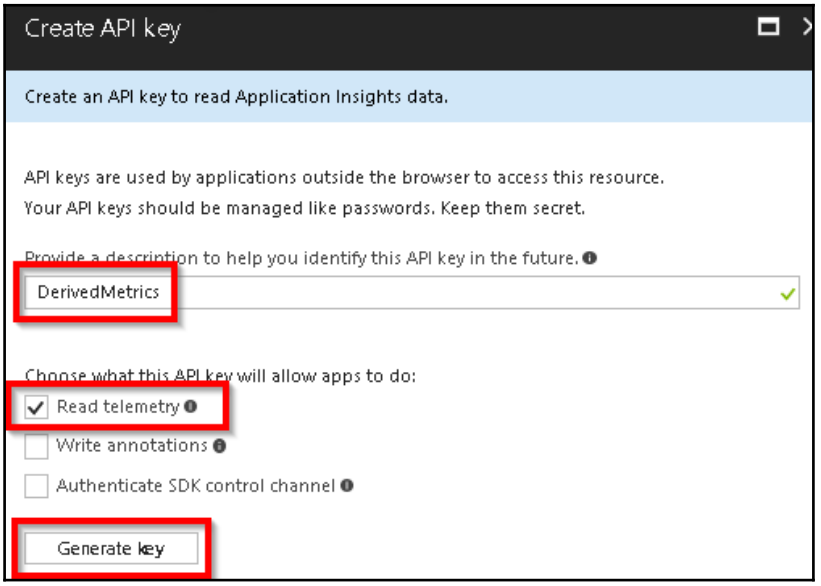

Live Metrics Stream
FunctionsMonitoring
Incoming Requests
Requests/Sec
10
5
0
60
40
20
0

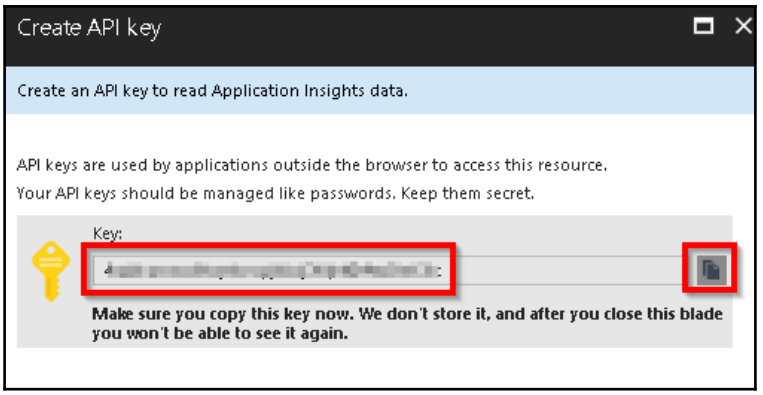

Feed Application derived metrics data to App Insights using Azure Functions
App Insights
1
Feed every request
Website
Run Query
Get query results
Track Metric to App Insights
4
3
2
Azure Functions

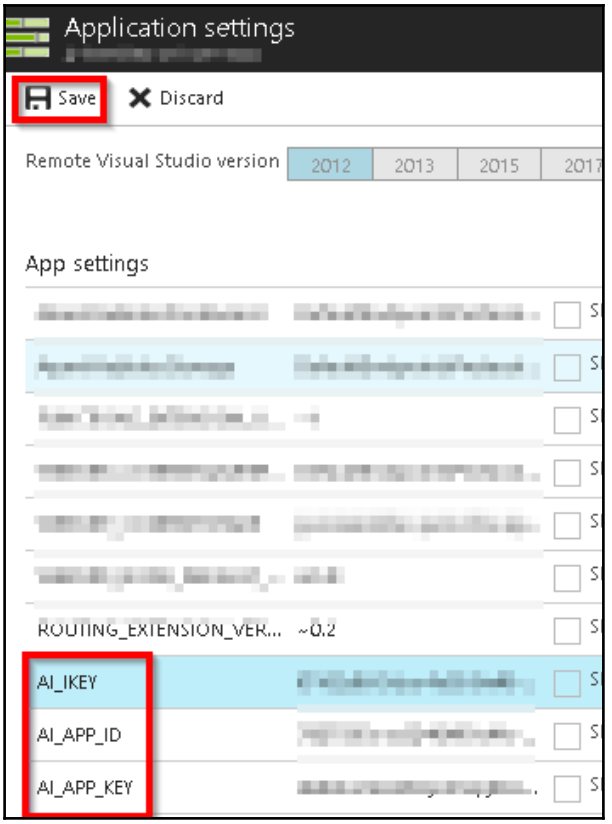

Choose a template below or go to the quickstart
Language: C#
Scenario: Monitoring
AppInsights Http Availability - C#
A C# function which monitors availability and responsiveness of any web app with Application Insights
AppInsights Real-time Power BI - C#
A C# function which pushes real-time availability data from Application Insights to Power BI
AppInsights Scheduled Analytics - C#
A C# function which derives metrics from performing deep analysis of your app telemetry with Application Insights
AppInsights Scheduled Digest - C#
A C# function which sends a daily Application Insights telemetry report via email
Name your function
FeedAIwithCustomDerivedMetrics
Timer trigger (myTimer)
Schedule
0 */1 * * *
Create

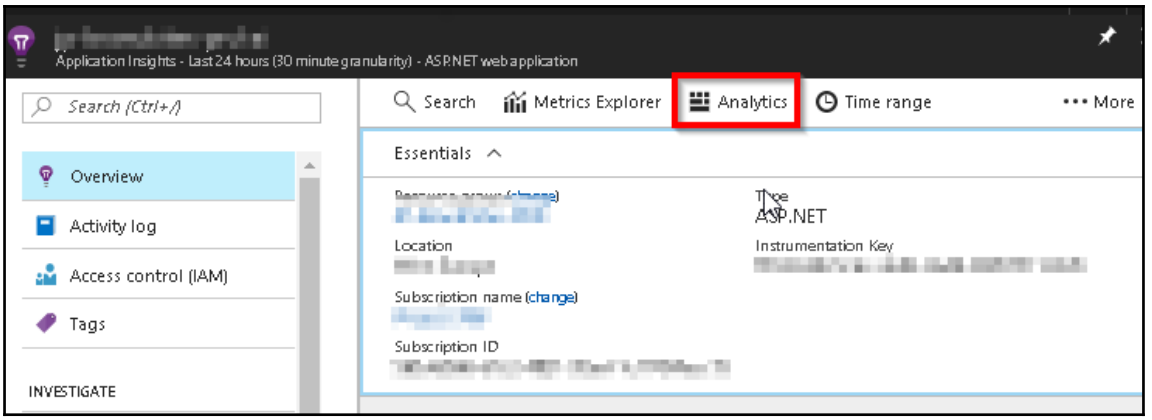

Search
Metrics Explorer
Analytics
Time range
More
Essentials
Resource group (change)
Location
Subscription name (change)
Subscription ID
Type
ASP.NET
Instrumentation Key

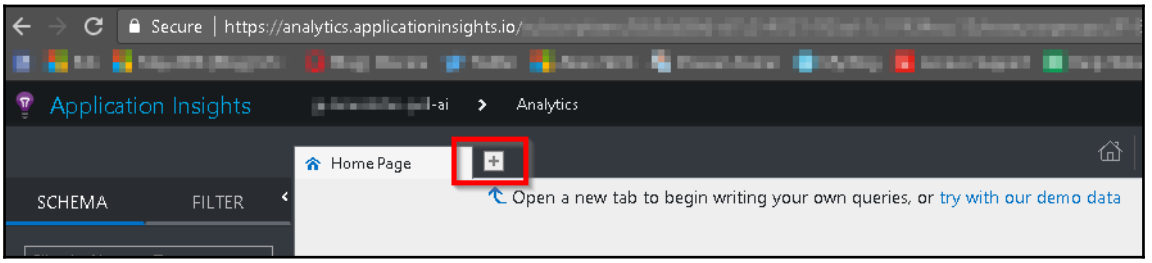

Application Insights
Search (Ctrl+/)
Properties
Alerts
Smart Detection settings
Features + pricing
Data volume management
Continuous export
Performance Testing
API Access
Work Items
Create API key
Delete API key
Help
Application ID
API KEY DESCRIPTION
LAST USED
CREATED ON
PERMISSIONS
You haven't set up any API keys. Click 'Create API key' to get started. Learn more

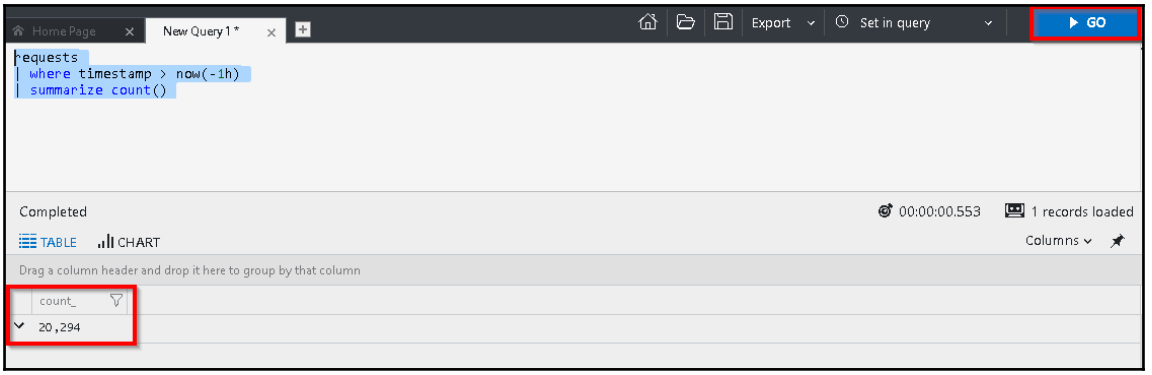

Create API key
Create an API key to read Application Insights data.
API keys are used by applications outside the browser to access this resource.
Your API keys should be managed like passwords. Keep them secret.
Provide a description to help you identify this API key in the future.
DerivedMetrics
Choose what this API key will allow apps to do:
Read telemetry
Write annotations
Authenticate SDK control channel
Generate key


Create API key
Create an API key to read Application Insights data.
API keys are used by applications outside the browser to access this resource.
Your API keys should be managed like passwords. Keep them secret.
Key:
Make sure you copy this key now. We don't store it, and after you close this blade you won't be able to see it again.


Application settings
Save
Discard
Remote Visual Studio version
2012
2013
2015
App settings
ROUTING_EXTENSION_VER...
~0.2
AI_IKEY
AI_APP_ID
AI_APP_KEY


Application Insights - Last 24 hours (30 minute granularity) - ASP.NET web application
Search (Ctrl+/)
Overview
Activity log
Access control (IAM)
Tags
INVESTIGATE
Search
Metrics Explorer
Analytics
Time range
More
Essentials
Type
ASP.NET
Location
Instrumentation Key
Subscription name (change)
Subscription ID


Secure | https://analytics.applicationinsights.io/
Application Insights
Analytics
Home Page
SCHEMA
FILTER
Open a new tab to begin writing your own queries, or try with our demo data


Home Page
New Query 1 *
Export
Set in query
GO
requests
| where timestamp > now(-1h)
| summarize count()
Completed
00:00:00.553
1 records loaded
TABLE
CHART
Columns
Drag a column header and drop it here to group by that column
count_
20,294

```
29 public static async Task Run(TimerInfo myTimer, TraceWriter log)
30 {
31     if (myTimer.IsPastDue)
32     {
33         log.Warning($"[Warning]: Timer is running late! Last ran
34     }
35
36     // [CONFIGURATION_REQUIRED] update the query accordingly for
37     // be sure to run it against Application Insights Analytics p
38     // output should be a number if sending derived metrics
39     // [Application Insights Analytics] https://docs.microsoft.co
40     aw
41         name: "Requests per hour",
42         query: @"
43 requests
44 | where timestamp > now(-1h)
45 | summarize count()
46 "
47         log: log
48     );
49 }
```

1

2

Timer trigger (myTimer) delete

Timestamp parameter name

myTimer

Schedule

0 */1 * * * *

For a richer monitoring experience, including live metrics and custom queries, we recommend using Azure A

Success count since Jun 1st

127

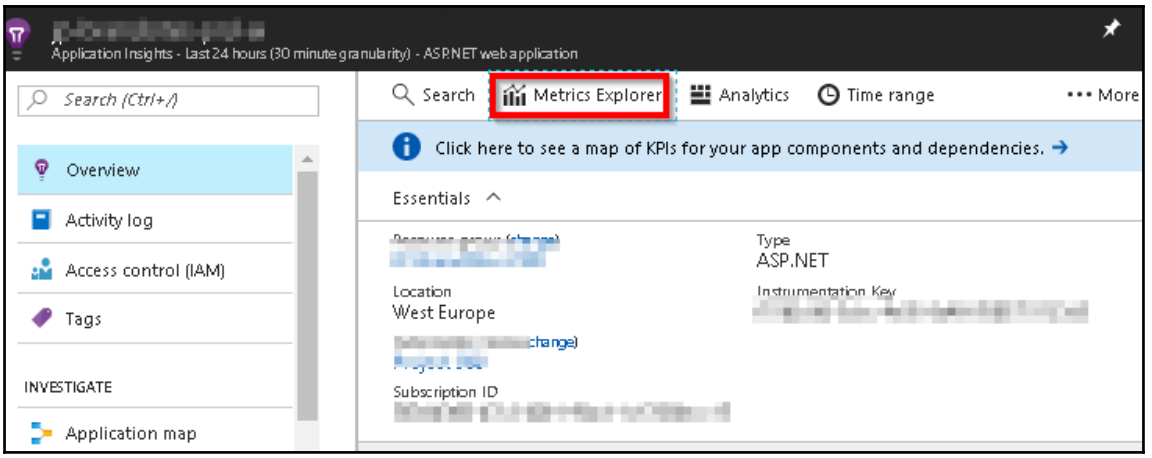
Error c

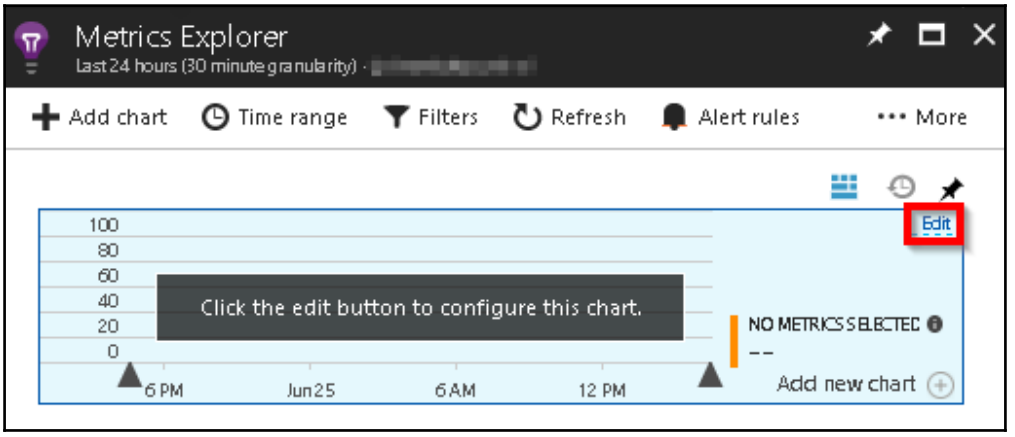
1

Invocation log Refresh

live event stream

Function	Status	Details: Last ran	(duration)
FeedAlwithCustomDerivedMetrics (2017-06-25T10:39:0 ...)	✔	in a minute	(1,593 ms)
FeedAlwithCustomDerivedMetrics (2017-06-25T10:38:0 ...)	✔	in a few seconds	(1,856 ms)
FeedAlwithCustomDerivedMetrics (2017-06-25T10:37:0 ...)	✔	a minute ago	(1,038 ms)


Application Insights - Last 24 hours (30 minute granularity) - ASP.NET web application
Search (Ctrl+/)
Overview
Activity log
Access control (IAM)
Tags
INVESTIGATE
Application map
Search
Metrics Explorer
Analytics
Time range
More
Click here to see a map of KPIs for your app components and dependencies.
Essentials
Type
ASP.NET
Location
West Europe
Subscription ID


Metrics Explorer
Last 24 hours (30 minute granularity)
Add chart
Time range
Filters
Refresh
Alert rules
More
Edit
100
80
60
40
20
0
Click the edit button to configure this chart.
NO METRICS SELECTED
6 PM
Jun 25
6 AM
12 PM
Add new chart

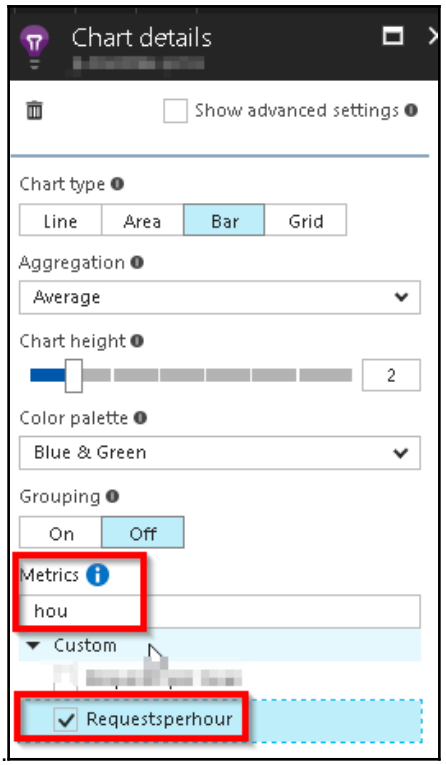
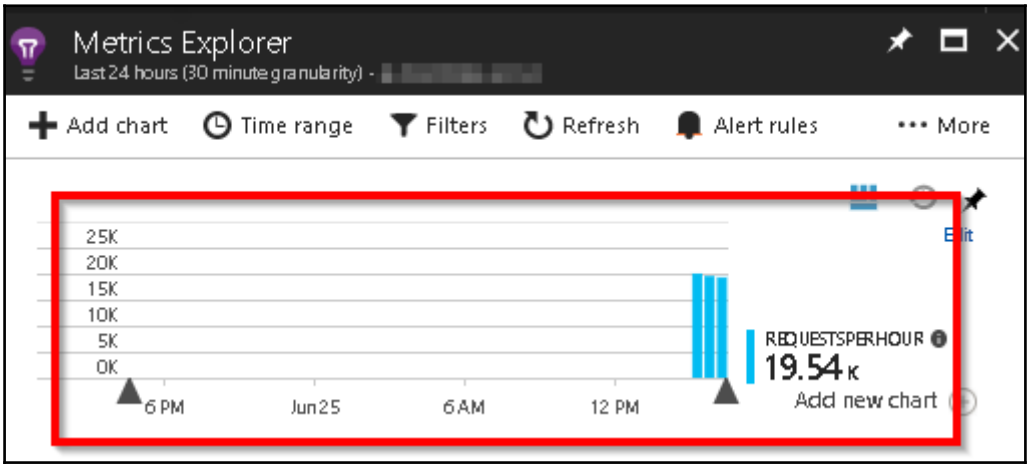
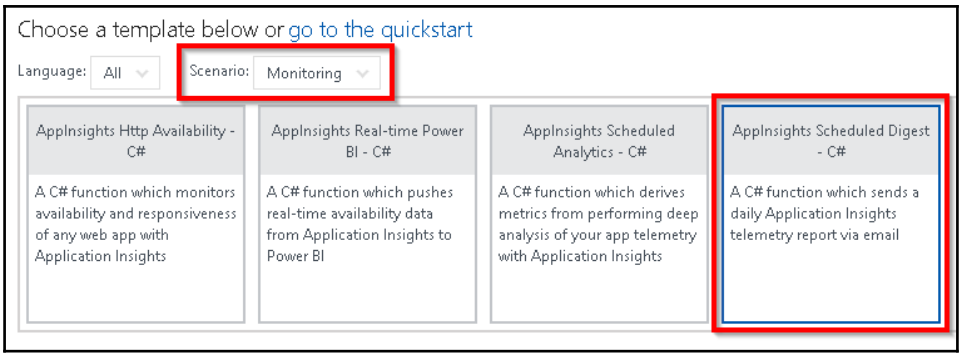
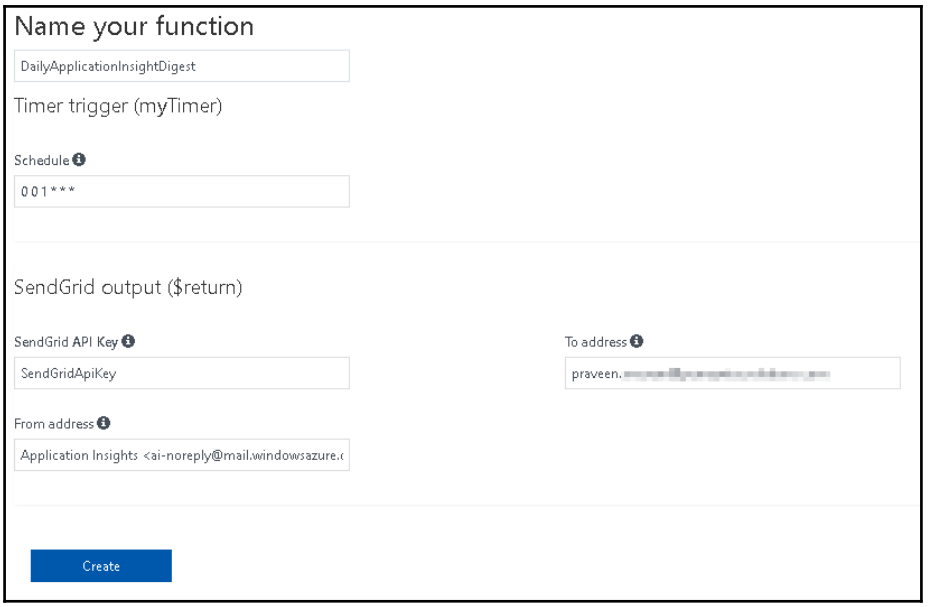


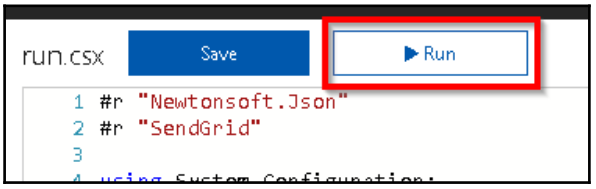
Chart details
Show advanced settings
Chart type
Line
Area
Bar
Grid
Aggregation
Average
Chart height
2
Color palette
Blue & Green
Grouping
On
Off
Metrics
hou
Custom
Requestsperhour


Metrics Explorer
Last 24 hours (30 minute granularity) -
Add chart
Time range
Filters
Refresh
Alert rules
More
Edit
25K
20K
15K
10K
5K
0K
6 PM
Jun 25
6 AM
12 PM
REQUESTSPERHOUR
19.54 K
Add new chart





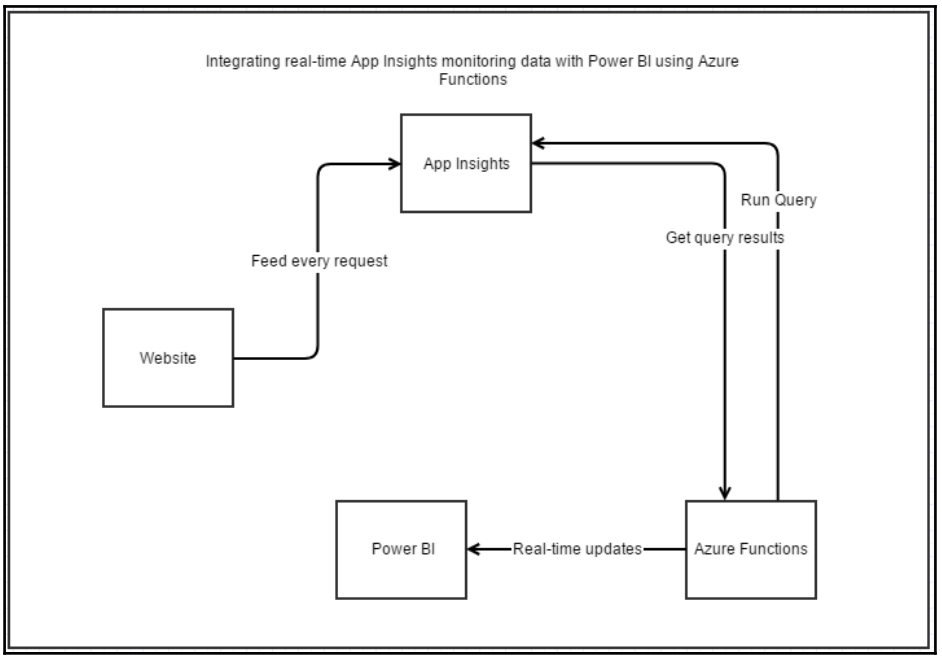

```
// [CONFIGURATION_REQUIRED] configure {appName} accordingly for your app/email
string appName = "Azure Function Serverless Cookbook";
```

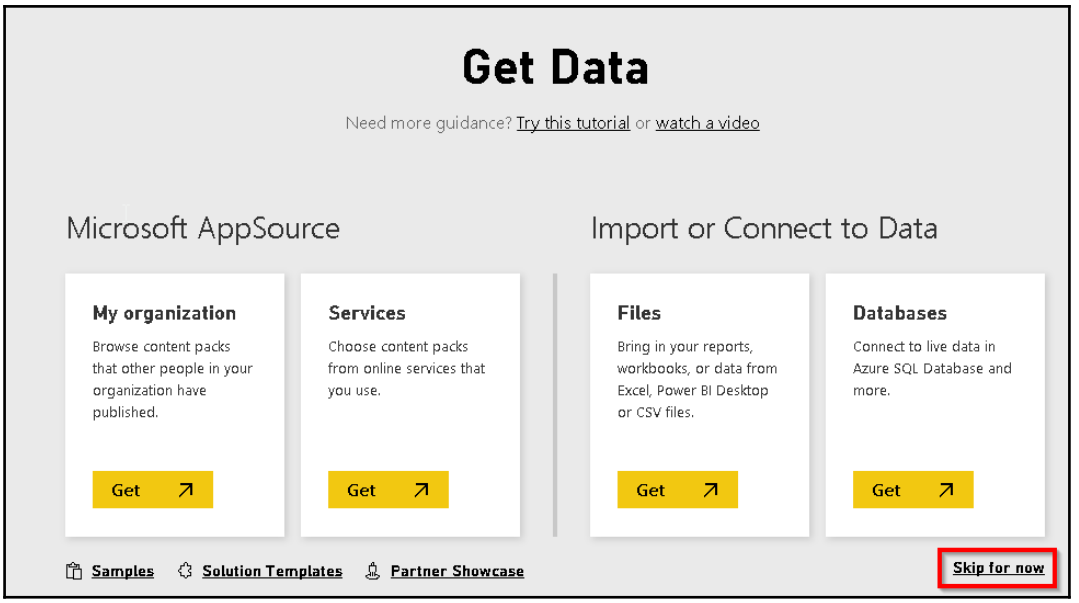


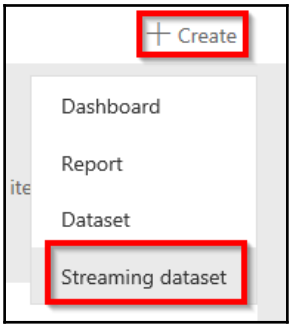
Azure Function Serverless Cookbook daily telemetry report 6/25/2017

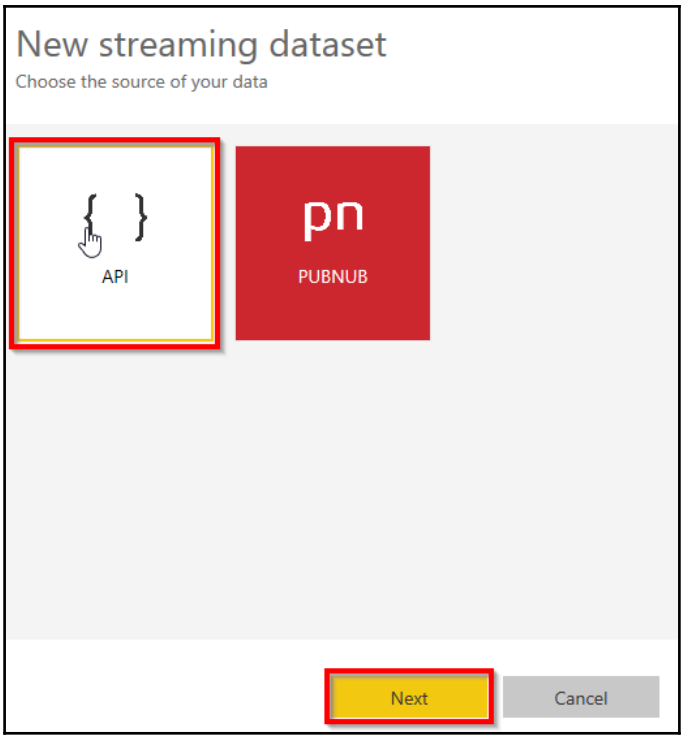
The following data shows insights based on telemetry from last 24 hours.

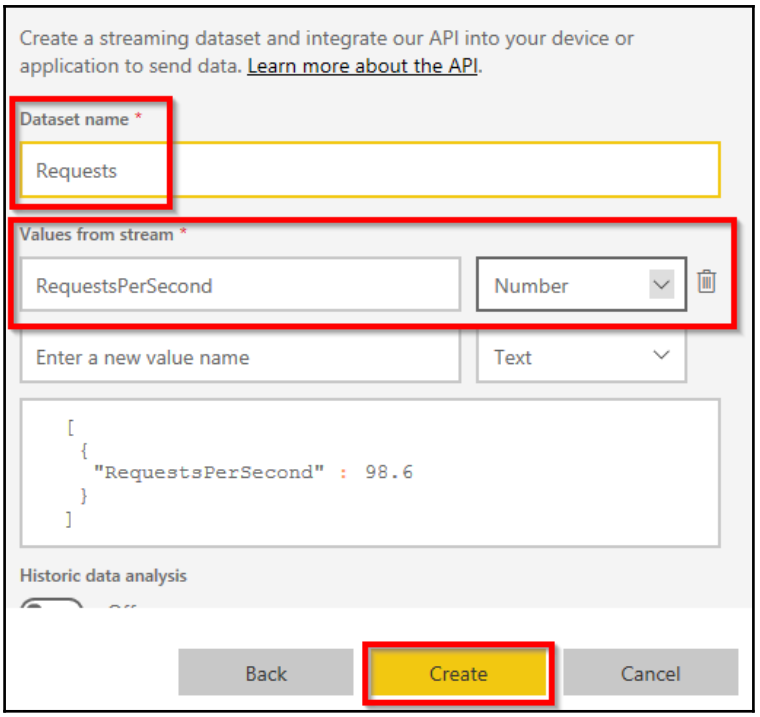
Total requests	**470,256**
Failed requests	1,263
Average response time	77.78 ms
Total dependencies	**0**
Failed dependencies	0
Average response time	------ ms
Total views	**0**
Total exceptions	**180**
Overall Availability	**100.0 %**
Average response time	457.8 ms

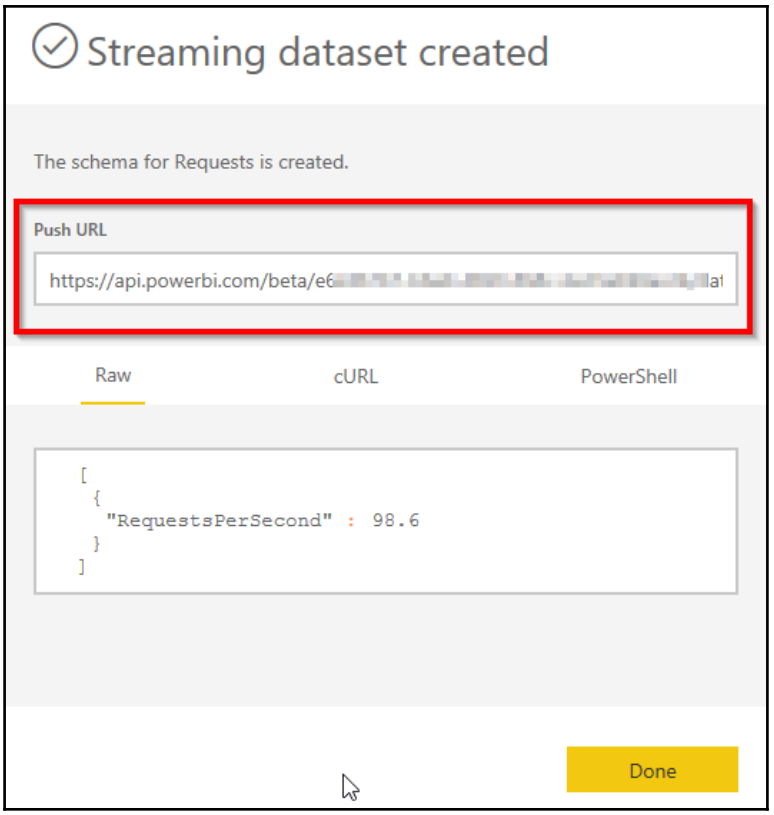


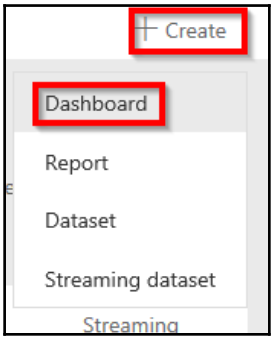

Get Data
Need more guidance? Try this tutorial or watch a video
Microsoft AppSource
Import or Connect to Data
My organization
Browse content packs that other people in your organization have published.
Get
Services
Choose content packs from online services that you use.
Get
Files
Bring in your reports, workbooks, or data from Excel, Power BI Desktop or CSV files.
Get
Databases
Connect to live data in Azure SQL Database and more.
Get
Samples
Solution Templates
Partner Showcase
Skip for now

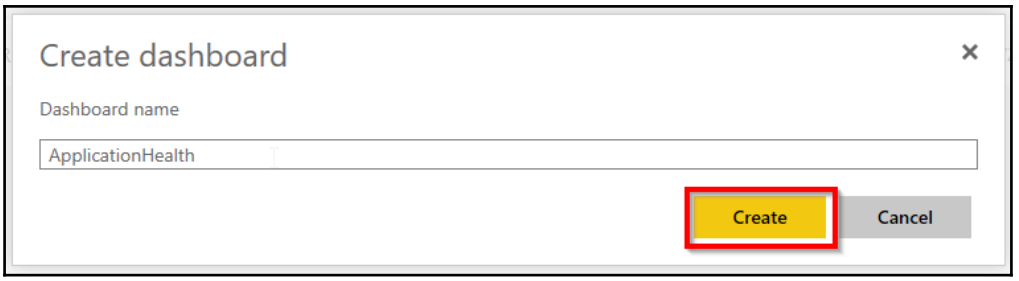

Create
Dashboard
Report
Dataset
Streaming dataset

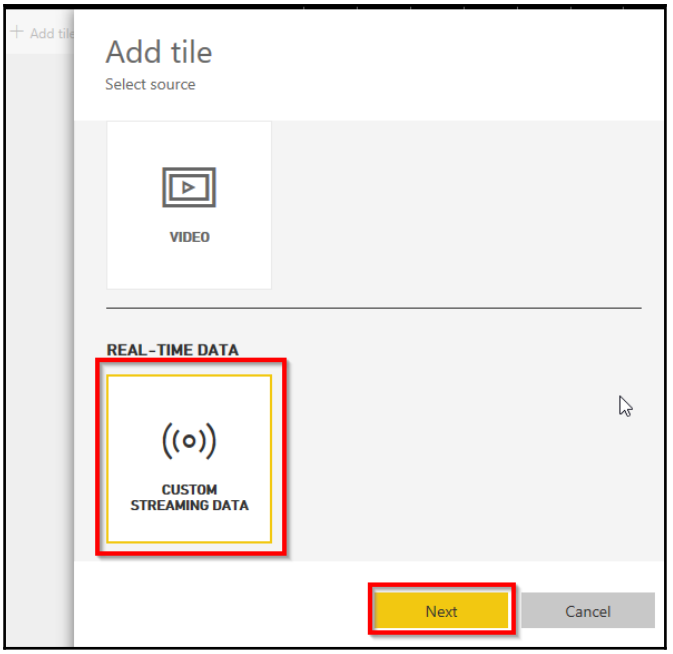

New streaming dataset
Choose the source of your data
API
pn
PUBNUB
Next
Cancel

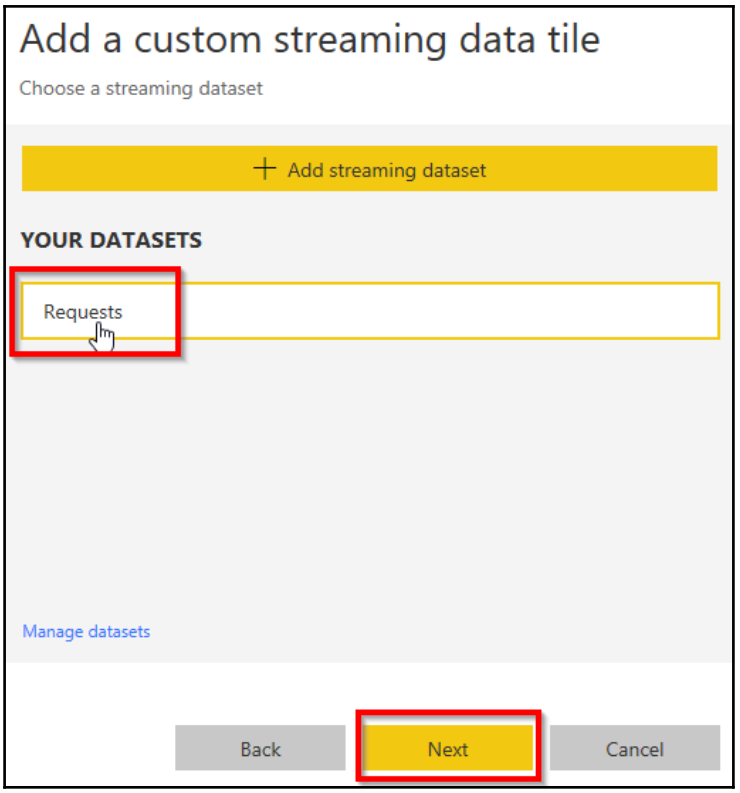

Create a streaming dataset and integrate our API into your device or application to send data. Learn more about the API.
Dataset name *
Requests
Values from stream *
RequestsPerSecond
Number
Enter a new value name
Text
[
{
"RequestsPerSecond" : 98.6
}
]
Historic data analysis
Back
Create
Cancel

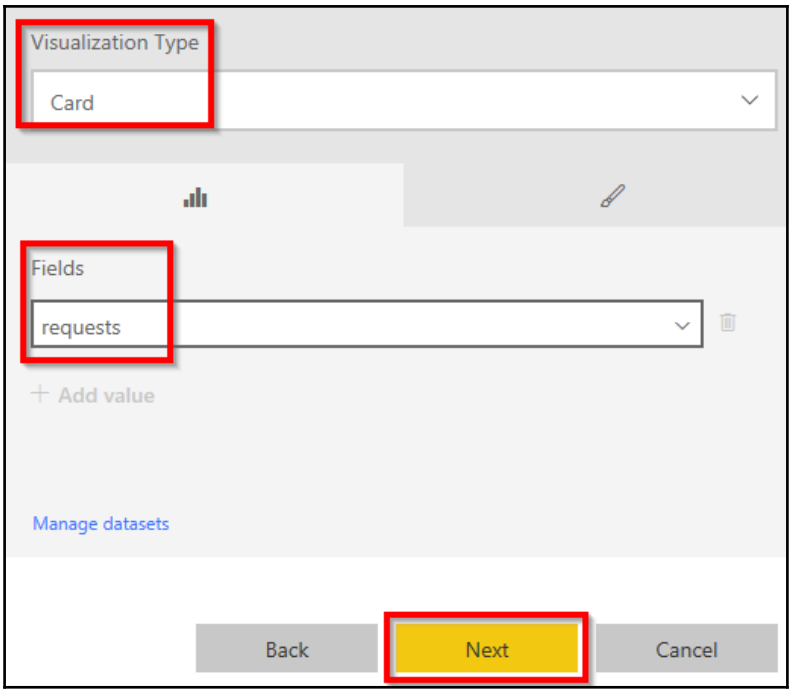

Streaming dataset created
The schema for Requests is created.
Push URL
https://api.powerbi.com/beta/e6
Raw
cURL
PowerShell
[
{
"RequestsPerSecond" : 98.6
}
]
Done

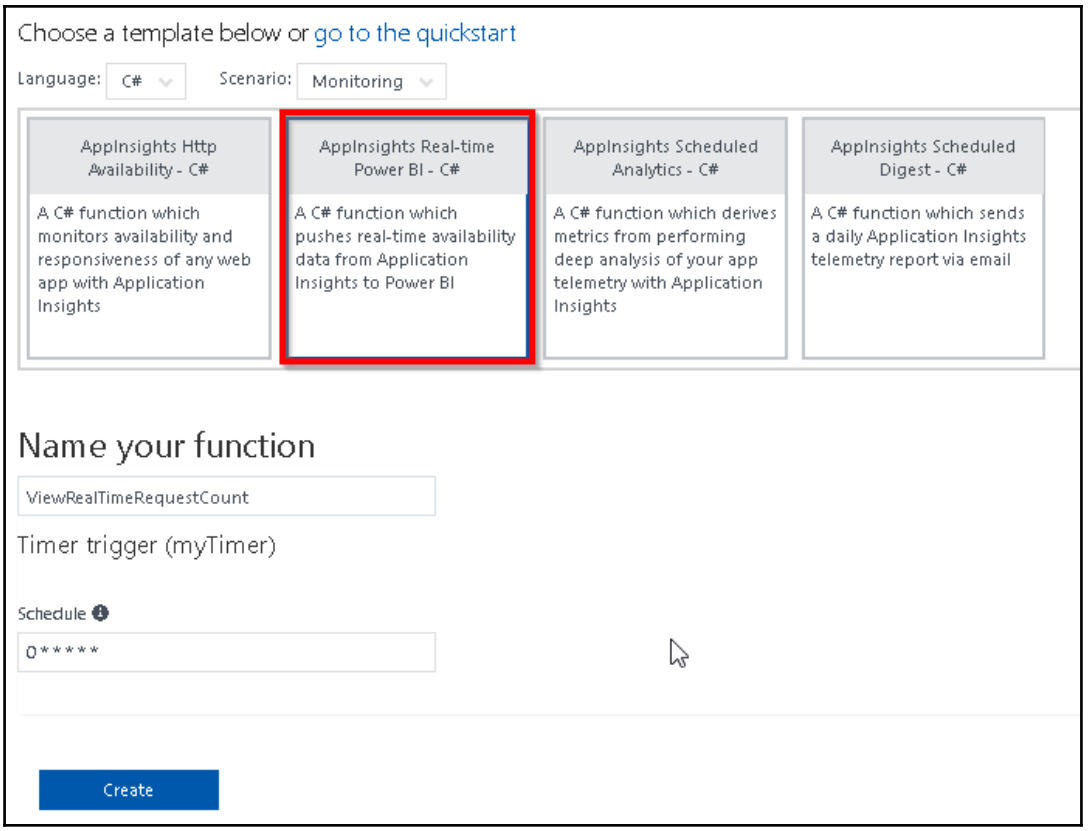

Create
Dashboard
Report
Dataset
Streaming dataset
Streaming

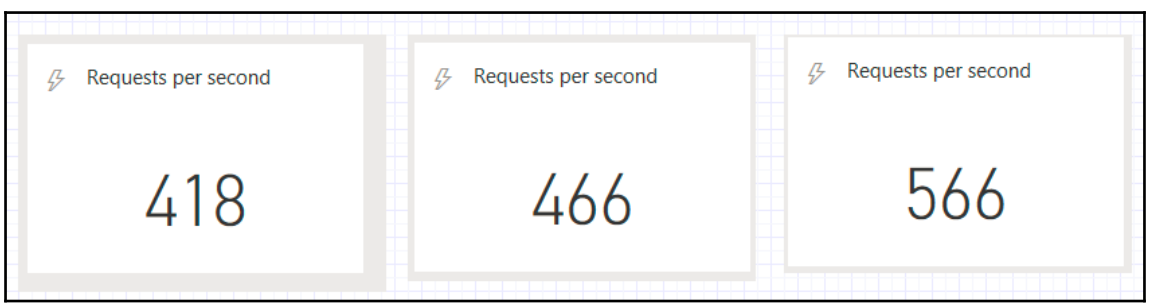

Create dashboard
Dashboard name
ApplicationHealth
Create
Cancel


Add tile
Select source
VIDEO
REAL-TIME DATA
CUSTOM STREAMING DATA
Next
Cancel

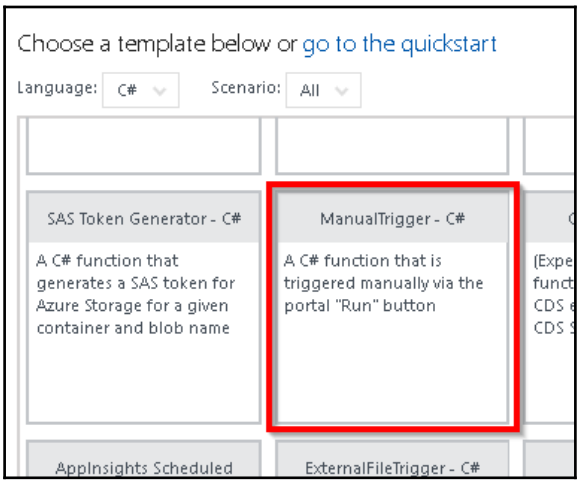

Add a custom streaming data tile
Choose a streaming dataset
Add streaming dataset
YOUR DATASETS
Requests
Manage datasets
Back
Next
Cancel

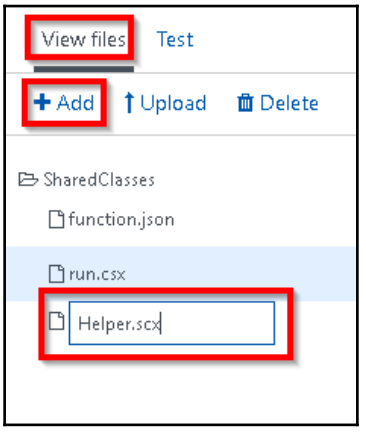

Visualization Type
Card
Fields
requests
Add value
Manage datasets
Back
Next
Cancel

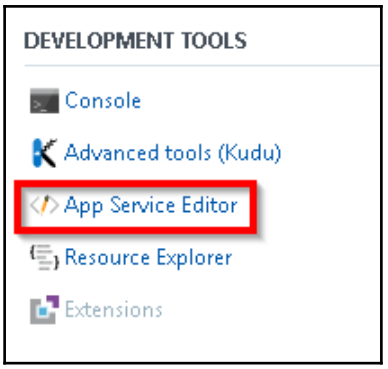

Choose a template below or go to the quickstart
Language: C#
Scenario: Monitoring
AppInsights Http Availability - C#
A C# function which monitors availability and responsiveness of any web app with Application Insights
AppInsights Real-time Power BI - C#
A C# function which pushes real-time availability data from Application Insights to Power BI
AppInsights Scheduled Analytics - C#
A C# function which derives metrics from performing deep analysis of your app telemetry with Application Insights
AppInsights Scheduled Digest - C#
A C# function which sends a daily Application Insights telemetry report via email
Name your function
ViewRealTimeRequestCount
Timer trigger (myTimer)
Schedule
0 * * * * *
Create

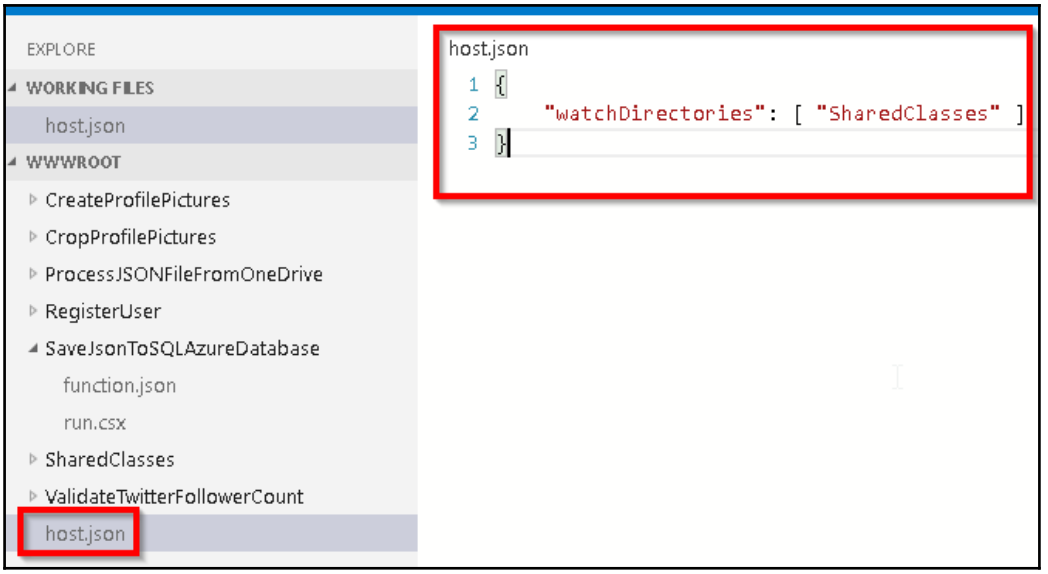

Requests per second
418
Requests per second
466
Requests per second
566

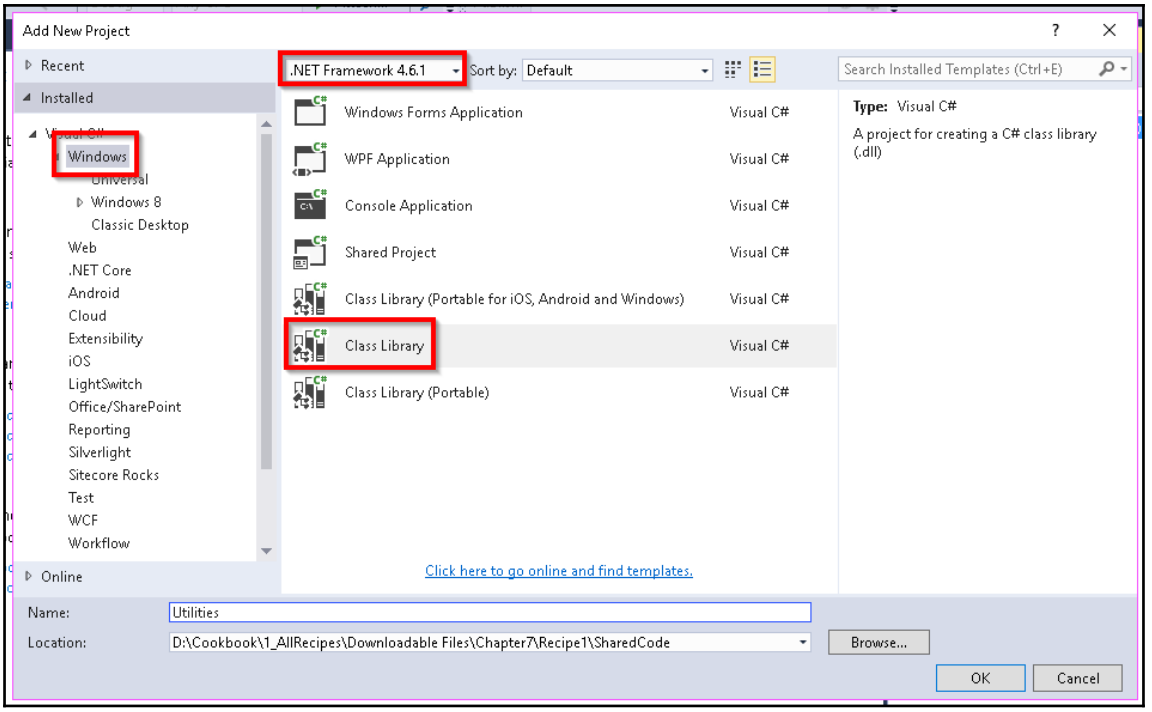
Chapter 07: Code Reusability and Refactoring the Code in Azure Functions

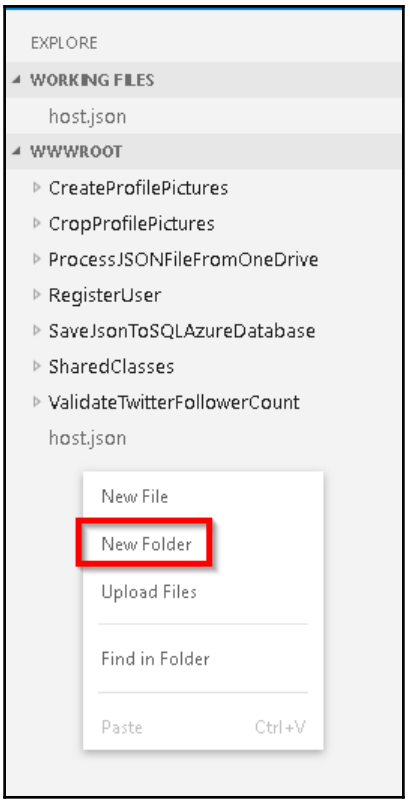


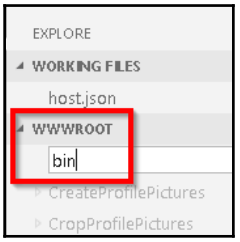


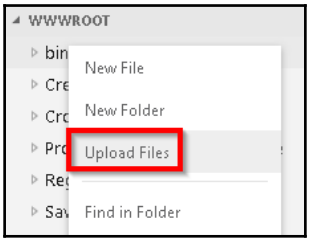

DEVELOPMENT TOOLS
Console
Advanced tools (Kudu)
App Service Editor
Resource Explorer
Extensions

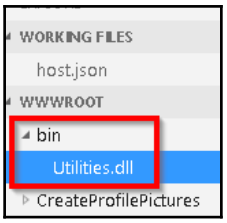

EXPLORE
WORKING FILES
host.json
WWWROOT
CreateProfilePictures
CropProfilePictures
ProcessJSONFileFromOneDrive
RegisterUser
SaveJsonToSQLAzureDatabase
function.json
run.csx
SharedClasses
ValidateTwitterFollowerCount
host.json
host.json
1 {
2 "watchDirectories": ["SharedClasses"]
3 }

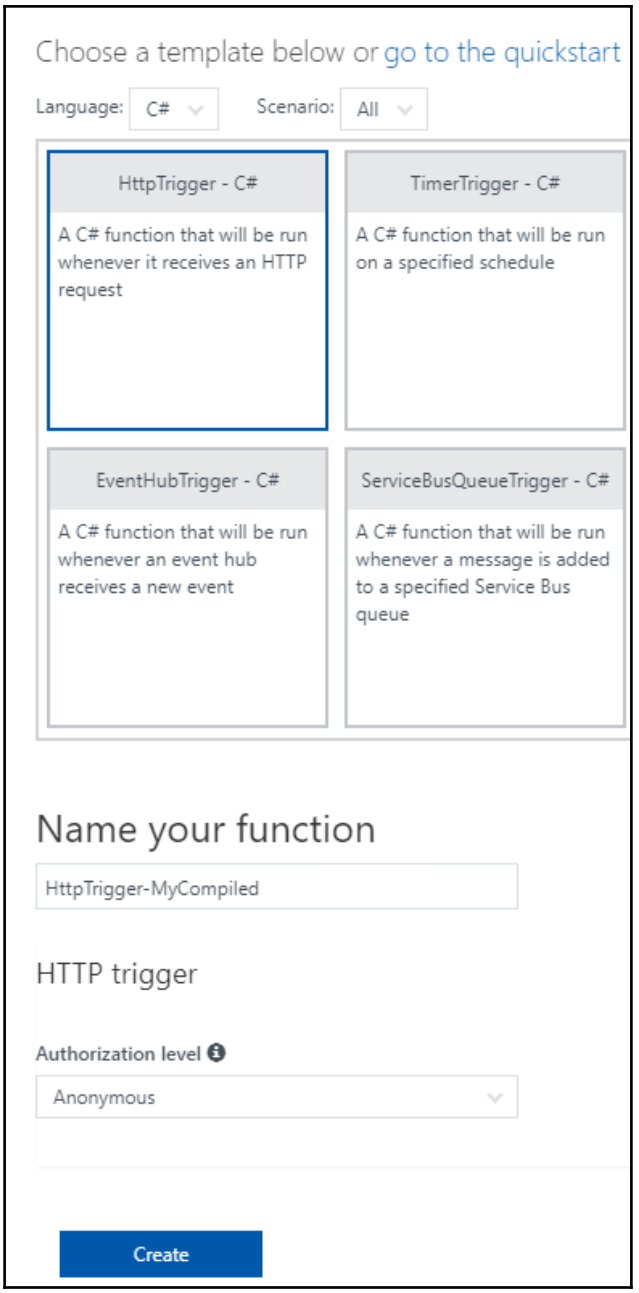

Add New Project
Recent
Installed
Windows
Universal
Windows 8
Classic Desktop
Web
.NET Core
Android
Cloud
Extensibility
iOS
LightSwitch
Office/SharePoint
Reporting
Silverlight
Sitecore Rocks
Test
WCF
Workflow
Online
.NET Framework 4.6.1
Sort by: Default
Search Installed Templates (Ctrl+E)
Windows Forms Application
WPF Application
Console Application
Shared Project
Class Library (Portable for iOS, Android and Windows)
Class Library
Class Library (Portable)
Visual C#
Type: Visual C#
A project for creating a C# class library (.dll)
Click here to go online and find templates.
Name: Utilities
Location: D:\Cookbook\1_AllRecipes\Downloadable Files\Chapter7\Recipe1\SharedCode
Browse...
OK
Cancel

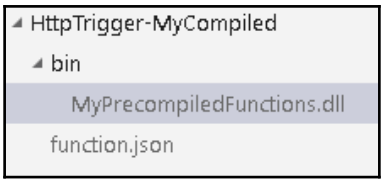

EXPLORE
WORKING FILES
host.json
WWWROOT
CreateProfilePictures
CropProfilePictures
ProcessJSONFileFromOneDrive
RegisterUser
SaveJsonToSQLAzureDatabase
SharedClasses
ValidateTwitterFollowerCount
host.json
New File
New Folder
Upload Files
Find in Folder
Paste
Ctrl+V

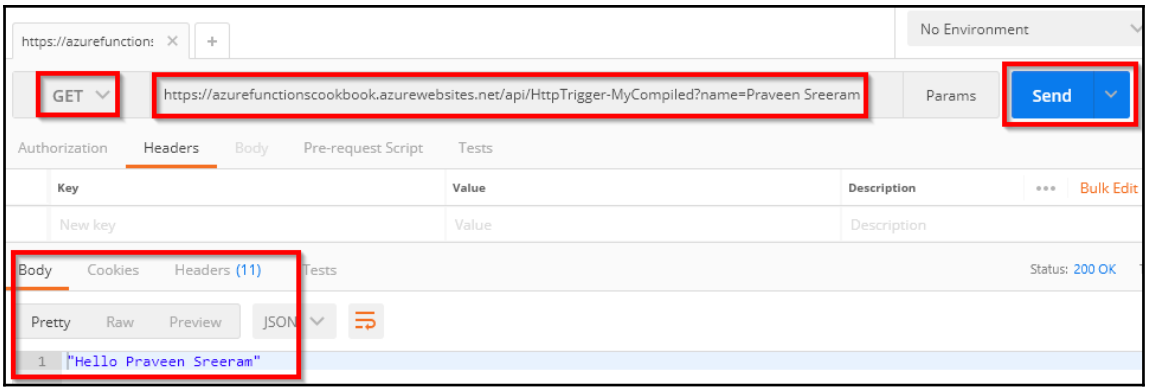

EXPLORE
WORKING FILES
host.json
WWWROOT
bin
CreateProfilePictures
CropProfilePictures

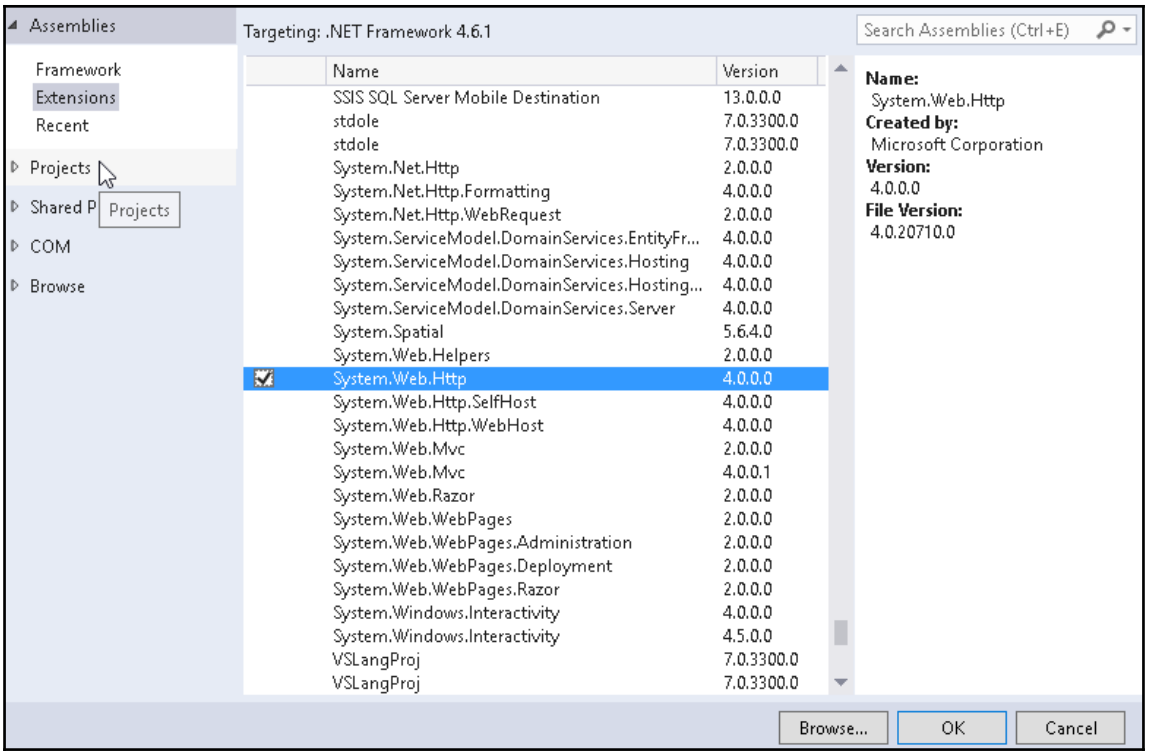

WWWROOT
New File
New Folder
Upload Files
Find in Folder

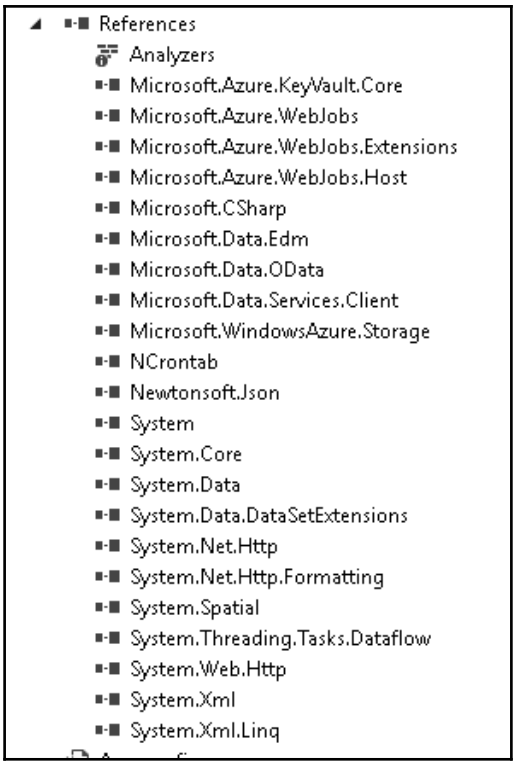

WORKING FILES
host.json
WWWROOT
bin
Utilities.dll
CreateProfilePictures

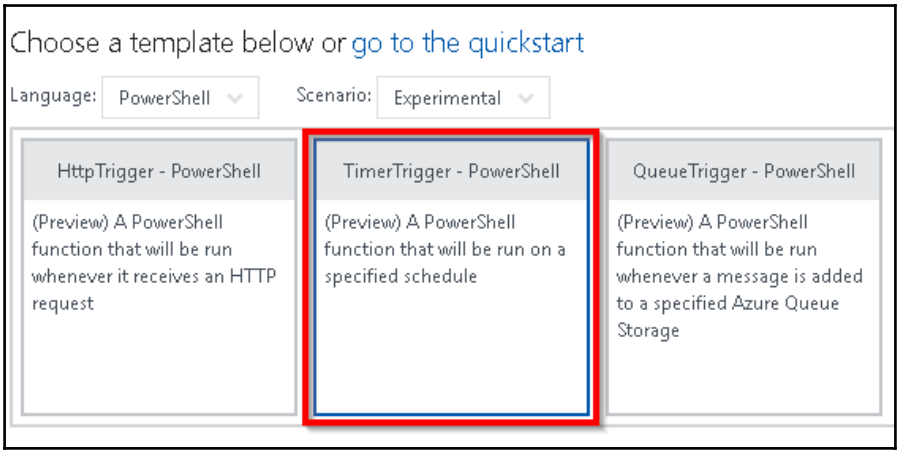

Choose a template below or go to the quickstart
Language: C#
Scenario: All
HttpTrigger - C#
A C# function that will be run whenever it receives an HTTP request
TimerTrigger - C#
A C# function that will be run on a specified schedule
EventHubTrigger - C#
A C# function that will be run whenever an event hub receives a new event
ServiceBusQueueTrigger - C#
A C# function that will be run whenever a message is added to a specified Service Bus queue
Name your function
HttpTrigger-MyCompiled
HTTP trigger
Authorization level
Anonymous
Create

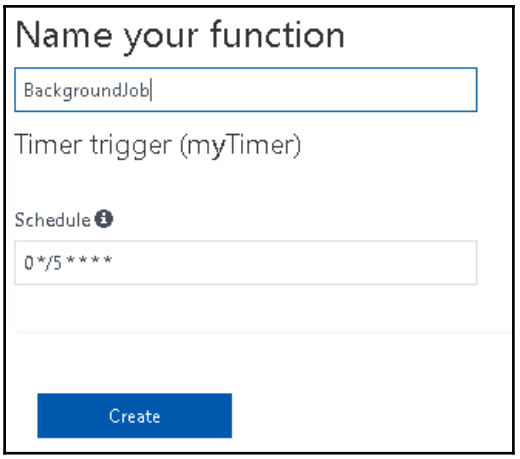

HttpTrigger-MyCompiled
bin
MyPrecompiledFunctions.dll
function.json

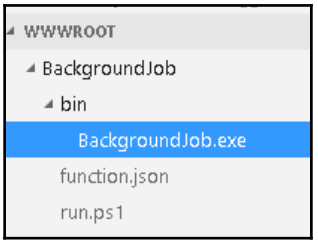

https://azurefunctions
No Environment
GET
https://azurefunctionscookbook.azurewebsites.net/api/HttpTrigger-MyCompiled?name=Praveen Sreeram
Params
Send
Authorization
Headers
Body
Pre-request Script
Tests
Key
Value
Description
Bulk Edit
New key
Value
Description
Body
Cookies
Headers (11)
Tests
Status: 200 OK
Pretty
Raw
Preview
JSON
1 "Hello Praveen Sreeram"

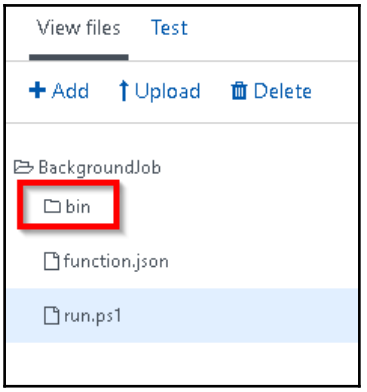

Assemblies
Framework
Extensions
Recent
Projects
Shared P
COM
Browse
Projects
Targeting: .NET Framework 4.6.1
Search Assemblies (Ctrl+E)
Name
Version
SSIS SQL Server Mobile Destination 13.0.0.0
stdole 7.0.3300.0
stdole 7.0.3300.0
System.Net.Http 2.0.0.0
System.Net.Http.Formatting 4.0.0.0
System.Net.Http.WebRequest 2.0.0.0
System.ServiceModel.DomainServices.EntityFr... 4.0.0.0
System.ServiceModel.DomainServices.Hosting 4.0.0.0
System.ServiceModel.DomainServices.Hosting... 4.0.0.0
System.ServiceModel.DomainServices.Server 4.0.0.0
System.Spatial 5.6.4.0
System.Web.Helpers 2.0.0.0
System.Web.Http 4.0.0.0
System.Web.Http.SelfHost 4.0.0.0
System.Web.Http.WebHost 4.0.0.0
System.Web.Mvc 2.0.0.0
System.Web.Mvc 4.0.0.1
System.Web.Razor 2.0.0.0
System.Web.WebPages 2.0.0.0
System.Web.WebPages.Administration 2.0.0.0
System.Web.WebPages.Deployment 2.0.0.0
System.Web.WebPages.Razor 2.0.0.0
System.Windows.Interactivity 4.0.0.0
System.Windows.Interactivity 4.5.0.0
VSLangProj 7.0.3300.0
VSLangProj 7.0.3300.0
Name:
System.Web.Http
Created by:
Microsoft Corporation
Version:
4.0.0.0
File Version:
4.0.20710.0
Browse...
OK
Cancel


References
Analyzers
Microsoft.Azure.KeyVault.Core
Microsoft.Azure.WebJobs
Microsoft.Azure.WebJobs.Extensions
Microsoft.Azure.WebJobs.Host
Microsoft.CSharp
Microsoft.Data.Edm
Microsoft.Data.OData
Microsoft.Data.Services.Client
Microsoft.WindowsAzure.Storage
NCrontab
Newtonsoft.Json
System
System.Core
System.Data
System.Data.DataSetExtensions
System.Net.Http
System.Net.Http.Formatting
System.Spatial
System.Threading.Tasks.Dataflow
System.Web.Http
System.Xml
System.Xml.Linq

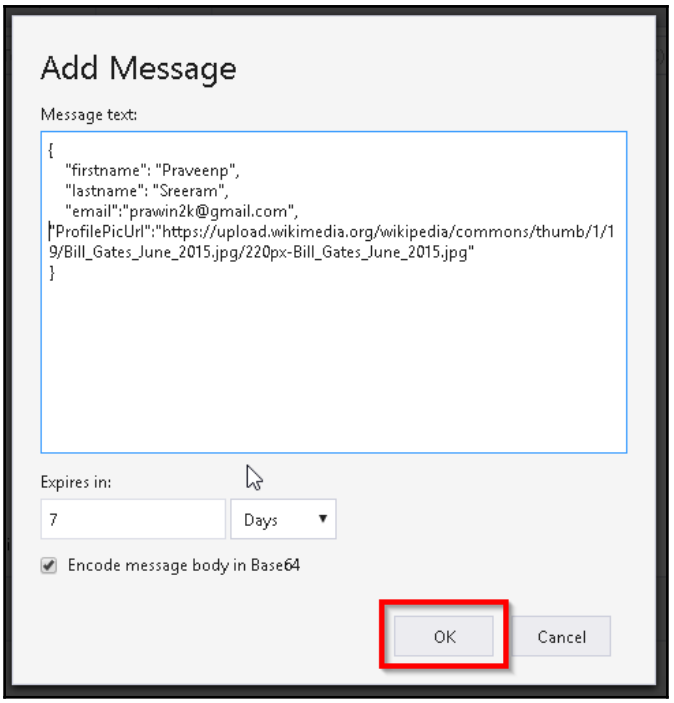

Choose a template below or go to the quickstart
Language: PowerShell
Scenario: Experimental
HttpTrigger - PowerShell
(Preview) A PowerShell function that will be run whenever it receives an HTTP request
TimerTrigger - PowerShell
(Preview) A PowerShell function that will be run on a specified schedule
QueueTrigger - PowerShell
(Preview) A PowerShell function that will be run whenever a message is added to a specified Azure Queue Storage


Name your function
BackgroundJob
Timer trigger (myTimer)
Schedule
0 */5 * * * *
Create


WWWROOT
BackgroundJob
bin
BackgroundJob.exe
function.json
run.ps1

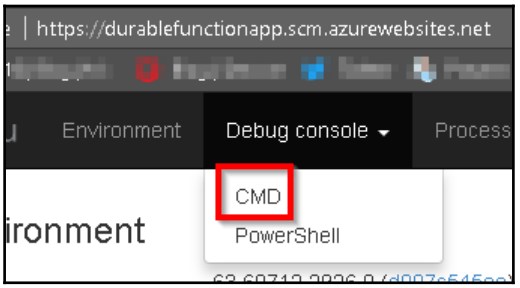

View files
Test
Add
Upload
Delete
BackgroundJob
bin
function.json
run.ps1

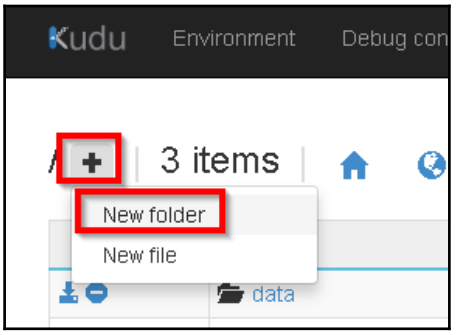
```
2017-07-06T11:35:02.061 Function started (Id=6b29bde6-145a-400c-bdc4-19429948f48c)
2017-07-06T11:35:03.156 Main method execution has been started
2017-07-06T11:35:03.156 ====================================
2017-07-06T11:35:03.156 Register User method of UserRegistration has been called.
2017-07-06T11:35:03.156 Process Order method of OrderProcessing class has been called
2017-07-06T11:35:03.156 ====================================
2017-07-06T11:35:03.156 Main method execution has been completed
2017-07-06T11:35:03.171 Function completed (Success, Id=6b29bde6-145a-400c-bdc4-19429948f4
```

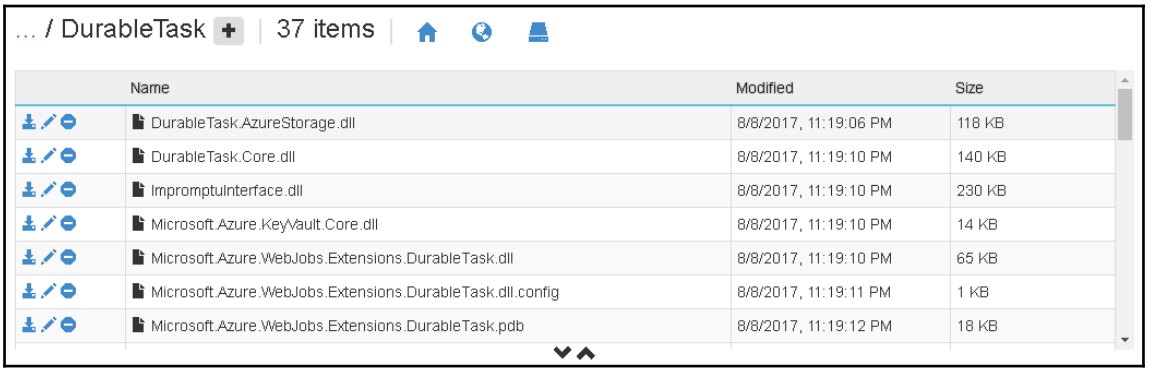

Add Message
Message text:
{
"firstname": "Praveenp",
"lastname": "Sreeram",
"email":"prawin2k@gmail.com",
"ProfilePicUrl":"https://upload.wikimedia.org/wikipedia/commons/thumb/1/19/Bill_Gates_June_2015.jpg/220px-Bill_Gates_June_2015.jpg"
}
Expires in:
7
Days
Encode message body in Base64
OK
Cancel

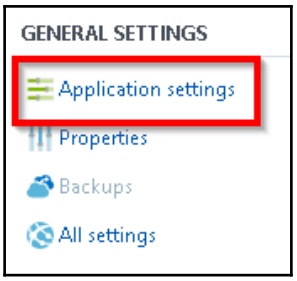
Logs
Pause
Clear
Copy logs
Collapse
2017-07-08T09:08:13.868 Function started (Id=95e34cd7-fd6e-4127-a8bf-43b798d0c335)
2017-07-08T09:08:13.884 A Message has been created for a new User
2017-07-08T09:08:13.884 First name: Praveen
2017-07-08T09:08:13.884 Last name: Sreeram
2017-07-08T09:08:13.884 email: prawin2k@gmail.com
2017-07-08T09:08:13.884 Profile Pic Url: https://upload.wikimedia.org/wikipedia/commons/thumb/1/19/Bill_Gates_June_2015.jpg/220px-Bil
2017-07-08T09:08:13.884 Function completed (Success, Id=95e34cd7-fd6e-4127-a8bf-43b798d0c335, Duration=18ms)

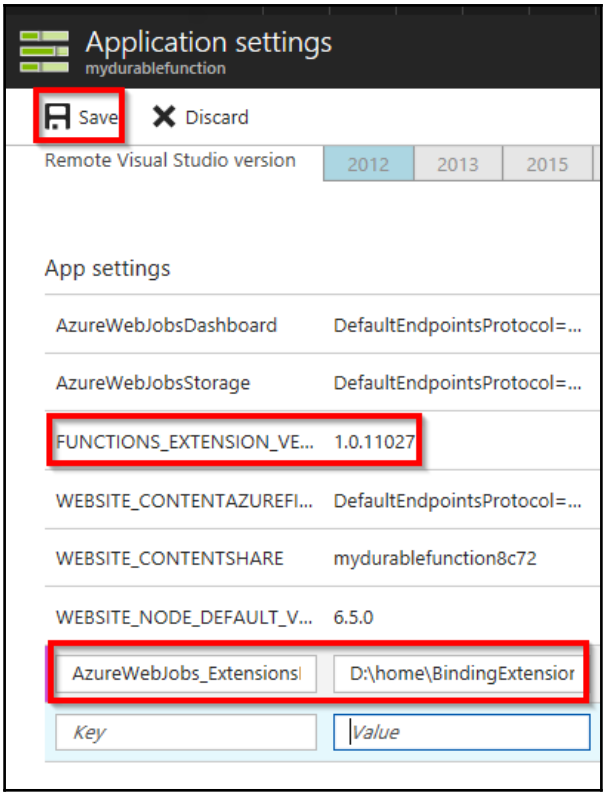
Chapter 08: Developing Reliable and Durable Serverless Applications Using Durable Functions

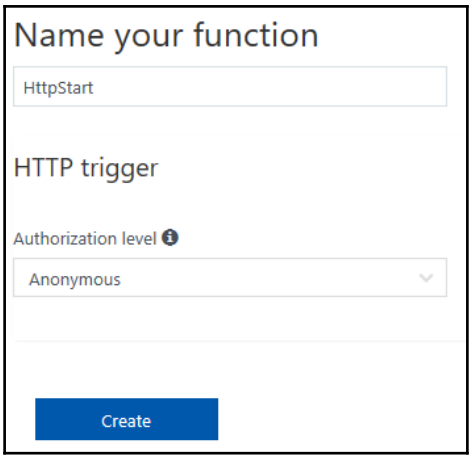


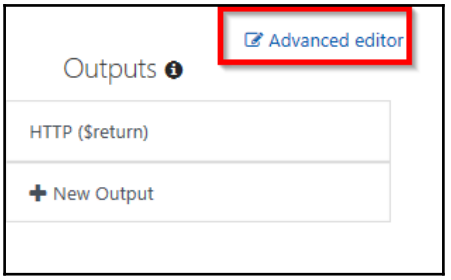




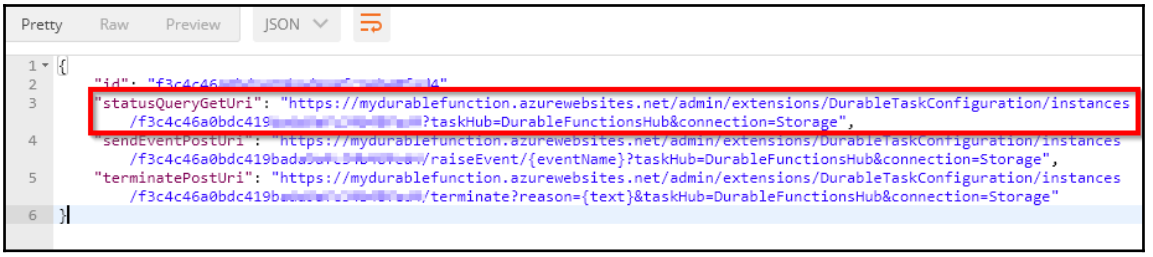

GENERAL SETTINGS
Application settings
Properties
Backups
All settings


Application settings
mydurablefunction
Save
Discard
Remote Visual Studio version
2012
2013
2015
App settings
AzureWebJobsDashboard
DefaultEndpointsProtocol=...
AzureWebJobsStorage
DefaultEndpointsProtocol=...
FUNCTIONS_EXTENSION_VE...
1.0.11027
WEBSITE_CONTENTAZUREFI...
DefaultEndpointsProtocol=...
WEBSITE_CONTENTSHARE
mydurablefunction8c72
WEBSITE_NODE_DEFAULT_V...
6.5.0
AzureWebJobs_Extensions
D:\home\BindingExtensior
Key
Value


Name your function
HttpStart
HTTP trigger
Authorization level
Anonymous
Create

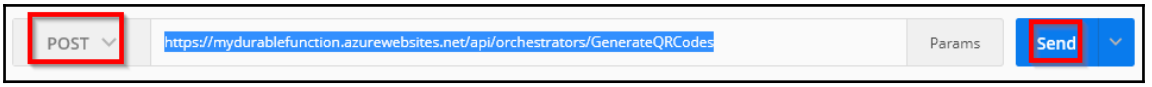

Advanced editor
Outputs
HTTP ($return)
New Output

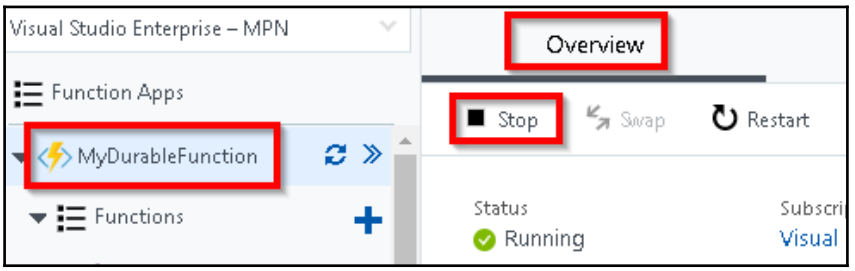
POST
https://mydurablefunction.azurewebsites.net/api/orchestrators/DurableFuncManager
Params
Send


Pretty
Raw
Preview
JSON
{
"id": "f3c4c46
"statusQueryGetUri": "https://mydurablefunction.azurewebsites.net/admin/extensions/DurableTaskConfiguration/instances/f3c4c46a0bdc419?taskHub=DurableFunctionsHub&connection=Storage",
"sendEventPostUri": "https://mydurablefunction.azurewebsites.net/admin/extensions/DurableTaskConfiguration/instances/f3c4c46a0bdc419bada/raiseEvent/{eventName}?taskHub=DurableFunctionsHub&connection=Storage",
"terminatePostUri": "https://mydurablefunction.azurewebsites.net/admin/extensions/DurableTaskConfiguration/instances/f3c4c46a0bdc419b/terminate?reason={text}&taskHub=DurableFunctionsHub&connection=Storage"
}

```
{
    "runtimeStatus": "Completed",
    "input": null,
    "output": [
        "Hello Welcome Cookbook Readers!"
    ],
    "createdTime": "2017-08-10T04:43:15Z",
    "lastUpdatedTime": "2017-08-10T04:43:33Z"
}
```


EventType	ExecutionId
OrchestratorStarted	a426ec4dabe44527a6aeae14290802c1
ExecutionStarted	a426ec4dabe44527a6aeae14290802c1
TaskScheduled	a426ec4dabe44527a6aeae14290802c1
OrchestratorCompleted	a426ec4dabe44527a6aeae14290802c1
OrchestratorStarted	a426ec4dabe44527a6aeae14290802c1
TaskCompleted	a426ec4dabe44527a6aeae14290802c1
ExecutionCompleted	a426ec4dabe44527a6aeae14290802c1
OrchestratorCompleted	a426ec4dabe44527a6aeae14290802c1

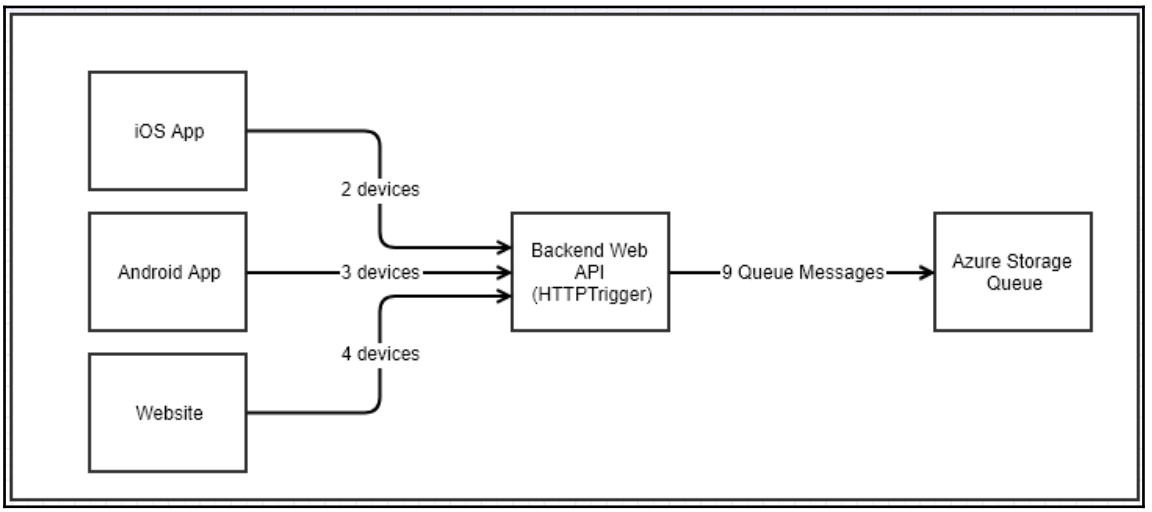


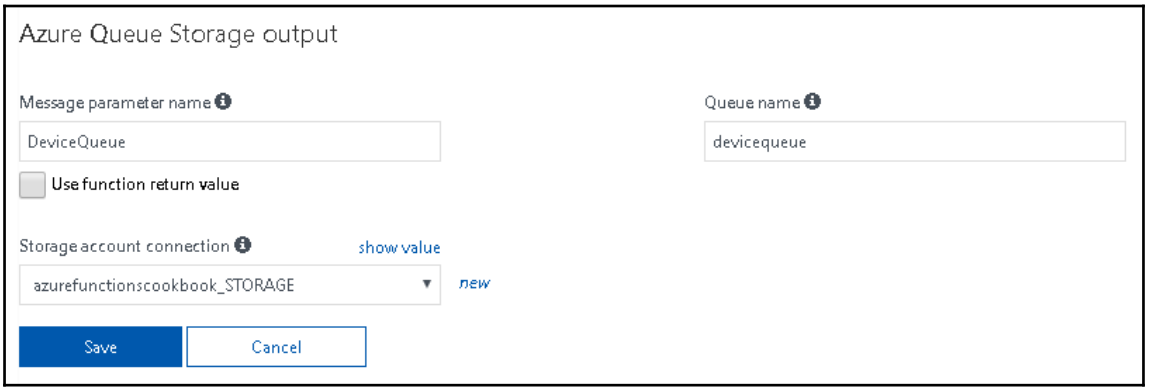


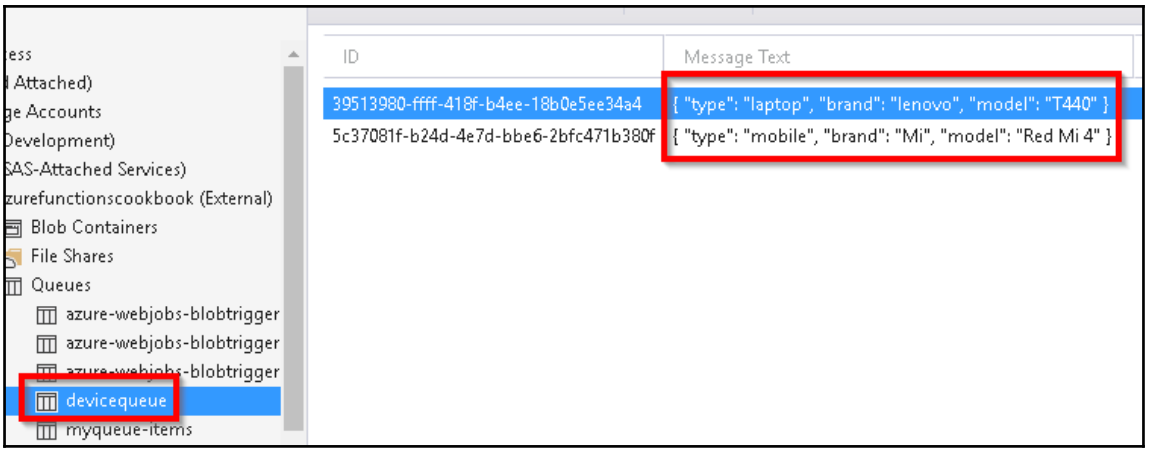
EventId	Name	Version	Result	TaskScheduledId
-1	GenerateQRCodes			
-1				
-1			4670	1
-1				
-1				
-1				
0	CreateQRCodeImagesPerCustomer			
1	CreateQRCodeImagesPerCustomer			
2	CreateQRCodeImagesPerCustomer			
3	CreateQRCodeImagesPerCustomer			
4	CreateQRCodeImagesPerCustomer			

WEBSITE_CONTENTSHARE	mydurablefunction8c72

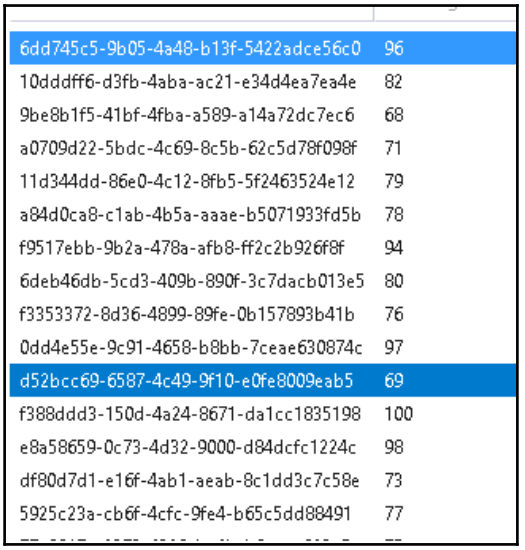
Chapter 09: Implement Best Practices for Azure Functions

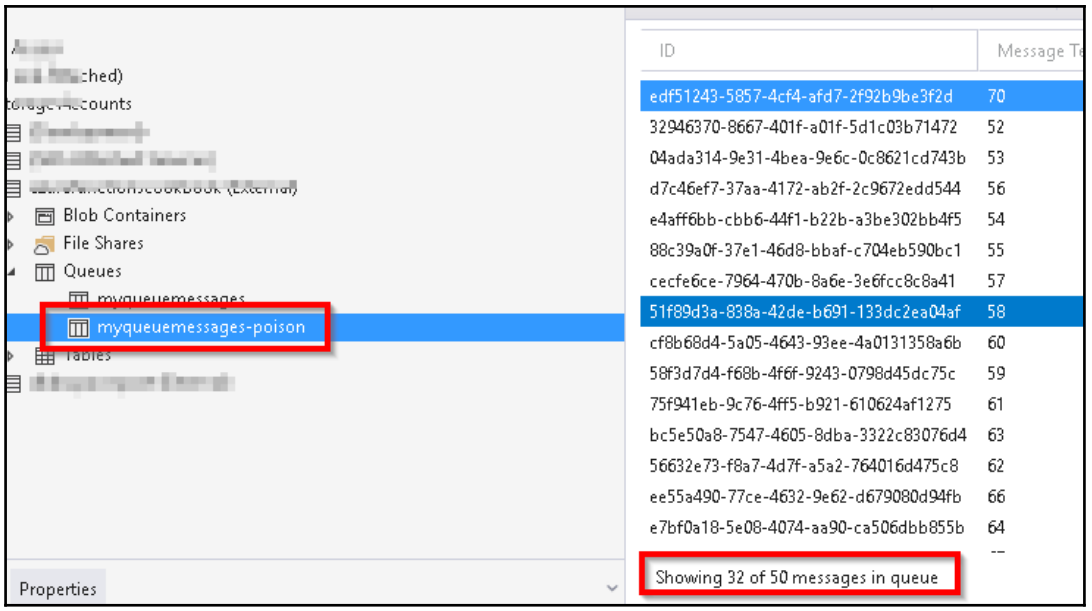


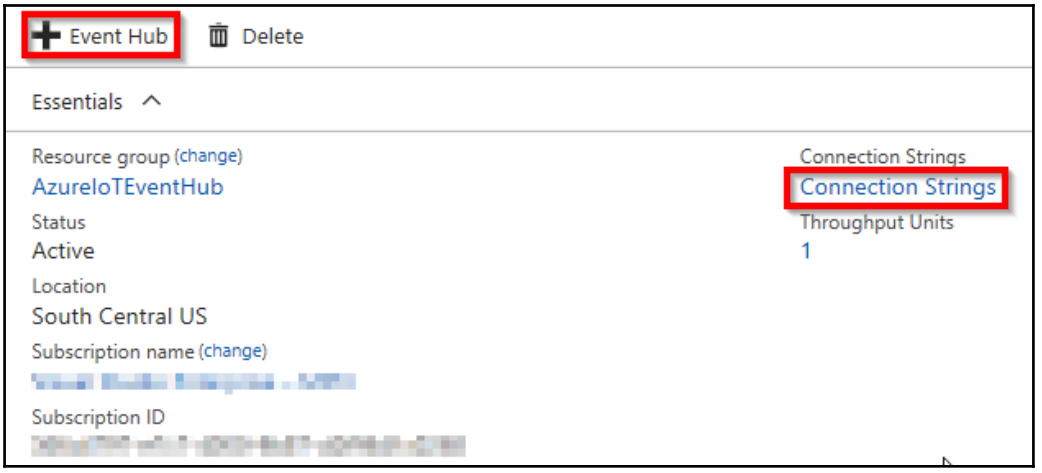



ess
Attached)
ge Accounts
Development)
SAS-Attached Services)
zurefunctionscookbook (External)
Blob Containers
File Shares
Queues
azure-webjobs-blobtrigger
azure-webjobs-blobtrigger
azure-webjobs-blobtrigger
devicequeue
myqueue-items
ID
Message Text
39513980-ffff-418f-b4ee-18b0e5ee34a4
{ "type": "laptop", "brand": "lenovo", "model": "T440" }
5c37081f-b24d-4e7d-bbe6-2bfc471b380f
{ "type": "mobile", "brand": "Mi", "model": "Red Mi 4" }

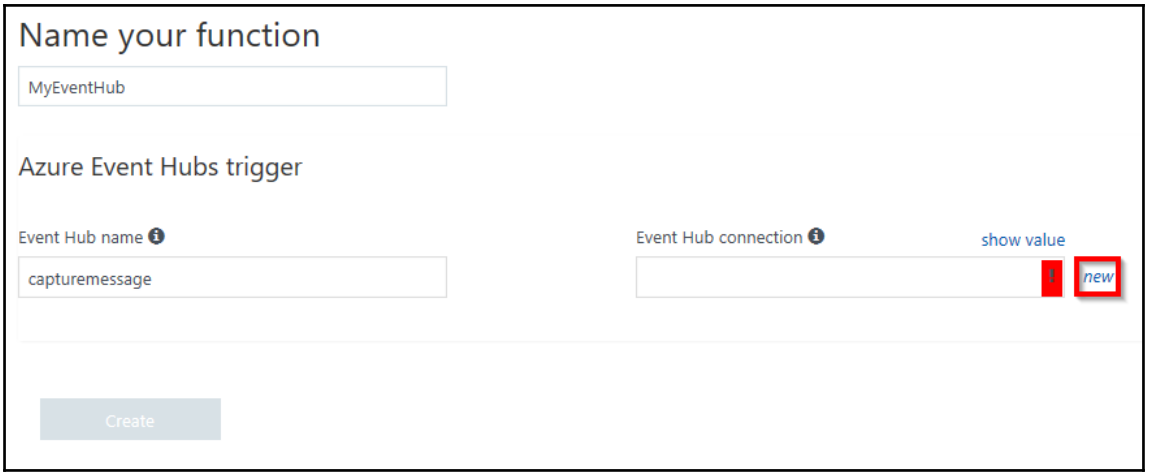
Azure Queue Storage trigger
delete
Message parameter name
myQueueItem
Queue name
myqueuemessages
Storage account connection
show value
AzureWebJobsDashboard
new

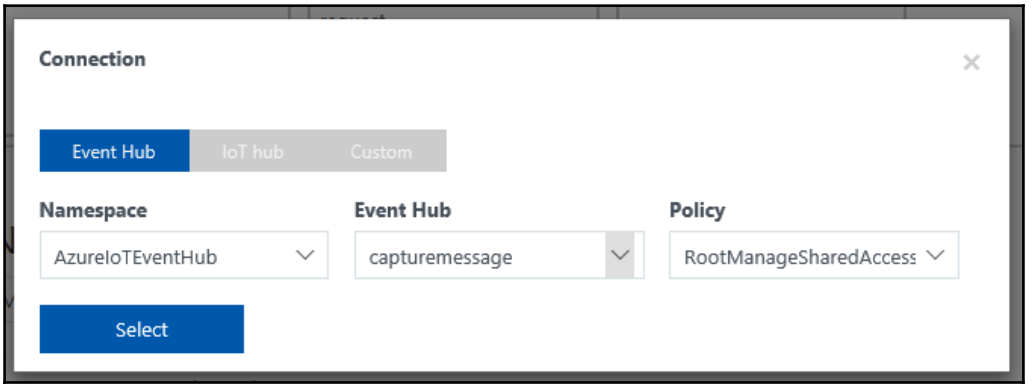

6dd745c5-9b05-4a48-b13f-5422adce56c0 96
10dddff6-d3fb-4aba-ac21-e34d4ea7ea4e 82
9be8b1f5-41bf-4fba-a589-a14a72dc7ec6 68
a0709d22-5bdc-4c69-8c5b-62c5d78f098f 71
11d344dd-86e0-4c12-8fb5-5f2463524e12 79
a84d0ca8-c1ab-4b5a-aaae-b5071933fd5b 78
f9517ebb-9b2a-478a-afb8-ff2c2b926f8f 94
6deb46db-5cd3-409b-890f-3c7dacb013e5 80
f3353372-8d36-4899-89fe-0b157893b41b 76
0dd4e55e-9c91-4658-b8bb-7ceae630874c 97
d52bcc69-6587-4c49-9f10-e0fe8009eab5 69
f388ddd3-150d-4a24-8671-da1cc1835198 100
e8a58659-0c73-4d32-9000-d84dcfc1224c 98
df80d7d1-e16f-4ab1-aeab-8c1dd3c7c58e 73
5925c23a-cb6f-4cfc-9fe4-b65c5dd88491 77

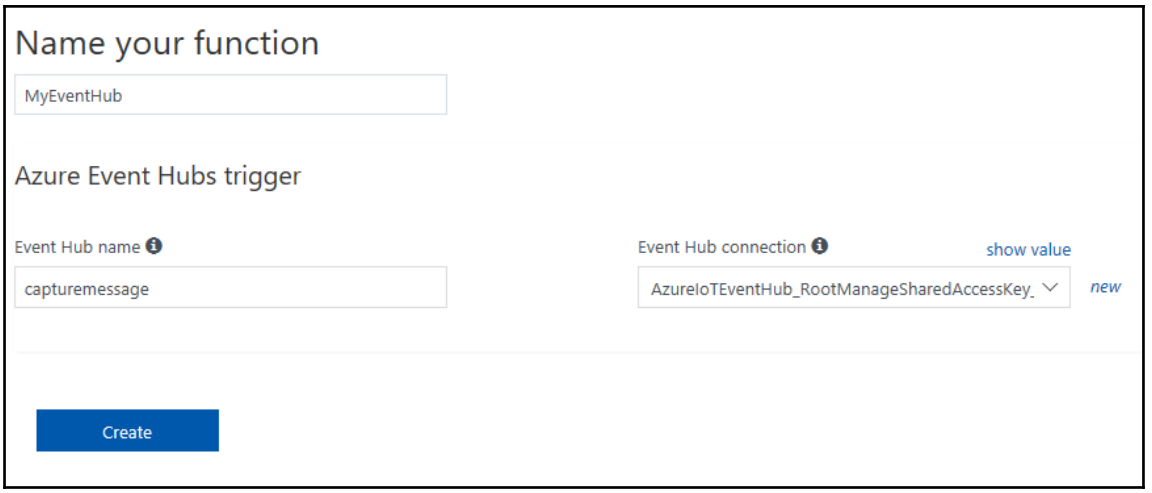

Blob Containers
File Shares
Queues
myqueuemessages-poison
Tables
Properties
ID
Message Te
edf51243-5857-4cf4-afd7-2f92b9be3f2d 70
32946370-8667-401f-a01f-5d1c03b71472 52
04ada314-9e31-4bea-9e6c-0c8621cd743b 53
d7c46ef7-37aa-4172-ab2f-2c9672edd544 56
e4aff6bb-cbb6-44f1-b22b-a3be302bb4f5 54
88c39a0f-37e1-46d8-bbaf-c704eb590bc1 55
cecfe6ce-7964-470b-8a6e-3e6fcc8c8a41 57
51f89d3a-838a-42de-b691-133dc2ea04af 58
cf8b68d4-5a05-4643-93ee-4a0131358a6b 60
58f3d7d4-f68b-4f6f-9243-0798d45dc75c 59
75f941eb-9c76-4ff5-b921-610624af1275 61
bc5e50a8-7547-4605-8dba-3322c83076d4 63
56632e73-f8a7-4d7f-a5a2-764016d475c8 62
ee55a490-77ce-4632-9e62-d679080d94fb 66
e7bf0a18-5e08-4074-aa90-ca506dbb855b 64
Showing 32 of 50 messages in queue

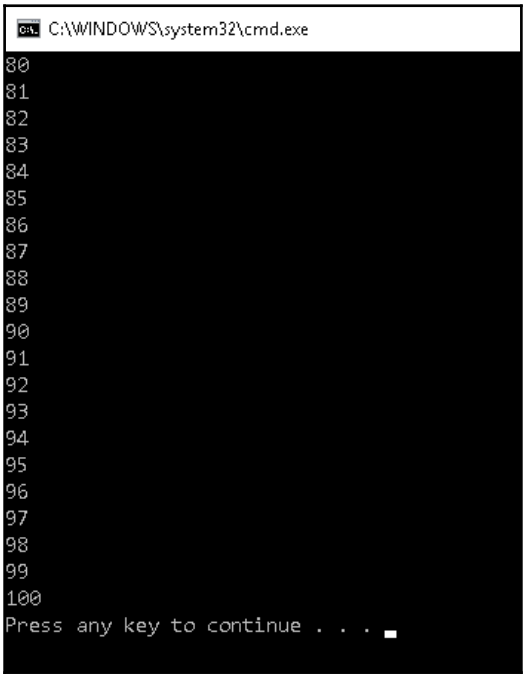

Event Hub
Delete
Essentials
Resource group (change)
AzureIoTEventHub
Status
Active
Location
South Central US
Subscription name (change)
Subscription ID
Connection Strings
Connection Strings
Throughput Units
1

EventHubTrigger - C#
A C# function that will be run whenever an event hub receives a new event

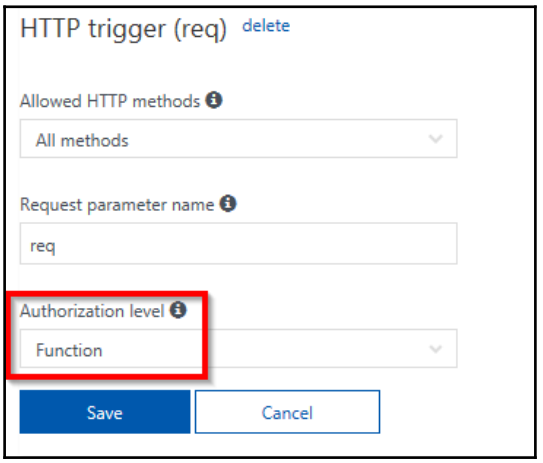

Name your function
MyEventHub
Azure Event Hubs trigger
Event Hub name
capturemessage
Event Hub connection
show value
new
Create


Connection
Event Hub
IoT hub
Custom
Namespace
AzureIoTEventHub
Event Hub
capturemessage
Policy
RootManageSharedAccess
Select

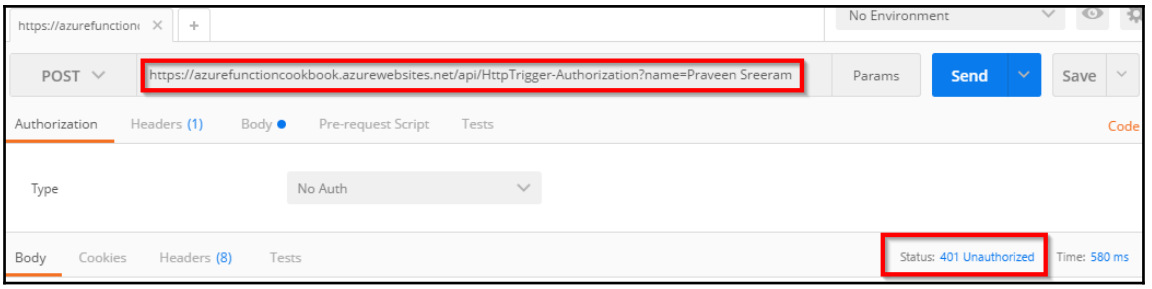

Name your function
MyEventHub
Azure Event Hubs trigger
Event Hub name
capturemessage
Event Hub connection
show value
AzureIoTEventHub_RootManageSharedAccessKey_
new
Create

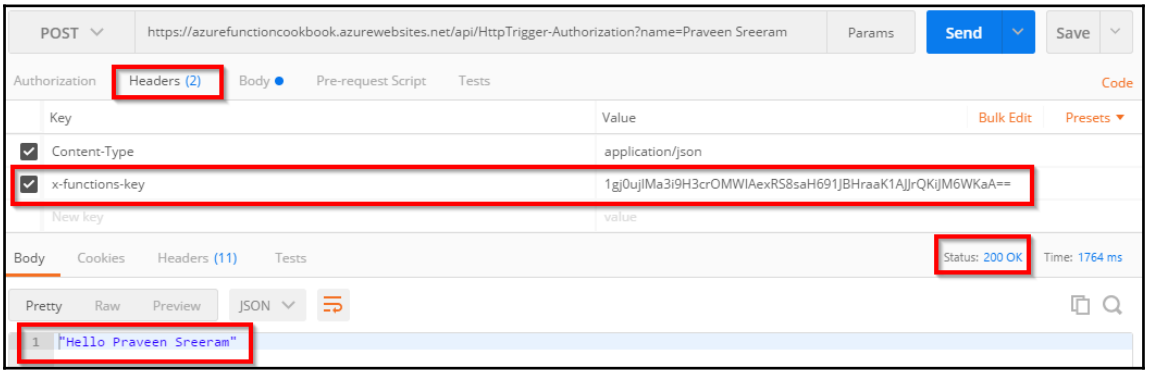

C:\WINDOWS\system32\cmd.exe
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
Press any key to continue . . .

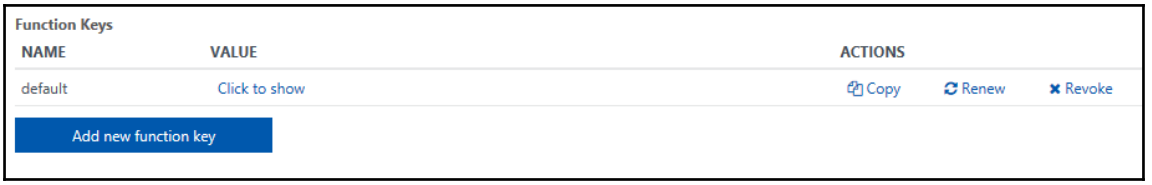
Function Apps
exploredurablefunctions
exploremyapps
Functions
MyApp1
MyApp2
MyEventHub
Integrate
Manage
Monitor
Proxies (preview)
Slots (preview)
Logs
Pause
Clear
Copy logs
2017-08-08T09:20:29.206 C# Event Hub trigger function processed a message: 93
2017-08-08T09:20:29.206 Function completed (Success, Id=0230d614-d910-4521-ac4b-355a75edaafa, Duration=0ms)
2017-08-08T09:20:29.488 Function started (Id=95381453-5de0-4811-a764-acc5298e5e75)
2017-08-08T09:20:29.488 C# Event Hub trigger function processed a message: 94
2017-08-08T09:20:29.488 Function completed (Success, Id=95381453-5de0-4811-a764-acc5298e5e75, Duration=0ms)
2017-08-08T09:20:29.769 Function started (Id=7757e213-e249-49fb-bac4-bafe9bd75689)
2017-08-08T09:20:29.769 C# Event Hub trigger function processed a message: 95
2017-08-08T09:20:29.769 Function completed (Success, Id=7757e213-e249-49fb-bac4-bafe9bd75689, Duration=0ms)
2017-08-08T09:20:30.025 Function started (Id=92d3de61-d4df-4a7f-ac37-6b897a55a954)
2017-08-08T09:20:30.025 C# Event Hub trigger function processed a message: 96
2017-08-08T09:20:30.025 Function completed (Success, Id=92d3de61-d4df-4a7f-ac37-6b897a55a954, Duration=0ms)
2017-08-08T09:20:30.293 Function started (Id=744d03d0-2717-4b73-9985-edb8bdfc12a9)
2017-08-08T09:20:30.293 C# Event Hub trigger function processed a message: 97
2017-08-08T09:20:30.293 Function completed (Success, Id=744d03d0-2717-4b73-9985-edb8bdfc12a9, Duration=0ms)
2017-08-08T09:20:30.561 Function started (Id=1b4615a3-a4b9-4e70-a079-9de08c523ef2)
2017-08-08T09:20:30.561 C# Event Hub trigger function processed a message: 98
2017-08-08T09:20:30.561 Function completed (Success, Id=1b4615a3-a4b9-4e70-a079-9de08c523ef2, Duration=0ms)
2017-08-08T09:20:30.840 Function started (Id=e0682ed3-7e5e-4ff3-94d3-082520c6da1e)
2017-08-08T09:20:30.840 C# Event Hub trigger function processed a message: 99
2017-08-08T09:20:30.840 Function completed (Success, Id=e0682ed3-7e5e-4ff3-94d3-082520c6da1e, Duration=0ms)
2017-08-08T09:20:31.153 Function started (Id=715cce20-699a-4dd9-8f1d-79f7ee529839)
2017-08-08T09:20:31.153 C# Event Hub trigger function processed a message: 100
2017-08-08T09:20:31.153 Function completed (Success, Id=715cce20-699a-4dd9-8f1d-79f7ee529839, Duration=0ms)


HTTP trigger (req)
delete
Allowed HTTP methods
All methods
Request parameter name
req
Authorization level
Function
Save
Cancel

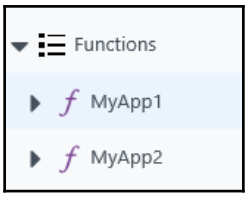
No Environment
POST
https://azurefunctioncookbook.azurewebsites.net/api/HttpTrigger-Authorization?name=Praveen Sreeram&code=vbbwhyP4Ta3SNpWJi1XmH/VK0MC/ZO8VLTxYNHKab1dFlxyfayKJKg==
Params
Send

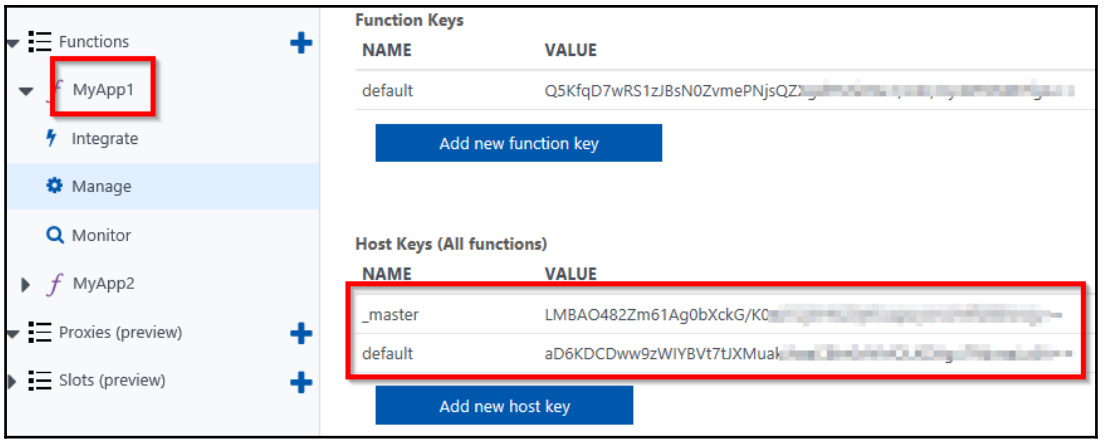

https://azurefunctioni
No Environment
POST
https://azurefunctioncookbook.azurewebsites.net/api/HttpTrigger-Authorization?name=Praveen Sreeram
Params
Send
Save
Authorization
Headers (1)
Body
Pre-request Script
Tests
Code
Type
No Auth
Body
Cookies
Headers (8)
Tests
Status: 401 Unauthorized
Time: 580 ms

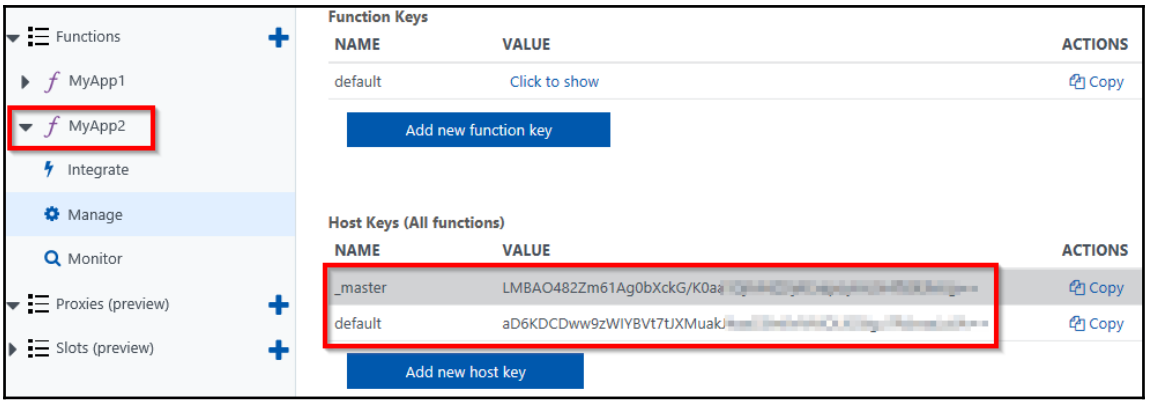

POST
https://azurefunctioncookbook.azurewebsites.net/api/HttpTrigger-Authorization?name=Praveen Sreeram
Params
Send
Save
Authorization
Headers (2)
Body
Pre-request Script
Tests
Code
Key
Value
Bulk Edit
Presets
Content-Type
application/json
x-functions-key
1gj0ujIMa3i9H3crOMWIAexRS8saH691JBHraaK1AJJrQKiJM6WKaA==
New key
value
Body
Cookies
Headers (11)
Tests
Status: 200 OK
Time: 1764 ms
Pretty
Raw
Preview
JSON
1
"Hello Praveen Sreeram"


Function Keys
NAME
VALUE
ACTIONS
default
Click to show
Copy
Renew
Revoke
Add new function key

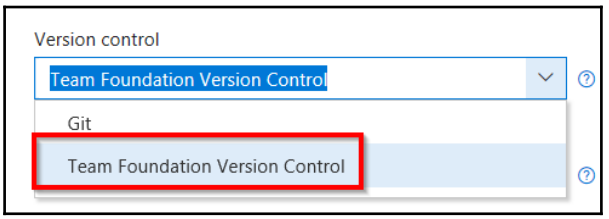
Function Keys
NAME
VALUE
ACTIONS
default
Click to show
Copy
Renew
Revoke
WebApplication
Click to show
Copy
Renew
Revoke
MobileApplication
Click to show
Copy
Renew
Revoke
iOT Application
(Optional) Leave empty to auto-generate a key.
Save
Discard

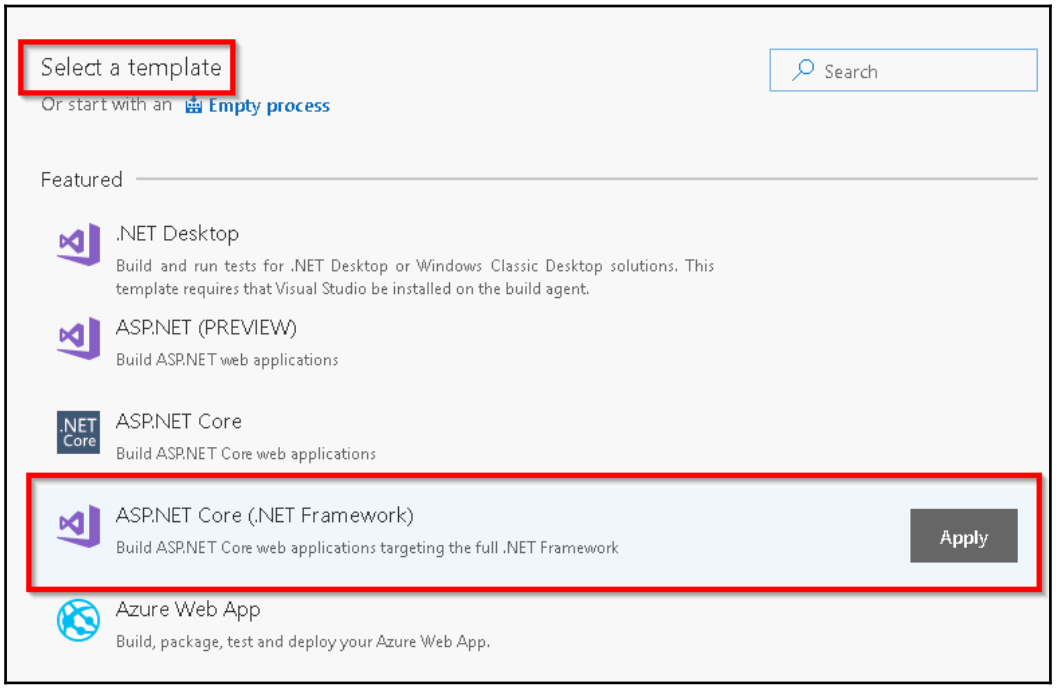

Functions
MyApp1
MyApp2

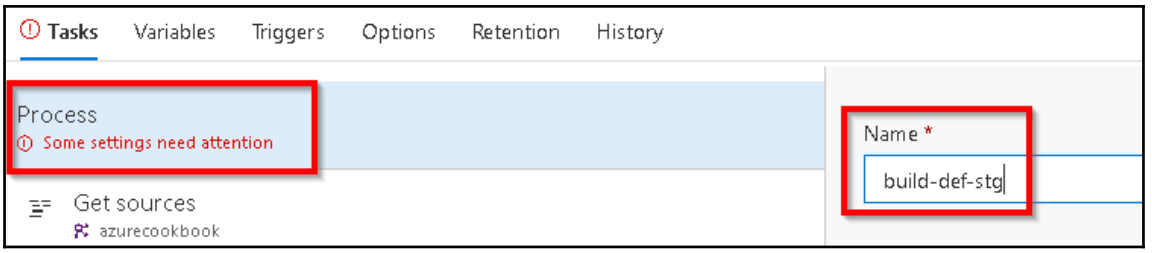

Functions
MyApp1
Integrate
Manage
Monitor
MyApp2
Proxies (preview)
Slots (preview)
Function Keys
NAME
VALUE
default
Q5KfqD7wRS1zJBsN0ZvmePNjsQZ
Add new function key
Host Keys (All functions)
NAME
VALUE
_master
LMBAO482Zm61Ag0bXckG/K0
default
aD6KDCDww9zWIYBVt7tJXMuak
Add new host key

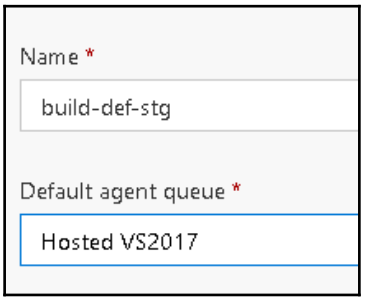

Functions
MyApp1
MyApp2
Integrate
Manage
Monitor
Proxies (preview)
Slots (preview)
Function Keys
NAME
VALUE
ACTIONS
default
Click to show
Copy
Add new function key
Host Keys (All functions)
NAME
VALUE
ACTIONS
_master
LMBAO482Zm61Ag0bXckG/K0aa
Copy
default
aD6KDCDww9zWIYBVt7tJXMuaki
Copy
Add new host key

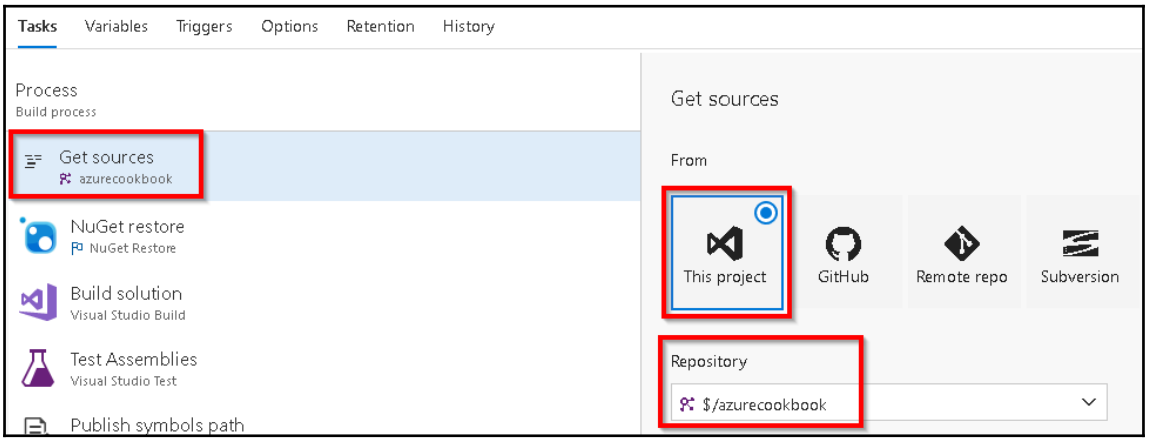
Chapter 10: Implement Continuous Integration and Deployment of Azure Functions Using Visual Studio Team Services

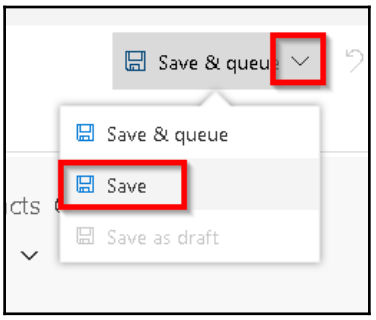


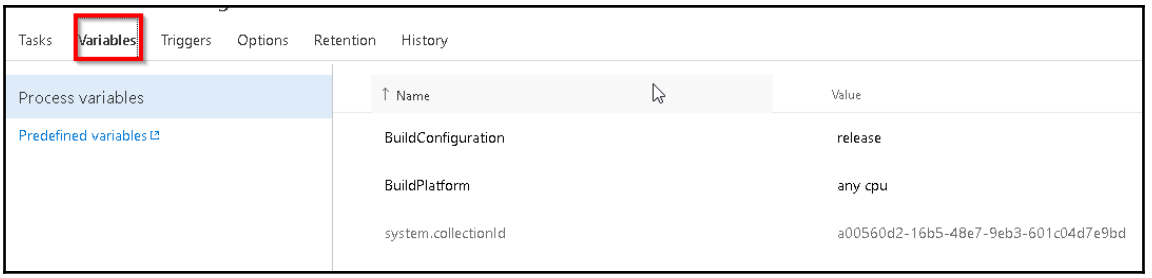


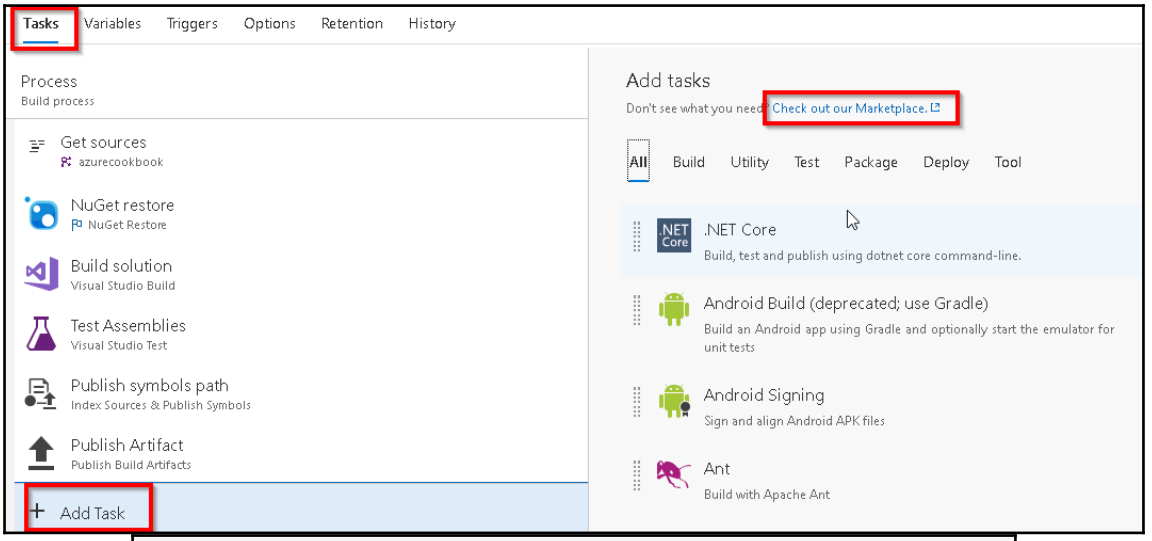

Tasks
Variables
Triggers
Options
Retention
History
Process
Some settings need attention
Get sources
azurecookbook
Name *
build-def-stg

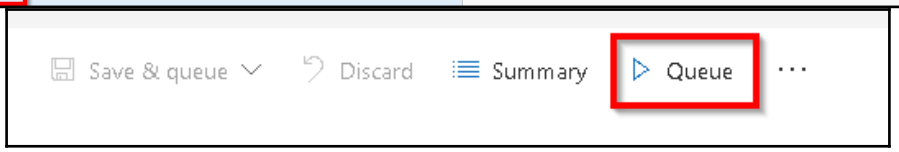

Name *
build-def-stg
Default agent queue *
Hosted VS2017

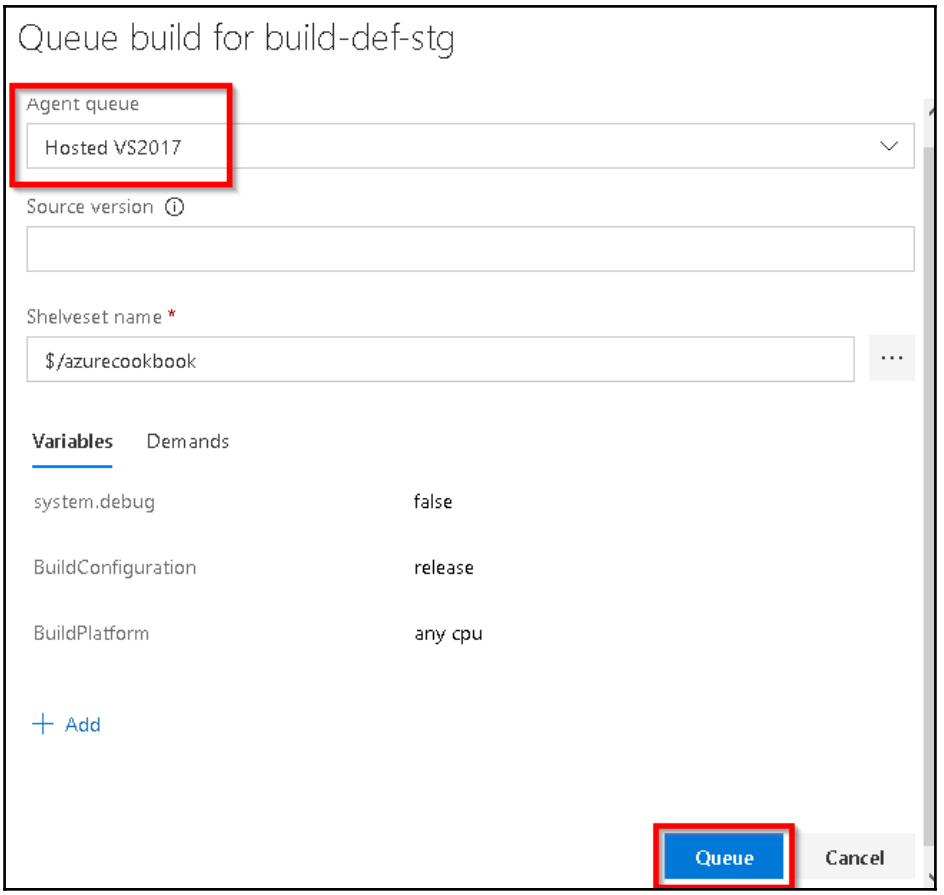

Tasks
Variables
Triggers
Options
Retention
History
Process
Build process
Get sources
azurecookbook
NuGet restore
NuGet Restore
Build solution
Visual Studio Build
Test Assemblies
Visual Studio Test
Publish symbols path
Get sources
From
This project
GitHub
Remote repo
Subversion
Repository
$/azurecookbook


Save & queue
Save & queue
Save
Save as draft

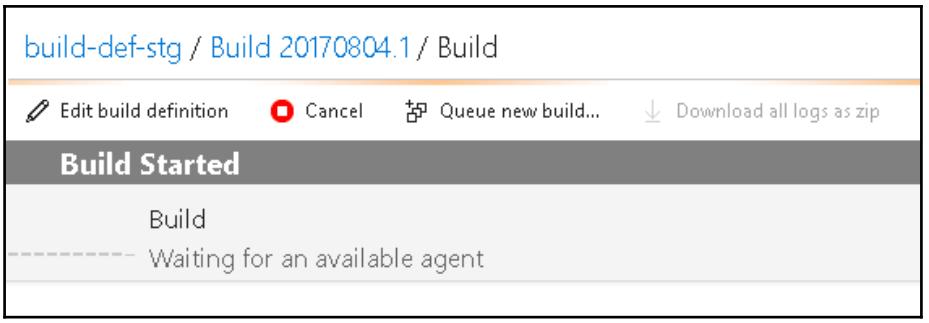

Tasks
Variables
Triggers
Options
Retention
History
Process variables
Predefined variables
Name
Value
BuildConfiguration
release
BuildPlatform
any cpu
system.collectionId
a00560d2-16b5-48e7-9eb3-601c04d7e9bd

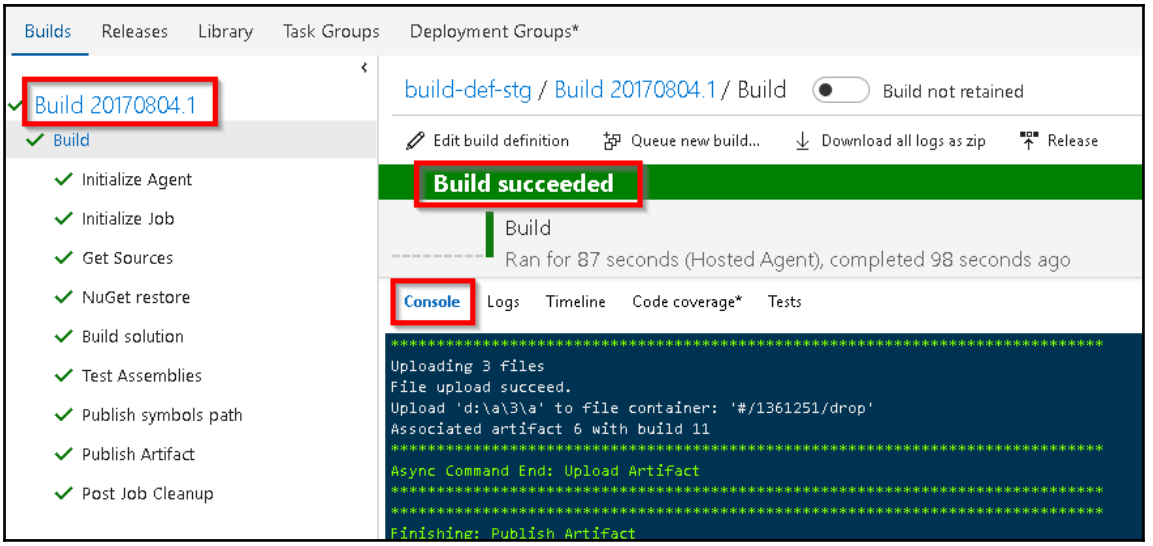

Tasks
Variables
Triggers
Options
Retention
History
Process
Build process
Get sources
azurecookbook
NuGet restore
NuGet Restore
Build solution
Visual Studio Build
Test Assemblies
Visual Studio Test
Publish symbols path
Index Sources & Publish Symbols
Publish Artifact
Publish Build Artifacts
Add Task
Add tasks
Don't see what you need? Check out our Marketplace.
All
Build
Utility
Test
Package
Deploy
Tool
.NET Core
Build, test and publish using dotnet core command-line.
Android Build (deprecated; use Gradle)
Build an Android app using Gradle and optionally start the emulator for unit tests
Android Signing
Sign and align Android APK files
Ant
Build with Apache Ant

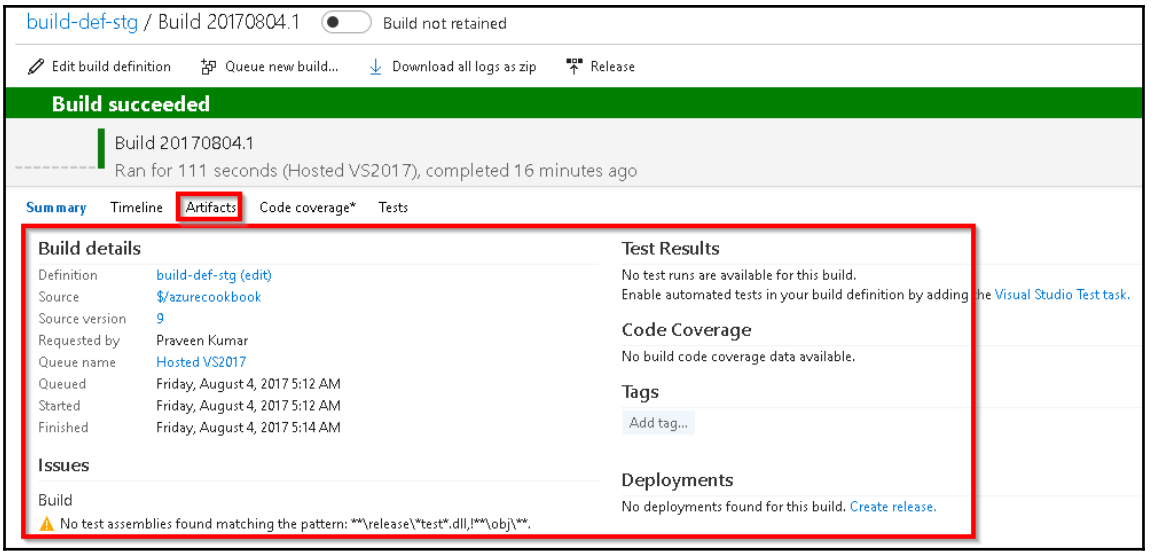

Save & queue
Discard
Summary
Queue

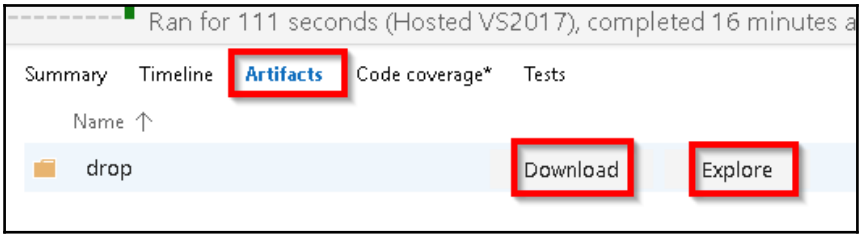

Queue build for build-def-stg
Agent queue
Hosted VS2017
Source version
Shelveset name *
$/azurecookbook
Variables
Demands
system.debug
false
BuildConfiguration
release
BuildPlatform
any cpu
Add
Queue
Cancel

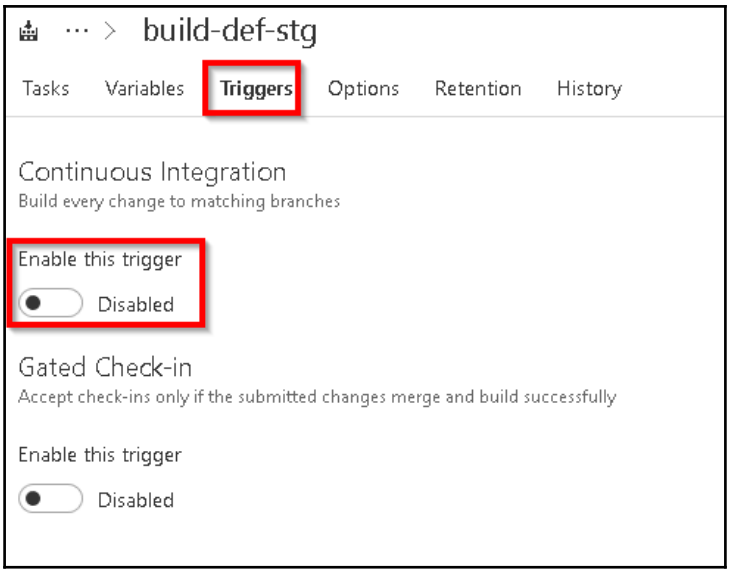
Build 20170804.1 has been queued.

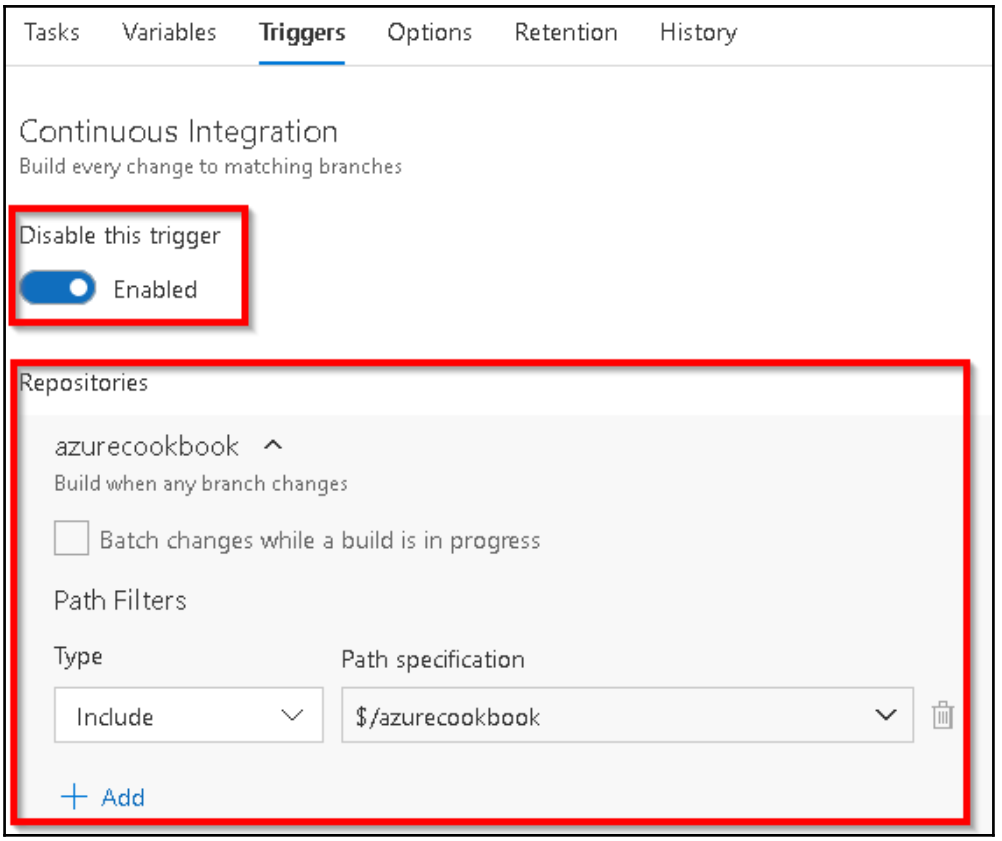

build-def-stg / Build 20170804.1 / Build
Edit build definition
Cancel
Queue new build...
Download all logs as zip
Build Started
Build
Waiting for an available agent

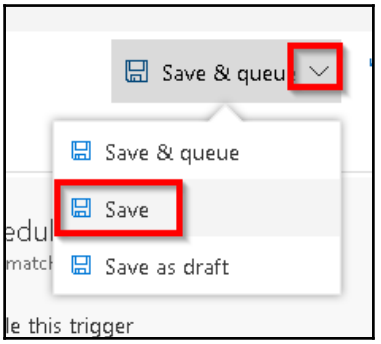

Builds
Releases
Library
Task Groups
Deployment Groups*
Build 20170804.1
Build
Initialize Agent
Initialize Job
Get Sources
NuGet restore
Build solution
Test Assemblies
Publish symbols path
Publish Artifact
Post Job Cleanup
build-def-stg / Build 20170804.1 / Build
Build not retained
Edit build definition
Queue new build...
Download all logs as zip
Release
Build succeeded
Build
Ran for 87 seconds (Hosted Agent), completed 98 seconds ago
Console
Logs
Timeline
Code coverage*
Tests
Uploading 3 files
File upload succeed.
Upload 'd:\a\3\a' to file container: '#/1361251/drop'
Associated artifact 6 with build 11
Async Command End: Upload Artifact
Finishing: Publish Artifact

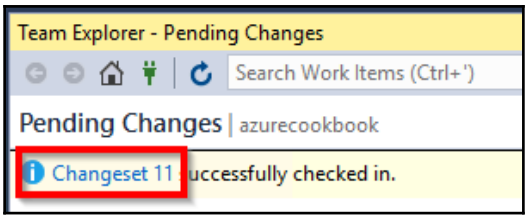

build-def-stg / Build 20170804.1
Build not retained
Edit build definition
Queue new build...
Download all logs as zip
Release
Build succeeded
Build 20170804.1
Ran for 111 seconds (Hosted VS2017), completed 16 minutes ago
Summary
Timeline
Artifacts
Code coverage*
Tests
Build details
Definition build-def-stg (edit)
Source $/azurecookbook
Source version 9
Requested by Praveen Kumar
Queue name Hosted VS2017
Queued Friday, August 4, 2017 5:12 AM
Started Friday, August 4, 2017 5:12 AM
Finished Friday, August 4, 2017 5:14 AM
Issues
Build
No test assemblies found matching the pattern: **\release*test*.dll;!**\obj**.
Test Results
No test runs are available for this build.
Enable automated tests in your build definition by adding the Visual Studio Test task.
Code Coverage
No build code coverage data available.
Tags
Add tag...
Deployments
No deployments found for this build. Create release.

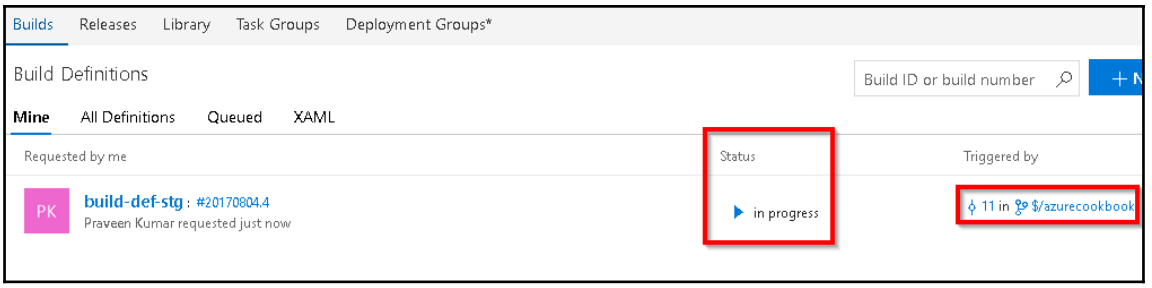

Ran for 111 seconds (Hosted VS2017), completed 16 minutes a
Summary
Timeline
Artifacts
Code coverage*
Tests
Name
drop
Download
Explore


build-def-stg
Tasks
Variables
Triggers
Options
Retention
History
Continuous Integration
Build every change to matching branches
Enable this trigger
Disabled
Gated Check-in
Accept check-ins only if the submitted changes merge and build successfully
Enable this trigger
Disabled

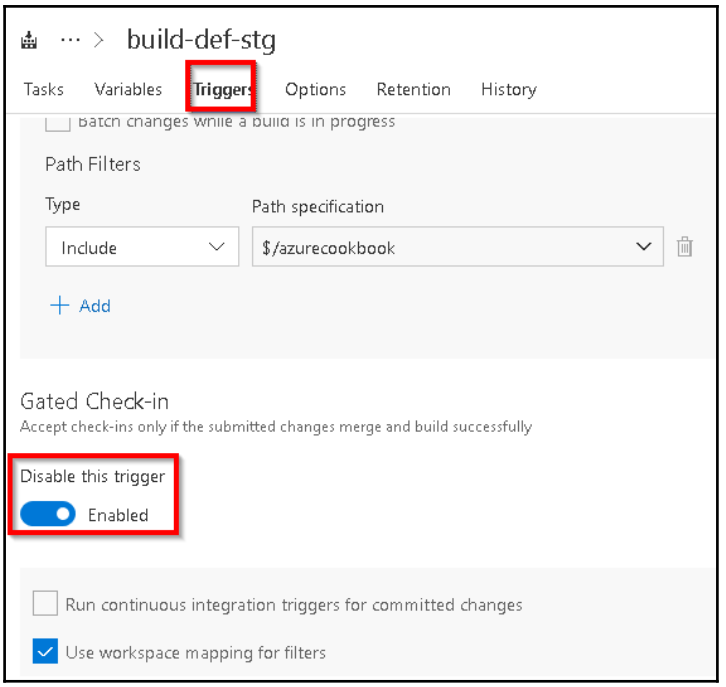

Tasks
Variables
Triggers
Options
Retention
History
Continuous Integration
Build every change to matching branches
Disable this trigger
Enabled
Repositories
azurecookbook
Build when any branch changes
Batch changes while a build is in progress
Path Filters
Type
Path specification
Include
$/azurecookbook
Add

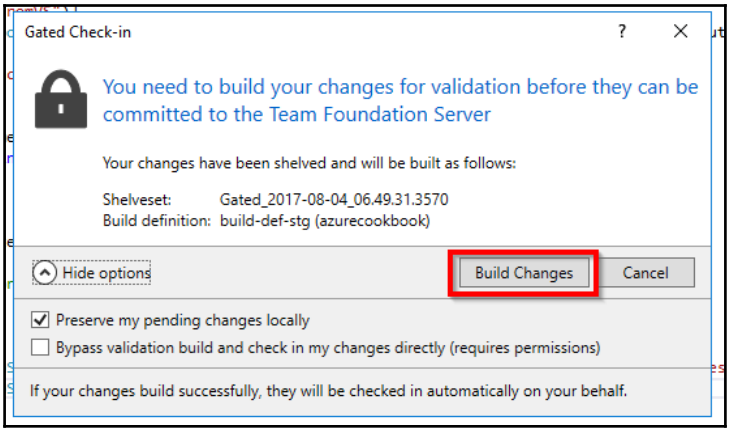

Save & queue
Save & queue
Save
Save as draft

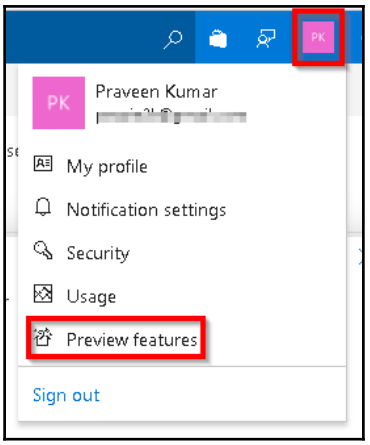

Team Explorer - Pending Changes
Search Work Items (Ctrl+')
Pending Changes | azurecookbook
Changeset 11 successfully checked in.

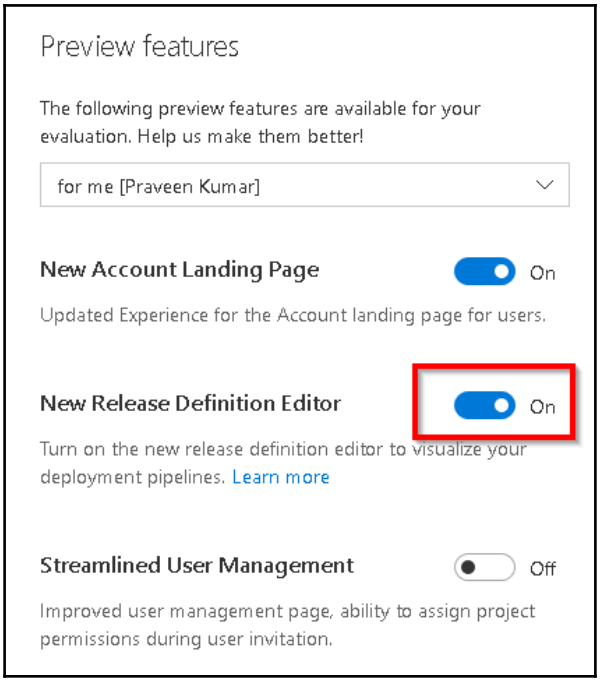

Builds
Releases
Library
Task Groups
Deployment Groups*
Build Definitions
Build ID or build number
Mine
All Definitions
Queued
XAML
Requested by me
Status
Triggered by
PK
build-def-stg : #20170804.4
Praveen Kumar requested just now
in progress
11 in $/azurecookbook

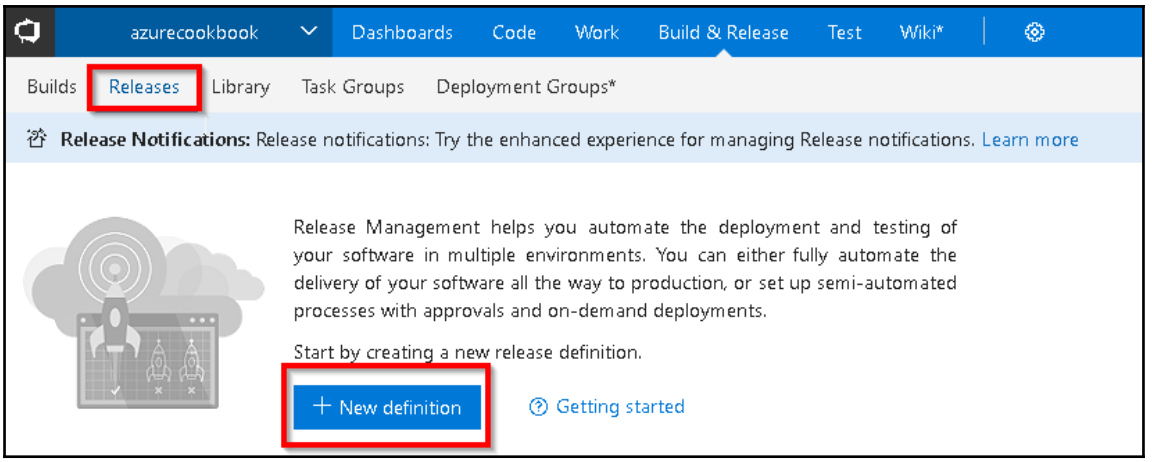
Build Definitions
Build ID or build number
Mine
All Definitions
Queued
XAML
Requested by me
Status
Triggered by
PK
build-def-stg : #20170804.4
Praveen Kumar requested 21 minutes ago
succeeded
11 in $/azurecookbook

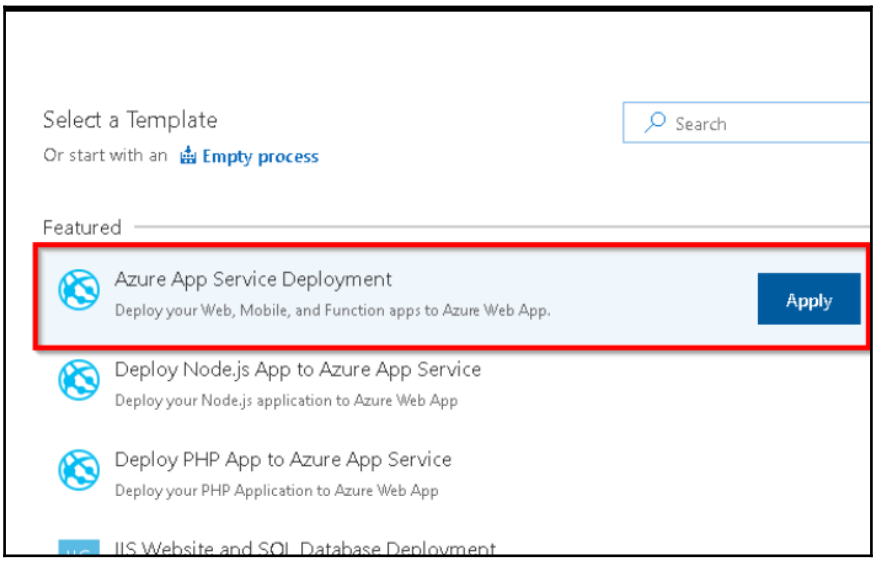

build-def-stg
Tasks
Variables
Triggers
Options
Retention
History
Batch changes while a build is in progress
Path Filters
Type
Path specification
Include
$/azurecookbook
Add
Gated Check-in
Accept check-ins only if the submitted changes merge and build successfully
Disable this trigger
Enabled
Run continuous integration triggers for committed changes
Use workspace mapping for filters

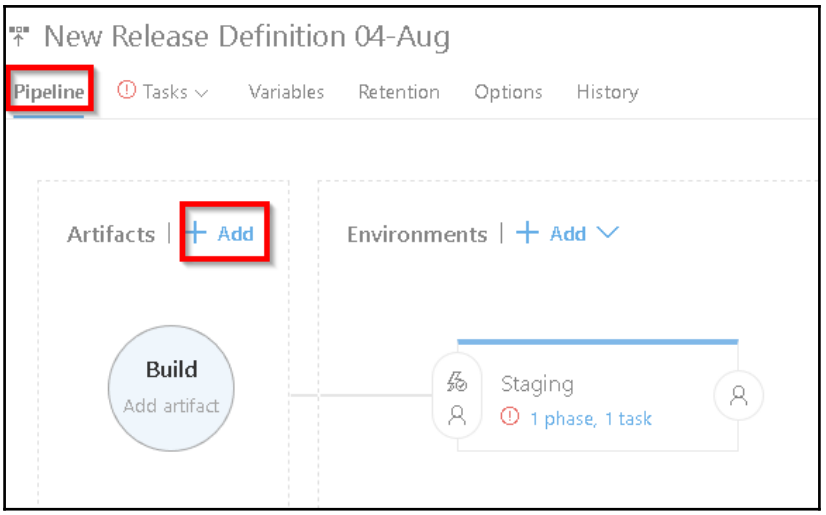

Gated Check-in
You need to build your changes for validation before they can be committed to the Team Foundation Server
Your changes have been shelved and will be built as follows:
Shelveset: Gated_2017-08-04_06.49.31.3570
Build definition: build-def-stg (azurecookbook)
Hide options
Build Changes
Cancel
Preserve my pending changes locally
Bypass validation build and check in my changes directly (requires permissions)
If your changes build successfully, they will be checked in automatically on your behalf.

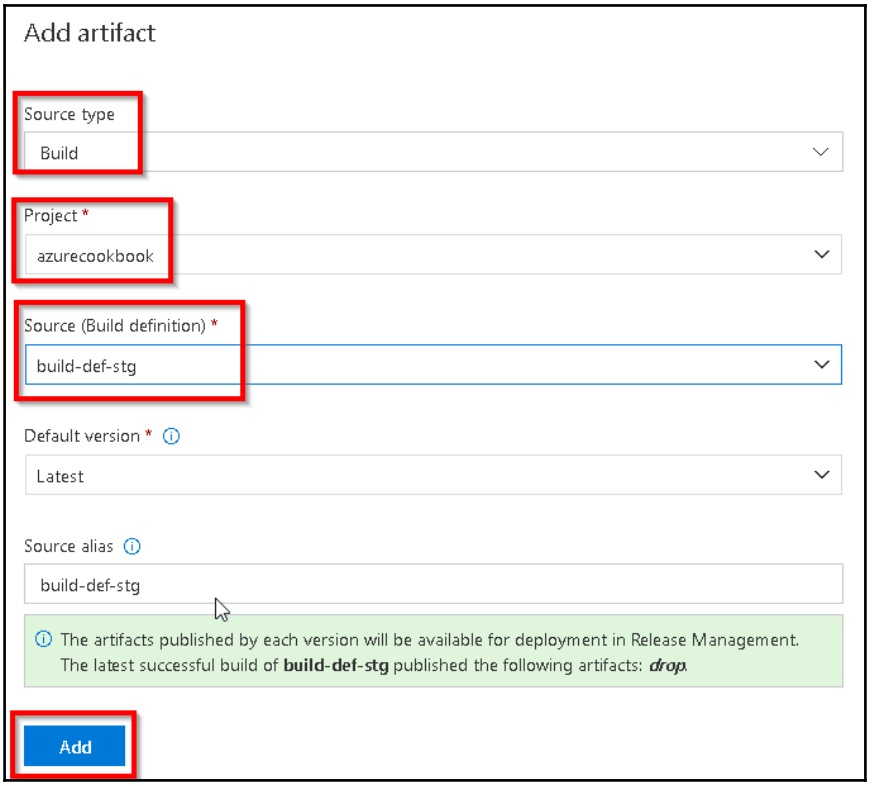

PK
Praveen Kumar
My profile
Notification settings
Security
Usage
Preview features
Sign out

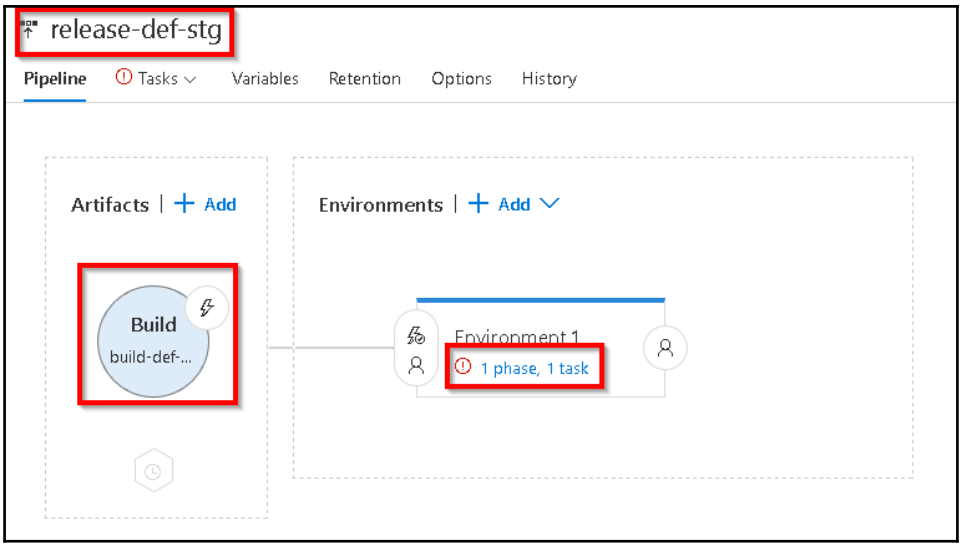

Preview features
The following preview features are available for your evaluation. Help us make them better!
for me [Praveen Kumar]
New Account Landing Page
On
Updated Experience for the Account landing page for users.
New Release Definition Editor
On
Turn on the new release definition editor to visualize your deployment pipelines. Learn more
Streamlined User Management
Off
Improved user management page, ability to assign project permissions during user invitation.

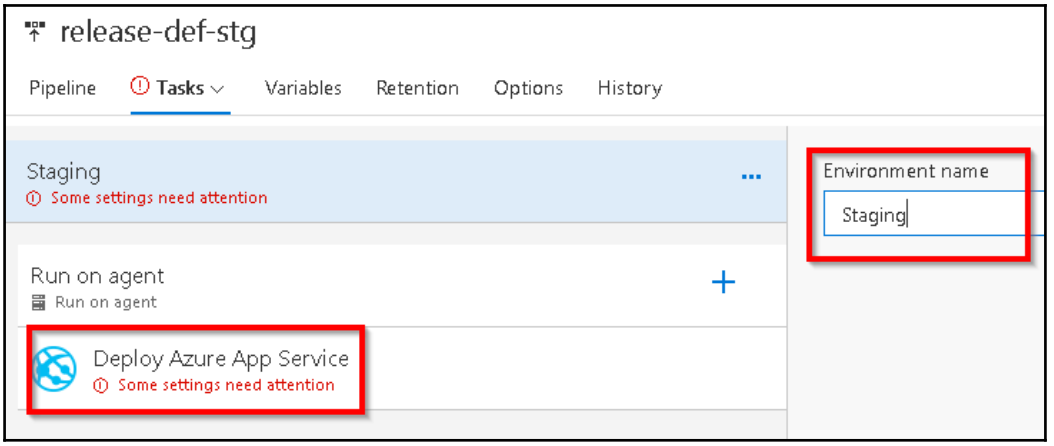

azurecookbook
Dashboards
Code
Work
Build & Release
Test
Wiki*
Builds
Releases
Library
Task Groups
Deployment Groups*
Release Notifications: Release notifications: Try the enhanced experience for managing Release notifications. Learn more
Release Management helps you automate the deployment and testing of your software in multiple environments. You can either fully automate the delivery of your software all the way to production, or set up semi-automated processes with approvals and on-demand deployments.
Start by creating a new release definition.
New definition
Getting started


Select a Template
Search
Or start with an Empty process
Featured
Azure App Service Deployment
Deploy your Web, Mobile, and Function apps to Azure Web App.
Apply
Deploy Node.js App to Azure App Service
Deploy your Node.js application to Azure Web App
Deploy PHP App to Azure App Service
Deploy your PHP Application to Azure Web App
IIS Website and SQL Database Deployment

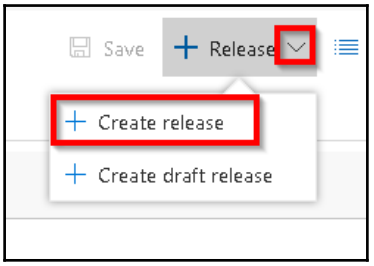

New Release Definition 04-Aug
Pipeline
Tasks
Variables
Retention
Options
History
Artifacts
Add
Environments
Add
Build
Add artifact
Staging
1 phase, 1 task

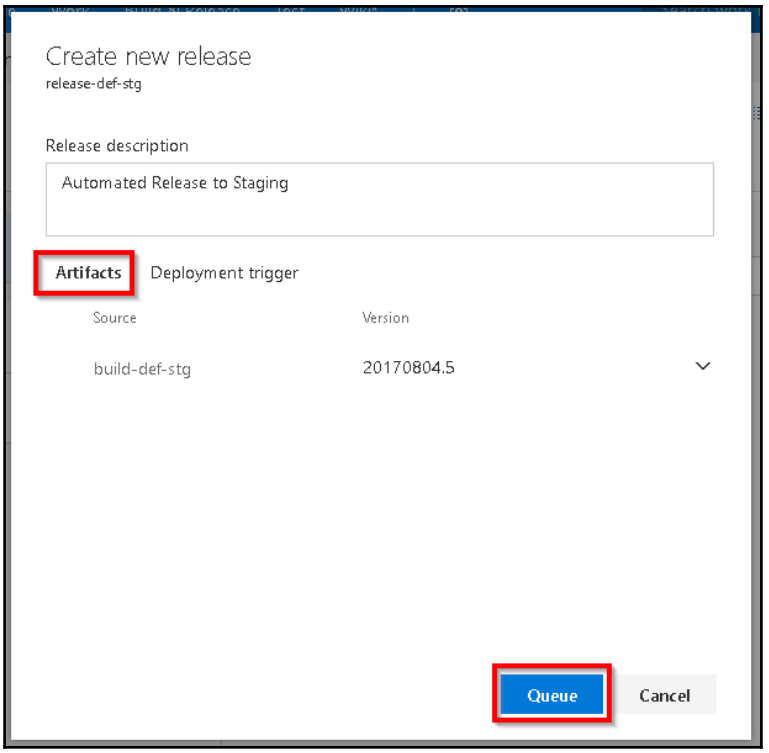

Add artifact
Source type
Build
Project *
azurecookbook
Source (Build definition) *
build-def-stg
Default version *
Latest
Source alias
build-def-stg
The artifacts published by each version will be available for deployment in Release Management.
The latest successful build of build-def-stg published the following artifacts: drop.
Add

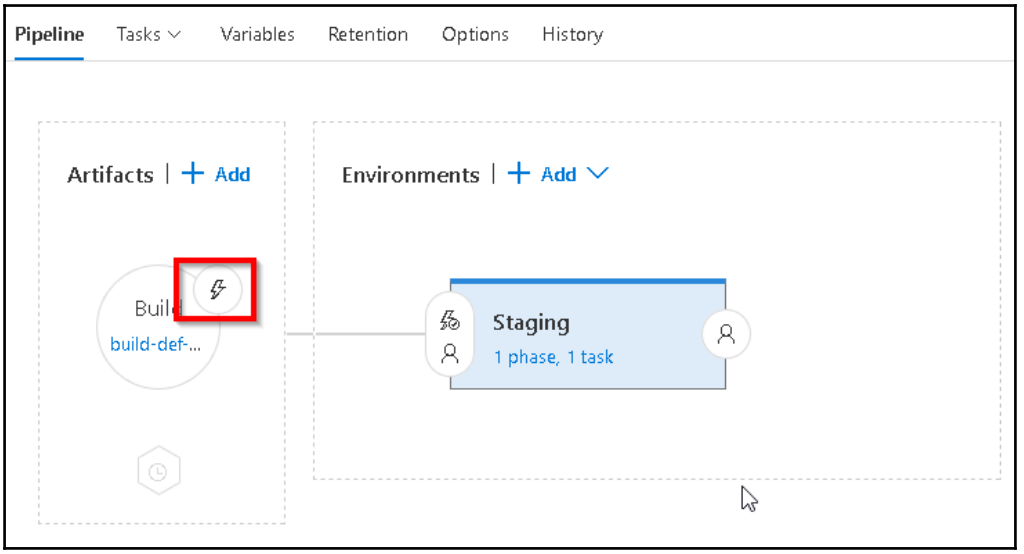

release-def-stg
Pipeline
Tasks
Variables
Retention
Options
History
Artifacts | Add
Build
build-def-...
Environments | Add
Environment 1
1 phase, 1 task

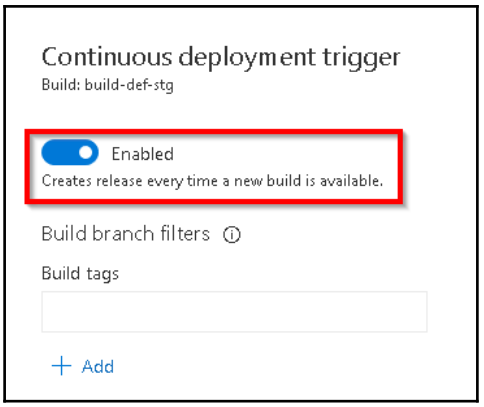

release-def-stg
Pipeline
Tasks
Variables
Retention
Options
History
Staging
Some settings need attention
Run on agent
Run on agent
Deploy Azure App Service
Some settings need attention
Environment name
Staging

Azure App Service Deploy
Remove
Version 3.*
Display name *
FunctionAppInVisualStudio
Azure subscription *
Visual Studio Enterprise – MPN (366c4797-e7c7-4050-9b87-d2f9641c0268)
App Service name *
FunctionAppInVisualStudio
Deploy to slot

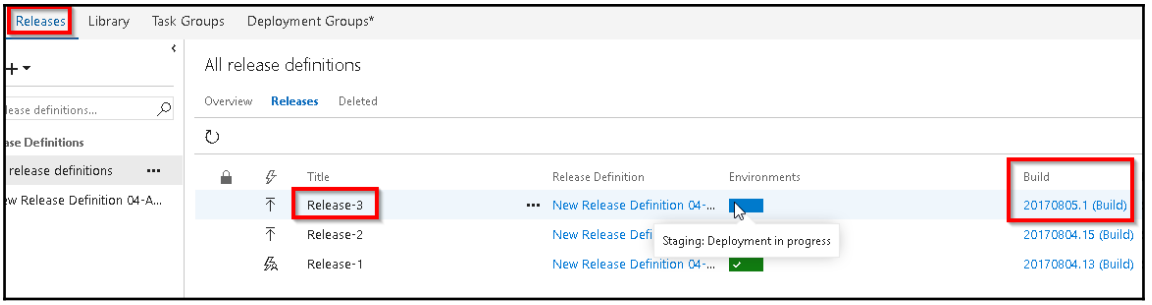

Save
Release
Create release
Create draft release


Create new release
release-def-stg
Release description
Automated Release to Staging
Artifacts
Deployment trigger
Source
Version
build-def-stg
20170804.5
Queue
Cancel


Pipeline
Tasks
Variables
Retention
Options
History
Artifacts | Add
Environments | Add
build-def-...
Staging
1 phase, 1 task


Continuous deployment trigger
Build: build-def-stg
Enabled
Creates release every time a new build is available.
Build branch filters
Build tags
Add

Requested by me
Status
Triggered by
PK
build-def-stg
#20170805.1
Praveen Kumar requested just now
in progress
Continous Deployment


Releases
Library
Task Groups
Deployment Groups*
All release definitions
Overview
Releases
Deleted
Title
Release Definition
Environments
Build
Release-3
New Release Definition 04-...
20170805.1 (Build)
Release-2
20170804.15 (Build)
Staging: Deployment in progress
Release-1
20170804.13 (Build)

Body
Cookies
Headers (11)
Tests
Pretty
Raw
Preview
JSON
1
"Automated Build Trigger & Release Trigger test by Praveen Sreeram"