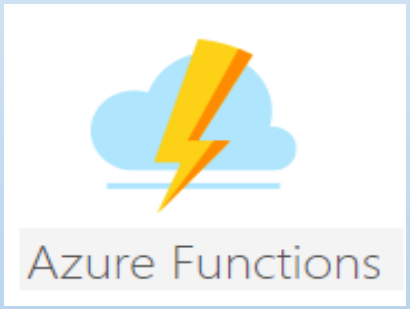
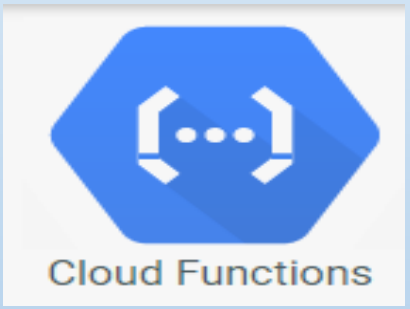
Server Less Computing





Agenda

- Overview of Server Less Computing
- Why Server Less Computing?
- Available Platforms
- Azure Functions and Azure Cosmos Synergy
- Durable Functions Overview
- Demo using Azure – Kudu, Visual Studio, CLI
- Gotchas and Limitations with Server Less

My Intro

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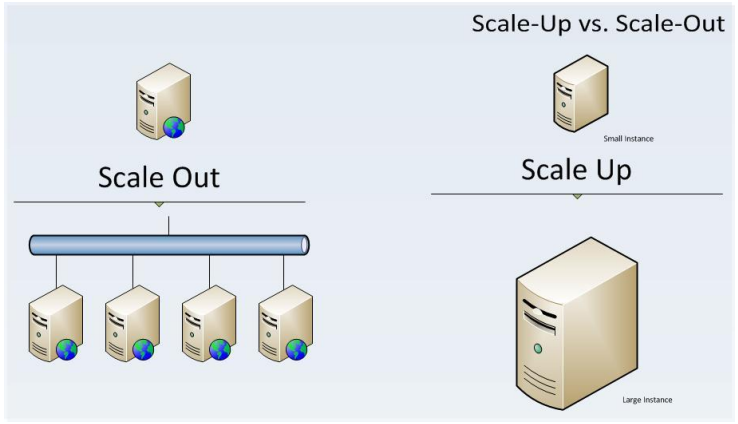
- www.compunnel.com
- https://github.com/baskar3078/testazurefunctions

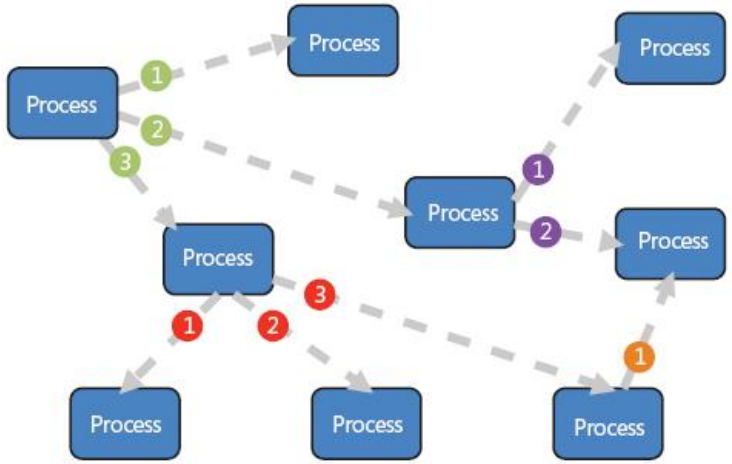
Server Less Computing - Overview

- Does not mean No Servers.
- Enables developers to develop and execute code with out server provisioning.
- “Function as Service” is mainly used to develop event driven applications or perform recurring actions with easier configuration.

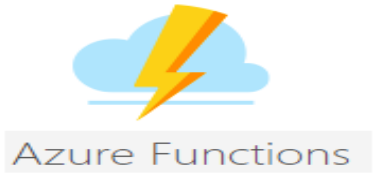
Why Server Less Computing ?

- Enables developers to focus on the functionality with out worrying on performance by automatically scaling up or down based on demand.
- Allows to pay for only the execution time along with costs for other resources like storage, network etc..
- Azure Functions, AWS Lambda, Google Cloud Functions , IBM Cloud Functions are different variations of function as service.



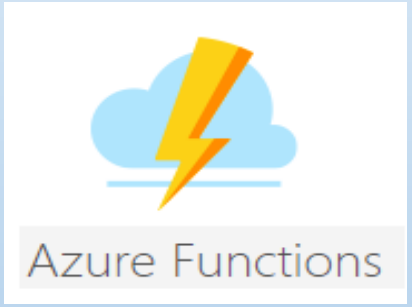


Platform Comparison



	AWS Lambda	Azure Functions	Google Function	IBM Cloud
Languages	Java , Node.js, C# , Python	C#, F#, Node.js, Python, PHP, Bash, Powershell, Custom exe	JavaScript /Node.js	Javascript/Node.js Swift, Python, Java, Docker (custom)
Triggers	HTTP, Event Based, Scheduled	HTTP, Event Based, Scheduled	HTTP , Event Based ,Scheduled	Event Driven, HTTP
Free Trial	Yes	Yes	Yes	Yes
Free Requests	1 Million Free Request per month	1 Million Executions 400,000 GB-s	400,000 GB-seconds 2 million invocations 5GB of Internet egress traffic	400,000 GB-s free

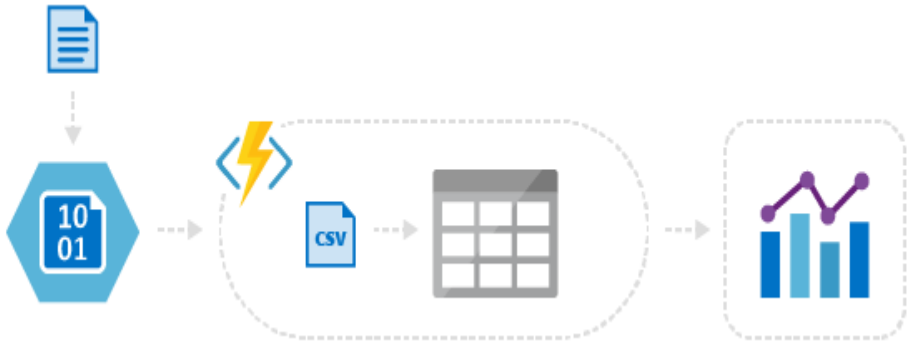
Azure Functions- Use Cases



Azure Functions

- Timer Based Processing – Control the execution of function using Cron Expressions.

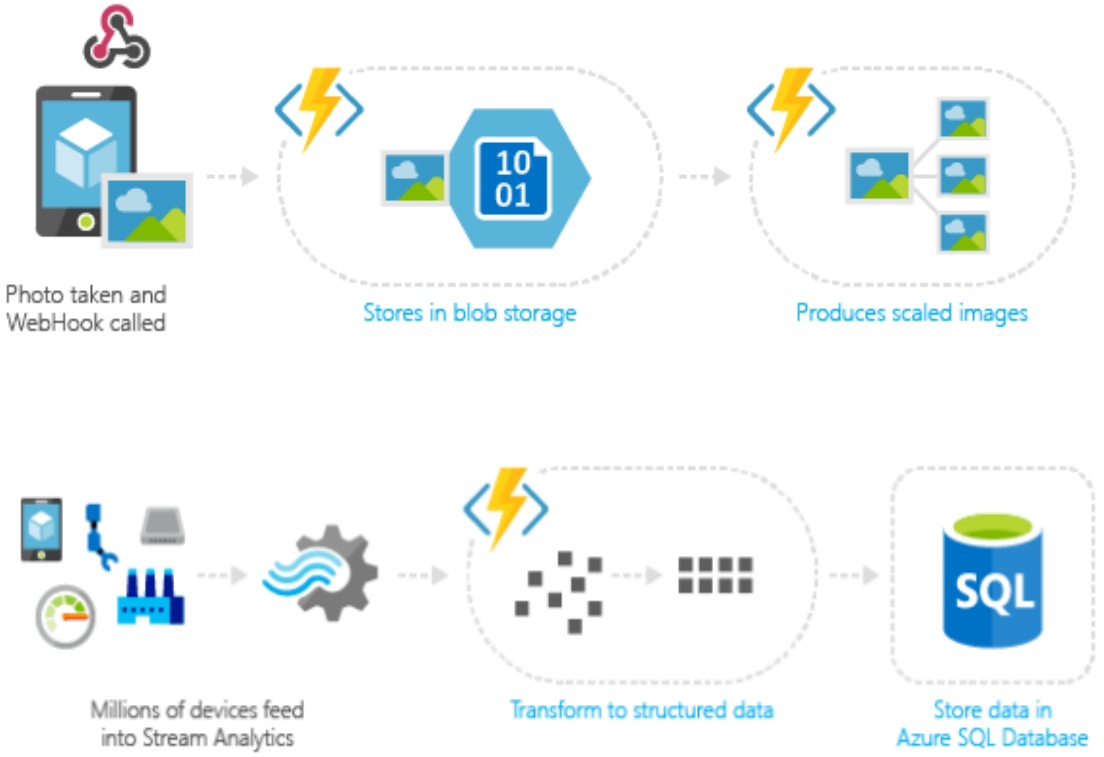
- Event Based Processing – Respond to Events with in Azure landscape. Blob Storage, Queues etc.



- Create Server Less APIs and integrate with Front End and Mobile Apps.

Azure Functions

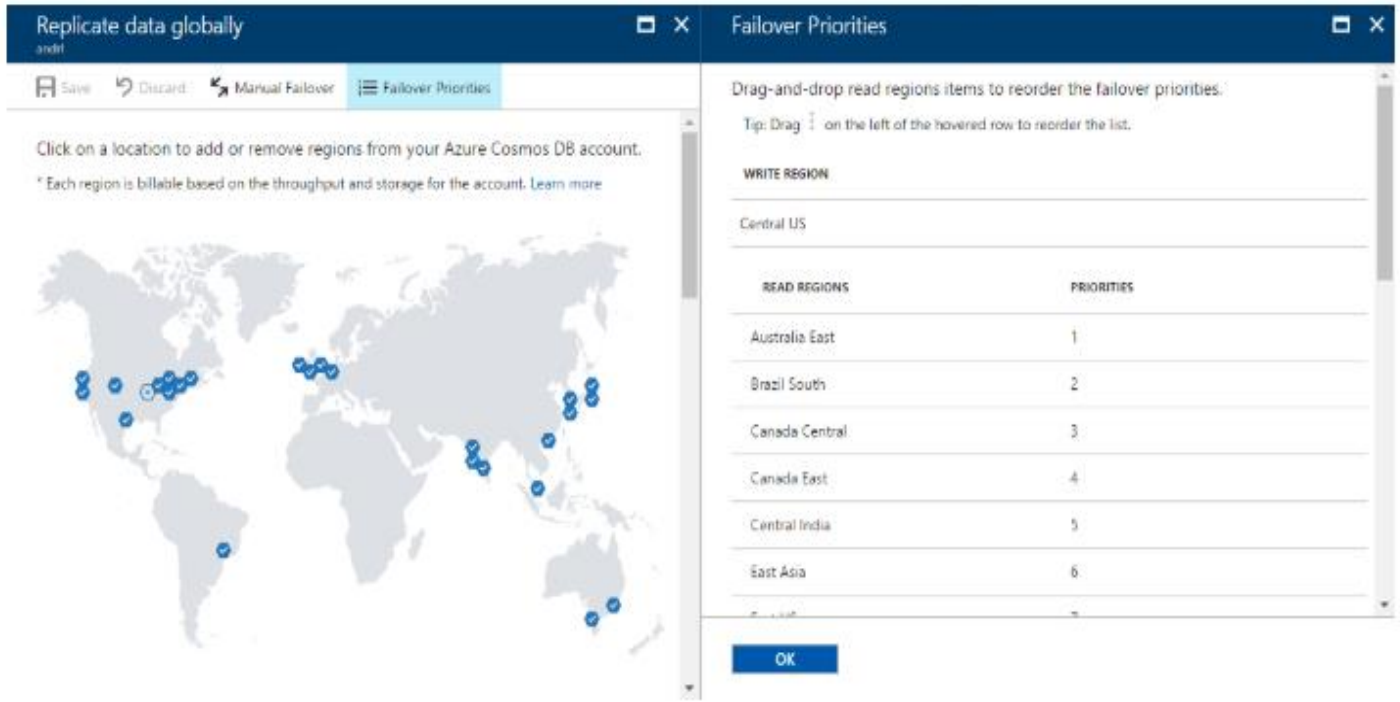
- Respond to Events from IOT Hub and Process Incoming Events.
- Respond to GitHub Events using Web Hook.
- Integrate with Azure Storage Account , Twilio and SendGrid for mail communication.



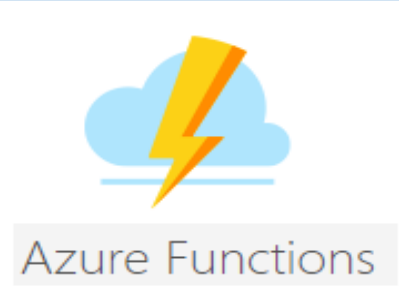
Azure Cosmos

Azure Cosmos

- Support for NoSQL and MongoDB, Cassandra, Gremlin and SQL
- Easily integrate with Logic Apps and Azure Functions using built in connectors.
- Easily distribute data across any region. New Database would be available in 30 minutes anywhere in the world - 100 TBs or less
- Multi-Homing API provides support to perform read operation from nearest region.
- Index Free and Schema Agnostic.
- Control Access using Firewall.



Modernize EDI Operations

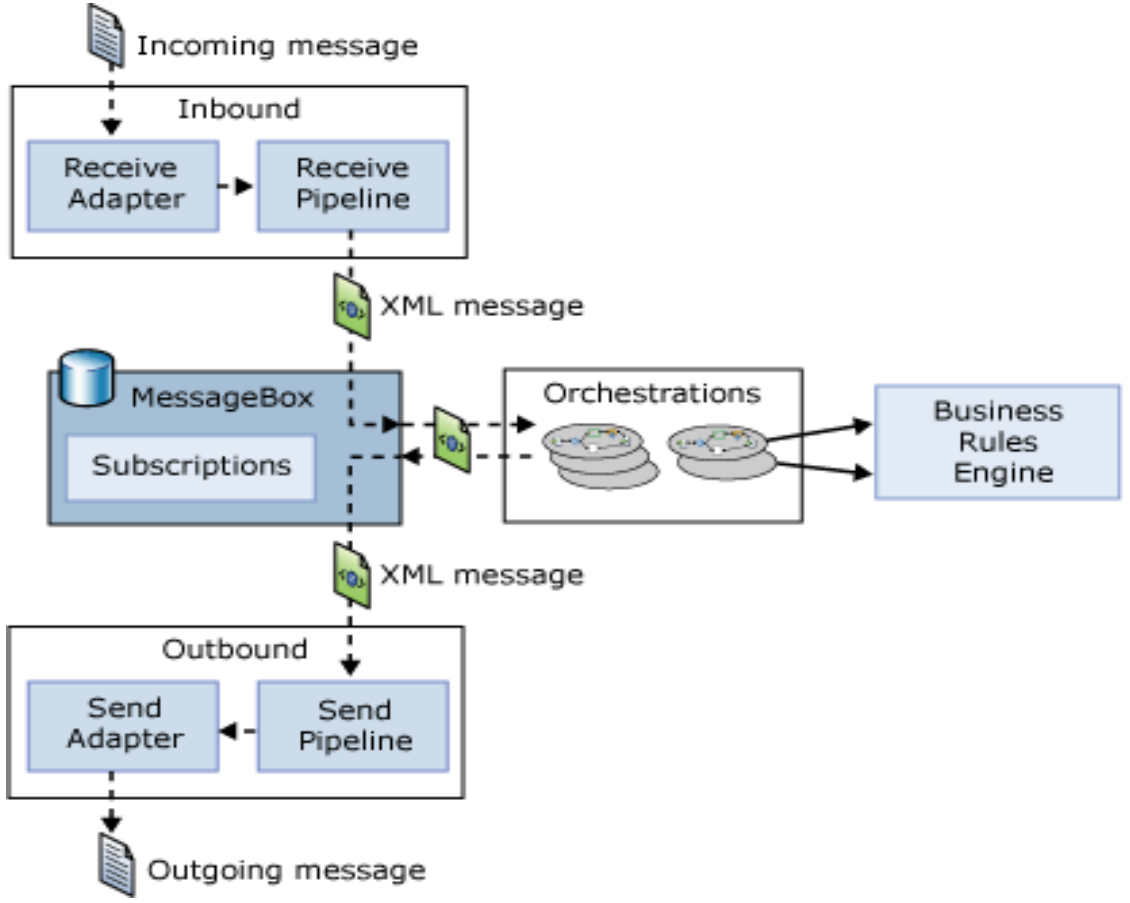


Traditional EDI Applications

- Files Received in Incoming Folder through

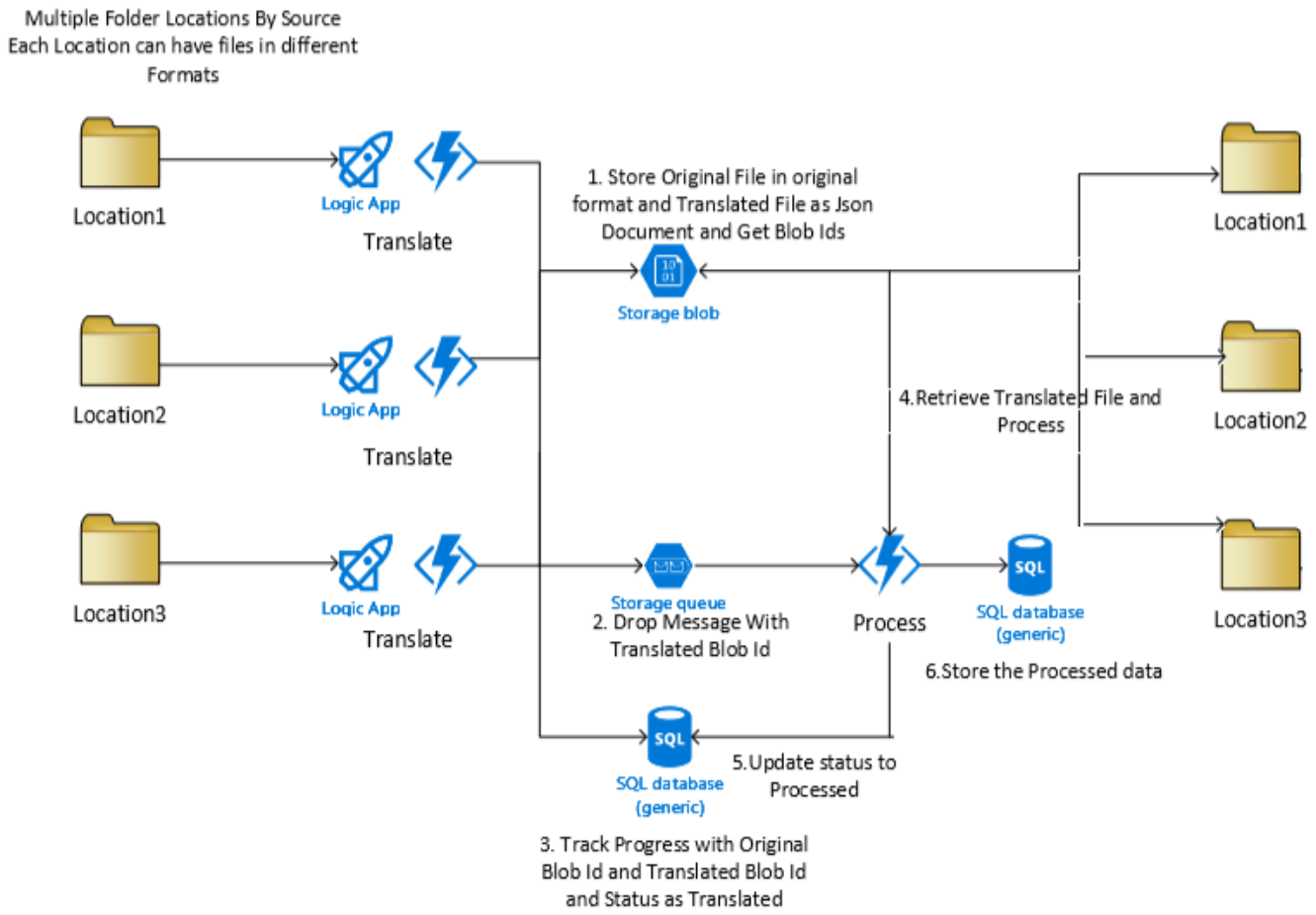
  Secure FTP or FTP.
- Incoming Folder Locations are monitored by

  BizTalk Server
- BizTalk Server process the incoming files through orchestrations and business rules.
- Processed Outputs are created to Outbound Folder

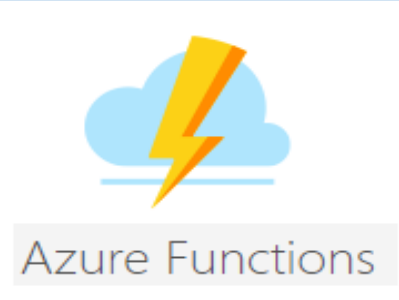


ServerLess EDI Applications

- Incoming Folder Locations will be monitored by Logic Apps.
- Logic Apps can invoke Function to perform translation
- Incoming EDI files can be stored in Blob Storage
- Process Function will be used to process incoming files
- Generate output files and transm to output location



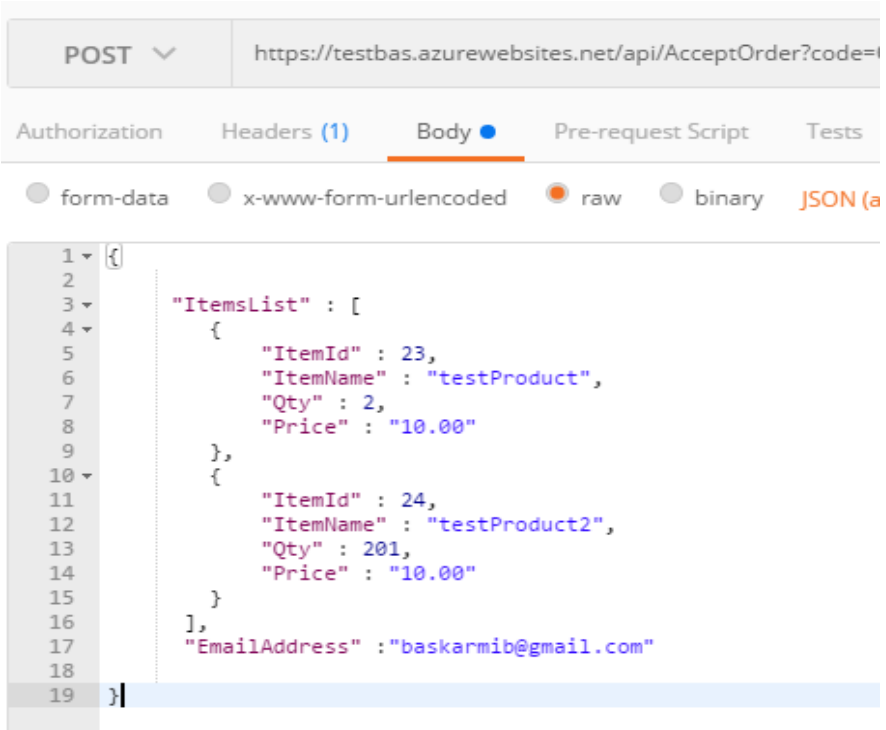
Azure Functions and Cosmos Demo



Functions Walkthrough-Azure Portal

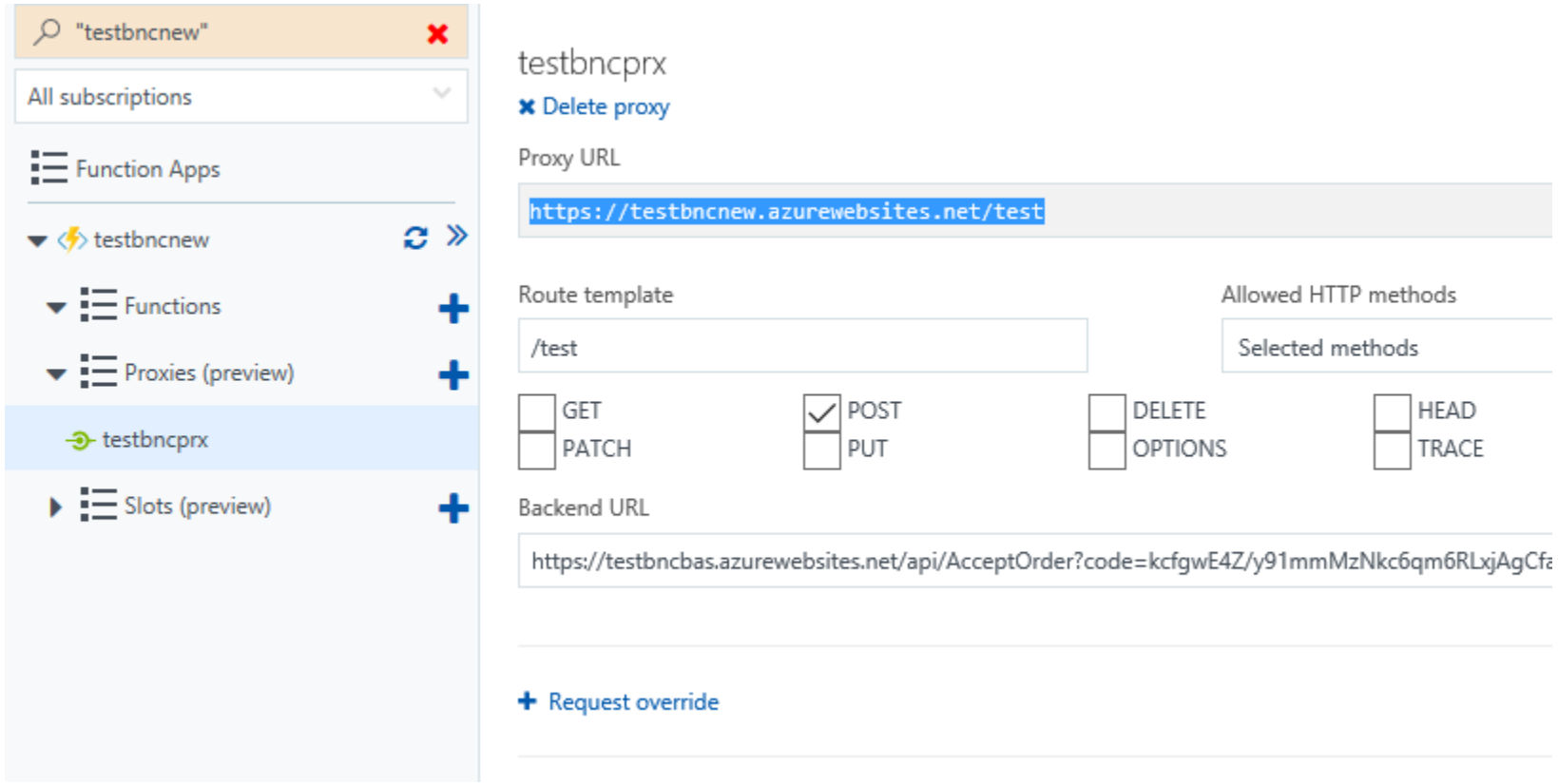
- Create an Http Trigger Function
- Accept order through HttpRequest
- Process the request and add an item to Azure Queue
- Create an Queue Trigger Function
- Save Processed Orders to Processed Orders Queue
- Create an Timer Trigger Function
- Send an Order Confirmation Email

Azure Functions



Function Proxies-Azure Portal

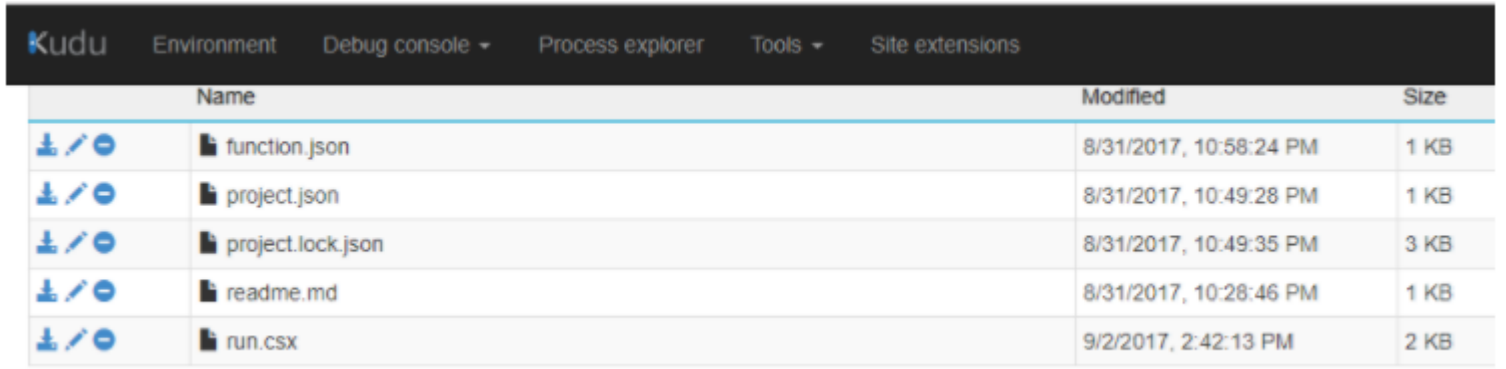
- Create an Azure Function Proxy
- Define proxy route
- Configure Back End url
- Test the function proxy



Functions Walkthrough-Using Kudu

- Below url can be used to launch kudu explorer

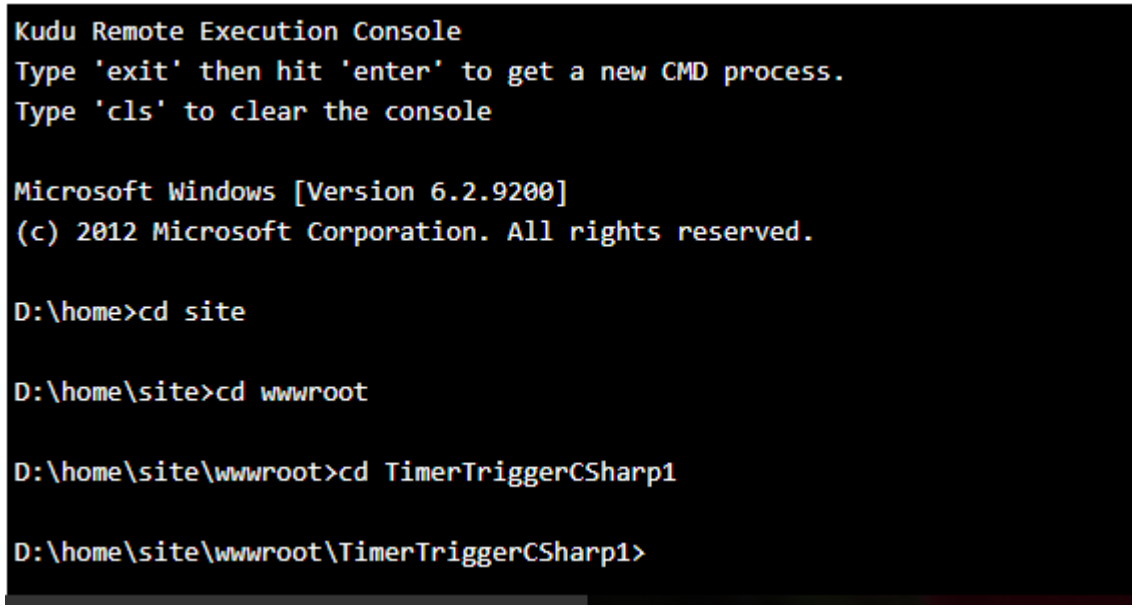
https://functionappname.scm.azurewebsites.net



- Kudu can be used to update settings and upload the files.
- Example – updating settings to update Nuget Packages.

Functions Walkthrough-Using Kudu

- Navigate to Debug Console and select cmd.
- A command line tool will be enabled.
- Using the command line tool,
  we can navigate to the folder pertaining
  to the above function. Function will be present inside wwwroot.

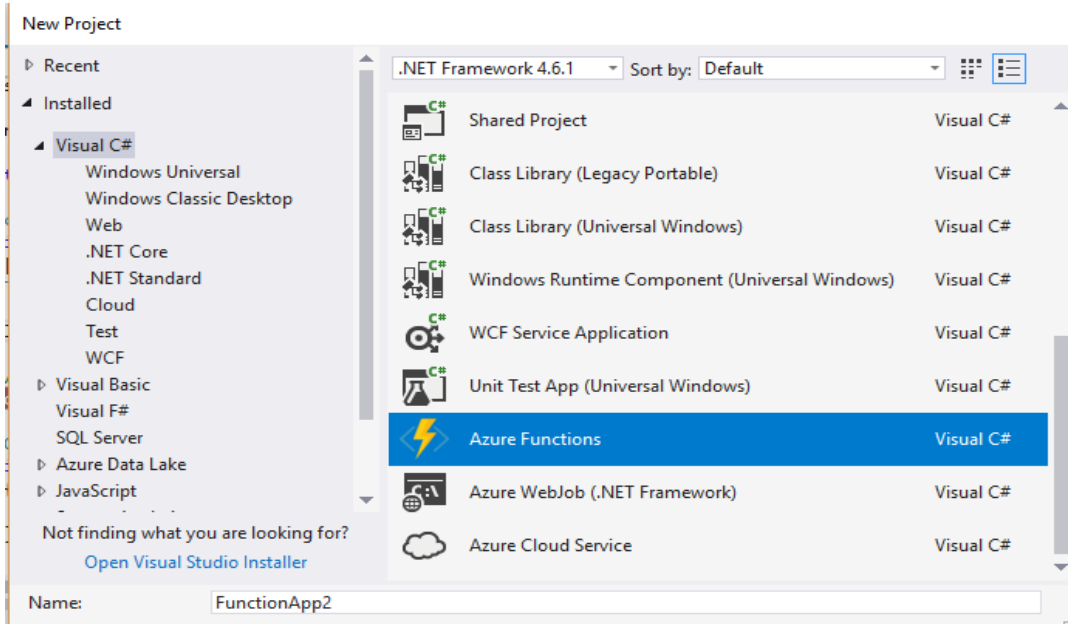


Functions Walkthrough-Visual Studio 2017

- Create a function using Visual Studio 2017
- Debug a function using Visual Studio 2017

- First time debug might take time as

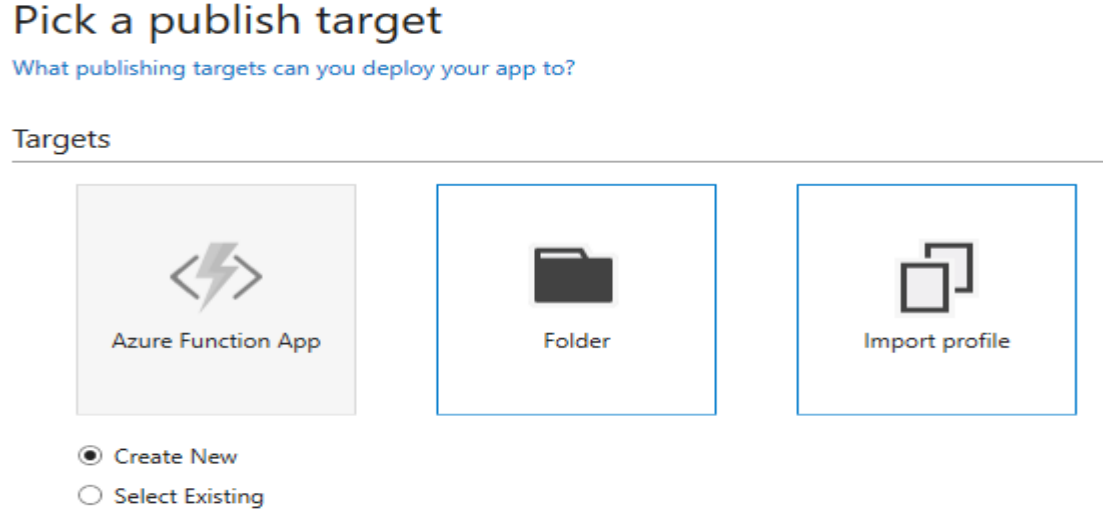
  Visual Studio will download Azure CLI tools

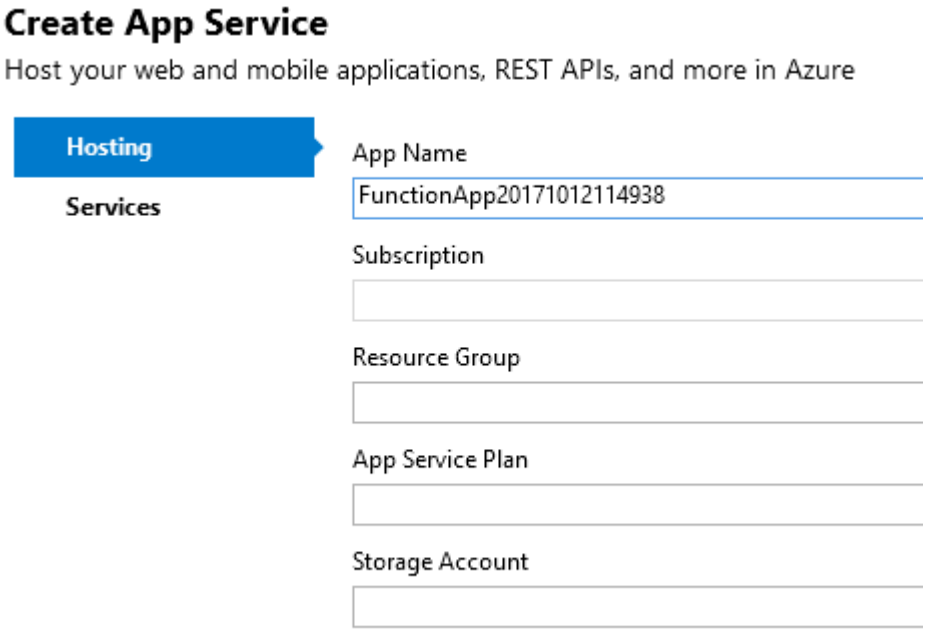


- After you install or upgrade to Visual Studio 2017 version 15.3, you must manually update the Visual Studio 2017 tools for Azure Functions. You can update the tools from the Tools menu under Extensions and Updates... > Updates > Visual Studio Marketplace > Azure Functions and Web Jobs Tools > Update.

Functions Walkthrough-Visual Studio 2017

- Publish a function using Visual Studio 2017

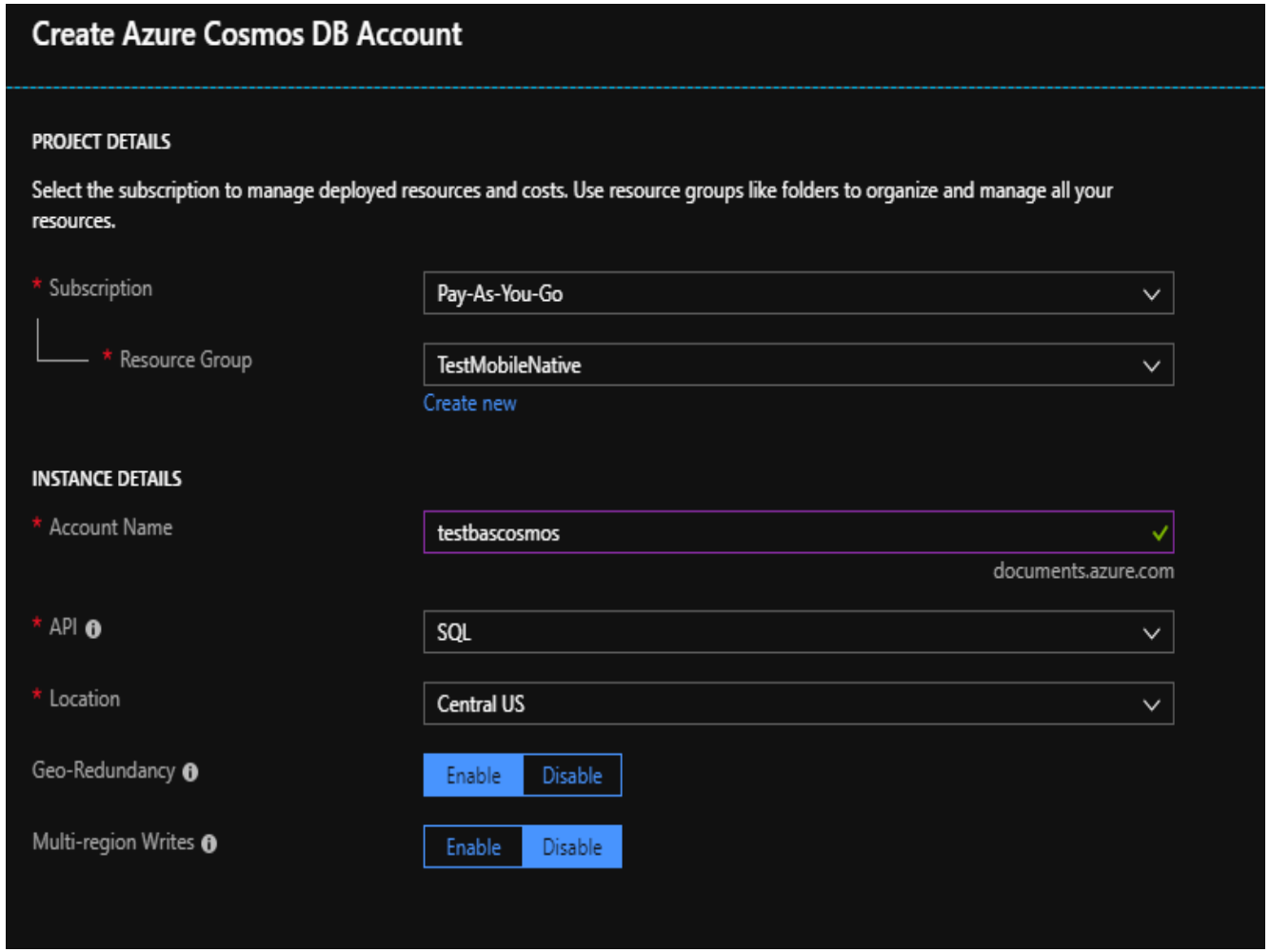




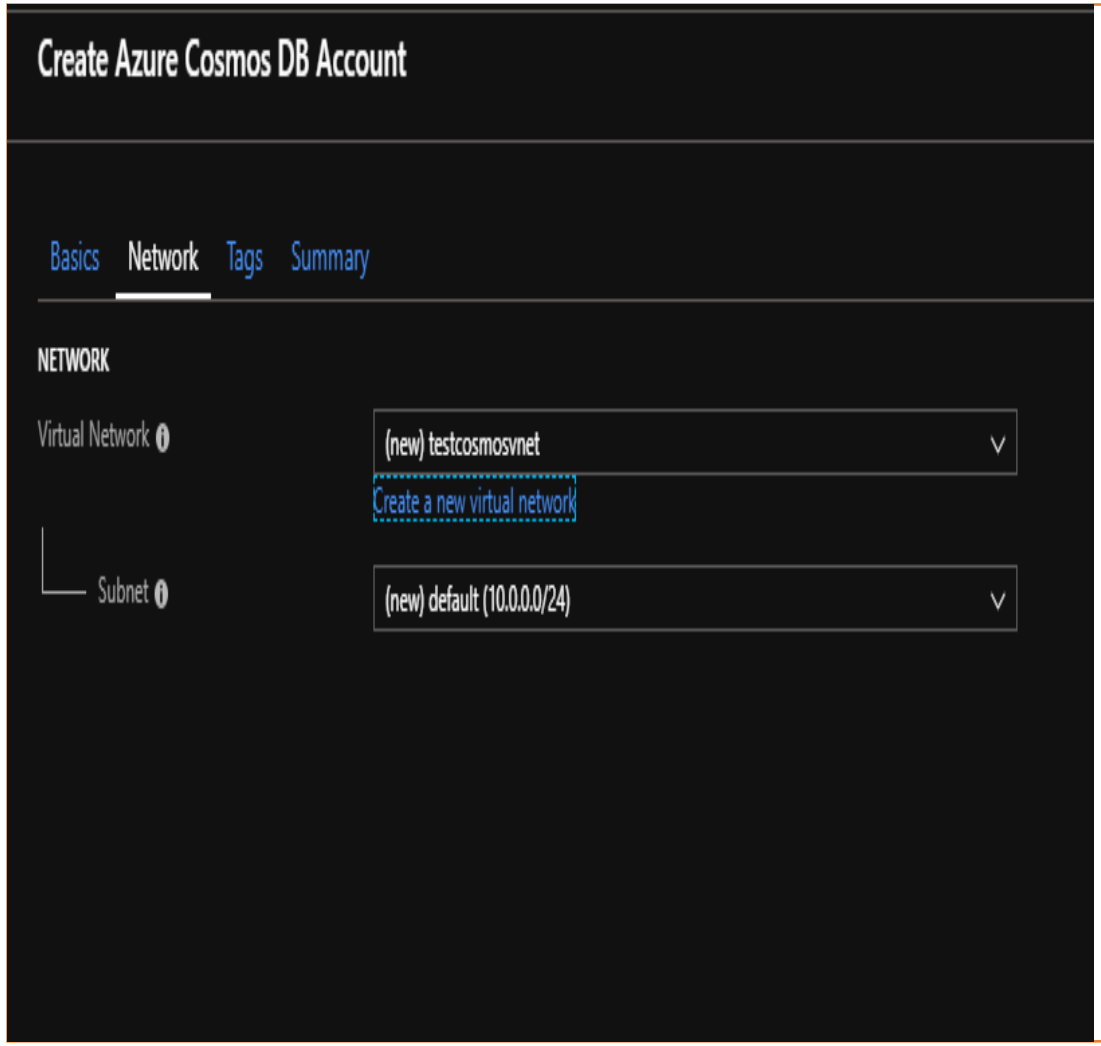
If we publish a function to an existing function app, it is possible that the function settings will be overridden to read only mode. These can be updated in Function app settings in azure portal to make the function in read/write mode in order to use azure portal for development.

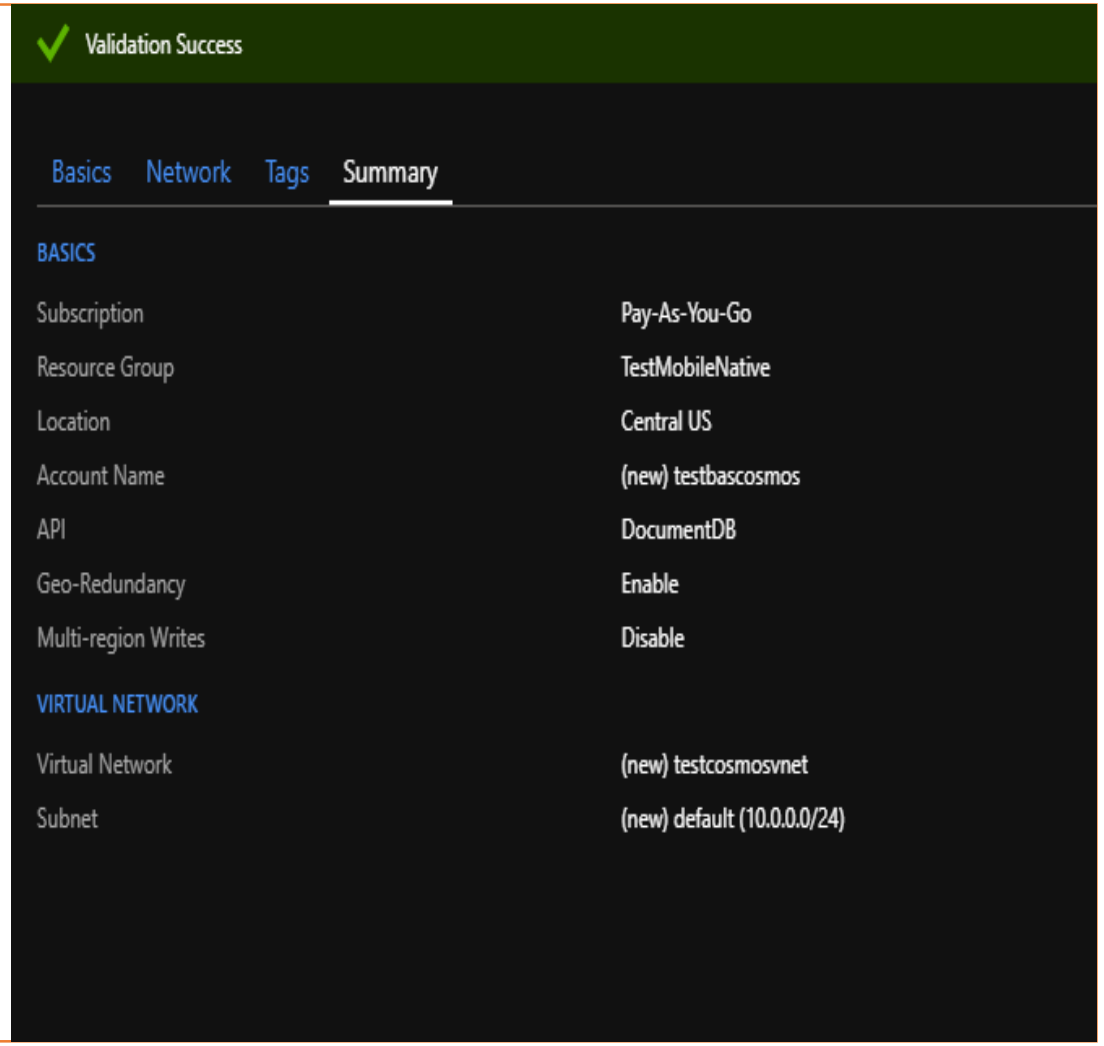
Cosmos DB Walkthrough-Azure Portal

- Create Cosmos using Azure Portal
- Create a Collection using Portal
- Add Documents to Collection using Portal
- Run Filter Queries using Portal
- Walkthrough Code Sample to Access Data

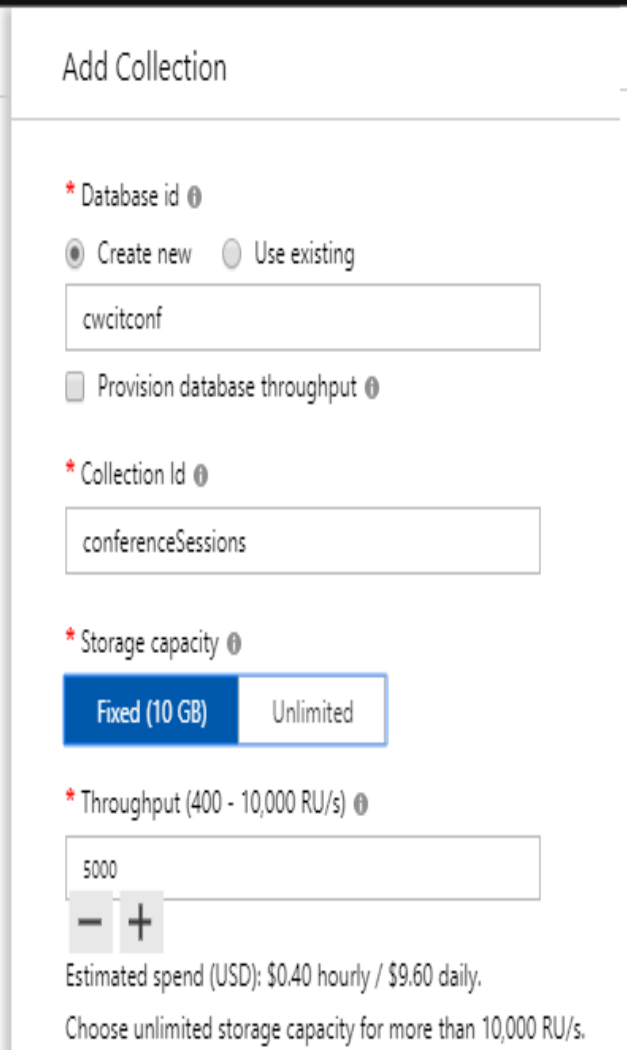


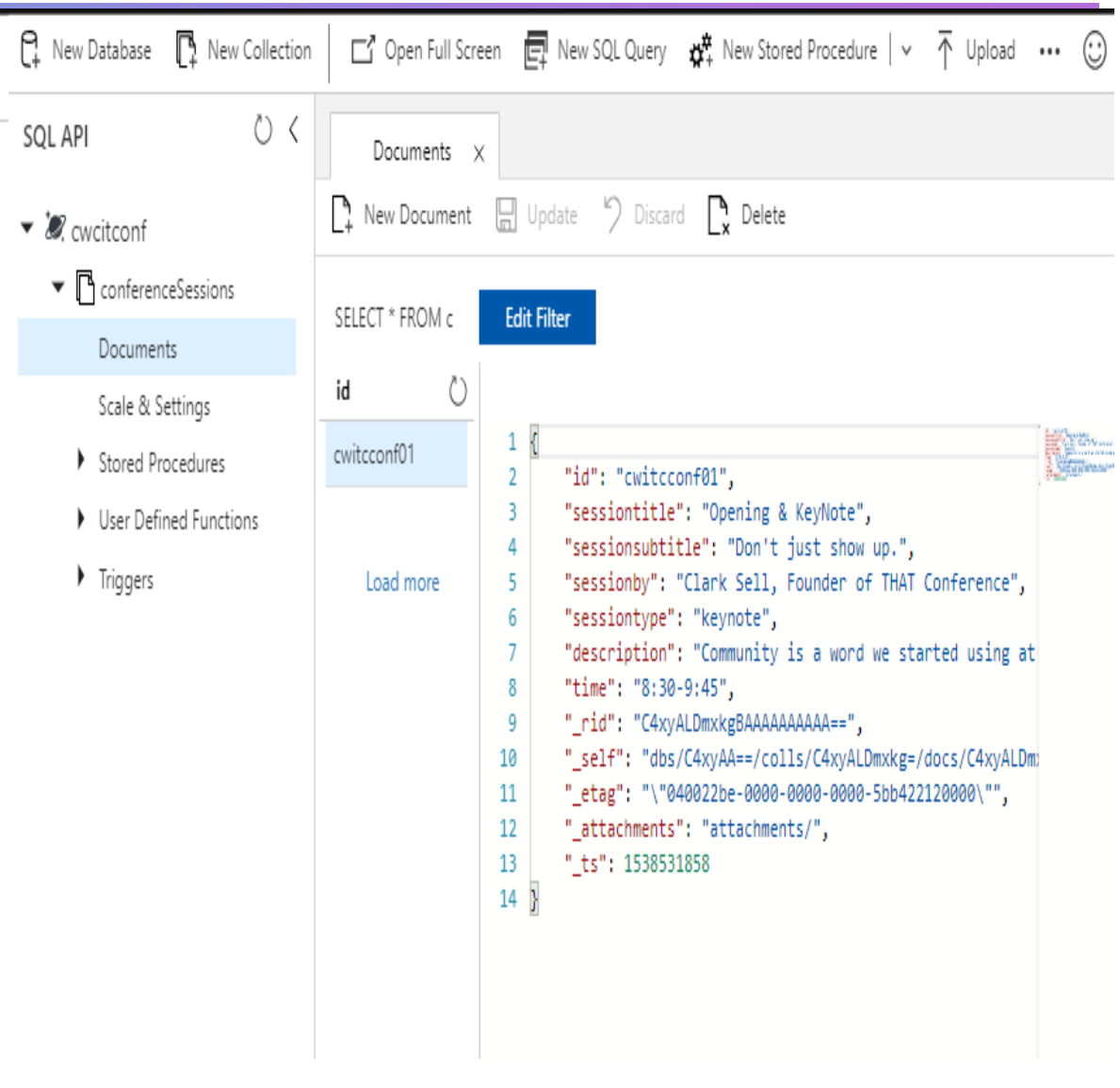
Cosmos DB Walkthrough-Azure Portal





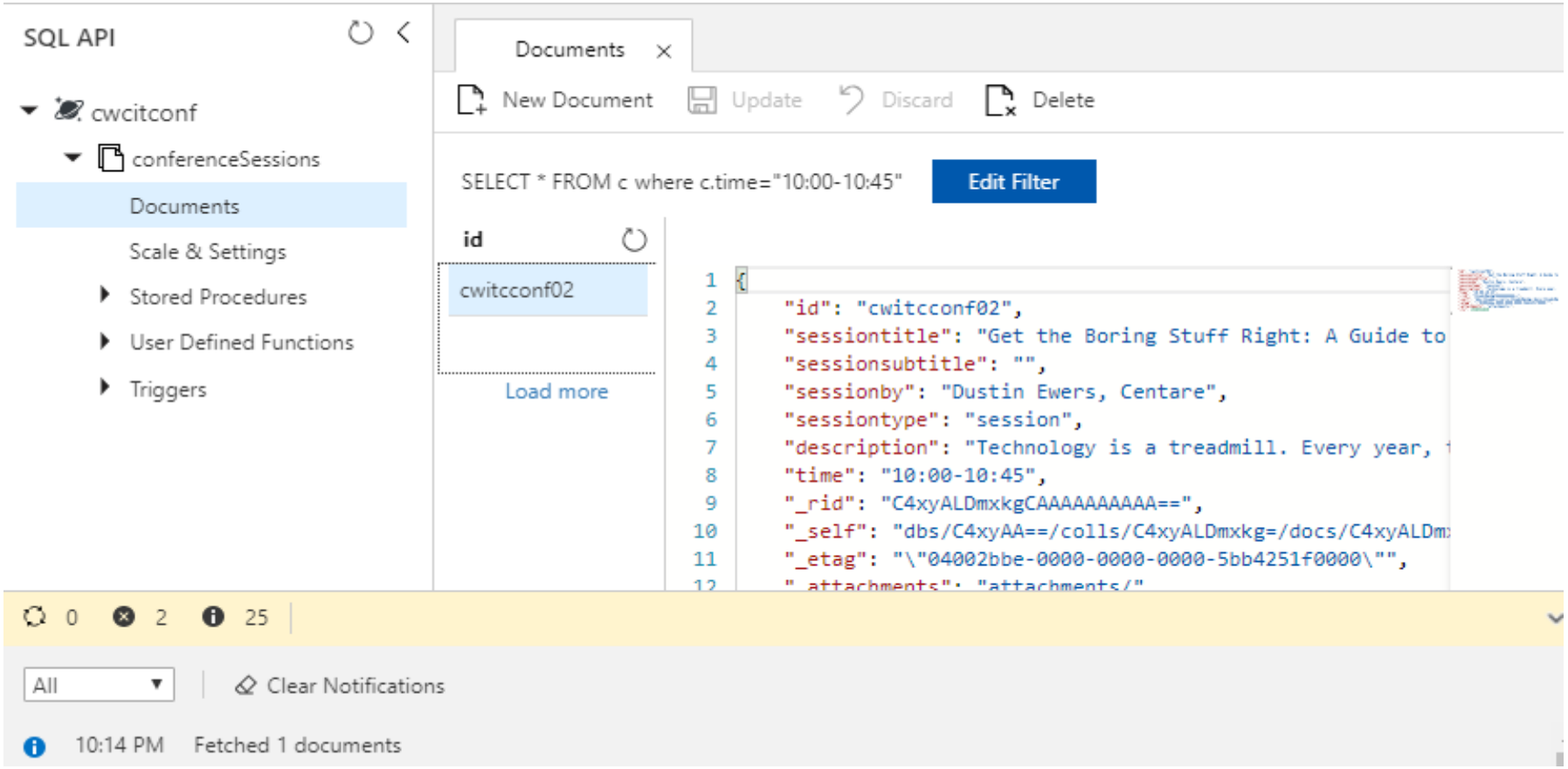
Cosmos DB Walkthrough-Azure Portal





Cosmos DB Walkthrough-Azure Portal

- Query Explorer can be used to query by applying filters



Application Insights

- App Insights can be used to monitor

  - Number of Users

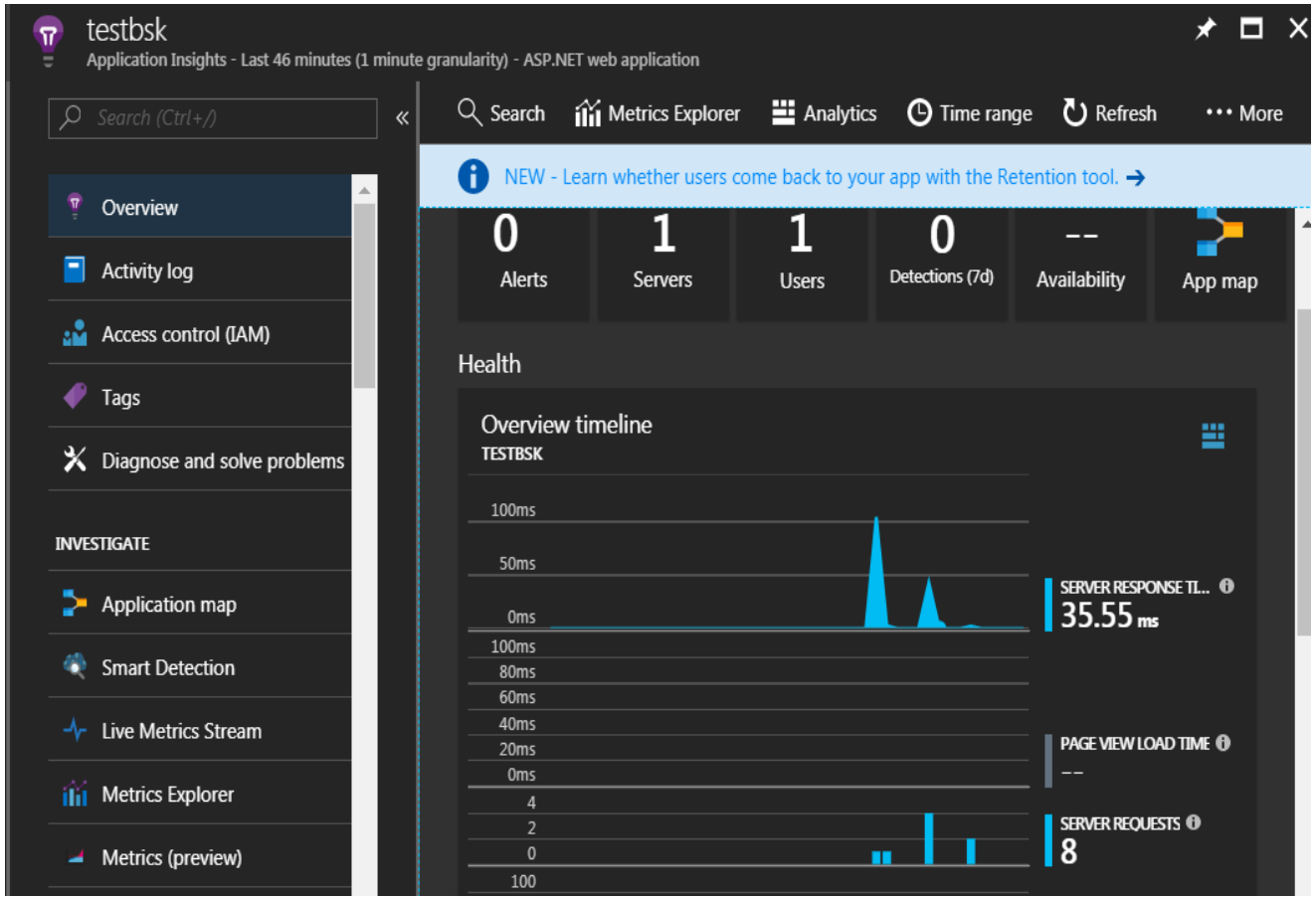
  - Number of Servers

  - Service Response Times

  - Total Number of Requests

  - Failed Request

  - Total Requests By Performance



Durable Functions

- Durable Functions are still in preview mode.
- They support the development of stateful functions.
- The following patterns are recommended for Durable Functions

  Function Chaining

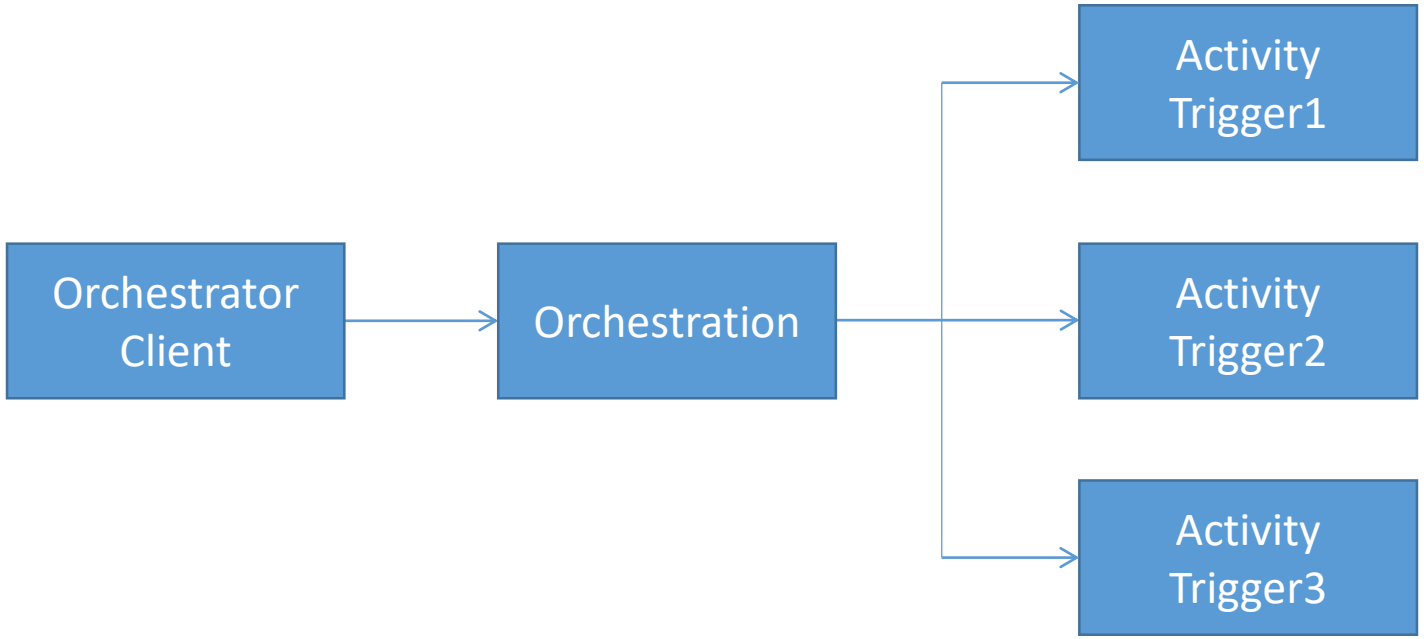
  Fan Out and Fan In Pattern

  Async Http API and Monitoring

  Human Interaction.
- Durable Functions are implemented using code workflows.

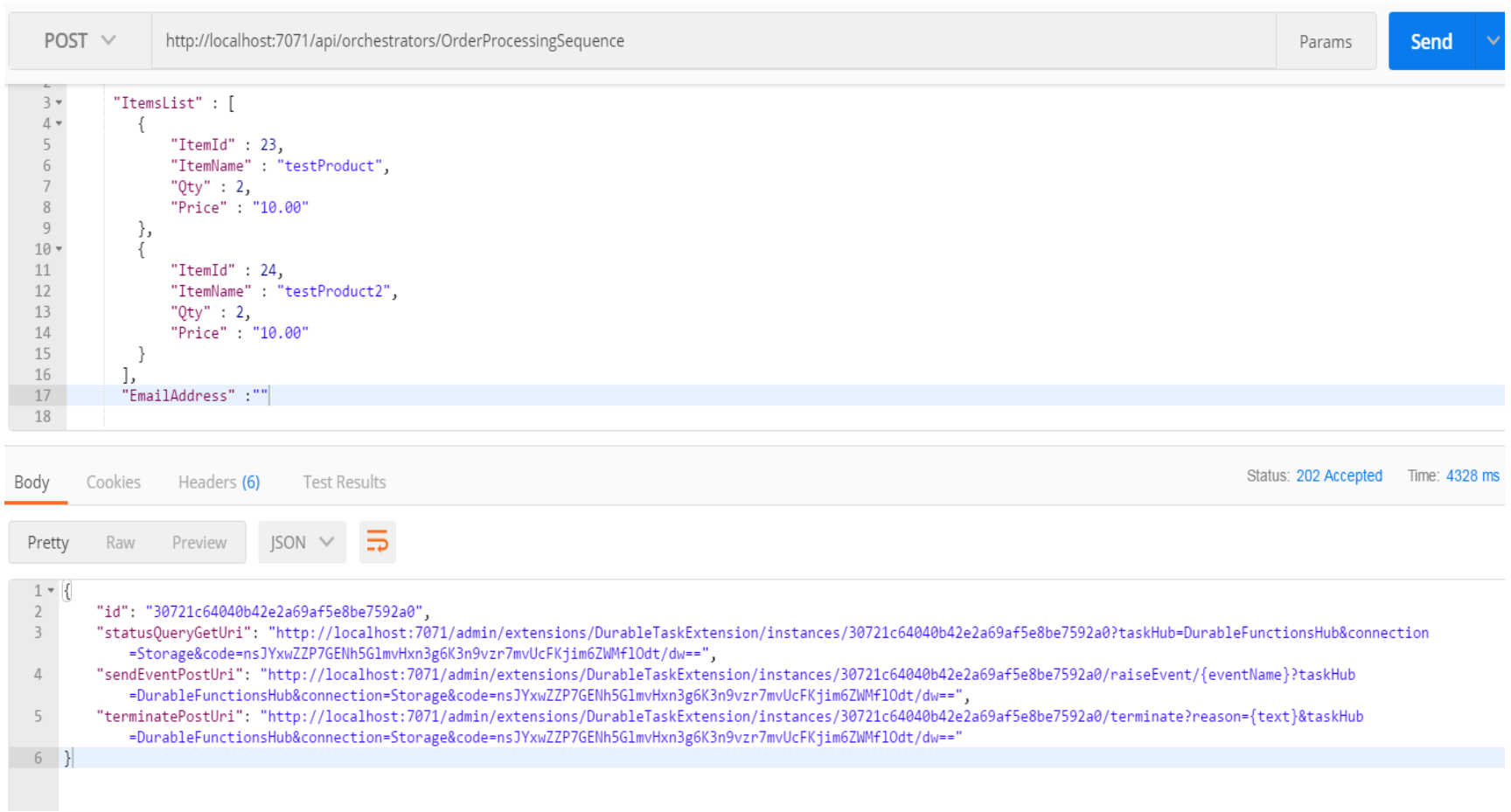
Demo Durable Functions

- Durable Functions demo using Function Chaining



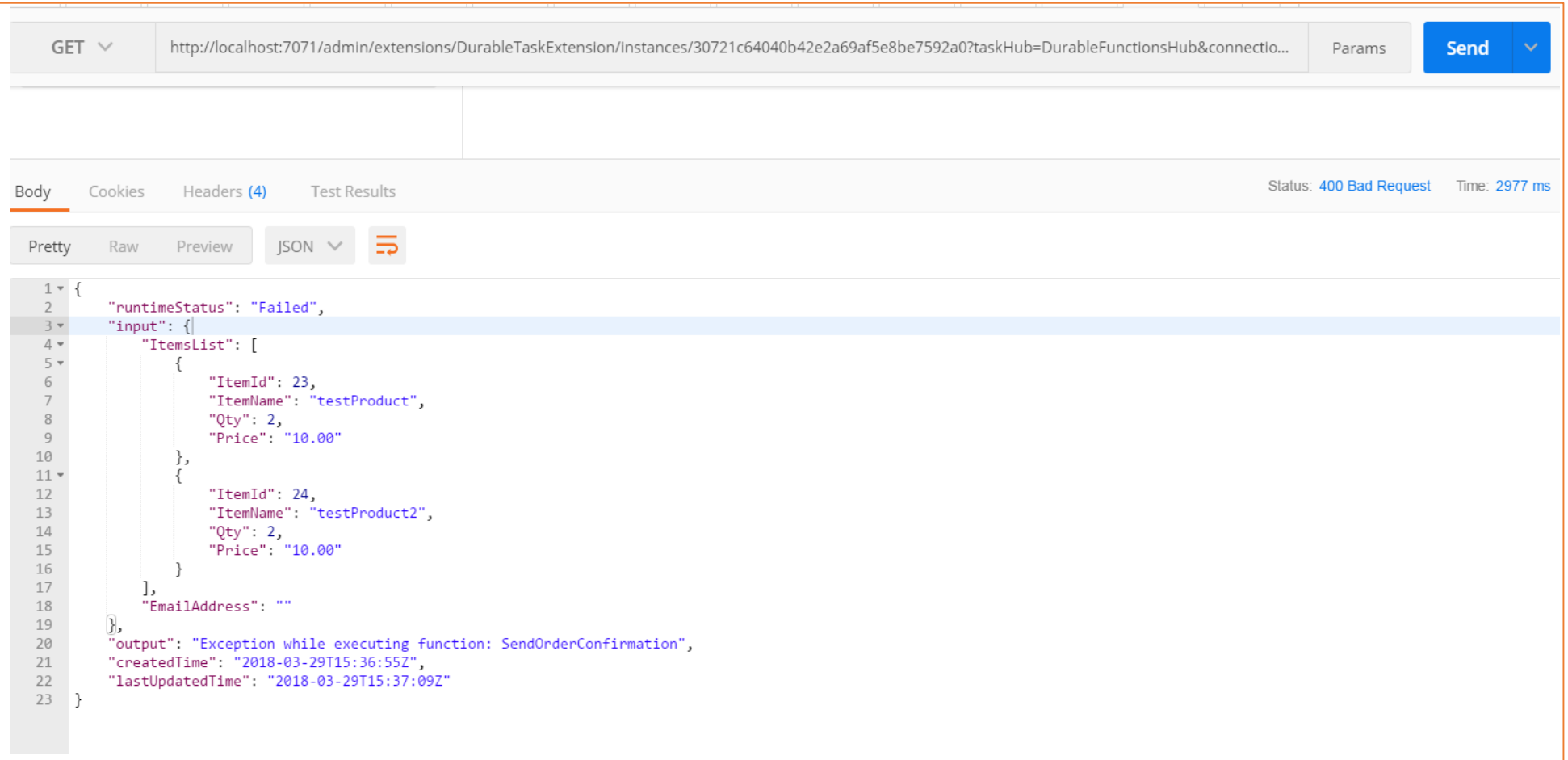
Manage Durable Functions

- statusQueryGetUri
- sendEventPostUri
- terminatePostUri



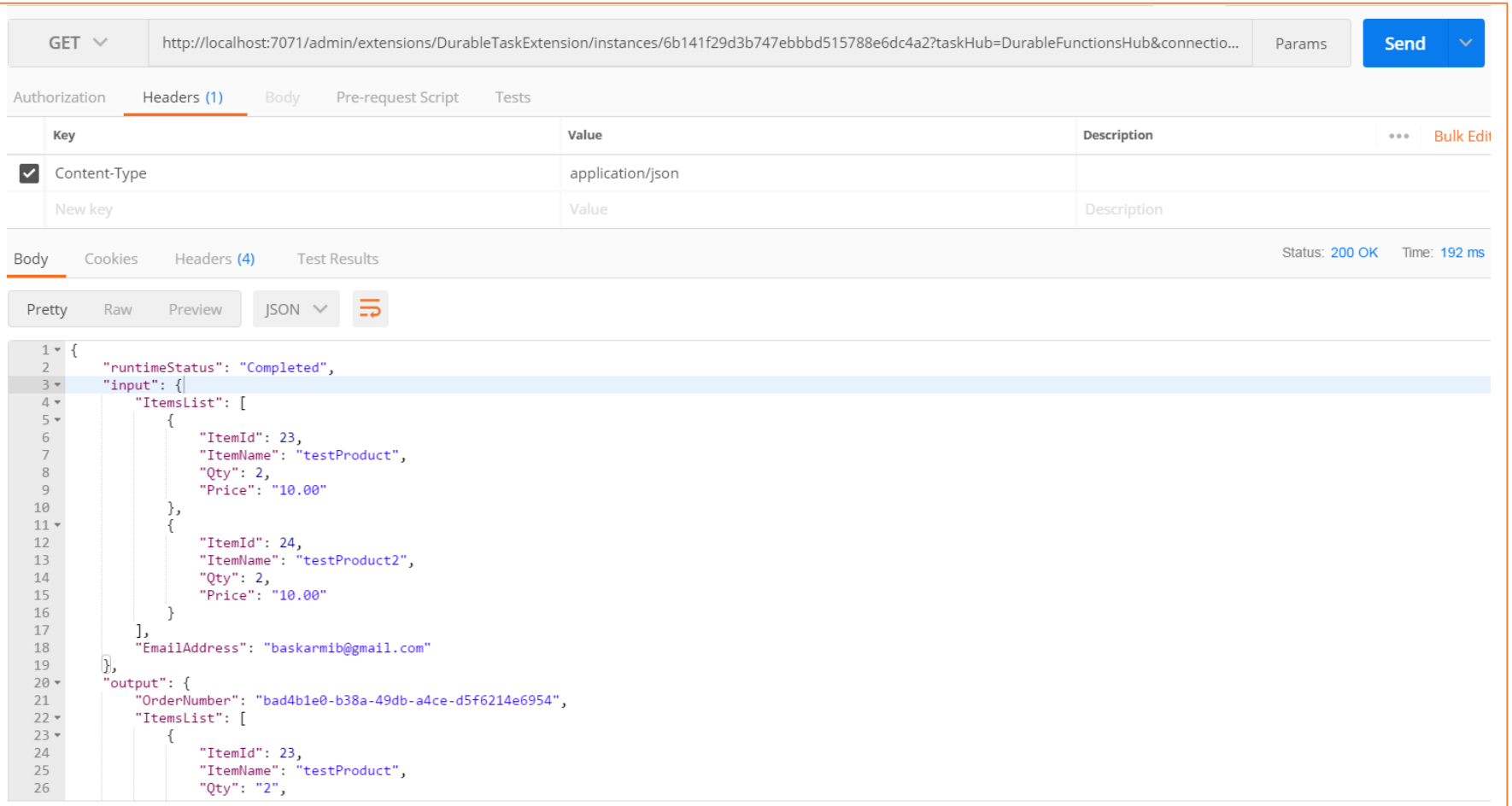
Manage Durable Functions

- statusQueryGetUri



Manage Durable Functions

- statusQueryGetUri



Key Points to Observe

- In azure portal , all the bindings are declared through orchestration or Integrate tab.
- Function developed from Visual Studio does not have the integrate tab options in portal.
- The method signatures are different in portal and Visual Studio. Visual Studio it is required to provide the signature attributes.
- When we use a Queue Trigger or any event based triggers until the function does not exit gracefully , function will keep on trying to execute the event repeatedly.

Server Less Computing - Limitations

Below are some disadvantages

- There might be increase in response time from functions if they are not used continuously.
- There is no direct control on the CPU size or Memory allocation as they are allocated based on usage while using Consumption Plan.
- We can configure source control for functions developed in portal after initial deployment.

Code Samples

Below are the code samples in GitHub

Http Trigger, Queue Trigger and Timer Trigger Functions

https://github.com/baskar3078/testazurefunctions

The above functions converted as Durable Function Activities

https://github.com/baskar3078/durableFunctionSample

Microsoft Ignite 2018 Announcements

https://news.microsoft.com/uploads/prod/sites/507/2018/09/IGNITEBOOKOFNEWS-5ba90f5a37c54.pdf

Questions

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