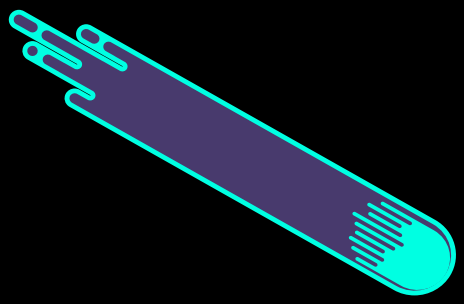
Microsoft Azure



Azure Tips and Tricks

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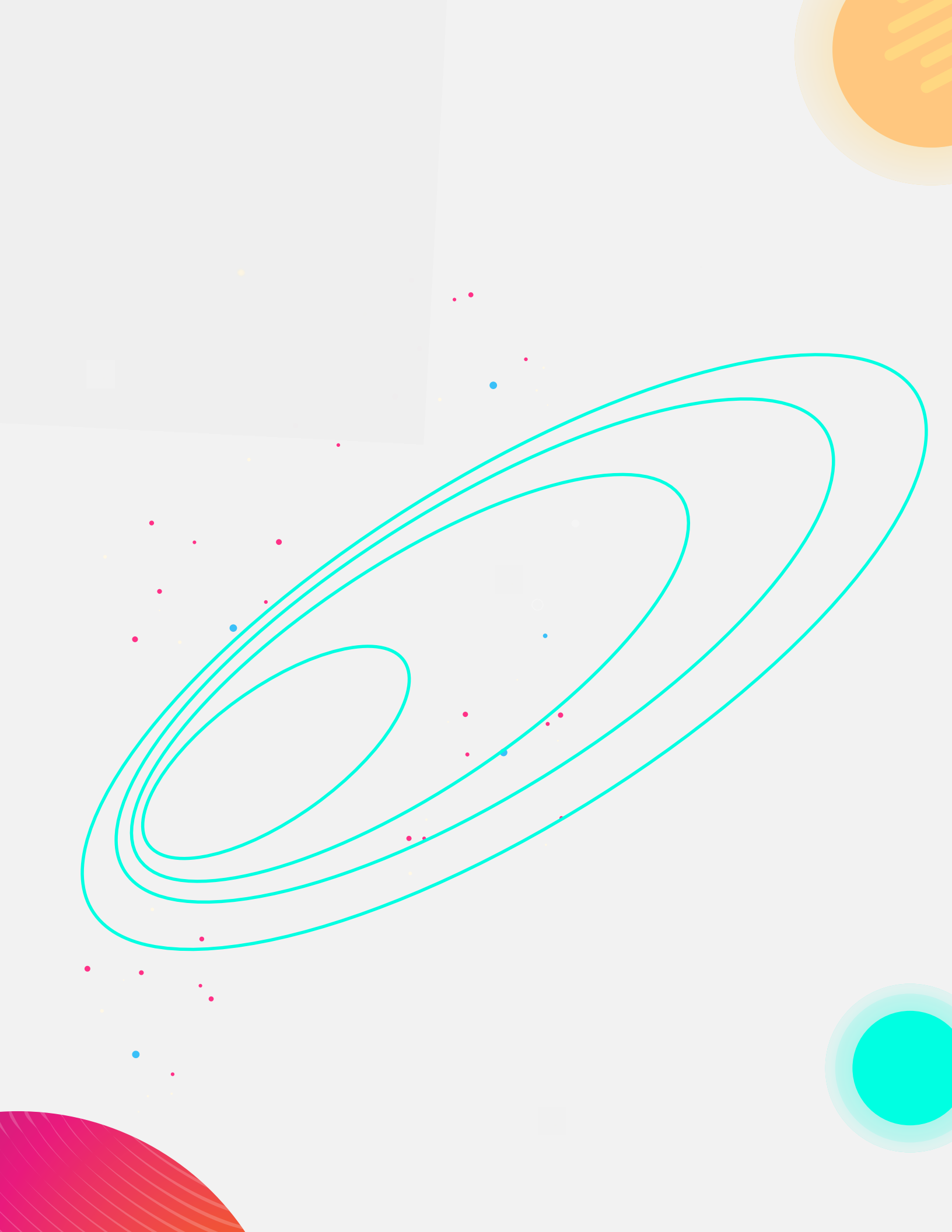


Introduction

Hi, folks! 

When I reflect back on Azure Tips and Tricks a year ago, I was only thinking that I'd write a couple of posts and move on. Fast-forward to today, the collection has grown to over 150+ tips, as well as videos, conference talks, and now an eBook spanning the entire universe of the Azure platform. What you are currently reading is a special collection of tips based on page views of the entire series over the last year. I've grouped the top tips and landed on four categories that cover web, data, serverless, and productivity. Before we dive in, you'll notice my pixelated form as you turn each page.

These represent:

Something I found interesting and you may too.

Additional resources to get the most out of this tip.

A key takeaway from the tip.

You can stay up to date with the latest Azure Tips and Tricks at:

- Blog - azuredev.tips
- Videos - videos.azuredev.tips
- eBook - ebook.azuredev.tips
- Survey - survey.azuredev.tips

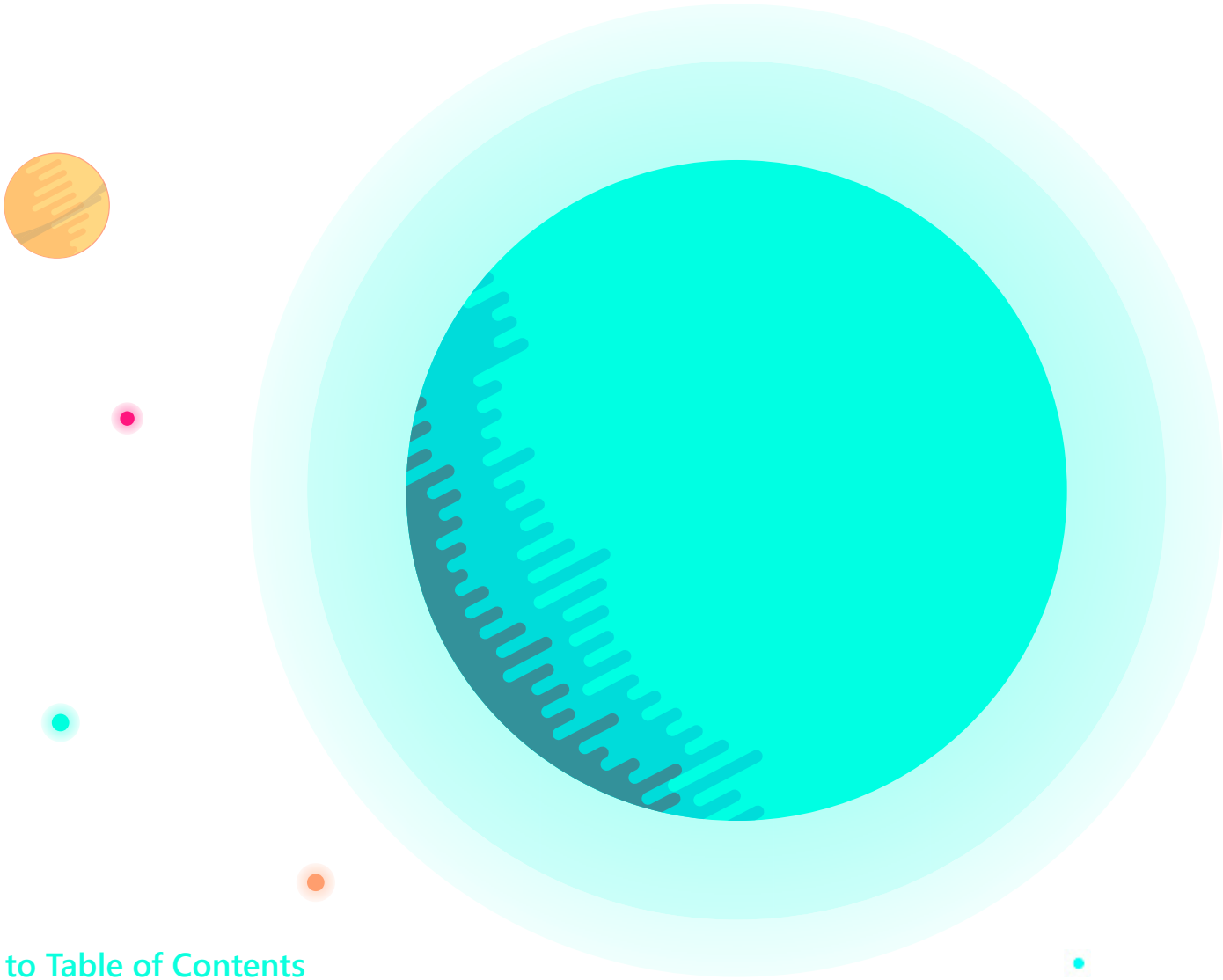
I hope you enjoy reading the eBook as much as I did writing it.

Thanks,
Michael Crump (@mbcrump)

Table of Contents

WEB

If you've used Azure, you've more than likely used Azure App Service to easily host web applications, REST APIs, and mobile back ends. In this set of tips, I've pulled out the **top 6 tips** since the creation of Azure Tips and Tricks for Azure App Service. They include easily working with files in the console, easily setting up staging environments and swapping between them, and routing traffic to different versions of your app to "Test in Production". I'll also cover how you can implement performance testing, best practices for App Settings in Azure App Service, and cloning a web app that is especially helpful if you have customers all over the world.



Back to Table of Contents

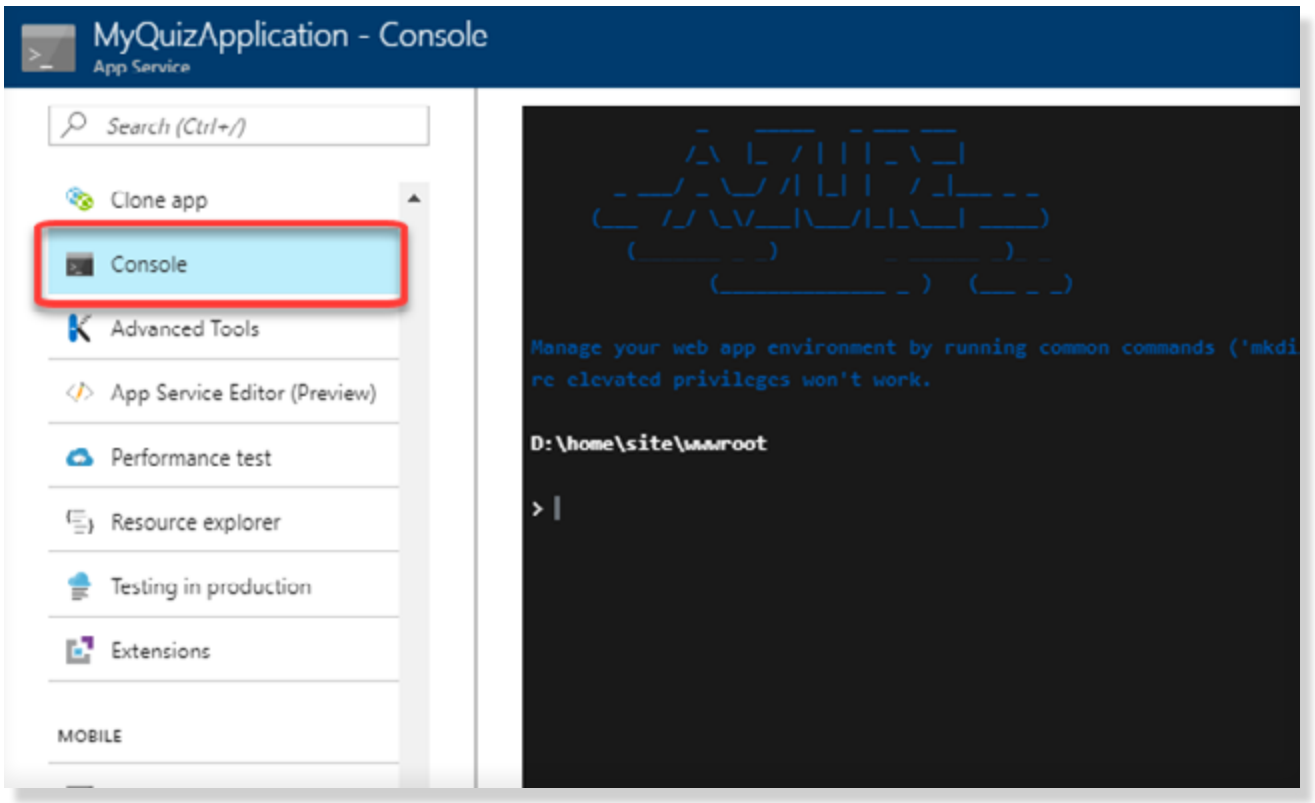
Working with Files in Azure App Service

You can learn more about Azure App Service here

We'll take a look at the files inside an Azure App Service web site and how you can easily work with them.

Console Access to my App Service

Go to the Azure Portal and select my App Service. Click on **Console** under **Development Tools** to have a command prompt to quickly work with my Azure App Service.



As you can tell from the screenshot, I start in D:\home\site\wwwroot. I can type dir to see a current directory listing.

```
Volume in drive D is Windows
 Volume Serial Number is FE33-4717

 Directory of D:\home\site\wwwroot

09/21/2017  08:35 PM    <DIR>          .
09/21/2017  08:35 PM    <DIR>          ..
09/20/2017  09:03 PM    <DIR>          css
09/20/2017  09:03 PM             5,351 Default.html
09/20/2017  09:03 PM    <DIR>          js
09/20/2017  09:03 PM             1,950 jsQuizEngine.sln
09/20/2017  09:03 PM               304 jsQuizEngine.userprefs
09/20/2017  09:03 PM            31,744 jsQuizEngine.v12.suo
09/20/2017  09:03 PM    <DIR>          PrecompiledWeb
09/20/2017  09:03 PM    <DIR>          quiz
               4 File(s)         39,349 bytes
               7 Dir(s)   1,072,893,952 bytes free
```

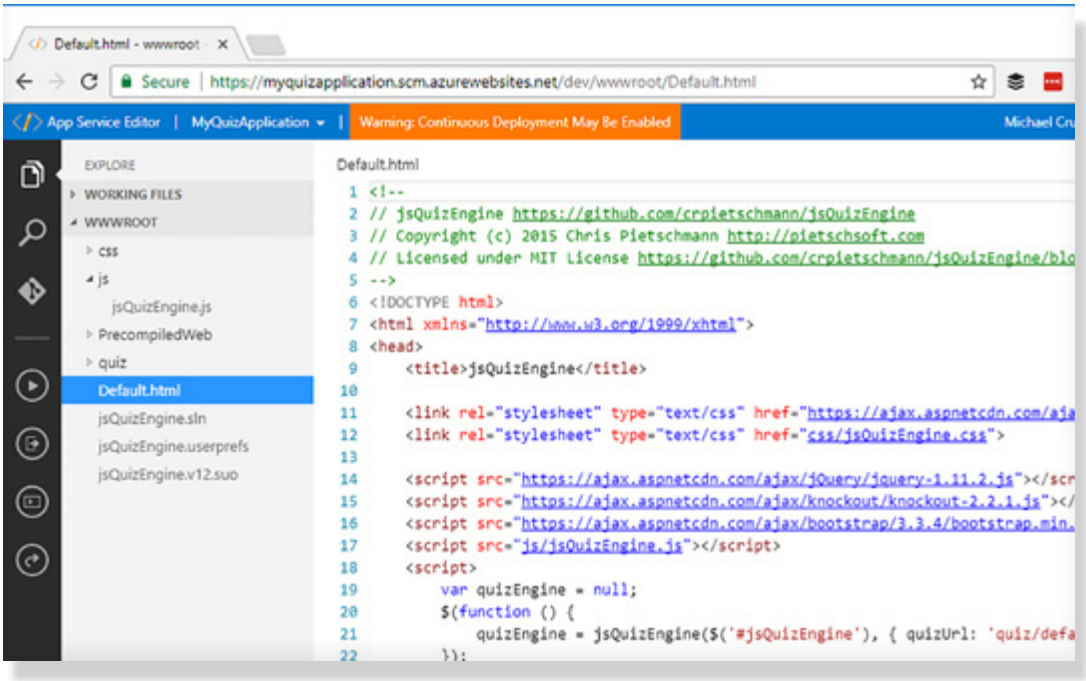
Quick Tip You can type **help** from the console window for a list of available commands.

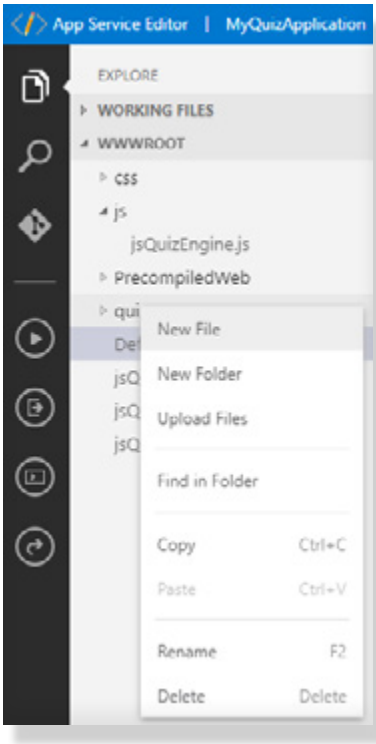
I can do basic commands here and even use **TYPE <FILENAME>** to parse the output of a file to the screen. You can make directory and so forth, but keep in mind that this is a sandbox environment and some commands which require elevated permissions may not work.

If you're familiar with VS Code, then you'll be right at home as you can explore, search and add to Git. You can also manipulate files from within the window. This makes it easy to add, edit or delete files.

A VS Code Experience to an Azure App Service

A VS Code Experience to an Azure App Service
There is also another option that is called **"App Service Editor"** located just two items down from "**Console**" that you picked before.

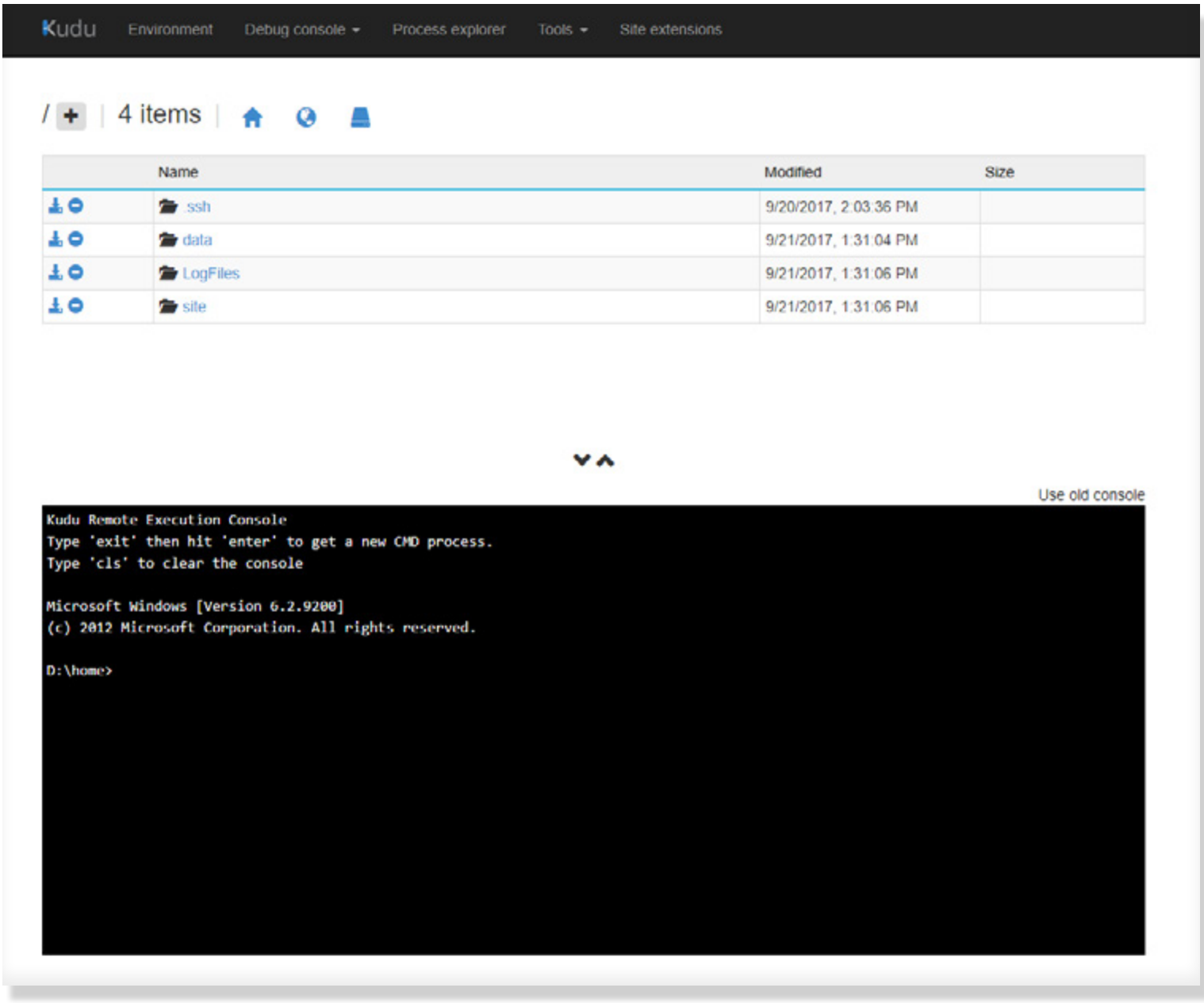




Just like in VS Code, you can modify your settings and even change your theme.

Kudu Diagnostic Console

No App Service tutorial is complete without mentioning Kudu Diagnostic Console. You can access it from within the **App Service Editor** under your **app name -> Open Kudu Console** or through the portal under **Advanced Tools.**



Quick Tip The App Service Editor is a great choice if ever in doubt and you can access it directly **here**

You can just click on the folder name to navigate or type in the command. You can also easily manipulate the files, but I like the App Service Editor better for that functionality.

Editor is perfect for lightweight work such as editing files whereas Kudu puts you deep into the weeds with debugging information, file manipulation and more.

The main reason that I typically come to the Kudu Diagnostic Console is to download files.

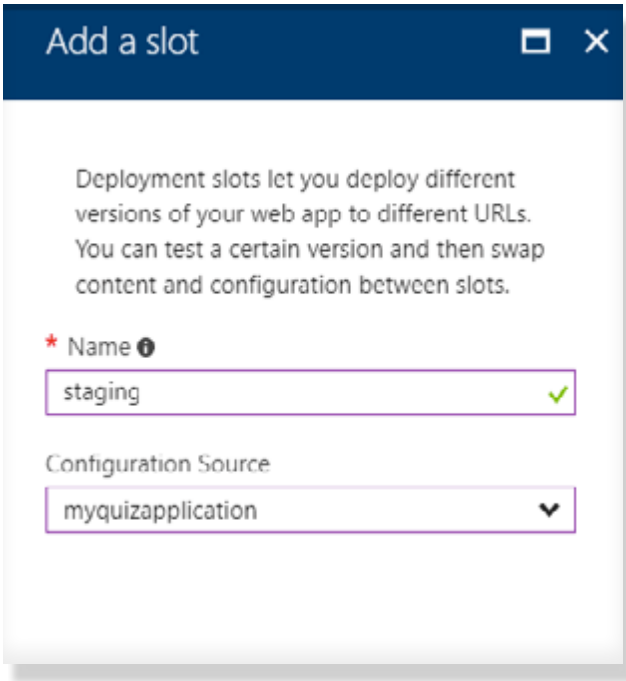
Test Web Apps in Production with Azure App Service

You can learn more about Azure Deployment Slots **here**

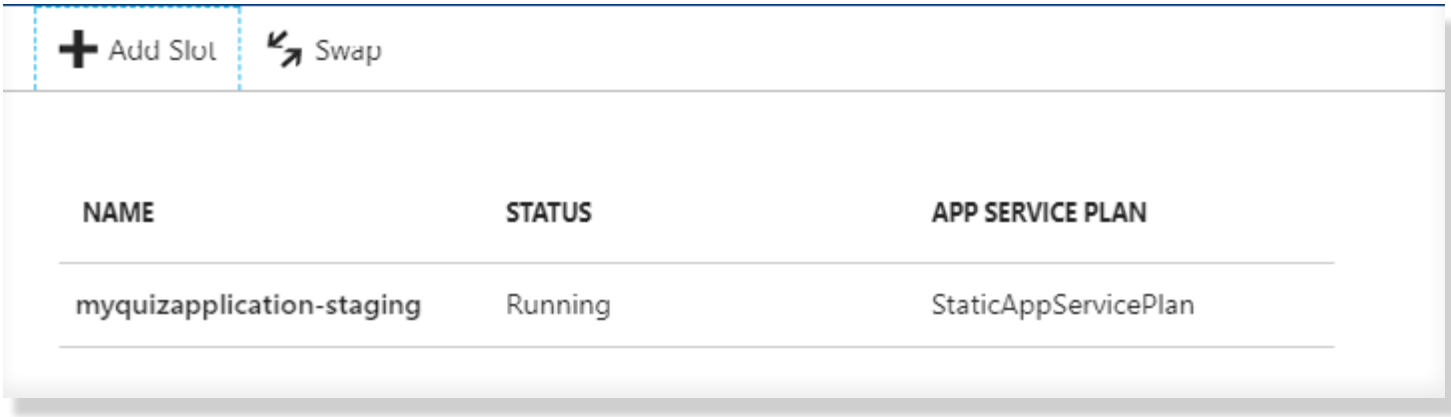
We'll take a look at the files inside an Azure App Service web site and how you can easily work with them.

Creating Deployment Slot

Deployment slots let you deploy different versions of your web app to different URLs. You can test a certain version and then swap content and configuration between slots.
Go to the Azure Portal and select my App Service and click on **Deployment Slots** under **Deployment** to get started. Then click on the **Add Slots** button. Give it a name such as staging then use an existing configuration source. We'll use our "production" web app. You know, the cool quiz application. Aka.ms/azuretips/myquizapp

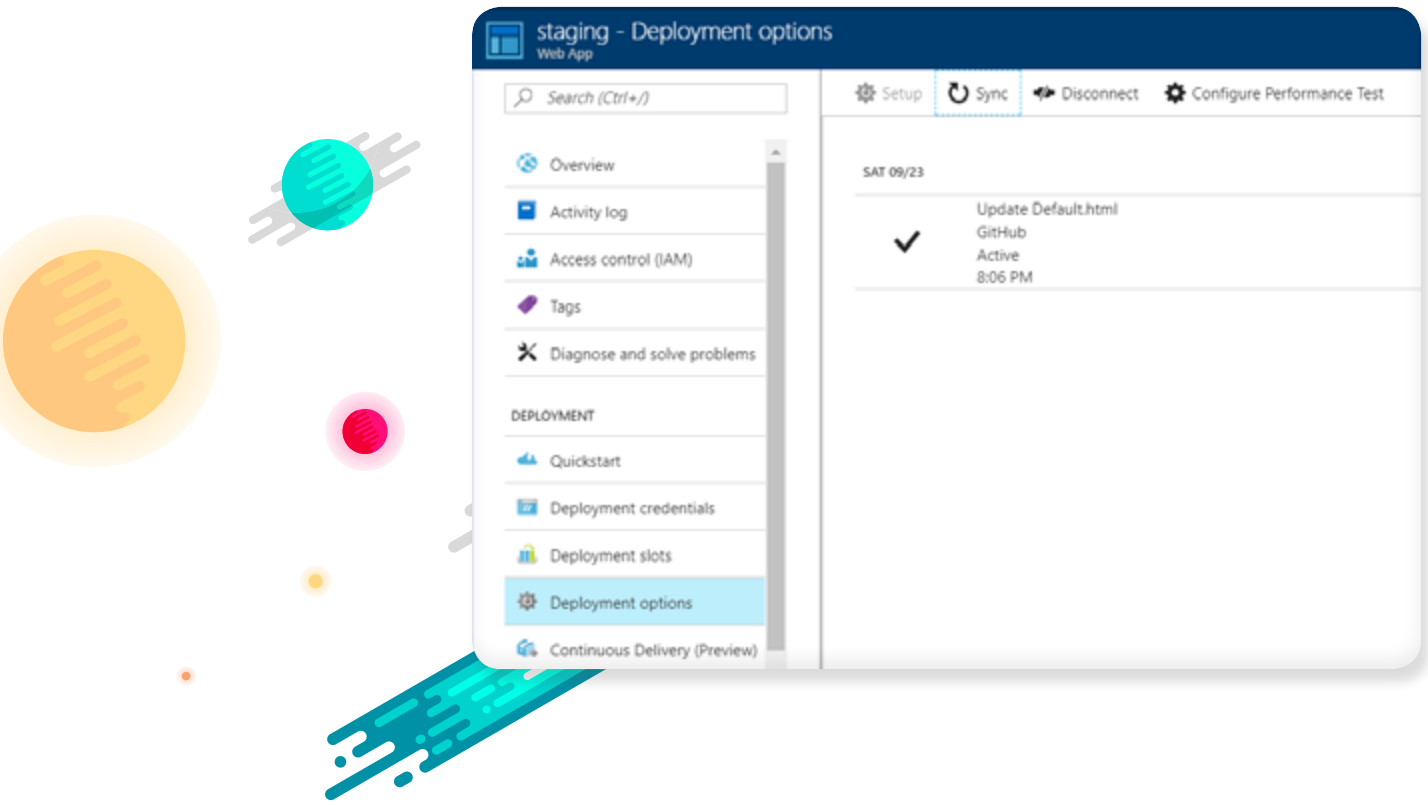


Great, now if we go back to Deployment Slots, we should see it running.



Click on the new staging site that we just created and you'll notice that it has appended the word **staging.** You'll also notice we have a new site: Aka.ms/azuretips/quizsourcegit

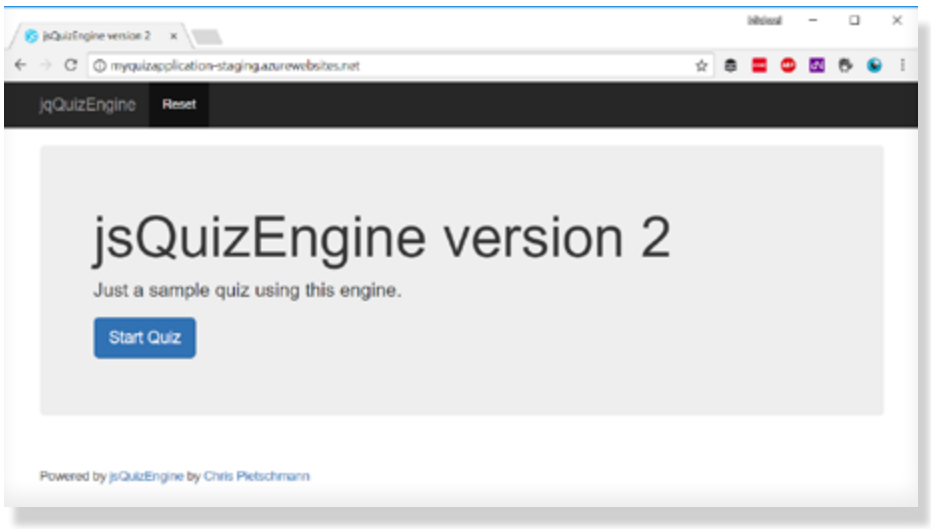
We need to push a new version of our existing quiz application to this staging slot. Go to **Deployment Options** and select **External Repository.** Give it the following URL: Aka.ms/azuretips/quizsource and hit OK."You might have to hit Sync, and you'll eventually see the following:



We could now return to the original app service that we created and swap between the two sites that we have. For example, you might want to move the **staging** site over to the **production** site and vice versa. The power of this is that your users don't experience a downtime and you can continue working in your preferred space until ready to move to production.

Source Code The source code to the staging environment can be found **here**

Give it a couple of minutes until you see that it has completed pulling down your code from Git and then go to the new URL of your site. You can find the URL on your overview page. In my case it is, http://myquizapplication-staging.azurewebsites.net/



Success! This is our new site as indicated by the awesome large font that says **jsQuizEngine version 2.**

In this tip, we'll look at a feature called Testing in Production which allows you to test your application in production. Not scary at all!

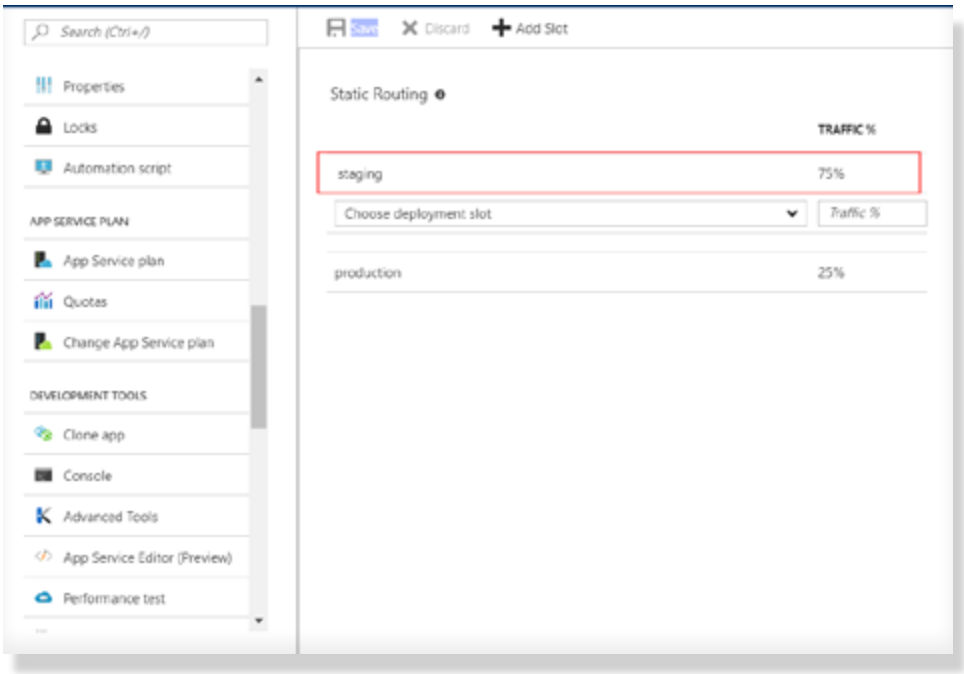
Hold up! You'll want to take a look at the deployment slots in the previous tip if you haven't worked with deployment slots before.

What is Static Routing This section lets you control how traffic is distributed between your production and other slots. This is useful if you want to try out a new change with a small percentage of requests and then gradually increase the percentage of requests that get the new behavior.

Testing Web Apps in Production with Azure App Service

Go to the Azure Portal and select my App Service and click on Testing in Production under **Development Tools** to get started. The first thing you'll see is **Static Routing** and you'll notice that it's looking for a deployment slot and traffic percentage.

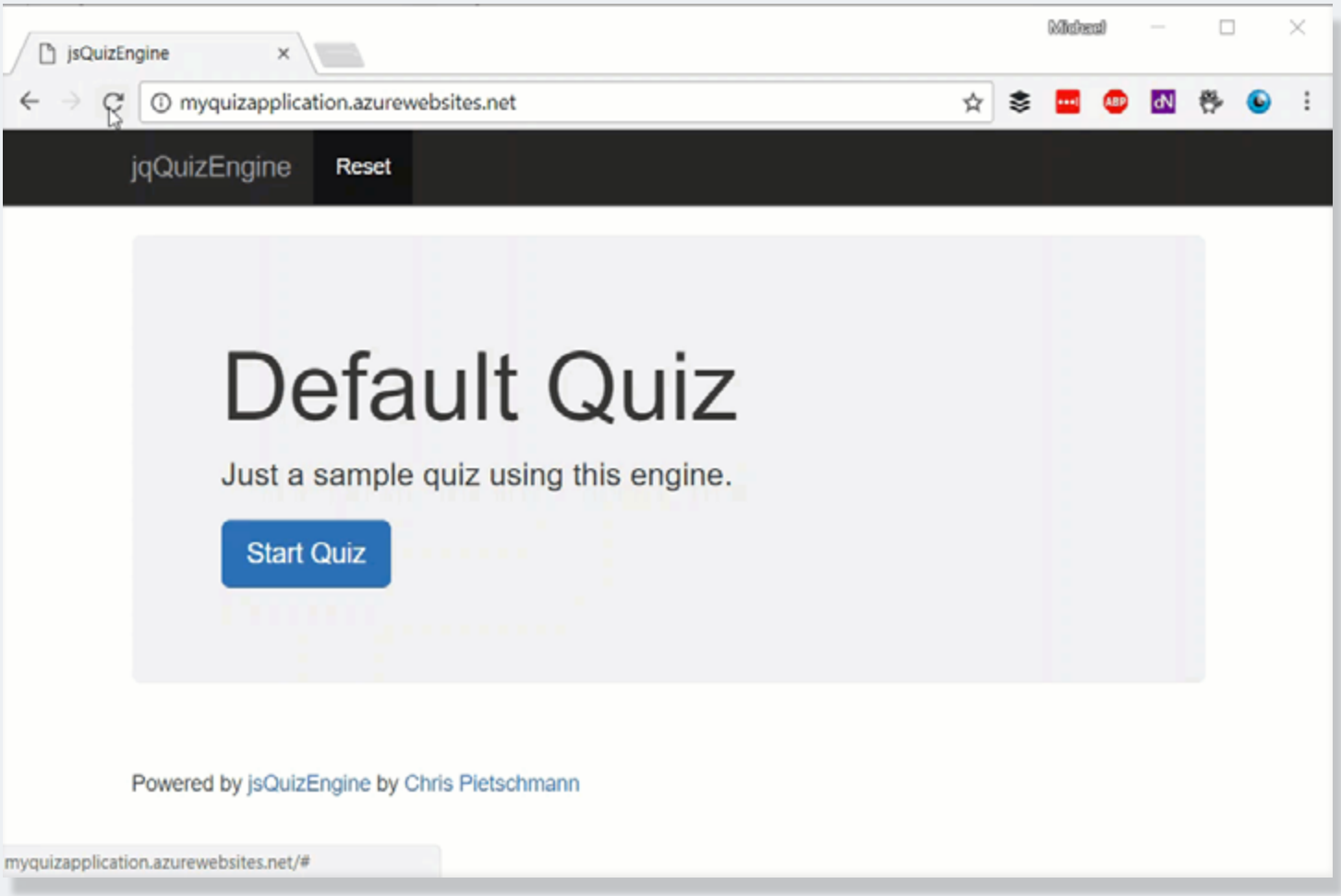
We'll want to split the traffic to our site into two groups to test our new site and see if customers like it. Since this is just a demo, I want to send a large number of folks to our new **staging** site as shown below.



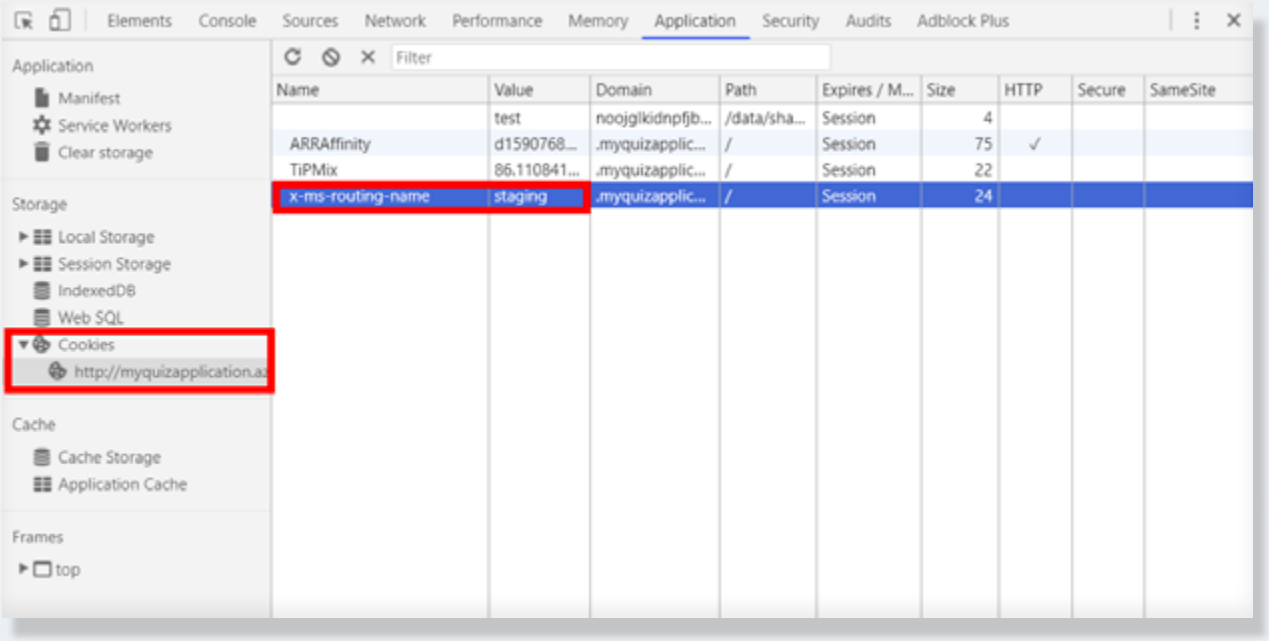
Great! Now keep in mind that we have two versions of our site: one that is **production** and one that is **staging**. They are identical except for the staging site has a large font that says **jsQuizEngine version 2.**

We don't want to **swap** sites, we just want to **distribute** traffic between the two sites.

I can test this by going to my production URL and refreshing the site until the staging site is shown with the production URL.



Success! It works, but what happens when they leave the site? We actually store a cookie that keeps track of it. You can find this cookie yourself by inspecting the site and looking for the cookie shown on the next page.



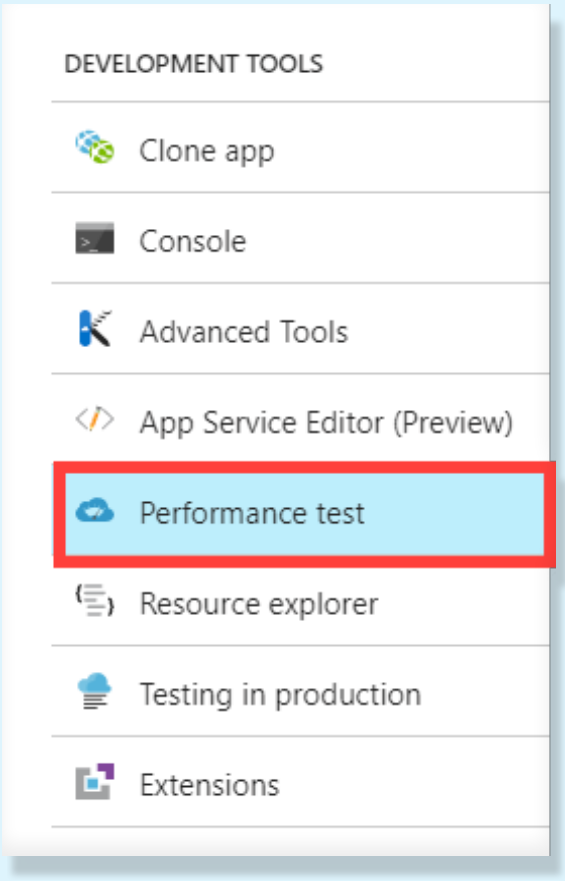
You could actually force the **old production** site by setting the **x-ms-routing-name** cookie to **self** or providing it in the URL query string such as **http://myquizapplication.azurewebsites.net/?x-ms-routing-name=self** You could even use the URL to let your users test different versions of your site. For example, I could use **http://myquizapplication.azurewebsites.net/?x-ms-routing-name=staging** to let users try my new website before I push it live. This is very neat stuff, folks!

Learn more about load testing at
Aka.ms/azuretips/vsts

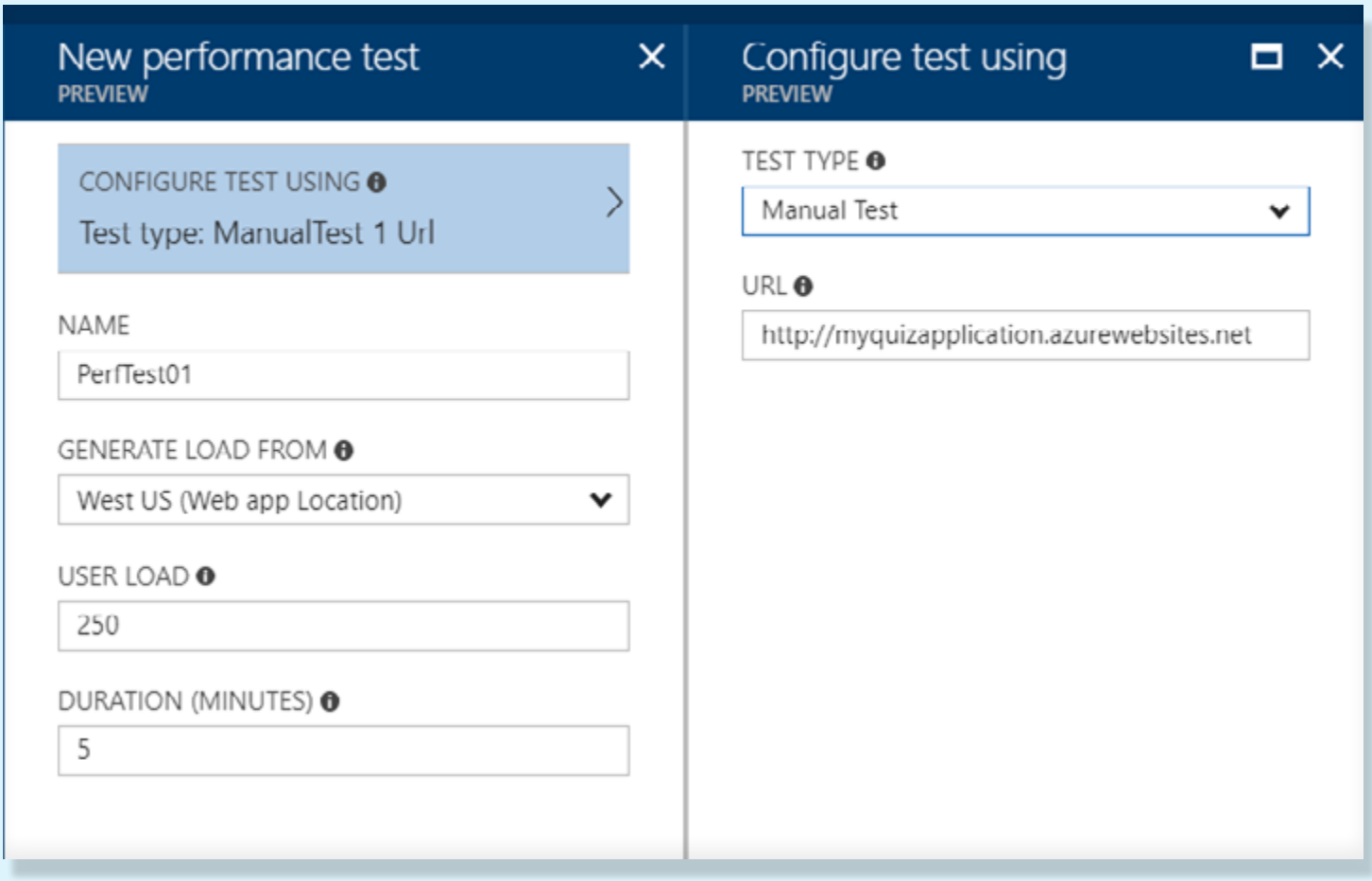
In this tip, we'll look at a simple and quick way to perform load testing of your web app.

Load Testing web apps with Azure App Services

Load Testing allows you to test your web app's performance and determine if your app can handle increased traffic during peak times. You can find this tool by logging into your Azure account, going to your App service that you created, and looking under **Development Tools.**



Inside the blade, select New and you will see the following options:

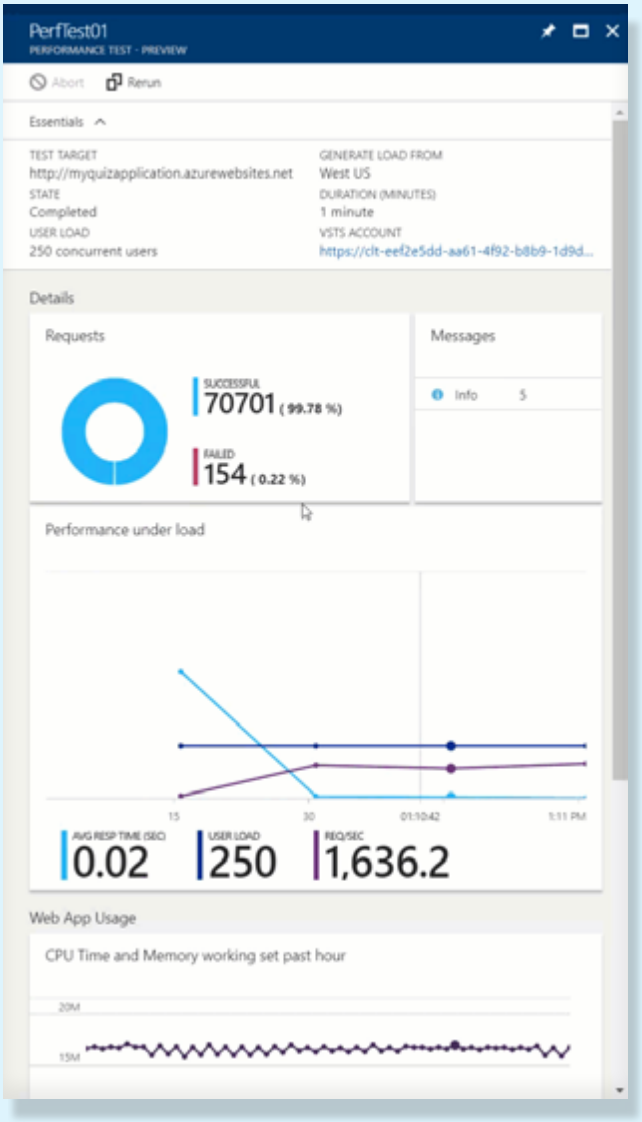


Use Case Scenario Suppose you have a web app and you have something for sale. You have an upcoming promo that last year had 175 users connected for 5 minutes. Users complained that the site was slow and since your site has grown, you want to improve customer satisfaction by reducing the page load time and test your web app with a load of 250 users for 5 minutes. Let the test run and you'll be presented with the following information once it has completed:

You have the option to **Configure Test** and you can leave this as **Manual Test** or **Visual Studio Web Test**. The main difference between the two is that with the latter you can select multiple URLs and even use a HTTP Archive file (such as one created by Fiddler). Leave the testing option as manual and select a name and location, and make sure you leave the defaults as 250 users for 5 minutes.

Look out! Keep in mind that there is a charge for performing a load test in terms of virtual users as indicated in the screenshot.

We were able to do this without writing code and with just a couple of clicks in the portal.



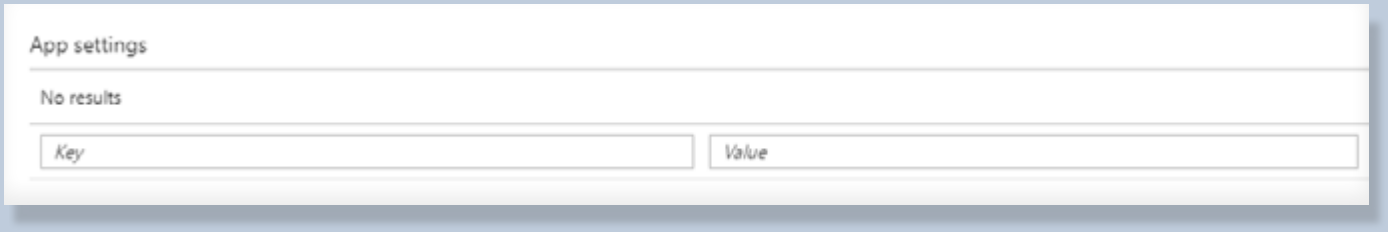
Learn more about App Settings at Aka.ms/azuretips/appservconfig

In this post, we'll take advantage of App Settings to store a Key/Value pair securely in Azure and access it in your web app.

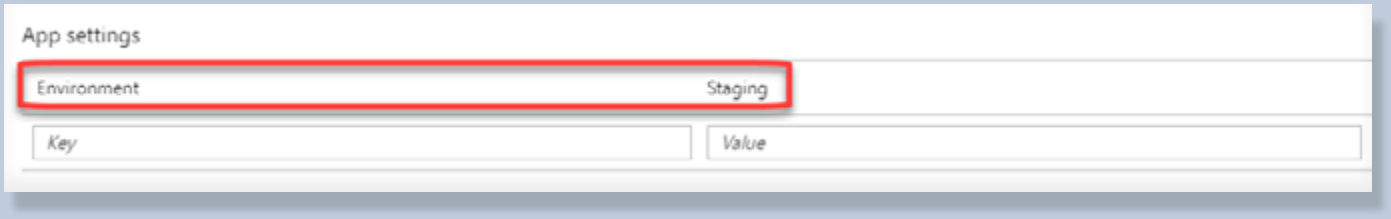
Working with App Settings and Azure App Services

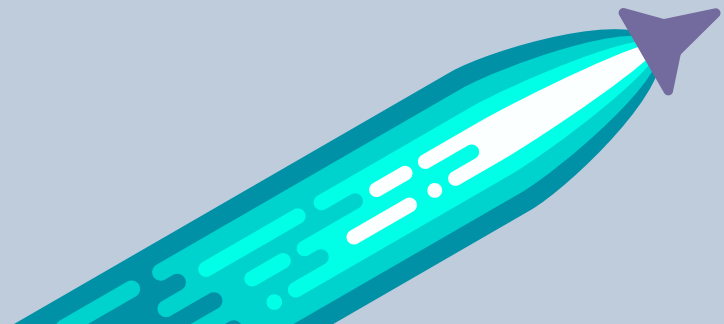
App Settings are used to store configurable items without making any changes to the code. The key/value pairs are stored behind the scenes in a configuration store, which is nice because sensitive information never shows up in a web.config, etc. file. In order to take advantage of this, you'll need to log into your Azure account and go to your App Service that you created and look under **Development Tools** then you will see **Application Settings.**

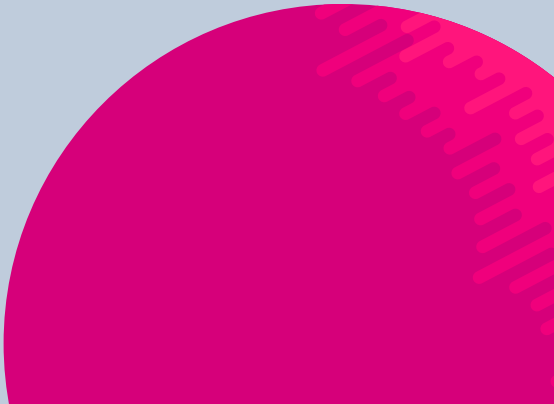
Open it and scroll down and you'll see **App Settings** as shown below.



We're going to add an App Setting in Azure. I added one with the key of Environment and the value is set to **Staging.**







Open or create your ASP.NET MVC app and modify the appSettings section of the **web.config** file to add our **Environment** key/value pair as shown below:

```
  <appSettings>
    <add key="webpages:Version" value="3.0.0.0" />
    <add key="webpages:Enabled" value="false" />
    <add key="Environment" value="Production" />
  </appSettings>
  ```

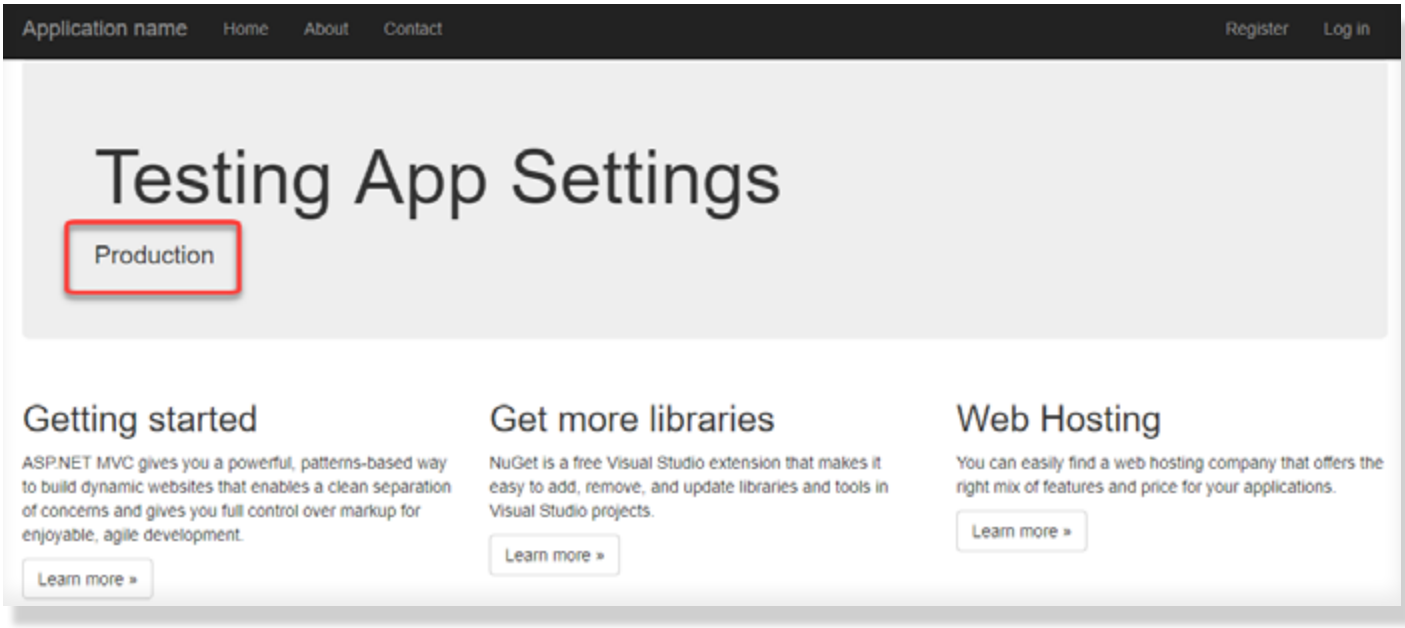
Now it is in our web configuration of our app. In order to see the value, we'll need to add it to a page to display the value.

If you're using ASP.NET MVC (for example), then navigate to your **appname/Views/Home/Index.cshtml** file and add the following **using** statement followed by a call to **ConfigurationManager** as shown below :

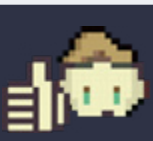

```html
@using System.Configuration
@{
    ViewBag.Title = "Home Page";
}

<div class="jumbotron">
    <h1>Testing App Settings</h1>
    @ConfigurationManager.AppSettings["Environment"]
</div>
```

If you run the application locally, then you'll see **Production** as it is coming from the **web.config file**, but if you run it inside of Azure, then you'll see **Staging** as it is coming from the **Apps Settings** configuration store located in Azure. Neat stuff!



Connection Strings vs. App Settings You may have noticed **Connection Strings** right below the **App Settings** option and wonder when to use it. A general rule of thumb is to use Connection Strings for database **connection strings** and **App Settings** for key/value pair application settings. If you examine your **web.config** file, then you'll see there is also a section for *connectionStrings* just as there is a section for *appSettings*.

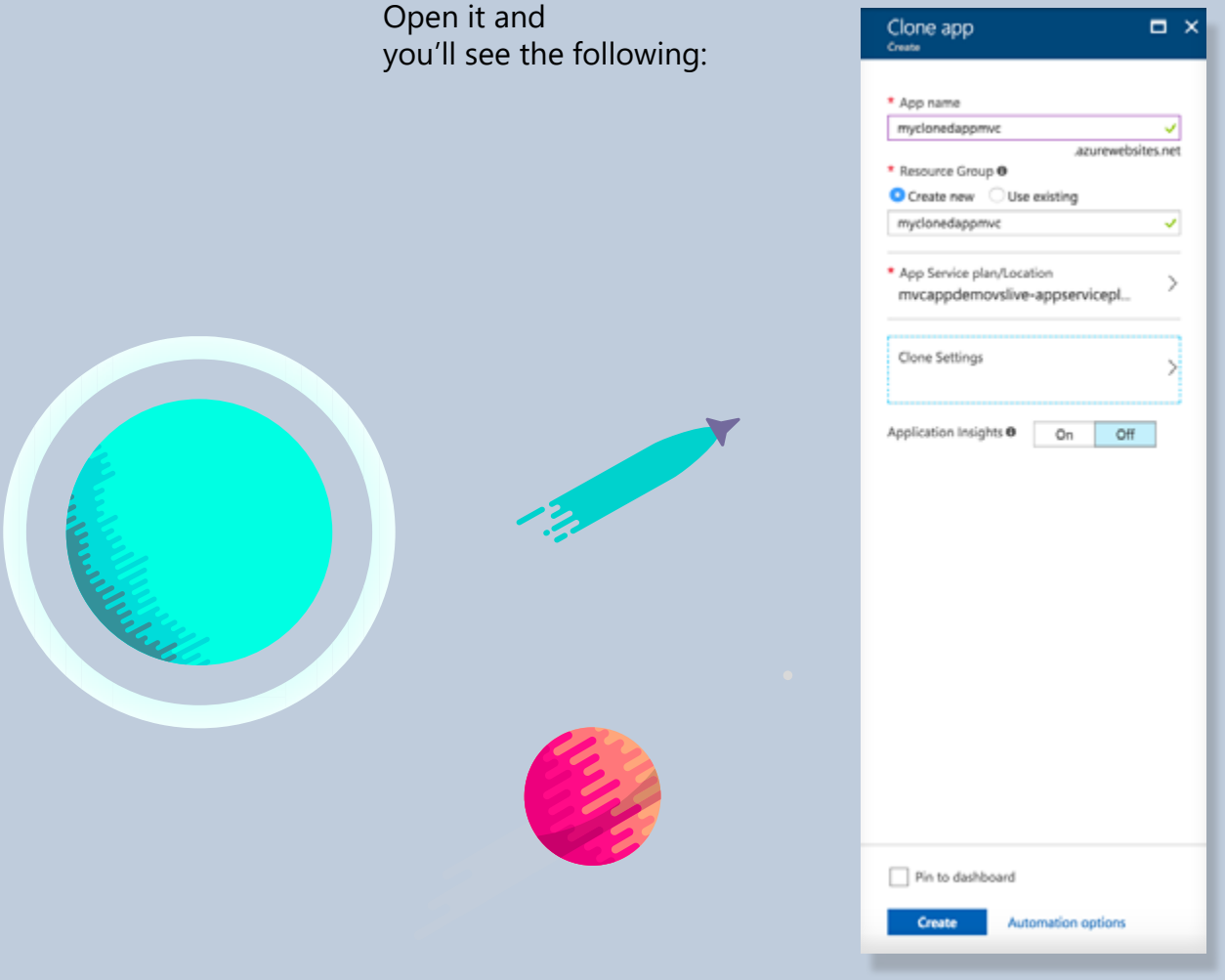


Cloning is the ability to duplicate an existing Web App to a newly created app that is often in a different region. This will enable customers to deploy a number of apps across different regions quickly and easily.

Cloning Web Apps Using and Azure App Services

Scenario: A company has an existing web app in **West US**, they would like to clone the app to **East US** to serve folks that live on that site with better performance such as latency.
To do this, log into your Azure account and go to your App Service that you created. Look under **Development Tools** and find **Clone App.**

Open it and
you'll see the following:



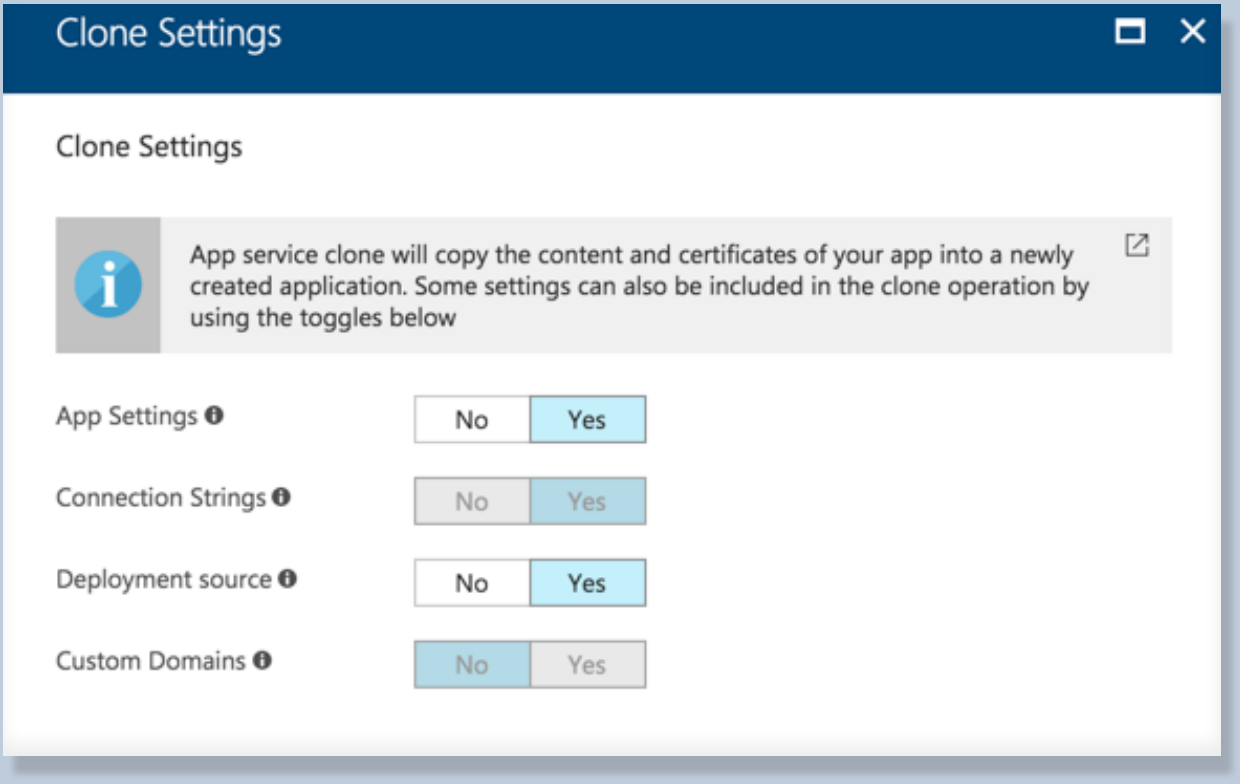
Hold Up Besides changing the location, this is also a great time to determine the plan needed. You might not need all the horsepower to serve this site if you expect very low traffic in that region.

Ensure you give it an:

- **App Name** - Something unique as this site will live in something.azurewebsites.net
- **Resource Group** - Create a new one or use an existing one
- **App Service Plan/Location** - This is a good time to associate a new plan that will determine the location, features, and cost, and compute resources associated with your app.

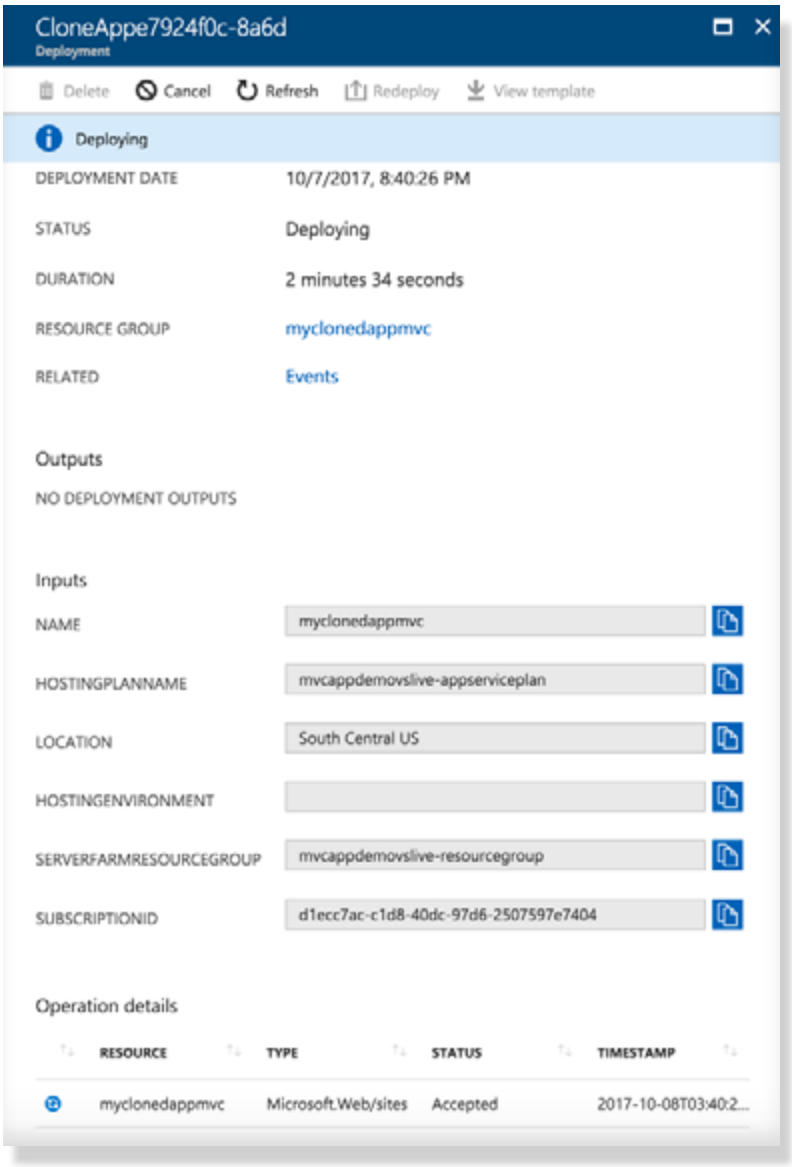
- **Application Insights** - You can turn it on or off to help you detect and diagnose issues with .NET apps.
- **Clone Settings** - Clone will copy the content and certificates of your app into a newly created application. You can also copy things like App Settings, Connection Strings, Deployment Source, and Custom Domains.

Finally, there is **Automation Options** which brings you to the Azure Resource Manager templates that are so valuable. Aka.ms/azuretips/resourcemanager



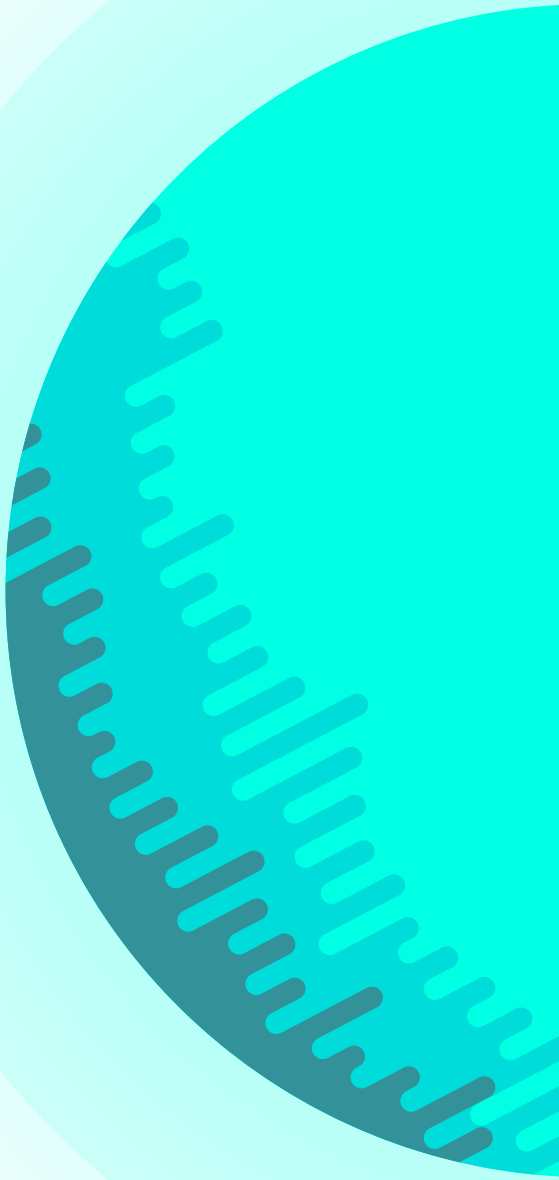
What is a Azure Resource Manager again? Azure Resource Manager enables you to work with the resources in your solution as a group. You can deploy, update, or delete all the resources for your solution in a single, coordinated operation. You use a template for deployment and that template can work for different environments such as testing, staging, and production. Resource Manager provides security, auditing, and tagging features to help you manage your resources after deployment. **Aka.ms/azuretips/appservdeploy**

Once everything is set up then press **Create** and you'll see the **Deployment in Progress** begin. You can click on it while deploying to see details as shown:



Data

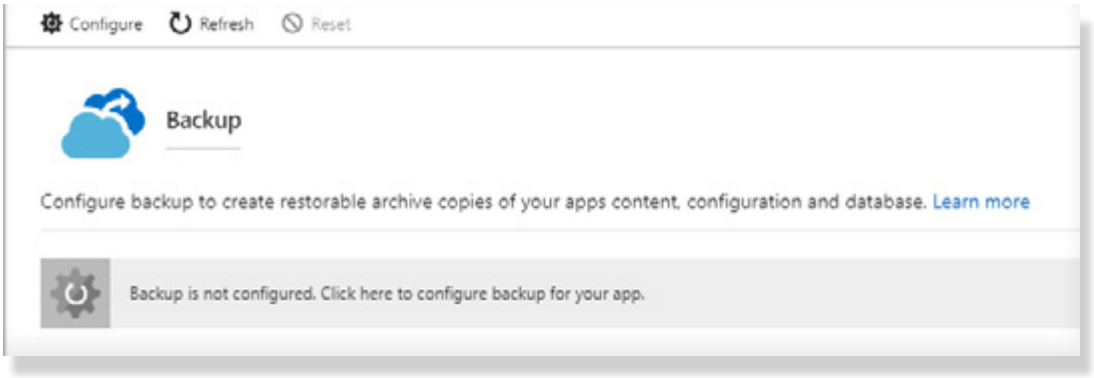
Data and application development go hand in hand. It's no wonder that these four data tips were the best of all time for developers. In this section, we'll discover an easy way to configure backups to create copies of your content, configuration, and database. We'll also take a look at how to work with streams in Azure Blob storage. In addition, you'l learn how to work with our command line and tools with Azure Storage, and discover a data migration tool that you can use to move data into Azure Cosmos DB.



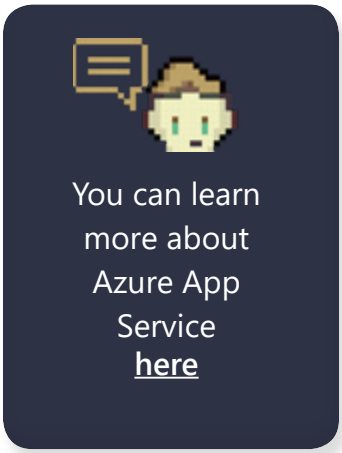
Back to Table of Contents

Configure a Backup for your Azure App Service and Database

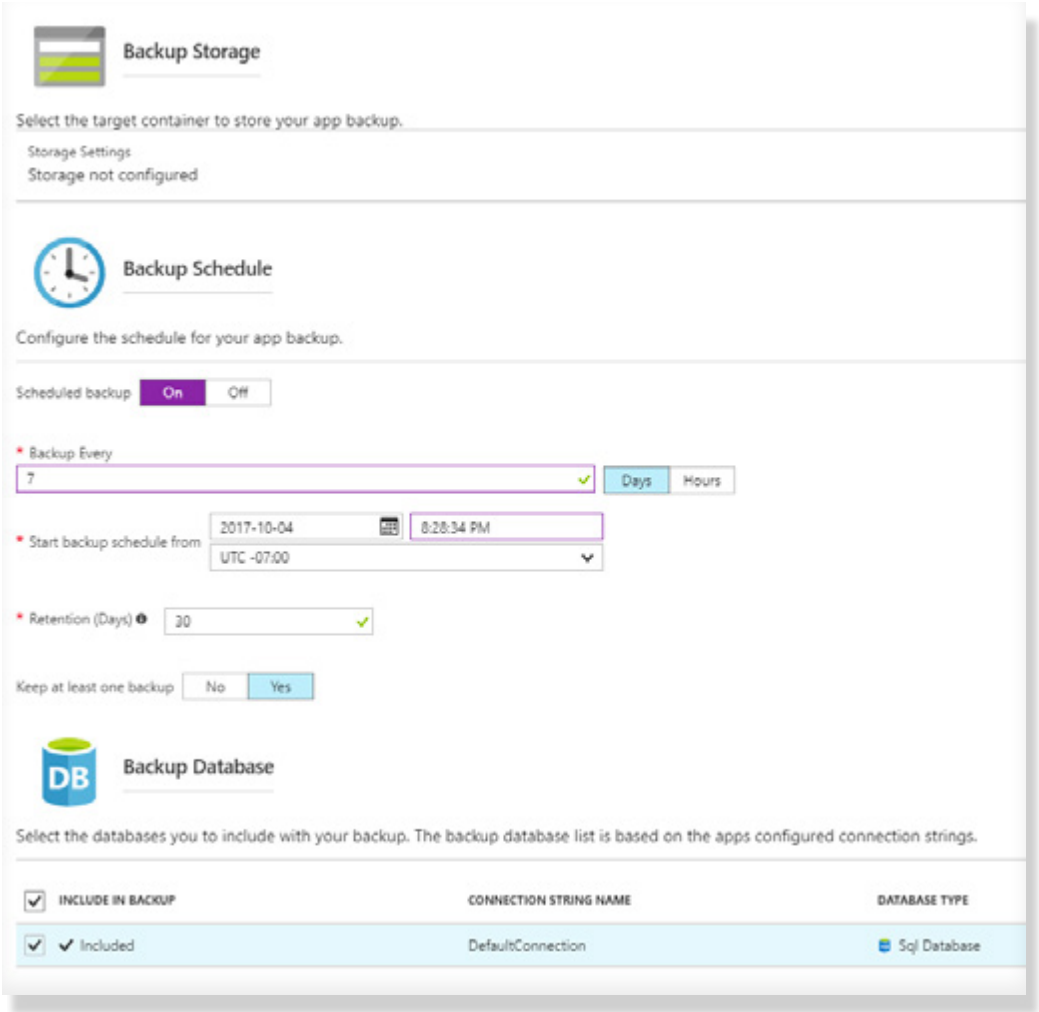
Most folks don't realize how easy it is to configure a backup copy of your Azure App Service to ensure you have restorable archive copies of your app and database. In order to take advantage of this, you'll need to log into your Azure account and go to your App Service that you created. Look under **Settings** and you will see **Backup.**

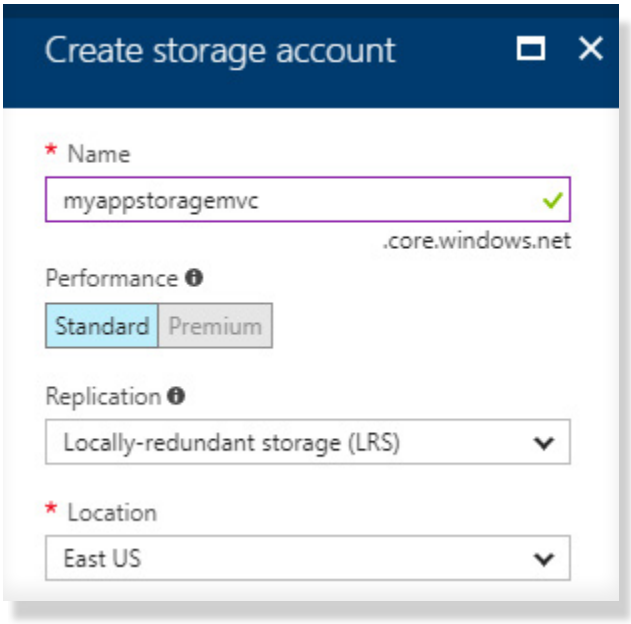


Open it and select **Configure** and you'll see the following screen:



You can learn more about Azure App Service **here**

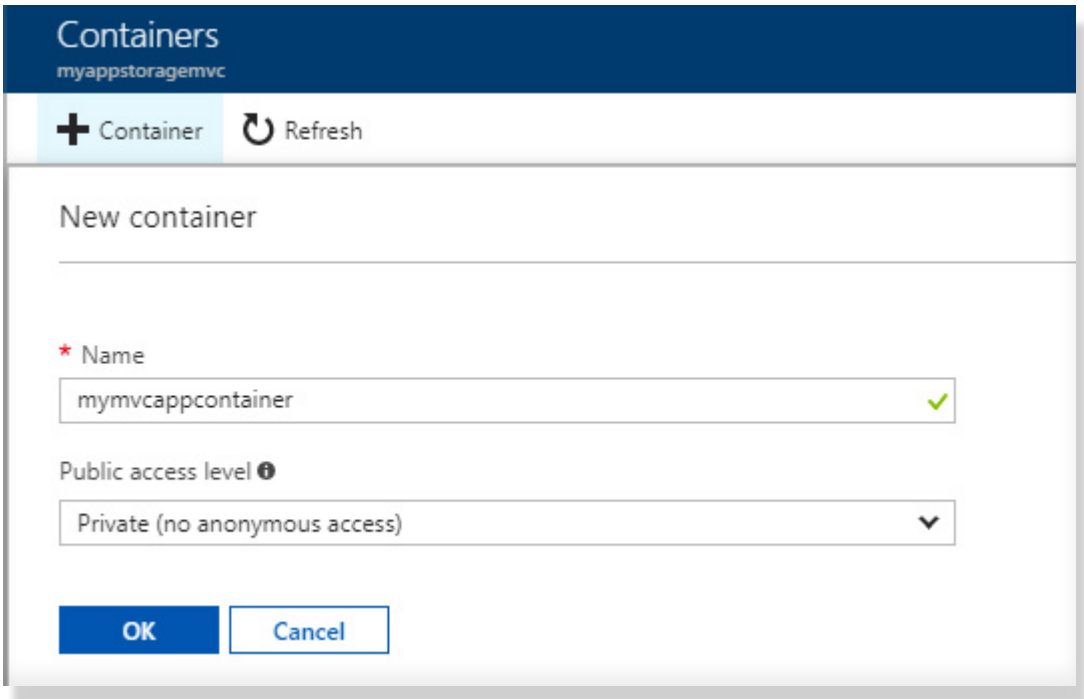




I provided a Name, selected the Standard under the Performance option, and used Locally-Redundant Storage (LRS) for Replication. For the location field, please use the closest location nearest you.

Quick Tip You can type **help** from the console window for a list of available commands.

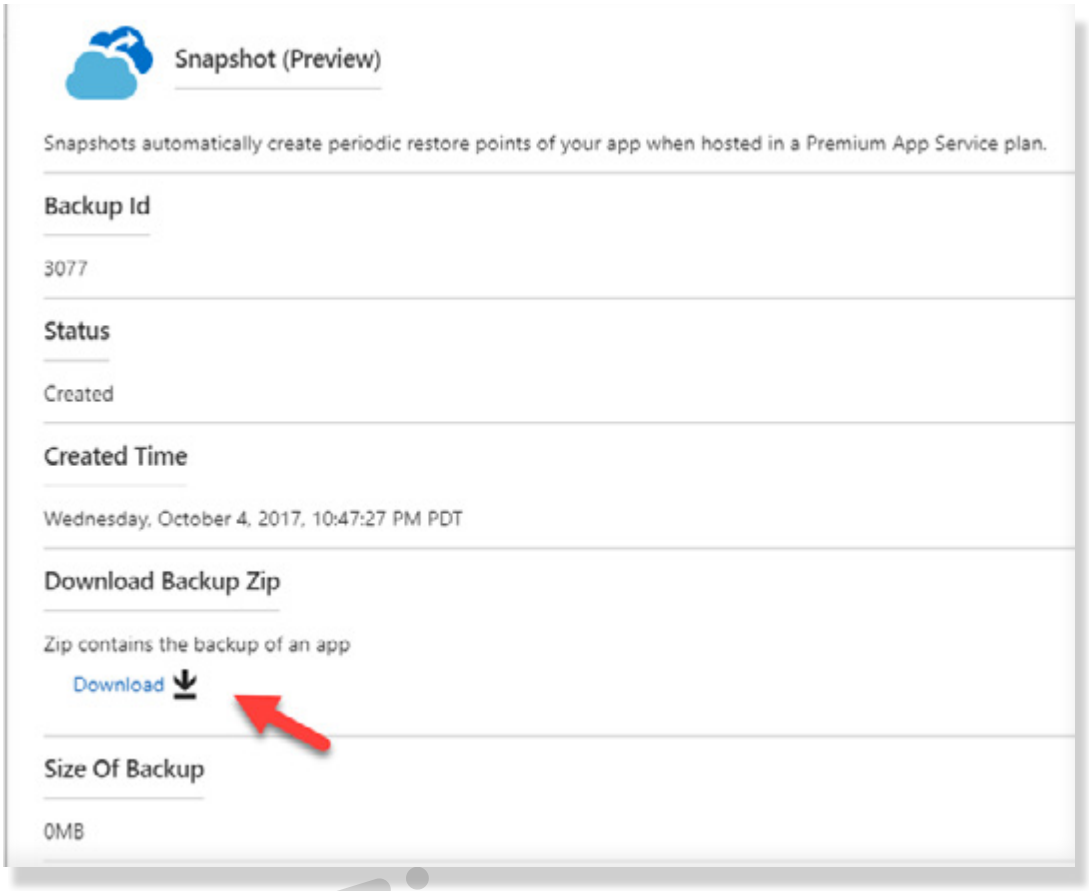
Now you'll need to configure a container to store your backup.

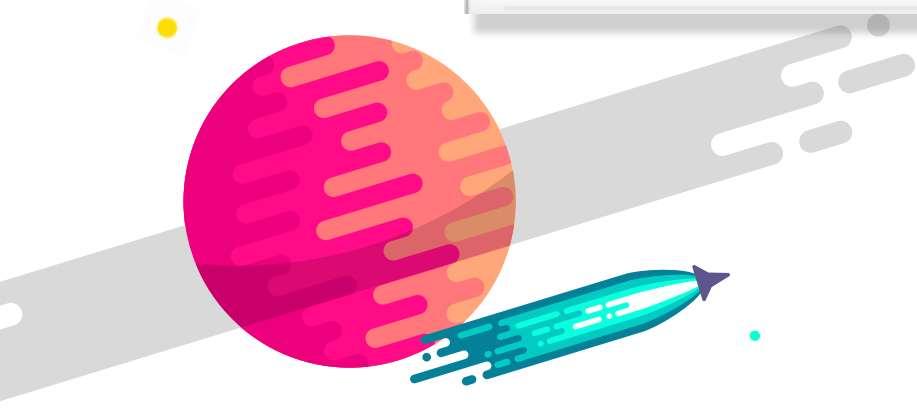


Once completed, you can click on the backup and see a feature called **Snapshot** which automatically creates periodic restore points of your app when hosted in a Premium App Service plan. You can even download a zip of the app.

Next, you'll want to make sure that **Scheduled backup** is set to **On**. You'll want to configure the Days and Hours and then the current schedule that it should back up from. I set mine to back up every **seven** days, and starting from now. You'll also want to set the retention and by default it will keep at least one backup. If you have a database, then you can also add it with just a checkmark.

Once everything is set, you can see that the next backup is configured and can either force it manually or restore from an existing backup with just a visit to the Azure Portal. You typically want to use "manual" restore when you want to look at your backup at the current point in time vs "restore" a backup at a different time that occurred in the past.





Learn more about Azure Cosmos DB here

Using the Data Migration Tool with Cosmos DB

Migrating data from one format to another is a common task for application developers (even if it is just for testing). I was recently building out an API and needed to dump some data into Cosmos DB. The tool that made short work of this was the Azure DocumentDB Data Migration Tool. In my case, I needed to dump a large JSON file into Cosmos DB. Here is how I did it.

Grab whatever sample file that you'd like to experiment with. For this exercise, I selected a file that is public domain and contains a large set of data.

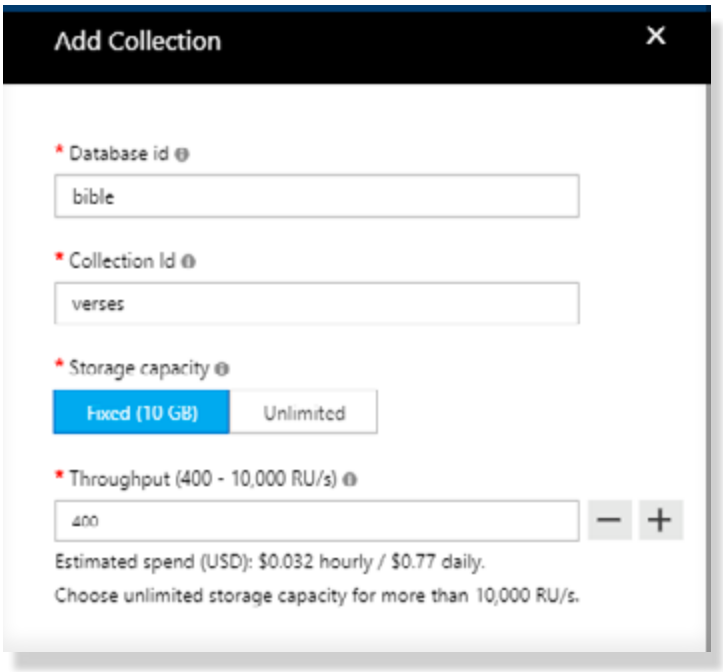
I'm using the en_kjv.json JSON file from here

Now we're ready to begin work!

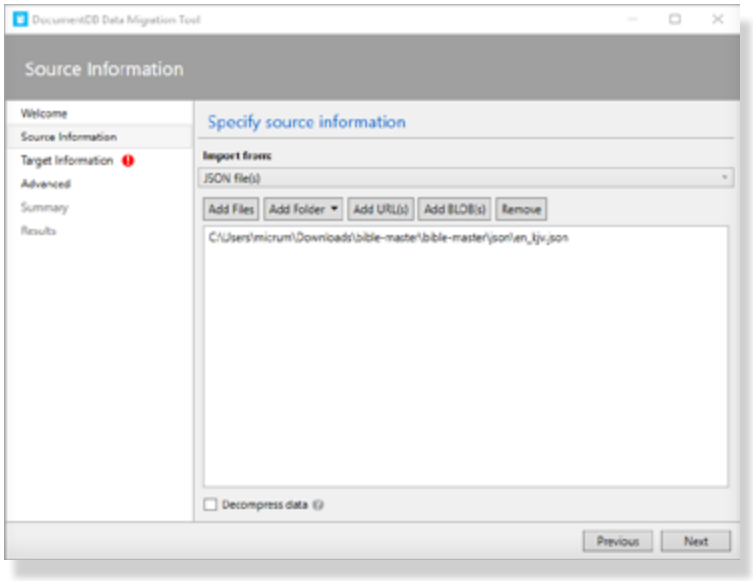
The Tools + Public Domain Sample Data

Get to work

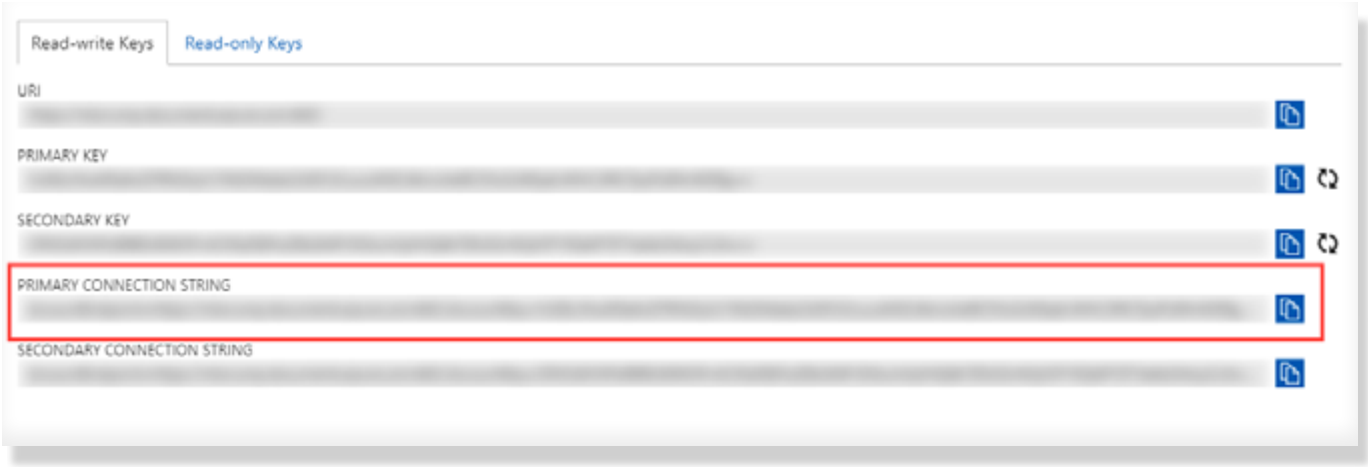
Ensure you have a Cosmos DB database id and collection. You can learn how to create a Cosmos DB by going to https://docs.microsoft.com/en-us/azure/cosmos-db/
I'm using the following:



Open the Data Migration Tool and under **Source Information**, point to the local JSON file as shown below.

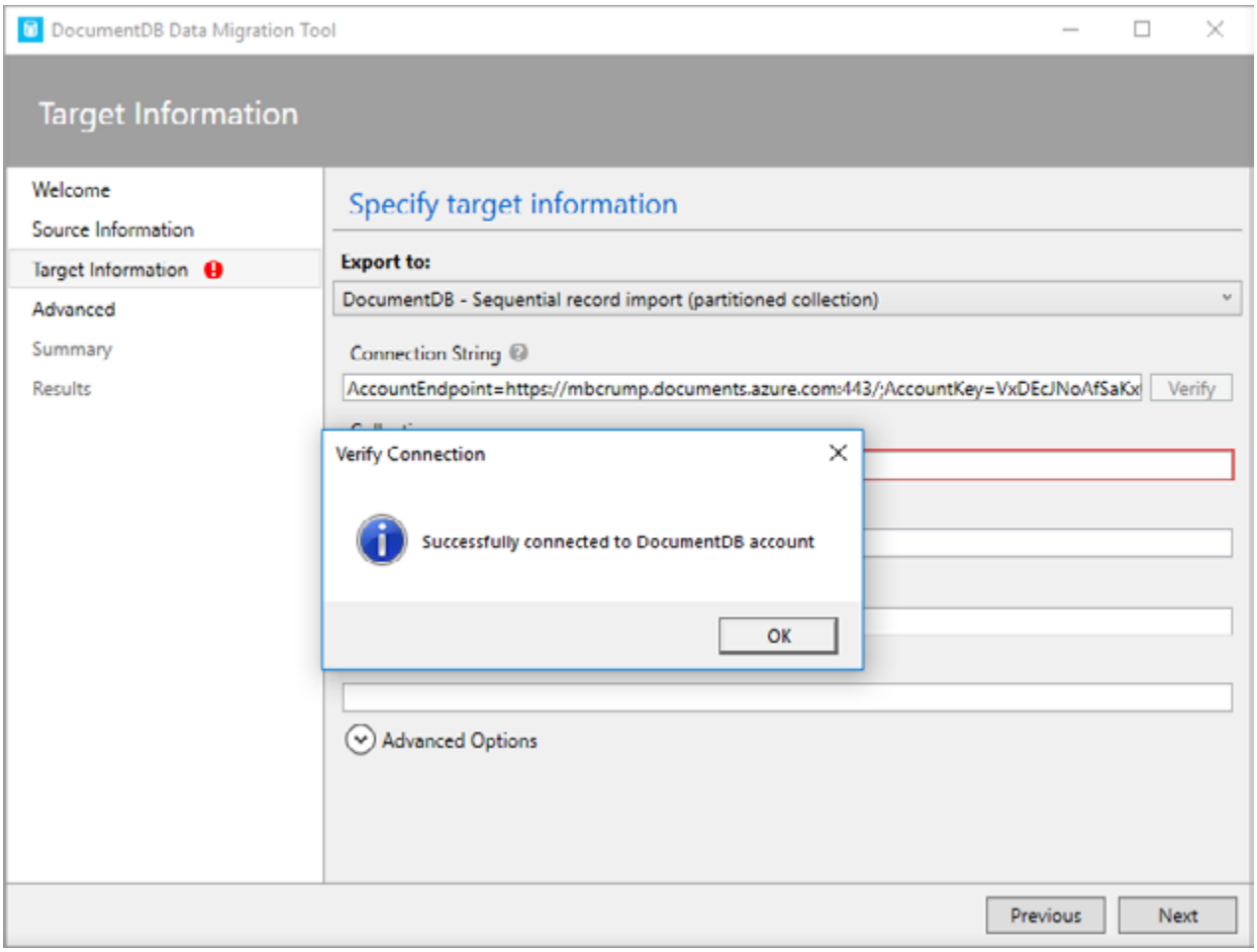


Go to **Keys** (inside your Cosmos DB blade in the portal) to copy the **Primary Connection String**.

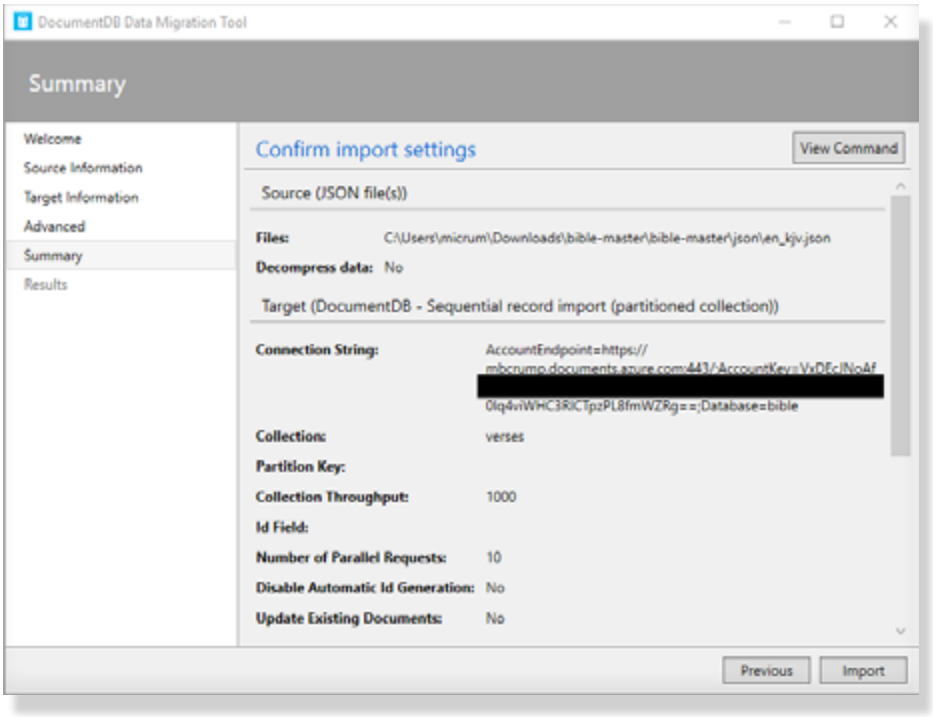


You'll need to append the Database name to the end of the string. For example: **Database=bible** will be appended to the string **AccountEndpoint=https://mbcrump.documents.azure.com:443/;AccountKey=VxDEcJblah==;Database=bible** that I copied out of the portal. Now press **Verify Connection.**

Give it a couple of minutes until you see that it has completed pulling down your code from Git and then go to the new URL of your site. You can find the URL on your overview page. In my case it is, **http://myquizapplication-staging.azurewebsites.net/**

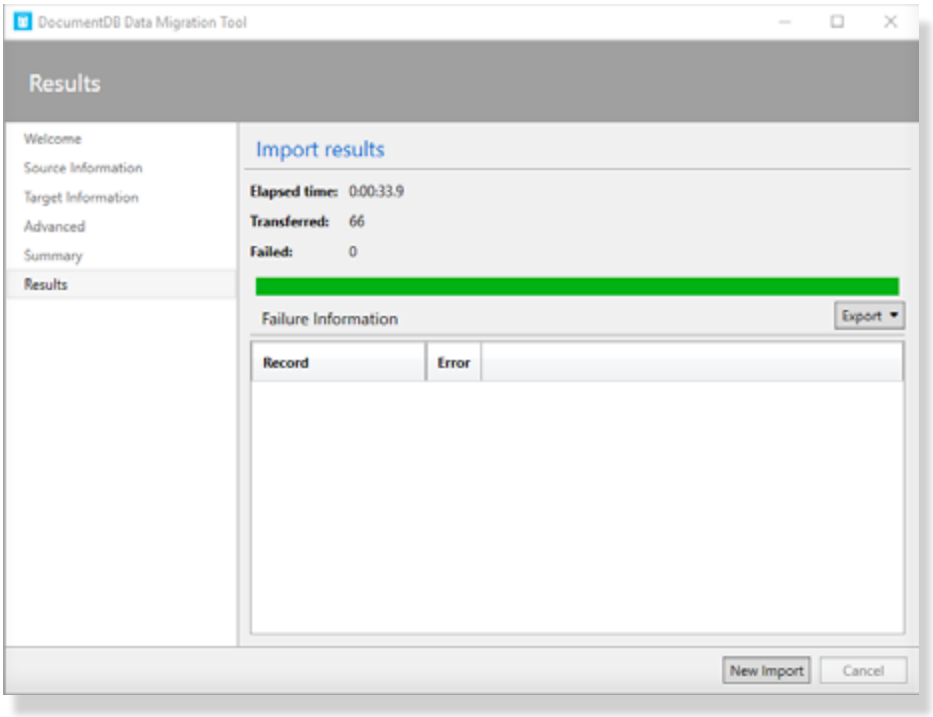


You'll need to add the **Collection** and in my case it is **verses**. We'll take the defaults on the next two screens and you'll finally see a **Confirm inport settings** page.

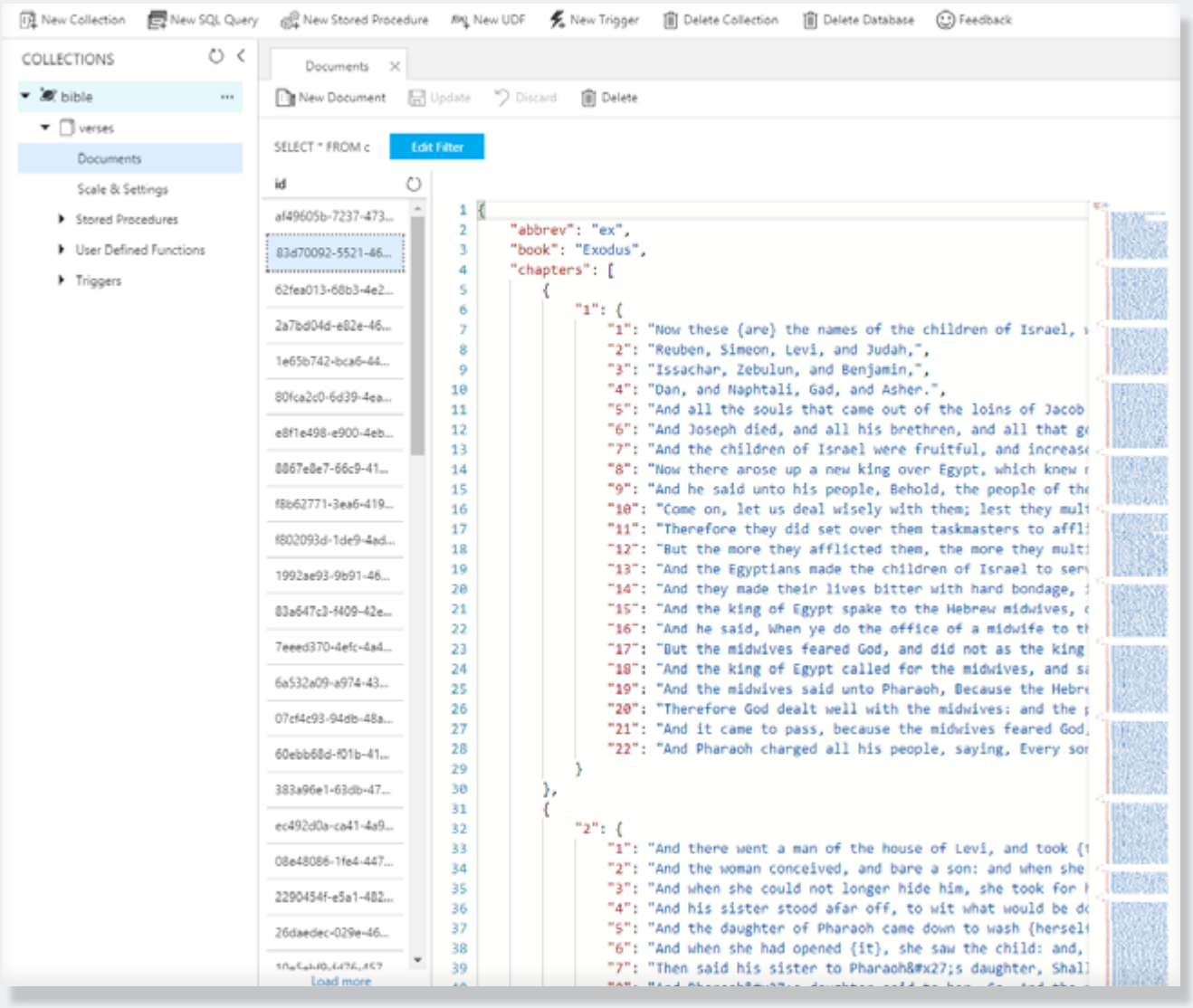


You can even click on **View Command** to see the command that will be used to migrate your data. This is helpful to just learn the syntax.

You'll finally see the Import has completed with 66 transferred.



If you go back to the Azure Portal, open Cosmos DB, and look under **Data Explorer**, you'll see the data has been imported successfully into our collection.



Learn more about our variety of data options **here**

Uploading and Downloading a Stream into an Azure Storage Blob

Azure Storage is described as a service that provides storage that is available, secure, durable, scalable, and redundant. Azure Storage consists of **1)** Blob storage, **2)** File Storage, and **3)** Queue storage. In this tip, we'll take a look at how to upload and download a stream into an Azure Storage Blob with C#.

If you need help setting up a project for the code below then go **here**

Upload a File

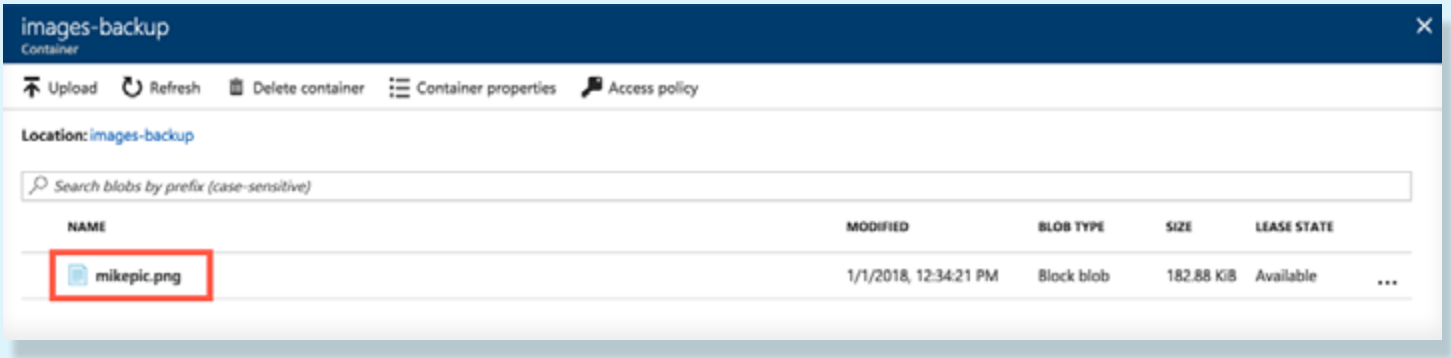
Now that we've created the Azure Storage Blob Container, we'll upload a file to it. We'll build off our last code snippet and add the following lines of code to upload a file off our local hard disk:

```
static void Main(string[] args)
{
    var storageAccount =
CloudStorageAccount.Parse(CloudConfigurationManager.GetSetting("StorageConnection")
);
    var myClient = storageAccount.CreateCloudBlobClient();
    var container = myClient.GetContainerReference("images-backup");
    container.CreateIfNotExists(BlobContainerPublicAccessType.Blob);

//lines modified
    var blockBlob = container.GetBlockBlobReference("mikepic.png");
      using (var fileStream = System.IO.File.OpenRead(@"c:\mikepic.png"))
      {
         blockBlob.UploadFromStream(fileStream);
      }
//lines modified

    Console.ReadLine();
}
```

If we switch over to our Storage Account and navigate inside the container, we'll see our new file has been added:



Download a File

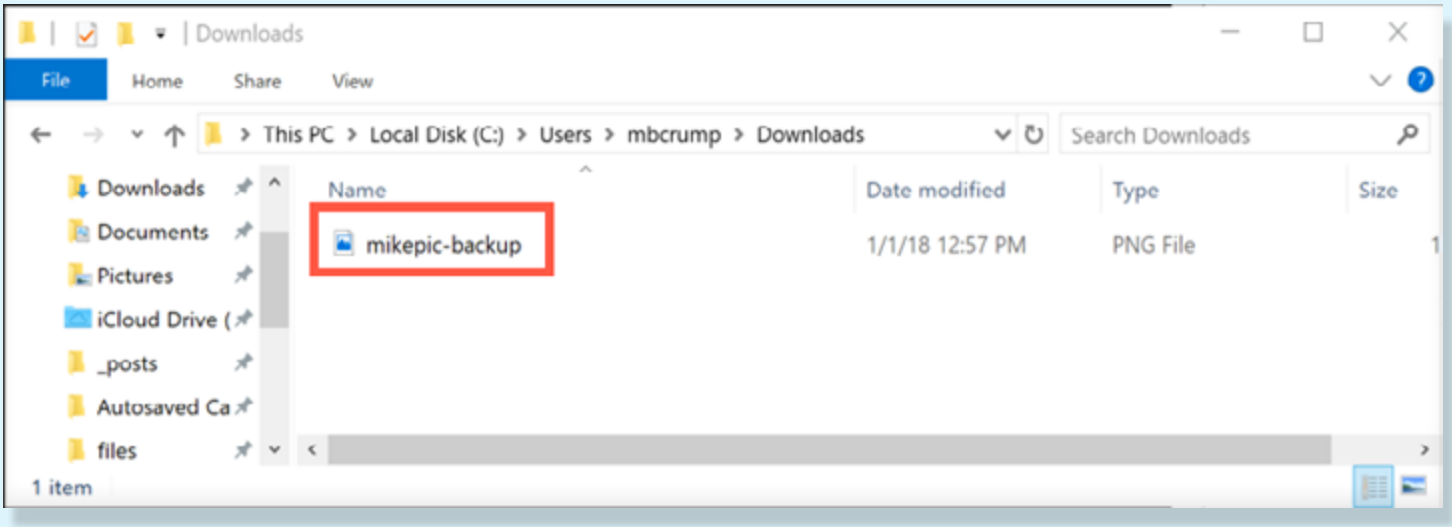
Now that we've uploaded a file to the Azure Storage Blob Container, we'll download a file from it.
We'll build off our last code snippet and add the following lines of code to download a file from our local hard disk and give it new name:

```
static void Main(string[] args)
{
    var storageAccount =
CloudStorageAccount.Parse(CloudConfigurationManager.GetSetting("StorageConnection")
);
    var myClient = storageAccount.CreateCloudBlobClient();
    var container = myClient.GetContainerReference("images-backup");
    container.CreateIfNotExists(BlobContainerPublicAccessType.Blob);

//lines modified
    var blockBlob = container.GetBlockBlobReference("mikepic.png");
    using (var fileStream =
System.IO.File.OpenWrite(@"C:\Users\mbcrump\Downloads\mikepic-backup.png"))
    {
      blockBlob.DownloadToStream(fileStream);
    }
//lines modified

    Console.ReadLine();
}
```

Note that are now using the **OpenWrite** method and specifying a new name. We are also taking advantage of the **DownloadToStream** method. If we run the application, our new file should be in the downloads folder.



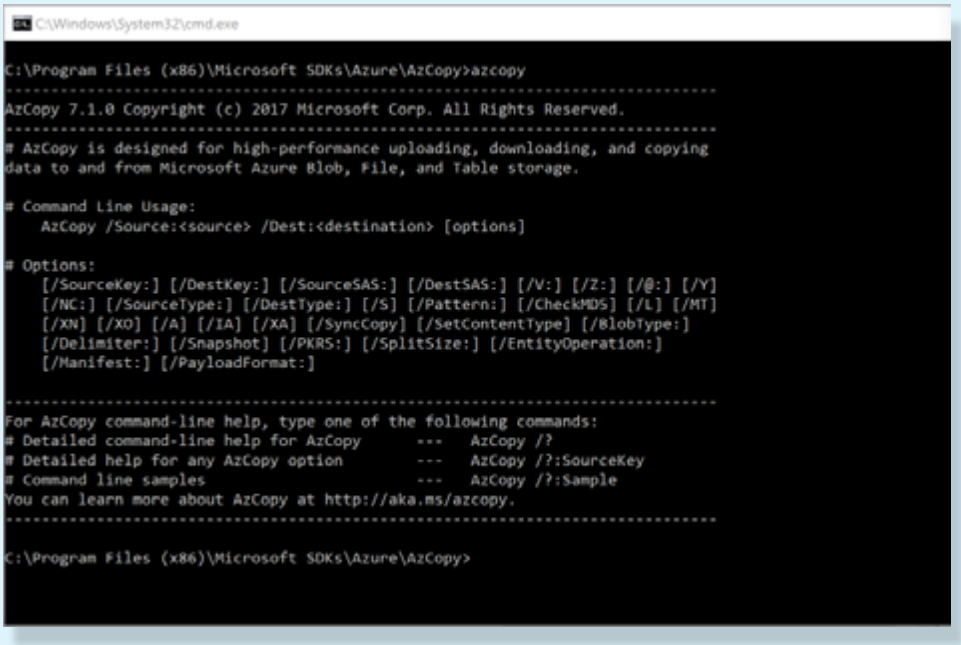
What is AzCopy?
AzCopy is a command line utility designed for copying data to/from Microsoft Azure Blob, File, and Table storage, using simple commands designed for optimal performance. You can copy data between a file system and a storage account, or between storage accounts.
(courtesy of docs)

You can download either the latest version of AzCopy on **Windows** or **Linux** .

Working with AzCopy and Azure Storage

You can easily work with AzCopy to manipulate Azure Storage containers and more. In this tip, we'll explore AzCopy in the context of Azure Storage containers.

For this example, I'm going to use Windows. After I downloaded and installed the utility, I navigated inside my command prompt to the following folder **%ProgramFiles(x86)%\Microsoft SDKs\Azure\AzCopy** and ran the **azcopy.exe** command to ensure everything was working properly.

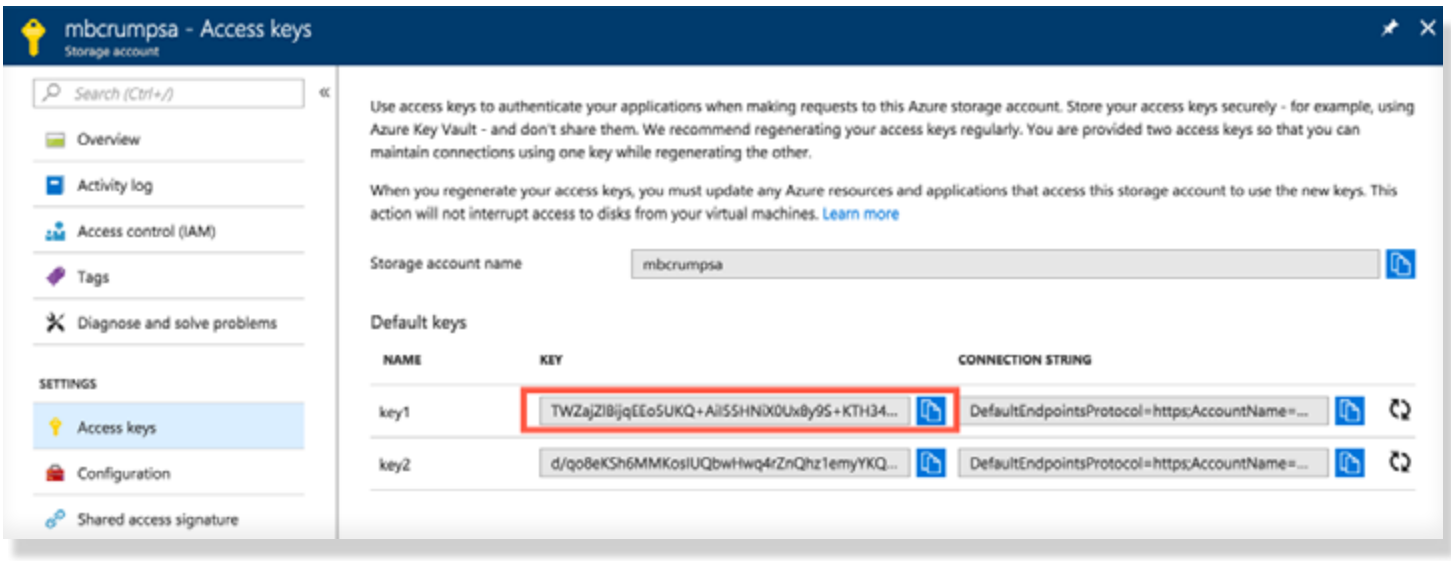


You may be wondering if you need to do the device login as we did with the Azure CLI. The answer is no, we'll be using our Azure Storage Access Key.

Getting the Azure Storage Access Key

Go ahead and open the Azure Portal and navigate to the Azure Storage account that we worked with earlier.

Look under **Settings**, then **Access Keys** and copy the key1.

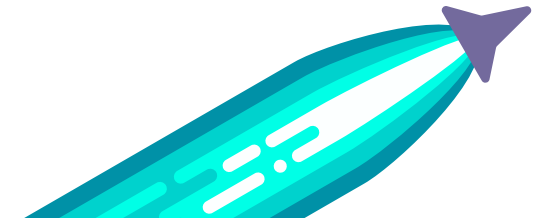


Store the key1 somewhere that you can retrieve it again.

Kick the tires with a couple of commands.

We can easily download a file from our Azure Storage Blob Container that we've been working with by using the following command:

```
AzCopy /Source:https://mbcrumpsa.blob.core.windows.net/images-backup
/Dest:C:\mytest /SourceKey:thekeyyoucopiedearlier /Pattern:"mikepic.png"
```



Keep in mind: The main difference between these two commands is the use of **SourceKey** for downloading and **DestKey** for uploading. The key that is being used is identical (named key1 from the example above).

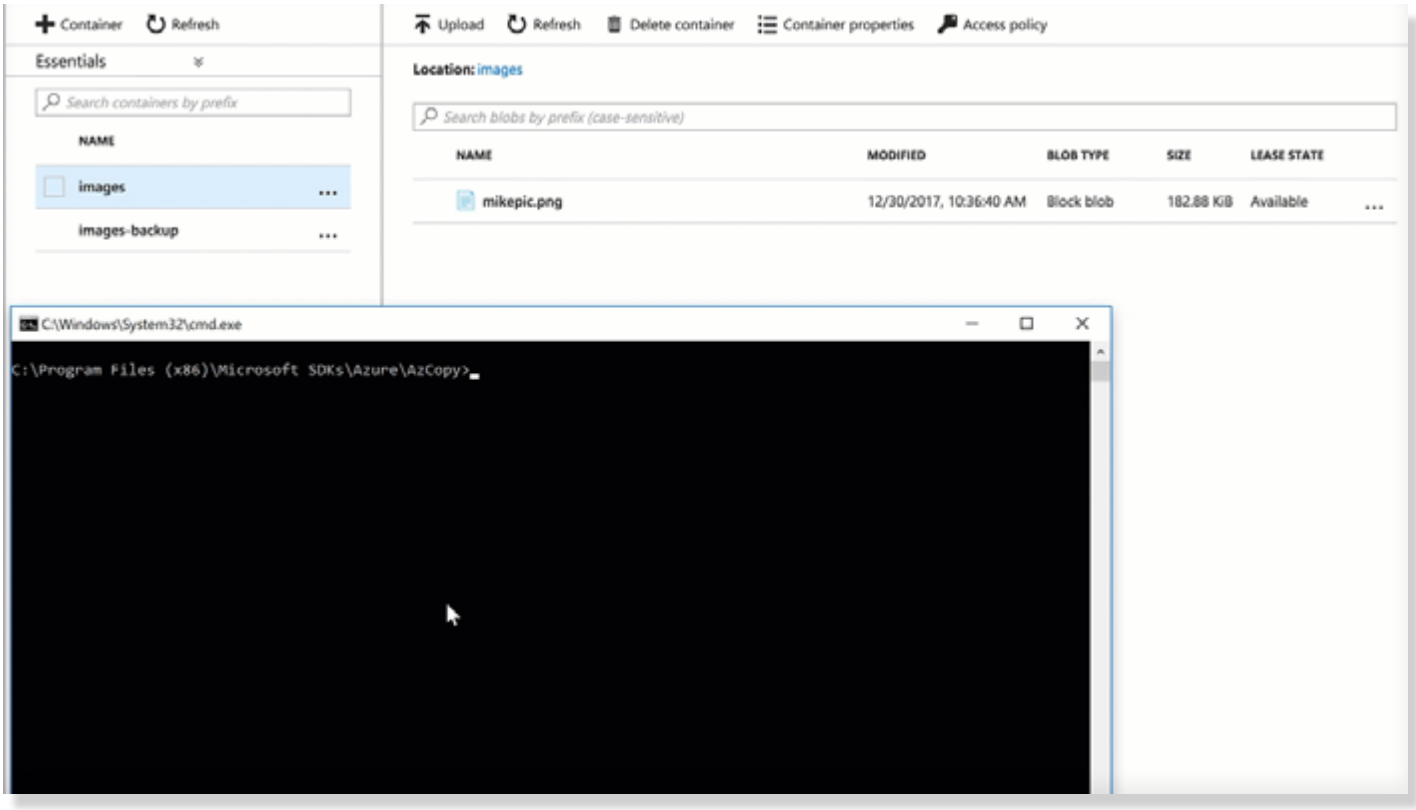
We can do the reverse and upload a file from our hard disk to Azure Storage Blob Container with the following command:

```
AzCopy /Source:C:\mytest
/Dest:https://mbcrumpsa.blob.core.windows.net/images-backup
/DestKey:thekeyyoucopiedearlier /Pattern:"mikepicnew.png"
```

Finally, you can copy from one Azure Storage account to another one with the following command:

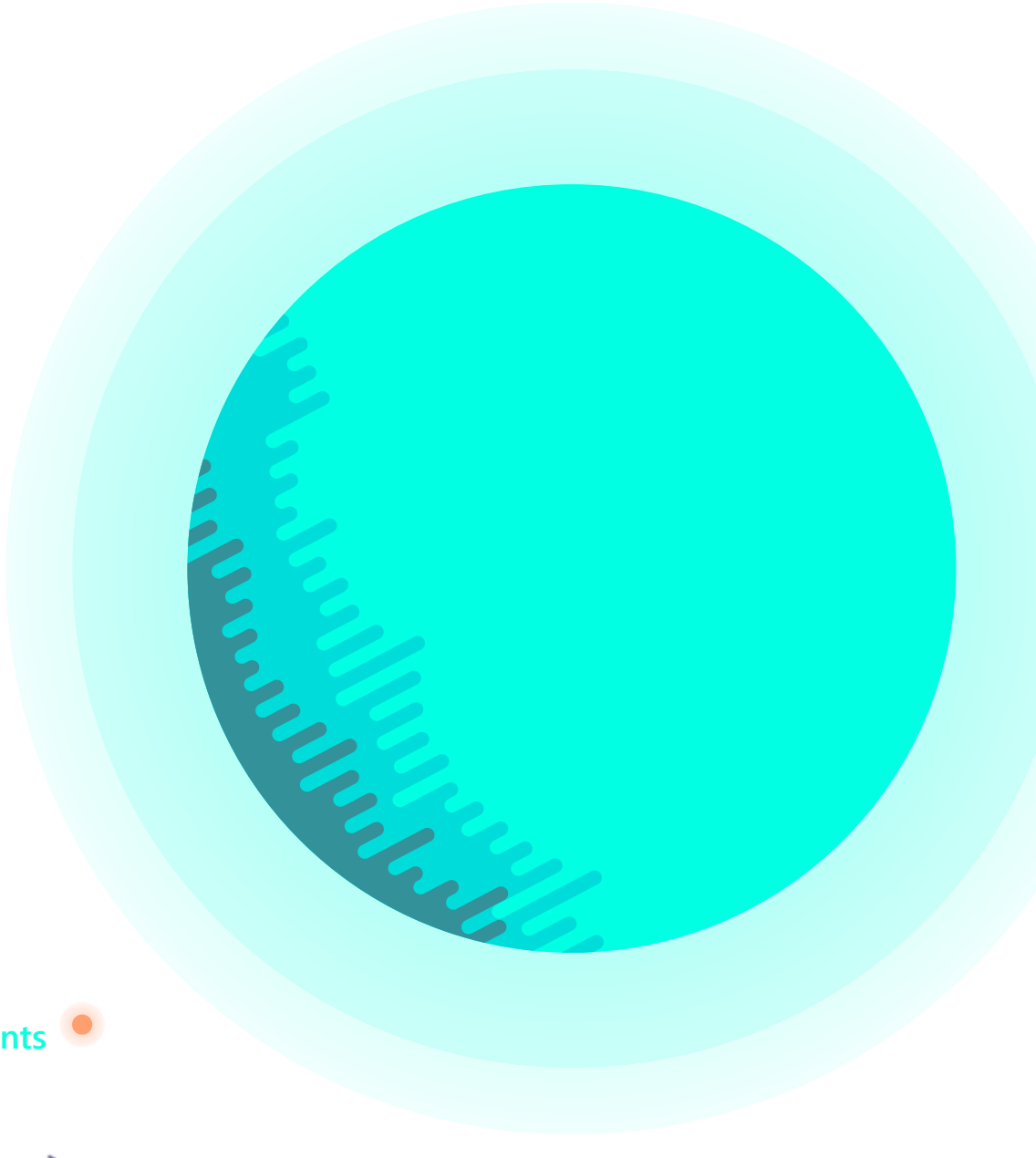
```
AzCopy /Source:https://mbcrumpsa.blob.core.windows.net/images-backup
/Dest:https://mbcrumpsa.blob.core.windows.net/images
/SourceKey:thekeyyoucopiedearlier /DestKey:thekeyyoucopiedearlier
/Pattern:"mikepicnew.png"
```

In this case, I am copying a file named **mikepicnew.png** from **images-backup** to **images** and then I'll refresh the container.



Serverless

In this set of tips, I've pulled out the **top 4 tips** from the serverless topics and it is no surprise that they include Azure Logic Apps and Azure Functions. We'll begin with two tips that show how I used Azure to help me track my running data with Azure Logic Apps and OneDrive. Next we'll look at how I create Azure Functions projects in Visual Studio Code. Then we'll wrap up with a way to use a different route prefix with Azure Functions.



Back to Table of Contents

Tracking Run Data with Azure

I'd like to share a practical example of how I am using Azure in my daily life. I've started running outdoors and would like to extract several bits of information that the app on my phone generates and sends via email once the run is complete. Currently I open the email and save the **kml, gpx, csv** files to my OneDrive for historical purposes. There is a better way with Azure.

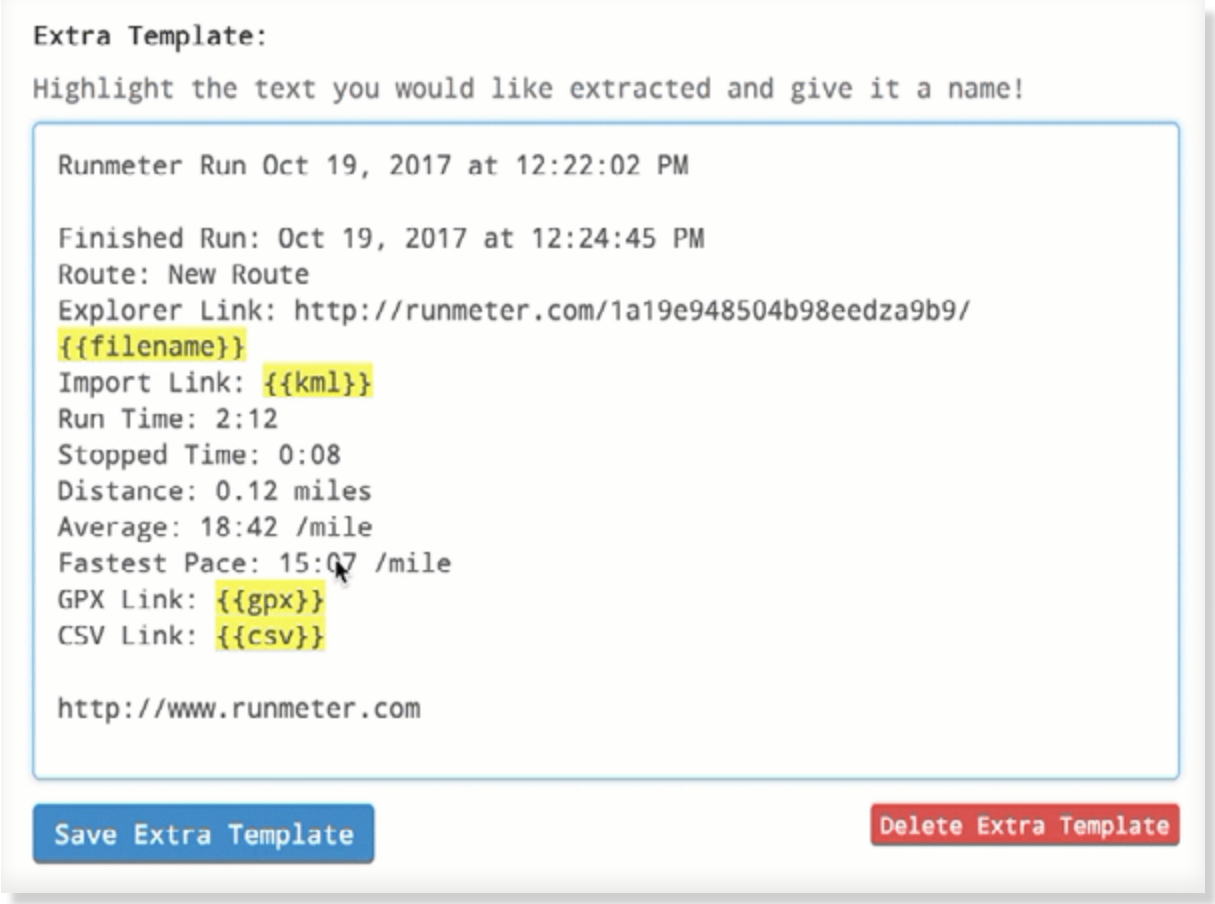
Parse Emails to Be Used in a Azure Logic Apps

Once a run is complete, the app that I use (Runmeter) generates an email with a link to the run data (GPX, CSV, KML File) in the following format:

```
Finished Run: Oct 19, 2017 at 8:46:32 PM
Route: New Route
Explorer Link: http://runmeter.com/xxx/Run-20171019-2045
Import Link: http://share.abvio.com/xxx/Runmeter-Run-20171019-2045.kml
Run Time: 1:04
Stopped Time: 0:00
Distance: 0.00 miles
Average: 0:00 /mile
Fastest Pace: 0:00 /mile
Calories: 4
GPX Link: http://share.abvio.com/xxx/Runmeter-Run-20171019-2045.gpx
CSV Link: http://share.abvio.com/xxx/Runmeter-Run-20171019-2045.csv
```

The pieces of data that we'd like to extract are the **kml, gpx, csv** URLs and the last piece of the Explorer Link URL. After we have the URLs we are going to download them automatically into a OneDrive folder.

Fire up parser.Zapier.com and create a mailbox. You'll need to send an email to it as it will be your starting template. Once you've sent an email, select the pieces of data that you want to use and give them a name. In the example below, I've already selected four pieces of data and show how to create a new one.

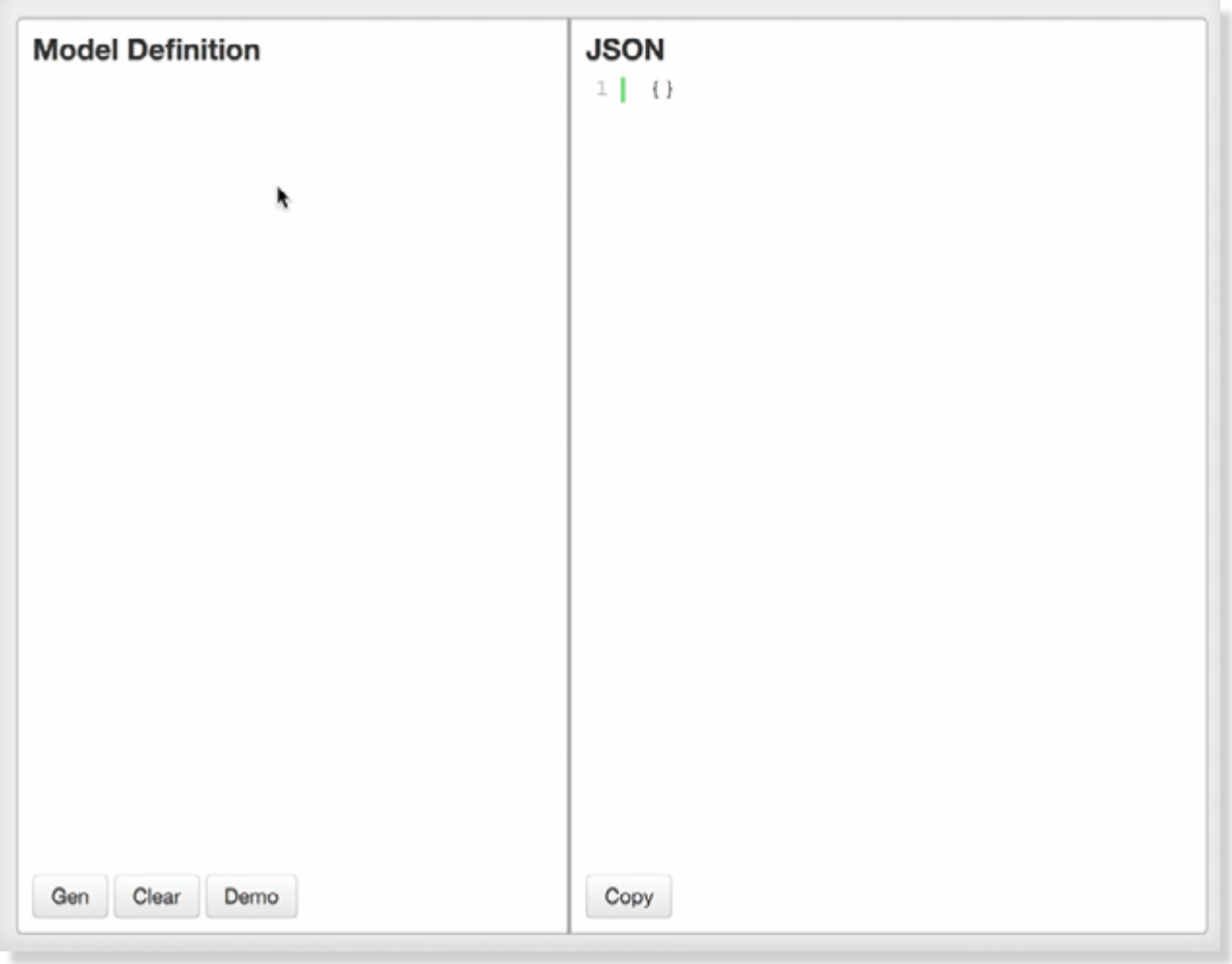


Now that you have your mailbox created and the parser engine knows what data to extract, we can connect the app to the Zapier Editor But first let's review the pieces of data that we wanted to extract and why.

- Filename - This is the general filename that the app uses, and I think it's a piece of data we want to store.
- CSV URL - A URL to the CSV File that we'll be posting to OneDrive.
- GPX URL - A URL to the GPX File that we'll be posting to OneDrive.
- KML URL - A URL to the KML File that we'll be posting to OneDrive.

Create JSON Schema to Be Used in Azure Logic Apps

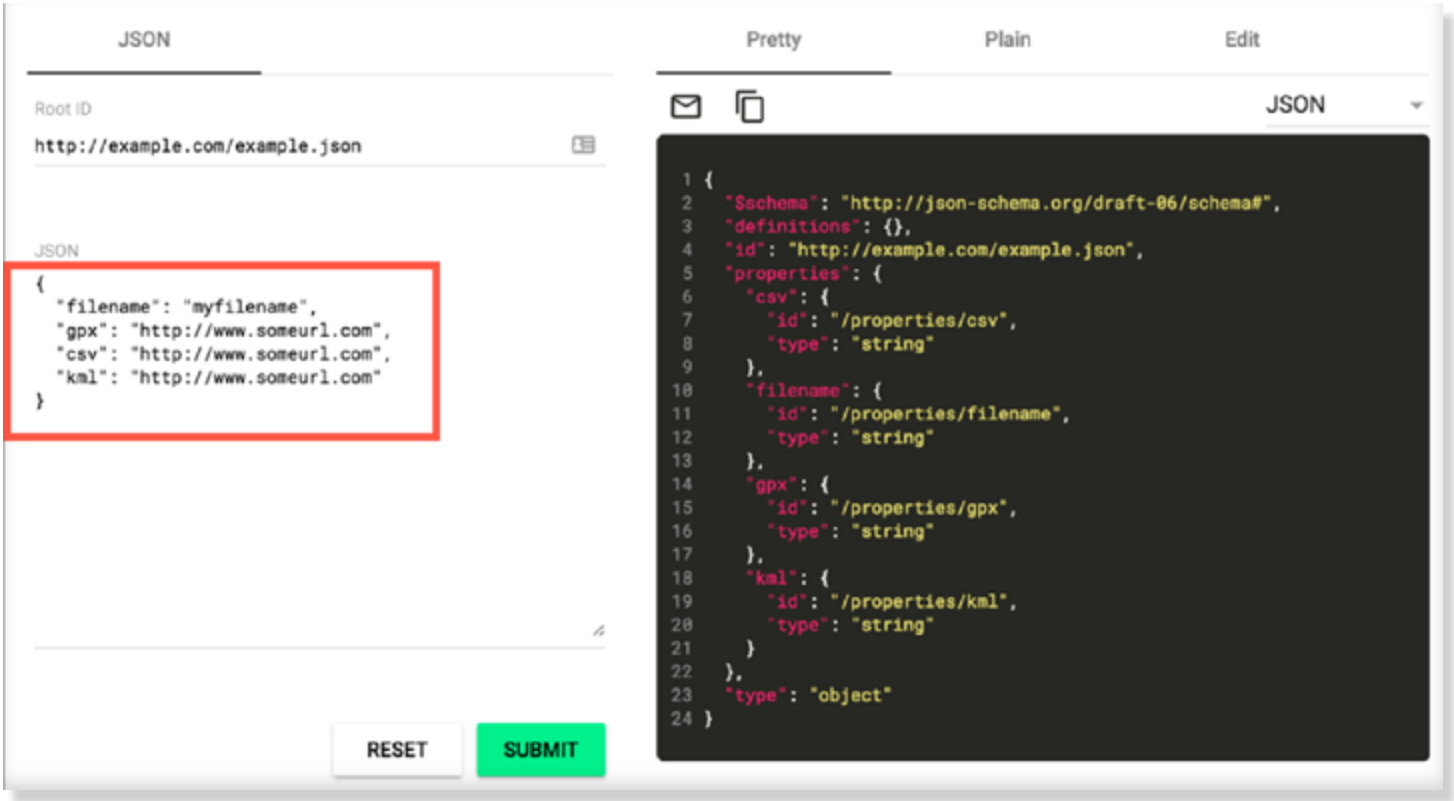
We need to create the JSON body which we'll use to create the schema. I used objgen.com/json to quickly create this piece, but you can just manually type it if you want.



Here is the JSON payload with some sample data:

```
{
  "filename": "myfilename",
  "gpx": "http://www.someurl.com",
  "csv": "http://www.someurl.com",
  "kml": "http://www.someurl.com"
}
```

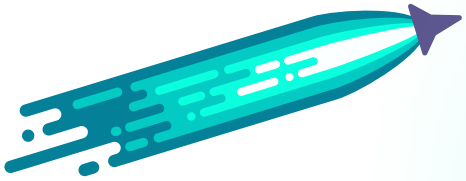
Now I've clicked the "Copy" Button, headed over to jsonschema.net, pasted it in, and my JSON schema was generated.



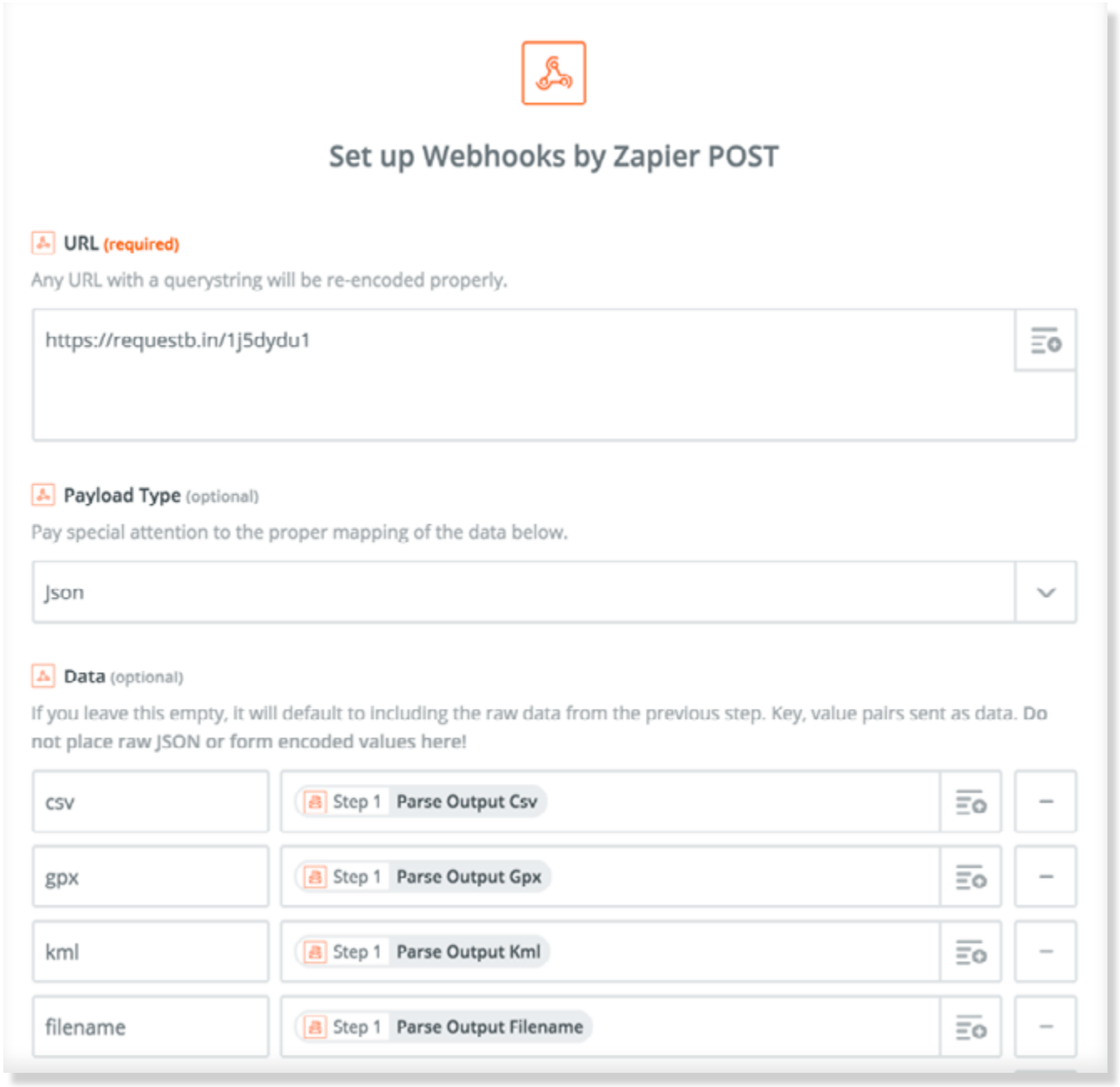
```
{
  "$schema": "http://json-schema.org/draft-06/schema#",
  "definitions": {},
  "id": "http://example.com/example.json",
  "properties": {
    "csv": {
      "id": "/properties/csv",
      "type": "string"
    },
    "filename": {
      "id": "/properties/filename",
      "type": "string"
    },
    "gpx": {
      "id": "/properties/gpx",
      "type": "string"
    },
    "kml": {
      "id": "/properties/kml",
      "type": "string"
    }
  },
  "type": "object"
}
```

Too easy! Now head over to the Zapier Editor and create a new app.

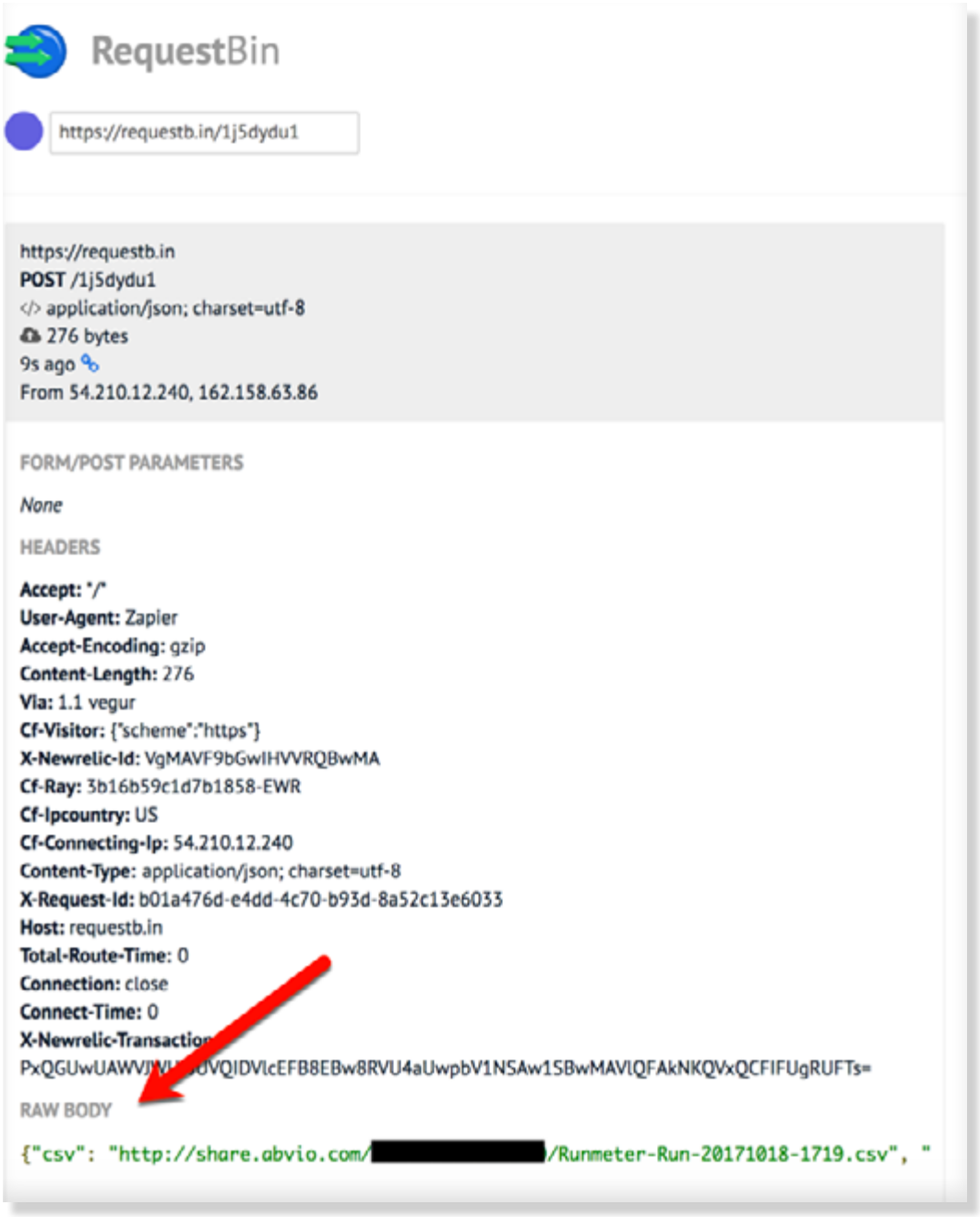
You'll want to use the **New Email** Trigger and use the **Email** Parser by **Zapier** and allow it to connect to your mailbox that you created earlier.



For the next step, you'll want to use an **Action** that is a **POST** request that uses **Webhooks by Zapier**. When you get to the point to where it asks you for a URL, use **requestb.in** to see what your HTTP client is sending or to inspect and debug webhook requests. Now you have a URL that you can use for testing. Ensure your payload is set to **JSON** and now you can select the data from your parsed email (filename, csv, kml, gpx). You can leave the rest of the fields as they are. When you finish your screen should look like the following:

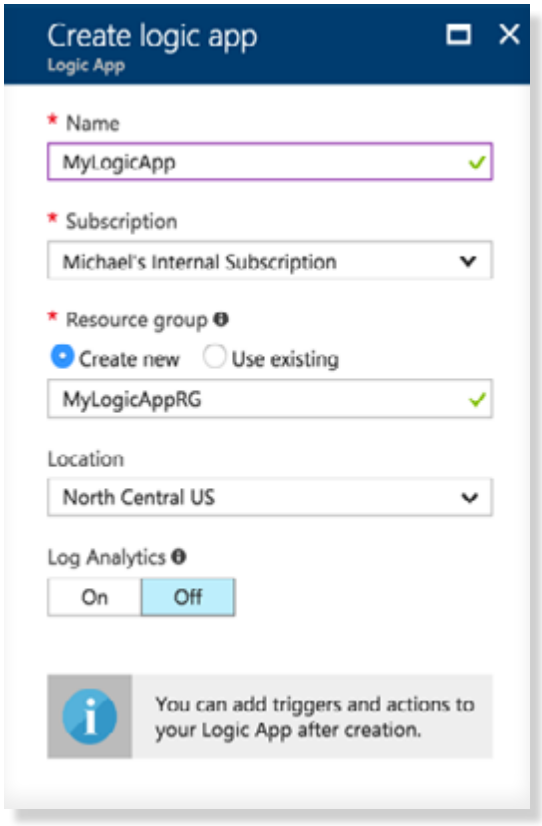


Go ahead and save and run the test. After you switch over to your requestb.in you should see the output that matches the parsed data from the email.



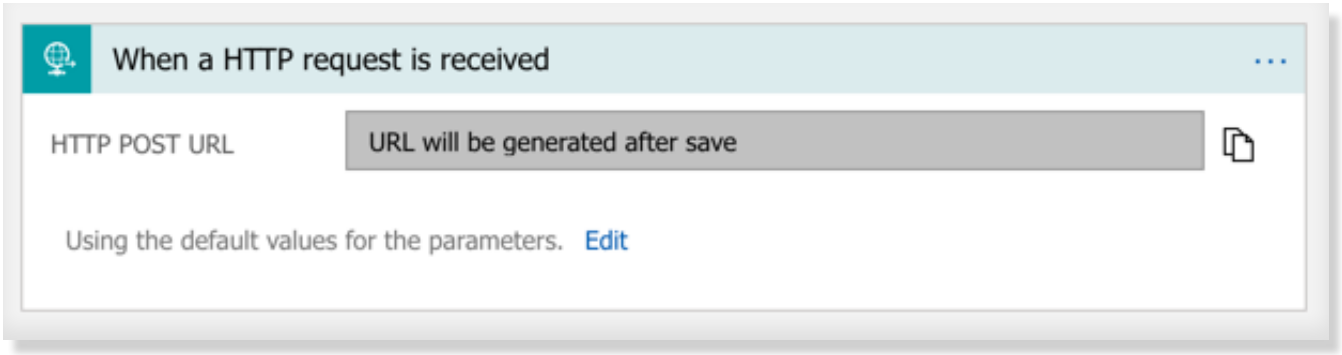
Set up an HTTP Request Trigger that is used in Azure Logic Apps

Create a new Azure Logic App by going to the Azure Portal and create a new resource



After the resource is ready, we're are going to need to trigger an action when an HTTP request comes in. Thankfully, this is one of the **Common Triggers** and we can select it to begin.

Note that the URL isn't generated until we provide the parameters.

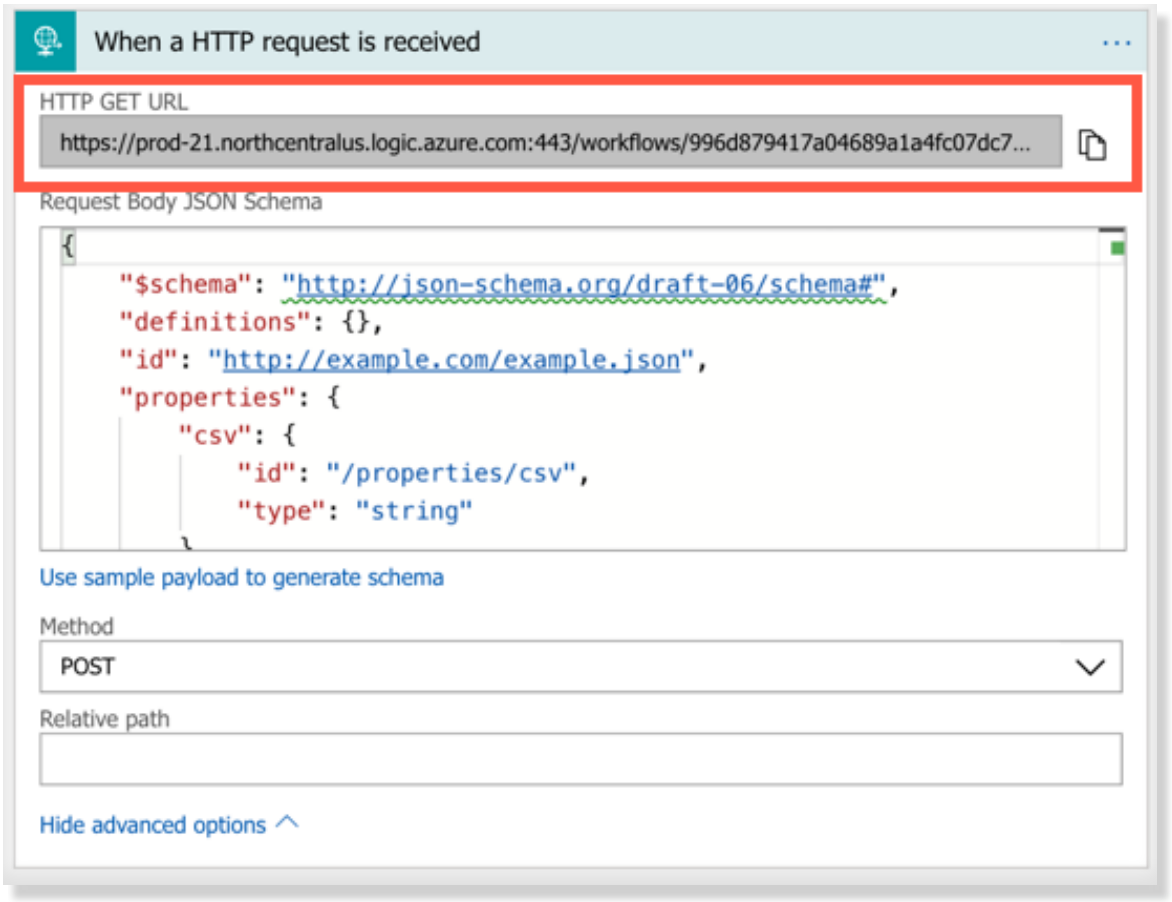


Go ahead and press **Edit**. Remember the JSON Schema from the last post? Well, now is the time to paste it in. I'll also include it below:

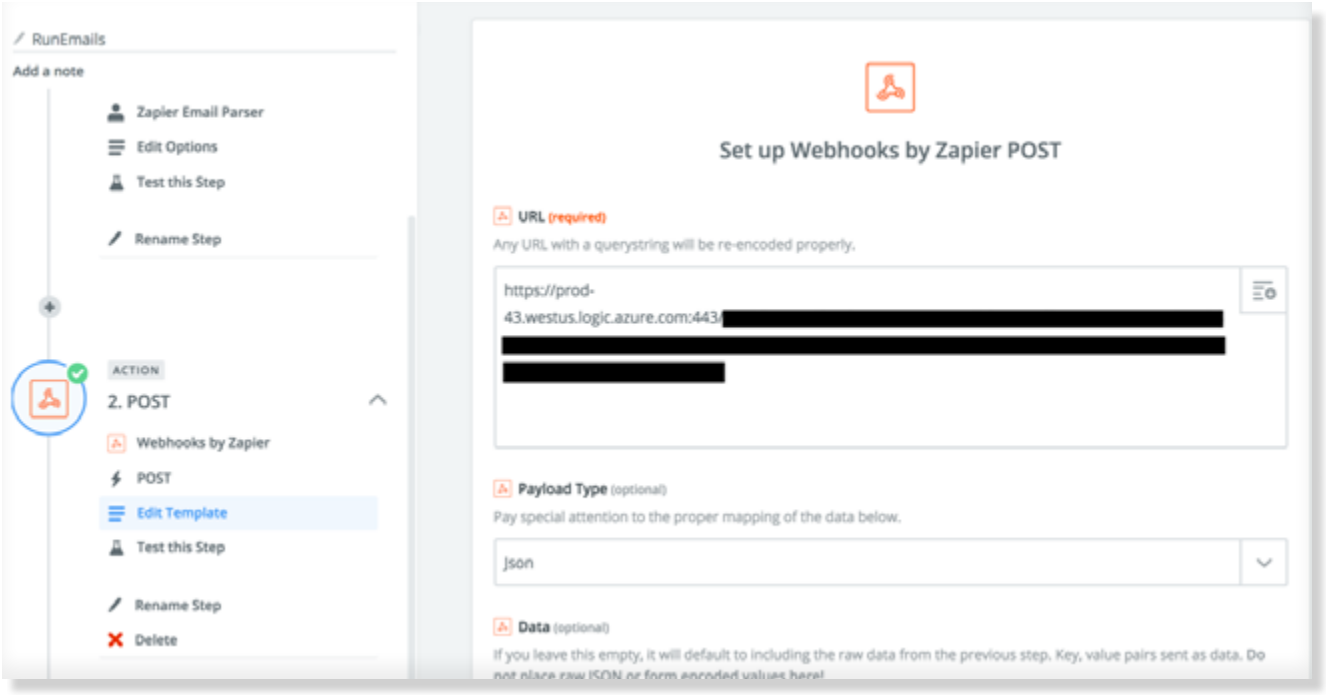
```
{
  "$schema": "http://json-schema.org/draft-06/schema#",
  "definitions": {},
  "id": "http://example.com/example.json",
  "properties": {
    "csv": {
      "id": "/properties/csv",
      "type": "string"
    },
    "filename": {
      "id": "/properties/filename",
      "type": "string"
    },
    "gpx": {
      "id": "/properties/gpx",
      "type": "string"
    },
    "kml": {
      "id": "/properties/kml",
      "type": "string"
    }
  },
  "type": "object"
}
```

Note: You can use the "Use sample payload to generate schema" option, but I prefer the additional meta data that **JSON Schema** can provide.

You'll now have a GET URL that you can put in Zapier and replace the requestb.in that we stubbed out earlier.

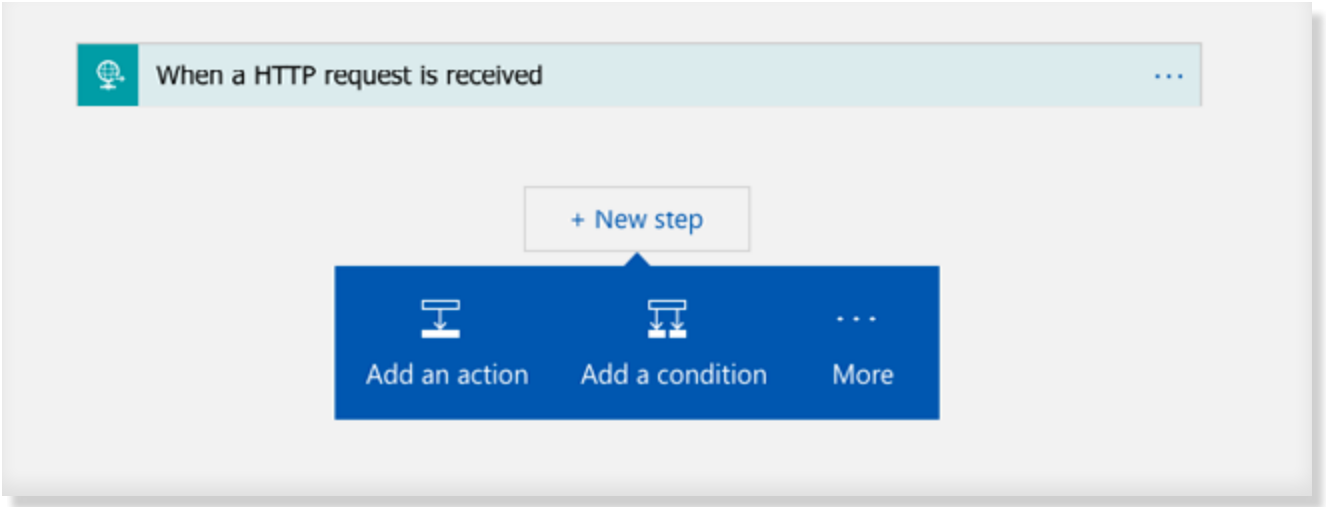


Head back over to Zapier Editor and modify your Zap by editing the template and replacing the requestb.in URL with your live Azure Logic Apps ones.



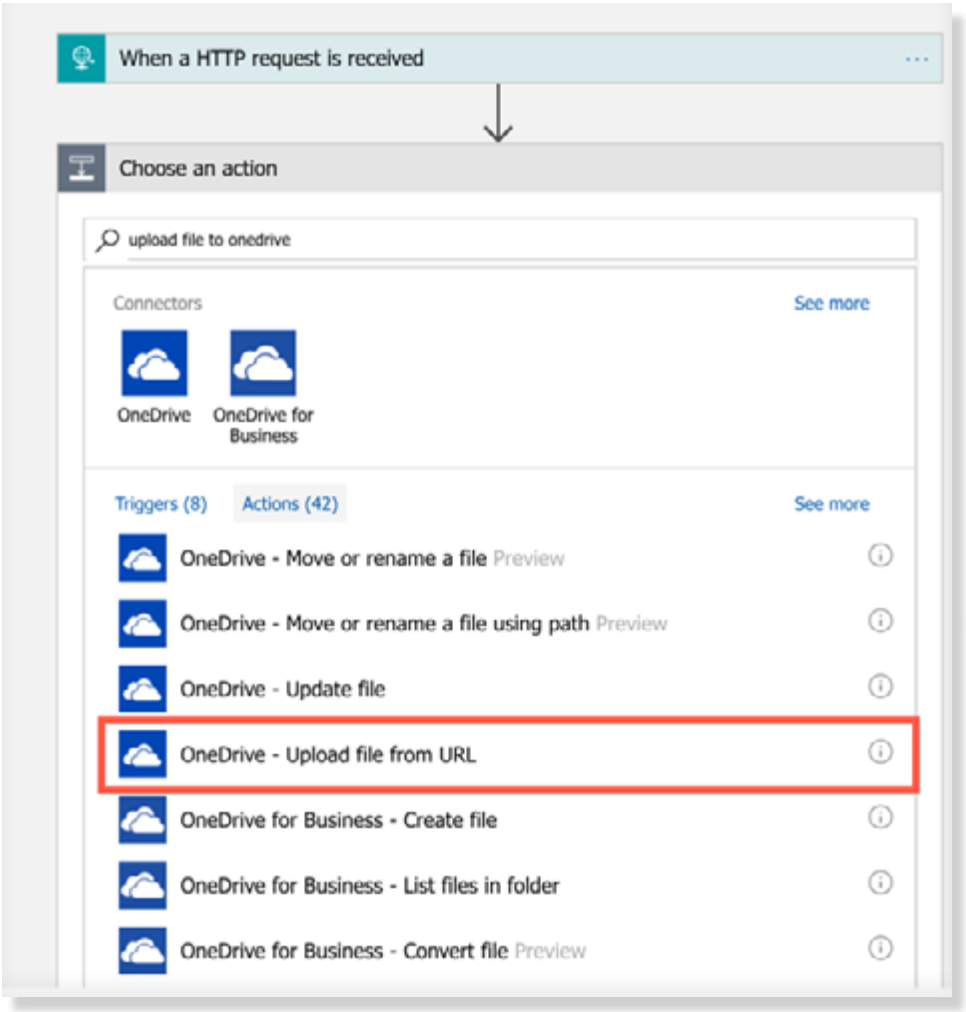
Upload Files from a URL with Azure Logic Apps

Open our existing Azure Logic App and we'll use OneDrive to automatically upload the files to my personal OneDrive account.



Typically, you'll add an **Action** or **Condition** to trigger once the HTTP request is complete.

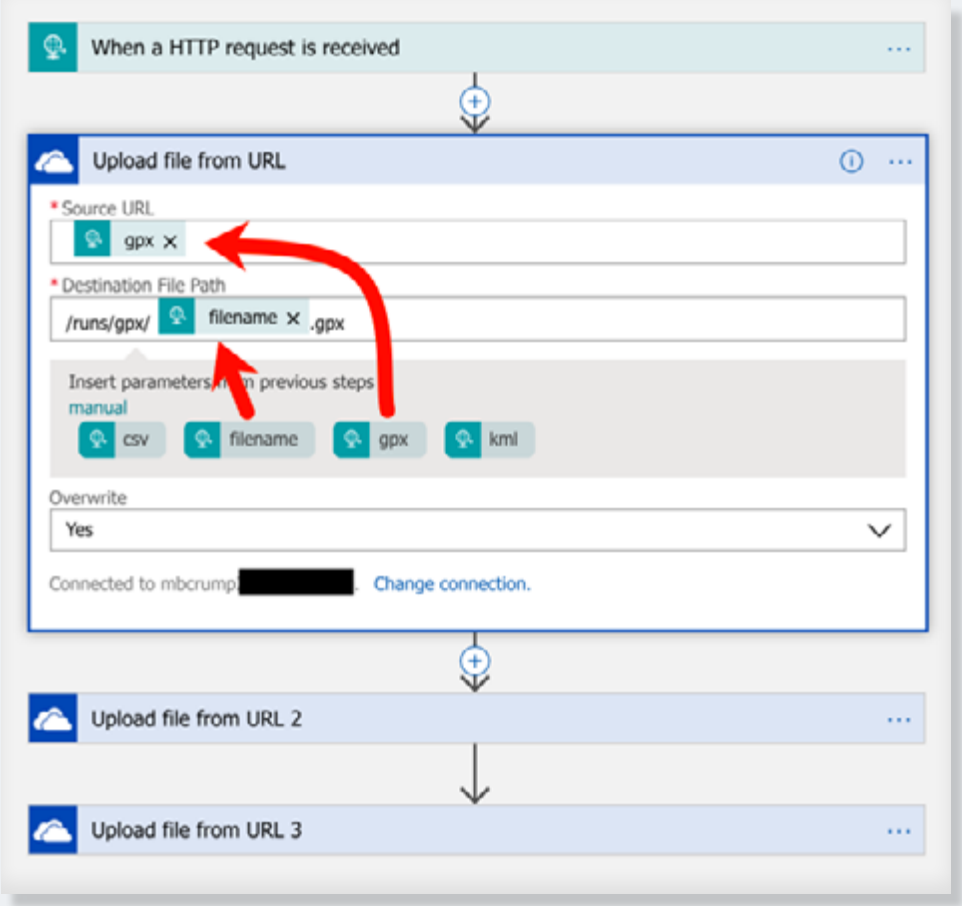
We'll select an **Action** as we want it to run every time vs. a **Condition** which would use "If..then.." logic after the HTTP request comes in. Select **Action** and search for "upload file to onedrive" and you'll see the following is available to use.



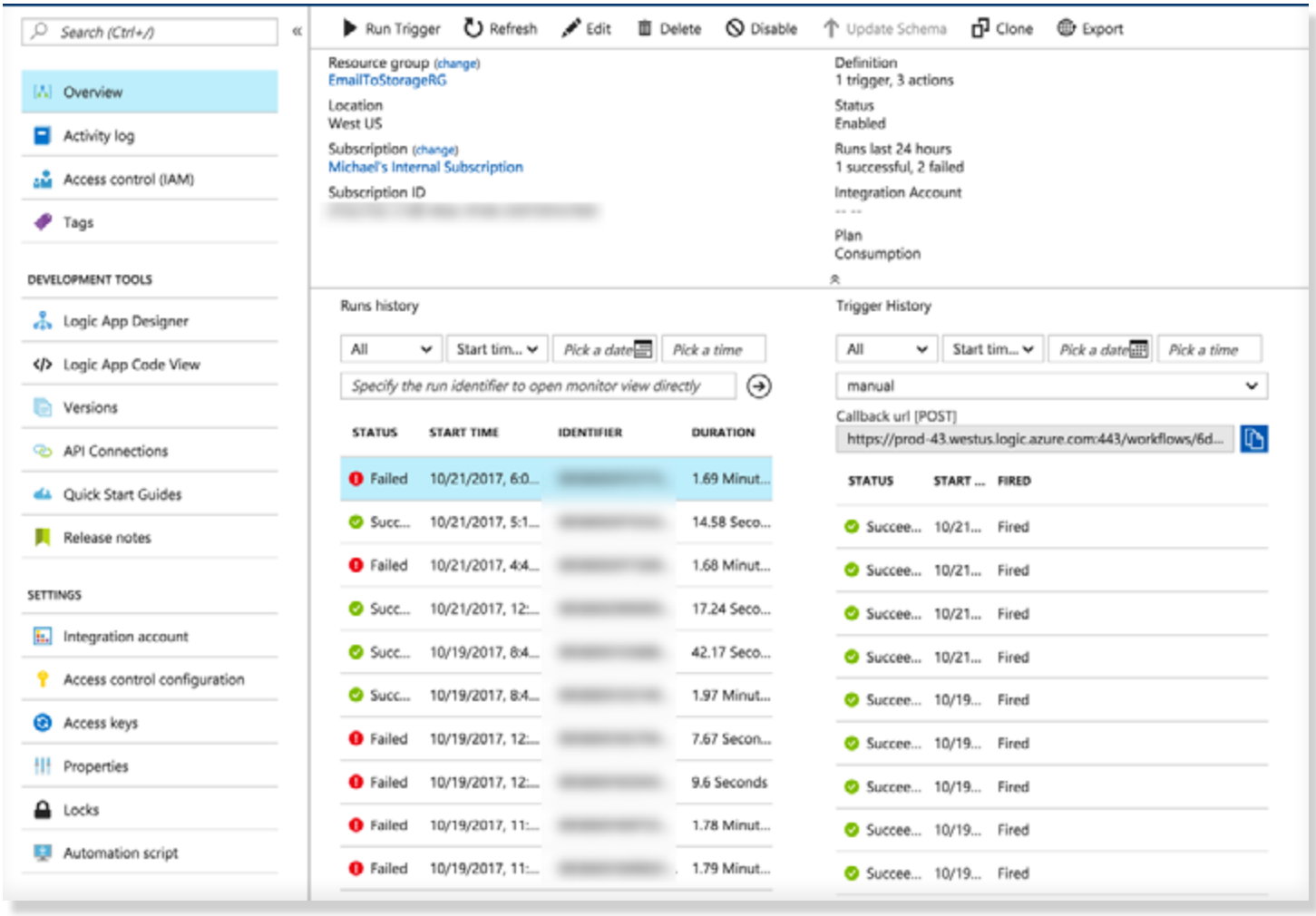
You'll have to sign in to your OneDrive account.

Now you can pull the fields that we captured and use them as dynamic content. For example, the GPX file contains the full URL, so we can just use that dynamic field. For the destination URL, we'll construct the location we want it to go in our OneDrive account. Note that I've also setup 2 additional OneDrive actions for the KML and CSV file.

Now you'd want to send an email to your Zapier mailbox to test all the pieces to this app. Now you can switch over to your OneDrive account. If everything goes well and worked successfully you will see your new files in your OneDrive folder.



If it doesn't appear to be working, you should start by looking at the **Overview** section, then the **Run History** as shown below.



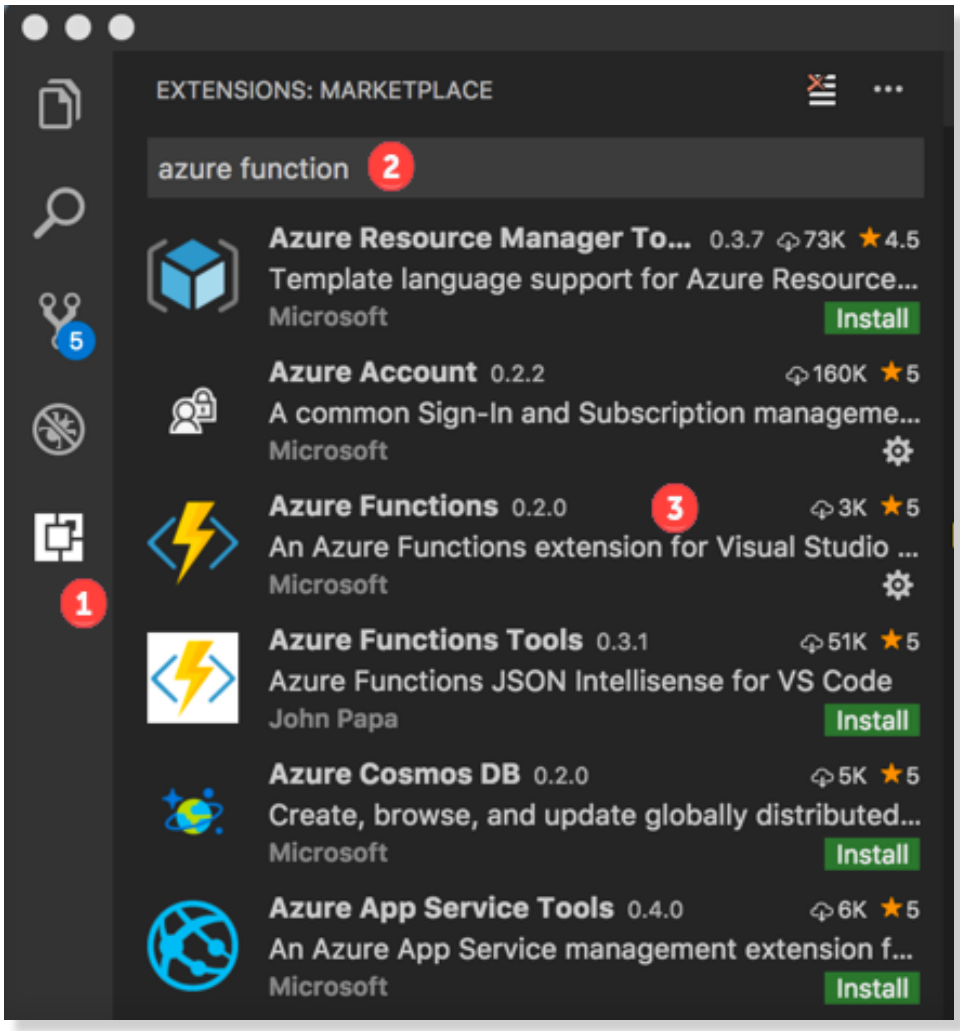
I was able to create the app in less time than it took to write this up!

Success! Our application is working properly.

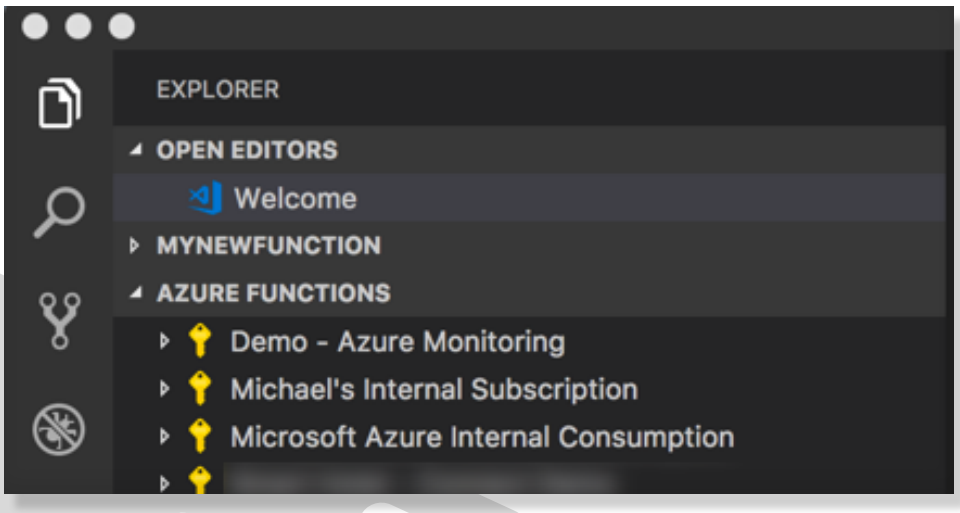
Create an Azure Functions Project with Visual Studio Code

Visual Studio Code is the best thing since coffee for developers and if you pair it with Azure Functions... well, more awesome happens. In this post, we'll look at adding an Azure Function project to Visual Studio Code.

It is fairly easy as all you need to do is open VS Code, click on Extensions, search for **azure function**, and install it as shown below :

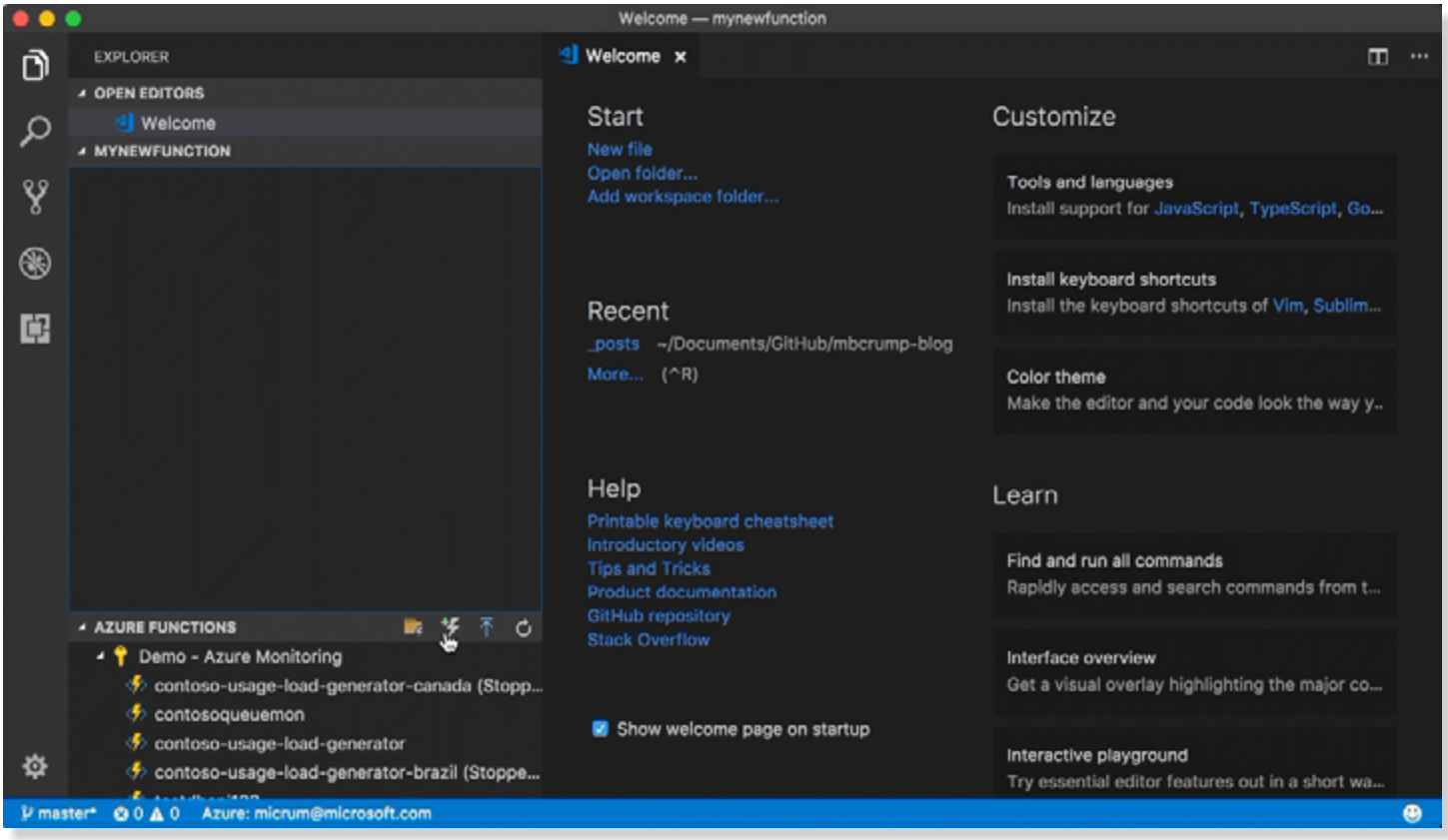


Once installed, you'll need to reload the extension and you should see your subscriptions.



You may need to sign in if Visual Studio Code hasn't already been authenticated.

Now you should create a project, then a function app, and select which template that you want to use. After you select a template, you'll need to provide a name and an authorization level.



Just hit **F5** and you have a local Azure Function running in Visual Studio Code.

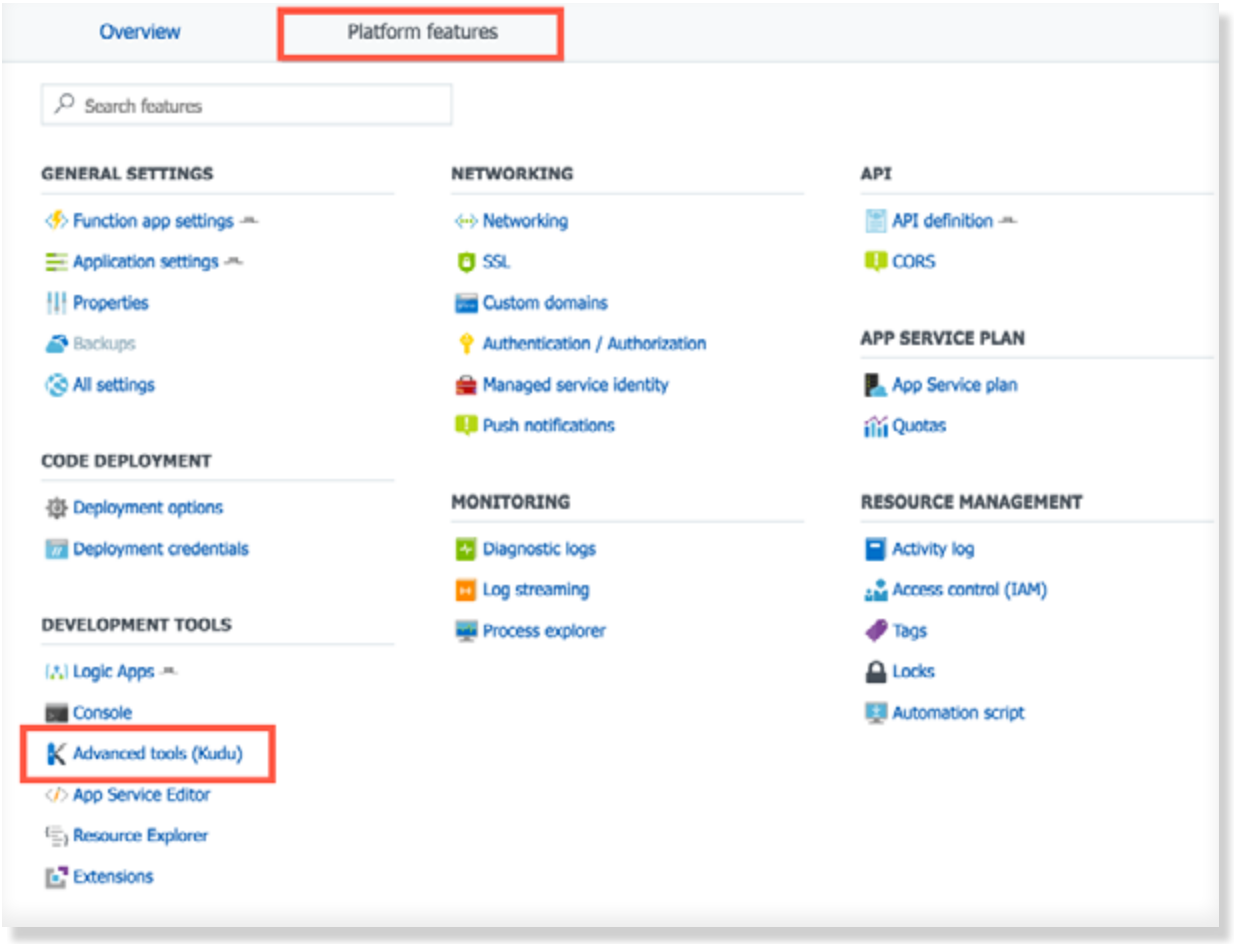
Remember this! You can also add Azure Cloud Shell to Visual Studio Code with this **tip**!

Using a different route prefix with Azure Functions

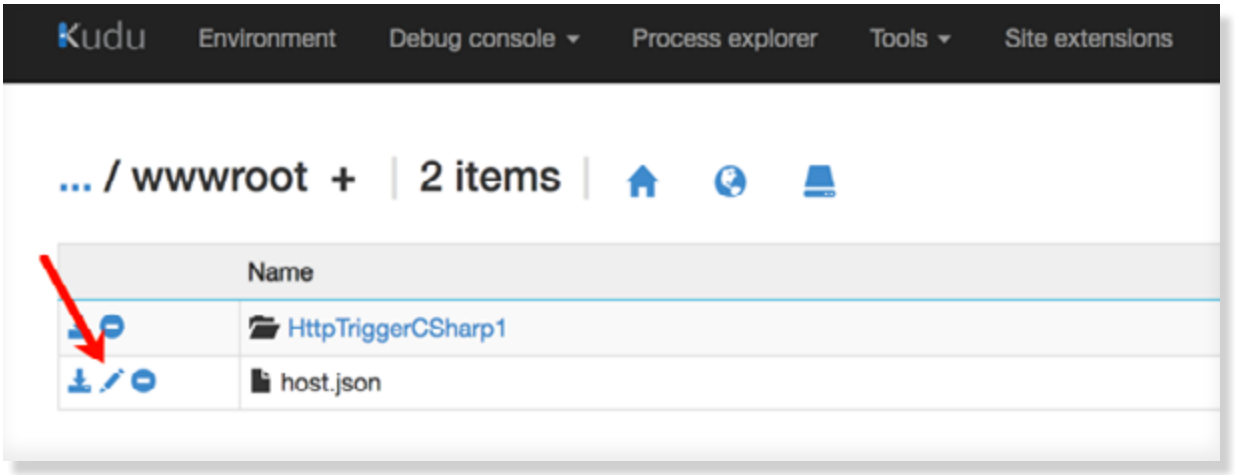
Sometimes you have the requirement to use a different route prefix than the one that Azure Functions auto-generates

For example: **https://mynewapimc.azurewebsites.net/api/HttpTriggerCSharp1** uses **api** before the function name. You might want to either remove `api` or change it to another name.

I typically fix this by going into the Azure Portal and clicking on my Azure Function. I then click on **Platform Features** and **Advanced tools(Kudu)**.



I then navigate to **wwwroot** and hit edit on the **host.json** file.



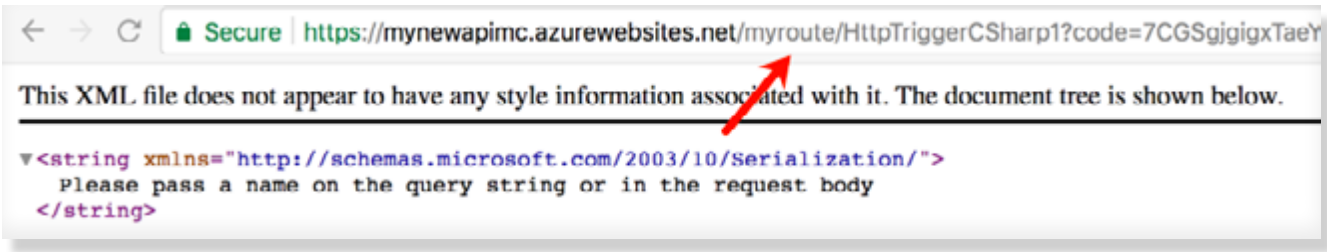
Inside the editor, add the **routePrefix** to define the route prefix. So if I wanted the route prefix to be blank, then I'd use the following:

```
{
  "http": {
    "routePrefix": ""
  }
}
```

Simply restart your Azure Function and now my URL is accessible without api.

On the flip side, if I wanted a route prefix, then I'd just add the following:

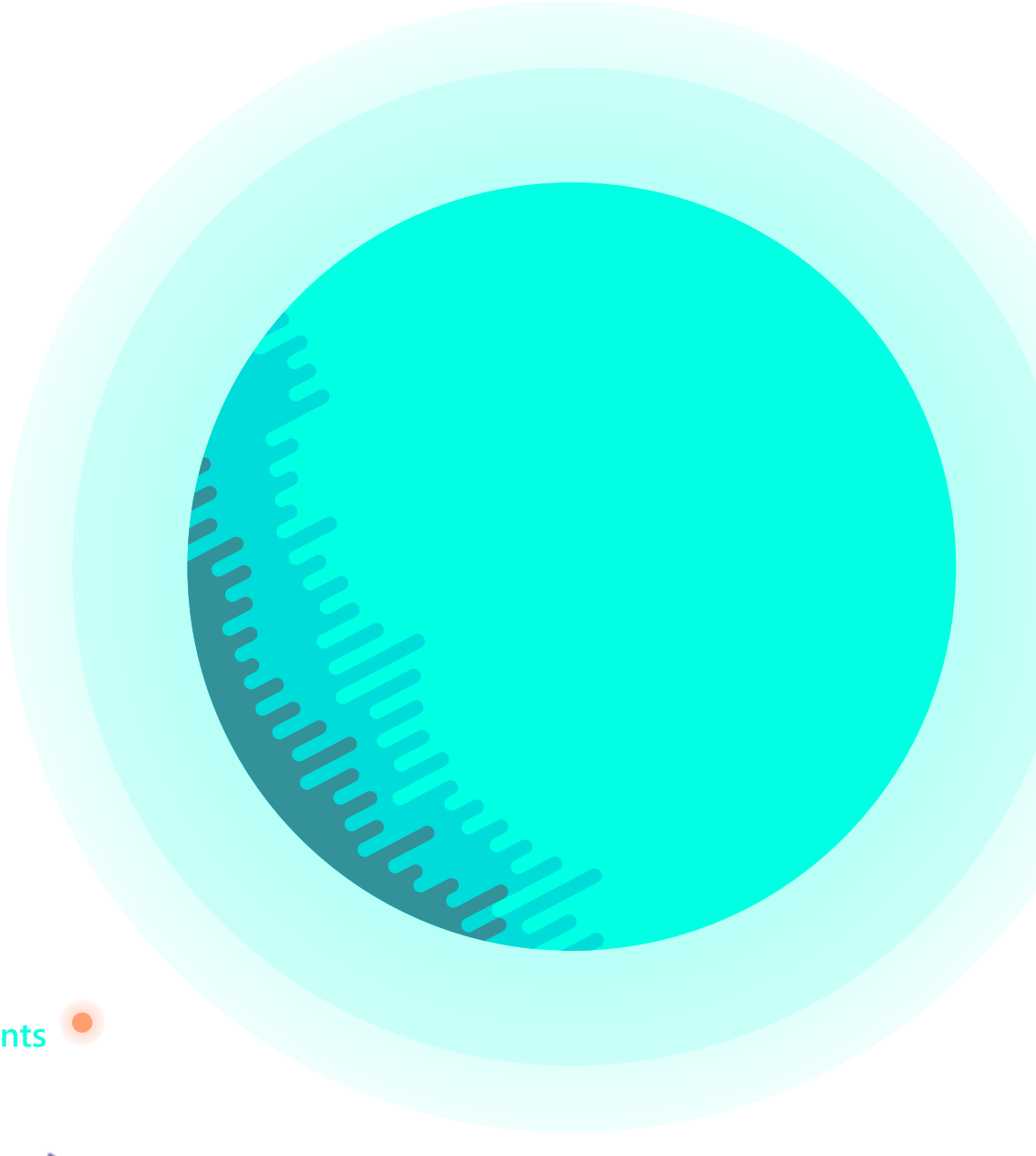
```
{
  "http": {
    "routePrefix": "myroute"
  }
}
```



Keep in mind that best practice (as far as I can tell) is to use api, but wanted to flag this as only you can make your design decisions.

Productivity

If you jumped straight to this section, then you certainly understand the spirit of what I originally wanted to achieve with Azure Tips and Tricks - simply to be more productive with Azure. In this set of tips, I've gone back to the first tip that I ever wrote describing how you can use keyboard shortcuts within the Azure Portal to navigate more effectively. We'll also cover how you can apply tags to your Azure resources to logically organize them by categories. We'll wrap up with using Azure Cloud Shell, which provides an interactive, browser-accessible shell for managing Azure resources, and how you can quickly take advantage of it with Visual Studio Code in the browser or on your local development machine.



Back to Table of Contents

Azure Portal Keyboard Shortcuts

Developers love keyboard shortcuts and there are plenty of keyboard shortcuts in the Azure platform. You can see a list by logging into the Azure Portal, clicking on the question mark (or help icon), and selecting Keyboard Shortcuts.

You will see that you have the following keyboard shortcuts available:

Actions

CTRL+/	Search blade menu items
ALT+SHIFT+Up	Move favorites up
ALT+SHIFT+Down	Move favorites down
G+/	Search resources (global)
G+N	Create a new resource
G+B	Open the 'More services' pane

Navigation

G+,	Move focus to command bar
G+.	Toggle focus between top bar and side bar

Go to

G+D	Go to dashboard
G+A	Move favorites up
G+R	Move favorites down
G+number	Search resources (global)

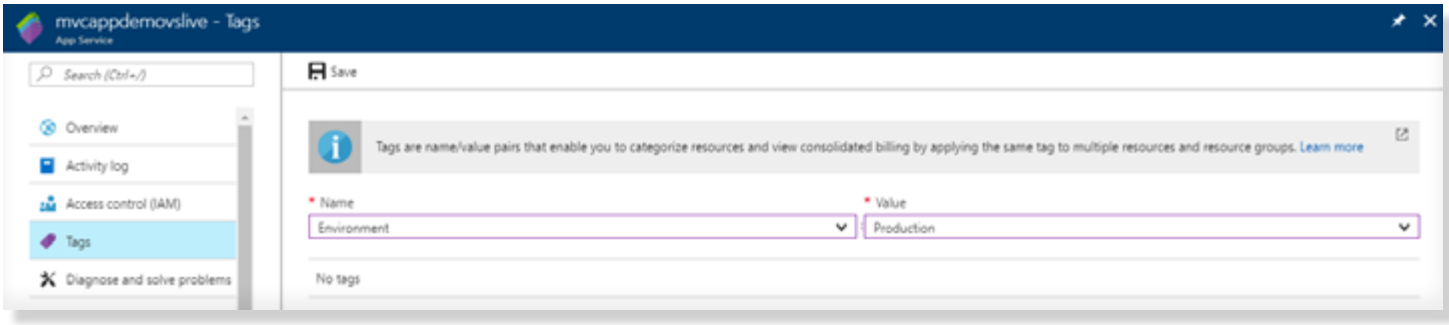
Continue checking the site as new ones are being added all the time!

Use Tags to Quickly Organize Azure Resources

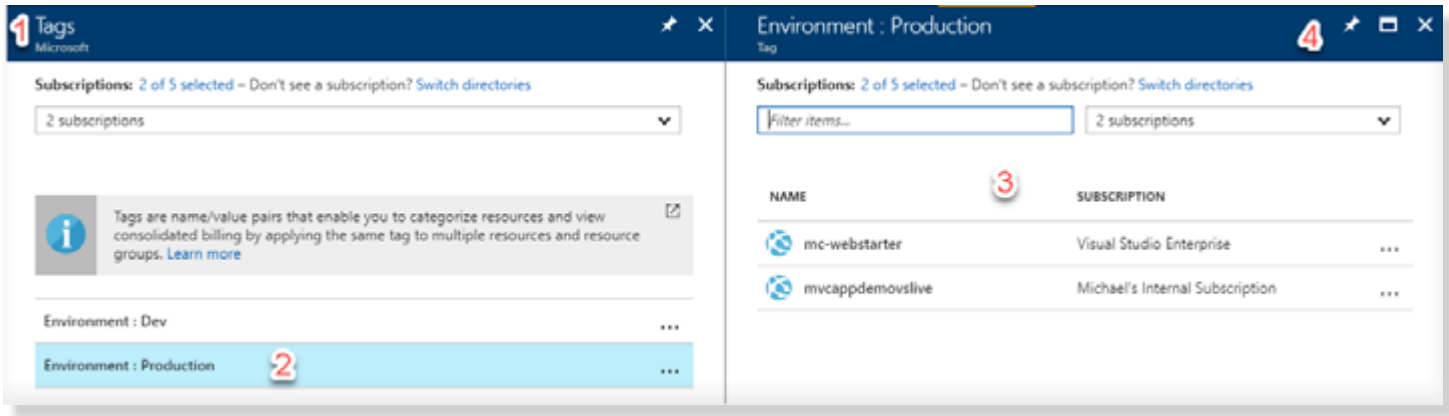
You can utilize tags to quickly organize Azure Resources. For example, if you'd like to have a set of Resources for "Production" and another for "Dev", then you can quickly do that.

Remember this!
Tags are user-defined key/value pairs which can be placed directly on a resource or a resource group.

Head over to the Azure Portal and select a service. In my example, I'm going to select a Web App that I want to tag as a Production App. Select the Tags menu and provide a Name and Value as shown below.

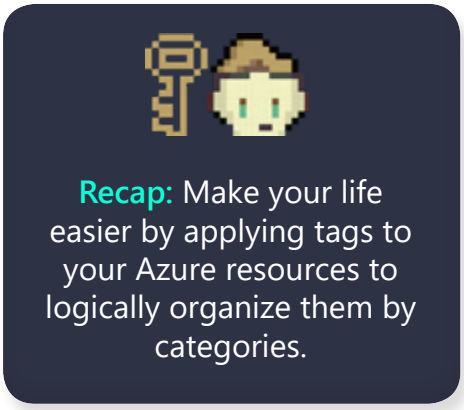


I selected **Environment** and gave it the value of **Production**. I then clicked **Save**. I could also do this for other Production resources, and even tag the appropriate ones with **Dev**. I can now take advantage of this ability by going to **More Services**, typing **Tags**, and clicking on the Environment: Production as shown below.



1. Results from searching “Tags”
2. Our Production Environment we just setup
3. List all the Web Apps with the Production Environment Tag
4. Pin the Blade to our Azure Portal Main Page

If you pin the blade (by pressing the pin in step 4) you’ll see the following on your Azure Portal dashboard:



Recap: Make your life easier by applying tags to your Azure resources to logically organize them by categories.

Environment : Production

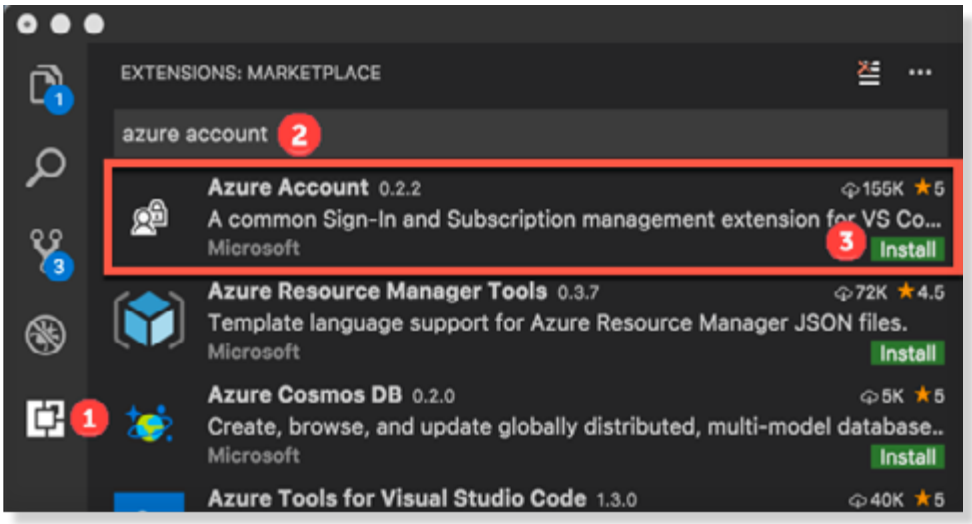
You can even interact with **Tags** using Azure CLI 2.0. For example, I can type **az tag list -o json** to list all the tags associated with an account.

```
michael@Azure:~$ az tag list
[
  {
    "count": {
      "type": "Total",
      "value": 2
    },
    "id":
"/subscriptions/c0e5fb0f-7461-4b04-9720-63fe407b1bdb/tagNames/Environment",
    "tagName": "Environment",
    "values": [
      {
        "count": {
          "type": "Total",
          "value": 1
        },
        "id":
"/subscriptions/c0e5fb0f-7461-4b04-9720-63fe407b1bdb/tagNames/Environment/tagValues
/Dev",
        "tagValue": "Dev"
      },
      {
        "count": {
          "type": "Total",
          "value": 1
        },
        "id":
"/subscriptions/c0e5fb0f-7461-4b04-9720-63fe407b1bdb/tagNames/Environment/tagValues
/Production",
        "tagValue": "Production"
      }
    ]
  }
]
```

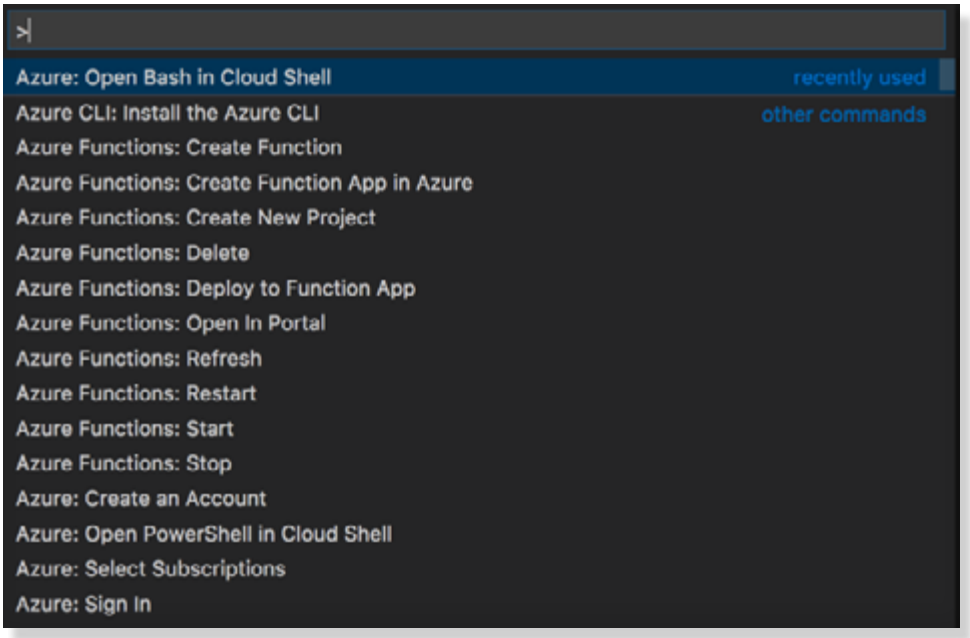
Azure Cloud Shell is an interactive, browser-accessible shell for managing Azure resources. Linux users can opt for a Bash experience, while Windows users can opt for PowerShell.

Add Azure Cloud Shell to Visual Studio Code

To add Azure Cloud Shell to VS Code, click on Extensions and search for **azure account**. Install it as shown below.

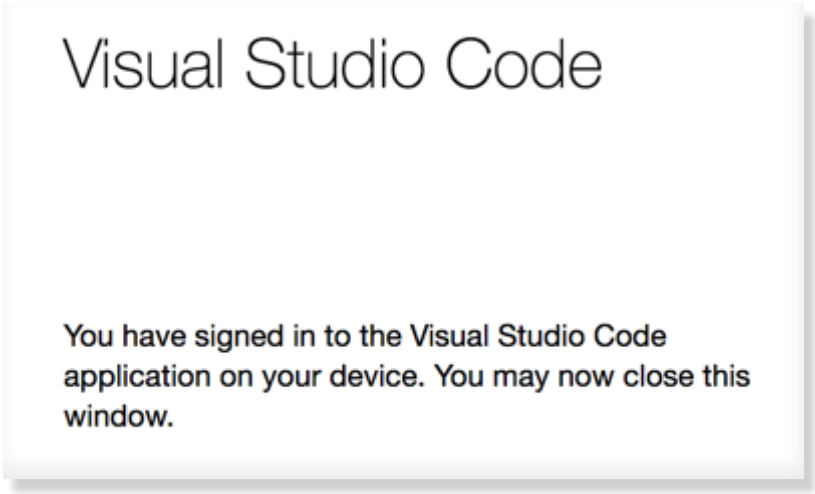


Once installed, go to View -> Command Palette and type **Open Bash in Cloud Shell**.

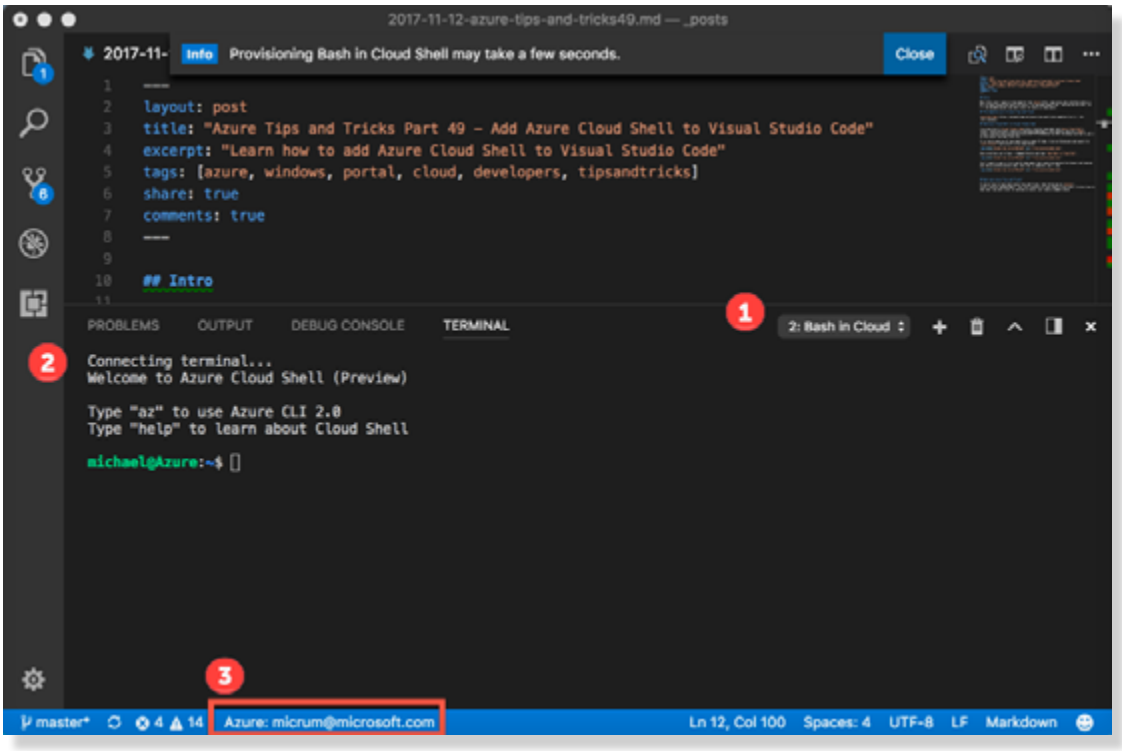


Note: You can also open PowerShell in Cloud Shell with this extension!

You'll need to sign in first, and Visual Studio Code makes that simple by opening the browser and copying your device authentication code. Once that is complete, you'll see:



Go back to View -> Command Palette and select **Open Bash in Cloud Shell** again and it should spin up as shown below.



Very cool! If you want to see the source code for the app it can be found here.

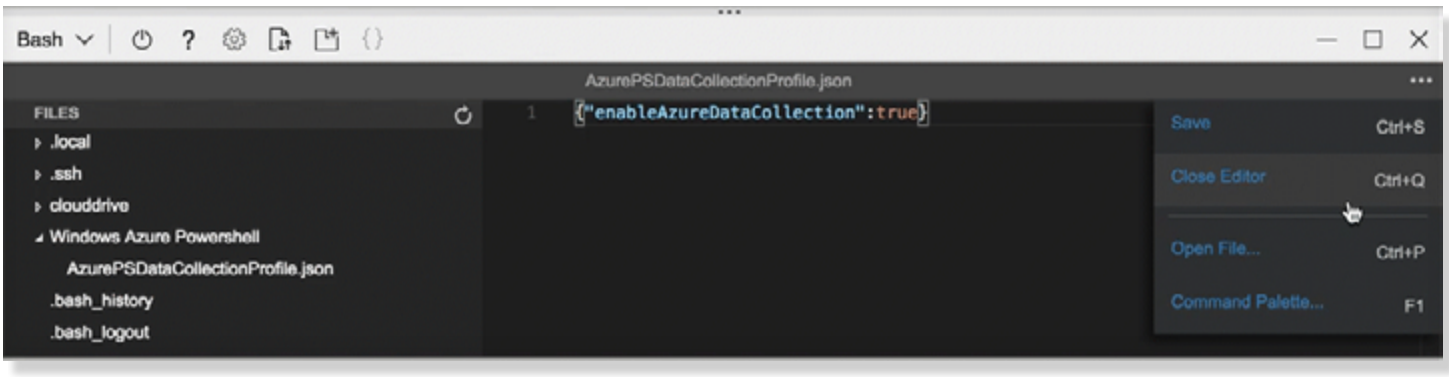
Quickly Edit Files Within Azure Cloud Shell Using Visual Studio Code That You Know and Love

Did you know that you can access Visual Studio Code within a Cloud Shell instance?

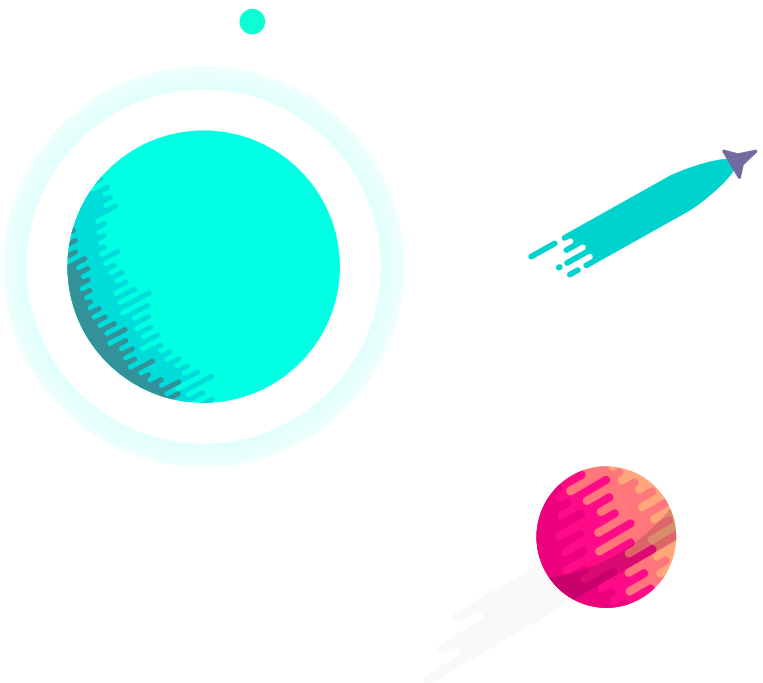
I'm sure by now everyone has used the lovely Visual Studio Code editor in some application before, but you may not be aware that you can use the editor within Cloud Shell without installing anything. To give this a spin, open up Cloud Shell and type **code .** and you'll see the following:

Notice that you can do things such as navigate directories, and also view files with the same syntax used in VS Code. You can easily save and close the editor, open a file outside the current working directory, and open the command palette.

If you open the command palette you'll see a very familiar list of commands that you've probably used in the editor on your desktop.



And since this is based upon the open-source Monaco project that powers Visual Studio Code, you can expect we'll see more features added over time. As of the publication time of this eBook, it automatically includes authorization for pre-installed open source tools like Terraform, Ansible, and InSpec. So what are you waiting for? Go check out now!



Conclusion

Thanks for reading and I hope that you enjoyed the top tips of Azure Tips & Tricks since the creation of the series. While we've discussed four broad sections that covered web, data, serverless & productivity, there are 130+ additional tips waiting on you that cover additional topics such as :

- **App Services**
- **CLI**
- **Cloud Shell**
- **Cognitive Services**
- **Containers**
- **Cosmos DB**
- **Functions**
- **IoT**
- **Logic Apps**
- **Portal**
- **PowerShell**
- **Productivity**
- **Storage**
- **SQL and Search**

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Until next time,

Michael Crump @mbcrump

signing off... 

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