Creating Microsoft Azure Web Sites

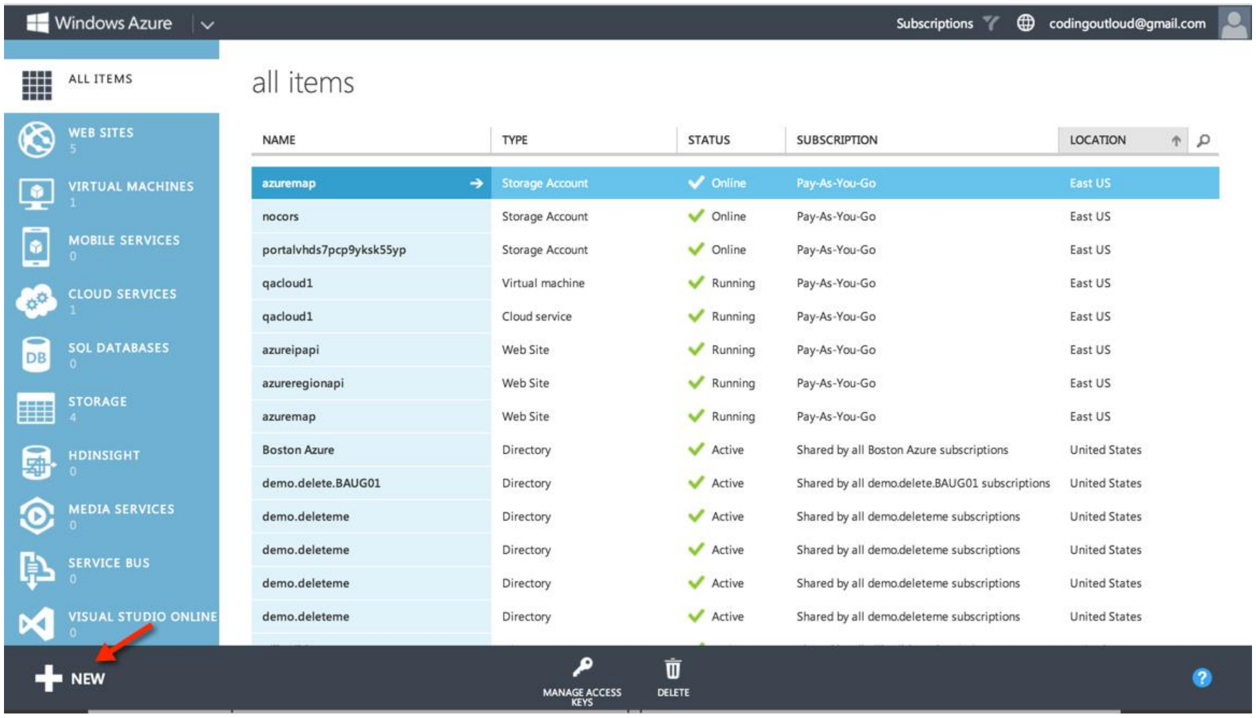
Microsoft Azure supports several ways to create web sites. Of the available Microsoft Azure offerings, Cloud Services and Virtual Machines are the most flexible. While both of these approaches allow a great deal of control over your environment, they also require skill and time. A more streamlined experience is available with Microsoft Azure Web Sites. For web applications written by using ASP.NET, Node.js, PHP, or Python, Microsoft Azure Web Sites enables rapid deployment, easy configuration, monitoring, high scalability, and a service level agreement (SLA). This paper provides guidance on using Microsoft Azure Web Sites.

Creating a web site from the gallery

You can easily create a new Microsoft Azure web site by selecting a starter project from the gallery in the Microsoft Azure Management Portal. These options provide solutions to get you closer to your goal with less work than if you started with a blank project. The gallery contains Microsoft-provided options, such as ASP.NET-related starter projects, as well as options for Python, PHP, and Node.js that are based on community projects or from other third parties.

This paper assumes that you already have a Microsoft Azure subscription. (If you do not have an account, sign up for a free one-month trial of Microsoft Azure.)

After logging into your account on the Management Portal, you will see a window similar to the image in Figure 1.



all items

NAME	TYPE	STATUS	SUBSCRIPTION	LOCATION
azuremap	Storage Account	✓ Online	Pay-As-You-Go	East US
nocors	Storage Account	✓ Online	Pay-As-You-Go	East US
portalvhds7pcp9yksk55yp	Storage Account	✓ Online	Pay-As-You-Go	East US
qacloud1	Virtual machine	✓ Running	Pay-As-You-Go	East US
qacloud1	Cloud service	✓ Running	Pay-As-You-Go	East US
azureipapi	Web Site	✓ Running	Pay-As-You-Go	East US
azureregionapi	Web Site	✓ Running	Pay-As-You-Go	East US
azuremap	Web Site	✓ Running	Pay-As-You-Go	East US
Boston Azure	Directory	✓ Active	Shared by all Boston Azure subscriptions	United States
demo.delete.BAUG01	Directory	✓ Active	Shared by all demo.delete.BAUG01 subscriptions	United States
demo.deleteme	Directory	✓ Active	Shared by all demo.deleteme subscriptions	United States
demo.deleteme	Directory	✓ Active	Shared by all demo.deleteme subscriptions	United States
demo.deleteme	Directory	✓ Active	Shared by all demo.deleteme subscriptions	United States
demo.deleteme	Directory	✓ Active	Shared by all demo.deleteme subscriptions	United States

Figure 1

1. Select **+ New** to open a wizard from which you can create many types of cloud resources.

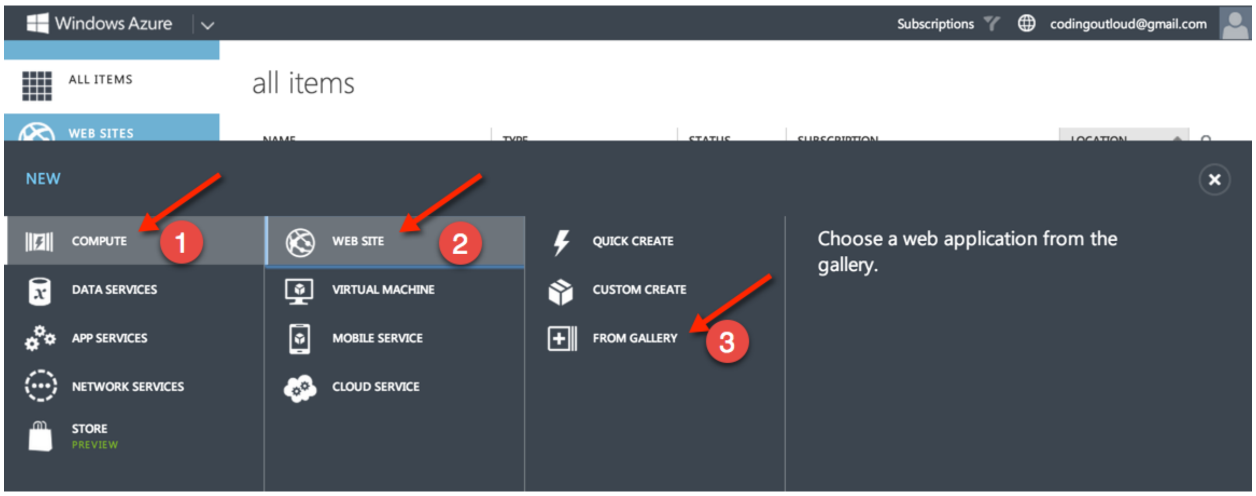
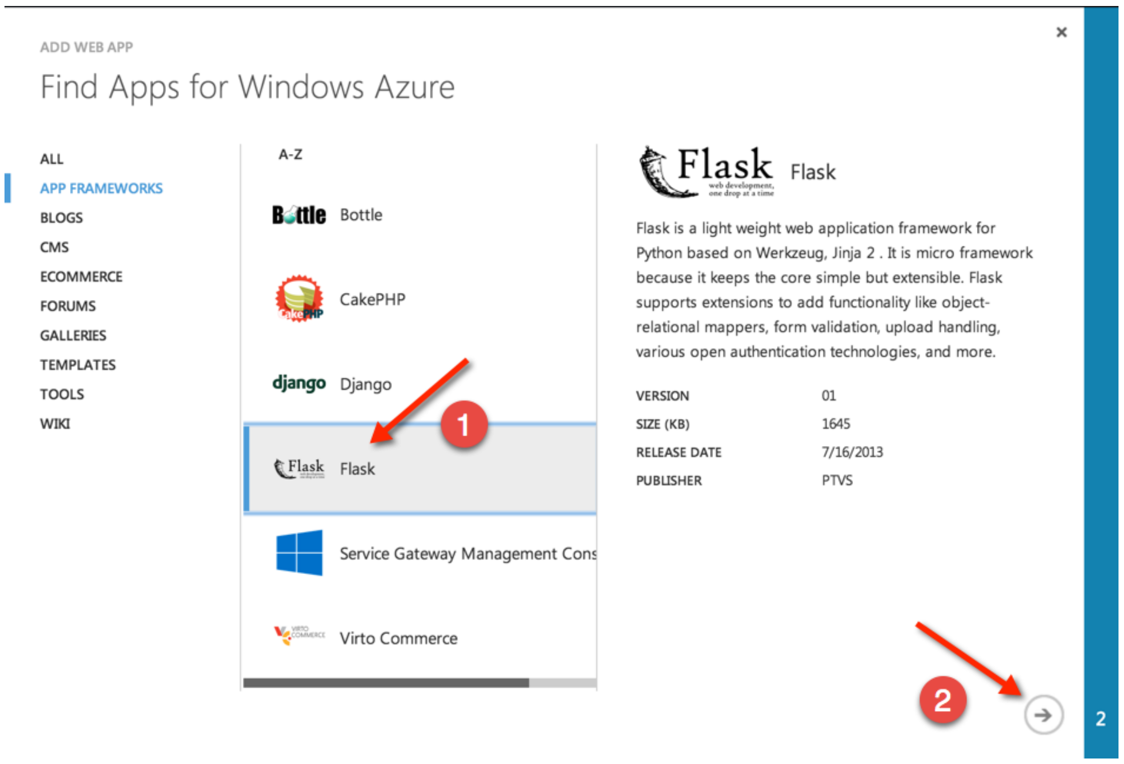


Figure 2

2. Select **COMPUTE** > **WEB SITE** > **FROM GALLERY**.

From the gallery, you can select from a variety of starter projects for a range of technologies, including Node.js, Python, PHP, and ASP.NET, as shown in Figure 3.

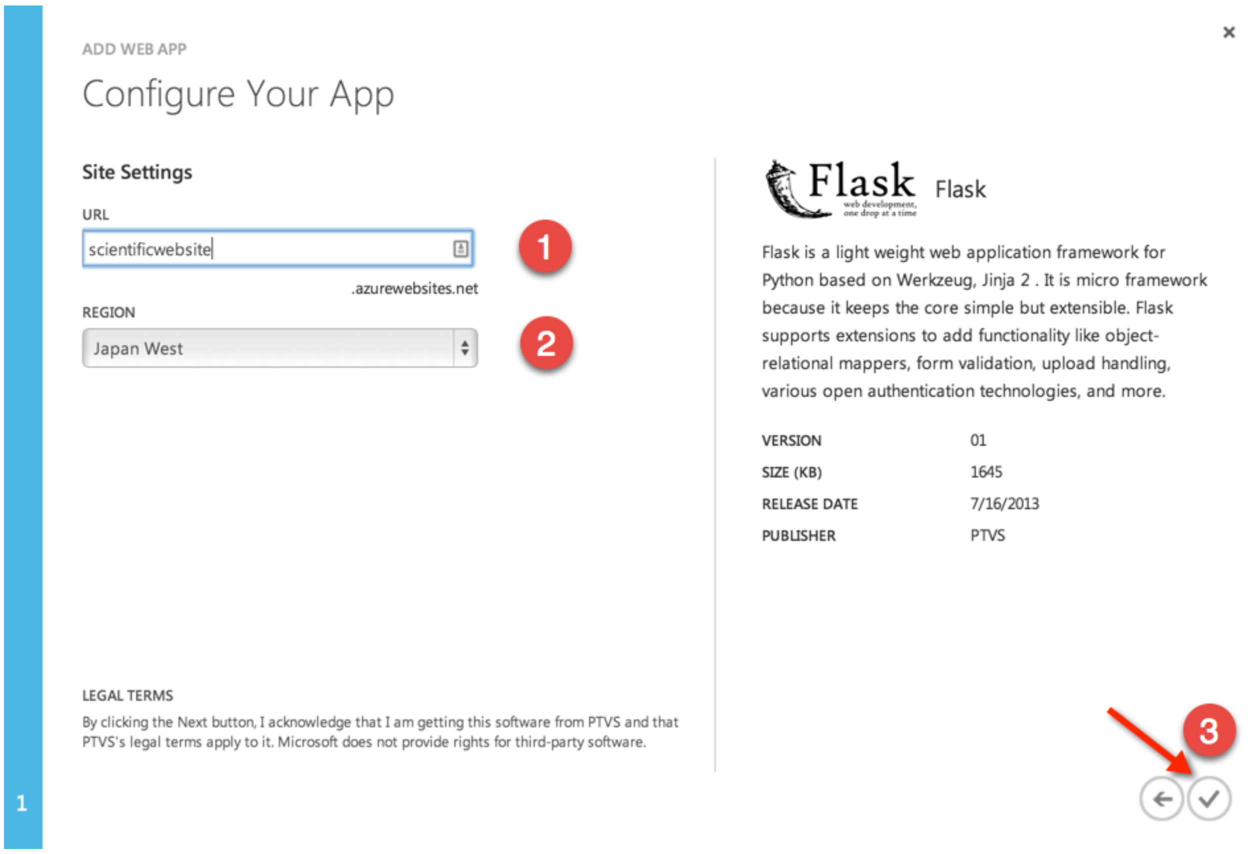


Flask is a light weight web application framework for Python based on Werkzeug, Jinja 2 . It is micro framework because it keeps the core simple but extensible. Flask supports extensions to add functionality like object-relational mappers, form validation, upload handling, various open authentication technologies, and more.

VERSION	01
SIZE (KB)	1645
RELEASE DATE	7/16/2013
PUBLISHER	PTVS

Figure 3

3. Select the Flask option, then click the right arrow (→) to move to the next step in the wizard.


ADD WEB APP

Configure Your App

Site Settings

URL: scientificwebsite .azurewebsites.net

REGION: Japan West

Flask

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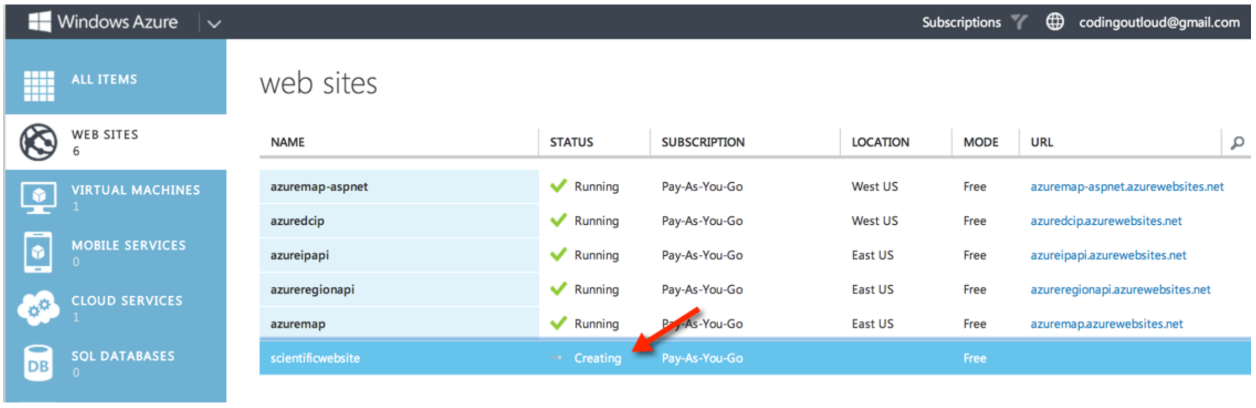
LEGAL TERMS

By clicking the Next button, I acknowledge that I am getting this software from PTVS and that PTVS's legal terms apply to it. Microsoft does not provide rights for third-party software.

Figure 4

4. Provide a subdomain name: scientificwebsite (1).
5. Select a region, **Japan West** (2).
6. Click the **checkmark button** (3).

This creates our new web site, as shown in Figure 5.



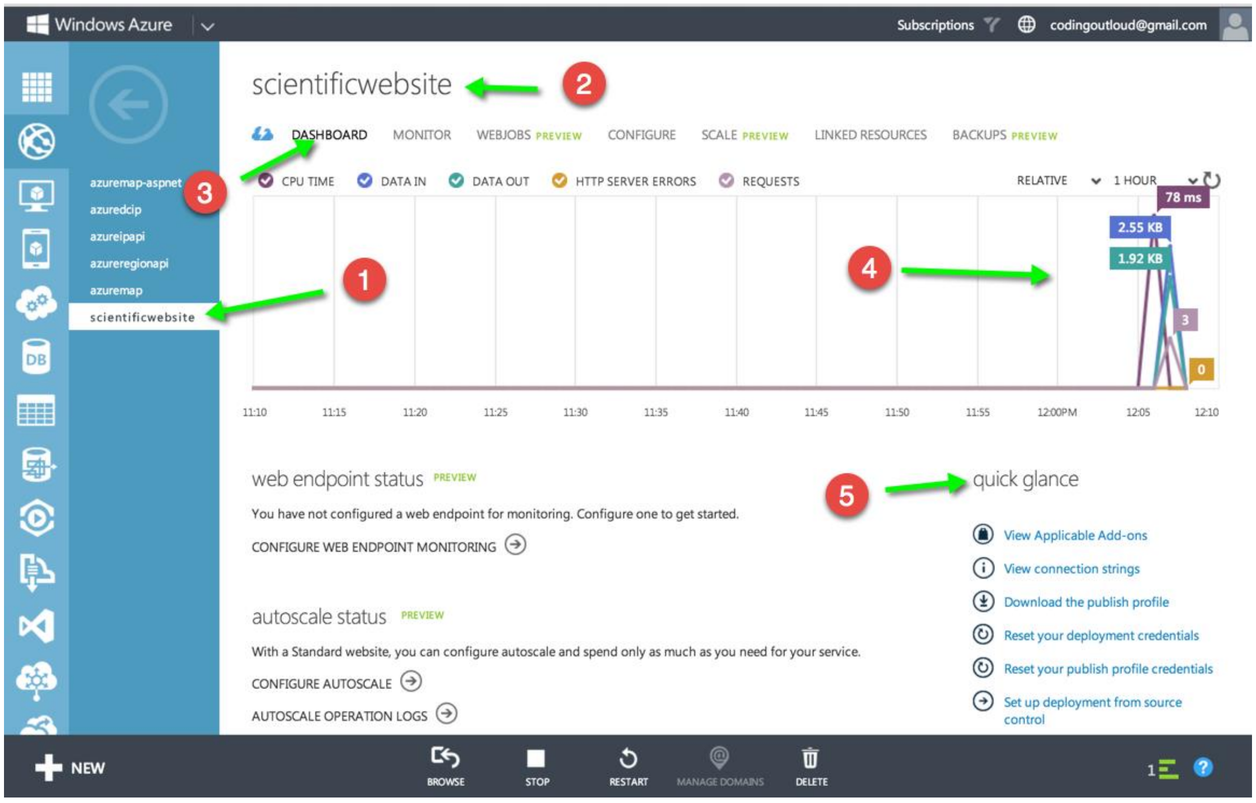
web sites

NAME	STATUS	SUBSCRIPTION	LOCATION	MODE	URL
azuremap-aspnet	✓ Running	Pay-As-You-Go	West US	Free	azuremap-aspnet.azurewebsites.net
azuredcip	✓ Running	Pay-As-You-Go	West US	Free	azuredcip.azurewebsites.net
azureipapi	✓ Running	Pay-As-You-Go	East US	Free	azureipapi.azurewebsites.net
azureregionapi	✓ Running	Pay-As-You-Go	East US	Free	azureregionapi.azurewebsites.net
azuremap	✓ Running	Pay-As-You-Go	East US	Free	azuremap.azurewebsites.net
scientificwebsite	Creating	Pay-As-You-Go		Free	

Figure 5

Since the subdomain we chose for our web site is "scientificwebsite," the web site will be created at http://*scientificwebsite*.azurewebsites.net, or at the equivalent HTTPS URL by using the built-in wildcard SSL support.

7. Click the name of the web site, **scientificwebsite**, to get to the next screen.



You have not configured a web endpoint for monitoring. Configure one to get started.

With a Standard website, you can configure autoscale and spend only as much as you need for your service.

Figure 6

In this screen (Figure 6), you can that see we have selected our web site (1); our web site name displays at the top (2). Relating specifically to our web site, we are on the **DASHBOARD** tab (3), which has a lot of useful information, including a summary of the monitoring data (4), and the ability to view and make changes to various credentials for FTP, management through the API, and more (5).

In addition to the **DASHBOARD** tab, there are other tabs where you can configure specialized settings. For example, from the **SCALE** tab, you can manage manual scaling and configure auto-scaling rules, and the **CONFIGURE** tab provides options for logging parameters, configuring a custom domain name, and more.

Initial creation of Python web sites and using third-party tools

The simplest way to start configuring a Python web site is to select an option from the gallery. This ensures that proper site configuration is in place and that the Python libraries (for example, Django) are deployed for the web site. Once deployed, you can use FTP to capture the source code from the site and copy it locally. Once the source is local, you can edit with any tool (such as Vim, PyCharm, or Microsoft Visual Studio). Alternatively, if you would like to start a project from within another tool, you can set up Python configuration settings yourself.

In addition to configuration settings, deployments must include all non-standard Python libraries needed by your web site, such as all the libraries you downloaded by using pip or a similar package manager.

For instructions on setting up Python configuration settings and deploying additional Python libraries, see the tutorial, Creating Web Sites with Django.

Automatic publishing to web sites

Web Sites supports integration with a number of source code repositories, such as Bitbucket, GitHub, and VisualStudio.com, and even other services, such as Dropbox. You can configure any of these so that changes to source code deploy automatically to one or more web sites.

In this section, you will learn how to configure a web site to support continuous deployment from a GitHub repository. Continuous deployment means that if there is a change, the web site updates automatically. If someone uses the commands **git commit** and then **git push** to record changes to the repository, GitHub executes a **WebHook**. A **WebHook** allows a repository to communicate with a web server whenever the repository receives a push. In this example, the **WebHook** communicates with the Microsoft Azure web site, which performs a **git pull** and redeploys the code. For more information about **WebHook**s, see Creating Webhooks on GitHub Help.

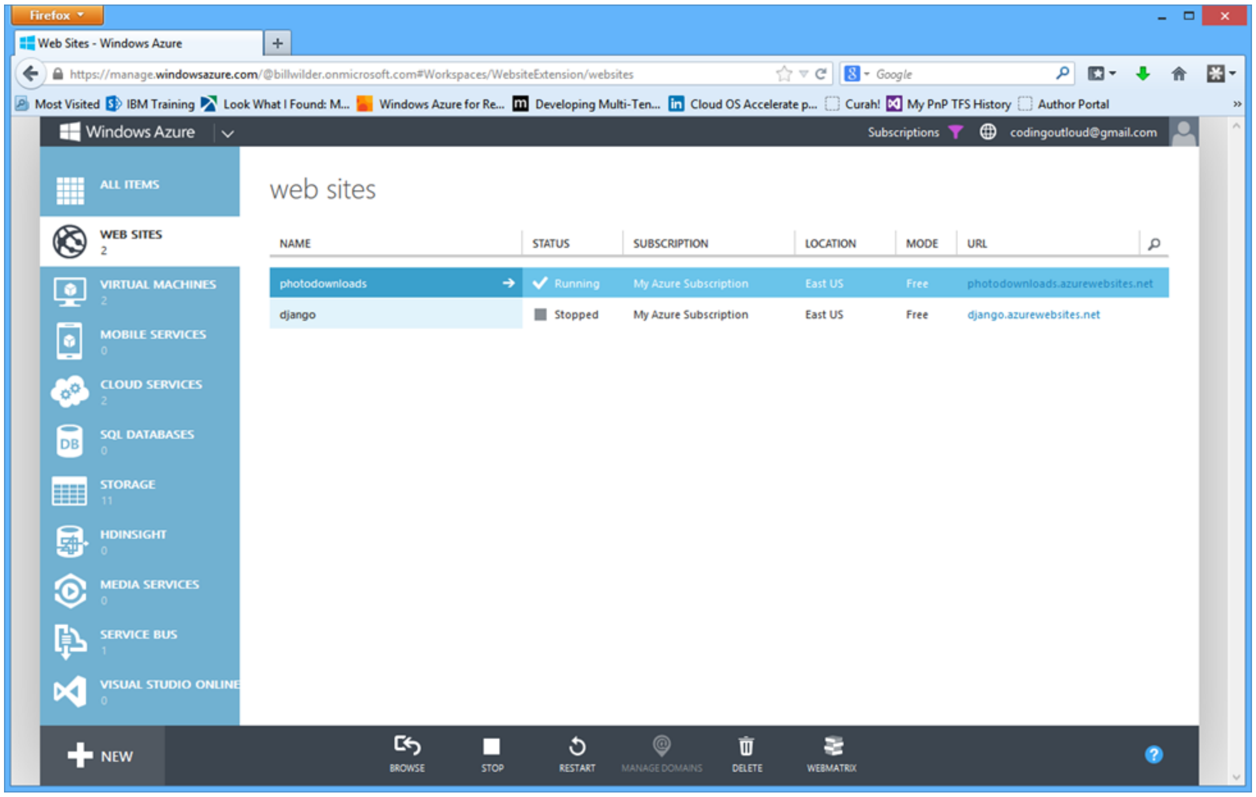
Aside from the advantage of keeping your web site updated, there are additional benefits associated with continuous deployment. For example, if you don't want to give people access to your web server, you can give them access to the GitHub repository instead and they can check in their changes there. If you want to review changes before they appear on the web site, you can use the **git pull** feature (commonly known as a “pull request”).

The next section is a procedure for creating the web site by using existing code. It assumes that you already have a GitHub account with a repository (in addition to your Microsoft Azure subscription). Your repository should contain some code that can appear on your web site, such as a "Hello, word" example. If you would like, you can also clone the flasky GitHub repository that is in this example.

Creating a web site from source control

Follow these steps to create a custom Flask web site that deploys code from your GitHub repository and supports continuous deployment.

1. Go to the Microsoft Azure Management Portal and select **WEB SITES** in the menu on the left, as shown in Figure 7.



https://manage.windowsazure.com/@billwilder.onmicrosoft.com#Workspaces/WebsiteExtension/websites

web sites

NAME	STATUS	SUBSCRIPTION	LOCATION	MODE	URL
photodownloads	✓ Running	My Azure Subscription	East US	Free	photodownloads.azurewebsites.net
django	Stopped	My Azure Subscription	East US	Free	django.azurewebsites.net

Figure 7

2. Select **+ New** at the lower left of the screen.

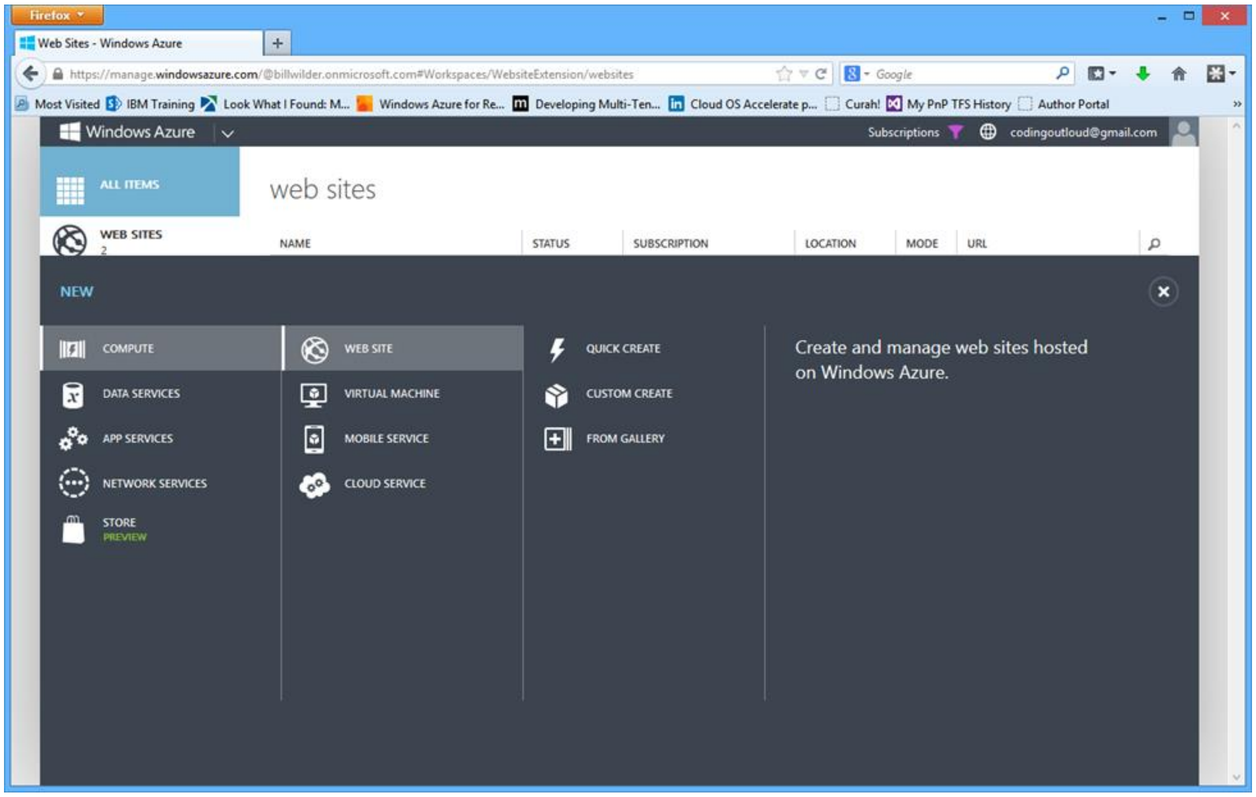
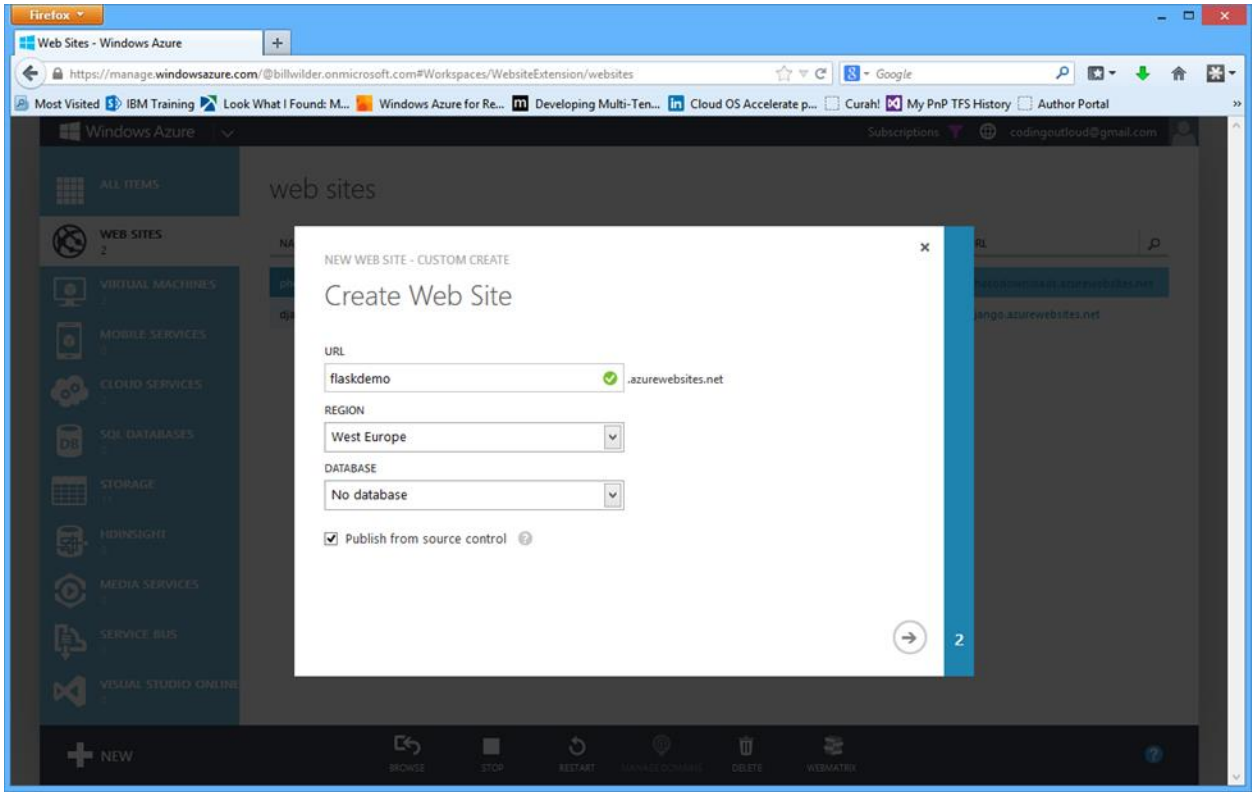


Figure 8

3. In the next screen (Figure 8), select **COMPUTE** > **WEB SITE** > **CUSTOM CREATE**.

The **Create Web Site** dialog box appears (Figure 9).



URL: flaskdemo .azurewebsites.net

REGION: West Europe

DATABASE: No database

☑ Publish from source control

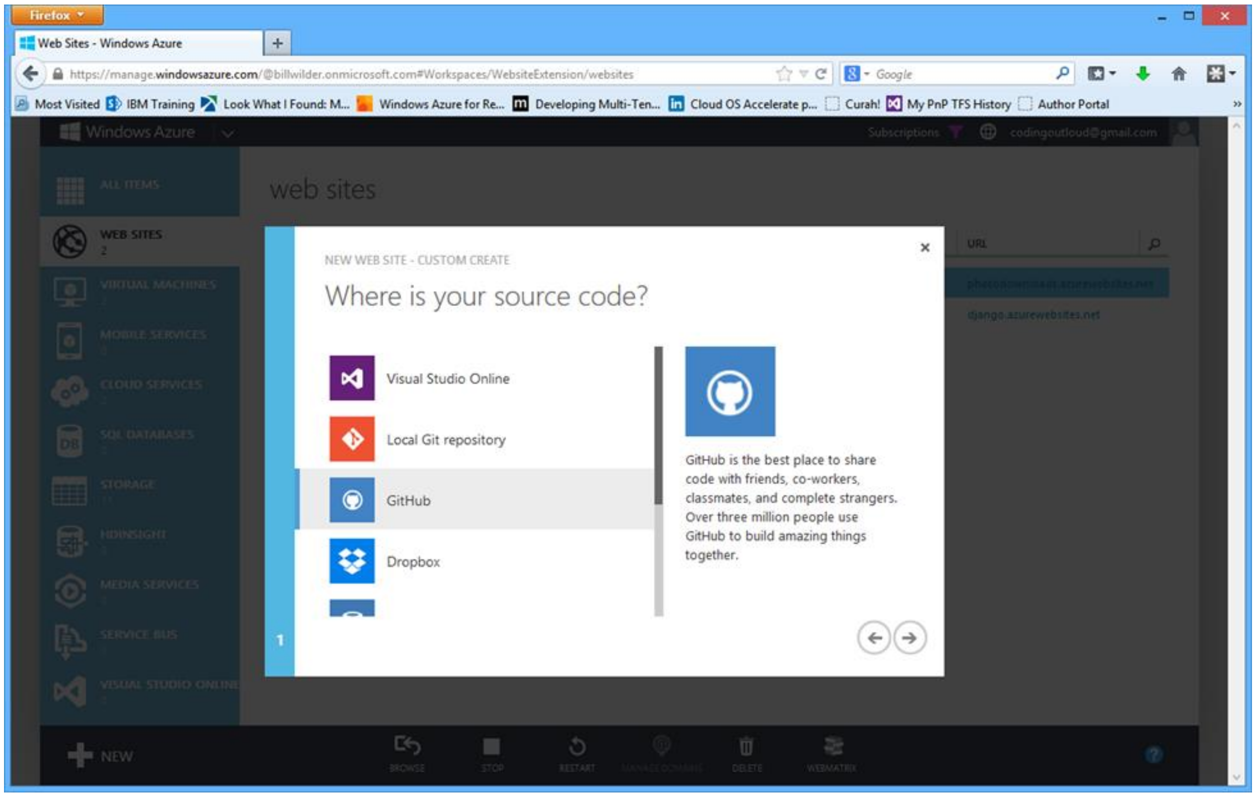
Figure 9

4. In the **URL** field, enter a unique name for the web site.

Microsoft Azure automatically checks to see if the URL is acceptable. If it is, a green checkmark appears next to the name, as shown in Figure 9. The URL of the web site will be *name*.azurewebsites.net. In this example, it will be *flaskdemo*.azurewebsites.net.

5. From the **REGION** drop-down box, select the region that will host the web site.
6. Make sure that the **DATABASE** field is set to **No database**.
   Select the **Publish from source code** checkbox to enable integration with a source control system.
7. Click the **right arrow** (→) at the bottom right of the dialog box.

The second page of the dialog box appears (Figure 10). This is where you select your source repository.

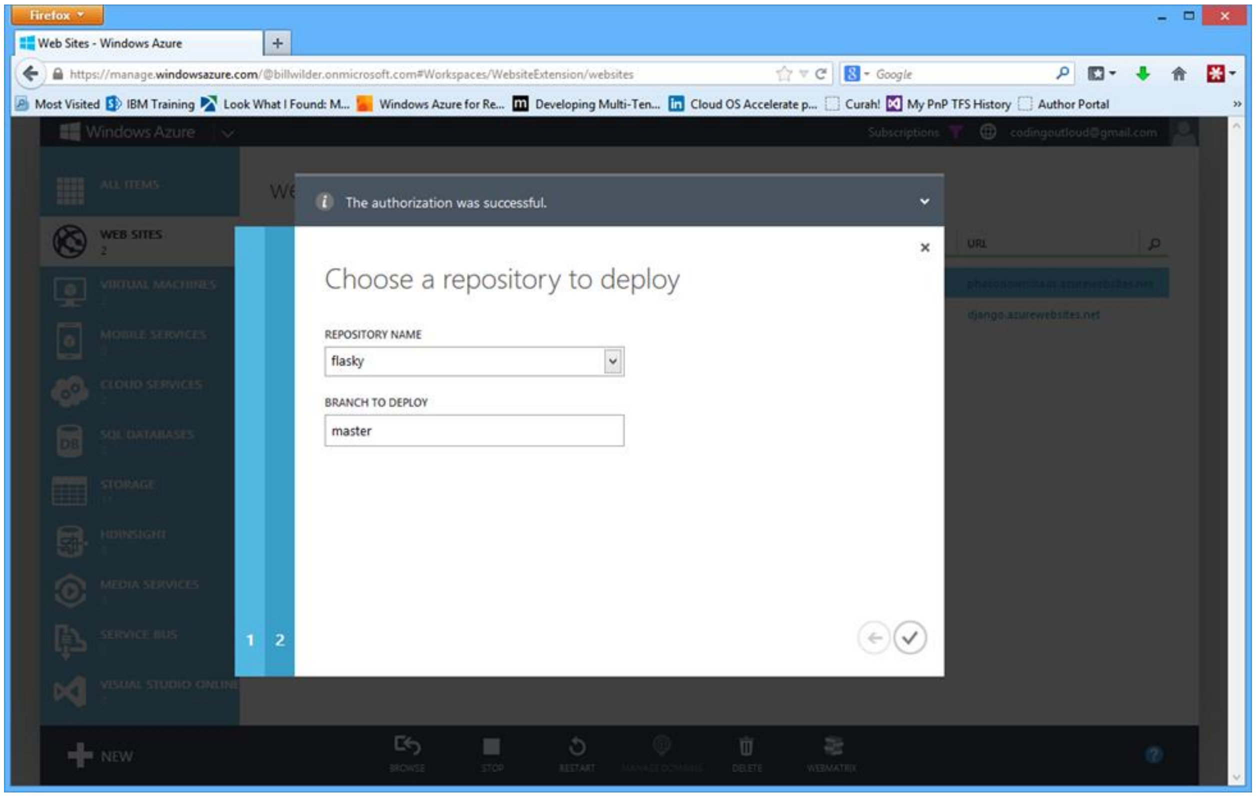


GitHub is the best place to share code with friends, co-workers, classmates, and complete strangers. Over three million people use GitHub to build amazing things together.

Figure 10

8. Select **GitHub**.
9. Click the **right arrow** (→) at the bottom right of the dialog box.
10. If you are not already signed in to GitHub, a GitHub sign-in page appears. Enter your GitHub user name and password. Click **Sign in**.

If the authorization is successful, the **Choose a repository to deploy** dialog box appears (Figure 11).


The authorization was successful.

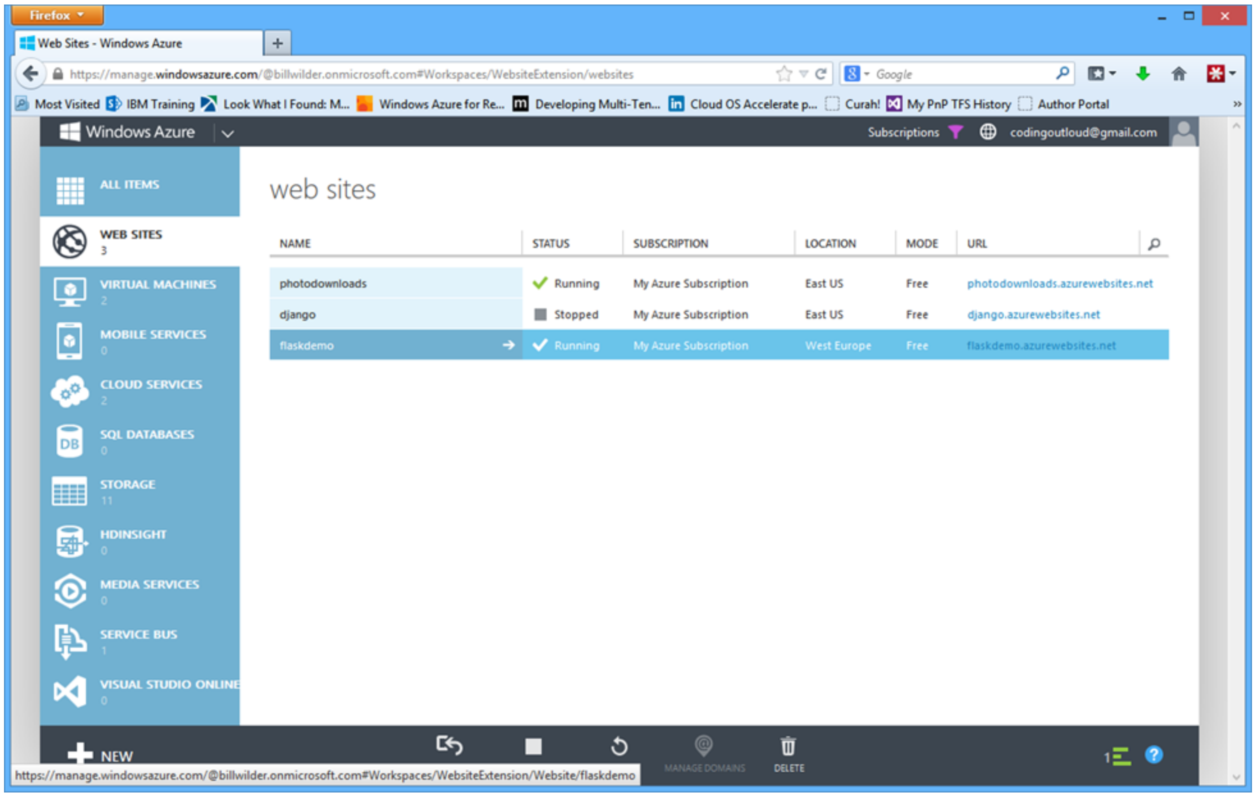
Choose a repository to deploy

REPOSITORY NAME: flasky

BRANCH TO DEPLOY: master

Figure 11

11. Select a repository from the **REPOSITORY NAME** drop-down box.
12. Enter a branch in the **BRANCH TO DEPLOY** field.
13. Click the **checkmark button**. Microsoft Azure Web Services will create your web site.
14. Go to the Microsoft Azure Management Portal to see the status of your web site (Figure 12).



web sites

NAME	STATUS	SUBSCRIPTION	LOCATION	MODE	URL
photodownloads	✓ Running	My Azure Subscription	East US	Free	photodownloads.azurewebsites.net
django	■ Stopped	My Azure Subscription	East US	Free	django.azurewebsites.net
flaskdemo	✓ Running	My Azure Subscription	West Europe	Free	flaskdemo.azurewebsites.net

Figure 12

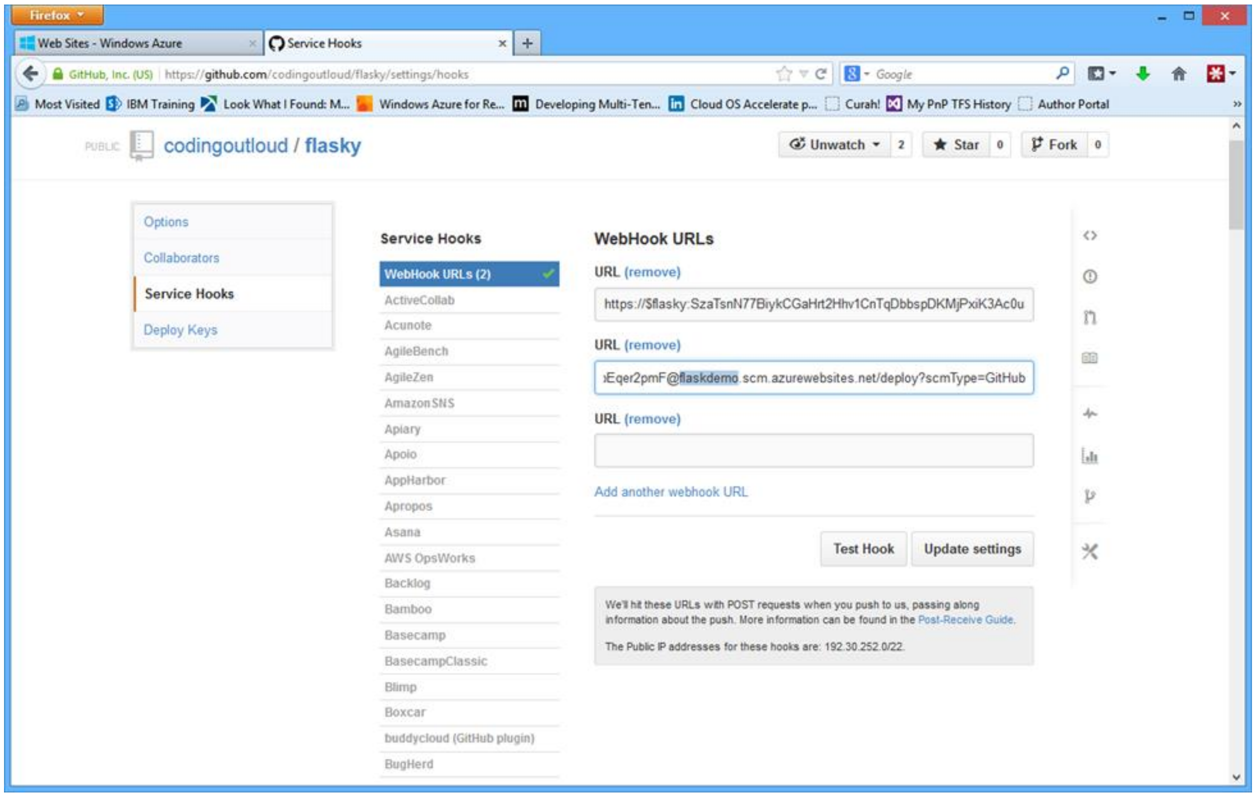
In Figure 12, you can see that the status of **flaskdemo** is **Running**.

15. Go to your web site. In this example, the address is http://flaskdemo.azurewebsites.net/.

You can see that the web site is already populated with the code from the flasky repository on GitHub. Any updates to the code in the repository will deploy automatically to the web site.

Viewing WebHook settings

If you are interested in seeing what the integration with the web site looks like from within GitHub, go to https://github.com/*username*/*reponame*/settings/hooks (insert your GitHub user name [*username*] and the repository name [*reponame*] in the URL where indicated).



https://$flasky:SzaTsnN77BiykCGaHrt2Hhv1CnTqDbbspDKMjPxiK3Ac0u

›Eqer2pmF@flaskdemo.scm.azurewebsites.net/deploy?scmType=GitHub

We'll hit these URLs with POST requests when you push to us, passing along information about the push. More information can be found in the Post-Receive Guide.

The Public IP addresses for these hooks are: 192.30.252.0/22.

Figure 13

You will see that a new WebHook URL has been added (displayed in the second **URL** field in Figure 13), which is attached to the flaskdemo web site.

Managing and scaling web sites

The Microsoft Azure Web Sites service offers plans that target various common workloads. For low-volume web sites, there is a free plan that includes a modest amount of traffic and some space in either MySQL or Microsoft Azure SQL Database. For higher-traffic and more complex web applications, there are paid options that support custom domain names, auto-scaling, and the ability to scale between 1 and 40 CPU cores. For more information about pricing, see Microsoft Azure pricing at-a-glance.

Full management of web sites is available through the Microsoft Azure Management Portal, but there are also management APIs to enable integration with other tools. The APIs can be accessed natively through REST-style integration, but there are also platform-specific SDKs written for Node.js, Python, .NET (for C#, F#, or any other .NET Framework programming language), Java, popular mobile platforms, and others (see the full list). Microsoft also exposes management features through a suite of PowerShell cmdlets and a set of Cross-Platform Command Line Interface (xplat-cli) commands, both of which allow for easy scripting; the xplat-cli runs on Linux, Mac, and Windows, while PowerShell runs only on Windows. Visual Studio and third-party tools can also integrate by using the APIs. You can also create custom integrations as needed.

Simplicity is a feature

Powerful features are helpful only for sites that need them—now or in the future. However, if you run a small lab, you probably don't need custom integration or Internet-scale features; you may not even have the resources to maintain your own web site. With Microsoft Azure, once your web site is running, you can forget about it. If the web site fails or crashes, it restarts automatically—no manual intervention required. You have a simple view, including monitoring and management, directly from the Microsoft Azure Management Portal.

Learn more

- Microsoft Azure Web Sites (http://azure.microsoft.com/en-us/documentation/services/web-sites/)
- Microsoft Azure pricing at-a-glance (http://azure.microsoft.com/en-us/pricing/overview/)
- Flask (http://flask.pocoo.org/)
- GitHub Help (https://help.github.com/)
- GitHub Webhooks (https://help.github.com/articles/post-receive-hooks)