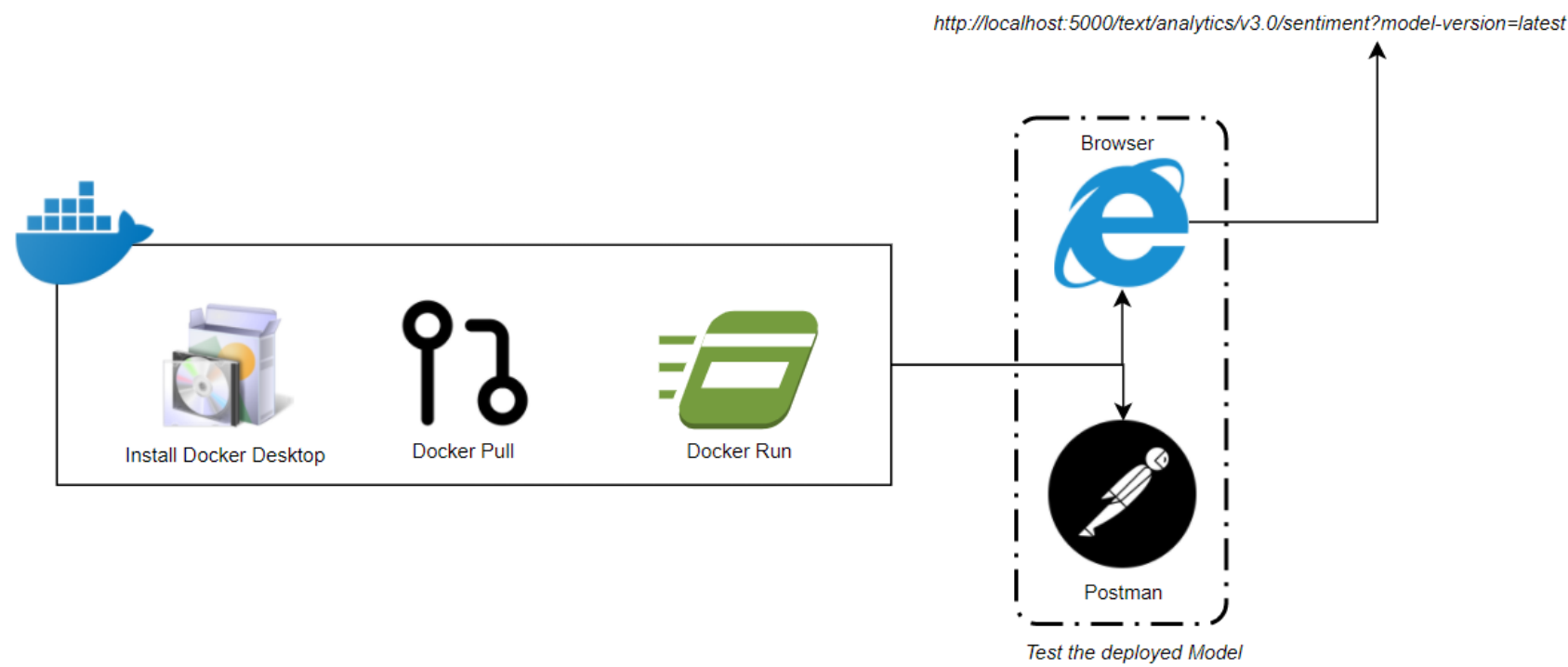


Document Name	HOL – Deploy Azure Cognitive Service to container
Author	Shiva S Tomar & Anupreet Kaur
Reviewer	
Executive Summary	Azure Cognitive APIs enable the developers of all skill levels to add human intelligence in their applications. The services are designed for developers interested in pursuing DS/AI/ML skills and people who want to acquire the deep technical knowledge on the Cognitive APIs of Azure, despite not having Machine Learning expertise.
Purpose	<p>This document is created to help you gain level 350 working knowledge on Deploying Cognitive Services on Container (aka Edge). You will be able to explore each functionality offered by the service through the API and observe the outcomes. We have also shared a sample dataset to replicate what we have used to create the content of this workshop.</p> <p>Once you complete these labs, you'll go from <i>Zero to Hero</i> on the respective Azure Cognitive service and should be able to <i>Demo, Develop and Deploy</i> your own custom use cases. The important thing to note here is that you don't need to refer any other documents to complete this workshop.</p>
Intent of Guide	<p>This workshop is designed to help you explore all the features of a service offered through their APIs. The diagram shown in the beginning of the document is its functional Architecture; talking about the functionalities offered by the service in a flow. It also covers the Concepts, How-to and best practices about the service.</p> <p>This document is not intended to enable you with scenarios of deployment in production.</p>

Service brief: [Deploy Azure Cognitive Service to container](#)

Deploying Azure Cognitive Services on containers allows you to bring AI capabilities to your on-premises environment. This is useful when the customer is deploying the solution in a hybrid environment or does not want to take their data or solution to cloud. These can be deployed anywhere where containers are supported, which ensures that you get enough flexibility for your deployment.

Diagram: Functional Architecture

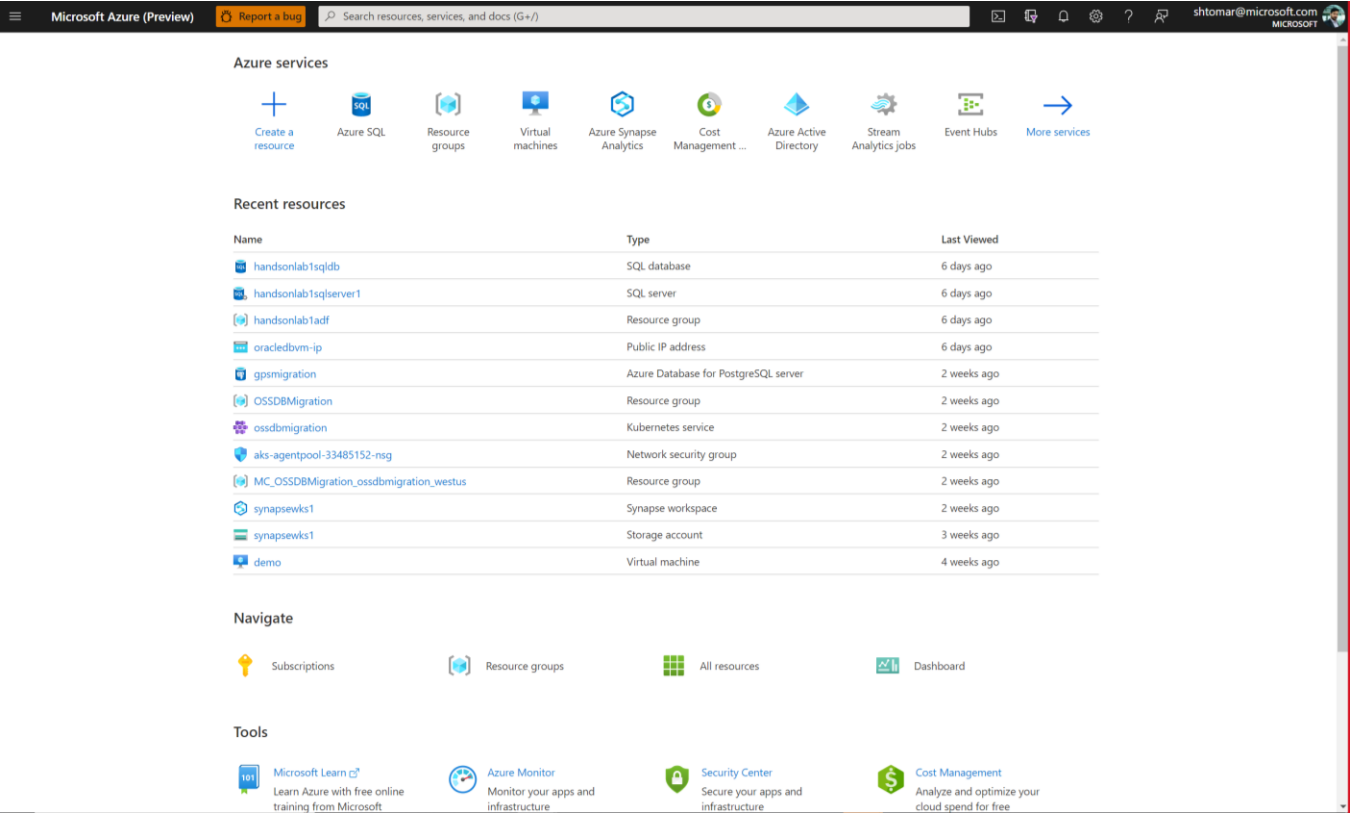
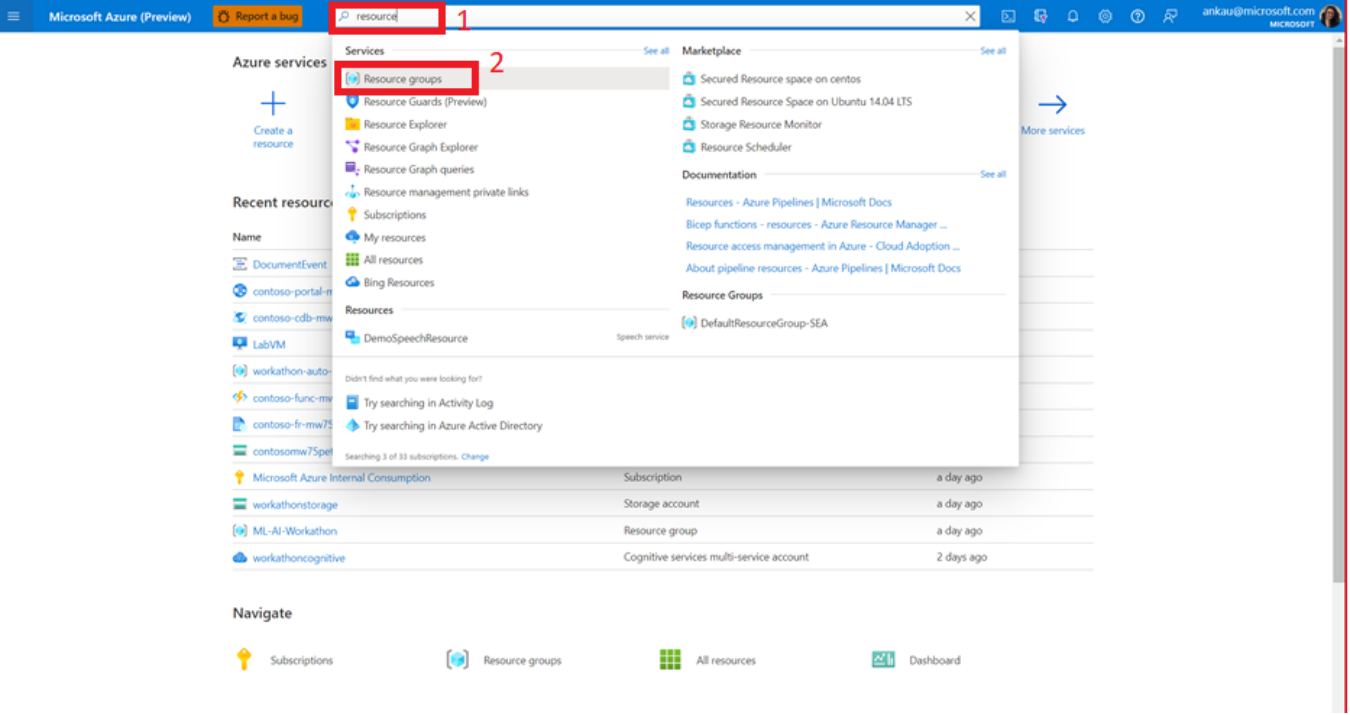


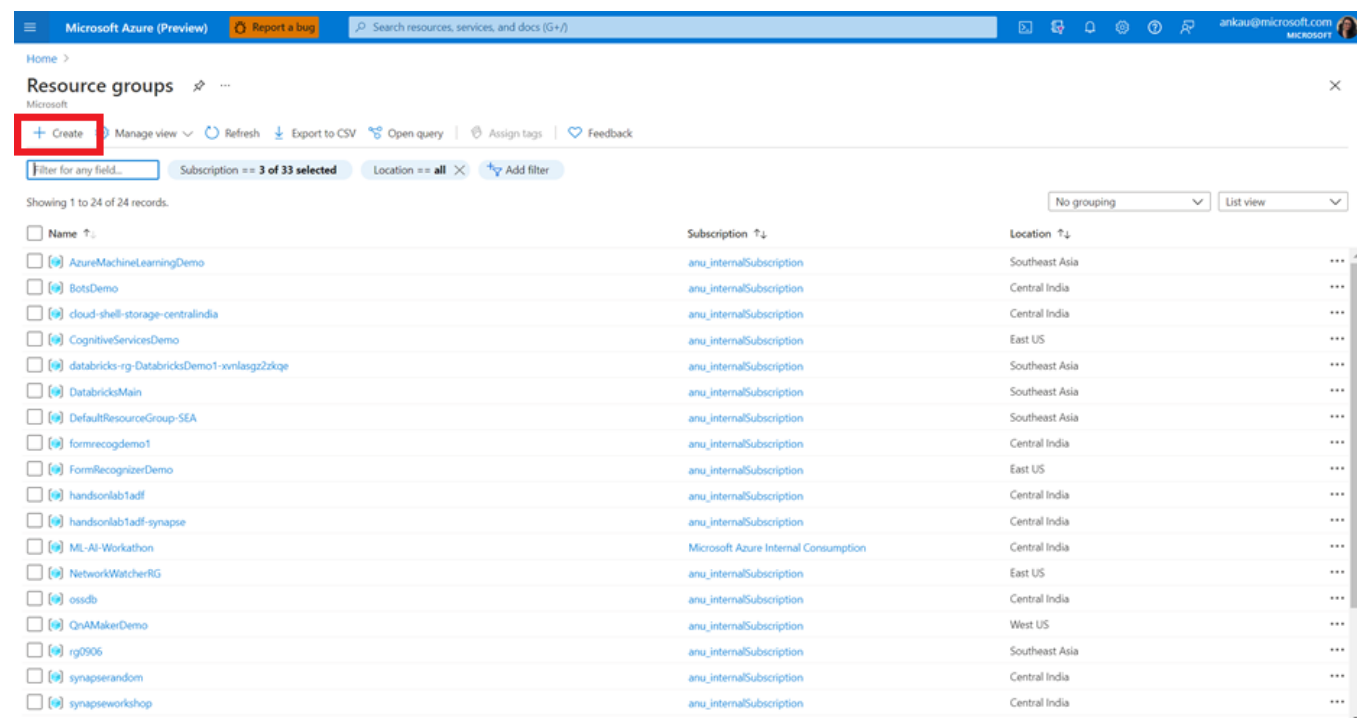
Step by step hands on guide to go from *Zero to Hero*

Pre-requisites

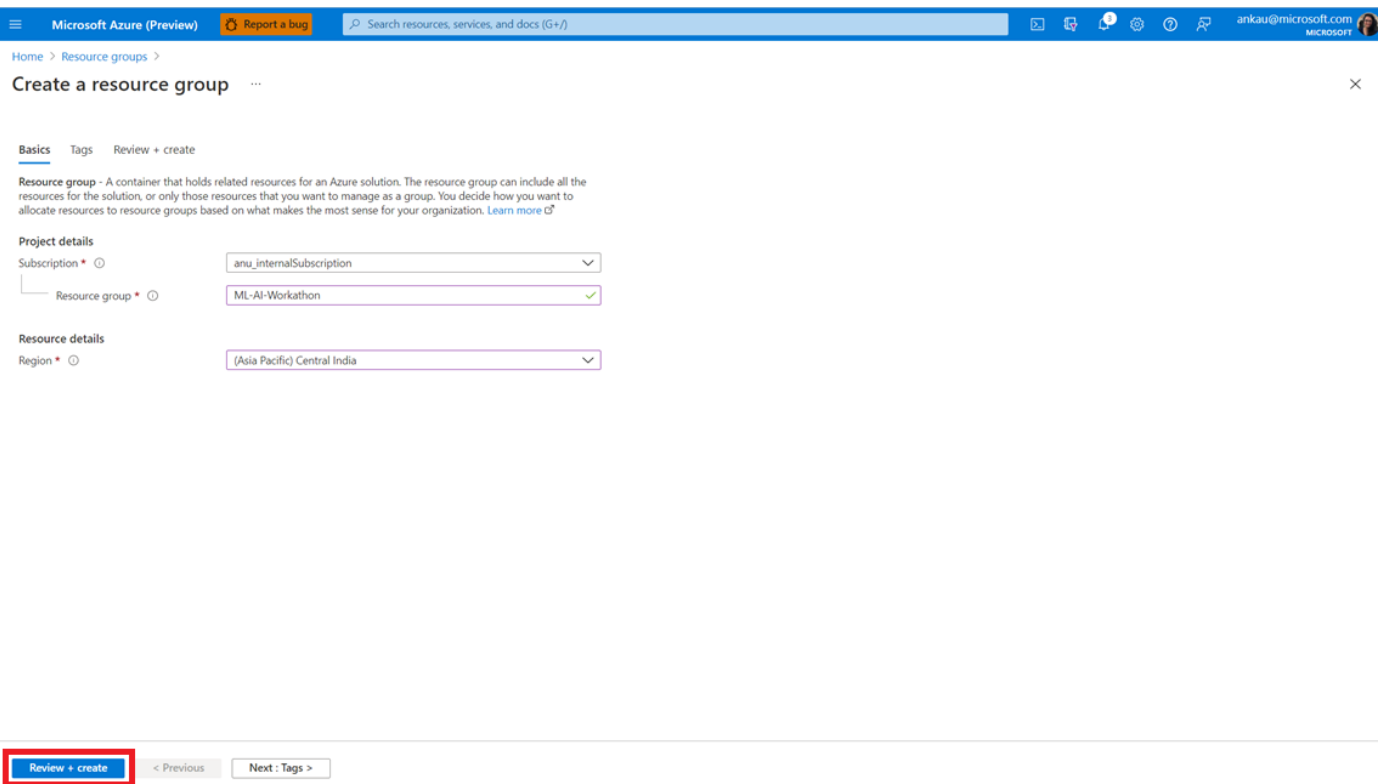
- Download & Install Postman
 - Postman is a free tool which allows you to make API calls
 - You can download the desktop application or get started using the web version ([Download Postman | Try Postman for Free](#))
- An active Azure Account
 - You can use your current Azure Subscription or get started by creating a free trial account (<https://azure.microsoft.com/en-in/free>)
- [Docker Desktop](#) installed in your machine

Let’s get started!

Screenshots	Steps & Significance
	<p>Sign into your Azure Portal.</p>
	<p><u>Create a Resource Group</u></p> <p>Follow steps 1 & 2 to create a resource group.</p> <p>You can skip this step if you already have a Resource Group in place.</p>



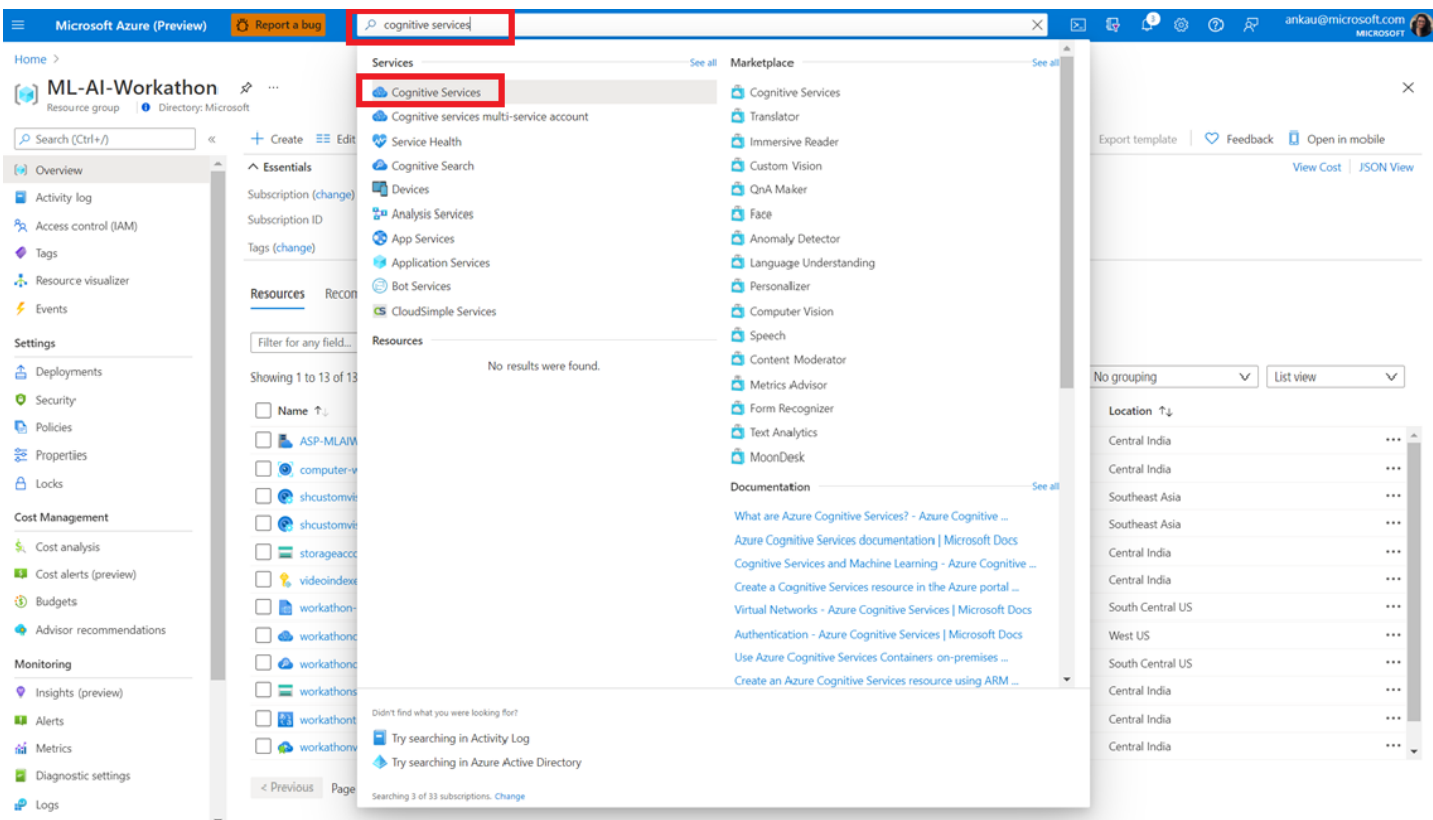
Click create to create a new resource group.



Enter the details –

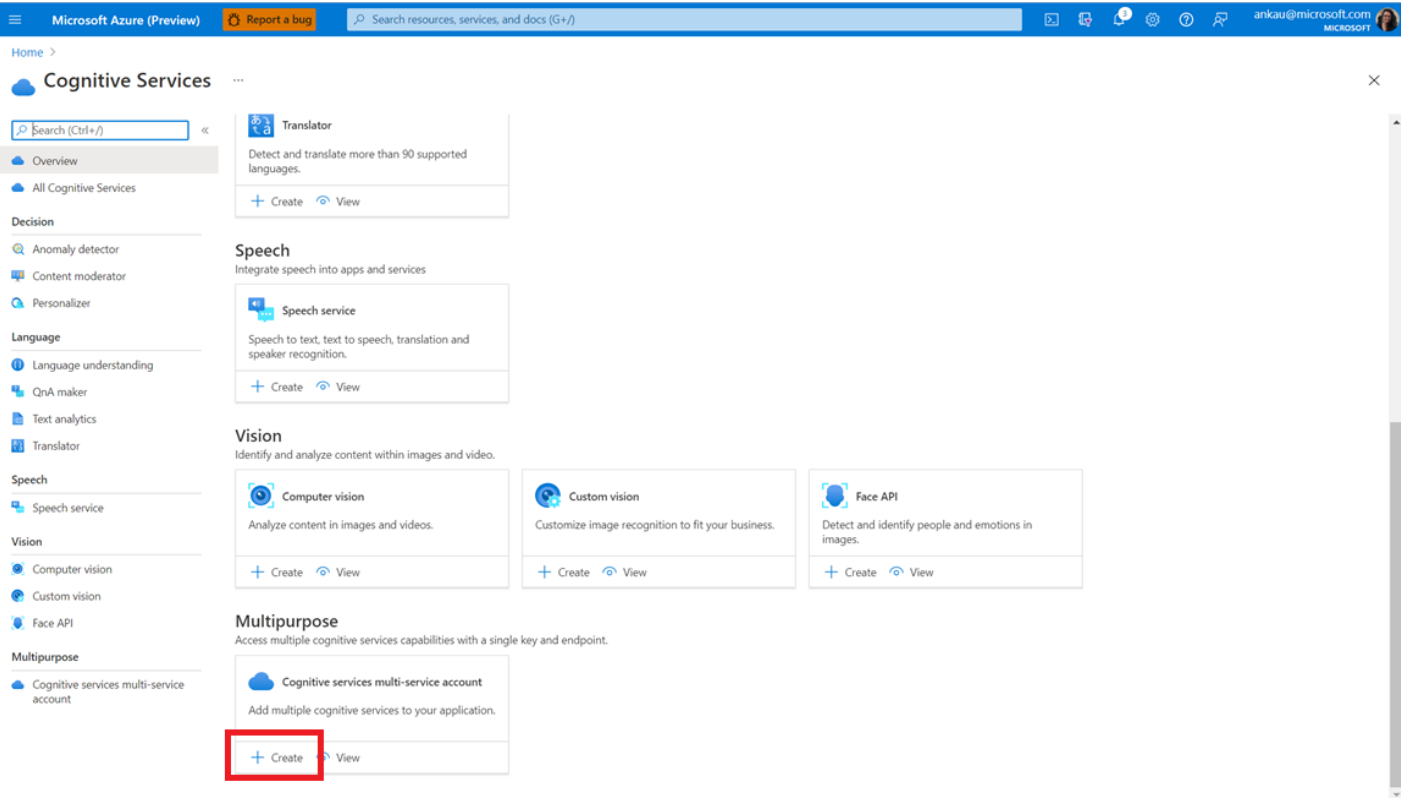
1. Subscription : Azure subscription in which you want to deploy the resource group
2. Resource Group : Name of your choice for the resource group
3. Region : Region where you want to deploy the resource group

Click Review + Create.



Once the resource group is created, search for Cognitive Services in the search bar above and select Cognitive Services.

You can skip this step if you already have a Cognitive Service in place for Text Analytics. This can be a multipurpose Azure Cognitive Resource or a Text Analytics Resource.

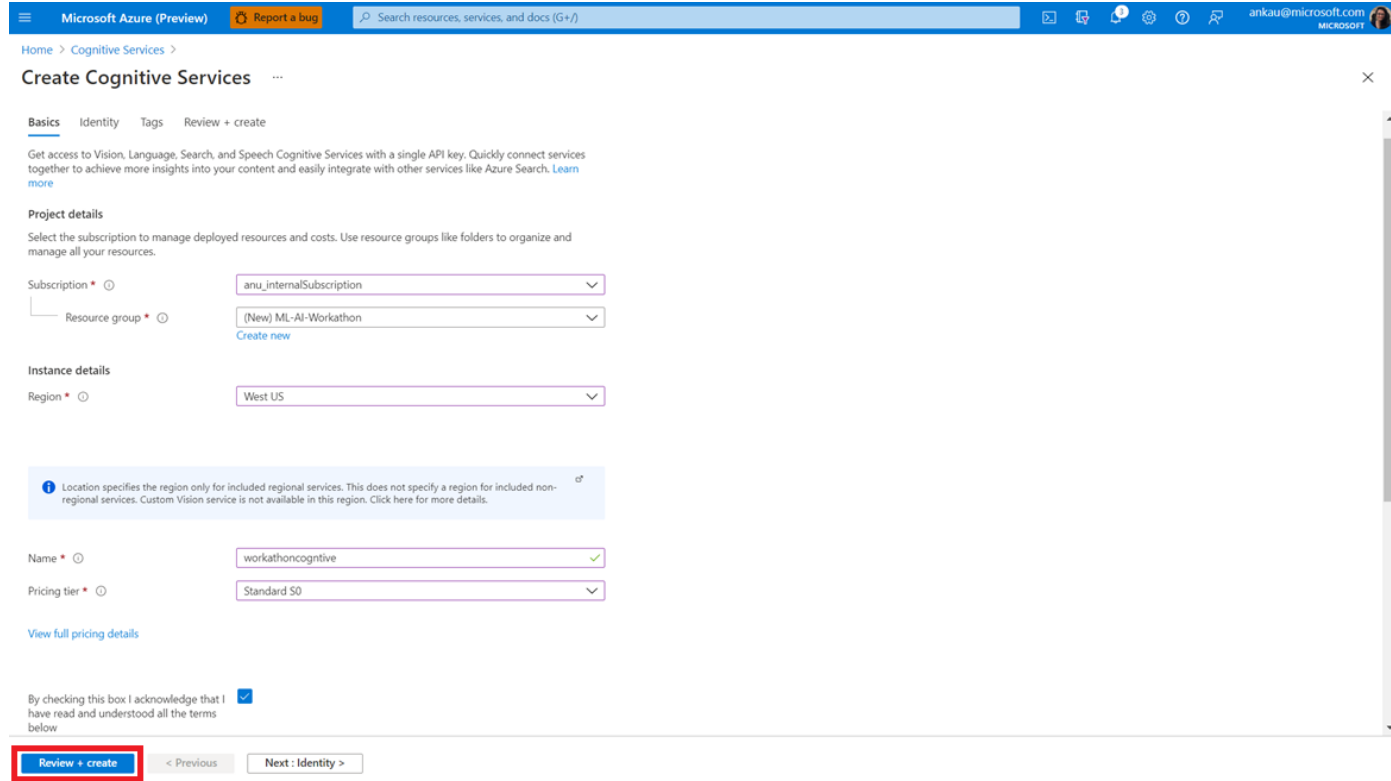


Create a multipurpose cognitive service

Significance : A multipurpose Cognitive Service account allows you to leverage the same resource for many cognitive services, which include :

- [Computer Vision](#) - Analyze images
- [Content Moderator](#) - Check text, image or videos for offensive or undesirable content
- [Face](#) - Recognize people and their attributes in an image
- [Form Recognizer](#) - Identify and extract text, key/value pairs and table data from form documents
- [Language Understanding](#) - Extract meaning from natural language
- [Speech](#) - Transform speech-to-text, text-to-speech and recognize speakers
- [Text Analytics](#) - Detect sentiment, key phrases, entities and human language type in text

In this lab, we used a multipurpose Cognitive Service account since we would be learning about all the above-mentioned services. However, you can also spin up individual services to execute these labs or for your development / production scenarios. The only difference is spinning up individual services allows logical separation from workspace standpoint and easy monitoring of billability.



Enter the details to create a new cognitive service as follows -

Project details	Description
Subscription	Select one of your available Azure subscriptions.
Resource group	The Azure resource group that will contain your Cognitive Services resource. You can create a new group or add it to a pre-existing group.
Region	The location of your cognitive service instance. Different locations may introduce latency but have no impact on the runtime availability of your resource.
Name	A descriptive name for your cognitive services resource.
Pricing tier	The cost of your Cognitive Services account depends on the options you choose and your usage.

Click Review + Create.

Microsoft Azure (Preview)

Report a bug

Search resources, services, and docs (G+I)

arkau@microsoft.com

Home > Cognitive Services >

Create Cognitive Services

Validation Passed

BasicsIdentityTagsReview + create

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the Azure Marketplace Terms for additional details.

Basics

Subscription

Resource group

Region

Name

Pricing tier

anu_internalSubscription

ML-AI-Workathon

West US

workathoncognitive

Standard S0

Identity

Identity type

None

CreatePreviousNextDownload a template for automation

Verify the details and click Create.

Microsoft Azure (Preview)

Report a bug

Search resources, services, and docs (G+I)

arkau@microsoft.com

Home >

Microsoft.CognitiveServicesAllInOne-20210821163837 | Overview

Deployment

Search (Ctrl+I)

DeleteCancelRedeployRefresh

We'd love your feedback! →

OverviewInputsOutputsTemplate

✓ Your deployment is complete

Deployment name: Microsoft.CognitiveServicesAllInOne-20210821...

Subscription: anu_internalSubscription

Resource group: ML-AI-Workathon

Start time: 8/21/2021, 4:43:51 PM

Correlation ID: c2b12f3c-ae77-4725-8194-6fcb80b9818f

Deployment details (Download)

Next steps

Go to resource

Security Center

Secure your apps and infrastructure

Go to Azure security center >

Free Microsoft tutorials

Start learning today >

Work with an expert

Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support.

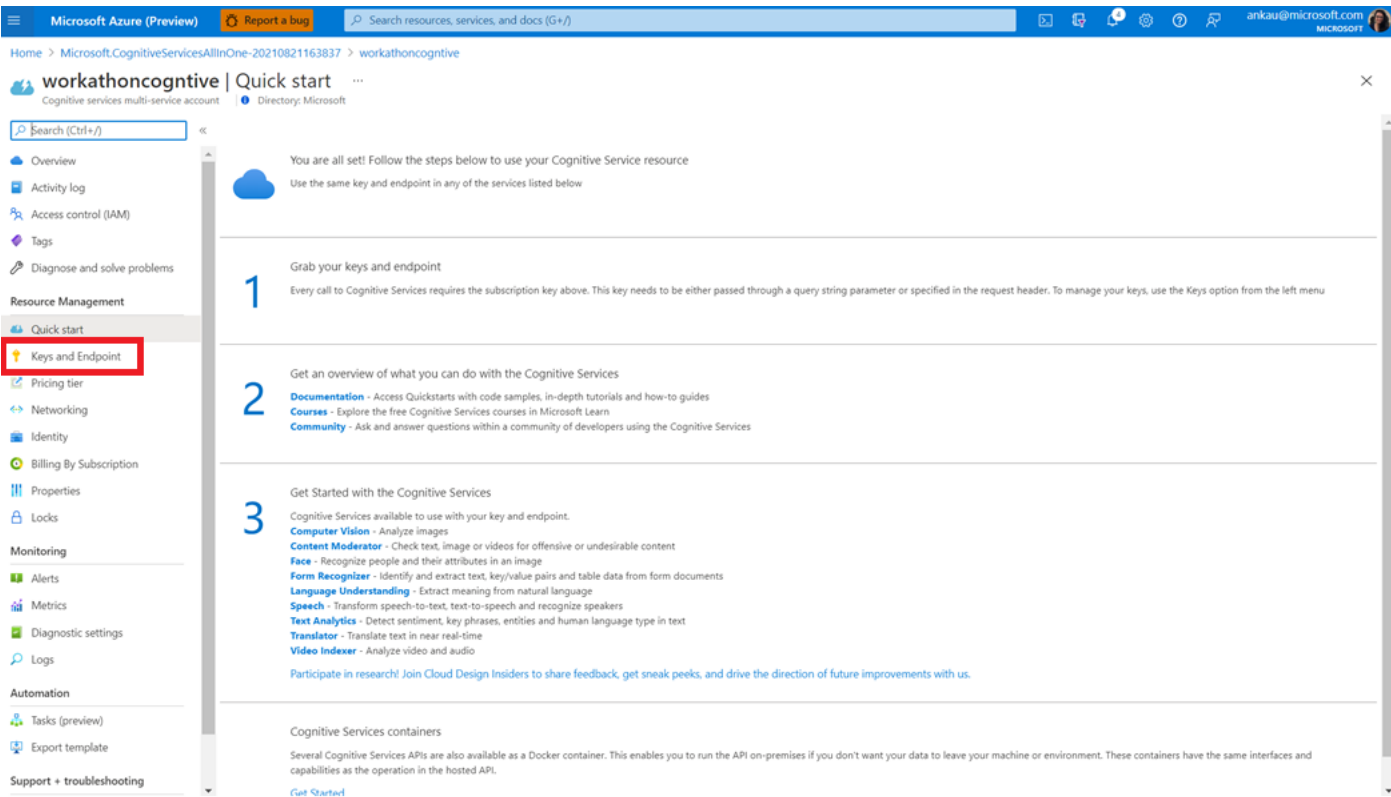
Find an Azure expert >

Cost Management

Get notified to stay within your budget and prevent unexpected charges on your bill.

Set up cost alerts >

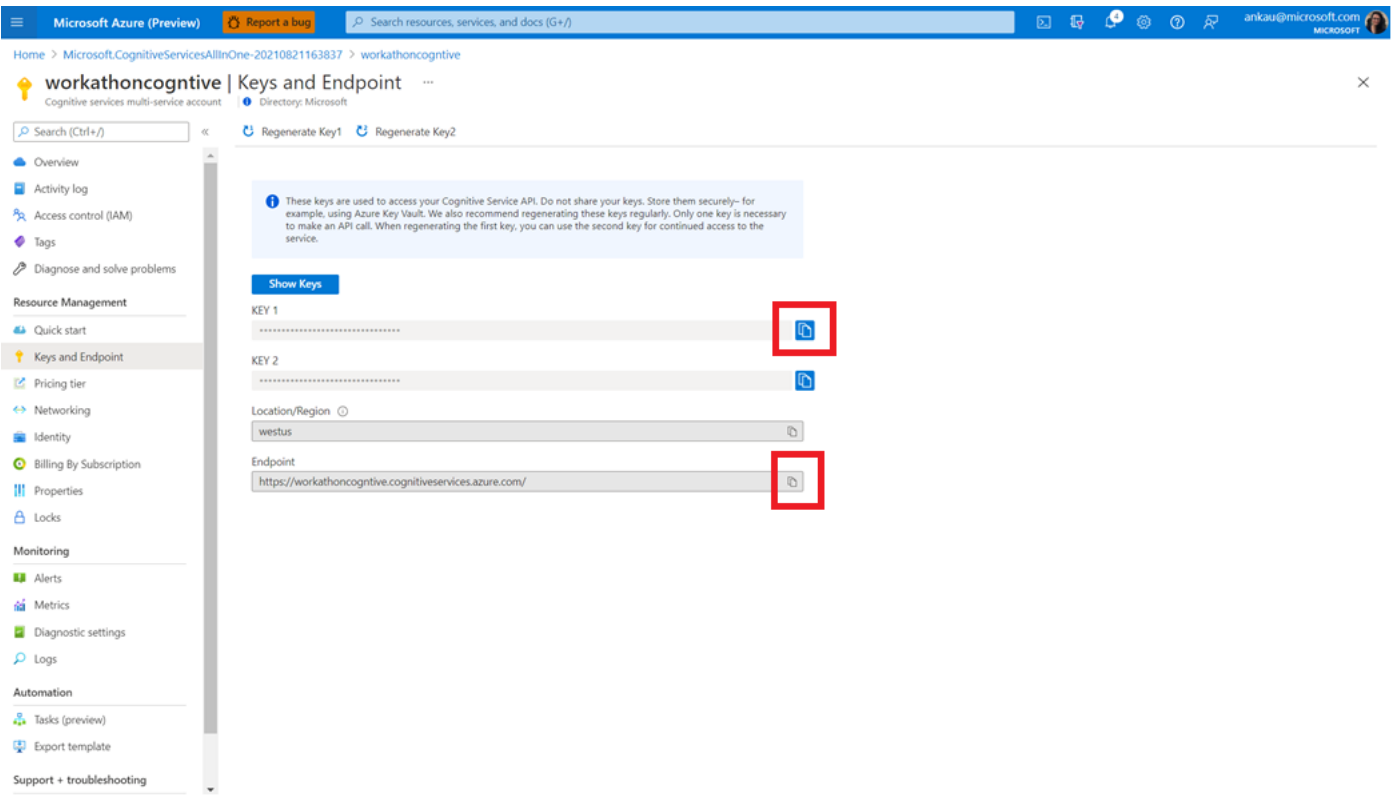
After the resource has been deployed, click Go to Resource.



Copy keys & endpoints

On the Quick start page, you can find details about different cognitive services and can click the hyperlinks to learn more.

Click Key and Endpoints.



Copy the Key and Endpoint. Paste these in a notepad. You will leverage these in the next steps.


```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.22000.168]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ankau>docker pull mcr.microsoft.com/azure-cognitive-services/textanalytics/sentiment:3.0-en
3.0-en: Pulling from azure-cognitive-services/textanalytics/sentiment
b59952930446: Pull complete
b5995484a21: Pull complete
abc43d54b0d9: Pull complete
ab8b3fc3bae1: Pull complete
c42d79623507: Pull complete
cdc72b76ca29: Pull complete
Digest: sha256:4a5a86da3bae66b015d73d37b724f4b043d4545c5d482bb4126702f710a1528
Status: Downloaded newer image for mcr.microsoft.com/azure-cognitive-services/textanalytics/sentiment:3.0-en
mcr.microsoft.com/azure-cognitive-services/textanalytics/sentiment:3.0-en

C:\Users\ankau>
```

Pull Docker Image

1. Open Command Prompt
2. Enter the following command to pull docker image (Sentiment Analytics) :

docker pull mcr.microsoft.com/azure-cognitive-services/textanalytics/sentiment:3.0-en

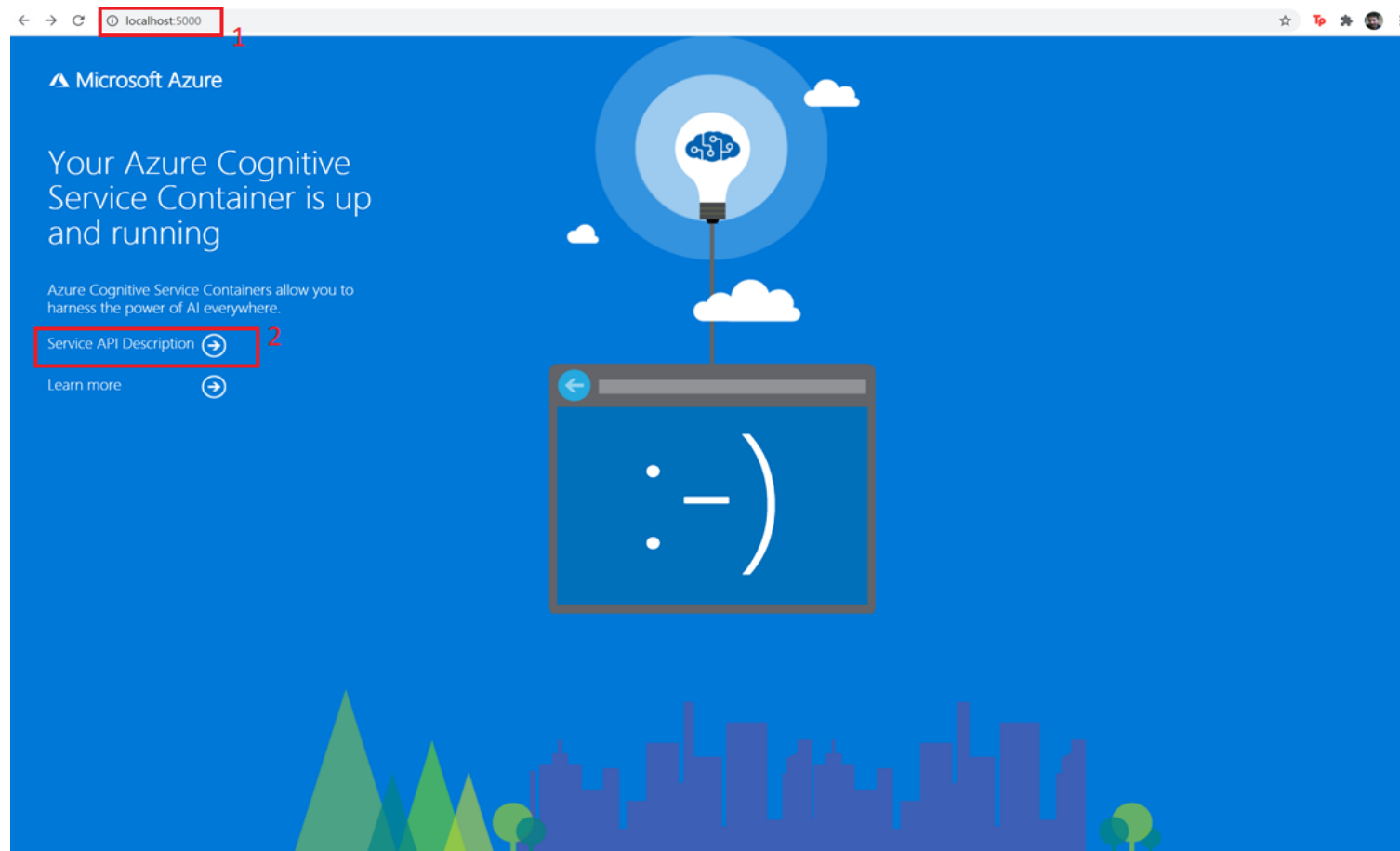
Once pulled successfully, you will see the Status as Downloaded newer image.

```
C:\Windows\system32\cmd.exe - docker run --rm -it -p 5000:5000 --memory 8g --cpus 1 mcr.microsoft.com/azure-cognitive-services/textanalytics/sentiment:3.0-en Eula=accept Billing=https://workathoncognitive.cognitiveservices.azure.com ApiKey=b1fa979abd842
C:\Users\shtomar>docker run --rm -it -p 5000:5000 --memory 8g --cpus 1 mcr.microsoft.com/azure-cognitive-services/textanalytics/sentiment:3.0-en Eula=accept Billing=https://workathoncognitive.cognitiveservices.azure.com ApiKey=b1fa979abd842
COGNITIVE_VERSION=1.0.1110.1
CONTAINER_NAME=9e10f821de54
ASPNETCORE_ENVIRONMENT=Production
ASPNETCORE_URLS=http://*:80
%cd=/app
PATH=/app/conda/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin
MODEL_VERSION=1.0.133545a1
%cd=/usr/bin/env
sentiment_model_en_1.0.133545a1
/usr/lib/python2.7/dist-packages/supervisor/options.py:461: UserWarning: Supervisor is running as root and it is searching for its configuration file in default locations (including its current working directory); you probably want to specify a "-c" argument specifying an absolute path to a configuration file for improved security.
  "Supervisor is running as root and it is searching "
0821-09-18 11:56:03,598 CRIT Supervisor is running as root.  Privileges were not dropped because no user is specified in the config file.  If you intend to run as root, you can set user=root in the config file to avoid this
message.
0821-09-18 11:56:03,598 INFO Included extra file "/etc/supervisor/conf.d/supervisord.conf" during parsing
0821-09-18 11:56:03,603 INFO RPC interface 'supervisor' initialized
0821-09-18 11:56:03,603 CRIT Server 'unix_http_server' running without any HTTP authentication checking
0821-09-18 11:56:03,603 INFO supervisord started with pid 12
0821-09-18 11:56:04,607 INFO spawned: 'python_server' with pid 15
0821-09-18 11:56:04,609 INFO spawned: 'dotnet_stdout_to_console' with pid 16
0821-09-18 11:56:04,610 INFO spawned: 'dotnet_client' with pid 17
0821-09-18 11:56:04,614 INFO success: dotnet_stdout_to_console entered RUNNING state, process has stayed up for > than 0 seconds (startsecs)
.
```

Run Docker Image

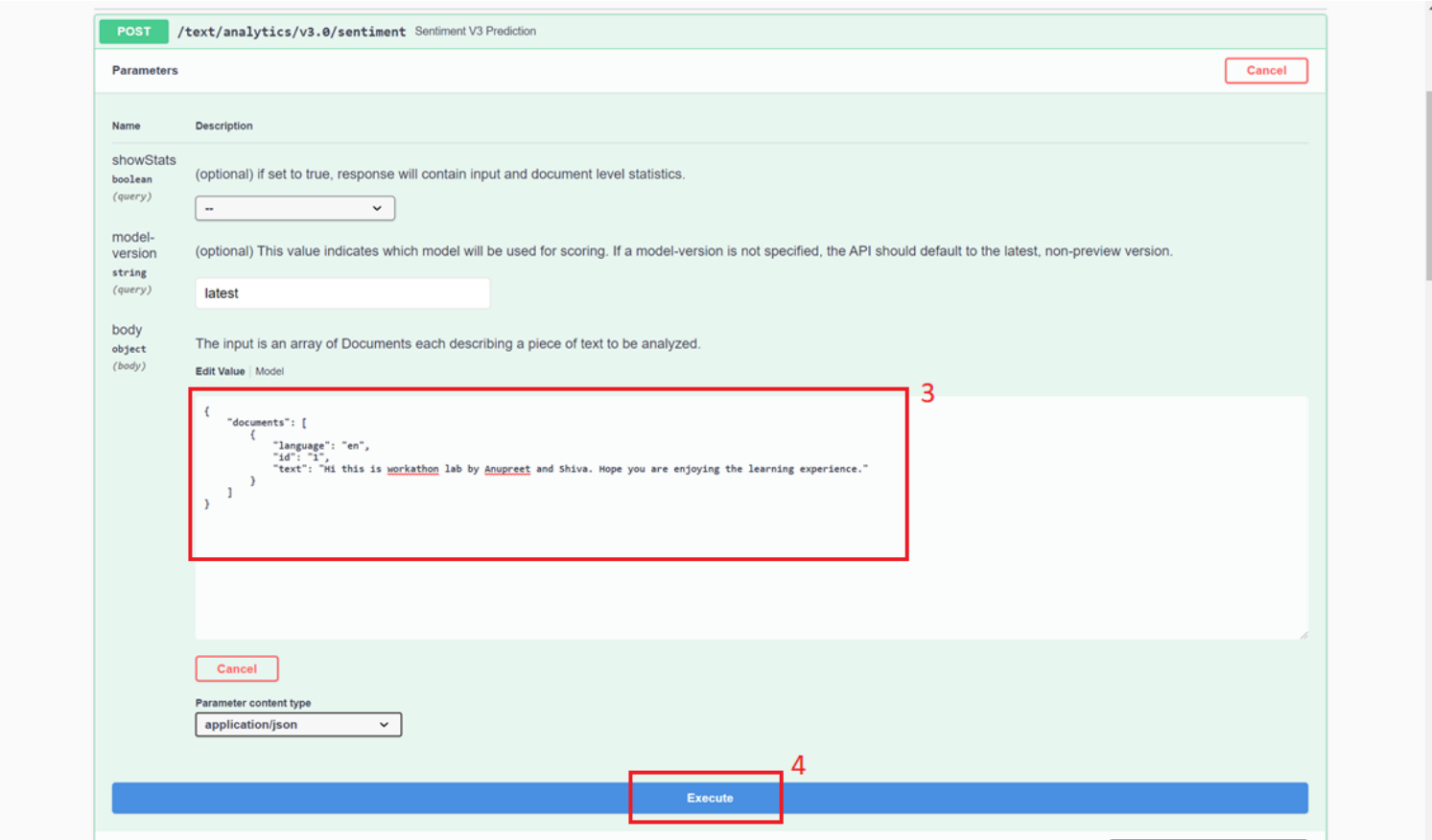
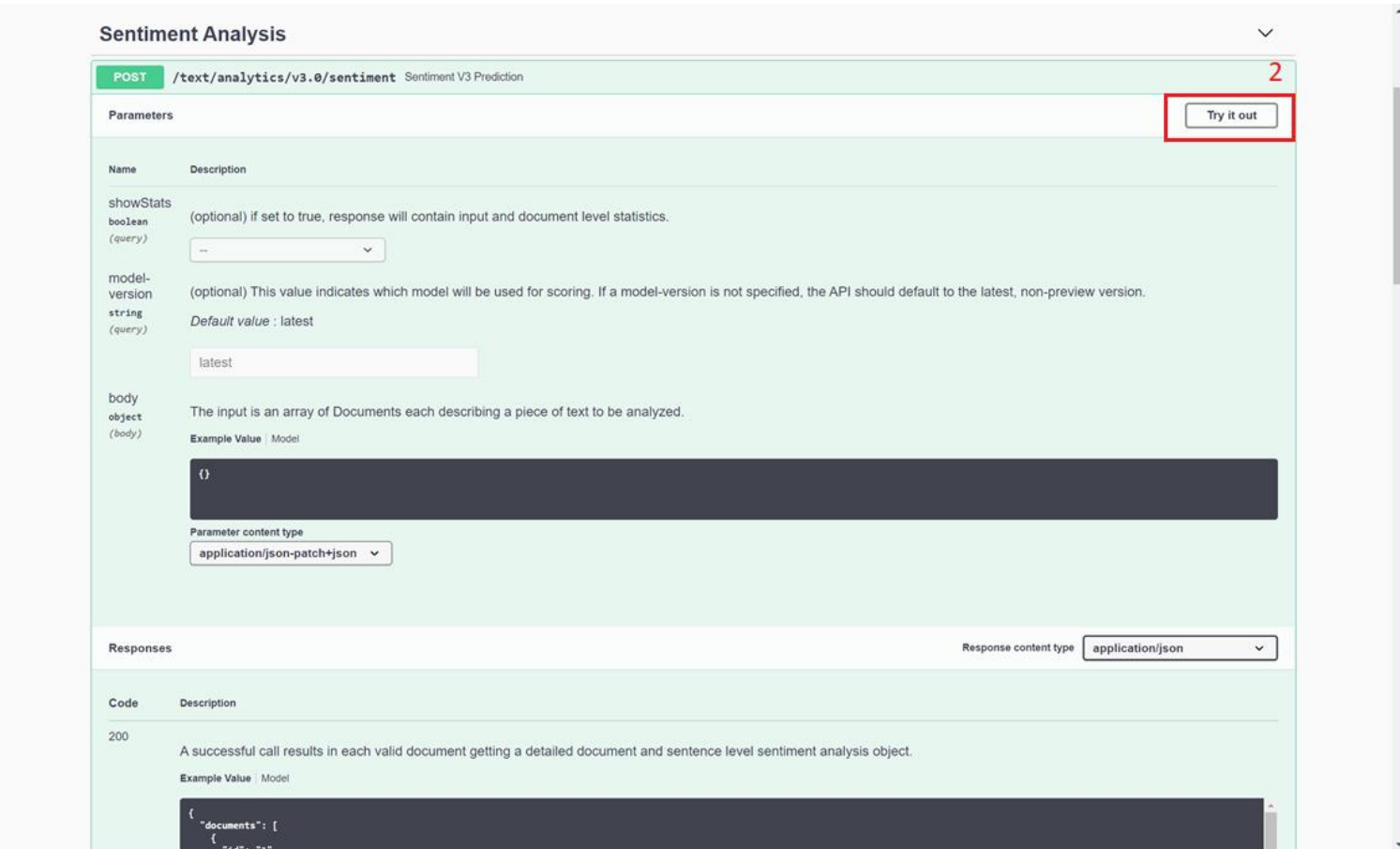
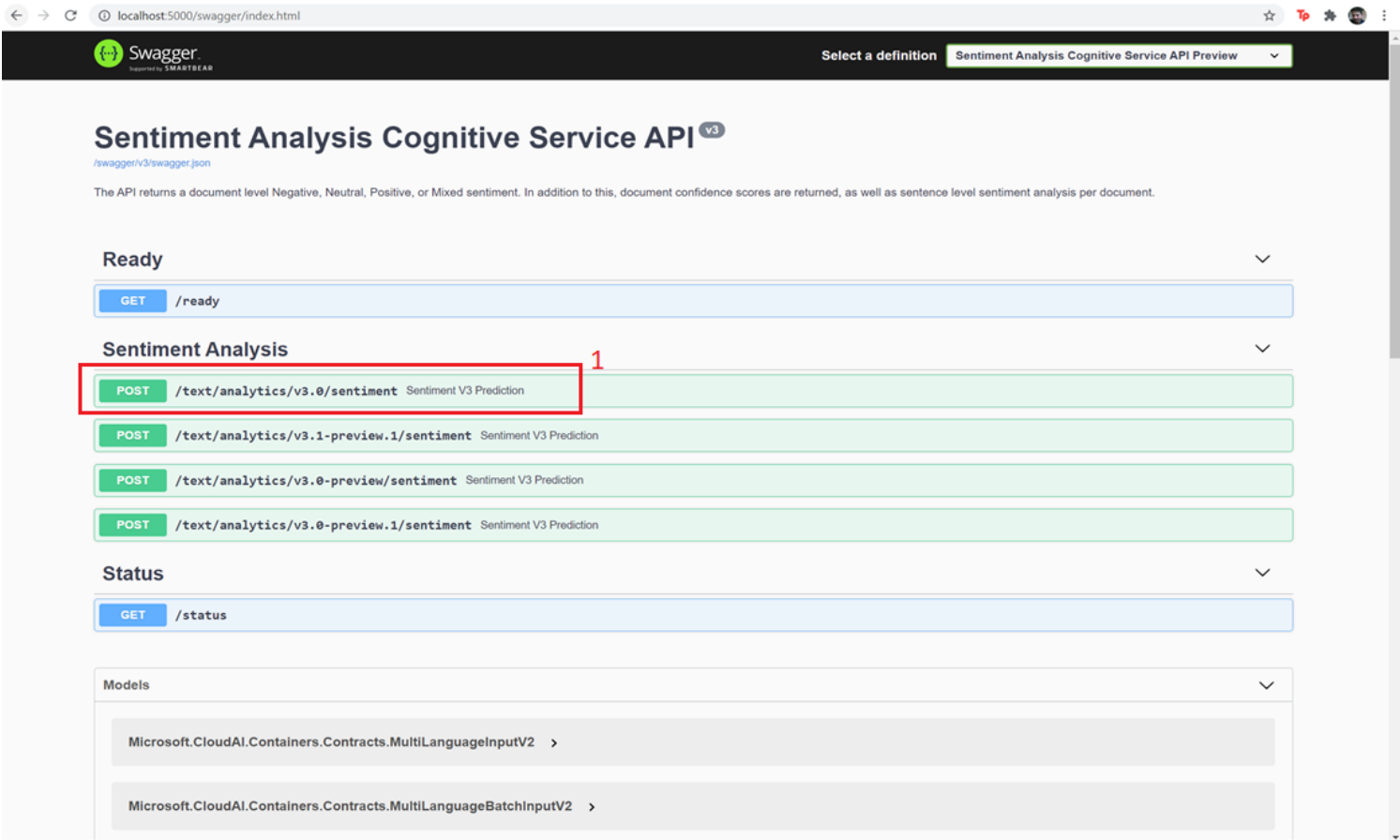
1. Enter the following command to run docker image (Sentiment Analytics) :

docker run --rm -it -p 5000:5000 --memory 8g --cpus 1 mcr.microsoft.com/azure-cognitive-services/textanalytics/sentiment:3.0-en Eula=accept Billing=<paste the endpoint we copied above> ApiKey=<paste the key we copied above>

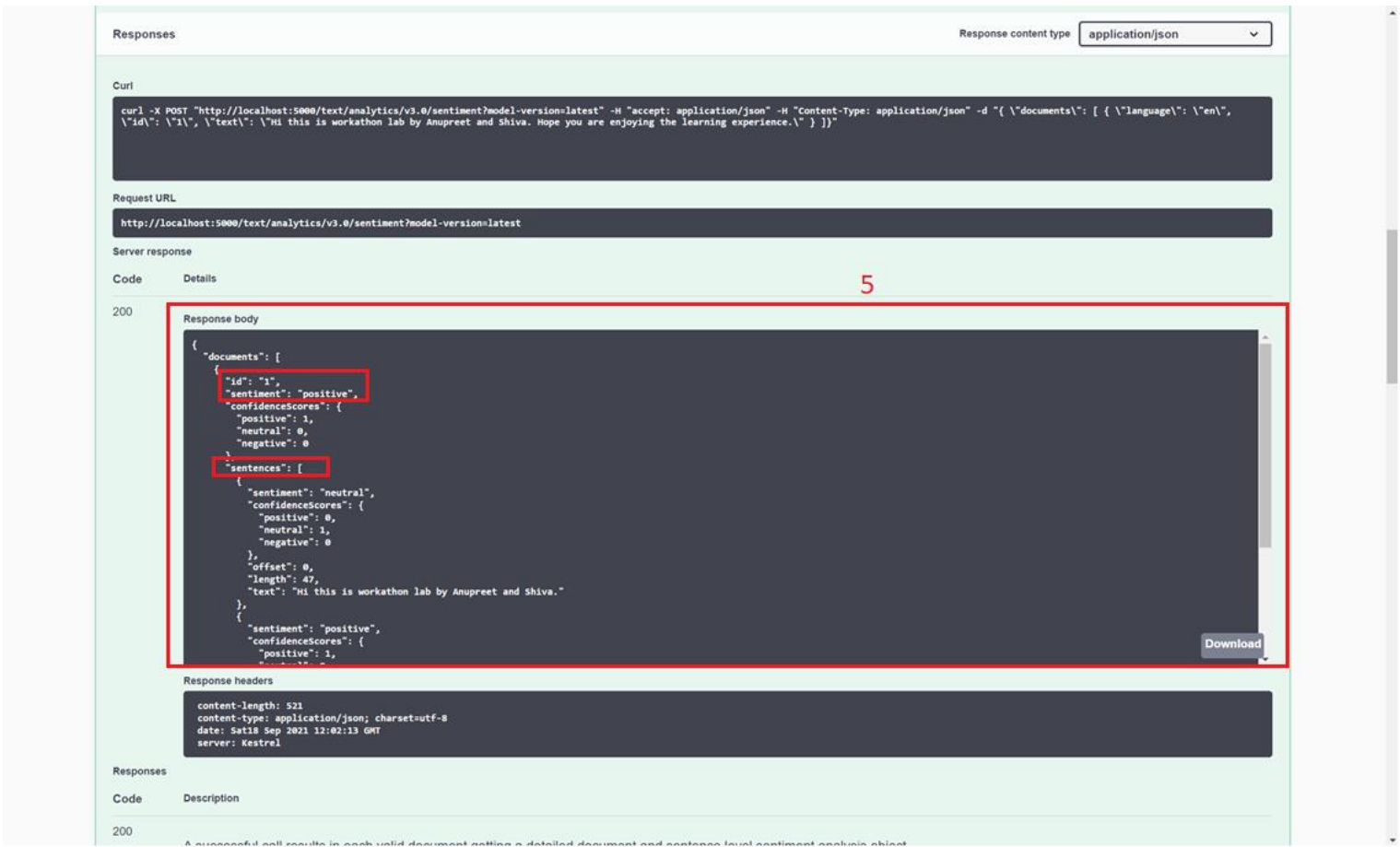


Test and explore the cognitive service deployed locally

1. Go to <https://localhost:5000>
2. Select API description

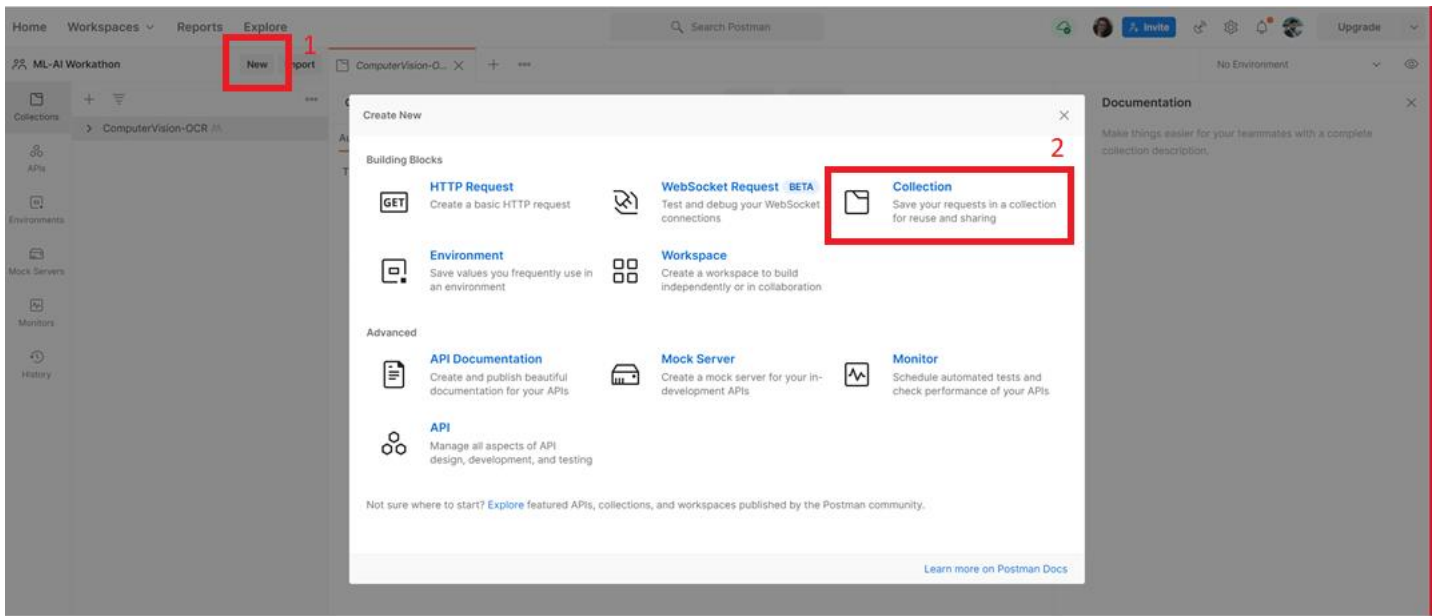


1. Select the API call as shown.
 2. Click 'Try it out' to test the API in the Swagger GUI
 3. Enter the following text in the Body, as shown in step 3
- ```
{
 "documents": [
 {
 "language": "en",
 "id": "1",
 "text": "Hi this is workathon lab by Anupreet and Shiva. Hope you are
enjoying the learning experience."
 }
]
}
```
4. Click 'Execute'



Observe the results obtained as shown in step 5.  
The API returns an overall sentiment for the complete input text. It also returns sentiment at an individual sentence level.

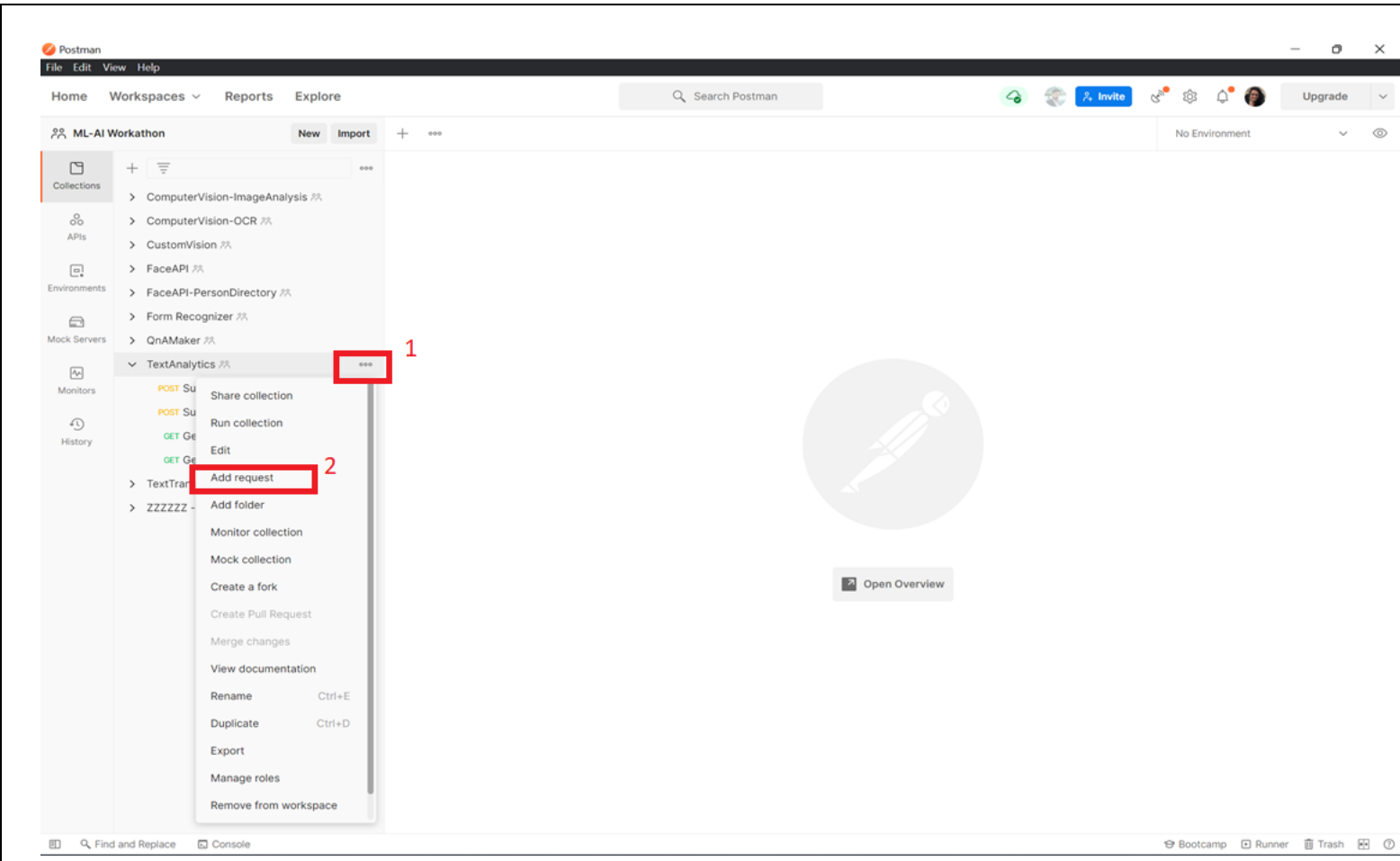
Irrespective of the location of deployment (cloud or edge), you will receive the same results on calling the respective APIs.



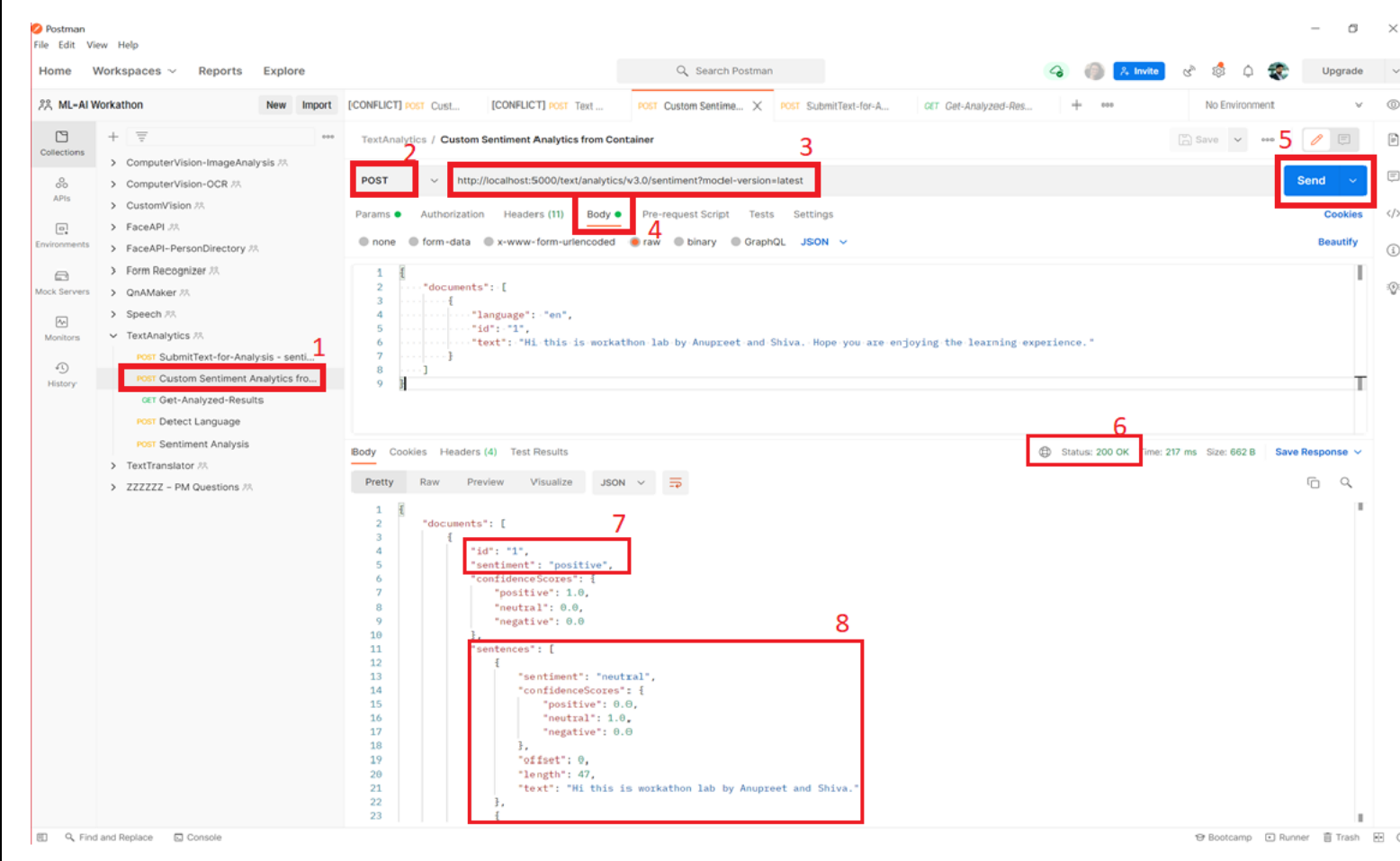
### Create new collection in Postman

Open Postman > select New.  
On the pop up select Collection.  
Name the collection Text Analytics.

Collection is like a folder for managing the API call requests.



Once you have created the collection, follow steps 1 & 2, to create a new request.



### Call Detect Sentiment API running on Docker container via Postman

This request upon successful execution will return the sentiment for each individual sentences & for the document as a whole.

URL : `http://localhost:5000/text/analytics/v3.0/sentiment?model-version=latest`

Body :

```
{
 "documents": [
 {
 "id": "doc1",
 "text": "Hi this is workathon lab by Anupreet and Shiva. Hope you are enjoying the learning experience.",
 "language": "en"
 }
]
}
```

You should also try exploring with different input languages and sentences.

### Homework

1. Try to deploy other Generally Available Azure Cognitive services containers such as LUIS, Anomaly Detector, Language Detection etc.

### Additional recommended resources

<https://docs.microsoft.com/en-us/azure/cognitive-services/containers/>

<https://www.youtube.com/watch?v=XLQLNazid4I>