

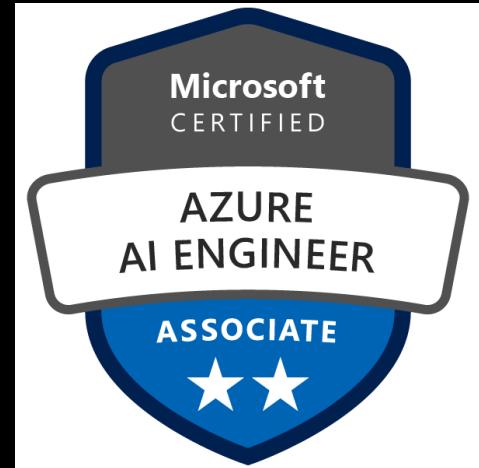
# Challenge #4 // Part 1

## Azure Cognitive Services

### Intro + Quick Start

#### IN THIS CHALLENGE:

1. Intro
2. Azure Cognitive Services
3. Create Cognitive Services
4. Quick Start
5. Tools / IDE's



This content is based on the main requirements for AI-102 Certification



# Exam AI-102: Designing and Implementing a Microsoft Azure AI Solution

Candidates for Exam AI-102 should have subject matter expertise building, managing, and deploying AI solutions that leverage Azure Cognitive Services, Azure Cognitive Search, and Microsoft Bot Framework.

Candidates for this exam should be proficient in C#, Python, or JavaScript and should be able to use REST-based APIs and SDKs to build computer vision, natural language processing, knowledge mining, and conversational AI solutions on Azure. They should also understand the components that make up the Azure AI portfolio and the available data storage options. Plus, candidates need to understand and be able to apply responsible AI principles.

## YOU CAN DO IT

---

“If you find something very difficult to achieve yourself, don’t imagine it impossible—for anything possible and proper for another person can be achieved as easily by you.”

—MARCUS AURELIUS, *MEDITATIONS*, 6.19

**T**here are two kinds of people in this world. The first looks at others who have accomplished things and thinks: *Why them? Why not me?* The other looks at those same people and thinks: *If they can do it, why can't I?*

One is zero-sum and jealous (if you win, I lose). The other is non-zero-sum (there's plenty to go around) and sees the success of others as an *inspiration*. Which attitude will propel you onward and upward? Which will drive you to bitterness and despair?

Who will you be?

# Before we start there are some important clarification points:

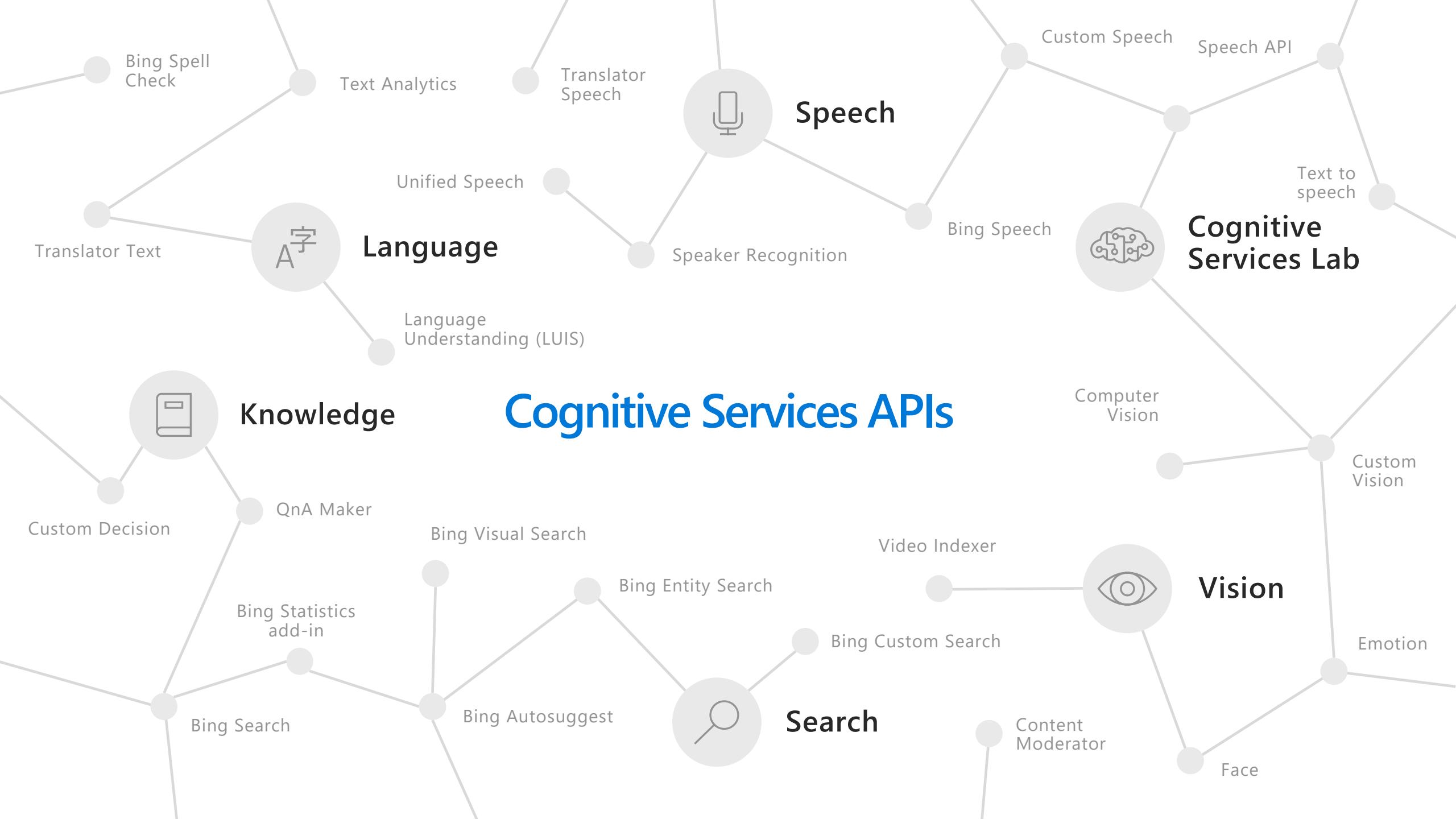


- (1) Troubleshooting is REALLY important** – It is important for you to find the bugs in your code, env, IDE, etc.
- (2) The code IS JUST a code** – There are several ways to write a code and different languages. The examples here are just one way to do it.
- (3) This IS NOT a prep course** – The main goal here is to show the practical application of the Azure Resources with a focus on Enterprise AI solutions.
- (4) You won't be graded by the challenges** but, they are an important practical component in your learning experience.

## Challenge #4.1

# Intro to Azure Cognitive Services

# Cognitive Services APIs



# Cognitive Services capabilities

Infuse your apps, websites, and bots with human-like intelligence



## Vision

- Object, scene, and activity detection
- Face recognition and identification
- Celebrity and landmark recognition
- Emotion recognition
- Text and handwriting recognition (OCR)
- Customizable image recognition
- Video metadata, audio, and keyframe extraction and analysis
- Explicit or offensive content moderation



## Speech

- Speech transcription (speech-to-text)
- Custom speech models for unique vocabularies or complex environment
- Text-to-speech
- Custom Voice
- Real-time speech translation
- Customizable speech transcription and translation
- Speaker identification and verification



## Language

- Language detection
- Named entity recognition
- Key phrase extraction
- Text sentiment analysis
- Multilingual and contextual spell checking
- Explicit or offensive text content moderation
- PII detection for text moderation
- Text translation
- Customizable text translation
- Contextual language understanding



## Knowledge

- Q&A extraction from unstructured text
- Knowledge base creation from collections of Q&As
- Semantic matching for knowledge bases
- Customizable content personalization learning



## Search

- Ad-free web, news, image, and video search results
- Trends for video, news
- Image identification, classification and knowledge extraction
- Identification of similar images and products
- Named entity recognition and classification
- Knowledge acquisition for named entities
- Search query autosuggest
- Ad-free custom search engine creation

Azure Cognitive Services document +

docs.microsoft.com/en-us/azure/cognitive-services/ ☆

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Search 

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Portal Free account

# Azure Cognitive Services documentation

Learn how to build intelligent and supported algorithms into apps, websites, and bots to see, hear, speak, understand, and interpret your user needs.



OVERVIEW  
[What are Cognitive Services?](#)



WHAT'S NEW  
[What's new in docs?](#)



CONCEPT  
[Development options](#)



CONCEPT  
[Cognitive Services and machine learning](#)



CONCEPT  
[Cognitive Services on-prem containers](#)



CONCEPT  
[Cognitive Services with databases](#)



REFERENCE  
[Language support](#)



REFERENCE  
[Support and help options](#)

## Vision

Recognize, identify, caption, index, and

## Language

Allow your apps to process natural

## Speech

Convert speech into text and text into

## Decision

Build apps that surface recommendations

## Vision

Recognize, identify, caption, index, and moderate your pictures, videos, and digital ink content.

[Computer Vision](#)

[Custom Vision](#)

[Face](#)

## Language

Allow your apps to process natural language with pre-built scripts, evaluate sentiment and learn how to recognize what users want.

[Language Understanding \(LUIS\)](#)

[QnA Maker](#)

[Text Analytics](#)

[Translator](#)

## Speech

Convert speech into text and text into natural-sounding speech. Translate from one language to another and enable speaker verification and recognition.

[Speech service](#)

[Customize with Speech Studio](#)

## Decision

Build apps that surface recommendations for informed and efficient decision-making.

[Anomaly Detector](#)

[Content Moderator](#)

[Personalizer](#)

## Search

Add Bing Search APIs to your apps and harness the ability to comb billions of webpages, images, videos, and news with a single API call.

[Bing Search APIs hub page](#)

## Cognitive Service Containers

Container support in Azure Cognitive Services allows developers to use the same rich APIs that are available in Azure, and enables flexibility in where to deploy and host the services that come with Docker containers.

- [Cognitive Services containers documentation](#)
- [What are Cognitive Service containers?](#)
- [Create containers for reuse](#)
- [Deploy and run container on Azure Container Instance](#)
- [Deploy to Azure Kubernetes Service](#)
- [Use Docker Compose to deploy multiple containers](#)
- [Cognitive Services containers FAQ](#)

## Cognitive Services for Big Data

The Cognitive Services for Big Data allows developers to use cognitive services within databases to apply intelligent algorithms over large datasets

- [Cognitive Services for Big Data](#)
- [Use Cognitive Services within Azure Databricks and Azure Synapse Analytics](#)
- [Python Samples](#)

## Responsible use of AI

Azure Cognitive Services provides information and guidelines on how to responsibly use our AI services in your applications.

[Responsible use of AI](#)

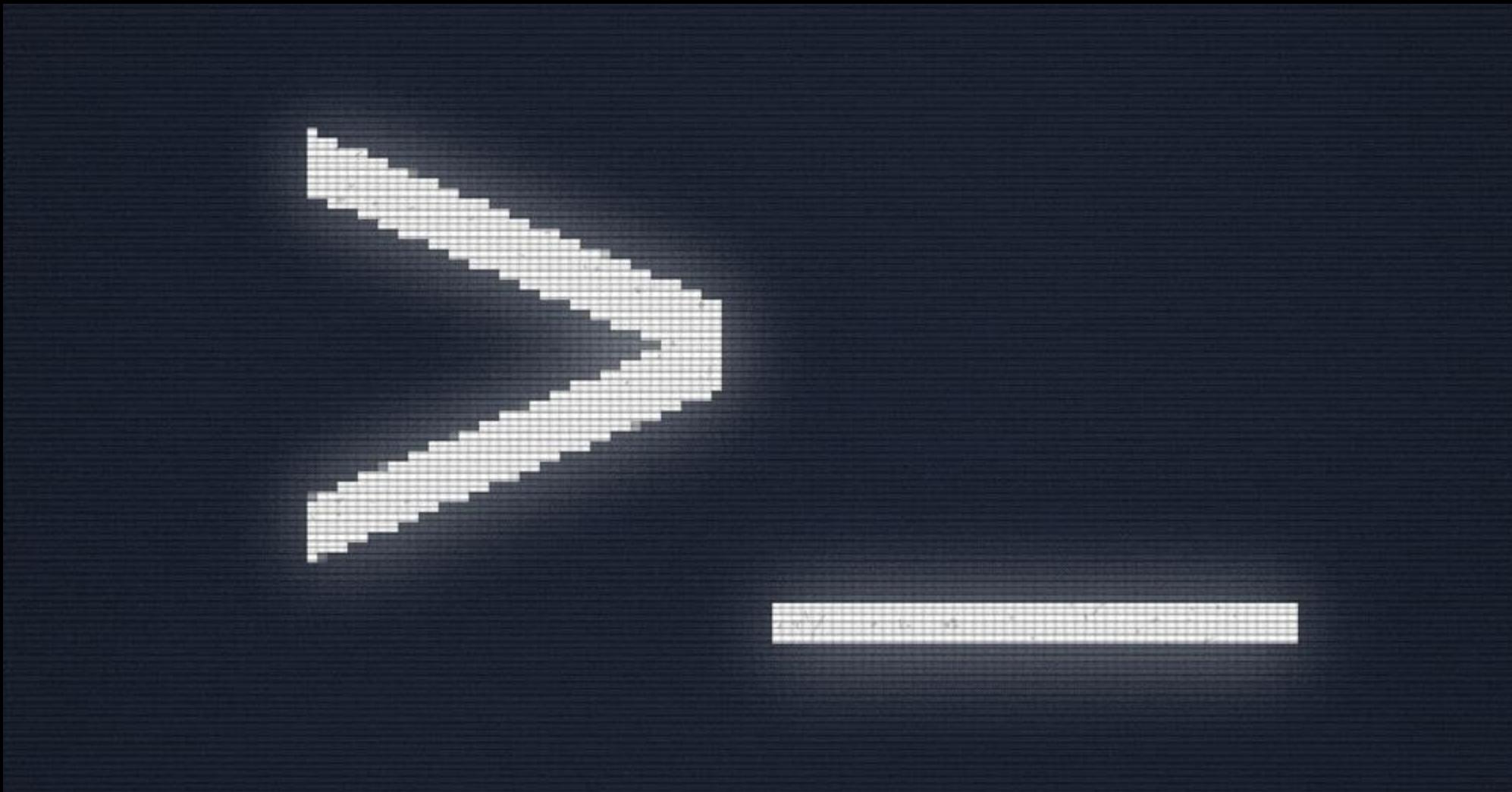


## AZURE COGNITIVE SERVICE – Create Cognitive Service on Azure Portal

### Categories of Cognitive Services

- CLI
- PowerShell
- Portal

```
New-AzCognitiveServicesAccount -ResourceGroupName cognitive-  
services-resource-group -name myluis -Type LUIS -SkuName S0 -Locatio  
n 'WestUS'
```



Install the Azure CLI for Windows x +

docs.microsoft.com/en-us/cli/azure/install-azure-cli-windows?tabs=azure-cli

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Azure / Azure CLI

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Azure CLI

> Overview

✓ Install, update and run

✓ Install

    Install

    Install - Windows

    Install - macOS

    Install - Linux

    Install - beta

Update

Run Azure CLI in a Docker container

Run Azure Cloud Shell using Bash

Sign in

> Tutorials

> Samples

> How-to guides

> Reference Summaries

> Reference

# Install Azure CLI on Windows

09/25/2020 • 4 minutes to read • 6 contributors

For Windows, the Azure CLI is installed via a MSI, which gives you access to the CLI through the Windows Command Prompt (CMD) or PowerShell. When installing for Windows Subsystem for Linux (WSL), packages are available for your Linux distribution. See the [main install page](#) for the list of supported package managers or how to install manually under WSL.

The current version of the Azure CLI is 2.24.2. For information about the latest release, see the [release notes](#). To find your installed version and see if you need to update, run `az version`.

## Install or update

The MSI distributable is used for installing or updating the Azure CLI on Windows. You don't need to uninstall current versions before using the MSI installer because the MSI will update any existing version.

Microsoft Installer (MSI)

Microsoft Installer (MSI) with Command

When the installer asks if it can make changes to your computer, click the "Yes" box.

## Azure CLI current version

Download and install the current release of the Azure CLI. After the installation is complete, you will need to

Is this page helpful?

Yes No

In this article

| Install or update

Run the Azure CLI

Troubleshooting

Uninstall

Next Steps

<https://docs.microsoft.com/en-us/cli/azure/install-azure-cli-windows?tabs=azure-cli>

Overview of the Azure CLI | Micro  +     

docs.microsoft.com/en-us/cli/azure/   

 Microsoft | [Docs](#) [Documentation](#) Learn Q&A Code Samples

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**Azure CLI**

- > Overview
- > Install, update and run
- > Tutorials
- > Samples
- > How-to guides
- > Reference Summaries
- > Reference

# Azure Command-Line Interface (CLI) documentation

The Azure command-line interface (Azure CLI) is a set of commands used to create and manage Azure resources. The Azure CLI is available across Azure services and is designed to get you working quickly with Azure, with an emphasis on automation.

## Install the Azure CLI

 [DOWNLOAD](#)

[Installation overview](#)  
[Install for Windows](#)  
[Install for macOS](#)  
[Install on Linux](#)  
[Run in Docker](#)  
[Run in Azure Cloud Shell ↗](#)

## Learn Azure CLI features

 [GET STARTED](#)

[Get started with the Azure CLI](#)  
[Services the Azure CLI can manage](#)  
[Popular articles using the Azure CLI](#)

 [HOW-TO GUIDE](#)

[Sign-in methods](#)  
[Create a service principal](#)  
[Query CLI command results](#)

## Use the Azure CLI to manage cloud resources

 [QUICKSTART](#)

[Deploy a web application from GitHub](#)  
[Create a Postgres SQL database](#)  
[Create a Kubernetes cluster](#)

 [LEARN](#)

[Manage virtual machines with the Azure CLI](#)  
[Control Azure services with the CLI](#)  
[Connect an application to Azure Storage](#)

## Azure CLI extensions

 [OVERVIEW](#)

## Azure CLI reference

## Command Prompt

Microsoft Windows [Version 10.0.19041.985]  
(c) Microsoft Corporation. All rights reserved.

```
C:\Users\cailog>az login
The default web browser has been opened at https://login.microsoftonline.com/common/oauth2/authorize. Please continue the login in the web browser. If no web browser is available or if the web browser fails to open, use device code flow with `az login --use-device-code`.
You have logged in. Now let us find all the subscriptions to which you have access...
The following tenants don't contain accessible subscriptions. Use 'az login --allow-no-subscriptions' to have tenant level access.
06e469d1-2d2a-468f-ae9b-7df0968eb6d7 'OCAD University'
[
  {
    "cloudName": "AzureCloud",
    "homeTenantId": "362067a6-2936-460f-ae05-bf263cebe940",
    "id": "bf350b48-f641-49a2-b7e4-598ce72df8ab",
    "isDefault": true,
    "managedByTenants": [],
    "name": "Free Trial",
    "state": "Enabled",
    "tenantId": "362067a6-2936-460f-ae05-bf263cebe940",
    "user": {
      "name": "caiogasparine@gmail.com",
      "type": "user"
    }
  }
]
```

C:\Users\cailog>

## Command Prompt

Microsoft Windows [Version 10.0.19041.985]  
(c) Microsoft Corporation. All rights reserved.

```
C:\Users\cailog>az cognitiveservices account list-kinds  
[
```

```
    "AnomalyDetector",  
    "Bing.CustomSearch",  
    "Bing.Search.v7",  
    "CognitiveServices",  
    "ComputerVision",  
    "ContentModerator",  
    "CustomVision.Prediction",  
    "CustomVision.Training",  
    "Face",  
    "FormRecognizer",  
    "ImmersiveReader",  
    "Internal.AllInOne",  
    "LUIS",  
    "LUIS.Authoring",  
    "MetricsAdvisor",  
    "Personalizer",  
    "QnAMaker",  
    "QnAMaker.v2",  
    "SpeechServices",  
    "TextAnalytics",  
    "TextTranslation"
```

```
]
```

```
C:\Users\cailog>
```

COMMAND: az cognitiveservices account list-kinds

## Command Prompt

```
C:\Users\cailog>az group create --location westus --resource-group MyNewResourceGroup
{
  "id": "/subscriptions/bf350b48-f641-49a2-b7e4-598ce72df8ab/resourceGroups/MyNewResourceGroup",
  "location": "westus",
  "managedBy": null,
  "name": "MyNewResourceGroup",
  "properties": {
    "provisioningState": "Succeeded"
  },
  "tags": null,
  "type": "Microsoft.Resources/resourceGroups"
}
C:\Users\cailog>
```

COMMAND: az group create --location westus --resource-group **MyNewResourceGroup**

## Command Prompt

```
C:\Users\cailog>az cognitiveservices account create -n myresource -g MyNewResourceGroup --kind Face --sku S0 -l WestEurope --yes
Notice
I certify that use of this service is not by or for a police department in the United States.
{
  "etag": "\"0100721d-0000-0d00-0000-60c261690000\"",
  "id": "/subscriptions/bf350b48-f641-49a2-b7e4-598ce72df8ab/resourceGroups/MyNewResourceGroup/providers/Microsoft.CognitiveServices/accounts/myresource",
  "identity": null,
  "kind": "Face",
  "location": "WestEurope",
  "name": "myresource",
  "properties": {
    "apiProperties": null,
    "capabilities": [
      {
        "name": "VirtualNetworks",
        "value": null
      },
      {
        "name": "Container",
        "value": "Face.Face"
      }
    ],
    "customSubDomainName": null,
    "dateCreated": "2021-06-10T19:00:57.1021234Z",
    "encryption": null,
    "endpoint": "https://westeurope.api.cognitive.microsoft.com/",
    "internalId": "b27d2d1274d04836982f9a1035700381",
  }
}
```

COMMAND: az cognitiveservices account create -n myresource -g MyNewResourceGroup --kind Face --sku S0 -l WestEurope --yes

Command Prompt

```
C:\Users\cailog>az cognitiveservices account delete --name myresource --resource-group myNewResourceGroup
```

```
C:\Users\cailog>
```

COMMAND: az cognitiveservices account delete --name **myresource** --resource-group **myNewResourceGroup**

# Count Parameter (*preview*)

For example: `az vm create.... --count 2`

With this command Azure will deploy 2 VM instances in parallel (or the number used in the parameter count)  
Azure engine will manage VNET, disks, public IP's, NSG, and etc.

Another simple example for academic purposes: Create 2 VMs using Debian without customization

`az group create -n rg-example -l eastus`

`az vm create -n vm-example -g rg-example --count 2 --size Standard_B1ls --image Debian --generate-ssh-keys`

The first line will create the resource group (example)

The second line will create the resources inside the resource group.

All resources - Microsoft Azure

portal.azure.com/#blade/HubsExtension/BrowseAll

## Microsoft Azure

Search resources, services, and docs (G+)

Home > All resources

Create Manage view Refresh Export to CSV Open query Feedback Assign tags Delete

Filter for any field... Subscription == all Resource group == all Type == all Location == all Add filter

Showing 1 to 20 of 20 records.  Show hidden types

No grouping List view

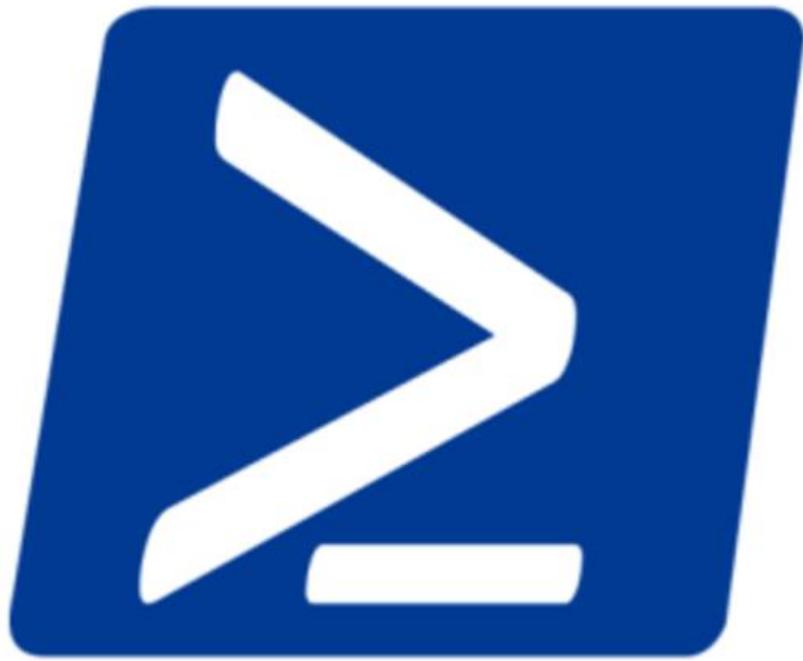
Name	Type	Resource group	Location	Subscription
storageaccountcaio	Storage account	rg-caio-ai	East US	Free Trial
translator-caio	Cognitive Services	rg-caio-ai	East US	Free Trial
vm-example0	Virtual machine	rg-example	East US	Free Trial
vm-example0_OsDisk_1_15a314090c274451bad00f8f719403fc	Disk	RG-EXAMPLE	East US	Free Trial
vm-example1	Virtual machine	rg-example	East US	Free Trial
vm-example1_OsDisk_1_25a2ab7a0e1d425b91b1e3137f0d4127	Disk	RG-EXAMPLE	East US	Free Trial
vm-exampleNSG	Network security group	rg-example	East US	Free Trial
vm-examplePublicIP0	Public IP address	rg-example	East US	Free Trial
vm-examplePublicIP1	Public IP address	rg-example	East US	Free Trial
vm-exampleVMNic0	Network interface	rg-example	East US	Free Trial
vm-exampleVMNic1	Network interface	rg-example	East US	Free Trial
vm-exampleVNET	Virtual network	rg-example	East US	Free Trial

< Previous Page 1 of 1 Next >

Result

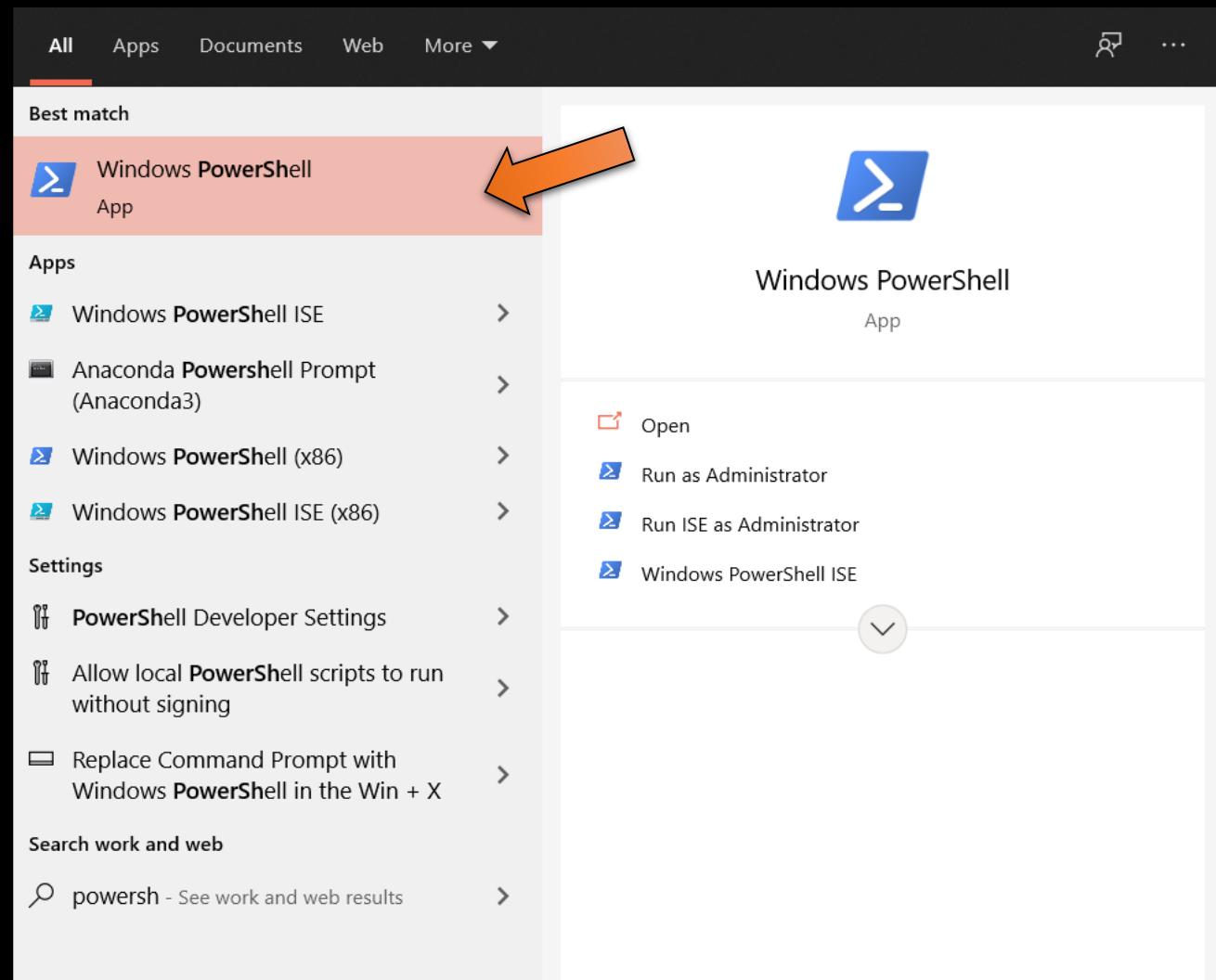
The screenshot shows the Microsoft Azure 'All resources' blade. A red rectangular selection box highlights the first 10 resources in the list. An orange arrow points from the top right towards the highlighted area. The resources listed are:

- storageaccountcaio (Type: Storage account, Resource group: rg-caio-ai, Location: East US, Subscription: Free Trial)
- translator-caio (Type: Cognitive Services, Resource group: rg-caio-ai, Location: East US, Subscription: Free Trial)
- vm-example0 (Type: Virtual machine, Resource group: rg-example, Location: East US, Subscription: Free Trial)
- vm-example0\_OsDisk\_1\_15a314090c274451bad00f8f719403fc (Type: Disk, Resource group: RG-EXAMPLE, Location: East US, Subscription: Free Trial)
- vm-example1 (Type: Virtual machine, Resource group: rg-example, Location: East US, Subscription: Free Trial)
- vm-example1\_OsDisk\_1\_25a2ab7a0e1d425b91b1e3137f0d4127 (Type: Disk, Resource group: RG-EXAMPLE, Location: East US, Subscription: Free Trial)
- vm-exampleNSG (Type: Network security group, Resource group: rg-example, Location: East US, Subscription: Free Trial)
- vm-examplePublicIP0 (Type: Public IP address, Resource group: rg-example, Location: East US, Subscription: Free Trial)
- vm-examplePublicIP1 (Type: Public IP address, Resource group: rg-example, Location: East US, Subscription: Free Trial)
- vm-exampleVMNic0 (Type: Network interface, Resource group: rg-example, Location: East US, Subscription: Free Trial)
- vm-exampleVMNic1 (Type: Network interface, Resource group: rg-example, Location: East US, Subscription: Free Trial)
- vm-exampleVNET (Type: Virtual network, Resource group: rg-example, Location: East US, Subscription: Free Trial)



PowerShell

Microsoft Azure



Windows PowerShell

App

Open

Run as Administrator

Run ISE as Administrator

Windows PowerShell ISE



C:\Users\cailog

Windows PowerShell  
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell <https://aka.ms/pscore6>

Loading personal and system profiles took 874ms.  
cailog@DESKTOP-9Q74A52 ~ [15:10]

[ ]

Get started with Azure PowerShell x +

docs.microsoft.com/en-us/powershell/azure/get-started-azureps?view=azps-6.0.0

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Manage subscriptions

> Deploy

> Concepts

> Tutorials

> Sample Scripts

> Release notes

# Get started with Azure PowerShell

04/24/2020 • 3 minutes to read • 

Azure PowerShell is designed for managing and administering Azure resources from the command line. Use Azure PowerShell when you want to build automated tools that use the Azure Resource Manager model. Try it out in your browser with [Azure Cloud Shell](#), or install on your local machine.

This article helps you get started with Azure PowerShell and teaches the core concepts behind it.

## Install or run in Azure Cloud Shell

The easiest way to get started with Azure PowerShell is by trying it out in an Azure Cloud Shell environment. To get up and running with Cloud Shell, see [Quickstart for PowerShell in Azure Cloud Shell](#). Cloud Shell runs PowerShell on a Linux container, so Windows-specific functionality isn't available.

When you're ready to install Azure PowerShell on your local machine, follow the instructions in [Install the Azure PowerShell module](#).

## Sign in to Azure

Sign in interactively with the `Connect-AzAccount` cmdlet. Skip this step if you use Cloud Shell. Your Azure Cloud Shell session is already authenticated for the environment, subscription, and tenant that launched the Cloud Shell session.

Is this page helpful?

Yes No

In this article

Install or run in Azure Cloud Shell

Sign in to Azure

Find commands

Telemetry

Learn Azure PowerShell basics with quickstarts and tutorials

Next steps

Overview of Azure PowerShell | [M](#) [x](#) + ☰ - □ X

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# Azure PowerShell documentation

Azure PowerShell is a set of cmdlets for managing Azure resources directly from the PowerShell command line. Azure PowerShell is designed to make it easy to learn and get started with, but provides powerful features for automation. Written in .NET Standard, Azure PowerShell works with PowerShell 5.1 on Windows, PowerShell 7.0.6 LTS and PowerShell 7.1.3 or higher on all platforms.

### Get started with Azure PowerShell

---

 [DOWNLOAD](#)  
[Install Azure PowerShell](#)  
[Install PowerShell](#)  
[Run in Azure Cloud Shell ↗](#)

---

 [GET STARTED](#)  
[Get started](#)  
[Learn about PowerShell concepts](#)

---

 [HOW-TO GUIDE](#)  
[Authenticate with Azure PowerShell](#)

### Manage Azure resources

---

 [CONCEPT](#)  
[Sample scripts for virtual machines](#)  
[Sample scripts for Azure App Service](#)  
[Sample scripts for SQL databases](#)

---

 [TUTORIAL](#)  
[Create virtual machines on the same subnet](#)

---

 [LEARN](#)  
[Automate Azure tasks from PowerShell](#)

### Migrate from AzureRM

---

 [OVERVIEW](#)  
[About the Azure PowerShell 'Az' module](#)

---

 [CONCEPT](#)  
[Migrate from AzureRM to Az](#)

---

 [REFERENCE](#)  
[Breaking changes between AzureRM and Az](#)



Home - Microsoft Azure x + ▼ - □ X

portal.azure.com/#home ★

Microsoft Azure Upgrade Search resources, services, and docs (G+/) ? ? ? ?

Azure services

Create a resource Cost Management ... Subscriptions All resources Data factories SQL databases Quickstart Center Virtual machines App Services

R\$959.71 credit remaining  
Subscription 'Free Trial' has a remaining credit of R\$959.71.  
[Click here to upgrade to a Pay-As-You-Go subscription.](#)

Recent resources

Name	Type	Last Viewed
cognitiveservices-caio	Cognitive Services	an hour ago
rg-caio-ai	Resource group	an hour ago
storageaccountcaio	Storage account	a week ago
Free Trial	Subscription	a week ago
sql-caio-ai1	SQL database	a week ago
sa-caio-ai1	Synapse workspace	2 weeks ago
df-caio-001	Data factory (V2)	3 weeks ago

Navigate

Subscriptions Resource groups All resources Dashboard

Azure Portal

Why you should consider  
using **CLI or PowerShell?**

**Other VERY important key things...**

- **Subscription**
- **Resource Group**
- **Region**
- **Resource Name**
- **Pricing Tier**

- **REGIONAL AVAILABILITY**

**The API's in Cognitive Services are hosted on a growing network of Microsoft-managed datacenters. You can find the regional availability for each API in Azure Region List.**

<https://azure.microsoft.com/en-us/global-infrastructure/geographies/>

- **SECURITY**

**Azure Cognitive Services provides a layered security model, including authentication, via Azure Active Directory credentials, a valid resource key, and Azure Virtual Networks.**

**Challenge #4.2**

**Azure Cognitive Services**



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## Azure Cognitive Services

A comprehensive family of AI services and cognitive APIs to help you build intelligent apps

Try Cognitive Services free



## Product overview

## Features

APIs

Customer stories

Documentation

FAQ

## What is Azure Cognitive Services?

Cognitive Services brings AI within reach of every developer—without



 Chat with Sales

Cognitive Services—APIs for AI D X +

← → C ⌂ 🔒 azure.microsoft.com/en-us/services/cognitive-services/#api ☆

# Microsoft Azure | ▾

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## Azure Cognitive Services

**Decision**

Language

Speech

Vision

Make smarter decisions faster

**Anomaly Detector**

Identify potential problems early on.

**Content Moderator**

Detect potentially offensive or unwanted content.

**Personalizer**

Create rich, personalized experiences for every user.

Explore the whole family of Azure AI services

Chat with Sales

Cognitive Services—APIs for AI D X +

azure.microsoft.com/en-us/services/cognitive-services/#api

Microsoft Azure | ▾

Product overview Features APIs Customer stories Documentation FAQs Free account

## Azure Cognitive Services

Decision

Language

Speech

Vision

Extract meaning from unstructured text

**Language Understanding**

Build natural language understanding into apps, bots, and IoT devices.

**QnA Maker**

Create a conversational question and answer layer over your data.

**Text Analytics**

Detect sentiment, key phrases, and named entities.

**Translator**

Detect and translate more than 90 supported languages.

Luis

Azure BOT

Translator API

Chat with Sales

The screenshot shows the Microsoft Azure Cognitive Services page. On the left, there's a sidebar with categories: Decision, Language (which is highlighted with a red border), Speech, and Vision. The main content area has a dark background with several service cards. One card for 'Language Understanding' is highlighted with a red border. Another card for 'QnA Maker' is also highlighted with a red border. A third card for 'Text Analytics' and a fourth for 'Translator' are shown without borders. To the right of each service card is a blue button with the service's name. At the bottom right is a blue button for 'Chat with Sales'. The URL https://azure.microsoft.com/en-us/services/cognitive-services/ is visible at the bottom of the browser window.

Cognitive Services—APIs for AI D X +

← → ⌂ ⌄ 🔒 azure.microsoft.com/en-us/services/cognitive-services/#api ☆

# Microsoft Azure | ▾

Product overview Features APIs Customer stories Documentation FAQs Free account

## Azure Cognitive Services

Decision	Improve customer experiences with <a href="#">Speech</a>
Language	<b>Speech to Text</b> Transcribe audible speech into readable, searchable text.
<b>Speech</b>	<b>Text to Speech</b> Convert text to lifelike speech for more natural interfaces.
Vision	<b>Speech Translation</b> Integrate real-time speech translation into your apps.
	<b>Speaker Recognition</b> PREVIEW Identify and verify the people speaking based on audio.

Chat with Sales

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

Cognitive Services—APIs for AI D X +

← → C ⌂ 🔒 azure.microsoft.com/en-us/services/cognitive-services/#api ⌂ ☆

# Microsoft Azure | ▾

Product overview Features APIs Customer stories Documentation FAQs Free account

## Azure Cognitive Services

Decision

Language

Speech

Vision

Identify and analyze content within images and videos

**Computer Vision**

Analyze content in images and video.

**Custom Vision**

Customize image recognition to fit your business needs.

**Face**

Detect and identify people and emotions in images.

OCR

Face API

Explore the whole family of Azure AI services

Chat with Sales

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



# AZURE COGNITIVE SERVICE?

## Microsoft Cognitive Services

Infuse intelligence into your applications



### Vision

Computer Vision

Custom Vision Service

Content Moderator

Emotion API

Face API

Video Indexer



### Speech

Bing Speech Service

Custom Speech Service

Speaker Recognition

Translator Speech



### Language

Bing Spell Check

Language Understanding Intelligent Service (LUIS)

Linguistics Analysis

Text Analytics

Translator Text

Web Language Model



### Knowledge

Custom Decision Service

QnA Maker

Knowledge Exploration

Entity Linking

Academic Knowledge



### Search

Bing Web Search

Bing Custom Search

Bing Autosuggest

Bing News Search

Bing Video Search

Bing Entity Search

Bing Image Search

## Challenge #4.3

**Creating your Azure Cognitive Services**

Home - Microsoft Azure x + ▼ - □ X

portal.azure.com/#home ★

Microsoft Azure Search resources, services, and docs (G+/) Cloud Shell Feedback Help ? Copy

Azure services

Create a resource Cost Management ... Subscriptions All resources Data factories SQL databases Quickstart Center Virtual machines App Services More services

Recent resources

Name	Type	Last Viewed
storageaccountcaio	Storage account	a week ago
Free Trial	Subscription	a week ago
sql-caio-ai1	SQL database	a week ago
sa-caio-ai1	Synapse workspace	2 weeks ago
rg-caio-ai	Resource group	2 weeks ago
df-caio-001	Data factory (V2)	3 weeks ago

Navigate

Subscriptions Resource groups All resources Dashboard

Tools <https://portal.azure.com/#create/hub>

Select the option CREATE A RESOURCE

A Cognitive Services - Microsoft Az x +

portal.azure.com/#blade/Microsoft\_Azure\_Marketplace/GalleryItemDetailsBladeNopdl/product/%7B"displayName"%3A"Cognitive%20Services"%2C"itemDisplayName"%3A"Cognitive%20Ser... ☆

Microsoft Azure Upgrade Search resources, services, and docs (G+/)

Home > Create a resource >

## Cognitive Services

Microsoft

**Cognitive Services** Microsoft Add to Favorites

★★★★★ 4.4 (29 ratings)

Create

Overview Plans Usage Information + Support Reviews

Cognitive Services is a product bundle that enables customers to access multiple services with a single API key.

Product features:

- Access to Vision, Language, Search, and Speech services using a single API
- Quickly connect services together to achieve more insights into your content
- Easily integrate with other services like Azure Search

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More offers from Microsoft See All

https://portal.azure.com/#

Search for COGNITIVE SERVICES and select CREATE

Create Cognitive Services - Micro +

portal.azure.com/#create/Microsoft.CognitiveServicesAllInOne

Microsoft Azure Upgrade Search resources, services, and docs (G+)

Home > Create a resource > Cognitive Services >

## Create Cognitive Services

Basics Identity Tags Review + create

Get access to Vision, Language, Search, and Speech Cognitive Services with a single API key. Quickly connect services together to achieve more insights into your content and easily integrate with other services like Azure Search. [Learn more](#)

**Project details**

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription \* ⓘ Free Trial

Resource group \* ⓘ rg-caio-ai 

Create new

Region \* ⓘ Brazil South

**Instance details**

**Info** Location specifies the region only for included regional services. This does not specify a region for included non-regional services. [Click here for more details.](#)

**Review + create** < Previous Next : Identity >

Add your COGNITIVE SERVICES information

Create Cognitive Services - Micro +

portal.azure.com/#create/Microsoft.CognitiveServicesAllInOne

Microsoft Azure Upgrade Search resources, services, and docs (G+)

Home > Create a resource > Cognitive Services >

## Create Cognitive Services

Region \* ⓘ Brazil South

**Info** Location specifies the region only for included regional services. This does not specify a region for included non-regional services. Click here for more details.

Name \* ⓘ cognitiveservices-caio

Pricing tier \* ⓘ Standard S0

View full pricing details

By checking this box I acknowledge that I have read and understood all the terms below

**Responsible AI Notice**

Microsoft provides technical documentation regarding the appropriate operation applicable to this Cognitive Service that is made available by Microsoft. Customer acknowledges and agrees that they have reviewed this documentation and will use this service in accordance with it. This Cognitive Services is intended to process Customer Data that includes Biometric Data (as may be further described in product documentation) that Customer may incorporate into its own systems used for personal identification or other purposes. Customer acknowledges and agrees that it is responsible for complying with the Biometric Data obligations contained in the Online Services DPA.

Review + create < Previous Next : Identity >

Add your COGNITIVE SERVICES information

The screenshot shows the Microsoft Azure 'Create Cognitive Services' interface. On the left, there are input fields for 'Name' (cognitiveservices-caio) and 'Pricing tier' (Standard S0). Below these is a checkbox labeled 'By checking this box I acknowledge that I have read and understood all the terms below'. To the right, a yellow-highlighted box contains the 'Responsible AI Notice' text. Three orange arrows point from the input fields towards this text, and a large red arrow points from the acknowledgement checkbox towards it. At the bottom, there are navigation buttons: 'Review + create', '< Previous', 'Next : Identity >', and 'Add your COGNITIVE SERVICES information'.

Create Cognitive Services - Micro +

portal.azure.com/#create/Microsoft.CognitiveServicesAllInOne

Microsoft Azure Upgrade Search resources, services, and docs (G+)

Home > Create a resource > Cognitive Services >

## Create Cognitive Services

Region \* ⓘ Brazil South

**Info** Location specifies the region only for included regional services. This does not specify a region for included non-regional services. Click here for more details.

Name \* ⓘ cognitiveservices-caio ✓

Pricing tier \* ⓘ Standard S0

[View full pricing details](#)

By checking this box I acknowledge that I have read and understood all the terms below

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**Review + create**  < Previous Next : Identity >

Review the information and select REVIEW + CREATE

Create Cognitive Services - Micro +

portal.azure.com/#create/Microsoft.CognitiveServicesAllInOne

Microsoft Azure Upgrade Search resources, services, and docs (G+/)

Home > Create a resource > Cognitive Services >

## Create Cognitive Services

Validation Passed

Basics Identity Tags Review + 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	Free Trial
Resource group	rg-caio-ai
Region	Brazil South
Name	cognitiveservices-caio
Pricing tier	Standard S0

**Create**  < Previous Next Download a template for automation

Select CREATE

Home - Microsoft Azure

portal.azure.com/#home

Microsoft Azure    Upgrade    Search resources, services, and docs (G+/)

Azure services

Create a resource    Cost Management ...    Subscriptions    All resources    Data factories    SQL databases    Quickstart Center    Virtual machines    App Services    More services

Recent resources

Name	Type	Last Viewed
cognitiveservices-caio	Cognitive Services	a few seconds ago
rg-caio-ai	Resource group	a few seconds ago
storageaccountcaio	Storage account	a week ago
Free Trial	Subscription	a week ago
sql-caio-ai1	SQL database	a week ago
sa-caio-ai1	Synapse workspace	2 weeks ago
df-caio-001	Data factory (V2)	3 weeks ago

Navigate

Subscriptions    Resource groups    All resources    Dashboard

Go to HOME and check if your resource was created

**Challenge #4.4**

**Azure Cognitive Services**

**Quick Start**

Home - Microsoft Azure x + ▼ - □ ×

portal.azure.com/#home ★

Microsoft Azure Upgrade Search resources, services, and docs (G+) ? 3 ? ? ?

### Azure services

+ Create a resource Cost Management ... Subscriptions All resources Data factories SQL databases Quickstart Center Virtual machines App Services More services →

### Recent resources

Name	Type	Last Viewed
cognitiveservices-caio	Cognitive Services	a few seconds ago
rg-caio-ai	Resource group	a few seconds ago
storageaccountcaio	Storage account	a week ago
Free Trial	Subscription	a week ago
sql-caio-ai1	SQL database	a week ago
sa-caio-ai1	Synapse workspace	2 weeks ago
df-caio-001	Data factory (V2)	3 weeks ago

Orange arrow pointing to the 'cognitiveservices-caio' row in the Recent resources table.

### Navigate

Yellow key icon Subscriptions Blue cube icon Resource groups Green grid icon All resources Green chart icon Dashboard

Select your COGNITIVE SERVICES resource

A cognitiveservices-caio - Microsoft +

portal.azure.com/#@craigasparine@gmail.onmicrosoft.com/resource/subscriptions/bf350b48-f641-49a2-b7e4-598ce72df8ab/resourceGroups/rg-caio-ai/providers/Microsoft.CognitiveServices... ☆

Microsoft Azure Upgrade Search resources, services, and docs (G+/-) ☰ 🔍 📈 ⚙️ ? 🔍

Home > cognitiveservices-caio

## cognitiveservices-caio | Quick start

Cognitive Services

Search (Ctrl+ /) <>

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource Management

Quick start

Keys and Endpoint

Pricing tier

Networking

Identity

Billing By Subscription

Properties

Locks

Monitoring

Alerts

You are all set! Follow the steps below to use your Cognitive Service resource

Use the same key and endpoint in any of the services listed below

Grab your keys and endpoint

Every call to Cognitive Services requires the subscription key above. This key needs to be either passed through a query string parameter or specified in the request header. To manage your keys, use the Keys option from the left menu

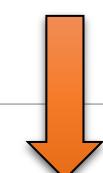
Get an overview of what you can do with the Cognitive Services

**Documentation** - Access Quickstarts with code samples, in-depth tutorials and how-to guides  
**Courses** - Explore the free Cognitive Services courses in Microsoft Learn  
**Community** - Ask and answer questions within a community of developers using the Cognitive Services

Get Started with the Cognitive Services

Cognitive Services available to use with your key and endpoint.

**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  
**Custom Vision** \* - Custom Vision lets you build, deploy, and improve your own image classifiers.



Scroll down...

cognitiveservices-caio - Microsoft +

portal.azure.com/#@craigasparine@gmail.onmicrosoft.com/resource/subscriptions/bf350b48-f641-49a2-b7e4-598ce72df8ab/resourceGroups/rg-caio-ai/providers/Microsoft.CognitiveServices...

Microsoft Azure Upgrade Search resources, services, and docs (G+)

Home > cognitiveservices-caio

## cognitiveservices-caio | Quick start

Get an overview of what you can do with the Cognitive Services

**Documentation** - Access Quickstarts with code samples, in-depth tutorials and how-to guides  
**Courses** - Explore the free Cognitive Services courses in Microsoft Learn  
**Community** - Ask and answer questions within a community of developers using the Cognitive Services

**2**

Get Started with the Cognitive Services

Cognitive Services available to use with your key and endpoint.

**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  
**Custom Vision** \* - Custom Vision lets you build, deploy, and improve your own image classifiers.  
**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  
**Translator** - Translate text in near real-time  
**Video Indexer** - Analyze video and audio  
\* supported only in few regions

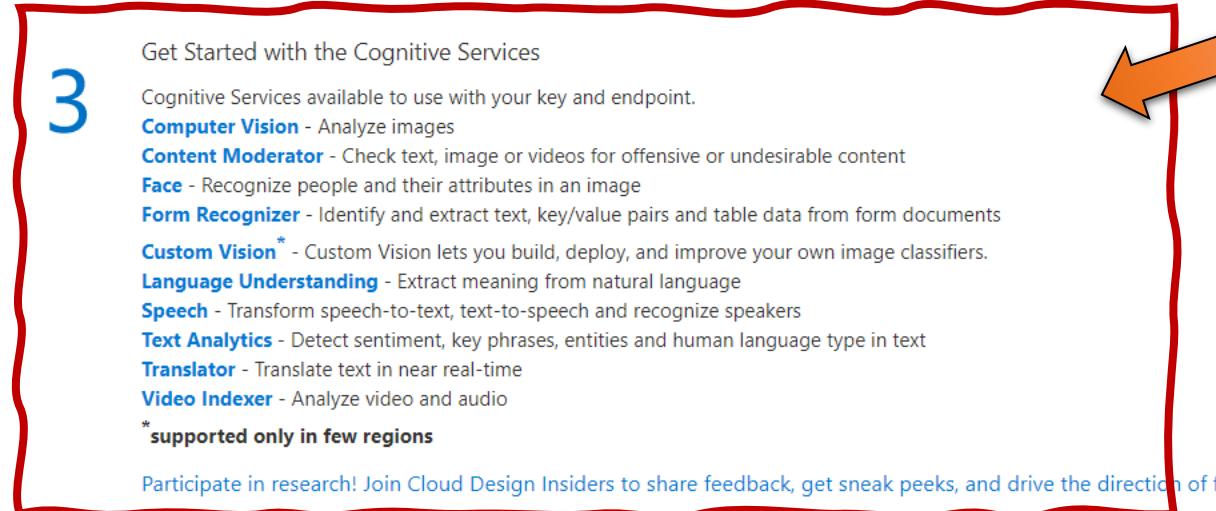
Participate in research! Join Cloud Design Insiders to share feedback, get sneak peeks, and drive the direction of future improvements with us.

**3**

Cognitive Services containers

Several Cognitive Services APIs are also available as a Docker container. This enables you to run the API on-premises if you don't want your data to leave your machine or environment. These containers have the same interfaces and capabilities as the operation in the hosted API.

[Get Started](#)



These are all the Cognitive Services available (June, 2021)

# How does it work?

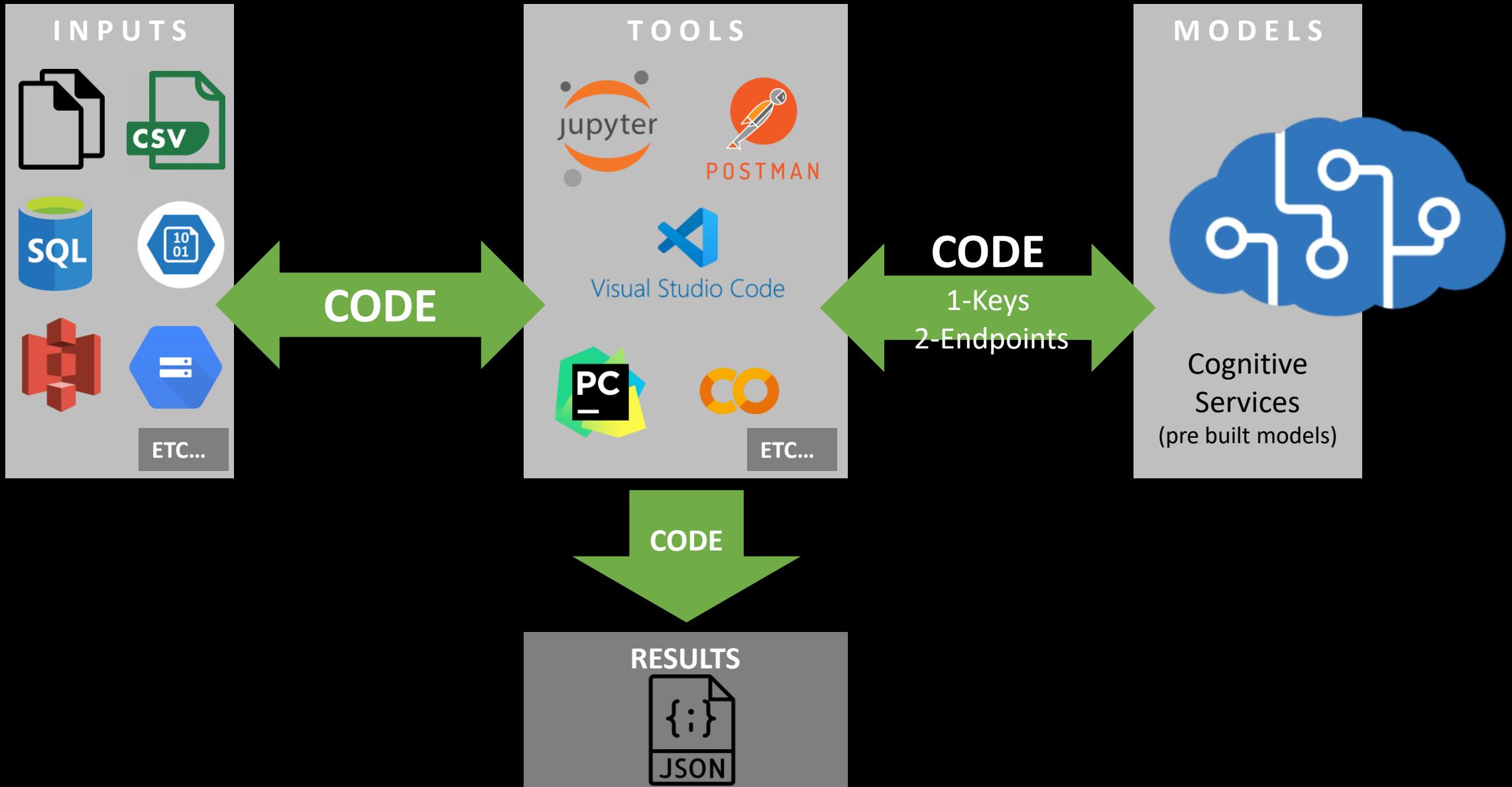
## What is Azure Cognitive Services?

Cognitive Services brings AI within reach of every developer—without requiring machine learning expertise. All it takes is an API call to embed the ability to see, hear, speak, search, understand, and accelerate decision-making into your apps. Enable developers of all skill levels to easily add AI capabilities to their apps.

Watch this 50-second video to see how to deploy AI for various use cases using the programming languages you already know.



# How does it work?



# Challenge #4.5

## Tools / IDE's



[Install](#) [About Us](#) [Community](#) [Documentation](#) [NBViewer](#) [JupyterHub](#) [Widgets](#) [Blog](#)



Project Jupyter exists to develop open-source software, open-standards, and services for interactive computing across dozens of programming languages.

Anaconda | Individual Edition

anaconda.com/products/individual

The landing page features a large green header with the Anaconda logo and navigation links for Products, Pricing, Solutions, and Resources. Below the header, five edition options are listed with icons: Individual Edition (Open Source Distribution), Commercial Edition (Premium Package Repository), Team Edition (On-prem Package Repository), Enterprise Edition (Full Data Science Platform), and Professional Services (Data Experts Work Together). A large call-to-action button at the bottom right says "Your data science toolkit" and "With over 25 million users".

<https://www.anaconda.com/products/individual>

<https://www.anaconda.com/>

The Anaconda Navigator interface displays a grid of applications. The visible ones include:

- CMD.exe Prompt
- Datalore
- IBM Watson Studio Cloud
- JupyterLab
- jupyter Notebook
- PowerShell Prompt
- PyCharm Community
- Qt Console
- Spyder
- VS Code
- Gwyddon
- Orange 3

Each application has a "Launch" or "Install" button.

This page provides a direct download link for the Windows version of the Individual Edition. It includes a "Download" button, a note for Windows users, and links to get additional installers for Linux and macOS.

Anaconda Individual Edition

Download

For Windows

Python 3.8 • 64-Bit Graphical Installer • 477 MB

Get Additional Installers



# The Collaboration Platform for API Development

Simplify each step of building an API and streamline collaboration so you can create better APIs—faster.

[Learn More](#)

## Get Started with Postman

 Username Email Password

Passwords need to be at least 7 characters long.

Sign me up to get product updates, news, and other marketing communications.

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jetbrains.com/pycharm/download/#section=windows

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Version: 2021.1.2

Build: 211.7442.45

1 June 2021

[System requirements](#)

[Installation Instructions](#)

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### Professional

For both Scientific and Web Python development. With HTML, JS, and SQL support.

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For pure Python development

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[Free, open-source](#)

[X]

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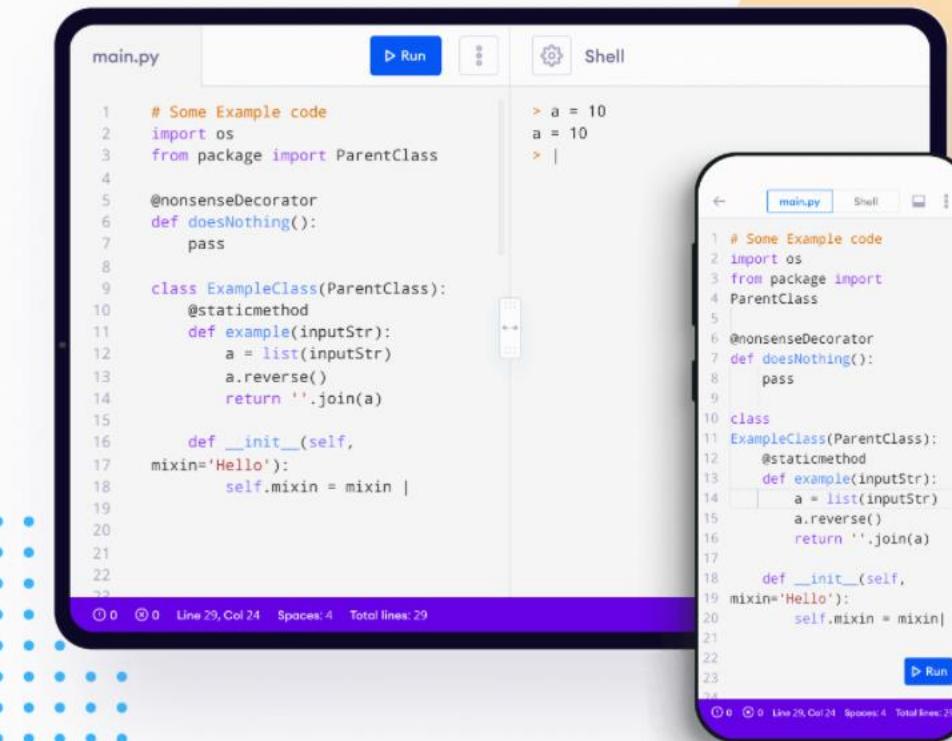
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[Y]es, I agree      [N]o, thanks

~ root#



Get the Toolbox App to download PyCharm and its future updates with ease



# Online Python Compiler

Get started with Python in no time.

Now you can write and run Python code online in your browser.

Run Python Online

Welcome To Colaboratory - Colab

colab.research.google.com/notebooks/intro.ipynb#recent=true

Welcome To Colaboratory

File Edit View Insert Runtime Tools Help

Share 

Table of contents

Getting started

Data science

Machine learning

More Resources

Machine Learning Examples

Section

Examples Recent Google Drive GitHub Upload

Filter notebooks

Title	Last opened	First opened	
CO Welcome To Colaboratory	5:51 PM	5:51 PM	
CO Welcome To Colaboratory	Jan 11, 2020	Oct 31, 2019	
CO TensorFlow with GPU	Oct 31, 2019	Oct 31, 2019	
CO Colab's New Code Editor	Oct 31, 2019	Oct 31, 2019	
Untitled	Oct 31, 2019	Oct 31, 2019	 

New notebook Cancel

To execute the code in the above cell, select it with a click and then either press the play button to the left of the code, or use the keyboard

<https://colab.research.google.com/>

machinelearning-ai1006 - Micros x Notebooks - Microsoft Azure Ma x + ml.azure.com/fileexplorerAzNB?wsid=/subscriptions/bf350b48-f641-49a2-b7e4-598ce72df8ab/resourcegroups/rg-caio-ai/workspaces/machinelearning-ai1006&tid=362067a6-2936-460f-ae... ☆

## Microsoft Azure Machine Learning

Home > Notebooks

### Notebooks

Files Samples

Editing

ML

```
1 import requests, uuid, json
2
3 # Add your subscription key and endpoint
4 subscription_key = "adbc876dcfc14863ae2df143c413c88b"
5 endpoint = "https://api.cognitive.microsofttranslator.com"
6
7 # Add your location, also known as region. The default is global.
8 # This is required if using a Cognitive Services resource.
9 location = "eastus"
10
11 path = '/translate'
12 constructed_url = endpoint + path
13
14 params = {
15     'api-version': '3.0',
16     'from': 'en',
17     'to': ['de', 'it']
18 }
19 constructed_url = endpoint + path
20
21 headers = {
22     'Ocp-Apim-Subscription-Key': subscription_key,
23     'Ocp-Apim-Subscription-Region': location,
24     'Content-type': 'application/json',
25     'X-ClientTraceId': str(uuid.uuid4())
26 }
27
28 # You can pass more than one object in body.
```

# Downloads

Help me choose



## Visual Studio 2019

Version 16.10

[Release notes >](#)

Full-featured integrated development environment (IDE) for Android, iOS, Windows, web, and cloud

[Compare editions >](#)

[How to install offline >](#)

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Powerful IDE, free for students, open-source contributors, and individuals

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Professional IDE best suited to small teams

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### Enterprise

Scalable, end-to-end solution for teams of any size

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## Visual Studio Preview

[Release notes >](#)

Get early access to latest features not yet in the main release

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Feedback ↗



macOS



macOS

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code.visualstudio.com/download

Visual Studio Code Docs Updates Blog API Extensions FAQ Learn Search Docs Download

Version 1.57 is now available! Read about the new features and fixes from May.

# Download Visual Studio Code

Free and built on open source. Integrated Git, debugging and extensions.



## ↓ Windows

Windows 7, 8, 10

User Installer  
System Installer  
.zip

64 bit 32 bit ARM  
64 bit 32 bit ARM  
64 bit 32 bit ARM

## ↓ .deb

Debian, Ubuntu

.deb 64 bit ARM ARM 64  
.rpm 64 bit ARM ARM 64  
.tar.gz 64 bit ARM ARM 64

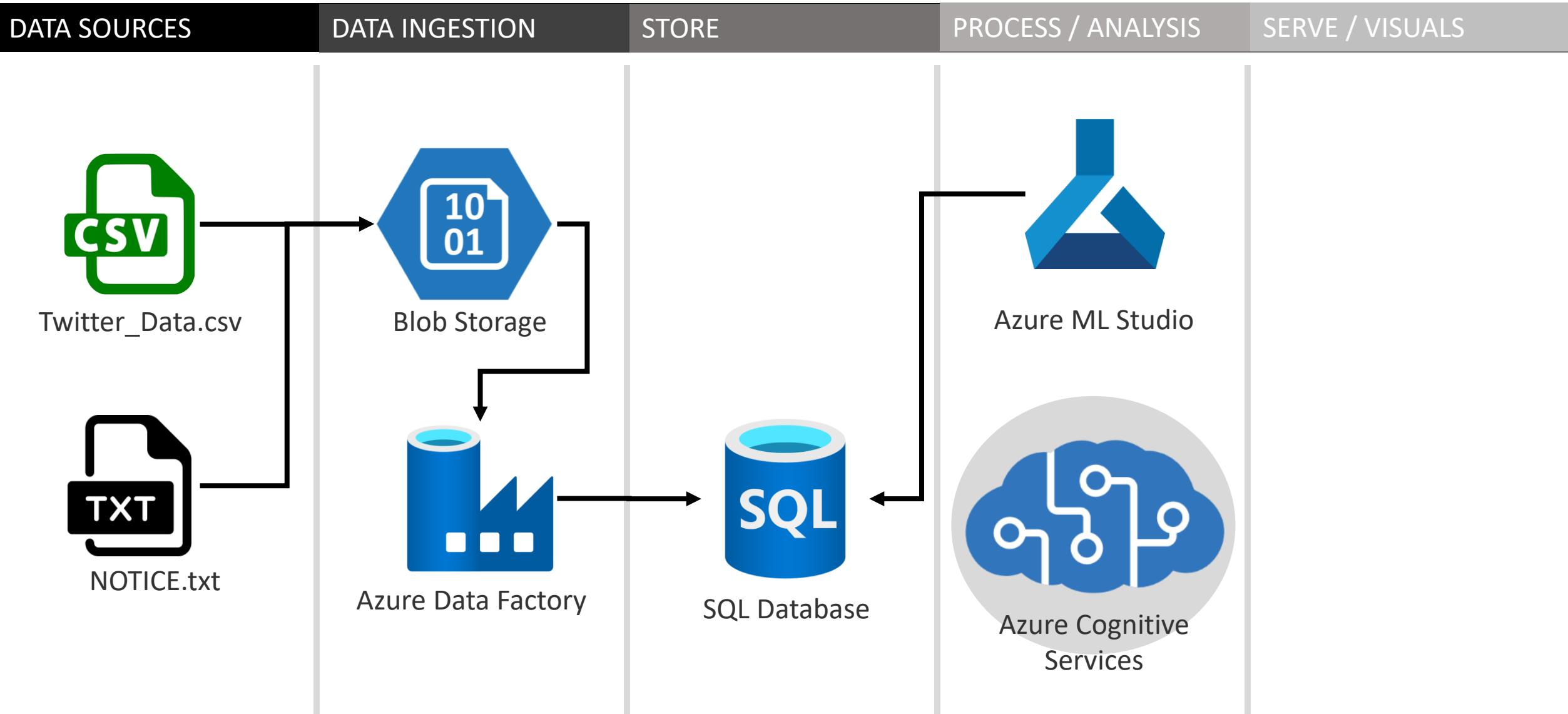
Snap Store

## ↓ Mac

macOS 10.10+

.zip Universal Intel Chip Apple Silicon

# Data Architecture so far...



# References

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Azure **Machine Learning**, <https://azure.microsoft.com/en-ca/services/machine-learning/>

Azure **Machine Learning Studio**, <https://studio.azureml.net/>

**Microsoft Learn**, <https://docs.microsoft.com/en-us/learn/>

**Microsoft Learn**, Course AI-102T00: Designing and Implementing a Microsoft Azure AI Solution,

<https://docs.microsoft.com/en-us/learn/certifications/courses/ai-102t00>

**Microsoft Learn**, AI-102, <https://docs.microsoft.com/en-us/learn/certifications/azure-ai-engineer/>

**Microsoft Learn, Code Samples**, <https://docs.microsoft.com/en-us/samples/browse/>

Microsoft Official **Git Hub**, **AI-Basic examples for all APIs**, <https://github.com/MicrosoftDocs/ai-fundamentals>

Microsoft Official **Git Hub**, **Microsoft learn AI-900**, <https://github.com/MicrosoftLearning/mslearn-ai900>

Microsoft Official **Git Hub**, **Microsoft learn AI-102**, <https://github.com/MicrosoftLearning/AI-102-AIEngineer>

# Thank you! ;-)

Please e-mail me the screenshots of your final steps for each component / service to validate your bonus points.